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PLIERS

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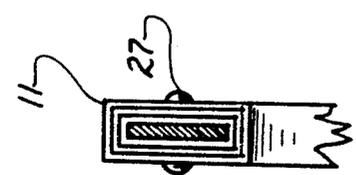
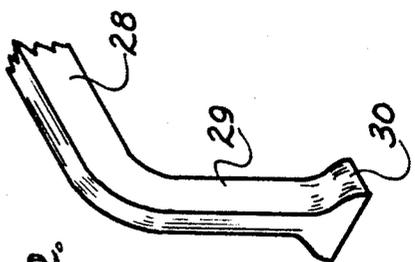
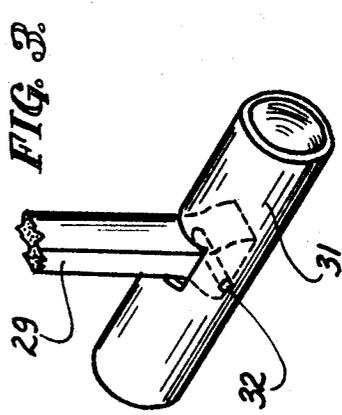
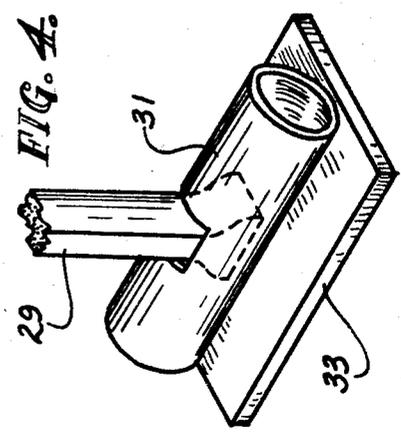
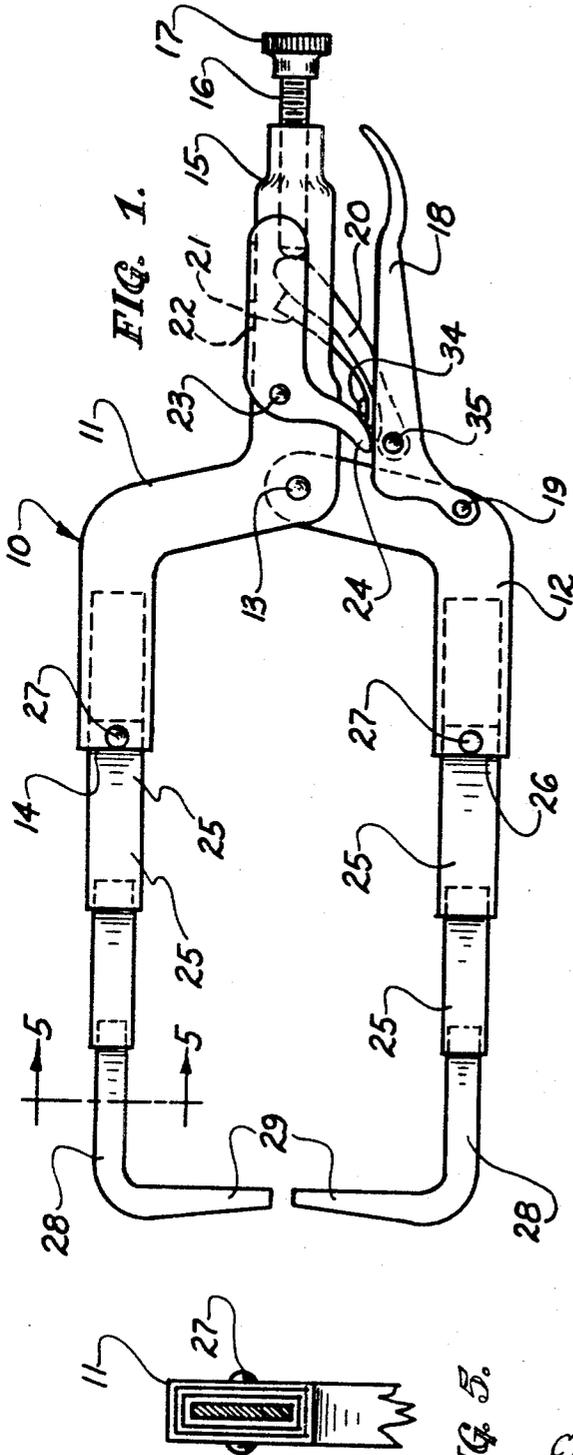


FIG. 5.

FIG. 2.

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4 Claims

ABSTRACT OF THE DISCLOSURE

A manually operated gripping tool which is provided with a plurality of hollow tubular extensions mounted on each of a pair of jaws between retracted and extended positions. The jaws are actuated by a toggle mechanism between open and closed positions and are releasably locked in the closed position. A release lever is provided on a handle portion of one of the jaws to actuate the release of the toggle linkage to permit opening of the jaws. An adjustment screw is included to permit varying the distance between the jaws when in the closed position. The gripping portion of the jaws which grip the article are adapted to be connected to clamping means of various configuration to facilitate the handling of various articles.

This invention relates to hand tools, and more particularly, to that form of hand tool known in the art as pliers. Pliers are defined as a pinching tool that is operated in one hand.

There are an unlimited number of different types of pliers. Most of them have different forms of gripping points that are more or less straight instead of being curved like pincers.

Pliers are usually limited to a predetermined type of work by reason of the configuration of their gripping points. This limited use of pliers often leads to the purchase of several different types of pliers, particularly if one's livelihood requires their more or less constant use for many different purposes. This is particularly true in the art of automotive repairing as well as in many other arts, such as work in the machine shop.

It is, therefore, the principal object of this invention to provide pliers that have interchangeable gripping points, as will be hereinafter pointed out in this specification.

Another object of this invention is to provide pliers, the nose of which is adjustable in length by reason of its unique telescoping construction.

Still another object of this invention is to provide pliers that have jaws that are adaptable to any work placed therein.

Other and further objects of this invention will appear as the reading of the specifications proceeds and the drawing is examined.

In the drawing:

FIG. 1 is a side view of this invention.

FIG. 2 is a pictorial view of one of the gripping points of this invention.

FIG. 3 is a pictorial view of an optional form of gripping end of this invention.

FIG. 4 is a pictorial view of still another form of gripping end of this invention.

FIG. 5 is a vertical sectional view of a portion of this invention, taken substantially along line 5-5 of FIGURE 1, and viewed in the direction indicated by the arrows.

The reference number 10 indicates this invention in its entirety. The invention consists basically of two main parts: The stationary Z-shaped jaw member 11 and the movable L-shaped jaw member 12. The Z-shaped member 11 is pivotally secured to the L-shaped member 12 by the rivet or pin 13.

The aforesaid Z-shaped member 11 is provided with a hollow outer end 14 that is rectangular, when viewed from the front, and a hollow handle 15. In this handle 15 is located the major part of the adjusting screw 16 which has its head 17 projecting out beyond the end of the aforesaid end 15, as clearly shown in FIGURE 1 of the appended drawing.

Locking action for the hand tool 10 is accomplished by means of a conventional toggle linkage in the form of a link member 18 pivotally connected to L-shaped member 12 at pin 19 and a second link 20 pivotally connected to link member 18 by a pin 35.

Link 20 extends upwardly through hollow handle 15 and is biased downwardly, as viewed in FIG. 1, by a tension spring 21 secured to link 18 by a rivet 34.

Upward movement of link member 18 moves link member 20 upwardly into contact with the inner end of adjusting screw 16. Further upward movement of link 18 to overcome the bias of spring 21 moves the toggle pivot point 35 past the toggle joint center line located between pin 19 and the abutment between link 20 and screw 16 to complete the conventional locking of members 11 and 12 in the closed position.

A release trigger 22 is pivotally connected to handle 15 by pin 23 and includes a lower end 24 engageable with the upper side of link member 18. Upward movement of trigger 22 pivots link member 18 downwardly, as viewed in FIG. 1, and releases the locking action by causing the toggle pivot point 34 to move below the previously mentioned toggle joint center line.

Any desired number of tubular extension members 25 are mounted end to end in telescope fashion in the hollow outer end 14 of the Z-shaped member 11 while an alike number of similar extension members that are indicated by the same reference number 25 are likewise mounted in the hollow outer end 26 of the aforesaid L-shaped member 12 of this invention. The members 25 are secured in the outer end of members 11 and 12 by means of the pins 27, as one can see on examination of FIGURES 1 and 5 of the appended drawing. An L-shaped gripping member 28, having an inwardly turned end 29, is mounted in the outermost end of the last of the tubular members 25 connected to jaw members 11 and 12, thereby completing the assembly of this invention of a pliers.

The aforesaid ends 29 of the L-shaped members 28 may terminate in an enlarged head 30, as in FIGURE 2 of the drawing, or in a tubular member 31 to which the outermost end of the end 29 is secured by a rivet 32, as in FIGURE 3, or the tube 31 may be secured to a rectangular plate 33, as one can see by looking at FIGURE 4 of the drawing. The obvious purpose of these alternate forms of termination of the inwardly turned end 29 of each L-shaped member 28 is to insure that the pliers be adaptable to any special form of desired work.

It is clear from reading the above description of the construction of this invention that the pliers are used in the usual manner except that one can adjust the maximum closing distance between the two opposed inwardly turned ends 29, merely by adjusting the screw 16. Should one want to release the grip of the pliers suddenly all he has to do is to move the previously mentioned release trigger 22 to the upwardly as viewed in FIGURE 1 of the drawing.

This invention is subject to any detail changes in design in so long as the changes fall within the scope and intent of the appended claims.

It is claimed:

1. A gripping or pinching hand tool comprising, in combination, first and second jaw members pivotally connected to one another for relative movement toward one another, said jaw members including hollow end

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portions; means connected to said jaw members for manually actuating said jaw members between an open and closed position; means for adjustably changing the effective length of said jaw members, said means including at least one elongate extension member removably received in a respective hollow end portion of each of said jaw members and the other end of said extension members having releasable connecting means, whereby a selected number of extension members may be connected to said jaw members to effectively change the length thereof; and a pair of gripping members each having a turned in end portion and being removably received in each respective terminal extension member of said jaw members.

2. The tool defined in claim 1 wherein said means for actuating said jaw members includes a toggle linkage mechanism for releasably locking said jaw members in said closed position.

3. The tool defined in claim 2 including a release lever pivotally connected to said first jaw member and engaging said toggle linkage mechanism to release said jaw members from said closed position.

4. A gripping or pinching tool comprising, in combination, first and second movable jaw members pivotally connected together for relative movement toward one another, one end of each of said jaw members including

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a plurality of tubular extension members, each slidably mounted within the next adjacent extension member between extended and retracted positions for adjustably changing the effective length of said jaw members; actuating means carried by said jaw members for manually moving said jaw members between said open and closed positions; and a gripping member having a turn-in end portion mounted on the terminal extension member of each of said jaw members.

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