J. LEE.

PRIMERS FOR CARTRIDGES.

No. 193,524. Patented July 24, 1877.

Fig. 1.

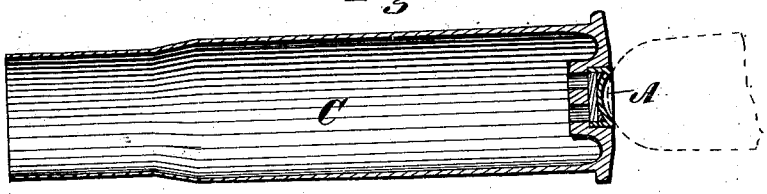


Fig. 2.

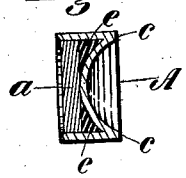


Fig. 3.

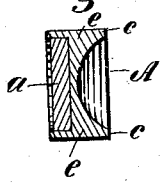
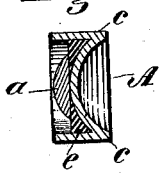


Fig. 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PRIMERS FOR CARTRIDGES.

Specification forming part of Letters Patent No. **193,524**, dated July 24, 1877; application filed June 11, 1877.

To all whom it may concern:

Be it known that I, JAMES LEE, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in Primers for Cartridges, of which the following is a specification:

My invention relates to primers for metallic cartridges; and the invention consists in a primer having its head or closed end made concave, and having the groove or angle surrounding the same on the interior filled in with a non-explosive material, or made solid, whereby the danger of accidental explosion will be greatly lessened, as hereinafter more fully set forth.

Figure 1 is a longitudinal section of a cartridge-shell with the primer applied thereto. Figs. 2, 3, and 4 are longitudinal transverse sections of the primer, showing its construction, with modifications.

The object of my invention is to produce a primer that can be used with metallic cartridges in magazine fire-arms in such a manner as to obviate or greatly lessen the danger of accidental explosion of the cartridges.

It is well known that in magazine-guns the cartridges, having powder, ball, and primer all applied, are placed end to end in a tube, in which case the point of the ball of one cartridge bears against the head of the one immediately in its front, and, as a consequence of this, it sometimes happens, especially when the arm is handled roughly or is accidentally subjected to sudden shocks, that one or more of the cartridges are accidentally exploded, by the blow or concussion of the ball in rear striking against the primer of the cartridge in front of it. It is obvious that such an explosion will endanger the life or limb of the person holding the arm as well as the destruction or disabling of the arm itself.

To obviate this difficulty I construct my primer as follows: Instead of making the shell or body of the primer in the usual manner, with its head or closed end flat or convex on its exterior surface, I make it concave, as shown in Fig. 2, the concavity being made comparatively deep and occupying the entire end, so as to leave the outer rear wall or rim *c* rigid and strong, so that it cannot be indented or driven in upon itself without receiving a blow sufficient to upset the solid metal of the side walls. This of itself may be sufficient in some cases, especially if the primers be made of thicker or heavier metal than usual; but, as it is desirable not to make them of much thicker metal, on account of its requiring a stronger blow to ignite them, I prefer to use metal of the ordinary thickness, and then to fill the cavity around the indented head with gum-shellac or other non-explosive material on the inside of the primer, as indicated at *e*, Figs. 2, 3, and 4, the space being thus filled up level with the top of the indented end, or nearly so, as shown.

After the primer has been thus prepared, the fulminate *a* is placed in it in the usual manner, it preferably not coming quite flush with the open end, as shown in Fig. 2.

Instead of making the body of the primer of sheet metal of uniform thickness, and then putting in the non-explosive filling *e*, it may be made as represented in Fig. 3, in which it is made of metal of sufficient thickness to leave the part *e* of solid metal, as there shown, which can be readily done by using thicker metal and the proper machinery. So it is obvious that, instead of gum-shellac, other substances may be used to fill up the cavity around the indented head, such, for instance, as a suitably-shaped ring of wood, metal, *papier-maché*, rubber, or the like, and be made to answer equally well.

It is important that the concavity in the head of the primer should be of such depth that when the ball in its rear shall bear against it, the point of the ball shall not reach or bear upon the bottom of the concavity, but, instead, shall bear or rest on the rim or projecting angle *c* around the outer edge, as shown in Fig. 1.

It will readily be seen that, with a primer made in the manner above described, it will be next to impossible, if not absolutely impossible, to produce an explosion by the weight or force of the cartridge in its rear.

Even if the primer should happen to protrude a little beyond the head or end of the cartridge-shell, the only effect of a blow or pressure on its edge *c* would be to force it into its place in the pocket in the head of the shell. By having the portion *e* filled with

non-explosive material it will be seen that a blow obliquely against the sides of the concavity will not explode it. At the same time a blow from the point of a firing-pin delivered centrally in the concavity will ignite the fulminate *a* as readily as in the ordinary primer.

Another advantage of this primer is that it enables me to dispense with the anvil ordinarily used either in the primer or on the shell, and thereby to save considerable in time and expense. When such a primer is used, the bottom of the pocket in the cartridge-shell C is left flat, and a couple of holes punched through it in such a manner as to leave a solid portion of metal at the center, as represented in Fig. 1, the fulminate in such case being driven against this solid central portion by the point of the firing-pin and exploded.

Instead of spreading the fulminate *a* over the whole space in the primer, it may be merely piled up in the center, as shown in Fig. 4.

Having thus described my invention, what I claim is—

A primer, consisting of the body or shell A, having its closed end or head indented or made concave, with the non-explosive material *e* filled in around, or made solid with said concave head, substantially as and for the purpose set forth.

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