

UNITED STATES PATENT OFFICE.

THEODORE V. BOYDEN, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR HEADING CARTRIDGE-SHELLS.

Specification forming part of Letters Patent No. **114,639**, dated May 9, 1871.

To all whom it may concern:

Be it known that I, THEODORE V. BOYDEN, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and Improved Cartridge-Heading Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

My invention relates to machines used for forming the head or flange on metallic cartridges; and the invention consists in so constructing the machine that the heading-die and hopper can be adjusted therein, as hereinafter more fully explained.

Figure 1 is a front view of the main portion of the machine, with a portion of the frame broken away in order to more clearly illustrate the manner of adjusting the die. Fig. 2 is a longitudinal vertical section on the line *x x* of Fig. 1; Fig. 3 is a transverse vertical section on the line *z z* of Fig. 2; and Figs. 4 and 5 are perspective views of portions detached. Figs. 6 and 7 are longitudinal sections of a cartridge-shell before and after the head is formed, respectively.

The machine on which my invention is an improvement is that heretofore patented to Ethan Allen. In that machine, or in machines of that class, a die, *c*, is used to hold the shell while the head is being formed thereon, the shells being fed into a V-shaped hopper, *H*, in rear of the die, and a piston or rod, *I*, working through a guide, *e*, and other suitable bearings in rear of the hopper *H*, as represented in Fig. 2, this piston having a reciprocating motion imparted to it by suitable mechanism not represented in this case.

As shown in Fig. 2, the piston *I* has its front end reduced in diameter, so as to correspond with the internal diameter of the shell, and has a shoulder, *n*, formed on it at such a distance from its front end that when inserted within the shell its front end will not quite reach to the closed end of the shell, the open end of the latter resting against the shoulder *n*, as shown in Fig. 2.

As the piston is drawn back out of the die *c* and out of the hopper *H*, a shell, of the form

shown in Fig. 6, is placed in the hopper, which is so adjusted vertically as to hold the shell directly in line with the piston. As the piston moves forward its front end enters the shell and carries it forward with it into the die *c*, leaving its closed end protruding slightly therefrom, as represented in Fig. 2. At this instant the piston *I* ceases its motion, while the heading-die *E* is brought up against the end of the shell, and crushes or flattens out the end of the shell into the shape shown in Fig. 7, thereby producing the head or flange so well known in this style of cartridge-shells.

It will be seen that the die *c* must necessarily be adjusted with great accuracy in relation to the hopper and piston in order to permit the shells to enter, and, as the die soon becomes worn by the constant shoving of the shells through it, it has to be frequently changed. As heretofore made, the die when thus worn was replaced by a new one, and much time was also lost in getting the new one adjusted accurately, thus entailing a loss of material, and also of time.

It is to remedy these difficulties that my invention is intended, and I accomplish it as follows: In the first place I have found that the die *c*, when thus worn, can be reduced in diameter by shrinking it, after which it is reamed out to the proper size, when it can be used again, and this process may be repeated several times.

In order to adjust it with accuracy and speedily, I make the die-holder *B*, which is secured firmly to a frame, *A*, with a semicircular recess for the upper side of the die *c* to rest in, and insert a set-screw, *f*, therein directly over the die, as represented in Figs. 1 and 2. I then provide a metal block, *C*, which is fitted to slide accurately from below upward, in the front part of the die-holder *B*, as shown in Figs. 1 and 2. This block *C* has a V-shaped notch or recess formed in its upper end, as shown in Fig. 4, so that when crowded up from below it will press against the die *c*, thus forcing the die to the center laterally and holding it firmly in position.

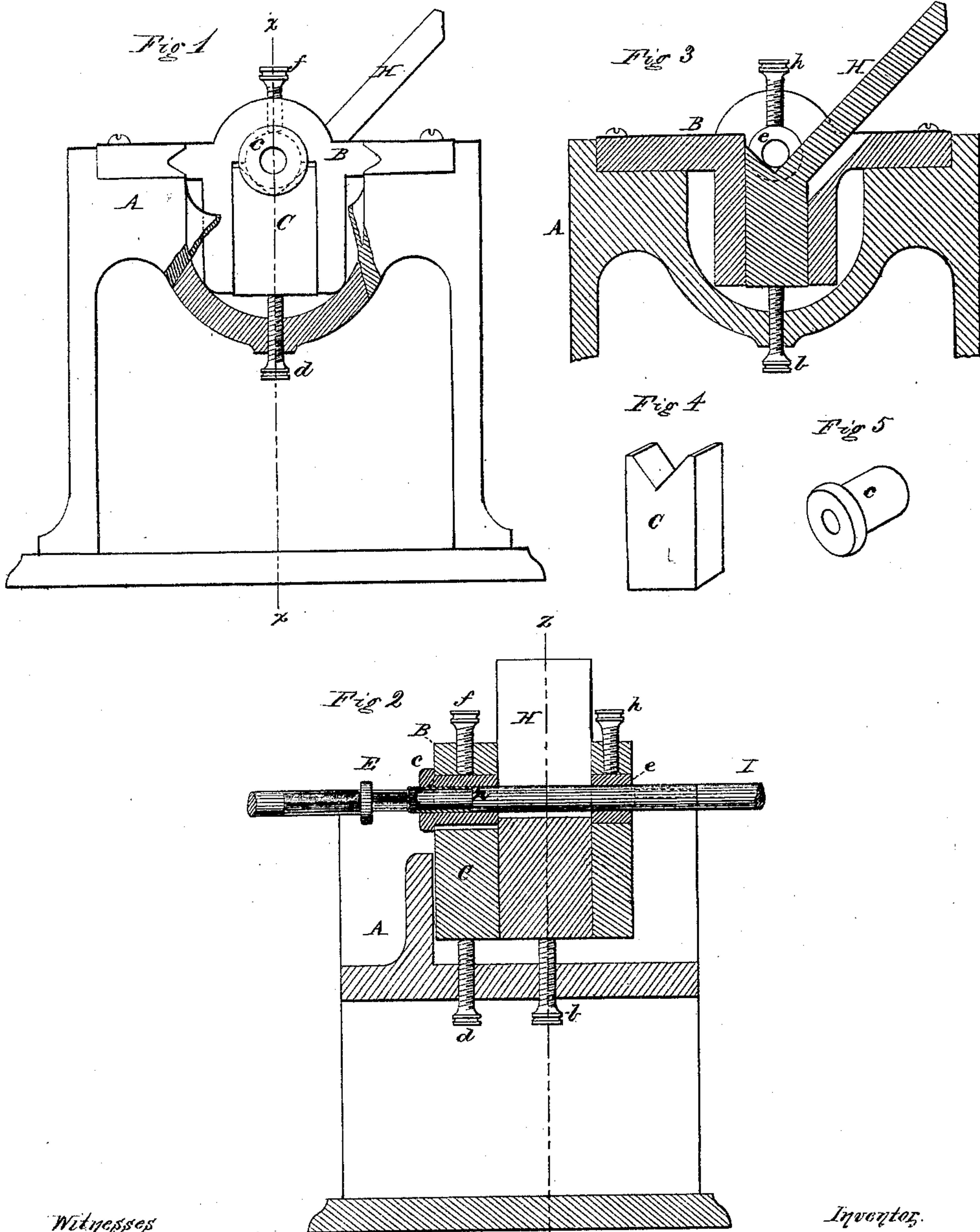
A set-screw, *d*, is inserted through the frame *A* underneath the block *C*, with its end pressing against the latter, by means of which the block *C* may be raised or lowered, as desired.

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Improvement in Machines for Heading Cartridge-Shells.

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Witnesses

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