

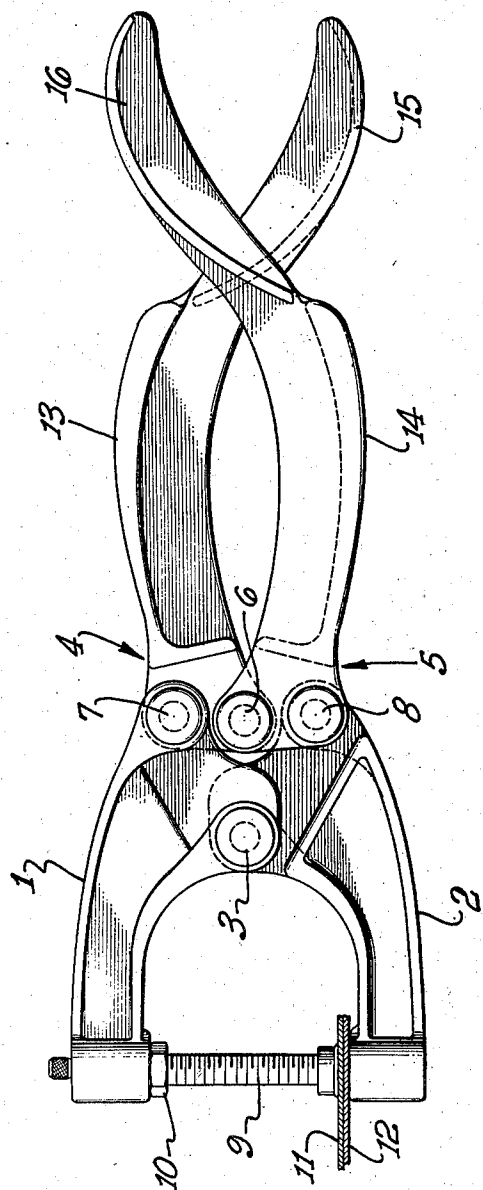
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SELF-LOCKING PLIER WITH CROSSED HANDLES

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SELF-LOCKING PLIERS WITH CROSSED HANDLES

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This invention relates to clamping pliers such as are used to clamp parts together while they are being permanently secured to each other as by bolting or welding, and a general object of the invention is to increase the ease of manipulation of such pliers.

A more specific object is to provide a clamping plier that is more easily released out of clamping position.

Clamping pliers of the type to which this invention relates include a toggle mechanism interposed between the jaws and the handles, so that when the handles are squeezed together to clamp the jaws against the work, the toggle mechanism moves into an over-center position which prevents retraction of the jaws when the handles are released, although the jaws can be retracted at any time by forceably spreading the handles apart.

A serious disadvantage of prior clamping pliers with which I am familiar is that it is not easy to supply the handle-separating force with one hand, and the workmen often find it necessary to use both hands to pull the handles apart. This slows up the work materially in many situations where the workman would normally be using one hand to perform some other operation.

In accordance with the present invention I provide clamping pliers that can always be easily released by simply extending and crossing the outer ends of the handles so that squeezing the extended ends together separates the main portions of the handles and releases the jaws.

A full understanding of the invention may be had from the following detailed description of the particular embodiment of the invention shown in the drawing.

The single figure of the drawing is a side view of a clamping plier shown in clamping engagement with a pair of sheet members which are being held together with the plier.

The plier comprises a pair of jaws 1 and 2, respectively, which are hinged together by a pin 3 for opening and closing movement, which opening and closing movement is effected by a pair of handles 4 and 5, respectively.

The handles are pivoted to each other by a pivot pin 6. In addition, the handle 4 is pivotally connected to the jaw 1 by a pin 7, and the handle 5 is pivotally connected to the jaw 2 by a pin 8. The three pins are so located that just as the handles move into fully closed position, the axis of pin 6 moves past the line extending from the center of pin 7 to the center of pin 8, so that the reactive force exerted by the work on the jaws

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tends to keep the handles closed instead of spreading them apart.

It is necessary that the work be tightly clamped when the handles are in fully closed position, and to this end the jaw 1 is provided with a screw 9, the head of which engages the work and presses it directly against the other jaw 2. A lock nut 10 is provided to retain the screw 9 in a desired position of adjustment. In the drawing the plier is shown gripping a pair of work sheets 11 and 12 together.

As so far described, the plier is in accordance with prior practice, in which the handles 4 and 5 have gripping portions 13 and 14 for engagement by the hand of the operator to squeeze the handles together. To release the prior clamps with one hand, it was necessary to grip one of the portions 13 or 14 with palm and thumb of the hand while pressing outward against the inside edge 17 of the other portion with the backs of the fingers. Often it was impossible to apply sufficient force in this way to release the plier.

In accordance with the present invention, I simply extend the handles beyond the portions 13 and 14 thereof, to form additional portions 15 and 16, respectively, which cross each other when the plier is closed, so that squeezing the portions 15 and 16 together opens the jaws. The great advantage of this arrangement is that it is very easy to squeeze the portions 15 and 16 together with one hand, whereas it is relatively difficult to separate the handle portions 13 and 14 with one hand.

The handle portions 15 and 16 are, of course, so constructed that they can pass each other, since they must do so to permit the jaws to fully open.

Various departures from the exact construction shown can be made without departing from the invention which is to be limited only to the extent set forth in the appended claims.

I claim:

1. A self-locking plier comprising: a pair of jaw members and means hingedly connecting them together for opening and closing movement; a pair of handles and means connecting them to each other for swinging movement between open and closed positions; means coupling said handles to said jaw members for closing of said jaw members in response to squeezing of said handles together, said means being so constructed and arranged that squeezing of said handles together into a predetermined position locks the handles against opening movement by an opening force applied to said jaw members;

and said handles having extensions thereon constituting auxiliary hand grips, said extensions being of shape such that they cross each other and separate when said handles are squeezed together into said predetermined position, whereby said handles can be moved out of fully closed position and unlocked by squeezing said hand grips together.

2. A plier according to claim 1 in which said handles are spaced apart approximately the same distance that the auxiliary hand grips are, when said handles are in said predetermined position.

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