(Model.)

H. S. BURNS.

Cartridge Crimping Machine.

No. 237,480. Patented Feb. 8, 1881.

fig. 1

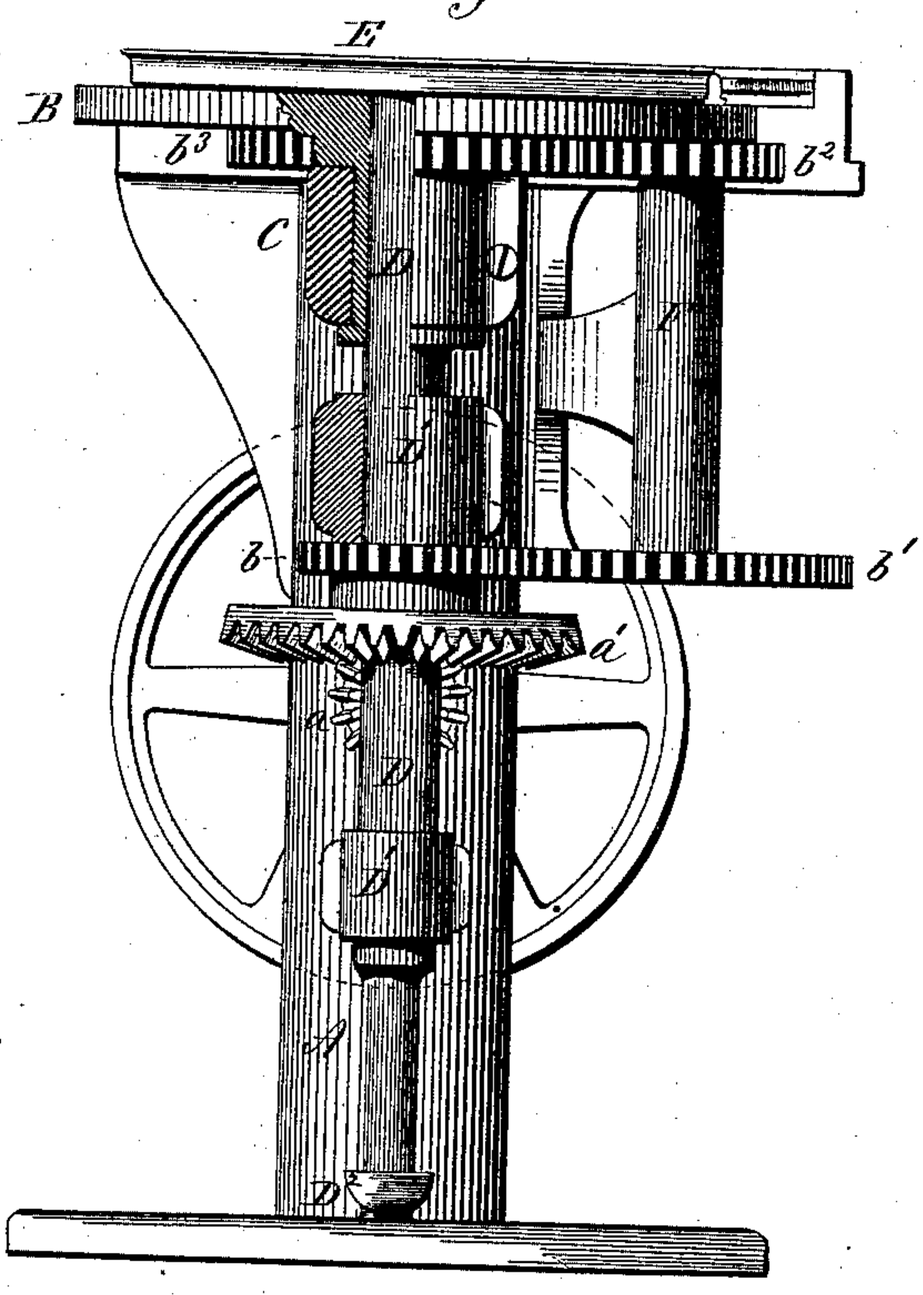


fig. 5

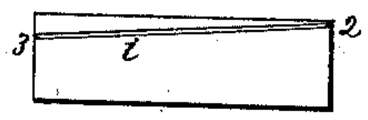


fig. 6

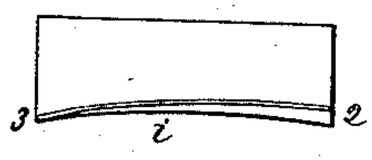


fig. 2

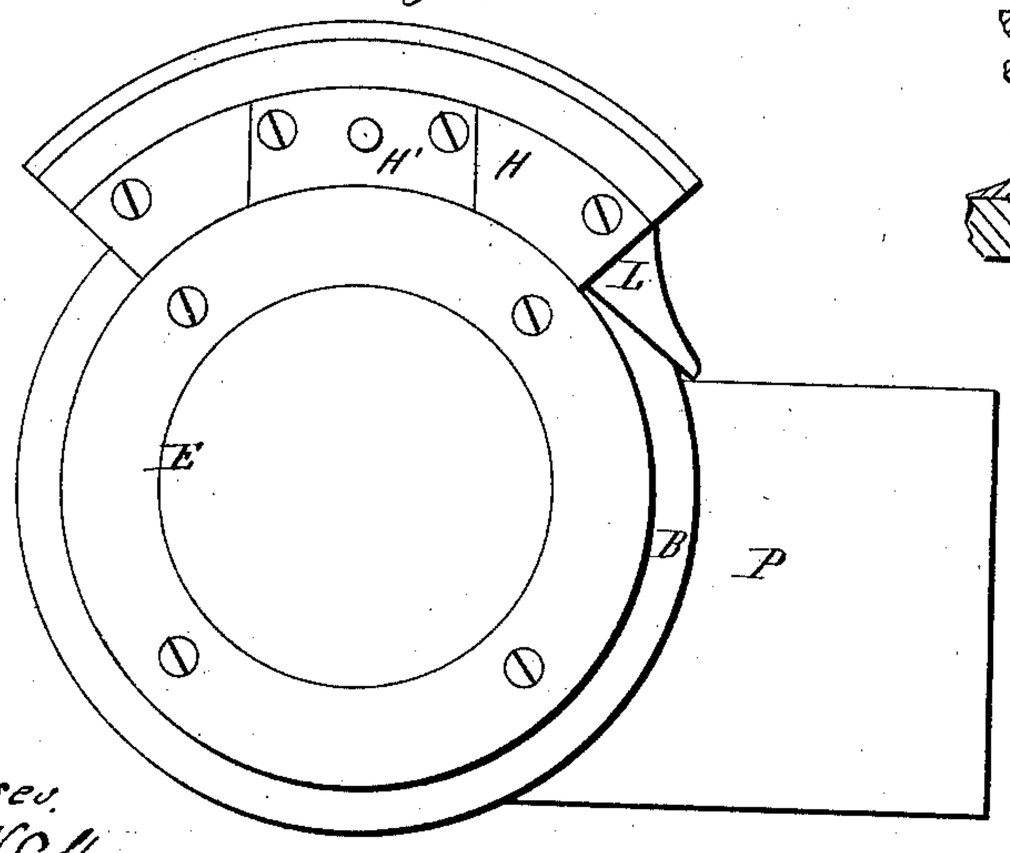


fig. 3

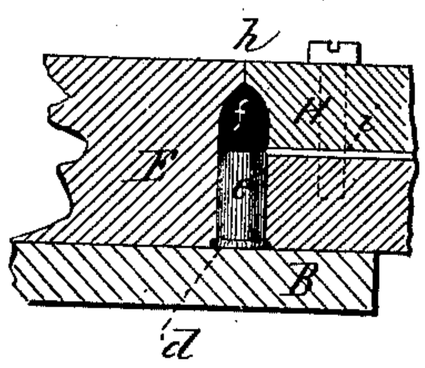
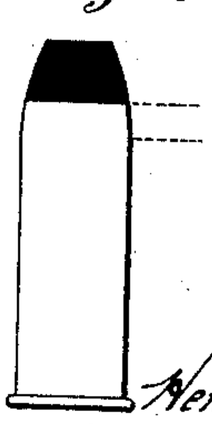


fig. 4



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UNITED STATES PATENT OFFICE.

HENRY S. BURNS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

CARTRIDGE-CRIMPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 237,480, dated February 8, 1881.

Application filed July 26, 1880. (Model.)

To all whom it may concern:

Be it known that I, HENRY S. BURNS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Crimping Cartridges; 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 sectional side view; Fig. 2, a top or plan view; Fig. 3, a section through the crimping-die; Figs. 4, 5, and 6, views to illustrate a modification of the machine.

This invention relates to an improvement in the manufacture of metal cartridges, with special reference to that part of the operation commonly termed "crimping"—that is to say, turning the edge of the shell inward onto the bullet, so as to secure the bullet and shell together.

In the usual crimping-machines the cartridges are fed to the machine singly by the hand of the operator.

The object of this invention is the adoption of a method and construction of a machine by which the cartridges may be delivered in a mass to the machine and automatically fed, so that several cartridges may be operated upon at the same time; and the invention consists in the construction as hereinafter described, and particularly recited in the claims.

As illustrated in the drawings, A represents an upright which forms the support for the operating mechanism. B is the bed or floor, which is supported in a vertical bearing, C, so as to be rotated as hereinafter described. Centrally through the floor B is a vertical shaft, D, which preferably extends downward through bearings D′ D′ and rests on a step, D^2, but so that it may revolve independent of the floor B. Above, or resting on the floor, is a disk, E, which is attached to and so as to revolve with the shaft D. Revolution is imparted to the shaft D by means of power applied through a beveled pinion, *a*, working into a corresponding gear, *a′*, on the shaft D, and from the shaft D revolution is communicated to the floor B by means of a pinion, *b*, on the shaft D, working into a gear, *b′*, on a vertical counter-shaft supported in a bearing, F, and carrying a pinion, b^2, which works into a corresponding gear, b^3, on the floor, as seen in Fig. 1. The proportion of the several gears b b' b^2 b^3 is such that the floor B is caused to revolve at a less velocity than the disk E, for the purpose which will more fully hereinafter appear.

The edge of the disk E, in transverse section, corresponds in shape, substantially, to one half-section of the cartridge, as seen in Fig. 3—that is to say, so as to leave a groove, *d*, between the disk and floor corresponding to the flange of the head of the cartridge; thence upward, following the line of the body of the shell *e* of the cartridge and of the bullet *f*, to the center, as seen in Fig. 3. At one side, and in the same plane with the disk, is a segment-shaped die, H, the edge of which facing the edge of the disk corresponds to the opposite side of the cartridge, (see Fig. 3,) the upper edge of the die H substantially meeting the upper edge of the disk E, as at *h*.

On the face of the die H, and in a line corresponding to the upper or mouth end of the shell *e*, is a rib, *i*, which projects inward toward the face of the disk E, as seen in Fig. 3.

If cartridges of the size corresponding to the space between the disk and die be placed head down upon the floor B, they will, by the revolution of the floor B, be carried into the space between the disk and die, conducted thereto by a guide, L, and when the first cartridge arrives in the space the revolving disk E engages with its one side, while the die H takes the opposite side, and then, as the revolution of the disk continues, the cartridges will be revolved or rolled between the disk and die, and in such revolution the rib *i* will strike the metal of the shell at the mouth and force it inward annularly around the shell into the metal of the bullet, forming what is called the "crimp," and thereby securing the bullet to the shell.

Preferably the rib *i* extends over only a portion of the length of the die H—as, for instance, the central portion, H′—leaving a space through which the cartridges will revolve before they reach the rib *i*. Hence, if the bul-

lets be not driven into the shell to the proper extent, they will be forced down to that proper extent by coming in contact with the upper portion or top of the space between the die and disk, so that a standard length and uniformity of the cartridges will be the result. The disk and die, bearing as they do upon the surface of the shell and bullet, prevent any possible bulging of the metal in consequence of the crimping operation, so that the cartridges passing from between the disk and die must be perfectly uniform throughout.

The floor B is made to revolve at a less velocity than the disk E, so that as each cartridge is taken between the disk and die an accelerated forward movement is given to it, taking it away from the next cartridge, which prevents the possibility of the cartridges coming in contact with each other while passing through the crimping operation.

In some classes of cartridges the bullet is inserted into the mouth of the shell until the mouth reaches onto the reduced portion of the bullet. In this case the mouth of the shell is to be crimped onto the bullet. This requires a curvature extending from the mouth toward the head, as between the broken lines, Fig. 4. In crimping this class of shells, if the rib be of a height and shape corresponding to the curve required, the result will be a fulling or stretching of the metal, and not producing the crimp. Therefore, for this class of crimping, the rib is arranged inclined to the floor, as seen in Fig. 5, the highest point, 2, being just at the mouth of the shell, and where it is first taken between the disk and die, its lowest point, 3, corresponding to the lowest point in the curve or crimp. The rib should gradually run from the extreme projection at the point 2 to nothing or no projection at the point 3, as seen in Fig. 6. (It will be understood that Figs. 5 and 6 are exaggerated representations.)

Preferably a table, P, is arranged at one side of the floor and on the same plane with it, onto which a mass of cartridges may be set with heads downward and pressed forward by the operator onto the floor B as they are taken away by it and the revolving disk; or, instead, the revolving floor B may be stationary, and a common friction-feed with guides may be applied, in place of the table P, to deliver the cartridges to the mouth or space between the die and disk. The rib *i* may be in a corresponding position on the disk and not on the die, or it may be on both; or the rib *i* may be dispensed with entirely, when the disk and die, owing to their peculiar shape, as before described, will bring the bullets and shells into their proper relative shape and produce perfect uniformity of size and shape.

I do not broadly claim a revolving disk and segment-shaped die with a floor, either revolving or stationary, and either the disk or die, or both, provided with a rib or ribs, as I am aware that such a construction has been employed in bullet-grooving machines; but

What I do claim is—

1. The herein-described improvement in the method of securing the bullets in metallic cartridges, consisting in passing the cartridges, after the bullets have been inserted, between a stationary segment-shaped die and a corresponding revolving disk, which together cause the cartridges to revolve at the same time a rib on one or both of the said die and disk turns or crimps the edge of the shell annularly into the surface of the bullet, substantially as described.

2. In a machine for crimping cartridges, the combination of a floor upon which the heads of the cartridges ride or rest, a stationary segment-shaped die, and a corresponding revolving disk arranged to leave a space or groove at the floor for the flange of the cartridge-shell, the said disk and die to take the cartridge and impart to it a revolution as it passes between said die and disk, and the said die or disk, one or both, provided with a rib arranged to turn the metal of the shell annularly in upon the bullet, substantially as described.

3. In a machine for crimping cartridges, the combination of a floor upon which the heads of the cartridges ride or rest, a stationary segment-shaped die, and a corresponding revolving disk arranged to leave a space or groove at the floor for the flange of the cartridge-shell, the said disk and die to take the cartridge and impart to it a revolution as it passes between said die and disk, the said floor arranged to revolve in the same direction as the disk, but at a slower rate of revolution, and the said die or disk, one or both, provided with a rib arranged to turn the metal of the shell annularly in upon the bullet, substantially as described.

4. In a machine for crimping cartridges, the combination of a floor upon which the heads of the cartridges ride or rest, a stationary segment-shaped die, and a corresponding revolving disk arranged to leave a space or groove at the floor for the flange of the cartridge-shell, and shaped in vertical section so that the space between the disk and die corresponds to the longitudinal section of the complete cartridge, substantially as and for the purpose specified.

5. In a machine for crimping cartridges, the combination of the floor upon which the heads of the cartridges ride or rest, a stationary segment-shaped die, and a corresponding revolving disk, said die and disk, one or both, provided with a rib inclined to the plane of the floor, substantially as described.

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Witnesses:
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