Feb. 28, 1939. E. D. TAYLOR ET AL 2,148,883

RIVET HOLDER

Filed Sept. 2, 1937

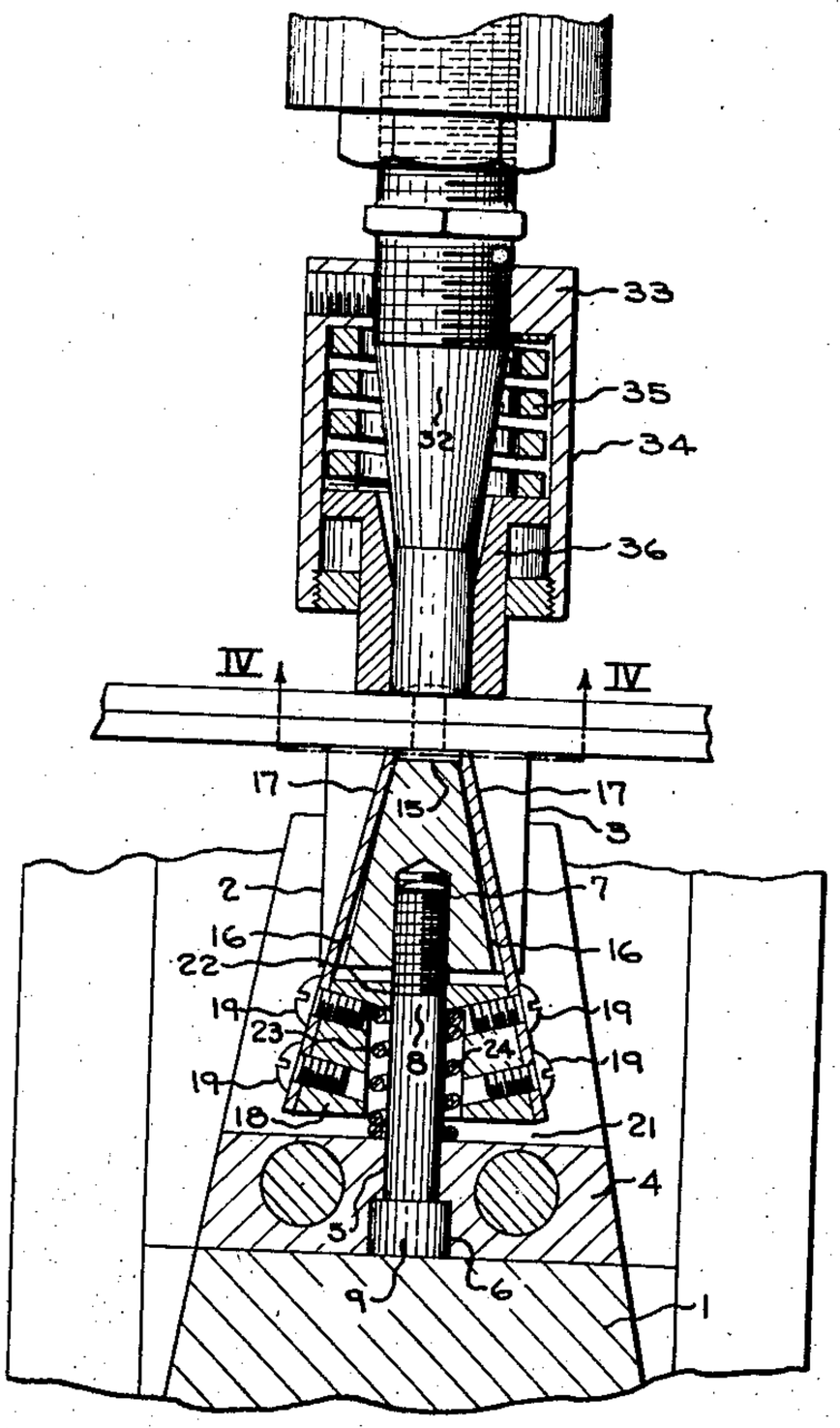

Fig. 1

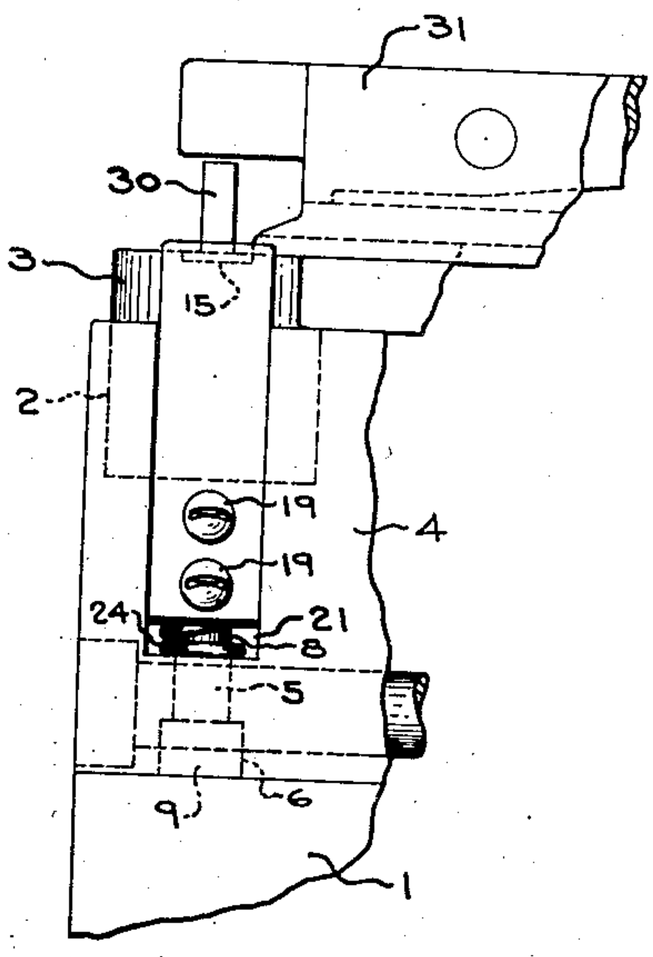

Fig. 2

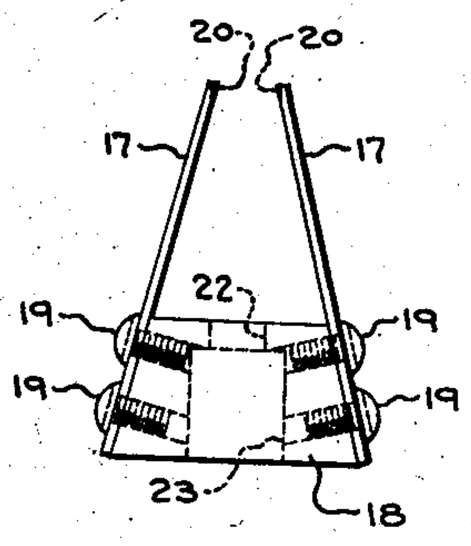

Fig. 3

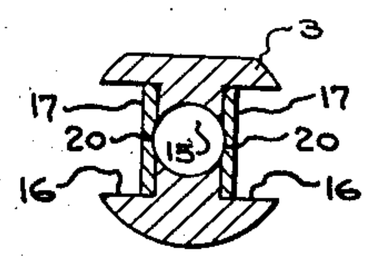

Fig. 4

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Patented Feb. 28, 1939 2,148,883

UNITED STATES PATENT OFFICE

2,148,883

RIVET HOLDER

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Application September 2, 1937, Serial No. 162,118

11 Claims. (Cl. 78—53.5)

This invention relates to riveting machines and more particularly to stationary devices for holding rivets immediately prior to the time at which they are headed up.

In riveting machines numerous devices movable with the rivet set have been devised for holding rivets and from which rivets are forced during the heading up movement of the rivet set. These devices do not permit, however, the placing of work on the rivet as is sometimes desired. Other devices for holding rivets comprise mere recesses or the like in which a rivet is deposited and is maintained in position solely by the action of gravity. The present invention comprises an improvement in the latter type of holder in that instead of a mere recess being provided for receiving a rivet prior to its being headed up, a pair of resilient arms are provided, the action of which in retaining the rivet is far superior to the common gravity retention type of holder.

An object of the invention therefore is to provide in a riveting machine a stationary holder for rivets which exerts a lateral clamping action on a rivet and positions it for being operated on by the rivet set.

Another object of the invention is to provide a pair of resiliently stressed arms between which a rivet is disposed prior to heading up.

A further object of the invention is to provide a novel anvil and rivet holding assembly.

These and other objects will become apparent from the following specification when taken with the accompanying drawing in which

Fig. 1 is a vertical section through the vertical axes of the anvil, rivet holder and set structures.

Fig. 2 is a side elevation of the anvil and rivet holder and the rivet depositing mechanism,

Fig. 3 is a detail view of the rivet holder, and

Fig. 4 is a section through the anvil and rivet holder on the line IV—IV of Fig. 1.

Referring particularly to the drawing the reference character 1 indicates the frame of a riveting machine having a recess 2 in which is mounted an anvil 3. Beneath the anvil 3 is disposed a frame member 4 having disposed therein a bore 5 having an enlarged lower end 6. Passing through the bore 5 and into a tapped bore 7 in the anvil 3 is a bolt 8 having a head 9 seating in the enlargement 6. The function of the bolt 8 is to clamp the anvil 3 in the recess 2.

The anvil 3 as more particularly disclosed in Figs. 1 and 4 is provided at its top with a shallow recess 15 for receiving the head of a rivet as shown in Fig. 2. At each side of the anvil 3 is cut out a channel 16 in which are disposed leaf springs 17. The leaf springs 17 are secured to a block 18 by screws 19, the block 18 being shaped so that the leaf springs 17 converge at their free ends. As shown particularly in Fig. 4 the upper ends of the leaf springs have slight depressions 20 on their inner faces for providing a better contact with a rivet head in the recess 15. To insure firm gripping of the rivet by the springs 17 the channels 16 are slightly closer together than the diameter of the recess 15.

Beneath the anvil 3 is a recess 21 in which the block 18 is disposed. The block 18 is provided with a bore 22 having at its lower end an enlargement 23. The anvil securing bolt 8 passes freely through the enlargement 23 and the bore 22. As shown particularly in Figs. 1 and 2 the recess 21 is of sufficient depth to permit a limited vertical movement of the block 18. Disposed within the enlargement 23 and about the bolt 8 is a helical spring 24 which is continuously under stress and bears against the bottom of the recess 21 and urges the block 18 upwardly against the bottom side of the anvil 3. As a result the leaf springs 17 are yieldably held upwardly but upon the exertion of downward force by the work during riveting as shown in Fig. 1 they are moved downwardly against the action of the spring 24. It will be observed from Fig. 1 that there is sufficient clearance between the bottom of the block 18 and the bottom of the recess 21 to permit continued downward movement of the springs 17 even after they have been moved downwardly to a position flush with the top of the anvil 3. This feature is to prevent damage to the springs 17 in the case of an accident as for instance the disposition of a rivet between the top of a spring 17 and the set 32.

The rivet 30 as shown in Fig. 2 is disposed in the depression 15 and between the ends of the leaf springs 17 by a carrier 31 which is more fully disclosed in the copending application of Harold A. Tomkins, Serial No. 53,404 filed December 7, 1935. It is contemplated, however, that any suitable mechanism may be employed for the purpose of positioning the rivet 30 as shown.

A rivet set 32 supported and operated in a manner well known in the art is disposed above the anvil 3. It is provided with a conventional stripper 33 which comprises a casing 34 mounted on the set 32 having disposed therein a helical spring 35 yieldably bearing against a slidable sleeve 36 through which the set 32 passes.

In operation of our invention the rivet 30 is placed in the depression 15 and is gripped by the

leaf springs 17. The placing carriage 31 or whatever mechanism is used to place the rivet 30 is then withdrawn and the work is disposed over the rivet. The set 32 is then caused to move downwardly heading up the rivet on the work as shown in Fig. 1. By means of our invention the rivet 30 is held in a vertical position against accidental displacement either by the work as it is being placed over the rivet, by vibrations or other accidental means. It will be understood that in place of cantilever mounted leaf springs we may use other types of jaws for laterally clamping the rivet in the recess 15 and that, therefore, we do not wish to be limited except by the scope of the claims.

Having thus described our invention what we desire to protect by Letters Patent and claim is:

1. In a riveting machine, an anvil for receiving a rivet head on the top thereof, and means operatively associated with said anvil for laterally engaging and supporting a rivet head on said anvil, said means terminating adjacent the top of said anvil.

2. In a riveting machine, an anvil for receiving a rivet head on the top thereof, and means operatively associated with said anvil for laterally engaging and supporting a rivet head on said anvil, said means terminating adjacent the top of said anvil, said means being yieldable vertically with respect to said anvil.

3. In a riveting machine, a frame, an anvil for receiving a rivet thereon mounted on said frame, said frame having an opening therebeneath, a member mounted in said opening and yieldably urged toward said anvil, and means mounted on said member for engaging a rivet on said anvil to maintain said rivet in a desired position.

4. In a riveting machine, a frame, an anvil disposed on said frame, said frame having an opening therebeneath, a member mounted in said opening for vertical adjustment, means for yieldably urging said member toward said anvil, means for securing said anvil to said frame, said means passing through said member in said opening and constituting a guide for said member, and a pair of leaf springs mounted on said member and projecting upwardly on opposite sides of said anvil for engaging a rivet on said anvil to maintain the same in a desired position.

5. In a riveting machine, an anvil having means for receiving a rivet thereon, said anvil having channels in opposite sides thereof, the bottoms of which are adjacent said rivet receiving means, and cantilever mounted leaf springs disposed in said channels for engaging a rivet on said anvil for maintaining the same in a desired position.

6. In a riveting machine, a frame, a seat on said frame, an anvil disposed on said seat, a bolt beneath said anvil for holding said anvil on said seat, a member beneath said anvil slidably mounted on said bolt, means yieldably urging said member toward said anvil, and upwardly converging leaf springs having the lower ends thereof mounted on said member and the upper ends thereof adjacent the top of said anvil for laterally engaging a rivet mounted on said anvil and for holding the same in a desired position.

7. In a riveting machine, a frame, a seat on said frame, an anvil disposed on said seat, a bolt beneath said anvil for holding said anvil on said seat, a member beneath said anvil slidably mounted on said bolt, means yieldably urging said member toward said anvil, and upwardly extending members mounted on said member for engaging a rivet mounted on said anvil and for holding the same in a desired position.

8. In a riveting machine, an anvil, a recess in said anvil for receiving a rivet head, channels in opposite sides of said anvil, each channel opening into a portion of said recess, and a finger in each channel resiliently urged toward the other and against a rivet head in said recess.

9. In a riveting machine, an anvil, a recess in said anvil for receiving a rivet head, channels in opposite sides of said anvil, each channel opening into a portion of said recess, and a finger in each channel resiliently urged toward the other and against a rivet head in said recess, said fingers being yieldable vertically with respect to said anvil.

10. In a riveting machine, an anvil, a recess therein for receiving a rivet head, and fingers resiliently urged inwardly terminating adjacent the top of said anvil, said recess having exposed sides for exposing the sides of a rivet head therein to the lateral pressure of said fingers.

11. In a riveting machine, an anvil, a recess therein for receiving a rivet head, a pair of opposed leaf springs at opposite sides of said anvil, said recess having exposed sides for exposing the sides of a rivet head therein to the lateral pressure of said leaf springs, and means for yieldably holding said springs in rivet engaging position with respect to said anvil.

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