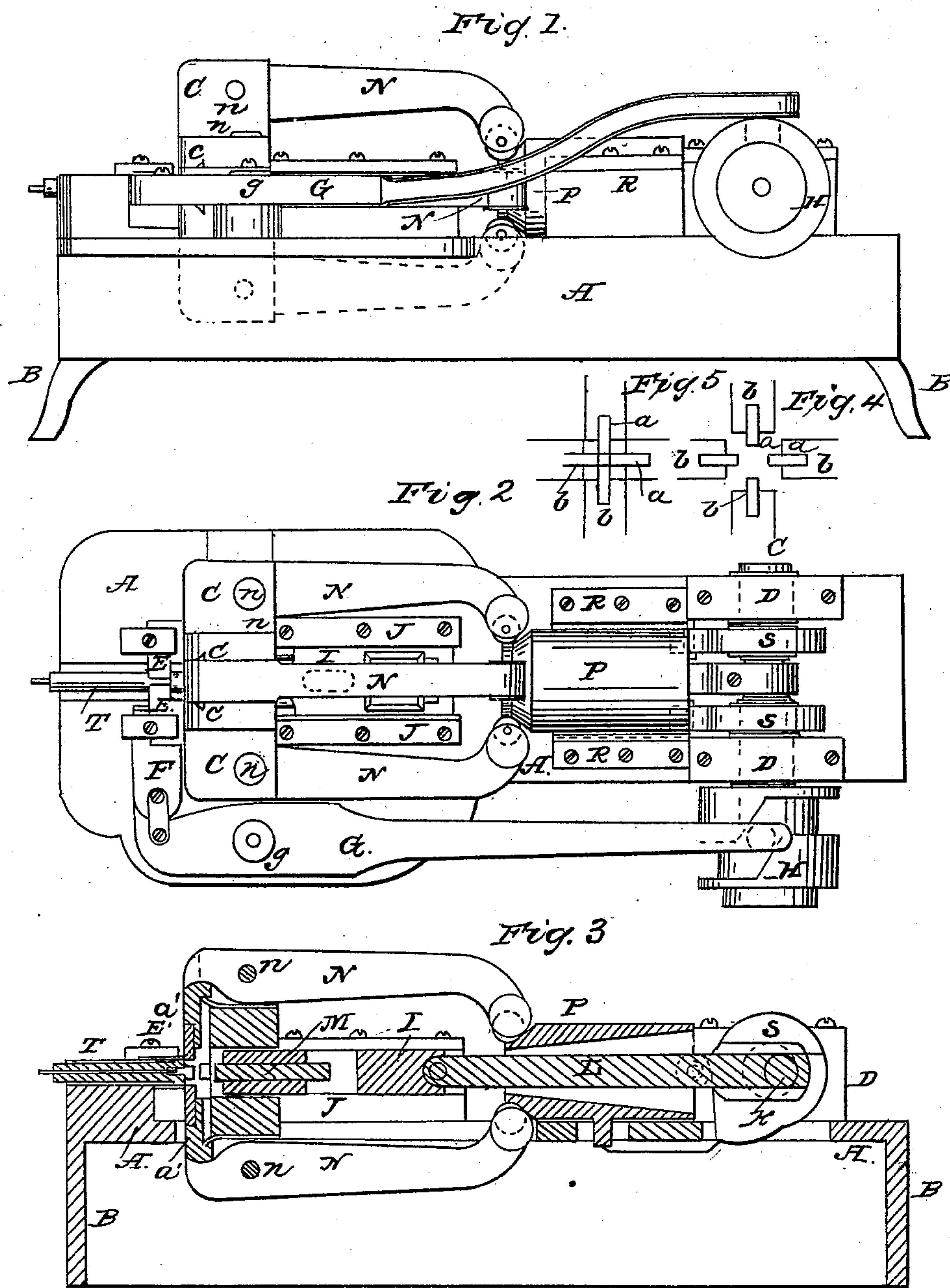


O. C. BURDICT.

Bolt Header.

No. 68,555.

Patented Sept. 3, 1867.



Witnesses
 John W. Shumway
 & J. L. Libbey

Inventor
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ORIN C. BURDICT, OF NEW HAVEN, CONNECTICUT.

Letters Patent No. 68,555, dated September 3, 1867.

IMPROVED MACHINE FOR HEADING BOLTS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, O. C. BURDICT, of New Haven, in the county of New Haven, and State of Connecticut, have invented a new Improvement in Bolt-Heading Machines; 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 side view.

Figure 2, a top view.

Figure 3, a central longitudinal sectional view.

Figures 4 and 5, the operation of the heading-dies; and in

Figures 6 and 7, the blank-holders.

My invention is designed for upsetting and forging the heads of bolts from one and the same piece as the bolt, and consists in the combination and mechanism for upsetting and finishing the head.

To enable others skilled in the art to construct and use my improvement, I will proceed to describe the same. As illustrated in the accompanying drawings—

A is the bed-plate, supported upon legs B or otherwise, and on which the operative mechanism is placed. C is the driving-shaft, supported, and so as to revolve freely in bearings D, by the application of power thereto in any convenient or well-known manner. E and E' are the two parts of a holding-die, the one, E', firmly fixed to the bed-plate, the other part, E, fixed to a slide, F, which is operated to move to or from the part E by connection with a lever, G, as seen in fig. 2, which said lever G has its fulcrum at *g*, and is operated by a cam, H, on the driving-shaft C. I is a slide, moving in guides J by the action of an eccentric, K, on the shaft C, through a connecting-rod, L, and has fixed in its forward end an upsetting-die, M, (see fig. 3,) which upsets the metal from which the head is formed. *a a* and *b b* are the four heading-dies, fixed each to its respective slides *a' a'* and *b' b'*, which said slides move freely in guides *c* by the action thereon of levers N N N N, having their fulcrums at *n*, and operated by a slide, P, moving in guides R, by the action of cam or cams S on the driving-shaft C; the forward end of the said slide being inclined, so that when forced between the longer arms of the four levers N, will simultaneously close the four dies *a a* and *b b* from the position seen in fig. 4 to that seen in fig. 5, and when withdrawn the said levers will permit the opening of the said dies by the employment of springs, or otherwise. I prefer to form the head of the bolt by inserting the blank into a holder, T, seen in fig. 6, through which passes a rod, *t*, of smaller diameter than the blank to be headed. The inner end of the holder is bored out the size and depth of the bolt to be formed, and into the hole bored out, the blank, when properly heated, is set, and placed between the dies E and E', and, when so set, power being applied to the driving-shaft, the cam H forces the die E upon the holder T, and holds it securely fixed in the required position, the blank being central between the four dies, and directly in front of the upsetting-die, as seen in fig. 3. The continued movement of the driving-shaft forces the upsetting-die against the end of the blank, upsetting the blank sufficiently to form the head; then the four dies *a a* and *b b* are forced down upon the upset portion of the blank, and compress it into a regular four-sided form. For the perfect finishing of the head it is better to permit two full revolutions and consequent operations upon the head, between which operations it would be advisable to turn the holder one-quarter over, but yet it is not necessary. When the holder is not used the holding-dies E and E' will clasp the blank in like manner as it does the holder, and the head in that case be formed directly against the dies E and E' in like manner as when the holder is used. The upsetting-die M, it will be seen in fig. 3, is formed with a slight recess in its face, of the size and form of the head, which tends to form and preserve the angles of the head. When the bolt has been headed in the holder, as seen in fig. 6, the holder is removed from the machine, when by a blow upon the end of the rod *t* the bolt will be forced from the holder, as seen in fig. 7, then another heated blank inserted for similar operation.

The advantages of the die-holder are, first, there being no joint, as when two-part dies are used, the under side of the head is formed perfectly smooth. Another advantage is, that by the use of a holder the dies E and E' may remain unchanged for various-sized bolts, it being only necessary to form the recess in the holder of the requisite size, the exterior of the holder still remaining the same, whereas when the blank is held directly

by the dies E different dies must be inserted for different-sized bolts; and the general advantage of my machine is its simplicity and inexpensive construction.

I do not broadly claim the simultaneous operation of four or more dies combined with holding-dies and upsetting-die, as such are not new.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is—

The combination of the dies *a a* and *b b* acting simultaneously, and moved in guides radially to a common centre by means of the levers N and cams P, in combination with holding-dies E and E', and upsetting-die M, all constructed and arranged to operate substantially in the manner as herein set forth.

ORIN C. BURDICT.

Witnesses:

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