

Nov. 11, 1952

R. J. KELLY

2,617,458

TOGGLE ACTUATED HAND GRIP CLAMP OR WRENCH

Filed Feb. 2, 1950

2 SHEETS—SHEET 1

FIG. 1.

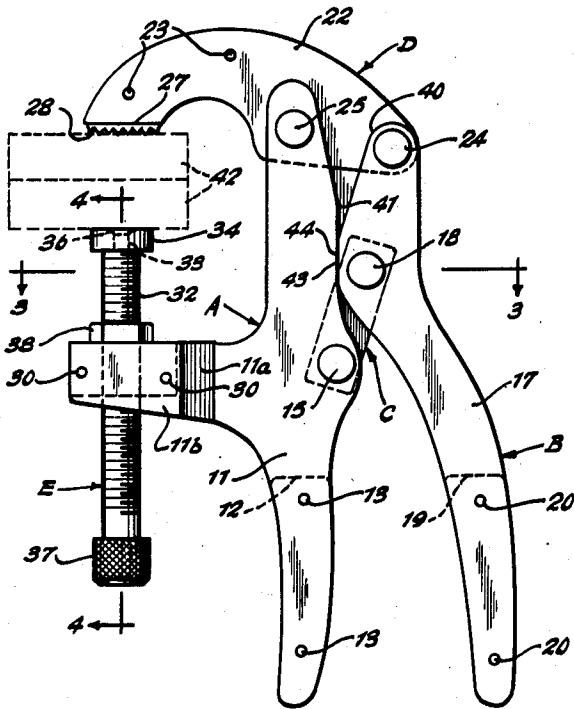


FIG. 2.

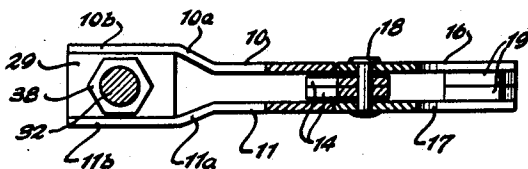
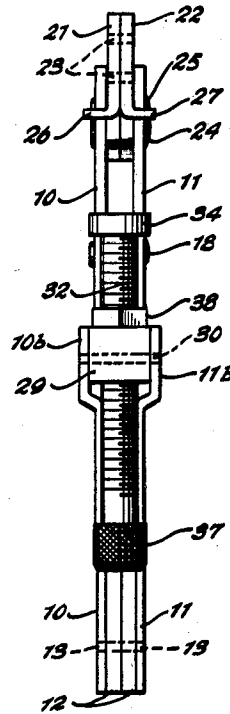
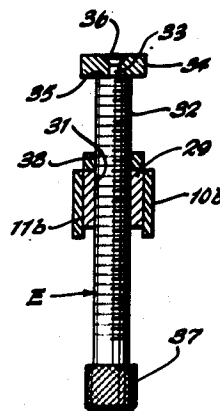


FIG. 3.

FIG. 4.



INVENTOR  
ROBERT J. KELLY.

BY

Thomas F. Healy

ATTORNEY

Nov. 11, 1952

R. J. KELLY

2,617,458

TOGGLE ACTUATED HAND GRIP CLAMP OR WRENCH

Filed Feb. 2, 1950

2 SHEETS—SHEET 2

FIG. 5.

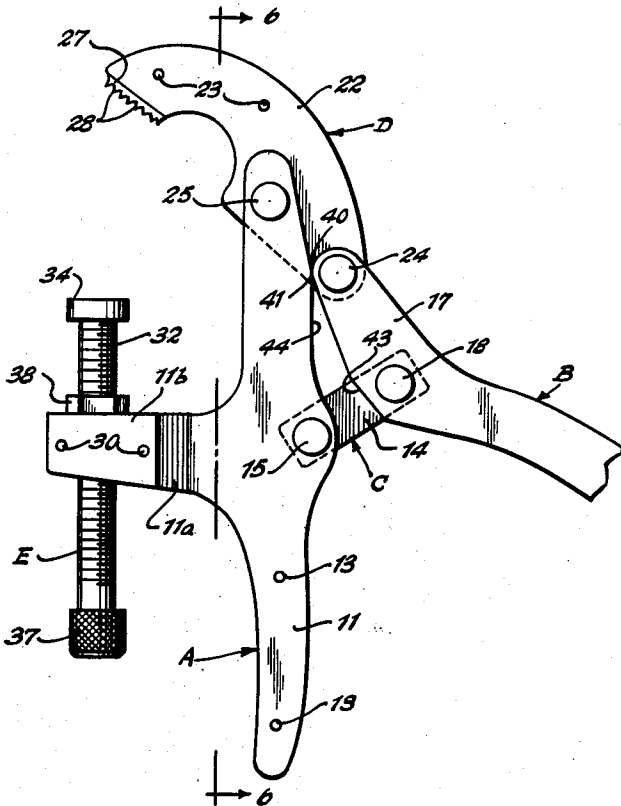


FIG. 6.

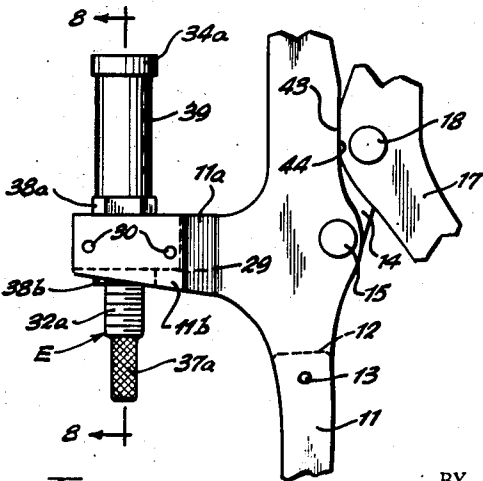
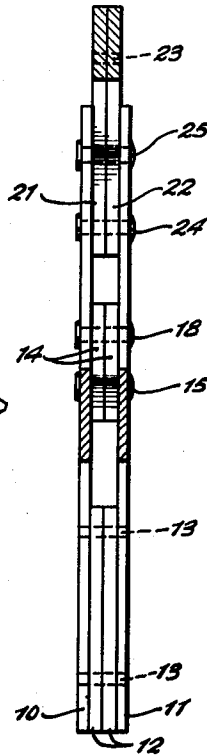


FIG. 7.

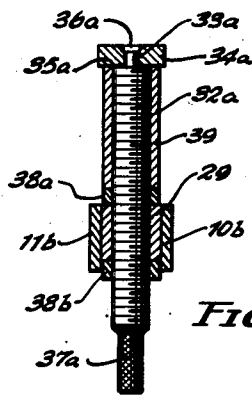


FIG. 8.

INVENTOR

ROBERT J. KELLY.

BY

Thomas F. Healy  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,617,458

## TOGGLE ACTUATED HAND GRIP CLAMP OR WRENCH

Robert J. Kelly, Waterford, Conn.

Application February 2, 1950, Serial No. 141,937

2 Claims. (Cl. 144-302)

1

The present invention relates to improvements in a toggle actuated hand grip clamp or wrench and has for an object to provide an improved wrench of this type comprising a pair of relatively movable jaws for holding an object therebetween and means for maintaining the jaws in either their operative or inoperative position without the employment of manual pressure by the operator.

Another object of the present invention is the provision of an improved structure in which substantially all of the component parts are made from stampings of steel or the like held together by rivets or the like. This arrangement effects a substantial savings in the cost of manufacture as compared to the present practice of making such wrenches from castings which must be milled to make possible the mounting and fitting together of the various parts of such prior art structures.

A further object of the present invention is to provide an improved wrench of this character in which the above objects are accomplished without sacrificing strength and durability.

A still further object of the present invention is to provide an improved device of this kind which can be used as a clamp on various types of work, such as welding, woodworking, drill press work, sheet metal work, aircraft production and the like.

In one of its broadest aspects the present invention contemplates the provision of an improved toggle actuated hand grip wrench comprising a stationary handle or frame including a pair of spaced apart stampings having a hand grip portion, inserts between the hand grip portions of the stampings and secured thereto for holding said stampings in spaced apart relation, a block mounted between said stampings and having a threaded opening therethrough, a link pivotally connected at one end to said frame, a movable handle pivotally connected to the other end of said link and comprising a pair of spaced apart stampings having a hand grip portion, inserts between said hand grip portions of the handle stampings and secured thereto for holding said movable handle stampings in spaced apart relation, a jaw movably mounted on said frame and pivotally connected to said movable handle, and a spindle threadedly received by the opening in said block, said movable jaw and said spindle having opposed work engaging surfaces.

With the foregoing and other objects in view, the invention will be hereinafter more fully described and more particularly pointed out in the appended claims.

2

In the drawings, in which the same parts are denoted by the same reference numerals throughout the several views:

Figure 1 is a side elevational view in fully closed position of an improved wrench constructed in accordance with the present invention;

Figure 2 is a front elevational view of the same;

Figure 3 is a sectional view taken on the line 3-3 of Figure 1 and looking in the direction of the arrows;

Figure 4 is a sectional view taken on the line 4-4 of Figure 1 and looking in the direction of the arrows;

Figure 5 is a side elevational view of the improved wrench in fully opened position;

Figure 6 is a sectional view taken on the line 6-6 of Figure 5 and looking in the direction of the arrows;

Figure 7 is a fragmentary side elevational view of the improved wrench illustrating a spindle especially adapted for welding operations; and

Figure 8 is a sectional view taken on the line 8-8 of Figure 7 and looking in the direction of the arrows.

Referring more particularly to the drawings, A generally indicates a stationary or fixed handle or frame, B a movable handle, C a link movably connecting the handles A and B, and D a movable jaw connected to the handles A and B.

The frame A comprises a pair of substantially T-shaped members 10 and 11 which may be stampings of steel or the like. A pair of inserts 12 of aluminum, plastic or the like are disposed between the members 10 and 11 at the lower portion thereof to maintain members 11 and 12 in spaced apart relation. Rivets or the like 13 extend through the members 10 and 11 and the inserts 12 to retain them in assembled relation. The inserts 12 are substantially flush with the edges of the lower portions of the members 10 and 11 to form therewith a hand grip.

The link C comprises a pair of substantially flat rectangular shaped bars 14, the lower end portions of which are received between the members 10 and 11 and are pivotally mounted thereon by a pivot pin 15 in the form of a rivet or the like intermediate the opposite ends of the head portions of the members 10 and 11. The upper end portions of the bars 14 are received between stampings 16 and 17 of steel or the like which comprise the movable handle B.

The upper end portions of the bars 14 are pivotally connected to the stampings 16 and 17 of the handle B by a pivot pin 18 which may be in the form of a rivet or the like. The stampings

3

16 and 17 are held in spaced apart relation by inserts 19 which may be made of aluminum, plastic or the like. The inserts 19 are secured in position at the lower end portions of the stampings 16 and 17 by rivets or the like 20. The vertical edges of the inserts 19 are substantially flush with the edges of the stampings 16 and 17 to form therewith a hand grip.

The movable jaw D comprises a pair of substantially arcuate shaped stampings 21 and 22 of steel or the like which are held together by rivets or the like 23. The rear end portions of the stampings 21 and 22 are received between the upper end portions of the stampings 16 and 17 and are pivotally connected thereto by a rivet or the like 24. The intermediate portions of the stampings 21 and 22 forwardly of the rivet 24 are received between the upper end portions of the members 10 and 11 and are pivotally connected thereto by a pivot pin 25 which may be in the form of a rivet or the like. The forward end portions of the stampings 21 and 22 are bent laterally in opposite directions to provide laterally extending substantially semicircular lugs 26 and 27 which together provide a work engaging surface. The lower edges of the lugs 26 and 27 may be provided with milled teeth 28 to increase the gripping ability of the lugs 26 and 27.

As illustrated more clearly in Figure 3 of the drawing, the leg portions of the members 10 and 11 of the frame A diverge forwardly as at 10a and 11a for a short distance and then continue to provide the substantially parallel spaced apart portions 10b and 11b. A block 29 of steel or the like is disposed between the parallel portions 10b and 11b of the frame A and is secured thereto by rivets 30 or the like. The block 29 is provided with a substantially centrally disposed vertically extending threaded opening 31 which threadedly receives a screw threaded shank 32 of a spindle, generally indicated at E. The upper end portion 33 of the shank 32 is of reduced diameter and rotatably receives a cap 34. The provision of the reduced portion 33 forms a shoulder 35 which supports the cap 34. The upper end of the portion 33 is peened over to provide a retaining head 36 for the cap 34. The upper surface of the cap 34 is disposed in opposed relation to the under surfaces of the lugs 26 and 27 to provide in cooperation therewith a work engaging surface. The lower end portion of the spindle E may be of larger diameter than the shank 32 as indicated at 37 and may be knurled for affording a firm purchase for adjusting the spindle in the block 29. A lock nut 38 is threadedly received by the shank 32 of the spindle above the block 29 for locking the spindle in adjusted position.

In Figures 7 and 8 of the drawings is illustrated a spindle E' which is particularly adapted for use during welding operations. The spindle E' has a threaded shank 32a which is threadedly received by the block 29. The upper end portion 33a of the shank 32a is of reduced diameter and rotatably receives a cap 34a. The provision of the reduced portion 33a forms a shoulder 35a which supports the cap 34a. The upper end of the portion 33a is peened over to provide a retaining head 36a for the cap 34a. The lower end portion of the shank 32a is of reduced diameter as indicated at 37a so that the spindle E' may be entirely removed from the block 29 to permit of the replacement of the spindle. The reduced portion 37a may be knurled to provide a firm purchase for adjusting the spindle E' in the block 29. Lock nuts 38a and 38b are threadedly re-

4

ceived by the shank 32a above and below the block 29, respectively, for retaining the spindle in adjusted position. A protective sleeve or tube 39 of copper or the like encircles the upper end portions of the shank 32a of the spindle E'. The tube 39 is confined between the cap 34a and the lock nut 38a so that the tube will protect the threads on the upper portion of the shank 32a.

In the use of the device the movable handle B will be swung to the fully open position illustrated in Figure 5 of the drawing. It will be noted that when in its fully open position the upper inner end surfaces 40 of the stampings 16 and 17 will engage the opposed adjacent edges of the members 10 and 11 as at 41. This inter-engagement of the frame A and the movable handle B will prevent the movement of the pivots 15 and 18 of the link C past dead center, but will permit these pivots to assume a position in which the movable handle B cannot be accidentally moved to the closed position of the jaw D. When the parts are in the position illustrated in Figure 5 of the drawing the pieces of work indicated at 42 in phantom lines in Figure 1 of the drawing can be inserted between the movable jaw D and the cap 34.

The operator will now move the handle B towards the fixed frame A by squeezing these two parts together until the work 42 is firmly gripped between the lugs 26 and 27 and the cap 34, as shown in Figure 1 of the drawing. The desired operations can now be carried out upon the work 42. The space between the lugs 26 and 27 of the jaw D and the cap 34 can be varied by loosening the lock nut 38 and rotating the spindle 32 in the desired direction to move the cap 34 towards or away from the lugs 26 and 27. When the cap has been moved to the desired position the lock nut 38 is again screwed down tight against the upper surface of the block 29.

The stampings 16 and 17 are of greater width adjacent the pivot 18 and are provided with substantially flat portions 43 which are adapted to engage the opposed edges of the stampings 10 and 11 as at 44 when the handle B is moved to its fully closed position as shown in Figure 1 of the drawing. The portions 43 and 44 of the frame A and the handle B thus cooperate to limit the movement of the handle B and to assure that the gripping faces of the lugs 26 and 27 will be parallel to the gripping surface of the cap 34 so that the work 42 will be firmly gripped by substantially the entire surfaces of the lugs 26 and 27.

When it is desired to use the wrench in connection with welding or the like operations, the spindle E' illustrated in Figures 7 and 8 of the drawing may be employed. The adjustment of this spindle E' with respect to the movable jaw D is effected by loosening the lock nut 38b and rotating the spindle E' in the block 29 in the desired direction and then tightening the lock nut 38b. The tube 39 will protect the threads of the shank 32a against the hot sparks or the like during the welding operation. This is highly desirable as these threads would soon be burnt away and the spindle would have to be replaced.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What I claim is:

1. An improved toggle actuated hand grip wrench comprising a stationary frame including

5

a pair of spaced apart stampings, means for maintaining said stampings in spaced apart relation, a movable handle including a pair of spaced apart stampings, means for maintaining said handle stampings in spaced apart relation, a link comprising a pair of bars one end portion of which is received between the frame stampings and pivotally attached thereto and the other end portion of which is received between the handle stampings and is pivotally attached thereto, a movable jaw having a work engaging surface and comprising a pair of stampings one end portion of which is received between the handle stampings and is pivotally connected thereto and the intermediate portion of which is received between said frame stampings and is pivotally connected thereto, a block having a screw threaded opening extending therethrough and disposed between said frame stampings and secured thereto, a spindle threadedly received by the opening in said block and having a work engaging surface in opposed relation to said jaw, and locking means for securing said spindle in adjusted position, said frame and handle having cooperating portions which engage one another when the handle is moved to its fully open position to limit the movement of the movable handle in its opening direction, said frame and handle also having cooperating portions which engage one another when the handle is moved to its fully closed position to limit the closing movement of the handle and to maintain the work engaging surface of the movable jaw spaced from and substantially parallel to the work engaging surface of the spindle.

2. An improved toggle actuated hand grip wrench, comprising a substantially T-shaped stationary frame having a head portion and a leg portion and including a pair of spaced apart stampings, a block having a screw threaded opening extending therethrough and disposed between said frame stampings in the leg portion thereof

6

and secured thereto, a spindle threadedly received by the opening in said block and having a work engaging surface, locking means for securing said spindle in adjusted position, a movable jaw having its intermediate portion received between the frame stampings at one end of the head portion thereof and pivotally mounted thereon, said jaw having a work engaging surface one end portion thereof and cooperating with the work engaging surface of said spindle for holding a piece of work, a movable handle comprising a pair of spaced apart stampings, the other end portion of said movable jaw being received by the space between said handle stampings at one end thereof and pivotally connected thereto, and a link having one end portion received by the space between the frame stampings at the intermediate part of the head portion thereof and pivotally connected thereto, the other end portion of said link being received by the space between the handle stampings inwardly of and adjacent to the pivotal connection of the movable jaw to the movable handle and pivotally connected to said handle stampings, the pivots of said link being on dead center when the handle is moved to fully open position.

ROBERT J. KELLY.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
35 542,035	Wilever	July 2, 1895
732,858	Irland	July 7, 1903
1,056,693	Krahulic	Mar. 18, 1913
1,504,401	Tull et al.	Aug. 12, 1924
2,327,368	Olson	Aug. 24, 1943
40 2,366,015	Fischer	Dec. 26, 1944
2,501,238	Sarsgard et al.	Mar. 21, 1950
2,502,804	Spencer	Apr. 4, 1950