

**CLASS 180, MOTOR VEHICLES****SECTION I - CLASS DEFINITION**

This class relates to the propulsion of land vehicles by a motor carried on the vehicle and to the following subject matter, which may be considered as incidental to such propulsion:

1. The mounting of a motor on a land vehicle.
2. Transmission mechanism in connection with specific vehicle structure. (See Lines With Other Classes and Within This Class, B, below.)
3. Power steering-gear for land vehicles.
4. Power means for raising a frame or body relative to a wheel or wheels.
5. Devices not of general application for utilizing the power of the power plant of a land vehicle to drive other machines, the specific structure of such machines not being involved.
6. Controlling devices in connection with land vehicle structure.
7. Gyroscopes in connection with land vehicle structure.
8. Safety devices involving a feature limited to use on motor vehicles.
9. Motor Vehicles provided with wheel substitutes. This includes vehicles with wheel substitutes even though no power or driving means is claimed unless the vehicle claimed is identified in the specific disclosure as only a nonmotor vehicle. Further, this class takes fluid supported suction effect and surface effect vehicles, including subcombinations drawn to the fluid producing means even though no power or driving means or specific vehicle structure is claimed or disclosed.

**SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

The preceding class definition is subject to the following exceptions:

- A. This class is superior to the various motor classes, and whenever a patent contains claims involving in any degree the structure of the vehicle in connection with a

power plant or the location and arrangement of the motive-power plant relative thereto it is placed in this class. The mere mention of a vehicle broadly, or of such parts as are necessarily involved in the definition of a vehicle, in a claim which is in other respects drawn to the specific construction of the power plant, does not cause such an assignment, the classification being then based on the power-plant structure, so that the patent is assigned to the appropriate motor class.

B. Transmission mechanism for driving vehicle-wheels is classified with other transmission mechanism elsewhere, even when there is an inclusion in a claim for such structure of a frame, body or boiler, an axle, and traction-wheels. In general, however, inventions relating to vehicle structure are classified in Class 180, although transmission mechanism is included. Transmission-trains designed to drive the road-wheels on opposite sides of a vehicle at the same speed and when desired at different speeds or in different directions or to drive the wheel on one side only are placed in Class 180. Patents containing claims for vehicle-springs in connection with transmission mechanism are placed in Class 180. Patents having two sets of claims, one relating to vehicle structure of general application and the other to transmission mechanism, are placed in this class. Transmission mechanism for an occupant-propelled vehicle in connection with vehicle structure is found elsewhere.

C. Self-propelled vehicles carrying or constituting a device designed to perform a function not incidental to transportation are classified in the class having such devices when a functional manipulation or mounting of the device or more structure than is necessary for connection to the running gear is claimed. For example, a traction-engine claimed in connection with a plow is placed elsewhere.

The term "steering wheel" used in the following definitions means a road-wheel, the axis of which may be swung so as to change the course of the vehicle; however, for an exception to this practice see Subclass References to the Current Class, below. By the term "normal wheel-base" is meant the arrangement of the four wheels of a vehicle so that straight lines joining the points of contact of the wheels with the road form approximately a rectangle when the steering wheels are in the straight-away position.

Vehicle structure designed for motor-vehicles, but not involving features mentioned in the preceding definition, will be found in Classes 280, Land Vehicles, 296, Land Vehicles: Bodies and Tops, and 301, Land Vehicles: Wheels and Axles.

**LINE WITH CLASS 475 AND CLASS 74**

See Class 475, Planetary Gear Transmission Systems or Components, for a planetary gear transmission in a vehicle drive train. The same line exists between Class 180 and Class 475 as exists between Class 180 and Class 74.

**LINE WITH CLASS 477, CLASS 74, CLASS 180, AND CLASS 192**

See Class 477, Interrelated Power Delivery Controls, Including Engine Control, for interrelated control between an engine and a transmission, clutch, or brake. Class 477 was formed from patents in Classes 74 and 192 and so the same line exists between Class 180 and Class 477 as exists between Class 180 and Classes 74 and 192.

**SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS****SEE OR SEARCH THIS CLASS, SUBCLASS:**

252, (2) Note for an exception to the term "steering wheel" as defined in the Glossary, below.

**SECTION IV - REFERENCES TO OTHER CLASSES****SEE OR SEARCH CLASS:**

74, Machine Element or Mechanism, see Lines With Other Classes and Within This Class, B, above.

105, Railway Rolling Stock, appropriate subclasses (e.g., subclasses 215.1+) for a motor vehicle which includes means whereby it may operate in the manner of a vehicle of that class (105).

172, Earth Working, subclass 3 for earth working apparatus with automatic motive power control, subclasses 114+ for a driven earth working tool mounted on a vehicle, specific propelling means for the vehicle being claimed, and subclass 292 for earth working apparatus in which specific propelling means are claimed. Also, see Lines With Other Classes and Within This Class C, above.

173, Tool Driving or Impacting, subclasses 184+ for a tool driving or impacting device combined with a vehicle support.

244, Aeronautics and Astronautics, appropriate subclasses (e.g., subclasses 2, 17.17, 50) for a vehicle of that class which either is combined

with a land or water vehicle or else includes means whereby it may operate in one or more respects (e.g., braking, steering, etc.) in the manner of a land or a water vehicle.

280, Land Vehicles, (see Lines With Other Classes and Within This Class, in reference to Vehicle Structure, above).

296, Land Vehicles: Bodies and Tops, (see Lines With Other Classes and Within This Class, in reference to Vehicle Structure, above).

301, Land Vehicles: Wheels and Axles, (see Lines With Other Classes and Within This Class, in reference to Vehicle Structure, above).

305, Wheel Substitutes for Land Vehicles, for wheel substitutes, per se. Class 180 takes patents relating to a vehicle, disclosed as a motor vehicle, where some vehicle structure or a special relationship between the vehicle frame and the wheel substitute is set forth in the claims, irrespective of whether or not any driving means is claimed. However such expressions as a "vehicle frame", an "axle", a "pivotal connection between the vehicle frame and wheel substitute carrying frame" in claims which are otherwise directed to specific wheel substitute structure are considered mere nominal recitations of vehicle structure and are not excluded from Class 305. Also Class 180 takes patents claiming some element of the driving means of a wheel substitute except that the mere broad recitation of a drive means, drive axle or drive sprocket for a wheel substitute is not sufficient to exclude the patent from Class 305, if the vehicle is otherwise only nominally recited in the claims. Further Class 180 takes suction effect and surface effect vehicles even though no driving means or specific vehicle structure is claimed.

368, Horology: Time Measuring Systems or Devices, subclasses 6+ for a vehicle responsive parking meter and subclasses 1+ for an horological device acted upon by a disparate device.

475, Planetary Gear Transmission Systems or Components, for a planetary gear transmission in a vehicle drive train. (See Lines With Other Classes and Within This Class, above.)

477, Interrelated Power Delivery Controls, Including Engine Control, for interrelated control between an engine and a transmission, clutch, or brake. (See Lines With Other Classes and Within This Class, above.)

**SECTION V - GLOSSARY****NORMAL WHEEL-BASE**

Means the arrangement of the four wheels of a vehicle so that straight lines joining the points of contact of the wheels with the road form approximately a rectangle when the steering wheels are in the straight-away position.

**STEERING WHEEL**

Used in the Class 180 subclass definitions means a road-wheel, the axis of which may be swung so as to change the course of the vehicle; however, see Subclass References in the Current Class above.

**SUBCLASSES****2.1 MOTOR SUPPLIED WITH POWER FROM AN EXTERNAL SOURCE:**

This subclass is indented under the class definition. Motors supplied from without the vehicle with fuel or an equivalent during the travel of the vehicle.

**SEE OR SEARCH CLASS:**

- 191, Electricity: Transmission to Vehicles, which contains inventions relating to the transmission of electrical energy from fixed points to vehicles, and not involving specific vehicle structure nor specific means for applying the electrical energy to any specific purpose.
- 239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 738 and 746 for ambulant sprayers with a stationary fluid supply and having a carriage propelled by the energy of the fluid to be sprayed.

**2.2 Source comprises or includes energy derived from a force of nature (e.g., sun, wind):**

This subclass is indented under subclass 2.1. Motor vehicles wherein the source of power for the motor is derived from a freely occurring natural force (e.g., sun, wind).

- (1) Note. For the purposes of this subclass, although a sail is powered by a natural force, it is not considered a motor under the class definition and therefor vehicles powered by sails except in connection

with a motor are excluded from this class.

**SEE OR SEARCH CLASS:**

- 114, Ships, subclasses 39.12+, for sail-board and rig means therefor and subclasses 39.21+ for sailpowered watercraft.
- 280, Land Vehicles, subclasses 1, 213 and 810 for sail powered land vehicles.

**6.2 STEERING BY DRIVING:**

This subclass is indented under the class definition. Vehicles having means to cause a relative difference in rate of travel between traction elements on opposite sides, as by: (1) unclutching or otherwise disengaging the road traction element or elements on one side from its driving means; (2) changing the speed of, or the amount of power transmitted to, the traction element or elements to produce a differential effect; or (3) varying the effective tractive area of the driving element or elements.

- (1) Note. The line between this group of subclasses and Classes 74, Machine Element or Mechanism, 188, Brakes and 192, Clutches and Power-Stop Control and 475, Planetary Gear Transmission Systems or Components, is that where specific vehicle frame structure or arrangement not related to the transmission of power is claimed, such as, the location or equilibrium positioning of the motor, transmission or the like on the frame, or other vehicle feature (e.g., load carrying structure or nondriven wheels), classification is in Class 180.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 23, for vehicles in which the driving wheels are positively moved by independent means for steering the vehicle.
- 24.01, for vehicles in which wheels other than driving wheels are positively moved by independent means for steering the vehicle.
- 24.08, for similar devices in which steering of the vehicle is not involved.
- 400+, for power steering gear mechanism and steering gear combined with vehicle power features.

## SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, appropriate subclasses, for power transmitting elements included in steering by driving mechanism wherein specific vehicle structure or specific relation with vehicle structure is not claimed (i.e., the vehicle is included in name only). See (1) Note.
- 188, Brakes, appropriate subclasses, for brakes included in steering by driving mechanism wherein no significant vehicle structure is claimed. See (1) Note.
- 192, Clutches and Power-Stop Control, appropriate subclasses, for brakes and clutches, plural clutches, transmission control with brake control or clutch, etc., wherein no significant vehicle structure is claimed. See (1) Note.
- 475, Planetary Gear Transmission Systems or Components, subclasses 18+ for steering by driving. See (1) Note.
- 477, Interrelated Power Delivery Controls, Including Engine Control, for steering by driving, including interrelated engine and transmission, clutch, or brake controls and lacking significant vehicle structure. The same line exists between Class 180 and Class 477 as exists between Class 180 and Class 74 as set forth above.

**6.24 Combined with manual steering:**

This subclass is indented under subclass 6.2. Vehicles having combined therewith means for manually turning or rotating ground engaging elements about a vertical axis; i.e., conventional steering gear.

- (1) Note. The manual steering mechanism for the most part controls nondriven wheels.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 400+, for power steering gear mechanisms and steering gear combined with vehicle power features.

## SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclasses 771+ for a general utility wheeled land vehicle including occupant controlled steering.

**6.26 Interlocked:**

This subclass is indented under subclass 6.24. Combinations in which the mechanism for steering by driving is controlled by or responsive to the manual steering mechanism.

**6.28 Electrical:**

This subclass is indented under subclass 6.26. Combined steering mechanisms in which the interlocked relation between the steering mechanisms is accomplished by means of electro-mechanical responsive devices.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 6.44, for auxiliary electric motors used to effect steering by driving.
- 6.5, for electric traction motors that drive traction elements and are controlled to effect steering by driving.

**6.3 Fluid:**

This subclass is indented under subclass 6.26. Combined steering mechanisms in which the interlocked relation between the steering mechanisms is accomplished through the medium of a fluid pressure system.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 6.44, for auxiliary fluid motors used to effect steering by driving.
- 6.48, for fluid traction motors that drive traction elements and are controlled to effect steering by driving.

**6.32 Lever and/or linkage:**

This subclass is indented under subclass 6.26. Combined steering mechanisms in which the interlocked relation between the steering mechanisms is accomplished by means of a mechanical lever and/or linkage system.

**6.34 With controller cam:**

This subclass is indented under subclass 6.32. Steering mechanisms in which the mechanical lever and/or linkage system is operated or controlled by a cam mechanism.

**6.36 Lost motion type:**

This subclass is indented under subclass 6.32. Steering mechanisms in which the mechanical lever and/or linkage systems is constructed so as to have lost motion.

- (1) Note. These devices, for the most part, are operative only when making sharp turns.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.34, for cam controlled linkage systems having a lost motion.

**6.38 Geared:**

This subclass is indented under subclass 6.32. Steering mechanisms in which the motion of the mechanical lever and/or linkage system is controlled by geared members.

**6.4 With flexible and/or yieldable link:**

This subclass is indented under subclass 6.32. Steering mechanisms in which the mechanical lever and/or linkage system includes flexible and/or yieldable elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.36, for yieldable elements providing lost motion in the steering mechanism.

**6.44 Auxiliary steering motor:**

This subclass is indented under subclass 6.2. Vehicles in which a separate motor is used to modify or vary the drive to the traction element or elements to effect steering by driving.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.28, for auxiliary electric motors in steering by driving systems combined with manual steering mechanisms.

6.3, for auxiliary fluid motors in steering by driving systems combined with manual steering mechanisms.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 640+ for gearing in general with two power sources.

475, Planetary Gear Transmission Systems or Components, subclasses 1+ for planetary gearing having two power sources.

**6.48 Independently operable drive motors:**

This subclass is indented under subclass 6.2. Vehicles in which different traction elements are driven by individually controlled motor units for varying motor power output to effect steering by driving.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.3, for independently operable fluid drive motors in steering by driving systems combined with manual steering mechanism.

**6.5 Electrical:**

This subclass is indented under subclass 6.48. Combinations in which the motor units are electrical.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.28, for electrical motor units used in interlocked steering mechanisms.

**6.54 Variable contact:**

This subclass is indented under subclass 6.2. Vehicles in which the effective tractive area of a traction element or elements is varied.

- (1) Note. These vehicles, for the most part, have endless flexible traction elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.7, for vehicles having endless flexible traction elements, steered by driving, but not involving variable ground contact.

15, for vehicles having auxiliary traction elements.

16, for auxiliary traction elements adapted to be attached to vehicles.

**6.58 Controlled from rotatably mounted superstructure:**

This subclass is indented under subclass 6.2. Vehicles in which means for controlling the steering by driving mechanism is located on a pivotally mounted platform or turntable type of superstructure.

- (1) Note. These are for the most part vehicles having endless flexible tracks.

**6.6 Steering responsive to rotary movement of superstructure:**

This subclass is indented under subclass 6.58. Combinations in which the steering by driving mechanism is responsive to the position of and/or controllable by the rotation of the superstructure.

**6.62 Combined:**

This subclass is indented under subclass 6.2. Vehicles claimed in combination with features other than the steering by driving structure and not provided for in preceding subclasses.

- (1) Note. Steering by driving structure includes propulsive ground engaging elements and power, transmission and/or driving means such as will produce variation in the relative motion of the traction elements either by changing power or tractive effort, with connecting framework or platform.
- (2) Note. In this subclass, for example, are combinations with power take-offs, hitches or hangers for a trailing load or animal draft, furrow engaging wheels used as a controlling element for the steering by driving mechanism, and supports on which the vehicle can be tilted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 6.24+, for steering by driving mechanism combined with manual steering mechanism.
- 6.58+, for steering by driving mechanism combined with a rotatably mounted superstructure.
- 53.1+, for other power take-offs combined with vehicle structure.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 11+ for power take-offs, per se.
- 192, Clutches and Power-Stop Control, the unnumbered title "Interrelated power delivery controls" and see the Notes thereto for interrelated control of one or more of prime movers, clutches, gearing, brakes and loads by name only.

**6.64 Swinging traction frame responsive to differential drive:**

This subclass is indented under subclass 6.2. Vehicles having a frame member, carrying driven traction elements, mounted so as to swing about a vertical axis in response to the steering by driving.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 14.1+, for articulated trains of motor vehicles.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclass 124.109 for a general utility wheeled land vehicle including a self-sustaining structural assembly disposed between the vehicle body, chassis, or frame and the axle, wheel, or wheels; subclasses 124.11+ for a general utility wheeled land vehicle wherein the running gear includes a pivotally mounted axle or axle assembly providing resilient, shock absorbing support for the vehicle body chassis or frame; subclasses 137.5+ for a general utility wheeled land vehicle wherein the running gear includes a turnable axle lacking resilient, shock absorbing support; or subclasses 400+ for an articulated vehicle or interconnected plural vehicles (i.e., vehicle train).

**6.66 Reversing drive to traction element:**

This subclass is indented under subclass 6.2. Vehicles in which means are provided for driving the traction elements in relatively reverse directions to effect steering by driving.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.48+, for vehicles driven by individually controlled motor units capable of selectively reversing the drive to their respective traction elements.

**6.7 Endless flexible track:**

This subclass is indented under subclass 6.2. Vehicles wherein the traction elements are flexible and endless.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.58+, for endless flexible tracked vehicles mounting a rotatable superstructure.

9.1+, for endless flexible tracked vehicles not involving steering by driving.

**7.1 SPECIAL DRIVING DEVICE:**

This subclass is indented under the class definition. Motor-vehicles driven in some other way than by the mere rotation of road-wheels as traction-wheels.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

116, for surface effect vehicles.

164, for a motor vehicle having powered means for creating a fluid force to attract the vehicle to the surface upon which it travels.

186+, for a motor vehicle which includes a ski-like or runner member and wherein the vehicle is provided with at least one surface-engaging propulsion element.

SEE OR SEARCH CLASS:

104, Railways, subclass 235, for vehicles propelling the vehicle along a fixed cable.

242, Winding, Tensioning, or Guiding, subclass 390.7 for a reeling device driven by a vehicle motor, 392 for a spool mounted on a vehicle wheel, and 391+ for a traction driven spool in a reeling device.

280, Land Vehicles, subclasses 8+ for a general utility land vehicle including both wheel and runner ground engaging elements; subclass 28.5 for a general utility land vehicle including

wheel substitutes; or subclasses 845+ for a general utility land vehicle including runner ground engaging elements. In each instance identified above, the vehicle being claimed is a nonmotor vehicle or identified only as a nonmotor vehicle in the specific disclosure.

305, Wheel Substitutes for Land Vehicles, appropriate subclasses, for wheel substitutes, per se. See the class definition of Class 180 for the line between Class 180 and Class 305.

**7.2 Spiral type element:**

This subclass is indented under subclass 7.1. Motor vehicle wherein at least one propulsion element comprises a reaction surface in the form of a screw or a helix which is driven about its axis of rotation, said axis being in general alignment with the direction of the vehicle's motion.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

188, for vehicles driven by this type of device and also provided with runners.

**7.3 Reaction jet propulsion:**

This subclass is indented under subclass 7.1. Motor vehicle wherein the special driving device is a jet propulsion device.

**7.4 Propeller type:**

This subclass is indented under subclass 7.1. Motor vehicle wherein the special driving device is a rotary fluid reaction type impeller.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

182+, for vehicles driven by this type of device and also equipped with runners.

**7.5 Vehicle mounted winch for pulling vehicle:**

This subclass is indented under subclass 7.1. Motor vehicle wherein the special driving device is a driven cable reel which is mounted on the vehicle and winds a cable connected at its other end to a stationary object.

- (1) Note. These devices are usually used to extract the vehicle from the mud and the like.
- (2) Note. A wheeled roadway vehicle having a motor powered, traction cable-pulling device mounted on it for propelling it from one location to another as the cable is pulled by the device, is found in this subclass; if, however, the vehicle is not claimed, or the device is not disclosed as also being used to pull a load, classification is in Class 254.

**SEE OR SEARCH CLASS:**

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 264+, for apparatus for hauling or hoisting a load which includes a driven device for pulling on or traveling along a cable, and wherein either the device or the cable is attached to the load; see (2) Note above.

**8.1 Stepper:**

This subclass is indented under subclass 7.1. Motor vehicles driven by mechanical legs.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 187, for a motor vehicle of the kind described in the reference to subclasses 186+ appearing in subclass 7.1 above, and wherein the propulsion element is of a type which shuffles along the vehicle-supporting surface.
- 203, for a motor vehicle provided with powered, ground-engaging means for producing, or assisting in the production of, lateral movement of the vehicle (e.g., for parking) and wherein the means comprises a reciprocally driven stepper or a rotatably driven cam.

**SEE OR SEARCH CLASS:**

- 56, Harvesters, subclasses 365+ for combined rakes and tedders and 370+ for tedders.
- 105, Railway Rolling Stock, subclasses 32 and 49 for intermittent grip drive.
- 172, Earth Working, subclasses 84+ for earth working blades having a reciprocating and oscillating motion, and

- subclass 352 for earth working apparatus with manually driven stepper propulsion means.
- 280, Land Vehicles, subclasses 1.181+ for an occupant propelled land vehicle which simulates an animate figure including similar driving means; or subclasses 218 and 219 for a general utility wheeled land vehicle of occupant propelled type including similar driving means.
- 305, Wheel Substitutes for Land Vehicles, subclasses 1+ for stepper type wheel substitutes.

**8.2 Step or abutment ascending/descending type vehicle:**

This subclass is indented under subclass 8.1. Motor vehicle wherein the mechanical legs are used to propel the vehicle up or down steps or abutments (e.g., stair climber).

- (1) Note. Vehicles to be placed in this subclass must have legs that engage the step or abutment by intermittent action. Legs on wheels which form spiders will be found in this subclass.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 9.22, for motor driven stair climbers employing only an endless tread.

**8.3 Wheel and stepper type:**

This subclass is indented under subclass 8.1. Motor vehicle having supporting wheels in addition to the mechanical legs.

**8.4 Nonsupporting pusher type stepper:**

This subclass is indented under subclass 8.3. Motor vehicles wherein the mechanical legs serve only to propel the vehicle.

**8.5 With alternately lifted support base and legs:**

This subclass is indented under subclass 8.1. Motor vehicle having a ground engaging supporting base and at least one mechanical leg and including means that alternately lift the base and the leg from the ground and means for moving the base and leg relative to one another to move the vehicle.



**8.6 With alternately lifted feet or skids:**  
Motor vehicle under 8.1 having ground engaging means that are alternately lifted from the ground and reciprocated or swung relative to the vehicle to move the vehicle.

**8.7 Endless or rotary type:**  
This subclass is indented under subclass 8.1. Motor vehicle wherein the mechanical legs are mounted for guided motion on an endless guide track or a rotary support and engage with and disengage from the ground in succession.

**9 Portable track:**  
This subclass is indented under subclass 7.1. Motor-vehicles adapted to travel upon a track carried by the vehicle.

SEE OR SEARCH CLASS:

305, Wheel Substitutes for Land Vehicles, subclasses 6+ for rigid portable tracks.

**9.1 Endless, flexible:**  
This subclass is indented under subclass 9. Motor vehicles wherein the track is flexible and endless.

SEE OR SEARCH THIS CLASS, SUBCLASS:

184+, for a motor vehicle which includes a ski-like or runner member, which member is substitutable for support structure of the wheel type, and wherein the vehicle is provided with a propulsion element of the endless track type.

190+, for a motor vehicle which includes a ski-like or runner member and wherein the vehicle is provided with at least one surface-engaging propulsion element of the endless track type.

SEE OR SEARCH CLASS:

172, Earth Working, subclass 292 for an earth working implement propelled over the ground by an endless track motor vehicle.

280, Land Vehicles, subclass 5.22 for a step or abutment ascending land vehicle including an endless track; subclass 28.5 for a nonmotor general utility land vehicle including wheel

substitutes; or subclasses 124.128+, particularly subclass 124.129 for a general utility wheeled land vehicle wherein the running gear includes a wheel separately supported upon an individual stub axle by a longitudinally extending swinging support arm as commonly used in conjunction with an endless track but not claiming the endless track.

305, Wheel Substitutes for Land Vehicles, appropriate subclasses for flexible endless track type wheel substitutes.

**9.21 Track substituted for drive wheel:**  
This subclass is indented under subclass 9.1. Motor vehicles wherein the endless track is substituted for one or more of the regular drive wheels of the vehicle.

**9.22 Guided by walking attendant:**  
This subclass is indented under subclass 9.1. Motor vehicles provided with means by which the vehicle may be supported or guided by a walking attendant.

(1) Note. Motorized stair climbers using endless tread drives will be found in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

19.1, for a motor vehicle steered by a walking attendant.

SEE OR SEARCH CLASS:

172, Earth Working, subclass 258 for an earth working implement supported on an endless track motor vehicle which is guided by a walking attendant.

**9.23 With attendant station:**  
This subclass is indented under subclass 9.1. Motor vehicles provided with a seat or other support means for the operator of the vehicle.

**9.25 Rider straddles vehicle (e.g., motorcycle):**  
This subclass is indented under subclass 9.23. Motor vehicle wherein the attendant rides the vehicle with one leg on each side of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:  
190+, for snowmobiles.

**9.26 Convertible from wheel type:**

This subclass is indented under subclass 9.1. Motor vehicles wherein (1) a flexible track is always carried by a vehicle provided with ground wheels but by an adjustment of parts the vehicle is either a flexible track vehicle (i.e., a vehicle in which a flexible track engages the ground) or a wheeled vehicle (i.e., a vehicle in which all of the supporting means are wheels) or (2) a frame carrying a flexible track apparatus is mounted on a wheeled vehicle without removing any of the wheels from the vehicle.

- (1) Note. Devices in which the drive wheel of a vehicle is removed and a flexible track apparatus substituted therefor, and devices in which a flexible track is applied to the drive wheel of a motor vehicle to extend between such drive wheel and an idler wheel to convert the wheel vehicle into an endless track vehicle are not included in this subclass. Such devices are classified on other features in other subclasses under subclass 9.1.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

185, for a motor vehicle which includes a ski-like or runner member, which member is substitutable for support structure of the wheel type, and wherein the vehicle is provided with a propulsion element of the endless track type and further wherein the track comprises a substitute for or an addition to a propulsion element in the nature of a traction wheel.

SEE OR SEARCH CLASS:

305, Wheel Substitutes for Land Vehicles, subclass 20 for a flexible track apparatus adapted to be positioned beneath a vehicle so that the vehicle wheel directly engages the upper surface of the flexible track to drive said track.

**9.28 Track remains with vehicle:**

This subclass is indented under subclass 9.26. Motor vehicles wherein the flexible track is always carried by a vehicle provided with ground wheel means and by an adjustment of parts may be brought into or out of ground contact.

**9.3 Wheel or track contacts ground:**

This subclass is indented under subclass 9.28. Motor vehicles wherein the arrangement of parts is such that when the flexible track contacts the ground the wheel means is out of ground contact.

**9.32 With auxiliary obstacle surmounting means:**

This subclass is indented under subclass 9.1. Apparatus provided with means in addition to the running gear of the vehicle, said means being out of ground contact during normal operation of the vehicle but being operative when the vehicle encounters an obstacle to assist the vehicle in surmounting the obstacle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

9.28, for a wheel vehicle provided with a flexible track apparatus, said flexible track apparatus being vertically movable into or out of ground contact.

**9.34 With ground wheel:**

This subclass is indented under subclass 9.1. Motor vehicles provided with a ground engaging wheel adapted to assist the endless track in supporting or propelling the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

9.32, for a flexible track motor vehicle provided with wheels which are normally out of ground contact, but which are engageable with the ground when the vehicle encounters an obstruction.

**9.36 Opposite and laterally spaced:**

This subclass is indented under subclass 9.34. Motor vehicles wherein the ground wheel is located to one side of the track, and a portion thereof lies within an area defined by a horizontal projection of the track periphery.

**9.38 Steering:**

This subclass is indented under subclass 9.34. Motor vehicles wherein said wheel is adapted to be turned to steer the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

9.44+, for steering means in which the track is steered.

**9.4 With hitch:**

This subclass is indented under subclass 9.1. Motor vehicles provided with an articulated hitch for connecting another vehicle to the motor vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 400+ for articulated vehicles.

**9.42 Combined:**

This subclass is indented under subclass 9.1. Motor vehicles in combination with means other than the basic subject matter of subclass 9.1, which includes a flexible track structure, a vehicle frame and motive power and drive means for the flexible track, and not provided for in other subclasses under subclass 9.1.

- (1) Note. This subclass includes, for example, jack means for supporting the vehicle frame on the track frame for allowing the removal of the drive sprocket from the apparatus, an automatic track leveling means, a crawler speed indicator, a track heating means, a vehicle hood usable as a trailer, and a means for conducting the engine exhaust gases to the final drive mechanism for the expulsion of dirt and grit therefrom.

**9.44 With track-related steering means:**

This subclass is indented under subclass 9.1. Motor vehicles provided with means for steering the vehicle.

- (1) Note. The means of this subclass may involve modifying (e.g., by distorting) or repositioning, relative to the vehicle, a track.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 6.7, for a flexible track motor vehicle which is steered by driving.  
9.38, for a flexible track vehicle provided with a separate ground engaging wheel which is adapted to be turned to steer the vehicle.

SEE OR SEARCH CLASS:

- 305, Wheel Substitutes for Land Vehicles, subclass 44 for an endless flexible track where the track is so modified as to facilitate steering thereof.

**9.46 Pivoted track frame:**

This subclass is indented under subclass 9.44. Motor vehicles wherein the track is carried by a frame which is pivotally mounted on the vehicle frame to turn about a vertical axis.

**9.48 Laterally extendable track:**

This subclass is indented under subclass 9.1. Motor vehicles wherein the flexible track is carried by a frame and (1) there are means to selectively hold the track frame at various distances from the vehicle frame, or (2) the track frame is adapted to accommodate tracks of varying widths.

**9.5 Track support mounted for vertical movement:**

This subclass is indented under subclass 9.1. Motor vehicles in which at least one end portion of the track is trained over a supporting structure including an end wheel and said supporting structure is mounted for movement in a vertical plane relative to the vehicle frame.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 193, for a motor vehicle of the kind described in the reference to subclasses 190+ appearing in subclass 9.1 above and wherein the endless track is provided with a vertically movable support which is located intermediate the forward and rearward extremities of the track.

## SEE OR SEARCH CLASS:

305, Wheel Substitutes for Land Vehicles, subclass 143 for a wheel substitute apparatus comprising a pair of spaced end wheels, a flexible track trained about said end wheels, and one of said end wheels being vertically movable with relation to the other end wheel.

**9.52 Adjustable:**

This subclass is indented under subclass 9.5. Motor vehicles wherein means are provided to selectively hold said supporting structure in different vertical positions relative to the vehicle frame.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

9.28, for a vehicle provided with ground wheels and a flexible track apparatus, and in which the track apparatus may be selectively raised or lowered relative to the vehicle frame.

**9.54 With spring:**

This subclass is indented under subclass 9.5. Motor vehicles wherein spring means are provided between the track supporting structure and the vehicle frame.

**9.56 Longitudinally extending coil spring:**

This subclass is indented under subclass 9.54. Motor vehicles wherein said spring means comprises a coil spring extending in a longitudinal direction relative to the vehicle frame.

**9.58 Leaf or torsion spring:**

This subclass is indented under subclass 9.54. Motor vehicles wherein said spring means comprises either a leaf or torsion spring.

**9.6 Transversely extending:**

This subclass is indented under subclass 9.58. Motor vehicles wherein said leaf or torsion spring extends in a transverse direction relative to the vehicle frame.

**9.62 Toothed wheel drive:**

This subclass is indented under subclass 9.1. Motor vehicles wherein the track is driven by means of a wheel provided with track engaging teeth along the periphery thereof.

## SEE OR SEARCH CLASS:

305, Wheel Substitutes for Land Vehicles, subclasses 195+ for specific interengaging means between a track and its driving sprocket.

**9.64 Belt or chain driven:**

This subclass is indented under subclass 9.62. Motor vehicles wherein said toothed wheel is driven by a power train which includes a belt or a sprocket chain.

**10 Annular:**

This subclass is indented under subclass 9. Motor-vehicles having a ring or annular track on which a supporting-wheel or supporting-wheels of the vehicle bear and which is caused to rotate to effect propulsion.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

342+, for transmission mechanism which includes a rotatably driven pulley or the equivalent for driving a tire or a wheel rim by direct engagement therewith.

## SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 207 for vehicles propelled by occupant within the wheel.

295, Railway Wheels and Axles, subclass 3 for railway wheels of this type.

305, Wheel Substitutes for Land Vehicles, subclass 7 for a rigid circular track type wheel substitute.

**11 MOTOR-CARRYING ATTACHMENTS:**

This subclass is indented under the class definition. Devices comprising a frame carrying a motor supported on one or more wheels and adapted to be attached to a vehicle which supports the frame in part.

(1) Note. The motor may drive the wheel or wheels of the frame or a wheel or wheels of the vehicle.

(2) Note. See (2) Note of subclass 295 below regarding the apparent absence, at present, of a clear line of distinction between the art of that subclass (295) and that of this subclass (11).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

295, for a motor vehicle wherein the motor and the body frame are particularly related to one another and wherein a change-speed gearing or a clutch is mounted in common with the motor and further wherein a wheeled auxiliary frame, which is resiliently joined to the body frame, is provided for supporting the motor and the gearing or clutch; however, see also (2) Note above.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 400+ for articulated vehicles, especially subclasses 423.1+ for a motor section and a trailer supported on the rear end thereof, the motor section and trailer being separable.

**12 Driven steering wheel type:**  
This subclass is indented under subclass 11. Frames wherein the wheels of the attachment are driven and steered.

**13 Single wheel:**  
This subclass is indented under subclass 12. Frames having a single wheel supporting the frame.

**14.1 VEHICLE TRAINS:**  
This subclass is indented under the class definition. Vehicles having two or more connected vehicles, one at least being a motor vehicle which remains a complete vehicle when the other vehicle or vehicles are detached.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

182, for a vehicle train consisting of one or more sleds attached to a motor vehicle, as mentioned in (1) Note thereof.

235, for a motor vehicle having four wheels driven and provided with means for steering all of the driven wheels and wherein the means includes articulation of the frame of the vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 400+ for patents relating to a train of vehicles including a motor vehicle, and claiming the motor vehicle only by a general term, as motor vehicle or traction-engine.

**14.2 Motorized trailer:**  
This subclass is indented under subclass 14.1. Motor vehicles wherein each of the vehicles is provided with its own motor or power plant.

**14.3 All motors supplied from power plant of a single vehicle:**  
This subclass is indented under subclass 14.2. Motor vehicles wherein the motors of all of the vehicles are supplied with power from a power plant mounted on one vehicle (e.g., hydrostatic or electric transmission of power between vehicles).

(1) Note. Motor as used herein refers to a device supplied with power from an external source.

**14.4 Drive means between vehicles through coupling:**  
This subclass is indented under subclass 14.1. Motor vehicles wherein one vehicle is a complete motor vehicle which drives the wheels of the other vehicles by means of a drive train extending through the means coupling the vehicles.

**14.5 Overload release:**  
This subclass is indented under subclass 14.1. Vehicles in which the connections between the motor vehicle and the drawn vehicle contain means which operates to stop the motor or release the load in case of overload.

SEE OR SEARCH CLASS:

172, Earth Working, subclass 3 for earth working apparatus with an automatically operated control of the motive power for the apparatus. A trailing implement must be claimed by more than name only to be placed in Class 172.

192, Clutches and Power-Stop Control, subclass 150 for over-load released stop mechanisms.

- 280, Land Vehicles, subclasses 449+ for vehicle train draft couplings with over-load release.
- 14.6 Tractor drive effort varied by pull exerted by trailer:**  
This subclass is indented under subclass 14.1. Motor vehicle where one vehicle is a complete motor vehicle which functions as a tractor and the power applied to the wheels of the tractor is a function of the load exerted by the trailing vehicles on the means connecting the vehicles.
- 14.7 Vehicle drive drives other vehicle wheel:**  
This subclass is indented under subclass 14.1. Motor vehicle where one vehicle is a complete motor vehicle which has drive means directly engaging and driving one or more wheels of the other vehicle, e.g., a drive device for driving the nose or trail wheel of an aircraft.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
904, for a cross reference art collection of traction dollies for aircraft.
- 15 ADDITIONAL TRACTION WHEEL:**  
This subclass is indented under the class definition. Vehicles with driving devices consisting of one or more traction-wheels not constituting the main supporting-wheels of the vehicle. The traction-wheel is frequently mounted on a frame pivoted at one end to the vehicle body or running-gear.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
11+, for motor carrying attachments which may have traction wheels.  
196, for a motor vehicle which includes one or more ski-like or runner members and wherein the vehicle is provided with at least one surface-engaging propulsion element and further wherein the element comprises a traction wheel.
- SEE OR SEARCH CLASS:  
105, Railway Rolling Stock, especially subclass 73 for locomotives and traction regulators therefor.
- 16 TRACTION WHEEL ATTACHMENTS:**  
This subclass is indented under the class definition. Devices comprising a frame carrying traction-wheels adapted to be attached to motor vehicles.
- (1) Note. The traction-wheels of the motor-vehicle may be removed or may remain in place; but the traction-wheels of the attachment support the vehicle instead of the original traction-wheels and are driven from the source of power of the motor vehicle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
11+, for such frames carrying a motor.
- 19.1 STEERED BY WALKING ATTENDANT:**  
This subclass is indented under the class definition. Vehicles having steering means adapted to be actuated by an attendant who walks with the vehicle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
9.22, for such vehicles adapted to travel upon a flexible endless track carried by the vehicle.
- SEE OR SEARCH CLASS:  
56, Harvesters, subclass 14.7, a harvester driven by a motor and guided by a walking attendant.  
172, Earth Working, subclasses 42+ for a driven earth working tool guided by a walking attendant, and subclasses 256+ for an earth working apparatus comprising a propulsion unit guided by a walking attendant.  
280, Land Vehicles, subclass 47.11 for non-motor propelled vehicles with wheel steering by walking attendant.
- 19.2 Who steerably controls steerable wheel:**  
This subclass is indented under subclass 19.1. Motor vehicles including steerable wheel means and mechanism carried by the vehicles, accessible to the walking attendant to control the steerable wheel means.

- (1) Note. Castered wheels with a handle attached thereto are included in this subclass.

**19.3 Handle movement controls vehicle drive:**

This subclass is indented under subclass 19.1. Motor vehicles having a handle engaged by the attendant for guiding the vehicle with movement of the handle relative to the vehicle by the attendant being effective to control the drive means to the vehicle wheels.

- (1) Note. Sectional handles in which one handle portion is movable to control the drive are included in this subclass

**20 WITH ROLLERS:**

This subclass is indented under the class definition. Motor vehicles wherein one or more rollers support the body or frame.

- (1) Note. Patents for power steering-gear disclosing a steering-roller are placed in this subclass.

**SEE OR SEARCH CLASS:**

- 172, Earth Working, subclasses 133+ for rollers combined with other earth working tools and subclasses 518+ for some types of rollers specific to agricultural use.
- 404, Road Structure, Process, or Apparatus, subclasses 122+ for a device for working earth or road material provided with one or more rollers.
- 492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

**21 SPECIAL WHEEL BASE:**

This subclass is indented under the class definition. Motor vehicles in which the arrangement of the road-wheels differs from the usual one in which straight lines joining the points of contact of the wheels with the road form approximately a rectangle when the steering-wheels are in the straightaway position.

- (1) Note. In the reclassification of former subclasses 25+ ("Three wheeled") and 29+ ("Two wheeled") of this area, now subclasses 205 through 231, and in a concurrent screening of the examiner

copies of the patents of this subclass (21), which subclass was not included in the reclassification project, a vehicle which is (a) disclosed solely as having a number or an arrangement of wheels whereby it constitutes a special wheel base type of vehicle, even though the specific number or arrangement of wheels is not claimed, or (b) disclosed as having both special and nonspecial (i.e., four wheels, rectangularly arranged) wheel base species, and claimed only generically, is classified here (subclasses 21 and 205 through 231); however, this statement is not applicable to subclass 22 and the subclasses indented thereunder, which subclasses were not included in the project nor were they screened.

- (2) Note. Also included herein (subclasses 21 and 205 through 231) is a subcombination of a special wheel base vehicle, provided that the subcombination (a) is not specifically provided for in another class or in a superior subclass of this class and (b) is primarily relevant only to the special wheel base vehicle with which it is associated.
- (3) Note. Generally, a vehicle which is disclosed solely as having a nonspecial (see (1) Note above) wheel base, but for which a number of wheels less than four is claimed, is not classified here (subclasses 21 and 205 through 231) on the basis of that specific number of wheels; rather, classification is elsewhere in the class on some other feature.
- (4) Note. Insofar as subclasses 21 and 205 through 231 are concerned, the substitution of a dual wheel (i.e., two wheels having their central portions either joined back to back or else otherwise mounted in such proximity to each other that insufficient space remains therebetween for accommodating an intervening element such as a drive chain or a steering gear operating shaft) for a single wheel at one or more of the vehicle's wheel-carrying locations does not change the number of wheels thereon from the standpoint of determining the vehicle's wheel base. This statement,

however, is not intended to affect the meaning assigned to “dual wheel pair” in subclass 24.03.

**22 Five or more wheels:**

This subclass is indented under subclass 21. Motor vehicles comprising five or more main supporting-wheels.

- (1) Note. These are single vehicles and are distinguishable by this from the vehicles of subclass 14.1.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 11+, for vehicles having wheeled motor carrying attachments.  
 14.1, (see Note 1).  
 15, for single vehicles having additional traction wheels.  
 233+, for a motor vehicle having four wheels which are driven.

**23 Driven steering wheel type:**

This subclass is indented under subclass 22. Apparatus in which one of the supporting wheels is a driving wheel which is positively moved by independent means for guidance of the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 6.2, for vehicles that are steered by causing a relative difference in the rate of travel between traction elements on opposite sides thereof.  
 24.01, for vehicles in which nondriving wheels are positively moved for steering a vehicle.

**24 Stub-axle type:**

This subclass is indented under subclass 23. Apparatus in which the driving wheel which is positively moved to guide the vehicle swings about pivot means positioned between the medium line of the vehicle and the wheel.

**24.01 Having tandem steerable or translatable wheels or wheel sets:**

This subclass is indented under subclass 22. Apparatus in which one of the wheels is positively moved by external means for guiding the vehicle and in which one other wheel longitudinally spaced in the direction of travel of the

vehicle being either positively and simultaneously moved for steering the vehicle or movably mounted to vehicle structure to move incident to a steering movement of the vehicle.

**24.02 Displaceable wheel shifts or proportions load:**

This subclass is indented under subclass 22. Apparatus which one of the wheels is either (1) adjustably mounted for vertical movement on the frame of the vehicle or (2) mounted for vertical movement and moving incident to a condition of operation of the vehicle whereby the load carried by one other wheel is accordingly modified.

- (1) Note. Under part (2) of the above definition it is considered that wheels mounted on opposite ends of a rocker beam or the equivalent thereof and thereby having relative vertical movement do not constitute load shifting or proportioning wheels for classification here and classification thereof will be based on other vehicle features classifiable in subclass 22 of this class or the subclasses indented thereunder.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 200+, for a motor vehicle provided with powered, ground-engaging means for producing, or assisting in the production of, lateral movement of the vehicle (e.g., for parking) and wherein the means comprises a rotatably driven member which may be an auxiliary wheel.

**24.03 Independently rotatable side-by-side dual wheels:**

This subclass is indented under subclass 22. Apparatus in which two of the wheels are positioned side-by-side to thereby make a dual wheel pair and in which each wheel of the dual wheel pair is mounted on the vehicle to have rotational differential movement relative to the other wheel of the wheel pair.

- (1) Note. See (4) Note of subclass 21 above.



**24.04 With differential housing integrally fixed to vehicle frame:**

This subclass is indented under subclass 22. Apparatus in which gearing connected to and simultaneously and differentially transmitting driving power to laterally spaced driving wheel axles is provided with a housing which is rigidly connected to the frame of the vehicle.

**24.05 Rocker beam houses drive means:**

This subclass is indented under subclass 22. Apparatus in which the motor vehicle includes a hollow pivoted member having mounting means intermediate its ends by which it is rotatably supported on the vehicle, the hollow pivoted member having one of the wheels mounted thereon at each of its ends and driving torque to the wheels being provided by power transmitting mechanism within the hollow member.

**24.06 Plural propelling motors:**

This subclass is indented under subclass 22. Apparatus in which the motive means for propelling the vehicle comprises either a plurality of prime movers or a plurality of energy conversion devices converting other than mechanical energy to mechanical energy.

**24.07 Separate driving motor for each drive wheel:**

This subclass is indented under subclass 24.06. Apparatus comprising a separate prime mover or energy conversion device for independently driving each driving wheel of the vehicle for propelling the vehicle.

**24.08 Each wheel positively driven:**

This subclass is indented under subclass 22. Apparatus in which the motive means is positively drivingly connected to each wheel of the vehicle for propelling the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

6.2, for similar devices in which steering of the vehicle is involved.

38, for a motor vehicle of the steam traction engine type having not only the steering wheels, but also the remaining two wheels, driven.

212, for a motor vehicle having a wheel arrangement comprising three wheels

and wherein at least one wheel is steered and further wherein each wheel is driven.

224, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is steered and further wherein both wheels are motor driven.

233+, as explained in the reference thereto appearing in subclass 22 above.

**24.09 With interaxle differential:**

This subclass is indented under subclass 22. Apparatus in which the drive means for the motor vehicle includes a power dividing means in the form of differential gearing driving each differential of a tandem pair of differentially driven wheel drive axles.

**24.1 With drive interrupt means to either tandem drive wheel:**

This subclass is indented under subclass 22. Apparatus comprising two driving wheels spaced longitudinally in the direction of travel of the vehicle and the drive thereto includes drive disconnect means whereby driving torque to one of the longitudinally spaced driving wheels is discontinued, the driving torque to the other driving wheel remaining unaffected.

**24.11 Driven tandem wheels:**

This subclass is indented under subclass 22. Apparatus comprising wheels spaced longitudinally in the direction of travel of the vehicle and a drive to two of the longitudinally spaced wheels for propelling the vehicle.

**24.12 One serially driven by other:**

This subclass is indented under subclass 24.11. Apparatus wherein the drive to the longitudinally spaced wheels is initially directed to a wheel or drive gearing therefor from which one other wheel or its drive gearing is sequentially driven whereby upon interruption of the drive to the first mentioned wheel or drive gearing, drive to the other wheel or to the other drive gearing would also be interrupted.

**24.13 Spring rocker beam:**

This subclass is indented under subclass 22. Apparatus in which the motor vehicle includes an elongated resilient member having a wheel means mounted at each end thereof, the elon-

gate resilient member being pivotally mounted intermediate its ends to the frame of the vehicle.

### 36 STEAM TRACTION ENGINES:

This subclass is indented under the class definition. Vehicles of normal wheelbase carrying a steam-engine and boiler, the parts of the power plant constituting the main part of the vehicle, precluding its use as a means of carrying goods or passengers.

- (1) Note. Classification in this and the indented subclasses likewise is proper when only the steam traction engine vehicle and its boiler are claimed, i.e., the motor (engine) is disclosed but not claimed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 303+, for a motor vehicle of other than the steam traction engine type having a propulsion motor driven by expansible gas from an external source, which gas is produced by treating a volatile fluid (e.g., the gas is steam).
- 310, for a vehicle of the kind described above as being proper for subclasses 303+ but wherein the vehicle's motor is not claimed.

SEE OR SEARCH CLASS:

- 60, Power Plants, subclass 668 for a steam power system physically related to vehicle structure. See (1) Note of the class definition of Class 180 for the line between Class 180 and the power or motor classes.
- 74, Machine Element or Mechanism, in appropriate subclasses, for transmission mechanism not involving specific vehicle structure. For a more detailed statement of this line see Note 1,b, under the class definition.
- 280, Land Vehicles, subclasses 830+ for inventions relating to the mounting of a boiler on the running gear.

### 37 Driven steering wheel type:

This subclass is indented under subclass 36. Vehicles wherein the steering-wheels are driven.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 12+, for a motor vehicle having a motor-carrying attachment in the nature of a wheeled frame and wherein the wheels of the frame are driven and steered.
- 23+, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein one or more of the wheels are driven and steered.
- 211+, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one of the wheels is driven and steered.
- 222, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein one of the wheels is driven frictionally and further wherein means is provided for steering that wheel.
- 223+, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is driven and steered.
- 234+, for a motor vehicle having four wheels driven and provided with means for steering all of the driven wheels.
- 252+, for a motor vehicle having at least one wheel which is both driven and steerable.
- 400+, for a motor vehicle having means for guiding it.

### 38 Four wheels driven:

This subclass is indented under subclass 37. Vehicles in which all four wheels are driven.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 212, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one wheel is steered and further wherein each wheel is driven.
- 224, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is steered and further wherein both wheels are motor driven.

234+, as explained in the reference thereto appearing in subclass 37 above.

39

**With boiler leveler:**

This subclass is indented under subclass 36. Vehicles wherein means is provided for leveling the boiler.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclass 7 for similar vehicles without special motor features.

40

**Spring mounted on axle:**

This subclass is indented under subclass 36. Vehicles in which the boiler is mounted by means of springs on the rear axle or axle of the driving wheels.

41

**WITH LEVELING DEVICE:**

This subclass is indented under the class definition. Motor-vehicles having means for raising the frame or body relatively to a wheel or wheels, also power means for raising a frame or body relatively to a wheel or wheels.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

39, for boiler carrying vehicles of this type.

**SEE OR SEARCH CLASS:**

56, Harvesters, subclasses 208+ for harvester platform adjustments.

280, Land Vehicles, subclasses 5.5+ for a land vehicle including an active suspension responsive to a force encountered while the vehicle is in surface traversing motion; subclasses 6.15+, particularly subclasses 6.157+ for a general utility land vehicle including means, interposed between the vehicle body, chassis, or frame and running gear thereof, provided for altering height or levelness of the vehicle body, chassis, or frame; or subclasses 43+ for a general utility wheeled land vehicle including means for vertically adjusting a wheel for the proximate utility of altering a dimension of the vehicle or a part thereof.

**53.1 MOTOR AS SOURCE OF POWER FOR OTHER MACHINE:**

This subclass is indented under the class definition. Devices designed to facilitate the use of the motor of a motor vehicle to supply power to drive other machines.

(1) Note. Inventions of this nature disclosed in connection with a steam traction-engine of usual wheelbase will be found in subclass 36.

(2) Note. Classes 74, Machine Element or Mechanism, and 464, Rotary Shafts, Gudgeons, Housing, and Flexible Couplings for Rotary Shafts, contain devices of general application for transmitting power from a motor.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

14.1, for motor-vehicles supplying power to other vehicles connected thereto.

36, (see (1) Note).

198, for a portable carrier which comprises the sole support for a motor of the vehicle, the power of the motor continuing to be expended in the same manner (e.g., through the vehicle's wheels), however, as it was when the vehicle was not supported by the carrier.

**SEE OR SEARCH CLASS:**

74, Machine Element or Mechanism, (see (2) Note).

172, Earth Working, subclasses 35+ for driven earth working tools, and see the Search Class notes in this subclass for the line.

173, Tool Driving or Impacting, subclasses 25+ for a tool driving or impacting means mounted on a wheeled vehicle, in which the vehicle motor is mechanically coupled to the means to drive or impact a tool, and subclass 27 for a vehicle motor and drive motor powered by the same energy source.

222, Dispensing, subclass 627 for a driven dispensing means which is carried on, or pulled or pushed by, a motor vehi-

- cle and wherein the means is driven by the motor of the vehicle.
- 242, Winding, Tensioning, or Guiding, subclass 390.7 for a reeling device driven by a vehicle motor, 392 for a spool mounted on a vehicle wheel, and 391+ for a traction driven reel spool.
- 464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, (see (2) Note).
- 53.2 Other machine is creeper drive on motor vehicle:**  
This subclass is indented under subclass 53.1. Devices wherein the other machine is a speed reducing transmission which enables the motor vehicle to move at a slow speed to permit the machinery on the vehicle to perform a function related to that slow speed.
- 53.3 Other machine mounted by three point hitch (i.e., ford-ferguson hitch):**  
This subclass is indented under subclass 53.1. Devices wherein the other machine is mounted on the motor vehicle by a lifting hitch having three connecting linkages, at least one of which is powered to raise and lower the other machine between a use and nonuse (i.e., transporting) position.
- (1) Note. Such hitches are known as the Ford-Ferguson hitch.
- 53.4 Hydraulic drive to other machine:**  
This subclass is indented under subclass 53.1. Devices wherein the motor vehicle motor drives a hydraulic drive system which in turn drives the other machine.
- 53.5 Electric drive to other machine:**  
This subclass is indented under subclass 53.1. Devices wherein the motor vehicle motor drives an electric power system which in turn drives the other machine.
- 53.6 Drive to other machine by power take-off (PTO) driven by wheel or axle of motor vehicle:**  
This subclass is indented under subclass 53.1. Drives wherein the other machine is driven by drive means connected to or forming part of the driven axle or wheels of the motor vehicle.
- 53.61 PTO mounted directly on or engaging drive wheel to rotate therewith:**  
This subclass is indented under subclass 53.6. Devices wherein the drive means for the other machine is rigidly mounted on or engages the drive wheel of the motor vehicle and rotates with the drive wheel.
- 53.62 PTO constantly driven with wheel selectively drive:**  
This subclass is indented under subclass 53.6. Devices wherein the drive means to the other machine is constantly driven by the axle and means are provided to selectively couple the axle to the wheel to drive the latter.
- 53.7 Drive to other machine by power take-off (PTO) at front end of vehicle:**  
This subclass is indented under subclass 53.1. Devices wherein the other machine is driven by drive means connected to the forward end of an engine mounted on the front end of the motor vehicle.
- (1) Note. The connection is usually to the forward end of the crankshaft of the engine.
- 53.8 Other machine is vehicle accessory:**  
This subclass is indented under subclass 53.1. Devices wherein the other machine is a vehicle accessory (i.e., windshield wiper, air conditioning system, etc.) and the invention is in the drive means to the vehicle accessory.
- (1) Note. Where the invention is in the accessory and not the drive means therefore, the invention is classified with the accessory in the appropriate class and subclass.
- 54.1 POWER:**  
This subclass is indented under the class definition. Inventions in which the distinguishing feature of the invention relating to the apparatus for producing power, usually its location and arrangement relative to the vehicle.
- (1) Note. When a patent contains claims involving the structure of the vehicle in connection with the motor or power-plant, or the location and arrangement of the motor or power-plant relative to the

vehicle, it is placed in this class. The mere mention of a vehicle broadly, or of such parts as are necessarily involved in the definition of a vehicle, in a claim which is in other respects drawn to the specific construction of the motor or power-plant does not cause such an assignment, the classification being then based on the motor or power-plant structure. A search therefore for a motor or power-plant shown in connection with a conventional vehicle must be made in the motor or power-plant classes (e.g., Classes 60, 91, 123, 185, 290, 310, and 415).

- (2) Note. The vehicles of this subclass and the subclasses indented thereunder are four-wheeled vehicles of usual wheel-base.
- (3) Note. Motors mounted so as to be moved to place a pulley in contact with the tire of a road-wheel will be found in Class 74, Machine Element or Mechanism, subclasses 13+, unless specific vehicle structure is included, in which case they will be found in this class, subclasses 342+.
- (4) Note. Motors movable on a frame to enable the power-shaft to drive different shafts, and so change the speed or direction, will be found in Class 74, Machine Element or Mechanism, in appropriate subclasses of Gearing, unless specific vehicle structure is claimed, in which case they will be found in this class, subclasses 364+.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 283, for a motor vehicle provided with safety-promoting means which responds to a sensing of acceleration, deceleration, or tilt of the vehicle in a manner whereby the ignition circuit is interrupted.
- 284, for a motor vehicle provided with safety-promoting means which responds in the manner of the means of subclass 283 noted above and which further responds by impeding the flow of fuel.

342+, (see (3) Note).

364+, (see (4) Note).

**SEE OR SEARCH CLASS:**

74, Machine Element or Mechanism, (see (3) Note and (4) Note).

**54.2 With spring powered motor:**

This subclass is indented under subclass 54.1. Power plant apparatus wherein the power plant includes an energy storing mechanical motor.

**SEE OR SEARCH CLASS:**

185, Motors: Spring, Weight, or Animal Powered, appropriate subclasses for spring motors, per se.

**55 On lower running gear:**

This subclass is indented under subclass 54.1. Inventions relating to the mounting of the power plant partly or wholly on the lower running-gear--i.e., wheels, axles, and their immediate attachments, such as underframes and springs. The body-frame is not included as part of the lower running-gear.

- (1) Note. When the mounting of some other part of the power plant than the motor and the mounting of the motor constitute the invention, the patent is classified according to the motor-mounting and a cross-reference, if necessary, placed in the subclass in which the rest of the invention would be placed if claimed, per se.
- (2) Note. In the instance of a vehicle wheel which contains a motor for driving the wheel, classification is in a motor class as long as the wheel is claimed in such a manner as to amount to no more than a nominal load for the motor.

**SEE OR SEARCH CLASS:**

310, Electrical Generator or Motor Structure, subclass 67 for dynamoelectric devices incorporated within some other unit or device such as a vehicle wheel.

- 56 Rear axle and body:**  
This subclass is indented under subclass 55. Power plant mounted on the rear axle and on a body or body-frame spring-mounted on the rear axle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
63, for motor moving with axle relatively to body.
- 57 Longitudinal shaft:**  
This subclass is indented under subclass 56. Power plant drive effected by means of a fore-and-aft shaft.
- 58 Frame:**  
This subclass is indented under subclass 55. Power apparatus mounted on the frame connecting the axles.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
55, for frames carrying a motor or power-plant and mounted by means of springs on both axles or mounted pivotally on the front axle and by springs on the rear axle.  
61, for frames carrying a motor or power-plant and mounted pivotally on the rear axle and by springs on the front axle.
- 59 Pivoted support on axle:**  
This subclass is indented under subclass 58. Power plants mounted pivotally on a rear axle and by means of springs from an underframe of which the rear axle forms a part.
- 60 Electric:**  
This subclass is indented under subclass 58. Electric-power apparatus mounted on an underframe.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
59, for electric-power apparatus pivotally mounted on a driving-axle and spring-mounted at the other end of an underframe.
- 61 Pivoted support on axle:**  
This subclass is indented under subclass 55. Power apparatus carried by a frame or casing pivoted to the rear or driving axle at one end and supported resiliently at the other end by some part of the running-gear other than the body-frame or the underframe.
- 62 Rear axle:**  
This subclass is indented under subclass 55. Power apparatus mounted on the rear or driving axle.
- 63 Motor moved by axle:**  
This subclass is indented under subclass 54.1. Motors mounted on the body or body-frame and moving relatively to its support, the rear axle being connected with the motor, so that as the body moves up and down relatively to the axle, the distance from the motor-shaft to the axle is kept constant.
- SEE OR SEARCH CLASS:  
105, Railway Rolling-Stock, subclass 3, for articulated trains.  
384, Bearings, appropriate subclasses for bearing of general use.
- 65.1 Electric:**  
This subclass is indented under subclass 54.1. Vehicles wherein an electric motor in the body or on the body-frame drives the vehicle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
6.48, for vehicles wherein electric motors are selectively driven to steer the vehicle.  
60, for a motor vehicle having its power plant mounted on its lower running gear and wherein that running gear comprises the frame which connects the axles and further wherein the power plant is an electric motor.  
214, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one wheel is both steerable and driven and further wherein the vehicle's motor is mounted to swing with that wheel, and wherein, in addition, the motor is electrical in nature.

- 216, for a motor vehicle having a wheel arrangement comprising three wheels and wherein two wheels, which wheels have a common axis, are driven and further wherein the vehicle's motor is electrical in nature.
- 220, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein the vehicle's motor is of the electrical type.
- 242+, for a motor vehicle having four wheels driven and wherein the means for driving one or more of the wheels may be an electric motor.
- 298, for a motor vehicle wherein the motor and the body frame are particularly related to one another and wherein is included means which enables the repositioning of the motor relative to the body frame; as explained in (2) Note of that subclass (298), the motor may be a prime mover of the battery, or of the motor-generator, type.

## SEE OR SEARCH CLASS:

- 191, Electricity: Transmission to Vehicles, for inventions relating to the transmission of electrical energy from fixed points to vehicles and not involving specific vehicle structure nor specific means for applying the electrical energy to any specific purpose.
- 290, Prime-Mover Dynamo Plants, subclass 45, and the subclasses (e.g., 9+, 22+, 27-29) indented under Electric Control, for power-plants for motor-vehicles, including a prime mover, a generator, and one or more motors. Patents herein do not include claims for structure specific to vehicles nor for inventions relating to the mounting of electric-power-plant structure relative to a vehicle.
- 310, Electrical Generator or Motor Structure, appropriate subclasses for electric motors designed for motor vehicles but not involving vehicle features.
- 320, Electricity: Battery or Capacitor Charging or Discharging, appropriate subclass for charging a vehicular battery.

**65.21 Hybrid vehicle (IPC):**

This subclass is indented under subclass 65.1. Subject matter wherein an electric motor in the body or on the body-frame drives the vehicle, combined with a prime mover, other than another electric motor, for generating power for the electric motor or for driving the vehicle.

- (1) Note. The electric motor and the prime mover may act on the same or different wheels of the vehicle and may be usable alternately or jointly, but both remain on the vehicle at all times.

**65.22 Specific vehicle architecture (IPC):**

This subclass is indented under subclass 65.21. Subject matter having a specific or particular functional arrangement of or interconnection between two or more major components (e.g., wheel, motor/generator, engine, etc.) of a drive train.

**65.225 Series and parallel (IPC):**

This subclass is indented under subclass 65.22. Subject matter having a functional arrangement which allows operation in both a first mode wherein the electric motor is supplied with electric power generated by a generating means carried on the vehicle, the generating means being driven by a prime mover other than another electric motor which does not directly drive the wheels; and a second mode wherein the electric motor, generator and prime mover are mechanically interconnected with the drive wheels for driving the vehicle.

**65.23 Switching type (IPC):**

This subclass is indented under subclass 65.225. Subject matter wherein a series or parallel drive mode can be either selected by a user or is changed automatically.

**65.235 Differential gearing type (IPC):**

This subclass is indented under subclass 65.225. Subject matter wherein a differential gear (e.g., planetary differential gear, etc.) is used for power distribution, in both a series and parallel drive mode.

**65.24 Electrical distribution type (IPC):**

This subclass is indented under subclass 65.225. Subject matter wherein an electric motor which can operate differentially is pro-

vided for power distribution, in both series and parallel drive mode.

**65.245 Series (IPC):**

This subclass is indented under subclass 65.22. Subject matter wherein the electric motor is supplied with electric power generated by a generating means carried on the vehicle, the generating means being driven by a prime mover other than another electric motor, the prime mover not directly driving the wheels.

**65.25 Parallel (IPC):**

This subclass is indented under subclass 65.22. Subject matter wherein the electric motor and prime mover are mechanically interconnected with the drive wheels for driving the vehicle.

**65.26 Motor assist (IPC):**

This subclass is indented under subclass 65.25. Subject matter wherein the electric motor provides an assist force for driving the vehicle (i.e., it is not capable of driving the vehicle alone).

**65.265 Control of multiple systems specific to hybrid operation:**

This subclass is indented under subclass 65.21. Subject matter provided with a control arrangement of multiple subunits (e.g., engine, battery, motor, etc.) of a hybrid propulsion power train.

- (1) Note. A control arrangement lacking a recitation of vehicle structure, or including only broad recitation of a vehicle, or of such parts as are necessarily involved in the definition of a vehicle, would not be placed in this subclass.

**65.27 Control of external device in conjunction with specific hybrid function:**

This subclass is indented under subclass 65.21. Subject matter including vehicle having a control arrangement specific to the operation of a device external to the hybrid power train relative to hybrid operation, or the control of a portion of a hybrid power train in relation to an external device.

- (1) Note. A control arrangement lacking a recitation of vehicle structure, or including only broad recitation of a vehicle, or of such parts as are necessarily involved

in the definition of a vehicle, would not be placed in this subclass.

**65.275 Control of individual subunit specific to hybrid operation:**

This subclass is indented under subclass 65.21. Subject matter including vehicle having an arrangement for control of an individual subunit of a hybrid electric power train (e.g., control of fuel cell, etc.).

- (1) Note. A control arrangement lacking a recitation of vehicle structure, or including only broad recitation of a vehicle, or of such parts as are necessarily involved in the definition of a vehicle, would not be placed in this subclass.

**65.28 Control of engine specific to hybrid operation:**

This subclass is indented under subclass 65.275. Subject matter including vehicle having a control arrangement specific to the operation of the prime mover.

- (1) Note. A control arrangement lacking a recitation of vehicle structure, or including only broad recitation of a vehicle, or of such parts as are necessarily involved in the definition of a vehicle, would not be placed in this subclass.

**65.285 Control of motor or generator specific to hybrid operation:**

This subclass is indented under subclass 65.275. Subject matter including vehicle having a control arrangement specific to the operation of a motor or generator.

- (1) Note. A control arrangement lacking a recitation of vehicle structure, or including only broad recitation of a vehicle, or of such parts as are necessarily involved in the definition of a vehicle, would not be placed in this subclass.

**65.29 Control of battery specific to hybrid operation:**

This subclass is indented under subclass 65.275. Subject matter including vehicle having a control arrangement specific to the operation of the battery.



- (1) Note. A control arrangement lacking a recitation of vehicle structure, or including only broad recitation of a vehicle, or of such parts as are necessarily involved in the definition of a vehicle, would not be placed in this subclass.

**65.31 With means on vehicle for generating power for the electric motor:**

This subclass is indented under subclass 65.1. Subject matter including vehicle wherein the electric motor is supplied with electric power generated by means carried on the vehicle.

- (1) Note. The generating means may be a generator driven by a prime mover or the running gear of the vehicle including the drive wheels, the drive axle, drive shaft, or shock absorbing means. The drive may be direct or indirect through an energy conversion mechanism. Although the systems in this and the indented subclass may include batteries, for purposes of this subclass, a storage battery is not considered to be means for generating electric power.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 2.2, for generating means on a vehicle driven by a wind motor or in the form of a solar cell.

**65.51 With motor in or moveable with wheel:**

This subclass is indented under subclass 65.1. Subject matter including vehicle wherein the electric motor is mounted in the wheel to form part of the wheel or is mounted on the wheel to move with the wheel as the wheel moves relative to the vehicle body or frame.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 55, for wheel mounted motors other than electric or hydraulic.  
308, for hydraulically driven motors mounted in or on the wheels.

SEE OR SEARCH CLASS:

- 310, Electrical Generator or Motor Structure, subclass 67 for electric motors combined with wheels.

**65.6 With gearing between electric motor and drive wheel:**

This subclass is indented under subclass 65.1. Vehicles wherein the electric motor is connected to the drive wheels by a mechanical transmission means comprising intermeshing gears.

- (1) Note. The gearing means is usually used to permit the motor and drive wheels to rotate at different speeds.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 337+, for gear transmissions in combination with vehicles not limited by the recitation of an electric motor.

**65.7 Gearing is changeable ratio gearing:**

This subclass is indented under subclass 65.6. Vehicles wherein the transmission is provided with means whereby the ratio of the motor speed to the wheel speed can be selectively changed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 364+, for variable speed transmissions in vehicles without an electric motor.

**65.8 With electronic devices (logic gates, semi-conductors, vacuum tubes, etc.) in control circuit:**

This subclass is indented under subclass 65.1. Vehicles wherein the electric motor is controlled by a circuit that includes electronic devices such as logic gates, semi-conductors or vacuum tubes in the circuit.

- (1) Note. The motor and circuit must be claimed in combination with features limited to a motor vehicle for placement in this subclass. Control circuits utilizing only normally standard switches, relays or regulators are excluded from this subclass.

SEE OR SEARCH CLASS:

- 318, Electricity: Motive Power Systems, appropriate subclasses for control circuits not claimed in combination with a vehicle.

**68.1 With means to guide and/or control air for power plant cooling:**

This subclass is indented under subclass 54.1. Power plant apparatus wherein the vehicle is provided with means for directing cooling air to the power plant for its cooling.

- (1) Note. This subclass includes means to guide air to the radiator of a liquid cooled engine, housings for the power plant and having air guide means and air cooled engines in combination with a motor vehicle.

**SEE OR SEARCH CLASS:**

123, International-Combustion Engines, subclasses 41.01+, for cooling systems for internal combustion engines.

**68.2 With further means to utilize power plant cooling air for other purposes:**

This subclass is indented under subclass 68.1. Power plant cooling apparatus wherein the air that is used to cool the power plant is used to heat or cool the vehicle by either passing through the vehicle before cooling the engine or by passing into the vehicle after cooling the engine or for other purposes.

**SEE OR SEARCH CLASS:**

237, Heating Systems, subclass 12.3, for heating devices wherein the vehicle is claimed only nominally.

**68.3 With means to guide and/or control combustion air for power plant:**

This subclass is indented under subclass 54.1. Power plant apparatus wherein the vehicle is provided with means to guide and/or control air provided to the power plant for combustion purposes.

- (1) Note. The guide means may be part of the vehicle frame or may be mounted on the hood covering the power plant.

**68.4 Radiators and condensers, mounting:**

This subclass is indented under subclass 54.1. Apparatus for mounting a radiator condenser on a vehicle-body or body-frame.

**SEE OR SEARCH CLASS:**

165, Heat Exchange, subclasses 41+, for a heat exchanger installed on a vehicle; subclasses 67+, for an external support for a heat exchanger; and subclass 149, for a radiator case having a frame or edge cover means.

**68.5 Battery mountings and holders:**

This subclass is indented under subclass 54.1. Apparatus including cradles, holders, hold-downs, and supports for battery cells on motor vehicles.

**SEE OR SEARCH CLASS:**

105, Railway Rolling Stock, subclass 51 for electric locomotive battery holders.  
224, Package and Article Carriers, subclasses 400+ for vehicle-mounted carriers generally.  
248, Supports, subclasses 500+ for hold-downs of general utility.  
429, Chemistry: Electrical Current Producing Apparatus, Product, and Process, subclasses 96+ for battery supports.

**68.6 With protector for the radiator or condenser:**

This subclass is indented under subclass 68.4. Radiator or condenser mountings having combined therewith a protector positioned in front of the radiator or condenser, to fend off foreign objects which would otherwise strike the radiator or condenser.

**SEE OR SEARCH CLASS:**

160, Flexible or Portable Closure, Partition, or Panel, appropriate subclasses for flexible panels, per se.  
293, Vehicle Fenders, subclass 115, for radiator guards which also serve as a fender or bumper for the vehicle.

**69.1 Underpans:**

This subclass is indented under subclass 54.1. Devices including dust, protective, or drip pans adapted to be attached beneath the engines of automobiles.

## SEE OR SEARCH CLASS:

184, Lubrication, subclass 106 for a device placed beneath a bearing for catching unused oil.

**69.2 Hoods:**

This subclass is indented under subclass 54.1. Covers for the power plants of motor-vehicles.

- (1) Note. The inclusion of a radiator or dashboard in a claim for a motor-cover is deemed to restrict it to use on a vehicle.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

289, for a motor vehicle having means for promoting its safety, which means may be in the nature of a device, mechanism, or system for either (1) repositioning the hood of the vehicle or (2) operating a means for locking the hood, the moving or the securing of the hood being for the purpose of preventing unauthorized or unintended access or use.

## 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 221 for hinges for automobile hoods.

70, Locks, subclasses 240 and 241 for devices for locking hoods to vehicle-frames.

74, Machine Element or Mechanism, subclass 606 for motor-covers of general applications.

**69.21 Pivoted about horizontal axis extending transversely of vehicle (e.g., alligator type or front end pivot):**

This subclass is indented under subclass 69.2. Power plant covers wherein the cover is pivoted about a horizontal axis extending transversely off the vehicle.

- (1) Note. The cover is usually of one piece construction and the pivot may be at either the forward end or the rear end of the cover. The cover may also be provided with an operator for the cover.

## SEE OR SEARCH CLASS:

49, Moveable or Removable Closures, appropriate subclasses for closures and operators therefor.

**69.22 With noise suppression means:**

This subclass is indented under subclass 69.2. Power plant covers wherein the cover is provided with means to reduce the transmission of acoustical vibrations caused by the operation of the power plant or by the movement of the cover relative to the vehicle.

## SEE OR SEARCH CLASS:

181, Acoustics, subclasses 284+, for sound absorbing panels.

**69.23 Noise suppression means prevents hood from vibrating (i.e., anti-rattlers):**

This subclass is indented under subclass 69.2. Power plant covers wherein the noise suppression means is attached to one of the vehicle frame or the cover and engages the other to prevent acoustical vibration from being transferred between the cover and the vehicle frame.

**69.24 With access openings having moveable or removable closures:**

This subclass is indented under subclass 69.2. Power plant covers wherein the cover is provided with openings to permit access to portions of the power plant without opening the cover completely, said openings being provided with suitable closures pivoted to or removable from the cover.

- (1) Note. These openings are usually to permit access to the battery filler caps, the dipsticks, the radiator cap or other items involved in routine servicing of the power plant.

**69.25 Water deflectors:**

This subclass is indented under subclass 69.2. Devices forming a part of the hood or adapted for use with a conventional hood for deflecting water from the engine compartment of a motor vehicle.

**69.3 With means to increase idle speed of internal combustion engine to compensate for accessory load:**

This subclass is indented under subclass 54.1. Power plant apparatus wherein the power plant is an internal combustion engine and means are provided to increase automatically the idle speed of the engine when accessories to be driven by the engine are connected to drive means driven by the engine.

**69.4 With fuel supply for internal combustion engine:**

This subclass is indented under subclass 54.1. Power plant apparatus wherein the power plant is an internal combustion engine and the vehicle is provided with means to provide fuel to the engine, said fuel supply means being connected to the means controlling the operation of the engine.

SEE OR SEARCH CLASS:

- 123, Internal-Combustion Engines, appropriate subclasses for internal combustion engines, per se, with fuel supply means.
- 280, Land Vehicles, subclasses 834+ for a general utility land vehicle including a boiler or tank wherein the tank forms a container or receptacle for a fluid for use by a prime mover to produce propulsion.

**69.5 Engine uses gaseous fuel:**

This subclass is indented under subclass 69.4. Power plant fuel supply apparatus wherein the power plant uses a normally gaseous fuel and means are provided on the vehicle for storing or generating the fuel.

- (1) Note. The fuel may be stored in gaseous form such as propane, in liquid form such as LPG or may be generated and stored by means carried on the vehicle or on a trailer attached to the vehicle.

**69.6 Vehicle has plural power plants:**

This subclass is indented under subclass 54.1. Power plant apparatus wherein the vehicle has two or more separate power plants mounted on a single body or body frame.

- (1) Note. The power plants may be used individually or simultaneously and the operation of one may control the operation of the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 14.2, for vehicle trains with more than one power plant.

SEE OR SEARCH CLASS:

- 475, Planetary Gear Transmission Systems or Components, subclasses 1+ for plural motors driving a planetary gear transmission lacking significant vehicle structure.
- 477, Interrelated Power Delivery Controls, Including Engine Control, subclasses 2+ for plural motors with interrelated control between a transmission clutch, or brake, and lacking significant vehicle structure.

**76 COMPENSATING DEVICES:**

This subclass is indented under the class definition. Miscellaneous devices for allowing a driven road-wheel to turn faster than the corresponding wheel on the other side when the resistance that it meets is less than that of the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 200+, for a motor vehicle provided with powered, ground-engaging means for producing, or assisting in the production of, lateral movement of the vehicle (e.g., for parking) and wherein the means comprises a rotatably driven auxiliary wheel or endless track, the drive train for which wheel or track may include the vehicle's differential.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 640+ for compensating mechanism other than planetary gearing connecting the adjacent ends of two shafts and subclass 575 for pawls and ratchets connecting one or more wheels to a shaft.

- 192, Clutches and Power-Stop Control, subclasses 41+ for pawl-and-ratchet and other overrunning clutches.
- 475, Planetary Gear Transmission Systems or Components, subclasses 220+ for planetary gear differentials.
- 78 Steering shaft:**  
This subclass is indented under subclass 315. Controlling devices mounted on the steering post or handle.
- SEE OR SEARCH CLASS:
- 74, Machine Element or Mechanism, subclasses 484+ and 491+ for hand and/or foot operated control lever and linkage systems.
- 123, Internal-Combustion Engines, subclass 319, per se, for manually controlled speed regulators.
- 361, Electricity: Electrical Systems and Devices, subclasses 600+, especially subclass 627 for panel board-type switchboards.
- 84 DUST GUARDS:**  
This subclass is indented under the class definition. Devices for preventing the cloud of dust raised by the vehicle from settling on the occupants or the vehicle claimed in combination with a feature limited to a motor-vehicle.
- SEE OR SEARCH CLASS:
- 280, Land Vehicles, subclasses 847+ for dust-guards for vehicles in general.
- 454, Ventilation, subclasses 96+ for dust-guards used on railway-vehicles.
- 89.1 BODIES:**  
This subclass is indented under the class definition. Body structure claimed in combination with a feature limited to a motor vehicle.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 54.1, and indented subclasses, for inventions relating to the mounting of a power plant in a body.
- SEE OR SEARCH CLASS:
- 296, Land Vehicles: Bodies and Tops, appropriate subclasses, for vehicle body construction in general.
- 89.11 With passenger compartment having article receiving or removing means:**  
This subclass is indented under subclass 89.1. Apparatus wherein the passenger compartment of a motor vehicle is provided with either I, an article receiving compartment or receptacle means or II, a means which may include a compartment or receptacle whereby articles such as litter or trash may be positively removed from within the passenger compartment of a vehicle.
- SEE OR SEARCH CLASS:
- 296, Land Vehicles: Bodies and Tops, subclasses 37.8+ for auxiliary article compartments accessible from within the passenger compartment of a vehicle.
- 89.12 Tractor and similar vehicle cabs:**  
This subclass is indented under subclass 89.1. Apparatus in which a motor vehicle other than what is normally considered to be a roadway type vehicle (e.g., automobile, truck, bus, etc.) is provided with an enclosed operator's compartment or station.
- (1) Note. Cabs for tractors, self-propelled farm machines, bulldozers, etc., are classified here providing no specific art structure is claimed. This subclass will take a nominally claimed bulldozer, harvester, etc.
- SEE OR SEARCH CLASS:
- 296, Land Vehicles: Bodies and Tops, subclass 102 and 190.01+ for similar structure where no vehicle features for Classes 180 and 280 are claimed.
- 89.13 Movable cab or operator's station:**  
This subclass is indented under subclass 89.1. Apparatus wherein the body or the vehicle comprises a compartment or portion for occupation by the vehicle operator, the compartment or portion being shiftable to at least one other position or attitude on the vehicle.
- (1) Note. For classification here the cab or operator's station in its entirety is movable to an adjusted or alternate position. Where a portion only of an otherwise fixed cab or operator's station is moved

to an adjusted or alternate position, classification is in subclass 89.18 of this class.

**89.14 Tilting:**

This subclass is indented under subclass 89.13. Apparatus wherein the compartment or portion is pivotally attached to the frame of the vehicle whereby it is shiftable to an alternate attitude or position.

**89.15 Via power or power enhancing means:**

This subclass is indented under subclass 89.14. Apparatus wherein the compartment is shifted to its alternate attitude or position by either I, a motive means movable by the application of a pressurized fluid or II, a linkage or other gearing provided a mechanical advantage to a user for positively moving the compartment or portion.

**89.16 Overmotor cab:**

This subclass is indented under subclass 89.13. Apparatus wherein the compartment occupied by the vehicle operator is positioned at least partially above the motor of the vehicle.

**89.17 Movable body portion facilitating engine access:**

This subclass is indented under subclass 89.1. Apparatus wherein the motor vehicle comprises body parts movable to alternate positions, the movable body parts providing an entrance-way to the vehicle motor.

**89.18 Cab portion:**

This subclass is indented under subclass 89.17. Apparatus wherein the body parts movable to alternate positions comprises either the seat means or other part (e.g., floor) of the vehicle operator's compartment.

SEE OR SEARCH THIS CLASS, SUBCLASS:

89.13, for a cab or operator's station movable in its entirety to an adjusted or alternate position.

**89.19 Overmotor cab:**

This subclass is indented under subclass 89.1. Apparatus wherein the compartment occupied by the vehicle operator is positioned at least partially above the motor of the vehicle.

**89.2 With means for handling exhaust of a motor:**

This subclass is indented under subclass 89.1. Apparatus wherein the feature comprises means for receiving, conducting, or otherwise handling the products of combustion discharged from a motor utilized for propelling a vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

296, as explained in subclass 309.  
309, for a motor vehicle which is provided with means for receiving, conducting, or otherwise handling the products of combustion discharged from its motor.

SEE OR SEARCH CLASS:

60, Power Plants, subclasses 272+ as explained in the reference thereto appearing in subclass 296.  
181, Acoustics, subclasses 121+ as explained in the reference thereto appearing in subclass 296.  
248, Supports, subclasses 49+ as explained in the reference thereto appearing in subclass 296.1.  
293, Vehicle Fenders, subclass 113 as explained in the reference thereto appearing in subclass 296.

**90 Dashboards:**

This subclass is indented under subclass 89.1. Dashboards claimed in connection with a feature limited to a motor vehicle.

(1) Note. May include the disposition or arrangements of control or other instruments on the dashboard.

SEE OR SEARCH THIS CLASS, SUBCLASS:

315, for controlling devices for motor vehicles.

SEE OR SEARCH CLASS:

175, Boring or Penetrating the Earth, subclass 298 for panels and switchboards which are of general application for mounting electrical devices.

**90.6 Footboards and pedal guards:**

This subclass is indented under subclass 89.1. Inventions in the footboards of motor vehicles and in wind and heat guards for the same, usually in connection with the pedal openings.

**SEE OR SEARCH CLASS:**

- 74, Machine Element or Mechanism, subclasses 18+, for a flexible sealing diaphragm attached to a moving rod and to a casing, and subclasses 469+, for levers and for guards and devices of this nature claimed significantly in combination with levers.
- 296, Land Vehicles: Bodies and Tops, appropriate subclasses for the floor, or a floor-related feature, of a vehicle body.

**116 SURFACE EFFECT VEHICLES (I.E., GROUND EFFECT MACHINES):**

This subclass is indented under the class definition. Vehicles comprising means maintaining a working fluid mass, i.e., a cushion or film of fluid, between a surface of the vehicle and a reaction supporting surface, to cause a force to act on the vehicle to repel the vehicle from the supporting surface so as to sustain the vehicle in lift above, but in close proximity to, the supporting surface, the said fluid issuing from the vehicle.

- (1) Note. This definition is intended to cover an art collection of surface effect vehicles and no motor propulsion means need be disclosed or intended to be used. The vehicle may be a broadly recited art device and no specific vehicle structure need be claimed. The fluid cushion may be identified as merely a support, it being assumed for purposes of this definition, that a fluid cushion support is intended and is inherently capable of use in moving any device or load over a surface in the manner of a vehicle. A subcombination of the vehicle comprising the surface effect producing means is classifiable under this definition.
- (2) Note. Subject matter under this definition includes a vehicle having wheels or wheel substitutes and a separate or auxiliary surface effect producing means.

- (3) Note. The “reaction supporting surface” in the definition may be any surface (e.g., water, etc.) other than one which is a part (e.g., a track, etc.) of the vehicle.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 164, for a motor vehicle having powered means for creating a fluid force to attract the vehicle to a surface on which it may travel, and see the reference to this subclass (116) in (2) Note thereof.

**SEE OR SEARCH CLASS:**

- 56, Harvesters, subclass 10.1, for air cushion supported rotary cutting lawn mowers.
- 104, Railways, appropriate subclasses for railways having track guided surface effect vehicles.
- 105, Railway Rolling Stock, appropriate subclasses for transportation equipment for railways having a surface effect means.
- 114, Ships, appropriate subclasses, especially subclass 67, for surface effect marine vehicles having propulsion means extending in and acting against the water, as well as devices peculiar to water borne vehicles.
- 244, Aeronautics and Astronautics, subclasses 12.1+ and 23 for fluid sustained aircraft operating in both ground effect and free flight conditions. Class 180 takes ground effect machines which utilize the action of a working fluid mass against a reaction surface to effect a limited lifting of the vehicle, but do not provide sufficient vertical thrust that would enable such to attain a free flight condition, i.e., where the earth's surface has no effect on the vehicle, the latter being provided for by Class 244.
- 305, Wheel Substitutes for Land Vehicles, appropriate subclasses for wheel substitutes, per se, with the exception of the fluid supported surface effect devices provided for by this subclass.
- 414, Material or Article Handling, subclass 676 for an article supported by one or more columns of air issuing

- from a surface beneath the article and wherein the article is moved laterally relative to the surface by mechanical or manual means.
- 434, Education and Demonstration, subclasses 30+, for aircraft operation teaching devices using fluid supported training apparatus to simulate "in space" conditions.
- 117 Having propulsion or control means:**  
This subclass is indented under subclass 116. A vehicle comprising means to propel the vehicle or control the direction of movement, attitude, or propulsion of the vehicle.
- 118 Responsive to instability condition:**  
This subclass is indented under subclass 117. A vehicle in which a condition indicative of instability of the vehicle (e.g., a variation of cushion or curtain pressure, a variation of the height of the vehicle above the supporting surface, etc.) causes operation of the propulsion or control means without the intervention of a human operator.
- 119 Surface contacting control:**  
This subclass is indented under subclass 117. A vehicle wherein the propulsion or control means has at least a portion thereof in contact with the supporting surface.
- 120 Integrated with working fluid:**  
This subclass is indented under subclass 117. A vehicle wherein at least part of the working fluid is utilized as the propulsion or control means.
- 121 With plural cushions:**  
This subclass is indented under subclass 120. A vehicle wherein the working fluid is utilized to produce a plurality of separate fluid cushions.
- 122 With dynamic seal or fluid curtain:**  
This subclass is indented under subclass 120. A vehicle wherein the working fluid is utilized to produce a fluid cushion which is at least in part, supplied from and confined by a dynamic seal or fluid curtain.
- 123 Spray deflector:**  
This subclass is indented under subclass 116. A vehicle provided with means to diminish the undesirable effect of the upward spray or debris occasioned by the action of the fluid against the supporting surface, e.g., lateral deflectors, shields, etc.
- 124 Expansible chamber:**  
This subclass is indented under subclass 116. A vehicle provided with a chamber means which is expanded or inflated by the admission of the working fluid to support the weight of the vehicle and supply the working fluid for producing the surface effect.
- 125 Fluid bearing or fluid pad:**  
This subclass is indented under subclass 116. A vehicle wherein the basal area of the vehicle conforms to the contour of the supporting surface, usually planar, and is supported above the surface by a thin film of high pressure fluid.
- 126 Rigid side walls:**  
This subclass is indented under subclass 116. A vehicle wherein the working fluid is contained, at least in part, by separate side walls which are substantially rigid under normal conditions of use, are rigidly connected to the vehicle and extended in the direction of movement of the vehicle.
- 127 Flexible skirt:**  
This subclass is indented under subclass 116. A vehicle provided with a flexible skirt suspended from the basal area of the vehicle for confining at least a portion of the working fluid.
- 128 Having outlet for working fluid:**  
This subclass is indented under subclass 127. A vehicle wherein the flexible skirt is provided with an outlet to supply and maintain the working fluid.
- 129 Dynamic seal or fluid curtain:**  
This subclass is indented under subclass 116. A vehicle wherein the working fluid is, at least partially, supplied and maintained by a dynamic seal or fluid curtain.



SEE OR SEARCH THIS CLASS, SUBCLASS:

122, for propulsion or control means for a surface effect vehicle utilizing a dynamic seal or fluid curtain.

**130 Recirculating:**

This subclass is indented under subclass 129. A vehicle wherein the dynamic seal or fluid curtain has a fluid recovery means.

**164 WITH POWERED MEANS FOR CREATING FLUID FORCE TO ATTRACT VEHICLE TO SURFACE OF TRAVEL:**

This subclass is indented under the class definition. Vehicle provided with a fluid-moving device (e.g., blower, fan) driven by the vehicle's propulsion motor or by an auxiliary motor, for causing a flow of fluid (ordinarily air) away from all or a portion of the region between the vehicle and a surface on or along which it may travel (usually a vehicle-underlying surface) and with such confining structure (e.g., apron, seal) for the region as may be necessary to cause the flow of fluid therefrom to result in a less-than-ambient pressure in the region, thus causing the vehicle to be attracted to the surface (by a force greater than that of gravity when the surface is a vehicle-underlying one).

- (1) Note. The art of this subclass is not limited to the scope of the class definition; rather, the subclass has been utilized as a collecting point for load transporting devices, not otherwise provided for, which devices may lack the propulsion motor of a motor vehicle and, in fact, may amount to no more than a movable load transporting platform; however, the devices do meet the requirement of having a powered (ordinarily by an onboard power plant) means for developing the suction-creating, fluid flow.
- (2) Note. The devices of this subclass occasionally have the alternative capability of maintaining a cushion of fluid between themselves and a reaction-supporting surface (e.g., by a reversal of the direction of fluid flow) as provided for in subclasses 116+ below; cross-reference copies of patents to such devices are

found in the appropriate subclass of that area (subclasses 116+). In rare instances, the attractive force of this subclass (164) and the fluid cushion of subclasses 116+ may be operative simultaneously in different regions of a single device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

116+, for a motor vehicle of the surface effect type, and see (2) Note above.

SEE OR SEARCH CLASS:

248, Supports, subclass 362 for a vacuum hold-down.

**165 WITH FLUID OR MECHANICAL MEANS TO ACCUMULATE ENERGY (I) DERIVED FROM MOTION OF VEHICLE OR (II) OBTAINED FROM OPERATION OF VEHICLE MOTOR, AND GIVE UP THE ENERGY (1) WHEN NEEDED FOR VEHICLE ACCELERATION OR (2) TO POWER AN AUXILIARY SYSTEM OF THE VEHICLE:**

This subclass is indented under the class definition. Vehicle provided with means of a fluid or a mechanical nature (e.g., pressure reservoir, flywheel) to receive and retain energy which (I) results from the momentum of the vehicle in ordinary travel, or any other movement of all or part of the vehicle ancillary thereto, or (II) is produced by the operation of the motor of the vehicle (which operation may or may not serve simultaneously a vehicle propelling purpose) which means will, upon demand, feed back the stored energy (1) to aid in starting up or increasing the speed of the vehicle or (2) to drive or otherwise operate a system of the vehicle which serves other than a propelling purpose.

- (1) Note. This subclass was established during the project which reclassified former subclasses 1, 3+, 25+, 42+, 64, 66+, 82+, and 115 and is intended to provide a locus for collecting art which relates to certain aspects of conserving the energy required for the operation of a motor vehicle. The art initially placed here was assembled primarily from the informal records of an examiner in the class and secondarily from screening the sub-

classes listed above; while the collection is believed to be relatively complete, also, insofar as the nonreclassified portion of the class is concerned, it may presently contain only a minor portion of such relevant art as exists in other classes. Inasmuch as the development of a subclass of this nature was beyond the original scope of the project, it was necessary to keep the subclass concept relatively narrow, e.g., to have broadened it to include energy conservation devices of the kind commonly associated with electrically propelled vehicles would have involved reviewing such relatively large fields of art as dynamic braking, motors which may function alternatively as generators, etc.

**SEE OR SEARCH CLASS:**

- 60, Power Plants, subclass 408 for a motor and a source of fluid for driving the motor, and wherein the fluid is in the form of a gas which is supplied to or removed from the motor by, e.g., a pump, and wherein is further provided a storage vessel for serving as the gas supplying or removing device and additionally wherein the motor is a unit which is usable either as a motor (when driven by gas from the charged storage vessel) or as a pump (when used to charge the vessel); and subclasses 413+ for a motor and a source of fluid for driving the motor, and wherein is provided structure that stores energy and also a manual or condition responsive means for controlling either the input to the storage means or the output therefrom.
- 280, Land Vehicles, subclasses 212+ for a land vehicle of the wheeled type provided with positive means adapting it to be propelled by an occupant, and wherein the means is one operable by the occupant, and further wherein is additionally provided a means for storing energy, which energy is expended in driving the vehicle.

**166 WHEELED INFANT CARRIAGE OR CRIB WITH DRIVEN MEANS FOR**

**RECIPROCATING IT LONGITUDINALLY:**

This subclass is indented under the class definition. Apparatus comprising a vehicle of the kind used for resting or transporting an infant, and motor means for moving the vehicle back and forth in a direction parallel to its longitudinal axis.

- (1) Note. The purpose of the movement is to quiet or relax the infant, induce it to sleep, etc. To further promote such relaxation, etc., it is not uncommon to also provide means for rocking the infant supporting portion of the vehicle relative to the remainder thereof.
- (2) Note. A vehicle of this subclass is propelled manually when being utilized to transport the infant, and, from that standpoint, is a vehicle for Class 280. However, the presence of a motor means, which means propels the vehicle in its direction of travel, albeit to a limited extent, is considered to make this class (180) the more appropriate locus.

**SEE OR SEARCH CLASS:**

- 5, Beds, subclass 109 for an infant crib provided with motor means for imparting a rocking (e.g., a to-and-fro) movement thereto.
- 185, Motors: Spring, Weight, or Animal Powered, subclasses 37+ for a motor in which the prime mover is a spring.
- 280, Land Vehicles, subclasses 47.34+ for a vehicle of that class which is stable when traveling and is provided with handle means whereby it may be propelled by an attendant; and see particularly subclasses 47.38+ thereunder.

**167 WITH MEANS FOR CONTROLLING OPERATION RESPONSIVE TO ELECTROMAGNETIC RADIATION, MAGNETIC FORCE, OR SOUND WAVES RECEIVED FROM SOURCE, OR REFLECTED FROM OBJECT OR SURFACE, LOCATED APART FROM VEHICLE:**

This subclass is indented under the class definition. Vehicle provided with means for regulating its operation (e.g., starting, steering, stopping), which means responds to

electromagnetic radiation (e.g., radio rays, light rays, gamma rays) or magnetic force or sound waves, and wherein the radiation, force, or waves are either sent to the vehicle from a location remote therefrom or else are reflected to the vehicle (e.g., an on-board source creates the radiation, force, or waves) from an object or surface at such a location.

- (1) Note. The control of a vehicle by an operator located apart therefrom, and utilizing an electrical conductor, one end of which travels with the vehicle, to transmit signals thereto, does not constitute subject matter for this and the indented subclasses.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 2.1, for a motor vehicle wherein the motor of the vehicle is supplied with fuel or the equivalent from outside the vehicle.
- 170+, for a motor vehicle provided with means which is responsive to the speed of the vehicle for maintaining its speed at, or preventing it from exceeding, a particular value.
- 401, for the combination of a motor vehicle and a land based steering datum, the vehicle including means for sensing the datum and for controlling a steering motor in accordance with the information sensed from the datum.

SEE OR SEARCH CLASS:

- 244, Aeronautics and Astronautics, subclasses 3.11+ for the remote control of a missile; and subclasses 189+ for the remote control, by apparatus of an electrical nature, of an aircraft.
- 246, Railway Switches and Signals, appropriate subclasses (e.g., subclasses 182, 186+), for the remote control of a vehicle of the railway type.
- 318, Electricity: Motive Power Systems, subclass 16 for the control of an electric motor by space-transmitted electromagnetic or electrostatic energy; and subclass 587 for positional servo systems for guiding a land vehicle about a single axis.

- 340, Communications: Electrical, appropriate subclasses (e.g., subclasses 901+ for the use of electrical energy for communicating information.
- 446, Amusement Devices: Toys, subclass 175 or a light or sound responsive toy; and subclasses 454+ for a remotely controlled toy vehicle.

**168 Having controlling means adapted to interact with stationary means which describes course of vehicle's travel:**

This subclass is indented under subclass 167. Vehicle wherein the means for regulating the operation of the vehicle is adapted to function with or under the influence of a means which is fixed in a position (e.g., embedded in the roadway which supports the vehicle) and is so configured as to outline the path which the vehicle is intended to follow.

**169 Radiation, force, or waves reflected from external object or surface:**

This subclass is indented under subclass 167. Vehicle wherein the radiation, force, or waves to which the means responds is that which is reflected from an object or a surface located remotely from the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 168, for a motor vehicle provided with means for controlling its operation, which means is responsive to electromagnetic radiation, magnetic force, or sound waves received from a source, or from an object or surface, located apart from the vehicle, and wherein the controlling means is adapted to interact with a stationary means which is of a kind whereby it describes the intended course of travel of the vehicle. While the stationary means of that subclass frequently is a conductor embedded in a pavement, it may also comprise, for example, a reflecting element on each of a series of roadside posts.

SEE OR SEARCH CLASS:

- 342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), appropriate subclasses for reflected or other-

wise returned wave systems (e.g., object detection, radar).

**170 WITH MEANS RESPONSIVE TO SPEED OF VEHICLE FOR MAINTAINING SPEED AT, OR PREVENTING IT FROM EXCEEDING, A PARTICULAR VALUE:**

This subclass is indented under the class definition. Vehicle provided with means for controlling its rate of movement over a supporting surface in response to its speed, which controlling may consist of either (a) preventing it from exceeding an arbitrarily established, predetermined velocity or (b) maintaining it at a particular velocity, or velocity range, selected by the operator of the vehicle.

- (1) Note. The means ordinarily includes a device (e.g., a servomechanism) for operating a velocity-affecting element (e.g., the throttle) of the vehicle.
- (2) Note. A means for preventing the vehicle from exceeding a particular speed often is identified as a "governor" whereas a means for maintaining the vehicle at a particular speed, or within a relatively narrow range of speed, frequently is designated as a "cruise control"; however, the two functions frequently are so interrelated as to make it difficult to identify a device as being particularly adapted to perform only one, or the other, of the functions.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

167+, for a motor vehicle having means for controlling its operation responsive to electromagnetic radiation or magnetic force or sound waves either received from a source, or reflected from an object or a surface, located apart from the vehicle, and wherein the controlling of the operation of the vehicle may include the regulation of its speed.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclasses 488+ for a device of that class which is responsive to speed.

- 74, Machine Element or Mechanism, subclass 513 for a linkage system associated with a foot operated accelerator, which system may include means for locking the accelerator at a particular point in its travel.
- 123, Internal-Combustion Engines, subclasses 319+ (see especially indented subclasses 350+ and 378+) for means for controlling the speed of an engine, which engine may be the motor of a vehicle, wherein the means is responsive to a condition of the engine; and subclass 198 for an accessory (e.g., a fuel or ignition cutoff device) for an engine.
- 137, Fluid Handling, subclasses 47+ for a system of that class which includes a valve and a driven actuator therefor, which actuator influences the operation of the valve in accordance with the speed at which it is driven.
- 192, Clutches and Power-Stop Control, subclasses 1.1+ for the joint control of a vehicle engine (e.g., as by a throttle holder) and a vehicle brake.
- 246, Railway Switches and Signals, appropriate subclasses for controlling the speed of a vehicle of the railway type; however, as indicated in section IV(a) of the class definition of that class (246), speed control of a vehicle is elsewhere (as designated therein) "when all of the mechanism is upon the vehicle and there is no cooperation with devices on the track or roadway".
- 361, Electricity: Electrical Systems and Devices, subclass 51 for means for protecting an electrical system or device by sensing an excessive speed condition and activating a protective circuit.
- 388, Electricity: Motor Control Systems, subclasses 800+ and 825+ for single motor running-speed control systems with, and without, feedback, respectively.
- 477, Interrelated Power Delivery Controls, Including Engine Controls, subclass 108 for engine speed control and interrelated transmission control to achieve constant output speed, where

specific vehicle structure is not claimed.

serve also to prevent unauthorized use of the vehicle of which it is a part.

**171 Including device to signal to operator existence of unusual or unintended speed:**

This subclass is indented under subclass 170. Vehicle wherein the means includes a device to audibly, visibly, or otherwise indicate to a person controlling the operation of the vehicle that the vehicle is not traveling at the expected or desired speed.

**SEE OR SEARCH CLASS:**

340, Communications: Electrical, subclass 670 for an electrical communication device (e.g., an alarm) which is automatically responsive to velocity (e.g., of a vehicle); and indented subclasses 671+ for a similar device but wherein the velocity sensed is that in an angular direction (e.g., a centrifugal governor).

**172 Including device responsive to centrifugal force:**

This subclass is indented under subclass 170. Vehicle wherein the means includes a device for sensing the outward force resulting from imparting curvilinear or rotational movement to a mass and for reacting (e.g., by developing a control signal or force) to that force.

- (1) Note. While rotating weights driven at a speed proportional to that of the vehicle's motor presently predominate as the device of this subclass, included also, for example, is the pendulum of a curve compensator (i.e., a refinement to the regulating means for automatically adjusting the "set" speed of the means to changes in the course of the roadway along which the vehicle is traveling).

**173 And means to prevent tampering or unauthorized use:**

This subclass is indented under subclass 172. Vehicle wherein the means includes additional means to discourage, reduce, or eliminate the possibility of an unauthorized adjusting or other changing of the controlling means or the use of that means by an unauthorized person.

- (1) Note. A means for preventing unauthorized use of the controlling means may

**174 Having electrical switch:**

This subclass is indented under subclass 172. Vehicle wherein the device includes a switch of the electrical type, which is caused to function by the centrifugal force.

**175 Including fluid pressure actuated servo-mechanism:**

This subclass is indented under subclass 170. Vehicle wherein the means includes a servo-mechanism of the fluid pressure actuated type for operating a velocity-affecting element.

**176 And electrical quantities comparison means for development of input pressure:**

This subclass is indented under subclass 175. Vehicle wherein the means includes additional means for comparing one electrical quantity (e.g., voltage, pulse, waveform, flux, etc.) with another (e.g., a reference) quantity of a like kind, which comparison means is involved in the development of a pressure which is fed into the controlling means.

**177 And one or more electrical components for establishing or regulating input pressure:**

This subclass is indented under subclass 175. Vehicle wherein the means also includes at least one electrical component for setting up or maintaining or changing a pressure which is fed into the means.

- (1) Note. The presence anywhere in the means of any electrical device or element which sets up or maintains or changes the pressure is sufficient for classification in this subclass.

**178 Including electrically actuated servomechanism:**

This subclass is indented under subclass 170. Vehicle wherein the means includes a servo-mechanism of the electrically actuated type for operating a velocity-affecting element.

**SEE OR SEARCH CLASS:**

361, Electricity: Electrical Systems and Devices as explained in the reference thereto appearing in subclass 170 above.

**179 And electrical quantities comparison means for development of electrical input:**

This subclass is indented under subclass 178. Vehicle wherein the means includes additional means for comprising one electrical quantity (e.g., voltage, pulse, waveform, flux, etc.) with another (e.g., a reference) quantity of a like kind, which comparison means is involved in the development of an electrical signal which is fed into the controlling means.

**180 SKI- OR SKATE-TYPE VEHICLE FOR IMPARTING MOVEMENT TO A PERSON STANDING THEREON:**

This subclass is indented under the class definition. Apparatus comprising either (I) a surface-engaging power device for pushing or pulling a standing person who is at least partially supported by, and whose feet are secured to or in direct contact with, one or more ski- or skate-like (e.g., ice, roller) members, or (b) one or more ski- or skate-like members which have power means integral therewith or at least partially attached thereto, and which are adapted to be secured to or in direct contact with the feet of a standing person supported thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:

9.22, for a motor vehicle which is adapted to travel upon endless, flexible track carried by the vehicle, and wherein the vehicle is provided with means whereby it may be guided by an attendant who is walking (i.e., is located apart from the vehicle).

19.1, for a motor vehicle having steering means adapted to be actuated by an attendant who is walking (i.e., is located apart from the vehicle).

SEE OR SEARCH CLASS:

244, Aeronautics and Astronautics, subclass 4 for aircraft of the heavier-than-air type, which subclass may include a device to be attached to a person for placing the person in, or maintaining him in, an airborne condition.

**181 With power means or a portion thereof affixed to or built into the ski or skate:**

This subclass is indented under subclass 180. Apparatus in which the power means is integral with or at least partially attached to the one or more members.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 11.115 for a skate having means for propelling it, the means being of a kind which is driven by the person utilizing the skate.

**182 INCLUDING ONE OR MORE SKI-LIKE OR RUNNER MEMBERS:**

This subclass is indented under the class definition. Vehicle having a ski-like or runner member attached thereto, which member is in sliding contact with a vehicle supporting surface during a period when the vehicle is in a normal mode of operation, and wherein the member serves to guide or to support, in part, at least, the vehicle.

(1) Note. Vehicle trains consisting of one or more sleds attached to a motor vehicle are classified in this and the indented subclasses.

SEE OR SEARCH CLASS:

114, Ships, subclass 43 for an ice boat.

188, Brakes, subclasses 8 and 128 for braking means particularly adapted for use on a vehicle of the sled type.

280, Land Vehicles, subclasses 8+ for a vehicle of that class which is provided with supporting means of both the wheeled and the runner type; and subclasses 845+ for a vehicle of that class which is provided with one or more supporting means in the nature of a ski-like member.

305, Wheel Substitutes for Land Vehicles, appropriate subclasses for a vehicle supporting and/or propelling means of other than a wheeled or runner type.

**183 Member substitutable for wheel type support structure:**

This subclass is indented under subclass 182. Vehicle in which at least one member is utilized to change at least part of the supportive

engagement of the vehicle with the surface from a rolling contact type to a sliding contact type.

- (1) Note. If the structure which provided the rolling contact type of engagement continues to perform--along with the member--a supporting function, there is not a substitution within the meaning of this subclass.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclasses 9+ for a vehicle provided with both supporting wheels and runners in which either the wheels or runners may be retracted into an inoperative position leaving the other in a position of support; and subclass 13 for runners which are designed to be applied to the wheels of a wheeled vehicle.

**184 With propulsion element of endless track type:**

This subclass is indented under subclass 183. Vehicle provided with a driven endless belt or chain type propulsion element, which describes a path determined by two or more longitudinally spaced drive and idler wheels (i.e., the end wheels) around which it passes, and which directly engages the supporting surface.

**185 Track comprises substitute for or addition to propulsion element of traction wheel type:**

This subclass is indented under subclass 184. Vehicle in which the endless belt or chain-type propulsion element constitutes a substitute for, or an addition to, a propulsion element of the kind which comprises a powered wheel having a periphery which bears directly on the supporting surface.

- (1) Note. The powered wheel may remain in place and by utilized as a driving wheel for the track.

**186 With at least one surface-engaging propulsion element:**

This subclass is indented under subclass 182. Vehicle provided with one or more supporting-surface-contacting propulsion elements.

**187 Element shuffles along support surface:**

This subclass is indented under subclass 186. Vehicle wherein at least one surface containing propulsion element propels the vehicle by alternately (a) freely sliding upon, or slightly above and generally parallel to, the supporting surface away from a point on the vehicle and (b) firmly engaging the supporting surface and pulling the point on the vehicle towards it.

- (1) Note. The element may be a member in the sense of subclass 182.

**188 Spiral type element:**

This subclass is indented under subclass 186. Vehicle wherein at least one propulsion element comprises a reaction surface in the form of a screw or a helix which is driven about its axis of rotation, said axis being in general alignment with the direction of the vehicle's motion.

**189 Plural elements connected to and spaced along the plural throws of a common crank-shaft:**

This subclass is indented under subclass 186. Vehicle including plural propulsion elements, each attached to one of the cranks of a crankshaft at a point on the element remote from the surface contacting portion.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclasses 12.11+ for a sled having an occupant-driven propulsion means which propels the sled by making intermittent contact with the sled's supporting surface.

**190 Endless track type element:**

This subclass is indented under subclass 186. Vehicle wherein at least one propulsion element comprises an endless belt or chain in direct engagement with the supporting surface, and which belt or chain travels in a path having a forward extremity determined by one track driving or guiding wheel and a rearward extremity determined by another such wheel (i.e., the end wheels).

**191 Protruding from member:**

This subclass is indented under subclass 190. Vehicle in which a portion of the chain or belt passes through and projects slightly below an opening in the member or members.

**192 Plural tracks with interconnected drive or support means:**

This subclass is indented under subclass 190. Vehicle including plural, individual track type elements having interjoined drive or support means.

**193 With vertically movable track support located intermediate the forward and rearward extremities of the track:**

This subclass is indented under subclass 190. Vehicle provided with a belt or chain supporting device which is situated between, and is vertically movable relative to at least one of, the end wheels.

- (1) Note. "Support", as used herein, is not limited to a force exerted in opposition to gravity; rather, it encompasses any force applied by a vertically movable device to the inner surface of the belt or chain in a direction generally normal thereto.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 9.5, for a motor vehicle having a special driving device in the nature of a portable track and wherein the track is of the endless, flexible type and further wherein a support, which is vertically movable, is provided for the track.

SEE OR SEARCH CLASS:

- 305, Wheel Substitutes for Land Vehicles, subclass 141 for a wheel substitute in the nature of an endless track, and wherein the track is provided with a vertically movable supporting means intermediate its run.

**194 Plural discrete elements protruding from a wheel, hub, or shaft:**

This subclass is indented under subclass 186. Vehicle including plural, individual, propulsion elements each attached directly to a single

wheel, hub, or shaft for rotation therewith about its axis.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclasses 12.11+ for a sled having an occupant-driven propulsion means which propels the sled by making intermittent contact with the sled's supporting surface.

**195 Each element moves relative to wheel, hub, or shaft:**

This subclass is indented under subclass 194. Vehicle wherein the elements are attached to the wheel, hub, or shaft in such a manner as to be moved, at least in part, relative to the wheel, hub, or shaft during the vehicle's operation.

**196 Element comprises traction wheel:**

This subclass is indented under subclass 186. Vehicle wherein the propulsion element comprises a powered wheel having a periphery which bears directly on the supporting surface.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 194+, for a traction wheel having individual elements protruding therefrom.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclasses 12.13+ for a sled having an occupant-driven propulsion means for the traction wheel type.

**197 WITH MEANS FOR DETECTING WHEEL SLIP DURING VEHICLE ACCELERATION AND CONTROLLING IT BY REDUCING APPLICATION OF POWER TO WHEEL:**

This subclass is indented under the class definition. Apparatus wherein the vehicle is provided with means for determining if a driven wheel is rotating more rapidly than is proportional to the speed of the vehicle (i.e., the wheel is spinning relative to the surface with which it is in engagement) during a period when the speed of the vehicle is being increased, and for taking action to reduce or eliminate the unproportionality of the rotational velocity of the wheel to the speed of the vehicle by decreasing the amount or the effect of the power being applied to drive the wheel.



- (1) Note. The means of this subclass is sometimes used also for detecting wheel slip during braking (i.e., the wheel is rotating more slowly than is proportional to the speed of the vehicle and therefore is sliding relative to the surface it engages), and may include a capability for reducing or eliminating the unproportionality by decreasing the braking effort being applied to the wheel.
- (2) Note. In detecting wheel slip of the spinning kind (i.e., as is associated with acceleration), it is common practice to use the rotational velocity of a nondriven wheel as the reference against which the velocity of the driven wheel is compared.

## SEE OR SEARCH CLASS:

- 477, Interrelated Power Delivery Controls, Including Engine Control, subclass 35 for interrelated differential and engine control.

**198 PORTABLE CARRIER SUPPORTS MOTOR VEHICLE IN TOTO AND IS PROPELLED THEREBY:**

This subclass is indented under the class definition. Apparatus comprising a dolly or platform having ground-engaging supporting members in the nature of wheels or wheel substitutes and serving as the sole support for a motor vehicle, the motor of the vehicle being utilized to drive the loaded dolly or platform.

- (1) Note. The motor vehicle does not undergo any significant change in identity or status.
- (2) Note. The motor vehicle most commonly drives the dolly or platform by (a) driving its own wheels or wheel substitutes to drive directly (e.g., by a belt or chain and the appropriate gearing or by frictional engagement) or indirectly (e.g., by a treadmill) the ground-engaging, supporting members of the dolly or platform, or (b) driving the ground-engaging, supporting members directly from a power take-off located at the vehicle's motor, transmission, etc.

**199 WITH POWERED, GROUND-ENGAGING MEANS FOR PRODUCING, OR ASSISTING IN THE PRODUCTION OF, LATERAL MOVEMENT OF THE VEHICLE (E.G., FOR PARKING):**

This subclass is indented under the class definition. Vehicle provided with powered means for engaging the ground and lifting one or more of the vehicle's ground contacting members to relieve it of all or a part of its load and then either (1) transporting, while supporting, the one or more members in a sidewise direction, or (2) exerting, while at least part of the load is relieved, a sidewise thrust on the portion of the vehicle with which the one or more members are associated, or (3) supporting, after lifting, the one or more members, which members are at one end of the vehicle, for relatively friction-free sidewise movement (e.g., as on casters) and then cooperating with the motor of the vehicle to produce the sidewise movement of the members, and a resultant swinging of the vehicle, when (a) power is applied to the vehicle's two, driven, ground-contacting members at its other end and (b) the appropriate one (depending upon the direction of swinging desired) of those two members is braked against rotation and thus utilized as a point of pivot for the swinging of the vehicle.

- (1) Note. While vehicle movement of the kind provided for herein finds its most common application in the "parallel" parking of the vehicle, it is not infrequently utilized in turning the vehicle end for end.
- (2) Note. A device or element for preventing sagging of a wheel and its suspension members, at such time as the portion of the vehicle to which they are attached is elevated, appears frequently in the art of this and the indented subclasses.
- (3) Note. Certain motor vehicles, which are merely reducible in overall dimensions for a storage (e.g., parking) or transport purpose, will be found in subclass 208 below.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 208, for a motor vehicle of the special wheel base type, which vehicle is of a collapsible or knockdown nature, and see (3) Note above.
- 236, for a motor vehicle having four wheels driven and wherein is provided means for steering all of the driven wheels and further wherein that means enables the vehicle to travel in a path which is other than that produced by turning the front wheels and the rear wheels substantially equally and oppositely (e.g., if each wheel is turned 90° about its axis of pivot, the vehicle will move sideways).

SEE OR SEARCH CLASS:

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 418+ for a vehicle-attached jack for lifting the vehicle. The powering of the jack, not only during its lifting movement but also for driving a wheeled jack relative to its supporting surface, by the motor of the vehicle being lifted is not foreign to the art of that subclass (418); however, to be proper therefor, the lifting should be limited to that performed in conjunction with repairing or servicing the vehicle.
- 280, Land Vehicles, subclass 761 for a land vehicle provided with an attachment in the nature of a manually-actuated device for assisting in the parking of the vehicle in "parallel" fashion. If the device is a jack which is powered during lifting by the motor of the vehicle, classification is in this class (180), but, in the absence of powered lateral movement of the vehicle, is not in this area (subclasses 199+).

**200 Comprising rotatably driven auxiliary wheel or endless track:**

This subclass is indented under subclass 199. Vehicle wherein the means includes at least one wheel or endless track, which wheel or endless track (a) supplements or replaces some or all of the vehicle's usual ground-engaging elements

in supporting the vehicle, (b) is driven about its axis of rotation, and (c) transports the vehicle in a sidewise direction.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 7.1+, for a motor vehicle which is driven in some other way than by the mere rotation of road wheels as traction wheels.
- 203, for a motor vehicle which is provided with powered, ground-engaging means for producing, or assisting in the production of, lateral movement of the vehicle and wherein the means is a wheel substitute which may engage the ground cyclically.

**201 Driven by frictional engagement with tire of vehicle traction wheel:**

This subclass is indented under subclass 200. Vehicle wherein the power for driving the auxiliary wheel or endless track is derived from, or transmitted by, a member which is in frictional engagement with a tire of one of the traction wheels of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 221+, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein one of the wheels is driven frictionally.
- 342+, for a motor vehicle, generally, which includes mechanism for transmitting driving effort to a wheel and wherein the mechanism includes a rotating element which drives the wheel by frictionally engaging it.

**202 Driven by auxiliary electric or fluid motor:**

This subclass is indented under subclass 200. Vehicle wherein the power for driving the auxiliary wheel or endless track is provided by an ancillary motor of the electric or the fluid type.

**203 Comprising reciprocally driven stepper or rotatably driven cam:**

This subclass is indented under subclass 199. Vehicle wherein the ground-engaging means comprises either an extensible leg or a revoluble surface, either of which exert a force upon the vehicle which is, at first, primarily an upwardly directed force, but which, by virtue

of the location of the leg or the surface relative to the center of gravity of the vehicle, develops an ever-increasing lateral component as the driving cycle of the leg or surface progresses.

- (1) Note. The extensible leg or revoluble surface may shift the vehicle laterally in a single cycle of operation, or it may require a plurality of such cycles.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 8.1, for a motor vehicle provided with a special driving device in the nature of a stepper.

**204 WITH DEVICE FOR PROGRAMMABLY OPERATING VEHICLE'S STEERABLE WHEELS:**

This subclass is indented under the class definition. Vehicle wherein the means includes a device which turns the steerable (e.g., the front) wheels of the vehicle in a direction and to an extent and at a time whereby, in conjunction with a particular, concurrent, backward or forward movement of the vehicle.

- (1) Note. "Automatic parking", "automatic self-steering", and "preset maneuver" are typical of the art terms used to describe the subject matter of this subclass.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 167+, for a motor vehicle provided with means for controlling its operation which is responsive to electromagnetic radiation, magnetic force, or sound waves received from a source, or reflected from an object or surface, which is located apart from the vehicle.  
400+, for a motor vehicle provided with means for guiding it.

**205.1 Rider propulsion with additional source of power, e.g., combustion engine or electric motor (IPC):**

This subclass is indented under subclass 21. Subject matter related to a rider propelled cycle, e.g., bicycle, tricycle having an additional source of power, and the use of an additional source of power of a rider propelled

cycle, and a rider propelled cycle with an additional source of propulsion power different from a combustion engine or electric motor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 210, for nonoccupant propelled cycles having three wheels.  
218, 228 and 291, for a motorcycle having particular positioning of a motor or engine.  
218, and 65.21, for a transmission characterized by two or more dissimilar sources of power, e.g., transmission for hybrid cycles.  
65.1, and 907, for a motorized wheelchair.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclass 281.1 for engine or motor driven cycle frames, steering wheel forks or handles bars.  
476, Friction Gear transmission Systems or Components, subclass 65 for particular transmission details of a friction roller which engages a cycle ground wheel.

**205.2 Rider propelled cycle with auxiliary combustion engine (IPC):**

This subclass is indented under subclass 205.1. Subject matter related to a cycle propelled by a rider further having a combustion engine as an additional source of power in order to propel the cycle.

**205.3 Control or actuating device therefore; arrangement thereof (IPC):**

This subclass is indented under subclass 205.2. Subject matter related to means, specifically adapted for application on a rider propelled cycle, for controlling the delivery of power to the cycle by sensing or detecting a parameter, e.g., rider pedaling force, torque, speed or braking force, and controlling the combustion engine output torque to the cycle, and the particular arrangement of a sensor or a detector on a cycle.

**205.4 Power driven at crank shaft (IPC):**

This subclass is indented under subclass 205.2. Subject matter related to a rider propelled cycle where the power output of the combustion engine is transmitted to the pedal crank shaft

- through a power transmission arrangement at the pedal crank shaft.
- 205.5 Power driven at axle (IPC):**  
This subclass is indented under subclass 205.2. Subject matter related to a rider propelled cycle where the power output of the combustion engine is transmitted to a wheel axle shaft through a power transmission arrangement at the wheel axle shaft.
- 205.6 Power driven at endless flexible drive member, e.g., chain (IPC):**  
This subclass is indented under subclass 205.2. Subject matter related to a rider propelled cycle where the power output of the combustion engine is transmitted to an endless flexible member which connects the wheel axle shaft to the pedal shaft.
- 205.7 Power driven by friction roller or gear engaging the ground wheel (IPC):**  
This subclass is indented under subclass 205.2. Subject matter related to a rider propelled cycle where the power output of the combustion engine is transmitted to a periphery or side of the ground or road wheel through a power transmission arrangement which includes a friction or pressure roller or gear.
- 206.1 Rider propelled cycle with auxiliary electric motor (IPC):**  
This subclass is indented under subclass 205. Subject matter related to a cycle propelled by a rider further having an electric motor as an additional source of power in order to propel the cycle.
- 206.2 Control or actuating device therefore (IPC):**  
This subclass is indented under subclass 206.1. Subject matter related to means, specially adapted for application on a rider propelled cycle, for controlling the delivery of power to the cycle by sensing or detecting a parameter, e.g., rider pedaling force, torque, speed or braking force and controlling the output torque to the cycle.
- 206.3 Characterized by detector or sensor; arrangement thereof (IPC):**  
This subclass is indented under subclass 206.2. Subject matter related to a sensing device or detector specially adapted for the application on the cycle for sensing or detecting control parameters, e.g., rider pedaling force, torque, speed or braking force, or the arrangement or the specific location of a detector or sensor on a cycle.
- 206.4 Power driven at crank shaft (IPC):**  
This subclass is indented under subclass 206.1. Subject matter related to a rider propelled cycle where the power output of the electric motor is transmitted to the pedal crank shaft through a power transmission arrangement at the pedal crank shaft.
- 206.5 Power driven at axle (IPC):**  
This subclass is indented under subclass 206.1. Subject matter related to a rider propelled cycle where the power output of electric motor is transmitted to the wheel axle shaft through a power transmission arrangement at the wheel axle shaft.
- 206.6 With axle driving shaft arranged coaxially with motor output shaft (IPC):**  
This subclass is indented under subclass 206.5. Subject matter related to a rider propelled cycle where the power output of the electric motor is transmitted to the wheel axle shaft through a power transmission arrangement at the wheel axle shaft, with the motor output shaft being coaxial with the driven wheel axle shaft.
- 206.7 Power driven at endless flexible drive member, e.g., chain (IPC):**  
This subclass is indented under subclass 206.1. Subject matter related to a rider propelled cycle where the power output of the electric motor is transmitted to the flexible member which connects the wheel axle shaft to the pedal shaft.
- 206.8 Power driven by friction roller or gear engaging the ground wheel (IPC):**  
This subclass is indented under subclass 206.1. Subject matter related to a rider propelled cycle where the power output of the electric motor is transmitted to the periphery or the side of the ground or road wheel through a power transmission arrangement which includes a friction or pressure roller or gear.
- 207.1 Accessories arrangement thereof (IPC):**  
This subclass is indented under subclass 205.1. Subject matter related to auxiliary equipment or an accessory, e.g., battery or fuel cell feeding the electric motor or device having special

feature considered specially adapted for the application on a power assisted cycle, e.g., cooling system specially adapted for the auxiliary electric motor or the location or arrangement of the accessory on the cycle.

**207.2 Solar cell; arrangement thereof (IPC):**

This subclass is indented under subclass 207.1. Subject matter related to a solar cell on a rider propelled cycle providing a power source to a battery or electric propulsion motor or the arrangement of a solar cell on the cycle.

**SEE OR SEARCH CLASS:**

136, Batteries: Thermoelectric or Photoelectric, subclass 252 for particular detail to a photoelectric cell.

**207.3 Battery; arrangement thereof (IPC):**

This subclass is indented under subclass 207.1. Subject matter related to a battery on a rider propelled cycle providing a power source for the electric propulsion motor or the arrangement of a battery on the cycle.

**SEE OR SEARCH CLASS:**

320, Electricity: Battery or Capacitor Charging or Discharging, subclass 137 for particular battery cell charging.

429, Chemistry: Electrical Current Producing Apparatus, Product, And Process, subclass 100 for a support for a battery having particular battery detail.

**208 Collapsible or knockdown for storage or transport:**

This subclass is indented under subclass 21. Vehicle provided with elements or components which are foldable or telescopically repositionable, or readily disconnectable, for a purpose relating either to placing the vehicle in a nonuse condition or moving the vehicle to another location.

(1) Note. See (1) Note through (4) Note of subclass 21 above.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclass 278 or 287 for a general utility occupant propelled-type wheeled land vehicle including an adjustable, collapsible, extensible, foldable, or knockdown

framework (it is noted that in accordance with the (2) Note of Class 280, subclass 200, motorcycle frames and running gear, without features causing classification in Class 180, Motor Vehicles, are included in these subclasses); or subclasses 638+ for a general utility wheeled land vehicle including means for altering a dimension of the vehicle or a part thereof.

296, Land Vehicles: Bodies and Tops, subclass 27 for a land vehicle body provided with means whereby it may be collapsed.

**209 With means for changing number of supporting wheels, or for adjusting relative location thereof:**

This subclass is indented under subclass 21. Vehicle provided either with means whereby the number of wheels which engage the ground for supporting the vehicle may be decreased or increased, or with means whereby the position of at least one wheel relative to at least one other wheel may be changed.

(1) Note. See (1) Note through (4) Note of subclass 21 above.

(2) Note. "Supporting wheels" is interpreted to include not only the wheels which engage the ground while the vehicle is traveling in normal fashion, but also any other wheels which may be moved, relative to the vehicle, into engagement with the ground (e.g., to maintain a two-wheeled vehicle in its operating attitude at such time as it becomes unstable as a result of slowing or stopping).

(3) Note. A vehicle having four wheels, which wheels are so arranged as to form a nonspecial (i.e., a rectangular) wheel base, and provided with means inherently capable of so rearranging or respacing the wheels as to change the wheel base to a special one, is proper for this subclass, regardless of whether or not such a change is expressed in "wheel base" terminology.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 11+, for a motor vehicle provided with an attachment in the nature of a motor-carrying frame, which attachment is supported in part by the vehicle.
- 15, for a motor vehicle provided with at least one traction wheel which does not constitute one of the main supporting wheels of the vehicle.
- 16, for a motor vehicle provided with an attachment in the nature of a traction-wheel-carrying frame, the traction wheels of which replace the vehicle's original traction wheels as vehicle supporting members.
- 24.02, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein one of the wheels is adjustably, or otherwise, mounted to move vertically for the purpose of modifying the proportion of the load imposed upon at least one other wheel of the vehicle.
- 200+, for a motor vehicle provided with powered, ground-engaging means for producing, or assisting in the production of, lateral movement of the vehicle (e.g., for parking) and wherein the means comprises a rotatably driven auxiliary wheel or endless track.

## SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclass 86.5 for a general utility wheeled land vehicle including an auxiliary axle assembly movable between a use and a nonuse position; subclass 149.2 for a general utility wheeled land vehicle including longitudinally shiftable running gear; or subclasses 638+ for a general utility wheeled land vehicle including means for altering a dimension of the vehicle or a part thereof.

**210 Having only three wheels:**

This subclass is indented under subclass 21. Vehicle wherein the arrangement consists of three wheels for supporting the vehicle.

- (1) Note. See (1) Note through (4) Note of subclass 21 above.

## SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclass 282 for a land vehicle of the wheeled type provided with means adapting it to be propelled by an occupant and further provided with a frame which is designed for more than two wheels; and subclass 62 for a land vehicle of the kind which normally travels on three wheels.

**211 Including steerable and driven wheel:**

This subclass is indented under subclass 210. Vehicle wherein at least one wheel is not only drivingly rotated for propelling the vehicle, but is also attached to the vehicle in such a manner that it may be moved pivotably (e.g., rotatably) about a more or less vertical axis for changing the course of travel of the vehicle.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 6.2+, for a motor vehicle which is steered by creating a difference between the driving effort developed by one or more traction elements located on one side of the vehicle and the driving effort developed by one or more traction elements located on the other side thereof.
- 12+, for a motor vehicle having a motor-carrying attachment in the nature of a wheeled frame and wherein the wheels of the frame are driven and steered.
- 23+, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein one or more of the wheels are driven and steered.
- 37+, for a motor vehicle of the steam traction engine type having steering wheels which are driven.
- 222, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein one of the wheels is driven frictionally and further wherein means is provided for steering that wheel.
- 223+, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is driven and steered.

400+, for a motor vehicle having means for guiding it.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclasses 5.5+ for a general utility land vehicle including an active suspension responsive to a force encountered while the vehicle is in surface traversing motion which may or may not involve a driven and steered wheel; subclasses 124.1+ for a general utility wheeled land vehicle suspension arrangement which may or may not involve a driven and steered wheel; subclasses 263+ for a general utility occupant propelled-type wheeled land vehicle including occupant controlled steering means (it is noted that in accordance with the (2) Note of Class 280, subclass 200, motorcycle frames and running gear, without features causing classification in Class 180, Motor Vehicles, are included in these subclasses); or subclasses 771+ for a general utility wheeled land vehicle including occupant controlled steering means which may or may not involve a driven and steered wheel.

**212 All wheels motor driven:**

This subclass is indented under subclass 211. Vehicle wherein each of the supporting wheels is drivingly rotated by the vehicle's motor.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

24.08, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein each wheel is driven.

38, for a motor vehicle of the steam traction engine type wherein not only the steering wheels, but also the remaining two wheels, are driven.

224, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is steerable and further wherein both wheels are driven.

233+, for a motor vehicle provided with four driven wheels.

**213 Having motor mounted to swing with steerable wheel:**

This subclass is indented under subclass 211. Vehicle wherein the vehicle's motor, which motor drivingly rotates at least the steerable wheel, is attached to or otherwise supported by the steerable wheel in such a manner as to partake of the pivotable movement thereof.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

264+, for a motor vehicle provided with a driven axle which carries two or more wheels and is swingable about an axis of steering pivot and wherein the motor for driving the axle and its wheels is mounted to swing with the axle.

**214 Electrical type motor:**

This subclass is indented under subclass 213. Vehicle wherein the motor is of a kind which converts electrical energy into mechanical motion.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

65.1+, for a motor vehicle, generally, provided with an electric motor for driving it.

216, for another motor vehicle of the three-wheeled type which utilizes an electric motor, but wherein only two of the wheels, which two wheels have a common axis, are driven.

220, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein the vehicle's motor is of the electrical type.

**215 Including two wheels driven and having common axis of rotation:**

This subclass is indented under subclass 210. Vehicle wherein two of the three wheels are drivingly rotated about the same axis.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

337+, for a motor vehicle, generally, which includes mechanism for transmitting driving effort to at least one of two wheels mounted on an axle.

**216 Electrical type motor:**

This subclass is indented under subclass 215. Vehicle wherein the vehicle's motor is of a kind which converts electrical energy into mechanical motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 65.1+, as explained in the reference thereto appearing in subclass 214 above.
- 214, for another motor vehicle of the three-wheeled type which utilizes an electric motor, but wherein at least one wheel is both steerable and driven, and further wherein the motor is mounted to swing with that wheel.
- 220, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein the vehicle's motor is of the electrical type.

**217 Including endless element for transmitting drive to wheels:**

This subclass is indented under subclass 215. Vehicle which includes, as a component of a mechanism for transferring the driving effort of the vehicle's motor to the wheels, an element in the nature of a belt or chain.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 231, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein the mechanism for transferring driving effort to a wheel includes an endless element.
- 239, 241 and 251, for various species of a motor vehicle which has four wheels driven, each of which species includes at least one endless element for transmitting driving effort to one or more of the wheels.

**218 Having only two wheels:**

This subclass is indented under subclass 21. Vehicle wherein the arrangement consists of two wheels for supporting the vehicle.

- (1) Note. See (1) Note through (4) Note of subclass 21 above.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclasses 47.131+ for a tiltable general utility land vehicle which is stabilized by an article or an attendant; subclasses 63+ for a general utility wheeled land vehicle normally travelling on two wheels; subclasses 205+ for a general utility occupant propelled-type wheeled land vehicle having plural wheels mounted upon a common axis; or subclasses 281.1+ (with the exception of subclass 282) for a general utility occupant propelled-type wheeled land vehicle provided with a frame or running gear (it is noted that in accordance with the (2) Note of Class 280 subclass 200, motorcycle frames and running gear, without features causing classification in Class 180, Motor Vehicles, are included in these subclasses).

**219 Arranged in tandem:**

This subclass is indented under subclass 218. Vehicle wherein the two wheels occupy, during straight-ahead travel of the vehicle, a plane which is inclusive of, or parallel to, the longitudinal axis of the vehicle.

**220 Electrical type motor:**

This subclass is indented under subclass 219. Vehicle wherein the vehicle's motor is of a kind which converts electrical energy into mechanical motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 65.1, for a motor vehicle, generally, provided with an electric motor for driving it.
- 214, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one wheel is both steerable and driven and further wherein the vehicle's motor is mounted to swing with that wheel, and wherein, in addition, the motor is electrical in nature.
- 216, for a motor vehicle having a wheel arrangement comprising three wheels and wherein two wheels, which wheels have a common axis, are



driven and further wherein the vehicle's motor is electrical in nature.

**221 Including rotating element for frictionally engaging and driving a wheel:**

This subclass is indented under subclass 219. Vehicle which includes, as a component of a means for transmitting the driving effort of the vehicle's motor to one of its wheels, a rotating element (e.g., a roller) which causes the wheel to rotate when pressed into engagement with it or with a component (e.g., rim, tire) thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

342+, for a motor vehicle, generally, which includes mechanism for transmitting driving effort to a wheel and wherein the mechanism includes a rotating element which drives the wheel by frictionally engaging it.

**222 And means for steering that wheel:**

This subclass is indented under subclass 221. Vehicle which is additionally provided with means for steering the frictionally driven wheel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13, for a motor vehicle having a motor-carrying attachment in the nature of a wheeled frame and wherein the frame is supported by a single wheel (i.e., a wheel of the stub-axle type).

24, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein one or more of the wheels are driven and steered and further wherein any driven and steered wheel is a wheel of the stub-axle type.

37+, for a motor vehicle of the steam traction engine type having steering wheels which are driven.

211+, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one of the wheels is driven and steered.

223+, for another motor vehicle of the two-tandem-wheeled type wherein at least one of the wheels is driven and steered.

400+, for a motor vehicle having means for guiding it.

**223 Including steerable and driven wheel:**

This subclass is indented under subclass 219. Vehicle provided with at least one wheel which is not only drivingly rotated for propelling the vehicle, but is also attached to the vehicle in such a manner that it may be moved pivotably (e.g., rotatably) about a more or less vertical axis for changing the course of travel of the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13, 24, 37+, 211+, and 400+, as explained in the references thereto appearing in subclass 222 above, and see that subclass (222) for another motor vehicle of the two-tandem-wheeled type wherein one of the wheels is driven frictionally and further wherein means is provided for steering that wheel.

**224 Both wheels motor driven:**

This subclass is indented under subclass 223. Vehicle wherein each of the two supporting wheels is drivingly rotated by the vehicle's motor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

24.08, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein each wheel is driven.

38, for a motor vehicle of the steam traction engine type having not only the steering wheels, but also the remaining two wheels, driven.

212, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one of the wheels is steered and further wherein each wheel is driven.

233+, for a motor vehicle provided with four driven wheels.

**225 Having frame element or fender constituting also exhaust or fuel passageway or fuel reservoir:**

This subclass is indented under subclass 219. Vehicle wherein a component of the vehicle's frame, or a fender (i.e., mudguard) of the vehi-

cle, is adapted to serve also as (a) a conduit for products of combustion being discharged from the vehicle's motor or for fuel being fed to the motor, or (b) a container for storing a supply of fuel for the motor.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclass 782 for a general utility wheeled land vehicle running gear including a specific frame construction providing a fluid or electrical conduit; or subclasses 830+ for a general utility land vehicle including a boiler or tank, especially subclasses 834+ wherein the tank provides a container or receptacle for fluid for use by a prime mover to produce propulsion.

293, Vehicle Fenders, subclass 106 for a vehicle bumper having a storage compartment.

**226 Including longitudinally extending shaft for transmitting drive to wheel:**

This subclass is indented under subclass 219. Vehicle which includes, as a component of a means for transferring the driving effort of the vehicle's motor to one or more of its wheels, an elongated element which extends length-wise of the vehicle from the vicinity of the motor to a locus for engagement with a driven wheel or a member (e.g., a gear) affixed thereto, which element is rotatable about its principal axis.

**227 Including resilient means for mounting driven wheel:**

This subclass is indented under subclass 219. Vehicle which includes means in the nature of a cushion, shock absorber, spring, etc., for mounting a driven one of the wheels.

**SEE OR SEARCH CLASS:**

267, Spring Devices, subclasses 2+ for spring devices which are adapted to cushion relative movement between parts of a vehicle and are not provided for elsewhere.

280, Land Vehicles, subclass 79 for a general utility wheeled land vehicle provided with springs between the wheel or wheels and the load support, noting the search notes provided therein; subclasses 124.125+ for general utility wheeled land vehicle running gear

including separate support of a wheel upon an individual stub axle which wheel may or may not be driven; or subclasses 275+ or 283+ for general utility occupant propelled-type wheeled land vehicles including yielding framework or running gear (it is noted that in accordance with the (2) Note of Class 280, subclass 200, motorcycle frames and running gear, without features causing classification in Class 180, Motor Vehicles, are included in these subclasses).

**228 Including resilient means for mounting motor:**

This subclass is indented under subclass 219. Vehicle which includes means in the nature of a cushion, shock absorber, spring, etc., for mounting (e.g., supporting) the vehicle's propulsion motor.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

295, for a motor vehicle wherein the motor and the body frame are particularly related to one another and wherein a change-speed gearing or a clutch is mounted in common with the motor and further wherein a wheeled, auxiliary frame, which is resiliently joined to the body frame, is provided for supporting the motor and the gearing or clutch.

299, for a motor vehicle wherein the motor and the body frame are particularly related to one another and wherein is included both an auxiliary frame for supporting the motor and resilient means for connecting the auxiliary frame to the body frame.

**SEE OR SEARCH CLASS:**

248, Supports, subclasses 560+ for supports which are resilient in nature.

267, Spring Devices, subclasses 2+, as explained in the reference thereto appearing in subclass 227 above.

**229 With means for cooling motor:**

This subclass is indented under subclass 219. Vehicle provided with means for preventing an excessive increase in the operating temperature of the vehicle's motor (e.g., a system for circu-

lating a liquid coolant, a blower or a ducting arrangement for forcing or directing air to the motor, cooling fins on a cylinder head, etc.).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

68.1+, for art included therein relating to the cooling or ventilation of a vehicle's motor.

68.4+, for a motor vehicle having a radiator or condenser and wherein means is provided for mounting the radiator or condenser.

SEE OR SEARCH CLASS:

165, Heat Exchange, subclasses 41+ for heat transfer wherein a vehicle feature is involved.

**230 With change-speed means between motor and driven wheel:**

This subclass is indented under subclass 219. Vehicle provided with means for receiving power from the motor at whatever speed the motor is operating and converting it to a different speed for driving a wheel (e.g., plural gear sets, a fluid torque converter, a belt and pulley arrangement, etc.).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

364+, for variable speed transmissions in combination with vehicles generally.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 640+ for nonplanetary transmissions.

474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for means for controlling speed ratio in a belt and pulley drive system.

475, Planetary Gear Transmission Systems or Components, for planetary gear transmission.

**231 Including endless element for transmitting drive and means for adjusting tension of element:**

This subclass is indented under subclass 219. Vehicle which includes, as a component of a mechanism for transferring the driving effort of the vehicle's motor to one or more wheels

thereof, an element in the nature of a belt or chain, and wherein the vehicle further includes means for increasing or decreasing the amount of tensile stress in the element.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

217, for a motor vehicle having a wheel arrangement comprising three wheels and wherein two of the wheels, which have a common axis of rotation, are driven and further wherein the mechanism for transferring driving effort to the wheels includes an endless element.

239, 241 and 251, for various species of a motor vehicle which has four wheels driven, each of which species includes at least one endless element for transmitting driving effort to one or more of the wheels.

351, 357, 366, and 373, for belt or chain drives in other vehicle combinations that may include tensioning means.

SEE OR SEARCH CLASS:

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 101+ for a belt and pulley transmission with means for adjusting belt tension.

**232 WITH MEANS FOR (1) PROTECTING MOTOR FROM IMPACT OF COLLISION, (2) UTILIZING MASS OF MOTOR TO ABSORB FORCE THEREOF, OR (3) PROTECTING OCCUPANT REGION OF VEHICLE FROM IMPACT-INDUCED SHIFTING OF MOTOR:**

This subclass is indented under the class definition. Vehicle provided with means for either (1) cushioning or isolating the motor of a vehicle from the force created when the vehicle engages an object, (2) taking advantage of the inertia inherent in a moving motor to dissipate part of that force (e.g., by allowing a certain amount of "controlled" movement of the motor), or (3) redirecting the shifting of the motor caused by such a force into a path whereby it is less likely to cause critical damage to that portion of the vehicle in which the operator and any passengers are located (e.g., by providing guide means for the motor, which guide means are sometimes so designed as to

also cause some of the force of the impact to be dissipated by the movement of the motor therealong).

- (1) Note. This subclass consists principally of art found in former subclasses 64 and 82, and, accordingly, is not necessarily a complete collection of all such art which may exist in the class.

**SEE OR SEARCH CLASS:**

- 188, Brakes, subclasses 371+ and 378+ for miscellaneous means for retarding motion, which means may comprise or include a metallic element which is deformable or frangible.
- 280, Land Vehicles, subclass 784 for a general utility wheeled land vehicle running gear including specific frame construction wherein the frame construction has means for absorbing an impact.
- 296, Land Vehicles: Bodies and Tops, subclass 35.2 for a land vehicle body secured to running gear or a chassis frame by means including collision impact absorbing structure, and subclasses 187.01-30 for a land vehicle body which is deformable for absorbing the shock of an impact.

**233 HAVING FOUR WHEELS DRIVEN:**

This subclass is indented under the class definition. Vehicle provided with four wheels and means for driving each of the wheels.

- (1) Note. This and indented subclasses consist, for the most part, of art from former subclasses 42+ which provided for a steerable wheel of the driven type; see also (1) Note of subclass 252 below.
- (2) Note. While a majority of the art herein claims the typical four-wheel-drive type of vehicle (i.e., one having a driven wheel at each of its four corners), patents disclosing only that type of vehicle, but not necessarily claiming clearly that exact number of wheels as being driven, are included here (subclasses 233+).
- (3) Note. The substitution of a dual wheel (i.e., two wheels having their central (e.g., spider) portions joined back to

back, or being otherwise connected to move as one member, there being, in any case, insufficient space between the two to accommodate any such mechanism as a drive chain or a steering gear shaft) for a single wheel at one or more of the wheel-carrying locations of a vehicle does not, for the purposes of this and the indented subclasses, change the number of wheels on the vehicle.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 6.2+, for a motor vehicle which, for a steering purpose, is provided with at least one driven traction element on each of two opposite sides and means for driving the elements at different speeds.
- 14.1+, for a motor vehicle which comprises two or more connected vehicles, at least one of which retains its identity as a complete vehicle when the other or others are detached therefrom, which subclass may include, for example, two coupled vehicles having two driving wheels each.
- 21, for a motor vehicle having a special wheel-base; note that in the case of a patent claiming a vehicle having four driven wheels so located thereon that they form other than a rectangle, original classification would be in that subclass (21).
- 24.08, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein each wheel is driven.
- 24.09, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein the drive means includes power dividing means in the form of differential gearing for driving each differential of a tandem pair of differentially driven axles.
- 24.1, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein are included two, longitudinally spaced wheels which are driven and further wherein is included means for disconnecting the drive to one of the two wheels.
- 24.11+, for a motor vehicle having a wheel arrangement comprising five or more

- wheels and wherein are included at least two, longitudinally spaced wheels which are driven.
- 38, for a motor vehicle of the steam traction engine type wherein not only the steering wheels, but also the remaining two wheels, are driven.
- 212, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one of the wheels is steered and further wherein each wheel is driven.
- 224, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is steerable and further wherein both wheels are driven.
- 234 With means for steering all driven wheels:**  
This subclass is indented under subclass 233. Vehicle provided with means for repositioning every one of the driven wheels in such a manner as to alter the direction of travel of the vehicle.
- (1) Note. The means includes any such device or mechanism as may be necessary for coordinating the repositioning of the several wheels.
- SEE OR SEARCH CLASS:
- 280, Land Vehicles, subclass 91.1 for a land vehicle of the wheeled type having running gear for which steering means operable by an occupant is provided and wherein the means controls four supporting wheels; and subclasses 99+ for a land vehicle of the wheeled type having running gear which is specially constructed to enable the vehicle to make a short turn and wherein four supporting wheels are controlled for turning the vehicle.
- 235 Comprising articulated frame and means for pivoting one portion of frame relative to other portion about vertical axis located centrally of vehicle:**  
This subclass is indented under subclass 234. Vehicle wherein the means for repositioning the wheels comprises a vehicle frame which is divided into fore and aft, wheel-supported portions, the portions being hingedly connected to one another along a substantially vertical axis which is located at the approximate center of the vehicle, and provided with means for moving one portion of the frame relative to the other portion about the axis.
- (1) Note. The connection of one portion of the other frequently provides also for the pivotable movement of one portion relative to the other about one or more horizontal axes (e.g., to facilitate movement of the vehicle over an uneven surface).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 6.2+, as explained in the reference thereto appearing in subclass 233 above, and see particularly indented subclass 6.64, for a vehicle of that area which includes a frame member, having at least two traction elements thereon, swingable about a vertical axis in response to the differential driving of the elements.
- 14.1+, as explained in the reference thereto appearing in subclass 233 above, and with further observation that subclasses 14.1+ has not been screened for subject matter which may now be better provided for by this subclass (235).
- 265, for a motor vehicle of the steerable, driven wheel type having two or more steerable wheels mounted upon an axle which is swingable about a substantially vertical axis and having the motor of the vehicle mounted to swing with the axle, and wherein the axis is offset longitudinally from the axis about which it swings.
- 418+, for a motor vehicle of the kind comprising articulated sections and having steering gear of the fluid power assist type, and wherein steering is accomplished by moving the sections relative to one another about a more or less vertical axis at their point of articulation.

- 236 In a path of travel other than that produced by turning the front wheels and the rear wheels substantially equally and oppositely:**  
This subclass is indented under subclass 234. Vehicle wherein the means for repositioning the wheels is controllable in such a manner as to cause the vehicle to assume a course which is different from that obtainable by the usual practice of turning the front wheels in one direction and the rear wheels in the opposite direction and to more or less the same extent.
- (1) Note. Exemplary of the controllability of the repositioning means are: (a) restricting it to operating on fewer than all of the wheels; (b) causing it to turn the front wheels to either a greater or a lesser degree than the rear wheels, or vice versa; and (c) causing it to turn all of the wheels in the same direction (i.e., to make the vehicle move laterally or with a lateral component).
- 237 Comprising swingable, plural-wheel-carrying axles on individual, vertical axes of pivot:**  
This subclass is indented under subclass 234. Vehicle wherein the means for repositioning the wheels comprises two axles, each axle having a wheel at or adjacent each of its ends and being mounted for pivotable movement about a vertical axis, which axes do not coincide with one another.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
264+, 266 and 267, for motor vehicles of the steerable, driven wheel type which have two or more steerable wheels mounted upon a driven axle which is swingable about a substantially vertical axis.
- 238 At least one axle being offset from its pivotable axis:**  
This subclass is indented under subclass 237. Vehicle wherein at least one of the axles is located in a vertical plane which is spaced horizontally (e.g., longitudinally of the vehicle) from a parallel vertical plane which contains the axis about which the axle may swing.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
265, as explained in the reference thereto appearing in subclass 235 above.
- 239 Including longitudinally extending, endless element for transmitting drive to wheels:**  
This subclass is indented under subclass 237. Vehicle wherein a means for transferring the driving effort, developed by the motor, to the wheels of the vehicle includes a member which operates in a plane extending generally fore-and-aft of the vehicle and is in the nature of a belt or chain.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
217, for a motor vehicle having a wheel arrangement comprising three wheels and wherein two of the wheels, which have a common axis of rotation, are driven and further wherein the mechanism for transferring driving effort to the wheels includes an endless element.  
231, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein the mechanism for transferring driving effort to a wheel includes an endless element.  
241, and 251, for other motor vehicles of the four-driven-wheel type which include a longitudinally extending, endless, drive-transmitting element.  
350+, 357, 366, and 373, for a motor vehicle having transmission mechanism in the nature of one or more belts or chains for transmitting drive to its wheels.
- SEE OR SEARCH CLASS:  
474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for a power transmission using an endless belt.
- 240 Including rotatable shaft extending longitudinally from wheels at one end of vehicle to wheels at other end for transmitting steering force thereto:**  
This subclass is indented under subclass 234. Vehicle wherein the means for repositioning the wheels includes a torque-transmitting

member in the nature of a rod or shaft, extending from the wheels adjacent one end of the vehicle to those adjacent the other end thereof in a direction generally parallel to the longitudinal centerline of the vehicle, for transferring to the wheels a force for redirecting them.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

429, for a motor vehicle having steering gear of the fluid power assist type and wherein the mechanism of the power assist includes a working member which moves about an axis.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 47.11 for a general utility wheeled land vehicle including attendant controlled steering of other than a mere swinging axle; subclasses 99+ for a general utility wheeled land vehicle running gear specially constructed to enable execution of arcuate travel within a reduced radius of curvature (i.e., short turn); or subclasses 771+ for a general utility wheeled land vehicle including occupant controlled steering means, especially subclass 91.1 for a nonmotor land vehicle wherein each of four wheels is steered by the occupant.

**241 Including longitudinally extending, endless element for transmitting drive to wheels:**  
This subclass is indented under subclass 234. Vehicle wherein the means for driving the wheels includes a force transferring element in the nature of a belt or chain which travels in a plane extending generally fore-and-aft of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

239, and 251, for other motor vehicles of the four-driven-wheel type which include a longitudinally extending, endless, drive-transmitting element.  
350+, 357, 366, and 373, each as explained in the reference thereto appearing in subclass 239 above.

SEE OR SEARCH CLASS:

474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for a power transmission using an endless belt.

**242 Including pump and fluid motor, or generator and electric motor, for driving one or more wheels:**

This subclass is indented under subclass 233. Vehicle which includes, for driving one or more of its wheels, either a fluid motor and a pump for operating it or an electric motor and a generator for operating it.

(1) Note. "Generator" is not intended to exclude an equivalent source of electricity, such as a battery.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

65.1+, for a motor vehicle, generally, provided with an electric motor for driving it.

305+, for a motor vehicle having a traction motor of the kind driven by a non-compressible fluid received under pressure from a pump, which motor, in the case of indented subclass 308 drives a specific wheel.

**243 And another means for driving the remaining driven wheels:**

This subclass is indented under subclass 242. Vehicle which also includes some other means (e.g., a drive shaft from a power plant, which power plant may be the vehicle's prime motor) for driving those of the four wheels which are not driven by either the fluid motor or the electric motor.

**244 With means for braking either (1) one or more driven wheels or (2) structure transmitting drive to wheel:**

This subclass is indented under subclass 233. Vehicle provided with means for either (a) applying a force to one or more of the driven wheels to slow or stop its rotation or (b) applying a slowing or stopping force to an element, member, or device which is involved in transferring the driving effort of the motor to one or more of the driven wheels.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.2+, for means for changing the rate of travel of a traction element located on one side of a vehicle relative to the rate of travel of a traction element located on the other side of the vehicle, where the purpose of the change is to alter the course of the vehicle.

SEE OR SEARCH CLASS:

188, Brakes, appropriate subclasses for means for retarding the motion of machines (including vehicles), shafts, wheels, pulleys, and other moving mechanisms; see especially subclasses 2+ for brakes for vehicles; and the subclasses beginning with subclass 67 for brakes for wheels.

**245 Including separate mechanical assemblies for transmitting drive to each of two wheels at one end of vehicle:**

This subclass is indented under subclass 233. Vehicle which includes one group of mechanical elements for transferring the driving effort developed by the motor to one of the two driven wheels located at a particular end of the vehicle and another group of mechanical elements for transferring the driving effort to the other driven wheel at that end.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

24.05, for a motor vehicle having a wheel-base comprising five or more wheels wherein the wheels are attached to the vehicle by way of a rocker beam and further wherein mechanism for transmitting drive to the wheels is provided, which mechanism may be similar to the mechanical assemblies of this subclass (245).

**246 And assemblies for each of two wheels at other end, also:**

This subclass is indented under subclass 245. Vehicle wherein separate sets of mechanical, drive-transferring elements are provided also for each of the two driven wheels at the opposite end of the vehicle.

**247 With manually operated means for disengaging drive to one or more, but fewer than all, of the four wheels:**

This subclass is indented under subclass 233. Vehicle provided with means for interrupting the transmission of driving effort to at least one of the driven wheels while simultaneously maintaining it to at least one wheel, the means being of the kind which requires the intervention of an individual (e.g., the vehicle operator) for its actuation.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

24.1, for a motor vehicle having a wheel-base comprising five or more wheels and wherein is provided means for driving two wheels spaced from each other longitudinally in the direction of travel of the vehicle and wherein is further provided means for disconnecting the drive to one of the wheels but leaving unaffected the drive to the other wheel.

SEE OR SEARCH CLASS:

403, Joints and Corrections, subclass 1 for a selectively engageable hub to shaft connection.

**248 With differential means for driving two wheel sets at dissimilar speeds:**

This subclass is indented under subclass 233. Vehicle provided with means which modifies the driving effort of the motor to the extent of causing it to drive one set of wheels (e.g., the front) at one speed and the other set (e.g., the rear) at another speed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

24.09, for a motor vehicle having a wheel-base comprising five or more wheels and wherein the drive means for the vehicle includes a power dividing means in the form of gearing for differentially driving each differential of a tandem pair of wheel drive axles.

76, for a device for allowing a driven wheel on one side of a vehicle to rotate at a different speed than the corresponding wheel on the other side of the vehicle.



## SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 640+ for gearing, including gearing of the differential kind.
- 475, Planetary Gear Transmission Systems or Components, subclasses 220+ for planetary gear differentials.
- 477, Interrelated Power Delivery Controls, Including Engine Control, for interrelated control between a differential and a motor.

**249 And means for locking out the differential means:**

This subclass is indented under subclass 248. Vehicle provided with additional means for preventing the differential means from causing the wheel sets to be driven at speeds which are not the same.

**250 Manually operated type of lockout means:**

This subclass is indented under subclass 249. Vehicle wherein the means for preventing the differential means from functioning is of the kind which requires the intervention of an individual (e.g., the vehicle operator) for its actuation.

## SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 469+ for control lever and linkage systems.

**251 Including longitudinally extending, endless element for transmitting drive to wheels:**

This subclass is indented under subclass 233. Vehicle which includes, for transferring to the wheels the driving effort developed by the motor, a member which operates in a plane extending generally fore-and-aft of the vehicle and is in the nature of a belt or chain.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 239, and 241, for other motor vehicles of the four-driven-wheel type which include a longitudinally extending, endless, drive-transmitting element.
- 350+, 357, 366, and 373, each as explained in the reference thereto appearing in subclass 239 above.

## SEE OR SEARCH CLASS:

- 474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for a power transmission using an endless belt.

**252 HAVING AT LEAST ONE WHEEL BOTH DRIVEN AND STEERABLE:**

This subclass is indented under the class definition. Vehicle wherein one or more of its wheels is not only drivingly rotated for propelling the vehicle, but is also attached to the vehicle in such a manner that it may be moved pivotably (e.g., rotatably) about a more or less vertical axis for changing the course of travel of the vehicle.

- (1) Note. This and the indented subclasses consist primarily of that art which remained in former subclasses 42+ subsequent to the removal therefrom of the art devoted to vehicles having four wheels driven; see also (1) Note of subclass 233 above.
- (2) Note. Contrary to the statement in the Glossary of the class definition that the term "steering wheel" defines a road wheel which is swingable to change the course of the vehicle, the project which reclassified former subclasses 42+ adopted, instead, the designation of "steerable wheel" for such a road wheel.
- (3) Note. The substitution of a dual wheel (i.e., two wheels having their central (e.g., spider) portions joined back to back, or being otherwise connected to move as one member, there being, in any case, insufficient space between the two to accommodate any such mechanism as a drive chain or a steering gear shaft) for a single wheel at one or more of the wheel-carrying locations of a vehicle does not, for the purposes of this and the indented subclasses, change the number of wheels on the vehicle.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 6.2+, for a motor vehicle which is steerable by creating a difference between the driving effort developed by one or

- more traction elements located on one side of the vehicle and the driving effort developed by one or more traction elements located on the other side thereof.
- 12+, for a motor vehicle having a motor-carrying attachment in the nature of a wheeled frame and wherein the wheels of the frame are driven and steered.
- 23+, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein one or more of the wheels are driven and steered.
- 37+, for a motor vehicle of the steam traction engine type having steering wheels which are driven.
- 211+, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one of the wheels is driven and steered.
- 222, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein one of the wheels is driven frictionally and further wherein means is provided for steering that wheel.
- 223+, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is driven and steered.
- 400+, for a motor vehicle having means for guiding it.

**SEE OR SEARCH CLASS:**

- 280, Land Vehicles, subclasses 5.5+ for a general utility land vehicle including an active suspension responsive to a force encountered while the vehicle is in surface traversing motion which may or may not involve a driven and steered wheel; subclasses 124.1+ for a general utility wheeled land vehicle suspension arrangement which may or may not involve a driven and steerable wheel; or subclasses 771+ for a general utility wheeled land vehicle including occupant controlled steering.

**253 Steerable wheel has exclusive axis of pivot (i.e., stub-axle type):**

This subclass is indented under subclass 252. Vehicle wherein any steerable wheel thereof has an axis of pivot which is separate and distinct from that of any other such wheel.

- (1) Note. "Stub-axle" is the art term ordinarily associated with a pivotable wheel mounting of the kind described.
- (2) Note. See (1) Note of subclass 252 above.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 13, as explained in the reference to subclasses 12+ appearing in subclass 252 above, and with the further limitation that the frame is supported by a single wheel (i.e., a wheel of the stub-axle type).
- 24, as explained in the reference to subclasses 23+ appearing in subclass 252 above, and with the further limitation that any driven and steered wheel is a wheel of the stub-axle type.
- 37+, 211+, 222, and 223+, as explained in subclass 252 above, and with the further observation that a driven and steered wheel of the kind found in these subclasses may be, especially in subclasses 211+, 222, and 223+, of the stub-axle type.
- 447, for a motor vehicle having a steering gear which is provided with power assist of a mechanical nature and wherein the steerable wheel or wheels, while not driven, may be of the stub-axle type.

**SEE OR SEARCH CLASS:**

- 280, Land Vehicles, subclasses 124.125+ for a general utility wheeled land vehicle suspension arrangement for separately supporting a wheel upon an individual stub axle which wheel may or may not be steerable.

**254 Including flexible, axially rotatable means having one portion fixed to vehicle and**

**another portion pivotable with wheel for transmitting drive thereto:**

This subclass is indented under subclass 253. Vehicle wherein the arrangement for drivingly rotating the steerable wheel includes means (e.g., a shaft) which (a) is flexible (e.g., by means of a universal joint), (b) is rotatable about an axis corresponding generally with its centerline, (c) has one portion (e.g., that adjacent the vehicle's motor) anchored, except for axial rotation, to the vehicle (e.g., to its body, chassis, differential, etc.), and (d) has another portion located at or adjacent to the wheel and pivotable therewith, the purpose of the means being to transmit rotational drive to the wheel regardless of its angle of pivot.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

337+, for a motor vehicle provided with means to transmit power from its motor to its wheels.

**SEE OR SEARCH CLASS:**

403, Joints and Connections, subclasses 52+ for a connection between two or more members which provides for relative movement of the members about a bearing surface.

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, appropriate subclasses for flexible shafting and flexible shaft couplings; and particularly subclasses 106+ for a flexible coupling between torque transmitting members having misaligned or angularly related axes.

**255 Pivotable portion of means has additional structure of gearlike nature in driving engagement with corresponding structure on wheel:**

This subclass is indented under subclass 254. Vehicle wherein that portion of the flexible, axially rotatable means which is pivotable with the steerable wheel, and the steerable wheel, are each provided with structure in the nature of a gear, which structures are in drive-transmitting engagement, or are otherwise drivingly connected, with one another.

(1) Note. "Structure in the nature of a gear" includes, for example, a toothed gear for

intermeshing with another such gear, a wheel having a friction surface on its periphery for engaging another wheel of like nature, a sprocket for driving interconnection with another sprocket by means of a chain, etc.

**256 Means comprises rotatable shaft containing plural universal joints:**

This subclass is indented under subclass 254. Vehicle wherein the means is a rotatable, elongated member having, within its length and exclusive of its extremities, for the purpose of rendering it flexible, two or more connections of the kind which are capable of receiving rotational movement along one axis and are further capable of accommodating changes in the angular relationship of one of those axes to the other.

**257 Having at least one joint located on each side of axis of pivot:**

This subclass is indented under subclass 256. Vehicle wherein one or more of the universal joints of the shaft is located in one direction laterally from the axis about which the steerable wheel pivots, and another one or more of the universal joints is located in the opposite direction laterally from the axis of pivot.

**258 Pivotable portion of means includes ball or socket element of ball and socket type universal joint:**

This subclass is indented under subclass 254. Vehicle wherein that portion of the flexible, axially rotatable means which is pivotable with the steerable wheel includes one or the other of the principal elements of a universal joint of the ball and socket type.

**259 Joint includes intermediate ball, floating in groove, for positively engaging ball with socket:**

This subclass is indented under subclass 258. Vehicle wherein the ball and socket universal joint is of the kind which is provided with, between the ball and the socket, one or more (usually a plurality of) balls which are significantly smaller than the ball of the joint, and wherein grooves for receiving a portion of the periphery of each of the intermediate balls are provided in either the ball or the socket or both, each intermediate ball being permitted some movement in its groove in a direction parallel

to the axis of the shaft of either the ball or the socket, but serving to key the ball and socket to one another insofar as rotational movement of their shafts is concerned.

- (1) Note. Structure resembling a bearing race may be provided for maintaining a fixed lateral spacing between each of a plurality of the intermediate balls.

**260 Pivotal portion of means includes gear element of intermeshing gear type universal joint:**

This subclass is indented under subclass 254. Vehicle wherein that portion of the flexible, axially rotatable means which is pivotable with the steerable wheel includes a member having a toothed, or equivalent, surface, which member comprises one of the two or more gear elements of a universal joint of the intermeshing gear type.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 63+ for a mechanical movement for transferring rotary motion in kind.

**261 Joint includes at least one gear element rotatable on axis of pivot and intermeshing with gear element on pivotable portion:**

This subclass is indented under subclass 260. Vehicle wherein the intermeshing gear type universal joint includes one or more gear elements having an axis of rotation which coincides with the axis of pivot, at least one of the elements being in intermeshing engagement with the gear element which is pivotable with the steerable wheel.

**262 Joint also includes gear element on fixed portion engaging gear element on axis of pivot and vertically offset from gear element on pivotable portion:**

This subclass is indented under subclass 261. Vehicle wherein the intermeshing gear type universal joint additionally includes a gear element which is (a) located on the fixed portion of the flexible, axially rotatable means and meshing with a gear element of the one or more gear elements which have an axis of rotation coinciding with the axis of pivot and (b) offset in a vertical direction from the gear element

which is located on the pivotable portion of the means.

- (1) Note. The offset mentioned is for the purpose of adapting the joint to accommodate a difference in elevation between the axes of rotation of the two portions of the flexible, axially rotatable means.

- (2) Note. Usually there are at least two, separated members each having a gear element formed thereon, which have an axis of rotation that coincides with the axis of pivot; however, it is possible that, instead of having separated members on the axis, there will be a single member thereon and that member will have at least two gear elements formed on spaced regions thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 267, for a motor vehicle having a driven axle carrying two or more wheels and swingable about an axis of pivot for steering, and wherein the arrangement for transferring drive from the motor to the wheels includes a shaft which rotates about an axis which corresponds with the axis of pivot.

**263 Having axis of pivot disposed between parallel planes defined by opposite sides of wheel:**

This subclass is indented under subclass 254. Vehicle wherein the axis of pivot of the steerable wheel lies within the space bounded on one side by a plane perpendicular to the axis about which the wheel is driven and tangent to the outer surface of one side of the wheel and bounded on the opposite side by another plane parallel to the first plane and tangent to the outer surface of the other side of the wheel.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclass 124.126 for a general utility wheeled land vehicle suspension arrangement for separately supporting a wheel upon an individual stub axle wherein the wheel is mounted for steering purposes and the connection points defining the steering pivot axis are confined within the boundary of the wheel.

**264 With driven axle, mounting two or more wheels, swingable about axis of pivot, and motor mounted to swing therewith:**

This subclass is indented under subclass 252. Vehicle provided with at least one axle, which axle (a) is driven for a vehicle propelling purpose, (b) carries a plurality of wheels, and (c) is movable about the axis of pivot for enabling its wheel to perform a steering function, and wherein the motor for imparting driving rotation to the axle and its wheels is mounted in such a manner as to partake of the swingable movement of the axle.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

213+, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one wheel is steerable and further wherein the vehicle's motor is mounted to swing with the steerable wheel.

237+, for a motor vehicle having four wheels driven and provided with means for steering all of the driven wheels and wherein the means comprises wheel-carrying axles mounted for swinging about individual, generally vertical axes of pivot.

**SEE OR SEARCH CLASS:**

280, Land Vehicles, subclasses 93.504+ for a general utility wheeled land vehicle including occupant controlled steering wherein the steering mechanism involves movement of an axle or axle assembly about a vertically oriented pivot axis; subclass 124.109 for a general utility wheeled land vehicle suspension arrangement having a self-sustaining structural assembly disposed between the vehicle body, chassis, or frame and the axle, wheel, or wheels; subclasses 124.114+ for a general utility wheeled land vehicle suspension arrangement having an axle or axle assembly mounted upon both a longitudinally directed pivot axis and a vertically oriented pivot axis; or subclasses 124.117+ for a general utility wheeled land vehicle including a resilient, shock absorbing mounted axle or axle assembly pivot-

ally mounted about a vertical pivot axis.

**265 Having axle offset longitudinally of vehicle from axis of pivot:**

This subclass is indented under subclass 264. Vehicle wherein the axis of pivot about which the axle swings is spaced from the axle lengthwise of the vehicle.

- (1) Note. In the art of this subclass, the axis of pivot frequently is the axis of articulation of an articulated vehicle.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

235, for a motor vehicle having four wheels driven and means for steering all of the driven wheels and wherein the means comprises an articulated frame for the vehicle and means for pivoting one portion of the frame relative to the other portion about a generally vertical axis located approximately at the center of the vehicle.

238, as explained in the reference to subclass 237 in subclass 264 above and with the further observation that subclass 238 provides for at least one of the axles to be offset from its axis of pivot.

**266 With driven axle, mounting two or more wheels, swingable about axis of pivot, and swingable also about a horizontal axis:**

This subclass is indented under subclass 252. Vehicle provided with at least one axle, which axle (a) is driven for a vehicle propelling purpose, (b) carries a plurality of wheels, and (c) is movable about the axis of pivot for enabling its wheels to perform a steering function, and wherein the axle is so attached to the vehicle (e.g., as by a universal joint) that it may pivot about an axis which is horizontal and is perpendicular to the axle.

- (1) Note. The additional swingable movement of the axle enables it to rock as the vehicle passes across bumps or over obstructions.

## SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 93.504+ for a general utility wheeled land vehicle including occupant controlled steering wherein the steering mechanism involves movement of an axle or axle assembly about a vertically oriented pivot axis; subclass 124.109 for a general utility wheeled land vehicle suspension arrangement having a self-sustaining structural assembly disposed between the vehicle body, chassis, or frame and the axle, wheel, or wheels; subclasses 124.114+ for a general utility wheeled land vehicle suspension arrangement having an axle or axle assembly mounted upon both a longitudinally directed pivot axis and a vertically oriented pivot axis; or subclasses 124.117+ for a general utility wheeled land vehicle including a resiliently mounted axle or axle assembly pivotally mounted about a vertical pivot axis.

**267 With driven axle, mounting two or more wheels, swingable about axis of pivot, and shaft for transmitting drive coincident with axis:**

This subclass is indented under subclass 252. Vehicle provided with at least one axle, which axle (a) is driven for a vehicle propelling purpose, (b) carries a plurality of wheels, and (c) is movable about the axis of pivot for enabling its wheels to perform a steering function, and wherein the arrangement for transmitting drive from the motor to the wheels includes a shaft which rotates about an axis which corresponds with the axis of pivot.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

262, for a motor vehicle having at least one wheel which is both steerable and driven, which wheel has an exclusive axis of pivot for steering, and wherein is included flexible, axially rotatable means having one portion fixed to the vehicle and another portion pivotable with the wheel for transmitting drive to the wheel and further wherein the pivotable portion of the means includes a gear element of an inter-

meshing gear type of universal joint and additionally wherein the universal joint includes at least one gear element rotatable on the axis of pivot and intermeshing with a gear element on the pivotable portion and lastly wherein the joint also includes a gear element on the fixed portion engaging the gear element on the axis of pivot and vertically offset from the gear element on the pivotable portion.

**268 WITH BELT OR HARNESS FOR RESTRAINING OCCUPANT, AND MEANS WHEREBY THE BELT OR HARNESS CONTROLS, OR IS CONTROLLED BY, THE FUNCTIONING OF A VEHICLE SYSTEM OR COMPONENT:**

This subclass is indented under the class definition. Apparatus wherein the vehicle is provided with one or more devices consisting principally of a flexible, straplike member, or an assembly of such members, for engaging an occupant of the vehicle and preventing or limiting movement of the occupant relative to the vehicle upon a change in the momentum of the latter, and means whereby either (a) the belt, by its status (i.e., use or nonuse), renders a system (e.g., the ignition circuit) or a component (e.g., the transmission selector lever) of the vehicle either operative or inoperative or not properly positioned to function in its intended manner, or (b) as the result of the operation, or the failure to do so, or the improper positioning, of such system or component, the belt is itself placed in a condition whereby it either can, or cannot, serve to restrain the occupant.

(1) Note. An inflatable device (e.g., an air bag) for restraining an occupant of a vehicle of either a Class 180 type or a Class 280 type is classified in Class 280, Land Vehicles, subclasses 728.1+, without regard to which one of these two classes otherwise would take the particular vehicle involved. Moreover, the inflatable device may be in the nature of, or used in conjunction with, a belt or strap, as recognized by indented subclass 733.

(2) Note. As in the case of an inflatable device, as explained in (1) Note, a belt or harness of the passive restraint type (i.e.,

a belt or harness system which places itself in occupant-restraining position, and subsequently removes itself therefrom, without the aid of any manipulative effort on the part of the vehicle occupant) likewise is classified in Class 280, Land Vehicles, in this instance in subclasses 802+, without regard to whether the vehicle constitutes a motor vehicle or a land vehicle.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

271+, for a motor vehicle provided with means for promoting the safety of the vehicle, its occupant or load, or an external object.

**SEE OR SEARCH CLASS:**

24, Buckles, Buttons, Clasps, etc., appropriate subclasses for a device in the nature of a buckle for joining two, straplike members, particularly subclasses 572+.

242, Winding, Tensioning, or Guiding, especially subclasses 382+ for a seat belt reeling device.

244, Aeronautics and Astronautics, subclass 122 for a seat peculiar to an aircraft and a device for holding an occupant thereto.

280, Land Vehicles, subclasses 728.1+ for a vehicle, generally, provided with an inflatable passenger restraint, and see (1) Note above; subclasses 801.1+ and 805 through 808 for a land vehicle provided with a safety belt arrangement; and subclasses 802+ for a vehicle, generally, provided with a safety belt arrangement of the passive restraint type, and see (2) Note above; in regard to subclasses 801.1+ and 805 through 808, classification here (subclasses 268+) is proper if the safety belt arrangement is interlinked operationally with a system (e.g., ignition, transmission, etc.) which is peculiar to the vehicle as a motor vehicle or if the vehicle is established as being provided with a source of electrical power; however, the recital of an electrical device or element which is peculiar to only the safety

belt arrangement is not sufficient for classification here (subclasses 268+).

297, Chairs and Seats, subclasses 464+ for a chair or seat provided with a body or occupant restraint or confinement and see (1) Note of subclass 464 as to the scope thereof.

307, Electrical Transmission or Interconnection Systems, subclass 10.6 for a specific, vehicle-mounted, electrical system which may involve a circuit which includes elements of a seat belt.

340, Communications: Electrical, subclass 457.1 for an electric alarm or indicator responsive to the status (fastened or unfastened) of a vehicle seat belt.

**269 System comprises transmission or element thereof:**

This subclass is indented under subclass 268. Apparatus wherein the vehicle system is the mechanism which transmits or adapts the power of the engine or motor to the use of at least one road wheel or an element of the mechanism.

(1) Note. Most frequently it is a control (e.g., selector) lever for the transmission which either (a) is rendered inoperative by the belt being in nonuse status or (b) by being positioned improperly, prevents the belt from fulfilling its restraining function.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

337+, for a motor vehicle provided with mechanism connecting the power shaft to the road wheels.

**270 System comprises ignition circuit or starter circuit or element of one or other:**

This subclass is indented under subclass 268. Apparatus wherein the vehicle system is either the elements and wiring for providing electrical impulses to the motor or the elements and wiring for providing cranking torque to the motor or any part of either circuit.

**271 WITH MEANS FOR PROMOTING SAFETY OF VEHICLE, ITS OCCUPANT OR LOAD, OR AN EXTERNAL OBJECT:**

This subclass is indented under the class definition. Vehicle having means, not provided for elsewhere, in the nature of an element or device or system, or an operational interconnection between elements or devices or systems of the vehicle, which means has the purpose of (1) protecting the vehicle by (a) decreasing its likelihood of being involved in a collision or other accident, (b) rendering it less vulnerable to damage from such a collision or accident, (c) making it less susceptible to damage resulting from being incorrectly started, operated, or stopped by an unskilled operator or one unfamiliar with the vehicle, or (d) decreasing the possibility of its being entered or operated by a person not intended to have access to the vehicle; (2) protecting an occupant or a load either as a result of protecting the vehicle in one or more of the ways noted in (1) above or as a result of providing a restraint or shield for the occupant or load; or (3) protecting an external object, including another vehicle or an obstacle, either as a result of protecting the vehicle in one or more of the ways noted in (1) above or as a result of utilizing, for the vehicle, external structure which is less likely to damage the object or obstacle.

- (1) Note. The means of this and the indented subclasses usually has a capability for ascertaining a condition which involves, or may involve, the safety (as set of the above) of the vehicle and for acting in response thereto to protect the vehicle, its occupant or load, or an object (including another vehicle) external of the vehicle.
- (2) Note. This and the indented subclasses represent a reclassification of former subclasses 82+ (i.e., former subclasses 82 and 91 to 114), less former subclasses 98 and 105+, for which subclasses 167+ and 170+, respectively, have been established above. Concurrent with the reclassification, the safety concept was assigned a more superior position in the schedule. As a result of that relocation, this area (subclasses 271+) is incomplete to the extent that any intervening, unre-

classified subclass may contain safety-related subject matter; it is believed, however, that, should such art exist, it will be confined principally to subclasses 315+.

- (3) Note. While subclass 90 was not included in this project, it is believed that art pertaining to a resilient (e.g., padded) dashboard has been placed there without regard to whether it constituted a safety device within the concept of former subclasses 82+.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 41, for a motor vehicle provided with means for raising the frame or body relative to one or more of the vehicle wheels; inasmuch as that subclass (41) was not included in the classification project which established this area (subclasses 271+), principally from former subclasses 82+, no assurance can be given that it (subclass 41) does not contain art which, while having a safety aspect, was not previously considered as comprising a "safety device" within the meaning of former subclass 82.
- 78, for a motor vehicle provided with a controlling device which is mounted on the vehicle's steering post, and see the mention of subclasses 315+ in (2) Note above.
- 90, for a motor vehicle provided with a body and wherein the body has structure in the nature of a dashboard, which dashboard may be of a resilient (e.g., padded) type, and see (3) Note above.
- 232, for a motor vehicle provided with means for (a) protecting its motor from the impact of a collision, (b) utilizing the mass of the motor to absorb the force of a collision, or (c) protecting its occupant region from an impact-induced shifting of its motor.
- 268+, for a motor vehicle provided with a belt or harness for restraining an occupant and means whereby the belt or harness controls, or it is controlled by, the functioning of a vehicle system or component.



405+, for a motor vehicle provided with steering gear of the fluid power assist type and wherein secondary means is provided for insuring the availability of power to aid in manipulating the steering gear in the event of failure of the primary means.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclasses 250.001+ for an optical member cleaner (e.g., a windshield wiper).

74, Machine Element or Mechanism, subclasses 492+ for a steering post, per se, which may include a post which is collapsible or deformable.

188, Brakes, appropriate subclasses for a device or system for slowing or stopping a vehicle (e.g., an arrangement for controlling the “fishtailing” of a towed vehicle with respect to its towing vehicle by utilizing the brakes of one or both vehicles may be found in subclass 112).

192, Clutches and Power-Stop Controls, appropriate subclasses for the interrelated control of a motor and a clutch or a brake.

239, Fluid Sprinkling, Spraying, and Diffusing, subclass 284.1 for a windshield-type liquid sprayer.

280, Land Vehicles, subclasses 5.5+, especially subclasses 5.501+ for a general utility land vehicle including an active suspension responsive to a force encountered while the vehicle is in surface traversing motion; subclasses 124.103, 124.104+, and 124.106+ for a general utility wheeled land vehicle suspension arrangement specifically provided to prevent adverse disposition of the vehicle body, chassis, or frame; subclass 432 for a general utility wheeled land vehicle train of semi-trailer construction including a safety feature in the nature of either (a) means to prevent excessive horizontal swing of the trailer or (b) means to prevent separation of the tractor and the trailer in the event of failure of the coupling means; subclasses 728.1+, 801.1+, and 805 through 808, as explained in the search note appearing

within subclass 268 of this class (Class 180); subclasses 802+, also as explained in the (1) and (2) Notes appearing within subclass 268 of this class (Class 180); subclasses 748+ for a general utility wheeled land vehicle provided with a passenger safety guard; subclass 756 for a general utility wheeled land vehicle provided with an attachment in the nature of a roll bar and/or an overhead guard; subclasses 757+ for a general utility wheeled land vehicle provided with an attachment for providing traction with a road surface; subclass 770 for a general utility wheeled land vehicle provided with an attachment for protecting the vehicle from externally caused damage; or subclass 777 for a general utility wheeled land vehicle including occupant controlled steering having a steering column or steering wheel deformable or otherwise movable in response to the force of a collision.

291, Track Sanders, appropriate subclasses for means for applying sand or like material to the tread of a vehicle wheel or to the surface which underlyingly supports the wheel, or to both, for the purpose of increasing the coefficient of friction between the wheel and the surface. Certain subclasses (e.g., 2, 3, 4, 14, 15, 19, 22, 39, and 40) thereof provide for the combination of specific vehicle structure, or particular vehicle operation, with the means.

293, Vehicle Fenders, appropriate subclasses for a vehicle attached device for removing persons or animals from the path of a moving vehicle, or for catching and retaining such persons or animals, or for receiving or fending off blows from other vehicles or objects.

297, Chairs and Seats, subclasses 464+ as explained in the reference thereto appearing in subclass 268.1 above, and see particularly indented subclasses 487+.

303, Fluid-Pressure and Analogous Brake Systems, subclass 7 for the distribution of braking fluid to a plurality of

- braking motors, and wherein the motors are those on a sectional train and the fluid is distributed differently to the different sections; and subclasses 121+ for fluid braking apparatus wherein the distribution of braking fluid, and therefore the braking action, is regulated at least in part by a speed condition.
- 340, Communications: Electrical, subclasses 438+ for vehicle alarms or indicators responsive to a condition of the vehicle which condition may relate to the safety or protection of the vehicle or its occupants.
- 477, Interrelated Power Delivery Controls, Including Engine Control, for transmission and engine start interlock.
- 272 Responsive to absence or inattention of operator, or negatively reactive to attempt to operate vehicle by person not qualified mentally or physically to do so:**  
This subclass is indented under subclass 271. Vehicle wherein the means either (a) initiates action to safeguard the vehicle or an occupant (e.g., applies brake, closes throttle, sounds alarm, etc.) when the operator is not at his usual station or fails to positively indicate his presence and/or his attentiveness (e.g., a “deadman-type” control), or (b) foils an attempt to start or drive the vehicle if the would-be operator is unable to demonstrate his mental or physical capacity to do so (e.g., a “coded” ignition lock for dissuading one who is inebriated).
- SEE OR SEARCH CLASS:  
246, Railway Switches and Signals, subclass 186 for train control involving means located on the train for controlling its motive power, which may include deadman-type control devices.
- 303, Fluid-Pressure and Analogous Brake Systems, subclass 19 for a brake system wherein distribution of the fluid is initiated upon some failure of the operator.
- 340, Communications: Electrical, subclasses 573.1+ for a condition responsive indicating system of that class, which system is responsive to the condition of a human being or an animal, and see particularly subclasses 575 and 576 thereunder.
- 600, Surgery, subclass 300 for diagnostical devices which may include breath analyzers.
- 273 Utilizing weight, or lack thereof, of operator on seat or other support to determine presence or absence:**  
This subclass is indented under subclass 272. Vehicle wherein the determination of the operator’s presence or absence is made by investigating whether or not his weight is detected at his seat or such other structure as may be provided for his support.
- SEE OR SEARCH CLASS:  
188, Brakes, subclass 109 for a brake which may be operated by the imposition of weight on a vehicle seat.
- 340, Communications: Electrical, subclasses 666+ for a condition responsive indicating system of that class, which system is responsive to weight.
- 274 Responsive to engagement of portion of perimeter of vehicle with external object:**  
This subclass is indented under subclass 271. Vehicle wherein the means responds to a contact of an outermost portion, or an element (e.g., a bumper for protecting the vehicle body) thereon, of the vehicle with an object (e.g., a roadway guardrail, another vehicle, etc.) which is not a part of the vehicle.
- (1) Note. The art of this and the indented subclasses represents a reclassification of former subclasses 91+. It has not been possible at this time to determine whether a conflict may exist between the art of this subclass (274) and that of subclasses 2+ of Class 293.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
232, as explained in the reference thereto appearing in subclass 271 above.
- SEE OR SEARCH CLASS:  
200, Electricity: Circuit Makers and Breakers, subclass 61.44 for a feeler which is attached to a moving vehicle and which detects an object upon contact therewith.

- 293, Vehicle Fenders, subclasses 2+ for a vehicle fender interconnected in operation with a car-controlling element (and see (1) Note above).
- 275 And causing application of vehicle brake:**  
This subclass is indented under subclass 274. Vehicle wherein the response of the means results, either directly or by way of an intermediate mechanism or an additional means, in the operation of one or more devices on the vehicle which are intended to slow or stop it.
- SEE OR SEARCH CLASS:  
295, Vehicle Fenders, subclasses 5, 6, and 8 for a vehicle fender interconnected in operation with a car-controlling element and wherein, in subclass 5, the fender is movable and the element is a fluid brake system for the car, and wherein, in subclass 6, the element is a brake which engages a surface which supports the vehicle, and wherein, in subclass 8, the element is a brake shoe; also in regard to this area of Class 293, see (1) Note of subclass 274 above.
- 276 Brake comprises or includes element moved or deformed into engagement with ground:**  
This subclass is indented under subclass 275. Vehicle wherein the device is an element which is attached to, or forms an integral portion of, the vehicle and is movable, or deformable, into frictional contact with the ground (e.g., the surface of a road).
- SEE OR SEARCH CLASS:  
188, Brakes, subclasses 5+ for a ground-engaging brake for a nonrail-type vehicle.
- 277 And also interruption of at least one operational system of the vehicle or its motor:**  
This subclass is indented under subclass 275. Vehicle wherein the response of the means additionally results in stopping, momentarily or otherwise, the functioning of one or more systems of the vehicle having to do with its operation (e.g., clutch, steering, transmission) or with that of its motor (e.g., ignition, fuel flow).
- 278 System comprises clutch:**  
This subclass is indented under subclass 277. Vehicle wherein the operational system involved is the clutch of the vehicle.
- 279 And causing interruption of an electrical system of the vehicle or its motor:**  
This subclass is indented under subclass 274. Vehicle wherein the response of the means results in stopping, momentarily or otherwise, the functioning of an electrical system of either the vehicle (e.g., battery circuit) or the motor thereof (e.g., ignition circuit).
- SEE OR SEARCH CLASS:  
293, Vehicle Fenders, subclass 4 for a vehicle fender interconnected in operation with a car-controlling element in the nature of an electric switch, and see (1) Note of subclass 274 above.
- 280 And causing operation of vehicle steering system:**  
This subclass is indented under subclass 274. Vehicle wherein the response of the means results in the manipulation of the steering system of the vehicle for the purpose of altering its course of travel.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
400+, especially 443, for a motor vehicle (e.g., an unattended lawn mower) having an impact-responsive steering system, but wherein the safety aspect of this subclass (280) is absent and wherein the capability of the vehicle for changing its course of travel as the result of contacting an obstruction (e.g., a guide) is essential to its normal operation.
- 281 Comprising either movable closure member or fastening device therefor responsive to forward or rearward movement, or variations therein, of vehicle:**  
This subclass is indented under subclass 271. Vehicle wherein the means comprises (a) a movable closure member of the vehicle or (b) a device for preventing such a closure member from opening, and wherein the closure member changes position or the fastening device undergoes a change of status (e.g., locked to

released) in response either to movement of the vehicle in a forward or rearward direction or to changes in its movement in one or the other of these directions.

- (1) Note. "Fastening device" includes such structure as is involved in keeping a door or other movable closure member in its closed position and may comprise a latch bolt, a lock, etc.
- (2) Note. The response may be contingent upon the attainment by the vehicle of a predetermined speed.

SEE OR SEARCH CLASS:

49, Movable or Removable Closures, subclass 31 for a closure of that class which is provided with means to sense a condition and with means responsive to the sensing means to effect control of the closure.

**282 Responsive to sensing of acceleration, deceleration, or tilt of vehicle:**

This subclass is indented under subclass 271. Vehicle wherein the means responds to the determination of or the reaction to (a) a change in the velocity of travel of the vehicle or (b) a tipping movement of the vehicle in either a side-to-side or a forwardly-rearwardly direction.

- (1) Note. The sensing frequently is that accomplished by a gravity-sensitive device (e.g., a mercury switch, a pendulum), but may be, instead, that of a less sophisticated device such as a mechanical linkage serving to transfer the effect of a physical force or movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

41, as explained in the reference thereto appearing in subclass 271 above.

172, for a motor vehicle provided with means which is responsive to the speed of the vehicle for maintaining its speed at, or preventing it from exceeding, a particular value and wherein the means includes a device which is responsive to centrifugal force, which device may be, as

explained in (1) Note of that subclass (172), a pendulum.

- 274+, for a motor vehicle provided with a safety-promoting means which is responsive to the engagement of a portion of the perimeter of the vehicle with an external object (e.g., collision-caused deceleration).
- 281, for a motor vehicle provided with a safety-promoting means which comprises either a movable closure member or a fastening device therefor which is responsive to forward or rearward movement, or variations therein, of the vehicle.
- 290, for a motor vehicle provided with a safety promoting means which is responsive to the weight of a cargo load transported by the vehicle; in the instance of a vehicle which is caused to tilt by the weight of the load applied, classification is here (subclass 282) if the means responds to the tilting rather than, or in addition to, the weight of the load.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclasses 61.45+ for a switch responsive to a change of rate of motion or a change of inclination.
- 280, Land Vehicles, subclasses 5.5+, especially subclasses 5.501+ for a general utility land vehicle including an active suspension responsive to a force encountered while the vehicle is in surface traversing motion; subclasses 124.103, 124.104+, and 124.106+ for a general utility wheeled land vehicle suspension arrangement specifically provided to prevent adverse disposition of the vehicle body, chassis, or frame; subclasses 734+ for a general utility wheeled land vehicle including an inflatable passenger restraint responsive to a condition of the vehicle; subclass 753 for a general utility wheeled land vehicle passenger safety guard attachment in the nature of a padded or cushioned member wherein the member is positionable by an automatic actuator; or subclass 755 for a general utility wheeled land vehicle attachment preventing the

vehicle from tilting or tipping beyond a given point.

**283 And causing interruption of ignition circuit:**  
This subclass is indented under subclass 282. Vehicle wherein the response of the means results in stopping, momentarily or otherwise, the flow of current to or within the ignition system of the vehicle's motor.

**284 And also impeding flow of fuel:**  
This subclass is indented under subclass 283. Vehicle wherein the response of the means results, additionally, in slowing or stopping the movement of gasoline or other fuel to the vehicle's motor.

**285 And causing disruption of drive train between motor and wheels:**  
This subclass is indented under subclass 282. Vehicle wherein the response of the means results in creating a discontinuity in the train of elements and mechanisms which serve to transmit power from the motor of the vehicle to its wheels.

(1) Note. The subject matter of this subclass frequently is directed to a ground-actuated linkage for disengaging the vehicle's clutch.

**286 Comprising vehicle system or component responsive either to position of movable closure member or to status of fastening device therefor:**

This subclass is indented under subclass 271. Vehicle wherein the means comprises a system or a component of the vehicle which system or component is responsive to (a) the position, or a change therein, of a movable closure member of the vehicle or (b) the status, or change therein, of a device for preventing such a closure member from opening.

(1) Note. See (1) Note of subclass 281 above for an explanation of "fastening device".

SEE OR SEARCH CLASS:

49, Movable or Removable Closures, subclass 31 as explained in the reference thereto appearing in subclass 281 above.

**287 By preventing unauthorized or unintended access or use:**

This subclass is indented under subclass 271. Vehicle wherein the means has as its purpose the prevention of use of the vehicle or access to it by a person or persons, or for a purpose or purposes, not reasonably contemplated.

(1) Note. Neither a mere keyed lock for a vehicle closure member nor a keyed ignition switch constitute subject matter for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

173, for a motor vehicle provided with means responsive to the speed of the vehicle for maintaining the speed at, or preventing it from exceeding, a particular value and wherein the means includes a drive responsive to centrifugal force and further wherein there is also included means to prevent tampering or unauthorized use, and see the observation of (1) Note of that subclass.

272, for a motor vehicle provided with a safety-promoting means which may be of the kind which reacts negatively to an attempt by a mentally or physically unqualified person to operate the vehicle (e.g., an ignition lock which is responsive to an alphabetical or digital input code).

SEE OR SEARCH CLASS:

70, Locks, subclasses 237+ for locks adapted for use on automotive vehicles.

123, Internal-Combustion Engines, subclass 198 for accessories for an internal combustion engine, which accessories may be of an antitheft nature.

137, Fluid Handling, appropriate subclasses (e.g., subclasses 351+ or 383+) for a fluid handling system which is, or may be, associated with a vehicle, and which system may include an antitheft provision.

188, Brakes, appropriate subclasses, and see particularly subclass 353, for a brake of the fluid pressure type which is applied to a motor or other road

- vehicle and wherein means is provided to trap fluid in the brake system to hold the brake applied.
- 200, Electricity: Circuit Makers and Breakers, subclasses 42.01+ and 43.01+ for a circuit maker and breaker provided with means for preventing its operation except by one authorized to use it.
- 303, Fluid-Pressure and Analogous Brake Systems, appropriate subclasses, and see particularly subclass 89, for a system of the kind provided for in that class and wherein the system includes a device for maintaining the parts of the system in a position which may be that of brake application.
- 307, Electrical Transmission or Interconnection Systems, subclasses 10.2+ for an electrical distribution system mounted in an automotive vehicle, which system may include an antitheft provision.
- 340, Communications: Electrical, subclasses 426.1 through 426.36 for vehicle-mounted antitheft alarms.
- 288 Responsive to failure of taxicab operator to activate fare meter upon boarding of passenger:**  
This subclass is indented under subclass 287. Vehicle wherein the means having the purpose of preventing unauthorized or unintended access or use is one which responds to the omission of the operator of a motor vehicle of the for-hire type to place into operation, when a person engaging the vehicle boards it, a register provided on the vehicle for determining the charge for a trip, the response consisting of making the vehicle inoperative.
- 289 Comprising element, mechanism, or system for either repositioning a movable or removable closure member or operating a fastening device therefor:**  
This subclass is indented under subclass 287. Vehicle wherein the means having the purpose of preventing unauthorized or unintended access or use comprises an element, mechanism, or system for (a) moving a vehicle closure member which is either movable or removable to a different position or location or (b) changing the status (e.g., locked to released) of a device for preventing movement of such a closure member.
- (1) Note. See (1) Note of subclass 281 above for an explanation of "fastening device".
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 281, for a motor vehicle provided with a safety-promoting means which comprises either a movable closure member or a fastening device therefor responsive to forward or rearward movement, or variations therein, of the vehicle.
- 286, for a motor vehicle provided with a safety-promoting means which comprises a vehicle system or component responsive either to the position of a movable closure member or to the status of a fastening device therefor.
- SEE OR SEARCH CLASS:
- 49, Movable or Removable Closures, subclass 35 for a closure member of that class which may be controlled by a key; and subclass 72 for a window mounted in a door and wherein movement of the window relative to the door is interrelated with the movement of a means for latching the door.
- 70, Locks, appropriate subclasses (e.g., subclasses 237+ and 262+) for means or a system for locking a closure member of a motorized vehicle.
- 292, Closure Fasteners, appropriate subclasses for fasteners for vehicle closure members.
- 290 Responsive to weight of cargo load transported by vehicle:**  
This subclass is indented under subclass 271. Vehicle wherein the means responds to the downward force created by the articles or material placed on the vehicle for movement thereby.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 14.5, for two or more connected vehicles, at least one of the vehicles being a motor vehicle, and wherein the connection between the motor vehicle and at least

one vehicle drawn thereby includes means for stopping the motor of the motor vehicle or for releasing the load in the event the load exceeds the capacity of the motor vehicle.

- 282, for a motor vehicle provided with a safety-promoting means which may be responsive to a tilt of the vehicle, and see the reference therein (subclass 282) to this subclass (290) for an explanation of the relationship of the subclasses.

**291 Having specific motor-to-body-frame relationship:**

This subclass is indented under subclass 54.1. Vehicle wherein either (1) the device which develops the power for propelling the vehicle or (2) the device of (1) plus an attached or integral accessory (e.g., clutch, transmission, etc.) therefor, or (3) the device of (1) plus some other component (e.g., fender, front wheel suspension, etc.) of the vehicle, or any combination of (1), (2), or (3) is either (a) related peculiarly to the body frame of the vehicle (e.g., by giving it a particular location thereon) or (b) related to a body frame which, in itself, is more than a mere support--provided that no other locus for such subject matter exists.

- (1) Note. The line between this area, formerly subclass 64, and subclasses 55+ is not clear. While the art found in former subclass 64 has been broken down and identified in this and the indented subclasses, no attempt has been made to reconcile its locus with that of the art of subclass 55 or its indented subclasses.
- (2) Note. While the definition of former subclass 64 referred to "the main or body frame as distinguished from an underframe" (in contrast, of course, with the definition of subclass 55), the terms are not meaningfully definable nor, in the art, are the two kinds of frames necessarily either (a) readily identifiable or (b) clearly distinguishable; moreover, vehicle structures frequently utilize only one such frame or the other and, in some instances, neither.
- (3) Note. In view of the provision in inferior subclasses 65.1+ for a motor vehicle

having an electric motor, and in inferior subclasses 301, 302+, and 305+ (all of which were developed from former subclasses 66+) for a motor vehicle having a fluid motor, the art which had accumulated in former subclass 64, and which comprises the bulk of the art in this (291) and the indented subclasses, tended to be that pertaining principally to the mounting of a motor of the internal combustion engine type.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 228, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein the vehicle includes resilient means for mounting its motor.
- 232, for a motor vehicle provided with means for (a) protecting its motor from the impact of a collision, (b) utilizing the mass of the motor to absorb the force of a collision, or (c) protecting its occupant region from an impact-induced shifting of its motor.

**SEE OR SEARCH CLASS:**

- 105, Railway Rolling Stock, subclasses 133+ for the locating or securing of a motor on a vehicle of that class.
- 244, Aeronautics and Astronautics, subclass 54 for the mounting of a power plant on an aircraft.
- 248, Supports, subclasses 560+ for supports which are resilient in nature; and subclasses 637+ for supports for machinery. While the supporting of a nominally claimed vehicle frame is not beyond the scope of Class 248, nevertheless classification in Class 180 is proper when the claims develop specific motor or frame or vehicle aspects of which the following are exemplary: (a) structure of the motor which is in addition to that necessary for receiving the support provided by the frame, (b) motor (e.g., crankcase parting flange) or motor component (e.g., timing gear cover) structure which has, in addition to its support function, a function peculiar to the motor, (c) structure of the frame which is in addition to that necessary

for providing support to the motor, (d) one or more frame members which, while serving to support the motor, are disclosed as performing a frame-related function (e.g., rigidifying the frame), and (e) vehicle structure not involved solely in supporting the motor.

280, Land Vehicles, subclasses 781+ for a general utility wheeled land vehicle running gear including specific frame construction.

**292 Including change-speed gearing, or clutch, mounted in common with motor:**

This subclass is indented under subclass 291. Vehicle provided with means in the nature of gearing for altering the speed or direction of the power output of the motor or means for interrupting said output, the means being either formed integrally with or attached directly to the motor, or else mounted along with the motor on a frame which is auxiliary to the body frame, in order to form an assembly which is supported as a unit relative to the body frame.

- (1) Note. The claiming of only the housing of the gearing or the clutch is sufficient for classification here.
- (2) Note. The mounting in common with the motor of an accessory or component of a nature other than a change-speed gearing or a clutch (e.g., a generator, a starter, etc.) appears occasionally in the art of subclass 291 above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

374+, for the gear transmission relationship to the vehicle frame or axle, where the engine is not claimed.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, appropriate subclasses for a clutch.

**293 With member or mechanism for controlling gearing or clutch, and means for minimizing transfer of movement, caused by operation of motor, to member or mechanism:**

This subclass is indented under subclass 292. Vehicle provided with an element or linkage for controlling the gearing (e.g., by a shift

lever) or the clutch (e.g., by a clutch pedal), and also provided with means for reducing or eliminating the transfer to the element or linkage of the movement (e.g., oscillation, vibration) set up by the running of the vehicle's motor.

- (1) Note. The movement of the motor is that permitted by the mounting customarily provided therefor, which mounting may or may not be claimed.
- (2) Note. The elimination of "clutch chatter" appears occasionally as an objective of the structure of this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

315+, for a motor vehicle provided with a device for controlling its motor or driving mechanism.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclasses 82+ for a device for actuating a clutch.
- 248, Supports, subclasses 560+ and 637+ as explained in the reference thereto appearing in subclass 291 above.

**294 With means enabling repositioning of motor and gearing or clutch:**

This subclass is indented under subclass 292. Vehicle provided with means for moving, or facilitating the movement of, the motor and the gearing or clutch either into a different attitude or location on the body frame or from or to the body frame.

- (1) Note. The repositioning usually is for either changing the relative location of the motor (e.g., for adjusting the tension of a drive belt) or making the motor more easily accessible for service or repair.
- (2) Note. See (2) Note of subclass 298 below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

232, for a motor vehicle provided with means for (a) protecting the vehicle's motor from the impact of a collision,



(b) utilizing the mass of the motor to absorb the force of a collision, or (c) protecting the occupant region of the vehicle from an impact-induced shifting of the motor, which last-named category of means may include tracks, etc., for guiding the resultant movement of the motor.

**295 With wheeled auxiliary frame, resiliently joined to body frame, for supporting motor and gearing or clutch:**

This subclass is indented under subclass 292. Vehicle provided with an additional frame for carrying the motor and the gearing or clutch, the additional frame having ground-engaging wheels (e.g., the front wheels of the vehicle) and being connected to the body frame by one or more elastic couplings.

- (1) Note. In regard to (1) Note of subclass 291, this subclass, in particular, comprises art which subclasses 55+ may have been intended to provide for.
- (2) Note. Since subclasses 11+ were not included in the reclassification project which established this subclass (295), the line between the two is not entirely clear at present. In this subclass (295), however, the motor-supporting, wheeled, auxiliary frame is an essential portion of the vehicle and not a component which readily lends itself to being described as an "attachment".

SEE OR SEARCH THIS CLASS, SUBCLASS:

11+, for a motor vehicle having a motor-carrying attachment, but see (2) Note above.

**296 Including means on body frame or motor for handling exhaust:**

This subclass is indented under subclass 291. Vehicle wherein means located with respect to or attached to the body frame or motor is provided for receiving, conducting, or otherwise handling the products of combustion discharged from the motor.

- (1) Note. The means most frequently comprises a motor-attached exhaust pipe or manifold.

SEE OR SEARCH CLASS:

- 60, Power Plants, subclasses 272+ for the combination of an engine of the type in which fuel is burned in an expandable chamber to produce work and means to handle or treat at least some of the combusted material subsequent to its departure from the chamber, and see the search notes thereto for other, exhaust-related subject muffler.
- 181, Acoustics, subclasses 212+ for a fluid conducting type matter.
- 248, Supports, subclasses 49+ for supports particularly adapted to support a pipe (e.g., an exhaust conduit) or a cable.
- 293, Vehicle Fenders, subclass 113 for a vehicle fender of the buffer or bumper type having an opening therein which may be for the purpose of providing a passage for the products of combustion (or a conduit carrying them) discharged from the motor.

**297 Having motor shaft parallel to rotational axis of driven wheel:**

This subclass is indented under subclass 291. Vehicle wherein the component of the motor which delivers the power developed therein (e.g., the crank-shaft) lies on a line which is parallel to a line about which one or more driven wheels rotate in order to propel the vehicle.

- (1) Note. In the event that the vehicle has motors of both a prime mover type and a traction kind, the shaft with which this subclass is concerned is that of the traction motor.

**298 Including means enabling repositioning of motor:**

This subclass is indented under subclass 291. Vehicle provided with means for moving, or facilitating the movement of, the motor either into a different attitude or location on the body frame or from or to the body frame.

- (1) Note. (1) Note of subclass 294 is equally applicable here.
- (2) Note. While the motor of this subclass (298) usually is a torque-developing device from which power is transmitted

mechanically to a driven wheel of the vehicle, a small portion of the art relates to a repositionable prime mover of the kind which contains (i.e., a battery) or which develops (i.e., a motor-generator) electrical energy which is utilized to drive a disclosed electric traction motor. On the other hand, subclasses 65.1+, which was not included in the reclassification project which established this subclass (298) but which is known to include motor-generator prime movers, may contain a more significant portion of the art pertaining to repositionable prime movers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 232, as explained in the reference thereto appearing in subclass 294 above.
- 294, for a motor vehicle provided with means enabling the repositioning of the vehicle's motor and a change-speed gearing or a clutch which is mounted in common with the motor.

**299 Including auxiliary frame for motor and resilient means for connecting auxiliary frame to body frame:**

This subclass is indented under subclass 291. Vehicle provided with an additional frame (e.g., a subframe) for supporting the motor and with one or more cushioning devices (e.g., a spring, a shock absorber, elastomeric material, etc.) for joining the additional frame to the body frame.

**300 Including means of nonsupporting nature for minimizing operation-induced movement of motor:**

This subclass is indented under subclass 291. Vehicle having means for reducing or restraining that movement of the motor which is occasioned by forces (e.g., torque, vibration, etc.) developed consequent to the operation of the motor, and wherein the means provides no appreciable support of the motor against gravity.

- (1) Note. Frequently the means is a laterally extending brace which has a cushioning or snubbing capability.

SEE OR SEARCH CLASS:

- 188, Brakes, subclasses 266+ for a vibration dampener of the internal-resistance, motion-retarder type.
- 248, Supports, subclass 638 for a machinery support which includes vibration damping or absorbing means.

**301 Including traction motor of turbine type driven by fluid product of combustion:**

This subclass is indented under subclass 54.1. Vehicle wherein the apparatus for producing power includes a motor of the kind having a blade-carrying shaft, which shaft is caused to rotate by the reaction on its blades of a moving gas generated by the burning of fuel, for imparting vehicle-propelling movement to one or more surface-engaging members of the vehicle.

- (1) Note. The source of the moving gas may or may not be claimed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 291+, for a motor vehicle wherein the motor and the body frame are particularly related to one another.

SEE OR SEARCH CLASS:

- 60, Power Plants, subclasses 39.01+ for a power plant which utilizes a motive fluid comprised, at least in part, of gases produced by combustion, and see particularly those indented subclasses which relate to power plants of the turbine type.

**302 Including traction motor of kind driven by expansible fluid from source external of motor:**

This subclass is indented under subclass 54.1. Vehicle wherein the apparatus for producing power includes a motor of a type operated by a fluid, which is undergoing an increase in volume as the result of having been subjected to an elevation of its pressure or temperature at a location outside the motor, for imparting vehicle-propelling movement to one or more surface-engaging members of the vehicle.

- (1) Note. The source of the expansible gas may or may not be claimed.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
291+, as explained in subclass 301 above.
- 303 Gas is product of treatment of a volatile fluid (e.g., gas is steam):**  
This subclass is indented under subclass 302. Vehicle wherein the expansible gas is obtained by subjecting one of a particular class of fluids, while in a liquid state (e.g., water), to a change in pressure and/or temperature, thereby causing the liquid to vaporize.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
36+, for a vehicle propelled by a motor driven by steam, but wherein the vehicle is primarily a pulling device rather than a load-transporting means.  
310, for a vehicle having means to generate steam for a propulsion purpose, but lacking the motor of this subclass (303).
- SEE OR SEARCH CLASS:  
60, Power Plants, subclass 668 for a power plant comprising means to increase the energy of a motive fluid by the indirect addition of heat thereto plus a motor actuated by the fluid, and wherein is further included means dependent upon vehicle motion, vehicle traction, or vehicle body structure, provided that no other locus exists for such a plurality of means.  
91, Motors: Expansible Chamber Type, appropriate subclasses for a steam motor adapted for use with a vehicle.  
122, Liquid Heaters and Vaporizers, subclass 3 for a boiler plant adapted for use with a vehicle.
- 304 With means to condense gas discharged from motor:**  
This subclass is indented under subclass 303. Vehicle having means to receive the gas which has operated the motor and exited therefrom and to change the gas into a liquid.
- (1) Note. This subclass provides for a closed-cycle system in which the fluid, or at least a portion of it, is continuously reused.
- 305 Including traction motor of kind driven by noncompressible fluid received under pressure from a pump:**  
This subclass is indented under subclass 54.1. Vehicle wherein the apparatus for producing power includes at least one motor of a type operated by a fluid which is not appreciably reducible in volume (e.g., a liquid), and which is supplied to the motor in a pressurized state by a pump, for imparting vehicle-propelling movement to one or more surface-engaging members of the vehicle.
- (1) Note. The pump may or may not be claimed.  
(2) Note. The pump is intended to be driven by the power plant (e.g., an internal combustion engine) of the vehicle which power plant frequently is not claimed.  
(3) Note. The pump and motor of this subclass may constitute components of a device designated as a "hydro-static transmission".
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
242+, for a motor vehicle having four wheels driven and wherein the means for driving one or more of the wheels may be a fluid motor.  
291+, as explained in subclass 301 above.  
367, for other types of fluid drives combined with motor vehicles structure.
- SEE OR SEARCH CLASS:  
60, Power Plants, subclasses 325+ for a power plant consisting of a source of fluid under pressure and a motor driven by the fluid.
- 306 Vehicle includes another system operated by same fluid:**  
This subclass is indented under subclass 305. Vehicle having at least one other system (e.g., braking, steering), not a part of the traction-producing system, which also is driven by the pressurized fluid.

**307 Having variable displacement type motor or pump:**

This subclass is indented under subclass 305. Vehicle wherein either the traction motor, or the pump which supplied the fluid under pressure to the motor, is of a kind capable of changing its power output by virtue of having internal components which are adjustable to vary its volumetric capacity for handling fluid.

- (1) Note. Included herein is art directed to means for controlling the operation of the power plant of the vehicle in a manner responsive to the operation of another means for regulating the output of a variable displacement pump.

**308 Having separate motor for each driven, surface-engaging member:**

This subclass is indented under subclass 305. Vehicle wherein each driven wheel, track, or other traction-developing member is provided with an individual motor of the noncompressible fluid type for operating it.

SEE OR SEARCH THIS CLASS, SUBCLASS:

6.48, for a motor vehicle having means to cause, for the purpose of guiding the vehicle, a relative difference in the rate of travel of a traction element on one side of the vehicle and that of a traction element on the other side of the vehicle, and wherein the means comprises an individually controlled motor for each traction element.

24.07, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein the means for propelling the vehicle comprises either a plurality of prime movers or a plurality of energy conversion devices and further wherein each driven wheel is operated by an individual one of the prime movers or energy conversion devices.

242+, as explained in subclass 305 above, and with the observation that the fluid motor which may appear there (subclasses 242+) is frequently one which drives a specific wheel.

**309 With means for handling motor exhaust:**

This subclass is indented under subclass 54.1. Vehicle provided with means for receiving, conducting, or otherwise handling the products of combustion discharged from its motor.

(1) Note. The means may be one or more elements of which the following are exemplary: exhaust manifold, exhaust pipe, catalytic converter, muffler, tail pipe.

(2) Note. This subclass was established during the reclassification of former subclass 64 and the art placed herein at the time comprises a collection which should not be considered to be completed insofar as the remainder of the class is concerned.

SEE OR SEARCH THIS CLASS, SUBCLASS:

296, for a motor vehicle wherein the motor and the body frame are particularly related to one another and wherein is provided means, attached to or otherwise located with respect to the body frame or the motor, for handling the exhaust of the motor.

SEE OR SEARCH CLASS:

60, Power Plants, subclasses 272+ as explained in the reference thereto appearing in subclass 296 above.

181, Acoustics, subclasses 212+ as explained in the reference thereto appearing in subclass 296 above.

248, Supports, subclasses 49+ as explained in the reference thereto appearing in subclass 296.1 above.

293, Vehicle Fenders, subclass 113 as explained in the reference thereto appearing in subclass 296 above.

**310 With means to generate steam for a propulsion purpose:**

This subclass is indented under subclass 54.1. Vehicle provided with a boiler or other means for producing steam, which steam is intended for a purpose related to the propelling of the vehicle (i.e., the steam is for the operation of an unclaimed motor).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

36+, for a motor vehicle propelled by a motor driven by steam, but wherein the vehicle is primarily a pulling device rather than a vehicle of general utility; also, as pointed out in (1) Note of subclass 36, it is sufficient for classification there if only the steam traction engine vehicle and its boiler are claimed.

303+, for the vehicle and generating means of this subclass (310) plus the motor for utilizing the steam to propel the vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 830+ for a vehicle provided with a tank, which tank may be for the purpose of holding water which is intended to be used for the generation of steam.

### 311 **FRAME:**

This subclass is indented under the class definition. Subject matter comprising a frame for a vehicle, which frame includes a feature peculiar to a vehicle of the motor-propelled type.

(1) Note. This subclass is an outgrowth of the reclassification of selected portions (e.g., former subclass 64) of this class; accordingly, it does not purport to be a complete collection of all the art of this nature which may be present in the class. As a matter of fact, subclasses such as 55-63 and 89.1+, which were not a part of the reclassification project, may be particularly likely to include frame structure which would be pertinent to this area (subclasses 311+).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

55, through 63 and 89.1+, as explained in (1) Note above.

291+, for a motor vehicle wherein the motor and the body frame are particularly related to one another.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclasses 781+ for a general utility wheeled land vehicle

running gear including specific frame construction.

296, Land Vehicles: Bodies and Tops, subclasses 203.01+ for a body for a land vehicle, which body is provided with a frame for supporting or rigidifying it.

### 312 **With structure adapted to receive or support a motor, change-speed gearing, or other power train element:**

This subclass is indented under subclass 311. Frame provided with an auxiliary frame, a platform, a bracket, or other structure of such a nature either for holding a motor for propelling a vehicle, for holding gearing for changing a vehicle's velocity, or reversing its direction of movement, or for holding an element of the kind involved in developing power for, or transmitting power to, a traction-producing member of a vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

291+, as explained in subclass 311 above, and see especially subclass 299 thereof.

374+, and 377+, for a transmission-frame relationship and transmission support respectively, where the transmission is positively claimed.

### 313 **MISCELLANEOUS:**

This subclass is indented under the class definition. Apparatus not otherwise provided for.

### 314 **WITH PLURAL FUEL TANKS:**

This subclass is indented under the class definition. Apparatus wherein the vehicle is provided with two or more containers for holding energizing fluid for powering the vehicle.

### 315 **MANUALLY ACTUATED CONTROLLING DEVICES:**

This subclass is indented under the class definition. Devices having means for manually controlling the motor or driving mechanism in connection with specific vehicle structure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

90, for dashboards with controlling instruments arranged thereon.

- 173, for locks or sealing means for speed-controlling means.
- 714, for vehicle control actuated by a fender or buffer.

**SEE OR SEARCH CLASS:**

- 74, Machine Element or Mechanism, subclasses 469+ for controlling devices of general application.
- 123, Internal Combustion Engines, subclasses 185.1+ for manual starting mechanisms operable from the seat.
- 192, Clutches and Power-Stop Control, appropriate subclasses for brakes designed to be actuated in connection with a motor or clutch, so that the motor is stopped or the clutch disengaged when the brake is applied.
- 244, Aeronautics and Astronautics, subclass 75.1 and the classes specified in the notes thereto for apparatus and devices for controlling aircraft and other mobile craft. See subclass 175 and the classes specified in the notes thereto where the control is effected by electrical means, and for a statement as to the line between the classes.

- 316 By other than hand or foot of operator:**  
This subclass is indented under subclass 315. Apparatus wherein a controlling device is actuated by a body portion of an operator, and the body portion normally not being utilized in the control of a vehicle (e.g, knee, head, hip, etc.).
- 317 On mine car vehicle:**  
This subclass is indented under subclass 315. Apparatus in which the vehicle comprises structure designed for operation in a subterranean passage.
- 318 On delivery-type vehicle:**  
This subclass is indented under subclass 315. Apparatus wherein the vehicle comprises structure for facile on-off movement by an operator or other person of a vehicle designed for frequent pickup and delivery stops.
- 319 With rein means:**  
This subclass is indented under subclass 315. Apparatus wherein a manually manipulatable flexible means is connected to a movable vehi-

cle control part to at least partly control operation of the vehicle.

- (1) Note. A flexible member interconnecting rigid link members, one of which being manually manipulatable, in a vehicle control mechanism is not considered proper for classification here. Classification will be based on other features.

**320 With vehicle control extension:**

This subclass is indented under subclass 315. Apparatus wherein an additional manual means normally comprising extendable parts is secured to the vehicle (e.g., tractor) steering wheel and/or other manually controlled part normally used to control the vehicle, movement of the additional manual means enabling control of the vehicle from a remote position.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

319, for similar devices using rein means.

**321 With plural control stations:**

This subclass is indented under subclass 315. Apparatus wherein the vehicle comprises two or more operator locations, the vehicle drive being controlled from at least one of the locations.

- (1) Note. One of the locations may be used solely for controlling a work apparatus.

- (2) Note. One of the locations may provide a separate control for braking (only) the vehicle for use by a passenger or other rider.

- (3) Note. Included herein are dual control stations.

**322 Side-by-side:**

This subclass is indented under subclass 321. Apparatus wherein the locations are positioned alongside one another.

**323 For single control means:**

This subclass is indented under subclass 321. Apparatus wherein the same control apparatus is accessible for operation from a plurality of operator locations.

- 324 With tool or equipment control:**  
This subclass is indented under subclass 321. Apparatus wherein at least one of the operator locations comprises means to control equipment or work apparatus on the vehicle.
- 325 Braking controllable by passenger:**  
This subclass is indented under subclass 321. Apparatus comprising means readily accessible to a vehicle rider to retard vehicle motion, the rider being someone other than the vehicle operator.
- 326 With movable control station or seat position:**  
This subclass is indented under subclass 315. Apparatus having a control location which may have seat means for an operator from which the controlling means may be actuated, and wherein the control location or the seat may be moved from one position to another to enable the operator to control the vehicle and/or work apparatus thereon.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
334, for a control means adjustable merely for the convenience and at the will of a vehicle operator.
- 327 Movable cab:**  
This subclass is indented under subclass 326. Apparatus wherein an operator's location comprises a vehicle compartment or enclosure for housing the vehicle operator, the compartment or enclosure being shiftable to other positions or attitudes on the vehicle.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
89.13+, for similar subject matter wherein vehicle control means are not claimed, and see the search note thereunder.
- 328 Tilting:**  
This subclass is indented under subclass 327. Apparatus wherein the compartment or enclosure is pivotally attached to the frame of the vehicle whereby it is shiftable between alternate attitudes or positions.
- 329 Simultaneously movable seat and control:**  
This subclass is indented under subclass 326. Apparatus wherein an operator seat or location and at least one control means are mounted for concurrent movement to an alternate position.
- 330 Seat or seat portion movable to alternate position:**  
This subclass is indented under subclass 326. Apparatus wherein the seat or seat portion is movable to permit the operator to face another direction either to control the vehicle or to control work apparatus or equipment thereon.
- 331 With tool or equipment control:**  
This subclass is indented under subclass 330. Apparatus wherein a control means for vehicle-mounted work apparatus or equipment is accessible for operation by the operator at one position of seat or seat portion adjustment.
- 332 With tiller-type handle:**  
This subclass is indented under subclass 315. Apparatus comprising an arm or lever means connected at or adjacent one of its ends to at least one vehicle control entity and engageable at or adjacent its other end by the operator of the vehicle for the movement to control at least one vehicle control entity (e.g., steering, braking, etc.).
- 333 Multiple vehicle functions controllable by single device:**  
This subclass is indented under subclass 315. Apparatus comprising a member movable to control operation of a vehicle, the member being capable of controlling a plurality of distinct functional control entities (e.g., steering, braking, etc.).
- 334 With adjustable operator engageable control:**  
This subclass is indented under subclass 315. Apparatus wherein the position of a control member engageable by an operator to control the vehicle may be selectively moved to an alternate working position at a control station at the will of and for the convenience of the vehicle operator.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

326+, for either a control station or seat movable to at least one other position from which the vehicle and/or tool or equipment thereon may be controlled.

**335 With fuel or air throttle control:**

This subclass is indented under subclass 315. Apparatus comprising means actuated by a vehicle operator for regulating the amount of fuel and/or air deliverable to the cylinders of a vehicle motor.

**336 With transmission control:**

This subclass is indented under subclass 315. Apparatus comprising means actuated by a vehicle operator for regulating change speed mechanism positioned intermediate the vehicle motor and drive shafting.

**337 TRANSMISSION MECHANISM:**

This subclass is indented under the class definition. Mechanism connecting the power shaft to the road wheels and claimed in combination with specific vehicle structure.

(1) Note. Classes 56, Harvesters; 111, Planting; and 172, Earth Working, subclasses 105+, contain some agricultural vehicles carrying transmission mechanism connecting road wheels to a mechanism to be driven, e.g., in Class 56, Harvesters, are found vehicles carrying cutting mechanism actuated by the road wheels.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

6.2+, 21+, 36+, 53.1+, 233+, and 252+, for transmission mechanism of a nature peculiar to the motor vehicles of those subclasses.

53.1+, for transmission combinations with power take-offs, especially 53.2, for creeper drives.

165, for a transmission in combination with a mechanical or fluid accumulator.

200+, for a motor vehicle provided with powered ground engaging means for producing or assisting in the production of lateral movement of the vehi-

cle, (e.g., for parking), and wherein the means comprises a rotatably driven auxiliary wheel or endless track, the drive train for which wheel or track may include the vehicle's transmission.

269, for a motor vehicle having a belt or harness for restraining an occupant and means whereby the belt or harness controls, or is controlled by, the functioning of the vehicle's transmission.

305+, for a motor vehicle which includes a traction motor of the kind driven by a noncompressible fluid which has been placed under pressure by a pump, sometimes referred to as a hydrostatic transmission.

332, 333 and 336, for manually actuated vehicle transmission controls.

SEE OR SEARCH CLASS:

56, Harvesters, (See (1) Note).

74, Machine Element or Mechanism, appropriate subclasses, which contain transmission mechanism designed for motor vehicles, but not claimed in connection with specific vehicle structure. For a more detailed statement of this line see (1) Note (b) under the class definition.

105, Railway Rolling Stock, appropriate subclasses, for vehicles of that class having transmission mechanism; and see particularly subclasses 96+ for such a vehicle having drive mechanism for a wheel or axle.

111, Planting, (see (1) Note).

172, Earth Working, subclasses 35+ for a driven earth working tool, and subclass 292 for an earth working apparatus with some specific propelling means.

280, Land Vehicles, subclasses 200+ for general utility occupant propelled-type wheeled land vehicles. In accordance with the (2) Note in Class 280, subclass 200, motorcycle frames and running gear, without features causing classification in Class 180, Motor Vehicles, are included in these subclasses.



- 474, Endless Belt Power Transmission Systems or Components, for belt and chain transmissions not claimed in combination with specific vehicle structure.
- 475, Planetary Gear Transmission Systems or Components, for planetary gear transmission mechanism. The line is the same as with Class 74.
- 477, Interrelated Power Delivery Controls, Including Engine Control, for interrelated engine and transmission control.
- 338 Condition responsive, (e.g., responsive to speed, load, etc.):**  
This subclass is indented under subclass 337. Subject matter including means which controls or adjusts the transmission in response to a sensed condition or change of condition.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
14.6, for a transmission which may be controlled by the resistance to movement exerted by a trailer.
- 339 With temperature control, lubrication or sealing:**  
This subclass is indented under subclass 337. Subject matter including (a), heating or cooling of the transmission mechanism; (b), means to facilitate the admission of lubricant to the transmission mechanism or (c), means to contain such lubricant or deflect undesirable fluids or solids.
- (1) Note. Brake cooling is not found here but in subclass 370.
- SEE OR SEARCH CLASS:  
184, Lubrication, for lubricating means, per se.  
277, Seal for a Joint or Juncture, for a generic sealing means or process, subclasses 500+ for a dynamic circumferential contact seal for other than a piston.
- 340 With laterally movable wheel:**  
This subclass is indented under subclass 337. Subject matter including means to move the power driven road wheel(s) toward or away from the longitudinal axis of the vehicle so that the width of the vehicle's track may be varied.
- 341 Wheel drives parallel wheel:**  
This subclass is indented under subclass 337. Subject matter provided with a drive means, not part of the normal road wheel drive transmission, through which one wheel driven by the road wheel drive transmission may drive a parallel wheel.
- (1) Note. The effect is the same as locking up the differential between two parallel wheels.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
24.12, for driven wheels that may also drive through idlers to a set of tandem wheels.
- 342 Tire directly driven:**  
This subclass is indented under subclass 337. Subject matter wherein the transmission includes a gear in engagement with the ground contact surface of a traction wheel.
- (1) Note. The gear may be of the belt or chain type.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
14.7, 24.11+, 198, and 201, for vehicles of the type there provided for which drive a ground wheel by contact.  
221+, for a motor vehicle comprising two wheels in tandem, one of which is powered by a rotating element in frictional engagement therewith.
- SEE OR SEARCH CLASS:  
476, Friction Gear Transmission Systems or Components, for friction gear transmissions.
- 343 With particular gear structure:**  
This subclass is indented under subclass 342. Subject matter including the configuration of the gear or the material of which it is made.
- 344 Assembly feature:**  
This subclass is indented under subclass 337. Subject matter including structure facilitating the taking apart or bringing together of the transmission or the parts thereof and the vehicle.

## SEE OR SEARCH CLASS:

301, Land Vehicles: Wheels and Axles, subclasses 9.1+ for a vehicle wheel of detachable sections.

**345 Traction aid:**

This subclass is indented under subclass 337. Subject matter including particular structure disclosed as equalizing the normal forces acting between two parallel drive road wheels and the road.

(1) Note. The inequality in traction which is here compensated for is normally caused by the torque of the drive transmission.

**346 With protective guard or casing:**

This subclass is indented under subclass 337. Subject matter including a protective shield or covering designed to protect the transmission or to protect an object or person adjacent the transmission.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

380, for propeller shaft casings.

## SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 606+ and 608+ for gear housings and guards not in combination with specific vehicle structure.

474, Endless Belt Power Transmission Systems or Components, subclasses 144+ for chain or belt drives having guards or housings.

**347 Mechanical movement transmission:**

This subclass is indented under subclass 337. Subject matter wherein the transmission includes a device, other than gearing, for imparting motion to one body from the motion of another body, the two motions, or some intermediate motion, being of different form, type or degree.

## SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, appropriate subclasses for mechanical movements, per se.

**348 Final drive axle movable:**

This subclass is indented under subclass 337. Subject matter wherein the power driven road wheel is supported such that its axis is movable relative to the vehicle body or frame.

(1) Note. The axle moves against the pressure of the springs or oscillates relative to the body under the influence of inequalities in the road.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

40, for steam traction engines of this type.  
227, for a resiliently mounted driven wheel in a tandem wheeled vehicle.

## SEE OR SEARCH CLASS:

301, Land Vehicles: Wheels and Axles, subclasses 133 and 136 for spring mountings of wheels on axle ends.

**349 Rigid axle:**

This subclass is indented under subclass 348. Subject matter wherein two parallel drive wheels or drive wheel axles are mounted on a common support, which support is movable relative to the vehicle body or frame.

**350 Belt or chain drive:**

This subclass is indented under subclass 349. Subject matter wherein the transmission includes a flexible endless member entrained between a pair of pulleys or sprockets.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

9.64, 217, 231, 239, 241, and 251, for belt or chain transmissions combined with the particular vehicles provided for therein.

357, 366 and 373, for other belt or chain drive combinations.

## SEE OR SEARCH CLASS:

474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for belt or chain drives, per se.

- 351 With tensioning means:**  
This subclass is indented under subclass 350. Subject matter including means to regulate the stress in the belt or chain.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
231, for belt tensioning means used with vehicles having only two wheels in tandem.
- SEE OR SEARCH CLASS:  
474, Endless Belt Power Transmission Systems or Components, subclasses 101+ for belt tensioning, per se.
- 352 With lateral support between the differential or axle housing and the vehicle frame:**  
This subclass is indented under subclass 349. Subject matter wherein significance is attributed to the structure linking the casing which surrounds the differential or live axle with the vehicle frame to prevent transverse movement of the driving road wheels with respect to the longitudinal axis of the vehicle.
- 353 With sprung differential:**  
This subclass is indented under subclass 349. Subject matter wherein the gearing which compensates for varying speeds of the drive wheels is supported directly by the vehicle frame and thus constitutes part of the weight which is supported by the spring suspension of the vehicle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
359, for a sprung differential used with an independent suspension.
- 354 And differential support feature:**  
This subclass is indented under subclass 353. Subject matter wherein significance is attributed to the structure connecting the differential to the vehicle frame.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
360, and 378+, for other differential supports.
- 355 And final gear drive:**  
This subclass is indented under subclass 353. Subject matter wherein a gear transmission extends between the differential and the vehicle road wheels.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
350+, and 357, for final gear drives of the belt or chain type.  
356, 361, 363, and 371+, for other final gear drive combinations.
- 356 And final gear drive:**  
This subclass is indented under subclass 349. Subject matter wherein a separate gear transmission extends to each of two road wheels and, where a differential is disclosed, is beyond such differential in the path of power flow.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
350, and 357, for final gear drives of the belt or chain type.  
355, 361, 363, and 371+, for other final gear drive combinations.
- 357 Belt or chain drive:**  
This subclass is indented under subclass 348. Subject matter wherein the transmission includes a flexible endless member entrained between a pair of pulleys or sprockets.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
9.64, 217, 231, 239, 241, and 251, for belt or chain transmissions combined with the particular vehicles provided for therein.  
350, 366 and 373, for other belt or chain drive combinations.
- SEE OR SEARCH CLASS:  
474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for belt or chain drives, per se.
- 358 Swinging axle, single pivot:**  
This subclass is indented under subclass 348. Subject matter wherein separate drive wheel supporting axles are supported for swinging movement in a vertical plane transverse to the

longitudinal axis of the vehicle about a common fulcrum.

**359 With sprung differential:**

This subclass is indented under subclass 348. Subject matter wherein the gearing which compensates for varying speeds of the drive wheels is supported directly by the vehicle frame and thus constitutes part of the weight which is supported by the spring suspension of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

353, for a sprung differential together with a movable rigid axle.

**360 And differential support feature:**

This subclass is indented under subclass 359. Subject matter wherein significance is attributed to the structure connecting the differential to the vehicle frame.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

354, and 378+, for other differential supports.

**361 And final gear drive:**

This subclass is indented under subclass 359. Subject matter wherein a gear transmission extends between the differential and the vehicle road wheels.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

350+, and 357, for final gear drives of the belt or chain type.

355, 356, 363, and 371+, for other final gear drive combinations.

**362 With transverse leaf spring suspension:**

This subclass is indented under subclass 359. Subject matter wherein the vehicle suspension includes a spring made up of one or more flat, elongated flexible elements which extend in a direction transverse to the longitudinal axis of the vehicle.

**363 And final gear drive:**

This subclass is indented under subclass 348. Subject matter wherein a separate gear transmission extends to each of two road wheels and, where a differential is disclosed, is beyond such differential in the path of power flow.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

350+, and 357, for final gear drives of the belt or chain type.

355, 356, 361, and 371+, for other final gear drive combinations.

**364 Variable speed or direction:**

This subclass is indented under subclass 337. Subject matter wherein the transmission includes a gear arrangement which may be controlled to (a) change the number or fractional number of revolutions made by an output load driving member for each revolution made by an input member or (b) change the direction of rotation of an output load driving member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

65.7, for change speed gearing in combination with an electric motor drive.

230, for a change speed means utilized with a vehicle having only two wheels arranged in tandem.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 325+ for interchangeably locked change speed transmissions, per se.

475, Planetary Gear Transmission Systems or Components, subclasses 198+ for a change speed transmission in series with a differential.

**365 Plural:**

This subclass is indented under subclass 364. Subject matter wherein more than one speed varying or direction changing transmission is provided in the power path(s) to the road wheels.

(1) Note. The two or more transmissions may be in series or in parallel.

(2) Note. A change speed or direction transmission that is duplicated at each of two drive wheels is not found in this subclass but in one of the "final drive" subclasses or in the subclass providing for the particular transmission.

- (3) Note. Fluid drives not of the hydrostatic type combined with an additional change speed or direction transmission have been placed in subclass 367.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 305+, for plural transmissions one of which is of the hydrostatic type.  
367, see (3) Note above.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclass 745 for plural transmissions which may be used in vehicle combinations.  
475, Planetary Gear Transmission Systems or Components, subclasses 207+ for; a nonplanetary transmission combined with a planetary transmission.

### 366 **Belt or chain:**

This subclass is indented under subclass 364. Subject matter wherein the change speed or direction transmission includes a flexible endless member entrained between a pair of pulleys or sprockets.

SEE OR SEARCH CLASS:

- 474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for belt or chain drives, per se.

### 367 **Fluid drive:**

This subclass is indented under subclass 364. Subject matter wherein the connection between the power shaft and road wheels includes the transmission of torque through a fluid medium.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 301, for a turbine motor driven by the fluid product of combustion.  
305+, for a pump and motor drive of the hydrostatic type.

SEE OR SEARCH CLASS:

- 60, Power Plants, subclasses 330+ for coaxial impeller and turbine units, per se.

- 74, Machine Element or Mechanism, subclasses 718, 720 and 730.1+ for combinations of fluid drives and gearing.  
192, Clutches and Power-Stop Control, subclasses 21.5 and 58.1+ for fluid drives of the clutch type.  
475, Planetary Gear Transmission Systems or Components, subclasses 31+, for a fluid drive in a planetary transmission.

### 368 **Friction drive:**

This subclass is indented under subclass 364. Subject matter wherein the transmission includes gearing of the toothless type.

SEE OR SEARCH CLASS:

- 475, Planetary Gear Transmission Systems or Components, subclasses 183+, for friction planetary gearing.  
476, Friction Gear Transmission Systems or Components, for friction gear transmissions.

### 369 **Planetary:**

This subclass is indented under subclass 364. Subject matter wherein the transmission includes first and second engaging gears each having a central axis and wherein, during at least one mode of operation, the axis of one of the gears follows a path extending around the axis of the other of the gears.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, appropriate subclasses for planetary transmissions, per se.  
475, Planetary Gear Transmission Systems or Components, for planetary transmissions, per se.

### 370 **With brake:**

This subclass is indented under subclass 337. Subject matter wherein significance is attributed to the means for stopping the road wheel.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 6.2+, for brakes used for steering by driving purposes.

SEE OR SEARCH CLASS:

- 188, Brakes, for brakes, per se.

- 192, Clutches and Power-Stop Control, subclasses 215+ for the combination of transmission control and brake.
- 371 Final gear drive at each of two parallel wheels:**  
This subclass is indented under subclass 337. Subject matter wherein a separate gear transmission extends to each of two road wheels and, where a differential is disclosed, is beyond such differential in the path of power flow.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
342, for final drive gears which engage the traction surface of the ground wheels.  
355, 356, 361, and 363, for other final gear drive combinations.
- SEE OR SEARCH CLASS:  
475, Planetary Gear Transmission Systems or Components, subclasses 198+ for a variable speed or direction transmission combined with a differential.
- 372 Planetary:**  
This subclass is indented under subclass 371. Subject matter wherein each separate gear transmission includes first and second engaging gears each having a central axis and wherein, during at least one mode of operation, the axis of one of the gears follows a path extending around the axis of the other of the gears.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
369, for variable speed or direction planetary gearing associated with a vehicle wheel.
- SEE OR SEARCH CLASS:  
475, Planetary Gear Transmission Systems, or Components, for planetary transmissions, per se.
- 373 Belt or chain:**  
This subclass is indented under subclass 371. Subject matter wherein each separate gear transmission includes a flexible endless member entrained between a pair of pulleys or sprockets.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
350+, and 357, for belt or chain final drives used with movable drive axles and see the search notes thereunder.
- 374 Gear transmission relationship to frame or axle:**  
This subclass is indented under subclass 337. Subject matter wherein significance is attributed to the spatial relationship between the vehicle gear transmission and the vehicle frame or axle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
292+, for a specific relationship between the motor, transmission and vehicle frame.
- 375 Transmission is differential:**  
This subclass is indented under subclass 374. Subject matter wherein the gear transmission is the differential.
- 376 Shaft relationship to frame or shaft:**  
This subclass is indented under subclass 337. Subject matter wherein significance is attributed to the spatial relationship between (a) a transmission shaft and the vehicle frame or (b) the various shafts of the transmission.
- 377 Transmission support:**  
This subclass is indented under subclass 337. Subject matter wherein significance is attributed to the structure that sustains the transmission against the force of gravity.
- (1) Note. To be placed here both the transmission and vehicle structure must be positively claimed. In the absence of a claimed transmission patents should be placed in Class 180 subclass 312.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
312, see (1) Note above.
- 378 Differential or axle housing:**  
This subclass is indented under subclass 377. Subject matter wherein the transmission supported is the differential or axle housing.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
354, and 360, for differential supports in combination with movable drive axles.
- 379 Shaft:**  
This subclass is indented under subclass 377. Subject matter wherein the transmission supported is a shaft.
- SEE OR SEARCH CLASS:  
384, Bearings, appropriate subclasses for bearing supports and shaft hangers.
- 380 With propeller shaft casing, (e.g., torque tube):**  
This subclass is indented under subclass 379. Subject matter wherein the support includes an elongated housing that surrounds the vehicle drive shaft.
- (1) Note. For purposes of this subclass “propeller shaft”, (drive shaft), normally refers to the shaft extending lengthwise of the vehicle between the main gear transmission output and the differential, but could also refer to the shaft between the engine and the main gear transmission input where the transmission is located adjacent the differential.
- 381 Vibration damping:**  
This subclass is indented under subclass 379. Subject matter wherein the support includes means, usually flexible, to suppress the transmission of force between the shaft and structure from which the shaft is supported.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
380, for the combination of vibration damping and propeller shaft casing.
- SEE OR SEARCH CLASS:  
384, Bearings, appropriate subclasses for resilient bearing supports.  
464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclass 180 for shafting, per se, having vibration dampening structure.
- 382 Flexible support:**  
This subclass is indented under subclass 377. Subject matter wherein the support is characterized by its resilience.
- 383 With particular drive coupling:**  
This subclass is indented under subclass 337. Subject matter wherein the transmission includes a specifically claimed torque transmitting connection.
- (1) Note. The connection may take the form of a joint or coupling as in Classes 403 and 464 or a clutch as in Class 192.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
76, for miscellaneous devices that allow one driven road wheel to rotate faster than a parallel road wheel.
- SEE OR SEARCH CLASS:  
74, Machine Element or Mechanism, subclass 650 for nonplanetary devices which may be used to allow differential rotation of parallel vehicle wheels.  
192, Clutches and Power-Stop Control, subclasses 49+ for clutches which may allow differential rotation of parallel vehicle wheels.
- 384 Relative axial movement:**  
This subclass is indented under subclass 383. Subject matter wherein the torque transmitting connection accommodates relative movement between the connected members along their rotational axes.
- 385 Drive connection to wheel:**  
This subclass is indented under subclass 383. Subject matter wherein the torque transmitting connection includes or is adjacent to the vehicle wheel.
- (1) Note. See subclass 384 for a drive connection to the wheel which permits relative axial movement.
- SEE OR SEARCH CLASS:  
192, Clutches and Power-Stop Control, subclasses 49+ for clutches in a drive line to parallel vehicle wheels.

- 301, Land Vehicles: Wheels and Axles, appropriate subclasses for wheels, axles and combinations thereof.
- 403, Joints and Connections, subclass 1 for disengageable connections which may be to a wheel.

#### 400 **STEERING GEAR:**

This subclass is indented under the class definition. Subject matter comprising means for guiding vehicles involving motor vehicle structure or otherwise limited to motor vehicles as distinguished from drawn vehicles.

- (1) Note. The titled phrase "STEERING GEAR" is defined to be a total operating system for guiding a vehicle, and is not meant to solely include or to be limited to the presence of a mechanical element known as a gear.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 6.2+, for a motor vehicle which is steered by creating a difference between the driving effort developed by one or more traction elements located on one side of the vehicle and the driving effort developed by one or more traction elements located on the other side thereof; and see especially subclasses 6.24+ for the combination therewith of means (e.g., steerable wheels) for manually steering such a vehicle.
- 9.38, for a motor vehicle having a special driving device in the nature of an endless, flexible track and having also a ground-engaging wheel for assisting in propelling or supporting the vehicle and further wherein the wheel is adapted to be turned (i.e., pivoted) for steering the vehicle.
- 9.44+, for a motor vehicle having a special driving device in the nature of an endless, flexible track and having also means for steering the vehicle.
- 12+, for a motor vehicle having a motor-carrying attachment in the nature of a wheeled frame and wherein the wheels of the frame are driven and steered.
- 23+, for a motor vehicle having a wheel arrangement comprising five or more wheels and wherein one or more of

the wheels are driven and steered; and in particular subclass 24.01 for such a vehicle wherein one of the wheels is positively moved by external means for a vehicle-guiding purpose and another wheel longitudinally spaced from the one wheel is either positively and simultaneously moved for a steering purpose or is mounted to move incident to a turning movement of the vehicle.

- 37+, for a motor vehicle of the steam traction type having steering wheels which are driven.
- 167+, for a motor vehicle having means for controlling its operation responsive to either electromagnetic radiation, magnetic force, or sound waves received from a source, or reflected from an object or a surface, located from the vehicle.
- 204+, for a motor vehicle having a device for programmably operating the vehicle's steerable wheels.
- 211+, for a motor vehicle having a wheel arrangement comprising three wheels and wherein at least one of the wheels is driven and steered.
- 222, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein one of the wheels is driven frictionally and further wherein means is provided for steering that wheel.
- 223+, for a motor vehicle having a wheel arrangement comprising two wheels in tandem relationship and wherein at least one of the wheels is driven and steered.
- 234+, for a motor vehicle having four wheels driven and provided with means for steering all of the driven wheels.
- 252+, for a motor vehicle having at least one wheel which is both driven and steerable.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, subclasses 263+ for occupant propelled vehicles including steering, and subclasses 771+ for other land vehicles including occupant steering.



**401 Steering by terrestrial guide:**

This subclass is indented under subclass 400. Subject matter comprising a land based steering datum for cooperating with a datum sensing means on a vehicle wherein the datum sensing means cooperates with control means for steering the vehicle.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

167+, for a motor vehicle having means for controlling its operation responsive to either electromagnetic radiation, magnetic force, or sound waves received from a source, or reflected from an object or surface, located apart from the vehicle.

**SEE OR SEARCH CLASS:**

104, Railways, subclass 244.1 for a derailment guard for a railway vehicle, which guard includes a vehicle-mounted feeler element which is adapted to contact an existing channel or furrow in or on the ground and to guide the vehicle in a course which corresponds to that of the channel or furrow.

172, Earth Working, subclasses 23+, and particularly indented subclass 26, for earth working apparatus provided with means adapted to contact an elongate shoulder or a channel on or in the ground for the purpose of guiding the apparatus.

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 which is offset from the principal supporting wheel 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., curb) for a vehicle-steering purpose.

**402 No mechanical connection between steering shaft and steering gear:**

This subclass is indented under subclass 400. Subject matter wherein there is no mechanical linkage joining the steering shaft and the steering gear.

**403 Hydraulic:**

This subclass is indented under subclass 402. Subject matter wherein the steering shaft controls a fluid valve which regulates the flow of a pressurized fluid to a steering gear.

**404 Power assist alarms or disablers:**

This subclass is indented under subclass 400. Subject matter comprising either a means for (a) stopping the operation of the power assist in response to the malfunctioning thereof, or (b) producing a humanly perceptible signal in response to a predetermined condition of the power assist.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

400, for detectors and sensors for steering systems where a control system is not being claimed.

405+, for failure systems which further include a backup power assist.

**405 With alternate emergency power means (e.g., pump, gearing, etc.):**

This subclass is indented under subclass 400. Subject matter provided with secondary or backup means to ensure the steering of a vehicle with a mechanical advantage to the vehicle operator upon failure of a part of a primary steering means.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

271+, for a motor vehicle which is provided with means for promoting the safety of the vehicle, or its occupant or load, or an external object. (Inasmuch as this subclass 133 was not within the scope of the classification project which established subclass 271, principally from former subclasses 82+, there is no assurance that this subclass

does not presently contain art which is within the scope of subclass 271).

**406 With fluid backup:**

This subclass is indented under subclass 405. Subject matter wherein the secondary means is hydraulic.

**407 With electrical backup:**

This subclass is indented under subclass 405. Subject matter wherein the secondary means is electrical.

**408 Each wheel steerable:**

This subclass is indented under subclass 400. Subject matter wherein the vehicle comprises main and auxiliary wheels and there is provided a means for steering each of the wheels of the vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, subclass 91.1 for a nonmotor vehicle including steering gear which controls four supporting wheels.

**409 Occupant steered:**

This subclass is indented under subclass 408. Subject matter wherein all of the power for steering the wheels of the vehicle is provided by an occupant (i.e., no power assist).

**410 With condition modulated steering:**

This subclass is indented under subclass 409. Subject matter wherein there is provided a means responsive to either (a) the condition of operation of the vehicle or (b) a change thereof in order to change the steering ratio between the main and auxiliary wheels.

**411 Independently controlled steerable wheels:**

This subclass is indented under subclass 408. Subject matter wherein each wheel can be independently steered or controlled.

**412 With electric power assist:**

This subclass is indented under subclass 408. Subject matter including means movable by an electric motor to provide power to assist the steering of a wheel of the vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

445, for subject matter directed to an electric power assist motor for steering the rear wheels of a motor vehicle

**413 With electric power assist to all wheels:**

This subclass is indented under subclass 412. Subject matter wherein electric means provides the power assist for all of the wheels of the vehicle.

**414 With fluid power assist:**

This subclass is indented under subclass 408. Subject matter in which means movable by the application of pressure fluid thereto is positively connected to each vehicle wheel.

**415 With electrical control:**

This subclass is indented under subclass 414. Subject matter in which electrical energy is utilized for adjusting the flow of pressurized fluid to the movable means.

**416 With mechanical power assist:**

This subclass is indented under subclass 408. Subject matter in which there is provided motive means movable by the application of mechanical power (obtained, for example, from a power take-off mechanism) thereto to provide substantially all of the force required for steering the wheels of the vehicle.

**417 With fluid power assist:**

This subclass is indented under subclass 400. Subject matter in which there is provided motive means movable by the application of a pressurized fluid thereto to provide substantially all of the force required for guiding the vehicle, the initiating and/or remaining force being provided by a vehicle operator in guiding the vehicle.

**418 Between articulated wheeled vehicle sections:**

This subclass is indented under subclass 417. Subject matter wherein the vehicle comprises a plurality of relatively movable wheeled parts, the motive means causing relative movement between the vehicle parts for guiding the vehicle.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
235, for a motor vehicle having four wheels driven and provided with means for steering all of the driven wheels and wherein the means includes articulation of the frame of the vehicle.
- 419 Combined with another steering mode:**  
This subclass is indented under subclass 418. Subject matter wherein the vehicle includes a steering means in addition to the means for steering by relative movement between the wheeled vehicle parts for guiding the vehicle.
- (1) Note. The plural steering means may be utilized singly or together as desired to perform the steering operation.
- 420 Reciprocating power assist:**  
This subclass is indented under subclass 418. Subject matter wherein the means movable by the application of pressurized fluid comprises an expansible chamber motive means, the relatively movable parts thereof being movable in a straight line.
- 421 With condition modulated steering:**  
This subclass is indented under subclass 417. Subject matter wherein there is provided a means responsive either to (a) a condition of operation of the vehicle or (b) a change thereof for continuously and proportionally controlling the flow of pressure fluid to the motive means to compensate for the influence of the condition or change thereof in the guidance of the vehicle by the operator.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
404, for devices which sense a condition and disable or indicate failure or malfunction of the power assist
- 422 With electrical control:**  
This subclass is indented under subclass 421. Subject matter in which electrical energy is utilized for adjusting the flow of pressure fluid to the movable means.
- 423 Vehicle speed condition only:**  
This subclass is indented under subclass 422. Subject matter in which the condition of operation is the velocity only of the vehicle for controlling the flow of pressure fluid to the movable means.
- 424 With swinging axle:**  
This subclass is indented under subclass 417. Subject matter in which the vehicle includes an elongate pivoted wheeled supporting member having a width at least substantially the width of the vehicle, the motive means moving the pivoted supporting member about its pivot to guide the vehicle.
- 425 Including flexible power transmitting means:**  
This subclass is indented under subclass 417. Subject matter in which there is provided an elongate chain or cable means interconnecting the motive means with steerable wheel means to guide the vehicle.
- 426 Steering column supported:**  
This subclass is indented under subclass 417. Subject matter in which the motive means is either (a) attached to, (b) integral with, or (c) otherwise supported by a steering column of the vehicle.
- 427 Including rack gear means:**  
This subclass is indented under subclass 426. Subject matter in which there is provided force transmitting means comprising interengaging gear means one of which being an elongate toothed barlike member of determinate length movable in a reciprocating motion.
- (1) Note. The barlike member may be a piston connecting rod or may be a toothed side of a piston (working member).
- 428 With rack and pinion gearing intermediate steering shaft and power assist:**  
This subclass is indented under subclass 417. Subject matter in which there is provided interengaging gear means interconnecting a vehicle steering shaft or an extension thereof with either the motive means or a fluid control means therefor for guiding the vehicle, one of the interengaging gear means having the form of an elongate toothed bar.

- 429 Having rotary working member:**  
This subclass is indented under subclass 417. Subject matter wherein the motive means comprises a working member moving about an axis.
- 430 Having flexible working member:**  
This subclass is indented under subclass 417. Subject matter wherein the motive means comprises a working member having a pliable displaceable member comprising the movable wall of an expansible chamber device.
- 431 Steering linkage includes interengaging gear means:**  
This subclass is indented under subclass 417. Subject matter in which the motive means acts on force transmitting members comprising relatively moving meshing toothed members for moving a ground engaging wheel to thereby guide the vehicle.
- 432 With plural working members:**  
This subclass is indented under subclass 417. Subject matter in which the motive means includes at least two separate force or work producing members.
- 433 Working member movement traverses vehicle path:**  
This subclass is indented under subclass 432. Subject matter in which the force or work producing members move in a direction extending at least generally from side to side of the vehicle in a direction traverse to its path of travel.
- 434 Working member movement traverses vehicle path:**  
This subclass is indented under subclass 417. Subject matter in which the motive means includes a force or work producing member having movement from side to side of the vehicle in a direction substantially traverse to its path of travel.
- 435 Moves separate arm for each wheel steering arm:**  
This subclass is indented under subclass 434. Subject matter in which the force or work producing member is connected to actuate a plurality of force transmitting members each of which being connected to steer a separate steerable wheel.
- 436 Working member part engages wheel steering arm:**  
This subclass is indented under subclass 434. Subject matter wherein the force producing member is connected to a swinging lever or crank of a steerable ground engaging wheel.
- 437 Working member part engages tie rod:**  
This subclass is indented under subclass 434. Subject matter wherein the force producing member is connected to a force transmitting member which is connected to a steering wheel means at its ends.
- 438 Movable working member engages wheel steering arm:**  
This subclass is indented under subclass 417. Subject matter wherein the motive means includes a force or work producing member directly connected to a swinging lever or crank of a steerable ground engaging wheel.
- 439 Movable working member is a moving cylinder:**  
This subclass is indented under subclass 417. Subject matter in which the motive means includes a force or work producing member comprising a movable housing or outer member thereof which surrounds a fixed member of substantially like dimension.
- 440 With linkage intermediate working member and wheel steering arm:**  
This subclass is indented under subclass 417. Subject matter in which the motive means includes a force or work producing member connected to at least one force transmitting member having connection either directly or via another force transmitting member to a swinging lever or crank of a steerable ground engaging wheel.
- 441 Device to control pressure (e.g., valve):**  
This subclass is indented under subclass 417. Subject matter designed to vary the fluid pressure in a fluid power assisted steering system.
- 442 Hydraulic circuit:**  
This subclass is indented under subclass 417. Subject matter wherein a number of fluid logic devices are connected together forming a system for providing fluid to a power steering device.

**443 With electric power assist:**

This subclass is indented under subclass 400. Subject matter in which there is provided motive means movable by the application of electrical power (e.g., an electric servomotor) thereto to provide substantially all of the force required for guiding the vehicle, the initiating and/or remaining force being provided by a vehicle operator in guiding the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

400, for detectors and sensors for steering systems where a control system is not being claimed.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, subclasses 560+ for positional servo systems (e.g., servomechanisms); and see particularly subclass 628 for "feedback" systems.

**444 Specific mechanical feature:**

This subclass is indented under subclass 443. Subject matter directed to a mechanical linkage between the electric power means and the steering gear.

**445 Controlling rear wheels:**

This subclass is indented under subclass 443. Subject matter directed to an electric motor for steering the rear wheels of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

412+, for a vehicle having electrical power assisted rear wheel steering and also having front steerable wheels.

**446 Condition modulated:**

This subclass is indented under subclass 443. Subject matter wherein there is provided a means responsive either to (a) a condition of operation of the vehicle or (b) a change thereof for continuously and proportionally controlling the electrically powered motive means to compensate for the influence of the condition or change thereof in the guidance of the vehicle by the operator.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

404, for devices which sense a condition and disable or indicate failure or malfunction of the power assist.

**447 With mechanical power assist:**

This subclass is indented under subclass 400. Subject matter in which there is provided motive means movable by the application of mechanical power (obtained, for example, from a power take-off mechanism) thereto to provide substantially all of the force required for guiding the vehicle, the initiating and/or remaining force being provided a vehicle operator in guiding the vehicle.

(1) Note. When the invention relates to steering gear and transmission mechanism for actuating it, the fact that a shaft rotating constantly in one direction supplies the power is regarded as evidence that the steering gear is driven by power.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

17, for steering by differential rotation of the wheels on opposite sides of the vehicle.

18, for steering by driving controlled by steering of this type.

20, power steering of some steam rollers.

**448 Swinging axle:**

This subclass is indented under subclass 447. Subject matter wherein the mechanical power is applied to steer a continuous axle which carries a wheel in the vicinity of each of its ends.

**449 Bogie truck having more than one axle:**

This subclass is indented under subclass 447. Subject matter wherein the mechanical power is applied to steer a bogie truck having more than one axis.

## CROSS-REFERENCE ART COLLECTIONS

**900 AGRICULTURAL-TYPE TRACTORS:**

Art collection of motor vehicles wherein the vehicle is in the nature of either a traction vehicle for pulling a farm implement or a vehicle which not only moves but also supports such an implement and wherein the vehicle includes

one or more features which particularly adapt it for an agriculture-related use (e.g., cultivating, harvesting, etc.).

**901 DEVICES FOR TRAVERSING VERTICAL SURFACES:**

Art collection of motor vehicles wherein the vehicle is in the nature of a device which is particularly adapted (e.g., by magnetic means) to move itself along a surface which is predominantly vertical.

**902 SHOCK OR VIBRATION ABSORBING OR TRANSMITTING MEANS BETWEEN WHEEL SUSPENSION AND MOTOR:**

Art collection of motor vehicles wherein the vehicle is provided with means located between its motor and the structure for suspending its (usually front) wheels for absorbing or transmitting a force in the nature of a shock or vibration.

**903 AIRSTREAM REACTIVE VEHICLE OR VEHICLE STRUCTURE:**

Art collection of motor vehicles wherein the vehicle or a component thereof is so configured as to react with the ambient air under the condition of relative movement of the vehicle and the air.

**904 TRACTION DOLLIES FOR AIRCRAFT:**

Art collection of motor vehicles wherein the vehicles is a traction dolly employed to move aircraft on the ground with the vehicle connectable to the aircraft usually at the aircraft's steerable wheel.

**905 AXLES:**

Art collection of axles for motor vehicles.

**906 ADJUSTABLE AXLES:**

Art collection of axles for motor vehicles wherein the axle is adjustable to vary the distance between the wheels mounted on the axle.

**907 MOTORIZED WHEELCHAIRS:**

Art collection of wheelchairs equipped with motors for driving the wheelchair.

**908 MOTOR VEHICLES WITH SHORT WHEEL BASE:**

Art collection of motor vehicles wherein the wheelbase of the vehicle is shorter than normal so that usually only the operator of the vehicle

may be carried by the vehicle (e.g., lift trucks of the industrial tractors).

- (1) Note. Farm or agricultural tractors are excluded from this collection as an art collection of agricultural tractors will be found in subclass 900.

**FOREIGN ART COLLECTIONS**

The definitions below correspond to the abolished subclasses from which these collections were formed. See the Foreign Art Collection schedule of this class for specific correspondences. [Note: The titles and definitions for indented art collections include all the details of the one(s) that are hierarchically superior.]

**FOR 100 Combined with nonelectric drive means:**

Foreign art collections including vehicles wherein the electric motor is combined with a prime mover, other than another electric motor, for driving the vehicle.

- (1) Note. The electric motor and the prime mover may act on the same or different wheels of the vehicle and may be usable alternately or jointly but both remain on the vehicle at all times.
- (2) Note. This subclass is intended to include a prime-mover-generator-electric motor drive train provided they are all mechanically interconnected with the drive wheels. Such an apparatus is known as a hybrid drive vehicle.

**FOR 101 Generating means is driven by a prime mover:**

Foreign art collections including vehicles wherein the means for generating power for the electric motor is driven by a prime mover other than another electric motor.

- (1) Note. The prime mover is usually a gasoline or diesel engine and the drive system is usually referred to as a gas-electric or diesel-electric drive.

END