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(54) **PLIERS**

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B21K 5/00 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC **B25B 7/00** (2013.01); **B21K 5/00** (2013.01); **B25B 7/10** (2013.01); **B25B 7/22** (2013.01); **B25G 1/105** (2013.01)

(58) **Field of Classification Search**

CPC **B25B 7/10**; **B25B 7/00**; **B25B 7/22**; **B21K 5/00**; **B25G 1/105**

See application file for complete search history.

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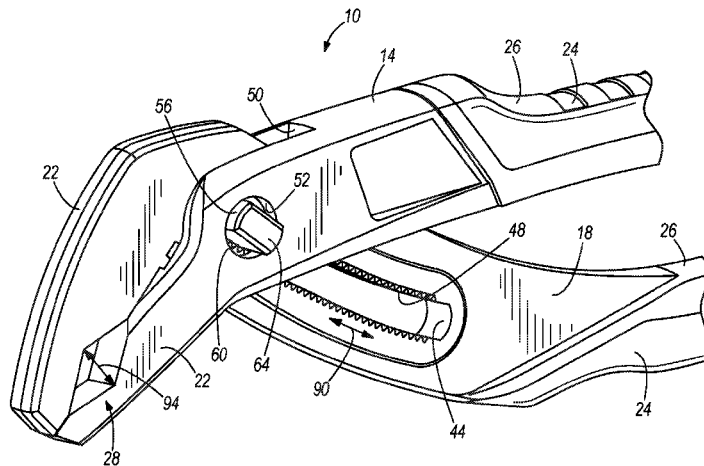
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(57) **ABSTRACT**

A pliers includes a first member and a second member pivotally coupled to the first member. The first member and the second member each include a head and a handle having a recessed area with a non-circular cross-sectional shape and an exposed end portion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip. The forward lip has a cross-sectional area not greater than a cross-sectional area of a portion of the handle adjacent the forward lip and opposite the recessed area. The pliers also includes a first grip positioned on the recessed area of the handle of the first member and a second grip positioned on the recessed area of the handle of the second member. The end portions of the handles are made of metal.

22 Claims, 12 Drawing Sheets



Related U.S. Application Data

No. 14/063,015, filed on Oct. 25, 2013, now Pat. No. 9,687,965, which is a continuation of application No. 13/286,872, filed on Nov. 1, 2011, now Pat. No. 8,661,948.

(60) Provisional application No. 61/408,760, filed on Nov. 1, 2010, provisional application No. 61/529,324, filed on Aug. 31, 2011.

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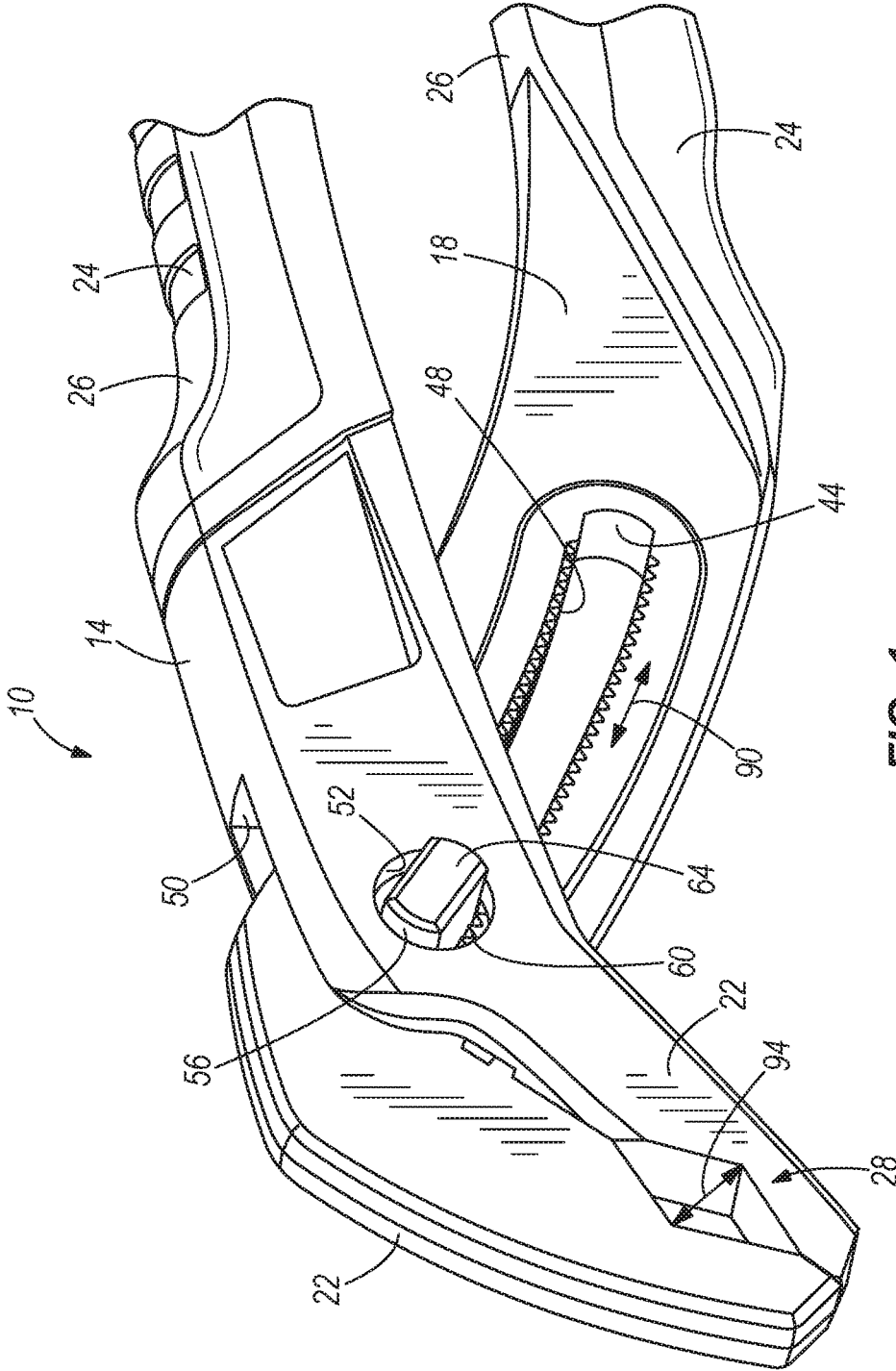


FIG. 1

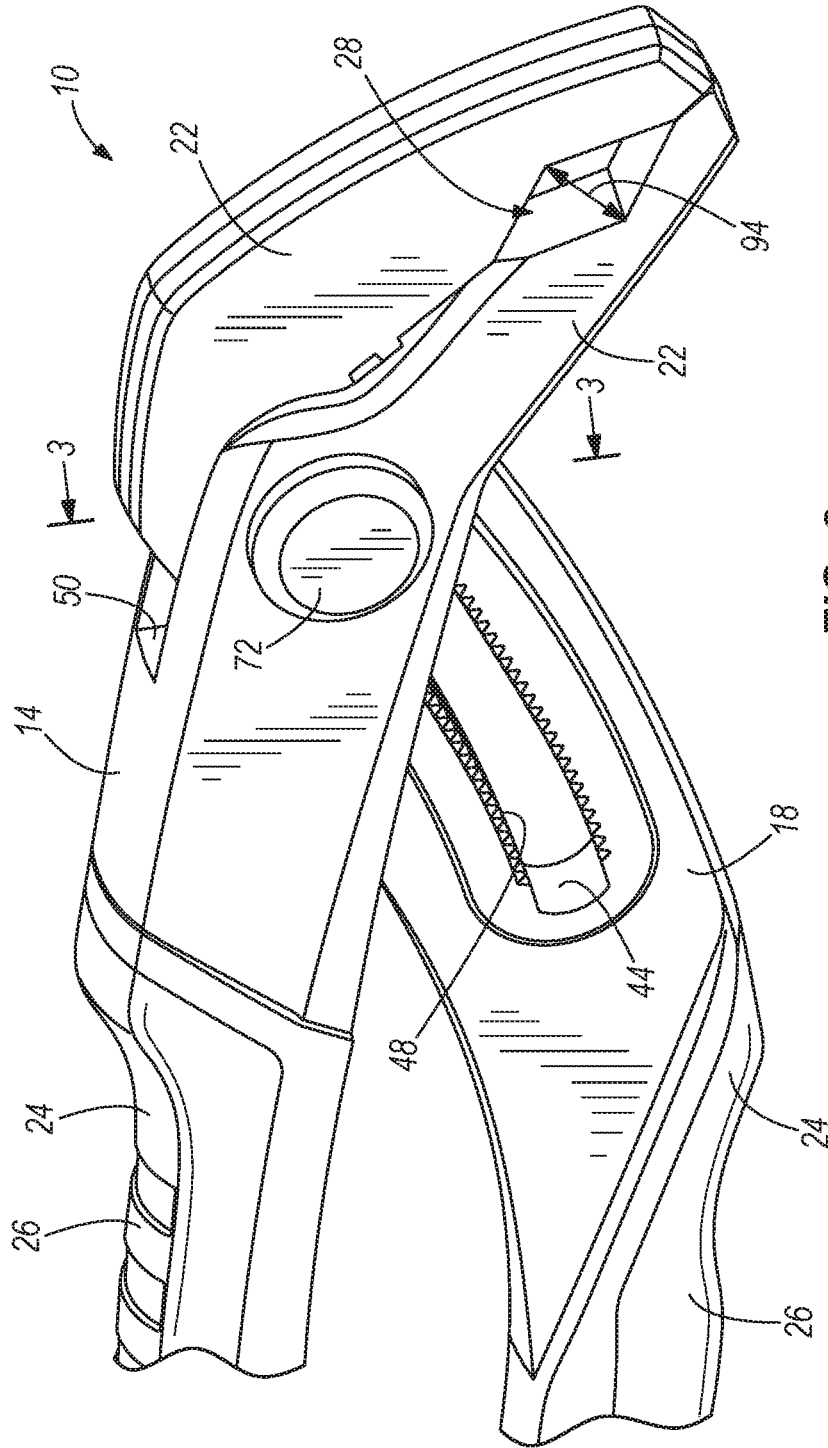


FIG. 2

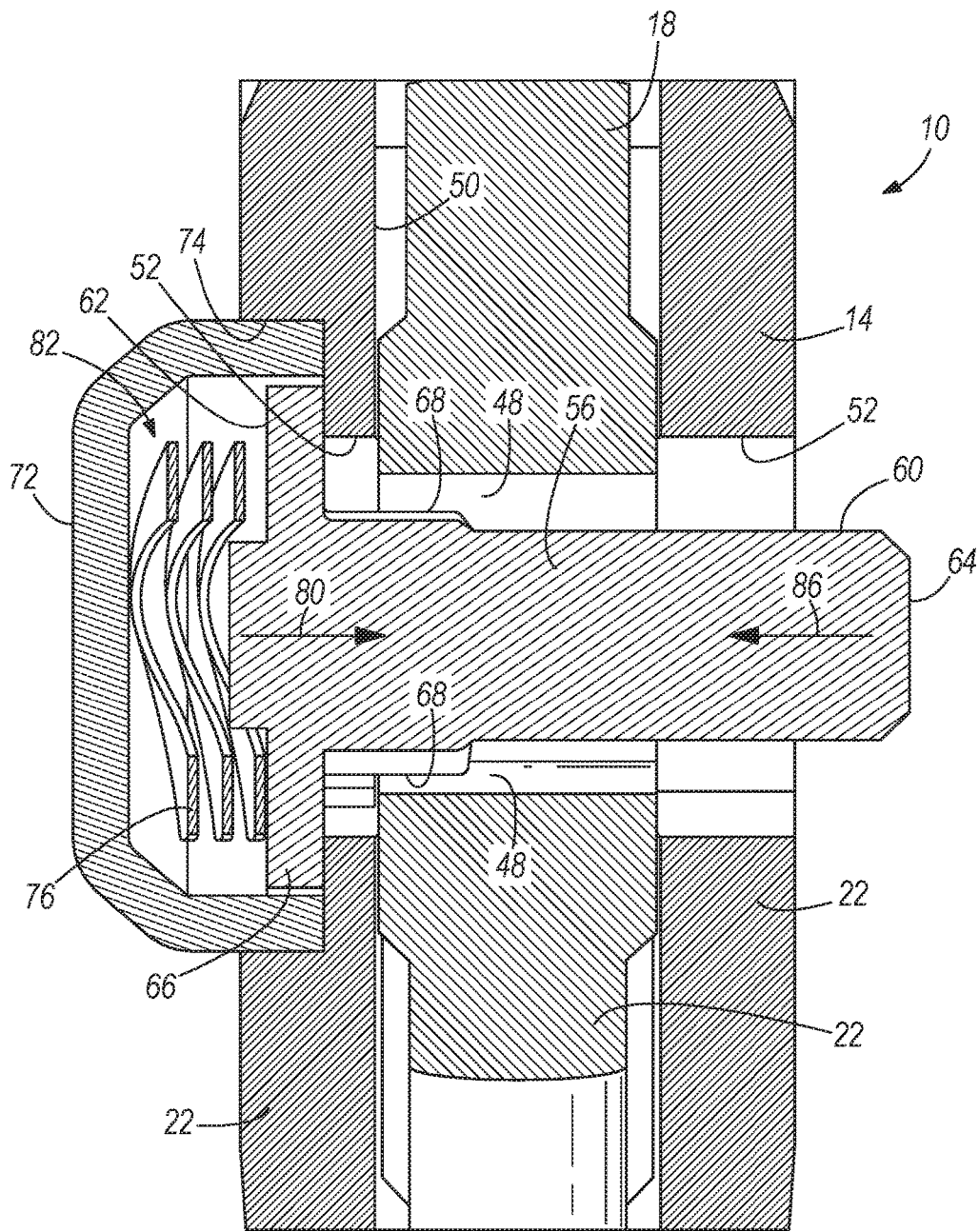


FIG. 3

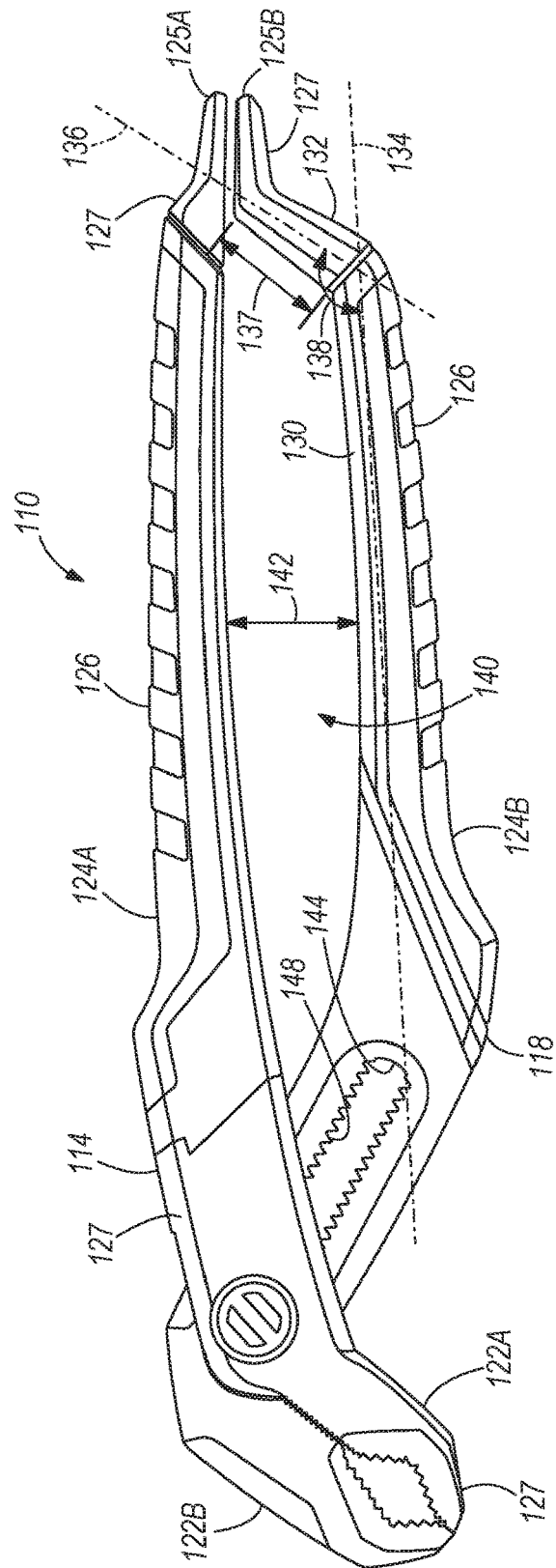


FIG. 4

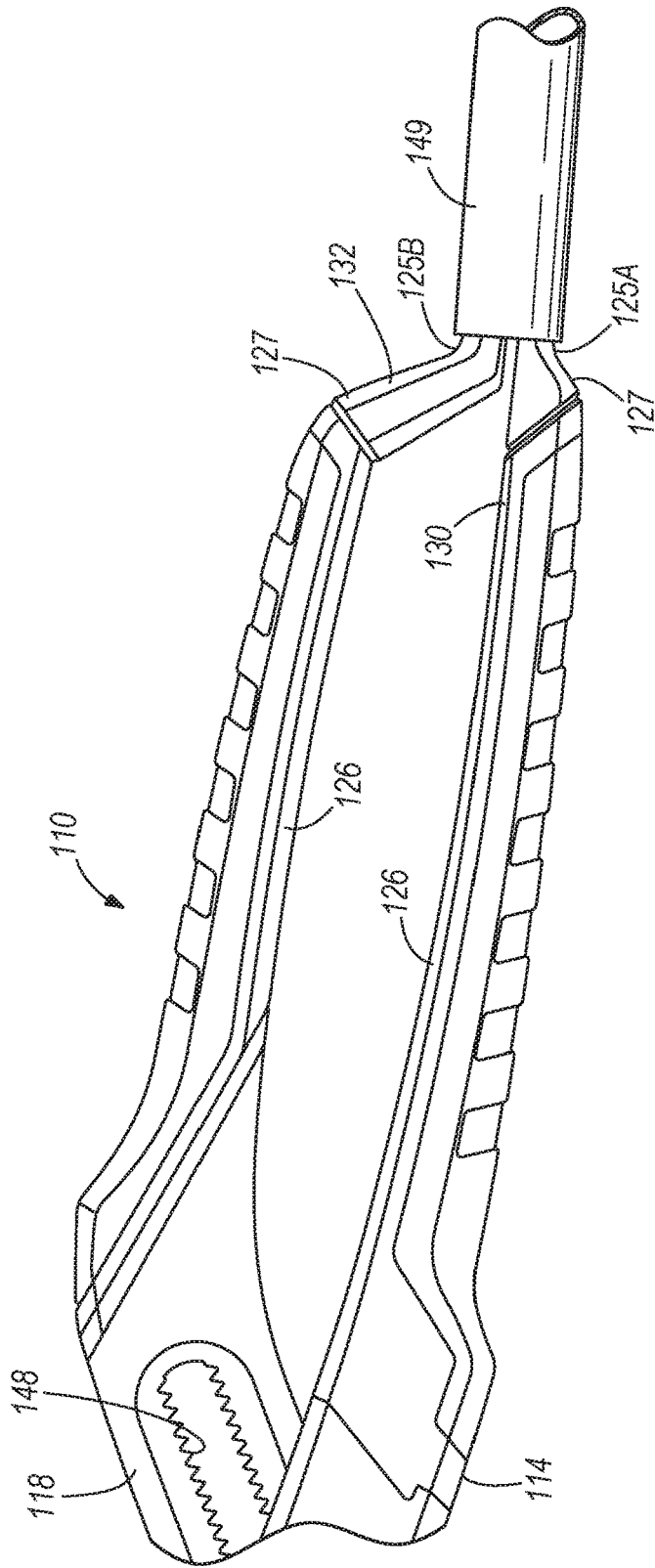


FIG. 5

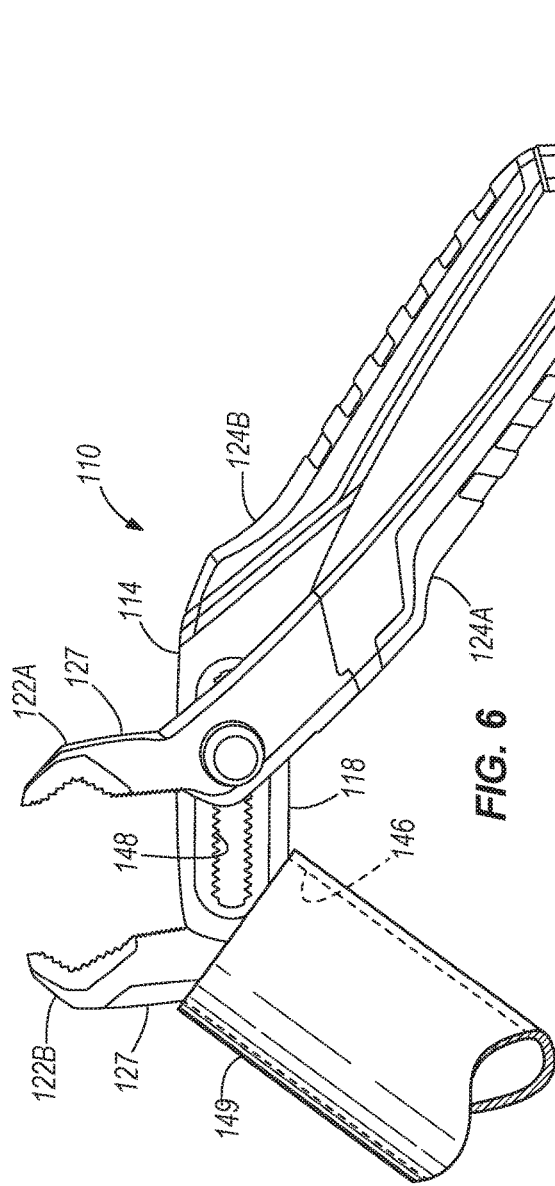


FIG. 6

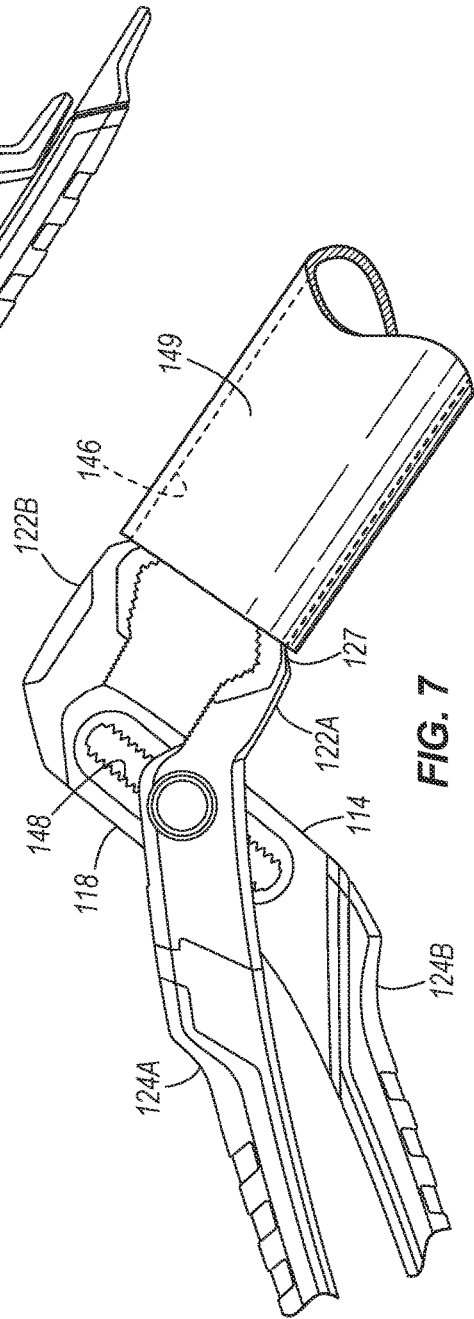


FIG. 7

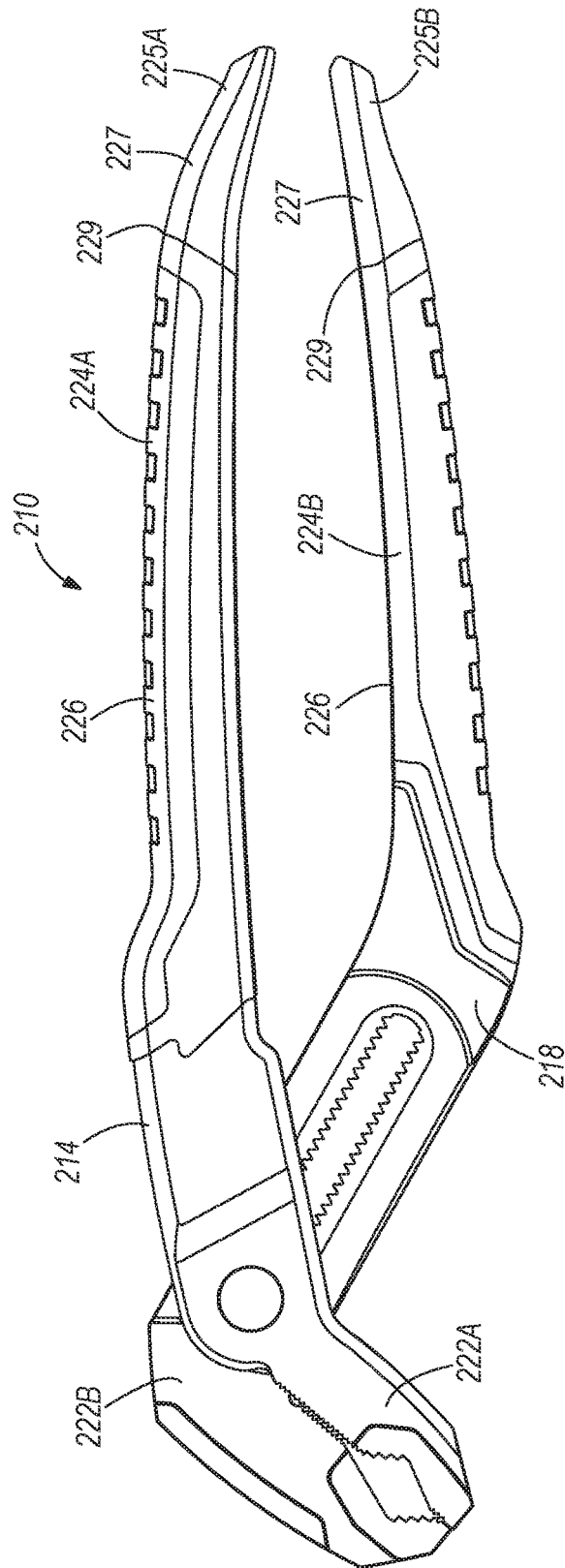


FIG. 8

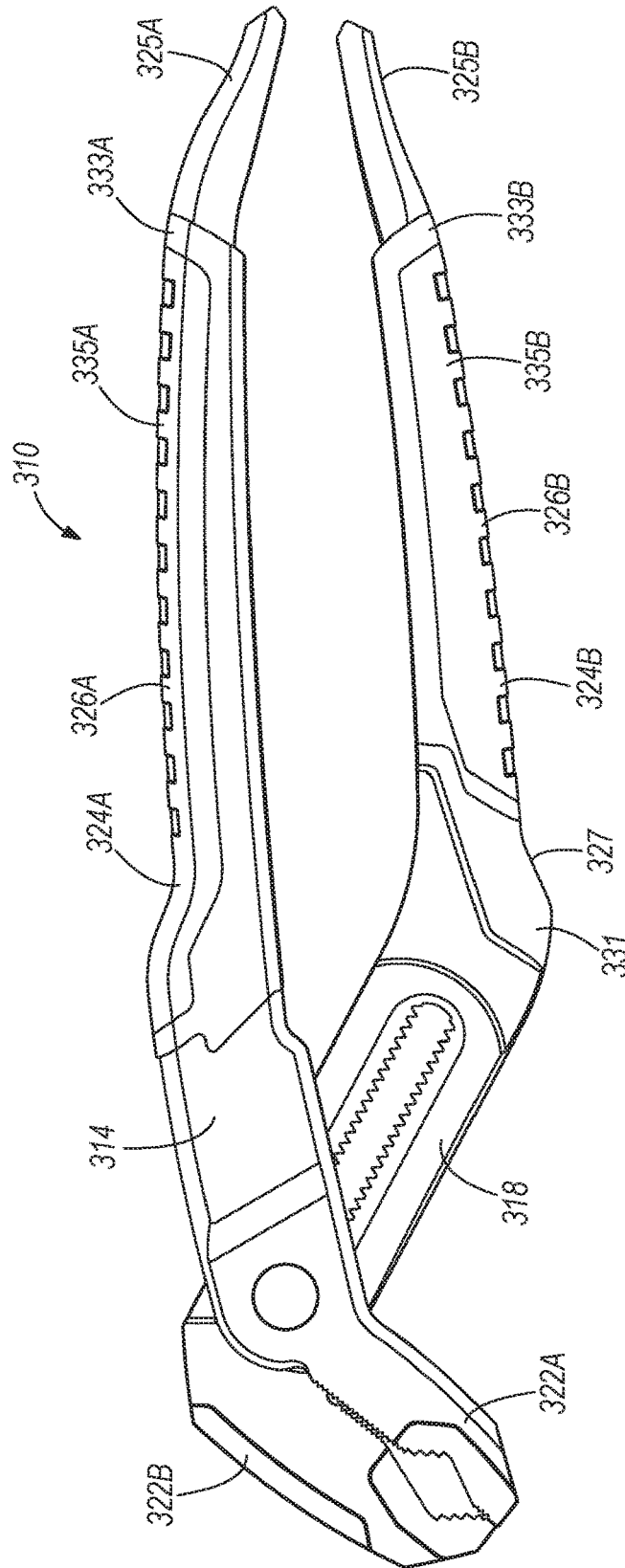


FIG. 9

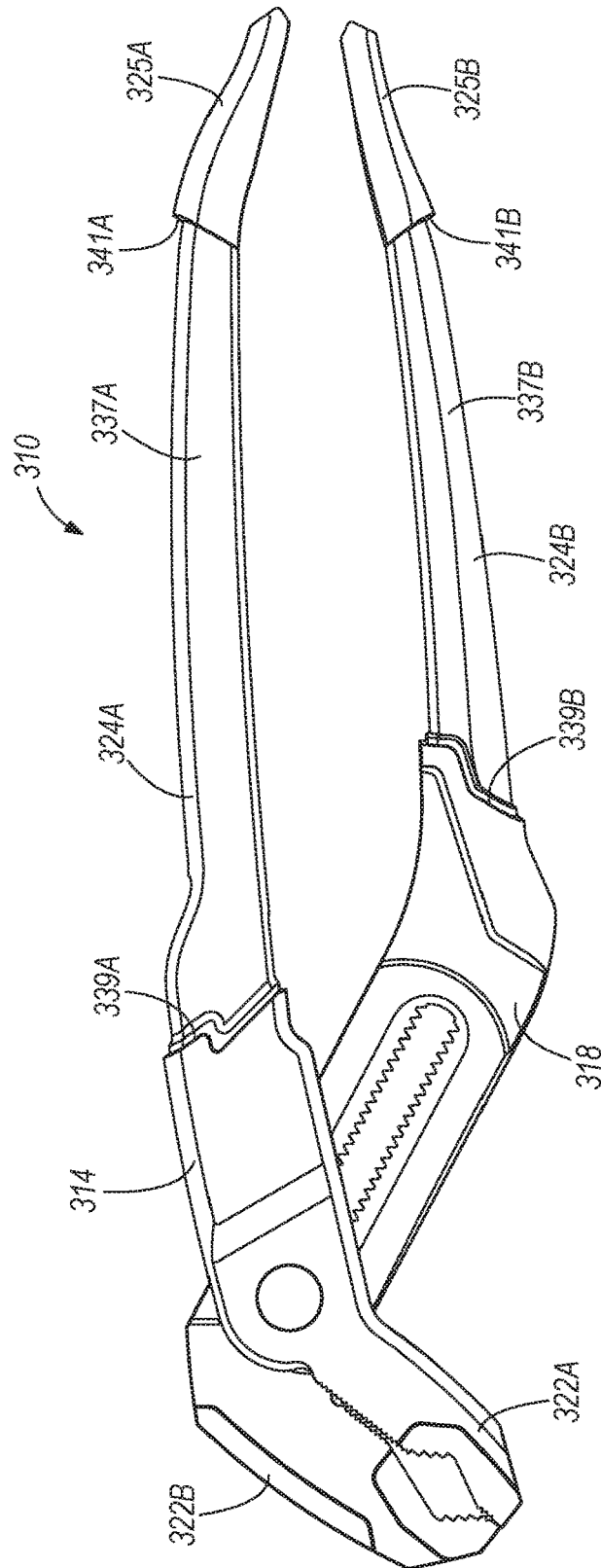


FIG. 10

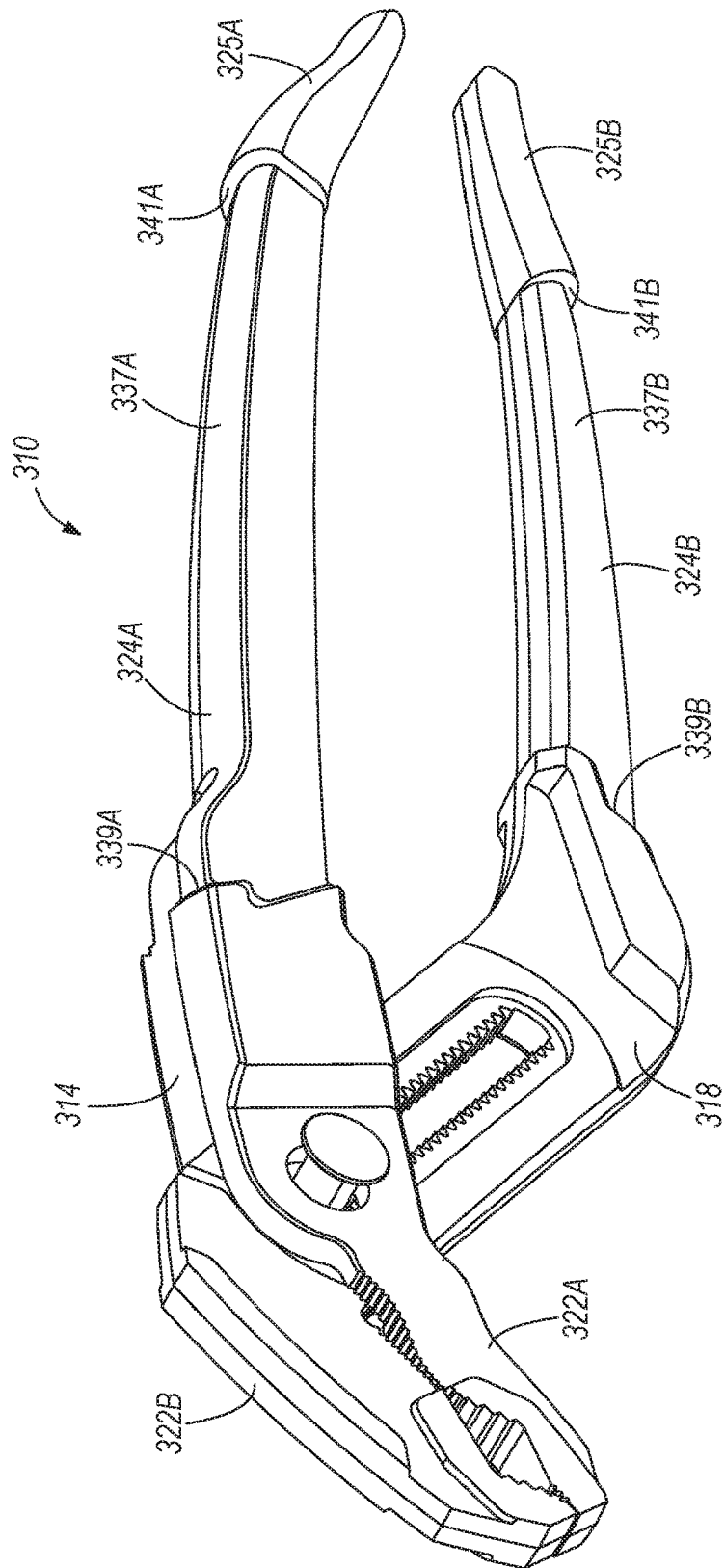


FIG. 11

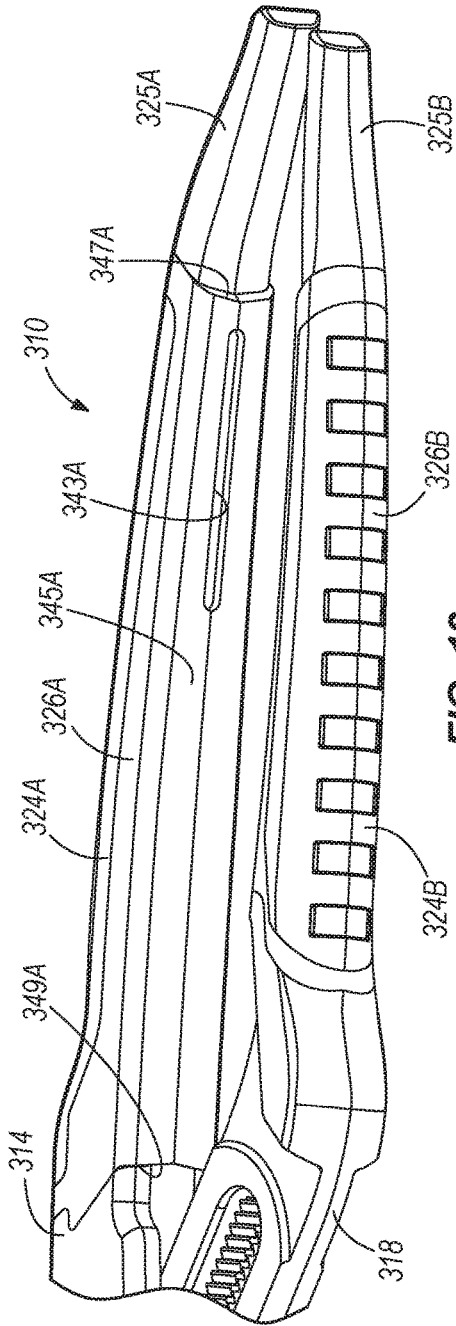


FIG. 12

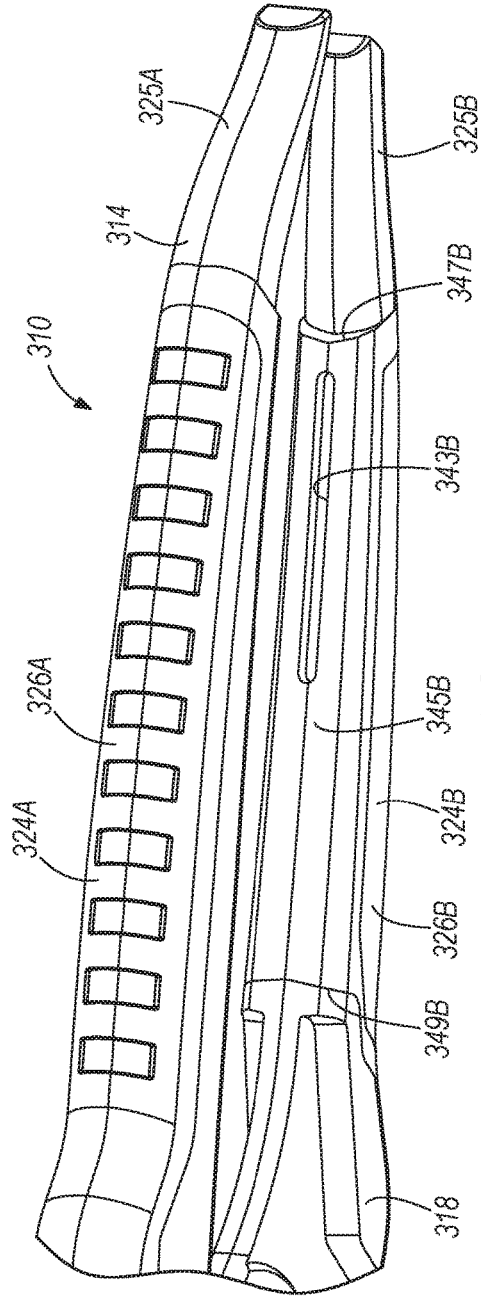


FIG. 13

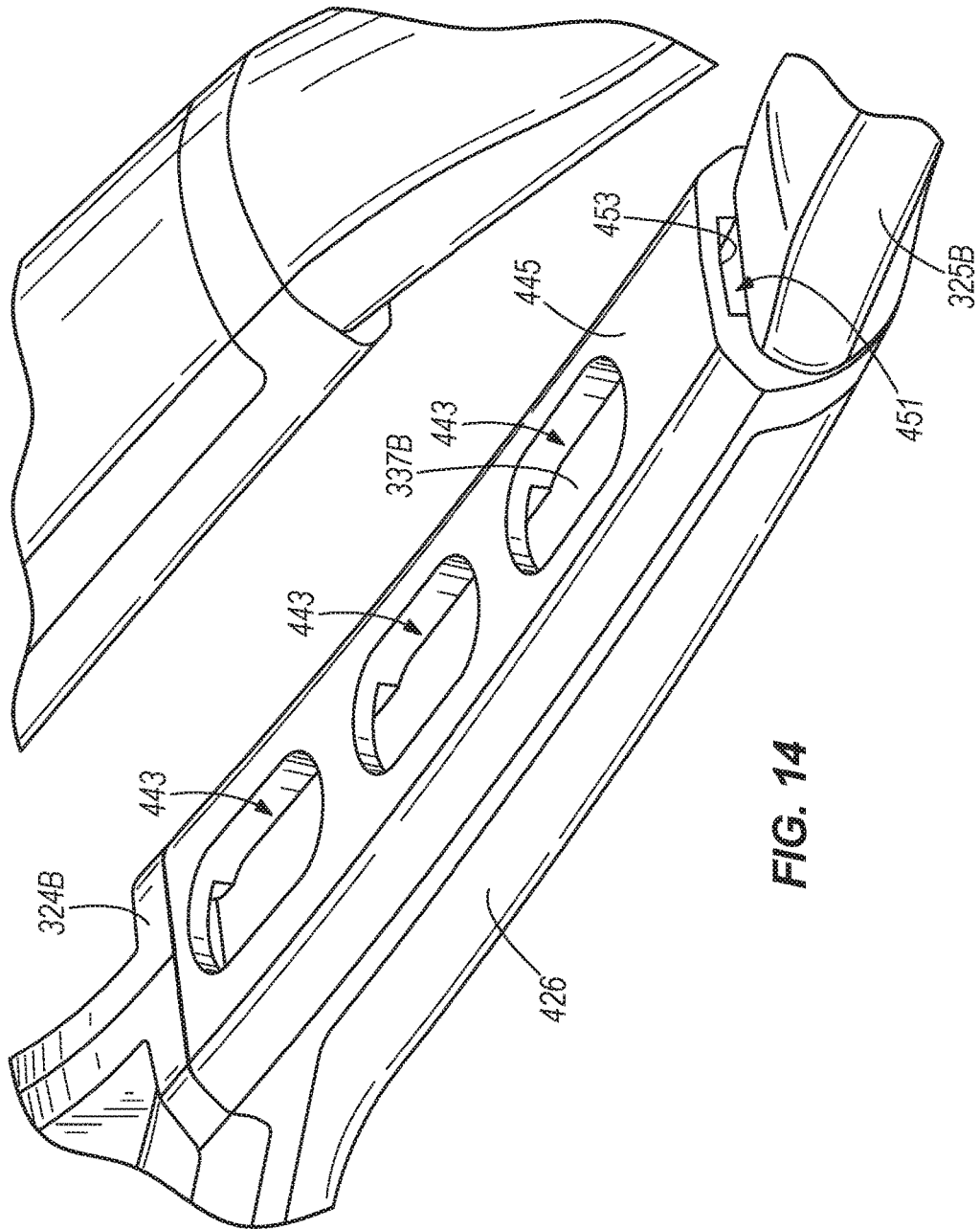


FIG. 14

PLIERS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of co-pending U.S. patent application Ser. No. 15/621,097, filed Jun. 13, 2017, which is a continuation of U.S. patent application Ser. No. 14/063,015, filed Oct. 25, 2013, now U.S. Pat. No. 9,687,965, which is a continuation of U.S. patent application Ser. No. 13/286,872, filed Nov. 1, 2011, now U.S. Pat. No. 8,661,948, which claims priority to U.S. Provisional Patent Application No. 61/408,760, filed Nov. 1, 2010 and to U.S. Provisional Patent Application No. 61/529,324, filed Aug. 31, 2011, the entire contents of all of which are incorporated by reference herein.

BACKGROUND

The present invention relates to hand tools and, more particularly, to pliers.

A pliers often includes two members that are pivotally connected at a pivot point. A rear end portion of the pliers typically forms a handle of the pliers and a front end portion forms a head of the pliers. The handle is used to open or close jaws formed at the head that pivot about the pivot point, and the handles can be rotated to rotate the head. Therefore, the jaws can be used to grip a fastener, wire, or any suitable material, and the pliers is rotated via the handle to rotate the fastener, wire, or material.

SUMMARY

The invention provides, in one aspect, a pliers including a first member with a first head and a first handle having a recessed area with a non-circular cross-sectional shape and an exposed end portion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip. The forward lip has a cross-sectional area not greater than a cross-sectional area of a portion of the first handle adjacent the forward lip and opposite the recessed area. The pliers also includes a first grip positioned on the recessed area of the first handle and a second member pivotally coupled to the first member. The second member includes a second head and a second handle having a recessed area with a non-circular cross-sectional shape and an exposed end portion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip. The forward lip has a cross-sectional area not greater than a cross-sectional area of a portion of the second handle adjacent the forward lip and opposite the recessed area. The pliers also includes a second grip positioned on the recessed area of the second handle. The end portions of the first and second handles are made of metal.

The invention provides, in another aspect, a pliers including a first member with a first head and a first handle having a recessed area with a non-circular cross-sectional shape and an exposed end portion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip. The forward lip has a cross-sectional area not greater than a cross-sectional area of a portion of the first handle adjacent the forward lip and opposite the recessed area. The pliers also includes a first grip positioned on the recessed area of the first handle and a second member pivotally coupled to the first member. The second member includes a second head and a second handle having a recessed area with a non-circular cross-sectional shape and an exposed end por-

tion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip. The forward lip has a cross-sectional area not greater than a cross-sectional area of a portion of the second handle adjacent the forward lip and opposite the recessed area. The pliers also includes a second grip positioned on the recessed area of the second handle. The end portion of the first handle extends from the rear lip to a distal end, and the end portion of the second handle extends from the rear lip to a distal end. A cross-sectional area of the end portion of the first handle increases from the distal end to the rear lip such that the end portion of the first handle has a tapered shape, and a cross-sectional area of the end portion of the second handle increases from the distal end to the rear lip such that the end portion of the second handle has a tapered shape. The end portions are made of metal.

The invention provides, in another aspect, a pliers including a first member with a first head and a first handle having a recessed area with a non-circular cross-sectional shape and an end portion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip, the forward lip having a cross-sectional area not greater than a cross-sectional area of a portion of the first handle adjacent the forward lip and opposite the recessed area. The pliers also includes a first grip positioned on the recessed area of the first handle such that the first grip and the end portion of the first handle define a first generally smooth transition in a length direction of the first member and the first grip and the portion of the first handle adjacent the forward lip define a second generally smooth transition in the length direction of the first member. The first grip includes a first open end adjacent the forward lip of the first handle and a second open end adjacent the rear lip of the first handle. A cross-sectional area of the first grip decreases from the first open end to the second open end such that the first grip has a tapered shape. The pliers further includes a second member pivotally coupled to the first member. The second member has a second head and a second handle with a recessed area having a non-circular cross-sectional shape and an end portion adjacent the recessed area. The recessed area is bounded by a forward lip and a rear lip, the forward lip having a cross-sectional area not greater than a cross-sectional area of a portion of the second handle adjacent the forward lip and opposite the recessed area. The pliers also includes a second grip positioned on the recessed area of the second handle such that the second grip and the end portion of the second handle define a first generally smooth transition in a length direction of the second member and the second grip and the portion of the second handle adjacent the forward lip define a second generally smooth transition in the length direction of the second member. The second grip includes a first open end adjacent the forward lip of the second handle and a second open end adjacent the rear lip of the second handle. A cross-sectional area of the second grip decreases from the first open end to the second open end such that the second grip has a tapered shape. The first and second members are made of metal.

Other aspects of the invention will become apparent by consideration of the detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a first side view of a pliers according to one embodiment of the invention.

FIG. 2 is a second side view of the pliers of FIG. 1.

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FIG. 3 is a cross-sectional view of the pliers of FIG. 1 taken along line 3-3 of FIG. 2.

FIG. 4 is a side view of a pliers according to another embodiment of the invention.

FIGS. 5-7 illustrate the pliers of FIG. 4 during use as a pipe reamer.

FIG. 8 is a side view of a pliers according to another embodiment of the invention.

FIG. 9 is a side view of a pliers according to yet another embodiment of the invention.

FIG. 10 is a side view of the pliers of FIG. 9 without grips.

FIG. 11 is a perspective view of the pliers of FIG. 9 without the grips.

FIG. 12 is a perspective view of a portion of the pliers of FIG. 9.

FIG. 13 is another perspective view of the portion of the pliers shown in FIG. 12.

FIG. 14 is a perspective view of a portion of the pliers of FIG. 9 including another embodiment of a grip.

Before any embodiments of the invention are explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings. The invention is capable of other embodiments and of being practiced or of being carried out in various ways.

DETAILED DESCRIPTION

FIG. 1 illustrates a pliers 10, which, in the illustrated embodiment, is an adjustable pliers. The pliers 10 includes a first member 14 and a second member 18. The second member 18 is pivotally connected to the first member 14. The members 14, 18 both include a head portion 22 and a handle portion 24 that are integrally formed as a single component. The handle portions 24 are covered with a grip 26, which is a rubber over mold in the illustrated embodiment. In the other embodiments, the handle portions 24 may be covered with injection molded grips that are created independently from the members 14, 18 and slipped onto the members 14, 18 or the members 14, 18 may be covered with insert molded grips that are molded directly onto the members 14, 18. Together the head portions 22 form jaws 28 of the pliers 10. The jaws 28 are used to grip pipes, electrical conduits, nuts, other types of fasteners, and the like.

The second member 18 of the pliers 10 includes an elongated aperture 44 that extends through the head portion 22. Teeth 48 are located within the elongated aperture 44 to further define the aperture 44. The first member 14 includes a first aperture 50 and the second member 18 extends through the first aperture 50. The first aperture 50 is sized so that the second member 18 can pivot with respect to the first member 14. The first member 14 further includes a second aperture 52 that extends through the first member 14 generally transverse to the first aperture 50 (FIG. 3).

Referring to FIG. 3, a pivot pin 56 extends through the first aperture 50 and the second aperture 52 to pivotally couple the first member 14 and the second member 18. The pivot pin 56 includes a first end portion 60 and a second end portion 62. The first end portion 60 includes an end surface 64 and the second end portion 62 includes a flange 66 and teeth 68.

The pliers 10 further includes a cap 72. The cap 72 is press fit into a recess 74 that is formed in the head portion 22 of the first member 14. In other embodiments, the cap 72 may be coupled to the recess 74 using other suitable means. A biasing member 76 is located between the cap 72 and the

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flange 66 of the pivot pin 56 to bias the pivot pin 56 in the direction of arrow 80 (FIG. 3). In the illustrated embodiment, the biasing member 76 includes three wave springs, but in other embodiments, the biasing member can include fewer or more wave springs, and in yet other embodiments, other types of biasing members can be used. The flange 66 and the cap 72 inhibit dirt, debris, and the like from entering a cavity 82 between the flange 66 and the cap 72 where the wave springs 76 are located.

In operation, a user presses on the end surface 64 of the pivot pin 56 in the direction of arrow 86 against the bias of the wave springs 76. The user presses on the end surface 64 to move the pivot pin 56 in the direction of arrow 86 to move the teeth 68 of the pivot pin 56 out of engagement with the teeth 48 in the aperture 44 of the second member 18. Then, the user slides the pivot pin 56 (i.e., moves the first member 14 with respect to the second member 18 through the aperture 50) along the aperture 44 in the directions of arrows 90 (FIG. 1) to adjust an opening width 94 of the jaws 28. The opening width 94 of the jaws 28 is adjusted in order to grip objects having different sizes. When the user has the jaws 28 adjusted to the desired width, the user releases the end surface 64 of the pivot pin 56 and the wave springs 76 move the pivot pin 56 back to the position illustrated in FIG. 3 so that the teeth 68 of the pivot pin 56 engage the teeth 48 of the second member 18. With the pivot pin 56 in the position illustrated in FIG. 3, the user is able to pivot the members 14, 18 with respect to each other to grasp an object with the jaws 28. Further, the pivot pin 56 does not slide within the aperture 44 in the directions of arrows 90 to keep the opening width 94 fixed in a desired distance.

FIG. 4 illustrates a pliers 110 according to another embodiment. The pliers 110 includes features similar to pliers 10 of FIGS. 1-3. Accordingly, only differences between the pliers 10 and 110 will be discussed in detail below and like components have been given like reference numbers plus 100.

Referring to FIG. 4, the pliers 110 includes a first member 114 and a second member 118 that is pivotally coupled to the first member 114 as discussed above with regard to the pliers 10 of FIGS. 1-3. The first member 114 includes a head 122A and a handle 124A, and the second member 118 includes a head 122B and a handle 124B. The handles 124A and 124B both include an end portion 125A and 125B, respectively, opposite the heads 122A and 122B, respectively. The end portions 125A and 125B do not include a grip or rubber over mold 126 such that base metal 127 used to form the members 114 and 118 is exposed, a purpose of which will be discussed in more detail below.

The handle 124B further includes a first handle portion 130 and a second handle portion 132 that extends between the first handle portion 130 and the end portion 125B. The first handle portion 130 includes a longitudinal axis 134 and is covered with and surrounded by the rubber over mold grip 126. The second handle portion 132 includes a longitudinal axis 136 and a length 137 measured along the axis 136. The second handle portion 132 does not include the over mold 126 such that the base metal 127 used to form the members 118 is exposed. The second handle portion 132 is bent or at an angle with respect to the first handle portion 130 such that an angle 138 is defined between the longitudinal axes 134, 136. In the illustrated embodiment, the angle 138 is approximately 125 degrees. In other embodiments, the angle 138 can be greater than or less than 125 degrees.

The angle 138 between the first handle portion 130 and the second handle portion 132 provides a relatively large opening or space 140 between the handles 124A, 124B when

the members **114**, **118** are pivoted to close the heads **122A**, **122B** (as shown in FIG. 4). Alternatively stated, the angle **138** and the length **137** of the second handle portion **132** maintain a relatively large distance **142** between the handles **124A**, **124B**. The relatively large distance **142** and the space **140** reduce the likelihood that the user's hand will be pinched between the handles **124A** and **124B** during operation of the pliers **110**.

As illustrated in FIGS. 5-7, the pliers **110** can also be used to smooth or ream an inner wall or surface **146** (FIGS. 6 and 7) of a piece of pipe **149**, or other conduit. Referring to FIG. 5, as discussed above, the end portions **125A**, **125B** (FIG. 4) of the handles **124A**, **125B**, respectively, include exposed base metal **127**. The user inserts the end portions **125A**, **124B** into the pipe **149** until the exposed base metal **127** contacts the pipe **149**. The user then rotates the pliers **110** or pipe **149** to remove burrs from the pipe **149** or otherwise smooth the inner surface **146** of the pipe **149**. The exposed metal **127** can include ridges, edges, and the like to facilitate removing material from the pipe **149**.

Referring to FIGS. 6 and 7, the heads **122A**, **122B** of the handles **124A**, **124B** can also be used to ream the pipe **149**. The heads **122A**, **122B** also do not include the rubber over mold **126** and, therefore, the base metal **127** is exposed. As illustrated in FIG. 6, the user can insert the head **122B** of the second member **118** into the pipe **149** and rotate the pliers **110** to ream the pipe **149**. Referring to FIG. 7, the user can insert both heads **122A**, **122B** or the jaws **128** into the pipe **149** to ream the pipe **149**. In the illustrated embodiment, the end portions **125A**, **125B** are configured such that the handles **124A**, **124B** are used to ream a pipe in a first size range, for example $\frac{1}{2}$ inch to 1 inch inner diameter electrical metal tubing ("EMT"), and the heads **122A**, **122B** are configured to ream pipe of a second size range, for example, greater than 1 inch inner diameter EMT. Thus, in one method of operation, the user determines the size range of the pipe and uses either the handles **124A**, **124B** or the heads **122A**, **122B** to ream the pipe depending on the size range (e.g., inner diameter) of the pipe.

FIG. 8 illustrates a pliers **210** according to another embodiment. The pliers **210** includes features similar to the pliers **10** of FIGS. 1-3. Accordingly, only differences between the pliers **10** and **210** will be discussed in detail below and like components have been given like reference numbers plus **200**.

Referring to FIG. 8, the pliers **210** includes a first member **214** and a second member **218** that is pivotally coupled to the first member **214** as discussed above with regard to the pliers **10** of FIGS. 1-3. The first member **214** includes a head **222A** and a handle **224A**, and the second member **218** includes a head **222B** and a handle **224B**. The handles **224A** and **224B** both include an end portion **225A** and **225B**, respectively, opposite the heads **222A** and **222B**, respectively. The end portions **225A**, **225B** do not include a rubber over mold **226** such that base metal **227** that is used to form the members **214** and **218** is exposed. In the illustrated embodiment, the over mold **226** is generally flush with the adjacent end portion **225A**, **225B** such that there is a flush or smooth interface **229** between the over mold **226** and the end portion **225A**, **225B**. In one embodiment, the rubber over mold **226** is replaced with a rubber slip-on grip that is slid over the base metal **227** of the handles **224A**, **224B** rather than over molded. In such an embodiment, the slip-on grip still exposes the base metal **227** of the end portions **225A**, **225B**.

As discussed above with regard to FIGS. 4-7, the end portions **225A**, **225B** can be used to ream or smooth a cut end of a pipe, and the heads **222A**, **222B** can also be used to ream a pipe.

FIGS. 9-13 illustrate a pliers **310** according to another embodiment of the invention. The pliers **310** includes features similar to the pliers **10** of FIGS. 1-3, the pliers **110** of FIGS. 4-7, and the pliers **210** of FIG. 8. Accordingly, only differences between the pliers **310** and the pliers **10**, **110**, **210** will be discussed in detail below, and like components have been given like reference numbers plus **300**.

Referring to FIG. 9, the pliers **310** includes a first member **314** and a second member **318** that is pivotally coupled to the first member **314** as discussed above with regard to the pliers **10** of FIGS. 1-3. The first member **314** includes a head **322A** and a handle **324A**, and the second member **318** includes a head **322B** and a handle **324B**. In the illustrated embodiment, the first and second members **314**, **318** are formed by forging. In other embodiments, the first and second members **314**, **318** may be formed by machining or casting.

Each member also includes a grip **326A**, **326B** coupled to the corresponding handle **324A**, **324B**. Unlike the pliers **10**, **110**, **210** discussed above, the second grip **326B** of the illustrated pliers **310** does not extend as far toward the head **322B** of the second member **318** such that base metal **327** at a knuckle portion **331** of the second member **318** is exposed. The illustrated grips **326A**, **326B** are slip-on grips that slide over end portions **325A**, **325B** of the handles **324A**, **324B** to fit on the handles **324A**, **324B**. Providing the grips **326A**, **326B** as slip-on members, as opposed to insert molding grips directly onto the handles **324A**, **324B**, reduces the cost of manufacturing the pliers **310**, particularly when the members **314**, **318** are formed by forging. In some embodiments, such as the illustrated embodiment, each of the grips **326A**, **326B** includes a first, or base, portion **333A**, **333B** and a second, or overlay, portion **335A**, **335B**. The first portions **333A**, **333B** are composed of a first material having a first hardness (e.g., 80 durometer) and the second portions **335A**, **335B** are composed of a second material having a second hardness (e.g., 70 durometer), which is less than the first hardness. In other embodiments, the first material can have any suitable hardness and the second material can have any suitable hardness different than the first material. In yet other embodiments, the grips **326A**, **326B** may be formed from a single material having a uniform hardness.

As shown in FIGS. 10 and 11, the first handle **324A** includes a first grip area **337A** and the second handle **324B** includes a second grip area **337B**. The grip areas **337A**, **337B** are shaped and sized to receive and support the grips **326A**, **326B** to couple the grips **326A**, **326B** to the handles **324A**, **324B**. In the illustrated embodiment, the grip areas **337A**, **337B** have a smaller cross-sectional area than the end portions **325A**, **325B** of the handles **324A**, **324B**. A forward lip **339A**, **339B** is formed on each member **314**, **318** between the grip area **337A**, **337B** and the portion of the handle **324A**, **324B** adjacent the head **322A**, **322B**, and a rear lip **341A**, **341B** is formed on each member **314**, **318** between the grip area **337A**, **337B** and the end portion **325A**, **325B**. The lips **339A**, **339B**, **341A**, **341B** define the boundaries of the smaller cross-section grip areas **326A**, **326B** on the members **314**, **318**. The grip areas **337A**, **337B** facilitate positioning the grips **326A**, **326B** on the handles **324A**, **324B** and reduce the cross-sectional areas of the handles **324A**, **324B** so that the grips **326A**, **326B** are generally flush with the rest of the handles **324A**, **324B**.

Referring to FIGS. 12 and 13, the first grip 326A includes a first elongated slot 343A and the second grip 326B includes a second elongated slot 343B. In the illustrated embodiment, the slots 343A, 343B extend entirely through the grips 326A, 326B to form openings in the grips 326A, 326B. In other embodiments, the slots 343A, 343B may only extend partway through the grips 326A, 326B such that the slots 343A, 343B define recesses or reliefs where the grips 326A, 326B have less material. The illustrated slots 343A, 343B are formed on inward-facing sides 345A, 345B of the grips 326A, 326B (i.e., the side of each grip 326A, 326B that faces the other grip 326A, 326B) such that the slots 343A, 343B typically do not interfere with a user grasping and squeezing the pliers 310. In the illustrated embodiment, each grip 326A, 326B includes a single elongated slot located adjacent a rear end 347A, 347B of the corresponding grip 326A, 326B (i.e., adjacent the end of the grip 326A, 326B nearest the end portion 325A, 325B of the corresponding handle 324A, 324B). In other embodiments, each grip 326A, 326B may define a series of elongated slots, slits, or other openings formed along the grip 326A, 326B.

In order to assemble the grips 326A, 326B onto the handles 324A, 324B, the grips 326A, 326B are slid over the end portions 325A, 325B of the handles 324A, 324B toward the heads 322A, 322B. As the end portions 325A, 325B pass through the grips 326A, 326B, the grips 326A, 326B are stretched and deflected. The elongated slots 343A, 343B allow the grips 326A, 326B to stretch and deflect to fit over the enlarged end portions 325A, 325B of the handles 324A, 324B. The illustrated grips 326A, 326B generally taper in cross-sectional area from a forward open end 349A, 349B (i.e., the end of the grip 326A, 326B nearest the head 322A, 322B) to the rear open end 347A, 347B such that the forward open ends 349A, 349B are generally large enough to slide over the end portions 325A, 325B of the handles 324A, 324B without slots.

FIG. 14 illustrates another embodiment of a grip 426 for use with the pliers 310. The grip 426 includes features similar to the grips 326A, 326B shown in FIGS. 12-13. Accordingly, only differences between the grip 426 and the grips 326A, 326B will be discussed in detail below, and like components have been given like reference numbers plus 400.

The illustrated grip 426 is an injection molded, slip-on grip that slides over the enlarged end portion 325B of the handle 324B. In the illustrated embodiment, the grip 426 includes three discrete slots 443 and a relief 451 extending the length of the grip 426. In other embodiments, the grip 426 may include fewer or more slots 443. The slots 443 are generally evenly spaced along and formed through an inward-facing side 445 of the grip 426. The relief 451 is formed on an inner surface 453 of the grip 426 that faces the grip area 337B to remove material from the grip 426. In some embodiments, the slots 443 may be omitted such that the grip 426 only includes the relief 451. In other embodiments, the relief 451 may be omitted such that the grip 426 only includes the slots 443. The slots 443 and the relief 451 facilitate stretching the grip 426 to slide the grip 426 over the enlarged end portion 325B and onto the handle 324B.

Although the invention has been described in detail with reference to certain preferred embodiments, variations and modifications exist within the scope and spirit of one or more independent aspects of the invention as described. For example, aspects of the invention may be applied to other types of hand tools with pivotable members, such as pex

cutters, snips, riveters, wire strippers, and the like. Various features and advantages of the invention are set forth in the following claims.

The invention claimed is:

1. A pliers comprising:

a first member including a first head and a first handle having a recessed area with a non-circular cross-sectional shape and an exposed end portion adjacent the recessed area, the recessed area bounded by a forward lip and a rear lip, the forward lip having a cross-sectional area not greater than a cross-sectional area of a portion of the first handle adjacent the forward lip and opposite the recessed area;

a first grip positioned on the recessed area of the first handle;

a second member pivotally coupled to the first member, the second member including a second head and a second handle having a recessed area with a non-circular cross-sectional shape and an exposed end portion adjacent the recessed area, the recessed area bounded by a forward lip and a rear lip, the forward lip having a cross-sectional area not greater than a cross-sectional area of a portion of the second handle adjacent the forward lip and opposite the recessed area; and

a second grip positioned on the recessed area of the second handle,

wherein the end portions of the first and second handles are made of metal.

2. The pliers of claim 1, wherein the end portion of the first handle extends from the rear lip to a distal end,

wherein a cross-sectional area of the end portion of the first handle increases from the distal end to the rear lip such that the end portion of the first handle has a tapered shape,

wherein the end portion of the second handle extends from the rear lip to a distal end, and

wherein a cross-sectional area of the end portion of the second handle increases from the distal end to the rear lip such that the end portion of the second handle has a tapered shape.

3. The pliers of claim 2, wherein the first grip and the end portion of the first handle define a generally smooth transition in a length direction of the first member, and wherein the second grip and the end portion of the second handle define a generally smooth transition in a length direction of the second member.

4. The pliers of claim 3, wherein the first grip and the portion of the first handle adjacent the forward lip define a second generally smooth transition in the length direction of the first member, and wherein the second grip and the portion of the second handle adjacent the forward lip define a second generally smooth transition in the length direction of the second member.

5. The pliers of claim 2, wherein the end portions of the first and second handles are configured for reaming conduit.

6. The pliers of claim 5, wherein each of the end portions includes at least one reaming edge.

7. The pliers of claim 1, wherein the first grip and the second grip each include a base portion made of a first material and an overlay portion made of a second material different than the first material.

8. The pliers of claim 7, wherein the first material has a first hardness and the second material has a second hardness less than the first hardness.

9. The pliers of claim 8, wherein the first hardness is about 80 durometer and the second hardness is about 70 durometer.

10. The pliers of claim 1,
 wherein the first grip includes a first open end adjacent the
 forward lip of the first handle and a second open end
 adjacent the rear lip of the first handle,
 wherein a cross-sectional area of the first grip decreases
 from the first open end to the second open end such that
 the first grip has a tapered shape,
 wherein the second grip includes a first open end adjacent
 the forward lip of the second handle and a second open
 end adjacent the rear lip of the second handle, and
 wherein a cross-sectional area of the second grip
 decreases from the first open end to the second open
 end such that the second grip has a tapered shape.

11. The pliers of claim 1,
 wherein the second member includes an elongated aper-
 ture,
 wherein the first member is pivotally coupled to the
 second member by a pin extending through the elon-
 gated aperture,
 wherein the first head includes a first jaw, and the second
 head includes a second jaw,
 wherein the pin is movable along the elongated aperture
 to adjust a spacing between the first jaw and the second
 jaw, and
 wherein the pliers further comprises a plurality of pro-
 jections disposed along the elongated aperture to selec-
 tively retain the spacing between the first jaw and the
 second jaw.

12. The pliers of claim 1, wherein the first grip is
 non-rotatably coupled to the first handle, and wherein the
 second grip is non-rotatably coupled to the second handle.

13. A pliers comprising:
 a first member including a first head and a first handle
 having a recessed area and an exposed end portion
 adjacent the recessed area, the recessed area bounded
 by a forward lip and a rear lip, the forward lip having
 a cross-sectional area not greater than a cross-sectional
 area of a portion of the first handle adjacent the forward
 lip and opposite the recessed area;
 a first grip positioned on the recessed area of the first
 handle;
 a second member pivotally coupled to the first member,
 the second member including a second head and a
 second handle having a recessed area with a non-
 circular cross-sectional shape and an exposed end por-
 tion adjacent the recessed area, the recessed area
 bounded by a forward lip and a rear lip, the forward lip
 having a cross-sectional area not greater than a cross-
 sectional area of a portion of the second handle adja-
 cent the forward lip and opposite the recessed area; and
 a second grip positioned on the recessed area of the
 second handle,
 wherein the end portion of the first handle extends from
 the rear lip to a distal end,
 wherein the end portion of the second handle extends
 from the rear lip to a distal end,
 wherein a cross-sectional area of the end portion of the
 first handle increases from the distal end to the rear lip
 such that the end portion of the first handle has a
 tapered shape,
 wherein a cross-sectional area of the end portion of the
 second handle increases from the distal end to the rear
 lip such that the end portion of the second handle has
 a tapered shape, and
 wherein the end portions are made of metal.

14. The pliers of claim 13, wherein the first grip and the
 end portion of the first handle define a generally smooth

transition in a length direction of the first member, and
 wherein the second grip and the end portion of the second
 handle define a generally smooth transition in a length
 direction of second member.

15. The pliers of claim 14, wherein the first grip and the
 portion of the first handle adjacent the forward lip define a
 second generally smooth transition in the length direction of
 the first member, and wherein the second grip and the
 portion of the second handle adjacent the forward lip define
 a second generally smooth transition in the length direction
 of the second member.

16. The pliers of claim 13, wherein the end portions are
 configured for reaming conduit.

17. The pliers of claim 13,
 wherein the first grip includes a first open end adjacent the
 forward lip of the first handle and a second open end
 adjacent the rear lip of the first handle,
 wherein a cross-sectional area of the first grip decreases
 from the first open end to the second open end such that
 the first grip has a tapered shape,
 wherein the second grip includes a first open end adjacent
 the forward lip of the second handle and a second open
 end adjacent the rear lip of the second handle, and
 wherein a cross-sectional area of the second grip
 decreases from the first open end to the second open
 end such that the second grip has a tapered shape.

18. The pliers of claim 13,
 wherein the second member includes an elongated aper-
 ture,
 wherein the first member is pivotally coupled to the
 second member by a pin extending through the elon-
 gated aperture,
 wherein the first head includes a first jaw, and the second
 head includes a second jaw, and
 wherein the pin is movable along the elongated aperture
 to adjust a spacing between the first jaw and the second
 jaw.

19. The pliers of claim 18, further comprising a plurality
 of projections disposed along the elongated aperture to
 selectively retain the spacing between the first jaw and the
 second jaw.

20. The pliers of claim 13, wherein the recessed area of
 the first handle has a non-circular cross-sectional shape
 such that the first grip is non-rotatably coupled to the first handle,
 and wherein the recessed area of the second handle has a
 non-circular cross-sectional shape such that the second grip
 is non-rotatably coupled to the second handle.

21. A pliers comprising:
 a first member including a first head and a first handle
 having a recessed area with a non-circular cross-sec-
 tional shape and an end portion adjacent the recessed
 area, the recessed area bounded by a forward lip and a
 rear lip, the forward lip having a cross-sectional area
 not greater than a cross-sectional area of a portion of
 the first handle adjacent the forward lip and opposite
 the recessed area;
 a first grip positioned on the recessed area of the first
 handle such that the first grip and the end portion of the
 first handle define a first generally smooth transition in
 a length direction of the first member and the first grip
 and the portion of the first handle adjacent the forward
 lip define a second generally smooth transition in the
 length direction of the first member, the first grip
 including a first open end adjacent the forward lip of the
 first handle and a second open end adjacent the rear lip
 of the first handle, wherein a cross-sectional area of the

first grip decreases from the first open end to the second open end such that the first grip has a tapered shape;

a second member pivotally coupled to the first member, the second member including a second head and a second handle having a recessed area with a non-circular cross-sectional shape and an end portion adjacent the recessed area, the recessed area bounded by a forward lip and a rear lip, the forward lip having a cross-sectional area not greater than a cross-sectional area of a portion of the second handle adjacent the forward lip and opposite the recessed area; and

a second grip positioned on the recessed area of the second handle such that the second grip and the end portion of the second handle define a first generally smooth transition in a length direction of the second member and the second grip and the portion of the second handle adjacent the forward lip define a second generally smooth transition in the length direction of the second member, the second grip including a first open end adjacent the forward lip of the second handle and a second open end adjacent the rear lip of the second handle, wherein a cross-sectional area of the second grip decreases from the first open end to the second open end such that the second grip has a tapered shape,

wherein the first and second members are made of metal.

22. The pliers of claim **21**, wherein each end portion is configured for reaming conduit.

* * * * *