

CLASS 470, THREADED, HEADED FASTENER, OR WASHER MAKING: PROCESS AND APPARATUS

SECTION I - CLASS DEFINITION

This class provides for processes, machines, devices, and implements which are either:

- (a) specialized and limited for manufacturing bolts, rivets, nails, screws, nuts and washers including the formation of internal and external screw-threads, or
- (b) capable of manufacturing bolts, rivets, nails, screws, nuts and washers by an operation other than cutting by use of a rotating axially moving tool; or
- (c) capable of manufacturing rivets, nails, screws, nuts and washers which may include a step of cutting by use of a rotating axially moving but also includes a step of materially treating bolts, rivets, nails, screws, nuts and washers.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

Class 470 provides for the specialized manufacture or other operations of manufacturing of articles of its class. However other classes provide for similar manufacturing operations, machines, etc. See References to Other Classes, below.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

- 29, Metal Working, for machines capable of manufacturing machine screws but additionally capable of forming other similar parts or articles such as binding posts, spoke nipples, etc., particularly subclasses 33+.
- 72, Metal Deforming, for machines and processes for forming articles of this class but wherein the forming operation is limited only to a metal deforming operation. A machine, process, etc., having a deforming step of an article of Class 470 and another operation on the article is properly classifiable in Class 470. See Classes of Article Making and the search note to Class 470 in the Class Definition of Class 72.
- 82, Turning, for machines and processes limited to thread cutting operations in which the opera-

tion is limited to the Class 82 operation particularly subclasses 110+, and without any other operation associated with bolt or screw formation. See the note relating to Class 470 in the Search Class notes of the Class Definitions of Class 82.

- 83, Cutting, for machines and processes for manufacturing nuts and washers by cold-punching or shearing operations in which the operation is limited to a Class 83 operations and without any other operation associated with nut or washer formation. See the Class 83 Class Definitions.
- 408, Cutting by Use of Rotating Axially Moving Tool, machines, process, etc. for drilling, screwing threading, or machining of a screw, bolt or nut wherein the machine, process, etc. is of general utility capable of performing operations on articles other than those of Class 470 in Search Class Notes of the Class Definitions of Class 408.
- 409, Gear Cutting, Milling, or Planing, for machines or processes for milling a thread, particularly subclasses 65+, in which the operation is limited to Class 409 operations and without any other operation associated with bolt or screw formation or in which the machine or process is of general utility capable of performing milling operations on articles other than those of Class 470.
- 451, Abrading, for a machine or process limited to thread forming operations by grinding, particularly subclass 48. If machine or process provides for operations for forming articles of this class in addition to a grinding operation, the patent disclosing same is properly classified in Class 470.
- 100, Presses, appropriate subclasses for presses otherwise provided for and particularly the Search Class notes to Class 470 in the Class Definition of Class 100.
- 173, Tool Driving or Impacting, appropriate subclasses for subject matter directed driving or impacting a tool, when such subject matter includes combined features peculiar to tool driving.
- 227, Elongated-Member-Driving Apparatus, appropriate subclasses, particularly subclasses 82+, for combined machines for forming and subsequently driving a member, e.g., nail, staple, etc.
- 249, Static Molds, for machines for static molding for forming a helical or threaded product by molding particularly subclass 59.

- 411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fasteners, subclasses 337+, for bolts, screws, nails, washers and similar fasteners, per se.
- 483, Tool Changing, for machines or processes comprising a tool transfer means combined with either a tool support of storage means.

perforated disk or annular component, i.e., a washer.

SUBCLASSES

1 PROCESS:

This subclass is indented under the class definition. Subject matter for a method of manufacturing a threaded fastener, a headed fastener, or a washer.

2 Assembling or disassembling fastener with element:

This subclass is indented under subclass 1. Subject matter for a method of associating or disassociating a threaded fastener with means structured to cooperate and function with the fastener.

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, and 48+, for concurrent apparatuses for assembling a fastener with an element for this subclass and its lineal indented subclasses, i.e., subclasses 2 to 7.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 428+ for methods of assembly. The fasteners and elements being assembled in this subclass (Class 470 subclass 2) are formed such that the fastener and element are integral such that disassembly would require destruction of the fastener or element.

3 Bolt or screw with washer:

This subclass is indented under subclass 2. Subject matter wherein the fastener comprises an externally threaded securing device having an enlargement at an end of the device structured to function as a head therefor, i.e., a bolt or screw, and further wherein the device is associated with means structured to cooperate and function with the fastener in the form of a

4 By telescoping:

This subclass is indented under subclass 3. Subject matter wherein the nut or washer associated with the bolt or screw by moving the nut or washer along the longitudinal axis of the bolt or screw.

5 Attaching cap to fastener:

This subclass is indented under subclass 2. Subject matter wherein means structured to cooperate and function with the fastener comprises a covering for an end of the fastener.

SEE OR SEARCH THIS CLASS, SUBCLASS:

184, for concurrent apparatuses for capping dies for nails or screws.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 428+ for methods of assembly. The processes of this subclass (Class 470, subclass 5) are such specialized manufacturing methods making them proper for Class 470.

6 Screw fastener:

This subclass is indented under subclass 5. Subject matter wherein the fastener comprises an externally threaded fastener having threads which converge to a point on an end of the fastener.

7 Nail fastener:

This subclass is indented under subclass 5. Subject matter wherein the fastener comprises a structure having an impact receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.

8 Making externally threaded fastener, e.g., screw or bolt:

This subclass is indented under subclass 1. Subject matter wherein the fastener is a threaded fastener comprising an externally threaded securing device having an enlargement at an end of the device structured to function as a head therefor.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
57+, for concurrent apparatuses for forming the fasteners formed in this subclass and its lineal indents, i.e., subclasses 8 to 17.
- 9 Screw:**
This subclass is indented under subclass 8. Subject matter wherein the fastener comprises an externally threaded fastener having threads which converge to a point on an end of the fastener.
- 10 Forming thread:**
This subclass is indented under subclass 9. Subject matter having a step of producing an exterior helical ridge on the fastener.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
185+, for screw threading dies, per se.
- 11 Bolt:**
This subclass is indented under subclass 8. Subject matter wherein the fastener comprises an externally threaded fastener.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
191, for bolt forming dies, per se, 205 for bolt head punching dies, per se.
- 12 Having specific configuration:**
This subclass is indented under subclass 11. Subject matter wherein significance is attributed to the shape of the fastener.
- 13 U-frame type:**
This subclass is indented under subclass 12. Subject matter wherein the fastener comprises a plural shanked structure formed in the shape of the letter U.
- 14 Hollow bolt type:**
This subclass is indented under subclass 12. Subject matter wherein the fastener is provided with a longitudinally extending bore or cavity.
- 15 And prong:**
This subclass is indented under subclass 14. Subject matter wherein the fastener is further provided with a portion structured as a penetrating end to allow the fastener to be used as impact driven fastener.
- 16 Formed by extrusion:**
This subclass is indented under subclass 11. Subject matter having a step of shaping by forcing the fastener through a die.
- 17 Formed by heat treatment:**
This subclass is indented under subclass 11. Subject matter having a step of heating or cooling the fastener to produce desired properties or conditions.
- 18 Making internally threaded fastener, e.g., nut:**
This subclass is indented under subclass 1. Subject matter wherein the fastener is provided with an internal helical ridge.
- 19 Lock-nut type, e.g., castellated nut:**
This subclass is indented under subclass 18. Subject matter wherein the means secures the fastener to a bolt or screw.
- 20 Having securement feature:**
This subclass is indented under subclass 18. Subject matter wherein the fastener is further provided with means for securing the fastener to another structure.
- 21 Fusible or deformable type:**
This subclass is indented under subclass 20. Subject matter wherein the means comprises a metallurgical property of the fastener allowing it to be fused during a heating operation or allowing it to readily mechanically deformed during a metal forming operation.
- 22 Weld nut type:**
This subclass is indented under subclass 21. Subject matter wherein the fastener is capable of being fused during a welding operation.
- 23 Having driver engagement feature, e.g., wing nut, etc.:**
This subclass is indented under subclass 18. Subject matter wherein the fastener is provided with structure for receiving a means used to move the fastener during its fastening operation.

- 24 Having decorative feature, e.g., cap nut, etc.:**
This subclass is indented under subclass 18. Subject matter wherein the fastener is provided with structure functioning solely for aesthetic purposes.
- 25 Formed by metal working:**
This subclass is indented under subclass 18. Subject matter having a step of shaping metal.
- 26 Forging:**
This subclass is indented under subclass 25. Subject matter further having a step of heating metal.
- 27 Making headed fastener, e.g., rivet or nail, etc.:**
This subclass is indented under subclass 1. Subject matter wherein the fastener having an enlargement at an end of the device structured to function as a head therefor.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
110+, for concurrent apparatuses for forming the fasteners formed in this subclass and its lineal indents, i.e., subclasses 27 to 40.
168+, for nail plate feeders, per se.
191, for rivet forming dies, per se.
205, for rivet head punching dies, per se.
- 28 Rivet type:**
This subclass is indented under subclass 27. Subject matter wherein the fastener is provided with an end structure consisting of a polycrystalline metallic grain structure which when subjected to an externally applied force is plastically flowable.
- 29 Hollow type:**
This subclass is indented under subclass 28. Subject matter wherein the fastener is provided with a longitudinally extending bore or cavity.
- 30 Having prong:**
This subclass is indented under subclass 29. Subject matter wherein the fastener is further provided with a portion structured as a penetrating end to allow the fastener to be used as impact driven fastener.
- 31 Formed by extrusion:**
This subclass is indented under subclass 28. Subject matter having a step of shaping by forcing the fastener through a die.
- 32 Formed by heat treatment:**
This subclass is indented under subclass 28. Subject matter having a step of heating or cooling the fastener to produce desired properties or conditions.
- 33 And pressure, e.g., forging:**
This subclass is indented under subclass 32. Subject matter having an additional step of applying pressure to the fastener.
- 34 Nail type:**
This subclass is indented under subclass 27. Subject matter wherein the fastener comprises a structure having an impact receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.
- 35 Horseshoe:**
This subclass is indented under subclass 34. Subject matter wherein the fastener is structured for securing a shoe to the foot of a mammal in the family Equidae.
- 36 Formed by heat treatment and metal shaping, i.e., wrought type:**
This subclass is indented under subclass 35. Subject matter having a step of heating or cooling a fastener and a step of shaping the fastener.
- 37 Formed by severing, i.e., cut type:**
This subclass is indented under subclass 34. Subject matter having a step of penetrating stock material being used to form the fastener with a sharp forming instrument or separating a portion of stock material being used to form the fastener.
- 38 Formed by heat treatment and metal shaping, i.e., wrought type:**
This subclass is indented under subclass 34. Subject matter having a step of heating or cooling a fastener and a step of shaping the fastener.

39 Spike type:

This subclass is indented under subclass 38. Subject matter wherein the fastener has substantially large dimensions such that the fastener can be used for securing substantially large structures or materials.

40 Wire type:

This subclass is indented under subclass 34. Subject matter wherein the fastener is fabricated from an elongated piece of metal stock having a circular cross sectional dimension which is much smaller than the longitudinal dimension of the stock.

41 Making washer:

This subclass is indented under subclass 1. Subject matter wherein the fastener comprises an annular element adapted to be placed beneath the bearing surface of a bolt head, nut, or similar article.

SEE OR SEARCH THIS CLASS, SUBCLASS:

162+, for apparatuses for making washers.

165+, for washer feeders, per se.

197+, for washer forming die.

206, for washer arbors, per se.

42 Lock-washer type:

This subclass is indented under subclass 41. Subject matter wherein the fastener is provided with means to secure same to another structure.

43 APPARATUS HAVING SAFETY MECHANISM:

This subclass is indented under the class definition. Subject matter for apparatus provided with means to prevent damage to either a human operator thereof or to the apparatus or any component thereof.

44 APPARATUS HAVING AUTOMATIC CONTROL:

This subclass is indented under the class definition. Subject matter for apparatus with: (a) means for detecting a characteristic of the work part to be assembled, the assembled product, the assembling apparatus, or the environment of the assembling apparatus affecting its operation, hereinafter referred to as: the sensor; (b) means for initiating or modifying a force or impulse other than that generated or transmit-

ted by the means for detecting; hereinafter referred to as: the activator; (c) means for regulating or modifying an operation of the assembling apparatus; hereinafter to as: the controller.

- (1) Note. This definition requires a document to claim or disclose at least four instrumentalities for placement herein, i.e., an assembly apparatus, a sensor, an activator, and a controller. For example, a document disclosing an assembly machine having a cam follower that makes and breaks an electrical circuit that energizes a motor which regulates or modified a part of the machine would be properly classified in this subclass. However, a machine having a cam follower directly linked to a controller, whereby the follower movement directly effects the controller movement is improperly classified in this subclass due to the lack of an activator required by the definition; such an assembly apparatus would be properly classified in subclasses 48+ below.

45 Having means sensing a condition or change in a condition:

This subclass is indented under subclass 44. Subject matter including: (a) means to sense a condition of the work part, the work product, the apparatus or the environment of the apparatus; and (b) means to sense a corresponding condition of information supply to the apparatus; (c) means relate a sensed condition; (d) means to regulate the operation of the apparatus in accordance with any difference between sensed conditions.

46 For assembling fastener and washer:

This subclass is indented under subclass 44. Subject matter wherein apparatus is capable of associating a threaded or headed fastener with a perforated disk or annular component.

SEE OR SEARCH THIS CLASS, SUBCLASS:

49+, for apparatuses for assembling fasteners with washers or other elements.

- 47 APPARATUS HAVING MEANS FOR MEASURING OR TESTING:**
This subclass is indented under the class definition. Subject matter for apparatus provided with means for determining a qualitative or quantitative characteristic or condition of the apparatus or material being processed or operated on by the apparatus.
- 48 APPARATUS FOR ASSEMBLING OR DISASSEMBLING FASTENER WITH ELEMENT:**
This subclass is indented under the class definition. Subject matter for apparatus associating or disassociating a fastener with means structured to cooperate and function with the fastener.
- SEE OR SEARCH CLASS:
29, Metal Working, subclasses 700+ for machines for assembly. See the notes to subclasses 700 for an explanation of the subject matter encompassed therein.
81, Tools, subclasses 54+ for machine wrenches or screwdrivers capable of turning rotatable work, e.g., bolts, nuts, screws, etc.
- 49 Headed fastener with element, e.g., bolt with nut and washer:**
This subclass is indented under subclass 48. Subject matter wherein the fastener comprises a securing device having an enlargement at an end of the device structured to function as a head therefor, i.e., a bolt, and further wherein the device is associated with means structured to cooperate and function with the device e.g., an internally threaded component such as nut, or a perforated disk or annular component such as a washer.
- 50 Having telescoping means:**
This subclass is indented under subclass 49. Subject matter wherein the means structured to cooperate with the device is associated with the device by the moving the cooperating means along the longitudinal axis of the securing device.
- 51 Attaching cap to fastener:**
This subclass is indented under subclass 49. Subject matter wherein the means structured to cooperate and function with the device comprises a covering for an end of the device.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
184, for nail or screw capping dies, per se.
- SEE OR SEARCH CLASS:
29, Metal Working, subclasses 243.5+ for machines, otherwise unprovided for, for assembling elements or parts by engaging a portion of one over another. The machines of this subclass (Class 470 subclass 51) are so specialized as to make them proper for Class 470.
227, Elongated-Member-Driving Apparatus, appropriate subclasses for apparatus for driving a member into work.
- 52 Screw fastener:**
This subclass is indented under subclass 51. Subject matter wherein the device comprises an externally threaded fastener having threads which converge to a point on an end of the fastener.
- 53 Nail fastener:**
This subclass is indented under subclass 51. Subject matter wherein the device comprises a structure having an impact receiving surface adapted to receive an axially applied force which causes the device to penetrate material, substructure, or other work desired to be fastened.
- 54 Having nicking means:**
This subclass is indented under subclass 51. Subject matter wherein the apparatus is provided with a component capable of forming a shallow notch, cut, or indentation in the covering.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
60+, for apparatus for head nicking screws and bolts.

- 55 Having means to feed rectangular stock:**
This subclass is indented under subclass 51. Subject matter wherein the apparatus is provided with a component capable of supplying work material, having a rectangular cross section, to the apparatus.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
164, for feeder or distributors, per se.
- 56 Having rotatable workholder:**
This subclass is indented under subclass 51. Subject matter wherein the apparatus is provided with a component capable of securing work material and further wherein the component is capable of rotating the work material relative to the remainder of the apparatus.
- SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclass 345 for rotatable conveyor with means for aligning the conveyed load at a work station, and other subclasses for a rotatable conveyor.
- 57 APPARATUS FOR MAKING EXTERNALLY THREADED FASTENER OR ARTICLE, E.G., SCREW, BOLT ETC.:**
This subclass is indented under the class definition. Subject matter for apparatus for manufacturing a securing device or element having an external helical ridge.
- SEE OR SEARCH CLASS:
29, Metal Working, for machines capable of manufacturing machine screws but additionally capable of forming other similar parts or articles such as binding posts, spoke nipples, etc., particularly subclasses 33+.
- 58 Screw fastener making:**
This subclass is indented under subclass 57. Subject matter for apparatus for manufacturing a securing device, i.e., a fastener, having an external helical ridge which converges to point on an end of the device.
- 59 Wooden screw:**
This subclass is indented under subclass 58. Subject matter wherein the fastener is composed of cellulose extracted from interior part of a tree.
- 60 Having head nicking:**
This subclass is indented under subclass 58. Subject matter provided with a component capable of forming a shallow notch, cut, or indentation in a head of the fastener.
- SEE OR SEARCH CLASS:
409, Gear Cutting, Milling, or Planing, subclasses 64+ for shaping material by means of a toothed rotary cutter unprovided for elsewhere.
- 61 And shaving means:**
This subclass is indented under subclass 60. Subject matter further provided with a mechanism capable of securing work material and further wherein the mechanism is capable of rotating the work material relative to the remainder of the apparatus.
- 62 And rotatable workholder:**
This subclass is indented under subclass 60. Subject matter further provided with a mechanism capable of securing work material and further wherein the mechanism is capable of rotating the work material relative to the remainder of the apparatus.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
120, for horseshoe nail manufacturing machines having a rotary workholder; 129 for wire nail manufacturing machines having rotary workholders; for spike manufacturing machines having rotary workholders.
- 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(s) in position to be operated on or treated. See notes therein for other related loci.

63 Punch and die type:

This subclass is indented under subclass 60. Subject matter wherein the component comprises an first element, i.e., a punch, cooperating with a second element, i.e., a die, whereby the notch, cut or indentation is produced a blow or thrust applied to the punch as the fastener is held between the punch and die.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

205, bolt or rivet heading punches, per se.

64 Having head shaving means:

This subclass is indented under subclass 58. Subject matter wherein the fastener is provided with an enlargement at one end of the fastener, i.e., a head, and wherein the apparatus is provided with a component capable of removing material in thin layers or slices from the head.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

150, for nail or rivet head finishing machines.

65 Having pointing means:

This subclass is indented under subclass 58. Subject matter wherein the apparatus is provided with a component capable of producing a conical or conoidal point on the fastener.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

80+, for machines capable of pointing a blank by the use of threading-chaser which simultaneously threads the remainder of the blank.

66 Having thread cutting means:

This subclass is indented under subclass 58. Subject matter wherein the apparatus is provided with a component capable of producing a helical ridge on the fastener.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

111+, screw threading dies, per se.

SEE OR SEARCH CLASS:

82, Turning, for machines and processes limited to thread cutting operations in

which the operation is limited to the Class 82 operation particularly subclasses 110+, and without any other operation associated with bolt or screw formation. In addition, Class 82 provides for thread forming or cutting machines or devices which solely claim or disclose the cutting of threads on pipes or conduits. Similar cutting machines or devices solely claiming or disclosing the cutting of threads on fasteners are proper in Class 470. See the note relating to Class 470 in the Search Class notes of the Class Definition of Class 82.

409, Gear Cutting, Milling, or Planing, subclasses 65+ for a thread milling machine.

67 Portable:

This subclass is indented under subclass 66. Subject matter wherein the apparatus is capable of being transported with relative ease.

68 And pointing means:

This subclass is indented under subclass 66. Subject matter wherein the apparatus is provided with a component capable of producing a conical or conoidal point on the fastener.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

80+, for machines capable of forming a point by a chasing-cutter while also threading the remainder of the screw.

69 And severing means:

This subclass is indented under subclass 66. Subject matter wherein the apparatus is further provided with a mechanism capable of penetrating stock material being used to form the fastener by the use of a sharp forming instrument or separating a portion of stock material being used to form the fastener.

70 Having plural dies:

This subclass is indented under subclass 66. Subject matter wherein the apparatus is further provided with a mechanism comprising two or more elements capable of cutting, shaping or stamping a portion of the fastener.

- 71 Axial aligned:**
This subclass is indented under subclass 70. Subject matter wherein the the longitudinal axes of the elements along a common line.
- 72 Turret mounted:**
This subclass is indented under subclass 70. Subject matter wherein the elements are installed on a rotatable device structured to hold and secure the elements during a cutting, shaping, or stamping operation.
- 73 Having collapsible die:**
This subclass is indented under subclass 66. Subject matter wherein the apparatus is further provided with a mechanism provided with two elements structured to cooperate to cut, shape, or stamp a portion of the fastener and further wherein the elements are capable of opening or closing with each other such that work material being used to form the fastener can be separated from the mechanism without having to unscrew the material from the mechanism.
- (1) Note. The elements or dies used to form the threads on the fastener are know in this art as "chasers".
- 74 And bevel operator:**
This subclass is indented under subclass 73. Subject matter wherein the elements are mounted on and interact with a wedge-shaped device such that axial movement of the device causes the elements to open or close allowing for the insertion or removal of the fastener.
- SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclass 37, 47, 48+, 50, 51+, 54, 56, 57, 58+, and the subclasses indented under Socket type, Radially-reciprocating jaws, Moving-cam actuator. (subclasses 69+)
- 75 And cam operator:**
This subclass is indented under subclass 73. Subject matter wherein the elements are mounted on and interact with a device in the form of an eccentrically shaped wheel mounted on a rotating shaft producing reciprocating motion causing the elements to open or close allowing for the insertion or removal of the fastener.
- SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclass 37, 47, 48+, 50, 51+, 54, 56, 57, 58+, and the subclasses indented under Socket type, Radially-reciprocating jaws, Moving-cam actuator (subclasses 69+).
- 76 Forming taper thread:**
This subclass is indented under subclass 75. Subject matter wherein the apparatus is further provided with structure capable of producing a gradually smaller diameter thread from a shank portion to an end portion of the fastener.
- 77 And lever closer:**
This subclass is indented under subclass 73. Subject matter wherein the elements are mounted to interact with a device in the form of a generally long slender body pivotable about a fixed fulcrum, i.e., a lever, such that movement of the lever causes the elements to open or close allowing for the insertion or removal of the fastener.
- SEE OR SEARCH CLASS:
279, Chucks or Sockets, subclass 119 for similar lever operated chucks or sockets.
- 78 Cone type:**
This subclass is indented under subclass 77. Subject matter further wherein the device is provided with a structure having a surface generated by a line fixed at a point moving along the intersection with a fixed curve or plane, i.e., a cone, such that movement of the cone causes movement of the lever.
- 79 And pivotable chaser carrier:**
This subclass is indented under subclass 73. Subject matter further wherein the element are mounted on a device capable of rotating about a pivot point such that the pivot point is parallel to the axis of the elements.
- (1) Note. The art of this subclass should be distinguished from machines in which the levers pivot. See the search notes below.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
77, 78, for machines in which the levers pivot.
- 80 Having chaser cutter:**
This subclass is indented under subclass 66. Subject matter wherein the component is capable forming the externally threaded ridge by using a sharp instrument to remove material from the fastener.
- SEE OR SEARCH CLASS:
29, Metal Working, subclass 27 and 57 for combined machines adapted for thread chasing.
82, Turning, subclasses 110+, for other thread chasing.
- 81 Rotatable type:**
This subclass is indented under subclass 66. Subject matter wherein the instrument is mounted on the component at a right angle of the fastener and further wherein the instrument is capable of moving in a circular path having the same circular pitch as the thread desired to produce on the fastener such that the instrument has a rolling motion along the fastener as the instrument moves along relative to fastener in the direction of the axis of the fastener.
- 82 Having recessed cylindrical die block:**
This subclass is indented under subclass 66. Subject matter wherein the component comprises a cylindrical structure having an external thread wherein the structure is capable of forming a thread by removing a portion of the structure on a line parallel to the axis of the structure.
- SEE OR SEARCH CLASS:
82, Turning, subclass 13 for lathes for producing an axial pattern which is predetermined by that of a formed cutter or series of juxtaposed cutters.
407, Cutters, for Shaping, subclass 64 for a cutter comprised of an elongated member, arcuate about a center and having at its leading extremity a planar face intersecting the arcuate surface to form the cutting edge, which planar face is generally in a plane extending through the center, which cutter is adapted to cut such that the chip formed is directed to pass over the planar face.
- 83 Having self releasable die holder:**
This subclass is indented under subclass 66. Subject matter wherein the component is provided with means allowing it to be removed from the fastener with relative ease.
- 84 Having thread swaging means:**
This subclass is indented under subclass 57. Subject matter wherein the apparatus is provided with a component capable of forming a thread by swaging cold metal.
- SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 88+ for disclosure of "thread rolling", and subclass 394+ for disclosure of swaging.
- 85 And reciprocable die:**
This subclass is indented under subclass 84. Subject matter wherein the component comprises an internally threaded structure adapted to move back and forth along a direction at a right angle to the axis of the fastener to thereby engage and form a thread on the fastener.
- 86 Having bolt pointing means:**
This subclass is indented under subclass 57. Subject matter wherein the securing device or element comprises a fastener provided with a helical ridge and an enlargement at one end of the fastener, i.e., and further wherein the apparatus is provided with a component capable of shaping the end of fastener opposite the head.
- 87 APPARATUS FOR MAKING INTERNALLY THREADED FASTENER, I.E., NUT:**
This subclass is indented under the class definition. Subject matter for apparatus for manufacturing a fastener provided with an internal helical ridge, i.e., a nut.
- SEE OR SEARCH CLASS:
83, Cutting, appropriate subclasses for machine for cold-punching nut-blanks.

- 88 Castellated nut type:**
This subclass is indented under subclass 87. Subject matter wherein the nut is provided with openings structured to cooperate with an element used to secure the nut to a fastened position.
- (1) Note. The openings on the nut usually take the form of slots cut or formed laterally through the nut to allow a cotter pin to be passed through the nut and cooperating lateral hole in the end of bolt to secure the nut in a locked position.
- 89 Having forger:**
This subclass is indented under subclass 87. Subject matter provided with means for shaping and heating metal.
- 90 And plural rotatable dies:**
This subclass is indented under subclass 89. Subject matter further provided with two mechanisms wherein each mechanism is provided with two cooperating mold elements capable of imparting or forming a shape or impression to the nut and further wherein the mechanisms are capable of rotary motion.
- 91 And plural punches:**
This subclass is indented under subclass 89. Subject matter further provided with two mechanisms wherein each mechanism is capable of imparting or forming a cavity in the nut.
- 92 And coiler:**
This subclass is indented under subclass 89. Subject matter further provided with two mechanisms capable of shaping wire or rod material into a circular configuration.
- 93 And side swagger:**
This subclass is indented under subclass 89. Subject matter further provided with two mechanisms for shaping the nut wherein the mechanism performs its shaping by moving a right angle to the axis of the nut.
- 94 And mandrel:**
This subclass is indented under subclass 93. Subject matter wherein the mechanism is further provided with a component capable of supporting the nut during a shaping step.
- 95 And transfer means:**
This subclass is indented under subclass 89. Subject matter further provided with a mechanism of moving the nut from one location to another location.
- 96 Having taper:**
This subclass is indented under subclass 87. Subject matter provided with means capable of cutting threads in a nut by rotating and engaging the means with the nut.
- SEE OR SEARCH CLASS:
409, Gear Cutting, Milling, or Planing, subclasses 65+ for a thread milling machine or process.
- 97 And reamer:**
This subclass is indented under subclass 96. Subject matter further provided with a mechanism capable enlarging a hole in the nut.
- 98 And work handler:**
This subclass is indented under subclass 96. Subject matter further provided with a mechanism for moving the nut or work material.
- 99 And multiple tap spindles:**
This subclass is indented under subclass 96. Subject matter further provided with two mechanisms capable imparting motion to the thread cutting means.
- SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 13+ for cutting of screw threads by machines including a plurality or rotating tools.
- 100 Circular gang type:**
This subclass is indented under subclass 99. Subject matter wherein the mechanisms are arranged in a circular manner either parallel to each other or radially in a single plane.
- SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclass 35 for similar structure wherein the tools are rotated.

101 And plural tap gripper:

This subclass is indented under subclass 96. Subject matter further provided with a mechanism having a pair jaws capable of gripping the means at several locations along the length of the means.

- (1) Note. The grippers of the subclass usually function at one end to hold and drive the tap and at the other end to open to allow nut blanks to be fed along the tap. Consequently, the machines of this subclass are made to operate continuously, the nut blanks being fed upon one end of the tapper and the finished nuts being discharged from the other end.

102 And release means:

This subclass is indented under subclass 96. Subject matter further provided with a mechanism capable of disengaging the thread cutting means from its driver allowing tapped nuts to be discharged and the thread cutting means to be re-engaged with its driver.

103 And yieldable tap driver:

This subclass is indented under subclass 96. Subject matter further provided with a mechanism capable of imparting motion to the thread cutting means and wherein the mechanism is structured to adjust or stop the motion upon the completion of a cutting step or upon incurring abnormal resistance to the cutting operation.

SEE OR SEARCH CLASS:

- 81, Tools, subclasses 467+ for wrenches or screwdrivers which yield upon predetermined overload.

104 Feed nut type:

This subclass is indented under subclass 103. Subject matter wherein the nut or a nut blank is automatically feed to the means for cutting the threads.

105 And finishing means:

This subclass is indented under subclass 96. Subject matter further provided with a mechanism capable of performing a metal working operation other than cutting threads.

- (1) Note. The machines of this subclass usually are combined machines which can

perform various operations on the nut or nut blank such as facing the top or bottom, or milling the sides.

106 Having broaching means:

This subclass is indented under subclass 87. Subject matter provided with means having a multiple-tooth, barlike cutting tool wherein the teeth are shaped to produce a desired surface or contour and the cutting is produced by configuring the teeth such that each tooth projects farther than the preceding tooth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 151, for machines for finishing the sides of rough-forged bolt heads by driving them through a trimming die.

SEE OR SEARCH CLASS:

- 409, Gear Cutting, Milling, or Planing, subclasses 244+ methods or machines for a general broaching operation.

107 Having milling means:

This subclass is indented under subclass 87. Subject matter provided with means having rotary cutting tool with peripheral teeth wherein the nut or nut blank is fed through the periphery of the tool.

SEE OR SEARCH CLASS:

- 409, Gear Cutting, Milling, or Planing, methods or machines for a general milling operation.

108 Having facing means:

This subclass is indented under subclass 87. Subject matter provided with means having a rotary cutting tool capable of removing material from flat surfaces on the nut or nut blank which surfaces are perpendicular to the rotational axis of the cutting tool.

- (1) Note. The patents of this subclass disclose means for feeding and discharging the nuts, and consequently are excluded from Class 82, Turning, the broad class of turning.

109 Having transfer means:

This subclass is indented under subclass 87. Subject matter provided with a mechanism capable of moving the nut or nut blank from one location to another location.

110 APPARATUS FOR MAKING HEADED FASTENER, E.G., NAIL, RIVET, ETC.:

This subclass is indented under the class definition. Subject matter for apparatus for manufacturing a securing device or element, i.e., a fastener, wherein the fastener is provided with an enlargement at an end thereof wherein the enlargement is structured to function as a head.

- (1) Note. This subclass, and its indented subclasses, are proper for machines claiming the nominal manufacture of making a bolt or screw wherein there is only claimed or disclosed operations for forming the head or shank. A disclosed or claimed machine having means to form threads on a screw or bolt would be proper in higher, preceding subclasses.

SEE OR SEARCH CLASS:

- 72, Metal Deforming, subclasses 318+ and 357 for disclosure of bolt heading.
227, Elongated-Member-Driving Apparatus, subclass 51 and 82 for combined apparatus for forming and driving a rivet.

111 Horseshoe nail making:

This subclass is indented under subclass 110. Subject matter wherein the fastener is structured for securing a shoe to the foot of a mammal in the family Equidae.

- (1) Note. The dies and other mechanisms of this subclass are especially designed to form horseshoe nails and are frequently constructed to simulate the peculiar drawing blow of a hand-hammer.

112 Cut type:

This subclass is indented under subclass 111. Subject matter wherein the fastener is formed by a step of penetrating stock material being used to form the fastener with a sharp forming instrument or separating a portion of stock material being used to form the fastener.

113 Having finishing means:

This subclass is indented under subclass 112. Subject matter further provided with a mechanism capable of performing a metal working operation for completing the fastener formation.

- (1) Note. This subclass provides for machines for trimming, pointing, swaging, or otherwise completing the cut horseshoe nail.

114 And cutter:

This subclass is indented under subclass 113. Subject matter further provided with a device capable of penetrating the fastener or separating a portion of the fastener from other material.

115 And rotary workholder:

This subclass is indented under subclass 113. Subject matter further provided with a mechanism capable of securing work material and further wherein the mechanism is capable of rotating the work material relative to the remainder of the apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 120, for horseshoe nail making other than cut-type having a rotary workholder.
129, for wire nail making machines having a rotary workholder.
135, for spike making machines having a rotary workholder.

116 Having chain drive:

This subclass is indented under subclass 112. Subject matter wherein the apparatus is provided with a mechanism capable of conveying fastener work material to shaping or forming devices wherein the conveying mechanism is a chain drive component.

SEE OR SEARCH CLASS:

- 198, Conveyors: Power-Driven, subclasses 345.1+ for endless conveyors with means for aligning the conveyed load at a work station, and other subclasses for an endless conveyor.

117 Having roll forging means:

This subclass is indented under subclass 111. Subject matter wherein the apparatus is provided with a mechanism in the form of cylindrical structure capable shaping the fastener by the application of heat and pressure.

SEE OR SEARCH CLASS:

72, Metal Deforming, subclasses 191+ especially subclass 198 for a tool-couple making a nail or spike by rolling.

118 Travelling roll type:

This subclass is indented under subclass 117. Subject matter wherein the mechanism comprises a roller having a further capacity of lateral.

- (1) Note. The roller forgers of this subclass usually can move in a planetary motion thereby producing a force or "blow" to the workpiece which simulates the "blow" of a hand-held hammer.

119 Having side swage means:

This subclass is indented under subclass 111. Subject matter wherein the apparatus is provided with a mechanism for shaping the fastener wherein the mechanism performs its shaping operation by moving at a right angle to the axis of the fastener.

SEE OR SEARCH THIS CLASS, SUBCLASS:

147, for general headed fastener making machines having a side swagger.

120 Having rotary workholder:

This subclass is indented under subclass 111. Subject matter wherein the apparatus is provided with a mechanism capable of securing work material and further wherein the mechanism is capable of rotating the work material relative to the remainder of the apparatus.

121 Wire nail making:

This subclass is indented under subclass 110. Subject matter wherein the fastener is formed from wire and the fastener is structured to have an impact receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.

- (1) Note. The apparatus is this subclass usually makes nails by feeding wire for a coil to a header while the free end of the wire is fed to a pointer and then the nail is severed by suitable dies.

122 String nail type:

This subclass is indented under subclass 121. Subject matter wherein the apparatus is capable of manufacturing two or more fasteners such that the fasteners are joined head to point allowing them to be easily separated from one another.

SEE OR SEARCH CLASS:

227, Elongated-Member-Driving Apparatus, subclasses 82+ for apparatus for forming a string of members, e.g., nail, combined with means to sever and apply one of the members to work.

123 Having multiple header means:

This subclass is indented under subclass 121. Subject matter wherein the apparatus is provided with a mechanism capable of forming a head on two or more fasteners during a single operation or engagement of the mechanism with fastener stock material.

124 Opposite end former:

This subclass is indented under subclass 123. Subject matter wherein the mechanism is capable of simultaneously forming a point on an adjacent nail during the operation or engagement of the mechanism with fastener stock material.

125 Having reciprocating die and header:

This subclass is indented under subclass 121. Subject matter wherein the apparatus is further provided with means having wire-gripping dies capable of reciprocating transversely of the line of feed of the wire to grip and release the wire and wherein the header is capable of reciprocating in the direction of the length of the nail to head the nail while being held by the gripping dies.

- (1) Note. The dies of this subclass usually point and sever as well as hold the nail.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
141+, for wrought fastener making machines having reciprocating dies and headers.
- 126 And toggle closing dies:**
This subclass is indented under subclass 125. Subject matter wherein the gripping-dies are actuated by a toggle linkage mechanism.
- 127 And wedge closing dies:**
This subclass is indented under subclass 125. Subject matter wherein the gripping-dies are opened and closed by the use of either a wedge structure or a diagonal cam slot both which are capable of engaging the dies and moving them to open and closed positions.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
142+, for wrought fastener making machines having wedge closing dies.
- 128 Having distributing means:**
This subclass is indented under subclass 121. Subject matter wherein the apparatus is provided with means for disseminating formed fasteners from the apparatus such that the fasteners can be used in various fastening operations.
- (1) Note. The nails distributed by machines of this subclass are used in nailing shoe-heels, boxes, etc.
- SEE OR SEARCH CLASS:
227, Elongated-Member-Driving Apparatus, subclasses 82+ for a device for forming, feeding, or guiding and applying a member, e.g., nail, to work.
- 129 Having rotary workholder:**
This subclass is indented under subclass 121. Subject matter wherein the apparatus is provided with a mechanism capable of securing work material and further wherein the mechanism is capable of rotating the work material relative to the remainder of the apparatus.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
135, for spike making machines having a rotary workholder.
- SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclasses 345.1+ for rotatable conveyor with means for aligning the conveyed load at a work station, and other subclasses for a rotatable conveyor.
- 130 Having spiral shank forming means:**
This subclass is indented under subclass 129. Subject matter further with means capable of producing a helical rib on the fastener.
- 131 Wrought fastener making:**
This subclass is indented under subclass 110. Subject matter wherein the fastener is formed by heating and shaping the fastener.
- (1) Note. The fasteners of this subclass are usually formed from heated stock rods or plates.
- 132 Spike type:**
This subclass is indented under subclass 131. Subject matter wherein the fastener has substantially large dimensions such that the fastener can be used for securing substantially large structures or materials.
- 133 Having roller die:**
This subclass is indented under subclass 132. Subject matter wherein the apparatus is provided with a shaping die in the form of cylindrical structure having metal shaping contours located in on the peripheral surface of the structure.
- (1) Note. The apparatus of this subclass usually are provided with additional means for heading, pointing, and performing other shaping operations on the fastener.
- SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 191+ especially subclass 198 for a tool-couple making a nail or spike by rolling.

- 134 Having pointing means:**
This subclass is indented under subclass 133. Subject matter further provided with a mechanism for shaping that end of the fastener structured for penetrating material, substructure, or other work desired to be fastened.
- 135 Having rotary workholder:**
This subclass is indented under subclass 133. Subject matter further provided with a mechanism capable of securing work material and further wherein the mechanism is capable of rotating the work material relative to the remainder of the apparatus.
- 136 Nail type:**
This subclass is indented under subclass 131. Subject matter wherein the fastener being formed comprises a structure having an impact receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.
- 137 Header means:**
This subclass is indented under subclass 110. Subject matter wherein one of the mechanisms capable of forming an enlargement at one end of the fastener structured to function as a head therefor, i.e., a header.
- 138 And laterally movable carrier:**
This subclass is indented under subclass 137. Subject matter further provided with a device capable of supporting and moving the header in a direction transverse to the operating direction of the forming components of the header.
- 139 Bolt blank making:**
This subclass is indented under subclass 137. Subject matter wherein the work material being formed is an intermediate article which is to undergo further forming operations resulting in an externally headed fastener structured to cooperate with and be secured by an internally threaded fastener.
- 140 Having plural rotatable dies:**
This subclass is indented under subclass 110. Subject matter further provided with two mechanisms wherein each mechanism is provided with two cooperating mold elements capable of imparting or forming a shape or impression to the fastener and further wherein the mechanisms are capable of rotary motion.
- 141 Having reciprocating die and heading means:**
This subclass is indented under subclass 110. Subject matter wherein the apparatus is further provided with means having fastener gripping dies capable of reciprocating transversely of the line of feed of the fastener to grip and release the fastener and wherein the means is capable of reciprocating in the direction of the length of the fastener to head the fastener while being held by the gripping dies.
- 142 And toggle operator for die movement:**
This subclass is indented under subclass 141. Subject matter wherein the gripping-dies are actuated by a toggle linkage mechanism.
- 143 Bolt blank making:**
This subclass is indented under subclass 142. Subject matter wherein the work material being formed is an intermediate article which is to undergo further forming operations resulting in an externally headed fastener structured to cooperate with and be secured by an internally threaded fastener.
- 144 And wedge closing dies:**
This subclass is indented under subclass 141. Subject matter wherein the gripping-dies are opened and closed by the use of either a wedge structure or a diagonal cam slot both which are capable of engaging the dies and moving them to open and closed positions.
- 145 Bolt blank making:**
This subclass is indented under subclass 144. Subject matter wherein the work material being formed is an intermediate article which is to undergo further forming operations resulting in an externally headed fastener structured to cooperate with and be secured by an internally threaded fastener.
- 146 Making nail:**
This subclass is indented under subclass 141. Subject matter wherein the fastener being formed comprises a structure having an impact receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.

- 147 Having side swagger:**
This subclass is indented under subclass 110. Subject matter wherein the apparatus is provided with a mechanism for shaping the fastener wherein the mechanism performs its shaping operation by moving at a right angle to the axis of the fastener.
- 148 Having punch means:**
This subclass is indented under subclass 110. Subject matter wherein the apparatus is provided with a mechanism capable of imparting or forming a cavity in the fastener.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
205, for bolt or rivet head punches, per se.
- 149 Forming cotter-slot:**
This subclass is indented under subclass 148. Subject matter wherein the cavity is usually a longitudinal channel in the fastener capable of receiving a securing element used to secure the fastener, i.e., a cotter key.
- 150 Having head finisher:**
This subclass is indented under subclass 110. Subject matter provided with a mechanism capable of performing a metal working operation for completing the formation of a head on the fastener.
- (1) Note. This subclass provides for machines for trimming, pointing, swaging, or otherwise completing the head on the fastener.
- 151 Broach type:**
This subclass is indented under subclass 150. Subject matter wherein the mechanism comprises a multiple-tooth, barb-like cutting tool wherein the teeth are shaped to produce a desired surface or contour and the cutting is produced by configuring the teeth such that each tooth projects farther than the preceding tooth.
- SEE OR SEARCH CLASS:
409, Gear Cutting, Milling, or Planing, subclasses 244+, for the process of or machine for broaching, generally, and see the notes thereunder for other broaching.
- 152 Having ejection means:**
This subclass is indented under subclass 110. Subject matter provided with a mechanism capable of discharging a formed fastener from the apparatus.
- 153 And blank shear or cutoff means:**
This subclass is indented under subclass 152. Subject matter further provided with a device capable of severing fastener stock material into suitable lengths for headed fastener blanks.
- (1) Note. These devices are special tools applied to bolt and rivet machines and their operation and function are so specialized as to warrant placement in this class rather than the class for Cutting.
- 154 Having transfer means:**
This subclass is indented under subclass 110. Subject matter provided with a mechanism capable of moving the fastener or fastener blank from one location to another location.
- 155 Having gauge:**
This subclass is indented under subclass 110. Subject matter provided with a mechanism capable of measuring or determining the dimension of a component of the apparatus or of a workpiece.
- 156 Having cutting means:**
This subclass is indented under subclass 110. Subject matter provided with a mechanism capable of penetrating the fastener or separating a portion of the fastener from other material.
- 157 Making cut-type nail:**
This subclass is indented under subclass 156. Subject matter wherein the fastener being formed comprises a structure having an impact receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.
- 158 Tack strip making:**
This subclass is indented under subclass 157. Subject matter wherein the apparatus is capable of forming plural fasteners and which are formed such that the fasteners are laterally arranged and attached at their heads.

- (1) Note. The fasteners of this subclass have a comb-like appearance after formation and are used, primarily, in automatic nailing machines.
- SEE OR SEARCH CLASS:
29, Metal Working, subclasses 592+ and particularly subclasses 432+ for a method of making and/or applying a member, e.g., nail, staple, etc., to work.
227, Elongated-Member-Driving Apparatus, subclasses 93+ for apparatus for forming a member, e.g., nail by severing combined with means to apply the member.
- 159 And heading means:**
This subclass is indented under subclass 157. Subject matter further provided with a device capable of forming an enlargement at one end of the fastener structured to function as a head therefor.
- 160 And pointing means:**
This subclass is indented under subclass 157. Subject matter further provided with a device capable of forming that end of the fastener structured for penetrating material, substructure, or other work desired to be fastened.
- 161 Forming shank slot:**
This subclass is indented under subclass 156. Subject matter wherein the apparatus is capable of producing a longitudinal cavity in the fastener.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
5, for screw head nicking milling machines.
- SEE OR SEARCH CLASS:
409, Gear Cutting, Milling, or Planing, subclasses 64+ for shaping provided for elsewhere.
- 162 APPARATUS FOR MAKING WASHER:**
This subclass is indented under the class definition. Subject matter for apparatus for manufacturing a article comprising an annular element adapted to be placed beneath the bearing surface of a bolt head, nut, or similar fastener.
- SEE OR SEARCH CLASS:
83, Cutting, appropriate subclasses for machine for cold-punching nut-blanks and washers.
- 163 Lock washer:**
This subclass is indented under subclass 162. Subject matter wherein the article is provided with means to secure same to another bolt, nut, similar fastener or other structure.
- 164 MATERIAL SUPPLY FEEDER OR DISTRIBUTOR:**
This subclass is indented under the class definition. Subject matter for: (a) apparatus for providing nail, screw, nut, nail plate blanks, or similar stock material to apparatus for performing various manufacturing operations provided by this class on said blanks or stock material; or (b) apparatus for separating finished articles from imperfect work or excess material and for conveying articles from apparatus of this class of receptacles for packing or otherwise disseminating said articles.
- (1) Note. The subject matter of this and indented subclasses consists of patents claiming or disclosing subcombinational machines or devices used with forming or operating apparatuses of this class. For example, patents claiming only a feeder for feeding work material to a shaping apparatus are found in this and indented subclasses.
- 165 Nut and washer delivery means:**
This subclass is indented under subclass 164. Subject matter wherein the blank or stock material is supplied to an apparatus of this class for performing a nut or washer forming operation.
- SEE OR SEARCH CLASS:
83, Cutting, appropriate subclasses for machine for cold-punching nut blanks and washers.
- 166 For forger:**
This subclass is indented under subclass 165. Subject matter wherein the apparatus is capable of heating and shaping the blank or stock material.

167 Nut feeder:

This subclass is indented under subclass 165. Subject matter wherein the blank or stock material is supplied to an apparatus for forming an internally threaded fastener.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, subclasses 8+ for drilling machines with feed mechanism having means which in response to predetermined conditions during relative approach movement of tool and work, brings into operation a control means which reverses the direction of relative movement to withdraw tool and work; subclasses 62+ for drilling machines which feed the tool along the tool-axis; and subclasses 124+ for drilling machines which feed the tool along the tool-axis.

168 Nail plate feeder:

This subclass is indented under subclass 164. Subject matter wherein the blank or stock material is supplied to an apparatus of this class for performing a nail plate forming operations.

- (1) Note. See the Search Note below for a reference to a discussion on article feeding subcombinations. The feeding combinations in this and the indented subclasses are considered to be so specialized to the performance of the function of the work modifying machine of this class as to preclude classification in the general dispensing (feeding) class (221).

SEE OR SEARCH CLASS:

221, Article Dispensing, see the class definition in the section on Article Treatment or Modification (Including Assembly) for a discussion of article feeding subcombinations of the subject matter of this class (470). see (1) Note, above.

169 Having oscillator:

This subclass is indented under subclass 168. Subject matter wherein the apparatus is provided with means capable of moving a blank or stock material in a lateral vibratory motion

such that the blank or material is formed with a taper from a head end to an opposite end.

170 Having reverser:

This subclass is indented under subclass 168. Subject matter wherein the apparatus is provided with means capable of turning a formed plate over after a forming operation.

171 And gear:

This subclass is indented under subclass 170. Subject matter wherein the means is provided with a toothed wheel used to effectuate the plate turning.

172 Rack and pinion:

This subclass is indented under subclass 171. Subject matter wherein the means comprises a toothed wheel engageable and cooperating with a reciprocating rack.

173 Segmental type:

This subclass is indented under subclass 171. Subject matter wherein the toothed wheel comprises a portion or arc section of a complete toothed wheel such that by oscillatory motion of the portion or arc section with an associated or cooperating rack produces reversing motion of the formed plate.

174 Having roller or drum feeder with strap drive:

This subclass is indented under subclass 168. Subject matter wherein the plate is fed to forming device by a generally cylindrical structure such that the structure is rotated by strap material wound about the structure and further wherein the strap material is attached to a mechanism capable of moving the strap material in an oscillatory manner thereby rotatably moving the structure.

175 Nipper and nose piece:

This subclass is indented under subclass 168. Subject matter wherein significance is attributed to that end of a nail plate feeder used to grip and hold a nail plate immediately adjacent to a nail plate forming device.

- (1) Note. The typical holder of this subclass would feed the nail plate to nail cutting shears for cutting of forming cut nails.

176 Material infeed means:

This subclass is indented under subclass 164. Subject matter wherein the apparatus is provided with means capable of effecting axial movement between a die-head and stock material to thereby relieve the strain resulting from a feeding operation.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, subclasses 62+ and 129+ for drilling machines which feed the work or tool or both relative to one another along the axis of relative rotation of tool and work.

177 Having gripper feed jaws:

This subclass is indented under subclass 164. Subject matter wherein the apparatus is provided with means comprising a pair of opposed hinged elements movable toward each other such as to be capable of holding a blank or stock material therein.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 468.2+ and 470.1+ for conveyors having load-gripping members.
221, Article Dispensing, subclasses 210+ for article dispensing devices not otherwise provided for in which a gripper type discharge assistant is used to grip an article and remove it from a source of supply to a point of use or delivery.

178 Having reciprocating lifter:

This subclass is indented under subclass 164. Subject matter wherein the apparatus is provided with means capable of moving a element vertically and reciprocally to thereby elevate blanks or stock material and allow the blanks or material to be fed to a forming or operating device.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 396+, 550.01+ and 582 for a conveyor which moves a load from a bin or hopper.
221, Article Dispensing, subclasses 164+, 190, 192, and 254 for various article dispensing devices not otherwise pro-

vided for which elevate articles in separating them from the source of supply.

179 Having rotary disk:

This subclass is indented under subclass 164. Subject matter wherein the apparatus is provided with means in the form of a relative flat circular plate capable of rotation such that blanks or stock material received on the periphery of the plate can be carried or fed to a forming or operating device.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 384+, 397.01+, 441, 450, 480.1+, and 550.01+ for a rotating conveyor having load-receiving pockets.
221, Article Dispensing, subclasses 263+ for article dispensing devices not otherwise provided for having segregated chambers (i.e., trap chamber) structures to remove articles from a hopper source of supply, and subclasses 169+ for orienting type article dispensing devices in which articles are oriented by passing through openings or recesses in the peripheries of rotatable or oscillatable elements.

180 Having inclined chute:

This subclass is indented under subclass 164. Subject matter wherein the apparatus is provided with means having an inclined chute allowing blanks, stock material, or formed articles to move down for feeding or sorting.

(1) Note. The chutes usually have slots at the bottom allowing for blanks, stock material, or articles to hang supported by their heads.

SEE OR SEARCH CLASS:

193, Conveyors, Chutes, Skids, Guides, and Ways, subclasses 2+ for chutes in general.
198, Conveyors: Power-Driven, subclass 389 for a power-driven conveyor combined with a chute in which the conveyed load is suspended for orientation, and subclass 311, 359+, 390 and 523+ for such a conveyor combined with a chute.

- 221, Article Dispensing, subclasses 156+ for article dispensing (feeding) not otherwise provided for, for feeding and orienting asymmetrical articles.
- 181 TAP SPINDLE REVERSING DEVICE:**
This subclass is indented under the class definition. Subject matter for means capable of changing the direction of rotation of a cylindrical body, i.e., a spindle, used to carry and support a male templet screw capable of cutting threads, i.e., a tap, after a tapping operation is completed to thereby withdraw the tap from a work product.
- 182 Having spur gears:**
This subclass is indented under subclass 181. Subject matter wherein the means comprises two or more gears having teeth radially arrayed on their rims parallel to their axes, i.e., spur gears, wherein the gears are arranged such that an idler gear may be engaged with the spur gears and thereby introduce a change in direction of rotation of a driven gear and a spindle associated therewith.
- 183 IMPLEMENT, E.G., DIE, ETC.:**
This subclass is indented under the class definition. Subject matter for means comprising an elemental component used in apparatus of superior subclasses to perform various functions of those apparatus.
- (1) Note. The patents in this and indented subclasses consist of patents drawn to die, tap, punch, or similar devices mountable in apparatus provided for higher in the classification schedule.
- 184 Nail or screw capping die:**
This subclass is indented under subclass 183. Subject matter wherein the device is specially adapted for forming and closing a nail and screw cap about the head of an article.
- 185 Screw threading die:**
This subclass is indented under subclass 183. Subject matter wherein the device is specially adapted for forming an external ridge on a fastener.
- 186 Thread trimming:**
This subclass is indented under subclass 185. Subject matter wherein the device is provided with structure capable of removing a portion of a formed thread thereby leaving a portion of the end of the fastener unthreaded.
- 187 Radial chaser:**
This subclass is indented under subclass 185. Subject matter wherein the device comprises a bar-like structure having shaping teeth at an inner end and capable of being radially mounted in a die-head or holder.
- 188 Taper threading:**
This subclass is indented under subclass 187. Subject matter wherein the device comprises a structure are capable of gradually receding during a threading operation thereby producing a tapered thread wherein said receding is effected either by a mechanism which moves the device away from the blank or stock material or which controls the withdrawal of the device from the blank or stock material due to pressure created by the threading operation.
- 189 Having die-blade adjuster:**
This subclass is indented under subclass 188. Subject matter wherein the device is further provided with a member capable of varying the position of the device with a die-head or holder.
- 190 Adjustable:**
This subclass is indented under subclass 187. Subject matter wherein the device is provided with a mechanism capable of varying the position of the device with the die-head or holder.
- 191 Bolt or rivet forming die:**
This subclass is indented under subclass 183. Subject matter specially adapted to form an externally threaded fastener structured to cooperate with and internally threaded fastener, or a fastener provided with an end structure consisting of a polycrystalline metallic grain structure which when subjected to an externally applied force is plastically flowable.
- 192 Nail forming die:**
This subclass is indented under subclass 183. Subject matter specially adapted to form a fastener comprising a structure having an impact

- receiving surface adapted to receive an axially applied force which causes the fastener to penetrate material, substructure, or other work desired to be fastened.
- 193 Horseshoe type:**
This subclass is indented under subclass 192. Subject matter wherein the fastener is structured for securing a shoe to the foot of a mammal in the family Equidae.
- 194 Cut:**
This subclass is indented under subclass 193. Subject matter wherein the fastener is formed by a process having a step of penetrating stock material being used to form the fastener with a sharp forming instrument of separating a portion of stock material being used to form the fastener.
- 195 Wire type:**
This subclass is indented under subclass 192. Subject matter wherein the fastener is formed from an elongated piece of metal stock having a circular cross sectional dimension which is much smaller than the longitudinal dimension of the stock.
- 196 Wrought type:**
This subclass is indented under subclass 192. Subject matter wherein the fastener is formed by a process having a step of heating or cooling a fastener and a step of shaping the fastener.
- 197 Nut or washer forming die:**
This subclass is indented under subclass 183. Subject matter wherein a fastener being formed is either: (a) provided with an internal helical ridge; (b) comprises an annular element adapted to be placed beneath the bearing surface of a bolt head, nut, or similar article.
- 198 Tap:**
This subclass is indented under subclass 183. Subject matter otherwise unprovided for capable of forming an interior ridge in a blank or stock material.
- SEE OR SEARCH CLASS:
29, Metal Working, subclass 281 for hand manipulated assembling or disassembling tools which have grippers for direct push or pull for tube applying
- or removing in which the gripping means is thread tapping.
- 199 Combined:**
This subclass is indented under subclass 198. Subject matter having means or structure capable of performing operations other than forming interior ridge forming.
- SEE OR SEARCH CLASS:
408, Cutting by Use of Rotating Axially Moving Tool, subclasses 215+ for cutting dies which are rotated relative to the work during operation.
- 200 Radially adjustable:**
This subclass is indented under subclass 198. Subject matter wherein the component is capable of being moved in a radial direction relative to the blank or stock material being subjected to an operation of this class.
- 201 Collapsible:**
This subclass is indented under subclass 198. Subject matter wherein the component is structured such that it may be readily retracted toward the axis of the device to allow its withdrawal from a formed hole without reversing any rotary motion of the device.
- 202 Cam core:**
This subclass is indented under subclass 201. Subject matter wherein the device is actuated by a rotary mechanism which engages an eccentrically shaped surface axially or concentrically mounted relative to the device.
- 203 Wedge core:**
This subclass is indented under subclass 201. Subject matter wherein the device is actuated by a triangular shaped or conical surface which engages the device.
- 204 Thread swage:**
This subclass is indented under subclass 198. Subject matter wherein the device is capable of forming screw threads by shaping cold metal.
- 205 Bolt or rivet heading punch:**
This subclass is indented under subclass 183. Subject matter wherein the component is specially adapted for forming a head on either: (A) an externally threaded fastener structured to cooperate with an internally threaded fastener,

or (B) a fastener provided with an end structure consisting of a polycrystalline metallic grain structure which when subjected to an externally applied force is plastically flowable.

206 Nut or washer arbor:

This subclass is indented under subclass 190. Subject matter wherein the component is specially adapted for supporting a internally threaded fastener or an annular element adapted to be placed beneath the bearing surface of a bolt head, nut, or similar article during a forming operation.

SEE OR SEARCH CLASS:

82, Turning, subclasses 168+ for work driving and supporting mandrels placed between the centers of a lathe and driving hollow work pieces by engaging their interior surfaces.

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 there-under for other related loci.

207 Die holder:

This subclass is indented under subclass 190. Subject matter wherein the component is specially adapted for supporting a device for cutting out, forming, or stamping material.

208 Anvil:

This subclass is indented under subclass 190. Subject matter wherein the component is specially adapted for providing a generally flat, smooth hard material surface on which a metal blank or stock material may be shaped.

(1) Note. An anvil usually consists of a very large block of iron or steel for hand forging of metal material.

209 MISCELLANEOUS:

This subclass is indented under the class definition. Subject matter otherwise unprovided for in superior subclasses.

to their claimed subject matter. These collections, therefore, are only examples of the art encompassed by the definition and a thorough search for a desired concept should include a search in the preceding official subclasses.

900 FLOATING WORKHOLDER:

Art collection of apparatuses having a workholder capable of drifting during a forming operation of this class.

901 PIPE OR ROD WORKHOLDER:

Art collection of devices capable of holding a pipe or rod workpiece during a forming operation of this class.

902 WORKHOLDER INDEX:

Art collection of devices capable indicating or pointing to a position on a workholder.

903 YIELDABLE SPINDLE:

Art collection of devices for a spindle capable of yielding during a forming operation.

904 TURRET:

Art collection of devices for a turret for use with an apparatus of this class.

905 WIRE COIL INSERT:

Art collection of apparatuses or methods for forming a wire coil insert.

906 NYLON PLUG LOCK:

Art collection for a nylon plug insert.

907 CLUTCH NUT FEEDER:

Art collection for apparatuses or devices for feeding a clutch nut.

END

CROSS-REFERENCE ART COLLECTIONS

The patents in the following collections have been placed without regard to their original classification or