

# UNITED STATES PATENT OFFICE.

WILLIAM E. WARD, OF PORT CHESTER, NEW YORK.

## METHOD OF HEADING SCREW-BLANKS, RIVETS, &c.

Specification of Letters Patent No. 9,508, dated December 28, 1852.

*To all whom it may concern:*

Be it known that I, WILLIAM E. WARD, of Port Chester, New York, have invented certain new and useful Improvements in Machines for Making Screw-Blanks, Bolts, Rivets, and all other Like Articles, and that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a plan; Figs. 2 and 3, side elevations; Figs. 4, 5 and 6, vertical sections taken at the lines A<sup>a</sup>, B<sup>b</sup>, and C<sup>c</sup>, of Fig. 1 and Fig. 7, represents the cam *k*, developed.

The same letters indicate like parts in all the figures.

In most of the machines for this purpose heretofore used, the rod of metal from which the screw blank, rivet or bolt is to be formed, is cut off the length required, with so much of its length as may be required to form the head, projecting from that face of the die against which the header works. This method presents two serious difficulties. In the first place it requires a change of die for every change in the length of article to be produced, and second, as the shank remains permanent in the die during the entire operation of striking up the head, the die has to resist all the force required to swage up the head to its complete form. In this mode of operation there is a great tendency to upset and hence to swell the metal of the shank within the cylindrical cavity of the die, which frequently breaks the die.

The object of my invention is to avoid the difficulty above pointed out, and to this end the nature of my invention consists in giving to the follower which makes resistance against the end of the rod a back movement from the swage or header toward the end of the heading operation, by means of which I am enabled to push out of the die a greater length of rod than is required for the head, which by the first part of the operation of the header is easily upset without seriously straining the die, and then, as the follower moves back and the header completes its operation, the metal which has been upset and swelled out beyond the die is compressed between the header and that part of the die which determines the form of the under side of the head, and the rest is forced into the cylindrical part of the die to complete the

head and give the proper form to it and to the shank where the two join.

In the accompanying drawings *a*, represents the frame of the machine which can be varied at pleasure to suit the purpose, and *b*, the head block making part of the frame.

The die block *c*, has its two opposite faces parallel and is fitted to slide horizontally in apertures in the side pieces *d*, *d*, of the frame, with one of its faces in contact with the inner face of the head block. It is made with a hole for the reception of the die *e*, which is held in place by a temper screw *f*. At one end it is jointed by a link *g*, with one end of a lever *h*, that turns on a stud *i*, the other end being kept by a spring *j*, in contact with the face of a cam *k*, on the cam shaft *l*. This cam has three divisions 1, 3, and 5, each at right angles to the axis, and connected by a series of inclined planes 2, 4 and 5. When division 1, of the cam passes, the die remains in a state of rest and in a position to have a previously headed blank, rivet or bolt discharged. When division 2, passes, the die is carried to the feeding apparatus to receive the wire or rod where it remains during the passage of division 3. It is moved by division 4, to cut off the wire (the head block and die acting as shears in the usual way) and to bring the die in a line with the header, where it remains during the passage of division 5, and during the entire heading operation, and at the end of the division 6 permits the tension of the spring *j*, to force it back to the first or discharging position.

There is a discharge punch *m*, fitted to slide in a hole in the head block and in a line with the die when in position 1. This punch is jointed to an arm *n*, on one end of a rock shaft *o*, which has another arm *p*, connected by a link *q*, with one arm of a lever *r*, the other arm being acted upon, while the die is in the first position, by a cam *s*, on the cam shaft to force out of the die a previously headed screw blank &c., the said discharge punch being drawn back by the tension of a spring *t*, that acts on the lever *r*.

There is another hole in the head block corresponding with the die when in the second position through which the wire or rod *u*, is fed by means of two feeding rollers *v*, *v*, of the usual construction, one of which rollers is on one end of an arbor *w*, which at its other end carries a ratchet wheel *x*, acted upon by a ratchet hand *y*,

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*Nº 9,509.*

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