

J. O. JONES.  
Bolt-Machines.

No. 137,688.

Patented April 8, 1873.

Fig. 2.

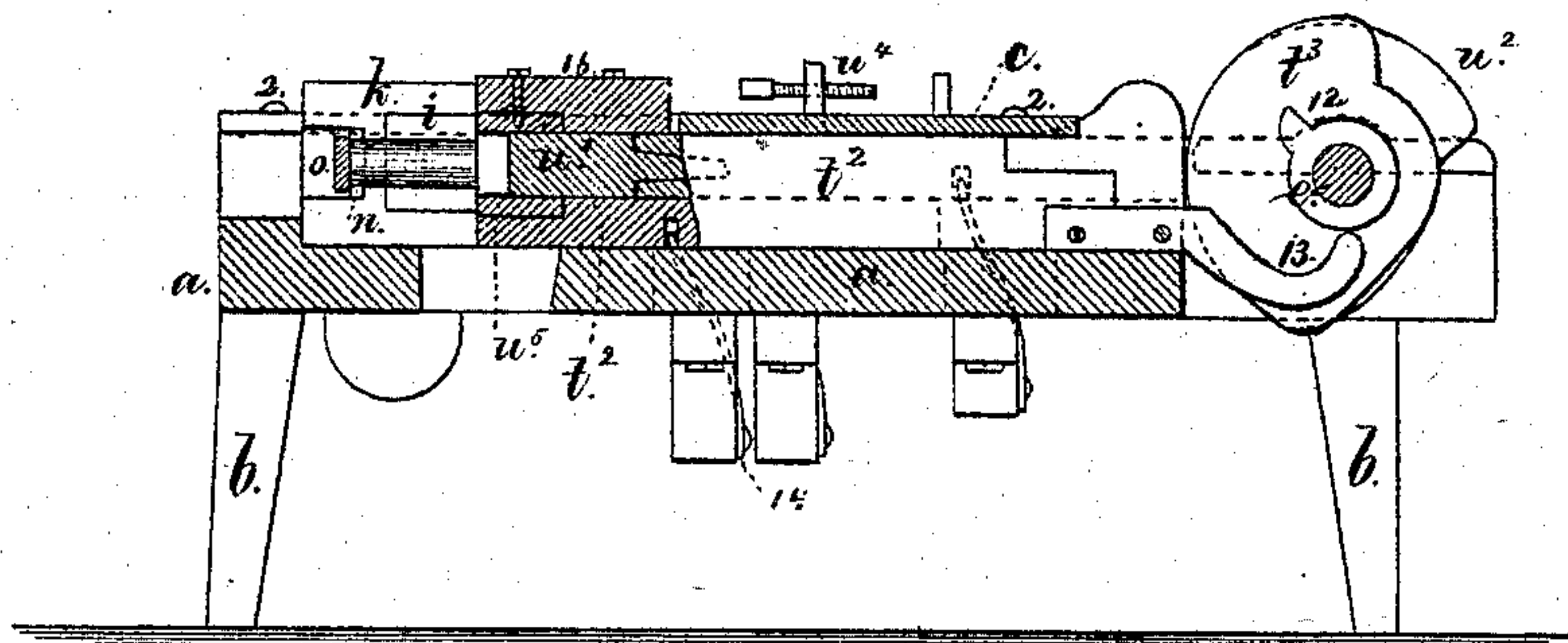


Fig. 3.

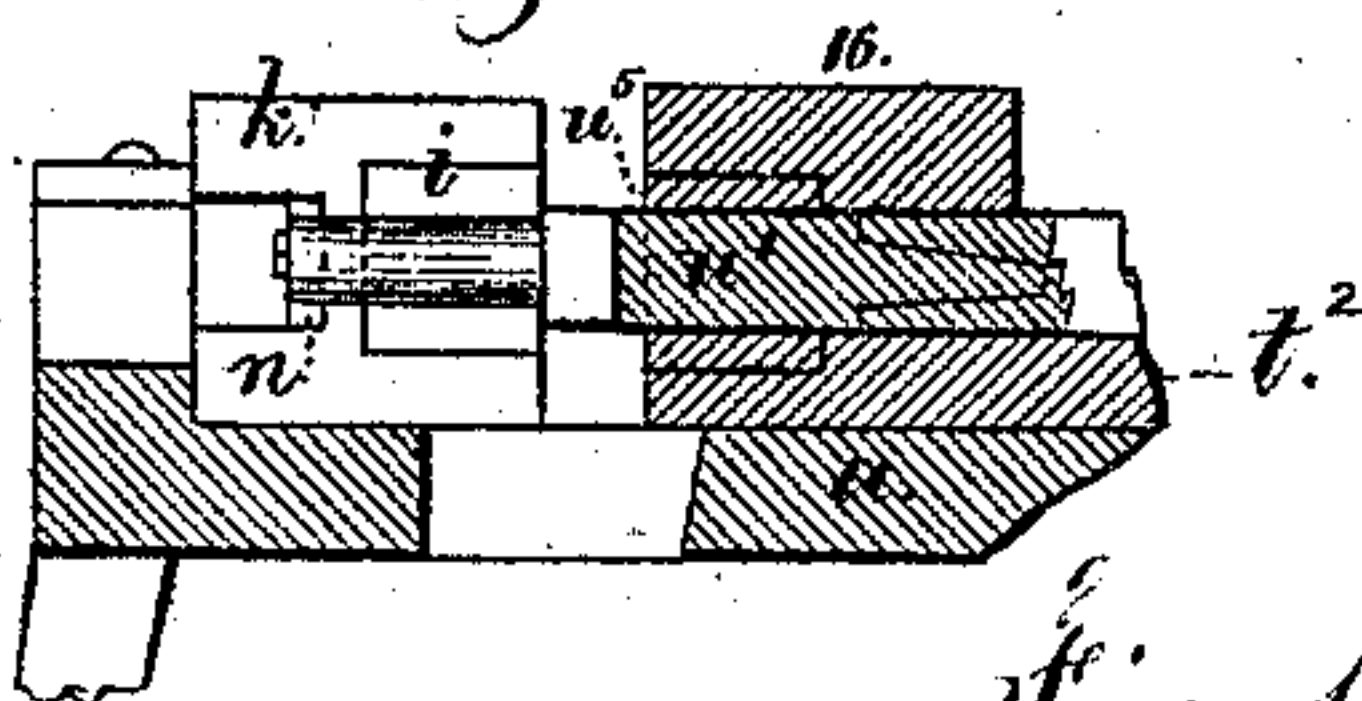


Fig. 1.

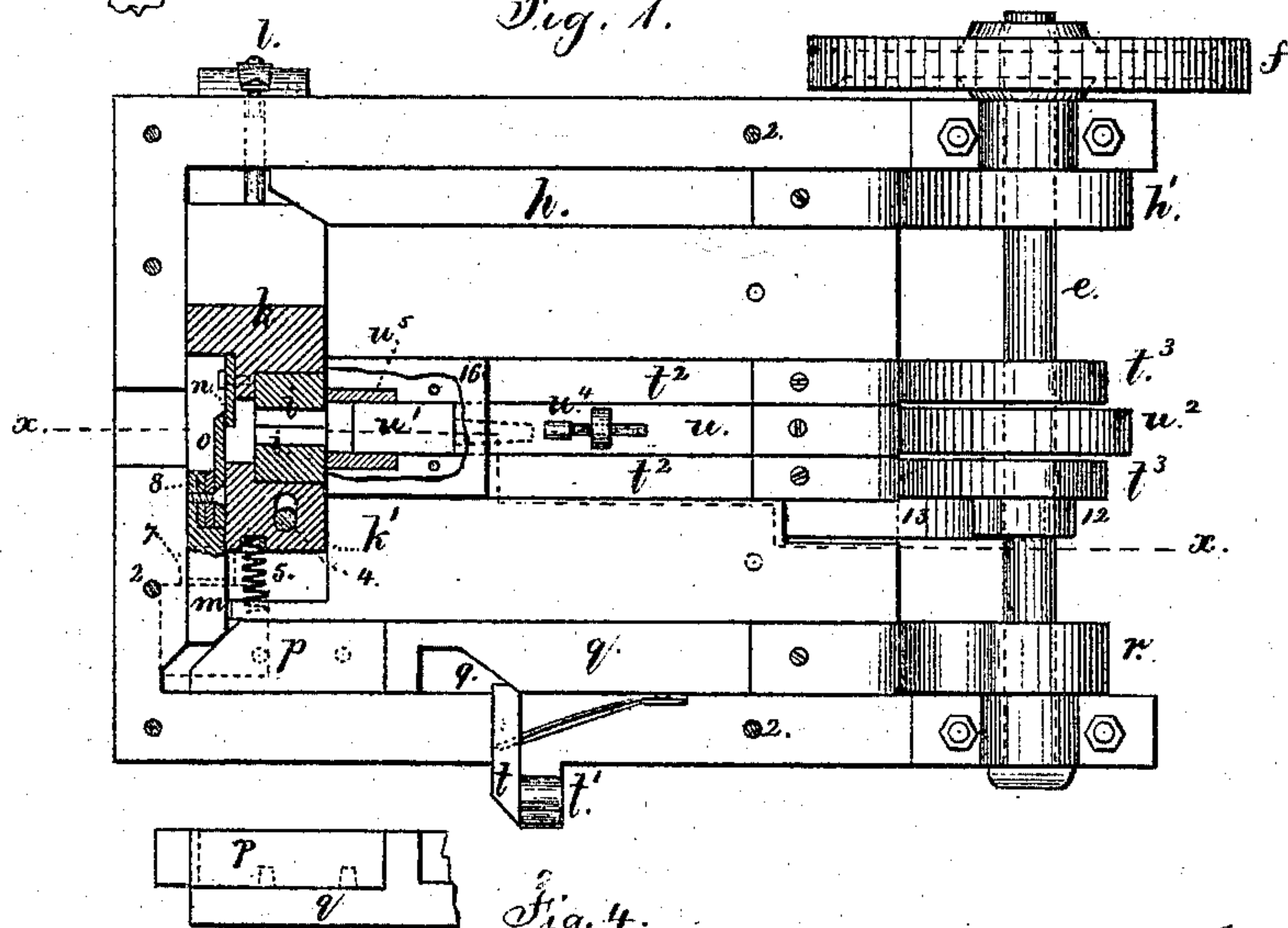


Fig. 4.

Witnesses

Chas. H. Smith  
Geo. D. Walter

Inventor.

James O. Jones,  
Lemuel M. Terrell atty.



# UNITED STATES PATENT OFFICE.

JAMES O. JONES, OF BROOKLYN, ASSIGNOR TO HIMSELF AND ADOLPH STARKE, OF NEW YORK, N. Y.

## IMPROVEMENT IN BOLT-MACHINES.

Specification forming part of Letters Patent No. **137,688**, dated April 8, 1873; application filed December 27, 1872.

*To all whom it may concern:*

Be it known that I, JAMES O. JONES, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Machinery for Heading Bolts, Spikes, &c., of which the following is a specification:

In this machine the bolt is grasped by dies and cut off to length, and the head is upset by a punch acting within a die. The die draws back so that the punch delivers the bolt-head.

The invention in question relates, first, to the manner of constructing the holding-jaws and moving the same; and, second, to the shear and its actuating mechanism, whereby the shear is thrown out of action.

In the drawing, Figure 1 is a plan of the machine with the top plate removed and the dies in section. Fig. 2 is a vertical section at the line *x x*. Fig. 3 is a section of the punch with the die drawn back for delivering the bolt; and Fig. 4 is a side view of the removable wedge-block for actuating the cutter.

The bed *a* of the machine is supported upon suitable legs *b*, and made with the necessary grooves and mortises for receiving the various parts and allowing those that slide to be moved. The parts are kept in place by a top plate, *c*, that is removed in Fig. 1, the same being secured when in place by the screws 2 2; or bars across the machine may take the place of the top plate *c*. The motive power is applied to the shaft *e* by the pulley *f*, or otherwise; and upon this shaft are the cams that give motion to the various parts. Clamping-jaws *i i* are inserted in the blocks *k k'*, and these jaws may be changed to suit different characters of bolts or bars. The block *k* receives motion to clamp the bolt by means of the wedge-acting slide-bar *h* that is moved at the proper time by the cam *h'*. As the wedge-bar *h* draws back, the spring *l* moves the block *k* and opens the jaw *i*. The block *k'* can slide in a recess within the bed *a* toward or from the block *k*, and a spring, 5, tends to press *k'* toward *k*. A bolt or screw, 4, passes through the block *k'* and bed *a*, there being an elongated hole or slot in one or the other to allow of aforesaid movement. When the screw 4 is loosened, the parts can be easily adjusted, es-

pecially to position the block *k'* and its die with reference to the block *k* and its die, after the dies have been changed. The spring 5 presses *k'* forward to place, after which it is firmly held by tightening the bolt 4.

If there should be any obstruction to the movement of the block *k* and jaw *i*, such as a second rod or bolt, then the die *k'* and jaw *i* will yield, either by the block *k'* and clamping-screw sliding, or the screw 4 breaking—it being the weakest part—thus preventing injury to the other parts.

In the block *k* is a knife or shear-cutter, *n*, and in a sliding stock *m* is the moving cutter *o*. The stock *m* is actuated by the wedge-block *p* upon the slide-bar *q* and the cam *r* upon the shaft *e*. This wedge-block *p* can be lifted off the slide-bar *q* and out of the groove in the bed *a*, in which it slides, so as to prevent the cutter *o* being operated. In this case the spring shown at 7 by dotted lines keeps the cutter back out of the way of the bolt or bar that is held by the jaws *i i*.

To vary the length of bolt, the cutters *n* and *o* are movable, and the filling-plates at 8 may be removed and placed behind the cutter *n*, so as to move the cutters *n o* further away from the heading mechanism. The stock of the cutter *o* may be wider than shown, so as to give increased space for adjusting the cutters to vary the length of bolt, or the bolts may be fed in by hand or otherwise.

Bolts are often cut of various lengths; hence when the shears *n o* are not available the cutter *t* can be made use of, the same acting in a jaw, *t<sup>1</sup>*, at the side of the bed *a*, and an incline, 9, upon the side of the bar *q*, gives motion to this cutter at every revolution of the shaft *e*. By this means the bolt can be cut to length and fed in by hand; but it would again be cut off by the cutter *o* if that was not rendered inoperative by removing the wedge-block *p*; hence it is to be understood that this block *p* is removed when long bolts are being introduced by hand and headed. The die-carrier *t<sup>2</sup>* is made trough-shape, and slides in a groove in the bed *a*, and in the groove of this carrier is the punch-stock *u*. The cams *t<sup>3</sup>* give motion to the carrier *t<sup>2</sup>* as it is moved forward, and the cam 12 and hook 13 insure the back-



ward movement of the die-carrier  $t^2$  in cases where the spring 14 fails to keep the carrier  $t^2$  against the cams  $t^3$ . The die  $u^5$  is movable and fits into a recess in the die-carrier  $t^2$ , and is held in place by the removable plate 16 and screws. The interior of the die corresponds in shape to the exterior of the bolt-head.

By this construction the die can be changed for different bolts, or removed and reformed to compensate wear. The punch  $u^1$  is made to suit the shape of the head to be forged. Such punch is at the end of the punch-carrier or slide  $u$ , and is removable. This punch may be recessed to shape the head or the surface thereof.

The operation of this machine, as a whole, will be apparent. The parts being properly timed, the bolt-rod is fed in between the jaws  $i$ , and clamped and cut off. Then the die and punch are brought up, and the bolt-head is formed within the die. The punch remains stationary as the die is drawn back so as to release the bolt-head, and the bolt drops as the jaws open, and the punch draws back. Fig. 3 shows the punch projecting beyond the die,

the latter having been drawn back. The cam  $u^2$ , that moves the punch-carrier and punch, should be so shaped, for making large bolt-heads, as to give two or more blows upon the head of the bolt, so as to spread the metal and thoroughly fill the die. By means of the adjustable stop or screw  $u^4$  the punch is arrested in its backward movement; hence the face of the punch becomes a gage for inserting the rod or bar into the heading-dies.

I claim as my invention—

1. The block  $k'$ , spring 5, and clamping-screw 4, in combination with the block  $k$ , wedge-bar  $h$ , and jaws  $i$ , substantially as set forth.

2. The removable wedge-block  $p$  and the slide-bar  $q$ , in combination with the cutter  $o$ , shear  $n$ , and clamping-jaws  $i$ , constructed and operating substantially as set forth.

Signed by me this 21st day of December, 1872.

JAMES O. JONES.

Witnesses:

GEO. T. PINCKNEY,  
CHAS. H. SMITH.