(No Model.)

R. WHITE.

DEVICE FOR TRIMMING CARTRIDGE SHELLS.

No. 348,441. Patented Aug. 31, 1886.

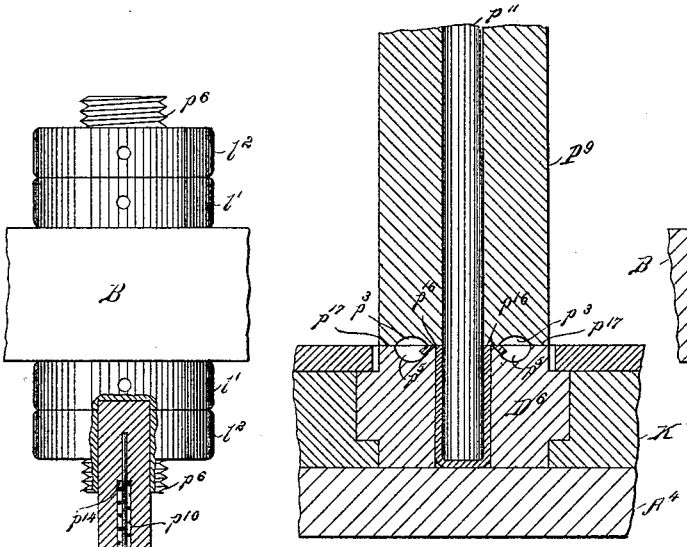

Fig. 1.

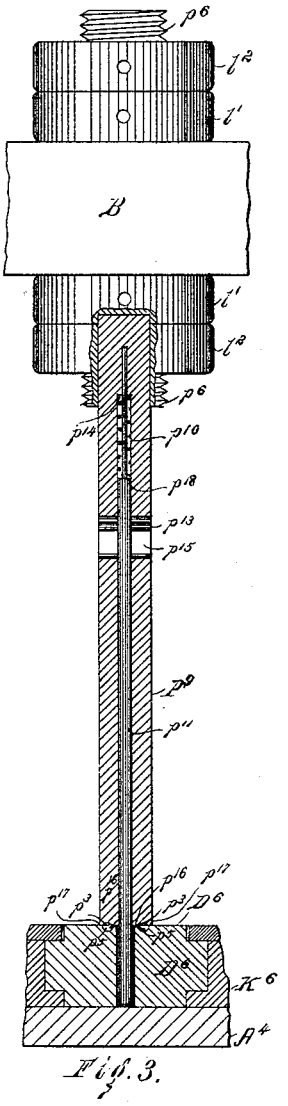

Fig. 3.

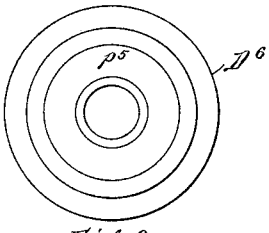

Fig. 2.

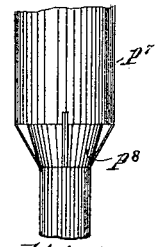

Fig. 5.

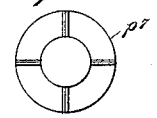

Fig. 6.

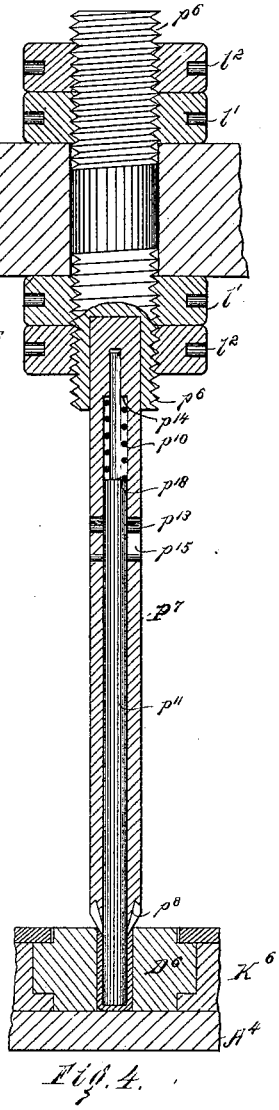

Fig. 4.

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UNITED STATES PATENT OFFICE.

ROLLIN WHITE, OF LOWELL, MASSACHUSETTS.

DEVICE FOR TRIMMING CARTRIDGE-SHELLS.

SPECIFICATION forming part of Letters Patent No. 348,441, dated August 31, 1886.

Application filed December 2, 1885. Serial No. 184,405. (No model.)

To all whom it may concern:

Be it known that I, ROLLIN WHITE, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Punches and Dies, of which the following is a specification.

My invention relates to punches and dies adapted for cutting and trimming; and it consists in the means, hereinafter described, of cutting off the ragged end of a metallic tube, and in means of determining the length of the finished tube.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of the lower end of my improved trimming-punch, the die, and a part of the die-rail; Fig. 2, a detached top view of the die shown in Fig. 1; Fig. 3, a side elevation of the punch-socket and a part of the head in which and the nuts by which the socket is secured, the lower part of the socket and the lower nuts being broken away and the trimming punch and die being in cross-section; Fig. 4, a sectional elevation of a splitting-punch and socket, a part of the head in which and the nuts by which it is secured, a die and a part of the die-holder, and the die-rail, and in this figure the punch has its lower end tapered off and is provided with knives for splitting the shell before trimming. The die shown in this figure is merely a dummy-die, intended to show the relation of the splitting-punch to the shell, as in practice the shell remains in the same die during the operation of splitting and trimming. Fig. 5 is an enlarged view of the lower part of the punch shown in Fig. 4, showing the beveled or tapered end of the outer cylinder and the splitting-knives; Fig. 6, a bottom view of the splitting-punch shown in Figs. 4 and 5.

In the drawings, B represents a head or block, caused in practice to have a reciprocating motion. In this head B is secured the socket p^6 in any convenient manner. In the drawings it is represented as being provided at its ends with external screw-threads, which engage with nuts l' and check-nuts l^2, above and below the head.

The trimming-punch proper consists of the outer cylinder, p^9, having on its lower end an annular groove, p^3, concentric therewith, the object of which groove is to admit the ragged upper end of the shell which has been split by the splitting-punch.

The splitting-punch is preferably of the form shown in Figs. 4, 5, and 6, and consists of an outer part, p^7, rigidly secured to the head of the machine, having its lower end tapered downward or beveled off at p^8, Figs. 4 and 5, and within this outer tube a cylindrical rod, p^{11}, adapted to move freely therein, and having its upper part reduced for a distance from its upper end to form a shoulder, p^{18}. This reduced part is surrounded by a spiral spring, p^{10}, which is compressed between said shoulder and a shoulder, p^{14}, on the outer cylinder. The spring p^{10} tends to push the inner rod, p^{11}, downward and out of the tube P^7; but this tendency is limited by a pin, p^{13}, driven through a perpendicular slot, p^{15}, in the tube p^7, and into or through the rod p^{11}, or the rod p^{11} may be extended up through the tube P^7 and into a recess in the socket; and be secured by nuts and lock-nuts, as shown and described in another specification filed simultaneously and bearing even date herewith for an "improvement in punches and dies."

The object of the central rod and the spiral spring is to crowd the blank shell into the trimming-die D^7 until the closed end of the blank touches the bottom of the die, and to do this before the splitting or trimming operation commences, thus gaging the length of the finished shell. The beveled part p^9 of the splitting-punch is provided with two or more radial knives, p, (four being shown in Figs. 6 and 7,) secured thereto and extending down some distance just far enough to clear the upper edge of the die when the punch is down. These knives have a cutting-edge on the exposed sides, which split the upper or open end of the shell extending above the die, and the taper of the punch spreads the end so split outward. The die containing the shell is now moved in any convenient manner (either by sliding it or revolving the carrier which contains it, substantially as shown and described in an application for a patent for "improvements in machines for making cartridge-shells," filed by me January 2, 1885,) under the trimming-punch P^9.

The trimming-die D^6 is provided with an annular groove, p^5, on its upper surface, about semicircular in cross-section close to the die-

opening, so that the edge of the die-opening is an annular knife, upon which the split upper end of the shell is trimmed, the die resting at the time on the die-rail.

The trimming-punch (preferably, but not necessarily, provided with an internal rod like the splitting-punch) descending upon the split and spread end of the shell forces the part above the die upon the annular knife p^5, and thereby cuts it off as the desired length on a true line.

In trimming eyelets and similar articles having a flange at an angle to the blank, the spreading and splitting may be dispensed with and the article be trimmed by the trimming-punch only.

Both the trimming-punch and the splitting-punch may be used without the internal rod, p^{11}, or the rod may be rigidly affixed in the outer cylinder, thus making it equivalent to a downwardly-projecting teat; but I prefer to construct the punches as described, so that should the shell get started from or fail to reach the bottom of the die the inner rod, p^{11}, will force it to its place and retain it there before and during the operation of splitting and trimming. The downward projection also acts as a guide for the outer cylinder. I also prefer to make the trimming-punch of such form that when the part p^{16} is down and just in contact with the knife of the die the lower surface, p^{17}, outside the annular groove, will rest upon the die, as shown in Figs. 1 and 3, thus saving the knife from injury should the punch be improperly adjusted.

I claim as my invention—

1. The combination of a die provided with an annular knife surrounding the die-opening, a punch having a conical lower end provided with splitting-knives, and a trimming-punch, substantially as described.

2. The combination of a die provided with an annular knife surrounding the die-opening, a splitting-punch provided with splitting-knives, and a trimming-punch having an annular groove on its lower surface, as and for the purpose specified.

3. The combination of a trimming-die provided with an annular knife surrounding the die-opening, and a punch adapted to press the open end of a shell upon said knife, substantially as set forth.

4. The combination of a trimming-punch having a groove in its lower surface, and a trimming-die having a knife surrounding the die-opening.

5. The combination of a die and a punch, said punch having a conical enlargement above the cylindrical portion or downwardly-projecting teat, as and for the purpose specified.

6. The combination of a die and a punch having radial conical-shaped knives and a cylindrical portion or teat projecting below said knives, as and for the purpose specified.

7. The splitting-punch having its lower end tapered or beveled off and provided with radial conical-shaped knives, as and for the purpose specified.

8. The combination of a trimming-punch having its lower surface extended laterally beyond the part which forms the anvil, and a trimming-die having a surface without the knife, upon which surface the extended surface of the punch may rest, as and for the purpose specified.

ROLLIN WHITE.

Witnesses:
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