J. GARDNER.
Percussion Primers.

No. 208,589. Patented Oct. 1, 1878.

Fig. 1.

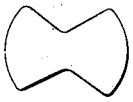


Fig. 2.

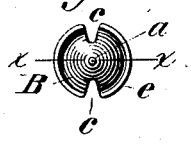


Fig. 3.

Fig. 4.

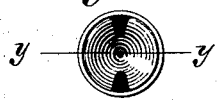
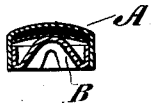


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN GARDNER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

IMPROVEMENT IN PERCUSSION-PRIMERS.

Specification forming part of Letters Patent No. **208,589**, dated October 1, 1878; application filed September 3, 1878.

To all whom it may concern:

Be it known that I, JOHN GARDNER, of New Haven, in the county of New Haven and State of Connecticut, have invented certain Improvements in Primers for Cartridges, of which the following is a specification:

My invention relates to primers for use with metallic cartridges; and the invention consists of an anvil of novel construction, as hereinafter more fully explained.

Figure 1 is a plan view of the blank from which the anvil is made. Fig. 2 is a top-plan view, and Fig. 3 a transverse vertical section, of the anvil completed. Fig. 4 is a bottom-plan view, and Fig. 5 a transverse vertical section, of a primer complete.

Various forms and styles of anvils have been devised for use with the primers of metallic cartridges, some being formed of the metal of the cartridge-head and solid therewith, others of a separate piece of metal and afterward set loosely in the pocket of the cartridge-head, or in some cases fastened therein. So there have been anvils made that were placed in the cap or primer, but generally these have not been as perfect as desired, for several reasons. Usually they have been of such a form that if pressed into the cap sufficiently tight to be held therein, as they should be, they pressed the sides of the cap outward at certain points, thereby throwing the sides out of a true circle; and when such a primer is inserted in the pocket of a shell it would not fit and bear evenly all around, and consequently would not be gas-tight in all cases, as it should be.

In nearly all cases the anvil bears at the center of the pocket only, and consequently when struck in firing the charge it is apt to depress the bottom of the pocket at the center, so that it is difficult to successfully use the shell again, because the anvil setting deeper in the pocket at each discharge soon gets beyond the reach of the firing-pin; or, if the pocket is made sufficiently thick and strong to withstand the repeated blows, it often happens that the cap itself is cut through by the point of the firing-pin, in which case, also, it will leak gas.

To obviate these and other objections I make my improved anvil as follows: From sheet metal of the proper quality and thickness I cut out a blank of the form shown in Fig. 1. By means of dies and punches I then strike up the center, so as to form a cone or point, *a*, as shown in Figs. 3 and 5, and also turn up the outer edge all around, so as to form a vertical flange, *e*, as shown in Fig. 3. These operations bring the two sides or edges of the blank toward each other, so that the large V-shaped notches in its two edges are each reduced to the small notch or opening *c* shown in Figs. 3 and 5, these being the openings through which the flame from the fulminate of the cap passes when ignited.

Care is of course taken to make these anvils of such a size that they will just fit inside of the caps, as shown in Fig. 5, and they are pressed into the caps with sufficient tightness to hold them in and prevent their falling out in handling, the form of the anvil allowing it to spring a little, thereby causing it to press against the sides of the cap with sufficient force to hold it securely in place.

An anvil thus constructed has, among others, these advantages: It is not liable to drop out, and, being made in dies, can be made of any desired thickness and with perfect uniformity, both as to thickness and size. Being circular in form, it does not press the cap out of shape, and hence the latter, if properly fitted, will be self-sealing or gas-tight when exploded; and, besides, the pressure on the apex of the anvil will tend to press its bottom outward all around, thus helping to force the sides of the cap at its edge against the walls of the pocket, thus aiding to make it gas-tight. Again, this anvil bears upon the bottom of the pocket around its outer edge, where the metal is solid and best supported, and hence it does not depress the bottom of the pocket at its center, as some kinds do, and this is rendered all the more certain by its bearing uniformly nearly all around.

Moreover its arched or conical form enables it to be made of very thin metal, and yet offer the required resistance to ignite the fulminate, and at the same time it can be so adjusted as to thickness and resistance as to yield before the cap is cut through by the point of the firing-

pin. A cap provided with such an anvil is found, on trial, to operate in the most satisfactory manner and to make a most complete primer.

Having thus described my invention, what I claim is—

1. An anvil for cartridge-primers consisting of the sheet-metal blank struck up in a die in such a manner as to produce the anvil B, having the conical apex *a*, the reversed flange or rim *e*, and slots *c*, substantially as shown and described.

2. A primer consisting of the cap A and the anvil B, the latter being made with the conical body or apex *a*, the reversed flange *e*, and slots *c*, substantially as shown and described.

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