June 9, 1953 C. PETERSEN 2,641,149

GRIPPING TOOL

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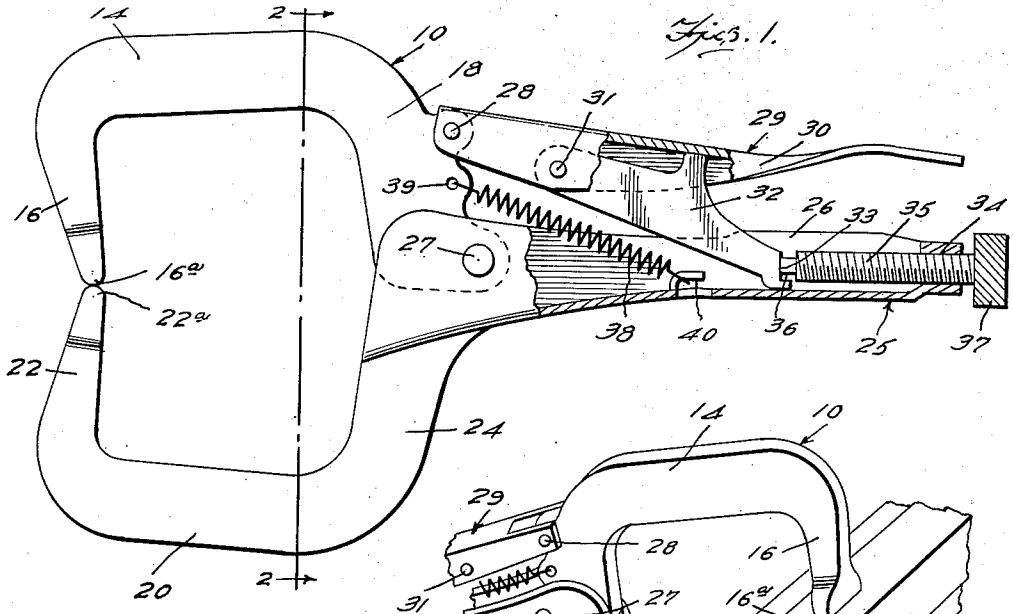

Fig. 1.

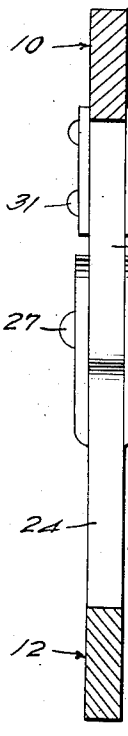

Fig. 2.

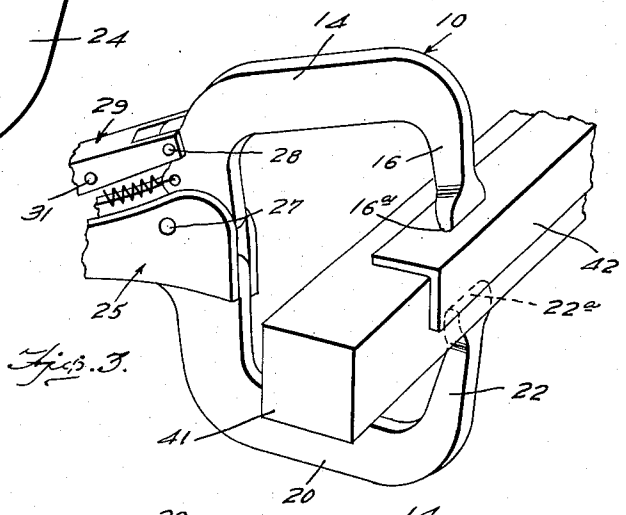

Fig. 3.

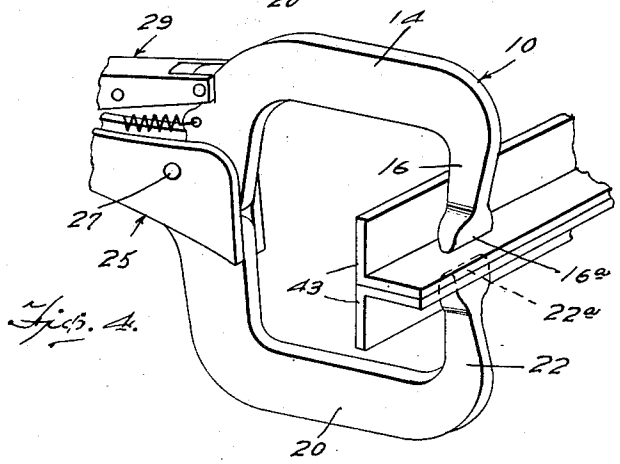

Fig. 4.

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GRIPPING TOOL

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1 Claim. (Cl. 81—84)

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This invention relates generally to the class of tools and is directed particularly to an improved self locking tool of the plier type.

A principal object of the present invention is to provide an improved hand tool which is designed to perform the functions of a C-clamp without having the disadvantages of such clamp in requiring the use of two hands for its application and removal from a piece of work.

In jobs requiring the use of a clamp or a number of clamps of the C type where two or more pieces of work are to be secured together for the performance of some action in connection therewith such as welding, drilling or the like it is necessary to hold the clamp in position with one hand while tightening the screw with the other hand. This requirement for the use of both hands also applies in removing the clamp and accordingly if it is necessary to maintain two pieces of material against relative movement while the clamp is being released and shifted the job becomes particularly difficult for one workman because of this fact since the single workman must use both of his hands to disengage and reset the clamp.

In the light of the foregoing it is a particular object of the present invention to provide a novel tool having clamping jaws corresponding to the clamping jaws of a C-clamp and having a general form like a C-clamp, with means for opening and closing the clamp and effecting the locking of the same when in closed position by the use of one hand only.

A further and more specific object of the invention is to provide a tool of the above stated type wherein the jaws comprise two substantially C-shaped members with one leg of each member being connected with an actuating handle and such handles being pivotally coupled together to provide a plier type construction, the ends of the other legs of the two jaw members being brought together in gripping relation upon the work, and means being provided in association with the handles for effecting the automatic locking together of the jaws when the same have been forced together on the work.

Other objects and advantages of the invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described

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since obvious modifications will occur to a person skilled in the art.

In the drawing:

Figure 1 is a view in side elevation of a tool constructed in accordance with the present invention with portions broken away.

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1.

Figures 3 and 4 illustrate two applications of the tool.

Referring now more particularly to the drawing it will be seen upon reference to Figure 1 that the tool of the present invention comprises the two jaw members or units 10 and 12, each of which is substantially in the form of a letter C.

The unit 10 comprises the long back bar 14 and the forward and rear legs 16 and 18 respectively which are integral, substantially right angular continuations of the back bar 14.

The jaw unit or member 12, which may be defined as the fixed jaw, is also of substantially the same form or shape as the jaw member 10 in that it comprises the back bar 20 and the forward and rear legs 22 and 24 respectively.

The rear leg 24 of the fixed jaw 12 is rigidly joined to the forward end of a handle 25 which is of channel form and accordingly includes the spaced side flanges 26. At the forward end of the handle 25, the free end of the rear leg 18 of the jaw member 10 is positioned between the flanges 26 and pivotally coupled to the same as indicated at 27, whereby the jaw member 10 is oscillatable or swingable in the plane of the fixed jaw 12 and the jaws are set so that the free ends of the forward legs 16 and 22 may be brought into opposed abutting relation. The ends of these legs are widened slightly to form the gripping lips 16a and 22a as shown. Between these lips the work to be held is positioned.

At the back edge of the rear leg 18 of the jaw member 10 there is pivotally attached as at 28, an end of a hand lever 29.

Rearwardly of the pivot 28 the hand lever, which is also of channel cross section, has secured between the side flanges 30 thereof, a pivot pin 31. This pivot pin lies in a line extending longitudinally of the tool, passing between the pivots 27 and 28 and the pivot 31 is rearwardly of the other two pivots so that the three pivots form a triangular arrangement as shown.

Interposed between the handle 25 and lever 29 which constitutes a second handle which is movable relative to the handle 25, is a toggle link 32 which has one end positioned between the flanges 30 of the lever 29 and pivoted on the pivot 31

while the opposite end of the toggle link extends rearwardly and into the channel of the handle **25** and is formed with a rearwardly directed shoulder **33**.

The back end of the channel forming the handle **25** is closed and provided with a threaded passage **34** through which is threadably extended the adjustment screw **35**, the forward end of which, designated **36**, bears against the shoulder **33** of the toggle link. The rear end of the screw **35** carries a knurled head **37** which is rearwardly of the handle as shown so that the screw may be conveniently turned to force the toggle link **32** forwardly thereby applying thrust to the pivot **28** and causing the jaw arms **16** and **22** to be moved together. Reverse movement of the screw **35** permits the opening of the jaws and the opening action is facilitated by a spring **38** which has one end attached as at **39** to the back edge of the leg **18** between the pivot **28** and the pivot **27**, while the other end of the spring extends down into the channel of the handle **25** and is secured thereto by means of the hook **40** or in any other suitable manner.

The toggle link coupling the handles **25** and **29** is such, as will be readily apparent, that when the jaw lips **16***a* and **22***a* are properly set to lightly grip a piece of work between them, the application of pressure to the handle lever **29** to force its free rear end toward the handle **25**, will cause the pivot center **31** to move inwardly toward the handle **25** slightly beyond a line extending between the pivot **28** and the point of contact of the screw end **36** against the shoulder **33**. In this manner the jaws will be held locked in gripping relation on a piece of work interposed between them.

Figures 3 and 4 illustrate two applications of the present tool to work where two pieces are to be held together.

In Figure 3 there is shown a bar **41** on which is placed a piece of angle iron **42** which receives a corner of the bar in the angle so that one flange of the angle lies against one face of the bar and the other flange of the angle lies against the adjacent right angular positioned face of the bar.

The jaws **10** and **12** are opened to the proper position to just receive between them the bar **41** and one flange of the angle iron **42** as shown. By then applying pressure to the lever **29** in the manner previously stated the handles **25** and **29** will be forced into locked position so that the two elements **41** and **42** will be firmly locked together. The necessary work may then be performed upon the element such as welding the two together or drilling or any other operation and if it should become necessary to then shift the gripping tool, particularly where the members **41** and **42** are not secured together against relative movement, the two pieces of work can be held in one hand while the tool is opened and shifted and then closed again in another position without danger of having the two pieces of work shift one with relation to the other. In a similar operation using standard C-clamps it will be readily seen that while the clamp might be released with one hand, the use of two hands would be required to hold the clamp body in its new position while the screw is being tightened and thus the possibility of shifting of the parts is increased.

In Figure 4 an illustration is given of the manner in which the jaws of the tool can be made to straddle two wide pieces of work in order to secure together more closely related parts. As here shown two pieces of angle iron **43** are placed side by side with two flanges of the pieces extending in opposite directions while the other two flanges lie back to back. In an operation where it might not be possible to apply clamps to the juxtaposed flanges at the edges remote from the two edge to edge related flanges, the present tool can straddle the edge to edge flanges as illustrated in order to bring the lips **16***a* and **22***a* of the jaws into clamping relation against the juxtaposed flanges and after the jaws have been so placed the tool can be firmly locked to hold the pieces of work together merely by forcing the handles **25** and **29** together in the manner previously described.

From the foregoing it will be readily apparent that a tool constructed in accordance with the present invention has many advantages over ordinary types of clamps such as ease and quickness of application of the tool to the work and in addition, after the jaws have once been set to grip two articles, they can be opened and closed many times for shifting or replacement on other articles of the same size without having to change the adjustment of the jaws whereas with screw clamps the jaws must be separated and readjusted for tightness each time the clamp is removed from a piece of work and replaced.

I claim:

A gripping tool of the character set forth comprising two substantially C-shaped jaws disposed in a common plane with their open sides opposed, each jaw having a back bar and forward and rear legs extending from the ends of the back bar, a handle having one end rigidly fixed to the rear leg of one jaw, a pivot coupling between the end of the rear leg of the outer jaw and the said end of said handle, a handle lever, a pivot coupling between one end of said lever and the rear leg of said other jaw at a location a substantial distance outwardly from the pivot coupling between the end of the said leg of said other jaw and the said end of the fixed handle, the free ends of the forward legs of the jaws being positioned to be brought into opposing contacting relation, and a toggle link coupling between the handle and the handle lever for locking the jaws against separation when the handle and handle lever are forced together, said C-shaped jaws being of flat form and each of said forward legs at its free end being enlarged laterally from each side of the leg to provide transversely extending gripping lips of substantial length, each of said gripping lips being tapered toward a rounded work engaging edge.

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