J. BROWNING.

Dies for Bolt-Heading Machines.

No. 167,062. Patented Aug. 24, 1875.

FIG. 1.

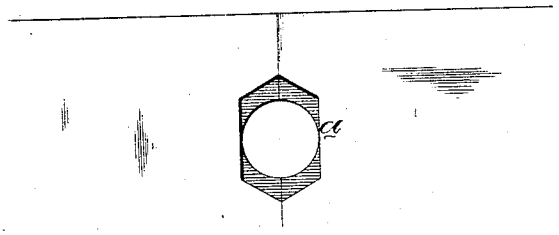


FIG. 2.

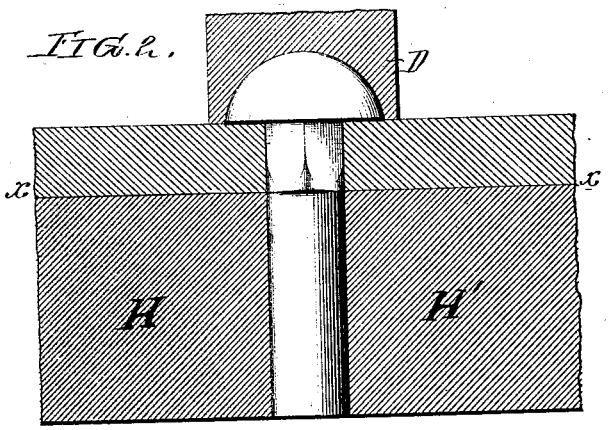


FIG. 7.

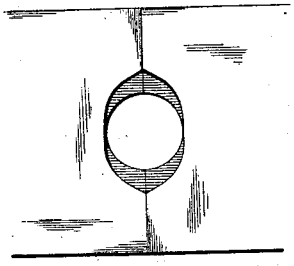


FIG. 3.

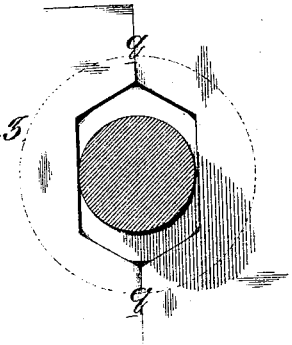


FIG. 4.

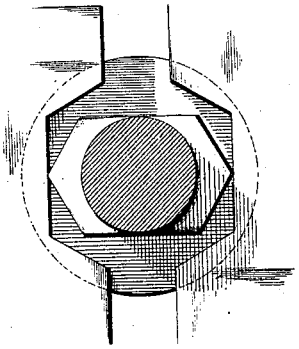


FIG. 6.

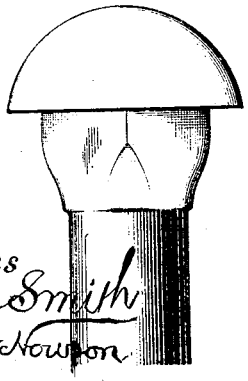
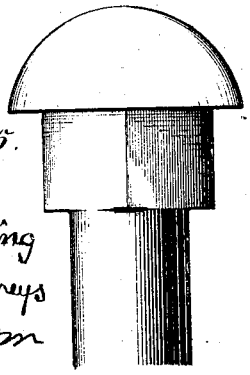


FIG. 5.



Witnesses
Harry Smith
Hubert Howson

Joseph Browning
by his Attorneys
Howson and Sons

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH BROWNING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM C. ALLISON, J. WESLEY ALLISON, AND T. ELWOOD ALLISON, OF SAME PLACE.

IMPROVEMENT IN DIES FOR BOLT-HEADING MACHINES.

Specification forming part of Letters Patent No. **167,062**, dated August 24, 1875; application filed April 19, 1875.

To all whom it may concern:

Be it known that I, JOSEPH BROWNING, of Philadelphia, Pennsylvania, have invented an Improvement in Dies for Making Carriage-Bolts, of which the following is a specification:

My invention relates to dies for the manufacture of carriage-bolts—that is, bolts with square necks; and the object of my invention is to form on machine-made bolts of this class necks of a more perfect shape and greater length than usual.

This object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a front view; Fig. 2, a plan view of the dies which I employ in carrying out my invention; Figs. 3 and 4, views illustrating my mode of forming the necks of the bolts; Fig. 5, a portion of a bolt, with a square neck made according to my invention; and Fig. 6, a portion of a bolt with the ordinary square neck.

In making square-necked bolts by machinery the most common practice has been to form the necks and heads at one operation, a round heated rod being griped by and between dies having recesses for the formation of the neck, and the heading-die forcing the metal into these recesses simultaneously with the making of the head, the result being a square neck of the restricted character shown in Fig. 6, and even this restricted neck is not well defined.

In order to obviate this defect I forge the neck in the following manner by means of the dies H and H′, shown in Figs. 1 and 2, which are similar to the dies heretofore used, with the exception of the shape of the recess *a* presented by the dies when they are in contact, or nearly in contact, with each other. This recess, in the ordinary dies, is square, whereas it is essential in carrying out my invention that it should present the figure shown at *a*, Fig. 1, or a figure approximating to this shape. This recess extends into the dies as far as the line *x x*, beyond which point the dies are formed as usual to embrace the round rod, of which the bolt is to be made. After the heated rod has been griped by and between the dies the header D advances, and acting on the end of the rod forces the metal into the recess *a*, at the same time forming the head. By this first action of the dies a neck of the shape shown in Fig. 3 is formed, this neck having an excess of metal in the direction of the line *q q*. When the dies H and H′ are open the bolt is turned one-quarter round to the position shown in Fig. 4, so that when the dies again close the protuberant corners will be flattened down, and the neck will assume a square form by two or three additional actions of the dies. The bolt being turned one-quarter round between each action a complete, well-defined, square neck, as shown in Fig. 5, will be formed on the bolt.

The important feature of my invention is the peculiar shape of the dies; the latter, by the first action on the bolt, reducing its neck to a hexagonal sectional form, which permits the operator to more rapidly turn and adjust the bolt between the first and second action of the dies, than if the neck was first reduced to an oblong sectional form, and thus presented four abrupt corners, which interfered with the easy turning of the bolt.

Each die, instead of having two of its three sides beveled, may have those two sides curved, so that the neck, after the first action of the dies, will be of the shape shown in Fig. 7, which permits the same easy turning of the bolt as the hexagonal shape.

I do not desire to claim, broadly, so forming the dies of bolt-heading machines, that the neck of the bolt can first be made thicker in one direction than the other, and then reduced to a square form by the same dies; but,

I claim as my invention—

The combination of the heading-die of a bolt-machine with dies H and H′, which, when closed, present an opening of the shape illustrated and described, for the formation of the square neck of the bolt, in the manner specified.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

JOSEPH BROWNING.

Witnesses:

HUBERT HOWSON,

HARRY SMITH.