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M. E. THIERWECHTER

2,347,300

TOOL

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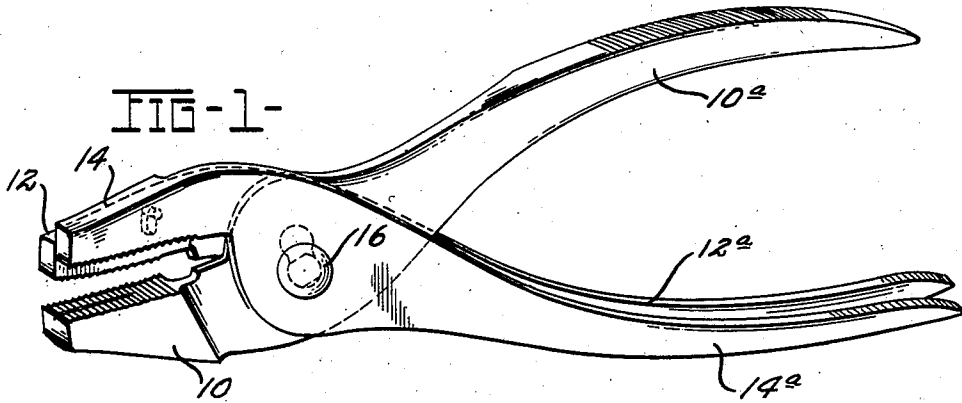


FIG-2-

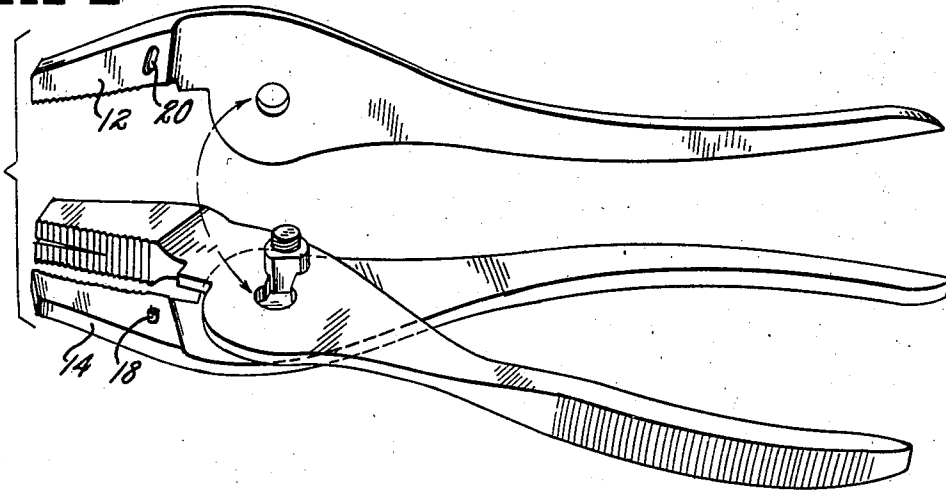


FIG-3-

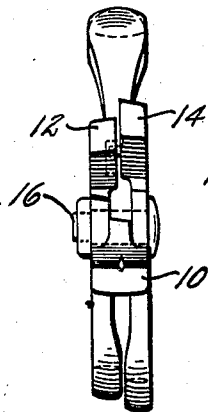
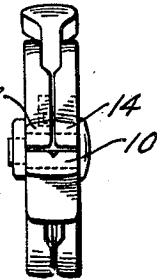


FIG-4-



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TOOL

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5 Claims. (Cl. 81-47)

This invention relates to tools of the pivoted jaw type and is more particularly directed to pliers, tongs, tweezers or similar instruments in which at least three surfaces cooperate to grip a work piece. The primary object of the invention is to provide means to grip an irregularly shaped object or a plurality of objects of unequal size.

Another object of the invention is to provide a tool in which a plurality of independently controlled jaws cooperate with a single anvil jaw to facilitate securely holding an irregularly shaped object or a plurality of objects independently.

Another object of the invention is to provide means to grip an irregularly shaped object at a minimum of three points, the relative pressure between the points of contact being independently controlled.

Other objects and advantages of the invention will become apparent as the description proceeds, reference being had to the accompanying drawing in which—

Figure 1 is a perspective view of a pair of pliers incorporating the present invention; Fig. 2 is a perspective view of the pliers with one jaw disassembled; Fig. 3 is a front view with the jaws opened, and Fig. 4 is a front view with the jaws closed.

Referring to the drawing the invention is disclosed as embodied in a pair of pliers, although the same principles may be applied to any instrument in which an object is to be gripped between two cooperating surfaces. An anvil jaw 10 is provided which cooperates with two jaw members 12 and 14 which operate as companions to each other. These three jaws are pivoted relatively to each other on the usual fulcrum 16. The anvil 10 extends beyond the fulcrum to form a handle 10^a and each of the jaws 12 and 14 is likewise extended to form handles 12^a and 14^a. As shown in Figs. 3 and 4, the anvil is sufficiently wide to contact both of the jaws 12 and 14 so that when the jaws are closed each of them moves against the upper surface of the anvil jaw in close proximity to the other.

The handles 12^a and 14^a are, of course, independently controllable for movement about the fulcrum 16, and are separated sufficiently so that they may be operated conveniently, each with respect to the other and with respect to the cooperating anvil handle 10^a.

When the invention is incorporated in a pair of pliers it may be desirable to limit the relative movement of the jaws 12 and 14 and for this purpose a small pin 18 is provided which projects from the jaw 12 and into a cooperating slot

20 formed in the inner side surface of the jaw 14. The pin and slot thus serve to limit the relative movements of the jaws 12 and 14 so that generally the jaws and their handles 12^a and 14^a move together within the limits fixed by the extent of the slot 20.

In operation, if the pliers are used for gripping a tapered pin, for example, the pin will be gripped between the jaws at at least three points, one on the jaw 12, one on the anvil 10 and one on the jaw 14. The pin is thus held firmly against movement, while in the ordinary pliers a tapered pin would be free to turn about an axis determined by the two opposing points at which it is gripped. Similarly, if the pliers are used to grasp two unequally shaped objects, such as two wires of different diameters, one wire may be held between jaw 12 and the anvil 10 and the other wire between jaw 14 and the anvil. The wires can then be twisted together or soldered or operated on in any other manner. In the common pliers, it is not possible to grip two wires of different diameter because the closing of the jaws is determined by the larger wire.

It will be appreciated that the invention has been disclosed in connection with a particular form of the elementary parts and that the size and shape of these parts may vary depending on the specific purpose for which the particular tool or instrument is designed. Such modifications and changes may be made without departing from the invention as defined in the appended claims.

What I claim as new and desire to secure by United States Letters Patent is:

1. A tool of the plier type having at least three pivotally connected relatively movable jaw members arranged for at least two companion jaws to oppose at least one anvil jaw in gripping an article, each jaw member having an individual control handle projecting therefrom at a side of the pivotal connection opposed to the jaw members and arranged to be grasped by a single hand and independently operated thereby to move the members, one of said companion jaws having a recess formed therein and another companion jaw having a projection entering said recess, whereby to restrict the range of independent movement of said companion jaws.

2. A tool of the plier type having three work gripping jaws with one jaw opposing the other two jaws and the latter having similar gripping action on the former, said jaws having handles projecting rearwardly therefrom with the handles of the two jaws substantially parallel and

crossing the handle of the single jaw at opposite sides thereof, means to restrict the range of pivotal movements of the two jaws relative to each other, and a pivotal connection between all of said handles at the crossing point permitting pivotal movement of any handle and its jaw relative to the others, whereby when a gripping force is applied to the jaws through the handles the jaws may assume positions suitable for the shape of the gripped work.

3. A tool of the plier type including a main jaw, a pair of substantially parallel independent auxiliary jaws disposed in side by side relation and movable into and out of cooperative gripping engagement with said main jaw, means for movably connecting all of said jaws together, and handle means connected to each of said jaws for controlling the movements thereof relative to each other, the handles of the auxiliary jaws being opposed to the handle of the main jaw.

4. A tool of the plier type including a main jaw, a pair of substantially parallel independent auxiliary jaws disposed in side by side relation and movable into and out of cooperative gripping

engagement with said main jaw, cooperating means carried by said auxiliary jaws for limiting the movements thereof relative to each other, means for movably connecting all of said jaws together, and handle means carried by each of said jaws for controlling the movements thereof relative to each other, the handles of the auxiliary jaws being opposed to the handle of the main jaw.

5. A tool of the plier type including a main jaw, a pair of substantially parallel independent auxiliary jaws disposed in side by side relation and movable into and out of cooperative gripping engagement with said main jaw, said auxiliary jaws having a combined width substantially equal to the width of the main jaw, cooperating means carried by said auxiliary jaws for limiting the movements thereof relative to each other, means for movably connecting all of said jaws together, and handle means carried by each of said jaws for controlling the movements thereof relative to each other, the handles of the auxiliary jaws being opposed to the handle of the main jaw.

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