J. C. GETZ.

Bolt and Rivet Machine.

No. 167,522. Patented Sept. 7, 1875.

Fig. 1.

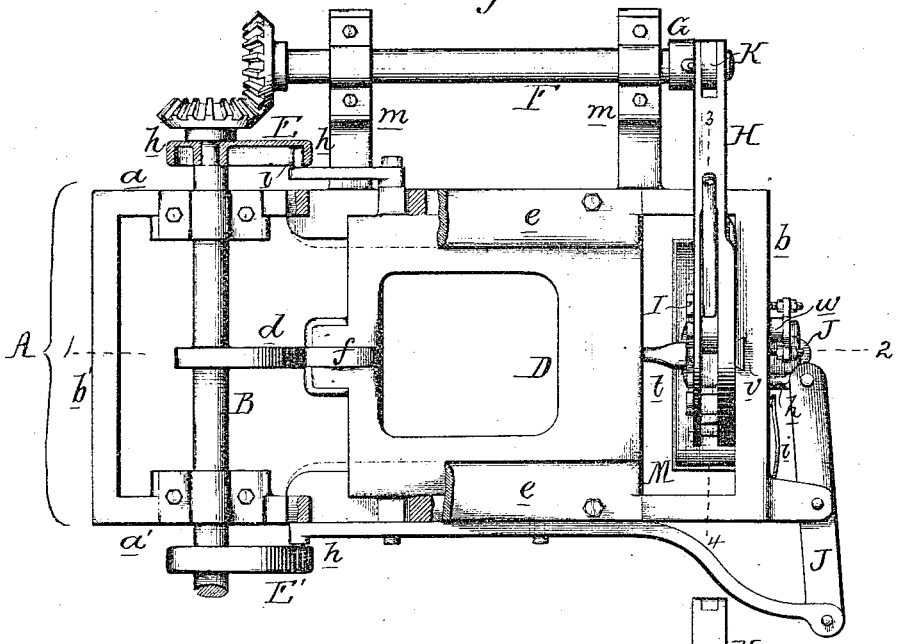


Fig. 2.

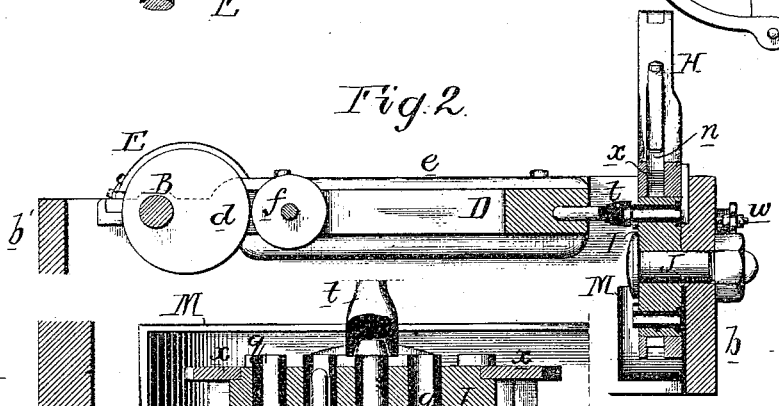


Fig. 4.

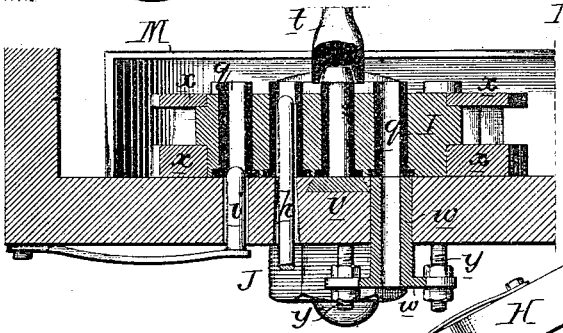
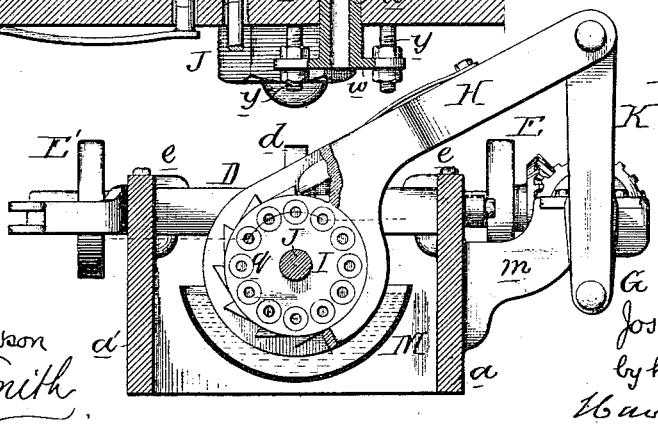


Fig. 3.



Witnesses,
Hubert Howson
Harry Smith

Jos. C. Getz
by his Attorneys,
Howson and Sons

UNITED STATES PATENT OFFICE.

JOSEPH C. GETZ, OF PHILADELPHIA, PA., ASSIGNOR OF ONE-HALF INTEREST TO A. O. DENIO, OF WILMINGTON, DELAWARE; SAID GETZ AND DENIO ASSIGNORS OF PART INTEREST TO GEORGE G. LOBDELL, OF WILMINGTON, DELAWARE.

IMPROVEMENT IN BOLT AND RIVET MACHINES.

Specification forming part of Letters Patent No. **167,522**, dated September 7, 1875; application filed April 30, 1875.

To all whom it may concern:

Be it known that I, JOSEPH C. GETZ, of Philadelphia, Pennsylvania, have invented an Improved Bolt and Rivet Machine, of which the following is a specification:

The object of my invention is to construct a substantial, effective, and cheap machine for heading rivet and bolt blanks, my invention having especial reference to mechanism for operating the slide which carries the heading-die, to the construction of and devices for operating the die-plate, to the ready repairing and adjustment of the severing mechanism, and to the maintenance of the die-plate and its adjuncts in a cool condition.

Figure 1 is a plan view of my improved rivet and bolt heading machine; Fig. 2, a vertical section on the line 1 2; Fig. 3, a transverse vertical section on the line 3 4; and Fig. 4, an enlarged sectional plan of part of the machine.

A is the substantial box-like frame, having opposite sides *a a'* and opposite ends *b b'*. In suitable bearings on the sides of the frame turns the driving-shaft B, on which is a cam or eccentric, *d*, for imparting a forward movement to a slide, D, adapted to guides *e* on the frame, the slide being provided with an anti-friction roller, *f*, against which the said cam *d* bears. The slide is retracted by two disks, E and E', having eccentric flanges *h*, the inner sides of which bear against pins *i* attached to the slide. It should be understood that the cam *d* and eccentrics *h* are so arranged in respect to each other and so formed that during the forward motion of the slide the flanges *h* are free from contact with the pins *i*, and during the rearward movement of the slide the cam *d* is free from contact with the roller *f*. Motion is communicated, through the medium of bevel-wheels, from the driving-shaft B to a shaft, F, adapted to bearings *m m* projecting from the frame, and this shaft has a crank, G, connected, by a rod, K, to the outer end of the arm H, the inner end of which is made to embrace the circular die-plate I, which is hung to a bolt, J, and is snugly confined by the same to the end *b* of the frame, but so that the plate can turn freely. The end of the lever H where it embraces the die-plate consists of two rings, *x x*, and between these rings is hung a spring-pawl, *n*, adapted to ratchet-teeth formed on the edge of the die-plate, the said teeth projecting between the two rings *x x* of the lever, so that the latter shall embrace the die-plate, one ring on one side and the other on the opposite side of the teeth, which thus maintain the lever in its proper lateral position on the die-plate.

It may be remarked here that this plan of causing the lever to embrace the die-plate, which thus becomes the fulcrum of the lever, insures greater accuracy and truth in the movement of the lever, and enables it to perform its severe duty better than if it had its fulcrum outside the die-plate.

There are as many horizontal openings in the die-plate as there are ratchet-teeth on the same, and into each opening is snugly fitted a tubular die, *q*, of steel, the outer end of which is provided with a collar so adapted to a recess in the plate that the front end of the die shall be in the same plane with the front face of the plate. To an opening in the end *b* of the frame is fitted a steel-receiving tube, *w*, which is secured to the frame by threaded studs *y* passing through lips on the tube, each stud being provided with two nuts, one on each side of the lip, so that the tube can be readily removed and replaced and adjusted horizontally in the frame. The importance of this arrangement will be understood when it is borne in mind that the heated bar of which the bolts or rivets have to be made is passed through this receiving-tube and through one of the tubes *q* of the die-plate, and is severed by the movement of the said tube *q* past the tube *w* when the die-plate is moved by the lever H. Hence the end of the tube *w* presents one cutting-edge and the end of each tube *q* another cutting-edge. As there are twelve or more tubes, *q*, in the die-plate, the tube *w* has more cutting duty to perform, and hence will be more rapidly worn at the cutting end. When the latter becomes blunt, however, the tube can be withdrawn

from the frame and the end ground prior to the reinsertion of the tube, which can be adjusted by the nuts of the screws *y* to a position where, in conjunction with the tubes *q*, it will have the best cutting effect.

When the slide D, with its header *t*, is being retracted by the eccentric flanges of the disks E, the heated bar is passed through the tube *w* and through that tube *q* of the die-plate which coincides with the said tube *w*, after which the rod is severed by the movement of the die-plate, which carries the severed end of the rod to a position between a detachable steel plate, *v*, in the end *b* of the frame, and the header *t*, which, being forced forward by the action of the cam *d* on the slide D, forms the head on the said severed rod, and the rivet or bolt blank thus formed is subsequently forced from the tube *q* which contained it by a rod, *h*, passing through the end *b* of the frame and jointed to one arm of the lever J, the other arm of which is connected to the slide D. A spring-rod, *i*, serves to steady the die-plate I and to maintain the same in a proper position during the heading operation, but yields when the die is moved by the action of the lever H and its pawl.

It will be seen on reference to Fig. 3 that a portion of the die-plate, as well as of that portion of the lever which embraces the said plate, is contained within a trough, M, which is always maintained nearly full of water, so as to counteract the evil effects of the undue heat which would otherwise be imparted to the said die-plate and lever.

I claim as my invention—

1. In a rivet or bolt heading machine, the combination of the driving-shaft carrying a central cam or eccentric, *d*, and two eccentric flanged disks, E E′, and the slide D, provided with pins *i*, against which the flanges *h h* of the said disks bear in retracting the slide, all as and for the purpose set forth.

2. The combination of the cutting-tube *w*, secured in a stationary position on the frame of the machine, and the die-plate I, provided with a series of detachable tubular dies, *q*, each extending completely through the plate, and having a collar at the front end, between which and the end of the tube *w* the bar is severed, all as set forth.

3. The die-plate I, having at the edge a central ratchet and a recess at each side thereof, in combination with a lever, H, carrying a spring-pawl, *n*, and having at the end rings *x x*, fitting said recesses, all as set forth.

4. The removable and adjustable tube *w*, connected to the frame of the machine, substantially in the manner described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH C. GETZ.

Witnesses:

HUBERT HOWSON,

HARRY SMITH.