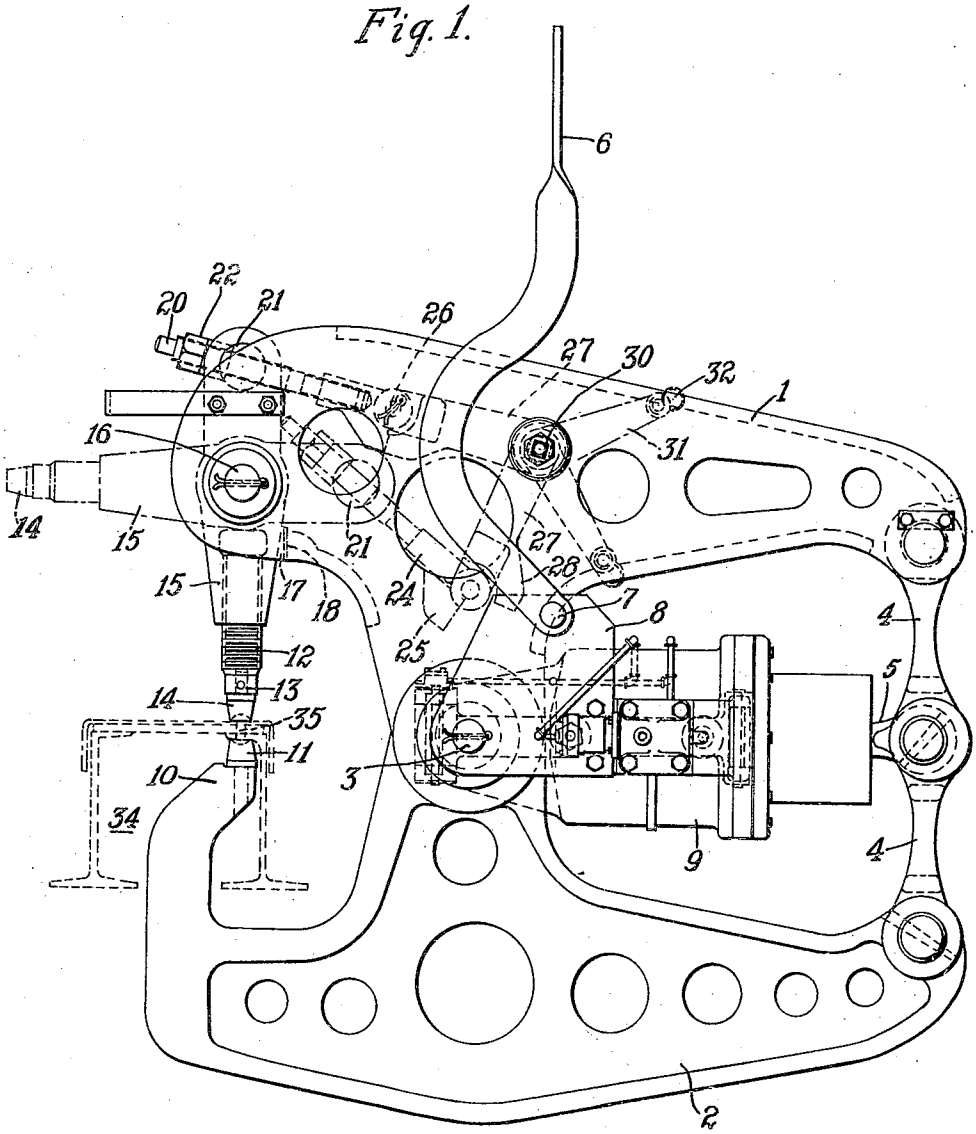
May 12, 1931. K. R. HAMMERSTROM ET AL 1,805,282

PINCH RIVETER

Filed Nov. 4, 1927 2 Sheets-Sheet 1

Fig. 1.




H. T. Procter

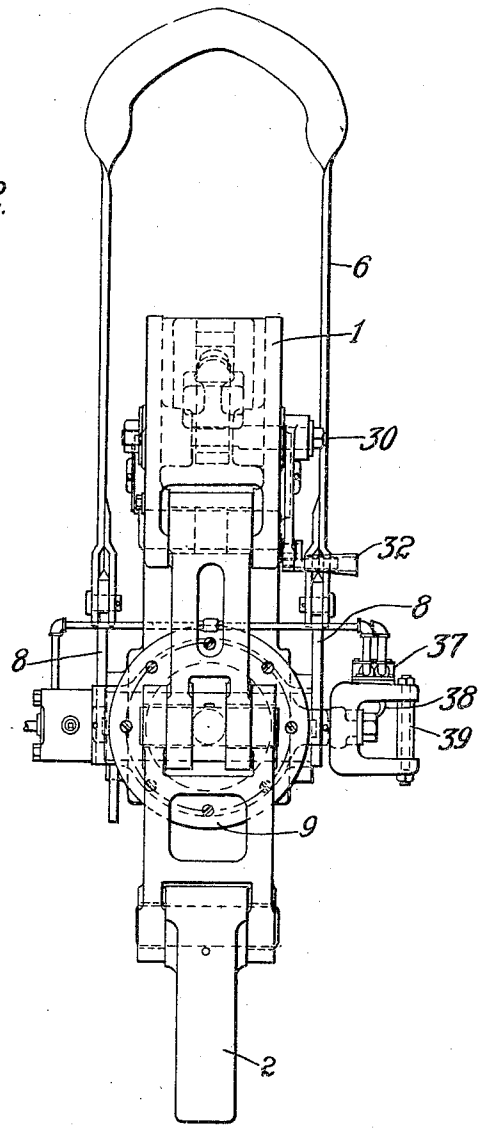
INVENTORS
Karl R. Hammerstrom
and
Lars H. Vold
William B. Jaspert
BY
ATTORNEYS.

May 12, 1931. K. R. HAMMERSTROM ET AL 1,805,282

PINCH RIVETER

Filed Nov. 4, 1927 2 Sheets-Sheet 2

Fig. 2.




H. T. Procter

INVENTORS
Karl R. Hammerstrom
and Lars H. Vold
BY William B. Jaspert.
ATTORNEYS.

Patented May 12, 1931

1,805,282

# UNITED STATES PATENT OFFICE

KARL R. HAMMERSTROM, OF HAMMOND, INDIANA, AND LARS H. VOLD, OF BUTLER, PENNSYLVANIA

## PINCH RIVETER

Application filed November 4, 1927. Serial No. 231,016.

This invention relates to riveting machines more particularly to what are known as pinch riveters which are suspended from a crane to render them portable.

It is among the objects of this invention to provide a pinch riveter of the type in which the riveting dies are mounted in cooperative alinement on a pair of levers which are pivotally arranged in a manner to bring the riveting dies in intimate engagement when the levers are subjected to movemet about their pivotal connection in one direction and to separate the dies when the levers are subjected to movement in the opposite direction; and which shall embody means for displacing one of the die elements from its working position to render the dies accessible for deep channel or other structural elements to be acted upon.

Another object of the invention is to provide a riveting machine of the above designed character in which one of the die members is pivotally supported in a manner to adapt it for angular movement about its support for the purpose of bringing it into and out of alinement with its cooperating die member and which shall further be provided with manually operated means for effecting the angular movement of the die member.

Another object of the invention is to provide a riveting machine in which a movable die member will be seated against its supporting frame in its operative position and which shall be movable through a toggle member to a position transversely of its normal position.

Still another object of the invention is to provide a riveting machine of the above designed character which shall be of simple, compact and durable mechanical construction and which shall be especially designed to facilitate its engagement with the work to be acted upon.

In the accompanying drawings constituting a part hereof and in which like reference characters designate like parts, Fig. 1 is a side elevational view of a riveting machine embodying the principles of this invention and Fig. 2 is a rear elevational view thereof.

Referring to the figures of the drawings, the riveting machine comprises a pair of movable arms 1 and 2 which are pivotally connected by a bolt 3 and joined at their free ends by links 4 which are connected to a piston member 5 of a fluid pressure actuating device, the arm members so connected being constituted levers which are operated by the movement of the piston member to actuate them.

The levers 1 and 2 are adapted to be suspended from a hanger strap 6 which is pivotally connected at 7 to a pair of side plates 8 which are bolted to cylinder 9 to support the latter. The pin 7 is off-set from pin 3 to a position which is approximately the center of gravity of the entire device, this being the point at which the levers 1 and 2 are relatively movable without interference or binding. By supporting the mechanism in the manner explained, the entire riveter is suspended from the strap 6.

The riveting or pinching end of lever 2 is provided with a permanent anvil 10 having an opening therein for receiving the shank of a riveting die 11 which is removably mounted to be interchangeable with dies of various forms and sizes. Cooperating with the fixed die element 11 is a die holder 12 having a socket or gripping element 13 for securing a die member 14 which cooperates with the die 11 to pinch rivets therebetween.

The holder 12 is mounted in an arm 15 which is pivoted at 16 to the upper lever 1 and which is provided with an off-set portion 17 which engages a shoulder 18 of the lever 1 to maintain it in proper vertical alinement with the longitudinal axis of the die member 11, when the member 15 is disposed in its vertical position. The arm 15 is adapted for angular movement about its pivotal support 16 by a toggle mechanism comprising a lever 20 which projects through an opening in a pin 21 provided in the upper portion of the arm 15 and lever 20 is secured to pin 21 by a nut 22. The pin 21 is adapted for rotary movement in the arm 15 to eliminate binding of the toggle connection when the arm 15 is moved about the pivotal support 16.

The free end of the lever 20 fits into a socket 24 having an off-set shoulder portion

25 and having one end pivotally joined by a pin 26 to a lever 27 which is also provided with an off-set shoulder portion 28 that is adapted to cooperatively engage the shoulder 25 of the member 24 when the toggle is in its straight position as shown in the upper portion of lever 1. With this position of the toggle the arm 15 is in a position in which the die members 11 and 14 are in cooperative alinement.

The toggle lever 27 is secured to a shaft 30 which is rotatable by a crank arm 31 having a handle 32 to render it manually operative. With the handle member 32 in the upper position the toggle is broken and arm 15 is in the position at right angles to the vertical axes of the lower die member to provide a large clearance space above the lower riveting die for the purpose of passing the lower die element underneath the work to be acted upon such as the structural element generally designated at 34, the several parts of which are to be joined by rivets 35. When assembled in this position, the handle 32 is pulled to the lower position shown in Fig. 1 whereby the toggles are brought in co-axial alinement with their shoulders 25 and 28 in engagement, thus bringing the arm 15 in the vertical position against the supporting shoulder 18 of lever 1. In this position the shoulders 25—28 of the toggle constitute a rigid support which together with the shoulder 18 of lever 1 maintains the arm 15 rigidly and against displacement during the riveting operation.

As shown in Fig. 2 the control mechanism for the cylinder 9 comprises a valve mechanism 37 for controlling fluid pressure to the operating cylinder for piston 5 which actuates the levers 1 and 2. The valves 37 are controlled by a trigger 38 which is in proximity to a handle or grip 39. The operating grip and trigger and the handle 32 of the die manipulating toggle are on the same side of the riveter and so arranged as to be readily accessible to the operator.

It is evident from the foregoing description of this invention that the riveting machine made in accordance therewith is adapted for use in riveting structural elements which are ordinarily difficult to reach with the standard forms of riveting machines, and it is further evident that the operating mechanism is so arranged as to facilitate the riveting operation.

Although one embodiment of the invention has been herein illustrated and described it will be obvious to those skilled in the art that various means may be employed for displacing the die members to provide suitable clearance or space for reaching the objects to be riveted without departing from the spirit of this invention.

We claim:

1. A riveting machine comprising in combination a pair of levers, a die holder pivotally mounted on one of said levers, and a die secured on the other of said levers in cooperative alinement with said die holder, and an abutment on said lever for engaging the die holder in its vertical operative position, and a toggle mechanism for moving said holder out of alinement with its cooperating die, said toggle mechanism being provided with abutments for securing the movable die holder against displacement when in its operative position.

2. A riveting machine comprising in combination a pair of levers, a die holder pivotally mounted on one of said levers and a die mounted in the other of said levers in cooperative alinement with the die holder, a toggle link connecting said die holder and provided with abutments for securing said holder against displacement in its operative position, and a hand lever for breaking said toggle whereby the die holder is subjected to angular movement about its pivotal support.

3. A riveting machine as set forth in claim 1 provided with a fluid pressure mechanism, a supporting bracket for pivotally supporting said mechanism and the levers, and a suspension link pivoted to said bracket at substantially the center of gravity of said levers and pressure actuating mechanism.

In testimony whereof, we have hereunto set our hands.

KARL R. HAMMERSTROM.
LARS H. VOLD.