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DOUBLE-ENDED MULTIPLE JAW PLIERS

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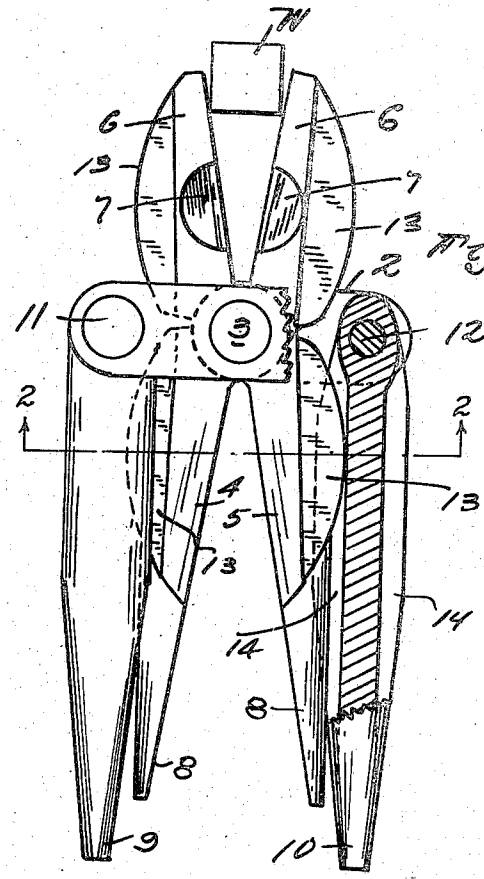


Fig. 1.

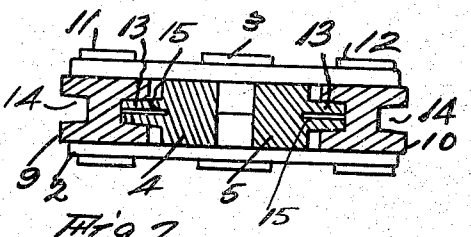


Fig. 2.

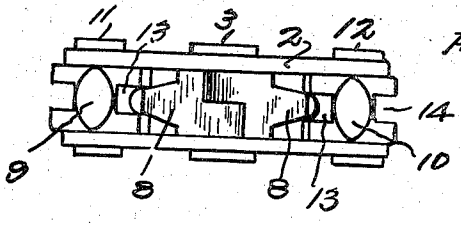


Fig. 3.

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DOUBLE-ENDED MULTIPLE JAW PLIERS

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6 Claims. (Cl. 81—47)

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This discovery is in the art of small hand tools and its concept is in advances in the construction and operation of hand tools of the pliers type.

It is an object of this invention to provide a simple, practical, substantial, low cost pliers tool incorporating crossed plier members each having at its opposite ends faces or jaws differentiated in such manner that the opposite ends of the pliers can be utilized for the performance of entirely different functions and to provide a handle device having the purpose not only of closing the jaws on or as to the given work but, further, having the function of opening the jaws at the respective ends of the members.

The invention consists in certain novel conceptions in the pliers tool art as set forth in the ensuing text and having, with the above, additional objects and advantages as hereinafter developed, and whose constructions, combinations and details of means and the manner of operation will be made manifest in the following description of the herewith illustrative embodiment; it being understood that modifications, variations, and adaptations may be resorted to within the scope, principle and spirit of the invention as it is presently claimed in the addendum.

Figure 1 is a plan, partly in section, of the tool.

Figure 2 is a cross-section on line 2—2 of Fig. 1.

Figure 3 is an end elevation of the pliers.

A suitable journal block 2 has a central pivot 3 from top to bottom and on the pivot is swingably mounted a pair of crossed members 4 and 5. The opposite ends (as to the pivot 3) of these members are provided with work engaging or function-performing jaws of differentiated kinds; the jaws which are in lateral opposition on each common side of the pivot being of paired design.

That is, directly opposite jaws are designed to cooperate functionally. Thus one end of the interpivoted members includes a pair of opposed plane faced gripping jaws 6—6 and if so desired may have opposed shears 7—7. The opposite end of the paired pliers (members 4—5) is shown as having conventional long-nose jaw parts 8—8. This jaw disclosure is but exemplary in kind as a very great range of plier faces or jaws is within the scope of the invention.

It is obvious that both ends of the pliers will open or will close at the same time as the members swing on their medial fulcrum 3. And a distinctive feature of this invention is in the novel means by which the members are either pulled open at the same time or are closed (at their opposed work performing parts) at the same time. The disclosed means for this dual function includes a pair of substantially duplicate and completely reversible handle elements 9 and 10 each having one end hung on a respective outboard pivot 11 (or 12) in the outer end of the said block 2; these handles being turnable entirely around the ends of the block so as to take positions embracing either end of the members 4 and 5 as to their pivot 3. In operation, as the handles are closed toward each other they approach longitudinal, lateral fins 13 forming rigid parts of the members 4 and 5 and which are designed to snugly slide with wedge action into complementary V-channels 14 provided longitudinally in the two side faces of the handles 9 and 10. It will be noticed that each member 4 and 5 has such a fin 13 on each of its jaws projecting each way from the common pivot 3. Therefore in the position of the parts shown in Fig. 1, the inner faces of the handles are longitudinally straddling the interposed fins 13 of the long-nose parts of the members and as the handles are closed both ends of the pliers are being closed; the outer jaws 6—6 clinching on work W. If, now, the handles are pulled apart and swung half-a-circle around their pivots 11 or 12 they will initially operate, by reason of frictional engagement on the fins 13 of the jaws 8—8, to pull open both ends of the pliers at one time. During this reverse of the position of the levers or handles 9—10 they will disengage the contact on the fins and at the other extreme of the reversing action the then inside face channels 14 of the handles will ride onto the presented fins of the jaws 6—6, now in opened position, and further action of closing the handles will result in closing both sets of jaws 6—6 and 8—8 at the same moment; in this position of the handles the long-nose jaws 8—8 are thus entirely clear from the handles and fully presented for use on any desired work.

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The desired friction as between the fins and the walls of the channels (the tops and bottoms) 14 can be effected in any suitable manner. In the instant case the fins are shown as longitudinally slit at 15 to permit of desired spring of the lips of the fins as they are crowded into the cooperative channels of the handles. Conversely, the lips of the channels may have the desired spring capacity.

What is claimed is:

1. A hand pliers consisting of a pair of crossed members having at each end differentiated work engaging features, those on common ends being cooperative, a body on which the members are tiltable on a common pivot, and a pair

of handles pivoted on the body and swingable in half-circles to engage and close either end of the pair of members, and means disposed on the outer sides of the work members to releasably interconnect with either of opposite sides of the handles to pull the members to open position as the handles are moved outward at either end of the pliers.

2. The pliers of claim 1; said means including mutually engaging friction parts on opposite sides of the handles and along the outer sides of said members.

3. The pliers of claim 1; said means including cooperative interwedging fin and channel features along opposite sides of the handles and along the outer sides of the said members.

4. The pliers of claim 1; said means including wedge section fins on the outer sides of said members and the handles having channels along their opposite sides frictionally engageable with the fins.

5. The pliers of claim 1; said means including longitudinally extending, wedge section fins on the outer sides of said members and the handles having channels on their opposite sides complementary to the fins to effect frictional cooperation during opening of the handles.

6. The pliers of claim 1; said means including wedge fins on the outer sides of said members and cooperative wedge channels on opposite sides of the handles and said fins being longitudinally, inwardly channeled to increase resilient wedging reaction in the wedge channels.

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