(No Model.) 2 Sheets—Sheet 1.

A. L. HOWARD.

MACHINE FOR TRIMMING CARTRIDGE HEADS.

No. 311,324. Patented Jan. 27, 1885.

Fig. 3.

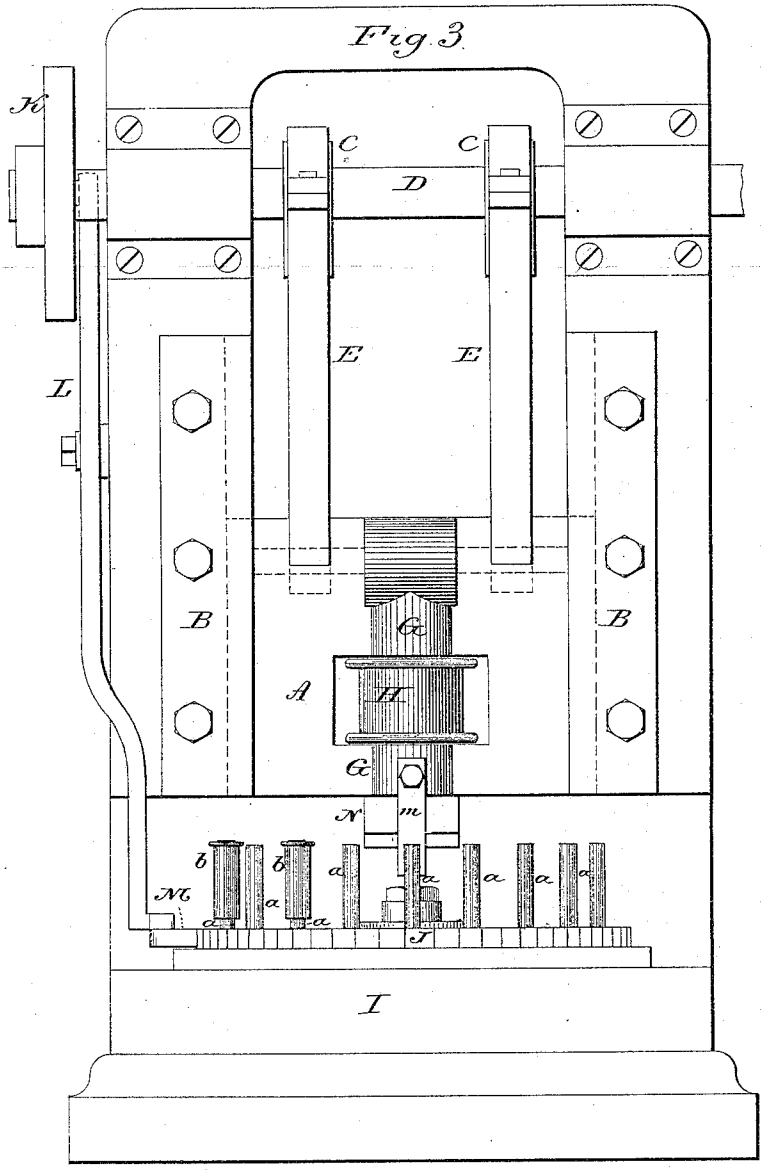


Fig. 1

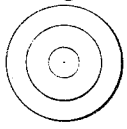


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4

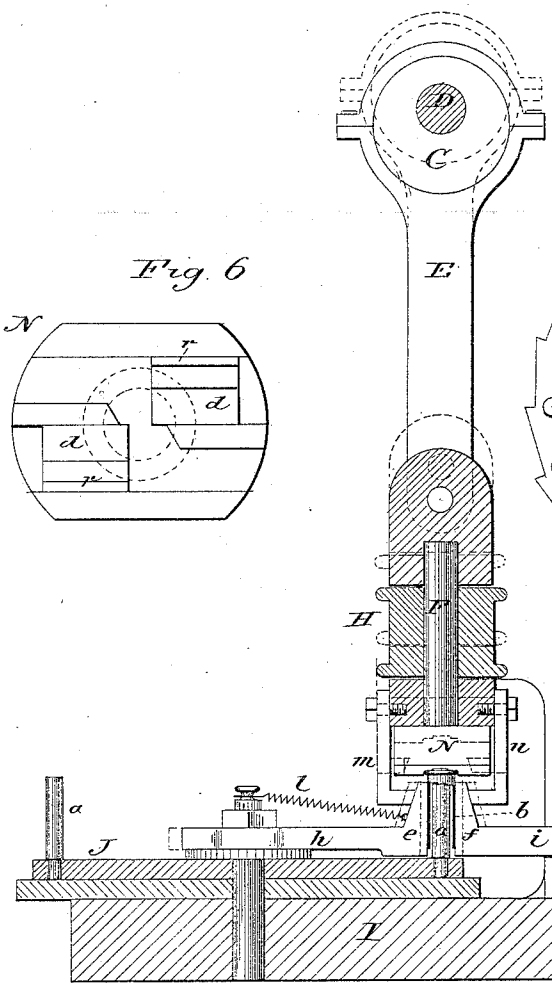


Fig. 5

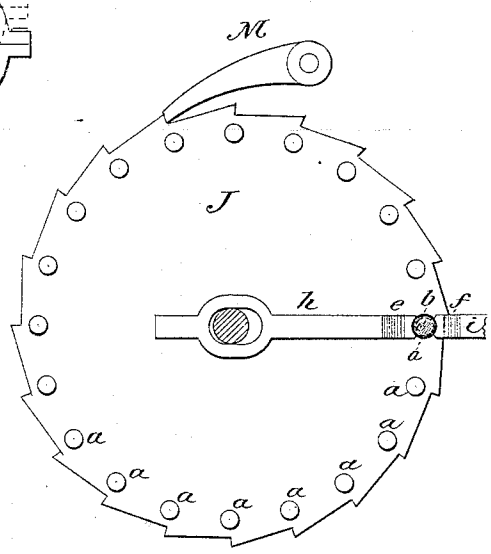


Fig. 6

Fig. 7

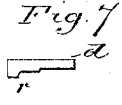
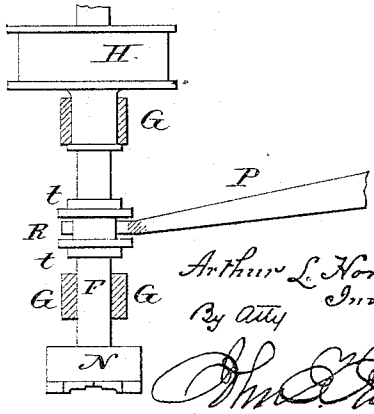


Fig. 8



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UNITED STATES PATENT OFFICE.

ARTHUR L. HOWARD, OF NEW HAVEN, CONNECTICUT.

MACHINE FOR TRIMMING CARTRIDGE-HEADS.

SPECIFICATION forming part of Letters Patent No. 311,324, dated January 27, 1885.

Application filed June 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR L. HOWARD, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Trimming Cartridge-Heads; and I do hereby declare the following, when taken in connection with 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 face view of the head of a shot-shell; Fig. 2, a vertical section of the same; Fig. 3, a front view of the machine complete; Fig. 4, a sectional side view; Fig. 5, a top view from below the cutter, showing the dial and jaws; Fig. 6, an under side view of the cutter-head enlarged, showing the cutters in place; Fig. 7, an edge view of one of the cutters enlarged; Fig. 8, a modification.

This invention relates to a machine for trimming or finishing the face end of the heads of that class of metallic cartridge-shells designed for use in breech-loading shot-guns, and commonly called "shot-shells." The central portion of the face of the head of these shells requires to be raised slightly above the outer portion, as seen in Figs. 1 and 2, and the outer surface to be smoothly and nicely finished, and it is to the finishing of this head that my invention particularly relates, the object of my invention being the construction of a machine which, having the shells fed to it, may be presented to cutters and the surface automatically trimmed; and the invention consists in the construction of the machine, as hereinafter described, and more particularly recited in the claims.

A represents a cross head or slide arranged to be moved vertically between guides B B in similar manner to the cross head or slide of a power-press. The mechanism for imparting such up-and-down reciprocating movement to the slide may be such as usually employed in power-presses.

As here represented, the reciprocating movement is imparted by an eccentric, C, on the driving-shaft D, and from which a pitman, E, extends to the slide. The mechanism for imparting such reciprocating movement, however, forms no part of my invention.

In the slide A a vertical spindle, F, is arranged in suitable bearings, G, so as to be revolved rapidly, such revolution being imparted to it by means of a pulley, H, on the spindle.

On the bed I of the machine is a disk, J, arranged to be rotated in a horizontal plane. This disk has numerous pins *a* projecting vertically from its upper surface, and in a circle concentric with the disk, and is what is commonly known in cartridge machinery as a "pin-dial." The disk is arranged in such relation to the spindle F that the pins in the rotation of the disk will pass beneath the spindle, and so that each may stand in a vertical central line with the spindle. These pins are constructed so as to receive a shell, *b*, which is set thereon by the operative in the usual manner of placing shells upon the pins of the dial for any operation which may be required upon the head. An intermittent rotation is imparted to the disk in the usual manner of rotating such disks. As here represented, this rotation is imparted by a cam, K, on the driving-shaft through a lever, L, carrying a pawl, M, at its lower end, which engages one of the notches on the edge of the periphery at each vibratory movement of the lever L, and so as to impart to the disk one step in its rotation to each ascent of the slide A, the length of this step being equal to the distance between the pins on the dial, each step bringing one of the pins into vertical central line with the spindle F. On the lower end of the spindle a cutter-head, N, is fixed. The under or working face of this cutter-head is shown detached in Fig. 6. In the face two cutters, *d*, are fixed, their cutting-surface corresponding to the shape of the face end of the finished shell. This cutter revolves rapidly in a plane parallel with the plane of the dial. The shells are placed upon the pins head up, and as each is presented in line with the spindle, as before described, they are grasped by a pair of jaws, *e f*. The adjacent faces of these jaws correspond to the exterior of the surface of the shell. The one, *e*, is formed as a part of a slide, *h*, arranged for radial movement over the dial. The other jaw, *f*, is made as a part of a slide, *i*, arranged on a guide in rear of, but in line with, the jaw *h*. The back of these jaws are

inclined upward and inward. A spring is applied to each, serving to draw them away from each other. On the front of the slide A is a follower, *m*, and on the rear is a like follower, *n*. The noses of these followers as the slide descends strike, respectively, the inclined back of the jaws *e f*, and, continuing their descent, force these jaws toward each other and into the position seen in Fig. 4. As the slide ascends the jaws are released and permitted to retreat. As the slide ascends the dial is turned one step and brings the shell into line with the spindle F, and there it stands. The slide descends, the followers *m n* bring the two jaws firmly against and so as to embrace and hold the shell to prevent its rotation, at the same time the cutter comes upon the head of the cartridge, and, revolving, dresses or trims the head to the required shape. Then the slide rises and releases the shell from the jaws *e f*. The dial is again turned one step to present a second shell as well as to remove the first finished shell, and so on. The up-and-down movement of the slide corresponding to the feed, the machine continues its work, automatically presenting a new shell, trimming its head, and taking it away, it only being necessary for the operative to place the shells upon the pins of the dial.

The cutters are constructed with a downwardly-projecting flange, *r*, at their outer edge, which forms a cutter to trim the edge of the head. They are set in the cutter-head one each side the center, their inner point extending in sufficiently far to dress the head to the primer-seat.

While I prefer to arrange the spindle F in a vertically-reciprocating slide, it may be arranged in fixed bearings, so as to be reciprocated vertically therein, as seen in Fig. 8, the pulley H also being stationary as to vertical movement, as seen in that figure. As shown in this illustration, the vertical reciprocating movement is imparted by means of a lever, P, hung to a collar, R, around the spindle—say between its bearings G G—the collar R working between collars *t t* on the spindle.

It will be understood that there is a spline-connection between the pulley and the spindle, common in such connection between fixed pulleys and longitudinally-movable jaws or spindles. I therefore do not wish to be understood as limiting my invention to the particular devices whereby reciprocating movement is imparted to the cutter-carrying spindle or intermittent rotation imparted to the dial.

I claim—

1. In a machine for trimming the heads of cartridges, the combination of a vertical reciprocating and revolving spindle, a cutter-head attached to the lower end of said spindle, provided with cutters corresponding in shape to the shape of the head to be finished, mechanism, substantially such as described, to impart reciprocating and rotative movement to said spindle, a dial arranged upon an axis parallel with the axis of the spindle, the said dial provided with a series of pins in a circle concentric with the axis of the dial, and arranged in relation to the said spindle so that the axis of said pins will pass the axial line of said spindle, mechanism, substantially such as described, to impart intermittent or step-by-step rotation to said dial, whereby the said pins will be successively presented in axial line with said spindle, and a clamp, substantially such as described, to clamp the shell upon the pin so presented to said cutter, substantially as specified.

2. The combination of the spindle F, carrying the cutter-head N, said cutter-head armed upon its face with cutters corresponding to the shape of the head of the shell to be dressed, mechanism, substantially such as described, to impart vertically reciprocating and rotative movement to said spindle and cutter-head, the dial J, carrying a series of pins, *a*, concentric with the axis of the dial, mechanism, substantially such as described, to impart intermittent or step-by-step rotation to said dial, the jaws *e f*, arranged beneath said cutter-head, and substantially in the plane of the axis of the spindle, and movable on guides in a plane at substantially right angles to the axis of the spindle, the face of said jaws corresponding substantially to the external surface of the shell to be trimmed, the backs of said jaws inclined upward and toward each other, and reciprocating followers *m n*, arranged to strike the backs of said jaws in the descent of said spindle, substantially as described.

3. The combination of the slide A, mechanism, substantially such as described, to impart reciprocating movement to said slide, the spindle F, arranged in bearings in said slide, and so as to partake of its reciprocating movement, pulley H on said spindle, whereby rotation is imparted thereto, cutter-head N on the lower end of said spindle carrying cutters *d d*, the cutting-edge of which corresponds to the shape of the head of the shell to be dressed, the dial J, arranged to rotate in a horizontal plane, and carrying a series of pins, *a*, the jaws *e f*, their faces constructed corresponding to the external surface of the shells and their backs inclined, followers *m n*, attached to said slide, and mechanism, substantially such as described, to impart intermittent rotation to said dial, substantially as and for the purpose described.

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