J. B. CLARK.

Die for Heading and Squaring Bolts.

No 165,542. Patented July 13, 1875.

Fig. 1.

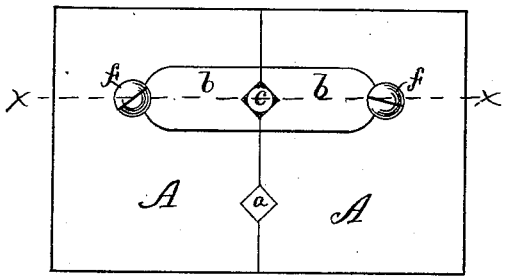


Fig. 2.

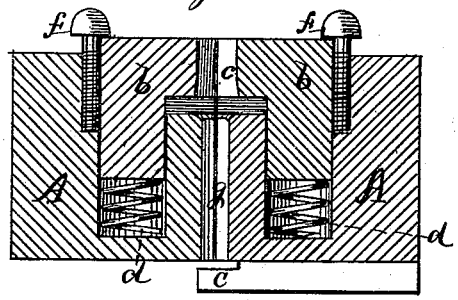
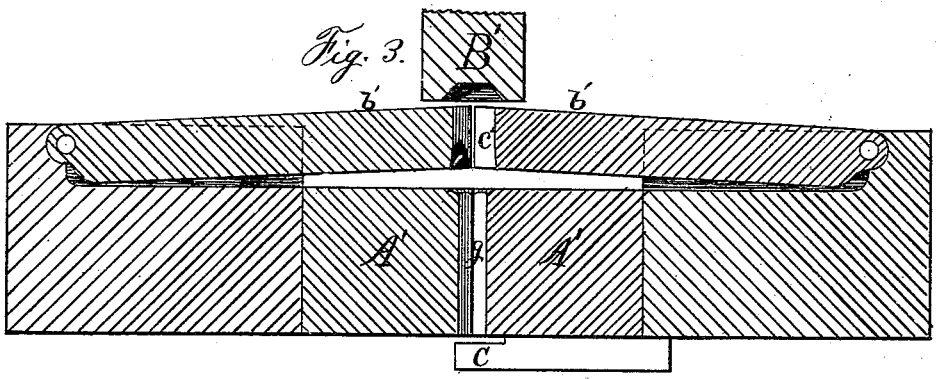
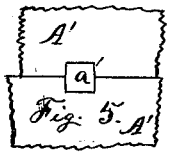


Fig. 3.





Witnesses.
Alfred A West
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UNITED STATES PATENT OFFICE.

JAMES B. CLARK, OF PLANTSVILLE, CONNECTICUT.

IMPROVEMENT IN DIES FOR HEADING AND SQUARING BOLTS.

Specification forming part of Letters Patent No. **165,542**, dated July 13, 1875; application filed May 10, 1875.

To all whom it may concern:

Be it known that I, JAMES B. CLARK, of Plantsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dies for Heading and Squaring Bolts, of which the following is a specification:

My invention consists of an improved mechanism for heading and squaring bolts—to wit, a holding die, a movable shaping-die, and a heading-die, all as hereinafter described.

In the accompanying drawing, Figure 1 is a face view of a set of dies which embody my invention. Fig. 2 is a horizontal section of the same on line *x x* of Fig. 1. Fig. 3 is a like view of a modification of the same, and Figs. 4 and 5 are face views of other modifications.

A A designate die-blocks, which may be fitted in any ordinary bolt-heading machine, and arranged in the usual manner, so that one may move to and from its fellow. In these blocks A A I form an ordinary bolt heading and squaring die, *a*, which is too well known to require description. This die *a* may be formed in the blocks A A, with my improved die *c* adjoining or in separate blocks, as may be desired. The die *c* is the shaping-die, and I prefer to make it substantially square, one-half or two sides of the square being in each block, as shown, and the largest at its base, as clearly shown in Fig. 2.

I form the shaping-die *c* in movable blocks, *b b*, fitted in recesses in the blocks A A, so as to play in and out, said recesses being of such depth relatively to the thickness of the movable blocks *b b* that when they are forced in and strike the bottom of the recess or top of the die *g* their outer or front face will be even with the face of the blocks A A. Back of the movable blocks *b b* springs *d d* are placed to force them outward. I also provide the blocks A A with regulating-screws *f f*, the heads of which engage with the face of the blocks *b b*, so that by turning the screws out or in the movement of the blocks *b b* may be made greater or less.

In the edge of the blocks A A, and directly in line with the die *c*, I form semicircular grooves, which form the holding-dies *g*.

The operation of the dies is as follows, to wit: A round rod of the proper length is placed in the dies *c*, with one end projecting beyond the face of said dies when they are closed, so that the holding-dies *g* firmly gripe and hold the rod, and the shaping-die *c* bears upon it sufficiently to steady it. If desired, instead of holding the rod by griping, the die *g* may bear upon it only just enough to hold it steadily in place, while any suitable stop, C, may be placed just back of the end of the rod for it to rest upon, and prevent it from moving endwise. A heading-die, B, Fig. 3, of any ordinary construction, then comes forward and upsets the end of the rod, which fills the cavity in the heading-die and the upper portion of the movable die *c*, when the further movement of the heading-die carries the movable shaping-die with it, and the metal at the base of said die, and above the stationary holding-die, is upset, the shape of the upset portion being governed by the movable die *c*. The product of the dies *c* is then placed in the die *a*, and operated upon by another header, which smooths it and throws it into its final form, which form is the same as now in common use for bolts.

By adjusting the distance that the dies *b b* move by means of screws *f f* a greater or less portion of the stock may be upset, as may be desired.

If desired, more than one die may be employed to finish the bolt after it comes from the dies *c;* but one die will answer.

In Fig. 3 the parts are substantially the same as in Figs. 1 and 2, except that the movable blocks *b′ b′* swing instead of moving in a direct line. By this arrangement the lower part of the die *c′* will open a little simultaneously with the upsetting of the metal, which takes place while the die-blocks *b′ b′* are moving.

In Fig. 4 the movable blocks *b′ b′* are also arranged to swing, but are placed at right angles to each other, instead of on the same line.

In Fig. 5 the die *a′* is represented as formed with its sides practically parallel to the sides of the die-block A′ A′, instead of obliquely thereto, as in the other figures, and therefore, if a fin of surplus metal is formed between

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the die-blocks upon the product of the first die, said fin will come directly against the flat side of the second die during the finishing operation.

In Figs. 3, 4, and 5, A′ A′ designate the die-blocks proper.

I claim as my invention—

The combination of the stationary holding-die *g* with the movable shaping-die *c* and heading-die, all operating together substantially as described.

JAMES B. CLARK.

Witnesses:
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