

CLASS 227, ELONGATED-MEMBER-DRIVING APPARATUS

SECTION I - CLASS DEFINITION

Introductory Notes

- (1) Note. This is a restricted class for the art of elongated-member-driving apparatus as defined above. For original placement of a patent in this class, its claimed disclosure should meet the minimum requirements of the class definition, and should fall within the boundaries expressed in the sections "Scope of the Class", "Other Classes With Elongated Member Driving Means", "Relationship to Combination Classes," "Relationship to Subcombination Classes", and "Other Class Relationships" below.
- (2) Note. The term "member", appearing throughout this class definition, is a defined term in this class (see Glossary), denoting an elongated object to be driven; usually, but not necessarily disclosed as a nail, stud, staple, or the like.
- (3) Note. Terms followed by an asterisk (*) will be found defined in the Glossary. Throughout this class definition, certain very frequently appearing terms, such as work, product, member, and driver, are accompanied by the asterisk only where the exact meaning of the term is deemed particularly important.

Main Class Definition

This class provides for a device comprising a pushing or driving element, disclosed as being guided for movement in a predetermined path and as being effective (1) to engage a member, or end portion of indeterminate length material, and (2) to impart translatory motion to the same with respect to a workpiece, or to engage a workpiece and to translate the same or a portion thereof with respect to a member; said member or said end portion comprising a pointed and/or generally elongated rod-like or tubular projection substantially aligned with the direction of such translatory motion, said pushing or driving element serving, in either case, to initiate and/or increase a penetrating relationship between said workpiece and member (or workpiece

and end portion); and further comprising at least one of the following: means to (a) modify, (b) position or (c) support, a workpiece or member.

Scope of the Class

The subject matter of this class relates to apparatus for applying a member (having an elongated rod-like or tubular projection) to one or more workpieces by relative movement between the member and the workpiece generally in the direction of a projection of the member.

A patent claiming apparatus for driving a member may be excluded from the class because of additional claimed subject matter, not expressly covered in the subclass titles and definitions. See Lines With Other Classes, below

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

A patent claiming apparatus for driving a member may be excluded from the class because of additional claimed subject matter, not expressly covered in the subclass titles and definitions. Claimed subject matter which bars a patent from original placement in Class 227 may be summarized as follows (see below for a more detailed discussion):

A method of applying a member, for which see Class 29, Metal Working, subclasses 592+.

Apparatus for positively rotating a member during driving.

Apparatus for applying a clip, edge binding or hog ring (for which see Classes 29, Metal Working, and 72, Metal Deforming), except where there is bodily movement of the clip, etc., along a line in extension of a pointed portion of the clip, etc., during work penetration. A patent to the latter type of device is proper for Class 227.

A means for performing a particular operation or for making a special product, which is recognized as subject matter of some other existing class, e.g., pile-driver, boot, or shoe making machine, etc., for which see the Index to Classification under the heading of the operation performed or product made.

Means for treating a product made by a device of this class.

RELATIONSHIP TO OTHER CLASSES CONTAINING ELONGATED MEMBER DRIVING MEANS, PER SE

Prefatory Note

Class 227, "Main Class Definition" limits the movement of the member or work, imparted to it directly by a driver, to a rectilinear path but permits the member or work to turn; however, a positive means to rotate the member or work is excluded from Class 227 (see "Other Class Relationships," below, for loci of patents claiming positive means to rotate a member or work).

Ordnance Classes

A patent claiming a firearm is placed in the appropriate ordnance class, unless it teaches that a barrel is intended to be in contact with work when the device is fired to propel a member, in which case the patent is proper for Class 227. See Class 42, Firearms, and Class 89, Ordnance.

The Class Of Tools

Generally, a hand-wielded hammer is proper subject matter for Class 81, Tools. However, where there is claimed means to permit a device (e.g., hammer-head) to move relative to handle, other than by a whipping or bending of the handle (which is subject matter for Class 81), placement of the patent is proper in Class 227, subclass 133. See the prefatory note, above, regarding the exclusion of member-rotating means (e.g., a screw driver) from this class.

Earthworking Or Particular-work Treating Classes

A patent claim directed to means for driving a member into the earth or into certain specified kinds of work will be placed in the class providing for such earthworking or for operations on such work. See References to Other Classes below for examples of typical subject matter.

Tool Actuation

A patent claim directed only to apparatus for causing a driver to move a member, will be placed in Class 173, Tool Driving or Impacting.

RELATIONSHIP TO COMBINATION CLASSES

Prefatory Note

Class 227 is the locus for a patent claiming a combination of means to drive a member (e.g., nail) with any of the following: (1) means to perform a different operation on work prior to the member-driving operation, except for some special combinations in other classes, as noted below; or (2) means to treat a member or mating-member* before, during or after a class-type operation (e.g., clinching a driven nail) and including making or forming of such member; or (3) means to handle or cut the product of a class type operation; or (4) a device or feature, per se, classifiable in another class.

Classes Of Particular Work Or Product

As stated generally in the Prefatory Note of this section, a patent claim directed to a combination of means to assemble or treat work, with means to drive a member, is generally in Class 227, except where the combination is specifically provided for in another class based on the nature of the work.

For examples of such classes (or portions of classes) which are loci of patents to such combination, see References to Other Classes, below.

Classes Of Assembly Apparatus

Class 227 in the locus of patents directed to the combination of member-driving apparatus with apparatus for assembling workpieces, with the following exceptions: (a) a patent claim directed to apparatus for treating (other than by cutting; a product consisting of workpieces that have been assembled by an operation of the class type, is found, for example, in Class 29, Metal Working, or Class 118, Coating Apparatus; (b) a patent claim directed to apparatus for either filling a receptacle, or for assembling workpieces or articles and bonding or strapping the assembled workpieces or articles, combined with apparatus for driving a member; which is proper for the appropriate packaging or wrapping class, principally Class 53, Package Making, and Class 100, Presses.

The following list of classes, in addition to those listed in "Classes Of Particular Work Or Product" above, illustrates the location of patented art involving means for driving a member, in combination with assembly apparatus: Class 29, Metal Working, subclasses 33+; Class 53, Package Making; Class 100, Presses, subclasses 1+.

The Class Of Adhesive Bonding

Class 227 is the locus of patents directed to the combi-

nation of apparatus for applying a cement, for securing purposes, to a workpiece and means to drive a member into said workpiece, (or apparatus for applying cement to a member and driving the cemented member into a workpiece).

A patent directed to the method followed by the above apparatus is excluded from Class 227 and is placed in Class 156, Adhesive Bonding and Miscellaneous Chemical Manufacture.

Miscellaneous Combinations

A patent to the combination of member-driving apparatus with manufacturing or nonmanufacturing apparatus, not provided for in other classes (as, for instance, those classes set forth in "Classes Of Assembly Apparatus" and "Class Of Adhesive Bonding", above, or in preceding subclasses of this class, will be found in this class (227), subclass 156.

RELATIONSHIP TO SUBCOMBINATION CLASSES

Classes Of Apparatus For Making A Member (E.g., Nail, Rivet, Etc.)

A patent claiming the combination of apparatus for making a member with means to drive the member will be found in Class 227, subclasses 33 or 82+. A patent claiming apparatus for making a member, per se, may be found in one of the following classes:

59, Chain, Staple, and Horseshoe Making, subclasses 71-77 for making a staple

72, Metal Deforming, subclasses 324 to 341 and 343 to 378 for eyelet making

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 27+ for methods of making a rivet or nail and subclasses 110+ for machines of making a rivet or nail.

Work Or Product Handling Classes

A patent claiming specific means to drive a member (e.g., nail) in combination with means to handle work or product is placed in Class 227. However, a patent claiming a device for handling work or product, per se, or in combination with a merely named driving means (e.g., "stapler", "nailer"), will be found in the proper material or article handling class. But if there is claimed means to synchronize a work or product handling device with a driving device (e.g., stapler), whether claimed

specifically or by name only, the patent will be placed, as an original copy, in this class (227).

See References to Other Classes, below for a sample of classes directed to material or article handling means.

Classes Of Heading Apparatus

A patent claiming means to drive a member (e.g., rivet) with means to head the member will be found in this class (227), subclasses 51+. However, a patent claiming means to head a member, in the absence of a limitation to driving means, will be found in Class 72 if no assembly apparatus is recited, otherwise in Class 29 (see Lines With Other Classes and Within This Class for Class 72 for the line between Classes 29 and 72 in this respect).

Classes Relating To Tool Actuation

A patent claiming means to drive a member (e.g., nail) in combination with means to guide, modify, position or support the member or a workpiece is proper for Class 227. However, a patent claiming mere actuating means, or means to move a nominally recited driver (e.g., "nailer") will be placed in a class appropriate to the power source or transmission means.

See References to Other Classes, below for a sample of classes directed to such tool actuation subcombinations.

Classes Relating To Cutting Means

A patent claiming means to cut work, product, or a member (e.g., nail, before or after driving), in combination with means to drive a member, is proper for Class 227. However, a patent claiming only means to cut may be found in one of the following classes:

Class 83, Cutting

Class 408, Cutting by Use of Rotating Axially Moving Tool.

The Class Of Pressing (Class 100)

A patent claiming means to apply a lid by pressing in combination with means to apply a member thereto is proper for Class 227. However, a patent claiming only means for applying a lid by pressure will be found in Class 100, Presses, subclasses 54 to 64.

The Class Of Implements Or Apparatus For Applying A Pushing Or Pulling Force (Class 254).

A patent claiming means to apply and means to withdraw a member is proper for Class 227. However, a patent claiming only structure to extract a nail will be found in Class 254, subclasses 18 to 27; and to extract a staple, in Class 254, subclass 28.

A patent claiming means to stretch material and means to apply a member thereto is proper for Class 227 (subclasses 12+), while portable tensioning implements or apparatus for flexible material, per se, is generally classifiable in Class 254, subclasses 199+.

OTHER CLASS RELATIONSHIPS

Classes Of Articles

Class 227 excludes a patent to an article, per se, (e.g., nail, staple, etc.), whose placement may be proper in one of the following classes:

Class 24, Buckles, Buttons, Clasps, etc., subclasses 713.6+, for an eyelet used with a drawstring or laced-fastener.

Class 206, Special Receptacle or Package, subclass 338+ for a package of fasteners.

Class 411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fastener, subclasses 439+ for impact driven fasteners (e.g., nails, spikes, staples, etc.); and subclasses 500+ for rivets.

THE CLASSES OF TOOLS

Class 227 excludes patents to tools having a positive means to rotate a member or having no claimed structure to guide a driver. Placement thereof may be in one of the following classes:

Class 7, Compound Tools

Class 81, Tools, subclass 52 for wrenches or screwdrivers which rotate a piece of work (e.g., nut, bolt, screw).

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

12, Boot and Shoe Making, subclass 13.1, 18.3, 33.1, 43, 43.5, 50+, 85.4+ and 108, for patents where the combination is specifically provided for based on the nature of the work.

60, Power Plants (tool-actuation subcombination class)

74, Machine Element or Mechanism (tool-actuation subcombination class)

91, Motors: Expansible Chamber Type (tool actuation subcombination class)

104, Railways, subclass 17.1, for a railway-car-mounted means to drive a spike into a railway tie. (See above, "Earthworking or Particular-Work Treating Classes")

128, Surgery, for patents where the combination is specifically provided for based on the nature of the work.

131, Tobacco, subclass 106 and 113+, for a means for tagging tobacco products. (See above, "Earthworking or Particular-Work Treating Classes")

147, Coopering, for patents where the combination is specifically provided for based on the nature of the work.

173, Tool Driving or Impacting (tool actuation subcombination class)

175, Boring or Penetrating the Earth, for means for driving a casing, or means to drive a pile with means to remove the pile. (See above, "Earthworking or Particular-Work Treating Classes")

198, Conveyors: Power-Driven (class directed to material or article handling means. See "Work Or Product Handling Classes" above).

209, Classifying, Separating, and Assorting Solids (class directed to material or article handling means. See "Work Or Product Handling Classes" above).

221, Article Dispensing (class directed to material or article handling means. See "Work Or Product Handling Classes" above).

226, Advancing Material of Indeterminate Length (class directed to material or article handling means. See "Work Or Product Handling Classes" above).

242, Winding, Tensioning, or Guiding (class directed to material or article handling means. See "Work Or Product Handling Classes" above).

270, Sheet-Material Associating, subclasses 37+ and 53, for patents where the combination is specifically provided for based on the nature of the work.

271, Sheet Feeding or Delivering (class directed to material or article handling means. See "Work Or Product Handling Classes" above).

294, Handling: Hand and Hoist-Line Implements (class directed to material or article handling

- means. See “Work Or Product Handling Classes” above).
- 300, Brush, Broom, and Mop Making, subclasses 2+, 13 and 20, for patents where the combination is specifically provided for based on the nature of the work.
- 405, Hydraulic and Earth Engineering, subclasses 232+ for means for driving a pile into the earth. (See above, “Earthworking or Particular-Work Treating Classes”)
- 412, Bookbinding: Process and Apparatus, for patents where the combination is specifically provided for based on the nature of the work..
- 414, Material or Article Handling (class directed to material or article handling means. See “Work Or Product Handling Classes” above).
- 418, Rotary Expansible Chamber Devices (tool actuation subcombination class)
- 445, Electric Lamp or Space Discharge Component or Device Manufacturing, for patents where the combination is specifically provided for based on the nature of the work..
- 493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, for patents where the combination is specifically provided for based on the nature of the work..
- 606, Surgery, subclass 187 for hair or artificial hair injectors or anchors. (See above, “Earthworking or Particular-Work Treating Classes”)
- work) with sufficient force, to impart translatory motion there to effect an operation of the class type.
- DRIVER-CARRIAGE**
- Structure to support the driver in a device of the class type.
- DRIVING-STATION**
- That region of a machine wherein work must be located for an intended driving operation of the class type to be performed thereon.
- MATING-MEMBER**
- A “mating-member”. A discrete element which has as its sole disclosed function that of aiding in maintaining a driven member in its penetrated relationship with the work, or has such a peculiar shape as to be obviously intended to perform this sole function; this sole function being accomplished by permanent interassociation or interlocking of the member and the “mating-member”. (Note-A “mating-member” for the purposes of this class is considered a workpiece.)
- MEMBER**
- An object, or the end portion of indeterminate length material, comprising at least one pointed and/or generally elongated rod-like or tubular projection disclosed as being intended to penetrate* work* when the member, or the work, is engaged and bodily moved by a driver* substantially in the directing of said projection(s).

SECTION IV - GLOSSARY

ANVIL

A nonactuated (fixed or adjustably positionable) tool having a face portion designed and intended to react against a driven member to restrict the movement of the material of said member in at least one direction during the driving of said member.

DEFORM

In this class is used in the sense imparted by the Class Definition and Lines With Other Classes and Within This Class in Class 72.

DRIVER

A tangible instrumentality having a surface portion which is specifically designed and intended, upon actuation of said instrumentality, to act upon a member (or

PENETRATE

Act of inserting or imbedding (e.g., by piercing, etc.) all or a portion of an elongated member in work material, by bodily movement of the member or the proximate portion of the work material (as distinguished from relative deflection or deformation of plural portions of an exteriorly applied fastener, as in pinching, binding, clipping, hog-ringing, etc.). The term may also refer to increasing or advancing an already established penetrating relationship, by bodily movement of the member relative to the work.

PRODUCT

Article or material into which a member* has been driven.

- (1) Note. The member is not considered part of the product but retains its identity as a member for any further operation to be performed on it.

WORK, WORKPIECE

Article or material other than the surface of the earth into which a member* is to be driven; or an assemblage of juxtaposed workpieces (objects and/or layers of material) into at least one of which a member is to be driven.

SUBCLASSES

- 1** This subclass is indented under the class definition. Device provided with means capable of bringing at least one of the moving parts of the device to a halt or to such a condition as to terminate its intended operation, such means acting to accomplish its halting effect in response to a signal or impulse which cannot be predicted to occur during any particular one of a number of recurring cycles of operations (either of the machine as whole, or the driver, or of any part of the machine which has a cyclic law of operation).

SEE OR SEARCH CLASS:

- 83, Cutting, subclasses 58+ for randomly actuated stopping means in a cutting machine.
- 192, Clutches and Power-Stop Control, for stopping means in general; and subclass 134 for stopping of a machine responsive to part of an operative's body.
- 226, Advancing Material of Indeterminate Length, subclass 48 for material moving means provided with randomly-actuated stopping means.
- 234, Selective Cutting (e.g., Punching), subclass 20 for selective cutting means provided with randomly actuated stopping means.

- 2** This subclass is indented under the class definition. Subject matter including means for: (a) detecting any of the following characteristics: a state or property, a change in a state or property, or the occurrence of a predetermined event, in any of the following: the work*, the product of a machine, the machine itself, any

part of the machine, or the environment of the machine affecting the operation thereof; and (b) initiating (as a direct result of such detection) a force or energy impulse other than that generated or transmitted by the detecting means; and (c) regulating or modifying (as a direct result of such initiation) the operation of said machine.

- (1) Note. This definition requires a patent to claim at least four instrumentalities for original placement herein. One of these must be a member driving machine, or a device (e.g., work feeder, work-heater, product-handler) necessary to the proximate function of member driving. The other three are: (a) a senser (e.g., photo-cell system, trip-lever, pressure diaphragm) to detect a condition as stated in (a) of the this subclass definition; (b) an activator (e.g., an element to make or break an electric circuit, a clutch, a valve) to cause a release of energy more than, or different from, that accounted for by mere change in condition (e.g., position or movement) of the senser while it is functioning; and (c) a controller (e.g., a motor or driver for said machine or device) to change or cause the operation of said machine or device. Therefore, a cam follower (or senser) directly linked to a controller, whereby follower movement directly effects controller movement, is not proper subject matter for this subclass due to lack of an activator as defined. On the other hand, disclosure of a cam follower that makes and breaks an electrical circuit that energizes a motor, may be placed herein.

- (2) Note. A voluntary act of the person operating the machine is not proper subject matter for this subclass. For example, disclosure of an on-off switch manipulated by an operative to start and/or stop the machine (even though the switch initiates a release of energy), should be considered for subclass 1, but is not classified herein.

- (3) Note. The machine that is regulated by the control means is not limited to a member driving machine of this class. It can be another machine associated with

the member driver if the claim reciting the other machine and member driver is acceptable for original placement into this class (227).

- (4) Note. The control systems disclosed in the patents of this and indented subclasses are similar in concept to control systems of other classes, particularly Class 226, Advancing Material of Indeterminate Length and Class 83, Cutting. The total operations and the claimed combinations are, of course, different, but the control systems, per se, found in Classes 83 and 226 are usually analogous to those herein, and may be applicable to the machines of this class (227). In the "SEARCH CLASS" notes for the subclasses indented hereunder, reference to this (4) Note indicates that the other class and subclass should be considered because the control system, per se, of a patent in the other class may be similar to a control system, per se, of this (227) class. The notes to Class 83, subclass 399 (which see) summarize all the subclasses in Class 83 pertaining to "control" subclasses therein.

SEE OR SEARCH CLASS:

- 72, Metal Deforming, subclasses 6+ for control means in a metal deforming machine, wherein the control means, per se, is similar to those of this and indented subclasses.
- 83, Cutting, and see (4) Note, above.
- 226, Advancing Material of Indeterminate Length, and see (4) Note, above.
- 228, Metal Fusion Bonding, subclasses 8+ for control means in a metal fusion bonding machine, wherein the control means, per se, is similar to those of this and indented subclasses.

- 3** This subclass is indented under subclass 2. Device comprising actuated mechanism for moving or assuring movement of work toward a driving-station*, and wherein the detector is arranged to sense a given condition or position of some portion of said actuated mechanism.
- 4** This subclass is indented under subclass 2. Device comprising a movable anvil* and/or movable means adapted to hold work at a driv-

ing-station*, and wherein the detector is arranged to sense the presence or absence of said anvil or said work-holding means at a given location.

- (1) Note. An element positioned adjacent a surface which supports work, which element presents an obstacle to movement of the work in a desired direction, is not means to hold work but a work-stop abutment. If this element acts as a detector for the work, patents claiming such element will be placed in subclasses 5+.

SEE OR SEARCH CLASS:

- 72, Metal Deforming, subclasses 10.1+, 13.4+, 17.1, 17.2, and 20.1+ for control means responsive to position of a tool (e.g., anvil) or tool-linked part.
- 228, Metal Fusion Bonding, subclass 12 for control means responsive to position of a work holder in a fusion bonding machine.

- 5** This subclass is indented under subclass 2. Device wherein the means for detecting is arranged to sense the presence, absence, position, size, or some other property or condition of work* associated with the device.

SEE OR SEARCH CLASS:

- 83, Cutting, subclass 211, 286+, 360+ for a control system responsive to work in a cutting machine. Also see (4) Note under Class 227, subclass 2.
- 226, Advancing Material of Indeterminate Length, subclasses 10+ for a control system responsive to work for feeding the work. Also see (4) Note under Class 227, subclass 2.
- 228, Metal Fusion Bonding, subclasses 9+ for a control system responsive to work.

- 6** This subclass is indented under subclass 5. Device wherein the detecting means is arranged to sense the location of a workpiece in the device.

- 7** This subclass is indented under subclass 6. Device comprising means to move the driver* through a driving stroke, and wherein the regulating means governs the said driver moving means.

- 8** This subclass is indented under the class definition. Device provided with means to prevent motion of some part of the device in any manner (except said means itself) until said means is moved so as to permit movement of said part.
- SEE OR SEARCH CLASS:
83, Cutting, subclasses 399+ for cutting means provided with an interlock.
192, Clutches and Power-Stop Control, subclasses 129+ for a safety device or interlock.
- 9** This subclass is indented under the class definition. Device comprising means to hold and/or guide a member, a chamber or barrel designed to direct the force of an expanding gas therein against such member, and means to cause a violent expansion of gas within said chamber or barrel.
- SEE OR SEARCH CLASS:
60, Power Plants, subclasses 632+ for a motor actuated by fluid pressure generated by an explosion and see search Class notes thereunder for other loci of explosive-type device similar to those in this and indented subclasses.
72, Metal Deforming, subclass 56 for means to deform metal by the direct application of a shock wave thereto.
- 10** This subclass is indented under subclass 9. Device including an element movable in the chamber or barrel adapted to transmit the force from the gas to a member.
- 11** This subclass is indented under subclass 9. Device comprising means to block or deflect the flight of chips or particles away from a given location, as for the purpose of preventing injury to an operative.
- 12** This subclass is indented under the class definition. Device provided with means adapted to impale or grip a portion of flexible material, and said means being movable to exert a tensile force upon said flexible material, and wherein the driver* is arranged to force a member through said flexible material and into a solid supporting surface.
- SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 199+ for portable implements or apparatus for tensioning flexible material.
- 13** This subclass is indented under subclass 12. Device comprising force transmitting linkage capable of moving said impaling or gripping means with respect to another portion of said device.
- 14** This subclass is indented under the class definition. Device including means to apply an adhesive coating to a work surface and means to bring said work surface into contact with another work surface, or means to apply an adhesive coating to a member* prior to an operation of the class type.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
38, for means to sequentially secure layers together by a member.
- SEE OR SEARCH CLASS:
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 91 for a method followed by the above apparatus.
- 15** This subclass is indented under the class definition. Device comprising means to move or guide a mating-member* to a position in the driving path of the member* and/or to maintain a mating-member in such position, so as to receive in an interassociated manner the member during the driving operation.
- (1) Note. The positioning of the “mating-member” must take place before completion of the driving of the member.
- (2) Note. Figure 1 represents a member (lacing hook) with projections to be driven through work and into a mating-member, which has no disclosed function other than to aid in the securement of the driven member. In Figure 2, the pronged member is to be driven through work and secured in the lacing hook; the latter constitutes “work” rather than a

“mating-member” because it has a function (i.e., to hold a lace), in addition to its function of securing the driven member.

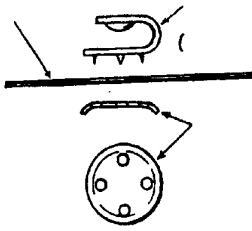


Fig. 1

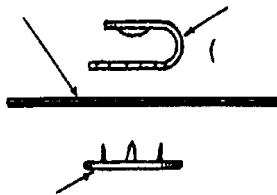


Fig. 2

SEE OR SEARCH THIS CLASS, SUBCLASS:

19+, for a disclosure of a workpiece similar to a mating-member and assembling it with another workpiece.

143+, for a disclosure of a workpiece similar to mating-member.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 243.521+ and 243.53+ for apparatus for securing objects together by means which may comprise a mating-member (e.g., a rivet and bur).

- 16** This subclass is indented under subclass 15. Device wherein the positioning means is designed and intended to coact with an elongated mating-member and into which a plurality of members are driven in spaced relationship in the direction of elongation.

(1) Note. A member having a plurality of projections which penetrate the work (e.g., staple) is not considered a plurality of members.

- 17** This subclass is indented under subclass 15. Device comprising means to fashion, shape, deform or cut a mating-member.

- 18** This subclass is indented under subclass 15. Device including a positively actuated means to move or transport a mating member into the driving path of the member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

99+, for means to feed a member, and see search notes for other loci of feed means.

- 19** This subclass is indented under the class definition. Device comprising means to move or guide a workpiece* into juxtaposition with another workpiece, and including (a) means to hold or position a member* between said workpieces before they are moved into juxtaposition or (b) means to hold or position said workpieces in alignment with a driver* for application of a member thereto.

(1) Note. One or both of the workpieces being assembled may be indeterminate-length material.

(2) Note. For placement as an original in this subclass area, a patent must be directed to a member-inserting device with means at least to direct or guide two workpieces or lengths of material into contact at some point and to present such assembled work to the action of a driver. Usually, but not necessarily, the inserted member will serve to secure the workpieces together.

(3) Note. A work stop abutment, disclosed as being useful for facilitating the registry, of two or more workpieces at a driving-station, is insufficient to constitute “means to move or guide a workpiece” under the subclass definition.

(4) Note. A fastener member is not generally regarded as “work”, for the purposes of this class. A device provided with means to feed a member to driving position, on or near a workpiece, is not classifiable as an assembly device but is

subject matter for the following subclasses 107+. Means for performing an operation on the member (such as cutting, shaping, heading, etc.) is specifically provided for in appropriate subclasses of this class (e.g., subclasses 79+, with means to cut member after penetration).

- (5) Note. For the line between this subclass (and those indented hereunder) and classes relating to combined driving and assembly, see section VI of this class definition and for classes relating to assembly, see section VII of this class definition.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 700+ for assembly apparatus, in general.

20 This subclass is indented under subclass 19. Device comprising means to alter the form, configuration, dimension, proportion or contour of a workpiece either with or without removal of material.

- (1) Note. Means to feed a flexible, resilient or flaccid workpiece from a coil or other source and to straighten it for assembly to another workpiece is not considered "shaping means"; disclosures of such means will be found in subclasses 44+, Endless conveyor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

12+, for means to stretch flaccid work and fasten it to rigid work.
44+, for a disclosure of means to straighten flexible work before assembly to other work on an endless conveyor.
64+, for means to shape work prior to application of a member.

21 This subclass is indented under subclass 20. Device provided with means to sever, incise, pierce or abrade a workpiece or some part thereof.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

27, for a disclosure of means to punch or drill work before assembly.

47, for a disclosure of work cutting means associated with reel-type supply means.

69, 70+ and 76, for various disclosures of work-cutting means associated with a device of the class type.

SEE OR SEARCH CLASS:

83, Cutting, for cutting apparatus, generally.

22 This subclass is indented under subclass 20. Device including means to revolve a workpiece.

(1) Note. The work may rotate about a fixed mandrel or the mandrel rotate with the work.

(2) Note. The rotation of the work may cause an element (hoop strip) to be coiled or wrapped around the workpiece.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

49, for means to rotate work, associated with magazine-type work supply means, in a device of the class type.

23 This subclass is indented under subclass 22. Device comprising configured mating elements between which the workpiece is formed to a desired configuration.

(1) Note. Included here are patents to a device for forming a basket from a blank of slatted material termed "basket mat".

(2) Note. Means to clamp a piece of work to a mandrel and rotate the mandrel to form the work around it is not die shaping means for this subclass; such disclosures will be found in subclasses 22 and 24.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

22, and 24, for a disclosure of work-shaping means other than dies for rotating work.

24 This subclass is indented under subclass 22. Device including means to position and/or hold a workpiece within an opening of a second workpiece.

- (1) Note. Included here are patents to a device for inserting and securing an end or bottom in a rotatably supported container.
- SEE OR SEARCH CLASS:
100, Presses, subclasses 54+ for presses for applying lids to portable receptacles.
- 25** This subclass is indented under subclass 20. Device wherein said means is effective, as disclosed, to gather, or pucker a nonrigid, limber and flexible workpiece.
- (1) Note. The work is generally gathered and after another workpiece is applied thereto member is driven through the gather to secure the pieces together.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
65, for means to buckle a flaccid workpiece.
- 26** This subclass is indented under subclass 19. Device including means to introduce a member* intermediate workpieces.
- (1) Note. For example, workpieces are forced together, causing the member positioned between them to penetrate the workpieces and form a laminated assembly.
- 27** This subclass is indented under subclass 19. Device including a tool that moves relative to a workpiece while cutting material out of the confines of the workpiece so that the cut does not intersect any edge (exterior or interior) of the workpiece.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
69, for a rotatable cutting tool to form an opening in a workpiece for a member.
- SEE OR SEARCH CLASS:
83, Cutting, for punching apparatus, generally.
408, Cutting by Use of Rotating Axially Moving Tool, for drilling apparatus generally.
- 28** This subclass is indented under subclass 19. Device comprising means, made effective after an actuation of the driver, to move or guide an additional workpiece into juxtaposition with said first-mentioned workpieces and into alignment with said driver, and means to cause another actuation of said driver.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for means to cement work or member and apply a member to a layer(s) of work.
- 29** This subclass is indented under subclass 28. Device wherein the means to move or guide successive workpieces into juxtaposition comprises relatively movable work-engageable elements and means to force or bias said elements into gripping engagement with a workpiece.
- (1) Note. A work clamp, for the purposes of this and other subclasses in this class, must comprise relatively movable jaws or their equivalent; i.e., a closely fitting unitary last or form is not a "clamp".
- SEE OR SEARCH THIS CLASS, SUBCLASS:
40, and 124, for a work clamp interrelated to other mechanism in a device of the class type.
152+, for a work clamp in a device of the class type.
- SEE OR SEARCH CLASS:
269, Work Holders, for a work holder (e.g., clamp), generally.
- 30** This subclass is indented under subclass 19. Device wherein said means to hold or position the workpieces comprises relatively movable work-engageable elements, and means to force or bias said elements into gripping engagement with said workpieces, one of said elements being configured to accommodate the passage of a driver toward and from the gripped workpieces.
- 31** This subclass is indented under subclass 19. Device wherein, as disclosed, one of the workpieces has a projecting loop or apertured portion, and wherein the device is effective to

secure the workpieces together by applying a member which passes or is driven through the loop or apertured portion of said workpiece.

SEE OR SEARCH CLASS:

112, Sewing, subclasses 104+ for a machine for attaching a button by thread.

- 32** This subclass is indented under subclass 31. Device comprising means effective to pass said member through the loop or apertured portion of said one workpiece.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 241 for stringing articles, and particularly for a device for producing threaded buttons as articles of manufacture.

- 33** This subclass is indented under subclass 32. Device comprising means to shape or fashion said member prior to the completion of its application to the workpieces.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

82+, for means to shape or form a member prior to its application to work.

SEE OR SEARCH CLASS:

59, Chain, Staple, and Horseshoe Making, for a machine to manufacture staples.
470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 27+ for methods of making a rivet or nail and subclasses 110+ for machines of making a rivet or nail.

- 34** This subclass is indented under subclass 32. Device comprising means effective to force said member through the other of said workpieces prior to its passage through the loop or apertured portion of said one workpiece.

- 35** This subclass is indented under subclass 34. Device which, as disclosed, applies tack or other one-prong type member to the workpieces.

- 36** This subclass is indented under subclass 34. Device comprising means effective to forward a workpiece to a driving-station*.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

99+, for means to convey work to a driving-station and see search notes thereunder for other loci of a work conveying device.

- 37** This subclass is indented under subclass 31. Device comprising means effective to forward a workpiece to a driving-station*.

(1) Note. See search notes under subclass 36 for location of other work feed means in devices of the class type.

- 38** This subclass is indented under subclass 37. Device comprising a power-transmitting linkage connected to the driver to move same through an effective member-applying stroke.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

129+, 146 and 147, for various specific driver-actuating means in a device of the class type.

- 39** This subclass is indented under subclass 19. Device comprising dynamic means to effect movement of a workpiece with respect to the driving-station*, or a device associated and movable with the workpiece to hold or support the workpiece and facilitate movement thereof with respect to the driving-station.

(1) Note. The work-moving means may comprise any structure by which the work is moved relative to a driving-station even though the structure itself may be actuated manually. Examples of such structure are a pivoted work-support, a pusher, etc.

(2) Note. The conveyor means of this subclasses (39+) may move one workpiece, or more than one, according to the design and mode of operation of the particular machine.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

99+, for work feed means in a device of the class type and see search notes there-

- under for other loci of work conveying or feeding devices.
- 40** This subclass is indented under subclass 39. Device wherein the means to effect movement of the workpiece comprises a gripping element which holds the workpiece in its moved position.
- 41** This subclass is indented under subclass 39. Device provided with means to permit a work holder or support to oscillate or turn about an axis.
- (1) Note. The pivotal movement may constitute the work-forwarding motion of the conveyor, or may be an additional, work-orienting or indexing motion.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
99+, for a pivoted work carrier, per se, in a device of the class type.
- 42** This subclass is indented under subclass 41. Device wherein the work holder or support is movable about two distinct pivotal centers or axes.
- 43** This subclass is indented under subclass 39. Device comprising means supplemental to said work moving means for positioning or repositioning an apertured work-piece at the driving-station with its opening(s) in alignment with a member in position to be driven into or through said opening(s).
- 44** This subclass is indented under subclass 39. Device wherein the workpiece moving means comprises a series of workpiece engaging portions arranged in a circular array or as a belt-like loop of articulated portions, each such portion being adapted to engage and move a workpiece relative to a driving-station.
- (1) Note. The conveyor portions usually, but not necessarily, provide support for the work as it is being moved and while it is at rest at one or more treating stations.
- 45** This subclass is indented under subclass 44. Device including means supplemental to the work-moving means which supplemental
- means temporarily stores discrete workpieces which, as disclosed, are fed to or dispensed onto the work-moving means.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
48, for magazine-type work supply means combined with other than an endless conveyor, in a device of the class type.
- SEE OR SEARCH CLASS:
221, Article Dispensing, appropriate subclasses for an article-storing magazine in a dispensing device.
- 46** This subclass is indented under subclass 44. Device including a drum or capstan-like means upon which work may be wrapped or coiled for storage.
- 47** This subclass is indented under subclass 46. Device comprising means to sever a workpiece from the supply of material stored on the reel or from another workpiece.
- (1) Note. See search notes under subclass 21 for other loci of cutting means.
- 48** This subclass is indented under subclass 39. Device having means to temporarily store a plurality of discrete workpieces which, as disclosed, are to be fed to a driving-station.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
45, for magazine-type work supply means combined with an endless conveyor, in a device of the class type.
- SEE OR SEARCH CLASS:
221, Article Dispensing, appropriate subclasses for an article-storing magazine combined with a dispensing device.
- 49** This subclass is indented under subclass 48. Device including means supplemental to the magazine work supply means which supplemental means turns the work for successive application of members at one or more driving-stations.
- (1) Note. The work may be turned about its own axis at the driving-station, or turned

as it is moved from one driving-station to another.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

22, for means to rotate work, combined with an assembly device, in a device of the class type.

50 This subclass is indented under subclass 48. Device including means supplemental to the magazine work supply means which supplemental means transports, as a unit, a plurality of workpieces which have been juxtapositioned.

(1) Note. The workpieces are fed from a magazine supply to a work holding device which holds the workpieces in an assembled position and then the work holder is moved to a driving-station.

51 This subclass is indented under the class definition. Device including means to deform an end portion of the member in such a manner as to increase the size, and/or to change the form, of the cross-section of said end portion after the member has penetrated the work.

(1) Note. A simple bending or deflecting (i.e., clenching) of a member during or after driving, is not regarded as "heading" for this subclasses (51+). Disclosures of clenching means are to be found in many subclasses throughout the Class 227 schedule; patents directed to this feature are placed as originals in subclass 155.

(2) Note. For the purposes of this subclass (51), the device must deform the member during or at the end of the driving stroke. The shaping or forming of a member prior to its penetration into work is effected by the machines classified in subclasses 82+.

(3) Note. Figure 3 diagrammatically illustrates various means to head a member.

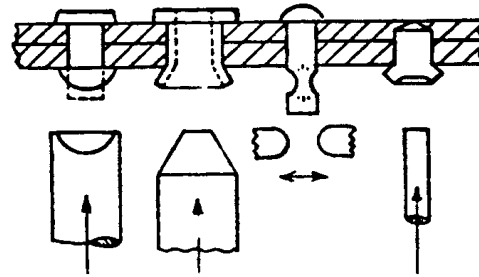


Fig. 3

SEE OR SEARCH THIS CLASS, SUB-CLASS:

77, for means to bend a projecting end portion of a driven member remote from a surface of work.

82+, for a device which shapes or forms a member prior to its application to work.

155, for a nailing device having clenching means, and see (1) Note, above.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 243.521+ and 243.53+ for a device which upsets or heads a rod, wire or other elongated work associated with an assembly device.

72, Metal Deforming, appropriate subclasses for a device which upsets or heads a rod, wire or other elongated work.

52 This subclass is indented under subclass 51. Device wherein the member is disclosed as being driven through the wall of a hollow elongated workpiece, with either the driver or the "heading" means functioning within the confines of the hollow portion of the workpiece.

(1) Note. The tubular workpiece operated upon by the devices of this subclass may have other than a cylindrical cross-section and also may be closed on one end, but this end portion is not considered as the "wall" of the subclass definition.

53 This subclass is indented under subclass 51. Device wherein the driver constitutes the means which deforms the end portion of the member.

- 54** This subclass is indented under subclass 51. Device wherein the heading means has a member engaging face which tapers to either a point or a line such that in operation, this point or line penetrates the member and initiates deformation thereof.
- 55** This subclass is indented under subclass 51. Device wherein a portion of the heading means, before initial contact of the means with the member, projects into a void space within the confines of the shank of the member.
- (1) Note. A hollow shank member for the purposes of this subclass includes those members that have an opening extending through their entire length (e.g., tubular rivet) as well as those members that have only a recess in the end portion which does not extend entirely through the member. A simple "split" rivet is not regarded as a hollow member within the meaning of the subclass definition.
- 56** This subclass is indented under subclass 55. Device including a plurality of heading means made effective during a single driving stroke to head a plurality of members.
- 57** This subclass is indented under subclass 55. Device including dynamic means to effect movement of the work or product relative to the driving-station*.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
99+, for means to convey work to a driving-station, and see search notes thereunder for other loci of a work conveying device.
- 58** This subclass is indented under subclass 55. Device including means for making an aperture in the workpiece into which said element is driven.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
67+, for a device of the class type having means to form an opening in work for a member.
- 59** This subclass is indented under subclass 58. Device wherein the means for heading the member additionally functions to make an aperture in the workpiece.
- 60** This subclass is indented under subclass 55. Device wherein either the driver or the heading means has an elongated projection adapted to enter the hollow portion of the member prior to the heading of the member to hold the member in a position to be driven and/or headed.
- 61** This subclass is indented under subclass 51. Device wherein the heading means comprises a tool having a member-engaging face which restricts the flow of the material of the member in at least one direction during the deformation of the end portion of the member (e.g., a flat or plane faced tool).
- SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 462+ for a tool (e.g., anvil), generally.
- 62** This subclass is indented under subclass 61. Device wherein the member-engaging face is so configured as to restrict the flow of the material of the engaged end portion of the member in at least two directions during the deformation of the end portion of the member (e.g., concave tool face).
- 63** This subclass is indented under the class definition. Devices comprising means engageable with a member for extracting said member from a workpiece.
- (1) Note. The extracting means, for the purposes of this subclass, may be a tongue or claw to be manipulated in the manner of a claw-hammer.
- SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 18+ for a nail extractor.
- 64** This subclass is indented under the class definition. Device including means (a) for altering the form, configuration, dimension, proportion or contour of a workpiece either with or without removal of material, or (b) for severing, incising, piercing, or abrading work or product.

- SEE OR SEARCH CLASS:
 72, Metal Deforming, appropriate subclasses for metal deforming means, generally.
 493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, subclasses 395+ for paper shaping, generally.
- 65** This subclass is indented under subclass 64. Device including means to shape, gather or pucker a nonrigid limber and flexible work-piece.
- (1) Note. The work is generally gathered and a fastener is driven through the gather, by what is generally designated as a pinning machine.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 25, for patents wherein the fastener is driven through the gather to secure two or more workpieces together.
- SEE OR SEARCH CLASS:
 206, Special Receptacle or Package, subclasses 380+ for a pin package, per se.
- 66** This subclass is indented under subclass 64. Device wherein a tool is moved in alternate directions in a straight line, for example, toward and away from a cooperating tool to deform* the work and to retract from the work placed there between.
- 67** This subclass is indented under subclass 64. Device wherein the shaping means makes an aperture(s) in said workpiece into which a member is to be driven.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 58, for means to form an opening for a member, in combination with heading means for the member.
- SEE OR SEARCH CLASS:
 402, Binder Device Releasably Engaging Aperture or Notch of Sheet, subclass 1 for a sheet retainer device which includes in combination, an impaling-type sheet retainer and a discrete sheet aperture forming device, (i.e., paper punch) which perforates a sheet prior to placing the same on the retainer; subclass 7 for an impaling-type sheet retainer which penetrates and inserts a pliant strand through a sheet surface and subclass 25 for an impaling-type sheet retainer including means to force a sheet upon the sheet retainer.
- 68** This subclass is indented under subclass 67. Device wherein said shaping means comprises a driver* which is adapted to penetrate work.
- 69** This subclass is indented under subclass 67. Device in which said shaping means comprises drilling or boring apparatus.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 27, for a drilling device combined with assembly means in a device of the class type.
- 70** This subclass is indented under subclass 67. Device in which said shaping means comprises two or more incising, piercing or severing elements.
- 71** This subclass is indented under subclass 70. Device wherein said incising, piercing, or severing elements are arranged to produce a pair of holes for the reception of a two pronged member (e.g., staple).
- 72** This subclass is indented under subclass 70. Device comprising a rotatably mounted holder for said incising, piercing, or severing elements.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 75, for a pivoted carrier for one cutting tool, in a device of the class type.
- 73** This subclass is indented under subclass 67. Device provided with actuated means to effect movement of the work with respect to a driving-station*.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

99+, for work feeding means to a driving-station, and see search notes thereunder for loci of other work feed devices.

- 74** This subclass is indented under subclass 73. Device wherein said actuated work-moving means consists, at least in part, of a tool element of said work-shaping means, which tool element is caused to move in the direction of work feed motion while it is in contact with the work.

SEE OR SEARCH CLASS:

83, Cutting, subclass 218 for a cutting tool having work feed motion.

- 75** This subclass is indented under subclass 74. Device provided with means to permit the holder or support of said tool element to oscillate or turn about an axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

72, for a pivoted carrier for plural tools, in a device of the class type.

- 76** This subclass is indented under subclass 64. Device provided with means to sever, incise, pierce or abrade work or product.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

21, for cutting means combined with assembly means, and see search notes thereunder for other loci for cutting means.

- 77** This subclass is indented under the class definition. Device having means to change the shape of a portion of a member at a point distant from a workpiece after initiation of work penetration by such member, said portion being spaced from the work both before and after the change in shape is effected.

(1) Note. Means to cut a driven member is not proper subject matter for this subclass.

(2) Note. Any deformation of a driven member which increases the size, and/or alters the form, of the cross-section of an end portion is provided for in preceding subclasses 51+.

(3) Note. Figure 4 illustrates a member driven into work and a portion of the member (i.e., hook) deformed at a point from the work surface by apparatus typical of this subclass.

(4) Note. This subclass will include patents which disclose an additional workpiece in substantial contact with the shaped portion of the member other than a workpiece into which the member is driven.

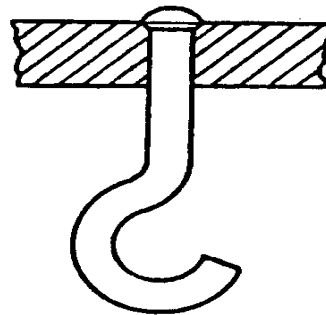


Fig. 4

SEE OR SEARCH THIS CLASS, SUB-CLASS:

51+, for means to head a driven member, and see (2) Note, above.

79+, for means to cut a driven member after the member is driven.

- 78** This subclass is indented under the class definition. Device having a plurality of applying devices any one of which is separately useable at the option of the operator.

- 79** This subclass is indented under the class definition. Device provided with means to sever a protruding end portion of a driven member, or to sever a driven member from stock material.

- 80** This subclass is indented under subclass 79. Device wherein said means is adapted to detach the driven end portion of stock material.

- (1) Note. The machine in this subclass is sometimes known as “Wire Inserting and Cutting Machines”.
- (2) Note. The material before being applied is usually in the form of a spool or wire.
- 81** This subclass is indented under the class definition. Device which includes means to move one or more drivers* into driving engagement with the work while the work is being moved to and through a driving-station* and in which the driver's movement includes, as a necessary factor, motion in the direction of such work movement.
- 82** This subclass is indented under the class definition. Device comprising means to shape or fashion a member* before its application to a workpiece.
- SEE OR SEARCH CLASS:
59, Chain, Staple, and Horseshoe Making, subclasses 71+ for means to make staples, per se.
470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 27+ for methods of making a rivet or nail and subclasses 110+ for machines of making a rivet or nail.
- 83** This subclass is indented under subclass 82. Device wherein the shaping means comprises an element(s) for diverting all or part of the member away from the path in which the member would be moved by a driver* in the absence of said diverting element.
- 84** This subclass is indented under subclass 82. Device wherein said shaping means comprises a portion which is capable of adjustment to effect the production of members of different lengths.
- 85** This subclass is indented under subclass 82. Device wherein the shaping means comprises a plurality of elements and means to move or to guide one of said elements with respect to another element so that at least one of said elements is moved past the other while in contact with a web, strand or other material to produce a member from said material.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
92, for opposed tools to form a member.
- 86** This subclass is indented under subclass 85. Device comprising a driver* having a severing element integral therewith or secured thereto.
- 87** This subclass is indented under subclass 85. Device wherein one of the shaping elements is configured to accommodate the passage of a driver* during a driving operation.
- 88** This subclass is indented under subclass 87. Device comprising means to move another of said shaping elements toward and away from its forming position and from the path of the driver.
- 89** This subclass is indented under subclass 88. Device including means to support the formed member and means to allow said support to move away from the path of a driver during a driving operation.
- 90** This subclass is indented under subclass 88. Device comprising means to restrain the motion of said other shaping element to an arcuate path.
- 91** This subclass is indented under subclass 87. Device, said shaping means comprising means, distinct from the driver, to divide the material.
- 92** This subclass is indented under subclass 82. Device, said shaping means comprising a plurality of elements each having a material-engaging surface portion wherein one of said elements moves in a direction such that said surface portions of two or more elements approach each other to form a member, such motion continuing until said portions move (1) into contact, or (2) toward ultimate contact but restrained therefrom by the presence of an intervening web, strand, or other material.
- 93** This subclass is indented under subclass 82. Device wherein the shaping means consists only of means to divide or cut a web, strand or other material.

- (1) Note. For placement of a patent as an original in this or indented subclasses it should contain no claimed forming operation other than cutting or punching in making a finished member.
- (2) Note. Apparatus for breaking or cutting apart fully formed members that are glued or adhered together is not regarded as forming means for this or indented subclasses.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

120+, for means to break or cut apart formed members glued or adhered together.

- 94** This subclass is indented under subclass 93. Device comprising additional cutting means, and means, made effective after an actuation of the first-named cutting or dividing means, to actuate said additional cutting means to complete the formation of a member.
- 95** This subclass is indented under subclass 93. Device including a positively actuated means to move, into position for driving, a series of partially formed members integrally linked together by uncut portions of material.
- 96** This subclass is indented under subclass 95. Device comprising means to restrain the motion of said actuated means to an arcuate path.
- 97** This subclass is indented under subclass 93. Device wherein the shaping (i.e., severing) means has a motion, in addition to its severing motion, towards the path of a driver to convey a member into said path.

SEE OR SEARCH CLASS:

83, Cutting, subclass 218 for a cutting tool having work feeding motion.

- 98** This subclass is indented under subclass 93. Device including a member holder and means to move said holder toward and away from the path of a driver.
- 99** This subclass is indented under the class definition. Device comprising dynamic means to effect movement of work or product with

respect to the driving-station*, or a device associated and movable with the work or product to hold or support the work or product and facilitate movement thereof with respect to the driving-station.

- (1) Note. The work-moving means may comprise any structure by which the work is moved relative to a driving-station even though the structure itself may be actuated manually. Examples of such structure are a movable table, a pivoted work-support, etc.
- (2) Note. For the lines between this subclass (and those indented hereunder) and classes relating to work handling, see section VII B 1 of this class definition.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

3, 36, 37, 39+, 57, and 73+, for a disclosure for means to feed work to a driving station.

18, 95+, 97, 98, and 107+, for a disclosure for means to feed a member to a driving-station.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, for conveyors of general utility and see Note (2), above.

- 100** This subclass is indented under subclass 99. Device wherein the work or product conveying means comprises a movable means which cooperates significantly with means to move the driver.

SEE OR SEARCH CLASS:

83, Cutting, subclass 426 for interrelated work-conveying and a cutting tool moving means.

- 101** This subclass is indented under subclass 100. Device comprising common means to move both the conveyor and a driver carriage*.

- 102** This subclass is indented under subclass 100. Device comprising a common means to drive said cooperating means, and means to adjust the speed or position of one of said cooperating means with respect to the other.

- 103** This subclass is indented under subclass 100. Device comprising at least two means to move the work or product.
- 104** This subclass is indented under subclass 100. Apparatus comprising a work support movable in a path which is neither solely rectilinear nor solely circular, during contact with the work.
- 105** This subclass is indented under subclass 100. Device comprising a work support movable in a circular path during contact with the work.
- 106** This subclass is indented under subclass 99. Device comprising a work support movable in a path which is not rectilinear during contact with the work.
- 107** This subclass is indented under the class definition. Device provided with means to transport a member or passive means which is operative to define or limit the path of movement (i.e., to direct wholly or partially, the course) of a moving member*, or to orient such member, to a suitable zone for an operation on said member by a claimed driver.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
99, for means to move work, product or member relative to a driving-station, and see search note thereunder for other related places and classes.
- 108** This subclass is indented under subclass 107. Device provided with an element(s) which enters the work and engages a portion of a driven member to bend that portion into interlocking engagement with the work.
- 109** This subclass is indented under subclass 107. Device wherein the means to transport or guide the member is designed and intended to allow passage of members of different dimensions or adjustment to supply a different number of members.
- 110** This subclass is indented under subclass 107. Device provided with means to adjust, position or guide the driver with respect to a workpiece for the application of a member thereto.
- 111** This subclass is indented under subclass 110. Device wherein the means to position the driver comprises means to move the driver-carriage* between successive operation of the driver.
- 112** This subclass is indented under subclass 107. Device wherein the means to transport the member comprises a direct impingement of a stream of liquid or gaseous material.
- (1) Note. The pressure of the fluid current may be superatmospheric or subatmospheric.
- 113** This subclass is indented under subclass 107. Device which effects movement of the member or supports the member in a position to be driven by forces exerted by a magnetic field.
- (1) Note. The magnet may be part of a driver or a work carrier.
- (2) Note. The magnetic field may be that of a "permanent" magnet or that induced by an electric current.
- 114** This subclass is indented under subclass 107. Device provided with means distinct from a driver* to isolate an individual member from a set of members and to position said member in alignment with the path of the driver.
- 115** This subclass is indented under subclass 114. Device wherein the means to isolate the member is integral with, or connected through mechanism with, an element to restrain the group of members.
- 116** This subclass is indented under subclass 114. Device wherein the isolating means moves in a straight line.
- 117** This subclass is indented under subclass 114. Device comprising means to cause the isolating means to move in a curved path.
- 118** This subclass is indented under subclass 117. Device comprising means to move the isolating means toward and away from the compartment for storing the members.

- 119** This subclass is indented under subclass 107. Device comprising means to engage the member and position said member with its pointed end or shank in proper alignment for driving or means to remove the member if its pointed end or shank is not in proper alignment for driving.
- 120** This subclass is indented under subclass 107. Device comprising a compartment for storing a plurality of members in which the transporting means operates to bias the members toward driving position.
- (1) Note. Included in this and indented subclasses are patents to subcombinations in which the driver is not always claimed.
- 121** This subclass is indented under subclass 120. Device comprising means effective to prevent return motion of the driver until a full driving stroke has been completed.
- 122** This subclass is indented under subclass 120. Device provided with means to divide a member(s) which becomes stuck along the path of its movement.
- 123** This subclass is indented under subclass 120. Device comprising means to enclose a guide path of the driver which is detachable or biased toward said guide path to allow a deformed member to be driven or removed from the path of the driver.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
109, for means adapted to allow oversized members to be driven, in a device of the class type.
- 124** This subclass is indented under subclass 120. Device comprising a plurality of opposed jaws or surface elements adapted to engage work and means to move one or more of said jaws or surface elements, which means cooperates with means to actuate a driver.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
153, for interrelated driver and work clamp.
- 125** This subclass is indented under subclass 120. Device comprising means to render the biasing means ineffective (e.g., an abutment or lock).
- 126** This subclass is indented under subclass 125. Device wherein the means to render the biasing means ineffective comprises a securing element.
- 127** This subclass is indented under subclass 120. Device wherein the compartment for storing the members comprises a movable element to allow access to the interior thereof.
- 128** This subclass is indented under subclass 127. Device comprising means to restrain the motion of the movable element to an arcuate path.
- 129** This subclass is indented under subclass 120. Device comprising means to apply a force to the driver to effect at least part of a driving stroke or cycle.
- 130** This subclass is indented under subclass 129. Device wherein the force applying means is a liquid or gas.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
9+, for explosive-type driving means.
- 131** This subclass is indented under subclass 129. Device wherein the force applying means is an electromechanical transducer in which reciprocatory or oscillatory motion between a coiled conductor carrying electric current and a ferrous or iron-like armature is effected by varying the instantaneous value of current in the conductor.
- 132** This subclass is indented under subclass 129. Device wherein the force applying means comprises a resilient element, means to compress said element, and means to release the compressed element for actuating the driver.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
146, for a spring-type driver.

- SEE OR SEARCH CLASS:
173, Tool Driving or Impacting, subclasses 202+ for spring-actuated hammer head.
- 133** This subclass is indented under subclass 129. Device wherein the force applying means comprises the mass of the driver and any parts secured thereto, which mass tends to continue in motion when the device is swung with a hammer-like blow against supported work, thereby projecting the driver from its initial position with respect to other portions of the device which are brought to a halt against the work.
- 134** This subclass is indented under subclass 120. Device comprising a resilient element which opposes the motion of the driver during the driving stroke and which returns the driver to its initial or nondriving position.
- 135** This subclass is indented under subclass 107. Device wherein the means to transport the member comprises structure to hold at least two members during the time they are being transported.
- 136** This subclass is indented under subclass 135. Device comprising means to move an elongated strip of material carrying a plurality of members.
- (1) Note. The strip-type carrier is usually disposable and not a permanent part of the device.
- 137** This subclass is indented under subclass 135. Device comprising means to cause the member transporting means to move in a curvilinear path.
- 138** This subclass is indented under subclass 107. Device wherein the means to transport a member comprises means connected to the driver so that movement of the driver transmits power from itself to the transporting means to feed the member.
- 139** This subclass is indented under subclass 107. Device wherein said means comprises nonactuated structure which directs wholly or partially the course of a moving member or which ori-
- ents such member to a suitable zone for an operation on said member by the driver.
- 140** This subclass is indented under the class definition. Apparatus having means to hold a member* and/or work* in a position to receive the reaction of a driver*.
- 141** This subclass is indented under subclass 140. Device wherein said means is effective to hold a member in a fixed location during the driving operation.
- (1) Note. In a device of this subclass type, the driver impels the work against a fixedly held member.
- 142** This subclass is indented under subclass 140. Device comprising means to change the distance a tool moves during a driving or clenching operation.
- SEE OR SEARCH CLASS:
83, Cutting, subclass 530 for mechanism to change a cutting tool stroke.
173, Tool Driving or Impacting, subclass 115 for mechanism to change a tool stroke.
- 143** This subclass is indented under subclass 140. Device comprising a plurality of movable tools and means to cause simultaneous actuation of said tools toward each other.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
154+, for mechanism where plural tools are moved independently of each other.
- 144** This subclass is indented under subclass 143. Device comprising means to restrain the motion of said tools to an arcuate path.
- 145** This subclass is indented under subclass 140. Device comprising means to guide a driver in a nonlinear course.
- 146** This subclass is indented under subclass 140. Device comprising a resilient element connected to a driver, means to compress said element, and means to release the compressed element for actuating said driver.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
132, for spring-type driver in combination with means to move a member into driving position.
- SEE OR SEARCH CLASS:
173, Tool Driving or Impacting, subclasses 202+ for spring-actuated hammer head.
- 147** This subclass is indented under subclass 140. Device wherein a driver has a surface intended to receive a blow, from a moving mass of material, (e.g., hammer head), for actuating said driver.
- SEE OR SEARCH CLASS:
173, Tool Driving or Impacting, subclasses 90+ for impact devices of general utility.
- 148** This subclass is indented under subclass 140. Device comprising means to adjust or position said member-holder, or means to guide a member in a path that is oblique to the plane of the surface of the work at which the member is to be driven.
- 149** This subclass is indented under subclass 140. Device comprising means tending to urge a portion of the member-holder into gripping relationship with a member held therein.
- (1) Note. Included here are patents to a holder with means which rely upon springs or resiliency of structural element.
- SEE OR SEARCH CLASS:
269, Work Holders, subclass 254 for a bias- type work holder.
- 150** This subclass is indented under subclass 140. Device comprising passive means which is operative to define or limit the path of movement (i.e., to direct, wholly or partially, the course) of moving work, or to orient such work relative to its path of movement.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
99+, for means to guide moving work in combination with means to move the work.
- SEE OR SEARCH CLASS:
83, Cutting, subclasses 438+ for a device to guide moving work at a cutting station.
193, Conveyors, Chutes, Skids, Guides, and Ways, appropriate subclasses for a material guide of general utility.
226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclass 196.1 for a passive guide with a material feeder.
242, Winding, Tensioning, or Guiding, subclasses 615+ for a residual guide or guard that directs elongated flexible material that may be combined with more than nominal winding structure.
- 151** This subclass is indented under subclass 140. Device comprising structure to maintain or retain the work in fixed position relative to immovable parts of the work-holder.
- SEE OR SEARCH CLASS:
269, Work Holders, appropriate subclasses for patents to hold or immobilize work.
- 152** This subclass is indented under subclass 151. Device wherein said structure comprises a plurality of opposed jaws or surface elements which are made effective, by movement of one or more of said jaws or surface elements, to grip the work frictionally.
- 153** This subclass is indented under subclass 152. Device comprising means to move one or more of said work clamping jaws or surface elements, which means cooperates with means to actuate a driver.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
124, for interrelated driver and work clamp including a supply magazine.
- 154** This subclass is indented under subclass 140. Device wherein the means to hold the work comprises a surface that is positioned beneath at least a part of the work and is intended to engage said part of the work to support the work against the force of gravity.
- SEE OR SEARCH CLASS:
269, Work Holders, subclasses 289+ for a work-underlying support of general utility.
- 155** This subclass is indented under subclass 154. Device including means to deform or facilitate deformation of a protruding end of a member*.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
120, for clenching means including a supply magazine.
- 156** This subclass is indented under the class definition. Apparatus which is not in conformance with the definition of any prior subclass in this schedule.
- 175.1 SURGICAL STAPLER:**
This subclass is indented under the class definition. Device comprising means to drive a member into human or animal fascia.
- SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 409.02+ for a device which applies a clip or staple by deforming the ends thereof without driving the clip or staple, and subclass 409.05 for an apparatus for similarly deforming a surgical staple to close a wound.
606, Surgery, subclasses 139+ for a surgical stapler for applying a wound closing staple that does not pierce the tissue, and subclasses 219+ for surgical staples, per se.
- 175.2 With lockout:**
This subclass is indented under subclass 175.1. Device provided with means to prevent motion of some part of the device (e.g. actuating means) in any manner to prevent an accidental stapling operation.
- (1) Note. A stapling operation may consist of expelling a staple from the device to perform a securing function.
- (2) Note. The lockout is to prevent accidental firing of staples.
- 175.3 Responsive to a condition or position of a staple magazine:**
This subclass is indented under subclass 175.2. Device wherein said means to prevent motion precludes motion of said part in response to the presence or absence of a staple magazine, (e.g., whether the staples are properly loaded with a magazine), or a specific condition of said magazine (e.g., the number of remaining staples in said cartridge).
- 175.4 Lockout prevents firing of a spent staple magazine:**
This subclass is indented under subclass 175.3. Device wherein said means to prevent motion precludes motion of said part due to the absence of staples in the magazine, that is, when all of the staples in the magazine have been consumed.
- 176.1 With magazine:**
This subclass is indented under subclass 175.1. Device comprising a compartment for storing a plurality of member and transport means, operative within the compartment, for moving a member into a driving position or such a compartment with passive means which is operative to define or limit the path of movement (i.e., to direct wholly or partially, the course) of a moving member within the compartment.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
107+, for means to move a guide member into driving position.
120, for magazines supply for constantly urged member.

177.1 Including biasing means:

This subclass is indented under subclass 176.1. Device wherein the transporting means operates to constantly urge the members toward a driving position.

178.1 Multiple driving means:

This subclass is indented under subclass 176.1. Device including multiple drivers operative to drive a plurality of members substantially simultaneously.

179.1 Tubular driving path:

This subclass is indented under subclass 178.1. Device wherein the path traveled by the plural drivers defines a generally cylindrical surface.

180.1 With cutting means:

This subclass is indented under subclass 176.1. Device provided with means to sever, pierce, or incise the fascia.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

76, for cutting means to make an opening in the work.

181.1 With means to position a mating-member in alignment with driver:

This subclass is indented under subclass 175.1. Device provided with means to move or guide a mating-member to a position in the driving path of the member and/or to maintain a mating-member in such position, so as to receive in an interassociated manner the member during the driving operation.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

15+, for means to position "mating-member" in alignment with the driver.

182.1 With means to prevent partial drive cycle:

This subclass is indented under subclass 175.1. Device comprising means to prevent return motion of the driver until a full driving stroke has been completed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

121, for means to prevent partial drive cycle.

CROSS-REFERENCE ART COLLECTIONS

901 SURGICAL CLIP APPLIERS:

Devices which are adapted to apply clips to human or animal fascia.

902 SURGICAL CLIPS OR STAPLES:

Clips or staples adapted for use in surgical procedures.

END