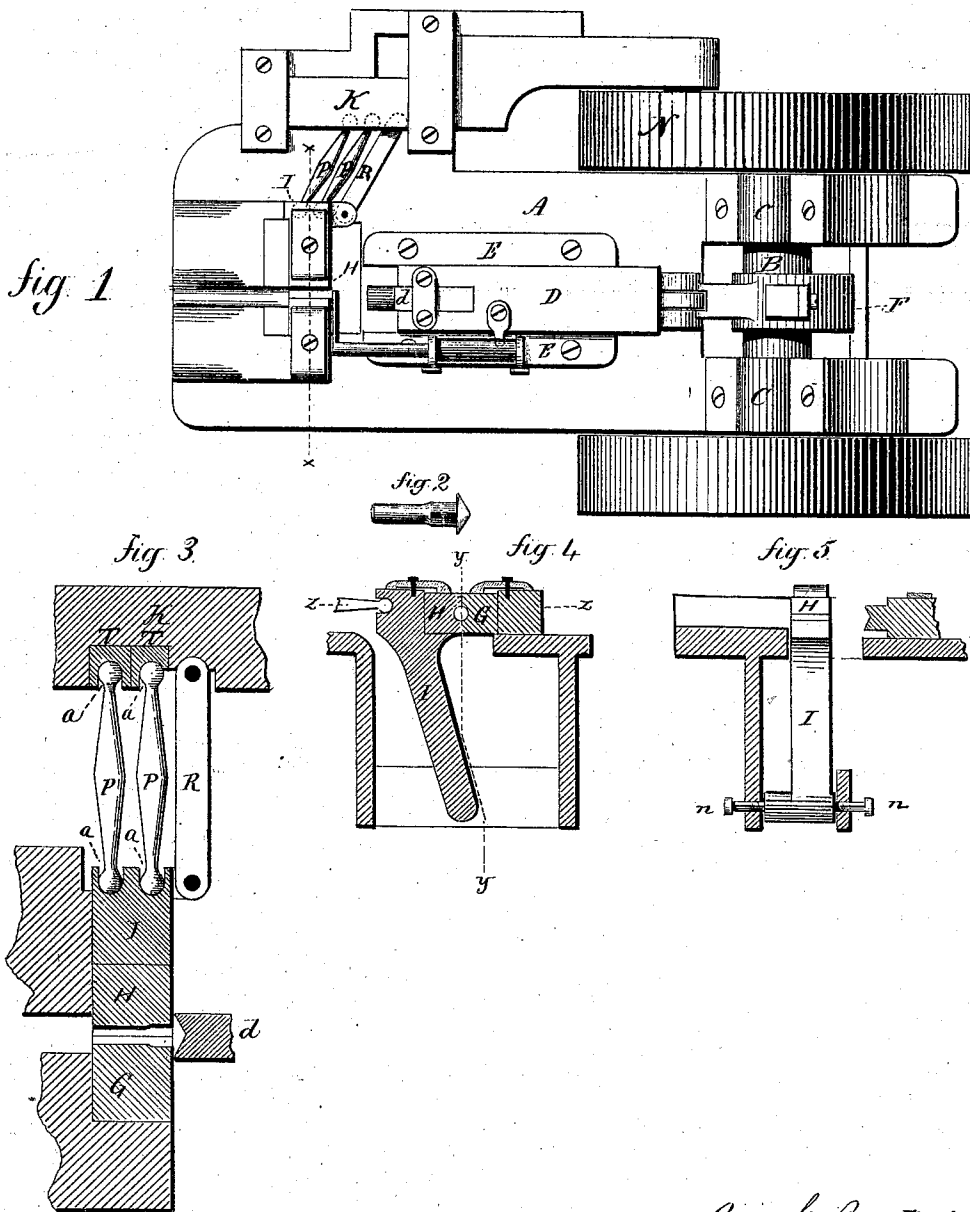


O. C. BURDICT.
Machines for Making Bolts.

No. 150,521.

Patented May 5, 1874.



Witnesses.
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UNITED STATES PATENT OFFICE

ORIN C. BURDICT, OF BUFFALO, NEW YORK, ASSIGNOR TO PLUMB,
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IMPROVEMENT IN MACHINES FOR MAKING BOLTS.

Specification forming part of Letters Patent No. **150,521**, dated May 5, 1874; application filed
December 10, 1873.

To all whom it may concern:

Be it known that I, ORIN C. BURDICT, of Buffalo, in the county of Erie and State of New York, have invented a new Improvement in Machine for Making Bolts; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a top or plan view; Fig. 2, a carriage-bolt plank; Fig. 3, a section on line *z z*, Fig. 4; Fig. 4, a vertical section on line *x x*, Fig. 1; and in Fig. 5, a section on line *y y* of Fig. 1.

The last three figures double the scale.

This invention relates to an improvement in machines for heading bolts, with special reference to that class designed for making carriage-bolts, but alike applicable to all machines in which the bar or blank is grasped between dies to be held for the upsetting-dies to form the head, and in which one part of the holding-dies has a transverse movement to and from the other part; and the invention consists in combining with the movable part of the holding-die a slide having a movement transverse to the path of the die, and the said die, or its holder and slide connected by a bar or bars, so that a movement of the said slide in one direction will bring the said bar or bars into a position at right angles or nearly so to the said slide and die, and thereby close and hold the die, and when moved in the opposite direction will allow the die to open, and the said movable part of the holding-die attached to a lever or holder hung below in axial line and parallel with the center of the holding-die, as more fully hereinafter described.

The construction of the heading or upsetting portion of the machine is immaterial. As illustrated, A is the bed of the machine; B, the driving-shaft supported in bearings C and caused to revolve by the application of power thereto in any of the known methods. D is the slide carrying the upsetting-die *d* and work-

ing back and forth in guides E, and caused thus to move by an eccentric, F, or other connection with the shaft, in substantially the usual manner for this class of machines. G is the stationary part, and H the movable part, of the holding-die. The part G is firmly secured to the bed or frame in any convenient manner. The part H is arranged on the upper end of a lever, I, and this may be a slide; but I prefer a lever as affording means of adjustment, as hereinafter described. The path of movement of the die H is transverse, or at right angles to the path of the upsetting or heading die *d*. At one side and in substantially the same plane with the holder of the die H is a slide, K, arranged to be moved back and forth in suitable guides L in a path parallel with the slide D, or nearly so, and such movement imparted from a cam, N, or otherwise. Between the slide K and the die-holder I, I arrange one or more rods, P, their ends seated, respectively, in the said holder and slide by a ball-and-socket joint, *a*, as seen in Fig. 3. The position of the seats in the slide and holder, relatively to each other, is such that when the slide is drawn back, as seen in Fig. 1, the rod or rods lie at an angle to the slide and holder; but when the slide is moved forward, as seen in Fig. 3, the rods are brought into a position at right angles, or nearly so, to the slide and holder, hence the forward movement of the slide causes a corresponding transverse or closing movement of the die H. A link, R, connects the die-holder and slide, so that the backward movement of the slide will cause a corresponding opening of the die. The seats T for the sockets on the slide are made of block form as a convenience for adjustment, as by introducing "packing" back of the said seats would force the holder farther toward the center; therefore, as the face of the die wears, the packing may be accordingly introduced back of the seats.

This construction or arrangement of the rod or rods P makes a support for the holding-dies of the strongest possible character; and in machines for making carriage-bolts, such as shown in Fig. 2, or other bolts where the neck

or other part of the body is to be swaged to other than the natural form of the bar, this arrangement of the rod or rods P exerts a force to produce the desired result not attainable by any of the usual methods for this purpose. The ball-and-socket joint is necessitated from the fact that the die-holder is hung below, and consequently has a combined vibratory and reciprocating motion.

As the die from constant use wears away upon its end next the upsetting-die, it is essential that it be set forward in proportion to its wear. To do this I extend the die-holder I down, as seen in Figs. 4 and 5, and hang it upon centers *n n*, these centers being in axial line and parallel with the center of the holding-dies, and are threaded, so as to be adjustable. By turning these centers correspondingly

the die-holder will be moved to carry the die forward or back, as the case may be, and this adjustment may be made with the greatest nicety.

I claim as my invention—

In combination, as herein described and shown, with the die-holder I hung centrally below and parallel with the holding-dies, the slide K having a reciprocating movement transverse to the movement of the die-holder, and the rods P connecting said die-holder and slide by means of ball-and-socket joints at the ends of said rods, and the link R, substantially as specified.

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Witnesses:

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