April 30, 1929. D. S. KELLEWAY 1,710,929

PLIERS

Filed Feb. 24, 1927

FIG. 1

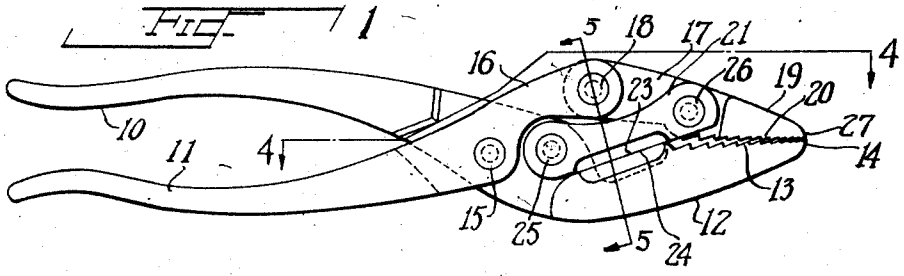


FIG. 2

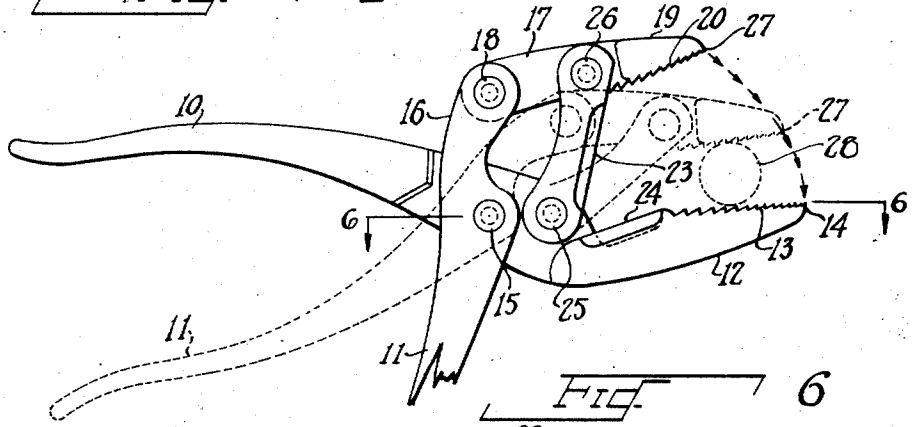


FIG. 6

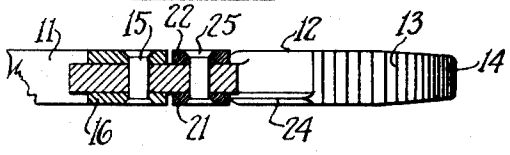


FIG. 5

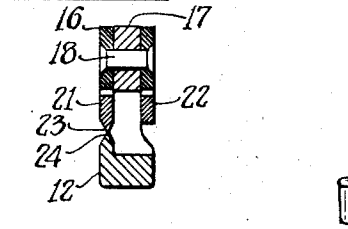


FIG. 3

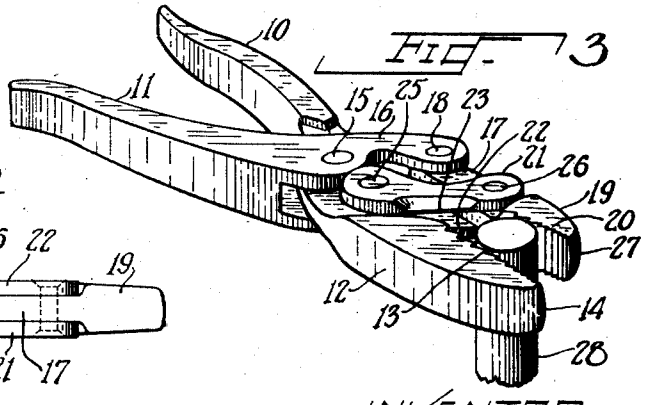
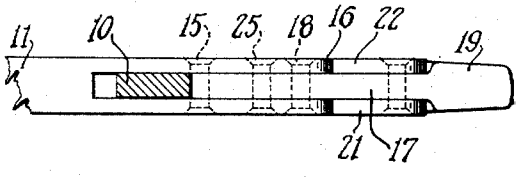


FIG. 4



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Patented Apr. 30, 1929. 1,710,929

UNITED STATES PATENT OFFICE.

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PLIERS.

Application filed February 24, 1927. Serial No. 170,471.

This invention relates generally to mechanics' tools, and particularly to a special form of plier for holding objects against rotation, or rotating same or cutting same.

The first object of this invention is to provide an exceedingly simple and efficient pair of pliers by means of which an improved gripping action is secured.

The second object is to so construct the pliers that it will be easy to manufacture at a relatively low cost, and at the same time avoid the necessity for making same unduly wide in order that they may be successfully used in narrow places.

These, and other objects, will become more apparent from the specification following as illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of the pliers from the cutter side showing same in a closed position. Figure 2 is also a side elevation showing the pliers in a wide open position in full lines and also showing same holding a cylindrical object, with one jaw and handle shown dotted in order to show various relative positions of the parts. Figure 3 is a perspective view showing the pliers gripping a cylindrical object. Figure 4 is a somewhat irregular horizontal section taken along the line 4—4 in Figure 1. Figure 5 is a transverse section taken along the line 5—5 in Figure 1. Figure 6 is a section taken along the line 6—6 in Figure 2.

Similar numbers of reference refer to similar parts throughout the several views.

Referring in detail to the drawing, the pliers consist of a pair of handle members 10 and 11, the former of which has formed on its work-engaging end a serrated jaw 12 having its teeth 13 pointed somewhat toward the tip 14. The handle 10 is united to the handle 11 by means of a rivet 15. The handle 11 is provided with a short end 16 to which is hinged a jaw 17 by means of the rivet 18. The jaw 17 is widened at its tip 19 which is provided with teeth 20 opposing and sloping in the opposite direction from the teeth 13.

Between the jaws 12 and 17 are the connecting links 21 and 22, the former of which is provided with a knife edge 23 which, together with the edge 24 on the jaw 12, forms the cutting portion of the pliers. The links 21 and 22 are attached to the jaw 12 by means of a rivet 25 and are attached to the jaw 17 by means of a rivet 26.

It will be noted that the rivets 18 and 26 lie approximately in a line passing through the tip 27 of the jaw 17 and are somewhat farther apart than the rivets 15 and 25, which lie in a line approximately coinciding with the face of the teeth 13; whereas the line which passes through the rivets 18 and 26 form a considerable angle with the faces of the teeth 20.

It will be noted that the link 21, which carries the cutting edge 23, is on one side of the plier, but it could be placed on the opposite side to better adapt itself for certain classes of work without departing from the spirit of this invention.

Attention is now drawn to Figure 2 in which it can be seen that pressure applied to handles 10 and 11 tending to move same together causes the jaw 17 to move outwardly as it closes upon the work 28 with a rolling action, which permits the teeth to effectively bite into the work, making same function somewhat after the fashion of a pipe wrench as distinguished from the ordinary monkey wrench provided with serrated jaws.

This type of pliers must not be confused with the old form of wrench employing one handle 10 but eliminating the handle 11 entirely, and depending upon a spring action (or in some cases the action of the thumb, or even gravity to hold the jaw 17 into the work).

As illustrated in my drawing, the force moving the handles 10 and 11 toward each other urges the jaw 17 proportionately toward its work, thereby producing pliers having a differential movement between its jaws and having unusual power, without the disadvantages arising from the use of parallel jaws.

It can also be seen that in some instances it will be desirable to make the links 21 integral—that is, out of a single piece having slotted ends, for the purpose of securing greater rigidity at the tips of the plier jaws.

I claim:

1. A pair of pliers having one integral handle and jaw member and a second handle member hinged by a main pivot across said first mentioned handle and having a jaw hinged to its over-lapping end, and link means between said integral jaw and said hinged

jaw whereby the closing of the handles will cause the tips of said jaws to approach each other in two directions the main pivot and the two link hinges lying in an approximately straight line when the pliers are closed.

2. A pair of pliers having, in combination, an integral handle and jaw member with a second handle member hinged across said first mentioned handle and having a jaw opposite said first mentioned jaw hinged to said second mentioned handle, and link means connecting the outer ends of both jaws between their tips and their union with another member said links holding said jaws at a diverging angle when open and at a converging angle when closed said hinged connection occupying an approximately straight line at the moment of closing.

DUANE S. KELLEWAY.