CLASS 81, TOOLS

SECTION I - CLASS DEFINITION

In this class are tools which are not structurally limited to any classified art.

This class is limited to hand tools, except in the subclasses noted in Subclass References to the Current Class, below.

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.1, -3.33, 9.1, 9.51, 15.2, 17+, 52.3+, 52.4+, 54+, for subclasses in which the subject matter is not limited to hand tools.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 700+ for a hand tool for assembling or disassembling parts and meeting the criteria specified in the subclass 700 definition.

30, Cutlery, subclasses 92+ for pipe and rod cutters.

72, Metal Deforming, subclasses 409+ for a plier-type bending tool, and subclasses 462+ for a metal deforming tool, per se, not elsewhere classifiable. If assembly is involved, as in crimping a sleeve on a wire, see Class 29, Metal Working, subclass 700.

140, Wireworking, subclasses 93.2+ for a tool for tightening a wire or band around a stack of items and applying or forming a fastener or seal to a wire or band.

166, Wells, subclasses 55+ for apparatus for cutting and perforating well tubing in situ.

173, Tool Driving or Impacting, appropriate subclass for subject matter directed to driving or impacting a tool, when such subject matter includes combined features peculiar to tool driving, but which does not include features limiting the subject matter to a specific tool art, such as specific shape of the work contacting portion of a tool, related tools, or an opposed work support. Only subclasses 52.3+ of Class 81 has been cleared as to subject.

254, Implements or Apparatus for Applying Pushing or Pulling Force, appropriate subclasses for a tool which includes a force multiplier or energy transducer to apply the pushing or pulling force. Pliers, clamps, or other hand grippers by which force is applied directly by the hand are classified in Class 81.

269, Work Holders, subclasses 3+ for patents to an operator supported work holder. Class 269 is the residual locus for patents to a device for clamping, supporting and/or holding an article (or articles) in position to be operated on or treated.

294, Handling: Hand and Hoist-Line Implements, appropriate subclasses for a hand-held holder for the transportation or mere handling of an article.

SUBCLASSES

2 Wrenches combined with pumps or oilers or with both.

SEE OR SEARCH CLASS:

222, Dispensing, for dispensers, per se.

3.05 Devices for extracting a shell, projectile or wad from a gun barrel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.1, to 3.49, inclusive, and subclass 302 for other tools capable of similar work.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 700+ for pin inserters and removers.

294, Handling: Hand and Hoist-Line Implements, subclasses 86.4+.

3.07 RECEPTACLE CLOSURE REMOVER: This subclass is indented under the class definition. Tools for removing closures from receptacles, and adjunct to such removers not provided for elsewhere.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 700+ for pin inserters and removers; and see subclass 808 for pinpoint extractors and inserters.

30, Cutlery, subclass 1.5 for a necked receptacle seal cutter; and subclasses 2 and 400+ for a carton or can opener.

53, Package Making, subclasses 381.1+ for a packaging apparatus having a receptacle opener or flap manipulator.

76, Metal Tools and Implements, Making, subclasses 101.1+ for blanks and processes for making receptacle closure remover.

86, Ammunition and Explosive-Charge Making, subclass 37 and 38 for devices for removing primers from cartridges.

164, Metal Founding, subclasses 213+ for apparatus including pattern removing means and subclasses 401+ for strippers or ejectors.

222, Dispensing, subclasses 81+ for dispensing devices, including cutter or punch type receptacle opening means.

254, Implements or Apparatus for Applying Pushing or Pulling Force, appropriate subclasses for pulling and prying devices of general application.

294, Handling: Hand and Hoist-Line Implements, particularly subclass 12, 27, 61, and 86+.

3.08 Having discrete retainer or receptacle for removed closure:

This subclass is indented under subclass 3.07. Receptacle closure remover wherein a container or other means is provided which is distinct from the closure engaging and removing portion and which is adapted to receive and retain the closure after it has been removed from the receptacle.

3.09 Combined or plural:

This subclass is indented under subclass 3.07. Tool comprising either (1) a receptacle closure remover combined with some other device which is used independently of the remover, the combination of which is not provided for in another class, or (2) a plurality of receptacle closure removers.

SEE OR SEARCH CLASS:

7, Compound Tools, subclasses 151+ for a receptacle closure remover combined with another type tool.

53, Package Making, subclasses 287+ for apparatus to apply closures to filled receptacles, and subclasses 381.1+ for receptacle opening, and see the Notes thereto for the line.

86, Ammunition and Explosive-Charge Making, subclass 28 and 37+ for similar devices used in ammunition loading.

3.15 Attached to receptacle or closure:

This subclass is indented under subclass 3.09. Receptacle closure remover which is connected to or combined with the receptacle or the closure.

(1) Note. The receptacle classes (see Search Notes below) take the claimed combination of a receptacle or receptacle closure with a means for removing a closure from that receptacle. This class take receptacle closure removers, per se, capable of repeated use and particularly in this subclass, combinations of a first receptacle with closure removal structure mounted thereon and operative only for removing closures from other receptacles where no more structure of the first receptacle is recited than is required to constitute or mount the closure remover.

SEE OR SEARCH CLASS:

215, Bottles and Jars, subclass 225 and 295+ for a bottle or jar closure having means to remove or facilitate removal of that closure or another closure on the same bottle or jar.

220, Receptacles, subclasses 260+ for closures which include opening arrangements.

3.2 Receptacle closure removers which are (1) power-driven or (2) actuated by vacuum or fluid pressure means.

SEE OR SEARCH CLASS:

53, Package Making, subclass 381 for machines which position closed receptacles and remove or shift the receptacle closure.

3.25 Wall or surface mounted or supported:

This subclass is indented under subclass 3.07. Receptacle closure remover which is mounted upon a wall or other supporting surface.

(1) Note. Receptacle closure removers peculiarly designed so as to require mounting for proper operation have been placed in this subclass or indented subclasses even though not claimed as wall or surface mounted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.1, for wall mounted devices including means to receive the receptacle closure.

3.2, for power driven and/or vacuum or fluid pressure actuated receptacle removers.

3.27 Lever or prying type:

This subclass is indented under subclass 3.25. Receptacle closure remover comprising either (1) a rigid element which transmit a force applied at a first point along its length to a second point along its length by pivoting about a third point, whereby the closure or its fastener is forced away from the receptacle, or (2) a portion adapted to engage a closure or its fastener and force it away from the receptacle by a twisting or prying action.

3.29 For engaging receptacle about closure (e.g., socket type):

This subclass is indented under subclass 3.36. Remover wherein the receptacle engaging means is applied over the closure to engage the receptacle circumferentially about the closure.

3.31 This subclass is indented under subclass 3.25. Removers combined with means to support and/or grasp the receptacle.

(1) Note. Removers having structure which engages the receptacle during removal of the closure but does not support or grasp the receptacle are excluded.

(2) Note. This subclass and the indented subclass include receptacle holding or grasping means, per se, as well as in combination with closure engaging means.

(3) Note. For can openers having receptacle supports, see Class 30, Cutlery, subclasses 436, 447 and 448.

SEE OR SEARCH CLASS:

269, Work Holders, appropriate subclasses. Class 269 is the residual locus for patents to a device for clamping, supporting and/or holding an article (or articles) in position to be operated on or treated. See notes thereunder for other related loci.

3.32 This subclass is indented under subclass 3.31. Removers having supporting means extending under the receptacle.

(1) Note. The means may include the surface upon which the closure remover is mounted.

(2) Note. For hand manipulated closure removers having receptacle bottom supports, see this class, subclass 3.39.

(3) Note. For receptacle supports in general, see Class 248, Supports, particularly subclasses 154, 310 and 311.2.

3.33 This subclass is indented under subclass 3.25. Removers including a rotary device for engaging the closure, such as a cork-screw, and mechanism comprising a gear or lever to actuate the rotary device, either to rotate it or translate it, or both.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.31, and 3.32, for similar devices having in addition means to grasp or support the receptacle.

3.35 This subclass is indented under subclass 3.25. Removers in which the element which engages the closure can be moved into a handle or over the handle, i.e., can be folded, collapsed or placed into close engagement with the handle.

(1) Note. For sheathed cutlery, see Class 30, Cutlery, subclasses 151+.

SEE OR SEARCH CLASS:

7, Compound Tools, subclass 118 for combinations of closure remover and pocket knife.

3.36 This subclass is indented under subclass 3.25. Removers in which in addition to the closure engaging part there is means engaging the receptacle to aid in the closure removing operation.

(1) Note. This subclass and the indented subclasses, particularly subclass 3.39, include receptacle engaging means, per se, as well as in combination with closure engaging means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.31, and 3.32, for wall or surface mounted closure removers having receptacle supporting or grasping means.

3.37 This subclass is indented under subclass 3.36. Removers in which the closure engaging part is given a translating, i.e., a linear or substantially linear motion by means including a gear or lever element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.31, 3.32 and 3.33, for wall mounted closure removers having a lever or gear translated closure remover.

3.39 This subclass is indented under subclass 3.36. Removers in which the additional receptacle engaging means extends under the receptacle to support it.

(1) Note. This subclass includes devices, per se, intended to grasp or hold the receptacle as well as the combination thereof with means to engage the closure to remove it.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.32, for wall mounted closure removers having bottom supports for receptacles.

3.4 This subclass is indented under subclass 3.25. Removers not provided for in the subclasses indented hereunder, (1) having means to grasp the closure, or (2) comprising means to grasp the receptacle to hold it during the removal of the closure.

(1) Note. For pliers or tongs of general application see this class, subclasses 300+.

(2) Note. For grapples in general, see Class 294, Handling: Hand and Hoist-Line Implements, subclasses 27.1+ and 86.4+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.31, and 3.32, for wall mounted closure removers having receptacle grasping means, and subclass 3.39.
3.46, for tong or plier-like devices for prying off receptacle closures.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 222+ for piston ring contractors for compressing piston rings around a piston and for contracting single piston rings and holding them contracted for the reception of a mandrel holder.

3.41 This subclass is indented under subclass 3.4. Removers , comprising two or more finger-like members which grip the receptacle closure by expanding or contracting motion.

(1) Note. For closure removers of similar nature wherein the members are joined at their ends to form loops, see this class, subclass 3.34.

3.42 This subclass is indented under subclass 3.4. Removers in which at least one closure engaging part reciprocates, i.e., has a linear motion, to engage and disengage the closure.

(1) Note. Removers in which the closure engaging parts move about a pivot in engaging and disengaging the closure, but can be adjusted to various sizes by linear motion, are classified in this class, subclass 3.44.

3.43 This subclass is indented under subclass 3.4. Removers comprising a deformable strip-like member which is caused to engage tightly about the closure or receptacle by a means which tightens or shortens the strip.

(1) Note. See this class, subclass 3.4 for removers having a strip-like member which is tightened about the closure or receptacle by manually gripping portions thereof; subclass 3.44, for removers having rigid members which move about a pivot to engage the receptacle or closure, and subclasses 64+ for flexible wrenches of general application.

(2) Note. For similar grapples of general application, see Class 294, Handling: Hand and Hoist-Line Implements, subclasses 33, 99.1 and 100.

3.44 This subclass is indented under subclass 3.4. Removers having two or more receptacle engaging portions which are pivotally connected so that they move about said pivot to engage and disengage the receptacle or closure.

(1) Note. For pivoted jaw grapples of general application, see Class 294, Handling: Hand and Hoist-Line Implements, subclasses 28, 97, 104, and 106 and their indented subclasses.

3.45 This subclass is indented under subclass 3.07. Removers including a screw member which pierces the closure.

(1) Note. For wire working processes of making corkscrews, see Class 140, Wireworking, subclass 86.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.09, 3.33, 3.35, 3.37, and 3.38, for the organizations there provided for, including screw type removers.

3.47 This subclass is indented under subclass 3.46. Removers having a portion which impales the closure or is inserted in an opening therein or in a bale or equivalent part on the closure.

(1) Note. For impaling or inserting type removers having no levering means, see this class, subclasses 3.48 and 3.49.

3.48 This subclass is indented under subclass 3.07. Removers including a portion which impales the closure or is inserted in an opening therein or in a bale or equivalent part on the closure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.47, for similar closure removers having a levering means combined therewith.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 164.5+ for ice picks.

128, Surgery, subclass 329 for surgical puncturing means.

294, Handling: Hand and Hoist-Line Implements, subclass 61 for spears of general use.

3.49 This subclass is indented under subclass 3.48. Removers having a part or parts projecting from the side of the impaling or inserting member or including an abutment or indentation in the side of said member, which abutment, indentation, part or parts act against the receptacle closure to assist removal.

3.5 Special tools for assembling and operating on spectacle frames and lenses.

3.55 Levering or prying type:
This subclass is indented under subclass 3.07. Remover comprising either (1) a rigid element which transmits a force applied at a first point along it length to a second point along it length by pivoting about a third point, whereby the closure or its fastener is forced away from the receptacle or (2) a portion adapted to engage a closure or its fastener and force it away from the receptacle by a twisting or prying action.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.27, for a wall or surface mounted or supported remover of the levering or prying type.

3.56 Having discrete relatively movable portions:
This subclass is indented under subclass 3.55. Remover including one part which is movably mounted with respect to another part of the remover for adjustment or actuation of the remover.

3.57 Having handle, intermediate hook, and end fulcrum:
This subclass is indented under subclass 3.55. Remover wherein the second point to which the force is transmitted to remove the closure is located on a reentrant portion located along the length of the remover between the first point at which the force is applied and the third point about which the remover pivots.

3.6 Tools of the plier type coming under the preceding subclass.

3.7 Special tools for spreading leaf springs.

3.8 Special tools for removing or inserting fuses in fuse blocks.

(1) Note. See this class, subclasses 418+.

(2) Note. See also Class 294, Handling: Hand and Hoist-Line Implements, subclass 19.1.

SEE OR SEARCH THIS CLASS, SUBCLASS:
53.1, for wrenches comprising pole like handle structures and peculiarly adapted to engage work at a distance.

4 Devices for clamping articles while being engraved.

SEE OR SEARCH THIS CLASS, SUBCLASS:
6, for devices for holding watch and clock parts.
17, for vises.

SEE OR SEARCH CLASS:
269, Work Holders, appropriate subclasses, and see the Notes thereto for other work holders.
294, Handling: Hand and Hoist-line Implements, subclass 99.2 for tweezers.

6 Tools having special construction limiting them to watchmakers' use. Devices for holding watch and clock parts are here.

SEE OR SEARCH CLASS:
269, Work Holders, appropriate subclasses and see the Notes thereto for other work holders.
968, Horology, subclasses 651+ for an alternative search for U.S. Patents based upon a modification of the European Patent Office Classification.

7 Tools of special construction for use in setting jewels.

7.5 This subclass is indented under subclass 6. Devices , for (1) winding the mainspring of a watch or clock, in situ, or (2) winding and holding the mainspring and trans-ferring it into the mainspring-barrel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
54+, for motor driven wrenches.
122+, for watch keys.

SEE OR SEARCH CLASS:
185, Motors: Spring, Weight, or Animal Powered, subclasses 39+ for spring motors combined with winding means therefor.

8 Tools of special construction for use in setting ruby-pins or roller-jewels.

8.1 Includes special tools for inserting, packing, and removing fibrous and similar packing material into or from a joint, usually fibrous material around a pipe or tube.

SEE OR SEARCH CLASS:
114, Ships, subclass 224.
425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 87 for hand manipulable, plural dimension shaping implement having a material supply means.

9.2 This subclass is indented under the class definition. Tool adapted to be drawn across the surface of a sheet of material to produce indicia (e.g., by an indenting or manifolding operation) on that surface or any underlying surface, without depositing any coating material on that surface and without cutting or scratching hat surface.

(1) Note. The implement may be a stencilling tool; i.e., one which displaces lines of wax coating on a stencil.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 358+ for a perforating or indenting implement (e.g., scratch awl).

33, Geometrical Instruments, subclasses 18+ for the combination of an awl or scriber with means to guide the tool along a predetermined path to form a line.

101, Printing, subclass 26 for a piercing and printing machine.

401, Coating Implements With Material Supply, subclasses 208+ for an implement with material supply, the tool of which implement is a roller (e.g., ball in indented subclasses 209+) which deposits coating material onto the surface to which is applied; and subclasses 258+ and 292 for a similar implement whose tool is a stylus or is stylus-like.

9.21 This subclass is indented under the class definition. Tool having a work-contacting face portion capable of cutting a philatelic laminate or coating, and means, including a part movable in a direction other than that of the tool face portion, to impart arcuate scraping movement to said face portion to perform said cutting when positioned over said laminate or coating.

(1) Note. Additional means to print cancellation indicia on the stamp will not bar placement of a patent to a stamp scarifier in this subclass.

9.22 This subclass is indented under the class definition. Tool including means to puncture a surface and to discharge pigmentous liquid into the punctures, to perform a writing or designing operation.

(1) Note. The discharge structure may be integral with, part of, or separate from the structure for puncturing.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 358+, particularly subclasses 366+ for a pointed perforating tool; and see the search notes thereto.

9.24 TAPPET ADJUSTER:
This subclass is indented under the class definition. Tool specifically adapted to adjust the clearance between a tappet and an adjacent part is the valve train of an internal combustion engine.

9.26 PLOWSHARE HOLDER:
This subclass is indented under the class definition. Tool including means for gripping or accommodating the cutting blade of a plow.

SEE OR SEARCH THIS CLASS, SUBCLASS:

487, for a hand-held holder, or a tool having a clamp, and see the search notes thereunder for related loci.

9.3 Implements usually of the plier type, for tightening and fastening wires, bands, straps, etc., around hose pipe.

SEE OR SEARCH CLASS:

140, Wireworking, subclasses 93.2+ for implements for tightening and securing binders around material.

9.4 WIRE STRIPPER:
This subclass is indented under the class definition. Hand tool for cutting, crushing, or otherwise removing wire coverings or sheaths.

(1) Note. A mere hand cutter for wire of insulation is classified in Class 30 (see Search Note below). Those cutters classified here have additional means for removing the insulation.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 564.4, 565 and 566+ for an assembly device (e.g., terminal applier) which includes means for stripping insulation from wire.

30, Cutlery, subclasses 90.1+ for a hand manipulatable device for cutting an elongated strand-encircling sheath. Those tools having additional means for removing the sheath are classified in Class 81.

86, Ammunition and Explosive-Charge Making, subclass 22 for similar structure for cutting and crimping fuse.

9.41 **Having relatively movable clamp and blade:**
This subclass is indented under subclass 9.4. Tool including (1) means to cut the covering or sheath, (2) discrete means to grip the covering or sheath, and (3) means to move or to permit relative movement between the cutting and gripping means to remove the covering or sheath from the wire.

9.42 **Clamp and blade move relative to supporting structure:**
This subclass is indented under subclass 9.41. Tool including structure on which both the cutting means and the gripping means are mounted for relative movement to remove the covering from the sheath.

9.43 **Blade moves relative to handle to remove insulation:**
This subclass is indented under subclass 9.41. Tool wherein the cutting means is movably mounted on supporting which includes a hand engageable portion rigid therewith which is gripped by the hand while using the tool.

9.44 **Pivoted blade:**
This subclass is indented under subclass 9.4. Tool including a first part having a cutting edge and which is swingably attached by a shaft, pin or equivalent structure to a second part having a cooperating cutting edge or a work back-up surface.

9.51 This subclass is indented under subclass 9.4. Devices , which have a fixed base.

(1) Note. Devices for stripping insulated or covered wire combined with means to further modify or treat the wire (e.g., intertwist strands or wind wire onto a terminal) in other than a manner characteristic of Class 140, Wireworking, are classified in Class 29, Metal Working, subclasses 33+.

10 Tools specially adapted for locking nuts and bolts together or for applying or removing nut or bolt locking devices.

13 Devices for holding a bolt from movement while a nut is turned on or off.

SEE OR SEARCH THIS CLASS, SUBCLASS:
55,

15.2 This subclass and those indented hereunder are directed to portable tools having a construction adapting them to one or more of the operations necessary in repairing resilient vehicle tires.

SEE OR SEARCH CLASS:
15, Brushing, Scrubbing, and General Cleaning, subclasses 236.01+ for scrapers of general cleaning utility, and see the Notes thereto for miscellaneous scrapers of more specialized application.
29, Metal Working, subclass 221.5 for tools for assembling and/or removing valves for pneumatic tires or tubes with or from the wheel rim.
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 95+ for processes for repairing toroidal articles, and search subclasses 110+ and 394+ as the generic place for methods and apparatus for building tires.
157, Wheelwright Machines, subclasses 1.1+ and 11, for tire setters and removers.
425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 11+ for a molding or vulcanizing apparatus arranged to repair or restore an article.

15.3 This subclass is indented under subclass 15.2. Devices comprising means for holding tire casings in deformed position for inspection, repairs or other purposes.

(1) Note. The devices classified herein are mere holders and are provided with no means adapting them to use in applying force to spread the tire beads, such spreaders being provided for in Class 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 50.1+ or are referred to in the notes.

(2) Note. The devices classified in this subclass are implements adapted to be supported by the casing and afford no support for the tire.

SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 50.1+, see (1) Note above.

15.4 Tools for enabling the air to escape from pneumatic tires. These are mostly tools to depress the inflation valve body.

(1) Note. For combined valve caps and valve manipulating tools, see Class 152, Resilient Tires and Wheels, subclass 431.

15.5 Tools adapted to apply puncture healing material and insert a patch.

(1) Note. See definitions of indented subclasses of this class.

15.6 The tire repair tool is for the purpose of applying puncture healing material in fluid form to the interior of a pneumatic tire through a puncture, blowout or aperture in the wall of the tire, or through the valve stem, whether by way of repair or originally.

(1) Note. For similar dispensing devices, see Class 222, Dispensing.

SEE OR SEARCH CLASS:
141, Fluent Material Handling, With Receiver or Receiver Coacting Means, appropriate subclasses, for machines for performing similar functions.

15.7 The repair tool is for the purpose of inserting repair plugs or patches into a tire through a puncture, blowout, or other aperture in the wall of the tire.

15.8 Tools for application to anti-skid devices to facilitate their mounting upon or removal from the tire.

(1) Note. For such tools in combination with the anti-skid device, see Class 152, Resilient Tires and Wheels, subclass 213.

SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 199+ for detachable implements or apparatus for tensioning flexible material.

15.9 FOR LOCK OR LATCH:
This subclass is indented under the class definition. Tool specifically adapted for use on either a key aperated fastening device, or a fastening device comprising mating mechanical parts formed or attached to respective members to selectively fix the members in a particular relationship.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 804 for a tool for assembling or disassembling a tumbler lock.

16 CHUCK KEY:
This subclass is indented under the class definition. Tool which is specifically adapted to cooperatively engage a machine chuck or tool-holding socket and to be manipulated to cause the chuck or socket to grip or release a workpiece or tool.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclasses 147+ for corresponding chuck or socket structure.

19 DEFORMABLE HEAD MALLET:
This subclass is indented under the class definition. Tool including a head composed of deformable material having a plurality of impacting surfaces, and a lever arm having an end adapted to carry the head.

(1) Note. The deformable material may be soft metal, leather, wood, etc.

20 HAMMER:
This subclass is indented under the class definition. Tool including a head having an impacting surface and a lever arm having an end adapted to carry the head.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19, for a similar tool having a pliable impacting surface.

SEE OR SEARCH CLASS:
7, Compound Tools, subclasses 143+ for a compound tool including a hammer.
173, Tool Driving or Impacting, subclasses 90+ and see the search notes therein for a device to impact a tool or the like.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 26 for nail extractor combined with a hammer.

21 Having work protector surrounding face:
This subclass is indented under subclass 20. Hammer having a member encircling the impacting surface and either protruding axially from it or covering it.

(1) Note. The member functions to prevent damage to a workpiece and is usually flexible or yieldable.

22 Having shock absorbing means:
This subclass is indented under subclass 20. Hammer including means to dissipate the reactive force resulting from impact before it reaches a user.

(1) Note. The means may be recited as being for the protection and comfort of the user, for assuring the effectiveness of a driving blow, or for the prevention of damage to a workpiece.

23 Having nail placer:
This subclass is indented under subclass 20. Hammer including means adapted to hold a penetrating fastener in a position for starting it into a workpiece.

SEE OR SEARCH THIS CLASS, SUBCLASS:
44, for a driven fastener holder, pusher or setter, per se.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 213.1+ for a valve applier or remover.

24 Magnetic:
This subclass is indented under subclass 23. Hammer wherein the holding means includes a member possessing a magnetic field.

25 Having replaceable striking face:
This subclass is indented under subclass 20. Hammer wherein the impacting surface is on a member which can be removed from the head, and a substitute installed.

26 Having plural striking faces:
This subclass is indented under subclass 20. Hammer having more than one impacting surfaces.

27 Rod encircling type:
This subclass is indented under subclass 20. Hammer wherein the impacting surface includes a slot adapted to receive a tubular member.

(1) Note. This subclass includes devices disclosed for driving a valve or draw off tube into a barrel.

28 BIT STOCK HAVING MANUAL DRIVE MEANS (E.G., BRACE):
This subclass is indented under the class definition. Devices including a member adapted to mount a bit shaft (usually a chuck) with the bit extending from the member, and a driving element projecting transversely from the member and adapted to receive force applied manually to rotate the bit.

(1) Note. This subclass and its indents include extension shanks for bits, and subcombinations disclosed with devices appropriate for inclusion herein.

(2) Note. The driving element may comprise a lever arm to be engaged manually, or structure adapted to be engaged by another driven element.

SEE OR SEARCH THIS CLASS, SUBCLASS:
53+, for a tool of this type either claimed with, or solely disclosed as, a wrench or screwdriver.

29 Having ratchet mechanism:
This subclass is indented under subclass 28. Device including a toothed wheel intermediate the bit and the driving element, and a pawl adapted to engage and drive the wheel.

(1) Note. The mechanism commonly permits the member to be driven in only one direction although the driving element can rotate in both directions.

30 Straight crank arm:
This subclass is indented under subclass 29. Device wherein the driving element consists of a lever arm extending perpendicular to the bit.

(1) Note. The lever may be pivoted to the member to be folded when not in use.

31 Adjustable pawl:
This subclass is indented under subclass 29. Device including means to selectively change the position or orientation of the pawl relative to the ratcheting.

(1) Note. The selective change effects a change in an operating characteristic of the tool, e.g., from left-hand to right-hand ratcheting.

32 Pivoted pawl:
This subclass is indented under subclass 29. Device wherein the pawl is adapted to turn about an axis and swings into and out of engagement with the ratchet.

33 Sliding pawl:
This subclass is indented under subclass 29. Device wherein the pawl is adapted to reciprocate along its longitudinal axis and slides into and out of engagement with the ratchet.

34 Straight stock having side driving gear:
This subclass is indented under subclass 28. Device wherein the member extends linearly in axial alignment with the bit, and including a driving gear substantially perpendicular to, and member adapted to rotate the bit about its axis.

35 Having U-shaped crank arm:
This subclass is indented under subclass 28. Device wherein the driving element includes a portion which is offset from the member forming a “U” shaped crank arm.

36 Speeding gear:
This subclass is indented under subclass 35. Device including a gear train intermediate the crank arm and the bit, wherein one revolution of the U-crank will produce more than one revolution of the bit.

37 Bit shaft inclined relative to crank:
This subclass is indented under subclass 35. Device wherein the bit is out of alignment with the driving elements axis or rotation.

44 HOLDER, PUSHER, OR SETTER FOR DRIVEN-TYPE FASTENER:
This subclass is indented under the class definition. Device adapted to contact a penetrating fastener having a head (e.g. a nail, tack, etc.) and to either (a) support the fastener relative to a workpiece before being driven into the workpiece; (b) hold the fastener, receive and transmit to the fastener, a manually applied force to drive the fastener into the workpiece; or (c) receive an impact to set the head of the fastener below the surface of the workpiece.

(1) Note. For the purposes of this subclass, the penetrating fastener is considered to be the specific article worked upon.

SEE OR SEARCH THIS CLASS, SUBCLASS:
23+, for the combination of a driving tool and a device formed in, or secured on, the tool for holding a penetrating fastener.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 275+ for a hand manipulable assembly tool adapted to be applied to a metal workpiece, and to receive an impact from an outside source and transmit the impact to the workpiece.

45 SHINGLE TOOL:
This subclass is indented under the class definition. Device adapted to apply or remove roof or wall shingles.

46 WOODEN FLOORING TOOL:
This subclass is indented under the class definition. Device adapted to either apply boards to, or remove boards from a floor.

52 WRENCH, SCREWDRIVER, OR DRIVER THEREFOR:
This subclass is indented under the class definition. Tool for engaging a work part and exerting or transmitting a twisting strain thereto, or means for imparting or transmitting an actuating force to such a tool.

(1) Note. A hand tool for rotating a lever by merely pulling or pushing the tool along its length is excluded. To be properly classified here, the work engaging portion of a hand tool must move other than rectilinearly.

(2) Note. This subclass is the residual locus for tools which impart a twisting strain to the work and are not provided for elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.07+, for a tool for grasping and removing a receptacle closure.
463+, for impact delivering wrenches.

SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 120+ for a wrench particularly adapted to rotate a cutting tool of that class.
470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclass 61 for devices peculiarly adapted for rotating a tap, other than provided for in Class 408.

53.1 This subclass is indented under subclass 52. Wrenches or screwdriver comprising pole like handle structures peculiarly adapted for engaging work at a distance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.8, for devices including a pole structure provided with means for inserting or removing a fuse in a fuse box.

SEE OR SEARCH CLASS:
49, Movable or Removable Closures, subclass 461 for a fixture on a window type closure adapted to be engaged by a pole.
294, Handling: Hand and Hoist-Line Implements, subclasses 19.1+ for pole like structures adapted for handling articles at a distance.

53.11 Globe manipulator:
This subclass is indented under subclass 53.1. Wrenches for placing or removing electric light bulbs.

53.12 Rotatable grasper:
This subclass is indented under subclass 53.11. Wrenches having means, other than a mere torque applied manually to the handle, for rotating the object grasped.

(1) Note. Included herein are devices such as gear, belts, etc., which rotate the light bulb about its axis.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-line Implements, subclass 6 for plate turners and subclass 8 for pancake turners.

53.2 This subclass is indented under subclass 52. Wrench or screwdriver , especially adapted to extract or drive headless stud bolts.

54 Wrench or screwdriver having a casing or framework which carries moving mechanical elements, but does not itself move during the operation of the wrench or screwdriver.

(1) Note. A tool which does not claim any machine structure in detail other than (a) the work-engaging and strain-exerting portion of the tool, or (b) structure which grips or guides the rotatable work when a turning or twisting strain is exerted on the work by the tool, is not considered a machine and is classified on details of

the work-engaging and strain-exerting portion in other subclasses under Class 81, subclass 53.

SEE OR SEARCH CLASS:
173, Tool Driving or Impacting, appropriate subclass for a means to drive or impact a tool, and particularly subclass 164 for a means to drive a tool about an axis including means to hold and relatively rotate sections of a tool shaft.
408, Cutting by Use of Rotating Axially Moving Tool, appropriate subclasses especially subclasses 62+ and 129+ for drilling machines which feed the work or tool along the axis of the tool during operation.

55 The wrench or screwdriver has a device or part which prevents the movement of the bolt while the nut is being turned on or off.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13,

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 240+ for means assembling parts by relative rotation.

56 The bolt-holding wrench or screwdriver is operated by gearing.

(1) Note. Where the novelty lies in the gearing, search should be made in this class, subclass 57.

57 The wrench or screwdriver is operated by gearing.

SEE OR SEARCH THIS CLASS, SUBCLASS:
56,

57.11 This subclass is indented under subclass 57. Wrench or screwdriver provided with motor means designed to impart motion to the wrench or screwdriver.

57.12 This subclass is indented under subclass 57.11. Wrench or screwdriver having an angular relationship between the handle, or like drive means, and the work engaging means, said angle being either acute or obtuse.

57.13 This subclass is indented under subclass 57.11. Wrench or screwdriver having an angular relationship between the handle, or like drive means, and the work engaging means, said relationship being a right angle.

57.14 This subclass is indented under subclass 57.11. Wrench or screwdriver wherein the handle, or like drive means, is in a parallel relationship with respect to the work engaging means.

57.15 This subclass is indented under subclass 57. Wrenches wherein the jaws are specially adapted for grasping or clutching round work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
120, for rigid jaws specially adapted for round work.

57.16 This subclass is indented under subclass 57.15. Wrenches combined with means to support or grasp the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.31+, for wall or surface mounted receptacle closure removers with means to support or grasp the receptacle.
3.36+, for hand manipulated receptacle closure removers with means to support or grasp the receptacle.

SEE OR SEARCH CLASS:
269, Work Holders, appropriate subclasses for residual devices for clamping, supporting or holding an article in position to be operated on or treated.

57.17 This subclass is indented under subclass 57.15. Wrenches provided with a flexible gripping device to surround wholly or partly the work being manipulated.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.43, for flexible jaws specially adapted for removing receptacle closures.
64+, for other wrenches having flexible jaws.

57.18 This subclass is indented under subclass 57.15. Wrenches including camming means connected to at least one jaw to effect movement thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
128, for other wrenches having a cam operated sliding jaw.

57.19 This subclass is indented under subclass 57.15. Wrenches having a fluid force acting upon at least one jaw to effect movement thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
301, for plier type tool including hydraulic features.

SEE OR SEARCH CLASS:
91, Motors: Expansible Chamber Type, appropriate subclasses for expansible chamber type motors, per se.

57.2 This subclass is indented under subclass 57.15. Wrenches wherein at least one jaw is pivoted and swings or rocks to grip or engage the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
90.1, for other wrenches having multiple pivoted jaws.
92, for other wrenches having pivoted inner jaws.
98+, for other wrenches having pivoted outer jaws.
111, for other wrenches having pivoted side jaws.

57.21 This subclass is indented under subclass 57.15. Wrenches having at least one sliding jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
126+, for other wrenches having sliding jaws.

57.22 This subclass is indented under subclass 57. Wrench or screwdriver comprising more than one drive means to actuate a single workpiece, a single drive means to actuate plural workpieces, or more than one drive means to actuate a plurality of workpieces.

57.23 This subclass is indented under subclass 57.22. Wrench or screwdriver comprising a magazine type holder for nuts or bolts.

57.24 This subclass is indented under subclass 57. Wrench or screwdriver provided with support means therefor.

57.25 This subclass is indented under subclass 57.24. Wrench or screwdriver wherein the support is a vehicle.

57.26 This subclass is indented under subclass 57. Wrench or screwdriver having means to change the angle between the handle or drive means and the work engaging part.

SEE OR SEARCH THIS CLASS, SUBCLASS:
177.8, for angularly adjustable handles.

57.27 This subclass is indented under subclass 57.26. Wrench or screwdriver wherein the means to change the angles between the handle or drive means and the work engaging means is a flexible shaft.

57.28 This subclass is indented under subclass 57. Wrench or screwdriver having an angular relationship between the handle or drive means and the work engaging means, said angle being either acute or obtuse.

57.29 This subclass is indented under subclass 57. Wrench or screwdriver having an angular relationship between the handle or drive means, and the work engaging means said relationship being a right angle.

57.3 This subclass is indented under subclass 57. Wrench or screwdriver wherein the handle or drive means is in a parallel relationship with respect to the work engaging means.

57.31 This subclass is indented under subclass 57. Wrench or screwdriver wherein the drive means and the driven means are on a common axis.

57.32 This subclass is indented under subclass 54. Wrench or screwdriver comprising interrelated plural drives and plural work engaging means

or a single drive having plural work engaging means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
77, for double ended, simultaneous adjustable wrenches.

57.33 This subclass is indented under subclass 54. Wrenches wherein the jaws are specially adapted for grasping or clutching round work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.15+, for gear operated wrenches specially adapted for round work.

57.34 This subclass is indented under subclass 57.33. Wrenches combined with ancillary means to support or grasp the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.16, for gear operated wrenches combined with ancillary means to support or grasp the work.

57.35 This subclass is indented under subclass 57.33. Wrenches provided with support means therefor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.24, for gear operated wrenches provided with support means.

57.36 This subclass is indented under subclass 54. Wrench or screwdriver provided with plural work engaging means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.22, for gear operated wrench or screwdriver having multiple work engaging means.

57.37 This subclass is indented under subclass 54. Wrench or screwdriver provided with either (a) means to feed pieces of work to the work-engaging and strain-exerting portion of the wrench or screwdriver, or (b) magazine means for holding and storing pieces of work which are to be fed to the work-engaging and strain-exerting portion of the wrench or screwdriver.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.23, for gear operated wrenches having magazine means.

57.38 This subclass is indented under subclass 54. Wrench or screwdriver provided with means to apply a predetermined tension to the work.

57.39 This subclass is indented under subclass 54. Wrench or screwdriver comprising a clutching element so arranged that the movement of the wrench handle in one direction will drive the work engaging means while movement in the opposite direction permits relative movement between the handle and work engaging means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
60, for ratchet wrench or screwdriver.

57.4 This subclass is indented under subclass 54. Wrench or screwdriver provided with support means therefor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.24, for gear operated wrench or screwdriver having support means.

57.41 This subclass is indented under subclass 57.4. Wrench or screwdriver wherein the support is a vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.25, for vehicle supported gear operated wrench or screwdriver.

57.42 This subclass is indented under subclass 54. Wrench or screwdriver wherein the work driving means is in a direct line with respect to the force applying means.

57.43 This subclass is indented under subclass 57.42. Wrench or screwdriver wherein the drive means is a flexible shaft.

57.44 This subclass is indented under subclass 57.42. Wrench or screwdriver wherein the drive means is motivated by a fluid force.

57.45 This subclass is indented under subclass 57.42. Wrench or screwdriver having an angular relationship between the handle or drive means and the work engaging means, said angle being either acute or obtuse.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.28, for gear operated wrench or screwdriver having an oblique angle.

57.46 This subclass is indented under subclass 57.42. Wrench or screwdriver wherein the drive means is in a tangential relationship relative to the work engaging means.

57.5 This subclass is indented under subclass 52. Wrenches having a plurality of alternately usable work engaging sockets of paired jaws movably mounted on an operating handle, with means to fasten a selected pair of jaws or sockets in operating position with respect to the handle.

58 This subclass is indented under subclass 52. Wrench or screwdriver wherein the head or driven part is rotatable through 360o or more with respect to the handle or driving part, there being inter-engaging means on the handle and head to permit intermittent or continuous driving engagement between the head and handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
29+, for bit stocks provided with ratchet mechanism for driving the bit.
177.7+, for wrenches wherein the handle is adjustable with respect to the head, the adjustment being less than 360o.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclasses 126+ for oscillating to intermittent unidirectional intermittent grip type mechanical movements, and subclasses 144+ for grip units, per se.
192, Clutches and Power-Stop Control, subclasses 30+ for clutches, per se.

58.1 This subclass is indented under subclass 58. Wrench or screwdriver having means for imparting rotation to the head other than by a translating movement of the handle with respect to the work piece engaged by the head.

(1) Note. The means for imparting rotation may consist merely of a modification of the head, as by an extended or enlarged or roughened portion adapted to be manually gripped and actuated, provided only that such actuation be specifically disclosed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
54, for machine wrench or screwdriver wherein the casing constitutes a handle which does not itself move to provide a clutching engagement with the head.

58.2 This subclass is indented under subclass 58. Wrenches wherein the head has a slot extending from the center outwardly through the outer periphery to permit the use of the head as an “open end” wrench.

(1) Note. There may be included means functioning to close the slot to complete the circular or other configuration of the head.

58.3 This subclass is indented under subclass 58. Wrench or screwdriver wherein the driving and driven parts themselves or elements associated therewith are mounted for relative movement parallel to the axis of rotation of the head or driven part and are provided with clutching means whereby such relative movement will engage and/or disengage the clutching means.

58.4 This subclass is indented under subclass 58. Wrench or screwdriver wherein the interengaging means when engaged rigidly connect the two parts to provide for positively driving the head in either or both directions of rotation.

58.5 This subclass is indented under subclass 58. Wrench or screwdriver wherein the handle extends generally radially from the axis of rotation of the head and is pivoted or mounted to rotate eccentrically thereof whereby motion of the handle in one direction about its pivot will cause clutching or driving engagement with the head, motion in the opposite direction releasing the engagement.

(1) Note. In some instances movement of the handle to extreme positions in each direction will effect driving engagement in that direction there being a neutral position approximately midway between the extreme position wherein the driving engagement is disabled.

SEE OR SEARCH THIS CLASS, SUBCLASS:

58, for wrenches or screwdrivers having two handle portions, one being movable relative to the other, arranged to be gripped by the hand and squeezed together to thereby drivingly engage the head.

59.1 This subclass is indented under subclass 58. Wrench or screwdriver wherein the clutching elements include ball or roller devices arranged between two surfaces so shaped or otherwise related to each other as to wedge the ball or roller therebetween in one direction of movement of the handle with respect to the head to effect driving engagement between the handle and head.

60 This subclass is indented under subclass 58. Wrench or screwdriver wherein the clutching elements include a catch, dog, pawl or similar detent means, so arranged that movement of the handle in one direction will drive the head while movement in the opposite direction permits relative rotation of the head and handle.

(1) Note. These wrenches or screwdrivers are commonly known as “ratchet” wrenches or screwdrivers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

29+, for a bit stock provided with ratchet mechanism for driving the bit.

58.4, for wrench or screwdriver wherein a detent-type clutch is positively engaged for driving in both directions of movement of the handle.

59.1, for wrench or screwdriver wherein a ball or roller is wedged between two surfaces to effect driving engagement between the handle and head.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, subclasses 120+ for a ratchet wrench particularly adapted to drive a tool in that class manner.

61 A pawl pivoted to the driving device engages the ratchet-teeth of the head.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, subclasses 120+ for a ratchet wrench particularly adapted to drive a tool in that class manner.

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 183+ for a rachet wrench particularly adapted to drive a tool for cutting screw threads, except in the manner of cutting provided in Class 408.

62 The direction of rotation of the ratchet-head is reversible.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, subclass 122 and 123 for a ratchet wrench particularly adapted to drive a tool in that class manner, wherein the ratchet is reversible.

63 A single pawl controls the direction of revolution.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, subclass 122 and 123 for a ratchet wrench particularly adapted to drive a tool in that class manner, wherein the ratchet is reversible.

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 183+ for a rachet wrench particularly adapted to drive a tool for the cutting of screw threads, except in the manner provided for in Class 408.

63.1 This subclass is indented under subclass 60. Wrench or screwdriver provided with means whereby the direction of driving can be selectively reversed.

63.2 This subclass is indented under subclass 63.1. Wrench or screwdriver having a single pawl, the effect of which can be controlled to provide for selective reversing of the drive.

SEE OR SEARCH THIS CLASS, SUBCLASS:
63, for reversing one-way detent drive wrenches where the pawl is pivoted.

64 The object turned is surrounded wholly or partly by a flexible gripping device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3.4, and 3.43, see subclass 57.17 for gear operated machine wrenches with flexible gripping means.

SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 120+ for a flexible gripping device used to transmit torque to a ratchet wrench particularly adapted to cut in that class manner.

65 The flexible device is adjusted to the size of the work by a screw-threaded device.

65.2 **Link:**
This subclass is indented under subclass 64. Tool wherein the flexible device includes more than two articulated rigid elements, pivotally connected together in end-to-end fashion to form a flexible chain of work-gripping elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
90.3+, for a tool having three end-to-end connected jaws which are pivotally connected to a handle-lever, but which collectively do not form a “flexible gripping device” as required for subclass 65.2.

65.4 **Toothed adjustment:**
This subclass is indented under subclass 65.2. Wrench including a plurality of serially arranged projections and recesses which are adapted to be selectively engaged with cooperating structure to vary the effective length of the flexible gripping device.

(1) Note. There must be provided either “Projections” or “recesses” which are in addition to the pivot pins and interstices normally provided in the chain links.

68 A jaw on the handle engages the work.

(1) Note. If a pivoted jaw is a link of a chain it is classified herein not in Flexible, link, handle-jaw, pivoted, this class.

69 A pivoted jaw carried by the handle engages the work, the said jaw not being a link of the chain.

(1) Note. If the jaw is a link of the chain it is classified in this class, subclass 68.

70 The handle-jaw has two faces, either of which may engage the work according to the direction the chain is passed about it.

73 The operating part has a U-shaped arm similar to the common bit-stock.

74 Wrenches attached to and driven by wheels to turn nuts on or off from axles.

75 The wrench grips the rim of the wheel-hub to rotate the wrench and wheel together.

76 The wrench grips the interior of the hub-rim.

77 The wrench has at each end jaws which are adjusted at the same time.

90.1 **Plural pivoted jaws and handle-lever:**
This subclass is indented under subclass 53. Wrench including a plurality of discrete work-gripping elements which are swingable connected to a rigid elongated hand engageable portion, wherein the elements are caused to grip the work by a levering action through the hand engageable portion.

90.2 Cam or gear operated:
This subclass is indented under subclass 90.1. Wrench wherein the handle-lever moves a jaw through intermediate structure which comprises either (1) and interdigitated surface to transmit motion from the handle-lever to the jaw, or (2) a eccentric surface or pin carried by the handle-lever or by a member caused to pivot by the handle-lever and which bears against a jaw carrying member.

90.3 Jaws enclose work:
This subclass is indented under subclass 90.1. Tool wherein the work-gripping elements are serially connected to one another to form a closed loop around the periphery of the work.

(1) Note. The "closed loop" may be defined by jaw supporting or actuating structure in addition to jaw structure, per se.

SEE OR SEARCH THIS CLASS, SUBCLASS:
65.2+, for wrench having a flexible work-gripping band comprised of a plurality of pivoted links.

90.4 Including latch to connect jaw to handle-lever:
This subclass is indented under subclass 90.3. Tool wherein cooperating structure is provided on both the elongated hand engageable portion and the last of the series of work-gripping elements for releasably connecting them together to form the closed loop.

90.5 At least three jaws enclose work:
This subclass is indented under subclass 90.4. Tool including three or more serially arranged work-gripping elements which form the closed loop.

90.6 Including latch to connect pivoted jaws:
This subclass is indented under subclass 90.3. Tool wherein cooperating structure is provided on each of two adjacent work-gripping elements for releasably connecting the elements together to form the closed loop.

90.7 At least three jaws enclose work:
This subclass is indented under subclass 90.6. Tool including three or more serially arranged work-gripping elements which form the closed loop.

90.8 Two jaw pairs connected by latch:
This subclass is indented under subclass 90.7. Tool wherein the two work-gripping elements releasably connected together are each pivotally connected to third and fourth work-gripping elements, respectively, and the third and fourth elements are also pivotally connected to the handle-lever to complete the closed loop.

90.9 Including means to adjust or to secure jaw in adjusted position:
This subclass is indented under subclass 90.1. Tool wherein means are provided which either moves or fixes one work-gripping element relative to the handle-lever or another work-engaging element whereby different size work may be accommodated.

91.1 Slidable pivot:
This subclass is indented under subclass 90.1. Tool wherein the connecting structure which permits swinging movement of a work-gripping element additionally allows translational movement of the work-gripping element additionally allows translational movement or that work-gripping element with respect to either the handle-lever or another work-gripping element, whereby the pivotal axis may be shifted laterally.

91.2 First jaw pivoted directly to handle and to second jaw:
This subclass is indented under subclass 90.1. Tool comprising two work-gripping elements, a first being connected directly to the elongated hand engageable portion for swinging movement about a first axis, the second work-gripping element being connected directly to the first work-gripping for swinging about an axis spaced from the first axis.

91.3 Two jaws pivoted directly to intermediate member:
This subclass is indented under subclass 90.1. Tool including an additional discrete element which is connected to the hand engageable por-

tion and to which each of two work-gripping elements is swingably connected.

92 The inner jaw (the one nearest the hand) is pivoted and swings or rocks to grip or engage the work.

93 The inner jaw rocks or swings upon a nut or screw as its fulcrum.

94 The inner jaw has a pin as its fulcrum.

95 The pin-fulcrumed inner jaw is a disk or roller.

96 The roller or disk-shaped jaw is toothed and travels on a rack on the handle.

97 The pin-fulcrumed inner jaw is pressed by a spring. Wrenches, pivoted outer jaw, the outer jaw (the one at the end of the handle or the one farthest from the hand) is pivoted or swings as on a pivot. Wrenches, Pivoted outer jaw, fixed-fulcrum. The fulcrum on which the jaw swings does not travel relatively to either the fixed jaw or the parts which it connects.

98 The outer jaw does not travel longitudinally or in a substantially right line to adjust itself to the size of the work.

99 The outer jaw is pressed by a spring.

100 The outer jaw travels longitudinally or in a substantially right line to adjust itself to different sizes of work.

101 The outer jaw swings or rocks on the adjusting-nut as a fulcrum.

102 The outer jaw is carried by a rocking sleeve.

103 The rocking sleeve is spring-pressed.

104 The sleeve is a washer on which the nut is seated and on which the outer jaw rocks.

105 The sleeve wholly or partly incloses the adjusting-nut.

106 The fulcrum-point of the outer jaw travels relatively to either the fixed jaw or the parts which it connects.

107 The fulcrum is adjusted by a nut or screw working on a threaded handle-bar.

SEE OR SEARCH THIS CLASS, SUBCLASS:
174,

108 The fulcrum is adjusted by the axial rotation of a threaded handle-bar.

SEE OR SEARCH THIS CLASS, SUBCLASS:
164,

109 The fulcrum is adjustable in a slot in the shank of the fixed jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
411+, for jaw adjustment means including a slotted guide.

110 The fulcrum of the outer jaw is a tooth which is adjustable along teeth or notches on the shank of the fixed jaw.

111 One or both jaws swing sidewise of the handle to close upon the work, the meeting plane of the jaws, or the opening between the jaws when in their normal closed condition, lying on opposite sides of the central longitudinal line of the handle or of a line parallel thereto.

112 The relative movement of the jaws and the handle-body or of the jaws and the jaw-actuating device is along lines neither parallel nor perpendicular to the axis of the handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
331+, particularly subclass 333 for jaw locking means similar to structure classified herein (112).

SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclass 36, 37, 47 to 54, inclusive, indented under subclasses 46.1+, 57, 58, and 69, to 75, inclusive, indented under Socket type, Radially reciprocating jaws, Moving-cam actuator.

113 The jaws are drawn back into a beveled sleeve type socket or are thrust forward into a conical sleeve type cap by a axially-moving nut or screw.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclasses 60+ for socket type chucks or sockets having obliquely guided reciprocating jaws, and particularly subclass 63 where the operating member is a threaded cone and the jaws have mating threads.

114 This subclass is indented under subclass 113. Wrenches in which the sleeve type socket is interiorly threaded to form the axially moving nut.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, generally.

115 The jaws are closed by an unthreaded ring or collar, which embraces the jaws and cams them toward each other.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, generally.

116 One or both of the jaws are closed by a part which slides between the jaws or between the jaw and another part, producing a wedge-like action.

117 One or both of the jaws are closed by means of links which cause one or both of the jaws to travel longitudinally and inwardly.

118 The jaws are closed by a screw located transversely of the axis of the tool.

119 The jaws or work-engaging parts have no relative movement.

120 The jaws are specially adapted for grasping or clutching round work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.15+, for gear operated machine wrenches specially adapted for round work.
57.33+, for machine wrenches specially adapted for round work.

121.1 Enclosed (e.g., socket):
This subclass is indented under subclass 119. Tool wherein the jaws comprise enclosing walls which form and opening adapted to receive a nut or the like.

(1) Note. To be considered “enclosing wall” either of the following must apply: (1) the walls of the wrench surround a nut or the like to the extent that the wrench cannot by withdrawn laterally, or (2) the walls of the wrench surround at least 180 degrees of the circumference of a nut or the like.

122 Socketed tools for winding watches or clocks.

123 The watch or clock keys have means for excluding dust from the sockets.

124.1 Having devices for ejecting nuts from the enclosing socket.

124.2 Slotted socket:
This subclass is indented under subclass 121.1. Tool wherein the enclosing walls are slit along the length thereof.

(1) Note. A wrench is considered to be a “slotted socket” rather than an “open end” wrench (classifiable in subclass 119) if either of the following apply: (1) the walls of the wrench surround a nut of the like to the extent that the wrench cannot be withdrawn laterally, or (2) the walls of the wrench surround at least 180 degrees of the circumference of a nut of the like, and also a substantial portion of an end face.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclass 42, 43 and 43.1+ for a tool or work-holding socket of similar structure.

124.3 Through socket and perpendicular handle:
This subclass is indented under subclass 121.1. Tool wherein the opening extends completely through the tool and an elongated hand engagable member is attached to the enclosing walls such that the axis of the hand engagable member and the axis of the opening are orthogonal.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclasses 95+ for a bottomless chuck or socket, per se, for holding a tool bit or work part.

124.4 Plural sockets:
This subclass is indented under subclass 121.1. Tool including a second discrete work engaging portion which comprises enclosing walls forming an opening adapted to receive a nut or the like.

124.5 Slidably or pivotally connected to handle or to each other:
This subclass is indented under subclass 124.4. Tool wherein the two discrete work engaging portions are attached to a hand engagable portion or to each other by connecting structure which either (1) allows guided translational movement between the two attached portions or (2) allows relative swinging movement of the two attached portions.

124.6 Having axial opening for removable handle:
This subclass is indented under subclass 121.1. Tool including a second opening, or a continuation of the nut receiving opening, which extends from the end opposite the nut receiving opening and along the same axis, and which is adapted to detachably receive a hand engagable member.

SEE OR SEARCH THIS CLASS, SUBCLASS:
177.85, for a handle or shank, per se, provided with socket mounting structure.

SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclasses 76+ for a tool or work-holding socket having a side detent.

124.7 Having perpendicular handle:
This subclass is indented under subclass 121.1. Tool including an elongated hand engagable portion attached to the work engaging portion such that the longitudinal axis of the hand engagable portion and the axis through the nut receiving opening are orthogonal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for a bit stock having a perpendicular handle and ratchet mechanism, and which may be used to drive a socket type tool.

125 The socket has means for holding a nut from dropping out.

125.1 This subclass is indented under subclass 119. Wrenches having rigid jaws at each end of the handle or like drive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
77, for double ended wrenches whereby the jaws at each end thereof are simultaneously adjustable.

126 The actuation of a handle-lever causes a sliding jaw to grip the work. A pull on the handle closes the jaws.

SEE OR SEARCH CLASS:
7, Compound Tools, subclasses 125+.

127 The actuating-lever has a claw or tooth which claws or forces the sliding jaw to its work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
359+, for sliding jaw tools actuated by claw-lever and rack means.

SEE OR SEARCH CLASS:
7, Compound Tools, subclasses 125+.

128 A cam is actuated to operate a sliding jaw or cooperates with said jaw to produce a sliding movement thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:
26,
57.18, for machine wrenches provided with cam operated jaws.

129 This subclass is indented under subclass 52. Wrenches having one or more sliding jaws.

129.5 Rack:
This subclass is indented under subclass 129. Tool wherein a rack is provided for fixing or adjusting one jaw relative to another.

131 The jaws are carried by handles which interlock.

SEE OR SEARCH THIS CLASS, SUBCLASS:
318, for means to hold jaws of a plural-handle wrench in position.

132 The jaws are locked by means of a set screw or nut which locks together the rack and its interlocking part.

133 A pinion which travels on a rack on the shank is locked so as to prevent movement of the pinion carrier.

134 A pivoted device or a device moving as if on a pivot interlocks with a rack.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30,

135 The catch does not travel with the traveling-jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30,

136 The nontraveling catch has its pivot between its locking end and its operating part.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30, and 140.

137 The catch has its pivot or axis of movement lying longitudinally of the handle. It swings transversely of the interlocked rack.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30, 159, 160, and 161.

138 The catch is forced by a cam into locking engagement with the rack.

139 The catch is operated by a part not rigidly attached thereto.

140 The catch moves on a pivot located between its locking end and its operating part.

SEE OR SEARCH THIS CLASS, SUBCLASS:
136,

141 A cam engages the shank and draws the rack and the teeth of its cooperating member together.

142 A sliding catch interlocks with the rack of the sliding part.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31,

143 A cam holds the catch in engagement with the rack.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31,

144 A screw or nut holds the catch in engagement with the rack.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31,

145 A spring forces the catch into engagement with the rack.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31,

146 A spring presses the teeth of a jaw carrying frame into engagement with teeth on the shank of the other jaw.

(1) Note. This subclass includes only those jaw-frames whose teeth are not integral therewith.

147 The frame and the teeth are integral.

148 A wedge forces the teeth of one part into locking engagement with the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
154,

149 A special part not rigidly attached to the wedge moves the latter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
154,

150 The traveling jaw is locked to the shank by a gripping or clamping action.

151 The traveling jaw moves sidewise of the shank, the plane of the meeting faces of the jaws lying on opposite sides of the longitudinal axis of the handle or of a line parallel thereto.

152 A yoke or ring-like device has a portion which grips or bites the shank to lock the traveling jaw.

153 The traveling jaw is locked by gripping or clutching action of a roller upon the shank.

154 The traveling jaw is locked to the shank by one or more inclines.

SEE OR SEARCH THIS CLASS, SUBCLASS:
148, and 149.

155 The sliding part is adjusted by means of a threaded device.

156 The nut is made of sections which move away from the screw or of a single section which partially surrounds the screw and moves away from the screw in order to make a quick adjustment.

157 The nut or screw is separated bodily from its cooperating member to provide a quick adjustment.

SEE OR SEARCH THIS CLASS, SUBCLASS:
36, and 137.

158 The screw is carried by the traveling jaw and is moved away from its cooperating member which is a rack on the shank, to provide a quick adjustment.

SEE OR SEARCH THIS CLASS, SUBCLASS:
36, and 176.

159 A portion of the threads are removed from cooperating parts, so that by registering theremoved portion of one part with the full portion of the other a quick adjustment is provided.

SEE OR SEARCH THIS CLASS, SUBCLASS:
37,

160 An interiorly-threaded device is operated to lock and advance the jaw at the time of locking.

SEE OR SEARCH THIS CLASS, SUBCLASS:
37, and 137.

161 The nut is secured to the traveling jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
37, and 137.

162 An externally-threaded device secured to the traveling jaw is operated in connection with rack-like threads on the shank of the fixed jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
37, and 176.

163 The sliding part or parts are adjusted by the actuation of a device having right and left threads.

SEE OR SEARCH THIS CLASS, SUBCLASS:
35,

164 This subclass is indented under subclass 155. Wrenches in which a rotatable handgrip is provided with or connected to an exteriorly threaded portion, which portion is threadedly connected to the sliding jaw whereby rotation

of the handgrip causes the threads to advance or retract a jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
108, for wrenches provided with rotatable handgrips for adjusting a pivoted jaw.
168+, for handles provided with an interiorly threaded nut element which engages a threaded rod so that rotation of the handle causes the threads to advance or retract a sliding jaw.

SEE OR SEARCH CLASS:
30, Cutlery, subclasses 93+.

165 The sliding jaw has a movement transverse of the shank supporting it. Wrenches, Sliding adjustments, Thread, Nontraveling rotatable nut. An interiorly-threaded device having no travel is operated to adjust the sliding part.

166 The actuating-nut is seated between the jaws and the end of the handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
168,

167 The outer jaw is adjusted by the actuation of a nut between jaws and the end of the handle.

(1) Note. Where the nut is used as the fulcrum of a swinging outer jaw, see this class, subclass 101.

(2) Note. Where the nut is carried on a rocking washer, see this class, subclass 104.

(3) Note. Where the nut is carried in a rocking sleeve which guides an outer jaw, see this class, subclass 105.

SEE OR SEARCH THIS CLASS, SUBCLASS:
169,

168 The actuating nut is seated at the end of the handle.

(1) Note. Where the nut is used as the fulcrum of a swinging outer jaw, see this class, subclass 101.

(2) Note. Where the nut is carried on a rocking washer, see this class, subclass 104.

(3) Note. Where the nut is carried on a rocking sleeve which guides an outer jaw, see this class, subclass 105.

SEE OR SEARCH THIS CLASS, SUBCLASS:
166,

169 The outer jaw is adjusted by the actuation of a nut at the end of the handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
167,

170 An exteriorly-threaded device having no longitudinal movement is actuated to adjust the sliding part.

171 The screw has its bearing in or on a bracket, usually on or a part of the upper end of the handle proper.

SEE OR SEARCH THIS CLASS, SUBCLASS:
93, where the screw is used as the fulcrum of an inner jaw.

172 This subclass is indented under subclass 170. Wrenches , in which the exteriorly threaded member comprises a shaft portion having a spiral groove which is engaged by a projection on a slidable actuator, the actuator being manually reciprocated in a path parallel to the longitudinal axis of the handle to rotate said threaded member.

(1) Note. The actuator may form the slidable jaw.

173 An interiorly-threaded device carried by the sliding part is actuated to secure an adjustment.

174 The actuating-nut cooperates with threads upon the handle-bar.

SEE OR SEARCH THIS CLASS, SUBCLASS:
93, where the nut is used as the fulcrum of an inner jaw.

107, and the notes thereto.

175 An exteriorly-threaded device travels longitudinally to make an adjustment.

176 The actuating screw travels with the sliding part and cooperates with rack-like threads upon the shank.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152, and 162.

176.1 Spanner:
This subclass is indented under subclass 52. Wrench including two spaced work engaging portions, one of which comprises a projection or recess which is adapted to engage a cooperating recess or projection, respectively, on the peripheral or an end face of the work.

(1) Note. The flats and corners of a common bolt head or nut are not considered to be "projections or recesses" as required by this definition.

(2) Note. Tools provided with two spaced projections which are adapted to be inserted into corresponding recesses specifically provided in the end face of the work are provided for above in subclasses 461+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
461, for a screwdriver or wrench having plural spaced projections provided on engagement with a corresponding recess provided in an end face of the work and for applying a torque thereto.

176.15 Having means to engage work axially:
This subclass is indented under subclass 176.1. Wrench wherein the work engaging projection or recess extends along the axis about which the twisting strain is applied to the work.

176.2 And means to engage peripheral face of work:
This subclass is indented under subclass 176.15. Tool wherein the other of the two spaced work engaging portions is adapted to engage the outer periphery of the work.

176.3 Having relatively movable jaws:
This subclass is indented under subclass 176.1. Tool wherein the two spaced work engaging portions are connected to each other by structure which permits one to pivot or translate relative to the other.

177.1 Handle or shank:
This subclass is indented under subclass 52. Tool wherein significance is attributed either to a portion adapted to be engaged by the hand or to an elongated portion which connects a handle to the work engaging portion of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:
489+, the generic locus for tool handles which are not disclosed for use with a particular type of hand tool, and see the search notes thereunder.

SEE OR SEARCH CLASS:
16, Miscellaneous Hardware, subclasses 110.1+ for other miscellaneous handle structure.

177.2 Extensible handle or handle extension:
This subclass is indented under subclass 177.1. Tool comprising either (1) a hand engageable portion which is elongatable or is slidably retractable, or (2) a selectively attachable auxiliary hand engageable portion.

(1) Note. The tool must be usable when the handle is unextended (part 1), or with the auxiliary portion unattached (part 2).

SEE OR SEARCH THIS CLASS, SUBCLASS:
177.6, for a handle which is collapsible or foldable to a nonuse configuration.

177.3 Having finger opening:
This subclass is indented under subclass 177.1. Tool including structure which forms a passageway adapted to accommodate a finger of the user therein.

SEE OR SEARCH CLASS:
224, Package and Article Carriers, subclass 217 for an article carrier attached to the finger.

177.4 Having means to store parts:
This subclass is indented under subclass 177.1. Tool wherein either a compartment or other means is provided on the hand engageable portion or the elongated connecting portion to retain other parts of the tool in a position of nonuse.

177.5 Having terminal cross arm:
This subclass is indented under subclass 177.1. Tool wherein the elongated hand engageable portion is connected transversely to the elongated connecting portion at the distal end of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:
124.3, and 124.7, for a socket provided with a handle comprising a terminal cross arm.

177.6 Foldable or flexible:
This subclass is indented under subclass 177.1. Tool wherein the handle or shank either (1) is comprised of swingably connected sections collapsible to a nonuse configuration, or (2) comprises an elastically deformably member whereby the handle or shank may be flexed in a direction transverse to its length.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for a bit stock having a foldable handle.
177.2, for an extensible handle usable in both the extended and collapsed configuration.

177.7 Having pivoted handle section:
This subclass is indented under subclass 177.1. Tool including a hand engageable portion which is swingably attached to an adjacent portion that includes or is adapted to mount the work engaging portion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
177.6, for a handle or shank which is foldable to a nonuse configuration.
450, for a screwdriver or allen wrench adapted to pivot or swivel with respect to the longitudinal axis of the handle.

SEE OR SEARCH CLASS:
403, Joints and Connections, subclasses 52+ for a pivotal connection between sections of a nominally claimed article.

177.75 Universal joint:
This subclass is indented under subclass 177.7. Tool wherein the hand engageable portion is swingably attached to the adjacent portion by two serially connected pivotal movement about orthogonal axes.

SEE OR SEARCH CLASS:
403, Joints and Connections, subclass 57 for a universal joint connecting sections of a nominally claimed article.

177.8 This subclass is indented under subclass 177.1. Wrench or screwdriver having means for changing the angle between the handle and the work engaging part, the angular adjustment being less than 360°.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57.26, for gear operated machine wrenches provided with angularly adjustable drive means.
58+, for clutched head wrenches having handle and head adjustments of 360o or more.

177.85 Including socket and boss type connecting means:
This subclass is indented under subclass 177.1. Tool including structure provided on the handle or shank for selective assembly or disassembly with another tool part having cooperating structure wherein the connecting structure comprises a recess or opening in one part which is adapted to receive a protrusion formed on the other part.

SEE OR SEARCH THIS CLASS, SUBCLASS:
124.6, for a claimed socket wrench having an axial socket adapted to receive a boss on a handle as provided for in this subclass (177.85).

177.9 This subclass is indented under subclass 177.8. Wrench or screwdriver wherein a dog on one member is resiliently urged against one of a plurality of surfaces on the other member to permit adjustment in one direction of rotation of the handle relative to the head by the shifting of the dog to a different surface without manual actuation of the dog.

178 The jaws are reversible to bring a new part into operative position.

179 The jaw or jaws are provided with a sliding jaw-face which moves in some degree transversely of the shank.

180.1 Attachment, or including adjunct or replaceable portion:
This subclass is indented under subclass 52. Tool including a part which is connected to the remainder of the tool by structure which permits its ready removal and replacement, or a portion which has been added to the wrench to perform a specific function but does not essentially form part of the wrench, or a subcombination in the form of a part selectively connectable to a wrench.

SEE OR SEARCH THIS CLASS, SUBCLASS:
125, for a wrench attachment which holds a nut to prevent it from dropping out of a wrench.

SEE OR SEARCH CLASS:
7, Compound Tools, subclasses 138+ for a wrench which is provided with a diverse tool.

181 Attachments and adjuncts which are applied to wrenches to convert them into cutters and which are so combined with the wrench that the parts which operate the jaws of the wrench are employed for applying the necessary pressure to the cutters.

(1) Note. Cutters of a general nature applied to various parts of the wrench, but not coming within the above definition, are found in Class 7, Compound Tools.

SEE OR SEARCH CLASS:
30, Cutlery, appropriate subclasses, for cutters, per se.

182 The cutters are rotary disks or the like.

183 Rollers added to wrench-jaws and causing a clutch-grip on the work.

184 The attachment is sleeved upon or partially embraces the shank of the wrench.

185 Attachments for reducing the size of wrench-sockets.

185.1 Removable jaw face:
This subclass is indented under subclass 180.1. Tool comprising a work-engaging portion which is selectively attachable to or detachable from the wrench.

SEE OR SEARCH THIS CLASS, SUBCLASS:
421+, for a jaw attachment for pliers.

SEE OR SEARCH CLASS:
269, Work Holders, subclasses 271+ for a jaw attachment for a work holder.

185.2 Movably mounted:
This subclass is indented under subclass 180.1. Tool comprising an attachment or adjunct which is connected to the remainder of the wrench by means which permits pivotal or translational movement between the two parts.

(1) Note. Included in this subclass are wrenches having a multifaced element which is moved or reoriented to one of a plurality of positions to present a selected jaw face.

186 Inventions relating to the surface structure of the jaws.

SEE OR SEARCH THIS CLASS, SUBCLASS:
38, for vise jaw attachments.
421+, for jaw attachments to pliers and tongs.

300 This subclass is indented under the class definition. Tools including at least two relatively movable work-engaging elements (constituting jaws), at least two relatively movable hand-gripped elements (constituting handles), and joint mechanism interconnecting said jaws and said handles whereby manipulative movement of the handles with respect to each other effects relative movement of the jaws.

(1) Note. Generally, the tools in this and indented subclasses are characterized and distinguished from the wrenches of subclasses 53+ in that said tools include at least two hand-gripped members relatively manipulated to effect relative jaw positioning so as to engage work, while the wrenches of subclasses 53+ have but a single hand-gripped member manipulated to transmit such manipulation to work. Once the plural handles of a tool, here classified, have been relatively manipulated to effect jaw engagement with work, said plural handles may be further manipulated together as a unit, similar to a wrench handle, to transmit such further manipulation to the work.

(1.5) Note. Tools wherein relative jaw positioning is effected solely by longitudinal shifting of elongated hand-gripped members with respect to each other (as for example in Patent No. 585,412), are classified in appropriate subclasses under subclasses 53+. Such tools, which also include additional means to further relatively position said jaws, which means are, per se, encompassed by the definition of subclass 300 (as for example Patent No. 1,195,321) are classified hereunder. On the other hand, where the additional means to further relatively position the jaws are not encompassed by the above definition of subclass 300 (as for example Patent No. 864,659), classification is in subclasses 53+.

(2) Note. Compound tools which include a tool of the type classified in this or indented subclasses plus a wrench of the type classified in subclasses 53+, would be classified in this or the indented subclasses and cross-referenced into the appropriate subclass in Wrenches, subclasses 53+.

(3) Note. Included in this subclass are attachments for tools otherwise falling within the definition above, which attachments have means to substitute for or supplement hand action for handle manipulation of the handles relative to each other, (see Patent No. 1,412,205).

(4) Note. Ordinarily the user of a tool herein classified uses the tool by adjusting the jaw(s) (if jaw adjustment means is provided) to the approximate size of the work, then brings the tool jaws into close proximity with the work and moves the hand-gripped members (usually toward each other, but not limited thereto) so as to actuate the jaws to engage and grip the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3+, for pliers and tongs specialized for handling particular articles.

SEE OR SEARCH CLASS:

7, Compound Tools, subclasses 125+ for plier type tools.

15, Brushing, Scrubbing, and General Cleaning, subclasses 147.1+ for mop holders.

29, Metal Working, subclasses 700+, particularly subclasses 218, 221, 223+, 232, 248, 268 for plier or tong type devices specially designed to engage work and to exert either a pull or a push to assist in assembling or disassembling.

30, Cutlery, subclasses 92+ for pipe and rod cutters, subclass 120.2 for nut crackers, subclasses 175+ for nippers and subclasses 194+ for shears.

72, Metal Deforming, subclasses 409.01+ for a plier-type metal deforming device.

100, Presses, subclasses 234+ and 243 for presses, not elsewhere classified, of the plier type.

118, Coating Apparatus, subclass 504 for opposed jaw work-holding devices.

119, Animal Husbandry, subclasses 801+ for catching and holding tools provided with jaws or tong fingers.

128, Surgery, subclasses 319+ for crushers, subclasses 321+ for forceps having pivoted arms carrying contacting members for grasping parts of the human body or articles within the human body, and subclass 340 for plier type devices for grasping and manipulating a surgical needle in the application of a suture to a wound by means of the needle.

140, Wireworking, subclass 121 for plier type wire-joining tools, subclass 106 for crimping implements and subclass 123 for plier type implements.

227, Elongated-Member-Driving Apparatus, subclass 144 for apparatus for applying a member, e.g., staple, of the plier type.

251, Valves and Valve Actuation, subclass 4 for tube compressors.

294, Handling: Hand and Hoist-Line Implements, appropriate subclasses, for jaw actuator means. Specific search notes to subclasses under Class 294 are to be found under appropriate subclasses hereunder.

433, Dentistry, subclass 4 for orthodontic pliers; and subclasses 159+ for dental forceps and pliers.

452, Butchering, subclasses 13+ for bivalve openers and subclass 194 for fish dr4essing and holding tools.

GLOSSARY

For the purposes of this and the indented subclasses, the following terms are defined:

ACTUATION

The manipulation of handles relative to each other, so as to move jaws to engage work, within the limits of a predetermined range of jaw movement. (See the definition of “RANGE” hereunder).

ADJUSTMENT

The changing of structural relationships between members constituting the tool so as to vary the limits of jaw movement from one predetermined range to another. (See the definition of “RANGE” hereunder).

HANDLE-MEMBER

A member which is gripped by the hand of the operator to which member one of the jaws is fixedly attached at least during the actuation of the jaws.

HANDLE-LEVER (OR GRIP-LEVER)

A hand-gripped element connected to a handle-member and to a movable jaw as by pivot, link or motion-converting means, which hand-gripped element actuates the movable jaw.

HANDLE

The generic term for either a handle-member or a handle-lever where no distinction between the two members is necessary.

JAW

An element carrying at least one work engaging surface, two or more of such elements engaging and holding the workpiece.

JOINT MECHANISM

First means connecting the jaws movably to each other, second means for connecting at least one of the jaws movably to the handles, and third means connecting the handles movably to each other; said first, second and third means (either singly or in combination with each other) converting handle manipulation into relative jaw motion. The joint mechanism may consist, for example, of a common first, second and third means as for example in Patent No. 2,325,035; or a common second and third means as for example in a pair of cross-handled pliers.

RANGE

The extent of movement of the jaws relative to each other, unobstructed by the work to be engaged or by contact of the jaw surfaces, which movement is effected by manipulation of the handles from one extreme position of the handles to the other extreme position of the handles relative to each other. The range is predetermined by the structural relationships between the elements constituting the tool. To illustrate: assuming that the movement of the handles between extremes of handle positions effects a jaw movement of one inch, the one inch dimension equals the range, which range is the same even though the device may be adjusted so that in

one instance the jaws move from a zero gap position (closed) to a one inch gap or in another instance from a one-half inch gap to an inch-and-one-half gap. The shift described is defined as adjustment; the manipulation of the handles to effect the one inch of jaw movement is defined as actuation.

TOGGLE JOINT OR TOGGLE

A linkage including at least two links, pitmans, bars or struts, and at least three pivots, the end of one link being connected to the end of the other link by a pivot common to both links, each of said links also having a pivot at the end remote from the common pivot, which common pivot or intermediate pivot is movable from a position not in a straight line with the other two pivots, to a position substantially in line by a force applied to the intermediate pivot in a direction substantially normal to one of the links thereby moving at least one of the two pivots away from the other. At least one of said links is articulated at both ends and is not integral with either a jaw or a handle. The intermediate pivot is on the handle-lever or is connected to the handle-lever by a linkage or lever system between said intermediate pivot and the handle-lever, so that force is applied to the intermediate pivot by manipulation of the handle-lever.

301 This subclass is indented under subclass 300. Tools having a fluid force transmitting means.

SEE OR SEARCH CLASS:
91, Motors: Expansible Chamber Type, appropriate subclasses for expansible chamber type motors, per se.
418, Rotary Expansible Chamber Devices, for rotary expansible chamber devices, per se.

302 This subclass is indented under subclass 300. Tools including at least two jaws, each of which has a work-engaging surface facing away, oppositely, from the other jaw, and in which the movement of the handles towards each other effects movement of the jaws away from each other whereby the jaw surfaces engage interior surfaces of the work.

(1) Note. Jaws which have outwardly-facing work-engaging surfaces, which jaws move towards each other as the handles are moved together, are classified in other subclasses on the basis of features other than the facing of the work-engaging jaw portions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3, for specialized expanding devices, such as boiler tube spreaders, piston-ring removers and the like, and especially subclass 3.05 for shell, projectile and wad-extractors.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 239 for tools for spreading parts.
43, Fishing, Trapping, and Vermin Destroying, subclass 36 for expanding jaw traps.
128, Surgery, subclass 303.11 and 341+ for a delating instrument.
168, Farriery, subclass 47 for hoof and shoe expanders.
294, Handling: Hand and Hoist-Line Implements, subclasses 93+ for expanding jaw grapples.

303 This subclass is indented under subclass 300. Tools including three or more work-gripping jaws.

(1) Note. Included herein are those devices in which only two of the jaws may be actuated to grip the workpiece, those in which one jaw may be common to each of the other two, and those in which three or more handles may be provided to actuate any pair of jaws independently of the other jaw(s).

(2) Note. Pairs of jaws, each jaw of which includes two or more tines or fingers, are not found herein. See subclass 419 for this feature.

SEE OR SEARCH THIS CLASS, SUBCLASS:
419, and see (2) Note above.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclasses 3+ and 87.1+ for tools for grasping multiple objects.

304 This subclass is indented under subclass 303. Tools including two handles only, which handles are manipulated for movement with respect to each other to actuate the jaws.

305 This subclass is indented under subclass 304. Tools including two pairs of jaws on opposite sides of joint means common to both pairs of jaws, each pair facing away from said common joint, both jaw pairs actuated by the same handle pair.

(1) Note. Included in this subclass are tools in which the handle pair may be positioned so as to be adjacent either one of the jaw pairs, extending to one side of the joint, the other jaw pair extending to the other side of the joint.

306 This subclass is indented under subclass 305. Tools in which at least one set of jaws (which set comprises one jaw from each pair, said jaws of the set secured to each other and extending away from the common joint) is secured to one of the handles.

(1) Note. Included in this subclass are tools in which the two jaws of the secured set and the handle form a T-shape.

307 This subclass is indented under subclass 304. Tools including two spaced jaws each actuated by one of the handles and one or more auxiliary jaws, each having work-engaging surfaces on opposite faces of the said auxiliary jaw, each auxiliary jaw interposed in the space which separates said two spaced jaws.

308 This subclass is indented under subclass 304. Tools limited to three work-gripping jaw elements.

309 This subclass is indented under subclass 308. Tools including first joint mechanism converting handle manipulation into arcuate motion of two of the jaws and second joint mechanism converting said handle manipulation into substantially rectilinear movement of the third jaw relative to said first joint.

310 This subclass is indented under subclass 308. Tools including one or more joint mechanisms converting handle manipulation into arcuate movement of each of the jaws relative to the other two jaws.

311 This subclass is indented under subclass 304. Tools including at least four jaws arranged in plural sets of two coacting work-gripping surfaces in each set, each of said sets actuated by manipulation of the handles.

(1) Note. The jaw pairs may be similar to grip two or more objects individually or simultaneously, or may be different one pair from the other, to grip different objects.

SEE OR SEARCH THIS CLASS, SUBCLASS:

305, for tools including two pairs of jaws extending away from each other.

312 This subclass is indented under subclass 311. Tools in which the sets of surfaces are generally parallel to each other and separated from each other along a line substantially normal to the surfaces.

(1) Note. The jaws are simultaneously actuated for movement in a plane common to all the jaws.

313 This subclass is indented under subclass 300. Tools including means requiring a full predetermined extent of jaw motion prior to restoring the jaw(s) to an original position.

(1) Note. The cycle of operation is such that manipulation of the handles relative to each other effects only unidirectional movement of the jaws (usually toward each other) and only after the limit of such unidirectional movement is reached can the direction of jaw movement be reversed.

(2) Note. Included here are devices known in the art as full-stroke compelling mechanisms.

(3) Note. See the definition of “RANGE” under subclass 300.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclass 17.5 for full stroke compelling mechanisms.

314 This subclass is indented under subclass 300. Tools including means which convert a plurality of handle manipulations, alternating to and fro relative to each other, into an intermittent and unidirectional series of jaw motions.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses under 111+ for intermittent grip type actuators.

315 This subclass is indented under subclass 300. Tools including means for latching the handles against pivotal movement with respect to each other and means for moving the jaws with respect to each other while the handles are latched.

(1) Note. Tools in this and indented subclasses are convertible to use as wrenches or as pliers, see (1) Note under subclass 325.

SEE OR SEARCH THIS CLASS, SUBCLASS:
324, for convertible tools in which the relative jaw position is fixed.

316 This subclass is indented under subclass 315. Tools including means for latching the handles in any one of a number of desired handle relationships.

317 This subclass is indented under subclass 315. Tools wherein one handle slips or slides parallel to its own length with respect to and parallel to the length of the other handle.

(1) Note. Included in this subclass are tools in which the jaws are secured one to each handle whereby handle movement effects jaw adjustment.

318 This subclass is indented under subclass 300. Tools including means for holding the jaws against movement relative to each other despite continued application of force by the operator tending to urge the handles together or apart.

(1) Note. Included in this subclass are tools which require continued application of said force urging the handles together or apart or urging a finger-pressed element to hold the jaws in the desired relationship.

(2) Note. The subclasses indented hereunder provide for tools which do not require continued application of force by the operator to hold the jaws in the desired relationship.

(3) Note. Tools which provide means for preventing pivotal movement of the handles with respect to each other, but do not prevent movement of the jaws while the handles are so held are not classified in this or indented subclasses. For such tools see subclasses 315+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
131, for means locking the jaws of a wrench into a desired relationship.
315+, and see (3) Note above.

SEE OR SEARCH CLASS:
70, Locks, subclass 19 for jaw type locks.
128, Surgery, subclass 322 for forceps for grasping parts of the person and which forceps are locked to prevent release of the hold.

319 This subclass is indented under subclass 318. Tools including means both for latching the jaws in a desired relationship and for disengaging the latch means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
368+, for toggle release means.

320 This subclass is indented under subclass 318. Tools including means both for latching the jaws in a desired relationship and for holding the latch means out of operative or latching position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
372, for means to prevent the locking of a toggle linkage.

321 This subclass is indented under subclass 318. Tools including a latch, one portion of the latch mounted on one handle, another portion of the latch mounted on the other handle, and resilient

means biasing the handles towards or away from each other, whereby the bias maintains latch interengagement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
417, and 427, for spring-urged jaws and/or handles.

322 This subclass is indented under subclass 321. Tools including additional resilient means, separate and apart from the handle biasing means, for maintaining latch interengagement.

323 This subclass is indented under subclass 318. Tools including means for holding the jaws in the desired relationship and resilient means for biasing said holding means into jaw securing position.

324 This subclass is indented under subclass 318. Tools including means for latching the jaws rigidly into desired relationship.

(1) Note. Included herein are tools wherein the jaws are secured in a closed position for safe storage or transport.

325 This subclass is indented under subclass 324. Tools including means for latching the jaws in any one of a number of desired adjusted positions.

(1) Note. Included in this and indented subclasses are tools which are convertible for use as a wrench (for which use the jaws are adjustable but are fixed or locked to each other during application of torque to the work by the tool), or for use as a pair of pliers (for which use the lock is disabled to permit a range of jaw movement).

(2) Note. Included in this subclass are tools which include a toggle linkage for actuating the jaws plus means to secure or fix the linkage in latched position.

(3) Note. See definition of “TOGGLE” and “ACTUATION” under subclass 300.

SEE OR SEARCH THIS CLASS, SUBCLASS:
315+, for convertible tools in which the angular relative handle position is fixed.

326 This subclass is indented under subclass 325. Tools in which the latch means includes screw elements.

327 This subclass is indented under subclass 326. Tools including screw elements for adjusting the jaw position.

(1) Note. The jaw adjusting means are in addition to the latch means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
388+, and see notes thereunder for other threaded jaw-adjusting means.

328 This subclass is indented under subclass 325. Tools including toothed and indented members interengaging to prevent relative jaw movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
392, for other interdigitated lock means.

329 This subclass is indented under subclass 300. Tools including means to restrain the jaws against movement away from the work engaged, which means does not restrict movement of the jaws towards the work.

(1) Note. Included in this and indented subclasses are tools in which the jaws close to engage the work, which work alone limits further closing of the jaws, and the restraining means prevents the jaws from opening for so long as the operator desires the locked jaw condition. For similar tools in which jaw closing is limited by means other than the work engaged, see this class, subclass 341.

(2) Note. This subclass and indented subclasses specifically exclude toggle-link means for locking the jaws on the work; see (3) Note below. This and indented subclasses do not exclude toggle-link

means to actuate the jaws for movement together with other means for locking the jaws.

(3) Note. Since toggle linkages used for jaw actuation are inherently locked on the work by reason of the intermediate pivot passing through and beyond the straight line position of the links, all toggle actuated subclasses should be searched for this feature, including subclasses 363 and 367+.

(4) Note. See the definition of "TOGGLE" under subclass 300.

SEE OR SEARCH THIS CLASS, SUBCLASS:
319, and 320, for tools otherwise classified in this and indented subclasses, but provided with lock release means and lock disabling means respectively.
341, and see (1) Note above.
363, and 367+, and see (3) Note above.

330 This subclass is indented under subclass 329. Tools in which the restraining means is effective in predetermined jaw positions chosen by the operator.

(1) Note. Included in this subclass are tools which require a preliminary spacing of the jaws to a distance slightly greater than the span of the work, such that when the handles are manipulated to actuate the jaws, said jaws will lock on the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
385+, for jaw adjustment means.

331 This subclass is indented under subclass 329. Tools including latch means, separate and apart from the handles or jaws, which latch is set by the operator to restrain the jaws.

(1) Note. Tools classified in this and indented subclasses, particularly subclass 333, are those in which the movement of the jaws is effected by manipulation of the handles, and the jaw movement is prevented, at the will of the operator, by the latch means. For tools which are similar in structure to tools classified herein, but differ in that the jaw movement is effected by movement of the latch means, see this class, subclass 112.

SEE OR SEARCH THIS CLASS, SUBCLASS:
112, and see (1) Note above.

332 This subclass is indented under subclass 331. Tools including a loop or bight mounted on one handle to be swung over the other handle.

333 This subclass is indented under subclass 331. Tools including a collar, bight or loop element embracing both jaws or both handles, which element is moved longitudinally of the handles to firmly engage both jaws or both handles.

(1) Note. See (1) Note under subclass 331.

334 This subclass is indented under subclass 331. Tools including internal and external screw elements one of which elements is manipulated into abutting relationship with a portion of a jaw or handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
388+, and see search notes thereunder.

335 This subclass is indented under subclass 334. Tools in which the manipulated element is internally threaded.

SEE OR SEARCH THIS CLASS, SUBCLASS:
390, for nut means adjusting a jaw.
402+, for nut means adjusting the jaw and/or handle.

336 This subclass is indented under subclass 331. Tools including a cog or projection connected to one handle and a swinging member connected to the other handle, said swinging member having notches or indentations therein for engagement by said cog or projection.

337 This subclass is indented under subclass 331. Tools including indentations or notches connected to one handle and a swinging member connected to the other handle, said swinging

member having a cog or projection thereon for engagement with said indentations or notches.

338 This subclass is indented under subclass 329. Tools including a cog or projection connected to one handle or jaw mating with indentations or notches connected to the other handle or jaw.

(1) Note. The pawl or cog may be provided with one, two or three teeth which fit into the indentations of the rack member. For tools in which substantial areas of contacting surface are roughened or serrated, see the search this class, subclass note below.

SEE OR SEARCH THIS CLASS, SUBCLASS:
340, for tools in which substantial areas of contacting surface are roughened or serrated,and see (1) Note above.

339 This subclass is indented under subclass 329. Tools including two portions slidable relatively to each other in surface-to-surface contact, the surfaces approaching each other as the jaws are actuated by handle manipulation, and engaging firmly to resist retracting movement as the jaws engage the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:
323, for other frictional latch means urged into latching position by a spring.

340 This subclass is indented under subclass 339. Tools including roughened contacting faces.

(1) Note. Tools in this subclass rely on the increased frictional characteristics inherent in the roughened mating surfaces for locking the jaws on the work.For tools in which a cog fits into the indentations of a rack member to hold the jaws on the work, see this class, subclass 338.

SEE OR SEARCH THIS CLASS, SUBCLASS:
338, and see (1) Note above.

341 This subclass is indented under subclass 300. Tools including means to changeably set or determine the extremes of jaw position.

(1) Note. Included herein are tools in which the jaws close to engage the work and said means limits the closing of the jaws. For similar tools in which jaw opening is limited, see the search this class, subclass notes below.

(2) Note. This subclass is differentiated from the jaw adjustment subclasses 385+, in that tools in this subclass are provided with means to restrict the range of movement of the jaws, whereas tools in subclasses 385+ are provided with means to shift the range of movement of the jaws but leave the extent of such range unchanged.

(3) Note. See the definition of “RANGE” under subclass 300.

SEE OR SEARCH THIS CLASS, SUBCLASS:
329+, for similar tools in which jaw opening is limited, and see (1) Note above.
385+, and see (2) Note above.
418+, and 428, for jaw configuration or handle configuration which limit or restrict jaw or handle positions.

342 This subclass is indented under subclass 300. Tools characterized by joint mechanism which converts relative motion of the handles into a predetermined range of jaw movement.

(1) Note. See definition of “ACTUATION” under subclass 300.

(2) Note. First, second or third class levers are not here considered to be converting means. For example, a nut-cracker or tweezer type of tool otherwise falling within the scope of the definition of subclass 300 is not here classified, but is to be found either in subclass 300 or in other subclasses below on the basis of other features.

(3) Note. For jaw adjustment mechanisms, see subclasses 385+.

(4) Note. See definition of “ADJUSTMENT” under subclass 300.

(5) Note. See definition of "RANGE" under subclass 300.

SEE OR SEARCH THIS CLASS, SUBCLASS:
415, for first class lever tools.

343 This subclass is indented under subclass 342. Tools including structure providing more than one ratio of relative handle movement to relative jaw movement (e.g., mechanical advantage or leverage to actuate the jaws for movement) and further including structure to select or predetermine one desired ratio out of the plurality of ratios available.

(1) Note. Though actuators which include cam means or toggle-link means may be considered as mechanisms for varying the leverage, so that in effect more than one ratio of handle movement to jaw movement throughout actuation is inherent in these exemplary structures, such means, per se, are not included in this or indented subclasses. If, on the other hand, a cam actuator is provided with discrete cam surfaces or with separate means to choose a particular portion of a cam surface, whereby the user may select one of the surface or surface portions for the ratio desired, or a toggle-link actuator is provided with a separate means to vary inherent ratio of the toggle-linkage, whereby the user may change or preset the ratio to that desired, tools including such actuators are classified herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:
361, for sliding-jaw cam actuators.
363, and 367+, for toggle-link actuators.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclasses 516+ for control linkages including variable output and input forces.

344 This subclass is indented under subclass 343. Tools including means providing a finite number of desired leverage ratios.

345 This subclass is indented under subclass 342. Tools in which the handles are fixed on parallel shafts longitudinally slidable relatively to one another, and said shafts are connected to the jaws whereby manipulation of the handles relative to each other effects movement of the jaws.

346 This subclass is indented under subclass 342. Tools including cranked or offset handles fixed at ends of parallel rods or shafts and jaws fixed at other ends of said rods, whereby relative arcuate movement of the handles causes pivotal movement of at least one of the rods about its longitudinal axis effecting similar relative arcuate movement of the jaws.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclass 30 for axially extending handles.

347 This subclass is indented under subclass 342. Tools in which each jaw is movable with respect to its handle by motion of the handle or handles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
421+, for jaw attachments and/or inserts.
424, for tools in which only one jaw is pivoted or articulated to its handle.

348 This subclass is indented under subclass 347. Tools in which the jaws are fulcrumed with respect to each other or a common member for pivotable movement to or from each other.

349 This subclass is indented under subclass 348. Tools including camming means connected to both movable jaws to effect jaw movement.

(1) Note. The term "camming means" is inclusive of a rotary body having a continuous pressure surface of gradually varying radius, or of a movable body having diverging opposed pressure surfaces, in which movement of the pressure surface(s) is caused by movement of the body transversely of a direction of body-compressing motion and between the pressure surface and an abutment.

350 This subclass is indented under subclass 348. Tools including two jaws and two handles, each handle comprising a lever, at one end of which lever is a portion including two separated points of articulation, at the other end of which lever is a hand-grip portion, in which the handles are pivoted together at one of said points of articulation, the jaws being pivoted, one jaw to one handle respectively, at the other of said points of articulation, and the jaws are connected together for angular movement relative to each other.

351 This subclass is indented under subclass 350. Tools in which the connection between the jaws comprises a pintle common to both jaws.

352 This subclass is indented under subclass 347. Tools including means to maintain the gripping faces of the jaws continuously normal to a line perpendicular to and intersecting the jaw faces during jaw actuation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

355+, for tools in which one jaw is fixed to its handle and the other jaw is slidable with respect to said fixed jaw and handle.

373, for toggle linkage tools in which the jaw surfaces are continuously parallel to each other.

353 This subclass is indented under subclass 352. Tools in which jaw parallelism is maintained by means acting normal to the perpendicular intersecting line and along the extent of the jaws.

354 This subclass is indented under subclass 352. Tools in which jaw parallelism is maintained by means acting perpendicularly to the jaw surfaces.

355 This subclass is indented under subclass 342. Tools including a handle-lever and a handle-member and means to convert handle-lever manipulation into substantially rectilinear movement of its jaw normal to the gripping face of the fixed handle-member jaw.

(1) Note. In this and indented subclasses the surfaces of the jaws remain parallel to each other during the jaw actuation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

352+, for tools in which each jaw moves relative to each handle, and the jaw surfaces are continuously parallel to each other.

373, for toggle linkage tools in which the jaw surfaces are continuously parallel to each other.

SEE OR SEARCH CLASS:

294, Handling: Hand and Hoist-Line Implements, subclass 34 and 119.1 for sliding jaw grapples.

356 This subclass is indented under subclass 355. Tools including means to change the limits of sliding jaw movement from one predetermined range to another.

(1) Note. See definition of “ADJUSTMENT” under subclass 300.

(2) Note. In this subclass, as in subclasses 365, 382 and 384 the jaw adjustment mechanism and the jaw actuator mechanism are mounted on the same tool and each mechanism acts in its own way in the tool. For the particular adjustment structure see the indicated adjustment subclasses below.

357 This subclass is indented under subclass 356. Tools including detent or dog means pivoted to the handle-lever for movement thereby, the free end of said means engaging any one of a plurality of notches in a member connected to either the movable jaw or the handle-member jaw.

(1) Note. Tools in which the notched member is connected to the movable jaw permit adjustment of the type classified in subclass 391. Tools in which the notched member is connected to the handle-member permit handle adjustment of the type classified in subclass 410.

(2) Note. Included in this subclass are tools in which the dog means is spring urged toward the notched member.

(3) Note. See the first sentence of (1) Note under subclass 338.

SEE OR SEARCH THIS CLASS, SUBCLASS:
313, and 314, for tools including step-by-step jaw actuators including pivoted dog means.

358 This subclass is indented under subclass 355. Tools in which manipulation of the handle-lever rotates a separate toothed gear or gear segment, which segment engages a complementary notched member connected to either jaw.

(1) Note. A gear segment is here considered to have two or more teeth.

359 This subclass is indented under subclass 355. Tools including tooth or cog means integral with the handle-lever, which means engages an indented member connected to the movable jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
314, for means providing for step-by-step movement.
364, for claw-lever means actuating a pivoted jaw.

360 This subclass is indented under subclass 359. Tools in which the handle-lever has more than one cog.

SEE OR SEARCH THIS CLASS, SUBCLASS:
366, for plural cog coaction with a rack connected to a pivoted jaw.

361 This subclass is indented under subclass 355. Tools including a camming means connected to the slidable jaw which means is operated in response to handle-lever manipulation.

(1) Note. See (1) Note under subclass 349 for an exemplary definition of “camming means”.

362 This subclass is indented under subclass 355. Tools including a pitman pivoted at one point to the handle-lever and at another point either to the slidable jaw or to the handle-member which pitman is operated by manipulation of the handle-lever.

(1) Note. A socket joint is here considered a pivot joint.

363 This subclass is indented under subclass 362. Tools in which either the pitman or an extension of the handle-lever is part of a toggle linkages.

(1) Note. See the definition of “TOGGLE” under subclass 300.

SEE OR SEARCH THIS CLASS, SUBCLASS:
357, for lever and pawl actuator means in which the pawl acts as the connecting rod of a toggle linkage.
367+, for toggle linkage which actuates in articulated or pivoted jaw.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclass 106 for toggle linkage.

364 This subclass is indented under subclass 342. Tools including a handle-lever and a handle-member and tooth or cog means integral with, or pivotally carried by, the handle-lever, which means engages an indented member connected to a movable jaw, whereby handle manipulation oscillates said movable jaw with respect to a fixed jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
314, for means providing for step-by-step jaw movement.
359, for claw-lever means actuating a sliding jaw.

365 This subclass is indented under subclass 364. Tools including means to change the limits of jaw movement from one predetermined range to another.

(1) Note. See (1) Note under subclass 356.

(2) Note. See definition of "ADJUSTMENT" under subclass 300.

366 This subclass is indented under subclass 364. Tools in which the handle-lever has more than one cog.

SEE OR SEARCH THIS CLASS, SUBCLASS:
360, for plural cog coaction with a rack connected to a sliding jaw.

367 This subclass is indented under subclass 342. Tools including a handle-member, a handle-lever and an articulated jaw movable relative to the fixed, handle-member jaw, wherein the joint mechanism includes a toggle linkage.

(1) Note. See definition of the term "TOGGLE" under subclass 300.

(2) Note. Included herein and in the indented subclasses are those tools known in the art as vise-wrench, vise-grip, plier-wrench, locking plier or toggle-wrench type, wherein the jaws are clamped on the work after actuation without further effort by the operator. For other wrenches or pliers in which work is clamped between the jaws, see subclasses 318+ and 329+.

(3) Note. The toggle wrench mechanism in this and indented subclasses is replete with adjustment mechanisms, for which mechanism see subclasses 385+ as appropriate. The greatest number of these adjustments are to be found in subclasses 399+.

(4) Note. Included in this subclass are double toggle linkages which include at least three links (two of which links are connecting rods) and four pivots (one of which pivots is an outer pivot relative to one toggle and an intermediate pivot relative to the other toggle).

SEE OR SEARCH THIS CLASS, SUBCLASS:
318+, and see (2) Note above.
329+, and see (2) Note above.
363, for toggle linkage which actuates a sliding jaw.
385+, and see (3) Note above.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclass 106 for toggle linkages.

368 This subclass is indented under subclass 367. Tools in which a force is applied to the intermediate pivot for moving said pivot to or slightly beyond a straight line passing through the other or outer pivots, thus serving to stabilize the toggle linkage into a locked condition, and including means to alter the stable relationship of the pivots and/or links thus unlocking the toggle linkage.

(1) Note. Tools in this and indented subclasses are usually of the type classified in this class, subclasses 378+, but include a toggle release means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
319, for lock release means.
378+, and see (1) Note above.

369 This subclass is indented under subclass 368. Tools in which the alteration means includes means to apply a second force to the pintle which joins the two links, either directly or by link means, in a direction opposite to the first named force.

370 This subclass is indented under subclass 369. Tools in which the means for applying the second force is mounted on the handle-lever for movement with respect to said handle-lever and said pintle.

371 This subclass is indented under subclass 370. Tools in which the means for applying the second force is carried on the pintle which joins the links.

372 This subclass is indented under subclass 367. Tools including means to restrict travel of the pintle which joins the two links of the toggle.

(1) Note. Included herein are means to prevent locking of the tool on the work by preventing the movement of the interme-

diate pivot beyond a straight line passing through the outer pivots.

SEE OR SEARCH THIS CLASS, SUBCLASS:
320, for other means to disable a lock means.

373 This subclass is indented under subclass 367. Tools including means to constrain the travel of the articulated jaw whereby the work-engaging surfaces of both jaws remain parallel to each other during such travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:
352+, for parallel movement of two articulated jaws.
355+, for parallel movement of one jaw sliding relative to a second handle-member jaw.

374 This subclass is indented under subclass 367. Tools including two connecting-rods (one pivoted to the articulated jaw and the other pivoted to the handle-member) pivoted to each other at the intermediate pivot, and a link or lever-system pivoted at one end to the intermediate pivot and pivoted at the other end to the handle-lever, whereby manipulation of the handle-lever exerts force on the intermediate pivot.

375 This subclass is indented under subclass 367. Tools including an element movable relatively to the handle-member, on which element are pivoted the articulated jaw and the links constituting the toggle mechanism.

376 This subclass is indented under subclass 367. Tools in which one link of the toggle is an integral extension of the handle-lever and the other link is connected between the handle-lever and the articulated jaw.

377 This subclass is indented under subclass 367. Tools in which one link of the toggle is an integral extension of the handle-lever and the other link is connected between the handle-lever and the handle-member.

378 This subclass is indented under subclass 377. Tools including a pintle directly connecting the articulated jaw with the handle-member for actuation of said jaw about said pintle.

(1) Note. For tools of the type classified in this and indented subclasses which include a toggle-release means, see subclasses 368+.

SEE OR SEARCH THIS CLASS, SUBCLASS:
368+, and see (1) Note above.

379 This subclass is indented under subclass 378. Tools including spring means urging the articulated jaw or the toggle linkage or both elements in a desired direction with respect to the fixed jaw or handle-member.

380 This subclass is indented under subclass 379. Tools in which the spring comprises a helically wound wire looped or hooked at each end, the spring being extensible under a stretching load applied to the ends, wherein one end is attached to the articulated jaw and the other end is attached to the handle-member.

381 This subclass is indented under subclass 342. Tools including a handle-lever and a handle-member, in which the handle-lever is pivoted to the movable jaw, both the movable jaw and the handle-lever being pivoted to the handle-member.

(1) Note. The handle-lever may be connected to the handle-member by a toggle-link linkage wherein both links are integral with the respective jaw or handle-lever.

(2) Note. A socket joint is considered as a pivot in this and indented subclasses.

(3) Note. Included in this subclass are tools in which the movable jaw is directly pivoted to the handle-lever; for indirectly or linked pivoted jaws see subclass 383.

SEE OR SEARCH THIS CLASS, SUBCLASS:
347+, for pliers in which each jaw is movable and pivoted to its handle-lever.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclass 119 for tandem lever grapples.

382 This subclass is indented under subclass 381. Tools including means to change the limits of jaw movement from one predetermined range to another.

(1) Note. See (1) Note under subclass 356.

383 This subclass is indented under subclass 381. Tools including a pitman intermediate the handle-lever and the pivoted jaw.

383.5 This subclass is indented under subclass 342. Tools including a handle-member, a handle-lever and an articulated jaw, in which manipulation of the handle-lever effects movement of said jaw through a camming means.

(1) Note. See (1) Note under subclass 349 for an exemplary definition of "camming means".

384 This subclass is indented under subclass 342. Tools including means to change the limits of jaw movement from one predetermined range to another.

(1) Note. See (1) Note under subclass 356.

385 This subclass is indented under subclass 300. Tools characterized by joint mechanism for effecting a selection in the relative position of handles and/or jaws separate and apart from the actuating means for said jaws whereby the range of jaw actuation is shifted into one of a plurality of predetermined ranges.

(1) Note. For jaw actuating mechanisms see subclasses 342+.

(2) Note. See definition of "ACTUATION" under subclass 300.

(3) Note. See the definition of "RANGE" under subclass 300.

(4) Note. This subclass and indented subclasses are differentiated from the jaw movement limiting subclass 341 in that tools in this and indented subclasses are provided with means leaving the range of movement of the jaw(s) unchanged, but changing the placement of the range, whereas tools in subclass 341 are provided with means to change the extent of movement of the jaw(s).

386 This subclass is indented under subclass 385. Tools including means to change the position of at least one jaw with respect to its handle without changing either the position of the handles with respect to each other or the position of the joint connecting said handles.

387 This subclass is indented under subclass 386. Tools including means to change the position of each jaw with respect to its handle.

388 This subclass is indented under subclass 386. Tools in which the mechanism connecting the movable jaw to its handle includes screw elements, whereby manipulation of one of the elements effects adjustment of the jaw relative to its handle.

(1) Note. Included in this subclass are mechanisms including a helically threaded worm member interdigitated with a complementary notched bar or rack wherein the worm is rotated.

SEE OR SEARCH THIS CLASS, SUBCLASS:

155+, for other threaded adjustment means.
327, for other threaded jaw adjustment means.
334, for threaded jaw latch means.
395+, for other threaded jaw adjustment means.

389 This subclass is indented under subclass 388. Tools in which the manipulated element is externally threaded and is rotated to effect movement of the jaw relative to its handle.

390 This subclass is indented under subclass 388. Tools in which the manipulated element is internally threaded, and is rotated to effect movement of the jaw relative to its handle.

391 This subclass is indented under subclass 386. Tools including a toothed member and a complementary notched bar whereby selection of the notch engaged by the tooth determines the adjustment of the movable jaw and holds said jaw in said adjustment during actuation of the jaw(s).

SEE OR SEARCH THIS CLASS, SUBCLASS:
357, for lever and pawl actuator means in which the pawl is pivoted at one end to the handle-lever and engages at the other end with one of the notches in a notched, movable jaw.

392 This subclass is indented under subclass 386. Tools including complementary toothed interfitting means on the movable jaw and handle-lever respectively, and means to secure the toothed means against relative movement in desired position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
328, for other interdigitated lock means.

393 This subclass is indented under subclass 385. Tools including a plural-sectioned handle with means to vary the in-line relationship of one section with respect to another without changing either the position of the jaws with respect to each other or the position of the joint connecting the handles to each other.

394 This subclass is indented under subclass 385. Tools including at least one aperture in one handle, a plurality of apertures in the other handle and a pintle connecting the handles seated in a selected aperture in each handle.

(1) Note. Is is not necessary for the aperture(s) to extend entirely through the handle(s).

395 This subclass is indented under subclass 385. Tools including internal and external screw elements movably connecting the handles to each whereby rotary manipulation of one of the screw elements effects positioning of one handle and its jaw relative to the other handle and jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:
155+, for other threaded adjustment means.
326+, for threaded jaw lock means.
334+, for threaded jaw adjustment means.
388+, for threaded jaw adjustment means.

396 This subclass is indented under subclass 395. Tools including a helical externally threaded member interdigitated with a complementary notched bar whereby manipulation of said member effects jaw adjustment.

397 This subclass is indented under subclass 395. Tools including mating circumferential internal and external screw portions with each portion connected to or carried by a separate handle, one portion and its associated handle moved longitudinally of the other portion by rotation of said handles relative to each other.

398 This subclass is indented under subclass 395. Tools in which the manipulated internal or external screw is rotated and moves both handles.

(1) Note. Included herein are turnbuckle or similar adjusting means having right-hand and left-hand threads.

SEE OR SEARCH THIS CLASS, SUBCLASS:
155, 161, 162, 173, and 175, for screw elements rotated to adjust wrench jaws.

399 This subclass is indented under subclass 395. Tools in which the manipulated element is externally threaded and is rotated to effect axial movement relative to its mating element.

400 This subclass is indented under subclass 399. Tools in which the externally threaded element is connected to the member(s) constituting the joint mechanism for positive movement of said member(s) in each direction.

(1) Note. See subclass 300 for definition of “JOINT MECHANISM”.

401 This subclass is indented under subclass 399. Tools in which the internally threaded element is connected to the member(s) constituting the joint mechanism for positive movement of said member(s) in each direction.

(1) Note. See subclass 300 for definition of “JOINT MECHANISM”.

402 This subclass is indented under subclass 395. Tools including a manipulated element internally threaded and rotated to effect axial movement relative to its mating element.

403 This subclass is indented under subclass 402. Tools in which the externally threaded element is connected to the member(s) constituting the joint mechanism for positive movement of said members in each direction.

(1) Note. See subclass 300 for definition of "JOINT MECHANISM".

404 This subclass is indented under subclass 402. Tools in which the internally threaded element is connected to the member(s) constituting the joint mechanism for positive movement of said members in each direction.

(1) Note. See subclass 300 for definition of "JOINT MECHANISM".

405 This subclass is indented under subclass 385. Tools wherein the joint mechanism includes a pintle fixed to an element, which element is engaged by the operator to move said element and pintle relative to at least one of the handles.

(1) Note. The pintle is usually socketed in one handle and shiftable within a slot in the other handle.

(2) Note. The term "engaged" includes direct manipulation of the element of indirect movement as by a slide or cam.

406 This subclass is indented under subclass 405. Tools in which the element is provided with two portions socketed one in each handle, one portion forming the pintle for handle manipulation, the other portion being transversely offset from said pintle portion, whereby shifting of said other portion within its socket effects an orbital shifting of the pintle portion thereby moving one handle orbitally with respect to the other.

407 This subclass is indented under subclass 385. Tools including means movably connecting the handles to each other, said means constraining the handles for slidable movement relative to each other thereby changing the position of a bearing portion at which one handle pivots with respect to the other.

(1) Note. For adjustment of the jaws the operator grasps one handle in each hand and shifts the fulcrum of the handles by moving one handle substantially along its longitudinal axis. In many cases the handles must be separated by pivoting at the joint prior to the shifting movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

318, for jaw adjustment means including sliding handles, which handles are gripped by the hand of the operator to maintain the adjusted jaw position.

408 This subclass is indented under subclass 407. Tools wherein the bearing portion is carried by an element shiftable longitudinally along one handle, said bearing portion serving as a fulcrum or pivot for oscillation of one handle with respect to the other.

409 This subclass is indented under subclass 408. Tools including means to latch the element in desired adjustment position along the length of the handle.

(1) Note. See subclasses 400, 401, 403, and 404 for pliers with mechanically manipulated joints in which the adjustment is positively held.

409.5 With spring-urged lock for member:
This subclass is indented under subclass 408. Tool including resiliently biased means to secure the element in the desired adjustment position along the handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

357, for lever and pawl actuator means in which the pawl is pivoted at one end to the fulcrum-carrying member and engages at the free end with one of the notches in a notched handle-member.

411 This subclass is indented under subclass 407. Tools including a pintle on one handle selectively engageable with any of a plurality of indentations along an elongated aperture in the other handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
109, for other slotted fulcrum guide structure.

412 This subclass is indented under subclass 411. Tools in which the pintle has a cross-sectioned bearing portion with both a maximum and a minimum dimension, the slot has a plurality of longitudinally spaced enlarged portions substantially equal in size to said maximum cross-sectional dimension, and the enlarged portions are joined to each other by slot portions substantially equal in size to said minimum cross-sectional dimension.

(1) Note. Adjustment is effected by pivotal shift of the pintle so as to align the minimum pintle portion with the minimum slot portion and translational shift into the desired maximum slot portion.

(2) Note. It is not necessary for the enlarged portions of the slot to extend entirely through the handle.

413 This subclass is indented under subclass 407. Tools including a dog(s), projection(s), pin(s) or cog(s) integral with one handle and selectively engageable with any of a plurality of indentations along the facing edge of the other handle.

414 This subclass is indented under subclass 407. Tools in which the joint includes a pintle on one handle engaging an elongated slot in the other handle, at least one arcuate ridge or groove on one handle facing and selectively engaging any one of a plurality of mating arcuate grooves or ridges--the arcuate elements mating along peripheral surfaces--the pintle serving as a common center to the mating arcuate elements in any given selected position.

415 This subclass is indented under subclass 300. Tools wherein the claimed structure includes two levers each with a hand grip portion at one end and a fixed jaw or work gripping portion at the other end, a pivot hole or socket in either or both levers intermediate of the ends, and a pin in the hole(s) joining the two levers together in crossed relationship for pivotal movement of one lever relative to the other.

(1) Note. The pivot pin may be integral with one of the levers and socketed into the other lever.

(2) Note. Jaw adjusting means are not provided for in this subclass, see the jaw adjusting subclasses (385 to 414) above.

(3) Note. The term “fixed” is inclusive of jaw(s) integral with the lever(s) or detachable but immovable with respect to the lever(s) during use, as for example in subclasses 421+.

(4) Note. The term “plier” is not equivalent to crossed handles, and such recitation alone would not preclude classification in the subclasses below.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclasses 28+ and 106+ for pivoted grasping tools.

416 This subclass is indented under subclass 415. Tools including claimed structure specific to the means securing the levers together or to the bearing structure for said means.

(1) Note. For pivots joining crossed handle pliers, which pivots include means for adjusting the jaw and/or handle relationship, see appropriate adjustment subclasses preceding.

(2) Note. For other joint or pivot details a search is required in subclass 385 and indented subclasses. Basically all these subclasses 385+ relate to variations of joint mechanism. The search can be limited somewhat by consideration of the limitations set out by the subclass titles and definitions.

417 This subclass is indented under subclass 415. Tools including means to bias one lever for pivotal movement in a desired direction with respect to the other lever.

SEE OR SEARCH THIS CLASS, SUBCLASS:
321+, for spring-urged tools with lock means.

427, for other spring-urged tools.

418 This subclass is indented under subclass 300. Tools including specifically claimed jaw structure or conformation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
186, for jaw faces for wrenches.

419 This subclass is indented under subclass 418. Tools in which each jaw includes at least two fingers or fork elements.

420 This subclass is indented under subclass 418. Tools in which the jaws extend in a direction parallel to and beyond the joint of the assembled handles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
311, for plural jaw pairs, at least one pair extending parallel to and beyond the joint.

421 This subclass is indented under subclass 418. Tools including a separate work-engaging element fastened or secured to at least one jaw.

(1) Note. The fastening or securing is not limited to a rigid joint.

SEE OR SEARCH THIS CLASS, SUBCLASS:
180.1+, for jaw attachments for wrenches.

422 This subclass is indented under subclass 421. Tools including releasable or yielding fastening means providing for interchange of work-engaging jaw portions.

423 This subclass is indented under subclass 422. Tools including releasable fastening means providing for removal and replacement of work-engaging jaw elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
38, for vise jaw attachments.
388, 389 and 390, for adjustable jaws which are inherently capable of removal and replacement.

424 This subclass is indented under subclass 421. Tools including pivoted and/or swivelled fastening means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
347+, for tools with plural articulated jaws.

424.5 Nonplanar jaw face:
This subclass is indented under subclass 418. Tool in which the conformation of a work engaging jaw surface is specifically recited as not flat.

SEE OR SEARCH THIS CLASS, SUBCLASS:
419, for tined jaws.
423, for jaws detachable for surface changing purposes.

SEE OR SEARCH CLASS:
269, Work Holders, subclasses 268+ for nonplanar jaw features.

426 This subclass is indented under subclass 424.5. Tools in which each of the work-engaging jaw surfaces is recited as different from the other work-engaging surface(s).

SEE OR SEARCH THIS CLASS, SUBCLASS:
422, and 423, for replaceable jaw inserts inherently provided with a surface different from the other jaw surface.

426.5 Work conforming face:
This subclass is indented under subclass 424.5. Tool wherein the work-engaging jaw surface is formed in opposite contour to that of a specific type of work whereby mutual contact between the work and the jaw surface is achieved over the entire jaw face.

SEE OR SEARCH CLASS:
269, Work Holders, subclass 266 and 270 for work conforming jaw faces.

427 This subclass is indented under subclass 300. Tools including means to bias one handle and/or jaw for movement in a desired direction with respect to the other handle and/or jaw.

SEE OR SEARCH THIS CLASS, SUBCLASS:

357, for lever and pawl actuating means in which either the lever or the pawl is resiliently urged.

379+, for toggle wrench pliers resiliently urged.

417, for cross handle pliers resiliently urged.

427.5 Handle:

This subclass is indented under subclass 300. Tool including specifically recited structure of a hand gripped element or portion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

177.1+, for wrench or screwdriver handle structure.

SEE OR SEARCH CLASS:

16, Miscellaneous Hardware, subclasses 110.1+ for handle structure in general.

429 Responsive to movement of work:

This subclass is indented under subclass 53. Wrench or screwdriver wherein the operation of the wrench or screwdriver is stopped or it signals when either the distance traveled by or the number of rotations of the work exceed a selected amount.

430 Utilizing fluid to convey work:

This subclass is indented under subclass 57.37. Feed means in which a fluid current is utilized to push the pieces of work towards the work-engaging and strain-exerting portion of the wrench or screwdriver.

431 Including chute having longitudinal axis collinear with rotational axis of work turning portion:

This subclass is indented under subclass 57.37. Feed means including an inclined or vertical gravity flow path having the longitudinal axis of at least its discharging end collinear with the rotational axis of the work-engaging and strain-exerting portion of the wrench or screwdriver.

432 Including vibratory work supporting member:

This subclass is indented under subclass 57.37. Feed means including a work-supporting member which is vibrated (i.e., rapidly moved insignificant, minute distances) during a segment of the feeding operation to convey pieces of work to the work-engaging and strain-exerting portion of the wrench or screwdriver.

433 Including revolvably driven work contacting member:

This subclass is indented under subclass 57.37. Feed or storing means including a work-contacting member which is revolved 360° around a central area when work pieces are conveyed to the work-engaging and strain-exerting portion of the wrench or screwdriver.

434 Including driven, flexible, work supporting strip:

This subclass is indented under subclass 57.37. Feed means including a flexible belt-like member having several pieces of work spaced along the length of and supported by it, which, during feeding, the member is driven toward and conveys the pieces of work to the engaging and strain-exerting portion of the wrench or screwdriver.

435 Including driven, reciprocating, conveying member:

This subclass is indented under subclass 57.37. Feed means including a driven member reciprocated between two spaced positions; the member contacting and pushing or carrying pieces of work towards the engaging and strain-exerting portion of the wrench or screwdriver when moving in one of its directions.

436 Having work engaging and force exerting portion inserted into cavity (e.g., allen wrench, screwdriver):

This subclass is indented under subclass 53. Wrench or screwdriver in which the work-engaging and strain-exerting portion is intended to be inserted into a cavity (e.g., hole, aperture, etc.) in the surface of the rotatable work.

(1) Note. The portion of the wrench or screwdriver inserted into the cavity is intended to be separable from the cavity

of the rotatable work after the turning or twisting strain is applied and is never intended to remain with or become a component of the rotatable work wherein the axis of the cavity is collinear with the rotational axis of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

176+, for a spanner having two spaced projections adapted to engage in spaced recesses in the work to exert a twisting strain thereto.

437 Combined with or usable as diverse type wrench:

This subclass is indented under subclass 436. Wrench or screwdriver wherein the portion of the tool intended to be inserted into a cavity is either (a) connected to, or (b) may alternately be used as a diverse-type wrench (i.e., the diverse wrench portion is constructed to exert a turning or twisting strain on a rotatable workpiece without inserting a portion of its structure into a cavity in the surface of the work).

438 Having structure adapting portion or tool for separation:

This subclass is indented under subclass 436. Wrench or screwdriver in which either the portion of the tool not intended to engage the cavity or the cavity-engaging and strain-exerting portion of the tool is constructed to facilitate the separation of the cavity-contacting and strain-exerting portion from the remainder of the tool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

177.1+, for a wrench or screwdriver not limited to a specific type of force-exerting portion and having details of its handle structure claimed.

SEE OR SEARCH CLASS:

279, Chucks or Sockets, for chuck or socket structure in general.

439 Including discrete, separately usable, inserted portions:

This subclass is indented under subclass 436. Wrench or screwdriver including at least two discrete, cavity-engaging and strain-exerting portions which are intended to be used during separate strain-exerting operations.

(1) Note. The strain-exerting portions are in some instances intended to be capable of cooperating together in a single strain-exerting operation.

440 Pivotally or rotatably mounted:

This subclass is indented under subclass 439. Wrench or screwdriver in which the cavity-engaging and strain-exerting portions are pivotally or rotatably attached for selective movement to or from a use to a nonuse position.

441 Inserted portion cuts into or deforms cavity:

This subclass is indented under subclass 436. Wrench or screwdriver wherein the cavity-engaging and strain-exerting portion is constructed to either (a) form the cavity in the surface of the work which is to be rotated (e.g., drills hole into screw with broken head and then removes screw), (b) enlarge the cavity in the surface of the work (e.g., has sharp points which bite into surface of cavity), or (c) deform the shape of the cavity (e.g., bends vanes in cavity and interlocks therewith).

442 Inserted portion having relatively movable components:

This subclass is indented under subclass 436. Wrench or screwdriver wherein the cavity-engaging and strain-exerting portion includes two or more relatively movable components which firmly engage the cavity when moved.

SEE OR SEARCH CLASS:

166, Wells, subclass 117.7 for means anchored against rotation in one well conduit section for relatively rotating another section.

443 Having camming or wedging element for moving components:

This subclass is indented under subclass 442. Wrench or screwdriver including either a rotatable camming or shiftable wedging element having a surface which slides against and moves a cooperating surface on or attached to at least one of the components when a rotating or shifting force is applied to the element, the relative orientation or contour of one of the contacting surfaces causing the movement

transmitted to the component by the element to be in a direction other than that of the element.

444 Axially shiftable element located between and wedging against components:
This subclass is indented under subclass 443. Camming or wedging element in which the element is shifted in its entirety along a line parallel to the axis about which the wrench or screwdriver turns or twists when exerting strain on the work, the element being located between the components and sliding against the cooperating surface of at least one component when shifted parallel to the axis.

445 With threaded surface for cooperating with mating tool structure:
This subclass is indented under subclass 444. Camming or wedging element wherein at least a portion of the element is provided with a threaded surface which cooperates with mating threaded structure formed on the contacted surface of at least one of the inserted components or on another portion of the tool.

446 Rotatable element located between and camming against components:
This subclass is indented under subclass 443. Camming or wedging element in which the element is rotated about an axis when the components are to be moved relative to each other, the element being located between the components and sliding against the cooperating surface of at least one component when rotated.

447 Having cooperating threaded element type actuating means:
This subclass is indented under subclass 442. Wrench or screwdriver having means for moving the components relative to each other including a threaded, cylindrical rod which is either (a) rotated to shift a mating threaded rider attached to one of the components along its axis, or (b) is attached to one of the components and is shifted by and along the rotational axis of and relative to a mating threaded element which is being rotated.

448 Having resilient or spring biased component:
This subclass is indented under subclass 442. Wrench or screwdriver in which at least one of the components is either (a) constructed to be resilient, (b) made from a resilient material, or (c) is attached to a spring which pulls it toward its initial position before relative movement.

449 Biased component rotated about axis collinear to rotational axis of tool:
This subclass is indented under subclass 448. Wrench or screwdriver wherein the spring-biased component is rotated by the spring about an axis which is collinear to the axis about which the tool turns or twists when exerting strain on the work.

450 Inserted portion mounted to pivot or swivel relative to longitudinal axis of handle:
This subclass is indented under subclass 436. Wrench or screwdriver including a handle to which the cavity-engaging and strain-exerting portion is pivotally or otherwise mounted for swinging movement between angularly spaced positions.

451 With separate means for guiding or gripping work:
This subclass is indented under subclass 436. Wrench or screwdriver provided with means separate from its work-engaging and strain-exerting portion (i.e., the inserted and noninserted portion of the tool used to turn or twist the work) for contacting and guiding or gripping the work having strain exerted on it by the portion, in order to position the work relative to the portion during the straining operation.

452 Having resilient, relatively movable, work gripping members:
This subclass is indented under subclass 451. Gripping means having two or more relatively movable members which grip the work between their work-contacting surfaces, at least one of the members being either constructed to be resilient or made from a resilient material.

453 With camming or wedging element for moving members:
This subclass is indented under subclass 452. Gripping means including either a rotatable camming or a shiftable wedging element having a surface which slides against and moves a cooperating surface on or attached to at least one of the members when a rotating or shifting force is applied to the element, the relative orientation or contour of one of the surfaces causing the movement transmitted to the member

by the element to be in a direction other than that of the element.

454 Having pivoted, relatively movable, work gripping members:
This subclass is indented under subclass 451. Gripping means having two or more relatively movable members which grip the work between their work-contacting surfaces, at least one of the members being pivotally attached to the tool.

455 With camming or wedging element for moving members:
This subclass is indented under subclass 454. Gripping means including either a rotatable camming or a shiftable wedging element having a surface which slides against and moves a cooperating surface on or attached to at least one of the members when a rotating or shifting force is applied to the element, the relative orientation or contour of one of the surfaces causing the movement transmitted to the member by the element to be in a direction other than that of the element.

456 Having member with work underlying portion:
This subclass is indented under subclass 451. Guiding means having at least one member provided with a work-contacting portion which is intended to be located beneath a section of the work (e.g., screw head) during the strain-exerting operation.

457 Member spring biased for axial movement:
This subclass is indented under subclass 456. Guiding means in which the member is attached to a spring and and shifts along a line parallel to the axis about which the wrench turns or twists when strain is exerted on the work, the spring returning the member to its initial position after the strain-exerting operation is concluded.

458 Resilient member:
This subclass is indented under subclass 456. Guiding means in which the member is either constructed to be resilient or is made from a resilient material.

459 Inserted portion having threaded periphery:
This subclass is indented under subclass 436. Work-engaging and strain-exerting portions having a threaded periphery which is intended to cooperate with the contour of the cavity.

460 Inserted portion having plural, noncollinear blades (e.g., Phillips):
This subclass is indented under subclass 436. Work-engaging and strain-exerting portions having a periphery which includes two or more noncollinear blades (i.e., long, thin projections) which are intended to cooperate with the contour of the cavity.

461 Inserted portion having plural, separate, work engaging projections:
This subclass is indented under subclass 436. Work-engaging and strain-exerting portion having a periphery which includes two or more separate (i.e., having no common bridging structure normally contacting the contour of the cavity during the straining operation) projections which are intended to cooperate with the contour of the cavity.

SEE OR SEARCH THIS CLASS, SUBCLASS:
176.1+, for a spanner having two spaced projections adapted to engage in spaced recesses in the work to exert a twisting strain thereto.

462 Having stationary structure for supporting wrench or screwdriver:
This subclass is indented under subclass 53. Wrench or screwdriver having relatively stationary structure (i.e., structure which does not move while the work is having strain placed on it) for supporting the work-engaging and strain-exerting portion of the tool.

463 INCLUDING TOOL DRIVING BY IMPACT DELIVERING COMPONENT OR COOPERATING ANVIL:
This subclass is indented under the class definition. Tools provided with either (a) a movably attached component intended to forcibly strike against structure linked to or formed on a work-engaging portion of the tool, or (b) structure which is linked to or formed on the work-engaging portion of the tool and specially designed or constructed to receive an impact

from a movably attached component of the tool.

(1) Note. The mere claiming of one or more surfaces for receiving an impact from an integral component of the tool (e.g., pivot arm) is classified in this subclass. If, however, the surface claimed is intended to receive an impact from a distinct impacting tool (e.g., hammer) classification is elsewhere based on other features of the tool.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclass 104.04 and 104.07 for impact tools for cleaning pipes and tubes.

29, Metal Working, subclasses 243.53+ for a riveting device not elsewhere classified, and subclass 254 for impact- operated apparatus having means for engaging two work parts to be assembled or disassembled.

30, Cutlery, subclass 164.6, 168, and 277 for impact-operated cutlery.

72, Metal Deforming, appropriate subclasses for a process or an apparatus for deforming metal by the use of an impact means, e.g., forging with a drop hammer, as in subclasses 435+, or "impact extrusion" as in subclass 267.

83, Cutting, subclass 616 for impact-driven reciprocable cutting or punching tools.

104, Railways, subclasses 10+ for tampers. 114, Ships, subclass 3 for warship-carried rams. 125, Stone Working, subclass 40 for impact-operated, stone-working, and analogous tools.

144, Woodworking, subclasses 193.1+ for an impact-operated splitter.

164, Metal Founding, subclasses 169+ for mold-making apparatus including compaction means, and subclasses 260+ for metal-casting apparatus including a vibrator.

173, Tool Driving or Impacting, subclasses 90+ for an impacting device of general utility, and particularly subclasses 93+ for an impact device having an anvil arranged to deliver a torsional impact. An impact-type drive having a Class 81 type tool claimed by name only is classified in Class 173.

225, Severing by Tearing or Breaking, subclasses 93+ for metal-breaking devices which may include an impact-delivery means.

227, Elongated-Member-Driving Apparatus, subclass 51 for apparatus for heading a member (e.g., rivet).

241, Solid Material Comminution or Disintegration, subclasses 270+ for stamp mills and analogous devices.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 19 for impact-type nail extractors.

299, Mining or In Situ Disintegration of Hard Material, subclasses 69+, and see the search there noted for a hard material disintegrating machine driving a percussive-type cutter.

310, Electrical Generator or Motor Structure, subclasses 15+ for reciprocating electric motors.

404, Road Structure, Process, or Apparatus, subclass 133 for tamping means.

433, Dentistry, subclasses 118+ for motor-driven, impact-operated dental tools, and subclasses 150+ for hand-operated, impact-receiving or delivering dental tool.

601, Surgery: Kinesitherapy, subclasses 97+ and 107+ for impact-type applicators.

464 Motor or gear driven:

This subclass is indented under subclass 463. Tools in which the component is moved to its striking position by power either (a) derived from a motor, or (b) transmitted by relatively rotating gears.

465 Structurally constrained to arcuate movement:

This subclass is indented under subclass 463. Tools in which the component is constrained, by either the structure attaching it to the tool or the guide structure supported by the tool (e.g., pivot pin, guide tracks), to movement along an arcuate path.

466 About turning axis of work engaging portion:
This subclass is indented under subclass 465. Tools wherein the work-engaging portion of the tool turns about an axis which is collinear to the central axis of the arc about which the component moves.

467 Responsive to torque on work:
This subclass is indented under subclass 53. Wrench or screwdriver wherein either (a) the operation of the wrench or screwdriver is stopped, or (b) the tool signals when a selected amount of turning or twisting force (i.e., torque) on the work is exceeded.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 862.21+ for wrenches combined with means to measure the load.
464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 30+ for an overload release coupling; and subclass 25 for a fluid coupling for transmitting a limited pulsating torque.

468 With marking mechanism:
This subclass is indented under subclass 467. Wrench or screwdriver provided with a mechanism intended to mark the work in a manner which is detectable by an observer when the selected torque is applied to the work.

469 Means for regulating motor:
This subclass is indented under subclass 467. Wrench or screwdriver including means which is responsive to the amount of torque on the work and regulates the power output of a motor driving the work-contacting portion of the wrench or screwdriver.

(1) Note. The means may be either distinct from the motor or an active component of the motor.

470 Fluid motor:
This subclass is indented under subclass 469. Wrench or screwdriver in which the motor is operated by a fluid substance which does not alter in chemical composition while in the motor.

471 Permanently deformable component:
This subclass is indented under subclass 467. Wrench or screwdriver having at least one force-transmitting component constructed from material which is permanently deformed if the work has more than the selected amount of torque applied thereto.

472 Relatively movable work contacting components:
This subclass is indented under subclass 467. Wrench or screwdriver in which the work-contacting portion includes two or more components which move relative to each other and release the work from driving contact when the selected torque is exceeded.

473 Rotatable, coaxial, clutching components:
This subclass is indented under subclass 467. Wrench or screwdriver in which a portion of the tool-transmitting force from an input source to the work-contacting portion includes at least two coacting rotatable components, one of the components either (a) impels the other component to rotate about the same axis of rotation with it when force is transmitted to the work below the selected value of torque, or (b) allows the other component to rotate relative to it preventing the transmittal of force from the source to the work when the selected torque is exceeded.

474 Having intermediate, disparate, interlock element:
This subclass is indented under subclass 473. Wrench or screwdriver including an element (e.g., ball), structurally distinct from and located between the coacting surfaces of the components, which orbits about the same axis of rotation as the components and locks them together when the torque on the work is below the selected value.

475 Having complementary formations:
This subclass is indented under subclass 473. Wrench or screwdriver wherein one of the rotating components has either projections or apertures located on its coacting surface for engaging corresponding apertures or projections formed on the coacting surface of the other component.

476 Having friction type contact surfaces:
This subclass is indented under subclass 473. Wrench or screwdriver wherein the surface friction created by the contact of the coacting surface is solely relied upon for the transmitting of rotary motion from one component to the other.

477 Work engaging portion attached to and turned by resilient member:
This subclass is indented under subclass 467. Wrench or screwdriver in which the work-engaging portion is attached to a resilient structural member, which either (a) remains rigid and transmits force from the source to the portion when the torque on the work is below the selected value, or (b) bends and prevents or signal the transmittal of excessive force when the torque on the work exceeds the selected value.

478 Work engaging portion pivotally or rotatably connected to handle:
This subclass is indented under subclass 467. Wrench or screwdriver in which the work-engaging portion is pivotally or rotatably connected to a hand-powered structural member which transmits force to it, the portion pivoting or rotating relative to the member when the selected torque is exceeded.

479 With electric signal device:
This subclass is indented under subclass 478. Wrench or screwdriver provided with an electrical device which is activated by the pivotal or rotational movement of the portion relative to the member and signals the operator when the selected torque is exceeded.

SEE OR SEARCH CLASS:
116, Signals and Indicators, for mechanical signals, per se.
340, Communications: Electrical, subclasses 500+ for alarms which are automatically responsive to a condition. Note particularly indented subclasses 665 and 679+.

480 Axis of connection coaxial to rotational axis of work:
This subclass is indented under subclass 478. Wrench or screwdriver in which the pivotal or rotational axis of the connection is coaxial with the axis about which the work turns.

481 With arm extending from portion:
This subclass is indented under subclass 480. Wrench or screwdriver provided with either a rigidly attached or an integrally formed elongated element projecting from the work-engaging portion of the wrench.

482 With pivoted locking pawl:
This subclass is indented under subclass 480. Wrench or screwdriver provided with a pawl structurally distinct from both the portion and the member and pivotally connected to one of them and releasably locking with the surface of the other to prevent relative angular movement below the selected torque.

483 With arm extending from portion and through connection:
This subclass is indented under subclass 478. Wrench or screwdriver provided with either a rigidly attached or an integrally formed elongated element projecting from the work-engaging portion and through the pivotal axis of the connection.

484 FOR ADJUSTING VARIABLE POSITIONED PARTS:
This subclass is indented under the class definition. Tool peculiarly adapted to very the relative orientation or position of a plurality of connected parts which are specifically made to function in any of a plurality of relative orientations or positions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
6, for watchmakers' tools.
9.24, for tappet adjusters.
15.9, for a tool adapted to adjust a lock or latch.
53+, for a tool which performs an adjustment by exerting a twisting strain to the part (e.g. a screwthreaded part).
300+, for an adjusting tool in the form of pliers.

SEE OR SEARCH CLASS:

72, Metal Deforming, appropriate subclasses for a tool for adjusting the relative position of two parts by bending one part relative to the other, particularly subclasses 409.01+ for a plier type bender, and subclasses 476+ for a bender having a unitary tool face.

485 SPREADER:

This subclass is indented under the class definition. Tool including means for simultaneously engaging two adjacent parts or portions of a part and forcing the parts or portions apart.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.7, for a leaf spring spreader.

9.3, for a hose clamp applier having means to spread the ends of the clamp.

302, for a plier type tool having jaws which move apart as the handles approach.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 239 for an apparatus or implement which disassembles two parts by spreading them from face to face engagement.

486 RESILIENT ARTICLE TENSIONER OR COMPRESSOR:

This subclass is indented under the class definition. Tool comprising means to engage an elastically deformable member or an element in contact therewith, whereby a force may be applied to deform the member and place it under either tensile or compressive forces.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.7, for a leaf spring spreader.

15.2, for a resilient tire casing spreader.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 215 for engine valve spring compressors, subclasses 225+ for other spring appliers or removers, and subclass 235 for a tool for applying or removing a resilient article other than spring.

487 HAND HELD HOLDER OF HAVING CLAMP:

This subclass is indented under the class definition. Tool comprising either (1) a device adapted to be supported by hand having a work supporting portion or (2) two relatively movable work engaging surfaces for gripping the work of for holding portions of the work in relative position.

(1) Note. Part (1) of the above definition was intended to provided for manipulating tools, i.e., those hand held holders other than mere handling devices provided for in Class 294 Handling: Hand and Hoist-Line Implements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4, for an engraver's clamp.

9.26+, for a plowshare holder.

43, for tweezers.

300, for plier type tools, i.e., having clamping jaws positioned by relatively movable handles.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 270+ for a hand manipulatable tool for assembling or disassembling parts. See also the superior subclasses for special application tools.

269, Work Holders, subclass 3 for a hand held holder for a work part undergoing work treatment.

294, Handling: Hand and Hoist-Line Implements, appropriate subclasses for a hand held holder for the transportation or mere handling of an article.

433, Dentistry, subclasses 141+ for a hand-held work holder used in dentistry, particularly subclasses 153+ for hand-held clamps, and subclass 163 for other hand-held work carriers.

488 MISCELLANEOUS:

This subclass is indented under the class definition. Tool which is not provided for under any of the preceding subclasses.

489 HANDLE FOR TOOL:

This subclass is indented under the class definition. The hand engaged portion of a tool and which is not provided for elsewhere.

(1) Note. A patent having a sole disclosure to a handle for torque applying tool is classified in subclasses 177.1+.

(2) Note. "Tool handles" represent an extremely large body of art, and historically a claimed tool handle has been classified with the particular tool, regardless of whether or not the work engaging portion of a tool was claimed. This subclass was created to collect only those patents claiming a tool handle, per se, and whose disclosure is not restricted to a specific type of tool. Thus, a handle whose sole disclosed use is for a "saw or the like" will continue to be classified with the hand saws in Class 30, Cutlery. On the other hand, a handle disclosed for use with a "hammer, golf club", etc., or simply for "a tool", is classified here. Since cross referencing to this subclass has been kept to a minimum, a thorough investigation of related areas listed below is advised.

SEE OR SEARCH THIS CLASS, SUBCLASS:

22+, for a hammer handle.

53+, for a driver for a wrench or screwdriver socket or bit, especially subclasses 177.1+ for a wrench or screwdriver handle.

427.5, for a plier handle.

SEE OR SEARCH CLASS:

7, Compound Tools, subclasses 167+ for a handle for plural diverse tools. A tool having a compartment in which plural unattached (unclaimed) tools may be stored is classified in Class 81, subclass 490.

15, Brushing, Scrubbing, and General Cleaning, subclasses 22.1+, 79.1+, 143.1+, 222, 327.1+, 329, 335, 344, 350+, 361, and 410+ for handles associated with brushing, scrubbing or cleaning devices.

16, Miscellaneous Hardware, subclasses 110.1+ for a handle for a closure of receptacle, or a handle not provided for elsewhere.

30, Cutlery, subclass 80 for a razor handle, subclasses 329+ and 340+ for a handle for a detachable blade, or a connection between a handle and blade, subclass 491 for a bench plane handle and subclasses 517+ for a saw handle.

38, Textiles: Ironing or Smoothing, subclasses 90+ for a handle for a flat iron.

42, Firearms, subclass 7 and 71+ for a handle or grip for a firearm.

43, Fishing, Trapping, and Vermin Destroying, subclass 23 for a fishing rod handle or butt.

101, Printing, subclasses 405+ for a printing stamp handle.

119, Animal Husbandry, subclass 633 for a currycomb handle.

132, Toilet, subclass 76.5 for a separable holder for an abrader, file or buffer.

135, Tent, Canopy, Umbrella, or Cane, subclasses 65+ for a cane or umbrella handle.

172, Earth Working, subclasses 329+ for an earth working tool having a handle.

239, Fluid Sprinkling, Spraying, and Diffusing, subclass 154, 175, 375+, and 525+ for a fluid discharging device having a handle for manipulation thereof.

294, Handling: Hand and Hoist-Line Implements, subclasses 57+ for a hand fork or shovel handle.

359, Optics: Systems (Including Communication) and Elements, subclasses 882+ for a mirror of reflector having a handle.

407, Cutters, for Shaping, subclass 29.15 for a file or rasp handle.

414, Material or Article Handling, subclasses 722+ for shovel handle structure.

473, Games Using Tangible Projectile, subclasses 300+ for a golf grip, subclass 538 for a racket-type implement used to project a projectile in which a dimensional characteristic or parameter of the handle or grip portion thereof is specified by a number, numeric variable, or mathematical

formula; subclasses 549+ for handle or grip structure for a racket, in general; and subclass 568 for a bat-type implement used to project a projectile in which significance is attributed to the grip portion thereof.

END

490 Having storage compartment:
This subclass is indented under subclass 489. Handle provided with a cavity within the handle to accommodate a tool when not in use.

(1) Note. Included in this subclass are handles having a cavity into which an attached tool is retracted to a nonuse position.

SEE OR SEARCH THIS CLASS, SUBCLASS:
177.4, for a wrench or screwdriver handle having means to store parts.

491 Having discrete relatively movable tool clamp:
This subclass is indented under subclass 489. Handle provided with an individually distinct element mounted for movement to exert a force on tool to retain the tool in the handle.

492 Hav ing cap or reinforcing means:
This subclass is indented under subclass 489. Handle provided with either (1) an individually distinct element covering an end of the handle remote from the tool, or (2) an individually distinct rigid element for providing strength or rigidity to the remainder of the handle.

CROSS-REFERENCE ART COLLECTIONS

900 WRENCH OR SCREWDRIVER CONSTRUCTED FROM SPECIFIC MATERIAL:
Tools for exerting a turning or twisting strain on a rotatable piece of work which are constructed from a specific material having properties not normally associated with common tool material.

901 WRENCH OR SCREWDRIVER ADAPTED TO TURN EYE SCREW:
Tools for exerting a turning or a twisting strain on a rotatable piece of work having features which peculiarly adapt them to contacting and turning eye screws.