CLASS 172, EARTH WORKING

SECTION I - CLASS DEFINITION

GENERAL STATEMENT OF CLASS SUBJECT MATTER

This is the generic class for subject matter relating to working the earth in situ. Earth working involves physical treatment of the earth and includes beating, compacting, crushing, cultivating, cutting, digging, furrowing, harrowing, leveling, mixing, plowing, pulverizing, rolling, scraping, scratching, smoothing, and tilling.

The earth is usually worked by an earth working element carried on an apparatus traversing the ground but hand held tools such as hoes are also included.

This class also takes subject matter, not otherwise classified relating to the cutting and removal of sod or turf from the ground.

Apparatus comprising means other than earth working means supported on or attached to a vehicle for manipulation in a manner consistent with the use of the means as an earth working means is classifiable in this class if the means is identified in a claim by name only and the claim contains no feature otherwise inconsistent with classification in Class 172. However, lines with other classes have in many cases not been cleared so that where the bulk of the existing art has been classified on a basis other than indicated above such classification is continued.

(1) Note. CLAIMS NOT CONTROLLING IN PATENTS PRIOR TO 1930. Patents prior to 1930 have not necessarily been classified by claims so that the placement of these old patents does not necessarily indicate lines of classification. In view of the large numbers of old patents in this class many of these patents have been classified in accordance with their total disclosure. This is especially true of the patents in subclasses 332+. Most of the patents, however, regardless of their age have been placed in accordance with their claimed subject matter.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

SUBJECT MATTER RELATING TO SNOW REMOVAL, TO WORKING THE EARTH FOR INDUSTRIAL PURPOSES, TO COMPACTING EARTH FOR ROADS OR PAVEMENT AND TO WORKING HARD MATERIAL IN SITU

Class 37, Excavating, generally relates to removing snow or to working the earth for industrial purposes as by making a ditch or moving earth by a conveyor or scoop. In many cases the devices found in Class 37 for these purposes are indistinguishable structurally from devices found in Class 172. Classification turns on emphasis for a certain use, such as snow removal or ditch digging. Class 37 formerly contained subclasses 143 through 181 entitled “Scrapers” which included subject matter relating to scraping the earth by means of a blade or such subject matter in combination with other earth working means such as harrows or rollers. The devices in these subclasses were typically road graders or bulldozers for working or moving the earth for industrial purposes. These subclasses were abolished and the art found in them was for the most part incorporated into Class 172 and is to be found in subclasses 4.5, 26.5, 26.6, 777-809 and other appropriate subclasses. Some of the art was specialized to ditch filling and was placed in Class 37 subclass 142.5. The remaining patents were not drawn to scraping blades or such blades combined with simple earth working means and were transferred to appropriate subclasses in Class 37 or other classes. Class 37, subclasses 104+, Railway Graders, and subclasses 381+, Road-Grader Type, were not cleared. Patents in these subclasses should be drawn to devices more specialized than the general utility scrapers or “road graders” which were classified in abolished subclasses 143-181.

Class 299, Mining or In Situ Disintegration of Hard Material, as the title indicates, generally provides for the working of hard earth material such as rock and also the working of ice in situ. However, a tool which is actually of general utility in earth working, such as a ripper tooth or scraper and traverses the earth without relative movement with respect to its support (as by rolling or cyclical driving) is classifiable in Class 172 even if solely disclosed for disintegrating rock.

Class 404, Road Structure, Process, or Apparatus, subclasses 117, 121, and 122+, for a roller device which performs a simple compacting function on the earth. See the note to Class 172, under the class definition of Class 404.

JOINTS

Many of the patents relating to earth working devices claim joints between parts of the device. A claim to a

joint between two disclosed earth working portions of an earth working apparatus, e.g., a claim to a joint between a plow share and moldboard, is classifiable in Class 172, subclasses 681+. Also, a claim to an overload release joint between implement parts, e.g., between a tractor and a device solely disclosed as an earth working type of implement, is classifiable in Class 172, subclasses 261+ and a claim to a spring biased joint for biasing an earth working tool is classifiable in Class 172, subclasses 705+. However, other claims to joints, per se, are classifiable in the various classes relating to joints. Thus, joints of general application are classifiable in Class 403, Joints and Connections. An articulated joint between a tractor and a trailing vehicle, as long as that vehicle is not solely disclosed as an implement, is classifiable in Class 280, Land Vehicles, subclasses 400+.

The Search Notes below also contain lines with other classes.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

7, Compound Tools, appropriate subclasses for miscellaneous compound tools, especially subclass 115 for a cutter combined with a pitch fork and subclass 116 for a cutter combined with a spade or shovel (e.g., a bayonet and a shovel). Hand tools comprising combinations of various earth working portions are classifiable in Class 172, Earth Working.

15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses for cleaners, including scrapers. Class 172 takes cleaners for cleaning earth working parts, which cleaners are intended to be attached to the earth working apparatus.

16, Miscellaneous Hardware (e.g., Bushing, Carpet Fastener, Caster, Door Closer, Panel Hanger, Attachable or Adjunct Handle, Hinge, Window Sash Balance, etc.), subclasses 110.1+ for handles for earth working devices, such as plows or hoes.

29, Metal Working, subclass 14 for machines and processes of making plow and cultivator irons, subclasses 891+ for processes of making agricultural devices, and see the subclasses there cited.

30, Cutlery, appropriate subclasses, for cutters of general utility and cutters for merely making a slit in sod. A cutter for earth working purposes such as making a slit in the soil (e.g., a colter) is classifiable in Class 172. Thus a patent to a cutter with a claim restricted to earth working or a sole disclosure of earth working is classifiable in Class 172, except that a patent to a hand device with the cutting edge extending generally in the direction of the handle is classifiable in Class 30 even though it is restricted to earth working. Also a tool for merely cutting a plant below the surface of the earth is classifiable in Class 30.

37, Excavating, subclasses 196+ for snow- removing apparatus which may be identical with earth working apparatus except that it is disclosed as principally for snow removal, subclasses 307+ for dredging apparatus, subclasses 347+ especially subclasses 366+ for ditchers which may be very similar to earth working apparatus for Class 172 except that they are disclosed as making an industrial ditch or trench rather than a furrow, by more than mere scraping operation, subclasses 104+ for apparatus specialized to forming the bed or slopes of a railway, subclasses 381+ for apparatus specialized to working on roads and involving something more than mere scraping or earth working apparatus of general utility, subclasses 394+ for cable operated apparatus including cable operated scrapers involving more than the scraper, per se, and a cable attached to the scraper, subclasses 403+ for a scraper convertible to or combined with a scoop, shovel or other material pick up means, subclasses 411+ for scoops which are distinguishable from scrapers classified in Class 172 in that they have a bottom for transporting material, and appropriate subclasses for digging or moving earth in general.

47, Plant Husbandry, appropriate subclasses, especially subclasses 1.01 and 58.1 for subject matter relating to earth working combined with other functions relating to plant husbandry such as heating the earth or spraying a plant. However, a moldboard type plow with heating means for the plow is classifiable in Class 172 subclass 755.

56, Harvesters, appropriate subclasses for subject matter relating to severing or chopping of crop material without disturbing the soil and also subject matter relating to gathering or raking crop material without substantially disturbing the soil. The line is essentially one of disclosed use. If a device is described as a nonearth disturbing harvesting device the patent is placed

in Class 56 rather than Class 172 even if the structure claimed is the same as that which may be found in Class 172. An exception is that if a harvester is claimed by name only and the claim is otherwise drawn to merely a mounting or manipulating means which is consistent with the functioning of the named harvester as an earth working device then the patent may be classifiable in Class 172.

(a) With respect to the stalk chopper art, if the chopper is disclosed as one which operates by the action of a cutter member against the ground, without a ledger plate it is assumed that the soil is disturbed and classification in Class 172 results. Choppers operating above the ground level are classifiable in Class 56.

(b) Generally Class 172 takes the combination of or the conversion between a Class 56 apparatus and a Class 172 apparatus, or an apparatus disclosed as having either an earth working or a harvesting function without change. Thus a Class 172 type lawn edger combined with or convertible to a harvester is found in Class 172, subclass 14, the combination of other types of Class 172 devices with a harvester is in Class 172, subclasses 27+ and the combination of a Class 172 device with a rake is in Class 172, subclasses 29+. An exception to the above is that a hand rake combined with or convertible to an earth working means is classifiable in Class 56, subclasses 400.04+.

60, Power Plants, subclasses 325+, especially subclass 427 for hydraulic-type power plants operated by liquid supplied from a pump. Many such power plants are used in earth working apparatus. A claim to a power plant for an earth working apparatus reciting only a tractor mounting for the plant and a rockshaft actuated by the power plant is classifiable in Class 60. If the claim goes beyond this and claims some detail of the apparatus which may be only a lift arm on the rockshaft or a draft sensing means it is classifiable in Class 172.

72, Metal Deforming, subclasses 462+ for dies for forming plow and cultivator irons.

74, Machine Element or Mechanism, appropriate subclasses for machine elements and mechanical movements, especially subclasses 11+ for power take-offs.

76, Metal Tools and Implements, Making, subclass 85 for attachments other than abrading attachments for sharpening earth working tools. An earth working apparatus combined with a sharpening device is in Class 172, subclass 437. However, when the earth working apparatus as claimed is only a support for the attachment the claim is classifiable in Class 76.

91, Motors: Expansible Chamber Type, appropriate subclasses for servomotors, per se. Many such servomotors are used in earth working apparatus. A claim to a servomotor for an earth working apparatus reciting only a tractor mounting and rockshaft operated by the motor is classifiable in Class 91. However, further detail such as a lift arm on the rockshaft or a draft sensing means causes classification in Class 172.

104, Railways, subclass 169 for apparatus for reciprocating an earth working device, claimed by name only, over the ground and subclass 244.1 for a vehicle or earth working device claimed by name only guided along a field by a furrow feeler. Class 172, subclasses 23+ has significantly claimed earth working apparatus driven from or guided by a stationary object or previously formed furrow.

111, Planting, appropriate subclasses for earth working means combined with planting means, especially subclasses 118+ for earth working means combined with means for inserting liquid or gas into the soil, subclasses 25+ for planting means with earth marking means, subclass 33 for earth marking means comprising means to make an intermittent mark in the earth to indicate the points where material should be planted, subclasses 52+ for frame arrangements, subclass 82 for hand propelled planters, and subclass 99 for dibbles. A Class 172 device generally may comprise the earth working subcombination of a planting device. A planter may be recited by name only as a support for an earth marker or an earth working tool in a claim classifiable in Class 172. A support for an earth working portion identified as a planting boot in a claim is not considered too much for Class 172.

152, Resilient Tires and Wheels, appropriate subclasses for tires and wheels which may be structurally similar to earth working apparatus but are not intended to have an earth working function.

171, Unearthing Plants or Buried Objects, appropriate subclasses for subject matter relating to

unearthing and separating an object from the earth (e.g., a potato digger). A Class 172 device may cut plant roots as it traverses the ground or may turn a furrow which has objects in it such as potatoes but devices in Class 172 do not separate an object from the adjacent earth. A Class 172 device may be a subcombination of a Class 171 device; for example, a plow for Class 172 may lift earth with potatoes in it, the potatoes then being separated from the earth, the complete device being classifiable in Class 171.

173, Tool Driving or Impacting, appropriate subclass for subject matter directed to driving or impacting a tool, when such subject matter includes combined features peculiar to tool driving, but which does not include features limiting the subject matter to a specific tool art, such as specific shape of the work contacting portion of a tool, related tools, or an opposed work support, and see particularly subclasses 184+ driving or impacting means mounted on a wheeled vehicle. Class 172 has not been cleared as to subject matter in conflict with this line.

175, Boring or Penetrating the Earth, appropriate subclasses for subject matter relating to forming elongated holes in the earth. Apparatus for forming a plurality of small holes in the earth for aerating the soil or for like purposes is classifiable in Class 172, subclasses 21+.

180, Motor Vehicles, subclasses 14.1+ for vehicle trains comprising a tractor and a trailing vehicle which may be an implement claimed by name only, subclasses 53.1+ for devices in which the motor of the motor vehicle is used as a source of external power for a device which may be an implement claimed by name only, and subclass 401 for power steering devices which may be controlled by a feeler element running in a furrow. An implement described in a claim as comprising a frame and an earth working means carried thereby is considered to be claimed by more than name only so that the claim would be classifiable in Class 172. The line between Class 172 and subclasses 53.1+ of Class 180 is set out in the Search Class Note of subclass 35 in class 172.

192, Clutches and Power-Stop Control, subclass 62 for plow-lifting type clutches, per se.

241, Solid Material Comminution or Disintegration, appropriate subclasses for subject matter relating to comminuting or disintegrating material other than the earth in situ.

254, Implements or Apparatus for Applying Pushing or Pulling Force, appropriate subclasses for lifting means of general utility for lifting a load, which means may be structurally similar to a means for manipulating an implement.

280, Land Vehicles, appropriate subclasses for the running gear or other feature of a general utility land vehicle, not restricted by disclosure to an earth working or harvesting implement. Attention is directed to subclass 1.5 for a vehicle with a means for engaging the body of a walking attendant; subclasses 6.15+ for a vehicle including means, interposed between the vehicle body, chassis, or frame and running gear thereof, for altering height or levelness of the vehicle body, chassis, or frame; subclasses 32.5+ for a vehicle with a worker's support or shade; subclass 32.7 for a vehicle including a riding attachment; subclasses 43+ for a vehicle including a wheel vertically movable relative to the running gear for the purpose of altering a dimension of the vehicle or a part thereof; subclass 47.11 for a vehicle including steering of other than a mere swinging axle by an attendant positioned about, rather than upon, the vehicle; subclasses 47.131+ for a tiltable vehicle stabilized by an article or an attendant; subclasses 47.34+ for handle-propelled vehicles; subclasses 82+ for tongue trucks; subclasses 98+ for vehicles having running gear specifically constructed to enable execution of arcuate travel within a reduced radius of curvature (i.e., short turn); subclass 108 for general utility vehicles including tongue antivibrators; subclasses 124.1+ for general utility vehicle running gear including suspension means; subclasses 137.5+ for general utility vehicle running gear including a turnable axle lacking suspension means; subclasses 160+ for means for fending obstacles from contact with the wheels of a vehicle; subclasses 400+ for an articulated vehicle or plural interconnected vehicles (i.e., vehicle train); subclasses 763.1+ for a vehicle with a retractable ground support; subclasses 771+ for vehicles including occupant controlled steering; subclasses 847+ for vehicle dust or mud guards; or subclasses 855+ for wheel scrapers and cleaners. Further, regarding an articulated vehicle or vehicle train as provided in subclasses 400+ of this class (Class 280), particular attention is directed to subclasses 405.1+ for a load distribution connection between sections of the articulated vehicle or the plural vehicles, subclasses

411.1+ for multiple trailing vehicles, subclass 414.5 for a trailing vehicle having a vertically adjustable wheel, subclasses 415.1+ for a convertible interconnection between the articulated vehicles, subclass 419 for a steering connection between articulated vehicles, subclasses 420+ for articulated vehicles with service connections therebetween, subclasses 442+ for a wheel on a trailing vehicle steered by articulative movement between the vehicles, subclasses 446.1+ for condition responsive draft connections, subclasses 449+ for overload releasing draft connections, subclasses 456.1+ for plural laterally adjustable draft connections, subclass 476.1 for a wheel draft connection, subclasses 477+ for connection facilitating means in a draft connection, and subclass 490.1 for a vertically adjustable draft member, the adjustment being merely for the purpose of placing the draft member at a proper height for facilitating the connection between the articulated vehicles.

294, Handling: Hand and Hoist-Line Implements, subclasses 49+ for hand forks and shovels. Hand forks and shovels are distinguished from Class 172 apparatus such as a hand hoe in that the row of tines or blade extends in the general direction of the handle from an end thereof and is designed to engage and lift a load.

299, Mining or In Situ Disintegration of Hard Material, appropriate subclass for subject matter relating to recovering valuable material from the earth or breaking up hard, solid material in situ. In working the earth surface, the line between Class 172 and Class 299 turns on described hardness of material worked, Class 299 taking a cutter or device for working hard solid material in situ. Clay type earth or loose gravel is considered soft material whereas solid rock, coal or road pavement is considered hard material. However, a device for merely drawing a cutter back and forth like a plow even in a hard surface is classified in Class 172 if specific cutter structure is not recited.

301, Land Vehicles: Wheels and Axles, appropriate subclasses, especially subclasses 41.1+ for wheels which may be structurally indistinguishable from earth working tools but which are not intended to work the earth.

384, Bearings, subclass 157 for a plain bearing and 460 for an antifraction bearing for plow or colter disks which may include the bearing support.

403, Joints and Connections, appropriate subclasses for a joint between two members which does not involve any structure of the members other than that which cooperates to effect the joint.

404, Road Structure, Process, or Apparatus, subclass 117, for an earth compacting roller with vibrating or impact means, subclass 121, for a sheep's foot roller, subclasses 122+, for a rotating drum, roller or tire to compact earth and subclasses 133.05+, for earth tamping means.

414, Material or Article Handling, appropriate subclasses.

418, Rotary Expansible Chamber Devices, for rotary expansible chamber-type pumps or motors, per se.

451, Abrading, subclasses 415+ for an abrasive attachment for sharpening earth working tools. An earth working apparatus combined with a sharpening device is in Class 172, subclass 437. However, where the earth working apparatus, as claimed, is only a support for the attachment, then classification is in Class 451.

492, Roll or Roller, for a nonearth working roll, per se, not elsewhere provided for, and see the notes thereunder.

D8, Tools and Hardware, subclasses 1+ for tools and implements for agriculture, forestry and horticulture.

D15, Machines Not Elsewhere Specified, subclasses 10+ for agricultural or construction machinery.

SECTION IV - GLOSSARY

ACTUATOR

A device comprising both a means for imparting movement to an element and a means for holding the moved element against returning to a position from which it has been moved. Thus, an actuator may comprise a servomotor, a mechanical power take-off from a motor or rolling wheel, a hand operated lever and ratchet or merely a handle and a bracket for holding the element moved by the handle in position. In the case of a mere handle actuator, however, the handle must be intended to be used merely to move an element to an adjusted position where it is held in place by a holding means. If the handle is intended to be used by an attendant so as to hold an element in intermediate positions by continued application of force by the attendant then the handle is not considered an actuator. See subclasses 329+ for devices with such handles. If the handle is disclosed as

usable as an actuator to merely move and hold and, alternatively, also as a guiding means to move and hold by force exerted by the attendant then the handle is considered to be both an actuator and an attendant hold means and is classified accordingly in the first appropriate subclass and cross referenced down if necessary.

A device comprising merely a means for moving by direct application of draft force is not considered an actuator. For example, an implement hitched to a tractor and provided with a latch and a movable hitch whereby the draft force of the tractor on the movable hitch moves an earth working element with respect to the implement frame and the latch holds the element in different positions is not considered to be provided with an actuator, as the term is used in this class. See subclass 605 for such devices.

Also, a device comprising merely a screw bolt or the like is not considered an actuator, being merely a clamping or an adjusting means.

ADJUSTABLE

An adjective describing the capability of two parts of being selectively held in different positions with respect to one another by some means other than an attendant. A mere clamp which cooperates with a member such that by loosening the clamp the member could be set in any desired position and reclamped (e.g., clamp and spike tooth) is not considered to be an adjusting means. However, any specific structure such as selectively usable apertures, teeth, slots, etc., for the purpose of permitting the selective change of the relative positions of two parts is included under this definition.

Despite the above limitation on the meaning of “adjustable” if a claim emphasizes the feature of adjustability it is classifiable in an “adjustable” subclass even if structurally the feature comprises a mere clamp.

EARTH WORKING ELEMENT

Synonymous with “tool”.

IMPLEMENT

A combination of parts comprising an earth working device. It may mean merely an earth working portion or a complex combination of parts including a tractor. Usually it indicates a complete device which as an entity may be readily attached to a tractor in the field.

LATERAL

A direction which is transverse of the line of draft of a tool over the earth unless some other meaning is clearly indicated by the context.

LONGITUDINAL

A direction which is parallel to the line of draft of a tool over the earth unless some other meaning is clearly indicated.

TOOL

That portion of the apparatus which actually works the earth.

SUBCLASSES

1 **PROCESSES:**
This subclass is indented under the class definition. Methods.

SEE OR SEARCH CLASS:
- 37, Excavating, subclass 195 for methods of excavating.
- 47, Plant Husbandry, subclass 58.1 for methods of earth working combined with an additional nonearth working step such as adding fertilizer or treating the soil.
- 171, Unearthing Plants or Buried Objects, subclass 1 for methods of earth working combined with an additional step of removing or separating a plant or buried object from the earth.

2 **AUTOMATIC POWER CONTROL:**
This subclass is indented under the class definition. Apparatus comprising an earth working element and a means for sensing a condition or change of condition, which condition or change of condition may or may not occur, a separate control means and a separate power means for changing a condition of operation of the apparatus, said three means being so related that the sensing means controls operation of the controlling means and the control means controls operation of the power means, all without the intervention of a human operator.

(1) Note. The “power means” of the definition comprises a motor or a mechanical power take-off. For purposes of this defi-

nition a spring is not considered a power actuating means.

(2) Note. Apparatus in which a movement of the sensing means develops power which directly moves the power means is not included (e.g., a sensing means connected to a piston in a hydraulic transmission to directly cause movement of a piston in the power lift cylinder). See subclass 239 for such apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

465, for an actuator for lifting a tool for transport comprising a servo-motor with a follow up control.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 9 for unearthing devices having automatic control.

180, Motor Vehicles, subclass 14.5 for a connection between a motor vehicle and a trailer (including a broadly claimed implement) effective to automatically control the vehicle on occurrence of an overload on the connection, and subclasses 282+ for a motor vehicle provided with a safety-promoting means which is responsive to the sensing of acceleration, deceleration, or tilt of the vehicle.

414, Material or Article Handling, subclasses 699+, for material moving devices with a vertically swinging load support of the tilting shovel or fork type with automatic control for effecting an operation of the device.

3 Motive power control:

This subclass is indented under subclass 2. Apparatus in which the power means controlled is for propelling the apparatus over the ground.

(1) Note. This subclass includes brake or clutch control for the propelling means.

(2) Note. The mere recitation of an implement by name only in combination with a power driven propelling means therefor having a mechanism for controlling the propulsion means in response to a condition of the implement, as for example, a mechanism for disengaging the clutch of a tractor when a pulled implement strikes an obstruction, is not enough for classification under this definition. See Class 180, Motor Vehicles, subclass 14.5 for such devices.

(3) Note. The mere recitation of an implement in combination with a power driven propelling means therefor including a means for adjusting the implement and a mechanism for con trolling both the propelling means and the adjusting means for the implement is included in this definition.

SEE OR SEARCH CLASS:

180, Motor Vehicles, subclass 14.5 for vehicle trains with automatically responsive means for controlling the propelling means. A broadly named implement is considered a vehicle for Class 180.

901, Robots, subcollection 1 for a mobile robot device.

4 Constant depth type:

This subclass is indented under subclass 2. Apparatus in which the sensing means contacts or senses the surface of the ground and acts to maintain the earthworking element at a preselected depth therein.

4.5 Land leveller type:

This subclass is indented under subclass 2. Apparatus in which the earth working element is a ground leveling tool, (e.g., a scraper, etc.) which is so controlled that the contour of the finished portion of the earth which is being worked will be substantially straight in a longitudinal direction regardless of the irregularities of the original surface of said portion.

5 Obstruction sensing type (includes plant sensing):

This subclass is indented under subclass 2. Apparatus wherein the condition sensed is the location of an obstruction or plant.

(1) Note. A stake or other object which has been previously placed in position for the purpose of controlling an earth working implement which is intended to

approach such object is not considered to be an obstruction within this definition since its sensing is not considered to be a condition which may or may not occur. See search notes below for such apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

23+, for a stake or other object which has been previously placed in position for the purpose of controlling an earth working implement which is intended to approach an object

38, for driven tools having an obstruction feeling device which moves the implement.

233+, for apparatus having an obstruction feeler for moving an implement to avoid the obstruction, the obstruction feeler providing the power necessary to move the implement or merely unlatching the implement so that it may move.

SEE OR SEARCH CLASS:

56, Harvesters, subclasses 121.4+ for harvester cutters with plant or crop contacting gauges.

171, Unearthing Plants or Buried Objects, subclass 8 for drive triggered by desired object.

6 Electrical:

This subclass is indented under subclass 5. Apparatus in which at least one of the sensing, controlling or power means is electrical.

7 Draft responsive:

This subclass is indented under subclass 2. Apparatus in which the condition change which is sensed is a change in the force required to move the earth working element along the ground.

(1) Note. For classification under this definition a patent must claim the automatic control feature in some detail. A mere broad reference in a claim to an automatic control as, for example, a mere broad reference in a claim to a top link in a three point hitch broadly described as a link for automatically controlling a power lift is not enough. See Search Notes below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3, for apparatus including means to automatically control the power means of a vehicle for propelling a tool which may be responsive to the draft force on the earth working tool.

239+, for draft or pitch responsive depth control for implements, the control being other than of the automatic power control type.

439+, for patents with claims of the nature described in (1) Note above.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 446.1+ for articulated vehicles with a hitch responsive to changes in the draft load, there being no disclosure of an earth working element being the cause of the change in draft load, and subclasses 405.1+ for articulated vehicles with an adjustment to distribute the load between the vehicles or from one vehicle to another.

8 Variable rate responsive:

This subclass is indented under subclass 7. Apparatus in which the rate of movement of the power means varies with the magnitude of the sensed force in such a manner that the rate of movement increases or decreases when the magnitude of the sensed force increases or decreases respectively.

(1) Note. This subclass includes, for example, those devices in which a plurality of pumps, a variable capacity pump, or a plurality of successively operated valves are used to operate a fluid servomotor.

(2) Note. A system which has a mere single valve for directing fluid to a servomotor which would provide less restriction to fluid flow upon greater opening of the valve in response to the increased magnitude of the sensed force is not included in this subclass.

9 With manual actuator to select type of condition sensed:

This subclass is indented under subclass 7. Apparatus including means having a manually actuated element which may be set in a plurality of positions, wherein changing the position of the element results in a change in the type of condition (e.g., position of tool, amount of draft force, depth of tool) which causes a change in operation of the apparatus.

(1) Note. This subclass includes those devices having means to operate the power means to raise or lower the earth working means upon the occurrence of an excess draft force (e.g., excess draft release or overload lift type).

SEE OR SEARCH THIS CLASS, SUBCLASS:

465, for an actuator adapted to lift a tool for transport on a wheeled frame or broadly claimed implement and comprising a servomotor with a follow-up control, or for a device wherein an automatic draft responsive control is converted to a position control so that the automatic draft control is effective only if the device is disassembled.

SEE OR SEARCH CLASS:

91, Motors: Expansible Chamber Type, subclasses 358+ for expansible chamber motors having working member position responsive feedback control.

10 Sensitivity adjustment:

This subclass is indented under subclass 7. Apparatus having means to selectively adjust the relationship between the power means and the sensing means to change the magnitude of sensed force required to produce a given movement of the power means.

(1) Note. The sensed force in this definition is the force applied directly to the sensing means, for example, in the three-point mast type hitch it is the force applied to the end of the top link and not the force acting directly on the earth working element.

11 With excess draft release:

This subclass is indented under subclass 7. Apparatus in which the earthworking element is normally raised by the power means in response to an increase in the sensed force and having means which is operative when the magnitude of the force exceeds a predetermined amount to release the earth-working element from control by the power means.

12 Overload lift type:

This subclass is indented under subclass 7. Apparatus in which the condition sensed is an abnormal increase in the magnitude of the draft force, the sensing means initiating operation of the power means to cause raising of the earth working element to an inoperative position.

(1) Note. The earth working element may be returned to its previous working condition as part of the cycle of operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

261+, for overload responsive devices which are not automatic in their operation.

13 LAWN EDGER:

This subclass is indented under the class definition. Apparatus comprising means other than a scraper specially intended for working the earth adjacent a fixed structure on the surface of the earth (e.g., a paved walk to edge a lawn) or working the earth adjacent a turf surface (e.g., grooving a plant bed adjacent a lawn).

(1) Note. This definition is intended to provide an art collection of lawn edgers or trimmers. Usually such devices comprise a means for guiding the device along the edge of the pavement. However no special structure need be claimed for classification in this subclass. Patents whose sole specific disclosure or whose claims relate to the described use are considered to come under this definition.

SEE OR SEARCH CLASS:

30, Cutlery, appropriate subclasses for hand manipulable implements for merely cutting or slitting grass or sod. Devices which cut so as to form a

groove in the soil, however, are classified in Class 172.

56, Harvesters, subclasses 10.1+, for a motor-driven harvester, particularly subclass 13.7, wherein two or more cutters are provided, e.g., for mowing and for trimming, and subclass 16.9 wherein the motor may drive a mower or a trimmer; subclasses 229+, for a lawn and hedge cutter, and subclass 251, for a lawn edge trimmer combined with a lawn mower. The lawn edge trimmer or cutter of Class 56 merely cuts grass. If a groove is cut in the soil, or the ground is otherwise disturbed, classification is in an appropriate subclass in Class 172.

14 With or convertible to non-earth working implement:

This subclass is indented under subclass 13. Apparatus in combination with or convertible to an element for performing some work operation other than earth working.

(1) Note. Devices classified here include lawn edgers combined with mowers, brushes or snow removers.

15 Rolling or driven cutter:

This subclass is indented under subclass 13. Apparatus comprising an earth working element which cuts into the ground and has a rolling motion as it is pulled over the ground or is positively moved with respect to its support with a continuous or cyclic motion.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 292 and 319 for rotary blade cutters.

16 With fixed cutter or furrower:

This subclass is indented under subclass 15. Apparatus comprising in addition an earth working element for cutting into or furrowing the earth which does not move relative to its support while working the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

63+, for other driven and nondriven earth working elements.

174+, for other rolling and nonrolling earth working elements.

17 With wheel or roller:

This subclass is indented under subclass 13. Apparatus in combination with a ground wheel or ground roller.

18 Impact or grapple:

This subclass is indented under subclass 13. Apparatus comprising (1) an earth working element adapted to be driven generally vertically downwardly in the earth or (2) jaw members for grasping and lifting a portion of earth.

SEE OR SEARCH CLASS:

294, Handling: Hand and Hoist-Line Implements, subclasses 49+ for hand forks and shovels for digging or grappling earth and not limited to use as lawn edgers.

19 SOD CUTTER:

This subclass is indented under the class definition. Apparatus comprising means for cutting the earth (1) horizontally and vertically or (2) annularly for the purpose of enabling a portion of sod to be removed in an undisturbed condition.

(1) Note. This definition is intended to provide an art collection of sod or plug cutters. Other devices such as subsoilers, or the like, which cut soil and have structure similar to that of a sod cutter but are not used for the purpose of removing a strip of earth in an undisturbed condition are not included. Patents are considered to come under this definition if claims refer to sod cutting or the sole specific disclosure relates to this use.

(2) Note. Patents relating to the handling and/or cutting of sod after it has been cut from the ground are classified under this definition if not otherwise classifiable.

SEE OR SEARCH THIS CLASS, SUBCLASS:

22, for earth perforating devices which have means for removing the earth from a hole made in the earth, there being no intention to remove a piece of sod in an undisturbed condition so that it can be replanted. The earth perforating devices characteristically

either disturb the earth or take out a very small diameter core of earth and sod, not intended for replanting.

376, for hand tools of the loop type.

698, for a tool with laterally spaced standards.

699, for subsoilers.

720, for subsurface blades.

SEE OR SEARCH CLASS:

30, Cutlery, for merely cutting turf in a vertical plane.

37, Excavating, subclasses 302 and 303 for devices for excavating stumps and stones, and subclass 3 for peat excavators.

47, Plant Husbandry, subclasses 73+ for plant receptacles of the transplanting type.

111, Planting, subclasses 100+ for plant setting devices.

171, Unearthing Plants or Buried Objects, appropriate subclasses for separating plants from the soil.

175, Boring or Penetrating the Earth, subclasses 249+ for a core-forming type earth boring bit provided with means to sever the core and subclasses 403+ for a core-forming type earth boring bit.

294, Handling: Hand and Hoist-Line Implements, subclasses 49+ for forks or shovels for lifting plugs of earth or sod and subclass 50.6 for shovels of the grappling type, the grapple having no means to cut the earth in a horizontal plane.

299, Mining or In Situ Disintegration of Hard Material, appropriate subclass for cutting hard, solid earth material in situ, particularly subclasses 36.1+ for a floor working machine.

20 With means for vertical transverse cutting while moving:

This subclass is indented under subclass 19. Apparatus comprising means for making a transverse vertically extending cut in the earth while the apparatus is being propelled over the surface of the earth.

(1) Note. The apparatus may momentarily halt its forward motion while the transverse cut is being made.

SEE OR SEARCH THIS CLASS, SUBCLASS:

101, for driven earth working elements which are guided for rectilinear reciprocation, which reciprocation may be in a vertical transverse plane.

21 LAWN AERATOR OR PERFORATION, OR PLUG REMOVER:

This subclass is indented under the class definition. Apparatus for treating earth covered with grass by making a slit or small hole therein so as to either aerate the earth, remove a plug of grass and soil, or merely pierce sod, with a minimum of disturbance of the adjacent earth.

(1) Note. The apparatus found in this subclass is not limited to any specific type of structure but is usually disclosed as being intended to perform the aforementioned aerating and/or plug-removing function.

(2) Note. Apparatus which could incidently be used to perform this function is not included herein, unless the aerating and/or plug-removal of lawns is disclosed as an intended use of the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

91+, for cyclically driven carriers which have, movably mounted thereon, hole forming earth-working teeth, blades, or like projections, but which teeth, blades, or projections tear at and snag the soil in working it.

118+, for devices, other than lawn aerators or plug-removers, driven about a horizontal transverse axis.

540+, for roller devices, other than lawn aerators or plug removers, with teeth which make holes in the ground.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 226 for standing grain gatherers with bat members having a vertical movement similar to aerator projections; and subclass 249 for mowers with rollers having aerating devices.

111, Planting, subclasses 89+ for devices for making a cavity in the earth and

depositing material in the cavity; and subclass 99 for hand implements for forming a cavity other than a furrow in the ground to receive material.

175, Boring or Penetrating the Earth, appropriate subclasses for devices for boring holes in the earth.

22 Earth removing:

This subclass is indented under subclass 21. Apparatus in which there are means for making a hole in the earth by removing earth from below the surface of the ground to a location above the surface.

SEE OR SEARCH CLASS:

47, Plant Husbandry, subclasses 73+ for plant receptacles of the transplanting type.

175, Boring or Penetrating the Earth, subclasses 403+ for a core-forming type earth boring bit.

294, Handling: Hand and Hoist-Line Implements, subclass 50.7 for annularly arranged grappling-type hand forks or shovels.

23 DRIVEN FROM OR GUIDED BY STATIONARY OBJECT, OR ANCHORED:

This subclass is indented under the class definition. Apparatus comprising an earth working means adapted (1) to coact with some fixed manmade structure so as to be driven relative to or guided by said structure, (2) to be anchored to some fixed structure such as a tree or stake to be guided thereby, (3) to be operated while anchored to or supported on the earth so as to prevent the apparatus as a whole from having any translatory movement during the earth working operation, or (4) to be guided by a guide means contacting a channel or shoulder previously made in the ground.

(1) Note. The fixed man-made structure may be portable. For example, a tractor carrying a winch intended to pull an earth working element relative to the tractor to work the earth is considered a “fixed installation”, provided the earth working element is not carried by the tractor.

(2) Note. A means for feeling an obstruction and merely guiding or directing an implement to avoid such obstruction is not included in this definition. Such means are found in subclass 233. Also, an apparatus comprising merely a tool which shifts on meeting an obstruction is not included.

(3) Note. In connection with section (3) of the above definition the device must have some anchor, ground supporting feet or earth penetrating pilot in addition to the earth working means. However, the pilot may itself have some earth working function.

(4) Note. In connection with section (4) of the definition, in order to come within the definition an apparatus must have an element which does not support any substantial weight and which does not have an earth working function and is disclosed as intended to contact a channel or shoulder made on a previous pass of the apparatus or some other apparatus. A landslide of a plow or the like is not classified under this definition unless it is disclosed as specially intended to be used to guide the apparatus along a previously made shoulder since a landslide which inherently could be used to guide an apparatus along a shoulder is very common in this art.

SEE OR SEARCH CLASS:

104, Railways, subclass 169 for railroad rolling stock or track type apparatus claiming an earth working implement by name only and concerned with means for reciprocating the implement across a field, and subclass 244.1 for means coacting with a furrow for guiding a vehicle or implement claimed by name only.

180, Motor Vehicles, subclasses 400+ for a motor vehicle steered by means extending from a post fixed in a field.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 264+ for apparatus for hauling or hoisting a load including a driven device which contacts and pulls on a cable when the load is moved.

901, Robots, subcollection 14+ for the movement in space of a robot arm about its base.

24 Around tree or stake:

This subclass is indented under subclass 23. Apparatus in which the earth working means is guided in a rotary path by a fixed vertical member not forming a part of the apparatus (e.g., tree or stake).

SEE OR SEARCH THIS CLASS, SUBCLASS:

25, for an implement rotatable about a vertical axis and carrying an anchor or feet to prevent translational movement of the apparatus.

25 Rotatable about vertical axis:

This subclass is indented under subclass 23. Apparatus in which the earth working means is rotated about an upright axis while the apparatus is anchored to or supported on the ground so as to prevent translational movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

24, for an implement attached to or guided in a rotary path by a fixed vertical member (e.g., tree or stake).

26 Guided by surface track or previously formed shoulder:

This subclass is indented under subclass 23. Apparatus comprising a means which is adapted to contact an elongated shoulder or channel on or in the ground in order to guide the apparatus.

(1) Note. See (4) Note of subclass 23 for limitations applicable to this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13, for a lawn edger which may be guided by the edge of a pavement.

SEE OR SEARCH CLASS:

37, Excavating, for railway grading apparatus guided by a surface truck.

104, Railways, subclass 244.1 for a vehicle guided by a furrow feeler. The vehicle may be an implement claimed by name only.

171, Unearthing Plants or Buried Objects, subclass 47 for a surface object or ground contour engaging guide means which shifts the unearthing unit bodily with respect to the frame in a generally horizontal plane.

180, Motor Vehicles, subclass 401 for a motor vehicle provided with steering gear which includes a land based steering datum and means on the vehicle for sensing the datum, which means cooperates with a steering motor on the vehicle for the purpose of controlling the course of the vehicle.

280, Land Vehicles, subclass 87.2 for a land vehicle of the wheeled type provided with means whereby one or more of its wheels may be steered by an occupant and wherein the steering means controls also a wheel offset from the principal supporting wheels of the vehicle but which, by its own turning (i.e., pivotable) movement, is able to effect turning movement of certain of the principal wheels; and subclass 776 for a wheeled vehicle of the occupant steered type wherein bias means is provided for maintaining a steerable wheel in engagement with an elongate, more or less vertical surface (e.g., a curb) for a vehicle-steering purpose.

26.5 Dragline scraper:

This subclass is indented under subclass 23. Apparatus comprising a scraper that is adapted to be connected by a cable or the like flexible means to a fixed structure so as to be driven relative to said structure.

(1) Note. The scraper in this definition comprises an approximately vertically disposed blade for smoothing the earth or for cutting into the earth and pushing earth ahead of it in order to move the material from one location to another. The disclosed use may be for scraping earth beneath a body of water or scraping material from a vertical wall. The blade may have spaced teeth, though usually it has a straight edge.

(2) Note. Patents are considered to come under this definition if they are disclosed as intended to be used with a fixed structure, no special limitation being required

in the claims. Use with a fixed structure is considered to be established if it is clear from the disclosure that the scraper is dragged back as well as forward by a cable or the like and there is nothing in the disclosure inconsistent with the cable or the like for forward motion being a drag line.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 394+, for cable-operated excavating apparatus comprising more than a scraper, per se, and nominally recited hauling cables or like flexible means connected thereto, subclasses 398+ for cable operated wheeled scoops and subclasses 398+ for cable operated scoops. A scoop differs from a scraper in that it has a bottom wall which carries material to be transported, whereas a scraper relies on the surface over which it is moving to support material which it is transporting.

26.6 Scraper part rearranged upon reverse movement:

This subclass is indented under subclass 26.5. Apparatus in which the scraper is adapted to be pulled in opposite directions by the cable or flexible means and in which some portion of the scraper apparatus is caused to move to and remain at a different position relative to some other portion when the direction of pull is reversed.

(1) Note. The relative movable portion of the scraper apparatus must comprise more than a mere continuation of the flexible means, such as a bail.

27 WITH MEANS FOR CUTTING OR SHREDDING PLANTS WITHOUT SOIL DISTURBANCE:

This subclass is indented under the class definition. Apparatus comprising an earth working means in combination with an independent spaced means for severing or shredding crops without disturbing the soil, said independent means being used simultaneously with said earth working means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39, for a driven earth working element with a cleaner spaced from the ground surface.

66, for earth working elements with a cooperating driven cleaner which may act to sever vines or vegetation collected on the implement.

606+, and the subclasses there noted, for earth working elements with relatively movable cutting or cleaning means to remove vegetation or debris that has collected on the implement.

681+, especially subclass 752 for earth working elements having sharpened edges or portions which may serve to sever crops or vegetation coming in contact with the elements.

SEE OR SEARCH CLASS:

56, Harvesters, appropriate subclasses for plant severing or shredding means, per se, which do not disturb the earth.

171, Unearthing Plants or Buried Objects, subclass 5 for unearthing devices with additional vertical cutter for vegetation.

28 Driven:

This subclass is indented under subclass 27. Apparatus in which the plant severing or shredding means is driven with a regular cyclic motion relative to its support or frame by a power means in addition to the motion imparted directly to the means by the translation of the device as a whole as it is moved across the surface of the ground being treated.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35+, for driven earth working elements or cleaners.

29 WITH MEANS FOR SHIFTING SURFACE MATERIAL WITHOUT SOIL DISTURBANCE:

This subclass is indented under the class definition. Apparatus comprising an earth working means combined with means (e.g., a rack) for shifting material lying on the surface of the soil which has not been disturbed by the earthworking means without disturbing the soil, said

shifting means being used simultaneously with said earth working means.

(1) Note. Living plants, e.g., vines, are not included. Also dead plants which are still standing, e.g., corn stalks, are not included. See subclasses 514+ and 517 for plant deflectors for handling such material. Also, devices which merely clean or remove material from earth working elements are not included, see subclasses 39 and 66 for driven cleaners and subclasses 606+ and the subclasses there noted for non driven cleaners.

(2) Note. For patents to be classified under this definition the means to shift surface material must be disclosed as solely for such purpose. An earth working implement which may be adjusted to travel above the surface of the ground to shift surface material is not included.

SEE OR SEARCH CLASS:

56, Harvesters, appropriate subclasses for rakes or gatherers, per se, or combined with harvesting means, and subclasses 400.04+ for hand rakes combined with earth working elements.

111, Planting, subclass 139 for a trash control accessory claimed in combination with a planting machine.

171, Unearthing Plants or Buried Objects, subclass 19 for unearthing devices with rake or lateral deflector for ground contacting recovered objects.

30 Driven shifting means:

This subclass is indented under subclass 29. Apparatus in which the means for shifting surface material is driven with a regular cyclic motion relative to its support or frame by a power means in addition to the motion imparted directly to the means by the translation of the device as a whole as it is moved across the surface of the ground being treated.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35+, for driven earth working elements or cleaners.

31 Combined with rolling or vertically acting transverse cutter:

This subclass is indented under subclass 29. Apparatus in which the earth working means includes at least one earth engaging blade extending laterally of the direction of travel and being either reciprocable vertically to perform a cutting function or being attached to a rotary carrier which is rotated due to the resistance of the earth as the apparatus is moved over the earth.

(1) Note. The earth engaging blade need not extend the 90° with respect to the line of travel, but may be oblique with respect thereto.

(2) Note. Most of these devices are stalk choppers and the function of the blade is mainly to cut stalks.

32 WITH SEPARATING AFTER EARTH WORKING:

This subclass is indented under the class definition. Apparatus comprising an earth working means and a means for acting on the earth severed from the ground or loosened by the earth working means to classify, separate or assort it according to its physical characteristics and return at least a portion of such earth to the ground.

(1) Note. The classifying, assorting, or separating means must be in addition to and distinct from the earth working means which severs the material from the ground.

(2) Note. The classifying, assorting, or separating means is generally of the type found, per se, in Class 209, Classifying, Separating, and Assorting Solids.

(3) Note. A mere pulverizing or comminuting is not considered separating.

SEE OR SEARCH THIS CLASS, SUBCLASS:

511, for fenders for preventing soil thrown about by the apparatus from contacting plants, the fender being of the perforated or screening type to permit fine soil to pass.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, appropriate subclasses for means for unearthing plants or objects from the ground and separating them from the earth. The subject matter of Class 171 is characterized by means which discriminate between an object and the earth. In Class 172 the discrimination is between different portions of the earth itself, as between large clods or granules and small clods or granules. For example, a Class 172 device may separate large granules of earth mixed with stones from small granules of earth, while a Class 171 device would separate stones from earth.

299, Mining or In Situ Disintegration of Hard Material, subclasses 7+ for apparatus for mining material followed by separation.

33 WITH POWER DRIVEN MOLDBOARD, CONVEYER OR HANDLER:

This subclass is indented under the class definition. Apparatus comprising an earth working means combined with a power driven means for handling the earth after it has been severed from the ground or loosened by the earth working means.

(1) Note. Where the power driven means not only handles the earth but performs a substantial earth working function the apparatus is classifiable in subclasses 35+.

(2) Note. The power driven handling means may comprise for example a conveyer for moving the earth or a means for turning a furrow slice.

(3) Note. A power driven cleaner or comminutor which merely separates earth from an implement without conveying it to a distance is not considered to come within this definition. Such devices may be found in subclass 66.

SEE OR SEARCH CLASS:

37, Excavating, appropriate subclasses for apparatus for working earth or snow and conveying it away for the purpose of making an excavation or the like.

34 COMPLETE APPARATUS ADAPTED FOR USE UPSIDE DOWN:

This subclass is indented under the class definition. Apparatus , other than hand held devices, so arranged that the whole apparatus may be turned upside down so as to work the earth in that position in addition to its ability to work the earth in its original right side up position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

136, for diverse tools useable alternately only.

241, for an apparatus inverted to engage a ground support with the ground.

371+, for hand tools which may be used in an inverted position.

35 WITH DRIVE MEANS FOR TOOL OR CLEANER:

This subclass is indented under the class definition. Apparatus in which a power means is provided to move an earth working element with a regular cyclic motion relative to its support independently of or in addition to the motion imparted directly to said element by the translation of the device as a whole as it is moved across the surface of the ground being treated.

(1) Note. The moving means may employ a resilient element or gravity return arrangement during a portion of the movement.

(2) Note. The power means may comprise (1) a prime mover such as an engine or motor (2) a drive from a supporting wheel (other than where there is an integral wheel and earth working element or direct coupling therebetween) or (3) a manual means to continuously rotate the earth working element.

(3) Note. Where no more of the driving means for a driven earth working element is claimed than the driven shaft which supports said element the patent has been construed as a rotary implement subcombination, equally useful as a driven or a rolling earth working ele-

ment and has been classified in subclasses 518+ unless (1) the claimed structure, attitude, or relation of the element to the ground or to an adjacent, cooperating implement would require a drive means to operate it in the manner disclosed or (2) unless a disclosed drive means (more than a shaft) is claimed either broadly or specifically.

(4) Note. Driven earth working elements as contemplated by this definition usually engage earth which is either undisturbed or which rests on undisturbed earth immediately after it has been treated by another implement. As an exception to the above, driven elements which (1) are contiguous to a ground treating implement to clean it or (2) which are disposed in the path of the furrow slice or earth stream leaving the implement to pulverize said earth have been classified as driven earth engaging elements in subclasses 39, 50+, 66, and 67.

(5) Note. Provision of power means to shift an otherwise undriven earth working element at the option of the operator has not been considered to result in a driven earth working element for this definition in the absence of a regular and cyclic motion. For actuators for shifting earth working elements see subclass 663 and the subclasses there noted.

(6) Note. Some drive connections to an earth working element actually retard the element and constrain it to rotate at a speed slower than that at which it would roll on the ground. Patents claiming such drives have been classified in this and indented subclasses provided that the drive is capable of positively rotating the element if it were not in contact with the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

2+, for driven implements with automatic power control, especially subclass 5 for such implements with obstruction sensing means.

15+, for a lawn edger with a driven cutter.

19+, for driven sod cutters.

21, for driven lawn aerators.

28, for an earth working implement with adriven means for cutting or shredding plants without soil disturbance.

30, for an earth working implement with a driven means for shifting surface material without soil disturbance.

32, for an implement comprising a driven tool with means for separating earth after earth working.

33, for a power driven moldboard, conveyer, or handler.

236+, for an implement with a ground engageable draft responsive lever.

292, for specific propelling means for traversing an implement over the ground.

518+, for rolling, rotating or orbitally moving tools, no detail of a drive for the tool being claimed. See (3) Note of this definition (35).

663+, and the subclasses there noted for power driven actuators for tools.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses for analogous apparatus used for cleaning.

30, Cutlery, appropriate subclasses for general utility cutting implements which may be power operated.

56, Harvesters, subclasses 10.1+ for motor driven harvesters and subclasses 500+ for stalk choppers for cutting dead crop material.

74, Machine Element or Mechanism, subclasses 11+ for power take-offs and subclass 16 for portable assemblies for driving auxiliary attachments.

111, Planting, subclasses 113, 122, and 158+ for power-operated rotary furrow openers claimed in combination with planting or soil treating devices.

171, Unearthing Plants or Buried Objects, appropriate subclasses, for analogous apparatus used for unearthing plants or buried objects.

173, Tool Driving or Impacting, appropriate subclass for a means to drive or impact a tool, and particularly subclasses 184+ for such means mounted on a wheeled vehicle. Class 172 has not been cleared as to conflicting sub-

ject matter with Class 173, therefor a disclosed use as a drive for an agricultural earth working tool will cause classification in Class 172.

175, Boring or Penetrating the Earth, appropriate subclasses for analogous apparatus used for boring small diameter holes in the earth, for example, for artesian wells, oil wells, post holes, or the like.

180, Motor Vehicles, especially subclass 20 for motor vehicles with rollers, and subclasses 53.1+ for a motor vehicle in which the motor is used as a source of external power to drive an external device. The line between Classes 172 and 180 as to this subject matter is that Class 172 will take a patent in which (1) the external device is claimed as being an earth working implement or (2) the claim includes an external device and the sole specific disclosure relates to an earth working implement, or (3) the external device is claimed by name only and there is also claimed a means for manipulating the device relative to the motor vehicle in a manner consistent with the manner in which an earth working implement would be manipulated.

299, Mining or In Situ Disintegration of Hard Material, subclasses 29+ for a hard material disintegrating machine having a driven cutter and particularly subclasses 36.1+ for such a machine described as working on a hard, solid floor or road surface.

404, Road Structure, Process, or Apparatus, subclasses 122+, for a rotating drum, roller, or tire means to compact the earth and drive means therefore. See search notes thereunder for similar devices.

36 Subsurface shears or nippers:

This subclass is indented under subclass 35. Apparatus in which plural earth working elements or parts thereof are located below the surface of the ground and are relatively moved by a power means in such fashion that they periodically engage each other and then separate in order to cut or pinch subsurface material or growths.

37 Tool rotated by attendant:

This subclass is indented under subclass 35. Apparatus in which an earth working element is mounted for motion in a circular path and is disclosed as being moved in said path by an attendant, in normal use, through an arc of over 360 degrees.

SEE OR SEARCH THIS CLASS, SUBCLASS:

329+, for implements which are supported, propelled, guided or held in position by an attendant but are not otherwise driven.

38 With obstruction feeling device for moving or releasing implement:

This subclass is indented under subclass 35. Apparatus in which a driven earth working element is secured to or carried by a supporting member movably mounted on a main vehicular frame, there being a means on said member or said earth working element adapted to engage a plant, tree, post, or like obstruction in the normal path of traverse of the driven earth working element over the ground to thereby shift or permit a shifting of the driven earth working element out of the path of traverse to clear the obstruction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5+, for earth working apparatus in which the operation of the device is controlled automatically by sensing an obstruction or plant.

23+, for earth working apparatus which is controlled by a prepositioned stake, cable, etc.

233+, for nondriven implements with obstruction feelers for moving or releasing the implement to avoid the obstruction.

39 With cleaner or comminutor spaced from ground surface:

This subclass is indented under subclass 35. Apparatus in which the driven earth working element is mounted on a support which is provided with a means which is spaced from the original surface of the undisturbed ground and which means is disposed and adapted either (1) to remove earth from an element to be cleaned,

or (2) to engage and chop up a slice of earth proceeding from the driven earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

30, for earth working means combined with driven means for shifting material lying on the surface of the earth without disturbing the soil, the driven means working on material which has not collected on the earth working means rather than on material which is on parts or portions of said earth working means.

49, for a plurality of driven rotary ground engaging tools which cooperate or intermesh one with the other.

66, for driven members which engage a nondriven earth working tool to clean the same or to comminute a furrow slice turned thereby, and 558+ and 606 for nondriven cleaners for non drive tools.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 24 for unearthing devices with comminuting or multiple cutting of recovered plant.

40 Vibrating tool:

This subclass is indented under subclass 35. Apparatus in which an earth working element, or a portion thereof, is driven so that it has a motion of small amplitude (i.e., it vibrates).

(1) Note. Generally, the implement is driven by reaction forces produced by the rapid rotation of an off-center or unbalanced mass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

61+, for intermittent drives for tools.

41 Attendant supported tool:

This subclass is indented under subclass 35. Apparatus in which a power driven earth working element is adapted to be entirely supported and manipulated by an attendant.

(1) Note. The power supplying means may be supported in any manner desired as on a vehicle, on the ground or carried by the operator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

37, for a tool which is continuously manually rotated by an attendant.

370, for nondriven tools with attendant attaching means.

371+, for hand held nondriven tools.

42 Guided by walking attendant:

This subclass is indented under subclass 35. Apparatus in which a driven earth working element is mounted on a frame which element or frame is provided with a means to enable a walking attendant to steer, guide or otherwise manipulate the element or frame, such frame being propelled over the earth by the attendant, by the earth working element or by a traction member driven from a prime mover supported on the frame.

(1) Note. This definition is intended to take those implements commonly referred to as “garden tillers”, “rotary cultivators” and like devices which traverse the earth and are guided or manipulated as a unit by a walking attendant, there being disclosed a means, generally a handle, for affecting such guiding or manipulation. Devices which are coupled to a horse or tractor propelling means have been excluded and will be found in the subclasses hereinbelow based on the particular tool features or particular manipulative features of the driven tools.

SEE OR SEARCH THIS CLASS, SUBCLASS:

21+, for earth perforator tools of the lawn aerator type which may be hand guided by a walking attendant, such devices generally being self propelled over the earth.

SEE OR SEARCH CLASS:

56, Harvesters, subclasses 16.7+, for a motor-driven lawn mower that is steered by a walking attendant.

180, Motor Vehicles, subclasses 19.1+ for a motor vehicle steered by a walking attendant.

43 With ground support vertically adjustable relative to frame:
This subclass is indented under subclass 42. Apparatus comprising a frame, a driven tool supported by said frame and ground support means vertically adjustable relative to the frame.

(1) Note. For the meaning of adjustable see "adjustable" in the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
78, and 80, for other driven earth working elements combined with wheel substitutes.
387+, for nondriven earth working elements combined with wheel substitutes.

44 Subsurface shaft or bar (e.g., rod weeder):
This subclass is indented under subclass 35. Apparatus in which a driven earth working element in the form of a narrow elongated shaft or bar is disposed transversely to the line of draft and is rotatably supported wholly below the surface of the earth.

(1) Note. The usual purpose of the subsurface rotary shafts of this subclass is to stir up the soil usually to loosen weeds.

(2) Note. The elongated rod may be articulated or provided with projecting elements such as teeth.

(3) Note. The rod is generally rotatably supported at the lower end of "gooseneck" type standards and there may be a number of such standards some rotatably supporting the rod and others disposed forwardly of or to the rear of the rod and carrying at the lower ends thereof earth working teeth such as plows, chisels, etc.

45 Flails:
This subclass is indented under subclass 35. Apparatus in which a tooth, tine or like earth working part is so freely pivotally mounted on a driven rotary carrier that during carrier rotation centrifugal forces cause the free end of said tooth, tine, or like to swing to a radial position relative to the axis of rotation of such carrier.

(1) Note. This definition includes teeth or tines which are freely pivotally connected to a rotary carrier by means of a flexible chain.

SEE OR SEARCH THIS CLASS, SUBCLASS:
91+, for other teeth, tines or like earth working parts which are movably mounted on a driven carrier, the movement being caused (1) by a drive means or (2) by flexure of a resilient tooth, tine or like earth working part on encountering an overload or (3) by the turning of a rolling blade when the same contacts the ground.

46 Coaxial tools oppositely rotated:
This subclass is indented under subclass 35. Apparatus in which two or more earth working elements are journaled in a frame for movement in circular paths about a common axis of rotation, the drive means for such earth working elements being so arranged that said elements rotate in reverse directions relative to each other.

47 With specific relationship of mast type hitch (i.e., three point hitch) to implement:
This subclass is indented under subclass 35. Apparatus in which the driven earth-working element is part of an implement associated with a three point hitch (mast-type hitch) wherein significance is attributed to the cooperation of the implement with the hitch, or the implement includes a mounting for an additional three point hitch at the rear thereof for connection to another implement.

(1) Note. See this class, subclass 439, the definition and notes thereunder for a definition of a mast-type hitch.

48 Plural driven tools:
This subclass is indented under subclass 35. Apparatus employing a plurality of separate earth working elements or groups of elements, each of which is driven so as to move with respect to one another during operation, and each of which is connected, through a linkage, to a drive means that drives the tool in a predetermined manner.

(1) Note. Included herein are patents wherein the tools are driven by a common driving element such as a drive chain or camshaft, and those wherein the tools are mounted on shafts connected to individual gears of a row of intermeshing gears.

SEE OR SEARCH THIS CLASS, SUBCLASS:

84+, for plural earth working elements which are alternately raised from and lowered into the ground in a "hoeing" or "spading" type movement.

91+, for an earth working implement comprising a carrier means such as a chain or wheel which forms the support for earth-engaging teeth and has an orbital movement while the teeth supported by it also move with respect to it.

96+, for a tool having multiple earth-engaging elements (e.g., elongated teeth) which are mounted on a single support and (a) are pivoted freely thereon, (b) have a spring connection thereto, or (c) consist of spring elements so that they are movable with respect to each other, but not in a predetermined manner.

100, for an earth working implement in which a plurality of teeth or like earth working parts or portions are mounted on a flexible or articulated member which is driven in a closed path or circuit relative to a frame upon which said teeth, parts, or portions and member are supported.

SEE OR SEARCH CLASS:

173, Tool Driving or Impacting, subclass 52, and see the search notes therein for a single advance causing or controlling means or manipulating means for plural tool drives.

49 Contiguous cooperating or intermeshing rotary ground engaging tools:

This subclass is indented under subclass 48. Apparatus in which separate earth working elements travel in circular paths in contact with the earth and in which (1) said paths intersect and overlap or (2) said earth working elements are disposed immediately adjacent each other to cooperate in treating the intermediate earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for driven earth working elements which cooperate in the manner of shears or nippers under the surface of the earth.

49.5 Rotating about vertical axes:

This subclass is indented under subclass 49. Apparatus in which the axes, about which the earth working elements travel, are disposed in a generally vertical direction.

(1) Note. This subclass includes patents whose sole specific disclosure is to an implement in which the elements cooperate to work a continuous strip of soil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

59, for patents in which the tools, as disclosed, are laterally spaced so as to leave a strip of unworked soil between the tools.

111, for patents wherein a single tool, rotating about a vertical axis, is disclosed and claimed.

SEE OR SEARCH CLASS:

111, Planting, subclass 160 for a power-driven earth working tool, rotatable about a vertical axis, which is claimed in combination with a planting machine.

50 Diverse tools:

This subclass is indented under subclass 48. Apparatus which include a plurality of driven earth working elements which are not identical.

(1) Note. Differences in size or shape constitute matter for this definition but mere differences in rotary displacement (phase), position or attitude are excluded and are classified in a pertinent subclass herebelow on the basis of the features of each individual earth working element. For example, mirror images are not considered to be differences of shape.

51 All rotary:
This subclass is indented under subclass 50. Apparatus in which each of the diverse driven earth working elements moves through at least a complete turn in a circular path about an axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:
69, for similar arrangements wherein a rotary tool is driven by a diverse rolling tool.

52 Parallel axes:
This subclass is indented under subclass 51. Apparatus in which the axes of rotation of the diverse earth working elements are parallel to each other.

53 Rectilinearly reciprocating tool:
This subclass is indented under subclass 50. Apparatus in which at least one of the driven, diverse earth working elements is moved back and forth in a straight line path.

54 Oscillating tool:
This subclass is indented under subclass 50. Apparatus in which at least one of the driven, diverse earth working elements is moved back and forth through an arcuate path.

54.5 Tool reciprocates or oscillates within a generally horizontal plane:
This subclass is indented under subclass 48. Apparatus in which the earth working elements are moved back and forth either in a generally straight-line path, or in a generally arcuate path, or both, within a generally horizontal plane.

55 Plural groups of disks:
This subclass is indented under subclass 48. Apparatus in which the plural driven earth working elements consist of two or more groups of earth working elements, each group comprising a plurality of generally circular platelike members handled as a unit.

56 Staggered tools:
This subclass is indented under subclass 48. Apparatus in which the plural driven earth working elements are individually spaced both laterally and in the direction of draft or travel.

57 Laterally spaced tools:
This subclass is indented under subclass 48. Apparatus in which the plural driven earth working elements individually spaced transversely of the direction of travel.

58 Longitudinal axes:
This subclass is indented under subclass 57. Apparatus in which the axes of cyclic movement of the spaced earth working elements are parallel to each other and to the direction of draft.

59 Vertical axes:
This subclass is indented under subclass 57. Apparatus in which the axes of cyclic movement of the spaced earth working elements are parallel to each other and are disposed perpendicular to the earth's surface.

60 Transverse axes:
This subclass is indented under subclass 57. Apparatus in which the axes of cyclic movement of the spaced earth working elements are coaxial or parallel to each other and are diposed perpendicular to the direction of draft.

61 Intermittent drive for tool:
This subclass is indented under subclass 35. Apparatus in which a power drive to an earth working element is periodically interrupted.

(1) Note. Such intermittent drives generally employ mutilated or interrupted gears or cam operated drive clutches.

SEE OR SEARCH THIS CLASS, SUBCLASS:
36, for subsurface shears or nippers which comprise earth working portions which are periodically brought into engagement one with the other and then separated in order to cut or pinch subsurface material or growth, the means for imparting such movement generally being a power drive which is periodically interrupted.
40, for a vibrating earth working element.
90, for an apparatus supported by an irregular or off center ground wheel or support which gives an intermittent motion to an earth working element.

62 With spring return:

This subclass is indented under subclass 61. Apparatus in which movement of the earth working element through the power drive portion of its cycle effects a loading of a resilient means which means then effects movement of the earth working element to its initial position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for subsurface shear or nipper-type tools wherein plural earth working elements or parts thereof are moved toward or away from each other by a positive drive means having a spring device as part thereof.

63 With non-driven tool (e.g., plow, harrow, drag, scraper, knife or roll, etc.):

This subclass is indented under subclass 35. Apparatus which have a plurality of earth working elements, one of said elements being driven by a power driven means while another of said elements is not connected to said drive.

(1) Note. The nondriven earth working element may be fixed relative to the driven element (such as a plow, harrow, drag, scraper or knife) or may be a rolling earth working element such as a disk or roller.

(2) Note. The nondriven earth working element may be a ground contacting part or portion of a hood or shield for a driven earth working element provided such part or portion is specifically designed to work the earth; e.g., hoods with scraping, leveling, or smoothing blades or edges and hoods with depending crust breaking teeth are included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

33, for the combination of a nondriven plow with a power operated moldboard adapted to remove the furrow turned by the plow.

80, for driven earth working elements combined with wheel substitutes, i.e., runners or other ground contacting supporting means other than wheels, which perform no substantial earth working function.

133+, for a plurality of nondriven earth working elements which are different one from the other.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 24 for unearthing devices with comminuting or multiple cutting of recovered plant.

64 Non-driven furrow opener and driven dam former:

This subclass is indented under subclass 63. Apparatus in which the nondriven earth working element is provided for forming a furrow or irrigation ditch and the driven earth working element is provided for disposing earth across said furrow or ditch to thereby block or interrupt the same in order to form therein a series of basins spaced from each other by interposed dams.

SEE OR SEARCH THIS CLASS, SUBCLASS:

143, for nondriven furrow openers followed by intermittently rolling ditch blockers.

65 Interdigitating non-driven and driven tools:

This subclass is indented under subclass 63. Apparatus in which earth working portions of the non driven earth working elements intermesh or interdigitate with earth working portions of the driven earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

49, for a plurality of driven, rotary earth working elements which are disposed in intermeshing relation to each other.

66 Cooperating driven cleaner or comminutor and contiguous tool:

This subclass is indented under subclass 63. Apparatus in which the driven earth working element is disposed in contact with or along side of and within the confines of a fixed or rolling earth working element in order, for example, to clean the latter or to treat a furrow slice passing between the two earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

30, for earth working means combined with driven means for shifting material lying on the surface of the earth without disturbing the soil, the driven means working on material which has not collected on the earth working means rather than on material which has already collected on parts or portions of said earth working means.

39, for cleaners or comminutors which are spaced above the original surface of the undisturbed ground and which cooperate with driven earth working elements.

558, and 606, for devices or machines for scraping the soil from earth working elements.

67 Driven comminutor at outlet of earth guide:

This subclass is indented under subclass 63. Apparatus in which the nondriven earth working element is in the form of a surface adapted to pick up earth and guide it to a driven earth working element which pulverizes said earth.

(1) Note. The guide surface may be in the form of a trough, grate, ramp, or tube.

SEE OR SEARCH THIS CLASS, SUBCLASS:

33, (and see the Notes thereunder) for power driven conveyers which handle severed earth materials after they leave the earth working elements.

68 Rolling tool:

This subclass is indented under subclass 63. Apparatus in which the driven earth working element is associated with a nondriven earth working element which is freely journaled on a support in a manner to contact the ground and to be rotated by the resistance thereof as the latter element traverses a field.

(1) Note. Said nondriven earth working element may be a disk, roller or toothed drum but a rolling member disclosed as a mere support is excluded.

69 With tool drive from rolling tool:

This subclass is indented under subclass 68. Apparatus in which the driven earth working element is actuated by a power transmission means other than a mere rigid or articulated shaft which means is interposed between the driven earth working element and the rolling earth working element in such manner that in the disclosed use of the device the flow of power is always from the rolling earth working element to the driven earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

520, for rolling tools which are on different axes and in mutual driving relationship.

70 Fore-and-aft non-driven tool:

This subclass is indented under subclass 63. Apparatus in which the driven earth working element is disposed between a first forwardly positioned nondriven earth working element and a second rearwardly positioned nondriven earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

145+, for three or more diverse tools following the same path, all of such tools being nondriven earth working tools.

71 Non-driven tool follows path of driven tool:

This subclass is indented under subclass 63. Apparatus in which the nondriven earth working element follows the path of the driven earth working element.

72 Leveling drag or furrow shaper:

This subclass is indented under subclass 71. Apparatus in which the nondriven earth working element comprises a ground-engaging forming member having a lower surface shape which is substantially flat or horizontal or which is upwardly concave to form a cross sectional configuration which is desired to be imparted to the disturbed earth behind the driven earth working element.

73 Staggered driven and non-driven tool (e.g., cotton chopper, etc.):

This subclass is indented under subclass 63. Apparatus in which the driven earth working element is positioned to engage the earth in an area laterally and longitudinally of the area in which a nondriven earth working element engages the earth.

(1) Note. The driven earth working element generally works a plant row which row is undisturbed in the sense of not being broken, pulverized, tilled, or the like, however, the nondriven earth working element or elements may hill earth onto or scrape earth from the plant row before the driven earth working element engages the same.

74 With power take-off from tool drive to adjust tool:

This subclass is indented under subclass 35. Apparatus in which the means for transmitting power from a power source to the driven earth working element is provided with a power take-off for adjusting the position of the earth working element relative to the earth.

(1) Note. For the meaning of “adjustable” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

315+, 317+, 321, 322+, 324+, 395+, 439+, and especially 452+, for power driven means to shift an implement which is otherwise undriven in order to lift it or move it for adjustment purposes.

75 Interconnected tool lift and drive control:

This subclass is indented under subclass 35. Apparatus in which a means is provided to interrupt a power drive to a driven earth working element simultaneously with a bodily movement of the element to a different vertical position with respect to the ground.

(1) Note. The usual purpose of these devices is to stop or arrest the cyclic motion of the earth working element when it is lifted to an inoperative position out of contact with the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

83, for devices in which the power drive to an earth working element is interrupted by shifting of said element back or forth along the line of travel of the device.

103, for overload relief or clutch means for interrupting the drive to a driven earth working element upon engagement of such element with an obstruction or as desired by an attendant.

76 Implement with ground support for depth control:

This subclass is indented under subclass 35. Apparatus in which a driven implement is connected to a vehicle for vertical movement with respect thereto and is provided with a ground-contacting supporting member which member moves over the earth's surface and imparts to said implement a vertical movement corresponding to the contour of the earth's surface to thereby maintain the earth working element of the driven implement at a predetermined working depth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

117, for driven earth working elements which are freely or yieldably mounted on supporting frames whereby they may move vertically or laterally relative to said frames, there being provided no ground supports other than the support afforded by ground contact of the elements themselves.

77 Vertically biased implement:

This subclass is indented under subclass 76. Apparatus in which the driven implement is provided with a resilient means for normally biasing said implement in a vertical plane.

SEE OR SEARCH THIS CLASS, SUBCLASS:

117, for driven tools which are provided with a resilient means for yieldably biasing the same on a chassis.

497, for nondriven tools which are spring biased in a vertical plane and which are provided with ground support means.

78 Vertically adjustable ground support:
This subclass is indented under subclass 76. Apparatus in which the ground contacting supporting member is adapted to be vertically adjustably connected to the driven implement whereby the normal working depth of the earth working element may be altered by moving said ground-contacting supporting members from one vertical position to another.

(1) Note. See the class definition for the meaning of "adjustable".

79 Tool driven from prime mover on vehicle:
This subclass is indented under subclass 76. Apparatus in which the earth working element of the driven implement is drivingly connected by a transmission means to a power source on the vehicle.

(1) Note. The power source of this definition may be a self-contained prime mover for propelling the vehicle or an auxiliary self-contained power means; for example, an auxiliary gasoline or Diesel engine, an electric motor, etc. The power source does not include a mere power take-off from a driven or rolling ground wheel of the propelling vehicle. For such devices see subclasses 76 and 105+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
125, for drive details in the transmission means from a power source on a vehicle to a driven earth working element carried thereby.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclass 45 for a tractor powered trailing unearthing unit.

80 With wheel substitute (e.g., runner, etc.):
This subclass is indented under subclass 35. Apparatus comprising a runner or other ground contacting supporting means other than a wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
42+, for driven earth working elements which are mounted on a frame, the frame being provided with (1) a ground support means and (2) a means for guiding the same over the earth by a walking attendant.
76, for driven implements with ground supports and articulated connections to vehicles.
240+, for ground supports for nondriven earth working tools, which supports only engage the ground while transporting said tools.
387+, for wheel substitutes which are combined with nondriven earth working elements.

81 With plant deflector or protector:
This subclass is indented under subclass 35. Apparatus in which (1) means are provided to move the above ground portions of plants and to direct them either towards or away from a driven earth working element in order to assure that they are destroyed or preserved, respectively, or (2) means are provided for protecting the plant against earth moved by the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
29, for earth working elements combined with means for shifting material, such as trash, dead plants, reclining stalks, etc., lying on the surface of the soil without disturbing such soil.
517, for plant deflectors, per se.

82 Driven tool selectively shiftable along line of travel:
This subclass is indented under subclass 35. Apparatus in which a driven earth working element which normally travels in a given path or orbit with respect to a frame which supports said element is shiftable at the will of the operator back or forth in the direction in which the frame is moved across the ground to correspondingly shift the path or orbit.

(1) Note. The usual purpose of such shifting is to contact or to avoid contact with certain plants in a row while "chopping" out excess plants.

(2) Note. The shifting motion must be a rectilinear one substantially exactly in or

parallel to the line of travel to come under this definition.

83 Tool drive interrupted by shifting tool:
This subclass is indented under subclass 82. Apparatus in which the back or forth shifting movement of the earth working element is operative to effect a disengagement or declutching of the drive means to said earth working element to thereby arrest the cyclic motion of the element while in said back or forth position.

(1) Note. The usual purpose of these devices is to stop the cyclic motion of the tool when it has been shifted to a fore or after position to avoid chopping out or otherwise injuring a plant.

SEE OR SEARCH THIS CLASS, SUBCLASS:
75, for driven earth working elements which are mounted for vertical shifting on a frame, the vertical shifting causing an interruption of the drive to the elements.

84 Simultaneously reciprocating and oscillating blade having elongated shank:
This subclass is indented under subclass 35. Apparatus in which the earth working element comprises at least one tooth which has an earth-engaging portion and an elongated shank portion said earth-engaging portion having an oscillating motion about a point and the point itself having a component of motion generally parallel to or coinciding with the longitudinal axis of the shank in addition to the motion imparted to it by the traverse of the apparatus over the ground whereby the motion of the earth-engaging portion may be analyzed as a reciprocation in directions generally longitudinally of the shank and also an oscillation in directions generally transversely of the shank.

(1) Note. The earth-engaging portion is usually either perpendicular to the shank to provide a hoeing action or else aligned with the shank to provide a spading motion.

(2) Note. An earth working element comprising a carrier means such as a chain or wheel, for example, which carrier forms the support for earth-engaging teeth and has an orbital movement while the teeth supported by it also move with respect to it is not included. See subclasses 91+ for such devices.

(3) Note. An earth working element comprising a driven wheel or like carrier means having movably mounted on the periphery thereof a blade or like earth working portion, there being provided a means to swing such blade or portion back and forth through an arc the center of which arc moves through a circular path concentric with the circular path of the driven carrier is not included. See subclass 94 for such elements.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclass 99 for a digger supported and guided for motion in a rectilinear or curvilinear path.
180, Motor Vehicles, subclasses 8.1+ for a motor vehicle having reciprocating or oscillating leg propulsion means.

85 Transverse chopping type:
This subclass is indented under subclass 84. Apparatus in which the driven earth working element is driven in an endless path or orbit which lies in a plane which is generally vertical and disposed perpendicularly to the direction of travel of a frame on which the earth working element is mounted.

(1) Note. The patents in this and the indented subclasses are generally directed to devices which hoe transversely across a row of plants to chop out certain of the plants.

SEE OR SEARCH THIS CLASS, SUBCLASS:
70, and 73, for transverse choppers combined with nondriven earth working elements.

86 With plural cranks or cams driving each blade:
This subclass is indented under subclass 85. Apparatus in which the elongated shank portion is driven by plural cranks or eccentric pins or cams which engage the earth working ele-

ment at points which are spaced along said shank portion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

88, for other earth working elements having elongated shank portions driven by plural spaced cranks or eccentric pins or cams.

87 Means for varying contour of path of blade:
This subclass is indented under subclass 85. Apparatus in which means are provided to vary the shape or contour of the path or orbit through which the earth working element is driven.

(1) Note. A mere incidental change in the shape or contour of the path or orbit of the element due to the raising or lowering of the same to vary the working depth thereof or to raise the same for transport is not included herein. The claim must set forth means for varying the shape or contour of the path, which means is independent of the raising and lowering means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

89, for other earth working elements having elongated shank portions which are provided with means for varying the shape or contour of the path or orbit through which said earth working elements are driven.

88 With plural cranks or cams driving each blade:
This subclass is indented under subclass 84. Apparatus in which the elongated shank portion is driven by plural cranks or eccentric pins or cams which engage the earth working element at points which are spaced along said shank portion.

89 Means for varying contour of path of blade:
This subclass is indented under subclass 84. Apparatus in which means are provided to vary the shape or contour of the path or orbit through which the earth working element is driven.

(1) Note. A mere incidental change in the shape or contour of the path or orbit of the element due to the raising or lowering of the same to vary the working depth thereof or to raise the same for transport is not included herein. The claim must set forth means for varying the shape or contour of the path, which means is independent of the raising and lowering means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

87, for transverse chopper-type earth working elements which are provided with means for varying the shape or contour of the path or orbit through which the earth working elements are driven.

90 Irregular or off-center ground-engaging wheel or support:
This subclass is indented under subclass 35. Apparatus in which an earth working element which is supported on a frame is moved towards and away from the earth by a lifting member which is rotatably or pivotally supported on an axis on said frame and has circumferential portions which extend radially to varying distances from said axis in such fashion that said lifting member engages the earth and periodically lifts the frame and the earth working element.

(1) Note. The frame may be a vehicle chassis, all or part of which is lifted to move the earth working element.

(2) Note. The lifting member may roll on the earth or may be driven with respect to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

236+, for irregular ground-engaging wheels or levers which engage the earth to resist motion of the apparatus thereover, whereby upon a predetermined resistance relative motion between the wheels or levers and the apparatus causes a manipulation of the apparatus or a part thereof, the lever or wheel passing through only a portion

of a cycle i.e., passing through a cycle of less than 360°.

91 Blade movable with respect to cyclically driven carrier:
This subclass is indented under subclass 35. Apparatus in which a tooth or like earth working part or portion is movably supported on a carrier which carrier is driven in a definite closed path or orbit whereby said tooth, part or portion moves with respect to said carrier as said carrier moves through its path or orbit.

(1) Note. A vehicle upon which the tooth or like earth working part or portion is mounted would not be a "carrier" for this subclass even if it were steered to travel in a closed circular path.

(2) Note. A tooth or like earth working part or portion which can be moved from one position of adjustment to another on its carrier is not considered "movably mounted" for this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
109, for a tooth or like earth working part or portion which can be moved from one position of adjustment to another on a rotary driven carrier.
541, for rolling carriers having movably mounted thereon teeth or like earth working parts or portions which can be moved with respect to the rolling carrier from an earth working position to a position in which the teeth are prevented from engaging the ground.
545, for rolling carriers having projections on the periphery thereof which projections move relative to he carriers as said carriers rotate.
550, for a tooth or like earth working part or portion which can be selectively moved from one position of adjustment to another on a rolling carrier means.

SEE OR SEARCH CLASS:
175, Boring or Penetrating the Earth, subclasses 89+ for an earth boring device including a tool element on a continuously driven flexible or articulated endless member.

92 With means for moving blade:
This subclass is indented under subclass 91. Apparatus in which a means is provided for positively causing the movement of the tooth or like earth working part or portion relative to the carrier as said carrier moves through its path or orbit.

(1) Note. This subclass includes those earth working elements having earth working parts or portions which rotate or move in orbital paths relative to the cyclically driven carriers on which said parts or portions are mounted.

(2) Note. A mere spring connection between the blade and carrier for causing movement is not included in this definition. See subclass 96 for such apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:
48+, for a carrier which is itself a separate earth working element.
546, for rolling carriers having earth working teeth, parts, or projections on the periphery thereof, there being provided a means to cause movement of said teeth, parts, or projections relative to the rolling carriers.

93 Rectilinearly reciprocating blade:
This subclass is indented under subclass 92. Apparatus in which the tooth or like earth working part or portion is driven in such a fashion that it reciprocates in a straight line path with respect to the driven carrier upon which it is mounted.

94 Blade oscillating arcuately or swivelly with respect to rotary carrier:
This subclass is indented under subclass 92. Apparatus in which the tooth or like earth working part or portion is mounted on a rotating carrier, there being provided a means for moving said tooth, part, or portion back and forth in an arcuate path relative to said carrier.

95 By cam or crank:
This subclass is indented under subclass 92. Apparatus in which the tooth or like earth working part or portion is driven with respect to the driven carrier by a cam or crank.

(1) Note. The cam or crank is usually but not necessarily actuated in response to motion of the carrier.

96 Blade flexible or with yieldable mount on carrier:

This subclass is indented under subclass 91. Apparatus in which the tooth or like earth working part or portion is supported on the driven carrier by means which include a member which bends or distorts to allow said tooth or like earth working part or portion to move relative to said carrier.

(1) Note. The support may comprise a freely bendable connection or a resilient means adapted to bias the tooth or like earth working part or portion to a given position and which means may be employed either with or in lieu of a hinge connection between the carrier and said tooth, part, or portion.

(2) Note. The support may be a mere continuation of a spring formed or flexible blade or blade shank.

SEE OR SEARCH THIS CLASS, SUBCLASS:

45, for "flail type" tools wherein a tooth or like earth working part or portion is so pivotally mounted on a driven rotary carrier that during rotation of said carrier centrifugal forces cause the free end of said tooth or like earth working part or portion to swing to a radial position relative to the axis of rotation of said carrier.

261+, for nondriven earth working elements provided with means permitting the elements to shift with respect to the earth or a supporting frame when said elements encounter an overload.

543, for rolling nondriven tools having the teeth or like earth working parts or portions thereof formed of resilient material.

544+, for rolling nondriven tools in which the teeth or like earth working parts or portion thereof are mounted on a spring or are so related to a spring that relative movement between such teeth, parts or portions and the rolling supporting structure stresses the spring.

97 Compound motion for tool (e.g., reciprocating and oscillating, reciprocating and rotating):

This subclass is indented under subclass 35. Apparatus in which the earth working element or an earth-engaging portion thereof has different, distinct kinds of motions (such as reciprocating and rotating) with respect to the earth, these motions either occurring simultaneously or successively during the cyclical operation of the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

91+, for blades or teeth which are movably mounted on carriers which are also movably mounted so that said blades or teeth travel in paths determined by the superposed motions caused by the respective movable mountings.

101, for earth working elements which move in a guide means only in a reciprocating path.

98 Tool mounted for lateral shifting:

This subclass is indented under subclass 35. Apparatus in which a movably supported earth working element which is driven in a given path or orbit is provided with an actuating or manipulating means whereby during operation said element may be shifted at the will of an operator to positions in which said path or orbit is spaced from its initial position transversely of the line of travel of the element across the ground.

(1) Note. The usual purpose of the lateral shifting is to follow a crooked row of plants or to chop or avoid cutting out certain plants in a row.

(2) Note. The lateral shifting means may be a handle or foot lever type attendant operated actuating means which may be selectively moved from one latched position to another, or a handle or foot lever type attendant operated manipulating means which may be moved from one position and held in the position to which it is moved by continued applica-

tion of force on the manipulating means by the attendant.

SEE OR SEARCH THIS CLASS, SUBCLASS:

117, for driven earth working elements which are mounted for free or yielding movement laterally of the path of travel, there being provided no attendant operated actuating or manipulating means for effecting such movement.

332+, for nondriven tools which are manipulated by an attendant to vary their position relative to a supporting frame.

99 About generally vertical axis:

This subclass is indented under subclass 98. Apparatus in which the earth working element is swingable on a fixed radius about a fixed vertical axis in a generally horizontal plane transversely across the line of travel of said element.

100 Blade on endless driven belt or chain:

This subclass is indented under subclass 35. Apparatus in which a tooth or like earth working part or portion is mounted on a flexible or articulated member which is driven in a closed path or circuit relative to a frame upon which said tooth, part, or portion and member are supported.

(1) Note. The flexible or articulated member is generally a chain or endless belt type carrier to which the tooth, part, or portion is immovably fixed while said tooth, part, or portion is actually in ground engagement, but said tooth, part, or portion may move slightly as said carrier moves around gears, pulleys, or otherwise changes its direction in its closed path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

23, for earth working elements towed across a field from a fixed traction point by a flexible member.

91+, for blades which are movably mounted on belts or chains.

542, for rolling, rotating, or orbitally moving nondriven endless belts or chains having teeth or blades thereon.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 94 for unearthing unit carried by an endless flexible member.

175, Boring or Penetrating the Earth, subclasses 89+ for an earth boring device including a tool element on a continuously driven flexible or articulated endless member.

305, Wheel Substitutes for Land Vehicles, subclasses 187+ for an endless flexible track for a land vehicle, said track having detachable cleats for penetrating the ground to secure better traction for the track.

101 Tool guided for rectilinear reciprocation:

This subclass is indented under subclass 35. Apparatus in which a guide means is provided for constraining an earth working element to move back and forth in a straight line path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

20, and 22, for vertically reciprocating sod cutters.

21, for vertically reciprocating turf perforators which pierce the soil to aerate the same.

61+, for tools which are guided for rectilinear reciprocation but which are intermittently driven through their cycle of operation.

102 Tool moves in horizontal, transverse path:

This subclass is indented under subclass 101. Apparatus in which the guide means limits the movement of the earth working elements to a path transverse to the direction of draft and lying in a horizontal plane.

103 With overload relief or clutch in drive train (e.g., overload release, etc.):

This subclass is indented under subclass 35. Apparatus in which the drive transmission means between a driven earth working element and its motivating means is provided with a power transmitting member which (1) slips, bends, breaks, distorts, or in some other manner allows a relative displacement between said

earth working element and its motivating means, or (2) can be selectively moved from one position in which the drive transmission means is interrupted between the driven earth working element and its motivating means to another position in which said drive transmission means is again operative to transmit power directly from the motivating means to the driven earth working element.

(1) Note. Generally the function of the overload relief means is to protect the earth working element whenever it encounters an obstruction, while the clutch functions to interrupt the power drive to the earth working element whenever desirable.

SEE OR SEARCH THIS CLASS, SUBCLASS:

75, for driven earth working elements which are provided with means to interrupt the power drive to said element upon a bodily shifting of the same from one vertical position to another.

83, for driven earth working elements which are provided with means to interrupt the power drive to said element upon a bodily shifting of the same back or forth in the direction of draft.

96, for teeth or like earth working parts or portions which are yieldably mounted on a power driven cyclic carrier for motion with respect thereto upon contact by a resisting member.

117, for means to yieldably support an earth working element which means may permit the earth working element to rise up out of contact with an obstruction.

533, for a clutch between a shaft and a rolling, rotating, or orbitally moving non-driven tool mounted thereon.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 9 for unearthing devices with drive overload release.

104 Unidirectional clutch in drive from ground wheel:

This subclass is indented under subclass 103. Apparatus in which an overrunning clutch or its equivalent is interposed between a ground wheel and an earth working element driven thereby in such a manner that the wheel may drive the earth working element when said wheel is turning in one direction but not in the other.

105 Driven from rolling or driven ground wheel:

This subclass is indented under subclass 35. Apparatus in which a driven earth working element is mounted in a frame which is provided with a claimed ground-engaging supporting wheel and details of a power transmitting means from the wheel to the earth working element are set out in the claims.

(1) Note. Mere mention of a transmission between the wheel and the earth working element or a broad statement of the type of transmission (e.g., gearing) have not been considered to involve detailed structure which would require classification under this definition since traction drives of this type are very common in the art.

(2) Note. The wheel may itself be driven by power applied to it or may be a freely rolling wheel. In the case of a driven wheel the wheel must be interposed in the path of power from the source to the earth working element to come under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

44, for “rod weeder” type implements which may be positively driven from a ground wheel on the weeder supporting frame.

61+, for earth working elements which may be intermittently driven from a rolling or driven ground wheel, such intermittent drive generally being from several pins or other projections which are spaced about the periphery of the wheel or from mutilated gears or cam operated drive clutches which

are operatively associated with the wheel.

69, and the Note thereunder for earth working elements which are driven by nondriven earth working elements as the latter roll over the ground.

103+, for earth working elements which may be driven from a rolling or driven ground wheel and which include in the drive transmission from such wheel an overload relief or clutch means.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 108 for traction wheel drive for an unearthing unit part.

180, Motor Vehicles, subclasses 337+ for transmission mechanisms for driven ground wheels.

414, Material or Article Handling, subclasses 439+ for a wheel operated motion or draft responsive load handler.

106 Belt or chain drive:

This subclass is indented under subclass 105. Apparatus in which the drive interposed between the earth working element and a wheel includes an endless flexible force transmitting member.

107 Tool driven about horizontal, longitudinal axis:

This subclass is indented under subclass 35. Apparatus in which an earth working element is driven about an axis which is parallel to the ground and is additionally located in a plane which is generally parallel to the direction of travel of the earth working element over the ground.

(1) Note. This subclass includes those earth working elements which oscillate about a longitudinal axis generally back and forth across a crop row, for example, for thinning out or chopping cotton plants.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5+, for “cotton chopper” type tools which may be driven to oscillate or rotate about a horizontal longitudinal axis and in which the operation of said tool is further under the control of a sensing means.

58, for a plurality of laterally spaced tools each driven about a longitudinal axis.

63+, especially subclasses 70 and 73 for driven tools which may move about a longitudinal axis and which in addition, are combined with one or more non-driven tools.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 97 for a rotary digger driven about a horizontal longitudinal axis.

299, Mining or In Situ Disintegration of Hard Material, subclasses 39.1+ for a floor working hard material disintegrating machine having a driven rotary cutter.

108 Rotary driven tool:

This subclass is indented under subclass 107. Apparatus in which the driven earth working element rotates about an axis.

109 Adjustable tooth or blade:

This subclass is indented under subclass 108. Apparatus in which the rotary earth working element includes a tooth or like earth working part or portion whose relative position on the hub or supporting portion of said element may be adjusted.

(1) Note. For the meaning of “adjustable”, see the class definition.

(2) Note. This definition is intended to embrace those rotary earth working elements in which a tooth or like earth working part or portion thereof may be changed from one position of adjustment to another, such tooth, part, or portion being locked in each selected position of adjustment.

SEE OR SEARCH THIS CLASS, SUBCLASS:

96, for earth working elements wherein the tooth or like earth working parts or portions thereof are flexibly or yieldably moved from one position to another on the supporting hub or carrier of said elements.

550, for rolling earth working elements having peripherally spaced thereon and adjustably secured thereto a plurality of teeth, blades, or the like earth working parts or portions.

110 Tool driven about generally vertical axis (e.g., oscillating choppers, etc.):

This subclass is indented under subclass 35. Apparatus in which an earth working element is driven about an axis which is generally perpendicularly disposed relative to the ground.

(1) Note. This subclass includes those earth working elements which oscillate about a vertical axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

48+, especially subclass 59, for a plurality of tools each of which is provided with a separate individual drive means for causing the same to move about a vertical axis.

522+, for nondriven tools of the rolling, rotating, or orbitally moving type which move about a vertical axis.

SEE OR SEARCH CLASS:

299, Mining or In Situ Disintegration of Hard Material, subclass 41.1 for a floor working hard material disintegrating machine driving a substantially vertical axis cutter.

111 Rotary driven tool:

This subclass is indented under subclass 110. Apparatus in which an earth working element is rotatably driven about a vertical axis.

SEE OR SEARCH CLASS:

111, Planting, subclass 160 for a power driven earth working tool, rotatable about a vertical axis, which is claimed in combination with a planting machine.

175, Boring or Penetrating the Earth, subclasses 170+ for a drive for an earth boring tool, and including a drive for a vertical axis rotary-type earth boring tool which may be manipulatively mounted on a wheeled vehicle.

112 With deflector or shield for thrown material:

This subclass is indented under subclass 35. Apparatus in which the driven earth working element is provided with a guard or baffle means disposed in the path of material thrown from said element generally to intercept said material and alter the course or path of flow thereof to thereby cause said material to be deposited in a position or location other than that which said material would have assumed without said baffle means.

(1) Note. This definition includes hoods or like housings or enclosures against the inner surfaces of which unearthed material from a driven earth working element is impinged to break up clods or lumps of said material.

(2) Note. This definition is intended to take those patents in which the shield or deflector is disposed on or above the original ground surface and performs no earth working function except that incidental to shielding or deflecting the driven earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

32, for screens and the like, placed in the path along which unearthed material emerges from an earth working element to separate constituent portions of said material.

63+, for nondriven tools combined with driven earth working elements which tools may be in the form of hoods or shields provided with ground contacting parts or portions designed to perform an earth working function such, for example, as leveling or further pulverizing the earth proceeding from the driven implement, or breaking or scratching the earth's crust prior to working thereof by said driven earth working elements.

72, for leveling drags or plates which follow the driven earth working element and level or shape the soil redeposited on the earth by said element.

508+, for guards or shields for nondriven earth working elements.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 112 for an unearthing unit provided with a protective guard or casing.

113 Laterally directed outlet flow:

This subclass is indented under subclass 112. Apparatus in which the baffle or guard means acts on the material flowing from the driven earth working element to deflect said material laterally of the direction of draft of said element.

114 Specific propelling means:

This subclass is indented under subclass 35. Apparatus comprising a motor or motor actuated means for traversing a driven earth working element over the ground.

(1) Note. Self-propelled or tractor-propelled implements are common in this art. Hence for a patent to be classified under this definition, the propulsion means must be recited in some detail, and the mere recitation of a motor is not enough. However, a broad reference to a wheel substitute such as a tracklaying means on a tractor is sufficient. Also a recitation of a relationship with a propulsion means such as the statement that an implement hitch arm is connected to a differential housing (as distinct from merely a “rear axle housing”) is enough.

SEE OR SEARCH THIS CLASS, SUBCLASS:

105, for self-propelled or tractor-propelled devices wherein the earth working element is driven from a rolling or a driven ground wheel of said device.

292, for specific propulsion means for non-driven earth working elements, and see the Search Class Notes thereunder for appropriate fields of search in Class 74, Machine Element or Mechanism, Class 180, Motor Vehicles, and Class 305, Wheel Substitutes for Land Vehicles.

352, for manually driven stepper-type propulsion means.

SEE OR SEARCH CLASS:

180, Motor Vehicles, appropriate subclasses for specific propelling means for motor vehicles.

115 Tool steers implement:

This subclass is indented under subclass 114. Apparatus in which the driven earth working element is used to steer the apparatus in the desired direction as it traverses the ground.

116 Tool propels implement:

This subclass is indented under subclass 114. Apparatus in which (1) the sole means disclosed for traversing the apparatus over the ground is the driven earth working element and the apparatus is not disclosed as being guided by a walking attendant or (2) the driven earth working element aids in traversing the apparatus over the ground or is the sole means for traversing the apparatus over the ground and there is a significant recitation in a claim indicating this fact.

117 Tool freely or yieldably mounted on chassis:

This subclass is indented under subclass 35. Apparatus in which the driven earth working element is so mounted on a supporting frame that during normal operation said earth working element can (1) move freely relative to said frame, or (2) can move against the action of a biasing member which generally urges said earth working element into a predetermined position.

(1) Note. This definition includes lateral as well as vertical movement, and the tool need not be capable of universal movement but such tool may move in a guide way or the like even though the amplitude of the movement may be limited by stop means.

(2) Note. The movement of the tool relative to the frame as contemplated by this definition is a shifting or movement of the tool from one position to another in the frame, which movement is above and beyond the motion of the tool as it is driven through its path or orbit. Such shifting or movement may be either a translation of the tool as a unit or simply

a pivotal movement of the tool about a fixed axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

77, for a driven implement having a ground support and being jointedly connected to a vehicle there being additionally provided a resilient means for normally biasing the implement in a vertical plane.

96, for teeth or like earth working parts or portions which are yieldably mounted on a power driven carrier for motion with respect thereto.

98+, for earth working elements which are provided with a means whereby an attendant can selectively vary the lateral position of said elements during normal operation.

497+, for an actuator adapted to lift a nondriven tool for transport on a wheeled vehicle, there being provided a resilient means for biasing the tool to a predetermined position but permitting the same to yield on overload or the like.

501+, for an actuator adapted to lift a nondriven tool for transport on a wheeled frame, there being provided a lost motion connection between the actuator and tool whereby during earth working said tool is free to move relative to said actuator or frame.

118 Tool driven about axis transverse to draft line:

This subclass is indented under subclass 35. Apparatus in which an earth working element is driven about an axis which is parallel to the ground or disposed at an angle relative to the ground and is additionally located in a plane which is transverse to the direction of travel of the earth working element.

(1) Note. This subclass includes those earth working elements which are driven to and fro in an arcuate path about an axis extending transversely to the direction of draft; e.g., oscillating hoes and choppers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

61+, for earth working elements which are intermittently driven back and forth in an oscillatory path about an axis that is disposed transversely to the direction.

124, for earth working elements which are disposed at an angle other than 90° to the direction of draft as viewed in plan.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 98 for a rotary digger driven about a longitudinal transverse axis.

299, Mining or In Situ Disintegration of Hard Material, subclasses 25+ for an ice working device having a driven cutter, and subclasses 39.1+ for a floor working hard material disintegrating machine having a rotary cutter.

119 Screw or spiral rib, blade or tooth row:

This subclass is indented under subclass 118. Apparatus in which an earth working element which is driven about an axis transverse to the direction of travel is provided either with (1) a radially protruding ridge or sharpened plate or (2) a row of radially projecting prongs, which ridge, plate or row lies along a line which exends both longitudinally and circumferentially of a surface of revolution, such as a cylinder or cone.

SEE OR SEARCH THIS CLASS, SUBCLASS:

532, for nondriven earth working elements which are provided with screw or spiral arranged teeth, or like earth working parts or portions.

120 Disk or planar cutter (e.g., saw, etc.):

This subclass is indented under subclass 118. Apparatus in which an earth working element which is driven about an axis extending transversely to the direction of travel is in the form of a generally circular member which may be either flat or dished.

SEE OR SEARCH THIS CLASS, SUBCLASS:

55, for plural groups of driven disks.

518+, for rolling, rotating, or orbitally moving disc or planar cutter-type tools.

121 Laterally extending bar or blade with skeleton support (e.g., lawn mower type, etc.):

This subclass is indented under subclass 118. Apparatus in which the driven earth working element includes a laterally extending bar or earth working part or portion held on a rotatable support by openwork or by spaced supporting means.

(1) Note. The overall appearance of these earth working elements is very similar to that of a conventional lawn mower.

SEE OR SEARCH THIS CLASS, SUBCLASS:

552, for nondriven earth working elements having laterally extending blades on skeleton supports.

122 Drum with teeth or blades:

This subclass is indented under subclass 118. Apparatus which comprises a relatively large diameter drum or roller-like member having spaced about the periphery thereof a plurality of teeth, blades, or like earth working parts or portions.

(1) Note. The peripheral surface of the drum should be in ground contact as distinguished from a small diameter supporting shaft for teeth, blades, cutters, or like earth working portions, which shaft would be spaced above the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:

554, for rolling nondriven tools comprising drums having axially spaced teeth or blades thereon.

SEE OR SEARCH CLASS:

492, Roll or Roller, subclasses 30+ for a roll, per se, not elsewhere provided for, having surface projections, indentations or slits.

123 Rotary driven tool:

This subclass is indented under subclass 118. Apparatus in which the earth working element is rotatably driven about an axis extending transversely to the direction of travel.

124 Tool driven about diagonal axis:

This subclass is indented under subclass 35. Apparatus in which the driven earth working element is driven about an axis which as viewed in plan is disposed at an angle other than 90° to the direction of draft.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118, for earth working elements which are driven about axes which are disposed at 90° to the direction of draft.

125 Tool drive details:

This subclass is indented under subclass 35. Apparatus in which a mechanical drive feature is significantly claimed, such as a gearing, universal coupling, bearing, lubrication means or details of a drive motor.

(1) Note. For classification under this definition a patent must have a claim which contains some detailed description of a particular mechanical drive feature. Thus, the mere nominal inclusion of “a gear”, “a universal coupling”, “a bearing”, etc., will not suffice, while a more specific identification of the drive feature such as “a worm gear”, “a double clevis type universal coupling”, “a floating roller bearing”, etc., will suffice.

SEE OR SEARCH THIS CLASS, SUBCLASS:

103, for a clutch or overload release coupling interposed between an earth working element and a driving means therefor.

105, for mechanical drive features forming part of a specialized drive interposed between an earth working element and a traction and supporting wheel driving the same.

533, for a clutch interposed between a shaft and a rolling nondriven earth working element.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 142 for details of a drive for a driven unearthing device.

126 WITH EARTH MARKER:

This subclass is indented under the class definition. Apparatus comprising an earth working device in combination with means for making a mark or on the earth, which mark is to be used as a sight line for the earth working means on a subsequent pass over the field.

(1) Note. This subclass is intended to include marking devices disclosed as mounted on some earth working means (e.g., a planter) even if the earth working means is claimed only as a support. However, devices for making a mark in the earth disclosed as independent instrumentalities not mounted on some principal earth working means are treated as if they themselves were earth working devices (which they are since they mark the earth) and are classified in appropriate subclasses below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

133+, for diverse earth working elements.

204+, for earth working elements alternating for right or left hand operation.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclasses 18.1+ for scribers of general utility comprising mechanically guided relatively traveling means for scratching or scoring lines.

104, Railways, subclass 244.1 for furrow followers for guiding a vehicle along the furrow.

111, Planting, subclasses 25+ for means, combined with or disclosed in combination with a planter, for intermittently marking the earth to indicate seed depositories and subclass 33 for means for intermittently impressing on the ground a mark, or combinations of such means with means for marking an unbroken line on a field. A planter claimed by name only, combined with a marker is classifiable in Class 172.

171, Unearthing Plants or Buried Objects, subclass 6 for unearthing device with an earth marker.

127 Marker shiftable on turning:

This subclass is indented under subclass 126. Apparatus wherein the marker means is designed to make a mark to one side of the earth working device while the apparatus proceeds in one direction, and to shift to mark at the other side of the implement in response to the turning of the apparatus.

128 Marker adjusted upon raising implement:

This subclass is indented under subclass 126. Apparatus comprising means for raising the earth working device to a transport position and means interconnected therewith to shift the earth marking means with respect to the earth working device responsive to the raising movement of the earth working device.

(1) Note. This subclass does not include those devices in which the earth working device and marker are raised as a unit without relative movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

209+, for apparatus comprising tools alternating for right or left hand operation, lifting of the apparatus being interrelated with shifting of the tools.

129 Ground wheel operated marker control:

This subclass is indented under subclass 126. Apparatus in which the earth working device includes ground-engaging wheels and the marker means is moved relative to the earth working device by power derived from rotation of the wheels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

492, and 493, for actuators adapted to lift a tool for transport wherein power for said actuators is derived from a continuous source of power.

130 Multiple interconnected markers:

This subclass is indented under subclass 126. Apparatus wherein plural markers are provided and interconnected such that when one marker is adjusted to operative position, the other marker is simultaneously moved to inoperative position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

127, for interconnected markers shiftable on turning.

128, for interconnected markers shiftable on lifting the earth working device.

204+, for apparatus comprising earth working tools alternating for right or left hand operation.

131 Markers on laterally shiftable member:

This subclass is indented under subclass 130. Apparatus in which the markers are mounted at opposite ends of a common carrying member, the carrying member being movable laterally to place the markers into alternate operative and inoperative positions.

(1) Note. The lateral shifting is more than a mere pivoting movement. The common carrying member is usually moved bodily in a lateral direction and also pivoted on a longitudinal axis.

132 Marker swingable about longitudinal axis to both sides:

This subclass is indented under subclass 126. Apparatus having marker means mounted to pivot through approximately 180° about an axis which extends in the direction of travel of the implement and centrally thereof so as to be alternately usable on opposite sides of the implements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

224+, for implements alternating for right or left hand operation which are rotated about a longitudinal axis from one operative position to the other.

SEE OR SEARCH CLASS:

104, Railways, subclass 244.1 for furrow followers for a vehicle to guide it along a furrow, such followers being mounted in a manner similar to that of a marker mounting.

133 DIVERSE TOOLS:

This subclass is indented under the class definition. Apparatus comprising the combination of earth working elements of different size or shape each working the earth at the same time or adjustable into earth working position.

(1) Note. The diverse earth working elements must each be present in the apparatus at the same time, though one may be removable leaving another.

(2) Note. The diverse earth working elements must be distinct entities as distinguished from a single unit having portions of different shape to perform different functions. For such unitary elements see for example, subclasses 540+. A single disk is considered a unit. Where one tool or soil working element (e.g., sweep) is directly mounted upon another tool or soil contacting element (e.g., cultivator shovel) or on a common support or frame and for any given adjusted position (if the two are adjustably connected) could be made integral and the second element in effect forms a continuation of the first, for continuous soil contact, this is considered to be a single tool and is excluded from this definition.

(3) Note. The combination of a plow and an element for merely cutting or breaking a furrow slice raised by the plow is not classified under this definition. For subject matter of this type see subclass 758.

(4) Note. Where one implement is claimed so broadly that it can be considered merely a named support for the other, not distinguishable from a general utility support such as a vehicle, the device is classified on the basis of the other implement. See (2) Note in the definition of subclass 452 and (5) Note in the definition of subclass 669.

(5) Note. Earth working elements which differ merely by being for right or left hand operation or being mirror images of one

another are not included. See subclasses 204+, 642, and 686 for such apparatus.

(6) Note. A device comprising an earth working element mounted on a frame which frame may incidentally contact the earth and act as an earth leveling member and so be considered a diverse earth working element is not included under this definition unless the frame is specifically shaped or modified to perform said function.

(7) Note. The combination of an implement or implements having a part rotated by engagement with the soil and a nonrotating part are included under this definition even though the parts may be contiguous or form a continuation of one another if both of said parts perform a substantial earth working, cutting, or turning function. A plow having a moldboard which includes rollers or a belt to reduce friction is not included since the rollers or belts are not considered to have any substantial earth working function. (See subclasses 717 and 718). However, a plow having a disk moldboard is included. (See subclass 167). Also a rotating tool having a mere scraping element for removing earth from the tool is not included while a rotating tool having an adjacent moldboard for turning a slice raised by the tool is included. (See subclasses 168 and 558+).

(8) Note. A runner or landside directly connected to or forming a direct rearward continuation of a tool is considered to be a part of the tool. Thus, if an earth working blade, sweep, or the like is connected to such a runner or landside the resultant device is considered to be a single tool having multiple earth working portions and is not classified under this definition. See subclasses 728 and 746, for example. However, if a runner or landside is spaced rearwardly from a tool and does not form a direct continuation thereof and has an earth working blade, sweep, or the like mounted thereon, this is considered to be two separate tools and classification under this definition results.

(9) Note. A runner which is not attached to the rear of or does not form a rearward continuation of a tool and has a plurality of different type or shape blades or earth working portions attached thereto rearwardly of its forward end is considered to be a mere common support for diverse tools and the resultant apparatus is classified under this definition. (See subclass 188).

(10) Note. A pair of laterally spaced runners or landsides with unlike tools mounted thereon and spanning the same is included under this definition.

(11) Note. Where a nonearth working mounting member for one tool is directly connected to or carried by the earth working portion of a diverse tool, patents will be classified under this definition even if the claims do not recite the tool by which the member is carried.

(12) Note. This definition includes those devices in which one of the tools may be solely disclosed as cutting a vertical slit in the earth merely to prevent side sway or counterbalance side thrust. (See subclasses 190+).

(13) Note. Where there is combined with an earth working implement, such as a plow, a separate and distinct member which receives soil elevated by the implement and acts to deflect the soil to the side, invert it, etc., the member in this combination will be considered an earth working tool and be classified under this definition.

(14) Note. Hand held tools having diverse earth working portions or elements are not included. See subclasses 371+, especially subclasses 375 and 378+ for such devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

16, for a lawn edger with a rolling or driven cutter and a fixed cutter or furrower.

20, for a sod cutter with a means for transverse cutting while moving.
34, for an earth working apparatus adapted for use upside down.
50+, for plural driven diverse tools.
63+, for a driven tool combined with a non-driven tool.
126+, for an earth working device combined with an earth marking means.
204+, for alternating tools which differ merely by being for right or left hand operation.
245+, for apparatus comprising a tool convertible or changeable to a diverse tool, and specially subclasses 251+ for a tool changeable to a diverse tool by assembly or disassembly.
452+, for a broadly claimed implement with an actuator adapted to lift a tool on said implement for transport.
540+, for a rolling tool with circumferentially spaced tines, blades or the like of different shape or size.
558+, for a disk with disk cleaning means. See (7) Note.
642, for a pair of relatively movable tools cooperating to move earth to and from a plant row, the tools differing merely by being for right or left hand operation.
669+, for a broadly claimed implement supporting an earth working element.
684.5, and 799.5, for implements comprising plural scraping blades which are of different size or shape, or mounted in different angular relationship with respect to a reference line.
686, for right and left hand tools.
714+, for plural earth-engaging parts of an earth working element, the parts being movable during operation. See (7) Note.
728, for a symmetrical-type tool with an attached runner and additional blades attached to the runner. See (8) Note.
746, for an earth working tool with a portion extended beyond the landside.
758, for a moldboard-type earth working element with a furrow slice cutter or breaker.
777+, for a scraper supporting a narrow depending tool.

SEE OR SEARCH CLASS:
30, Cutlery, especially subclasses 123+ for knives and cutters of general application combined with other devices.
37, Excavating, subclasses 403+ for a scraper combined with a scoop, shovel, or the like.
56, Harvesters, subclasses 400.04+ for hand rakes combined with other tools.
171, Unearthing Plants or Buried Objects, subclass 4 for unearthing devices with additional earth or plant rolling implement, subclass 6 for unearthing devices with additional earth marker or earth conditioner, subclass 10 for unearthing devices having preliminary removal of earth.

134 One located in path of implement wheel:
This subclass is indented under subclass 133. Apparatus in which the diverse earth working elements are supported or propelled by a wheeled frame and at least one of the earth working elements operates on the soil traversed or to be traversed by the wheel or wheels.

SEE OR SEARCH THIS CLASS, SUBCLASS:
175+, for rolling and nonrolling implements operating along the same path.
297+, for a tool located forward of the rear of a motor vehicle.
671, for a wheel and tool mounted on a single longitudinal beam and traveling in the same path.
676, for a tool mounted on a wheeled frame and traveling in the same path as the wheel.
810+, for a tool located forward of a motor vehicle.

135 One implement surrounds another :
This subclass is indented under subclass 133. Apparatus in which an implement has earth working portions which operate on all four sides of an implement having a diverse earth working element.

(1) Note. The surrounding implement may comprise a plurality of like separate tools.

136 Tools usable alternately only:

This subclass is indented under subclass 133. Apparatus comprising earth working elements arranged adjustably in the apparatus so that when an element of one type is in ground-working position an element of another type must be out of ground working position.

(1) Note. Hand held tools having alternately usable unlike earth working portions or elements are excluded from the definition. See subclass 375.

(2) Note. This definition includes apparatus in which two integral diverse tools must be removed and reversed to bring the diverse tool into operation. The diverse tools must always be present in the apparatus when the apparatus is working the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

34, for apparatus adapted to be inverted in its entirely to provide an earth working operation in either position.

204+, for alternately usable tools which differ merely by being for right or left hand operation.

251+, for a tool which is changeable to a diverse tool by an assembly or disassembly operation.

375, for hand cultivating tools having diverse alternately usable earth working portions. See (1) Note above.

777+, for an alternately usable scraper and narrow depending tool attached thereto.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 2 for alternately usable unearthing units.

137 With means to vary spacing of tools upon turning:

This subclass is indented under subclass 133. Apparatus including means to alter the spacial relationship of the diverse earth working elements incident to a change in the direction of movement.

(1) Note. Tool mountings which merely permit relative movement between the tools in the absence of means to change the relationship upon turning are not classified in this and indented subclasses, but are classified below on other bases.

(2) Note. The variation in the spacing of the tools may be in a horizontal direction or may be a variation in the relative elevations of the tools.

SEE OR SEARCH THIS CLASS, SUBCLASS:

255, for apparatus in which a tool is lifted out of or lowered into ground engagement incident to a change of direction of movement.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 456.1+ for articulated vehicles having plural connections therebetween.

138 With interconnected vertical adjustment:

This subclass is indented under subclass 133. Apparatus in which the diverse earth working elements are independently mounted so as to be elevatable about separate axes or along different paths and lifting means are connected to each of the earth working elements the lifting means being so interrelated that vertical movement of one earth working element is accompanied by vertical movement of the other.

(1) Note. The tools may move in opposite directions, i.e., one move up while the other moves down.

(2) Note. The lifting means may comprise an actuator or an attendant manipulated handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

488+, for a single-lift actuator for plural relatively movable like tools.

139 Plow and colter:

This subclass is indented under subclass 138. Apparatus in which the diverse earth working elements comprise a moldboard-type tool for turning a furrow slice and a cutting knife to cut

a vertical slit in the earth in advance of the moldboard-type tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:
144, for the combination of a colter, jointer and plow.
165+, for diverse tools one of which is a colter.

140 With independent means for vertical movement:
This subclass is indented under subclass 133. Apparatus including a frame on which the diverse earth working elements are mounted and separate means are provided to selectively vertically move the diverse earth working elements with respect to the frame.

(1) Note. The moving means may be an actuator or an attendant manipulated handle.

(2) Note. This definition includes apparatus in which both tools are lifted by a single manipulating means and the second tool is lifted with respect to the first by a second manipulating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
301, for plural tools mounted ahead of the rear and to the rear of a motor vehicle and being actuatable by independent power units.
468, for plural tools liftable for transport on a wheeled frame and being independently actuatable.

141 Interconnected adjustment of horizontal angle of rolling and position of diverse tool:
This subclass is indented under subclass 133. Apparatus in which one of the earth working elements is of the rolling or rotating type, the axis of rotation thereof being adjustable in a substantially horizontal plane and a diverse earth working element adjustable about a separate point or along a different path, the adjustment of one earth working element resulting in an adjustment of the other earth working element.

142 Including spring formed tool or standard:
This subclass is indented under subclass 133. Apparatus in which one of the diverse earth working elements comprises an earth working element which is formed of or supported directly upon a member formed of resilient material.

(1) Note. A pivoted tool having means to bias the tool about the pivot is not included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
389+, for spring-tooth type implements having runners or other wheel substitutes.
643, for plural spring teeth in a single implement.
707+, for spring teeth, per se.

143 Including intermittently rolling tool:
This subclass is indented under subclass 133. Apparatus in which one of the earth working elements is of the rolling or rotating type and including brake or stop means for slowing down or stopping the rotation or rolling thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
528+, for rolling or rotating tools having means for stopping or retarding the rotation thereof.

144 Colter, jointer and plow:
This subclass is indented under subclass 133. Apparatus in which the diverse earth working elements comprise a plow or earth turning element having a moldboard to turn a furrow slice, a smaller plow or element to throw a strip of soil into the far side of the furrow in advance of the main plow, and a cutting knife to cut a slit in the ground forward of the plow, the plow operating in the slit.

(1) Note. The colter and jointer must be separate from one another and from the plow.

(2) Note. Patents claiming the combination of a separate colter and jointer disclosed for use with a plow will be classified as originals under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

163+, for the combination of a jointer and plow.

165+, for the combination of a colter and diverse tool operating in the slit formed by the colter.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 3 for unearthing devices with a stabilizing colter or fin.

145 Three or more diverse implements following same path (A, B, C, or A, B, A,):

This subclass is indented under subclass 133. Apparatus comprising at least three diverse implements in succession, the second implement following in or overlapping the path of the first and the third following in or overlapping the path of the second, the implements being longitudinally spaced and having diverse earth working elements.

(1) Note. Two of the implements may be the same if a different implement intervenes.

(2) Note. If an implement follows in or overlaps the path of travel of a diverse implement the implements are considered to be traveling in the same path. Thus it may be seen that three implements may be following overlapping paths under this definition and yet the third implement be laterally spaced with respect to the first. It should be particularly noted, that the word “implement” covers either a group of like earth working elements or a single earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

144, for the combination of a plow with a separate colter and jointer.

175+, for two rolling and nonrolling implements following the same path.

195+, for two diverse implements following the same path.

146 Four or more:

This subclass is indented under subclass 145. Apparatus in which at least four diverse implements follow the same or overlapping paths.

147 Alternately diverse (A, B, A, B):

This subclass is indented under subclass 146. Apparatus in which the implements are alternately alike, but successively unlike.

SEE OR SEARCH THIS CLASS, SUBCLASS:

148, for three implements following the same or overlapping paths, the first and third implements being alike and the intermediate implement being of a different type.

152+, for at least four laterally spaced implements which are alternately alike, but successively unlike.

148 Longitudinally spaced like implements with intermediate diverse implement (A, B, A):

This subclass is indented under subclass 145. Apparatus in which the first and third implements in the direction of travel are alike and the intermediate or second implement is of a different type.

SEE OR SEARCH THIS CLASS, SUBCLASS:

147, for four or more implements following the same path which are alternately alike, but successively unlike.

155+, for laterally spaced like implements with an intermediate unlike implement.

149 Including rolling tool:

This subclass is indented under subclass 145. Apparatus in which one of the diverse implements includes an earth working element which is given a rotating motion by the resistance of the earth as it is drawn thereover.

SEE OR SEARCH THIS CLASS, SUBCLASS:

143, for diverse tools one of which is a tool which has an intermittent rolling motion imparted thereto.

146+, for four or more diverse implements following the same path and including a rolling implement.

148, for longitudinally spaced like implements with an intermediate diverse implement including a rolling implement.

175+, for two rolling and nonrolling implements following the same path.
184+, for two diverse rolling implements following the same path.
518+, for rolling implements, per se.

150 Smooth levelling roller:
This subclass is indented under subclass 149. Apparatus in which the rolling earth working element comprises a smooth surface compaction roller of uniform diameter and free from protuberances or depressions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
170+, for other diverse tools one of which is a smooth leveling roller.

SEE OR SEARCH CLASS:
404, Road Structure, Process, or Apparatus, subclasses 122+, for compacting rollers, per se.

151 Diverse rolling:
This subclass is indented under subclass 149. Apparatus including two implements having rolling earth working elements of unlike types.

SEE OR SEARCH THIS CLASS, SUBCLASS:
150, and 172, for diverse rolling tools one of which is a smooth leveling roller.
154, for four or more laterally spaced rolling tools which are alternately alike, but successively unlike.
158, for laterally spaced like rolling tools with an intermediate diverse rolling tool.
184+, for other diverse rolling tools.

152 At least four alternately diverse laterally spaced tools (A, B, A, B):
This subclass is indented under subclass 133. Apparatus comprising four or more earth working elements spaced laterally of the direction of travel, the elements being alternately alike, but successively unlike.

(1) Note. The alternate earth working elements may consist of a group of like tools.

SEE OR SEARCH THIS CLASS, SUBCLASS:
155+, for laterally spaced like tools with an intermediate diverse tool.

153 Alternate rolling and non-rolling:
This subclass is indented under subclass 152. Apparatus in which one set of alternate earth working elements is of the rolling type while the other set of alternate earth working elements is of the nonrolling type thus providing a laterally spaced group of earth working elements which are successively of the rolling and nonrolling type.

(1) Note. This definition includes a single rolling tool having a plurality of laterally spaced sets of tines, teeth or the like with nonrolling tools operating in paths between the sets of teeth.

SEE OR SEARCH THIS CLASS, SUBCLASS:
65, for a plurality of laterally spaced interdigitating driven and nondriven tools.
156, and 157, for laterally spaced like tools and an intermediate diverse tool of the rolling and nonrolling type.

154 All rolling:
This subclass is indented under subclass 152. Apparatus in which the diverse earth working elements are all of the rolling type.

(1) Note. This definition includes two rolling tools having laterally spaced sets of teeth, tines, or the like with the sets of one tool operating in paths between the sets of the other tool.

(2) Note. This definition includes apparatus having relatively rotatable earth working elements of different shape or contour even if the members axially abut or one element carries the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
65, for a plurality of laterally spaced interdigitating driven and nondriven tools.

158, for laterally spaced like rolling tools with an intermediate diverse rolling tool.

155 Laterally spaced like tools with intermediate diverse tool (A, B, A):
This subclass is indented under subclass 133. Apparatus comprising a pair of like earth working elements spaced laterally of the direction of travel and a diverse earth working element which operates along a path intermediate the paths of the like elements.

(1) Note. Laterally spaced right and left hand tools are considered to be like earth working elements under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152+, for four laterally spaced tools which are alternately alike, but successively unlike.
193+, for a tool with a rearwardly spaced sweep or earth working blade, etc., which is attached to the tool standard or mounted on a member attached to the tool or its standard.

156 Spaced rolling with intermediate nonrolling:
This subclass is indented under subclass 155. Apparatus in which the spaced like earth working elements are of the rolling or rotating type and the intermediate earth working element is of the nonrolling type.

SEE OR SEARCH THIS CLASS, SUBCLASS:
153, for four laterally spaced tools which are successively of the rolling and nonrolling type and are alternately alike.

157 Spaced non-rolling with intermediate rolling:
This subclass is indented under subclass 155. Apparatus in which the spaced like earth working elements are of the nonrolling type and the intermediate earth working element is of the rolling or rotating type.

SEE OR SEARCH THIS CLASS, SUBCLASS:
153, for four laterally spaced tools which are successively of the rolling and nonrolling type and are alternately alike.

158 All rolling:
This subclass is indented under subclass 155. Apparatus in which the laterally spaced like earth working elements and the intermediate diverse earth working element are all of the rolling or rotating type.

SEE OR SEARCH THIS CLASS, SUBCLASS:
154, for four laterally spaced tools which are successively unlike and alternately alike, all of the tools being of the rolling type.

159 Spaced right and left hand tools with intermediate symmetrical tool:
This subclass is indented under subclass 155. Apparatus in which the laterally spaced earth working elements are nonidentical or positioned in a nonidentical way so as to function in a right and left handed manner and so located and constructed as to be mirror images of each other, and the intermediate earth working element comprises an element of symmetrical shape.

(1) Note. For the definition of a symmetrical tool see subclass 721.

SEE OR SEARCH THIS CLASS, SUBCLASS:
193+, for a tool with a rearwardly spaced sweep or earth working blade, etc., which is attached to the tool standard or mounted on a member attached to the tool or its standard.
642, for relatively movable right and left hand tools for throwing soil to or from a crop row.
686, for right and left hand tools.
721+, for symmetrical tools.

160 Including spike tooth:
This subclass is indented under subclass 155. Apparatus in which one of the earth working elements comprises a straight tooth of uniform or decreasing diameter in a downward direction.

161 Including implement alternating for right or left hand operation:

This subclass is indented under subclass 133. Apparatus in which one of the earth working elements comprises earth working means (other than a scraper) adapted to be adjusted so as to shift the earth in alternate lateral directions with respect to the direction of draft at different times.

SEE OR SEARCH THIS CLASS, SUBCLASS:

204+, for tools alternating for right or left hand operation.

162 Reversal of implement adjusts diverse tool:

This subclass is indented under subclass 161. Apparatus in which adjustment of the earth working means for alternate operation is accompanied by an adjustment of the diverse earth working element.

(1) Note. The adjustment of the diverse tool may comprise merely the operation of a latch or lock which holds the tool in adjusted position or may comprise the adjustment of the diverse tool in response to operation of a latch or lock to permit adjustment of the alternating implement.

(2) Note. This definition does not include apparatus in which the alternating implement and diverse tool are rigidly connected and adjusted as a unit. Nor does this definition include apparatus in which the diverse tool is freely mounted and may assume a different position upon reversal of the alternating implement due to altered ground resistance, gravity, etc.

(3) Note. The diverse tool is usually a jointer or colter.

163 Jointer and plow:

This subclass is indented under subclass 133. Apparatus comprising the combination of an earth working element having a moldboard for raising and inverting a furrow slice and a second earth working element operating in advance of the first and operative to raise and turn a smaller furrow slice and deposit it in the far side of a previously formed furrow so as to be covered by the furrow slice of the moldboard-type earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

144, for the combination of a plow, colter, and jointer.

382, for a plurality of like earth working elements (e.g., plows) which operate at different depths in the soil.

164 Rolling jointer:

This subclass is indented under subclass 163. Apparatus comprising a jointer and plow the jointer being of the rolling or rotating type.

165 Including colter:

This subclass is indented under subclass 133. Apparatus comprising a colter for cutting a vertical slit in the ground in advance of at least a portion of an earth working element and an earth working element following the colter and having a vertically extending portion operating in the slit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

19+, for sod cutters having means for cutting a strip of earth vertically and horizontally.

139, for a plow and colter mounted so as to be vertically movable along different paths or about different axes and lifting means connected to the tools such that vertical movement of one is accompanied by vertical movement of the other.

144, for the combination of a colter, jointer, and plow.

SEE OR SEARCH CLASS:

111, Planting, subclass 140 for a coulter claimed in combination with a planting machine.

171, Unearthing Plants or Buried Objects, subclass 3 for unearthing devices with stabilizing colter or fin.

166 Rolling colter:

This subclass is indented under subclass 165. Apparatus in which the colter is of the rolling or rotating type.

167 Fixed point or share with rotary moldboard:
This subclass is indented under subclass 133. Apparatus comprising a nonrolling earth working element adapted to cut a slice of earth and an adjacent rotary earth working element, usually in the form of a disk, for receiving said slice and inverting it.

(1) Note. A moldboard merely having friction reducing rollers or being in the form of a belt to reduce friction is not included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for implements having power driven moldboards.
717, for implements having a moldboard in the form of a belt.
718, for implements having a moldboard with friction reducing rollers.

168 Rotating tool with fixed moldboard:
This subclass is indented under subclass 133. Apparatus comprising a rolling or rotating earth working element for cutting or raising a furrow slice and a nonrolling adjacent member for receiving the furrow slice and inverting or completing the inversion of the same.

SEE OR SEARCH THIS CLASS, SUBCLASS:
166, for a rolling colter which acts to cut a vertical slit in the earth and a tool which operates in the slit.
558+, for disk-type tools with scrapers which merely act to scrape the disks to clean same.

169 Including tool rotatable about vertical axis:
This subclass is indented under subclass 133. Apparatus in which one of the earth working elements is of the rolling or rotating type and rotates about an axis which is substantially vertical.

(1) Note. The axis may deviate from the vertical by as much as 45°.

SEE OR SEARCH THIS CLASS, SUBCLASS:
522+, for tools which rotate about a substantially vertical axis.

170 Including smooth levelling roller:
This subclass is indented under subclass 133. Apparatus in which one of the earth working elements comprises a smooth surface compaction roller of uniform diameter and free of projections or depressions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
150, for three or more diverse implements following the same path one of which is a smooth leveling roller.
176, for a nonrolling tool for forming a furrow or ridge and a following rolling tool which conforms to the shape of the furrow or ridge.

SEE OR SEARCH CLASS:
404, Road Structure, Process, or Apparatus, subclasses 122+, for compacting rollers, per se.

171 Spaced from moldboard side of plow:
This subclass is indented under subclass 170. Apparatus including an earth working element having a moldboard to turn a furrow slice in one direction, the roller being spaced laterally from the turning or moldboard side of the moldboard-type earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
202+, for a plow and tool laterally spaced from the moldboard side of the plow.

172 With diverse rolling tool:
This subclass is indented under subclass 170. Apparatus in which the second earth working element is also of the rolling or rotating type and other than a smooth leveling roller.

SEE OR SEARCH THIS CLASS, SUBCLASS:
184+, for diverse rolling implements not including a smooth leveling roller.

173 With teeth:
This subclass is indented under subclass 170. Apparatus in which the roller has combined therewith a plurality of nonrolling earth working teeth.

(1) Note. For the definition of "tooth" see subclass 713.

SEE OR SEARCH THIS CLASS, SUBCLASS:

160, for laterally spaced like tools with an intermediate diverse tool and including spike teeth.

197, and 198, for diverse nonrolling tools following the same path and including teeth.

174 Rolling and non-rolling:

This subclass is indented under subclass 133. Apparatus in which one of the earth working elements is given a rotating motion by the resistance of the earth as it is drawn thereover and another earth working element is of a nonrolling type.

SEE OR SEARCH THIS CLASS, SUBCLASS:

143, for diverse tools including an intermittently rolling tool.

149+, for three or more diverse implements following the same path, at least one of which is of the rolling type.

153, for at least four laterally spaced diverse tools alternate tools being of the rolling type.

156, and 157, for laterally spaced like tools with an intermediate diverse tool of the rolling and nonrolling type.

164, for a rolling jointer and plow.

166, for a rolling colter combined with a diverse tool.

169, for diverse tools one of which is rotatable about a vertical axis.

170, for diverse tools including a smooth leveling roller.

175 Following same path:

This subclass is indented under subclass 174. Apparatus in which the rolling and nonrolling earth working elements are included in implements which travel in the same or overlapping paths and are longitudinally spaced from one another.

(1) Note. If an implement follows in or overlaps the path of travel of a diverse implement the implements are considered to be traveling in the same path. It should be particularly noted that the work "implement" covers either a group of like earth working elements or a single earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

71, for a driven tool and nondriven tool traveling in the same path.

149+, for three or more diverse implements following the same path at least one of which is the rolling type.

195+, for diverse implements of the nonrolling type following the same path.

176 Furrowing or ridging implement followed by furrow or ridge roller:

This subclass is indented under subclass 175. Apparatus in which the non-rolling implement opens a furrow in or forms a ridge on the ground and the rolling implement operates in the furrow or on the ridge and conforms to the shape thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

143, for diverse tools wherein one of the tools is of the intermittent rolling or rotating type.

177 Rolling tool has circumferentially spaced blades, tines or the like:

This subclass is indented under subclass 175. Apparatus in which the rolling earth working element of the rolling implement has teeth, tines, blades, projections or other configurations so the circumferential portion of the element located in a plane generally at right angles to the axis of rotation engages the earth intermittently or with a varying effect as the element turns.

SEE OR SEARCH THIS CLASS, SUBCLASS:

540+, for rolling earth working elements, per se, with circumferentially spaced blades, tines, or the like.

178 Including disk gang:

This subclass is indented under subclass 175. Apparatus in which the rolling implement comprises a group of earth working elements of generally circular platelike members each having the same axis of rotation.

(1) Note. The disks may be planar or concavo-convex.

SEE OR SEARCH THIS CLASS, SUBCLASS:
518+, for disk gangs, per se.

179 Non-rolling tool group with laterally coextensive rolling tool:
This subclass is indented under subclass 175. Apparatus comprising a group of earth working elements of the nonrolling type spaced from one another transversely of the direction of travel and a rolling earth working element or elements having the same lateral extent as, and traveling the same path traversed by, the nonrolling earth working element group.

SEE OR SEARCH THIS CLASS, SUBCLASS:
173, for a smooth leveling roller combined with a plurality of earth working teeth.
177, for a plurality of laterally spaced nonrolling tools following the same path as a rolling tool having circumferentially spaced blades, tines, or the like.
178, for a plurality of laterally spaced nonrolling tools following the same path as a plurality of disks rotatable about a common axis.

180 Rolling precedes non-rolling (same path):
This subclass is indented under subclass 175. Apparatus in which the rolling implement is located ahead of the nonrolling implement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
164, for a rolling jointer and plow.
166, for a rolling colter and diverse tool.

181 Concave furrowing disk with trailing tool:
This subclass is indented under subclass 180. Apparatus in which the earth working element of the rolling implement comprises a generally circular platelike member concave in a generally forward direction to form a furrow and the nonrolling implement includes an earth working element of the nonrolling type operating in said furrow.

(1) Note. The nonrolling tool may act to square off or undercut, etc., the furrow formed by the rolling tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:
164, for a rolling or rotating jointer followed by a moldboard-type tool.

182 Laterally spaced:
This subclass is indented under subclass 174. Apparatus in which the rolling and nonrolling earth working elements are spaced laterally of the direction of travel and operate along different paths.

SEE OR SEARCH THIS CLASS, SUBCLASS:
153, for at least four laterally spaced rolling and nonrolling tools which are alternately alike and successively unlike.
156, and 157, for laterally spaced like tools and an intermediate diverse tool, the tools being of the rolling and nonrolling type.
201+, for laterally spaced diverse tools of the nonrolling type.

183 With scissors or shearing action between adjacent faces:
This subclass is indented under subclass 182. Apparatus in which the rolling and nonrolling earth working elements have juxtaposed sides which contact or nearly contact during operation to perform a cutting or shearing operation.

(1) Note. The cutting or shearing action is usually for stalks or vines.

184 Diverse rolling:
This subclass is indented under subclass 133. Apparatus in which each of the earth working elements is given a rotating motion by the resistance of the earth as it is drawn thereover.

SEE OR SEARCH THIS CLASS, SUBCLASS:
51+, for diverse rotary driven tools.
151, for three or more diverse implements traveling in the same or overlapping paths and including diverse rolling tools.

154, for four or more laterally spaced tools which are alternately alike, but successively unlike and being all of the rolling type.
158, for laterally spaced like rolling tools with an intermediate diverse rolling tool.
172, for diverse rolling tools one of which is a smooth compaction roller.
518+, for rolling or rotating tools, per se.

185 Spaced on same axis of rotation:
This subclass is indented under subclass 184. Apparatus in which the diverse earth working elements have their working portions axially spaced from one another and are mounted to rotate about the same axis.

(1) Note. A rolling tool having circumferentially spaced unlike tines, blades, or the like which lie in substantially a single plane is not considered to be diverse tools. However, unlike earth working portions spaced on the same axis of rotation and having an intervening space with no earth working or earth contacting portion comes within this definition.

(2) Note. This definition includes apparatus having relatively rotatable earth working elements of different shape or contour even if the elements axially abut or one element carries the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
154, for four or more laterally spaced diverse tools which are alternately alike, but successively unlike and rotatable about a common axis.

186 Plane and dished disks:
This subclass is indented under subclass 184. Apparatus in which the earth working elements comprise circular platelike members at least one of which has all the parts thereof in a single plane and another of which is of concavo-convex shape.

187 Differing in size:
This subclass is indented under subclass 184. Apparatus in which the earth working elements are of substantially similar shape, but differ in size.

SEE OR SEARCH THIS CLASS, SUBCLASS:
185, for similarly shaped different size rolling earth working elements which rotate about the same axis.

188 Runner attached:
This subclass is indented under subclass 133. Apparatus comprising a longitudinal runner adapted to support at least a portion of the weight of the apparatus and a plurality of diverse earth working elements attached to the runner at points rearwardly of the forward end thereof.

(1) Note. An earth working element having a rearwardly extending runner or landside with earth working members attached thereto is considered to be a single tool having plural earth working portions and is excluded from this definition. See subclasses 681+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
387+, for apparatus having a wheel substitute such as a runner and see the Notes thereto for other related art.
681+, see (1) Note above.

189 Including fabric or flexible tool:
This subclass is indented under subclass 133. Apparatus in which one of the earth working elements comprises a flexible fabric, chain, cable, strand, rope, or wire.

SEE OR SEARCH THIS CLASS, SUBCLASS:
612, for fabric or flexible tools, per se, and see the Note thereto.

190 Including vertical, longitudinally oriented disc or blade (e.g., as stabilizer):
This subclass is indented under subclass 133. Apparatus wherein an upright, generally planar disc or blade is disposed in the direction of travel.

(1) Note. The blade or disc often works the earth only to provide lateral stability to the implement as it moves in its intended direction of travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

144, and 165+, for a colter which cuts a vertical slit in the earth and a tool which follows the colter and operates in the slit cut thereby.

752, for a unitary earthworking element having a separable vertical planar lognitudinal cutter including apparatus in which the cutter is mounted on a runner or landside which forms a direct rearward continuation of the shovel, moldboard, or the like.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 3 for unearthing devices with stabilizing colter or fin.

191 Plural:

This subclass is indented under subclass 190. Apparatus comprising a plurality of separate planar longitudinal blades.

192 Including horizontal knife or cutter:

This subclass is indented under subclass 133. Apparatus in which one of the earth working elements comprises a substantially flat blade disposed in a horizontal plane in the working position and adapted to cut through the soil at or below the surface thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

720, for subsurface blades, per se, which operate in substantially a horizontal position.

193 First tool with spaced trailing sweep:

This subclass is indented under subclass 133. Apparatus comprising an earth working element (e.g., shovel or moldboard) for moving soil transverse to the line of travel and mounted upon a standard and an earth working blade or sweep following the earth working element and operating upon the moved soil and mounted on the standard behind the earth working element or on a rearwardly extending member connected to the earth working element or standard.

SEE OR SEARCH THIS CLASS, SUBCLASS:

722, for symmetrical tools having separately attached wings or moldboards.

728, for symmetrical tools having an attached rearwardly extending runner on depth gauge and additional blades attached directly to the runner.

194 Sweep adjustable:

This subclass is indented under subclass 193. Apparatus in which the working position of the sweep can be selectively adjusted with respect to the earth working element.

195 Second implement follows path of first:

This subclass is indented under subclass 133. Apparatus in which the diverse implements travel in the same or overlapping paths and are longitudinally spaced in the direction of travel, the implements having diverse earth working elements.

(1) Note. If an implement follows in or overlaps the path of travel of a diverse implement the implements are considered to be traveling in the same path. It should be particlarly noted that the word implement covers either a group of like earth working elements or a single earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

71+, for a driven tool and a nondriven tool traveling in the same path.

144, for a colter, jointer and plow.

145+, for three or more diverse implements following the same or overlapping paths.

163+, for a colter and jointer, or a jointer and plow, or a colter and diverse tool.

175+, for rolling and nonrolling implements following the same path.

196 Including subsoiler:

This subclass is indented under subclass 195. Apparatus in which the earth working element of one of the implements comprises a subsoiler which acts on the soil at a greater depth than the earth working element of the other implement.

(1) Note. For the definition of subsoiler see subclass 699.

SEE OR SEARCH THIS CLASS, SUBCLASS:
699+, for subsoilers, per se.

197 Teeth and scraper, leveller or drag:
This subclass is indented under subclass 195. Apparatus in which the diverse earth working elements comprise a plurality of earth working teeth, and a substantially vertical blade disposed generally transversely of the direction of travel or a horizontal bar or plate having a continuous ground engaging edge or horizontal surface which acts to scrape or level the surface of the soil.

(1) Note. A vertical blade which is disposed at an angle to the direction of movement of the apparatus of substantially other than 90° so as to provide substantial lateral soil movement is excluded from this definition unless such blade is a scraper for producing a level surface.

(2) Note. See the definition of subclass 713 of this class for the definition of teeth. However, ripper or scarifier teeth are included under this definition even if they do not meet the definition of subclass 713.

SEE OR SEARCH THIS CLASS, SUBCLASS:
189, for diverse tools one of which is a fabric or flexible tool.
199+, for other diverse tools following the same path and including a drag, scraper, or leveling blade.
785, for a scraper between front and rear vehicle ground supports combined with teeth preceding the scraper.

198 Including teeth:
This subclass is indented under subclass 195. Apparatus in which earth working elements of one of the implements comprise a plurality of teeth.

(1) Note. See the definition of subclass 713 of this class for the definition of teeth.

SEE OR SEARCH THIS CLASS, SUBCLASS:
160, for laterally spaced like tools with an intermediate diverse tool and including a spike tooth.
173, for the combination of a smooth leveling roller and teeth.
197, for teeth combined with a drag, scraper, or leveling blade.
713, for teeth, per se.

199 Including drag, scraper or levelling blade:
This subclass is indented under subclass 195. Apparatus in which the earth working element of one of the implements comprises a substantially vertical blade disposed transversely of the direction of travel or a horizontal bar or plate having a continuous ground engaging edge or horizontal surface which acts to scrape or level the surface of the soil.

(1) Note. A vertical blade which is disposed at an angle to the direction of movement of the apparatus of substantially other than 90° so as to provide substantial lateral soil movement is excluded from this definition unless such blade is a scraper for producing a level surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:
189, for diverse tools one of which is a fabric or flexible tool.
197, for teeth combined with a drag, scraper, or leveling blade.
784+, for a scraper between front and rear vehicle ground supports combined with a diverse tool.

200 Proceeded by implement of different type:
This subclass is indented under subclass 199. Apparatus in which the drag, scraper, or leveling blade follows behind an implement having an earth working element of a different type.

SEE OR SEARCH THIS CLASS, SUBCLASS:
72, for a driven tool followed by a leveling drag or furrow shaper.
197, for teeth combined with a drag, scraper, or leveling blade.
785, for a scraper between front and rear vehicle ground supports combined

with a tool of a different type ahead and spaced from the scraper.

201 Laterally spaced:

This subclass is indented under subclass 133. Apparatus in which the diverse earth working elements are spaced laterally of the direction of travel and operate along different paths.

(1) Note. Two implements which travel in overlapping paths are considered to be following the same path and are thus not classified under this definition. Thus, where one implement comprises a plurality of like laterally spaced earth working elements only some of which follow in the path of the diverse implement classification under this definition does not result. See subclasses 195+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

152+, for four laterally spaced tools which are alternately alike, but successively unlike.

155+, for laterally spaced like tools and an intermediate diverse tool.

182, for laterally spaced rolling and nonrolling tools.

202 Spaced from moldboard side of plow:

This subclass is indented under subclass 201. Apparatus in which one of the earth working elements is a plow having a moldboard for turning a furrow slice in one direction and a land side and the diverse earth working element disposed to travel in a path spaced outwardly from the moldboard side.

SEE OR SEARCH THIS CLASS, SUBCLASS:

171, for a smooth roller spaced from the moldboard side of a plow.

203 Connected to moldboard or handle:

This subclass is indented under subclass 202. Apparatus in which the diverse earth working element has a connection directly to the moldboard or to the handles of the plow.

204 ALTERNATING FOR RIGHT OR LEFT HAND OPERATION (OTHER THAN SCRAPER):

This subclass is indented under the class definition. Apparatus comprising earth working means adapted to be adjusted so as to shift the earth in alternate lateral directions, with respect to the line of draft at different times.

(1) Note. Devices in which an earth working element is adjustable about a vertical axis for right or left hand operation, there being no actuating means for such adjustment or the actuating means comprising no more than a handle directly connected to the earth working element, are not included. See subclasses 577, 600, 603, and 735.

(2) Note. Devices in which an earth working element is swung laterally (e.g., a cultivator shovel moved toward or away from a plant row) are not included if the purpose of the device is merely to provide for lateral adjustment and any moving of the earth to the right or left is merely incidental and not claimed.

(3) Note. A disk, scraper, or drag which is adjustable about a vertical axis to throw soil in opposite directions is not included. See subclasses 600 and 603 for such disks and subclasses 781+ and other appropriate subclasses for such scrapers or drags.

SEE OR SEARCH THIS CLASS, SUBCLASS:

34, for an apparatus which may include right and left hand tools in which the complete apparatus is adapted for use in an upside down position.

126+, for earth marking means mounted on an earth working device, said marking means being alternately engageable with the ground.

161+, for apparatus comprising diverse tools, at least one of which is alternated for right or left hand operation.

662, for an apparatus comprising plural relatively movable tools, at least one of which may be moved to nonuse position.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 2 for alternately usable unearthing units.

205 Draft revoluble on transverse axis:

This subclass is indented under subclass 204. Apparatus in which the earth working means comprises separate earth working elements which are rotatable about a horizontal axis traverse to the direction of draft in order to alternately place the earth working elements in operation, the rotation being effected as a result of torque developed due to resistance of the ground to the forward motion of the earth working elements or some other ground contacting part of the earth working element carrier.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 436, 440, and 441 for scoops adapted to be rotated due to forward movement.

206 Interrelated tool shift and lateral movement of draft member:

This subclass is indented under subclass 204. Apparatus in which the apparatus has a draft beam or tongue which may be adjusted laterally with respect to the earth working means and in which adjustment of the earth working means for alternate operation is accompanied by lateral adjustment of the draft member.

(1) Note. Lateral adjustment of the draft member or adjustment of the earth working means for alternate operation may be accompanied merely by the operation of a latch to permit earth working means adjustment or draft member lateral adjustment, respectively.

207 Draft member reversed:

This subclass is indented under subclass 206. Apparatus in which the draft tongue or beam is swung through an angle of substantially 180° with respect to the frame on which the earth working means is mounted so as to draw the apparatus alternately in opposite directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

214, for oppositely directed tools having a reversible draft tongue, the reversal of the draft tongue not causing any adjustment of the tools.

208 Draft member latch control:

This subclass is indented under subclass 206. Apparatus in which the adjustment of the earth working means is accompanied by the operation of means which lock the draft member against lateral displacement.

209 Interrelated tool lift and shift:

This subclass is indented under subclass 204. Apparatus having earth working means other than parallel separate tools and means to raise the earth working means from the ground and in which the adjustment of the earth working means for alternate operation results from the operation of the raising means or the lowering of the earth working means to the ground after being raised.

(1) Note. The “parallel separate tools” of the definition are defined in subclass 228. For interrelated lifting and shifting of such tools see subclasses 228+.

(2) Note. The adjustment of the earth working means may be no more than unlocking or unlatching of the same to permit reversal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

128, for an apparatus comprising an earth working device and earth marking means, the earth marking means being adjusted upon lifting the implement.

162, for diverse tools including an implement alternating for right or left hand operation where reversal of the implement adjusts a diverse tool.

228+, for parallel separate tools which may be raised or lowered to place them in alternate operation.

210 Mast type hitch:

This subclass is indented under subclass 209. Apparatus in which the means for raising the earth working means is a mast-type hitch.

(1) Note. See this class, subclass 439 for the definition of mast-type hitch.

SEE OR SEARCH THIS CLASS, SUBCLASS:

445, for tools carried by a mast-type hitch including an auxiliary means which is operated by the vertical movement of the hitch.

211 Lift by ground support manipulation:

This subclass is indented under subclass 209. Apparatus in which the means for raising the earth working means comprises a wheel or wheel substitute which is depressed with respect to the frame on which the earth working means is mounted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

398, for implements including an actuator adjusted ground support and means interconnecting the actuating means and the earth working tool.

212 Interrelated tool shift and ground support manipulation:

This subclass is indented under subclass 204. Apparatus having a wheel or wheel substitute which automatically assumes a new supporting position with respect to its former supporting position, and also with respect to the earth working means, in response to adjustment of the earth working means to alternate positions.

213 Tools oriented for movement in opposite directions

This subclass is indented under subclass 204. Apparatus having separate earth working elements so directed as to be alternately usable when the frame on which they are mounted is moved in opposite directions without reversal of the frame.

214 Wheeled frame with reversible draft member:

This subclass is indented under subclass 213. Apparatus in which the earth working elements are carried by a wheeled frame having a draft member shiftable from one end of the frame to the opposite end through substantially 180° to draw the device in either direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

207, for tools adapted for alternate use having a reversible draft member, the reversal of the draft member adjusting the tools for alternate use.

215 Tilting beam:

This subclass is indented under subclass 213. Apparatus in which the oppositely oriented earth working elements are rigidly mounted at spaced points upon a longitudinally extending beam or frame which may be tilted about a horizontal transverse axis to alternately place the earth working elements in operative position.

216 Pivoted about spaced transverse axes, or translated:

This subclass is indented under subclass 213. Apparatus in which the earth working elements may be placed into and out of operative position by (1) movement about separate axes which are transverse to and spaced in the direction of travel or (2) movement in vertical planes in which the earth working elements maintain substantially the same angular position with respect to the ground.

217 With movable deflector:

This subclass is indented under subclass 213. Apparatus having shiftable earth deflector means (e.g., moldboard) alternately cooperating with the earth working elements as the frame is moved in opposite directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

218, for tools having a single earth breaking portion with an earth deflector means which is adjustable to move soil toward either side of the device.

218 Shiftable moldboard:

This subclass is indented under subclass 204. Apparatus comprising an earth working means having one portion which operates in and acts to break the soil in the same position for both directions of earth movement and an earth deflector or deflectors connected therewith and adjustable to different positions to move the soil toward either side of the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

217, for tools having oppositely directed earth breaking points with a movable deflector for moving the soil in alternate directions on movement of the tool in opposite directions.

219 Tool shifted for opposite throw:

This subclass is indented under subclass 204. Apparatus in which the same earth working element is utilized to move the soil in alternate lateral directions.

(1) Note. An earth working means having opposite ends or sides, one being used to move the soil in one direction and the other side or end being used to move soil in the other direction, is considered to be plural tools and is excluded from this and indented subclasses, except when the ends or sides are connected by a common moldboard or soil deflector portion which is utilized to deflect soil in both phases of operation.

220 Reversible disk with reversible cleaner:

This subclass is indented under subclass 219. Apparatus in which the earth working element is of the rolling-disk type having cleaning means to remove soil therefrom, the cleaning means being movable relative to the disk upon reversal of the disk so as to perform the cleaning operation for either direction of earth movement.

(1) Note. A scraper which merely moves as a unit with a reversible disk is not considered to be a reversible cleaning means for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

558+, for cleaning means for disks.

221 Plural tools shifted about individual vertical axes:

This subclass is indented under subclass 219. Apparatus including a plurality of earth working elements, each operative to move soil in opposite directions, the earth working elements being adjustable about spaced vertical axes to reverse the direction of soil movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

569, for a plurality of disks which are pivoted on vertical axes with interconnected means for moving them identically without shifting them for opposite throw.

647, for plural relatively movable tools which are simultaneously adjusted about their individual vertical axes without being shifted for opposite throw.

222 With translational movement of axes:

This subclass is indented under subclass 221. Apparatus wherein, in addition to the movement of the earth working elements about their vertical axes, at least one of the axes is also moved horizontally at the same time.

223 Moldboard type shiftable about longitudinal axis:

This subclass is indented under subclass 219. Apparatus in which the earth working element is of the type having a point, share and moldboard and in which the earth working element is adjustable about an axis extending substantially in the direction of travel to reverse the direction of soil movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

224+, for alternately usable separate tools which are adjusted about a longitudinal axis.

224 Axially rotatable implement:

This subclass is indented under subclass 204. Apparatus in which the earth working means comprises earth working elements which are alternately placed into operative position by rotation about an axis which is horizontal and longitudinal (i.e., in the direction of travel).

SEE OR SEARCH THIS CLASS, SUBCLASS:

34, for earth working apparatus in which the complete apparatus is adapted for use upside down.

232, for tools alternated for right or left hand operation by rotation about an axis lying in a vertical longitudinal

plane and at an angle to the horizontal.

225 With actuator:
This subclass is indented under subclass 224. Apparatus in which an actuator is provided to rotate the earth working elements with respect to a frame or support.

(1) Note. For the meaning of "actuator" see the class definition.

226 Gearing:
This subclass is indented under subclass 225. Apparatus in which the actuator comprises gearing.

(1) Note. For the definition of gearing, see Class 74, Machine Element or Mechanism, subclass 640.

227 Chain or cable:
This subclass is indented under subclass 226. Apparatus in which the gearing comprises a flexible member (e.g., chain or cable) cooperating with a sprocket or drum, rotation of the sprocket or drum effecting rotation of the earth working elements.

228 Parallel separate tools:
This subclass is indented under subclass 204. Apparatus employing separate earth working elements oriented for movement in the same direction which are alternately placed into operation by movement in substantially longitudinal vertical, parallel planes.

(1) Note. The tools may deviate slightly from the vertical planes during alternation so as, for example, to clear one another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
472, for plural tools simultaneously raised by an actuator for transport on a wheeled frame and which are individually lowered.
481, for tools raised by an actuator for transport on a wheeled frame and held in one position by a latch means separate from the actuating means.

229 Interconnected for simultaneous raising and lowering:
This subclass is indented under subclass 228. Apparatus having means connecting the earth working elements such that movement of one element in one direction (i.e., raising or lowering) is accompanied by movement of the other element in the opposite direction.

(1) Note. The connecting means may be temporarily disabled to allow both tools to be raised or lowered.

SEE OR SEARCH THIS CLASS, SUBCLASS:
130+, for apparatus comprising an earth working device and plural earth marking means, the plural earth marking means being interconnected so that adjustment of one causes movement of another.

230 Independently operable:
This subclass is indented under subclass 228. Apparatus having separate operating means for each earth working element such that each element is movable to operative and inoperative positions independently of the other element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
304, for plural tools carried forward of the rear of a motor vehicle which are independently actuatable.
468+, for plural tools having independently operable actuator means to lift the tools for transport on a wheeled frame.

231 Power derived from ground wheel:
This subclass is indented under subclass 230. Apparatus in which each of the operating means is actuated by power derived from a separate wheel engaging the ground and turned as an incident to the travel of the machine over the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:
399, for vertically adjustable ground supports with a power take-off from plural wheels.

408+, for vertically adjustable ground wheels in which the wheel actuates its own crank axle mount.

492+, for tools lifted for transport on a wheeled frame by means of an actuator operated by a power take-off, the power take-off usually being from a ground wheel.

232 Oblique axis in longitudinal vertical plane:
This subclass is indented under subclass 204. Apparatus in which the earth working means is alternately placed into operative position by movement about an axis which lies in a vertical plane extending in the direction of travel and is at an angle to the horizontal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

224+, for tools alternated for right and left hand operation by rotation about a horizontal, longitudinal axis.

233 WITH OBSTRUCTION FEELER FOR MOVING OR RELEASING IMPLEMENT TO AVOID OBSTRUCTION (INCLUDES DAM FORMER):
This subclass is indented under the class definition. Apparatus adapted to be moved over the surface of the earth comprising a feeler means adapted to sense the presence of an obstruction in or on the ground (e.g., a rock, tree, or mound of earth) and to cause or permit movement of the apparatus or a part thereof to avoid the obstruction.

(1) Note. The feeler means must constitute an element specifically provided for that purpose and not be a mere part of the tool supporting structure. A mere pivoted tool which may move because of direct contact of the tool or its supporting means with an obstruction is not included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5+, for apparatus in which an obstruction sensing means is operative to control a power means to adjust the apparatus or some part thereof to avoid the obstruction.

38, for an implement including a driven tool and obstruction feeling means for moving or releasing the implement.

236, for apparatus comprising a ground engageable lever means (including a segment of a wheel) which is engageable merely with the ground rather than an obstruction and which causes a manipulation due to its resistance to forward motion.

SEE OR SEARCH CLASS:

293, Vehicle Fenders, subclasses 102+ for protective structure attached to vehicles comprising barrier structures for fending off blows from other vehicles or objects.

234 Relatively movable:
This subclass is indented under subclass 233. Apparatus in which the feeler means is movable relative to the implement part to be moved.

235 Latch releasing:
This subclass is indented under subclass 234. Apparatus in which the feeler means operates a lock or latch to release the implement part so as to be free to move to another position to avoid the obstruction.

236 GROUND ENGAGEABLE DRAFT RESPONSIVE LEVER:
This subclass is indented under the class definition. Apparatus comprising an earth working element adapted to be propelled over the earth and a lever adapted to be lowered into engagement with the earth so as to resist motion of the apparatus whereby when the lever is engaged with the earth and the apparatus moved thereover relative motion between the lever and apparatus occurs due to the resistance of the lever, which results in some manipulation of the apparatus or a part thereof.

(1) Note. A ground wheel adapted to supply a force for manipulation of the apparatus due to its rolling over the ground is not included. See subclasses 407+, particularly subclass 409 for such devices. However, a lever arrangement including an arc, which may be a portion of a wheel, for rolling contact with the ground to manipulate the device is

included, if said lever does not pass through a complete cycle of 360° by contact with the ground to again be in position to repeat the cycle. The lever is not considered to pass through a cycle of 360° by contact with the ground when the initial movement of the lever through a portion of the cycle is effected by earth contact movement of an earth working tool connected therewith, and such devices would be included under this definition. See subclass 90 for an earth working element driven by an irregular ground-engaging wheel or support.

SEE OR SEARCH THIS CLASS, SUBCLASS:

90, for ground-engaging levers or irregularly shaped wheels used to give a regular or intermittent cyclical motion to an implement as it is drawn over the ground without any manipulation from the operator, i.e., a device in which a latch is released by the operator and the ground-engageable lever or irregular wheel moves through a cycle of at least 360° would be classified in subclass 90, while other latch-release type devices which must be manually advanced through part of their cycle of operation or which must be manually reset and which are not free to complete a cycle of 360° once having been unlatched are included under this definition (236).

205, for implements alternating for right or left hand operation and draft revoluble about a transverse axis by means of a ground-engageable draft responsive lever.

233+, for apparatus comprising a feeler means which senses some special obstruction and which causes manipulation of a part due to a movement or tendency to movement of the apparatus past the obstruction, resistance to movement being not necessarily present.

238, for apparatus including a ground wheel or wheel substitute which is moved relative to the frame by the draft force.

239, for apparatus including ground wheels and linkages for providing a constant depth of operation.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 418+ for attached vehicle jacks, including jacks comprising a leg which engages the ground and lifts the vehicle by moving the vehicle with respect to the ground.

280, Land Vehicles, subclass 43 for devices for rendering an apparatus transportable by movement of the apparatus with respect to a leg lowered to engage the ground.

414, Material or Article Handling, subclass 438 for a ground-engaging lever for manipulating a part of a load handler or transporter.

237 Roll over type implement:

This subclass is indented under subclass 236. Apparatus having an earth working element mounted to rotate through 360° about a horizontal transverse axis, the draft responsive lever being operative to rotate the tool on said axis over an arc of less than 360° being caused by a force other than from the lever, usually from earth resistance to the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

205, for earth working tools alternating for right or left hand operation and draft revoluble about a transverse axis by means of a lever engaging the ground.

528+, for rolling or rotating tools having means to stop or retard the rotation thereof.

SEE OR SEARCH CLASS:

37, Excavating, subclass 441 for a scoop with a dumping runner.

56, Harvesters, 379+ for roll-over type rakes.

238 GROUND SUPPORT MOVED VERTICALLY RELATIVE TO FRAME BY DRAFT MEANS:

This subclass is indented under the class definition. Apparatus comprising a framework, a ground wheel or wheel substitute carried thereby, an earth working element associated with the framework, a means for applying a draft force to the framework and means connecting the ground wheel or wheel substitute to the draft-force applying means whereby the ground wheel or wheel substitute may be moved vertically with respect to the framework by the draft-force applying means due to a force resulting from resistance of the apparatus to being moved over the earth by the draft force applying means.

(1) Note. Apparatus in which the vertical movement of the ground wheel is only the result of the draft force causing a ground wheel to rotate so that power from the rotating ground wheel causes the vertical movement is not included under this definition. See subclasses 407+, especially subclasses 408+ for apparatus in which a wheel is vertically adjusted by power from a wheel.

(2) Note. Apparatus comprising a ground wheel or wheel substitute which moves relatively to the framework due to irregularities in the surface of the ground and is connected to a draft means so as to move it correspondingly is not included. See subclass 239 for such apparatus.

(3) Note. Apparatus in which the draft- force applying means causes the ground wheel or wheel substitute to move only when a turn is being made is not included. See subclass 255 for such apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

236, for apparatus including a ground-engageable draft responsive lever.

239, for apparatus comprising a ground level responsive depth control of the type comprising a wheel and a linkage associated with an articulated hitch to a propelling vehicle.

255, for apparatus in which a turning movement causes an earth working element to be lifted off or lowered into the ground.

407+, especially subclasses 408+ for apparatus in which a wheel is vertically adjusted relative to its running gear by power derived from the rolling motion of a wheel.

467, for an apparatus comprising an actuator adapted to lift a tool for transport on a wheeled frame or broadly claimed implement and also comprising a shiftable hitch for causing vertical movement of the tool.

588, for apparatus comprising a hitch shiftable on a tongue for angling gangs of disks.

605, for an apparatus comprising a shiftable hitch for moving a tool relative to the frame.

239 DRAFT, PITCH OR GROUND LEVEL RESPONSIVE DEPTH CONTROL:

This subclass is indented under the class definition. Apparatus comprising an earth working element and a propelling device therefor, such as a tractor, the connection between the earth working element and its propelling device being such that (1) the earth working element tends to sink lower into the earth from a median working position when the draft force necessary to propel the element decreases and tends to raise out of the earth when the draft force increases or (2) the earth working element tends to move up and down from a median position relative to its propelling device as its propelling device pitches down and up, respectively, over uneven ground so as to maintain an approximately constant depth in the ground, (3) the earth working element tends to rise from a median position when the downward component or suck of the soil pressure increases and tends to sink from a median position when the downward component or suck of the soil pressure decreases or (4) the earth working element tends to move up from a median position as it approaches or is in a rise of ground and tends to move down from a median position as it approaches or is in a depression in the ground.

(1) Note. This subclass is intended to provide for linkages or the like which are

automatic in action but wholly mechanical so as not to fit the definition of the "Automatic" subclasses. An earth working element which is simply spring-pressed downwardly or which is merely pivoted at a forward point may be analyzable as coming under this definition, but such devices are not so classified. The devices under the definition comprise linkages or equivalent mechanism of greater complexity especially intended to function as stated in the definition. For example, a trailing implement connected to a tractor by a simple hitch including a spring so that the earth working tool is raised or lowered as the spring is stressed due to changes in draft load is classified in subclass 238 or subclass 678.

(2) Note. Apparatus classified under this definition is sometimes known as constant draft or constant depth apparatus.

(3) Note. Apparatus including gauge wheels connected by linkages to the propelling means to perform the functions set out in the definition are included.

(4) Note. Merely holding an earth working element down against a tendency to rise out of the ground is not included. Such devices are classified according to the structure claimed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

2+, for automatically operated power control devices especially subclasses 7+ for automatically operated power control devices responsive to changes in draft load.

238, for ground wheels moved vertically with respect to the running gear by means of the draft force (usually for lifting the earth working element for transport).

261+, for earth working elements which shift on occurrence of an overload.

678, for spring-biased hitches.

779, for a scraper whose position is automatically controlled by a linkage for leveling.

811+, for a scraper positioned in front of a motor vehicle and maintained in a horizontal position as the ground supports of the vehicle move over irregular terrain so that the vehicle tilts sidewise.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 446.1+ for articulated vehicles with a hitch responsive to change in draft load, there being no disclosure of an earth working element being the cause of the change in draft load.

240 WITH GROUND SUPPORT ENGAGEABLE WITH GROUND FOR TRANSPORT ONLY:

This subclass is indented under the class definition. Apparatus comprising a ground wheel or wheel substitute such as a runner so arranged in the apparatus or so attachable to the apparatus that when the wheel or wheel substitute engages the ground the apparatus may not effectively perform its intended earth working operation but may merely be readily moved.

(1) Note. A wheel or wheel substitute may be stated to be for transport only but if as disclosed it may actually engage the ground in supporting or gauging relation without precluding the operation of the earth working tool it is not classified under this definition. Such devices may be found in subclasses 395+. If the means attaching the wheel or wheel substitute to the implement can only be used to support the implement for transport and in any other position the wheel serves no purpose (e.g., gauging or supporting) classification under this definition results.

(2) Note. The wheel or wheel substitute may constitute a part of the earth working element itself, which functions as a wheel or runner or an earth working element in accordance with different positions in the apparatus.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 228 for transporting attachments for harvesters.

280, Land Vehicles, appropriate subclasses, especially subclasses 43+ and 47.131+ for wheel attachments for vehicles.

241 Apparatus inverted to engage ground support with ground:

This subclass is indented under subclass 240. Apparatus, in which the wheel or wheel substitute is so positioned with relation to the earth working element that the entire apparatus must be turned upside down to bring the wheel or wheel substitute into ground-engaging position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

34, for apparatus which is adapted for use upside down to provide an earth working function in either position.

242 Implement tiltable on longitudinal axis:

This subclass is indented under subclass 240. Apparatus in which an earth working element is pivoted about an axis extending longitudinally of the apparatus to shift it from an earth working position and enable engagement of the wheel or wheel substitute with the ground.

(1) Note. The wheel or runner may constitute a part of the earth working element itself, which functions as a wheel or runner or an earth working element in accordance with different positions in the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

224+, for an apparatus comprising axially rotatable alternately useable tools for right and left hand operation having wheels which alternately contact the ground.

243 Tool changeable to or replaced by ground support:

This subclass is indented under subclass 240. Apparatus in which a wheel or wheel substitute replaces an earth working element or is attached directly to an earth working element or in which an earth working element is manipulated to act as a wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

535, for a detachable rim for a disk, the rim being used for an earth working function, e.g., a packing roller rather than as a ground wheel.

540+, for a rolling or rotating earth working element having spaced teeth, tines, or blades which may be made by placing such teeth on a wheel.

SEE OR SEARCH CLASS:

301, Land Vehicles: Wheels and Axles, subclasses 38.1+ for wheels useable with ordinary wheels for emergency purposes.

244 Tool and ground support moved together relative to frame:

This subclass is indented under subclass 240. Apparatus in which there is a framework supporting an earth working element and the ground wheel or wheel substitute and the ground wheel or wheel substitute is so connected to the earth working element that movement of one relative to the frame is accompanied by movement of the other relative to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

397+, for apparatus having a vertically adjustable ground support which is movable together with a tool relative to a supporting frame.

245 CONVERTIBLE; OR CHANGEABLE BY DISASSEMBLY OR ASSEMBLY:

This subclass is indented under the class definition. Apparatus, (A) adapted to be rearranged to perform different functions, or (B) adapted to be altered so as to operate in a different way or change its function in some way by (1) the steps of disassembling the apparatus in some major portion and then reassembling the apparatus with the same or different portion, (2) the step of disassembling some major portion from the apparatus, or (3) the step of assembling some major portion to the apparatus.

(1) Note. Conversion features are common in this art. A mere preamble in a claim to the effect that a device is convertible or

is a conversion attachment is generally not enough for classification under this definition. The conversion feature should be spelled out as by (a) specifically claiming one embodiment of an apparatus having a first function and claiming with that embodiment a feature useable only for a second conversion function, or (b) repeated functional statements in the claim, or (c) a preamble which is so long and detailed that it may be considered part of the body of the claim. Where no other suitable classification exists a broad mention of conversion may be enough for classification under this definition.

(2) Note. The change in the apparatus must be more than merely placing a part in one of a series of adjacent holes or in general making a change which amounts to only an adjustment or minor alteration in the overall functioning of the device.

(3) Note. The change must be more than to change a part between an operative and an inoperative position.

(4) Note. When the conversion consists of the assembly of a part the claim must recite some element of the combination which has little or no utility when the part is in the combination but is useful when the part is absent from the combination.

(5) Note. Various specific types of apparatus which fit this definition have been considered to be better classified in subclasses below this subclass and not indented under it as indicated in the Search Notes. The general rule is that if a subclass below furnishes a specific home for subject matter apparently covered by this definition the patent is properly classified in the subclass below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14, for a lawn edger convertible to a non-earth working implement.

34, for a complete apparatus adapted for use upside down.

136, for diverse tools, not of the hand-held type, carried at the same time in an apparatus but useable alternately only, by merely changing the position of the tools with respect to the earth.

243, for an earth working element which is changeable to or replaced by a ground support for transporting the apparatus.

310, for plural wheeled implements.

341, for hand guided wheeled straddle row type cultivators with an added intermediate tool.

355, for attendant guided or propelled wheeled implements with alternately useable tools rocked about a wheel axis.

375, for alternately useable hand-held earth working elements, carried at the same time in the apparatus and alternately useable by a mere change of position while remaining in the apparatus.

439+, for a device converting an automatic power control means to a nonautomatic position controlled mast-type hitch.

443, for an implement with a mast-type hitch adapted to be bolted to a tractor as a unit thereby inherently acting to convert a tractor adapted to use with a simple hitch to one having a mast-type hitch.

452+, for an automatic power control device converted to a nonautomatic lift device, especially subclass 465 for a device converting an automatic power control means to a servomotor with a follow-up control (e.g., a position controlled device).

535, for detachable rims for disks, which rims may be rollers.

536, for a wheel or roller and an axially adjacent earth working element on the same axis.

539, for a wheel or roller with a ridge or rim attached to convert it to an earth working device.

540+, for a wheel or roller with blades mounted on the circumference to convert it to an earth working device.

541, for a roller with tines, blades, or the like which may be projected from or withdrawn beneath the surface of the roller.

568, for a disk gang with a removable section.
577, for a reversible group of rolling earth working elements.
581, for groups of disk gangs changeable to different arrangements.
603, for a disk changeable to positions having a different angular relationship to adjacent structure when viewed in plan.
625, for plural tool groups which are relatively movable as a result of operation and connected to a forward draft bar and have alternate draft means.
702+, for an earth working element with a reversible part.
719, for an earth working element with an added-on cutting or wearing edge, point, or surface.
735, for an earth working element adjustable to present different working portions.
777+, for a scraper supporting a readily detachable narrow depending tool.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclasses 51+ for implements having parts or adjustments permitting conversion of said implement to a fork, shovel, other implement, or different type of the same implement.

246 To land vehicle with body:
This subclass is indented under subclass 245. Apparatus changeable between a condition in which it functions as a device under the class definition and a condition in which it functions as a land vehicle having a body portion of general utility for transporting loads.

247 To device classifiable in another class:
This subclass is indented under subclass 245. Apparatus changeable between a condition in which it functions as a device under the class definition and a condition in which it funcitons as a device classifiable in some other class.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for a lawn edger convertible to a non-earth working implement.
246, for an earth working implement changeable to a land vehicle with a body.
375, for a hand-held implement with alternately useable diverse tools, one of which may be a tool not classifiable in this class.
535, for a detachable rim for a disk, which rim may be a roller.
536, for a wheel with a tool mounted on the same axis for rotation with the wheel.
539, for a wheel or roller with a ridge or rim attached to convert it to an earth working device.
540+, for a wheel or roller with blades mounted on the circumference to convert it to an earth working device.
541, for a roller with tines, blades, or the like which may be projected from or withdrawn beneath the surface of the roller, thereby converting the device from one classifiable in this class to one classifiable in Class 404, Road Structure, Process, or Apparatus.

SEE OR SEARCH CLASS:
37, Excavating, subclasses 403+ for a scraper convertible to a scoop, shovel, or other material pick up means.
56, Harvesters, subclasses 400.04+ for hand rakes convertible to earth working devices.
294, Handling: Hand and Hoist-Line Implements, subclass 51 for hand forks and shovels convertible to earth working devices.

248 To different type of hitch:
This subclass is indented under subclass 245. Apparatus in which an apparatus under the class definition having one distinct type of draft connection to a propelling means is convertible or changeable to an apparatus having another distinct type of draft connection to a propelling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
439+, for a device converting an automatic power control means to a nonautomatic position controlled mast-type hitch.
443, for an implement with a mast-type hitch adapted to be bolted to a tractor

as a unit, thereby inherently acting to convert a tractor adapted to use with a simple hitch to one having a mast-type hitch.

452, for a device converting an automatic power control means to a nonautomatic lift device especially subclass 465 for a device with an automatic control converted to a device having a servomotor with a follow-up position control.

463, for an apparatus comprising wheeled frame and an actuator adapted to lift a tool for transport, the lift actuator and the tool forming a removable unit.

625, for an apparatus comprising plural tool groups movably connected to a forward transverse draft bar and having alternate draft means spaced ninety degrees apart.

677+, for earth working implements with some significant detail of the hitch.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 415.1+ for articulated vehicles with convertible hitches, and subclass 474 for articulated vehicles with selectively rigid or flexible hitches.

249 Plural simultaneously usable tools to single tool:

This subclass is indented under subclass 245. Apparatus which is changeable between a condition in which it has a plurality of spaced earth working elements to a condition in which the plurality if elements have been joined or juxtaposed to form a part of a single earth working element.

250 Changeable by disassembly or assembly:

This subclass is indented under subclass 245. Apparatus adapted to be altered so as to operate in a different way or change its function in some way by (1) the steps of disassembling the apparatus in some major portion and then reassembling the apparatus with the same or different portions, (2) the step of disassembling some major portion from the apparatus, or (3) the step of assembling some major portion to the apparatus.

(1) Note. See the definition of subclass 245 for Notes limiting and explaining this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

243, for an earth working element replaceable by a ground support.

702+, for an earth working element with a reversible part.

719, for an earth working element with an added-on cutting or wearing edge, point, or surface.

251 Tool changeable to diverse tool:

This subclass is indented under subclass 250. Apparatus which is changeable from a device having an earth working element of one kind to a device in which said earth working element has been replaced by or changed to an earth-working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

136, for diverse tools, not of the hand-held type, carried at the same time in an apparatus but usable alternately only, by disassembling and assembling the tools to change their position with respect to the earth.

252 Tool plus added part forms diverse tool:

This subclass is indented under subclass 251. Apparatus in which the change is brought about by adding to an earth working element or a major portion of an earth working element a part to form an earth working element of a different shape or size than the original earth working element, said part not being intended for use as an earth working element by itself in the apparatus.

(1) Note. Merely attaching an earth working element to a nominally recited spring tooth or rigid earth working tooth is not included, the tooth in that case being considered merely a standard. However, if some earth working configuration of the tooth is claimed the device is classifiable under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

535, for detachable rims for disks.

708, for an earth working element attached to a spring tooth.

719, for an earth working element with an added-on cutting or wearing edge, point, or surface.

777+, for a scraper supporting a readily detachable narrow depending tool.

253 Tool added or substracted:

This subclass is indented under subclass 250. Apparatus in which the alteration of the apparatus comprises the addition of an earth working element or the removal of an earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

341, for hand guided wheeled straddle row type cultivators with an added intermediate tool.

568, for a disk gang with a removable section.

254 Tool rearranged on support structure:

This subclass is indented under subclass 250. Apparatus in which the alteration comprises placing an earth working element in distinctly different positions relative to adjacent supporting structure so that the element may perform its earth working function in each of these different positions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

554, for a disk changeable to positions having a different angular relationship to adjacent structure when viewed in plan.

577, for a reversible group of rolling earth working elements.

581, for groups of disks changeable to different arrangements.

702+, for a reversible part. Where the rearrangement of a tool results merely from reversing a nonrolling tool or part thereof, a standard, or a reversible part between such a tool and a standard or the standard and a beam, classification is in subclasses 702+.

735, for an earth working element adjustable to prevent a different working portion.

255 TURN LIFTS TOOL OFF OR LOWERS TOOL INTO GROUND:

This subclass is indented under the class definition. Apparatus comprising means for lifting an earth working element out of the ground or lowering the element into ground engagement responsive to a change in the direction of movement of the apparatus over the ground or responsive to a steering means for changing the direction of movement of the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

278+, for apparatus with actuating means for horizontally angling the axis of rotation of a ground wheel, which angling may be accompanied by a vertical movement of the wheel with respect to its carrying frame but there being no turning of the implement as a result of the wheel angling, particularly subclasses 279+ for an implement part interconnected with a motor vehicle steering means, subclass 283 for a wheel on a trailing implement responding to turning movement and interconnected with an adjustable earth working element, and subclass 287 for a wheel on a nonself-propelled device having means to angle it horizontally and interconnected with an earth working element. In subclasses 279+, 283, and 287 the earth working element does not move off or into the ground responsive to turning movement.

383+, for apparatus with a ground wheel whose axis of rotation may be adjusted to different angular positions and in which horizontal angling may be accompanied by vertical wheel movement but there being no turning of the implement as a result of the wheel angling.

256 PROPULSION UNIT GUIDED BY WALKING ATTENDANT OR PART OF ARTICULATED VEHICLE:

This subclass is indented under the class definition. Apparatus comprising (1) a self-propelled vehicle having means such that an attendant walking on the ground may guide the vehicle, or (2) a vehicle made up of a self-propelled frame section having a ground wheel and another frame section having a ground wheel connected to the self-propelled section by a pivot means providing a vertical axis, the self-propelled section when in use being unstable except for its connection to the other section.

(1) Note. The disclosure of an unstable tractor (e.g., one or two wheel) which is guided by a walking attendent will be classified under this definition even though (1) the guiding means (e.g., handles) or (2) the motor, is not claimed, provided the claim includes some recitation of (1) the tractor or tractor frame, or (2) the handles, respectively.

SEE OR SEARCH THIS CLASS, SUBCLASS:

42+, for an implement with a drive means for a tool or cleaner and guided by a walking attendant.

329+, for an implement comprising a vehicle other than a self-propelled vehicle and guided by a walking attendant.

SEE OR SEARCH CLASS:

56, Harvesters, subclasses 14.7+, for a harvester deriving its motive power from a tractor to which it is hitched, and 16.7+, for a motor-driven lawn mower guided by a walking attendant.

180, Motor Vehicles, subclasses 19.1+ for a motor driven vehicle guided by a walking attendant.

280, Land Vehicles, subclass 47.11 for a wheeled vehicle in which the wheel is steered by the attendant.

257 Riding attendant:

This subclass is indented under subclass 256. Apparatus in which the apparatus is guided by an attendant riding thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:

433, for a riding attachment on other than a self-propelled implement.

258 Endless track or single driven wheel:

This subclass is indented under subclass 256. Apparatus comprising an endless track traction means or a drive for one ground wheel only.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 414.5 for articulated vehicles having an actuator for vertically moving a wheel of a trailing vehicle.

259 With vertically adjustable wheel:

This subclass is indented under subclass 256. Apparatus in which a ground wheel may be vertically adjustable with respect to its carrying frame.

(1) Note. For the meaning of “adjustable” see the class definition.

260 With actuator for moving earth working element vertically:

This subclass is indented under subclass 256. Apparatus having an actuator for causing an earth working element to move vertically with respect to its supporting frame.

(1) Note. For the meaning of “actuator” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257, for apparatus in which there is an unstable propulsion unit vertically pivotally connected to another section with a riding attendant and there is also a means for causing an earth working element to move vertically.

260.5 HAVING TOOL OVERLOAD SHIFT CONTROLLED BY A FLUID PRESSURE DEVICE:

This subclass is indented under the class definition. Apparatus including (a) an earth working element; (b) means permitting the element to change position with respect to the ground, or with respect to its supporting or propelling means, when it meets an obstacle while being

drawn over the ground, and (c) a fluid pressure responsive means (e.g., a hydraulic system) to yieldingly resist the change in position of the element.

(1) Note. The patents classified herein include overload shift mechanisms of the type found in this class, either in subclasses 261+ or subclasses 705+, but also with the recitation of fluid pressure responsive means to control the overload shifting. This subclass is intended to provide a locus for fluid pressure responsive tool overload shift mechanisms.

SEE OR SEARCH CLASS:

111, Planting, subclass 151 for a trip mechanism claimed in combination with a planting machine.

261 OVERLOAD SHIFTING:

This subclass is indented under the class definition. Apparatus comprising an earth working element and means permitting the element to shift with respect to the earth or with respect to its supporting or propelling means when it meets an obstacle while being drawn over the field, said means (1) having a high initial resistance to said shifting of the element, which resistance decreases after the element starts to shift, or (2) requiring manual resetting by an attendant (e.g., a shear pin).

SEE OR SEARCH THIS CLASS, SUBCLASS:

96, for driven earth working elements having the teeth or like earth working part or portions thereof so flexibly or yieldably mounted on a driven carrier member that said teeth or like parts or portions will yield on encountering an obstacle.

233+, for an obstruction feeler for moving an implement to avoid an obstruction, including devices for forming small dams in the ground having feelers sensing accumulations of earth.

238, for a ground support moved vertically relative to a frame by a draft force.

528+, for a rolling earth working element with means for stopping or retarding its motion.

683, for an earth working element latched in earth working position, the latch being manually releasable.

705+, for spring-biased tools in which the spring resistance remains constant or increases as the tool shifts from normal working position.

SEE OR SEARCH CLASS:

111, Planting, subclass 151 for a trip mechanism claimed in combination with a planting machine.

171, Unearthing Plants or Buried Objects, subclass 9 for unearthing devices with overload release.

180, Motor Vehicles, subclass 14.5 for vehicle trains with an overload release. The trailing vehicle in subclass 14.5 may be a broadly named implement combined with means to control the application of pulling power on the occurrance of an overload.

280, Land Vehicles, subclasses 449+ for articulated vehicles with an overload release connection between them.

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 30+ for an overload release device in rotary drive elements.

262 Alternate tool brought into operation upon shift:

This subclass is indented under subclass 261. Apparatus in which the earth working element, upon the occurrence of an overload, shifts to an inoperative position and a second earth working element is brought into operative position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

528+, for a rolling earth working element with means to stop or retard rotation at will.

263 Actuator released:

This subclass is indented under subclass 261. Apparatus in which there is an actuator which is separated from adjacent and associated structure when the earth working element shifts.

(1) Note. For the meaning of “actuator” see the class definition.

264 Against spring return device:
This subclass is indented under subclass 261. Apparatus wherein resilient means is employed to resist shifting of the element, the resilient means returning the element to operative position after passing of the overload.

SEE OR SEARCH THIS CLASS, SUBCLASS:
705+, for spring-biased tools in which the spring resistance remains constant or increases as the tool shifts from normal working position.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclass 455 for articulated vehicles having an overload release of the type having a pivoted jaw or hook with a resilient keeper.

265 Swinging about fixed pivot axis:
This subclass is indented under subclass 264. Apparatus wherein the movable element pivots about a fixed point on the support.

(1) Note. This definition excludes those devices in which the movable element pivots about an axis and the axis also moves as a result of the overload shift.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclasses 452+ for articulated vehicles having an overload release of the type having a pivoted jaw or hook.

266 Including toggle linkage:
This subclass is indented under subclass 265. Apparatus including two links pivoted to one another, one of the links also being pivoted to the implement and the other of the links being also pivoted to the support, the links being so positioned as to offer a high initial resistance to movement of the tool from working position and a decreased resistance after some movement has occurred.

267 Toggle adjustable:
This subclass is indented under subclass 266. Apparatus in which the angularity between the links when in a normal or unshifted position is adjustable.

(1) Note. For the meaning of "adjustable" see the class definition.

268 Toggle links at acute angle:
This subclass is indented under subclass 266. Apparatus in which the axes of the two links are disposed at an angle to each other of less than 90° when the implement is in the normal or unshifted position.

269 Resilient latch:
This subclass is indented under subclass 261. Apparatus wherein the element is substantially rigidly held in place by a resiliently biased latch device until a predetermined overload occurs.

SEE OR SEARCH THIS CLASS, SUBCLASS:
270, for an element held in position by mere frictional resistance with an adjacent element and overcomes the frictional resistance to move upon the occurrence of an abnormal load.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclass 455 for articulated vehicles having an overload release of the type having a pivoted jaw or hook with a resilient keeper.
464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 37+ for an overload release coupling including a resiliently biased positive drive connection.

270 Friction lock:
This subclass is indented under subclass 261. Apparatus wherein a friction clamp is employed to rigidly hold the element in place until a predetermined overload occurs.

SEE OR SEARCH THIS CLASS, SUBCLASS:
269, for an element held in position by a resilient latch which yields upon overload to permit the element to shift.

SEE OR SEARCH CLASS:

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 30+ for friction drive connections in rotary drive overload release devices.

271 Frangible lock (e.g., shear pin, etc.):

This subclass is indented under subclass 261. Apparatus wherein the element is rigidly held in place by means destructible upon the occurrence of a predetermined overload.

(1) Note. The destructible means is usually a break pin.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 451 for articulated vehicles having an overload release of the frangible type.

272 WITH MEANS TO FACILITATE MOUNTING OF IMPLEMENT ON MOTOR VEHICLE:

This subclass is indented under the class definition. Apparatus comprising a self-propelled vehicle and specifically claimed means to permit and facilitate rapid attachment of an implement thereto with a minimum amount of labor.

(1) Note. It is recognized that the terms "rapid attachment" and "minimum amount of labor" are difficult to limit and define. The attachment should be accomplished without the necessity of tools and/or with little or no direct manual effort required on the part of an attendant to position the implement.

(2) Note. The following is illustrative of subject matter included under this definition:

(a) Apparatus in which a preliminary or pilot connection is made which supports or positions the implement or implement part on the tractor before the principal connection is completed.

(b) Apparatus in which the connection can be completed by engaging an implement part with a tractor part without the addition of a separate connecting member (the connection may be tightened after engagement).

(c) Apparatus in which the tractor is driven into interfitting relation with the implement (e.g., self-coupling) or in which the connection can be completed without the necessity of the attendant leaving the tractor.

(3) Note. If a self-propelled vehicle is disclosed it need not be claimed as such for classification under this definition. Any reference in the claim to a structure disclosed as a self-propelled vehicle is sufficient.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 477+ for means to facilitate the connection of articulated vehicles.

296, Land Vehicles: Bodies and Tops, subclasses 35.1+ for devices for securing a body to a vehicle.

403, Joints and Connections, appropriate subclasses for joints and connections of general application.

414, Material or Article Handling, subclass 563 for towing apparatus adapted to engage one end of a vehicle and elevate it into towing position, and subclasses 697+ for material moving devices with a vertically swinging load support of the tilting shovel or fork type with means to facilitate mounting them upon a motor vehicle.

273 Tool forward of rear of motor vehicle:

This subclass is indented under subclass 272. Apparatus in which an earth working element is entirely located in front of the rearmost point of the frame or wheels of the self-propelled vehicle when connected thereto in working relationship.

SEE OR SEARCH THIS CLASS, SUBCLASS:

297+, for tools mounted forward of the rear of a self-propelled vehicle.

274 Implement has ground support:
This subclass is indented under subclass 272. Apparatus in which the implement is provided with ground-support means (e.g., wheel or stand) to sustain a portion of the weight thereof, said ground-support means being separate from the ground-support of the self-propelled vehicle.

(1) Note. This definition does not include a runner or landside which forms part of or is closely associated with an earth working element.

(2) Note. The ground support may be operative only when the implement is disconnected from the self-propelled vehicle or may be operative at all times.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclass 763.1 for a land vehicle having a retractable ground support to stabilize the vehicle when not in use, subclasses 423.1+ for semi-trailers with landing gear, and subclass 475 for articulated vehicles having a retractable ground support.

275 Self-coupling by horizontal movement:
This subclass is indented under subclass 272. Apparatus in which the self-propelled vehicle and implement assume a coupled or connected relationship as a result of relative movement toward one another in a horizontal plane and require no manual manipulation at the time of making the connection.

(1) Note. This definition includes apparatus where a manual manipulation may be required to preset or condition one of the connecting members for the connecting action prior to relative movement and actual connection of the parts.

(2) Note. This definition includes apparatus having a plurality of connecting points between the self-propelled vehicle and implement wherein at least one of the points is self-coupling.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclasses 434+ and 508+ for coupling devices between articulated vehicles which are automatically connected by movement of one of the vehicles toward the other.

278 WITH WHEEL STEERING OR ACTUATOR FOR HORIZONTALLY ANGLING WHEEL AXIS:
This subclass is indented under the class definition. Apparatus comprising (1) an actuating means for moving the axis of rotation of a ground wheel to different positions of adjustment in a horizontal angular direction with respect to the running gear, or (2) means to change the horizontal angular direction of the axis of rotation of a ground wheel mounted on an implement with respect to the running gear in response to articulative movement between the implement and propulsion means for the implement.

(1) Note. The terminology “actuating means” as used above is meant to include “steering” or an “actuator” as defined in the class definition.

(2) Note. There must be some specific description in a claim of the steering means or a specific relationship to the steering means for classification under this definiton; merely calling for a steerable tractor or steerable wheel is not enough.

(3) Note. The “running gear” is the framework most intimately connected with the wheels. It does not include a mere draft tongue. For steering a trailing vehicle by swinging a draft tongue relative to its wheels see subclasses 324+.

(4) Note. Means for changing the direction of a freely swiveling caster by swinging the running gear are not included. There must be some means for positively causing the wheel to turn with respect to its running gear.

SEE OR SEARCH THIS CLASS, SUBCLASS:
23+, for an implement guided by a stationary object, including an implement guided by a feeler element running in a previously made furrow.

256+, especially 257 for steering devices comprising means for swinging an unstable propulsion unit with respect to another unit pivoted thereto on a vertical axis.

383+, for devices in which the axis of a wheel is angularly adjustable but there are not actuating means for making the adjustment.

580, for disk gangs with power means for horizontally angling them.

591+, for disk gangs with handle-operated horizontal angling means.

799, for a vehicle with a scraper between front and rear supports and means for horizontally angling a ground wheel.

SEE OR SEARCH CLASS:

104, Railways, subclass 244.1 for furrow followers for guiding a vehicle along the furrow.

180, Motor Vehicles, subclasses 6.2+ for vehicles steered by driving and subclasses 400+ for steering gear.

280, Land Vehicles, subclasses 6.15+ for a land vehicle of general utility including means, interposed between the vehicle body, chassis, or frame and running gear thereof, for altering height or levelness of the vehicle body, chassis, or frame which may or may not include steering; subclasses 124.11+ for a land vehicle of general utility including a pivotally mounted axle or axle assembly providing resilient, shock absorbing support which may or may not include steering; subclasses 137.5+ for a land vehicle of general utility including a turnable axle lacking resilient, shock absorbing support; subclass 419 for a vehicle train including interconnected steering of the plural articulated vehicles; subclasses 442+ for a vehicle train including steering control of a following vehicle's wheel through articulate movement of the interconnecting draft member; or subclasses 771+ for a land vehicle of general utility including occupant operated steering, especially subclass 87.2 wherein a controlled wheel is offset from the main running gear of the vehicle. With regard to an articulated vehicle or a vehicle train, see the (3) Note in Class 280 definition and the (1) Note in Class 280, subclass 400 definition for a further statement of the class line.

279 Implement part interconnected with motor vehicle steering means:

This subclass is indented under subclass 278. Apparatus in which the steering means is for steering a wheel of a self-propelled vehicle and is connected to an earth working device by a linkage so that movement of the steering means causes movement of a part of the earth working device relative to other parts or a movement of the earth working device with respect to the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

255, for means interconnected with a steering means for moving an implement vertically responsive to turns.

282, for an implement having an articulated connection with a propulsion means, the implement having a ground wheel which turns on turning movement of the propulsion means due to a connection with the propulsion means itself rather than a connection with the steering linkage of the propulsion means.

280 Implement wheel steered:

This subclass is indented under subclass 279. Apparatus wherein the element of said device which is moved comprises a ground wheel or the like.

(1) Note. The mere motion of a caster wheel on the device due to a movement of said device is not included. There must be some linkage for positively causing movement of the wheel of the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

282, for a wheel on a device carrying an earth working element which is moved in response to turning movement of a propulsion means rather than by a means connected with the steering linkage.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 137.5+ for a land vehicle of general utility including a turnable axle lacking resilient, shock absorbing support; subclass 419 for a vehicle train having interconnected steering of the plural units; or subclasses 442+ for a vehicle train including steering control of a following vehicle's wheel through articulative movement of the interconnecting draft member.

281 Transverse tool bar laterally shiftable:

This subclass is indented under subclass 279. Apparatus wherein the portion of the device which is moved is an earth working element mounting means extending crosswise of the line of draft and movable relative to its support in an endwise direction.

282 Wheel on trailing implement responds to turning movement:

This subclass is indented under subclass 278. Apparatus in which the ground wheel whose position is changeable is on an implement which trails behind and has an articulated connection with a propulsion means such that the wheel is caused to turn relative to the implement by turning movement of the propulsion means relative to the implement.

(1) Note. A freely swiveling caster wheel is not included. There must be some means for positively causing the wheel to turn when the propulsion means turns.

(2) Note. A hitch attached to a swinging axle carrying wheels so as to swing the axle with respect to the running gear when the propulsion means turns is included.

SEE OR SEARCH THIS CLASS, SUBCLASS:

280, for an implement wheel connected with the steering linkage of a self-propelled vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 426 for articulated vehicles wherein the wheels of a semi-trailer are steered as a result of the articulate motion, and subclasses 442+ for articulated vehicles wherein the wheels are steered by articulative movement.

283 Interconnected with adjustable tool:

This subclass is indented under subclass 282. Apparatus wherein the ground wheel and an earth working element supported by the implement frame are interconnected whereby when the wheel is caused to turn the earth working element is also caused to move relative to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

255, for an implement in which an earth working element is moved vertically responsive to turning.

287, for a steering wheel interconnected with an earth working element wherein the wheel is mounted on a non-self-propelled device.

284 With additional angular adjustment of wheel:

This subclass is indented under subclass 282. Apparatus in which the horizontal angularity of the axis of rotation of the ground wheel is selectively adjustable independently of the change caused by turning movement of the propulsion means.

(1) Note. For the meaning of “adjustable” see the class definition.

285 Rear wheel turned or controlled:

This subclass is indented under subclass 282. Apparatus in which a wheel located to the rear of the tool is angled.

(1) Note. If more than one tool is present, the wheel must be behind all the tools.

SEE OR SEARCH THIS CLASS, SUBCLASS:

283, for actuated wheels on trailing implements interconnected with an adjustable tool and located to the rear of the tool.

284, for actuated wheels on trailing implements provided with additional angular adjusting means.

291, for a steerable wheel on a nonself-propelled implement in which the wheel is behind the tool.

286 Wheel on non-propelled device:
This subclass is indented under subclass 278. Apparatus in which the said wheel is part of an implement frame which does not carry its own propelling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
799, for a nonself-propelled vehicle with a scraper between front and rear supports and means for horizontally angling a ground wheel.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclasses 124.11+ for a land vehicle of general utility including a pivotally mounted axle or axle assembly providing resilient, shock absorbing support which may or may not include steering; subclasses 137.5+ for a land vehicle of general utility including a turnable axle lacking resilient, shock absorbing support; subclass 419 for a vehicle train including interconnected steering of the plural articulated vehicles; subclasses 442+ for a vehicle train including steering control of a following vehicle's wheel through articulative movement of the interconnecting draft member; or subclasses 771+ for a land vehicle of general utility including occupant operated steering.

287 Wheel interconnected with tool:
This subclass is indented under subclass 286. Apparatus wherein the wheel and an earth working element supported by the frame are interconnected whereby when the wheel is caused to turn the earth working element is also caused to move relative to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:
212, for an implement which is adustable to move soil in opposite directions and having a wheel whose position is changed in response to the adjustment.
255, for an implement with an earth working element which is moved vertically when the implement is turned.
279, for an implement part interconnected with a self-propelled vehicle steering means.
283, for a wheel interconnected with an earth working element which turns in response to turning movement of the propulsion means.

288 Plural interconnected relatively movable wheels:
This subclass is indented under subclass 286. Apparatus in which two or more wheels are interconnected whereby they are constrained to move relative to one another when angled.

289 Transversely aligned stub shafts:
This subclass is indented under subclass 288. Apparatus in which there are two wheels each of which is mounted on its individual axle and wherein the axles are aligned transversely of the implement and are interconnected for concurrent movement.

290 Swinging axle:
This subclass is indented under subclass 286. Apparatus wherein two wheels are supported by one axle mounted for pivotal swinging movement about a vertical axis.

291 Wheel behind tool:
This subclass is indented under subclass 286. Apparatus in which the wheel is located to the rear of the tool.

(1) Note. If more than one tool is present the wheel must be behind all of the tools.

SEE OR SEARCH THIS CLASS, SUBCLASS:
283, for actuated wheels on trailing implements interconnected with an adjustable tool and located to the rear of the tool.
284, for actuated wheels on trailing implements provided with additional angular adjusting means.
285, for actuated wheels on trailing implements which are located to the rear of the tool.

292 SPECIFIC PROPELLING MEANS:
This subclass is indented under the class definition. Apparatus comprising a motor or motor-actuated means for traversing an implement over the ground.

(1) Note. Self-propelled or tractor-propelled implements are common in this art. In order for a patent to be classified under this definition the propulsion means must be recited in some detail. The mere recitation of a motor is not enough. However, a broad reference to a wheel substitute such as a tracklaying means on a tractor is sufficient. Also a recitation of a relationship with the propulsion means such as the statement that an implement hitch arm is connected to a differential housing (as distinct from merely a rear axle housing) is enough.

SEE OR SEARCH THIS CLASS, SUBCLASS:
114+, for specific propelling means for driven tools.
256+, for a propulsion unit guided by a walking attendant or part of an articulated vehicle.
352, for manually driven stepper-type propulsion means.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses for power transmitting means.
180, Motor Vehicles, appropriate subclasses for self-propelled vehicles.
280, Land Vehicles, appropriate subclasses for specific propelling means for land vehicles.
305, Wheel Substitutes for Land Vehicles, appropriate subclasses for track or stepper means for vehicles.

293 SERIES OF LIKE ELEMENTS SEQUENTIALLY OPERATED BY POWER CYCLE:
This subclass is indented under the class definition. Apparatus comprising power driven actuating means and means whereby a plurality of like elements (such as earth working elements or wheels) are moved one after another by the actuating means after only one setting of a control device for the actuating means.

(1) Note. Manually actuated devices are excluded. Power is derived from a motor such as a servomotor or by a mechanical power take-off as from a rolling wheel or motor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
407, for a ground support which is vertically adjustable relative to a frame by power-operated means.

294 Sequentially operated servo-motors:
This subclass is indented under subclass 293. Apparatus in which the actuating means comprises a plurality of servomotors which are serially operated to correspondingly move the separate parts of the apparatus.

295 Tool forward of rear of motor vehicle:
This subclass is indented under subclass 293. Apparatus in which at least one of the like elements comprises an earth working element which is mounted on a self-propelled vehicle forwardly of the rear of said vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
294, for a plurality of like elements sequentially operated by servomotors.

296 Shaft with spirally arranged projections:
This subclass is indented under subclass 293. Apparatus in which the power-driven actuating means comprises a rotatable shaft having radially projecting portions arranged at longitudinally and circumferentially spaced points on said shaft, and means operatively connected to the like elements of the apparatus for sequentially moving them, said means being located in the paths of said radially projecting portions so that the lost motion due to the circumferential spacing of the portions causes sequential motion of said parts.

SEE OR SEARCH THIS CLASS, SUBCLASS:
407, for a ground support which is vertically adjustable relative to a frame by power-operated means.

297 TOOL FORWARD OF REAR OF MOTOR VEHICLE:

This subclass is indented under the class definition. Apparatus comprising an earth working element which is entirely located in front of the rearmost point of the frame or wheels of a self-propelled vehicle.

(1) Note. Patents having a sole specific disclosure of an earth working element forward of the rear of a self-propelled vehicle are classified under this definition even if the location is not claimed, provided that some reference to the vehicle is made in the claims. The reference to the vehicle may be no more than a reference to a frame disclosed as rigidly attached to the vehicle.

(2) Note. The rearmost point is determined by the direction of movement of the vehicle when in use, the earth working element being ahead of the rear in the direction of movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

273, for an earth working element located forward of the rear of a self-propelled vehicle and having means to facilitate mounting of the element thereon.

295, for a plurality of tools, which are sequentially operated by a power cycle, at least one of which is located forward of the rear of a motor vehicle.

780, and 781+, for a scraper between front and rear ground supports of a vehicle.

810+, for an earth working element in front of a self-propelled vehicle.

SEE OR SEARCH CLASS:

172, Earth Working, subclasses 780+ for four-wheeled scrapers in which the scraper is mounted ahead of the rear wheels.

280, Land Vehicles, subclass 496 for articulated vehicles having the point of connection of the draft means for a trailing vehicle located forward of the axis of the rear axle of the leading vehicle.

293, Vehicle Fenders, subclass 58 for individual wheel guards attached to vehicles and extending downwardly in front of each front wheel to clear objects from the path of the wheel.

298 With ground support:

This subclass is indented under subclass 297. Apparatus in which the earth working element ahead of the rear of the motor vehicle is part of an implement which has a wheel or wheel substitute which is separate and distinct from the motor vehicle ground support means.

(1) Note. If the ground support under this definition comprises a wheel substitute, it must be a wheel substitute as defined in subclass 387 of this class. This definition does not include a runner or landside forming a part of or closely associated with an earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

832, and 834, for an implement mounted ahead of a motor vehicle and having a ground support.

299 Power actuator with cut-out or lock-out means:

This subclass is indented under subclass 297. Apparatus provided with an actuator for lifting the earth working element out of ground contact to transport position, said actuator including a power means comprising a servomotor or a power take-off and (1) having means operative to permit movement of the power means output member without moving the earth working element, the range of movement being such that the earth working element may remain in working position or transport position while the power means output member traverses its full range of movement between transport and working position or (2) having means for preventing operation of the power means in addition to the normal controls for the power means.

(1) Note. For the meaning of “actuator” see the class definition.

(2) Note. Various commonly used means, such as chain connection between a rock arm and a drag bar, are inherently capable of being used to allow full movement

of the power means without moving the earth working element, but such devices are not classified under this definition unless this function is specifically described.

300 With rearwardly mounted tool:
This subclass is indented under subclass 297. Apparatus including also an earth working element positioned to the rear of the self-propelled vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
295, for a plurality of tools which are sequentially operated by a power cycle, at least one of the tools being located forward of the rear of a motor vehicle.

301 Tools actuated by independent power units:
This subclass is indented under subclass 300. Apparatus provided with actuators for independently lifting different earth working elements out of ground contact to transport position said actuators including a plurality of power units comprising independently operated servomotors or power take-offs.

(1) Note. For the meaning of "actuators" see the class definition of "actuator".

302 Front and rear independent:
This subclass is indented under subclass 301. Apparatus in which there is a power unit for at least one rearwardly mounted unit and a power unit for at least one forwardly mounted unit, the power unit for the rearwardly mounted unit being operable independently of the power unit for any forwardly mounted unit.

303 Power actuator with manual adjusting or supplemental manual actuating means:
This subclass is indented under subclass 297. Apparatus provided with an actuator for lifting the earth working element out of ground contact to transport position said actuator including a power means comprising a servomotor or a power take-off and in addition a lever means manipulable by an attendant for moving the earth working element or the power means or a part thereof to effect an adjustment of the earth working element by human power or for acting as an adjustable stop to alter the range of movement imparted to the earth working element by the power means.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
485, for a power means for lifting a tool for transport on a wheeled frame and having a manual adjusting or actuating means.

304 Tools independently actuatable:
This subclass is indented under subclass 297. Apparatus comprising a plurality of earth working elements and a plurality of actuators which are independently operable to independently move different earth working elements out of ground contact to transport position.

(1) Note. For the meaning of "actuators" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
230+, for parallel separate tools alternating for right and left hand operation having independently operable means for alternating the operating position of the tools, as by raising and lowering the latter.
301+, for tools mounted ahead of the rear and to the rear of a motor vehicle and having independent power units for raising the tools.
468, for a plurality of tools with separate actuators to independently lift the tools for transport on a wheeled frame.
784+, for a scraper mounted between front and rear ground supports of a vehicle and a diverse tool with independently operable actuators for the scraper and tool.
786+, for a scraper mounted between front and rear ground supports of a vehicle and another scraper with independently operable actuators for the scrapers.

305 With means for moving tool laterally:
This subclass is indented under subclass 297. Apparatus comprising a power device or attendant-operated lever such as a handle for moving an earth working element to different positions laterally of the line of draft so as to work the earth in such different positions.

(1) Note. Apparatus comprising an actuating means for moving an earth working element in a vertical plane positioned diagonally of the line of draft is not included under this definition. See subclass 309.

(2) Note. The tool moving means may be an actuator to set and hold the tool in any of a number of adjusted positions or may be a handle requiring the continued application of force by an attendant to hold the tool in the desired lateral position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
281, for a tool located forward of the rear of a motor vehicle and which is laterally shiftable through interconnection with the vehicle steering means.
781+, for a scraper mounted between front and rear supports of a vehicle with an actuator for moving the scraper laterally.

306 Connected to front axle:
This subclass is indented under subclass 297. Apparatus in which the wheel frame has a front and a rear axle and there are means (other than the wheel frame) connecting the earth working element to the front axle.

307 Parallelogram type lift:
This subclass is indented under subclass 297. Apparatus provided with an actuator for lifting the earth working element out of ground contact to transport position including a pair of approximately parallel struts pivoted to the earth working element and the wheeled frame so as to give the earth working element an approximately translatory motion as it is moved between transport and working positions.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
484, for an actuating means having parallel links for lifting a tool for transport on a wheeled frame.

308 With push bar:
This subclass is indented under subclass 297. Apparatus comprising a generally longitudinally extending bar supporting an earth working element, means at the rearward portion of said bar connecting it to the self-propelled vehicle, an actuator for lifting the earth working element out of ground contact to transport position and means at the forward portion of said bar connecting it to the actuator.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
479, for tools lifted for transport on a wheeled frame by an actuator, the tool being pivoted to the frame on a transverse pivot axis and the actuating means being connected to the tool forward of the pivot axis.
788, for a scraper mounted between front and rear ground supports of a vehicle and connected to the vehicle by a push bar which is liftable by an actuator.
810+, particularly 828+, for a motor vehicle having a tool mounted ahead of it connected to the vehicle by a push bar which is liftable by an actuator.

309 Pivoted on horizontal diagonal axis:
This subclass is indented under subclass 297. Apparatus in which the earth working element is movable from earth engaging to transport position and is pivoted on a horizontal axis extending diagonally of the line of draft in moving between said positions.

310 PLURAL WHEELED IMPLEMENTS:
This subclass is indented under the class definition. Apparatus in which there are plural earth working devices and plural ground wheels, the different ground wheels or groups of ground wheels being intimately associated with different earth working devices or groups of earth working devices.

(1) Note. Plural earth working devices and plural wheels are not classified under this definition if the wheels are equally associated with each ground working device, e.g., a single transverse tool bar supported on wheels at each end with trailing drag bars supporting earth working elements is not classified under this definition, but a plurality of drag bars supporting earth working elements, each drag bar having its own gauge wheel is classified under this definition.

(2) Note. The definition includes devices comprising a tractor having earth working elements mounted thereon and also propelling an implement comprising an earth working element and wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

269, for wheeled vehicle attachments to receive and hold a rope and that are adapted to be released upon appreciable pull on the rope.

298, for plural wheeled implements connected to a motor vehicle, at least one of the implements being forward of the rear of the motor vehicle.

392, for plural runner supported implements which are relatively movable during operation.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 411.1+ for articulated vehicles wherein a plurality of trailing vehicles are drawn by a propelling vehicle.

311 Outrigged implement adjustable inwardly:
This subclass is indented under subclass 310. Apparatus comprising a vehicle having associated therewith an earth working implement having a wheel, the earth working implement being extended laterally from the vehicle and the implement being adjustable to a position closer to the longitudinal axis of the vehicle.

(1) Note. For the meaning of "adjustable" see the class definition.

312 Implement draft connection forwardly of rear of self-propelled vehicle:
This subclass is indented under subclass 310. Apparatus comprising a self-propelled vehicle and a trailing implement, a draft connection of the implement to the vehicle being forward of the rear axle of the vehicle.

(1) Note. The implement may be actually readily detachably coupled to the tractor behind the rear axle, but if the tractor carries additional structure forming a continuation of the implement beam or frame which structure extends to a point forward of the rear axle the device is included in this definition.

313 Laterally spaced with separate draft tongues:
This subclass is indented under subclass 310. Apparatus comprising a plurality of transversely spaced wheeled implements having separate draft tongues or members for attachment to different draft animals or vehicles.

314 Implements in echelon (e.g., gang plows, etc.):
This subclass is indented under subclass 310. Apparatus comprising at least three implements aligned in a direction at an angle other than 90° with respect to the line of travel, each implement having a wheel.

(1) Note. Each implement may consist of more than one earth working element.

315 ACTUATOR ON TRAILING IMPLEMENT, CONTROLLED FROM PROPELLING VEHICLE:
This subclass is indented under the class definition. Apparatus comprising an earth working device trailing behind a propelling vehicle and an actuator completely carried by the device, the actuator being under the control of an attendant stationed on the vehicle.

(1) Note. For the meaning of "actuator" see the class definition.

(2) Note. The broad combination defined above is basically very common in the art. For classification under this definition a claim should refer to the relation-

ship of the actuator to the vehicle in some significant detail to indicate that the actuator is controlled from the vehicle.

(3) Note. A trailing device under the definition must have at least a part thereof resting on the ground and after operation of the actuator a part of the device must still rest on the ground.

(4) Note. The trailing device comprehends the organization which is intended to be attached to the vehicle by the user of the device.

(5) Note. It is difficult at times to determine whether the actuator should be considered to be completely carried by the earth working device or partly carried by the vehicle. Generally both the part of the actuator for effecting movement and the part for holding something in position must be supported on the device but the actuator may react against the vehicle. In the case of an actuator of the power take-off type it is sufficient if the power take-off clutch is mounted on the device. In the case of an actuator of the hydraulic ram type both the cylinder and the piston of the ram must be supported on the device. In the case of an actuator of the lever and ratchet type both the lever and ratchet must be supported on the device. In the case of an actuator of the telescoping internally threaded cylinder and externally threaded rod type both the rod and the cylinder must be supported on the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

463, for an actuator carried on an implement adapted to lift the implement for transport on a wheeled frame.

591+, for horizontally adjustable disk gangs in which a manually operated lever is actuated by an attendant not described as being on the tractor and the draft force of the tractor then causes an angling movement of the gangs.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 407 for articulated vehicles wherein the load of a trailer on a leading vehicle is adjusted by adjusting the point of application of draft to the leading vehicle, and subclasses 420+ for articulated vehicles having service connections.

316 Servo-motor on implement:

This subclass is indented under subclass 315. Apparatus in which the actuator is a servomotor carried by the implement.

(1) Note. For the meaning of “actuator” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

491, for implements liftable for transport on a wheeled frame by means of a servo-motor.

317 ACTUATOR ON VEHICLE FOR RELATIVELY MOVING PARTS OF TRAILING IMPLEMENT:

This subclass is indented under the class definition. Apparatus comprising a vehicle, an earth working device trailing behind the vehicle, and an actuator on the vehicle for moving parts of the earth working device relative to each other while at least some part of the device remains on the ground.

(1) Note. For the meaning of “actuator” see the class definition.

(2) Note. A relative movement of parts incident to lifting the device off the ground for transport is not included. Also relative movement which results merely from gravity and a lost motion connection is not included, as where an implement frame is lifted and a gauge wheel thereupon drops.

(3) Note. Merely rocking an earth working element about a wheel axis is not included. See subclasses 321 and 322+ for such devices.

(4) Note. The parts which are usually relatively moved are an earth working ele-

ment with respect to the implement frame or a gauge wheel with respect to the implement frame.

318 Actuator on vehicle moves implement ground support vertically relative to implement frame:

This subclass is indented under subclass 317. Apparatus comprising an actuator carried on the vehicle and connected to an implement so that movement of the actuator causes some relatively vertical motion to occur between the implement wheel, or wheel substitute, and the frame of the implement which carries said wheel.

(1) Note. For the meaning of "actuator" see the class definition.

(2) Note. The actuator must apply some positive force to the wheel axle. Merely lifting the implement frame and thereby dropping the wheel due to a lost motion connection is not included. See subclass 321 for such apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

238, for apparatus in which a wheel is moved vertically with respect to its running gear in response to the draft load.

293+, for devices of this nature in which the wheels are sequentially operated by a power cycle.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 407 for articulated vehicles wherein the load of a trailer on a leading vehicle is adjusted by adjusting the point of application of draft to the leading vehicle, and subclass 414.5 for articulated vehicles having an actuator for vertically moving a wheel of a trailing vehicle.

319 Interconnected means for moving hitch:

This subclass is indented under subclass 318. Apparatus in which there is a means for moving the hitch connection of the implement with the vehicle, the hitch moving means being interconnected in operation with the wheel moving means.

(1) Note. The interconnecting means must be something additional in the structure such as a linkage. Apparatus in which the hitch moves merely because relative movement of the wheel moves the implement beam or frame is not included. Such apparatus is found in subclass 318.

320 Disk gang angling:

This subclass is indented under subclass 317. Apparatus in which the earth working device comprises a group of rolling- generally circular platelike elements, each having the same axis of rotation, the actuator on the vehicle being effective to adjust said axis in a horizontal plane.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

584+, and 599, for disk gangs in which the axis of rotation of the gang may be adjusted.

321 ACTUATOR ON VEHICLE FOR MOVING WHEELED IMPLEMENT:

This subclass is indented under the class definition. Apparatus comprising a vehicle having associated therewith an earth working device including a ground wheel, said vehicle carrying an actuator for moving the earth working device.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

298, for a wheeled implement mounted ahead of the rear of a motor vehicle and means on the vehicle for moving the implement.

832, and 834, for a wheeled implement mounted ahead of a motor vehicle and means on the vehicle for moving the implement.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 407 for articulated vehicles wherein the load of a

trailer on a leading vehicle is adjusted by adjusting the point of application of draft to the leading vehicle, and subclasses 490.1+ for articulated vehicles wherein the draft means may be vertically adjusted with respect to at least one of the vehicles or the ground.

322 WITH ACTUATOR FOR ROCKING TOOL ABOUT WHEEL AXIS:

This subclass is indented under the class definition. Apparatus comprising a ground wheel having an axis of rotation, a member extending radially from the axis of rotation and pivotally connected thereto, an earth working element connected to said member, and an actuator for pivotally moving said member and earth working element about the axis of rotation without changing the position of the earth working element with respect to the member.

(1) Note. See the class definition for the meaning of "actuator".

(2) Note. The movement of an earth working element about the axis of a ground wheel which may take place when a wheel of a stable wheeled frame is adjusted vertically with respect to the frame and another wheel is not included under this definition. See subclasses 395+ for such devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

329+, for apparatus comprising an earth working element rockable about a wheel axis by a handle held in position by an attendant.

323 Unstable wheeled frame moved by actuator:

This subclass is indented under subclass 322. Apparatus in which an unstable frame carrying the ground wheel is moved with respect to the ground by the actuator.

(1) Note. For the meaning of "actuator" see the class definition.

(2) Note. It is sometimes difficult to say whether or not a part should be considered a frame carrying the ground wheel or merely a frame carrying an earth working element. The frame carrying the ground wheel is the running gear of the apparatus. If it is shown as supporting a seat for the attendant or directly attached to a hitch means such as a tongue it is considered to be the running gear or "frame" of the definition.

(3) Note. The "unstable frame carrying the gound wheel" of the definition is a frame which relies on a draft connection to a propelling means such as a tractor or horse or on the contact of an earth working tool with the ground to keep it in a fixed position, e.g., a two wheeled frame is unstable while one with more than two wheels on different axes is stable. A frame is considered to be unstable if it is "unstable" in any position of adjustment, e.g., as when an actuator causes a wheel of a stable frame to leave the ground to thereby cause the frame to be of the "unstable" type. See subclasses 395+ for a stable wheeled frame carrying an earth working element, the stable frame being tilted about the axis of a wheel by a vertical adjustment of another wheel relative to the frame.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 109 for an apparatus comprising an unearthing unit on a vehicular break frame.

324 WITH ACTUATOR ON TRAILING GROUND SUPPORTED FRAME FOR MOVING DRAFT MEANS LATERALLY OR VERTICALLY:

This subclass is indented under the class definition. Apparatus comprising a framework having a ground support (e.g., wheels or wheel substitutes) a draft means for connecting it to a propulsion means and an actuator on the framework or draft means for moving the draft means vertically relative to the framework or laterally of the line of draft.

(1) Note. For the meaning of "actuator" see the class definition.

(2) Note. The draft means may be a tongue, and a movement of the tongue is considered a movement of the draft means.

(3) Note. Relative movement of the draft means and the frame caused merely by a relative movement of the ground support with respect to the frame (e.g., a tongue truck moved vertically with respect to the main frame) is not included under this definition. The actuator must include force-exerting means acting between the frame and draft means. See subclasses 395+ for a ground support relatively adjustable vertically with respect to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

315+, for apparatus in which a draft means is moved with respect to a wheeled frame by an actuator on the wheeled frame claimed in detail as controlled from a propelling vehicle.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 218 for harvesters with adjustable tongues.

280, Land Vehicles, subclass 83 for a vertically adjustable tongue truck, subclasses 456.1+ for a laterally adjustable hitch between a tractor and trailer, particularly, subclasses 467+ for a laterally adjustable trailer tongue, subclasses 463+ for articulated vehicles having actuator means provided for selective adjustment of the draft means on the trailing vehicle, and subclass 490.1 for a vertically adjustable hitch between a tractor and trailer.

325 Tool rigidly connected to tongue:

This subclass is indented under subclass 324. Apparatus in which the draft means comprises a tongue on the framework, and an earth working element is connected to the tongue so as to be rigidly related to it and to move with it when it is moved by the actuator.

(1) Note. For the meaning of “actuator” see the class definition.

(2) Note. The earth working element may be adjustable with respect to the tongue but must be rigidly related to it in any position of adjustment.

SEE OR SEARCH CLASS:

111, Planting, subclass 56 for forward and rearward sections connected by a transverse pivot and capable of a buckling action to lift certain parts of the planter.

326 Vertically:

This subclass is indented under subclass 324. Apparatus in which the draft means is moved vertically with respect to the framework.

(1) Note. In those devices in which the hitch means has a very minor vertical movement due to its manner of support on the frame but accomplishes its function due to a horizontal component of motion, classification is not under this definition. Such devices may be found in subclasses 588 and 605.

SEE OR SEARCH THIS CLASS, SUBCLASS:

323, for apparatus comprising unstable wheeled frames on earth working element and an actuator for rocking the earth working element about the wheel axis and moving the frame with respect to the ground whereby the hitch means move vertically with respect to the frame.

395+, for apparatus in which a wheel is adjusted vertically with respect to the frame, whereby the draft means is moved vertically with respect to the frame, there being no means acting between the frame and draft means.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 109 for an unearthing unit mounted on a vehicular break frame.

280, Land Vehicles, subclass 407 for articulated vehicles wherein the load of a trailer on a leading vehicle is adjusted by adjusting the point of application of draft to the leading vehicle, and subclass 414.5 for articulated vehicles having an actuator for vertically moving a wheel of a trailing vehicle.

327 With vertically adjustable ground support
This subclass is indented under subclass 326. Apparatus in which a ground support is vertically adjustable with respect to the framework.

(1) Note. For the meaning of "adjustable" see the class definition.

(2) Note. Devices in which the framework tilts about the wheel axis are not included in this definition. See subclasses 323 or 326 for such devices.

328 Interconnected means for adjusting draft means and ground support:
This subclass is indented under subclass 327. Apparatus in which the adjustable ground support and the adjustable hitch are interconnected so that movement of one influences movement of the other.

(1) Note. Devices in which the ground support and hitch means are rigidly mounted on the same support to move together are not included. The interconnection must be by a linkage or the like.

329 GUIDED BY WALKING ATTENDANT; SUPPORTED, PROPELLED, OR HELD IN POSITION BY ATTENDANT:
This subclass is indented under the class definition. Apparatus comprising (1) an earth working element having a handle for manipulating and supporting it (e.g., a hand hoe) or (2) an implement having a handle whereby the device is guided or propelled by a walking attendant (e.g., a walking plow) or (3) an earth working element supported on a frame and having means such as handles or foot pedals contacted by the attendant to manipulate the earth working element, the said element being held in the position to which it is moved by continued application of force on the manipulating means by the attendant (e.g., a straddle row cultivator) or (4) earth working means harnessed to the attendant or worn by him (e.g., a glove with earth scratching prongs) or (5) manipulating means such as a handle or foot pedal for moving any part (e.g., a draft tongue) and holding it in the position to which moved by continued application of force by the attendant.

(1) Note. An earth working element which may be raised by an attendant so as to be scraped by a stationary or relatively movable cleaner is not included under this definition. See subclass 461 and subclasses 606+ for such devices.

(2) Note. A seat or attendant's station is not considered a handle or manipulating device under this definition. See subclasses 431+ for apparatus with means manipulated by moving a seat or shifting weight on a seat or other attendant's station.

(3) Note. For part (3) of this definition a broadly claimed implement about which an earth working element is manipulated is considered a mounting frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

37, for hand driven implements adapted to be rotated through at least one complete revolution.
41, for a driven tool supported by an attendant.
42+, for an implement comprising a driven tool guided by a walking attendant.
256+, for a motor propelled implement guided by a walking attendant.

SEE OR SEARCH CLASS:

16, Miscellaneous Hardware (e.g., Bushing, Carpet Fastener, Caster, Door Closer, Panel Hanger, Attachable or Adjunct Handle, Hinge, Window Sash Balance, etc.), subclasses 110.1+ for handles and handle attaching devices for miscellaneous articles of hardware not otherwise classified.
30, Cutlery, subclasses 340+ for knives and cutter comprising blades provided with manipulating handles and including the means for attaching said handles to said blades.
56, Harvesters, subclasses 16.7+, for a motor-driven lawn mower steered by a walking attendant, and subclass 400.01, for a hand rake.
125, Stone Working, subclass 43 for miner's picks.

180, Motor Vehicles, subclass 19.1 for a motor vehicle steered by a walking attendant.

280, Land Vehicles, subclasses 47.17+ for a wheeled vehicle which the attendant may apply a propelling force thereto, and subclasses 47.34+ for stable wheeled vehicles which are handle propelled by an attendant.

294, Handling: Hand and Hoist-Line Implements, subclasses 49+ for hand forks and shovels.

330 With seat for moving hitch:

This subclass is indented under subclass 329. Apparatus having combined therewith a seat or attendant's station which is movable with respect to the apparatus and held in position by the attendant and a draft member or tongue for connecting the apparatus to a propelling means, the seat and draft member or tongue being connected so that movement of the seat changes the position of the draft member or tongue with respect to the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

435, for attendant manipulated seats which may move an implement or draft member.

331 Hitch guided relative to supporting frame:

This subclass is indented under subclass 329. Apparatus including a draft member or tongue for connecting the apparatus to a propelling means and attendant manipulated means for moving the draft member or tongue with respect to the implement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

330, for a movable attendant seat for manipulating a draft member combined with attendant-operated means for holding the implement in position.

435, for a movable attendant seat for manipulating a draft member.

332 Tool manipulated with respect to mounting frame:

This subclass is indented under subclass 329. Apparatus comprising a ground supported (e.g., wheeled) frame, an earth working element movably mounted on the frame and being manipulable and held in the position to which moved by the continued application of force by the attendant to vary its position with respect to the frame.

(1) Note. A mere wheeled axle is not considered a frame under this definition even though the earth working element may be rocked on the axle. However, a wheeled axle having a draft tongue rigid therewith is considered to be a frame under this definition. Some patents which disclose only a wheeled axle have been classified under this definition where they are obviously fragmentary disclosures of that type implement which comprises a wheeled frame of greater extent (e.g., with tongue).

(2) Note. An earth working element about or upon which another earth working element is manipulated is considered a mounting frame.

333 Arched wheel frame (i.e., straddle row, etc.):

This subclass is indented under subclass 332. Apparatus comprising a wheeled frame having the central portion thereof elevated above the axis of rotation of the wheels to clear a crop row and having a pair of attendant manipulated earth working elements adapted to operate on opposite sides of a crop row.

(1) Note. For classification under the definition the means by which the earth working elements are manipulated (e.g., handles) need not be claimed.

334 Seat counterbalanced beam:

This subclass is indented under subclass 333. Apparatus including an operator's seat pivoted to the frame and also connected to the earth working elements so that the operator's weight provides an upward force on the earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

431+, for other earth working apparatus having a seat or attendant's station including that in which the seat is movable by the attendant to manipulate the implement.

335 With spring biasing means:
This subclass is indented under subclass 333. Apparatus including resilient means to bias the earth working elements with respect to the wheeled frame or with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
705+, spring-biased earth working elements.

336 Spring biased upwardly during operation:
This subclass is indented under subclass 335. Apparatus in which the resilient means tends to bias the earth working elements out of ground engagement during operation.

337 Combined implement lift and wheel adjustment:
This subclass is indented under subclass 333. Apparatus having means to raise the earth working elements with respect to the wheeled frame and connected means to concurrently change the position of the wheels with respect to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:
398, for other earth working elements mounted on a wheeled frame and actuating means for lifting the element and also vertically moving a wheel with respect to the frame.

338 Tongueless, animal draft:
This subclass is indented under subclass 333. Apparatus adapted to be propelled by animals and characterized by the absence of a draft tongue.

339 With balancing means:
This subclass is indented under subclass 338. Apparatus provided with a member to contact the ground and stabilize the apparatus when the earth working elements are placed in an inoperative position.

340 Multiple plant row type:
This subclass is indented under subclass 333. Apparatus provided with a plurality of pairs of earth working elements adapted to operate on opposite sides of a plurality of crop rows.

341 With added intermediate tool:
This subclass is indented under subclass 333. Apparatus having an additional earth working element disposed to operate between the pair of earth working elements.

342 Cross connected drag bars:
This subclass is indented under subclass 333. Apparatus in which the earth working elements of the pair or the bars mounting said elements have a laterally extending member connecting same in addition to the frame member on which they are mounted.

343 Foot operated:
This subclass is indented under subclass 333. Apparatus in which the earth working elements are adapted to be operated by the feet of an attendant seated thereon.

344 With support bracket for transport:
This subclass is indented under subclass 333. Apparatus in which the frame is provided with means to support the earth working elements in an elevated nonuse position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
662, for plural relatively movable tools movable to nonuse position.
674, for support brackets on wheeled frames for holding an implement in nonearth working position.

345 Manipulated about longitudinal axis:
This subclass is indented under subclass 332. Apparatus in which an earth working element is movable by an attendant about an axis which extends in the direction of travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
459, for actuating means for lifting an earth working element for transport on a wheeled frame, the earth working element being pivotable about a longitudinal axis.
666, for an actuator for pivoting an earth working element about a longitudinal axis.

346 Plural tools independently or oppositely manipulable:
This subclass is indented under subclass 332. Apparatus including a plurality of earth working elements which may be manipulated individually or are so connected as to move in opposite directions when manipulated.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333+, for arch wheel frame implements provided with a plurality of earth working elements which are independently or oppositely manipulated.
345, for plural earth working elements which are manipulated about a longitudinal axis.

347 Spring biased:
This subclass is indented under subclass 332. Apparatus in which there is provided a resilient means which biases the earth working element during operation.

348 Vertically manipulated:
This subclass is indented under subclass 332. Apparatus in which the earth working element may be manipulated in a vertical direction by the attendant.

SEE OR SEARCH THIS CLASS, SUBCLASS:
345, for earth working elements which are manipulated about a longitudinal axis.

349 Rolling tool:
This subclass is indented under subclass 329. Apparatus in which the earth working element is of the rolling or rotating type.

SEE OR SEARCH THIS CLASS, SUBCLASS:
15+, for handle-propelled rolling lawn edgers.
518+, for rolling, rotating, or orbitally moving earth working elements.

SEE OR SEARCH CLASS:
452, Butchering, subclass 145 for hand-operated meat tenderizing rolls.

350 Handle swingably mounted on axis of tool:
This subclass is indented under subclass 349. Apparatus having a handle which is mounted to be freely pivotable about the axis of rotation of the rolling or rotating earth working element.

351 Guided or propelled by walking attendant and with ground support or draft means:
This subclass is indented under subclass 329. Apparatus comprising (1) an implement having ground support means (e.g., wheel) separate from the earth working means and a separate handle for propelling or guiding the implement, or (2) draft means for propelling the implement and a separate handle for guiding same.

(1) Note. The ground support must act as a depth gauge or support a portion of the weight of the implement.

(2) Note. The draft means under part (2) of this definition may comprise a member for the application of human power such as a body harness. Note subclass 353 indented hereunder for an implement having a harness and separate handle to be propelled and guided by a single attendant.

SEE OR SEARCH THIS CLASS, SUBCLASS:
256+, for a hand guided self-propelled implement.
322, for earth working elements which are attendant manipulated with respect to a ground-supported frame.
371, for tools with handles for manipulating and supporting same (i.e., hand tools).

SEE OR SEARCH CLASS:
111, Planting, subclass 82 for implements propelled by a walking attendant.

352 With stepper propulsion means:
This subclass is indented under subclass 351. Apparatus in which the apparatus is propelled by means of a member operated by the attendant which reacts with the ground to move the apparatus a given distance and the member is then reset to repeat the operation.

(1) Note. Search Class 180, Motor Vehicles, subclasses 4 and 8 for stepper propulsion means for vehicles.

SEE OR SEARCH CLASS:
305, Wheel Substitutes for Land Vehicles, subclasses 1+ for devices comprising ground-engaging feet operating by a step-by-step movement in the travel of the vehicle.

353 With body harness or engaging means:
This subclass is indented under subclass 351. Apparatus in which the draft means comprises a means adapted to engage or be attached to some part of the body other then the hands.

SEE OR SEARCH THIS CLASS, SUBCLASS:
370, for an operator-supported earth working element having means to attach the earth working element to the operator.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclass 1.5 for a vehicle with means for engaging the body (other than the hands) of a walking attendant.

354 With wheel:
This subclass is indented under subclass 351. Apparatus in which the ground support means comprises a wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for lawn edgers provided with a wheel or roller.
353, for a tool provided with a handle and a wheel, and having means adapted to engage or be attached to some part of the body other than the hands for propelling the implement.
669+, for a tool supported on a wheeled frame.

355 Alternately usable tools rocked about wheel axis:
This subclass is indented under subclass 354. Apparatus comprising a plurality of interconnected earth working elements which may only be in ground contact at different times and being connected to pivot on the axis of rotation of the wheel to engage the desired earth working element with the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:
136, for diverse tools useable alternately only.

356 Plural longitudinally spaced wheels:
This subclass is indented under subclass 354. Apparatus in which the implement is provided with two wheels spaced in the direction of travel.

357 Handle forward of tool:
This subclass is indented under subclass 354. Apparatus in which the handle is located forward of the earth working element, so as to adapt the apparatus to be pulled by the attendant.

(1) Note. The handle may be adjustable so as to adapt the apparatus to be pushed or pulled.

358 Tool forward of wheel:
This subclass is indented under subclass 354. Apparatus in which the earth working element is located forwardly of the wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
671+, for an earth working element mounted on a single longitudinal wheeled frame in which the wheel is located rearwardly of the forward end of the earth working element.

359 Tool and handle relatively vertically adjustable:
This subclass is indented under subclass 354. Apparatus in which the earth working element and the handle are selectively vertically adjustable relative to one another.

(1) Note. For the meaning of “adjustable” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
366, for an earth working element having a handle in which the handle and earth working element are selectively rela-

tively adjustable in relation to one another.

360 With wheel substitute (e.g., runner, etc.):
This subclass is indented under subclass 351. Apparatus in which the ground support means comprises an element other than a wheel such as, for example, a runner.

SEE OR SEARCH THIS CLASS, SUBCLASS:
387, for other earth working apparatus having a wheel substitute spaced from the earth working elements.
764, for earth working elements having closely associated runners and see the Search Notes thereto for related art.

361 Handle connected to tool or runner:
This subclass is indented under subclass 351. Apparatus in which the handle is directly attached to that portion of the earth working element which operates in the soil or to a runner or landside connected thereto.

(1) Note. This subclass does not include those devices where a brace extends from the handle to the earth working blade.

362 Tool standard connected to handle:
This subclass is indented under subclass 351. Apparatus in which the earth working element is secured to a generally upright member or standard and the standard is secured directly to a portion of the handle.

363 Plural handles associated with relatively adjustable tools:
This subclass is indented under subclass 351. Apparatus having a plurality of relatively adjustable earth working elements, handles associated therewith, an individual handle and associated earth working element being concurrently adjustable relative to another handle and associated earth working element.

(1) Note. For the meaning of "adjustable" see the class definition.

364 Handle mounted tool adjusting, latching or locking mechanism:
This subclass is indented under subclass 351. Apparatus in which there is attached to the handle, means whereby some portion of the earth working element is adjustable relative to some other portion of the earth working element or to the apparatus.

(1) Note. For the meaning of "adjustable" see the class definition.

365 Tool and handle relatively adjustable:
This subclass is indented under subclass 351. Apparatus in which the handle is adjustable with respect to the earth working element.

(1) Note. For the meaning of "adjustable" see the class definition.

366 Vertically:
This subclass is indented under subclass 365. Apparatus in which the elevation of the handle with respect to the earth working element is adjustable.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
359, for an earth working element having a handle and wheel in which the handle and earth working element are selectively vertically adjustable relative to one another.

367 Multiple handles connected to multiple longitudinal tool carrying beams:
This subclass is indented under subclass 351. Apparatus having a plurality of beams extending substantially in the direction of travel and having an earth working element or elements connected thereto and a plurality of handles, one connected to each of said beams.

368 Plural handles connected to opposite sides of longitudinal beam:
This subclass is indented under subclass 351. Apparatus having a beam extending in the direction of travel and a pair of handles connected at their ends to opposite sides of the beam at the same longtitudinal location.

369 With brace member:
This subclass is indented under subclass 368. Apparatus in which there is provided at least one member connected to the handles and another portion of the implement to brace the handles.

370 With attendant attaching means:
This subclass is indented under subclass 329. Apparatus of the type wherein the earth working element is harnessed to or worn by the attendant.

371 Hand tool:
This subclass is indented under subclass 329. Apparatus comprising an earth working means having a handle for manipulating and supporting it (e.g., hand hoe).

(1) Note. Mortar mixing hoes are also included on account of their similarity of structure.

(2) Note. Patents are classified under this definition even if only the earth working portion is claimed and not the handle if the sole disclosure relates to hand tools or the claim preamble relates to a hand tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13+, for hand tools of the lawn-edger type.
349+, for handle propelled rolling implements.

SEE OR SEARCH CLASS:
7, Compound Tools, appropriate subclasses for miscellaneous compound tools.
16, Miscellaneous Hardware (e.g., Bushing, Carpet Fastener, Caster, Door Closer, Panel Hanger, Attachable or Adjunct Handle, Hinge, Window Sash Balance, etc.), subclasses 110.1+ for handles for closures, receptacles, and the like, and see the Search Notes thereunder for the field of search for handles adapted for use with other devices.
30, Cutlery, appropriate subclasses for knives and cutting implements of general utility. This class (172) takes patents in which the claims are restricted to or the sole disclosed use is an implement for working the soil except those devices in which the cutting edge extends generally in the direction of the handle. In the latter case classification in Class 30 results.
56, Harvesters, subclasses 400.01+ for hand rakes.
125, Stone Working, subclass 43 for miner's picks.
294, Handling: Hand and Hoist-Line Implements, subclasses 49+ for hand forks and shovels.
366, Agitating, subclasses 1+ for tools especially adapted for mixing mortar, asphaltic and hydraulic cement, concretes, and the like.

372 Adjustable:
This subclass is indented under subclass 371. Apparatus wherein the relative positions of the handle and earth working means is selectively adjustable.

(1) Note. For the meaning of “adjustable” see the class definition.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclass 53.5 for hand implements wherein the fork or shovel head is pivotally and adjustably attached to the handle.
403, Joints and Connections, subclasses 52+ for articulated connections in general.

373 Plural tools relatively adjustable:
This subclass is indented under subclass 372. Apparatus wherein the earth working means comprises plural earth working elements which are adjustable with relation to one another.

(1) Note. For the meaning of “adjustable” see the class definition.

374 At least one tool immovably secured to handle:
This subclass is indented under subclass 373. Apparatus in which at least one of the earth working elements is nonadjustably secured to the handle.

375 Alternately usable diverse tools or parts:
This subclass is indented under subclass 371. Apparatus wherein the earth working means comprises plural earth working portions of different types or shapes, the portions being so arranged in the apparatus that when one works the earth another does not work the earth.

(1) Note. The earth working portions may be different parts of a unitary earth working element or may be separate earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
136, for implements other than hand held with earth working elements usable alternately only.

SEE OR SEARCH CLASS:
7, Compound Tools, appropriate subclasses for compound tools, especially subclasses 158+ for cutters combined with other tools.
56, Harvesters, subclasses 400.04+ for hand rakes combined with hoe blades or other earth working elements.

376 Loop type:
This subclass is indented under subclass 371. Apparatus wherein the earth working means is made from an elongated thin bandlike or wire material which is secured to the handle through means extending between the handle and the opposite ends of the earth working means.

377 Channel type:
This subclass is indented under subclass 371. Apparatus wherein the earth working means is in the form of a U-shaped scoop or channel open at both ends and adapted to be operated in the direction of the longitudinal axis of the channel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13+, for channel-type hand tools for edging along lawns or sidewalks.

378 Plural prongs, teeth or serrations:
This subclass is indented under subclass 371. Apparatus wherein the earth working means comprises a plurality of prongs, teeth, or serratins arranged to simultaneously contact the earth.

SEE OR SEARCH CLASS:
56, Harvesters, subclasses 400.01+ for hand rakes, particularly subclasses 400.04+ for rakes combined with earth working elements. A hand rake as distinguished from an earth working tool, is usually an implement having flexible teeth or rigid teeth with the width of the rigid tooth carrying portion width or diameter of the handle; i.e., at least ten times as large.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 131+ and for forks and shovels with fulcrum means to aid in the pulling of weeds from the ground.
294, Handling: Hand and Hoist-Line Implements, subclasses 50.5 and 50.6+ for hand implements having a handle and a blade or tines extending the general direction of the handle with grappling means.

379 Plural rows:
This subclass is indented under subclass 378. Apparatus wherein the earth working means comprises a plurality of earth working members arranged in a plurality of rows to simultaneously engage and work an area of the surface of the earth.

380 Made from sheet material:
This subclass is indented under subclass 378. Apparatus wherein a plurality of prongs, teeth, or serrations are formed from a single sheet of material.

381 Non-planar earth working portion:
This subclass is indented under subclass 371. Apparatus wherein the earth working means has portions lying in more than one plane.

382 MULTIPLE LEVEL TOOLS:
This subclass is indented under the class definition. Apparatus including a plurality of earth working elements so mounted as to operate at different depths in the ground at the same time.

(1) Note. This subclass does not include apparatus having a plurality of laterally spaced tools set at different elevations

for the purpose of operating at the same depth in the soil on a slope, furrow, ridge, etc. See subclasses 694+ for such tools.

SEE OR SEARCH THIS CLASS, SUBCLASS:

133+, for separate tools of unlike types which may operate at different depths and see particularly subclasses 144 and 163+ for the combination of a plow and jointer.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 10 for unearthing devices with preliminary removal of earth.

383 AXIS OF ROTATION OF WHEEL LOCKABLE OR ANGULARLY ADJUSTABLE:

This subclass is indented under the class definition. Apparatus comprising a frame, a ground wheel connected to the frame and (1) means for adjusting (at least in one direction) the axis of rotation of said ground wheel angularly with respect to said frame or (2) means for selectively locking said axis of rotation in one position or allowing it to move freely into different angular positions with respect to said frame.

(1) Note. For the meaning of "adjusting" see "adjustable" in the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

278+, for implements comprising a wheel with an angularly adjustable axis of rotation and actuating means for angularly adjusting the axis.

395+, for implements comprising ground wheels which are vertically adjustable, with the axis of rotation maintaining the same angular position.

507, for implements comprising ground wheels which are horizontally adjustable, with the axis of rotation maintaining the same angular position.

600, for a disk gang supported for tilting and horizontal angling adjustment.

603, for a horizontally angularly adjustable disk.

SEE OR SEARCH CLASS:

16, Miscellaneous Hardware (e.g., Bushing, Carpet Fastener, Caster, Door Closer, Panel Hanger, Attachable or Adjunct Handle, Hinge, Window Sash Balance, etc.), subclasses 18+ for caster wheels.

104, Railways, subclass 244.1 for furrow followers for guiding a vehicle along the furrow.

280, Land Vehicles, appropriate subclasses for vehicles with wheels.

384 With actuator for tilting in a vertical plane:

This subclass is indented under subclass 383. Apparatus in which there is an actuator for angling the axis of rotation of the wheel by moving it in a single transverse, vertical plane.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

798, for a scraper mounted between the front and rear ground supports of a vehicle and an actuator for tilting the axis of rotation of a wheel in a vertical plane.

385 Adjustable stop:

This subclass is indented under subclass 383. Apparatus in which the axis of rotation of the wheel may freely change its angular position and the amount of such free movement is adjustable.

(1) Note. For the meaning of "adjustable" see the class definition.

386 Lockable against free swinging:

This subclass is indented under subclass 383. Apparatus in which the axis of rotation of the wheel may freely change its angular position and there are means operable to hold the axis against movement to prevent free change of the angular position of the wheel.

(1) Note. Apparatus in which there is a latch designed to hold the axis of rotation in different positions and which would permit free angular movement if manually held out of operation are classified in

subclass 383 rather than under this definition.

387 WITH WHEEL SUBSTITUTE (E.G., RUNNER, ETC.):

This subclass is indented under the class definition. Apparatus comprising a means such as a runner or track member which is adapted to support the apparatus for movement over the ground and which has the same general relation to the apparatus as a supporting ground wheel would have.

(1) Note. Earth working elements mounted on a frame which frame may incidentally be in ground contact to act as a runner or depth gauge and is not specifically modified to act as a runner are not classified under this definition, but are classified below according to the earth working element or arrangement being claimed. See subclasses 634+, for example. A mere curving of the foward portion of the frame is not considered to be a modification under this definition.

(2) Note. Runners which have earth working elements attached to the runners by means of a nonearth working or contacting support or bracket so that the tool is spaced laterally or rearwardly of the runners are included under this definition. This definition does not include, however, runners which are so closely associated with an earth working element as to, in effect, form a unitary portion of the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

80, for an implement comprising a driven tool and a wheel substitute.

188, for diverse tools attached to a runner rearward of the forward end thereof.

360, for hand guided or propelled implements provided with runners.

665, for apparatus comprising an actuator for relatively movable earth-engaging parts of an earth working element, one of said parts being a runner.

738, for an earth working element having relatively adjustable earth-engaging parts, one being a runner.

764, for an earth working element and a separate runner.

783, for a scraper mounted between front and rear ground supports of a vehicle, the scraper having a runner attached thereto.

SEE OR SEARCH CLASS:

104, Railways, subclass 244.1 for furrow followers for guiding a vehicle along the furrow.

171, Unearthing Plants or Buried Objects, subclass 140 for an unearthing unit provided with a gage runner or wheel.

280, Land Vehicles, subclasses 8+, 841+, and 845+ for runners for vehicles, including a runner which may have an earth-penetrating part to prevent lateral sway.

305, Wheel Substitutes for Land Vehicles, appropriate subclasses for wheel substitutes other than runners.

388 With wheel:

This subclass is indented under subclass 387. Apparatus which includes a wheel which is adapted to support at least a portion of the weight of the device in at least one position of the wheel or implement.

389 Spring tooth implement:

This subclass is indented under subclass 387. Apparatus in which the wheel substitute is associated with an earth working element which is of spring form or is carried by a resilient standard.

SEE OR SEARCH THIS CLASS, SUBCLASS:

643, for an implement having a plurality of spring teeth.

707+, for an earth working tool comprising a spring in itself or a spring standard.

390 Parallel pivoted tooth bars:

This subclass is indented under subclass 389. Apparatus in which a plurality of the earth working elements are carried by a plurality of parallel transverse bars which are pivotally mounted and selectively rotatable from one angular position of adjustment to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

634+, for implements with parallel pivotally adjusted tool bars which may have spring-tooth tools mounted thereon.

391 Spike tooth implement:

This subclass is indented under subclass 387. Apparatus in which the wheel substitute is associated with an earth working element in which the earth working portion is no longer in lateral or longitudinal extent than the standard which supports it in earth working position.

392 Plural runner supported implements relatively movable during operation:

This subclass is indented under subclass 387. Apparatus in which the device comprises a plurality of implements which are relatively movable during operation of the device and each of the implements have a runner associated therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

310+, for plural wheeled implements.

393 Spaced parallel runners with tool mounted therebetween:

This subclass is indented under subclass 387. Apparatus in which the wheel substitute comprises a pair of spaced parallel runners, said runners having an earth working element associated therewith so that said element is positioned between and supported by both runners.

SEE OR SEARCH CLASS:

111, Planting, subclass 138 for sled frames claimed in combination with a planting machine.

394 Disk type tool:

This subclass is indented under subclass 387. Apparatus in which the earth working element comprises a circular platelike member which is given a rotating motion by the resistance of the earth as it is drawn thereover.

(1) Note. The circular platelike member may be plane, convex or concave in cross-section.

395 WITH GROUND SUPPORT VERTICALLY ADJUSTABLE RELATIVE TO FRAME:

This subclass is indented under the class definition. Apparatus comprising a frame, an earth working element carried by the frame, means connecting a ground support such as a wheel to the frame and means for adjusting the ground support vertically with respect to the frame or moving the ground support vertically with respect to the frame to some position of adjustment.

(1) Note. For the meaning of “adjustable” see the class definition.

(2) Note. The “frame” in this definition is the running gear or structure most closely associated with the ground support. The “earth working element” carried by the “frame” may itself comprise an extensive framework.

(3) Note. The relative movement between the frame and ground support must be produced by a force other than gravity applied to a wheel axle. Merely moving the frame, for example, by lifting the hitch to swing the frame about the axis of rotation of the wheel is not included. See subclasses 321 or 323 for such devices.

(4) Note. In that type of apparatus wherein the construction comprises a frame, wheels carrying the frame and a front-wheeled draft truck pivoted to the frame on a vertical axis and vertically adjustable with respect to the frame, the frame has been considered the running gear and the wheeled truck has been considered as movable vertically thereto so that such apparatus is classifiable under this definition.

(5) Note. A mere spring-mounting means is considered not to be a means for moving the wheel to an adjusted position.

(6) Note. The ground support under this definition must be either a wheel or a wheel substitute as defined in subclass 387 of this class. The wheel substitute has been

included under this definition so as to permit cross-referencing of such patents into appropriate subclasses hereunder.

(7) Note. Patents are classified under this definition even if the claims refer broadly merely to an implement adjusting means provided that the sole specific disclosure relates to a wheel-adjusting means.

(8) Note. A tilting movement of a frame about the axis of a wheel is not considered a vertical adjustment of the wheel relative to the frame. See subclass 323 for an unstable frame which may carry an earth working element and be tilted about a ground wheel axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

78, for a driven tool with an articulated connection to a vehicle and a vertically adjustable ground support.

211, for an alternating implement with interrelated lift and shift, the lift being by wheel manipulation.

236, for ground-engageable draft responsive levers or wheel segments which contact the earth to resist motion of the apparatus, continued motion of the apparatus causing some adjustment thereof, usually due to a lifting force from the lever or wheel segment.

240+, for implements comprising ground supports which contact the ground for transport only.

259, for a propulsion unit guided by a walking attendant or part of an articulated vehicle and having a vertically adjustable wheel.

293+, for a series of like elements sequentially lifted by vertical adjustment of wheels by a power cycle.

315+, for an actuator on a trailing implement for vertically adjusting a wheel and controlled from a propelling vehicle, the relationship with the vehicle being significantly claimed.

318+, for an actuator on a vehicle for vertically moving a wheel on a trailing implement relative to the implement frame.

321, for an actuator on a vehicle for lifting a wheeled implement.

387, for an implement comprising a wheel substitute.

SEE OR SEARCH CLASS:

16, Miscellaneous Hardware (e.g., Bushing, Carpet Fastener, Caster, Door Closer, Panel Hanger, Attachable or Adjunct Handle, Hinge, Window Sash Balance, etc.), subclass 19 for vertically adjustable casters, and subclasses 32+ for caster wheel or leg elevators.

104, Railways, subclass 244.1 for furrow followers for guiding a vehicle along the furrow.

111, Planting, subclass 68 for an auxiliary frame elevated and depressed by means of a cranked ground-wheel axle.

171, Unearthing Plants or Buried Objects, especially subclass 139 for apparatus comprising an unearthing unit fixed on a vertically shiftable vehicle frame, and subclass 109 for an unearthing unit mounted on a vehicular breakframe.

280, Land Vehicles, subclasses 6.15+ for a land vehicle of general utility including means, interposed between the vehicle body, chassis, or frame and running gear thereof, for altering height or levelness of the vehicle body, chassis, or frame; subclasses 43+ for a land vehicle of general utility having a wheel that is vertically adjustable with respect to the running gear for altering a dimension of the vehicle or a part thereof; or subclass 414.5 for a vehicle train of articulated vehicles having an actuator for vertically moving a wheel of the trailing vehicle.

396 Vertically adjustable or selectively lockable hitch:

This subclass is indented under subclass 395. Apparatus in which the frame carries a draft means for connecting the frame to a propelling means, said draft means being (1) vertically adjustable relative to the frame to (2) freely vertically movable relative to the frame under some conditions of operation and means are

provided to prevent or limit the vertical movement under other conditions of operation.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

319, for an actuator on a vehicle for moving an implement ground support vertically relative to the implement frame interconnected means for moving a hitch.

327+, for an actuator on a trailing implement for moving a draft means vertically and a vertically adjustable ground support.

397 Tool land ground support moved together relative to frame:

This subclass is indented under subclass 395. Apparatus in which the adjustment of the ground support is accompanied by movement of an earth working element relative to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

211, for implements comprising earth working means alternating for right or left hand operation and a vertically adjustable ground support for lifting the implement, the ground support and earth working means being interrelated so that vertical movement of the ground support is accompanied by the shifting of the earth working means to its alternate position.

244, for apparatus having a ground support engaging the ground for transport only where the ground support and a tool are moved together relative to a supporting frame.

323, for devices in which the tool pivots about a wheel axis which may be moved vertically with respect to a frame.

398 Linkage to tool:

This subclass is indented under subclass 397. Apparatus in which the earth working element is interconnected by a linkage with the ground support so that movement of one influences movement of the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

779, for a scraper whose position is automatically controlled by a linkage for leveling, the scraper and a wheel being interconnected to influence movement of each other.

399 With power take-off from plural wheels:

This subclass is indented under subclass 395. Apparatus in which power derived from the rolling motion of a plurality of ground wheels as the apparatus is propelled over the ground is used to move said wheels or other ground wheels vertically with respect to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

293+, for apparatus having a plurality of wheels or other elements which are sequentially operated by a power cycle.

400 Actuator and interconnected means for adjusting wheels on different axles:

This subclass is indented under subclass 395. Apparatus in which a plurality of wheels are independently mounted on different axles and there are additional means interconnecting the wheels whereby they may be moved simultaneously vertically with respect to the frame or so that the movement of one vertically with respect to the frame influences movement of the other, and there is an actuator for moving a wheel.

(1) Note. Plural wheels mounted at different ends of a crank axle or other axle whereby the wheels move together without use of any connecting links or separate power units are considered not to be independently mounted on different axles. Wheels so mounted do not come under the definition even if they are adjustable with respect to each other.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 6.15+ for a land vehicle of general utility including means, interposed between the vehicle body, chassis, or frame and running gear thereof, for altering height or levelness of the vehicle

body, chassis, or frame, especially subclasses 6.154+ wherein the proximate utility is predisposing the load, load carrier, or receptacle portion to enable travel upon a sustained inclined surface; or subclasses 43+ for a land vehicle of general utility including a wheel that is vertically adjustable with respect to the running gear for altering a dimension of the vehicle or a part thereof, especially subclass 43.13 wherein actuator means interconnect wheels on different axles so that movement of one results in movement of the other.

401 Three or more adjustable wheels on different axles interconnected:

This subclass is indented under subclass 400. Apparatus in which three or more wheels each on different axles are affected by the action of the interconnecting means.

402 With power take-off from self-adjusted wheel:

This subclass is indented under subclass 401. Apparatus in which power derived from the rolling motion of one of said interconnected wheels as the apparatus is propelled over the ground is used to move said wheels vertically with respect to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

408+, for a wheel which is carried by a crank axle mount which is adjusted by power derived from the wheel.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 211 for harvester frames which are adjusted by power derived from a traction wheel.

280, Land Vehicles, subclass 47 for a vehicle having an extensible wheel that is vertically adjustable by means of power derived from the wheel as it rolls over the ground.

403 With power take-off from wheel:

This subclass is indented under subclass 400. Apparatus in which power derived from the rolling motion of a ground wheel as the apparatus is propelled over the ground is used to move a plurality of said interconnected wheels vertically with respect to the frame.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 211 for harvester frames which are adjusted by power derived from a traction wheel.

192, Clutches and Power-Stop Control, subclass 62 for clutches adapted for use in raising plows.

404 Wheel adjusted by own power:

This subclass is indented under subclass 403. Apparatus in which the wheel supplying the power is itself moved vertically with respect to the frame by use of said power.

SEE OR SEARCH THIS CLASS, SUBCLASS:

402, for a power take-off from a self-adjusted wheel for adjusting three or more wheels on different interconnected axles.

408+, for a wheel which is carried by a crank axle mount which is adjusted by power derived from the wheel.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 47 for a vehicle having an extensible wheel that is vertically adjustable by means of power derived from the wheel as it rolls over the ground.

405 One wheel translates another swings:

This subclass is indented under subclass 400. Apparatus in which one of said interconnected wheels has a vertical motion of translation only and another of said interconnected wheels pivots about a horizontal axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

402, for apparatus having three or more interconnected adjustable wheels on different axles which are operated by a power take-off from one of the adjusted wheels and which includes translating and swinging wheels.

416, for vertically adjustable ground supports where one translates and another swings.

406 With additional actuator changing relative position of wheels:

This subclass is indented under subclass 400. Apparatus in which there is an additional actuating means which operates to adjust said interconnected wheels so as to change their relative position vertically with respect to said frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

402, for apparatus having three or more interconnected adjustable wheels on different axles which are operated by a power take-off from one of the adjusted wheels and which includes an additional actuator for changing the relative position of some of the wheels.

470, for plural tools which are independently actuated to be lifted on a wheeled frame for transport with a separate actuator for concurrent lifting or with an interlock means for causing simultaneous lifting.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 6.15+ for a land vehicle of general utility including means, interposed between the vehicle body, chassis, or frame and running gear thereof, for altering height or levelness of the vehicle body, chassis or frame, especially subclasses 6.154+ wherein the proximate utility is predisposing the load, load carrier, or receptacle portion to enable travel upon a sustained inclined surface.

407 Power operated adjustment:

This subclass is indented under subclass 395. Apparatus in which movement of the ground support to adjusted position is caused by the use of a power means.

(1) Note. A power means may be a servomotor or a continuously running source of power (e.g., a rotating ground wheel) with an interruptible power take-off.

SEE OR SEARCH THIS CLASS, SUBCLASS:

293+, for a plurality of like elements sequentially operated by a power cycle.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 211 for harvester frames which are adjusted by power derived from a traction wheel.

192, Clutches and Power-Stop Control, subclass 62 for clutches adapted for use in lifting plows.

280, Land Vehicles, subclass 43.23 for vehicles having power means to vertically adjust its wheels.

408 Wheel actuates its crank axle mount:

This subclass is indented under subclass 407. Apparatus in which there is an axle connected to a crank arm pivotally connected to the framework, a ground wheel is rotatably mounted on the axle and there is a means intermittently connectible to the ground wheel as it continuously rotates so that turning movement of the wheel causes swinging of the crank arm about its pivotal connection to the framework to move the wheel vertically with respect to the framework.

SEE OR SEARCH THIS CLASS, SUBCLASS:

402, and 404, for an actuator and interconnected means for adjusting wheels on different axles with a power take-off from one of the adjusted wheels for operating the actuator.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 47 for a vehicle having an extensible wheel that is vertically adjustable by means of power derived from the wheel as it rolls over the ground.

409 Wheel lockable to crank axle arm:

This subclass is indented under subclass 408. Apparatus in which the means intermittently connectible to the wheel locks said wheel against rotation relative to the pivotally mounted crank arm so that rolling movement of the wheel over the ground causes movement of the arm with respect to the frame.

410 Intermittently rotatable member swingable with crank:

This subclass is indented under subclass 408. Apparatus in which the means intermittently connectible with the wheel is a rotatable member mounted on the crank arm to swing therewith.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclass 62 for clutches adapted for use in lifting plows.

411 "Constant height" depth adjustment:

This subclass is indented under subclass 410. Apparatus in which the frame may be lowered with respect to the wheel to varying depths but is always raised to the same height.

SEE OR SEARCH THIS CLASS, SUBCLASS:

413, for constant height depth adjustment for wheels vertically adjusted with respect to an implement frame by a servomotor.

487, for an actuator adapted to lift a tool for transport on a wheeled frame said actuator comprising a power unit with manual adjusting or supplemental manual actuating means and there being a constant height depth adjustment.

412 Swingable arm engageable with wheel:

This subclass is indented under subclass 408. Apparatus in which the means intermittently connectible with the wheel is a means pivoted on the frame movable into engagement with the actuating wheel or into engagement with a means mounted to turn therewith on the same axis so that rolling movement of the wheel acts on the means pivoted to the frame to move the wheel relative to the frame.

413 Servo-motor adjusting means:

This subclass is indented under subclass 407. Apparatus in which the ground support is moved to different positions of adjustment by a motor means which operates just long enough to effect the desired adjustment.

(1) Note. This definition does not cover a mere power-transmitting mechanism intermittently connected to a continuously running source of power.

SEE OR SEARCH THIS CLASS, SUBCLASS:

294, for a series of like elements sequentially operated by servomotors.

316, for a servomotor on a trailing implement for vertically moving a wheel, the motor being controlled from a propelling vehicle, the relationship with the vehicle being significantly claimed.

414 Flexible or lost motion connection to actuator:

This subclass is indented under subclass 395. Apparatus in which there is an actuator for causing adjusting motion of the wheel and the connection between the actuator and the wheel is such as to allow at least a certain amount of free movement between the two in at least one direction.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 43.19 for vehicles having vertically adjustable wheels which are actuated through a flexible means.

415 Translating motion:

This subclass is indented under subclass 395. Apparatus in which the ground support has a motion of translation relative to the frame when moved from one vertical position to another (i.e., the motion is such that parts maintain approximately the same angular position relative to a plane parallel to the frame).

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 43.22 for vehicles having actuating means to move the wheels vertically with a translatory motion.

416 One ground support translates and another swings:

This subclass is indented under subclass 415. Apparatus having at least one additional ground support which pivots about a horizontal axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

405, for interconnected translating and swinging wheels.

417 Parallel links:

This subclass is indented under subclass 415. Apparatus in which the ground support is carried by a pair of links pivoted to the ground support and the frame structure, respectively, and which remain substantially parallel throughout their movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

405, for interconnected translating and swinging wheels.

418 With actuator:

This subclass is indented under subclass 415. Apparatus in which the translating motion is imparted to the ground support by an actuator.

(1) Note. For the meaning of "actuator" see the class definition.

419 Screw jack type:

This subclass is indented under subclass 418. Apparatus in which the actuator comprises a pair of relatively movable threaded members.

SEE OR SEARCH THIS CLASS, SUBCLASS:

427, for screw-jack type actuators for vertically adjustable ground supports.

504, for screw-type actuators for lifting tools for transport on a wheeled frame.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 43.2 for vehicles having supporting wheels which are moved vertically relative to the vehicle frame by a screw-jack type actuating means.

420 Rack and pinion or ratchet type:

This subclass is indented under subclass 418. Apparatus in which the actuator comprises a rack member meshing with a gear or engageable by a ratchet member.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 43.21 for vehicles having supporting wheels which are moved vertically relative to the vehicle frame by a rack and pinion or ratchet actuating means.

421 Plural ground supports vertically adjustable relative to each other and the frame:

This subclass is indented under subclass 395. Apparatus comprising a plurality of ground supports vertically adjustable relative to the frame which are also vertically adjustable with respect to one another.

422 Crank axle with angularly spaced wheel carrying arms:

This subclass is indented under subclass 395. Apparatus in which a plurality of wheels are carried by arms which extend radially from and are connected to a common shaft and are circumferentially spaced about the axis of said shaft.

423 With actuator:

This subclass is indented under subclass 395. Apparatus in which vertical motion is imparted to the ground support by an actuator.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

418+, for actuators for imparting a translating motion to a ground support.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 43.17+ for vehicles having actuating means to move the wheels vertically.

424 Spring assisted:

This subclass is indented under subclass 423. Apparatus in which a spring device is provided to assist the actuating means in moving the ground support vertically.

SEE OR SEARCH THIS CLASS, SUBCLASS:

506, for spring-assisted actuators for lifting tools for transport on a wheeled frame.

425 Gearing:
This subclass is indented under subclass 423. Apparatus in which the actuator comprises gearing.

(1) Note. For the definition of gearing, see Class 74, Machine Element or Mechanism, subclass 640.

426 Worm gear:
This subclass is indented under subclass 425. Apparatus in which the gearing includes a worm gear.

427 Screw jack type:
This subclass is indented under subclass 425. Apparatus in which the gearing includes a pair of relatively movable threaded members.

SEE OR SEARCH THIS CLASS, SUBCLASS:
419, for a screw-jack type actuator for a vertically adjustable ground support having translating motion.
504, for a screw-type actuator for lifting a tool for transport on a wheeled frame.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclass 43.2 for vehicles having supporting wheels which are moved vertically relative to the vehicle frame by a screw-jack type actuating means.

428 Rack and pinion or ratchet type:
This subclass is indented under subclass 425. Apparatus in which the gearing includes a rack member meshing with a gear or engageable by a ratchet.

SEE OR SEARCH THIS CLASS, SUBCLASS:
420, for a rack and pinion or ratchet-type actuator for a ground support having a translating motion.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclass 43.21 for vehicles having supporting wheels which are moved vertically relative to the vehicle frame by a rack and pinion or ratchet-actuating means.

429 Manually operated lever rigid with crank axle:
This subclass is indented under subclass 423. Apparatus in which the actuating means comprises a hand or foot operated lever rigid with the pivot shaft of a wheel carrying crank.

430 WITH INDICATING OR SIGHTING MEANS:
This subclass is indented under the class definition. Apparatus comprising (1) means for giving a signal or indication of a condition or position of some portion of the earth working apparatus or (2) means to be observed by an attendant to aid him in maintaining the apparatus on a predetermined course.

(1) Note. The mere positioning of an element of the apparatus is not considered enough to give an indication. There must be some special indicia means to come under this definition.

(2) Note. The guide means may comprise an element intended to be disposed in or aligned with a previously formed furrow or mark, the attendant guiding the apparatus in accordance with the position of the element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
126+, for apparatus comprising earth-marking means combined with an earth working element.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 624+, for collocating gauge designed for setting a tool with relation to its support or with relation to work in which it is to operate and subclass 264, for sighting means attached to a vehicle to aid the driver in maintaining the vehicle on a predetermined course.
104, Railways, subclass 244.1 for a furrow follower for guiding a vehicle, the guiding being accomplished by reaction of the furrow follower with the walls of the furrow.

340, Communications: Electrical, subclasses 500+ for electrical automatic condition responsive indicating systems.

431 WITH SEAT OR ATTENDANT'S STATION:

This subclass is indented under the class definition. Apparatus comprising a seat or other support for an attendant operating the apparatus.

(1) Note. There must be some specific claiming of the seat or the relationship of the seat or support in structure for classification under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

330, for hand guided or manipulated apparatus also having a hitch movable by shiftable seat.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 323, for a harvester with a seat.

171, Unearthing Plants or Buried Objects, subclass 20, for unearthing devices with manual operation station.

280, Land Vehicles, subclasses 32.5+, for a land vehicle with a worker's support.

296, Land Vehicles: Bodies and Tops, subclasses 63+, for seats with body modifications.

297, Chairs and Seats, appropriate subclasses, for a seat of general utility.

432 Plural:

This subclass is indented under subclass 431. Apparatus in which there are a plurality of separate and distinct seats or operator stations.

433 Riding attachment:

This subclass is indented under subclass 431. Apparatus in which the attendant operating the apparatus is carried by a sulky or riding attachment, which is adapted to be detachably connected to the implement and has its own wheel or wheels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257, for an unstable propulsion unit forming part of an articulated vehicle and having a riding attendant.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 32.6 for riding attachments for vehicles and subclass 32.7 for a wheeled vehicle having a station adapted to carry an operator and which also may be adapted to be attached to an agricultural implement.

434 Movable to non-use position:

This subclass is indented under subclass 431. Apparatus in which the seat or attendant's station may be moved to a position in which it is not intended to be used; e.g., changed from a riding implement to a walking implement.

435 Operator changes position or seat adjustable:

This subclass is indented under subclass 431. Apparatus in which the attendant's station or seat is modified to permit the operator to shift his entire body; or the seat is adjustable.

(1) Note. For the meaning of “adjustable” see the class definition.

(2) Note. The station or seat must be enlarged to permit the operator to move or slide thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334, for hand-guided straddle row cultivators having seat counterbalanced tool beams.

436 Mounted on transverse member connecting plural implements:

This subclass is indented under subclass 431. Apparatus in which the attendant's station or seat is positioned on a member extending laterally of the direction of motion and said member connects two or more earth working devices.

437 WITH TOOL SHARPENER:

This subclass is indented under the class definition. Apparatus comprising means for sharpening an earth working element.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 250 for cutting reels with sharpening means.

76, Metal Tools and Implements, Making, subclasses 82+, especially subclass 85 for tool sharpeners or tool sharpener attachments, per se.

451, Abrading, subclasses 415+ for an abrading attachment, per se.

438 COMBINED:

This subclass is indented under the class definition. Apparatus combined with a device outside of the class definition and not provided for in other subclasses of this class.

(1) Note. In this subclass, for example, are combinations with a gun, a shade for a draft animal, a vehicle brake, a basket of general utility and a loading device of general utility.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 403+ for a scraper combined with a scoop, shovel, or other material pick up means.

439 MAST TYPE HITCH (E.G., THREE POINT HITCH, ETC.):

This subclass is indented under the class definition. Apparatus comprising an earth working device adapted to trail behind a propelling means, said earth working device having a mast comprising a vertically extending structure which is held against movement relative to at least a portion of the device in a longitudinal vertical plane, and struts pivotally connected to the upper and lower portions of said structure, said struts also being pivotally connected respectively to upper and lower portions of the propelling means, and said struts being free to pivot about each of their pivotal connections in a generally longitudinal vertical plane.

(1) Note. Claims classifiable under this definition may include merely the struts or the vertically extending structure adapted for cooperation with the struts.

(2) Note. “Struts” are elements adapted to withstand compressive stress. Usually in working position the lower strut is in tension and the upper strut is in compression while in transport position the lower strut is in compression and the upper strut is in tension.

(3) Note. This definition is intended to include devices usually called three point hitches or Ferguson hitches. It should be noted, however, that the definition is broadly phrased and will include some devices other than the Ferguson or three point hitch.

(4) Note. The propelling device may be no more than a trailer or other means which itself is propelled by a tractor or other device.

(5) Note. The pivotal freedom of the struts may be inhibited by a lifting device. However, if other added means prevent pivoting of the struts then the device is not considered to come under this definition.

(6) Note. The mast or vertically extending structure may have some freedom for movement relative to the earth working device if the apparatus as a whole is essentially a Ferguson-type hitch.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7+, for draft responsive, automatic, power-controlled mast-type hitches. See (1) Note of subclass 7 for the line between subclasses 7 and 439.

47, for a mast-type hitch in combination with a power driven tool or cleaner.

210, for an alternating implement with an interrelated tool lift and shift, the hitch being of the mast type.

307, for a tool forward of the rear of a self-propelled vehicle connected to the vehicle by a parallelogram-type lift.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 400+ and especially subclass 407 for articulated vehicles wherein the load of a trailer on a leading vehicle is adjusted by adjusting the point of application of draft to the leading vehicle, subclass 460.1 for articulated vehicles with laterally spaced parallel connections, subclass 461.1 for articulated vehicles with vertically spaced connections, subclasses 467+ for articulated vehi-

cles comprising laterally adjustable hitches, subclass 490.1 for articulated vehicles wherein the draft means may be vertically adjusted with respect to at least one of the vehicles or the ground merely in order to facilitate connecting the vehicles, and subclass 497 for vertically paced connections of a draft element to a tractor. A sole disclosure to an agricultural implement hitched to a tractor by a hitch as defined in Class 172, subclass 439 is classifiable in Class 172.

414, Material or Article Handling, subclasses 680+ for a vertically swinging load support and subclass 766 may be of particular interest.

440 Angled gangs liftable as a unit:

This subclass is indented under subclass 439. Apparatus in which said earth working device comprises a plurality of rows of earth working elements, the axis of one row in plan view being located at, or being adjustable to, an angle with respect to the axis of another row, and the rows being vertically movable with the mast structure as a unit.

(1) Note. The earth working elements are usually disks.

SEE OR SEARCH THIS CLASS, SUBCLASS:

454+, for angled gangs liftable for transport on a wheeled frame by an actuating means other than a mast-type hitch.

579+, for plural groups of disks.

441 Tandem gangs:

This subclass is indented under subclass 440. Apparatus in which one row of earth working element is located generally behind another row of earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

455, for tandem-angled gangs liftable for transport on a wheeled frame by an actuating means other than a mast-type hitch.

595, and 596, for tandem disk gangs.

442 With actuator for angling groups relatively:

This subclass is indented under subclass 441. Apparatus comprising an actuator for changing the angular relation in plan view of one row of earth working elements with respect to another row.

(1) Note. For the meaning of “actuator” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

580, for groups of disks adjusted by a power device.

591+, for groups of disks horizontally angled by a manual actuator, especially subclass 594 for double tandem groups so adjusted.

443 Struts on trailer or between implement parts:

This subclass is indented under subclass 439. Apparatus in which (1) the struts extend between the earth working device and a wheeled trailer adapted to be drawn by a propelling means or (2) the struts extend between different parts of the earth working device.

(1) Note. The earth working device in part (2) of the definition is an implement which is adapted to be attached to a propelling means such as a tractor, in the field or as a substantially complete unit.

(2) Note. In the ordinary mast-type hitch the struts extend between a tractor and an implement, pivot means for the struts are assembled on or built into the tractor at the factory, the struts remain associated with the tractor in the field and an implement is attached to the struts in the field. This definition is intended to exclude this arrangement but include an arrangement whereby a tractor not equipped with pivot means for a mast-type hitch at the factory is associated with an implement which itself includes the mast-type hitch, or whereby the tractor is converted to use such an implement by securing an attachment to the tractor which includes struts for cooperating with the earth working element (the attachment and the earth working element being considered

the implement for purposes of this definition).

SEE OR SEARCH THIS CLASS, SUBCLASS:

248, for an apparatus convertible from one type of hitch to another.

463, for a lift actuator and tool which form a removable unit carried on a wheeled frame.

444 Hitch quadrilateral modified during lift:

This subclass is indented under subclass 439. Apparatus in which the geometrical outline (as seen in elevation), made up of the vertically extending structure, the struts and the propelling means, changes in basic configuration as the earth working device is lifted or lowered.

(1) Note. The geometrical outline of the definition is made up of four lines connected by pivot points, so that it will naturally change as the struts are lifted or lowered. This simply change is not included in the definition. The changes contemplated by the definition are brought about by some additional means and are those which occur, for example, when one of the struts is made of two pivoted or telescopic sections which move relatively while the earth working device is being lifted, or when one of the pivot points is on a link which moves as the earth working device is raised or lowered.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7+, for apparatus having an automatic power control and comprising a mast-type hitch in which one of the struts is pivoted to a yieldable pivot point.

445 With means operated by vertical hitch movement:

This subclass is indented under subclass 439. Apparatus in which there is a means for vertically moving the struts and mast to lift the earth working device for transport and some auxiliary means is operated as a result of the vertical movement (e.g., a link is operated to rock the implement about a longitudinal axis).

SEE OR SEARCH THIS CLASS, SUBCLASS:

128, for an earth marker which is adjusted upon raising an earth working device.

210, for apparatus including earth working means alternating for right or left hand operation which is carried on a mast- type hitch and in which vertical movement of the hitch is accompanied by movement of the earth working means to its alternate operating position.

458, for apparatus in which the vertical movement of an implement on a wheeled frame is associated with some other movement of the implement.

445.1 Including blade, scraper, or smoother:

This subclass is indented under subclass 439. Apparatus in which at least one earth working element is supported by a mast structure, wherein the element has either (a) a substantially vertical working surface adapted to strike off or level the earth, or (b) a substantial area adapted to contact the earth in a horizontal direction to compact or smooth the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4.5, for a scraper which is automatically power-controlled for leveling.

26.5+, for a dragline scraper.

72, for a driven tool followed by a leveling drag or furrow shaper.

189, and 612, for flexible implements including flexible matlike drags.

197, and 199+, for diverse tools, one of which comprises a drag or smoother that may be mounted on a vehicle by a three-point hitch.

777+, for a scraper supporting a narrow depending tool.

779, for a scraper whose position is controlled by a linkage for leveling.

780, and 781+, for a scraper between front and rear vehicle supports.

799.5, for a towed scraper on a wheel-supported frame.

810+, for a scraper ahead of a motor vehicle.

445.2 Angularly adjustable about vertical axis:
This subclass is indented under subclass 445.1. Apparatus in which the earth working element is mounted so to be movable about a vertical axis to a different angular position.

446 Laterally adjustable tool:
This subclass is indented under subclass 439. Apparatus in which there are means for holding an earth working element in different locations laterally of the line of draft or the propelling means.

(1) Note. Merely varying the limits to which an earth working device may laterally sway is not included. See subclass 450 for such apparatus.

(2) Note. The lateral adjustment may be the result of movement about a vertical or a longitudinal axis with respect to the propelling means.

(3) Note. A lateral movement of the earth working tool which is the result of a turning movement of the propelling tractor is not included. See subclass 450 for such devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
456, for apparatus liftable on a wheeled frame by means other than a mast-type hitch in which a central group of earth working elements is lifted vertically and side groups are movable inwardly.
459+, for an earth working element lifted vertically on a wheeled frame by means other than a mast-type hitch and by swinging movement about a longitudinal axis.
476+, for an earth working element liftable on a wheeled frame by means other than a mast-type hitch and laterally adjustable.
741+, for a laterally adjustable earth working element.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclasses 467+ for a vehicle train wherein the interconnected vehicles are laterally or angularly adjustable relative to each other.

447 Rockable about vertical axis:
This subclass is indented under subclass 446. Apparatus in which the earth working element is movable to a laterally adjusted position by a swinging movement about a generally vertical axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:
477, for an earth working element liftable on a wheeled frame by means other than a mast-type hitch and adjustable about a vertical axis.
742, for a tool adjustable about a vertical axis.

448 With auxiliary vertical adjustment:
This subclass is indented under subclass 439. Apparatus in which in addition to an actuator for swinging the struts which is adapted to lift the earth working device for transport there is an added means for holding an earth working element in different positions in a vertical sense with respect to the propelling means.

(1) Note. For the definition of “actuator” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
446, for tools associated with a mast-type hitch adjusted vertically as well as laterally.
474+, for tools which are liftable for transport on a wheeled frame which are rockable about an independently, vertically adjustable transverse axis.
485+, for apparatus comprising a power unit for lifting tools for transport on a wheeled frame and manual means for effecting a supplemental adjustment.

449 Tool movable relative to mast while earth working:
This subclass is indented under subclass 439. Apparatus in which an earth working element is free to move relative to the mast at least to a limited extent while the earth working element is performing its earth working function.

SEE OR SEARCH THIS CLASS, SUBCLASS:

440+, for apparatus comprising angled gangs liftable as a unit with one or more gangs movable relative to the mast while earth working.

450, for a mast-type hitch with tools swayable with respect to the propelling means but fixed with respect to the mast.

501+, for a tool liftable by an actuator on a wheeled frame and with a lost motion connection between the actuator and tool.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 497 for articulated vehicles comprising a draft connection between the vehicles with vertically spaced connections to the leading vehicle.

450 Sway limiting means or swayable tool:

This subclass is indented under subclass 439. Apparatus in which (1) an earth working element is free to move laterally to the line of draft relative to the propelling means while performing its earth working function or (2) there are means in addition to merely the struts and their connections with the mast and propelling means for preventing or inhibiting free movement of the earth working element laterally of the line of draft relative to the propelling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

449, for tools freely movable relative to the mast of a mast-type hitch while earth working.

457, for tools liftable on a wheeled frame by means other than a mast-type hitch and means to restrain sway when raised.

501+, for tools liftable on a wheeled frame by an actuator and with a lost motion connection between the actuator and the tool.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 497 for a trailer having an articulated connection to a draft element having vertically spaced connections to a tractor.

451 With tool frame or bar extending beyond side of vehicle:

This subclass is indented under subclass 439. Apparatus including a support mechanism or device which is adapted to support an earth working element or elements, wherein the mechanism or device extends laterally beyond the side of the propelling device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

440+, for mast-type hitches with angle gangs extending laterally on each side of the mast structure.

452 WITH ACTUATOR ADAPTED TO LIFT TOOL FOR TRANSPORT ON WHEELED FRAME OR BROADLY CLAIMED IMPLEMENT:

This subclass is indented under the class definition. Apparatus comprising a frame supported on ground support means such as wheels, an earth working element and an actuator for lifting the earth working element for supporting it on the frame so that it may be transported without engaging the earth.

(1) Note. For the meaning of “actuator” see the class definition.

(2) Note. Apparatus comprising an earth working element and a means for lifting the earth working element on an implement is classifiable under this definition if the implement is claimed broadly by name only, the implement being considered the equivalent of a frame supported on wheels.

(3) Note. An actuating means imparting vertical movement to an implement is considered to come under this definition unless the actuating means is disclosed as not usable to lift the implement off the ground for transport.

(4) Note. Apparatus comprising a frame, an earth working element and a means for lifting the earth working element on the frame is classifiable under this definition

if the frame is disclosed as rigidly attached to a wheel frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

47, and 439+, for an actuator on a vehicle adapted to lift an implement with a mast-type hitch for transport on the vehicle.

74, for a driven tool with a power take-off from the drive to adjust the tool.

75, for a driven tool with an interconnected lift and drive control.

238, for an implement with a ground support moved vertically relative to the frame by a draft force.

240+, for an implement with a ground support engageable with the ground for transport only.

255, for an implement with an earth working element moved vertically when the implement is turned.

260, for a propulsion unit guided by a walking attendant or part of an articulated vehicle and with an actuator for moving a tool vertically.

261+, for means for shifting an earth working element on striking an obstruction.

272+, for means to facilitate mounting an implement on a motor vehicle.

293+, for a series of earth working elements sequentially lifted by a power cycle.

297+, for earth working elements mounted forward of the rear of a self-propelled vehicle.

315+, for an actuator on a trailing implement, controlled from a propelling vehicle, the relationship with the vehicle being significantly claimed.

317+, for an actuator on vehicle for relatively moving parts of a trailing implement.

321, for an actuator on a vehicle for lifting a wheeled implement.

322+, for an actuator for rocking an implement about a wheel axis.

326+, for an actuator on a trailing ground-supported frame for moving a draft means vertically.

395+, for an implement with an actuator for moving a ground support vertically relative to a frame.

583+, for plural groups of disks comprising a vertically adjustable group.

663+, for actuators other than those adapted to lift a tool for transport on a wheeled frame or broadly claimed implement.

781+, for a scraper mounted between front and rear ground supports of a vehicle and an actuator for lifting it for transport.

810+, for earth working elements mounted ahead of a self-propelled vehicle.

SEE OR SEARCH CLASS:

37, Excavating, appropriate subclasses for lifting means for excavators.

56, Harvesters, subclass 273 for power-operated lifts for reciprocating side cut type harvesters.

60, Power Plants, subclasses 325+ for hydraulic servomotors operated by a pump. See note under definition of this class for line between this class and Class 60.

171, Unearthing Plants or Buried Objects, subclass 141 for lifting or tilting means for unearthing apparatus.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 2+ for hoisting trucks, and other appropriate subclasses for lifting devices such as cranes adapted for general utility lifting rather than forming part of a vehicle-implement combination intended to remain coupled when in use.

280, Land Vehicles, subclass 407 for articulated vehicles wherein the load of a trailer on a leading vehicle is adjusted by adjusting the point of application of draft to the leading vehicle, and subclass 490.1 for articulated vehicles wherein the draft means may be vertically adjusted with respect to at least one of the vehicles or the ground.

414, Material or Article Handling, subclasses 680+ for vertically swinging load supports.

453 Actuator electrically powered:

This subclass is indented under subclass 452. Apparatus wherein the actuator is driven by an electrically powered device.

454 Angled gangs lifted as a unit:
This subclass is indented under subclass 452. Apparatus comprising two groups of earth working elements, each group comprising elements having a common orientation, the longitudinal axis of one group being at an angle in plan view with respect to the longitudinal axis of the other group, and the groups being liftable as a unit by the actuator.

SEE OR SEARCH THIS CLASS, SUBCLASS:
440, for angled gangs carried by a mast-type hitch which are lifted as a unit.

455 Tandem gangs:
This subclass is indented under subclass 454. Apparatus in which one group of elements is positioned behind another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
441, for tandem-angled gangs carried by a mast-type hitch which are lifted as a unit.

456 Central group liftable vertically, side groups movable inwardly:
This subclass is indented under subclass 452. Apparatus comprising a centrally located group of earth working elements which is lifted for transport by the actuator and laterally positioned groups of earth working elements which are movable inwardly toward the longitudinal axis of the apparatus.

SEE OR SEARCH CLASS:
56, Harvesters, appropriate subclasses, for specific harvesting implements having means to reduce their width for transport and especially subclasses 6+ for gang mowers, subclasses 14.9+ for break-back reciprocating mowers, subclass 228 for transport attachments and subclass 385 for contractible, wheel-supported rear delivery rakes.

457 With means to restrain lateral sway when raised:
This subclass is indented under subclass 452. Apparatus in which the earth working element is connected to the frame for lateral swinging movement when the earth working element is in lowered working position and having means to prevent or restrain such movement when the earth working element is raised to transport position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
450, for means for limiting the lateral sway of tools carried on a mast-type hitch.

458 Vertical movement interrelated with another:
This subclass is indented under subclass 452. Apparatus wherein the earth working element, when moved up and down in a vertical plane by the actuator, is forced to undergo a movement in another plane, such as lateral tilting or lateral shifting.

(1) Note. Devices in which the movements of the earth working element are a result of a simple pivoting motion about a single axis or a canted pivot axis are not included.

SEE OR SEARCH THIS CLASS, SUBCLASS:
445, for tools carried by mast-type hitch having a means operated by vertical hitch movement.

459 Pivotable about longitudinal axis (e.g., lateral levelling, etc.):
This subclass is indented under subclass 452. Apparatus comprising an earth working element which is swingable about an axis which extends substantially in the direction of movement of the apparatus over the ground.

(1) Note. The earth working element may have a motion of translation and still be considered swingable about a longitudinal axis if the motion of translation is caused by links swinging about a longitudinal axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:
446, for an implement with a mast-type hitch and laterally adjustable about a longitudinal axis.
456, for an apparatus comprising a group of tools liftable vertically on a

wheeled frame and side groups swingable inwardly on longitudinal axes.

640, for plural, relatively movable tool groups having a tool group pivotally adjustable about a horizontal axis.

782, for a scraper between front and rear ground supports of a vehicle and a laterally offset tool which is adjustable about a longitudinal axis.

460 Tool independently vertically adjustable at transversely spaced points:

This subclass is indented under subclass 459. Apparatus wherein the earth working element is swingable about two longitudinal axes which are transversely spaced on the apparatus, each of said axes being selectively vertically adjustable.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

781+, especially subclass 797 and the subclasses there noted for a scraper between front and rear ground supports of a vehicle swingable about two vertically adjustable longitudinal axes.

461 Tool lifted with respect to stationary or relatively movable cleaner:

This subclass is indented under subclass 452. Apparatus having a means for removing debris from the earth working element when it is raised, said means being (1) fixed on the frame and the earth working element raised relative thereto or (2) positively moved relative to the earth working element by the raising motion of the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

606+, for earth working tools having cleaners.

462 Plural tools, individually spring biased down, lifted as unit:

This subclass is indented under subclass 452. Apparatus comprising a plurality of earth working elements each individually biased downwardly by resilient means, and an actuator lifting all of said implements as a group to transport position.

(1) Note. The mere broad recitation in a claim that an earth working element is a spring tooth is not enough for classification under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

500, for a tool lifted for transport on a wheeled frame which is spring-biased down during operation.

463 Lift actuator moves with tool or forms removable unit therewith:

This subclass is indented under subclass 452. Apparatus in which (1) the actuator for raising the earth working element is mounted on the earth working element and moves therewith between transport and working positions as a result of the operation of said actuator; or (2) the actuator for lifting the earth working element and the earth working element are carried by a common supporting structure which may be readily removable from the wheeled frame as a unit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

315+, for an actuator on an implement which is controlled from a propelling vehicle.

443, for mast-type hitch devices in which the mast-type hitch forms a unit with the implement.

464 Servo-motor forces tool down:

This subclass is indented under subclass 452. Apparatus in which the earth working element is positively moved in a downward direction by a servomotor.

(1) Note. A device in which the earth working element is pivotally connected to and trails behind a member which is positively forced down by a servomotor is included in this definition.

465 Servo-motor with follow-up control (e.g., motion responsive position control, etc.):

This subclass is indented under subclass 452. Apparatus in which the actuator for lifting the earth working element comprises a servomotor

and there are means operated in response to the motion of the servomotor for stopping the motor before the limit of motion is reached.

SEE OR SEARCH THIS CLASS, SUBCLASS:

9, for automatic draft responsive power control apparatus combined with a position control device.

SEE OR SEARCH CLASS:

91, Motors: Expansible Chamber Type, subclasses 358+ for expansible chamber motors having working member position responsive feedback control.

466 Tool held raised for relieving load on servomotor:

This subclass is indented under subclass 452. Apparatus in which the actuator is powered by a servomotor and there is a means for holding the earth working element out of engagement with the earth so as to support the element independently of the servomotor.

467 With shiftable hitch causing vertical movement:

This subclass is indented under subclass 452. Apparatus in which the wheeled frame carries a draft means for connecting it to a propelling means, said draft means being movable relative to the frame and interconnected with an earth working element whereby movement of the draft means relative to the frame causes vertical movement of the earth working element relative to the frame, said frame also carrying an actuator adapted to lift the earth working element for transport on the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

239+, for devices having draft responsive depth control means.

605+, for devices adjusted by utilizing the draft force on a shiftable hitch.

SEE OR SEARCH CLASS:

414, Material or Article Handling, subclass 435 for motion or draft responsive load handler including movably connected vehicle sections.

468 Plural tools, independently actuatable:

This subclass is indented under subclass 452. Apparatus in which actuating means are provided for lifting a plurality of earth working elements to transport position and said means are operable to lift one of said elements independently of another element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

140, for diverse tools having independent lift actuators.

230+, for parallel separate tools alternating for right or left hand operation having independently operable means for alternating the operating position of the tools, as by raising and lowering the latter.

300+, for a plurality of tools mounted ahead of the rear and behind a motor vehicle and having independent left actuators.

304, for plural independently actuatable tools carried forward of the rear of a motor vehicle.

469 By single selectively connectable actuator:

This subclass is indented under subclass 468. Apparatus in which the actuating means is a single actuator alternately connectable to each earth working element to lift it independently of the others.

470 With separate actuator for concurrent lift or with interlock:

This subclass is indented under subclass 468. Apparatus under subcass 468 in which (1) an additional actuating means is provided to lift all the earth working elements simultaneously or (2) means are provided for selectively connecting two or more of the earth working elements to be lifted together.

SEE OR SEARCH THIS CLASS, SUBCLASS:

406, for wheeled implements having an actuator for simultaneously adjusting wheels on different axles and having an additional actuator for changing the relative position of the wheels.

471 Three or more independent actuators:
This subclass is indented under subclass 468. Apparatus in which there are three or more separate earth working elements each with a separate actuator.

472 Plural tools simultaneously raised, individually lowered:
This subclass is indented under subclass 452. Apparatus wherein there are a plurality of earth working elements and means are provided for raising all the earth working elements as a unit and for selectively lowering each element separately.

SEE OR SEARCH THIS CLASS, SUBCLASS:
228, for separate tools alternating for right or left hand operation which may be simultaneously raised and held in raised position by separate latches.
462, for plural tools independently spring-biased down and raised at a unit.
481, for tools which are held in position by a latch means separate from the actuating means.

473 Tool differentially or sequentially lifted at longitudinally spaced points:
This subclass is indented under subclass 452. Apparatus in which the earth working element is positively adjusted vertically at different rates or at different times at points spaced in the direction of travel by a single actuator (to thereby raise the earth working element vertically as well as tilt the same about a transverse axis).

(1) Note. For the meaning of "actuator" see the class definition.

(2) Note. This definition includes a device having an actuator which is connected to a tool beam at a single point where the beam is also connected to the frame at a longitudinally spaced point by means of a cam, link, etc., such that upon operation of the actuator the beam is positively caused to move such that the two points of connection of necessity are moved vertically at different rates. This is to be distinguished from connections such as a freely pivoted link etc., which will permit but not necessarily enforce a different rate of movement, and which is excluded from this definition. See subclass 480.

SEE OR SEARCH THIS CLASS, SUBCLASS:
474, for means to adjust an implement about a horizontal transverse axis including means to adjust said axis vertically.
480, see (1) Note above. 484, for means to adjust an implement vertically including parallel links connecting the implement and frame.

474 Tool rocked about independently vertically adjustable transverse axis:
This subclass is indented under subclass 452. Apparatus wherein the earth working element is independently adjustable about an axis which extends laterally of the direction of travel, the elevation of the axis also being selectively adjustable.

(1) Note. For the definition of "adjustable" see the class definition.

(2) Note. The implement may be raised to transport position by either rocking about the transverse axis or by vertical adjustment of the axis or both.

SEE OR SEARCH THIS CLASS, SUBCLASS:
448, for tools carried by a mast-type hitch which include an auxiliary vertical adjustment.
789, for a scraper mounted between front and rear supports of a vehicle with an actuator for lifting it to transport position and an actuator for bodily shifting a scraper subframe draft connection which forms a transverse axis about which the scraper is adjustable.
795, for a scraper mounted between front and rear supports of a vehicle with an actuator for lifting it for transport and an actuator for tilting the scraper about a transverse, vertically adjustable axis.

475 Plural longitudinally spaced actuators:
This subclass is indented under subclass 474. Apparatus in which two actuators are carried on the frame and are longitudinally spaced thereon, one of said actuators adjusting the earth working element about the transverse axis and the other actuator adjusting the elevation of the transverse axis.

(1) Note. For the meaning of "actuator" see the class definition.

476 With lateral adjustment:
This subclass is indented under subclass 452. Apparatus wherein the earth working element is selectively positionable transversely of the direction of travel of the apparatus.

(1) Note. The mere recitation that the earth working element is laterally or transversely adjustable is not enough for classification in this subclass. Some structural detail relative to the adjustment must be recited.

SEE OR SEARCH THIS CLASS, SUBCLASS:
305, for a laterally adjustable earth working element mounted forward of the rear of a motor vehicle.
446+, for a laterally adjustable implement with a mast-type hitch.
456, for apparatus liftable for transport on a wheeled frame in which a central group of earth working elements is lifted vertically and side groups are movable inwardly.
459+, for an earth working element lifted vertically on a wheeled frame about a longitudinal axis.
645+, for plural, relatively movable tools which are horizontally adjustable.
741+, for a laterally adjustable earth working element.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclasses 467+ for articulated vehicles which are laterally or angularly adjustable.

477 Tool adjustable about vertical axis:
This subclass is indented under subclass 476. Apparatus wherein the earth working element is adjustable about a vertical axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:
447, for a tool liftable on a wheeled frame by a mast-type hitch and adjustable about a vertical axis.
796, and the subclasses there noted, for a scraper mounted between the front and rear ground supports of a vehicle, an actuator for lifting the scraper for transport and an actuator for adjusting the scraper about a vertical axis.
818+, for an elongated earth working blade mounted ahead of a motor vehicle and an actuator for lifting the blade for transport, the blade being adjustable about a vertical axis.

478 Tool and lift actuator on opposite sides of transverse pivot axis:
This subclass is indented under subclass 452. Apparatus in which the earth working element is mounted upon a member mounted to swing about a fixed transverse axis, the actuator and the earth working element both being connected to the member at points spaced from the pivot axis and on opposite sides thereof, the actuator being effective to raise the earth working element to transport position by movement about said axis.

(1) Note. Devices in which a beam or longitudinal member is pivoted to swing about a transverse axis with an actuator and earth working element connected to the member on opposite sides of the pivot axis wherein the actuator comprises a handle rigidly connected to the beam or member are not included in this definition and are classified in subclass 482.

479 Tool lifted forward of transverse pivot axis:
This subclass is indented under subclass 452. Apparatus in which the earth working element is mounted upon a member mounted to swing about a fixed transverse axis, the actuator being connected to the member forward of the pivot axis and being effective to raise the earth work-

ing element to a transport position about said axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

308, for a tool located forward of the rear of a motor vehicle and mounted on a push bar which is pivoted at its rear end to the motor vehicle and has an actuator attached to its forward end to lift the same.

480 Tool swung about freely shiftable or delayed pivot:

This subclass is indented under subclass 452. Apparatus in which the earth working element is raised by moving it about a transverse axis which is free to move vertically or longitudinally when the earth working element is in earth-engaging position or in which the earth working element is carried by a beam which is raised until some point thereon engages a point on the supporting frame at which time said points form a pivot axis about which the beam swings.

(1) Note. An earth working element which is connected to the supporting frame by a mere chain, cable, or the like is not included in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

473, for tools positively adjusted vertically at longitudinally spaced points.

474, for tools vertically adjustable about a transverse axis which is also vertically adjustable.

481 With separate latch:

This subclass is indented under subclass 452. Apparatus having means operative between the supporting frame and the earth working element for holding the earth working element in one position relative to the frame and in which the holding means is spaced from and forms no part of the lifting actuator or linkage.

SEE OR SEARCH THIS CLASS, SUBCLASS:

228, for separate tools alternating for right or left hand operation which may be simultaneously raised and held in raised position by separate latches.

466, for a tool which is lifted for transport by a servomotor and which is held raised by means independent of the servomotor.

472, for simultaneously raised plural tools which may be individually lowered, as by releasing a latch means.

683, for tools which are latched in an earth working position, there being no lift actuator for the tool.

482 Tool swings about rock shaft axis:

This subclass is indented under subclass 452. Apparatus comprising a shaft mounted on the wheeled frame for rotation about its axis, an earth working element rigidly connected to said shaft to rotate therewith about the shaft axis, said shaft being rotated by the actuator to thereby lift the earth working element for transport.

SEE OR SEARCH THIS CLASS, SUBCLASS:

322+, for tools rocked about a wheel axis by an actuator.

483 Translatable tool:

This subclass is indented under subclass 452. Apparatus in which the earth working element during its vertical movement maintains substantially the same angular position with respect to the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:

415+, for vertically adjustable translatable wheels.

460, and the subclasses there noted for a tool independently vertically adjustable at transversely spaced points and also capable of vertical translation.

661, for plural, relatively movable tools in which a tool is vertically translatably adjustable.

739+, for devices wherein the tool is carried by a mast-type hitch which is generally connected to a vehicle for raising and lowering by vertically spaced substantially parallel links.

484 By parallel links:

This subclass is indented under subclass 483. Apparatus in which the earth working element is carried by links pivoted to the frame and the

earth working element, said links remaining substantially parallel throughout the vertical movement of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

307, for tools mounted forward of the rear of a motor vehicle and having a parallelogram-type lift means for raising the tool.

439+, for a tool lifted by a mast-type hitch having parallel links.

485 Power actuator with manual adjusting or supplemental manual actuating means:

This subclass is indented under subclass 452. Apparatus in which the actuator includes a power means comprising a servomotor or a power take-off and in addition a lever means manipulable by an attendant for moving the earth working element or the power means or a part thereof to effect an adjustment of the earth working element by human power or for acting as an adjustable stop to alter the range of movement imparted to the earth working element by the power means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

303, for tools mounted ahead of the rear of a motor vehicle and having a power actuator with a manual adjusting or actuating means.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 625+ for alternate manual or power operators.

486 Manual actuation coextensive with power:

This subclass is indented under subclass 485. Apparatus in which the means manipulable by the attendant is related to the power unit so that they both are used simultaneously or selectively and the attendant manipulable means can move the earth working element over the same distance and between the same limits as the power means.

487 Constant height depth adjustment:

This subclass is indented under subclass 485. Apparatus in which the earth working element may be lowered to different depths in the soil as the result of different settings of the attendant manipulable means but is always raised to substantially the same height over the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:

411, for self-powered crank axle mounted vertically adjustable wheels with constant height depth adjustment.

488 Single lift actuator for plural relatively movable tools:

This subclass is indented under subclass 452. Apparatus comprising a plurality of earth working elements which are movable relative to each other and in which a single actuator is provided for lifting all the earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

138+, for diverse tools which are vertically adjusted by a single actuator and move relative to one another when adjusted.

456, for devices having side groups of tools which are movable inwardly toward a vertically movable central group.

462, for plural tools which are spring-biased down and raised as a unit.

489 Tools relatively moved during lift:

This subclass is indented under subclass 488. Apparatus wherein the earth working elements are moved relative to each other as a result of the lifting movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

138+, for diverse tools which are vertically adjustable by a single actuator and move relative to one another when adjusted.

390, for apparatus having a plurality of spring tools carried by parallel pivoted tooth bars and also having a wheel substitute such as a runner, said bars usually having an actuator to pivot said bars whereby the tools will be raised.

490 Rotary drum actuator:
This subclass is indented under subclass 452. Apparatus in which the actuator comprises a winch for winding a cable to hoist the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
293+, for a plurality of like elements sequentially operated by a power cycle wherein rotary drums are employed to actuate the elements.
414, for apparatus including a vertically adjustable ground support for a tool frame including a flexible connection between the ground support and actuator.

SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 264+ for apparatus for hauling or hoisting a load including a driven drum which contacts and pulls on a cable attached to the load.

491 Servo-motor actuator:
This subclass is indented under subclass 452. Apparatus in which the actuator comprises a motor which is in motion just long enough to effect the desired movement of the earth working element and then stops.

(1) Note. Servomotor actuators are very common in this art and only unusual types should be cross-referenced to this subclass. The search notes below list subclasses in which "servomotor" appears in the title.

SEE OR SEARCH THIS CLASS, SUBCLASS:
2+, for an implement with an automatic control for a servomotor.
294, for devices having a series of elements, such as wheels or tools, which are sequentially operated by a power cycle where the power is supplied by sequentially operated servomotors.
316, for servomotor actuator on a trailing implement controlled from a leading vehicle.
413, for wheels vertically adjusted by a servomotor actuator.
464, for a servomotor actuator forcing a tool down.
465, for a servomotor with a follow up control for lifting a tool for transport.
466, for a servomotor for lifting a tool for transport and means for holding the tool raised to relieve the load on the servomotor.
831, for plural servomotor actuators for lifting an elongated earth working blade positioned ahead of a motor vehicle.

492 With power take-off for actuator:
This subclass is indented under subclass 452. Apparatus in which the actuator comprises a device for applying the power of a continuously moving source of power to the earth working element for the period of time necessary to move it from one position of adjustment to another.

(1) Note. The source of power may be a ground wheel or motor. However, those devices in which the adjustment of the earth working element is accomplished by applying the power of a propelling means to shifting a hitch are not included. See subclasses 605+ for such devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
129, for means utilizing the power from a ground wheel to adjust an earth marker.
231, for parallel separate tools alternating for right or left hand operation which are independently operated by power derived from a ground wheel.
293+, for a series of like elements sequentially operated by a power cycle which may be derived from a power take-off.
402, and 403+, for devices having an actuator and means interconnecting the actuator and a plurality of wheels for vertically adjusting the wheels wherein the power for the actuator is derived from a ground wheel.

407+, for power-operated means for vertically adjusting a ground support including power take-off devices.

485+, for power-actuating means with manual adjusting or supplemental manual-actuating means.

SEE OR SEARCH CLASS:

56, Harvesters, subclasses 388 through 392 for rakes adjusted by a power take-off means deriving power from a wheel.

74, Machine Element or Mechanism, subclasses 11+ for power take-offs of general application.

493 Position controlled power disengagement:

This subclass is indented under subclass 492. Apparatus wherein means are provided to positively disengage the actuating means from the source of power when the earth working element has reached a predetermined position.

(1) Note. A simple slip clutch is not included in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

129, for means utilizing the power from a ground wheel to adjust an earth marker.

410, for apparatus comprising a frame vertically adjustable relative to a wheel mounted on a crank axle and having a self-interrupted clutch.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclass 33 for an automatic clutch having a manual control and definite position release.

494 Overcenter or toggle holding means:

This subclass is indented under subclass 452. Apparatus comprising a linkage means disposed between the earth working element and the frame (1) which acts to hold the earth working element in a raised position by a link passing over a center position such that the movement due to the weight of the earth working element acts to hold it in raised position or (2) which acts to hold the earth working element in one position by a pair of links assuming a substantially in-line position (i.e., toggle).

SEE OR SEARCH THIS CLASS, SUBCLASS:

499, for tools which include a spring device for alternately biasing a tool in opposite directions during operation.

506, for spring-assisted or spring actuators which may include a spring device for biasing the actuator to raise or lower the tool.

495 Foot operated actuator:

This subclass is indented under subclass 452. Apparatus wherein the actuator is provided with means which adapts it to be operated by the power of a human foot.

496 With combined or optional hand actuation:

This subclass is indented under subclass 495. Apparatus in which means are provided for applying human power by hand to the actuating means in addition to or alternatively of the foot-operated means.

497 Tool spring biased during operation:

This subclass is indented under subclass 452. Apparatus in which the earth working element is biased by resilient means during operation of the device.

(1) Note. The mere recitation in a claim that the earth working element is a spring tooth or formed of a spring material is not enough for classification under this definition.

(2) Note. A mere spring-biased hitch is not included. See subclass 678 for such devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

117, for driven earth working elements which are yieldably mounted on a supporting frame.

705+, for earth working elements which are spring biased or formed or have a part which is spring biased or formed.

498 Biased to neutral position:

This subclass is indented under subclass 497. Apparatus in which the resilient means provides an opposite bias on the tool when the tool

moves in either direction from a neutral position.

499 Spring means alternately biases tool in opposite directions:

This subclass is indented under subclass 497. Apparatus in which the resilient means is active to press the earth working element downwardly when the earth working element is in operative position and is so arranged to provide an upward bias on the earth working element as it is raised to transport position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

494, for tools held in raised position by an overcenter or toggle holding device by the weight of the tool acting on the holding device.

506, for spring-assisted or spring actuators which may include a spring device for biasing the actuator to raise or lower the tool.

500 Tool spring pressed downwardly:

This subclass is indented under subclass 497. Apparatus in which the bias of the resilient means acts to move the earth working element downwardly.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462, for plural tools which are individually spring-biased downwardly and raised as a unit.

501 Lost motion connection between actuator and tool:

This subclass is indented under subclass 452. Apparatus in which the connection between the actuator and earth working element is such as to allow at least a certain amount of free vertical movement between the two in at least one direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

117, for driven earth working elements which are free to move bodily at least a limited amount relative to a supporting frame on which they are mounted.

414, for apparatus including a vertically adjustable ground support for a tool frame including a flexible or lost motion connection between the ground support and the actuator.

449, for apparatus with a mast-type hitch in which the tool is movable relative to the mast while earth working.

502 Flexible connector:

This subclass is indented under subclass 501. Apparatus in which the connection between the actuator and earth working element includes a flexible member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

293+, for a plurality of like elements sequentially operated by a power cycle wherein flexible connectors are interposed between the power means and an element, and through which the element may be actuated by the power means.

490, for tools raised by means of a rotary drum actuator, the connection between the drum and tool usually being a flexible connection.

503 Actuator slidably connected to tool:

This subclass is indented under subclass 452. Apparatus comprising an actuator having a portion pivoted on an axis spaced from the pivot axis of a part of the earth working element, said actuator portion being directly connected to the earth working element by a connection permitting relative sliding motion between the actuator portion and the earth working element part.

504 Screw actuator:

This subclass is indented under subclass 452. Apparatus in which the actuator includes a pair of relatively movable threaded members.

SEE OR SEARCH THIS CLASS, SUBCLASS:

419, for ground supports which are moved with a vertical translating motion relative to a frame by a screw-jack type actuator.

427, for ground supports which are moved vertically relative to a frame by a screw-jack type actuator.

505 Tool connected to frame by bail:
This subclass is indented under subclass 452. Apparatus in which the earth working element is connected to the frame by a U-shaped member, the earth working element being carried in the bight of said member.

(1) Note. This subclass does not include those devices in which the bail member constitutes an axle for a wheel and the tool is rigidly connected to the bail since such devices are classified above in subclass 322.

SEE OR SEARCH THIS CLASS, SUBCLASS:
397, for apparatus having a tool and a ground support which are moved together relative to a frame and which include a tool carried in a bail formed by a wheel carrying crank axle.
480, for tools lifted for transport on wheeled frame said tools swing about a freely shiftable or delayed pivot in which the tool may be carried by a bail member.

506 Spring assisted or spring actuator:
This subclass is indented under subclass 452. Apparatus in which (1) a resilient means is provided which is operatively connected to the actuator so that movement of the actuator in one direction stores energy in the resilient means which is released and aids in moving the actuating means in the opposite direction; or (2) in which the earth working element may be latched in working position and the actuator is a resilient means in which energy is stored in the latched position and is released to raise the earth working element when the latter is unlatched.

SEE OR SEARCH THIS CLASS, SUBCLASS:
424, for spring-assisted actuators for moving a ground support vertically.
497+, for tools which are spring biased during operation and raised to a transport position by an actuator.
790, for a scraper mounted between front and rear supports of a vehicle and counterbalance means for adjusting the scraper.

507 GROUND SUPPORT MOVABLE HORIZONTALLY:
This subclass is indented under the class definition. Apparatus comprising a framework having ground support means such as wheels, the position of the ground support means in the apparatus in plan view being changeable with respect to the framework.

(1) Note. The framework in this definition comprises the running gear of the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:
278+, for implements with wheel steering or an actuator for horizontally angling a wheel axis.
383+, for an implement with the axis of rotation of the wheel lockable or angularly adjustable.
395+, for an implement with a ground support vertically adjustable with respect to the frame, which vertical adjustment may include a horizontal adjustment.

SEE OR SEARCH CLASS:
280, Land Vehicles, subclasses 638+ for extensible vehicles.

508 WITH GUARD, SHIELD OR PLANT DIVERTER:
This subclass is indented under the class definition. Apparatus under class defintion comprising (1) means to prevent people, animals, or objects from contacting parts of the apparatus so as to prevent injuries to themselves or the apparatus, (2) means to change the position of standing plants without soil disturbance (other than changes brought about by the earth working elements themselves), or (3) means to deflect earth or debris thrown about by the apparatus.

(1) Note. This subclass does not include those devices where an earth working element is provided with an extension or portion which acts as a deflector or shield.

SEE OR SEARCH THIS CLASS, SUBCLASS:

29+, for implements including means to shift nonstanding plants without soil disturbance.

38, for an implement comprising a driven tool and an obstruction-feeling device.

81, for an implement comprising a driven tool and a plant deflector or protector.

112+, for an implement comprising a driven tool with a deflector or shield for thrown material.

233+, for apparatus including an obstruction-feeling device for causing or permitting movement of an implement to avoid striking the obstruction.

558+, for disk cleaners which may also deflect earth.

606+, for tool cleaners.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 137 for an unearthing device provided with a protective guard or casing.

280, Land Vehicles, subclasses 847+ for land vehicles with dust and mud guards, subclass 159 for dust guards, and subclasses 160+ for wheel guards for fending obstacles from contact with the wheels of a vehicle.

509 Fender for deflected earth:

This subclass is indented under subclass 508. Apparatus comprising means to limit the lateral movement of material thrown out by an earth working element, usually to protect adjacent standing plants from injury.

510 Rotary:

This subclass is indented under subclass 509. Apparatus in which said means has a rotating movement imparted thereto usually by rolling contact with the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

534, for rolling devices provided with peripherally spaced plant saving means.

511 Perforated or screening type:

This subclass is indented under subclass 509. Apparatus in which said means comprises (1) a member having openings therein, or (2) a plurality of spaced members defining openings to permit the passage of material of a size smaller than the size of the openings through said means.

512 Inverted U-shape:

This subclass is indented under subclass 509. Apparatus in which said means comprises an inverted U- or V-shaped member for limiting the movement of material thrown inwardly toward said means from opposite sides.

513 Laterally spaced fenders for inwardly thrown earth:

This subclass is indented under subclass 509. Apparatus under 509 in which said means comprises a pair of members spaced transversely of the direction of travel for limiting the movement of material thrown inwardly toward said means from opposite sides.

514 Weed turner or trash holddown:

This subclass is indented under subclass 508. Apparatus comprising means for positioning or holding standing plants (e.g., weeds) so that they may be covered or cut by the operation of an earth working element.

(1) Note. This definition includes means to hold surface material, such as stalks, in position to be cut by an earth working element, but excludes means to change the position of surface material without disturbing the soil. See subclasses 29+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

29+, for devices for shifting surface material without disturbing the soil. See (1) Note above.

SEE OR SEARCH CLASS:

111, Planting, subclass 143 for a trash hold down claimed in combination with a planting machine.

515 Spring biased or spring formed:
This subclass is indented under subclass 514. Apparatus in which said means is (1) biased to a working position by a spring means, or (2) formed of a resilient material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
705+, for spring biased or spring formed earthworking tools or tool parts.

516 Plural cooperating elements:
This subclass is indented under subclass 515. Apparatus in which said spring biased or formed means comprises a plurality of closely spaced or contacting elements which allow the passage of obstructions or larger plants between the elements.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclasses 55 and 56 for an extractor for unearthing plants or buried objects comprising plural cooperating plant grasping jaws.

517 Plant deflector:
This subclass is indented under subclass 508. Apparatus comprising means for lifting or deflecting standing or rooted plants to prevent covering or injury by the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:
81, for driven tools having plant deflectors or protectors.

518 ROLLING, ROTATING OR ORBITALLY MOVING TOOL:
This subclass is indented under the class definition. Apparatus comprising an earth working element which has a rotational or orbital motion in use.

(1) Note. The motion of the element may be due to the resistance of the earth, or objects on or in the earth, as the element is moved over the earth; or it may be driven, but no more of the driving means is claimed than a driven shaft which supports the element or a wheel to which it is directly connected, and it does not require a drive means to operate it in the manner disclosed (see (3) Note under subclass 35).

(2) Note. An earth working device, comprising a plurality of earth working blades, tines, or projections mounted on an axis and intended to be used so that the earth is worked while a blade is relatively stationary with respect to its support frame and the device is rotated on its axis only occasionally to bring down another blade to engage the earth, is included even if the rotation is not a complete revolution.

(3) Note. The phrase “earth working element” or the word “tool” as applied to the subject mater of this group of subclasses includes in its meaning a unitary rotating device with a plurality of earth working blades or tines. The whole rotating device is considered a tool or earth working element, rather than merely a single blade of the device.

(4) Note. Patents are classified herein even if the claims do not describe an earth working element as being of the rolling or rotating type, provided that the sole specific disclosure relates to rolling or rotating earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
15, for a lawn edger with a rolling cutter.
21, for lawn aerators.
31, for a rolling cutter in an implement with means for shifting surface material without soil disturbance.
35+, for driven tools or cleaners, especially subclasses 68+ for a driven tool combined with a rolling tool.
133+, for diverse tools including rolling tools. The rolling tools are not found in the generic subclass but are found in indented subclasses 144, 149+, 153, 154, 156, 157, 158, 164, 166, 169, 170+, 174+, and 184+.
219+, for an alternating implement comprising a disk.
349+, for a rolling tool guided or propelled by a walking attendant.
440+, for angled disk gangs liftable as a unit by a mast-type hitch.

454+, for angled disk gangs adapted to be liftable as a unit by an actuator for transport on a wheeled frame or broadly claimed implement, the lifting means not comprising a mast-type hitch.
683, for a tool latched in earth working position.
715, for a rotary landside.
716+, for a movable moldboard.

SEE OR SEARCH CLASS:
30, Cutlery, appropriate subclasses for general utility cutting implements which may roll, rotate, or move through an orbital path as the same are moved along the earth's surface.
56, Harvesters, subclass 256 for rotating disk cutters for harvesters of the vertical-cut type, and subclasses 500+ for stalk choppers for cutting dead crop material.
111, Planting, subclasses 112+ for a rotary furrow opener claimed in combination with a plant setting machine; subclasses 121+ for a rotary furrow opener claimed in combination with liquid or gas soil treatment; and subclasses 157+ for a rotary furrow opener claimed in combination with a planting machine.
152, Resilient Tires and Wheels, appropriate subclasses for tires and wheels. A tire or wheel may inherently have an earth working function but is not classified in Class 172 unless the earth working function is claimed or specifically described in the specification as an important feature.
171, Unearthing Plants or Buried Objects, subclass 93 for a rolling unearthing device.
175, Boring or Penetrating the Earth, subclasses 331+ for a rolling cutter-type earth boring bit.
180, Motor Vehicles, subclass 20 for motor vehicles wherein one or more rollers support the body or frame.
301, Land Vehicles: Wheels and Axles, subclasses 5.1+ for wheels. A wheel may inherently work the earth due to its configuration, but wheels are not classified in Class 172 unless the earth working function is claimed or unless the earth working function is specifically described in the specification as an important feature.
384, Bearings, subclass 157, for a plain bearing and 460 for an antifriction bearing for plow or colter disks which may include the bearing support.
404, Road Structure, Process, or Apparatus, subclasses 122+ for a smooth-surface compaction roller for compressing or packing clods of earth, for rolling out an earthy mass, or for rolling a cementitious mass, and subclass 121 for a sheep's foot roller.
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

519 Yieldable material rim (e.g., rubber, etc.):
This subclass is indented under subclass 518. Apparatus in which the rim portion of the device bearing on the ground is made of rubber, fabric, or like yieldable, flexible material.

(1) Note. Devices under this definition must have a configuration, when in contact with the ground which is like that set out in the various subclasses under subclass 518. A mere compacting roller is classifiable in Class 404, Road Structure, Process, or Apparatus, subclasses 122+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
612, for fabric or flexible tools.
747, for tools made of some specific material.

SEE OR SEARCH CLASS:
152, Resilient Tires and Wheels, appropriate subclasses for wheels with yieldable surfaces.
492, Roll or Roller, subclass 29 for a roll, per se, not elsewhere provided for, having a nap or pile surface and subclasses 53+ and 57+ for a roll of specific composition.

520 Tools on different axes in mutual driving relationship:
This subclass is indented under subclass 518. Apparatus comprising earthworking elements on different axes and interconnected so that the

motion of one is constrained to correspond with the motion of the other.

521 With power take-off from tool or wheel:
This subclass is indented under subclass 518. Apparatus comprising a means driven by the rotating earth working element or a ground-engaging wheel for adjusting a part of the apparatus.

(1) Note. For the meaning of adjusting see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
105, for a driven earth working element driven from a rolling or driven ground wheel.

SEE OR SEARCH CLASS:
414, Material or Article Handling, subclasses 439+ for a ground wheel operated motion or draft responsive load handler.

522 Axis substantially vertical:
This subclass is indented under subclass 518. Apparatus in which the axis of rotation of the earth working element is substantially vertical.

(1) Note. The axis may deviate from the vertical by as much as 45 degrees. Also the axis may be adjustable to a horizontal position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
110, for a driven tool that rotates about a substantially vertical axis.
169, for diverse tools, one of which is a tool which rotates about a substantially vertical axis.

523 With vertically extending teeth:
This subclass is indented under subclass 522. Apparatus in which the earth working element is provided with one or more vertically disposed teeth, blades, or like earth working implements.

524 Positioning means engaging circumference:
This subclass is indented under subclass 523. Apparatus in which a means engages the peripheral portion of the earth working element to control or to aid in controlling the position of the earth working element.

525 With weight:
This subclass is indented under subclass 523. Apparatus including a weight or a means specifically designed to support a weight.

526 Plural tools:
This subclass is indented under subclass 523. Apparatus comprising a plurality of earth working elements each having its axis of rotation substantially vertically disposed.

527 Axis substantially longitudinal:
This subclass is indented under subclass 518. Apparatus in which the axis of rotation of the earth working element is substantially in the direction of movement of the apparatus over the ground.

(1) Note. For classification under this definition an axis must be very close to a true longitudinal axis when looked at in plan view. Many commonly used disk plows and harrows rotate about axes which are somewhat more longitudinally inclined than transverse but such devices are not considered to come under this definition and are classified in appropriate subclasses below.

(2) Note. A device disclosed as comprising a tool driven about a horizontal longitudinal axis is classified in subclasses 107+ even if the drive means is not claimed.

528 With means for stopping or retarding rotation:
This subclass is indented under subclass 518. Apparatus comprising brake or stop means for slowing down or stopping the rotation or rolling of the earth working element.

(1) Note. Apparatus in which the retarding means is capable of driving the earth working element is classifiable in subclasses 35+ even if, as actually used, rotation is caused due to the movement of the apparatus over the earth and the "driving means" functions only to retard the motion of the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

143, for diverse tools one of which is of the intermittently rolling type.

237, for an earth working element which may rotate from a working position through 360° back to the working position, the rotation through part of the cycle being effected by a ground-engageable draft responsive lever.

261+, for tools which may shift upon overload and particularly subclass 262 for apparatus in which an alternate tool is brought into operation as a result of the shift.

683, for an earth working element latched in working position and which moves to a position of less earth resistance when manually unlatched.

529 Positive stop:

This subclass is indented under subclass 528. Apparatus in which the brake or stop means comprises a detent device which acts to positively stop motion by abutment against a shoulder rather than by a frictional engagement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

237, for a tool latched in working position and rotatable through 360° to return to working position and having a ground- engageable draft responsive lever (e.g., wheel segment) to rotate the tool through a portion of the cycle after release of the latch.

SEE OR SEARCH CLASS:

37, Excavating, subclass 440 for scoops adapted to be rotated by forward movement of the device.

530 Wheel or motor controlled:

This subclass is indented under subclass 529. Apparatus in which the stop means is controlled by the motion of a ground wheel or by a motor so that the rotating earth working element is periodically released under control of the wheel or motor as the apparatus is advanced over the ground.

531 Wobble discs:

This subclass is indented under subclass 518. Apparatus in which one or more substantially planar rotary tools is disposed at an angle to its axis of rotation whereby during rotation the tool will sweep back and forth laterally of its direction of traverse.

532 Screw or spiral:

This subclass is indented under subclass 518. Apparatus in which the circumferential edge of the rolling or rotating earth working element is a spiral or a substantial portion of a spiral.

SEE OR SEARCH THIS CLASS, SUBCLASS:

119, for screw- or spiral-type tools which are driven about an axis transverse to the line of draft.

549, for plural tooth or blade units on a single axle which could be adjusted to have the circumferential edge of the teeth or blades in the form of a spiral.

533 Clutch between shaft and rotating element:

This subclass is indented under subclass 518. Apparatus comprising a clutch connection between a rolling or rotating earth working element and its supporting shaft by which means the element may be connected for rotation with its shaft or the shaft and element may rotate relative to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

103, and 125, for overload-relief type clutching means and special clutch features, respectively, for power-driven implements.

534 Wheel or roller with peripherally spaced plant saving means:

This subclass is indented under subclass 518. Apparatus in which the rolling earth working element is in the form of a wheel or roller lying in a plane parallel to the direction of draft and having earth working surfaces thereon, there being provided between a pair of the earth working surfaces a recess, shield or guard means for receiving and protecting a plant of a plant row.

(1) Note. The earth working surface may be merely a smooth surface of the wheel or roller or may have teeth or the like thereon.

SEE OR SEARCH CLASS:
301, Land Vehicles: Wheels and Axles, subclass 53 for vehicle wheels having the ground-engaging portion thereof formed with a series of openings or depressions.

535 Detachable rim for disk:
This subclass is indented under subclass 518. Apparatus comprising a circumferential earth working element adapted to be readily attached to and detached from a generally circular platelike member commonly called a "disk" so as to surround the circumference of the platelike member.

SEE OR SEARCH THIS CLASS, SUBCLASS:
243, for a detachable rim for a disk, the rim being used as a ground wheel.

SEE OR SEARCH CLASS:
301, Land Vehicles: Wheels and Axles, subclass 63.101 for vehicle wheels in which the supporting portion between the ground-engaging rim and the hub is in the form of a continuous or deformed disk.

536 Wheel, roller or gauge and axially adjacent tool on same axis:
This subclass is indented under subclass 518. Apparatus comprising a ground-engaging supporting wheel, roller, or gage means having coaxially associated therewith and operatively connected thereto at a side thereof a rotary tool means, the surface of the wheel or roller not being overlapped by the rotary tool.

(1) Note. The tool may be a rim or the like attached (1) to one end face of the wheel and may project laterally or radially outwardly therefrom, or (2) may be a thin rim or the like attached between the end faces of a pair of wheels and projecting radially outwardly therefrom in a relatively flat plane such that the overall area of the peripheral surfaces of the wheels is not appreciably changed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
539, for wheels or rollers having a groove, rim or disk formed integral therewith or attached thereto so as to be on or overlie the circumference of the wheel or roller.

537 Corrugated surface rollers:
This subclass is indented under subclass 518. Apparatus in which the rolling implement comprises (1) a plurality of abutting, coaxially aligned, similar, unbroken, peripheral-edged wheel-like elements which together form an axially extending wave-like configuration of alternate ridges and grooves or (2) a single broad-rimmed element having the outer peripheral surface thereof formed of an axially or circumferentially extending wave-like configuration of alternate ridges and grooves.

SEE OR SEARCH CLASS:
404, Road Structure, Process, or Apparatus, subclass 124, for a compacting roller with specific periphery characteristic.
492, Roll or Roller, subclasses 30+ for a roll, per se, not elsewhere provided for, having surface projections, indentations or slits.

538 Paired press rims (e.g., planter press wheels, etc.):
This subclass is indented under subclass 518. Apparatus in which the earth working element comprises an integral or separately formed pair of cooperating, radially inwardly converging annular soil packing surfaces adapted to ride on and compress the opposed sloping faces of a ridged plant or seed row.

SEE OR SEARCH THIS CLASS, SUBCLASS:
519, for planter press wheels having the opposed converging rim portions thereof, i.e., the tread portions, formed of a flexible material such as rubber.

539 Smooth roller with groove, rim or disk:

This subclass is indented under subclass 518. Apparatus comprising a broad-rimmed rolling device having a generally smooth surface for breaking clods and/or smoothing the earth, said device having at least one circumferential groove to form a ridge of earth as the device rolls over the earth, or being associated with one or more thin rims or disks which lie in a generally vertical plane and project radially beyond the broad-rimmed circumference of the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

536, for a wheel or roller with an axially adjacent earth working element rotating on the same axis.

SEE OR SEARCH CLASS:

404, Road Structure, Process, or Apparatus, subclass 124, for a compacting roller with specific periphery characteristics.

540 Tool has circumferentially spaced teeth, tines, blades or the like:

This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working element has teeth, tines, projections, blades, or other configurations spaced circumferentially in a plane generally at right angles to the axis of rotation to engage the earth intermittently or with a varying effect as the effect as the earth working element turns.

(1) Note. This definition includes those devices in which earth working teeth, tines, or blades are attached to wheels or rollers to convert them to the kind of earth working element set forth in the definition. Apparatus in which a wheel element is attached to a toothed element for purposes of transportation is found in subclass 243.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118+, for similar earth working elements which are mounted on a transverse axis and provided with a means for driving said elements through a cycle of operation.

177, for diverse tools, one of which is of the rolling type having circumferentially spaced blades, tines, or the like.

532, for a rolling tool with screw- or spirally arranged blades or teeth.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 377 for side delivery horse rakes having tined rotary raking elements.

111, Planting, subclass 159 for a tined rotary furrow opener claimed in combination with a planting machine.

171, Unearthing Plants or Buried Objects, subclasses 93, 95+, 116, and 128 for rolling a rotating means provided with circumferentially spaced teeth or blades.

301, Land Vehicles: Wheels and Axles, subclass 40.1 for emergency tires having traction increasing lugs or blades fastened thereto, and subclasses 43+ for wheels having traction increasing means in the form of projecting spurs or cleats.

404, Road Structure, Process, or Apparatus, subclass 121 for a sheep's foot roller.

452, Butchering, subclasses 141+ for meat tenderizing rollers having circumferentially, spaced teeth, blades, or the like.

492, Roll or Roller, subclasses 30+ for a roll, per se, not elsewhere provided for, having surface projections, indentations or slits.

541 With means for preventing ground engagement of teeth or blades:

This subclass is indented under subclass 540. Apparatus in which there are means operable to move the earth working projections with respect to the rotating support therefor to prevent the engagement of the projections with the ground.

SEE OR SEARCH CLASS:

301, Land Vehicles: Wheels and Axles, subclasses 46+ for vehicle wheels having adjustably mounted thereon traction increasing spurs or cleats.

542 Tooth or blade on endless carrier:
This subclass is indented under subclass 540. Apparatus in which the teeth, tines, projections, or blades of the implement are mounted on a flexible or articulated, closed belt-like member which moves through an endless circuit as the device is moved over the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:
100, for power driven, endless chain-type earth working implements.

SEE OR SEARCH CLASS:
175, Boring or Penetrating the Earth, subclasses 89+ for an earth-boring device including a tool element on a continuously driven flexible or articulated endless member.
305, Wheel Substitutes for Land Vehicles, subclasses 187+ for one endless flexible track for a land vehicle, said track having detachable cleats for penetrating the ground to secure better traction for the track.

543 Spring tooth or blade:
This subclass is indented under subclass 540. Apparatus in which the teeth, tines, blades, or the like are formed of an inherently resilient material whereby such teeth, tines, blades, or the like may flex or yield under stress.

SEE OR SEARCH THIS CLASS, SUBCLASS:
96, for spring teeth, blades, tines, or the like mounted on a cyclically driven carrier.
643, and 705+, for spring teeth, per se.

SEE OR SEARCH CLASS:
152, Resilient Tires and Wheels, subclasses 5+ for spring wheels having deformable ground-engaging rim portions whereby the wheel as a whole does not retain its circular form during rotation.

544 Spring moving or mounting means for tooth or blade:
This subclass is indented under subclass 540. Apparatus in which a tooth, tine, or blade is mounted on a spring or is related to a spring so that relative movement between the tooth, tine, or blade and its supporting member stresses the spring.

SEE OR SEARCH THIS CLASS, SUBCLASS:
96, for flexible or yieldably mounted teeth, blades, or the like mounted on a cyclically driven carrier.

SEE OR SEARCH CLASS:
152, Resilient Tires and Wheels, subclasses 5+ for spring wheels having resiliently deformable ground-engaging rim portions whereby the wheel as a whole does not retain its circular form during rotation.
301, Land Vehicles: Wheels and Axles, subclass 51 for a vehicle wheel having resiliently mounted thereon one or more traction increasing spurs or cleats.

545 Blades or teeth change position relative to each other or rotating support during rotation:
This subclass is indented under subclass 540. Apparatus in which the projecting means change their position relative to each other while the device as a whole is rotating, or are in movable relation to a rotating support therefor while the support is rotating.

SEE OR SEARCH THIS CLASS, SUBCLASS:
91, for driven implements wherein the teeth, blades, or tines therefor are moved or are movable relative to a driven carrier portion thereof.
541, for rolling supports having movable mounted thereon teeth, blades, tines, or the like which are movable to a position in which the teeth, etc., are prevented from engaging the ground.
543, for rolling or rotating implements with spring teeth.

SEE OR SEARCH CLASS:
301, Land Vehicles: Wheels and Axles, subclasses 45+ for vehicle wheels having movable mounted thereon traction increasing spurs or cleats.

546 With means for causing movement:
This subclass is indented under subclass 545. Apparatus in which means are provided for causing the movement to take place.

SEE OR SEARCH THIS CLASS, SUBCLASS:
92+, for similar devices wherein the rotating element is positively driven from a power source.
96, for similar devices wherein the rotating element is positively driven from a power source and the means for causing movement is a spring.
541, for a moving means operable to prevent ground engagement of the tines.
544+, for spring mounting or moving means.

SEE OR SEARCH CLASS:
301, Land Vehicles: Wheels and Axles, subclasses 48 and 49 for vehicle wheels having traction increasing spurs or cleats thereon, there being provided a means for alternately projecting and retracting the spurs on cleats during each revolution of the wheel.

547 With cleaning means:
This subclass is indented under subclass 540. Apparatus with means for clearing earth from the projecting elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
69, for apparatus in which one earth working element is definitely a driving means and is cleaned by another earth working element which is driven by the first element as the apparatus is propelled over the ground.
546, for a rolling, rotating, or orbitally moving element having tines, blades, or the like in which the tines or blades are cleaned by movement relative to the rotating support.
558+, for disc cleaning means.
674+, for earth working tool cleaning means in general.

548 Tooth or blade units on single axle:
This subclass is indented under subclass 540. Apparatus in which there are a plurality of tooth, tine, or blade units side by side on a common shaft or axle, each unit comprising at least one blade, tooth, or tine and a hub portion.

549 Tooth or blade units angularly adjustable on axle:
This subclass is indented under subclass 548. Apparatus in which a means is provided on the tooth or blade units or on the supporting axle therefor for adjusting the angular disposition of the tooth or blade units relative to each other in a circumferential direction about said axle.

(1) Note. For the meaning of “adjusting” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
109, for ground-engaging teeth or blades adjustably mounted on the peripheral surfaces of rotary tools, which tools are driven about horizontally disposed, longitudinally extending axes.
550, for a rolling or rotating tool with adjustable teeth.

550 Tooth or blade adjustable on carrier :
This subclass is indented under subclass 540. Apparatus wherein a tine, tooth, blade, or like projection is adjustable on a rotatable carrier means.

(1) Note. For the meaning of “adjustable” see the class definition.

(2) Note. A device disclosed as comprising a tool driven about a horizontal longitudinal axis and having adjustable teeth or blades is classified in subclass 109 even if the drive means is not claimed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
545+, for a rolling or rotating tool in which the blades or teeth change position during rotation.
549, for a rolling or rotating tool with plural, adjustable, positioned tine units on a single axle.

551 Rolling tool spring biased into ground contact:
This subclass is indented under subclass 540. Apparatus in which the rolling implement is journaled in a frame which frame is movably mounted on a main frame, there being interposed between the two frames a resilient means for yieldably urging the implement into ground contact.

SEE OR SEARCH THIS CLASS, SUBCLASS:
117, for rotary-driven implements which are yieldably mounted on a supporting frame.
572, for spring means to move a rolling or rotating tool vertically.

552 Laterally extending bar or blade with skeleton support (e.g., lawn mower type, etc.):
This subclass is indented under subclass 540. Apparatus in which a laterally extending bar or earth working blade portion is held on a rotatable support by openwork or spaced supporting means.

(1) Note. The general appearance of these devices is usually very similar to that of the conventional lawn mower.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31, for similar rolling earth working elements combined with means for shifting surface material without soil disturbance (e.g., combined with rake).
121, for driven earth working elements having laterally extending blades or skeleton support.

SEE OR SEARCH CLASS:
301, Land Vehicles: Wheels and Axles, subclass 52 for vehicle wheels composed of two or more parallel rims connected one to the other by cleats.

553 Toothed bar or blade:
This subclass is indented under subclass 552. Apparatus in which the laterally extending blade portion is provided with or formed of a number of spaced prongs, teeth, notches, or the like ground-working projections.

554 Drum with axially spaced teeth or blades:
This subclass is indented under subclass 540. Apparatus which comprises a relatively large diameter drum or roller-like member having axially spaced along the periphery thereof a plurality of teeth, blades, cutters, or the like.

(1) Note. The peripheral surface of the drum should be in ground contact as distinguished from a small diameter supporting shaft for teeth, blades, cutters or the like, which shaft would not be in ground contact.

SEE OR SEARCH THIS CLASS, SUBCLASS:
122, for a driven tool comprising a drum having teeth or blades.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 23.51 and 895.31 for apparatus and processes, respectively, of making toothed cylinders.

555 Integral disk:
This subclass is indented under subclass 540. Apparatus in which the teeth or other configurations are integral parts of a platelike member.

556 Tooth or blade axially clamped to hub face (e.g., hoe wheel type, etc.):
This subclass is indented under subclass 540. Apparatus in which the teeth or blades are attached to a generally thin wheel or hub-like rotary support by a locking or clamping means which means itself extends, or exerts a clamping force which extends, in a direction parallel to the axis of rotation of said support.

SEE OR SEARCH CLASS:
301, Land Vehicles: Wheels and Axles, subclasses 44.1+ for vehicle wheels having detachably mounted thereon traction increasing spurs or cleats.

557 Rim with spokes:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working element compreses a continuous rim supported by a plurality of spokes.

(1) Note. Earth working elements such as press wheels, marker wheels and the like are found in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

539, for a wheel or roller with a groove, rim, or disk.

SEE OR SEARCH CLASS:

301, Land Vehicles: Wheels and Axles, subclass 64.101 for a vehicle wheel in which the supporting portion between the rim and the hub comprises a disk deformed or cut to simulate in form or function the spokes of a conventional wheel.

558 With disk cleaning means:

This subclass is indented under subclass 518. Apparatus comprising means to remove earth from a generally circular plate like rolling or rotating earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

168, for a rolling or rotating tool for cutting or raising a furrow slice and a nonrolling adjacent moldboard for receiving the furrow slice and inverting or completing the inversion of the same.

220, for cleaning means for disks which are shifted for opposite throw for alternate right or left hand operation, the cleaning means being movable relative to the disk upon reversal of the disk.

547, for cleaners for rolling, rotating, or orbitally moving earth working elements having tines, blades or other discontinuous or angular periphery.

606, for cleaners for stationary-type implement.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, especially subclasses 236.01+, for disk cleaners which are not attachments on earth working apparatus.

280, Land Vehicles, subclasses 855+ for vehicles having wheel scrapers or cleaners.

559 Rotatably mounted cleaning means:

This subclass is indented under subclass 558. Apparatus in which the earth-removing means is supported for free rotation in position to remove accumulated soil from the platelike member.

560 Cleaner for pair of converging disks:

This subclass is indented under subclass 558. Apparatus in which earth is removed from a pair of platelike members which converge towards each other and touch or are closely adjacent at their convergent ends.

SEE OR SEARCH THIS CLASS, SUBCLASS:

575, for converging touching disks.

561 Cleaners for opposite sides of disk:

This subclass is indented under subclass 558. Apparatus in which the earth-removing means remove earth from the opposite sides of a said platelike member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

560, for converging discs having cleaners for opposite sides of each disk.

562 Plural cleaners for single disk:

This subclass is indented under subclass 558. Apparatus in which more than one earth-removing means is mounted to cooperate with a single side of a said platelike member.

563 Cleaners with common operator:

This subclass is indented under subclass 558. Apparatus comprising a plurality of earth-removing means associated with a plurality of disks and means common to said plurality of earth-removing means for moving them towards and away from the disks.

564 Mounted on rock shaft:

This subclass is indented under subclass 563. Apparatus in which the earth-removing means are each supported on a common elongated shaft which is turned about its axis to move the earth removing means.

565 Operating means moves parallel to disk gang axis:
This subclass is indented under subclass 563. Apparatus in which the disks have a common axis or generally parallel axes and the associated earth-removing means are moved toward or away from the disks by a common operating means which is movable in a direction generally parallel to the axis or axes of the disks.

566 Spring biased toward disk:
This subclass is indented under subclass 558. Apparatus in which the earth-removing means or a portion thereof is urged towards the platelike member.

567 Disk gang and single disk on diverse axes:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working elements comprise a group of generally circular platelike members each having the same axis of rotation and a single generally circular platelike member having a different axis of rotation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
574+, for plural disks mounted on individual axes.

568 Disk gang with movable or removable section:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working elements are generally circular platelike members each having the same axis of rotation and operated as a unit in ordinary use, a plurality of the platelike members which comprise a portion of the unit being movable or removable as a whole with respect to the remaining platelike members.

569 Disks pivoted on vertical axes with interconnected means for moving them indentically:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working elements are generally circular platelike members said members being parallel and mounted in an identical manner for pivotal movement about vertical axes and means interconnecting them for moving them about their axes, the movement of each member or cluster of members about its axis being the same amount and direction as the movement of each other member or cluster of members.

SEE OR SEARCH THIS CLASS, SUBCLASS:
221+, for an implement adapted to be alternated for right or left hand operation by being shifted for an opposite throw, said implement having plural disks shifted about individual vertical axes.
576, for plural disks mounted on individual axes and provided with interconnected means for simultaneously adjusting said discs.

570 With spring means other than for detent:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working element is provided with a spring other than one associated with a detent.

571 Spring is for tool group horizontal angling:
This subclass is indented under subclass 570. Apparatus in which a spring affects movement of a group of said earth working elements so as to change the angle of the axis or axes of rotation of the elements in plan view.

572 Spring acts to move tool vertically:
This subclass is indented under subclass 570. Apparatus in which a spring acts to move said earth working elements vertically.

SEE OR SEARCH THIS CLASS, SUBCLASS:
551, for a rolling tool having teeth, tines, or blades and provided with spring means to urge the tool into ground contact.
705+, for spring means to move an earth working element other than disk vertically.

573 Plural tools, individually spring urged:
This subclass is indented under subclass 572. Apparatus comprising a plurality of said earth working elements, each being separately and individually acted on by a spring member.

574 Plural disks with individual mount or axis:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working element is generally a circular plate-

like member, and there are a plurality of such members, each of which is disclosed as having an individual axle or is disclosed as revolving about an individual axis, at least in one position of adjustment.

SEE OR SEARCH THIS CLASS, SUBCLASS:
685+, for plural tools of the nonrolling type.

SEE OR SEARCH CLASS:
111, Planting, subclass 164 for openers of this general type claimed in combination with planters.

575 Touching disks:
This subclass is indented under subclass 574. Apparatus in which two of said platelike members touch each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
560, for touching disks provided with cleaning means.

576 With interconnected means for adjusting a plurality of disks:
This subclass is indented under subclass 574. Apparatus in which there are means for adjusting the platelike members, said means for the different platelike members being interconnected or having a common operator so as to influence each other.

(1) Note. For the meaning of "adjusting" see the class definition.

(2) Note. Devices in which the platelike members, rigidly mounted on the same support to move together, are not included in this definition. The interconnection must be by a linkage or the like.

SEE OR SEARCH THIS CLASS, SUBCLASS:
569, for plural disks pivoted on individual vertical axes and provided with interconnected means for moving them identically.

577 Reversible group:
This subclass is indented under subclass 518. Apparatus comprising a plurality of earth working element, handled as a unit, which unit is adapted to be turned to positions 180° apart from each other in plan view, for use in earth working in either position (e.g., to throw the earth either to the right or left).

(1) Note. Many disk gangs are inherently reversible. For classification under this definition a claim must make specific reference to the reversible feature.

SEE OR SEARCH THIS CLASS, SUBCLASS:
219+, for a group of rolling earth working elements movable to reversed position by an actuating means comprising more than a mere handle rigidly attached to the frame to be moved.
254, for devices which are changeable in function due to rearrangement of earth working elements, but not including devices as defined in subclass 577.
702+, for an earth working apparatus having a reversible port other than a disk gang.

578 With wheel (not on motor vehicle):
This subclass is indented under subclass 518. Apparatus comprising a wheel, other than a traction wheel forming a normal part of a self-propelled vehicle.

(1) Note. For classification under this definition a claim must positively refer to a wheel or some structure which necessarily implies a wheel. A reference in a claim to a frame which might or might not carry a wheel is not enough even though the frame is disclosed as carrying a wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
395+, for rolling or rotating earth working elements associated with wheels which are vertically adjustable with respect to their running gear.
440+, for angled gangs of earth working elements liftable as a unit with the mast of a mast-type hitch.
454+, for angled gangs of earth working elements liftable as a unit for transport on a wheeled frame by means other than a mast-type hitch.

579 Plural groups of disks:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working element is a generally circular plate-like member and there are plurality of groups or clusters of said members each group or cluster comprising a subassembly of parts which is handled as a unit.

(1) Note. A group is usually a gang of disks each rotating about the same axis, the gang being handled as a unit in the apparatus. The groups of disks, however, may be disclosed as involving disks rotating on different axes. If the claim merely calls for groups or gangs without detailing the different axes, the device is classfiable under this definition. If the claim describes the mounting of the disks on different axes in some detail, the patent would be classifiable in subclasses 574+ if its disclosure warranted it, or in other appropriate subclasses.

580 Power operated actuator:
This subclass is indented under subclass 579. Apparatus comprising a power means for moving an implement part to different positions relative to surrounding structure.

(1) Note. Implements which are adjusted by means of the draft force pulling the implement are not included, being classified in appropriate subclasses below. The "power means" of this definition comprises a servomotor or a power take off from a wheel or motor.

581 Groups changeable to different types of arrangements:
This subclass is indented under subclass 579. Apparatus in which groups of said members are changeable from one kind of arrangement to another, the change involving more than mere vertical adjustment, horizontal angling, lateral, or longitudinal adjustment which does not change the basic character of the arrangement.

(1) Note. The different arrangement may be solely for the purpose of changing the overall width of the device whereby it may be transported through a narrow opening in a fence, along a roadway, or the like.

(2) Note. The same number of groups must appear in each arrangement under this definition. For apparatus in which a group is added or subtracted see subclass 253.

SEE OR SEARCH THIS CLASS, SUBCLASS:
568, for different arrangements effected by moving or removing a section of a gang.

582 With independent lateral adjustment:
This subclass is indented under subclass 579. Apparatus comprising means for positioning groups of said members at different lateral horizontal distances apart from each other independently of the variation in spacing incidental to a vertical motion or a horizontal angling movement.

583 Vertically adjustable group:
This subclass is indented under subclass 579. Apparatus comprising means for adjusting a group of said members or part thereof vertically.

(1) Note. For the meaning of "adjusting" see the class definition.

(2) Note. The group may be held in different positions by the draft force on the implement.

(3) Note. The holding means may be an adjustable stop, holding against movement in only one direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:
440+, for plural groups of disks liftable as a unit by a mast-type hitch.
454, for plural groups of disks lifted by an actuator as a unit for transport on a wheeled frame or broadly claimed implement.
600, for a single gang mounted for tilting and horizontal angling adjustment.

584 Horizontally angularly adjustable group:
This subclass is indented under subclass 579. Apparatus comprising means for adjusting a group of said members in positions having a different angular relationship to adjacent structure in plan view.

(1) Note. For the meaning of "adjusting" see the class definition.

(2) Note. The gang may be adjusted due to a draft force, such as arises when making a turn or pulling the implement forward or pushing it rearward, or due to manual adjustment.

585 Groups of unequal length:
This subclass is indented under subclass 584. Apparatus in which one group is of a different length than another group.

586 More than two laterally positioned groups:
This subclass is indented under subclass 584. Apparatus in which there are more than two of said groups in a lateral direction across the apparatus so that more than two paths are formed in the ground.

(1) Note. A rear group may overlap a front group to a very minor extent in a lateral sense and still be considered to form a separate path. Where, however, the overlap is of material length the groups are considered tandem and classifiable in subclass 595 or 596.

587 Groups laterally spaced and unaligned:
This subclass is indented under subclass 584. Apparatus comprising at least two groups of disks arranged in staggered relation with respect to each other on each side of the center line of the apparatus (e.g., the axis of a group of disks on one side of the center line does not intersect the center line at the same point as the axis of a group of disks on the other side of the center line).

588 Hitch longitudinally movable on tongue and groups abreast:
This subclass is indented under subclass 584. Apparatus comprising a pair of said groups positioned abreast of each other, a tongue member extending longitudinally of the line of draft, means pivotally connecting the gangs to the tongue member, a draft hitch means for connection to a propelling means, said hitch means being mounted on and movable longitudinally with respect to said tongue member, and means connecting the gangs to the hitch means to swing or permit the gang to swing about their pivots when the hitch means is moved relative to the tongue.

SEE OR SEARCH CLASS:
414, Material or Article Handling, subclasses 435+ for motion or draft responsive load handling including movably connected vehicle sections.

589 Turning connection offset from draft connection:
This subclass is indented under subclass 584. Apparatus comprising a means attached to a tractor in addition to the draft connection of the implement to the tractor and at a point laterally spaced from the draft connection so that a turning movement of the tractor causes a movement of a disc gang relative to adjacent structure.

590 Latch responsive to tractor motion:
This subclass is indented under subclass 589. Apparatus comprising a detent means holding two parts against relative motion, which means is responsive to a movement of the tractor hitched to the implement to release the detent.

591 With manual actuator:
This subclass is indented under subclass 584. Apparatus comprising an actuator powered by an attendant, the operation of which moves a group or is effective to vary the range of movement caused by some other means.

(1) Note. The mere operation of a latch is not included.

(2) Note. See the class definition for the meaning of "actuator".

592 Concentric controls:
This subclass is indented under subclass 591. Apparatus in which there is a plurality of actuators, each having a shaft, the shaft of one actuator being concentrically positioned with respect to the shaft of another actuator.

593 Separate handles for independent gang adjustment:
This subclass is indented under subclass 591. Apparatus comprising a plurality of actuators, each connected to a different group and each moving its group independently of another.

594 Double tandem groups:
This subclass is indented under subclass 591. Apparatus in which two groups are arranged substantially abreast with their longitudinal axes on substantially the same laterally extending line and two other similarly positioned groups are disposed behind the first two groups and thereby work substantially the same soil path.

SEE OR SEARCH THIS CLASS, SUBCLASS:
592, for horizontally, angularly adjustable double tandem groups having concentric controls.

595 Double tandem groups:
This subclass is indented under subclass 584. Apparatus comprising two groups positionable substantially abreast with their longitudinal axes on substantially the same laterally extending line and two other similarly positioned group, behind the first two groups and working substantially the same soil path.

SEE OR SEARCH THIS CLASS, SUBCLASS:
588, for horizontally, angularly adjustable double tandem groups wherein the adjusting means comprises a hitch, longitudinally movable on the tongue of the apparatus.
589+, for horizontally, angularly adjustable double tandem groups having a turning connection offset from the draft connection.
594+, for horizontally, angularly adjustable double tandem groups provided with manual actuator-adjusting means.

596 Tandem groups:
This subclass is indented under subclass 584. Apparatus comprising a front group and a rear group positioned substantially directly in back of the front group and working substantially the same soil path.

SEE OR SEARCH THIS CLASS, SUBCLASS:
48+, for power-driven earth working elements arranged in tandem formation.
589+, for horizontally, angularly adjustable tandem gangs having a turning connection offset from the draft connection.

597 Toggle joint between groups:
This subclass is indented under subclass 596. Apparatus comprising two struts each directly pivoted to a different group and directly pivoted to each other to form a toggle joint between the groups.

598 Thrust means directly between group axles:
This subclass is indented under subclass 584. Apparatus comprising a pair of groups positioned abreast and means acting directly between the axles of the groups or directly between the end disks to take the end thrust between the groups.

599 Disk gang:
This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working element is a generally circular plate-like member and there is a plurality of said members each having a common axis of rotation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
574+, for plural discs having individual mounts or axes.

SEE OR SEARCH CLASS:
384, Bearings, subclass 157 for a plain bearing and 460 for an antifriction bearing for a plow or colter disks which may include the bearing support.

600 Supported for tilting and horizontal angling adjustment:
This subclass is indented under subclass 599. Apparatus in which the common axis is adjustable angularly in plan view and is also adjustable angularly in an elevational view.

(1) Note. For the meaning of “adjustable” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

583, for plural gangs supported for tilting adjustment.

584+, for plural gangs supported for horizontal angling adjustment.

603, for a single disc which is horizontally, angularly adjustable.

742, for a tool which is laterally adjustable about a vertical axis.

743, for a tool which is laterally adjustable about a longitudinal axis.

601 Disks rotatable relative to axle:

This subclass is indented under subclass 599. Apparatus in which the axis of rotation of the platelike members extends along the center of a straight supporting shaft, and the platelike members are rotatable relative to said shaft.

602 Single disk freely swayable:

This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working tool is disclosed as a single, generally circular platelike member which is mounted on a frame or frame standard for free swinging, arcuate movement about a vertical axis whereby the member assumes or may freely assume different angular positions relative to the direction of draft as viewed in plan.

SEE OR SEARCH THIS CLASS, SUBCLASS:

748, for a freely pivoting tool other than a disc.

603 Disk horizontally angularly changeable:

This subclass is indented under subclass 518. Apparatus in which the rolling or rotating earth working tool comprises a single, generally circular platelike member provided with a means for adjusting such member on a frame in a different angular relationship to adjacent structure as viewed in plan.

(1) Note. For the meaning of "adjusting" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

584+, for a horizontally, angularly adjustable disc gang.

742, for a tool other than a disc which is laterally adjustable about a vertical axis.

604 Detailed disk structure per se:

This subclass is indented under subclass 518. Apparatus in which the rolling or rotating element comprises a generally circular platelike member of some specific structural configuration.

(1) Note. For classification under this definition a patent must have a claim which contains some detailed description of the platelike member. The detailed description may relate merely to the means for fastening the plate to a bearing structure provided such means is integral with the plate. A separate means for attachment to a bearing, or the bearing or support structure, per se, is not included under this definition. Thus, a patent with a claim reciting details of a bearing and with merely a board reference to a disk is not included.

SEE OR SEARCH THIS CLASS, SUBCLASS:

557, for a disk with spokes.

599+, for disk gangs.

SEE OR SEARCH CLASS:

111, Planting, subclasses 163+ for disk-type earth working tools claimed in combination with planting machines.

175, Boring or Penetrating the Earth, subclass 373 for a disc cutter for a roller-type earth boring bit.

301, Land Vehicles: Wheels and Axles, subclass 63.101 for vehicle wheels having the supporting portion between the hub and the rim formed of a continuous or a deformed disk member.

605 SHIFTABLE HITCH MOVES TOOL RELATIVE TO FRAME:

This subclass is indented under the class definition. Apparatus comprising a frame, a hitch carried by the frame for connection to a propelling means, said hitch being movable with respect to the frame, and earth working element movably carried by the frame and means interconnecting the hitch and earth working

element whereby movement of the hitch with respect to the frame causes movement of the earth working element with respect to the frame.

(1) Note. This definition is intended to include devices in which an earth working element has a normal earth working position and is moved by the hitch after it has moved up from the normal position on striking an obstacle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

238, for an implement comprising a ground support moved vertically relative to the frame by a draft force.

467, an implement comprising a tool having vertical movement caused by a shiftable hitch combined with an actuator adapted to lift the tool for transport on a wheeled frame or broadly claimed implement.

588, for an implement comprising laterally disposed disk gangs which are horizontally angled by a hitch longitudinally movable on a tongue.

SEE OR SEARCH CLASS:

414, Material or Article Handling, subclasses 435+ for a draft responsive load handler and transporter.

606 WITH CLEANER:

This subclass is indented under the class definition. Apparatus comprising means movable relative to an earth working element or other part of the apparatus for cleaning said earth working element or said other part of the apparatus.

(1) Note. An earth working element having means to reduce friction (e.g., moldboard with rollers) is excluded. However, a nonearth working part (e.g., standard) having a relatively movable part such as a roller to prevent weeds, trash, or the like from collecting thereon is included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39, for an implement comprising a driven tool and a cleaner spaced from the ground surface.

66, for a nondriven tool combined with a driven cleaner.

183, for laterally spaced rolling and nonrolling earth working elements having a scissors or shearing action between adjacent faces, usually to cut stalks, etc., from the nonrolling element.

220, for a reversible disk with a reversible scraper.

236+, for apparatus having a ground-engageable draft responsive lever which may act to lift the implement off the ground to free it from trash.

461, for apparatus having an implement liftable for transport on a wheeled frame, the implement being movable with respect to a cleaning means during lift.

547, for a rolling tool having circumferentially spaced tines or blades and provided with cleaning means.

558+, for disk type rolling implements with disk cleaning means.

714+, for earth working elements having parts relatively movable during operation.

755, for moldboard-type implements in which the moldboard is heated or lubricated to reduce friction.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, for general utility cleaning apparatus not confined or limited to any particular industrial art.

134, Cleaning and Liquid Contact With Solids, for the generic home for the separation or removal of adherent dirt.

175, Boring or Penetrating the Earth, subclass 313 for a mechanical cleaner for an earth boring bit or cutter element.

607 Cleaner surrounds tooth:

This subclass is indented under subclass 606. Apparatus in which the earth working element is in the form of a vertically extending tooth, the cleaner comprising a member which extends completely around the tooth, relative

vertical movement between the tooth and cleaner effecting the cleaning action.

608 Clearing roller:
This subclass is indented under subclass 606. Apparatus comprising a freely rotatable non-earth working member located at some point subject to the collection of material (trash, weeds, etc.) said member rotating under the influence of the material to clear the same from the apparatus.

609 For plural tools :
This subclass is indented under subclass 606. Apparatus including a plurality of earth working elements and means to remove material from the surface of or from between the elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
607, for a plurality of teeth and cleaning means which surrounds the teeth.

610 Scraper:
This subclass is indented under subclass 606. Apparatus in which thecleaner comprises an element which sweeps across the surface to be cleaned in scraping contact therewith or closely adjacent thereto.

SEE OR SEARCH THIS CLASS, SUBCLASS:
609, for scrapers for plural tools.

SEE OR SEARCH CLASS:
15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses for general cleaning attachments including scrapers, wipers, or brushes which cooperate with moving surfaces of devices to remove material therefrom.

611 WITH WEIGHT:
This subclass is indented under the class definition. Apparatus comprising a weight or means for holding or adjusting a weight.

(1) Note. Since any object has weight, apparatus is classified in this subclass only when an element of the combination is specially provided to add weight or hold a weight.

SEE OR SEARCH THIS CLASS, SUBCLASS:
525, for implements having vertically extending teeth rotatable about a substantially vertical axis, wherein a weight is provided to tilt or cant the axis so that certain of the teeth will engage the earth and cause the teeth to rotate about said axis.

612 FABRIC OR FLEXIBLE TOOL:
This subclass is indented under the class definition. Apparatus comprising a flexible fabric, chain, cable, strand, rope, or wire for engaging the earth.

(1) Note. A flexible fabric may include a plurality of tooth members each tooth or very small goup of teeth being joined to others by pivoted links so as to act like a flexible chain or mat while in earth working use. The fabric may also be a textile material or a flexible metallic mesh or grating member. However, rigid bar members of substantial length carrying a plurality of teeth and connected by hinges or links to adjacent bars or supports are not included. This structure is classified in subclasses 619+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
519, for a rolling tool having a flexible material rim (e.g., rubber).

613 PLURAL RELATIVELY MOVABLE TOOLS:
This subclass is indented under the class definition. Apparatus comprising a plurality of earth working elements or portions of a plurality of earth working elements which are movably related to each other while remaining in the apparatus.

(1) Note. The distinction between an assemblage of parts comprising one earth working element and an assemblage of parts comprising a plurality of earth working elements is often difficult to make. Generally when parts closely cooperate and are mutually interconnected so as to be supported from the same standard they may comprise a sin-

gle earth working element, but parts on separate standards even though connected to a single frame and each performing a like function may be separate earth working elements. Common usage and the prior placement of the art must also be considered.

(2) Note. This definition includes relatively adjustable tools of the type where there is provided a frame or support having a plurality of holes or notches, etc., to mount a plurality of tools in selective positions, the individual tools necessarily having to be removed to be engaged in another hole for adjustment purposes. For this simple-type adjustment the tools are considered to remain in the apparatus when being adjusted. However, apparatus of the type in which the relative position of a plurality of tools is changed by a substantial disassembly and assembly operation, such as frame sections carrying tools being rearranged, is excluded from this definition. See subclasses 245+.

(3) Note. A plurality of earth working elements individually loosely mounted, or spring mounted, or merely themselves being springs (such as spring teeth) come under this definition since the elements will move relatively to each other as the apparatus is drawn over the ground.

(4) Note. See the definition of "adjustable" in the class definition. A plurality of earth working elements merely clamped in position so that the position of each may be changed by loosening the clamps and retightening are not included under this definition (613). See search notes below for such devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

48+, for plural driven tools.
63+, for a device comprising a driven tool and a nondriven tool.
133+, for diverse tools.
204+, for implements alternating for right or left hand operation.
382, for multiple-level tools for operating at different depths in the soil.
488+, for tools carried on a wheeled frame having a single actuator for lifting plural relatively movable tools.
518+, for rolling, rotating, or orbitally moving tools.
685, for plural relatively fixed tools.

614 Tool pivots on pivoted member when member moves:

This subclass is indented under subclass 613. Apparatus comprising an earth working element mounting member pivoted on a frame or support, at least one earth working element mounted on the member and being pivoted with respect thereto and means for pivoting the element incident to pivotal movement of the member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

684, for similar structure for single tools or for rigid tool units.

615 Tools connected to parallel pivoted bars:

This subclass is indented under subclass 614. Apparatus in which the earth working element mounting member and the means for pivoting the earth working element comprise a pair of spaced parallel bars both pivoted to the frame or support.

616 Bars pivoted about vertical axis:

This subclass is indented under subclass 615. Apparatus in which the parallel bars are mounted to pivot about vertical axes to allow the parallel bars to swing in a horizontal plane.

617 Also pivoted about horizontal axis:

This subclass is indented under subclass 616. Apparatus in which the parallel bars are also mounted to pivot about a horizontal axis to allow the bars to pivot in a vertical plane.

618 Tools assume different angularity for opposite draft:

This subclass is indented under subclass 613. Apparatus in which the earth working elements or tooth bars pivot about a horizontal transverse axis to different working angles when draft force is applied to the apparatus in opposite directions and including means to limit the

movement of the elements or tooth bars to a particular angularity in both directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

712, for an earth working element which assumes different working angles when drawn in opposite directions.

777+, for a narrow depending tool removably attached to a scraper which assumes different angularity when drawn in opposite directions.

619 Plural tool groups relatively vertically movable because of operation:

This subclass is indented under subclass 613. Apparatus comprising a plurality of groups of earth working elements interconnected by means which permits one group to rise and fall or pivot vertically as a unit with respect to another group under the influence of the forces applied thereto during operation, without intervention of an attendant.

(1) Note. This subclass includes those groups of earth working elements which are interconnected one to the other by means of loose or flexible linkage whereby as disclosed a group may move vertically a slight amount on encountering an obstacle or on traversing an uneven or undulating terrain.

SEE OR SEARCH THIS CLASS, SUBCLASS:

643, and 657+, for a plurality of single tools which are individually mounted for vertical movement one relative to the other during operation.

620 Parallel transverse tooth bars:

This subclass is indented under subclass 619. Apparatus comprising a plurality of horizontal bars parallel to one another and extending substantially transverse to the direction of travel, the bars each carrying a plurality of earth working teeth, the bars being so connected as to be individually capable of vertical motion with respect to one another during operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

634+, for a plurality of horizontal parallel tooth bars which are angularly adjustable about their supporting axis, but which bars are so mounted on a frame or interconnected one to the other as to be incapable of independent vertical motion relative to each other.

621 Spring biased bars:

This subclass is indented under subclass 620. Apparatus in which the tooth bars are resiliently mounted so that they may independently or simultaneously pivot or yield against the action of a biasing means.

622 With actuator to vary inclination of teeth:

This subclass is indented under subclass 620. Apparatus in which the angularity of the tooth bars may be changed to vary the angle of the teeth in vertically longitudinal planes and having actuating means to vary said angularity.

(1) Note. For the meaning of actuating see “actuator” in the class definition.

(2) Note. The actuator may positively move the tooth bars in only one direction with ground reaction force being relied upon to move the bars in the opposite direction.

623 Groups abreast and in tandem:

This subclass is indented under subclass 619. Apparatus including two transversely aligned laterally spaced earth working element groups with each said group having longitudinally aligned therewith a trailing group, all of said groups being vertically movable relative to one another.

624 Plural groups movably connected to forward transverse draft bar:

This subclass is indented under subclass 619. Apparatus in which the groups are movably connected to a laterally extending bar or draft beam located ahead of the groups.

SEE OR SEARCH THIS CLASS, SUBCLASS:

623, for groups of tools abreast and in tandem which may also be connected to a forward transverse draft bar.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 411.1 for articulated vehicles of the type includ-

ing a leading vehicle and a plurality of laterally spaced trailing vehicles.

624.5 With parallelogram-type linkage:
This subclass is indented under subclass 624. Apparatus in which the mechanism connecting the groups of the bar or draft beam includes a plurality of vertically spaced links, each pivoted at an end to the bar or draft beam and at its other end to the tools, which links remain in parallel relationship to each other as they move.

625 With alternate draft means (spaced 90 degrees):
This subclass is indented under subclass 624. Apparatus in which the earth working element groups are provided with draft or hitch means whereby they may be drawn alternately in different directions spaced 90° from one another.

626 Sectional draft bar:
This subclass is indented under subclass 624. Apparatus in which the bar or draft beam is composed of two or more movably connected sections.

627 Groups also connected to one another:
This subclass is indented under subclass 624. Apparatus in which the earth working element groups additionally have means connecting one earth working element group to an adjacent earth working element group.

628 Similar groups arranged to form a triangular shape:
This subclass is indented under subclass 619. Apparatus comprising a pair of laterally spaced transversely aligned earth working element groups and a third earth working element group longitudinally spaced from the first named groups, the longitudinally center line of the third element group extending in a line between the first two groups, all the groups being substantially similarly shaped.

629 Three or more laterally spaced groups:
This subclass is indented under subclass 619. Apparatus in which there are at least three earth working element groups so disposed laterally one of the other that during operation each group traverses a longitudinal path which is transversely spaced from the path of the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
623, for groups of tools abreast and in tandem which may have three or more laterally spaced groups.
624+, for two or more groups of tools connected to a forward transverse draft bar.

630 Groups pivoted to opposite sides of longitudinal draft member:
This subclass is indented under subclass 619. Apparatus in which the earth working element groups are mounted for pivotal movement on opposite sides of a longitudinal rod or beam which serves as a draft beam.

631 Groups movable about common longitudinal axis:
This subclass is indented under subclass 619. Apparatus comprising adjacent earth working element groups relatively pivotable about the same axis which extends substantially in or parallel to the line of draft.

SEE OR SEARCH THIS CLASS, SUBCLASS:
623, for groups of tools abreast and in tandem which may also be movable about a common longitudinal axis.
627, for groups of tools connected to each other for relative vertical movement which movement may be about a common longitudinal axis.

632 Group movable about oblique horizontal axis:
This subclass is indented under subclass 619. Apparatus in which the earth working element groups are connected to a draft member or to each other so they have relative movement about a horizontal axis which is at an angle to the line of draft.

633 Group pivotal about intermediate transverse axis:
This subclass is indented under subclass 619. Apparatus comprising a forward and a rearward group of earth working elements said groups being relatively movable about a horizontal axis disposed transversely of the apparatus intermediate the groups in forward and rearward position of the groups.

SEE OR SEARCH THIS CLASS, SUBCLASS:

623, for groups of tools abreast and in tandem which may permit the tandem groups to pivot about an intermediate transverse axis.

634 Parallel, pivotally adjusted tool bars:

This subclass is indented under subclass 613. Apparatus in which a plurality of parallel bars, each bar carrying a plurality of earth working elements, are pivotally mounted, the bars being selectively rotatable from one angular position of adjustment to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

390, for apparatus having a plurality of spring tools carried by parallel pivoted tooth bars and also having a wheel substitute such as a runner.

620+, for parallel transverse tooth bars which are relatively movable to each other during operation and which tooth bars may also be pivotally adjustable.

635 With actuator:

This subclass is indented under subclass 634. Apparatus including an actuator for pivoting one or more of the bars.

(1) Note. See the class definition for the definition of “actuator”.

SEE OR SEARCH THIS CLASS, SUBCLASS:

390, for apparatus having a plurality of spring tools carried by parallel pivoted tooth bars and also having a wheel substitute such as a runner, said bars usually having an actuator to pivot said bars.

622, for similar structures in which the tooth bars are each free to move vertically with respect to the others.

636 Tools also adjustable about vertical or longitudinal axes:

This subclass is indented under subclass 635. Apparatus in which the individual earth working elements are also adjustable about upright axes or axes which extend in the direction of travel.

637 Plural actuators, independently pivoted tool bars:

This subclass is indented under subclass 635. Apparatus comprising a plurality of separate actuators for independently pivoting different bars.

638 Gear:

This subclass is indented under subclass 635. Apparatus in which the actuator comprises gearing.

639 Specific mounting for pivoted tool bar:

This subclass is indented under subclass 634. Apparatus in which the structural features or details of the bar mounting or journaling means are specifically set forth in the claims.

640 Tool group pivotally adjustable about horizontal axis:

This subclass is indented under subclass 613. Apparatus under subclas 613 in which at least one earth working element group is pivotally mounted on and selectively adjustable as a unit about a horizontal axis to thereby adjust the position of the earth working element group with respect to another earth working element or earth working element group.

(1) Note. See class definition meaning of “adjustable”.

SEE OR SEARCH THIS CLASS, SUBCLASS:

459+, for tools lifted on a wheeled frame which are pivotal about a longitudinal axis.

641 Beam spreader of the pivoted yoke type:

This subclass is indented under subclass 613. Apparatus in which a pair of longitudinally extending earth working element supporting beams are provided with a lateral adjustable means comprising a yoke lying in a transverse vertical plane and in which the yoke comprises a pair of arms pivoted to each other at one end and having the other ends thereof interconnected to the element beams, the arms being adjustable relative to each other about the pivot to thereby spread the beams in a traverse direction relative to each other.

(1) Note. For meaning of “adjustable”, see the class definition.

642 Pair of tools cooperate to move earth to or from plant row:

This subclass is indented under subclass 613. Apparatus in which the earth engaging elements of a pair are nonidentical or positioned in a nonidentical way so as to function in a right and left handed manner in working the earth rather than in an identical manner, the elements being arranged to operate on opposite sides of a crop row for the purpose of simultaneously moving soil onto or away from said row.

SEE OR SEARCH THIS CLASS, SUBCLASS:

70, 71+ and 73, for pairs of nondriven earth working elements which cooperate on opposite sides of a plant row in a right and left hand manner and which are disposed forwardly of or to the rear of a driven earth working element.

159, for laterally spaced right and left hand elements with an intermediate symmetrical element.

686, for plural elements of the right and left hand type.

643 Spring formed tool or standard:

This subclass is indented under subclass 613. Apparatus in which the earth working element or the immediate supporting means therefor is formed of resilient material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

389+, for spring-tooth implements with wheel substitutes.

624, for a spring-formed standard mounted on a rotating carrier.

627, for spring teeth mounted on a rotating carrier.

634+, for parallel, pivotally adjusted tooth bars which may have spring-formed elements mounted thereon.

707+, for single-spring earth working elements.

644 Tools longitudinally adjustable to and from transverse alignment:

This subclass is indented under subclass 613. Apparatus in which a plurality of earth working elements is mounted on a frame for relative movement toward and away from each other in the direction of draft whereby in a single manipulation such elements may be moved from a fore-and-aft spaced position to a position in which all of said elements are in transverse alignment.

645 Tools relatively adjustable horizontally without causing vertical displacement:

This subclass is indented under subclass 613. Apparatus comprising earth working elements mounted on a support or frame which are capable of being adjustable relative to each other in a horizontal sense, without simultaneously disturbing their position in a vertical sense relative to said support or frame.

(1) Note. For the meaning of “adjustable” see the class definition.

(2) Note. There may be a positive means provided for precluding relative vertical movement of the elements while they are moved horizontally or the elements may simpy be so mounted that they can be relatively moved horizontally without simultaneously causing veritcal displacement of said elements. For example, this definition would include those devices in which loosening of an element securing means permits both a relative vertical and horizontal displacement, since an operator could manually preclude vertical displacement of said elements while moving the same horizontally, relative one to the other. Also, this definition includes tools which are removed from one position and remounted in a horizontally spaced position so long as the tool in its new position can retain the same relative vertical position. (Also see (2) Note under subclass 613).

646 Laterally adjustable tools, independently free to move vertically:
This subclass is indented under subclass 645. Apparatus in which the earth working elements are adjustable in a lateral direction and each earth working element is capable of free vertical movement independently of the other.

(1) Note. For the meaning of "adjustable" see the class definition.

(2) Note. Movement against a spring- biasing means is considered to be free movement under this definition. However, selective adjustment from one fixed position to another is not considered to be free movement.

647 Tools simultaneously adjustable about their individual, spaced vertical axes:
This subclass is indented under subclass 645. Apparatus comprising a plurality of earth working elements each being adjustable about spaced vertical axes which coincide with the vertical axes of the earth working elements or element standards, said elements being interconnected so as to partake of concurrent movement about said axes when adjusted.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
221, for alternating right or left hand tools which are simultaneously shifted about individual vertical axes.
576, for disk earth working elements which are simultaneously shifted about individual axes.
614+, for tools which are simultaneously adjusted about their individual vertical axes as the axes are moved laterally.

648 Collapsible lazy tong group:
This subclass is indented under subclass 645. Apparatus in which the earth working elements or element-supporting bars are pivotally joined together to form a diamond shape, opposite apices of said diamond being capable of movement toward or away from each other.

649 Tool groups relatively horizontally adjustable:
This subclass is indented under subclass 645. Apparatus in which groups of earth working elements are relatively adjustable as units in a horizontal sense without disturbing their position in a vertical sense.

(1) Note. For the meaning of "adjustable" see the class definition.

650 Also vertically adjustable:
This subclass is indented under subclass 649. Apparatus in which there is a group of earth working elements adjustable in a vertical sense, said adjustment being capable of occurring at a time different than the horizontal movement of this or some other group.

(1) Note. For the meaning of "adjustable" see the class definition.

651 Group pivoted about vertical axis:
This subclass is indented under subclass 649. Apparatus in which the relatively movable earth working element groups are adjustably connected one to the other or a group is adjustably connected to a supporting frame by vertically extending pivot means whereby such group may be rotated about said pivot means.

(1) Note. For the meaning of "adjustably" see "adjustable" in class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
647, for a plurality of earth working elements simultaneously pivoted about individual vertical axes.

652 V-shaped:
This subclass is indented under subclass 651. Apparatus in which the two groups of elements are disposed in converging relation to form a substantially V-shaped implement when viewed in plan.

(1) Note. The adjustment may include moving the groups from a forwardly converging relation to a rearwardly converging relation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

254, for groups of tools which are rearranged by disassembly and reassembly.

648, for groups of earth working elements arranged to form a diamond in which two of the opposite apices of the diamond are movable toward and away from each other.

653 Nested:

This subclass is indented under subclass 652. Apparatus in which the groups of earth working elements are so disposed as to form two V-shaped implements in plan view with the vertex of each V pointing in generally the same direction and the vertex of one V lying between the arms of the other V.

654 Main central beam, tools laterally adjustable relative thereto:

This subclass is indented under subclass 645. Apparatus in which the earth working elements are mounted on opposite sides of a central longitudinal beam for lateral adjustment with respect thereto.

(1) Note. The central beam must extend substantially between the earth working portion of the earth working elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

649+, for tool groups which may be adjustable relative to a main central beam.

741+, for a single earth working element which is laterally adjustable.

655 Tool adjustable vertically and laterally:

This subclass is indented under subclass 645. Apparatus in which an earth working element is capable of both vertical and lateral adjustment with respect to the element- supporting frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

476+, for a tool mounted on a wheeled frame said tool having an actuator for vertical adjustment and which tool is also laterally adjustable.

650, for tool groups which are adjustable horizontally and vertically.

656 Tool laterally adjustable:

This subclass is indented under subclass 645. Apparatus in which the earth working elements can be selectively laterally adjustable with respect to each other.

(1) Note. For the meaning of “adjustable” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

642, for pairs of earth working elements which are laterally adjustable.

649+, for groups of tools which are laterally adjustable.

654, for earth working elements which are laterally adjustable with respect to a main central beam.

655, for earth working elements which are adjustable vertically and laterally.

741+, for a single earth working element laterally adjustable.

657 Relatively movable because of operation:

This subclass is indented under subclass 613. Apparatus in which the earth working elements are capable of independent movement relative to each other as a result of the operation thereof in the soil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

612, for fabric or flexible earth working elements such as drags including an earth working element having spaced individual or small groups of teeth where each tooth or small group of teeth may move vertically with respect to each other tooth or group during operation.

619+, for groups of tools which are relatively movable during operation.

643, for implements having spring-formed tools or standards which tools because of their resiliency are relatively movable during operation.

644, for tools which are longitudinally adjustable to and from transverse alignment and which may also be relatively movable during operation.

646, for tools which are laterally adjustable and independently free to move vertically.

658 With interconnecting means to prevent independent lateral movement:
This subclass is indented under subclass 657. Apparatus in which the earth working elements during operation are each capable of vertical displacement independently of the other and means is provided for so joining the earth working elements one to the other that independent lateral displacement of said elements is precluded.

659 Adjustable about spaced horizontal axes:
This subclass is indented under subclass 613. Apparatus in which the plural earth working elements are separately mounted for pivotal movement from one position of adjustment to another about independent-spaced horizontally disposed axes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
739, for a single earth working element adjustable about a horizontal transverse axis.

660 Concurrent adjustment:
This subclass is indented under subclass 659. Apparatus in which the earth working elements are so interconnected one to the other that pivotal adjustment of one element will cause a simultaneous adjustment of the others.

661 Vertically translatable tool:
This subclass is indented under subclass 613. Apparatus in which the plural earth working elements are mounted on a frame or support means and at least one of said elements is individually selectively translatable from one vertical position to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
650, for groups of tools which are horizontally and vertically adjustable.
655, for tools adjustable vertically and laterally.
744, for a single earth working element vertically adjustable.

662 Tool movable to non-use position:
This subclass is indented under subclass 613. Apparatus in which the earth working elements are mounted on a supporting frame and one or more of said elements are so related thereto as to be capable of movement from an earth working position to a rest position, for example, to change the spacing between adjacent elements or to enable transport of the frame over the earth.

(1) Note. Since almost any vertical adjustment may be continued far enough to result in a movement to transport position this definition is limited to those devices in which some means is shown for adjusting or holding the element in transport position other than a mere vertical-adjusting means such as is intended to adjust the vertical working position of the tool in the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:
204+, for an apparatus comprising elements alternating for right or left hand operation.

663 WITH ACTUATOR:
This subclass is indented under the class definition. Apparatus comprising an actuator for adjusting some part of the apparatus.

(1) Note. See the class definition for the definition of “actuator”.

(2) Note. A latch or lock operator which does not adjust some part of the apparatus is not included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
2+, for power actuators which are automatically controlled.
224+, for actuators for implements rotatable about a longitudinal axis for right or left hand operation.
263, for an actuator which is released when an earth working element shifts due to an overload.
278+, for an actuator for changing the horizontal angle of the axis of rotation of a wheel.

293+, for power-actuating means for sequentially operating a plurality of like implement parts.
297+, for an actuator to adjust an implement mounted forward of the rear of a self-propelled vehicle.
315+, for an actuator on an implement which is controlled from a propelling vehicle.
317+, for an actuator on a vehicle for relatively moving parts of a trailing implement.
321, for an actuator on a vehicle for moving a wheeled implement.
322, for an actuator for rocking an implement about a wheel axis.
324+, for an actuator for moving a draft member laterally or vertically on a wheeled frame.
395+, for an actuator for vertically adjusting a wheel relative to a frame.
439+, for mast-type hitches (e.g., 3 point hitch) with actuating means to adjust the hitch.
452+, for an actuator for raising and lowering an implement on a wheeled frame and being capable of lifting the implement out of ground contact for transport.
613+, an actuator for changing the position of a plurality of relatively movable tools.
781+, for an actuator for moving a scraper mounted between the front and rear ground supports of a vehicle.
810+, for an actuator to move an implement mounted ahead of a motor vehicle.

SEE OR SEARCH CLASS:
56, Harvesters, subclasses 208+ for means for adjusting the position of a harvester platform relative to the ground.
60, Power Plants, subclasses 325+ for hydraulic servomotors operated by a pump.
171, Unearthing Plants or Buried Objects, subclass 44 for unearthing devices with a power means to shift a part.

664 For relatively movable earth engaging parts:
This subclass is indented under subclass 663. Apparatus comprising an earth working element having a plurality of earth-engaging portions movable relative to one another and an actuator for relatively moving the portions.

(1) Note. The plurality of earth-engaging portions may be different soil-working portions or may include a runner or depth gauge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
613+, for plural, relatively adustable distinct tools.
714+, for plural tool or earth engaging parts relatively movable during operation.
736+, for relatively adjustable tool or earth engaging parts.
811+, for an actuator for relatively adjustable earth-engaging parts of an elongated blade mounted ahead of a motor vehicle.

665 Tool and runner:
This subclass is indented under subclass 664. Apparatus wherein the relatively movable parts comprises an earth working portion and a member adapted to slide on the ground to act as a runner or depth gauge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
240+, for apparatus having a wheel or runner engageable with the ground for transport only.
387+, for implements provided with runners spaced from the tools and see the definition and Notes thereof for the line.
729, for symmetrical tools having a relatively adjustable runner or gauge.
738, for tools having a relatively adjustable runner or gauge.
764, for tools having a runner or depth gauge separate from the standard.

666 For adjustment about longitudinal axis:
This subclass is indented under subclass 663. Apparatus comprising an actuator for positioning an implement about an axis which is sub-

stantially horizontal and extends in the direction of travel.

(1) Note. For meaning of "actuator" see class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

225, for actuating means for rotating right and left hand implements about a longitudinal axis.

459+, for implements liftable for transport on a wheeled frame and being pivoted about a longitudinal axis.

673, for laterally adjustable tools mounted on a wheeled frame.

667 For lateral adjustment:

This subclass is indented under subclass 663. Apparatus comprising an actuator for positioning an implement transversely with respect to the line of travel.

(1) Note. For meaning of "actuator" see class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

305, for implements located forward of the rear of a self-propelled vehicle and having an actuator for lateral adjustment.

324+, for actuating means for moving a draft member laterally or vertically or a trailing wheeled implement.

476+, for implements liftable for transport on a wheeled frame and also laterally adjustable.

507, for an actuator for laterally moving a ground support (e.g., wheel) relative to an implement frame.

673, for laterally adjustable tools mounted on a wheeled frame.

741, for laterally adjustable tools not having an actuator.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 47 for an actuator for laterally shifting an unearthing unit on its support.

668 For vertical adjustment with respect to wheeled frame:

This subclass is indented under subclass 663. Apparatus comprising a wheel carrying frame, an implement connected thereto and an actuator for vertically positioning the implement or some part rigid therewith with respect to the wheeled frame.

(1) Note. For the meaning of "actuator" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

452, for similar devices in which the actuator is also capable of lifting the implement entirely off the ground for transport on the wheeled frame.

675, for vertically adjustable tools mounted on a wheeled frame.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 141 for an actuator for lifting or tilting an unearthing apparatus.

669 WITH WHEEL; OR SUPPORTED ON WHEEL FRAME OR BROADLY CLAIMED IMPLEMENT:

This subclass is indented under the class definition. Apparatus comprising an implement with a ground wheel or supported on a vehicle other than by a mere articulated hitch so that the vehicle carries a substantial portion of the weight of the implement rather than merely serving to pull it over the ground.

(1) Note. Where the disclosure shows a framework having a wheel or wheels and an earth working element attached to the framework so that it can be supported thereby in nonearth working position the claim is classifiable under this definition if it recites the framework even if it does not call for the wheel.

(2) Note. The support of the implement contemplated in the second part of the definition must be such that the implement would be held in substantially working position by the vehicle even if the ground did not support the implement or

can be held off the ground by the vehicle.

(3) Note. Where a wheel is not carried on a wheel frame (as a tractor) but is merely supported directly on the implement (as a gauge wheel on a plow beam) then the wheel must be claimed for the patent to be classifiable under this definition.

(4) Note. The wheel under the first portion of this definition must be capable of carrying a portion of the vertical load of the implement. Wheels or rollers rotatable on a vertical or substantially vertical axis and acting as a rotary landside are excluded. See subclass 715 for such devices.

(5) Note. The "vehicle" in this definition may be a broadly claimed implement supporting another implement. See (4) Note in subclass 133. The implements must be disclosed as related in a manner appropriate for a vehicle-carried implement. A disclosure of a specifically claimed implement supported on a shank of a broadly claimed implement would be classifiable in subclasses 681+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

17, for a lawn edger with a wheel.
35+, for apparatus comprising a driven tool mounted on a wheeled frame.
90, for an implement comprising an irregular ground-engaging wheel for giving a tool a cyclical motion.
126+, for an earth marker carried on a broadly claimed implement.
204+, for alternating tools carried on vehicles.
240+, for an implement with a ground support engageable with the ground for transport only.
255, for a vehicle mounting a tool which is lifted off or lowered into the ground on turning.
256+, for a propulsion unit guided by a walking attendant or part of an articulated vehicle.
272+, for means for facilitating mounting of an implement on a motor vehicle.
278+, for an implement with wheel steering or actuator for horizontally angling a wheel axis.
297+, for a tool mounted forward of the rear of a motor vehicle.
321, for an actuator on a vehicle for moving a wheeled implement.
322+, for an actuator for rocking a tool about a wheel axis.
324, for an implement comprising an actuator on a wheeled frame for moving hitch means laterally or vertically.
332+, for an implement mounted on a wheeled frame and manipulated and held in position by an attendant.
354+, for an implement with a wheel guided or propelled by a walking attendant.
383+, for an implement with a wheel having an axis of rotation which is lockable or angularly adjustable.
387+, for an implement with a wheel substitute.
395+, for an implement with a ground support vertically adjustable relative to the frame.
452+, for an apparatus comprising an actuator adapted to lift an implement for transport on a wheeled frame or broadly claimed implement.
507, for an implement with a ground support movable horizontally.
518+, for a rolling tool, especially subclass 578 for an apparatus comprising a rolling tool and a wheel (not on a motor vehicle).
780, and 781+, for a scraper mounted between the front and rear wheels of a vehicle.
810+, for a tool mounted ahead of a vehicle.

SEE OR SEARCH CLASS:

104, Railways, subclass 244.1 for furrow followers for guiding a vehicle along the furrow.
171, Unearthing Plants or Buried Objects, subclass 140 for an unearthing unit provided with a gauge runner or wheel, subclass 143 for wheeled chassis.
280, Land Vehicles, appropriate subclasses for wheeled vehicles, and subclasses 80.1+ for a wheeled vehicle with special reference to that portion of the vehicle which is directly con-

cerned in enabling it to be moved along the surface.

492, Roll or Roller, subclasses 9+ for a roll, per se, not elsewhere provided for, having measuring, testing, or indicating means.

670 All wheels on one side of tool:

This subclass is indented under subclass 669. Apparatus having one or more wheels and one or more earth working elements, all of the wheels being positioned on the same side of all of the earth working elements transversely of the line of draft.

(1) Note. For classification in this subclass the disclosure must show the defined arrangement. A patent disclosing wheels on both sides of an earth working element does not come under the definition even if only one wheel is claimed.

671 Mounted on single longitudinal beam in tool path:

This subclass is indented under subclass 669. Apparatus in which the frame is disclosed as comprising a single longitudinal beam, an earth working element connected to the beam and at least one wheel connected thereto and traveling in the same path as the earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

310+, for plural wheeled implements, which may comprise plural beams each with its own wheel.

676, for a tool and wheel following the same path.

672 Wheel secured to tool:

This subclass is indented under subclass 671. Apparatus wherein the wheel or wheels are secured directly to an earth-engaging portion of the earth working element.

673 Laterally adjustable tool:

This subclass is indented under subclass 669. Apparatus wherein the earth working implement is selectively transversely adjustable with relation to the wheel frame.

(1) Note. For meaning of “adjustable” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

476+, for laterally adjustable tools on a wheeled frame which have an actuator for lifting the tools.

666, and 667, for laterally adjustable tools on a wheeled frame provided with an actuator for effecting the adjustment.

674 With bracket to hold tool off ground:

This subclass is indented under subclass 699. Apparatus wherein the frame is provided with bracket means for supporting the earth working implement in nonearth working position.

(1) Note. See subclass 344 for arched wheeled-frame cultivators provided with an implement support bracket for transport.

675 Vertically adjustable tool:

This subclass is indented under subclass 669. Apparatus wherein the earth working element is selectively vertically adjustable with relation to the wheeled frame.

(1) Note. For the meaning of “adjustable” see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

452+, for tools vertically movable to transport position on a wheeled frame provided with an actuator for raising and lowering the tools.

668, for vertically adjustable tools on a wheeled frame provided with an actuator for effecting such adjustment.

676 Tool follows wheel path:

This subclass is indented under subclass 669. Apparatus wherein an earth working element follows in the wheel path, and is adapted to work the ground disturbed or compacted by the wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

344, for arched wheel-frame implements provided with brackets for holding the tools in nonuse position.

677 WITH DRAFT DETAIL:

This subclass is indented under the class definition. Apparatus comprising some detail of the means for hitching an implement to a separate propelling means, or to another implement, the hitch being of the type premitting some freedom of movement between the propelling means and the apparatus while the apparatus is being moved over the earth to perform its earthworking function.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7+, for draft responsive automatic power control.

76+, for an implement with a driven tool and ground support hitched to a vehicle by an articulated connection.

204+, for implements alternating for right or left hand operation and having various hitch details.

238, for a ground support moved vertically relative to a frame by draft force.

239, for an implement with draft, pitch, or ground-level responsive depth control.

248, for apparatus convertible or changeable to different types of hitch.

257, for a propulsion unit which is part of an articulated vehicle.

261+, for hitches involving overload shifting.

272+, for means to facilitate mounting an implement on a vehicle.

282+, for a trailing implement with a wheel responding to turning movement of a propelling means.

315+, for an actuator on a trailing implement controlled from a propelling vehicle.

317+, for an actuator on a vehicle for relatively moving parts of a trailing implement.

321, for an actuator on a vehicle for moving a wheeled implement.

324+, for an actuator on a trailing ground-supported frame for moving the draft means laterally or vertically.

332, for implements manipulated with respect to a mounting frame, the frame usually trailing behind a propelling animal or a tractor.

351+, for an implement guided by a walking attendant and having a hitch.

439+, for a mash-type hitch.

452+, for a hitch comprising an actuator adapted to lift a tool for transport on a wheeled frame or broadly claimed implement.

588, for horizontally, angularly adjustable groups of disks with a hitch longitudinally movable on a tongue.

605, for an apparatus comprising a shiftable hitch moving a tool relative to a frame.

618, for implements which assume different angularity for opposite draft.

624+, for plural tool groups movably connected to a forward transverse draft bar.

630, for tool groups pivoted to opposite sides of a longitudinally draft bar.

810+, for a tool hitched ahead of a motor vehicle.

SEE OR SEARCH CLASS:

278, Land Vehicles: Animal Draft Appliances, appropriate subclasses, for that portion of a vehicle or broadly claimed earth working implement by means of which the pull of draft animals is utilized to move the apparatus over the ground.

280, Land Vehicles, subclasses 400+ for hitches between articulated vehicles.

678 Spring biased hitch:

This subclass is indented under subclass 677. Apparatus including resilient means which is yieldable during operation in response to movement of the implement with respect to the hitching means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

239, for hitching means comprising complex linkages having springs to provide draft, pitch, or ground-level responsive depth control.

264+, for implements which may shift upon overload and provided with a spring return.

705+, for spring-biased tools.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 483+ for articulated vehicles wherein the con-

nection therebetween is resiliently biased in at least one direction.

679 Adjustable:

This subclass is indented under subclass 677. Apparatus wherein the means for hitching the implement to the propelling means is adjustable with respect to either the implement or the propelling means.

(1) Note. For the meaning of "adjustable" see the class definition.

680 Vertical:

This subclass is indented under subclass 679. Apparatus wherein the means for hitching the implement to the propelling means is adjustable in a vertical sense.

(1) Note. For meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

396, for a vertically adjustable or selectively lockable hitch combined with a vertically adjustable ground support.

681 TOOL, STANDARD OR CONNECTION:

This subclass is indented under the class definition. Apparatus comprising earth working elements, standards (i.e., a generally vertically extending member to which the earth working element is connected and which is in turn connected to a frame or beam member), or miscellaneous joints and connections between parts of an earth working apparatus not otherwise provided for.

(1) Note. Patents included herein may disclose and/or claim a tool, standard, or connection, "per se," or that combined with a frame.

(2) Note. Patents which are limited by disclosure or claims to a hand held tool of the type classifiable in subclasses 371+ are classified there even if only the earth working portion of the tool is claimed.

(3) Note. Frames, per se, for earth working elements which may include a plurality of joints, are not included. See subclass 776 for such apparatus.

(4) Note. Included under this definition are (1) a joint between earth working portions, (2) a joint between a non-earth working portion and an earth working portion if the claim includes some detail of significance in the earth working function (such as the shape of the earth contacting part), (3) plural joints between portions of an earth working apparatus and (4) a joint of special utility in earthworking such as a spring-biased joint. A joint between nonearth working portions and a joint between a nonearth working portion and an earth working portion identified as such by name only except for the parts related to the joint are classified in the appropriate class devoted to joints of general utility. See especially Class 403, Joints and Connections, subclasses 58+ for the joint between a standard and a beam and the joint between a standard and an earth working element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35+, for driven tools.
133+, for diverse tools.
261+, for an apparatus permitting shifting of a part on occurrence of an overload.
272+, for means to facilitate the mounting of an implement on a motor vehicle.
371+, for hand tools.
382, for multiple level tools.
518+, for rolling, rotating, or orbitally moving tools.
766, for miscellaneous nonwheeled frames for earth working elements in which the earth working elements are not claimed and including those in which a joint or connection between parts thereof is specifically claimed.

SEE OR SEARCH CLASS:

175, Boring or Penetrating the Earth, subclasses 327+ for an earth-boring bit or bit element.

682 Tool flexed to change contour:

This subclass is indented under subclass 681. Apparatus in which the working surface of an earth working element is selectively distorted or warped to vary the shape of the element.

683 Latched in earth working position:

This subclass is indented under subclass 681. Apparatus comprising an earth working element held in earth working position by a detent means readily operated by an attendant so that after release of the detent the earth working element assumes a position offering less resistance to a draft force propelling it over the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:

261+, for implements which are latched in position, the latch being released upon overload to permit the implement to shift.

481, for tools adapted to be lifted for transport on a wheeled frame by an actuator which has a latch means separate from the actuator for holding the tool in position relative to the frame.

494, for a tool and an actuator for lifting it for transport, the tool being held in position by a toggle.

529+, for intermittently rolling implements with latch means to stop the rotation.

684 Tool pivots on member when member moves:

This subclass is indented under subclass 681. Apparatus comprising a movable implement mounting member, an earth working element mounted thereon and being pivoted with respect thereto and means for pivoting the element incident to the movement of the member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

222, for a plurality of reversible implements pivoted about vertical axes upon a movable member, the implements being pivoted about their axes upon movement of the member.

439+, for mast-type hitches.

614+, for a plurality of tools which pivot upon a movable member when the member is moved.

684.5 Frame-supported blade, scraper, or smoother drawn by vehicle:

This subclass is indented under subclass 681. Apparatus having at least one earth working element mounted on a frame which is wholly or partly supported either on skids, a part of the frame, or by the element itself, and which is adapted to be dragged behind a towing vehicle, and wherein the element has either (a) a substantially vertical working surface adapted to strike off or level the earth, or (b) a substantial area adapted to contact the earth in a horizontal direction to compact or smooth the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4.5, for a scraper which is automatically power-controlled for leveling.

26.5+, for a dragline scraper.

72, for a driven tool followed by a leveling drag or furrow shaper.

189, and 612, for flexible implements including flexible matlike drags.

197, and 199+, for diverse tools, one of which comprises a drag or smoother.

777, for a scraper supporting a narrow depending tool. 779, for a scraper whose position is controlled by a linkage for leveling.

780, and 781+, for a scraper between front and rear vehicle supports.

799.5, for a towed scraper on a wheel-supported frame.

810+, for a scraper ahead of a motor vehicle.

685 Plural tools:

This subclass is indented under subclass 681. Apparatus comprising a plurality of spaced earth working elements.

(1) Note. A device comprising earth working elements all attached to an earth working portion is considered a unitary earth working means and does not come under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

133+, for a plurality of tools of different types.

310+, for plural wheeled implements.

378+, for hand tools having plural prongs or teeth.

518+, for plural rolling tools and especially subclasses 574+ for plural disks with individual mounts.

613+, for plural relatively movable tools.

786+, for plural scrapers, at least one of which is between the front and rear ground supports of a vehicle.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclasses 84+ for diggers comprising a plurality of spaced digging elements.

686 Right and left hand type:
This subclass is indented under subclass 685. Apparatus in which the earth-engaging elements of a pair are nonidentical or positioned in a nonidentical way so as to function in a right and left handed manner in working the earth rather than in an identical manner, i.e., the elements are so constructed and located as to be mirror images of each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
159, for right and left hand tools with an intermediate symmetrical tool.
204+, for alternately usable right and left hand-type tools.
642, for right and left hand tools which are adjustable with respect to each other.

687 Longitudinally spaced rows:
This subclass is indented under subclass 685. Apparatus having a plurality of rows of earth working elements (at least three elements to the row) extending transversely of the line of travel and traveling generally one behind the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
379, for hand tools having plural rows of prongs or teeth.

688 Staggered:
This subclass is indented under subclass 687. Apparatus in which the elements of one row are disposed to travel in the space not traversed by the elements in an adjacent row.

689 Closed geometrically shaped frame:
This subclass is indented under subclass 685. Apparatus in which the earth working elements are mounted at spaced intervals around a frame forming in plan view a geometric figure having a closed perimeter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
648, for a diamond-shaped frame having tools carried by each of the sides thereof, the opposite apices of the diamond being adjustable toward and away from one another.

690 V-shaped frame:
This subclass is indented under subclass 685. Apparatus in which the earth working elements are mounted on two elongated members that are connected at one end and divergent or convergent in a horizontal plane in the direction of the line of travel.

691 Mounted on transverse or oblique tool bar:
This subclass is indented under subclass 685. Apparatus in which the earth working elements are mounted on a horizontal beam the general extent of which is in a direction substantially 90° to the direction of travel or in a direction that is angular to the direction of travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
777+, for narrow tools which depend from a scraper and are removably attached thereto.

692 Angularly adjustable bar:
This subclass is indented under subclass 691. Apparatus having means to selectively adjust the beam on the frame at various angles to the direction of the line of travel.

693 Oblique bar:
This subclass is indented under subclass 691. Apparatus in which the general extent of the beam is in a direction that is at an angle to the direction of travel other than 90°.

694 Laterally spaced tools:
This subclass is indented under subclass 685. Apparatus having earth working elements which are mounted so as to be spaced with respect to each other in a direction laterally of the line of travel so as to travel in different paths.

695 Tools in echelon (3 or more):
This subclass is indented under subclass 694. Apparatus wherein three or more earth working elements are aligned in a direction at an angle other than 90° with respect to the line of travel.

696 Tools on opposite side of longitudinal beam:
This subclass is indented under subclass 694. Apparatus in which the frame comprises a longitudinally extending beam and at least one element is mounted on each side thereof.

697 Tools in transverse alignment:
This subclass is indented under subclass 694. Apparatus consisting of two or more elements aligned in a direction substantially 90° to the line of travel.

698 Tool with laterally spaced standards:
This subclass is indented under subclass 681. Apparatus comprising an earth working element supported at laterally spaced points so as to resemble a U in front elevation.

(1) Note. The elements may extend laterally beyond the standards and the number of standards may exceed two.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19+, for sod cutters which may have an earth working element supported at laterally spaced points so as to resemble a U in front elevation.

SEE OR SEARCH CLASS:
37, Excavating, subclasses 302 and 303 for stump and stone-type excavators which may be in the form of a U in front elevation for undercutting a stump or stone to facilitate removal thereof.

699 Subsoilers:
This subclass is indented under subclass 681. Apparatus comprising an earth working element specifically disclosed as working deep in the soil and having such a configuration that it merely lifts the soil and does not shift it laterally of the line of draft.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19+, for sod cutters having a horizontal blade for cutting below the surface of the soil.
196, for subsoilers combined with a diverse-type tool, usually a moldboard plow.
720, for subsurface blades for cutting below the surface of the soil without displacing the soil laterally.

SEE OR SEARCH CLASS:
37, Excavating, subclass 370 for mole plows for forming a defined opening or passage below the surface of the soil, e.g., for drainage.
111, Planting, subclass 123 for a chisel type furrow opener claimed in combination with liquid or gas soil treatment; and subclass 156 for a chisel opener claimed in combination with a planting machine.

700 With separate vertically spaced earth working portion attached to same standard:
This subclass is indented under subclass 699. Apparatus wherein a subsoil earth working element is secured to the lower end of a standard to work the earth below the surface, and a separate earth working element is attached to the same standard and spaced vertically above the subsoil earth working element to work the earth adjacent the surface of the ground.

SEE OR SEARCH THIS CLASS, SUBCLASS:
196, for a plurality of distinct, different-type tools mounted on separate standards one of which is a subsoiler.

701 Ridgers:
This subclass is indented under subclass 681. Apparatus in which a single earth working element is adapted to move soil transversely from opposite directions to form a hill or ridge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
176, for a furrowing or ridging implement followed by a furrow or ridge roller.
686, for separate tools of the right and left hand type.

SEE OR SEARCH CLASS:

111, Planting, appropriate subclasses for ridgers combined with planting means.

701.1 Tool is transversely elongated blade (e.g., bulldozer):

This subclass is indented under subclass 681. Apparatus wherein the earth working element has a vertical, generally planar earth working portion extended in its dimension transverse to the direction of travel of a vehicle propelling the element, the magnitude of the extension being at least on the order of the width of the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

781+, for the combination of a blade and a mounting for positioning the blade between the front and rear ground supports of a vehicle.

811+, for the combination of a blade and a mounting for positioning the blade ahead of a vehicle.

701.2 Having removable corner bit:

This subclass is indented under subclass 701.1. Having removable corner bit: Apparatus which includes a separable cutting element at a lower corner of the blade.

701.3 Having removable cutting edge:

This subclass is indented under subclass 701.1. Apparatus which includes a separable element adapted to be attached to the lower extended edge of the blade.

SEE OR SEARCH CLASS:

37, Excavating, subclass 450 for a removable cutting edge on an excavator of the type found in Class 37 (see this class (172), class definition, "SEARCH CLASS" 37 for a brief description of the lines).

702 Reversible part:

This subclass is indented under subclass 681. Apparatus in which some part of the apparatus may have its position changed through 180° usually for the purpose of presenting a new wearing portion or edge or for adjusting the position of some part.

(1) Note. Apparatus having a part which may be adjusted to a plurality of positions two of which may be 180° apart are not included under this definition.

(2) Note. The change may be made either by adjustment or by removal and replacement of the same part.

SEE OR SEARCH THIS CLASS, SUBCLASS:

254, for an apparatus changeable by disassembly or assembly in which a tool is rearranged, the rearrangement of the tool being accomplished by a means other than or more than a reversible tool or part thereof, a reversible standard or a reversible part between a tool and standard or standard and beam.

577, for gangs of disks which are adapted to be reversed to throw the earth either to the right or to the left.

735, for an earth working element adjustable through an angle of other than 180° or through a multiplicity of angles to present a distinct earth working portion to the soil.

703 Earth engaging means:

This subclass is indented under subclass 702. Apparatus in which the part whose position is changed through 180° directly contacts the earth.

(1) Note. A standard, beam, or other frame part which mounts the tool is not considered an earth contacting part under this definition, but a separate runner or landside is considered to be a part which directly contacts the earth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

34, for apparatus adapted to be completely inverted to provide an earth working function in both positions.

136, for diverse earth working elements which are usable alternately only.

241, for apparatus which is inverted to engage a transport wheel or runner with the ground.

735, for a tool or tool part which is adjusted through an angle of other than 180° to present a different cutting edge or working surface to the earth.

704 Portion of earth engaging assembly:
This subclass is indented under subclass 703. Apparatus in which the part whose position is changed through 180° comprises less than all of that part of the apparatus which directly contacts the earth.

(1) Note. A separate runner or landside is considered to be an earth working element part, but a standard, beam, or other frame part which mounts the tool is not.

705 Spring biased or formed tool or tool part:
This subclass is indented under subclass 681. Apparatus in which at least a portion of the earth working element is capable of movement under operating conditions and is resilient or separate resilient means is provided to resist said movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
117, for driven implements yieldably mounted on a chassis or frame.
261+, for implements which shift against a spring return device upon overload and see the definition and Notes of subclass 261 for the line.
335+, and 363, for spring-biased hand-guided or propelled implements.
462, for a plurality of tools which are individually spring-biased downwardly during operation and having an actuator for lifting the tools simultaneously for transport on a wheeled frame.
497+, for tools liftable for transport on a wheeled frame and being spring biased during operation.
515, for spring-biased or spring-form weed turners.
544, for a spring-mounted tooth on a rotating carrier.
621, for plural spring-biased tooth bars.
678, for spring-biased draft means.
794, for a scraper mounted between the front and rear ground supports of a vehicle which is spring biased into ground contact.

SEE OR SEARCH CLASS:
56, Harvesters, subclass 400 for a spring-formed or biased rake tooth.
111, Planting, subclass 151 for a trip mechanism used on and claimed in combination with a planting machine.
267, Spring Devices, appropriate subclasses for springs of general utility.

706 Plural earth engaging parts relatively movable during operation:
This subclass is indented under subclass 705. Apparatus in which the earth working element includes a plurality of distinct earth-engaging portions movable relative to one another during operation and resilient means resisting said relative movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
707+, for tools which are entirely of spring form or are mounted upon a spring standard or support.
714+, for tools having plural earth-engaging parts relatively movable during operation.

707 Spring formed tool or standard:
This subclass is indented under subclass 705. Apparatus in which the earth working element or the immediate supporting means for an earth working element are formed of resilient material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
142, for diverse tools one of which is a spring tooth or standard.
624, for a spring-formed tool standard mounted on a rotating carrier.
627, for spring teeth mounted on a rotating carrier.
643, for plural spring-formed teeth or standards.

SEE OR SEARCH CLASS:
111, Planting, subclass 155 for a resilient tooth or similar-type opener claimed in combination with a planting machine.

708 With separate or rigid earth working portion:

This subclass is indented under subclass 707. Apparatus in which (1) a rigid earth working element is separately attached to a spring standard or (2) a spring standard is modified so as to provide a rigid earth working portion thereon.

709 Laterally biased:

This subclass is indented under subclass 705. Apparatus comprising an earth working element is capable of movement transversely of the direction of travel and resilient means to resist said movement.

710 Pivoted tool biased beyond pivot:

This subclass is indented under subclass 705. Apparatus comprising an earthworking element mounted to swing about a horizontal transverse axis, the element or its shank or standard having a rigid portion extended from said pivot in a direction different from the element and biasing means acting on said extended portion.

711 Leaf or torsion spring:

This subclass is indented under subclass 705. Apparatus in which the resilient means comprises a single or superposed plate(s) or bar(s) adapted to yield through a bending action or a member which is stressed by an axial twist.

712 Tool assumes different position for opposite draft:

This subclass is indented under subclass 681. Apparatus in which the earth working element pivots to a different working position relative to the ground when the element is moved in opposite directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

26.6, for a dragline scraper which has a part which is rearranged on reverse movement.

618, for plural relatively movable implements which assume different working positions when moved in opposite directions.

777+, for a tool suspending from a scraper, the tool assuming a different position for opposite draft.

713 Tooth:

This subclass is indented under subclass 681. Apparatus comprising a generally elongated earth working element having an earth working portion and a standard to support it in earth working position in which the earth working portion is no longer in lateral or longitudinal extent than the standard.

(1) Note. A disclosure of an enlarged lateral or longitudinal portion is enough to disqualify a patent for classification under this definition regardless of the claimed subject matter.

SEE OR SEARCH THIS CLASS, SUBCLASS:

160, for laterally spaced like tools and an intermediate diverse tool at least one of which comprises a spike tooth.

173, for a smooth surface earth roller combined with earth working teeth.

198, for diverse tools following the same path, one of which comprises teeth.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 400 for a horse rake tooth.

111, Planting, subclass 154 for a tooth- or tine-type furrow opener claimed in combination with a planting machine.

714 Plural earth engaging parts relatively movable because of operation:

This subclass is indented under subclass 681. Apparatus in which the implement has a plurality of earth-engaging portions which may move relative to one another as a result of the operation of the implement in the soil.

(1) Note. The plurality of earth-engaging portions may be different soil moving portions of tool or may be a tool and runner.

SEE OR SEARCH THIS CLASS, SUBCLASS:

657+, for plural tools which are relatively movable as the result of operation.

664+, for actuating means for plural relatively adjustable tool or earth-engaging parts.

736, for selectively adjustable tool or earth- engaging parts.

715 Rotary landslide:
This subclass is indented under subclass 714. Apparatus in which the implement is provided with a longitudinal portion to receive the side pressure of the earth working element and guide it, said portion comprising an element rotatable about a substantially vertical axis to reduce friction.

SEE OR SEARCH THIS CLASS, SUBCLASS:
669, for earth working elements with wheels which serve to sustain a portion of the vertical load.

716 Movable moldboard for inverting furrow slice:
This subclass is indented under subclass 714. Apparatus in which at least a part of the moldboard of a moldboard-type implement is movable with respect to the point, share and landside during operation.

(1) Note. For the definition of a moldboard-type implement see subclass 754.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for an implement having a power-driven moldboard.

717 Belt:
This subclass is indented under subclass 716. Apparatus in which the movable moldboard comprises an endless element which is caused to move by contact of the soil passing thereover.

718 Roller:
This subclass is indented under subclass 716. Apparatus in which the movable moldboard comprises a member rotatable about an axis lying in a plane substantially parallel to the plane of movement of the soil over the moldboard.

719 With add-on cutting or wearing element applied directly over, or onto, the original cutting element:
This subclass is indented under subclass 681. Apparatus including an additional cutting or wearing edge, point, or surface, which is adapted to be attached directly over or onto the original cutting or wearing edge of the earth working element without the removal of the original edge.

(1) Note. The additional element is usually attached to the tool to act in place of a dulled edge or point.

SEE OR SEARCH THIS CLASS, SUBCLASS:
701.1+, for a particular cutting element on a bulldozer blade.
734+, or 772+, for a tool whose original cutting element is adapted to be removed and replaced.

720 Subsurface blade (e.g., weeder, etc.):
This subclass is indented under subclass 681. Apparatus comprising an earth working blade, usually operating in a horizontal position, which operated below the surface of the ground to make a horizontal cut or to lift the soil and permit it to return to substantially the original position without any lateral shifting thereof.

(1) Note. An earth working element which shifts soil laterally and has a horizontal blade extension or portion connected thereto is not included under this definition, but is classified below on other bases.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19+, for sod cutters having a horizontal blade which operates below the surface of the ground to make a horizontal cut.
699, for subsoil plows adapted to work deep in the soil without any lateral movement or turning of the soil.

721 Non-rectangular, symmetrical type:
This subclass is indented under subclass 681. Apparatus comprising an earth working element symmetrically arranged with respect to

the line of draft, i.e., parts on opposite sides of the line of draft are mirror images of each other and are arranged at the same position longitudinally of the line of draft.

(1) Note. Patents are classified here by disclosure when a claim includes any detail of the shape of the earth working element.

(2) Note. An earth working element all parts of which lie in a single plane and which is of square or rectangular shape when viewed both in plan and front elevation is not included under this definition.

(3) Note. An earth working element which is square or rectangular when viewed in both plan and front elevation and whose intersection with any vertical plane transverse to the line of draft results in one or more straight lines is also excluded from this definition. Thus, for example, an ordinary scraper blade which is straight, transversely of the line of draft and curved in end elevation, is excluded.

(4) Note. An earth working element which is symmetrical due merely to an arrangement of earth working fingers, tines, blades, or the like is not classified under this definition. See subclass 766 for such earth working elements.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 198+ for a V-shaped plow for railway snow excavation, subclasses 266+ for a V-shaped plow for roadway snow excavation and subclasses 366+ for symmetrically shaped plows for ditching.

111, Planting, subclass 83 for lister plows; subclass 111 for a runner-type opener claimed in combination with a plant setting machine; subclasses 124 and 125 for shoe- and runner-type openers respectively, used in combination with a liquid or gas soil treatment; and subclasses 152 and 153 for shoe- and runner-type openers respectively, claimed in combination with seed depositors.

722 Earth breaking part and separately attached wings:

This subclass is indented under subclass 721. Apparatus in which the earth working element has an earth breaking portion and separately attached members or wings extending laterally beyond the sides thereof and forming a continuation of said portion the wings and earth-breaking portion together forming a symmetrical implement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

193+, for an earth working implement and a trailing sweep spaced therefrom so as to constitute separate tools.

728, for a symmetrical tool with an attached runner or depth gauge and also having blades extending from opposite sides of the runner.

765+, for a tool having dissimilar wings or a wing extending from only one side thereof.

723 Draw cut point:

This subclass is indented under subclass 722. Apparatus in which the earth-breaking portion has a rearward and downward inclination so as to break the earth by being drawn therethrough.

SEE OR SEARCH THIS CLASS, SUBCLASS:

768, for draw-cut type earth working elements, per se.

724 Wings integral:

This subclass is indented under subclass 722. Apparatus in which the wings are made of a single piece of material separately attached to the earth-breaking portion.

725 With separable vertical cutter on centerline:

This subclass is indented under subclass 721. Apparatus in which the earth working element includes a separate member comprising a vertical cutting edge attached at the axis of symmetry of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

752, for unsymmetrical tools having separable parts one of which is a vertical longitudinal cutter.

726 Having separable parts jointed at center-line:
This subclass is indented under subclass 721. Apparatus in which the earth working element includes separable like parts (i.e., right and left hand) which are joined together or meet at the line of symmetry of the element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
722+, for symmetrical implements having an earth-breaking portion (e.g., point) and separate wings attached thereto.

727 With attached runner or depth gauge:
This subclass is indented under subclass 721. Apparatus including a member separate from the earth-working element and standard and adapted to slide over the earth to act as a shoe, runner, or depth gauge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
240+, for apparatus having a wheel or runner engageable with the ground for transport only.
360, for hand-guided or propelled implements having runners.
387+, for implements provided with runners spaced from the tools and see the definition and Notes thereof for the line.
764, for tools with separate runners the tools being other than the symmetrical type.

728 With additional blades attached to runner:
This subclass is indented under subclass 727. Apparatus in which the runner or depth gauge has connected thereto opposite laterally extending earth working blades which are additional to the earth working element, the device in its entirety being symmetrical.

SEE OR SEARCH THIS CLASS, SUBCLASS:
193+, for a tool for moving soil transversely of the line of travel and a sweep or blade spaced rearwardly thereof to act on the moved soil.

729 Adjustable:
This subclass is indented under subclass 727. Apparatus in which the relative positions of the earth working element and runner or depth gauge may be selectively changed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
665, for actuating means for relatively adjusting a tool and runner.
738, for relatively adjustable tools and runners, the tools being of other than the symmetrical type.

730 Winged:
This subclass is indented under subclass 721. Apparatus comprising oppositely extending wing portions forming a V-shape when viewed in plan or front elevation and having a portion extending upwardly from the central portion of the V for attachment to a standard, all of said portions being integral.

SEE OR SEARCH THIS CLASS, SUBCLASS:
733, for V-shaped symmetrical tools.

731 Lateral extent decreases upwardly:
This subclass is indented under subclass 721. Apparatus in which the earth working element has a given dimension transverse to the direction of travel at a lower portion thereof which dimension decreases at a portion of the element vertically spaced upwardly from the lower portion.

(1) Note. A tool having a reduced upward extension merely to form an attaching means for the tool is not included under this definition.

732 Triangular blade:
This subclass is indented under subclass 721. Apparatus in which the earth working element has the appearance of an isosceles triangle when viewed in plan or front elevation.

(1) Note. The triangular blade may have an integral or separately attached shank to the upper portion for connection to a standard or frame.

733 Constant height and V-shape:
This subclass is indented under subclass 721. Apparatus in which the earth working element has the appearance of a V when viewed in plan all parts of the element having substantially the same vertical extent.

734 Adjustable:
This subclass is indented under subclass 681. Apparatus in which an earth working element or part thereof is selectively held in different positions with respect to the frame or standard.

(1) Note. See the class definition for the definition of "adjustable".

SEE OR SEARCH THIS CLASS, SUBCLASS:
372, for hand-held tools having adjustable parts.
383+, for angularly adjustable wheels.
395+, for wheels vertically adjustable relative to a frame.
518+, for adjustable rolling implements.
605, for an implement adjustment utilizing the draft force on a shiftable hitch.
613, for plural relatively adjustable tools.
669+, for tools adjustable on a wheeled frame.
679+, for adjustable draft members.

SEE OR SEARCH CLASS:
175, Boring or Penetrating the Earth, subclasses 382+ and the search there noted for an earth boring bit having an adjustable cutter element.

735 To present different working portion:
This subclass is indented under subclass 734. Apparatus in which the earth working element or a part thereof is adjustable to direct a distinct cutting edge or portion in active earth working engagement with the soil.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
136, for diverse tools which may be used alternately only.
703+, for a tool or tool part reversible through 180° to present a different tool or portion thereof to the soil.

SEE OR SEARCH CLASS:
175, Boring or Penetrating the Earth, subclass 383 for an earth-boring bit having a cutter element which is adjustable to present a different cutting edge.

736 Relatively adjustable earth engaging parts:
This subclass is indented under subclass 734. Apparatus wherein two or more earth-engaging parts of a single earth working element are selectively adjustable, one with respect to the other.

(1) Note. For the meaning of "adjustable" see the class definition.

(2) Note. The plural earth-engaging parts may be different soil-moving parts of a single tool or may be a tool and runner.

SEE OR SEARCH THIS CLASS, SUBCLASS:
613+, for plural relatively adjustable distinct tools.
664+, for relatively adjustable tool or earth-engaging parts having an actuator to accomplish the adjustment.
722+, for symmetrical tools having separate wings which may be adjustable.
782, for a scraper mounted between front and rear ground supports of a vehicle and a laterally offset scraper part adjustable with respect to the scraper and for forming an inclined earth shoulder.
815, for a transversely elongated blade mounted ahead of a motor vehicle, said blade having relatively adjustable earth-engaging parts.

737 Element adjusted for wear compensation:
This subclass is indented under subclass 736. Apparatus in which provision is made for adjusting at least one of the elements as it is worn, through contact with the earth, to compensate for such wear.

738 Relatively adjustable tool and runner:
This subclass is indented under subclass 736. Apparatus wherein the implement comprises an earth working element and a separate member adapted to slide on the ground, to act as a runner and the two are adjustable with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
387+, for implements having runners spaced from the tools and see the definition and Notes thereof for the line.
665, for actuating means for relatively adjusting a tool and runner or depth gauge.
729, for a relatively adjustable symmetrical tool and runner.

SEE OR SEARCH CLASS:
111, Planting, subclasses 134+ for the combination of a gauged earth working tool and a planting device (e.g., seed depositor).

739 Adjustable about horizontal transverse axis:
This subclass is indented under subclass 734. Apparatus in which the earth working element is adjustable about an axis transverse to the line of travel, the axis substantially paralleling the earth surface.

(1) Note. For the meaning of "adjustable" see the class definition.

740 Tool adjustably connected to standard:
This subclass is indented under subclass 739. Apparatus wherein the earth working element is connected to a standard by adjustable means which permits rotation of said element about the transverse axis. The standard is the generally vertically extending member to which the tool is connected and which is in turn connected to a frame or beam member.

(1) Note. For the meaning of "adjustable" see the class definition.

741 Laterally adjustable:
This subclass is indented under subclass 734. Apparatus in which the earth-engaging element is adjustable laterally of the line of travel.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
305, for implements located forward of the rear of a self-propelled vehicle and having an actuator for lateral adjustment.
446+, for an implement with a mast-type hitch and laterally adjustable.
476+, for implements liftable for transport on a wheeled frame and also laterally adjustable.
667, for a laterally adjustable tool having an actuator for changing the tool position.
673, for a tool laterally adjustable with respect to a wheeled frame.

SEE OR SEARCH CLASS:
175, Boring or Penetrating the Earth, subclass 384 for an earth-boring bit having a laterally adjustable cutter element.

742 Adjustable about a vertical axis:
This subclass is indented under subclass 741. Apparatus in which the earth working element is angularly adjustable with respect to the line of travel, about an axis that is substantially vertical.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
447, for an apparatus comprising a mast-type hitch and a tool adjustable about a vertical axis.
477, for an earth working element liftable on a wheeled frame by means other than a mast-type hitch and adjustable about a vertical axis.
600, for a disc gang which is vertically adjustable about a vertical axis.
603, for a horizontally, angularly adjustable disc.

743 Adjustable about a longitudinal axis:
This subclass is indented under subclass 741. Apparatus wherein the earth working element is adjustable about an axis extending in the line of travel and parallel to the earth.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
600, for a disc gang which is mounted for tilting about a longitudinal axis.

744 Vertically adjustable:
This subclass is indented under subclass 734. Apparatus in which the earth working element is selectively adjustable so as to vary the vertical distance between the frame and the element.

(1) Note. For the meaning of "adjustable" see the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:
452+, for actuating means for lifting a tool for transport on a wheel frame.
668, for tools vertically adjustable with respect to wheel frame by means of an actuator.
675, for tools vertically adjustable with respect to a wheel frame.

745 Welded:
This subclass is indented under subclass 681. Apparatus in which parts of the apparatus are connected by heating the parts to a plastic of fluid state and allowing the metals to flow together with or without addition of other molten metal.

(1) Note. This subclass includes depositing weld material on a part of the apparatus as, for example, to replace a worn portion.

746 With portion extended beyond landslide:
This subclass is indented under subclass 681. Apparatus comprising an earth working element having a straight longitudinal portion to receive the side pressure of the earth working element and guide it (such portion being commonly known as a landside) and also having a portion extended laterally outwardly beyond the landside on the side opposite to that at which the main portion of the earth working element is located.

747 Specific material:
This subclass is indented under subclass 681. Apparatus in which a claim includes a recitation of the material of which the implement or a part thereof is made.

(1) Note. A mere recitation that a tool is made of iron or steel is excluded from this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
519, for a rolling tool having a yieldable material rim (e.g., rubber).
612, for a fabric or flexible tool.

748 Pivoted tool:
This subclass is indented under subclass 681. Apparatus in which an earth working element is mounted so as to be movable about an axis under some condition of operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
602, for a freely swayable single disc.
705+, for spring-biased pivoted tools.

749 Having separable parts interconnected without detachable fastening means:
This subclass is indented under subclass 681. Apparatus in which separable parts of the apparatus are so interfitted or related as to remain in operative relation to one another without the addition of a connecting or fastening member which is intended to be entirely detached from the parts when the parts are disconnected.

(1) Note. The disclosure of a separate fastening member related to the joint being claimed is sufficient to exclude a patent from this definition even though it is not claimed.

(2) Note. The "parts" of definition must be principal portions of the apparatus such as, standard, moldboard, or share. A mere portion of the connecting means

such as a bracket between two parts is not included.

SEE OR SEARCH THIS CLASS, SUBCLASS:

753, for implement parts which are interfitted or interlocked and also provided with a separate fastening member.

750 Self-engaging snap fastener:

This subclass is indented under subclass 749. Apparatus in which one of the members carries a resilient or resiliently biased part which automatically engages and locks the other part when the two parts are brought together in assembled relationship.

751 Captive fastener or wedge tightened or engaged after assembly:

This subclass is indented under subclass 749. Apparatus in which one of the parts has attached thereto a relatively movable fastener, clamp, or wedge member which is activated after the parts are juxtaposed to secure or tighten the parts.

(1) Note. The fastener, clamp, or wedge may be capable of removal from the implement part, but if removal is not necessary to accomplish the connection or disconnection, classification is under this definition.

752 With separable vertical planar longitudinal cutter (e.g., colter, etc.):

This subclass is indented under subclass 681. Apparatus in which the earth working element has separately attached thereto a substantially flat cutting blade lying in a vertical longitudinal plane.

SEE OR SEARCH THIS CLASS, SUBCLASS:

165+, for a tool having associated therewith a separate vertical cutter spaced forwardly to cut a slit in the earth in which the tool operates.

190, for separate tools one of which is a vertical longitudinal blade.

725, for symmetrical tools with a vertical cutter on the center line thereof.

765, for longitudinal planar blades, per se.

753 Interlocked or interfitted parts:

This subclass is indented under subclass 681. Apparatus in which separable parts of an implement have portions which interfit or interengage to lock the parts against movement in at least three directions spaced 90° apart in a single plane before the addition of any separate fastening means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

704, for interlocked tool parts in which one of the tool parts is reversible.

749+, for similar devices in which no separate fastening means is employed.

754 Share and furrow slice inverting moldboard:

This subclass is indented under subclass 681. Apparatus in which the tool is of the type having a landside to receive the side pressure of the earth working element and to act as a runner, a point for making an initial cut in the earth, a share for making a substantially horizontal cut beneath the surface to cut a slice of earth, and a moldboard to guide and completely invert the furrow slice.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 366+ for similar ditching-type excavating plows.

111, Planting, subclass 126 for a moldboard furrow opener claimed in combination with a liquid or gas soil treatment.

755 Heating or lubricating:

This subclass is indented under subclass 754. Apparatus including means to heat or add a lubricating material to the moldboard-type implement to facilitate the passage of earth thereover and reduce friction.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 200 and 227 for heated snow plows.

756 Skeleton:

This subclass is indented under subclass 754. Apparatus in which at least a part of the moldboard is perforated or an open framework usually for the purpose of reducing friction or clearing the furrow slice therefrom.

(1) Note. This definition does not include knives, bars, etc., disposed at the exit edge of the moldboard for the purpose of cutting or breaking the furrow slice.

SEE OR SEARCH THIS CLASS, SUBCLASS:
766, for tools having spaced parallel earth working fingers.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclass 83 for a plow or cutter having a contiguous, fixed, inclined separator foraminous separator element.

757 Furrow slice retainer:
This subclass is indented under subclass 754. Apparatus having additional means to cause the furrow slice to remain in contact with the entire moldboard and to prevent the slice from breaking or parting from the moldboard prematurely.

758 Furrow slice cutter or breaker:
This subclass is indented under subclass 754. Apparatus including at least one member for cutting or breaking the furrow slice as it passes over or from the moldboard.

759 With additional element juxtaposed to moldboard:
This subclass is indented under subclass 754. Apparatus in which in addition to the point, share, landside, and moldboard there is provided a separable soil working or deflector portion attached to or forming a continuation of moldboard.

(1) Note. The moldboard must be capable of turning a furrow slice over without the added member required for this subclass. A mere moldboard made of plural sections would not be included under this definition.

760 Specific moldboard shape:
This subclass is indented under subclass 754. Apparatus in which a claim includes a recitation of the particular shape of the moldboard for the earth guiding function.

(1) Note. This definition does not include those devices in which the shape of some portion of the moldboard is recited where such shape is merely for the purpose of cooperating with some other part to accomplish a connection.

SEE OR SEARCH THIS CLASS, SUBCLASS:
765+, for earth working elements of specific shape other than the moldboard type.

761 Serrated, toothed or notched point or share:
This subclass is indented under subclass 754. Apparatus in which the cutting edge or upper or lower surface of the point or share is provided with serrations, notches, or channels to enhance the earth working operation of the tool.

762 Specific tool and standard connection:
This subclass is indented under subclass 681. Apparatus wherein significance is attributed to a means connecting (a) the earth working element to (b) a generally vertically oriented member extending between the element and a beam or frame member.

763 Specific standard and beam connection:
This subclass is indented under subclass 681. Apparatus wherein significance is attributed to a means connecting a generally vertically oriented member extending between the earth working and a beam or frame member to the beam or frame member.

764 With separate runner, gauge, shoe or landslide:
This subclass is indented under subclass 681. Apparatus including a member separate from the earth working element and standard and adapted to slide over the surface of the earth to act as a runner, depth gauge, or landslide.

(1) Note. The runner or gauge may be directly attached to the earth working element or standard.

SEE OR SEARCH THIS CLASS, SUBCLASS:
240+, for apparatus having a wheel or runner engageable with the ground for transport only.

360, for hand-guided or propelled implements having runners.
387+, for implements provided with runners spaced from the tools and see the definition and Notes thereof for the line.
665, for actuating means for relatively adjusting a tool and runner.
727+, for symmetrical tools having an attached runner or depth gauge.
738, for a tool and runner which are relatively adjustable.

SEE OR SEARCH CLASS:
111, Planting subclasses 134+ for the combination of a gauged earth working tool and a planting device (e.g., seed depositor).

765 Specific tool shape:
This subclass is indented under subclass 681. Apparatus in which a claim includes a specific recitation of the shape of the earth working element for the earth working function.

SEE OR SEARCH THIS CLASS, SUBCLASS:
721+, for symmetrically shaped earth working elements.
754+, for moldboard-type implements and particularly subclass 760 for specific moldboard shape.

766 Tool with parallel fingers or blades:
This subclass is indented under subclass 765. Apparatus comprising a tool having an earth working portion and having extended therefrom a plurality of distinct substantially parallel similar earth working fingers, tines blades or the like.

SEE OR SEARCH THIS CLASS, SUBCLASS:
378+, for hand tools having a plurality of prongs, teeth, or serrations.
685+, for plural distinct tools.
777+, for a scraper supporting a plurality of readily removable, narrow depending tools.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclass 83 for a digging member having trailing spaced tines or fingers to separate objects such as plants or potatoes from the earth.

768 Draw cut type:
This subclass is indented under subclass 765. Apparatus in which the earth-breaking portion of the tool has a rearward and downward inclination so as to break the earth by being drawn therethrough.

SEE OR SEARCH THIS CLASS, SUBCLASS:
723, for winged symmetrical implements in which the earth-breaking portion is of the draw-cut type.

769 Separable parts:
This subclass is indented under subclass 765. Apparatus in which the earth working element comprises at least two separate earth working or deflecting parts which are detachably connected.

SEE OR SEARCH THIS CLASS, SUBCLASS:
714+, for tools having a plurality of earth-engaging parts movable relative to one another during operation.
719, for tools having an add-on cutting or wearing edge point or surface.
722+, for symmetrical tools having separately attached wings.
725, for symmetrical tools having a separable vertical cutter at the center line thereof.
726, for symmetrical tools having separable parts joined at the line of symmetry of the tool.
736+, for tools having plural relatively adjustable earth-engaging parts.
749+, for tools having plural parts interconnected without separate fastening means.
752, for tools having separable parts wherein one of the parts is a vertical longitudinal cutting blade.
753, for tools having separable parts which interlock or interfit.
754+, for moldboard-type tools having separable parts.
772, for tools having plural separable parts and no shape of the tool parts for the earth working function being claimed.

770 Angularly related tool surfaces:
This subclass is indented under subclass 765. Apparatus wherein the tool comprises two portions or surfaces which meet along a line so as to form a sharp angle therebetween of substantially less than 180°.

771 With curved surface:
This subclass is indented under subclass 765. Apparatus in which the earth working element has at least a portion of the surface thereof which is curved.

(1) Note. A planar blade having a mere curved edge is not included under this definition.

772 Removable tool portion (e.g., replaceable cutting or wearing element for tool):
This subclass is indented under subclass 681. Apparatus wherein the earth-engaging portion of the tool is separable and replaceable.

(1) Note. Many of the patents included herein disclose a tool having a portion adapted to be removed and replaced by a corresponding portion when worn or damaged.

SEE OR SEARCH THIS CLASS, SUBCLASS:
701.1+, for transversely elongated blades having separable parts.
745, for tools having parts which are welded together.
769, for tools of specific earth working shape having separable parts, and see the search notes therein for other tools having separable parts.

SEE OR SEARCH CLASS:
37, Excavating, subclass 450 for a removable cutting edge or tooth to be used on an excavating machine of the type found in Class 37.

772.5 Portion is cutting edge:
This subclass is indented under subclass 772. Apparatus including an elongated portion at the bottom (i.e., the ground-engaging part) of the tool which is removable from the rest of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:
701.3, for a removable cutting edge on a transversely elongated blade.

773 Specific standard:
This subclass is indented under subclass 681. Apparatus wherein a claim includes details of the construction or shape of the tool standard (i.e., a generally vertically extending member to which the tool is connected and which is in turn connected to a frame or beam member).

(1) Note. A vertical standard which is formed integral with a horizontal frame member (e.g., plow beam) is included under this definition.

774 With lateral offset:
This subclass is indented under subclass 773. Apparatus in which the standard is so shaped as to dispose the center line of the lower end of the standard to one side of the upper end thereof.

775 Braced:
This subclass is indented under subclass 773. Apparatus in which a separate bracing member is provided between the standard and beam or frame to which the standard is connected.

776 MISCELLANEOUS (E.G., FRAMES, ETC.):
This subclass is indented under the class definition. Apparatus not otherwise provided for.

(1) Note. For example, in this subclass are classified miscellaneous frames for earth working apparatus in which the claims do not include the earth working means.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclass 143 for frames.

777 SCRAPER SUPPORTS NARROW DEPENDING TOOL:
This subclass is indented under the class definition. Apparatus comprising a scraper and an earth working tool which is relatively narrow in a horizontal lateral direction in its intended position of use, the tool being disclosed as mounted on the grading scraper in such fashion

that at least the lower earth working portion of said tool extends downwardly beyond the lower edge of the grading scraper to that during operation the scraper supports the tool and (1) the tool is readily removable from the scraper or (2) the tool is movably attached to the scraper so that it may be positioned to work the earth or not work the earth, or the depth of earth penetration may be changed.

(1) Note. The tool must be disclosed as mounted on the transverse blade or moldboard portion of the scraper rather than on the wing portion or some structure which supports the scraper. Such device will be found in subclass 197.

(2) Note. For the meaning of "scraper" see the definition of subclass 781.

(3) Note. A claim to the combination of a scraper and a readily removable depending earth working tool is classified under this definition even if the scraper is claimed by name only as a support for the tool. Also a claim to a tool with some special adaptation for attachment to a scraper is classified under this definition.

(4) Note. Apparatus under this definition is typically used to scarify or break up roadways and may be called a road ripper, dozer scarifier, or the like.

778 Tool supporting clamp means engage upper and lower edges:

This subclass is indented under subclass 777. Apparatus in which the earth working tool is attached to the scraper by means at the top and bottom edges of the scraper acting to clamp the tool to the scraper.

779 SCRAPER POSITION AUTOMATICALLY CONTROLLED BY LINKAGE FOR LEVELLING:

This subclass is indented under the class definition. Apparatus, comprising a scraper associated with a frame for traversing the earth whose position relative to the frame is controlled by a mechanical linkage arrangement so that when the scraper passes over a raised section of earth it is lowered relative to the frame and when it passes over a low section of earth it is raised relative to the frame whereby an approximately level surface of the earth is created as the scraper traverses the earth, all without the intervention of a human operator.

(1) Note. Typically in apparatus under this definition a ground wheel may move relative to a frame carrying the grading scraper and a linkage connects the wheel and grading scraper so that as the wheel moves up relative to the frame the scraper moves down relative to the frame and as the wheel moves down relative to the frame the scraper moves up relative to the frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4.5, for automatically controlled power means for shifting the position of a scraper in order to achieve a level surface.

239, for apparatus having a linkage whereby the position of an earth working element is controlled in certain ways in response to draft forces, pitching of a propelling device or ground level.

398, for a vertically adjustable ground support interconnected with a tool by linkage so movement of one influences movement of the other.

811+, for a scraper positioned in front of a motor vehicle and maintained in a horizontal position as the ground supports of the vehicle move over irregular terrain so that the vehicle tilts sidewise.

780 SCRAPER BETWEEN WIDELY SPACED FRONT AND REAR GROUND SUPPORTS:

This subclass is indented under the class definition. Apparatus comprising a scraper supported intermediate the ends of an unusually long longitudinally extending supporting structure with separate ground support means at each end, the unusually long supporting structure tending to smooth out undulations in the earth to produce a finished, generally planar surface.

(1) Note. For the meaning of "scraper" see the definition of subclass 781.

(2) Note. The unusually long supporting structure must have one portion thereof extending a substantial distance from the scraper to the front support means and another portion thereof extending a substantial distance to the rear support means to present an elongated supporting base for materially reducing the effect of undulations in the soil on the scraper.

(3) Note. Patents are classified under this definition on a disclosure basis if the claim has any reference to the supporting structure. The supporting structure may be disclosed as supported at one or both ends by a separate vehicle or vehicles.

781 SCRAPER BETWEEN FRONT AND REAR GROUND SUPPORTS OF VEHICLE:

This subclass is indented under the class definition. Apparatus in which a scraper is located between spaced front and rear ground supports of a vehicle, the ground supports being either wheels or wheel substitutes having no substantial earth working function.

(1) Note. A "scraper" under this definition is an earth working tool, at least a substantial portion of which is laterally or diagonally disposed and has a substantially vertically disposed face having a lower straight edge which functions to scrape earth from or slide the same along the surface of the earth to form a smooth planar surface. A tool which is disclosed as intended to cultivate the soil, or to make a furrow or a trench is not considered to be a scraper and is classifiable on other features. A scraper under this definition is frequently called a "road grader".

(2) Note. The vehicle must be a unitary stable vehicle. A scraper mounted between a vehicle and the ground support means of a device which is essentially a separate trailing vehicle or pushed vehicle is not included. Such devices are classified on other features in various subclasses.

(3) Note. A scraper is considered to be between the front and rear ground supports only if at least a portion of the scraper in a plan view is located within a polygonal area defined by a perimeter formed by lines connecting the center points of the front and rear supports, e.g., in the ordinary vehicle having front and rear wheels, within the rectangle formed by the lines connecting the center lines of the wheels.

(4) Note. A device comprising a vehicle having separate front and rear ground supports which are adjustable relative to the framework of the vehicle so that they support the framework during transport only and not during use of the scraper for its intended function is not included. Such devices are classified on other features in various other subclasses.

(5) Note. Patents having a specific disclosure of a scraper located between front and rear ground supports of a vehicle are classified under this definition even if the location is not claimed, provided that some reference to the vehicle is made in the claims.

SEE OR SEARCH THIS CLASS, SUBCLASS:

63+, for apparatus comprising a driven tool such as a scraper which may be between front and rear vehicle supports.

780, for a scraper between the front and rear supports of a specially elongated vehicle.

SEE OR SEARCH CLASS:

37, Excavating, subclass 411, especially subclass 412 for scoops mounted between front and rear ground supports of a vehicle. The distinction between a scoop and a scraper is that a scoop has a bottom surface for transporting the earth while a scraper has no bottom and pushes earth ahead of it while the earth rests on the surface of the undisturbed earth beneath.

782 With laterally offset inclined shoulder forming tool:

This subclass is indented under subclass 781. Apparatus in which in addition to the scraper between the front and rear ground supports there is another earth working tool which is adapted to be used to form a planar surface which is positioned completely laterally beyond the surface formed by the scraper and completely laterally beyond the perimeter delineated by the front and rear ground supports, and which is inclined to the horizontal and relative to the surface formed by the scraper.

(1) Note. The additional tool may be a separate member or an extension of the scraper.

(2) Note. When the apparatus is being used to form a shoulder the scraper may be positioned, for example, above a concrete road and not actually be used to form an earth surface.

783 With scraper attached ground support:

This subclass is indented under subclass 781. Apparatus in which the scraper has a wheel or wheel substitute intimately associated therewith which is separate and distinct from the vehicle ground supports.

(1) Note. The wheel or wheel substitute under this definition may incidentally have an earth working function but an element which is intended to have an earth working function or a side earth retaining wall of a scraper is not included even though the lower edge or surface of said element or wall functions as a ground support. Scrapers with such elements or walls are classified on other features, though they should be cross-referenced to this subclass if structurally similar to scrapers with ground supports.

784 With diverse tool or portion:

This subclass is indented under subclass 781. Apparatus including an earth working element which differs in size or shape from the scraper and so is diverse, the diverse element being capable of working the earth at the same time as the scraper or adjustable in the apparatus to work the earth alternatively to the scraper.

(1) Note. A diverse earth working element under this definition may comprise any distinctly different portion of the scraper which causes classification under the definition of subclass 781.

(2) Note. A wing or vertical plate which extends longitudinally and acts to confine earth loosened by a scraper or other earth working element is not considered a diverse element under this definition.

(3) Note. An earth working element which differs from another by being merely a mirror image, e.g., for pushing earth to the left instead of the right, is not considered diverse under this definition.

(4) Note. The difference between the earth working element and the scraper does not have to be claimed. If a claim refers to an earth working element which is disclosed as diverse, this is sufficient for classification under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

63+, for an apparatus comprising a driven earth working element and a non-driven earth working element which may be a scraper.

777, for a scraper and a detachable narrow depending earth working element.

782, for an apparatus comprising a scraper between front and rear vehicle supports and a laterally offset inclined shoulder forming tool.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 403+ for a scraper combined with a scoop shovel or the like.

785 Non-scraping tool precedes and spaced from scraper:

This subclass is indented under subclass 784. Apparatus in which the diverse earth working element is an element other than a scraper and is positioned in front of and spaced from the scraper when they are both in working posi-

tion, the scraper and the diverse element working the earth in the same or overlapping paths.

(1) Note. An apparatus with a diverse earth working element which is connected to the earth-contacting portion of the scraper so as to be closely associated therewith does not come within this definition even if it precedes and is slightly spaced from the scraper, and is classified in the generic subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

777, for a scraper supporting a readily removable narrow depending tool which may precede the scraper.

786 Plural scrapers:

This subclass is indented under subclass 781. Apparatus in which there are a plurality of scrapers.

(1) Note. Plural scraping blades secured to a backing member or members to form a unitary means are not considered to be plural scrapers, the whole assemblage being considered a single scraper.

(2) Note. A plurality of scrapers may comprise any combination of parts (other than described in (1) Note) if two or more of the parts are each identifiable individually as constituting a scraper. A V scraper, for example, is considered to comprise two scrapers if each arm of the V fits the definition of a scraper.

SEE OR SEARCH THIS CLASS, SUBCLASS:

784+, for a scraper between front and rear vehicle ground supports in combination with a diverse earth working tool.

787 Spaced and in same path:

This subclass is indented under subclass 786. Apparatus in which the plural scrapers work the earth in the same or overlapping paths and are spaced from each other.

(1) Note. Scrapers which are adjustable relative to each other are considered to come within the definition if they meet the requirements of the definition in some positions of adjustment even if in other positions they do not meet the requirements.

(2) Note. Scrapers which are connected to each other in the earth-contacting portion so as to function as a unit (which may be composed of adjustable sections pivoting about the point of connection) are not considered to come within the definition even if the scrapers overlap and are spaced from each other. Such scrapers may be classified in subclass 786.

788 Push frame for scrapers:

This subclass is indented under subclass 781. Apparatus in which the scraper is attached to the forward end of a generally longitudinally extending frame which is attached to the vehicle frame at a location in back of the scraper so as to push the scraper when it is performing its earth working function.

(1) Note. The longitudinally extending frame under this definition must be one which transmits the principal propelling force (at least 50%) from the vehicle to the scraper rather than a mere stabilizing strut or adjusting link. Whether or not a frame meets this criterium is usually a decision made after a consideration of the total disclosure to determine the stress distribution inherently present in the apparatus.

(2) Note. The frame may be nothing more than a single strut.

(3) Note. The phrase “generally longitudinally extending” means that when the scraper is in working position the frame extends more in a longitudinal direction than in a vertical direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

308, for an earth working element other than a scraper between the front and rear of a motor vehicle and attached to a push bar.

789 Actuator for bodily shifting scraper subframe draft connection:

This subclass is indented under subclass 781. Apparatus in which the scraper is attached to a generally longitudinally extending frame which is attached to the vehicle frame by a hitch allowing pivotal movement of the longitudinally extending frame with respect to the vehicle frame, and there is an actuator for moving the hitch or parts thereof so that the locus in the hitch about which pivotal movement takes place is moved relative to the vehicle frame.

(1) Note. The frame may be nothing more than a strut.

(2) Note. The phrase "generally longitudinally extending" means that when the scraper is in working position the frame extends more in a longitudinal direction than in a vertical direction.

790 Counterbalance means for scraper adjustment:

This subclass is indented under subclass 781. Apparatus in which the scraper is adjustably mounted on the vehicle frame and in which there is a means for facilitating the adjustment by at least partially counterbalancing the weight of the scraper.

(1) Note. Included under this definition is a counterbalance means which more than compensates for the weight of the scraper and is the sole means for moving the scraper to an adjusted position against the force of gravity.

SEE OR SEARCH THIS CLASS, SUBCLASS:

506, for a spring-assisted or spring actuator for lifting a tool for transport on a wheeled frame.

791 Three or more independently operable scraper actuators:

This subclass is indented under subclass 781. Apparatus comprising three or more actuators, each operable independently of the others to adjust the position of the scraper relative to the vehicle frame extending between the front and rear ground supports, and acting between the frame and scraper.

(1) Note. If a single power source, such as an engine power take off or hand wheel, is connected by clutches to end elements, such as shafts, links or the like, so that a plurality of such elements can each be moved independently of each other to adjust the position of the scraper, then these are considered to be plural, independently operable actuators corresponding in number to the number of independently movable adjustment points.

792 Scraper adjustable about vertical axis of annular support:

This subclass is indented under subclass 791. Apparatus in which the grading scraper is supported from the vehicle frame by a means including a circular ring or ring portion which lies in a generally horizontal plane when the scraper cutting edge is horizontal and the scraper is adjustable relative to the vehicle frame about the axis of the ring or ring portion.

793 Actuator for laterally shifting support:

This subclass is indented under subclass 792. Apparatus in which one or more of the actuators is operatively connected between the vehicle's frame and the ring or ring portion and effective when operated to bodily move said ring or ring portion from one position of adjustment to another in a substantially lateral direction relative to said vehicle frame.

(1) Note. A scraper is usually provided with lift means at each end whereby it may be angled in a vertical plane. Such lift means may be operated to cause some lateral shifting of the ring but they are not ring-shifting means of this definition. The actuator of this definition is an added actuator whose principal function is to bodily shift the ring or ring portion laterally.

794 Spring biased into ground contact:

This subclass is indented under subclass 781. Apparatus in which the scraper or a portion of the scraper is movably mounted relative to the vehicle frame and there is a resilient means for yieldably urging said scraper or portion into ground contact.

(1) Note. The resilient means is considered to yieldably urge the scraper or scraper portion into ground contact even if it is disclosed as used so that it does not urge the scraper or part in a vertical direction against the ground but instead yieldably urges the scraper or part against an obstacle on the ground when the scraper or part is traversing the ground and contacts the obstacle in the path of traverse.

795 Specific actuator between frame and scraper:

This subclass is indented under subclass 781. Apparatus comprising an actuator for adjusting the position of the scraper relative to the vehicle frame extending between the front and rear supports and acting between the frame and scraper, the actuator being recited in a claim with some significant detail of its structure or relationship to the rest of the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

789, for apparatus comprising an actuator for bodily shifting a scraper subframe draft connection to thereby adjust the scraper.

791+, for a scraper adjusted relative to the vehicle frame by three or more independent actuators. Such actuators commonly comprise actuators for adjusting the scraper about a longitudinal horizontal axis, about a vertical axis and about a horizontal transverse axis through a hitch connecting a scraper-supporting frame to the vehicle frame. Significant disclosures of actuators for tilting the scraper about a horizontal transverse axis adjacent its immediate support or for adjusting the scraper in the direction of its own longitudinal axis should be cross-referenced to subclass 795.

796 For adjustment about vertical axis:

This subclass is indented under subclass 795. Apparatus in which the actuator adjusts the scraper about a vertical axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

791+, for a scraper adjusted relative to the vehicle frame by three or more actuators, one of which is for adjusting the scraper about a vertical axis.

797 For adjustment about longitudinal axis:

This subclass is indented under subclass 795. Apparatus in which the actuator adjusts the scraper about an axis lying in a horizontal plane and extending in the direction of the line of travel of the vehicle.

(1) Note. An axis lying in a horizontal plane and perpendicular to the longitudinal extent of the scraper is considered to be an axis under this definition.

(2) Note. Devices under this definition usually comprise a pair of actuators which may be operated together to lift the scraper about a horizontal transverse axis passing through a draft connection.

SEE OR SEARCH THIS CLASS, SUBCLASS:

782+, for a shoulder-forming scraper and an actuator for tilting it about a generally longitudinal axis.

791+, for a grading scraper adjusted relative to the vehicle frame by three or more actuators, including one or more actuators for adjusting the scraper about a horizontal longitudinal axis.

798 Actuator for tilting wheel relative to vehicle frame:

This subclass is indented under subclass 781. Apparatus in which there is an actuator for angling the axis of rotation of a ground wheel by changing its position in a transverse substantially vertical plane with respect to the vehicle frame which extends between the front and rear ground supports.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 5.52+ for a land vehicle of general utility including an active suspension responsive to a force encountered while the vehicle is in surface traversing motion for governing a spatial relationship

between structural elements of the running gear; subclasses 6.154+ for a land vehicle of general utility including means, interposed between the vehicle body, chassis, or frame and running gear thereof, for predisposing a load, load carrier, or receptacle portion so as to accommodate sustained travel upon an expansive inclined surface; or subclasses 80.1+ for specific details of running gear construction applicable to a land vehicle of general utility.

799 Specific means for horizontally angling wheel relative to vehicle frame:

This subclass is indented under subclass 781. Apparatus comprising a means to change the horizontal angular direction of the axis of rotation of a ground wheel relative to the vehicle frame which extends between the the front and rear ground supports (e.g., for steering the vehicle, etc.), the means being claimed with some specificity.

(1) Note. Means for changing the direction of a freely swiveling caster by swinging the vehicle are not included. There must be some means for positively causing the wheel to turn with respect to the vehicle.

799.5 TOWED SCRAPER WITH GROUND SUPPORT WHEELS:

This subclass is indented under the class definition. Apparatus wherein an implement mounting a scraper blade is adapted to be connected at its forward end to a towing vehicle and includes a rolling support device (i.e., a wheel).

SEE OR SEARCH THIS CLASS, SUBCLASS:

4.5, for a scraper which is automatically power-controlled for leveling.
26.5+, for a dragline scraper.
72, for a driven tool followed by a leveling drag or furrow shaper.
189, and 612, for flexible implements including flexible matlike drags.
197, and 199+, for diverse tools, one of which comprises a drag or smoother.
445.1+, for a scraper mounted on a frame which is supported on the rear of a vehicle by a three-point hitch.
684.5, for a dragged scraper on a supporting frame.
777+, for a scraper supporting a narrow depending tool.
779, for a scraper whose position is controlled by a linkage for leveling.
780, and 781+, for a scraper between front and rear vehicle supports.
810+, for a scraper ahead of a motor vehicle.

810 MOUNTING FOR PUSHED TOOL AT END OF MOTOR VEHICLE:

This subclass is indented under the class definition. Apparatus in which a mounting mechanism is provided for connecting an earth working element to, and ahead of, a self-propelled vehicle.

(1) Note. Basic subject matter for this subclass, and those indented hereunder, is the mounting means (e.g., a frame and adjusting linkage) intermediate a tool and a vehicle. The tool, the vehicle, or a control system for the adjusting linkage may be claimed as well, but this is not necessary for classification herein.

(2) Note. The earth working element is in front of the vehicle in its direction of travel when the element is in use. Included in this subclass, and those indented hereunder, are patents disclosing a tool attached to the rear of a vehicle, but wherein the vehicle moves in its normally reverse direction when using the tool.

(3) Note. A significant portion of the earth working element must be located ahead of a transverse line corresponding to the axis of the front wheels, or forward track idlers, of the vehicle. However, a tool comprising a transversely elongated blade, such as a bulldozer, may be angled (i.e., pivoted within a horizontal plane about a generally vertical axis) so that a portion of the blade is to the rear of said transverse line and outside the perimeter of the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

681+, for a tool, per se.

SEE OR SEARCH CLASS:
180, Motor Vehicles, appropriate subclass for a vehicle, per se.

811 Transversely mounted blade (e.g., bulldozer, etc.):
This subclass is indented under subclass 810. Apparatus in which the earth working element has a vertical, generally planar, earth working portion extended in its dimension transverse to the vehicle's direction of travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
701.1+, for a blade, per se.

812 With valve or pump for hydraulic control system:
This subclass is indented under subclass 811. Apparatus wherein adjustment of the blade is performed by a control system which incorporates fluid circuitry, and including means for producing or controlling fluid pressure within the system.

SEE OR SEARCH CLASS:
91, Motors: Expansible Chamber Type, for a hydraulic motor, per se.

813 Fluid line specifically arranged, or shield for system component:
This subclass is indented under subclass 811. Apparatus wherein (a) significance is attributed to a particular location for the system's hydraulic lines, or (b) structure is recited which serves as a protective covering for some portion or element of the system.

814 Having means controlling drive for interconnected vehicles:
This subclass is indented under subclass 811. Apparatus wherein a blade is powered by a plurality of vehicles, each having its motive control operatively connected one with the other.

(1) Note. The vehicles may be side by side so each is directly linked to the blade, or they may be in tandem arrangement (i.e., one behind the other) so that only the vehicle in front is directly linked to the blade. However, one vehicle simply pushing another, each independently operated, is not considered appropriate for this subclass.

815 Contiguous, relatively adjustable blades; or blade having relatively adjustable earth-engaging parts:
This subclass is indented under subclass 811. Apparatus in which (a) an auxiliary blade is mounted so as to be adjacent to, and adjustable with respect to, the main blade; or (b) the blade's working face is comprised of plural parts which can be adjusted with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
701.1+, for particular blade structure, per se, and especially for a blade having removable parts.

816 Blade mounting includes resilient connection:
This subclass is indented under subclass 811. Blade mounting includes resilient connection: Apparatus wherein an elastically deformable element is interposed in some portion of the mounting means to provide resiliency to the blade support.

817 Removable attachment for general purpose vehicle:
This subclass is indented under subclass 811. Apparatus which is particularly designed as an accessory to be selectively installed upon, and removed from, a general purpose vehicle.

(1) Note. Especially common in this subclass are blade attachments for wheeled farm tractors, which tractors are capable of powering a variety of tools; but this subclass is not limited to a certain type of vehicle.

818 Blade angle adjustable in a horizontal plane:
This subclass is indented under subclass 811. Blade angle adjustable in a horizontal plane: Apparatus including means to maintain the blade in any one of a plurality of selected angular orientations with respect to the longitudinal centerline of the vehicle within a generally horizontal plane.

(1) Note. “Angle” is the art term which refers to this adjustment.

819 Power-operated adjusting means:
This subclass is indented under subclass 818. Apparatus including a power system for moving the blade from one angular orientation to another.

SEE OR SEARCH CLASS:
91, Motors: Expansible Chamber Type, appropriate subclass for a hydraulic motor, per se.

820 Blade angled about fixed, central, generally vertical axis:
This subclass is indented under subclass 819. Apparatus wherein the blade is connected to the mounting means at a point which does not move laterally and lies in a vertical plane that includes the longitudinal centerline of the vehicle, so that it pivots about a generally vertical axis through that point.

821 And tilt of blade adjustable in a generally vertical plane:
This subclass is indented under subclass 820. Apparatus including a mechanism which maintains the working edge of the blade in selected angular orientations with respect to ground within a generally vertical plane.

(1) Note. "Tilt" is the art term which refers to this adjustment.

822 And tilt of blade adjustable:
This subclass is indented under subclass 819. Apparatus including a mechanism which maintains the working edge of the blade in selected angular orientations with respect to ground within a generally vertical plane.

(1) Note. "Tilt" is the art term which refers to this adjustment.

823 And tilt of blade adjustable:
This subclass is indented under subclass 818. Apparatus including a mechanism which maintains the working edge of the blade in selected angular orientations with respect to ground within a generally vertical plane.

(1) Note. "Tilt" is the art term which refers to this adjustment.

824 Having adjustable tilt of angularly fixed blade:
This subclass is indented under subclass 811. Apparatus including means to maintain the working edge of the blade in any one of a plurality of selected angular orientations with respect to ground within a generally vertical plane.

(1) Note. "Tilt" is the art term which refers to this adjustment.

825 About a pivot axis fixed to mounting:
This subclass is indented under subclass 824. Apparatus wherein the blade is connected to the mounting means so that it pivots about a generally stationary axis.

826 Including adjustable length device between mounting means and upper corner portion of blade:
This subclass is indented under subclass 824. Apparatus having a variable length device (e.g., a jack, hydraulic cylinder, etc.) connecting a part of the blade at its lateral end, and at or near the top thereof, with the mounting mechanism.

(1) Note. Many of the patents included herein also disclose diagonal-bracing devices extending laterally between the blade and the mounting means.

827 Having means to prevent lateral movement of mounting or blade:
This subclass is indented under subclass 811. Apparatus including means extending between the vehicle and the blade or mounting mechanism for limiting lateral movement of the blade or mounting mechanism relative to the vehicle.

(1) Note. Examples of means provided for herein include (a) a strut which links either the blade or the mounting mechanism to the vehicle, or (b) a slotted member attached to the vehicle which embraces the mounting mechanism to guide it in vertical movement.

828 **With power means for raising and lowering blade:**
This subclass is indented under subclass 811. Apparatus which includes a power system for causing vertical movement of the blade.

829 **Including elongated flexible element (e.g., cable) connecting power means to tool or mounting means:**
This subclass is indented under subclass 828. Apparatus in which the power system is connected to either the blade or a part of the mounting mechanism by a cable, rope, chain, or similar means.

830 **Power means is fluid servomotor:**
This subclass is indented under subclass 828. Apparatus in which the power system includes a device which has a piston movable within a cylinder by fluid pressure.

831 **Plural servomotors:**
This subclass is indented under subclass 830. Apparatus in which there are a plurality of fluid-pressure devices.

832 **With blade-carried ground support:**
This subclass is indented under subclass 811. Apparatus in which the earth working blade mounts a skid, wheel, or wheel substitute which is separate and distinct from the motor vehicle ground-support means.

833 **Tool prepares wheel path for passage of wheel:**
This subclass is indented under subclass 810. Apparatus in which the tool is positioned ahead of the vehicle wheel or wheel substitute to smooth or level the soil in the path thereof.

834 **With tool-carried ground support:**
This subclass is indented under subclass 810. Apparatus in which either the tool or the mounting means holds a skid, wheel, or wheel substitute which is separate and distinct from the motor vehicle ground-support means.

CROSS-REFERENCE ART COLLECTIONS

900 **PLANT THINNERS:**
This art collection is intended to collect all plant thinners which have an earth working function.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5+, for plant thinners having plant sensing means which actuate automatic power control means.

SEE OR SEARCH CLASS:

47, Plant Husbandry, subclass 1.43 for plant thinners which do not have an earth working function.

END