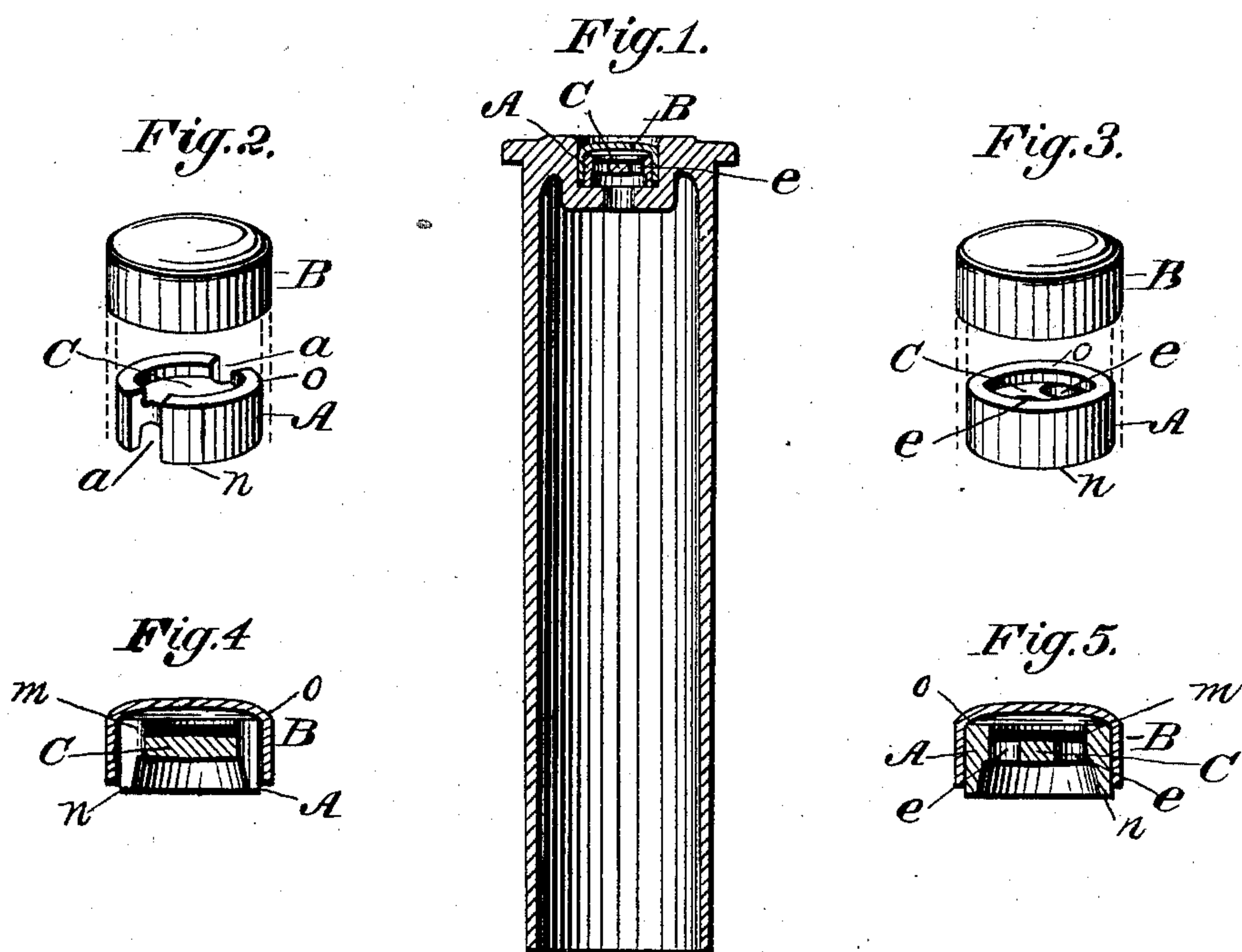


J. GARDNER.
Primer for Cartridges.

No. 238,039.

Patented Feb. 22, 1881.



Witnesses:
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UNITED STATES PATENT OFFICE.

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

PRIMER FOR CARTRIDGES.

SPECIFICATION forming part of Letters Patent No. 238,039, dated February 22, 1881.

Application filed June 21, 1879.

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 Metallic Cartridges, of which the following is a specification.

This invention relates to primers for metallic cartridges; and the invention consists in an anvil of peculiar construction, having the fulminate placed in a cavity in its upper surface, with a rigid surrounding wall, whereby it is rendered more secure against accidental explosions, and is specially adapted for use in magazine fire-arms, all as hereinafter more fully explained.

Figure 1 represents a longitudinal vertical section of a cartridge-shell having the improved primer applied. Figs. 2 and 3 are perspective views of the primer with the parts detached; and Figs. 4 and 5 are transverse vertical sections of the cap and anvil, all being enlarged.

The object of this invention is to produce a primer which will be sure to render the joint between it and the shell gas-tight, which shall contain only the proper quantity of fulminate, and which will also lessen the danger or possibility of accidental explosions.

To accomplish these results I construct the primer as follows: I first make the anvil A, which consists of a piece of metal stamped or otherwise formed into the shape of a cup, with a small cavity or recess in its closed end for the reception of the fulminate, as shown in the several figures. This cup or anvil will be made of a length corresponding to the length or depth of the cap into which it is to be inserted, as hereinafter described, so that when the primer, as a whole, is inserted in the pocket of the cartridge-shell, as represented in Fig. 1, the open end of the anvil A will rest upon the bottom of the pocket, and thus afford a solid resistance for the impact of the firing-pin or hammer, to insure the ignition of the fulminate. The closed end of the anvil is pierced with a couple of small holes, *e*, Figs. 3 and 5, to permit the flash from the fulminate to pass through and ignite the powder; or, instead of the holes, it may have a couple of grooves, *a*, formed in its sides, as shown in Fig. 2. The

holes are preferable, however, because they leave the walls of the anvil in the form of an unbroken cylinder, so as to fit snugly and bear against the inner walls of the surrounding cap B at all points of the circumference of the anvil, thereby aiding to hold the walls of the cap B in place, and enabling the primer to be forced very tightly into the pocket of the shell without collapsing or crinkling, thus insuring a close snug fit of the primer within the pocket, so as to prevent the escape of gas between them.

Having thus formed the anvil A, it only remains to provide openings for the fire or flash from the fulminate to pass through, and which may be done either by making one or more small holes, *e*, through the diaphragm C, as represented in Figs. 3 and 5, or by making one or more grooves, *a*, in its sides, as represented in Fig. 2, the holes, however, being considered preferable, because they leave the periphery of the anvil solid and unbroken, which is desirable, because such unbroken wall serves to support the surrounding rim or wall of the cap B and press it firmly against the surrounding wall of the pocket when properly seated in the cartridge-shell.

Experience has demonstrated that in order to make the joint between the primer and the shell gas-tight, the pocket in the head of the shell must be of a certain depth, and that it cannot be safely reduced beyond the depth now generally used in this class of shells. Experience has also demonstrated that an excess of fulminate in the primer is injurious, as its action is so instantaneous that it produces not only great strain, but also a rending effect, upon the adjacent parts, thereby tending to open the joints or burst the parts, and it is therefore very desirable that the primer should be so made as to prevent the possibility of getting in too much fulminate. By constructing the anvil as I have described I accomplish both these objects. The anvil, being rigid and perfectly cylindrical, forces and holds the surrounding flange of the cap B in close contact with the surrounding walls of the pocket as it is forced therein, especially as the walls of the pocket are slightly inclined, and at the same time the length of the anvil

is such that it affords a solid bearing for the flange of the cap B and presses it against the walls of the pocket throughout the entire depth of the cap, thus insuring a close-fitting joint of considerable depth, and one that is supported all around by the solid and rigid walls or sides of the anvil.

The cup or recess in the outer face of the anvil is of such a size that it will not receive an excess of fulminate, it being of sufficient capacity to hold only such an amount as is necessary to ignite the powder of the cartridge, and in filling this it is designed to have the surface of the fulminate *m* a trifle below the edge of the surrounding rim *o* of the anvil, as shown in Figs. 4 and 5.

It will, of course, be understood that the cap B, which is used with this anvil, is simply a metal cap, made in the usual manner, but without any fulminate within it, the fulminate in this case being placed in the anvil A instead. Another advantage arising from this construction is safety against accidental explosions, whether caused by handling or dropping the cartridges or by the concussion arising from the striking of one against another in the magazine of a gun. In either case the solid projecting flange *o* will receive the force of the blow, and thus prevent the fulminate from being hit and ignited, the point of the bullet, where the cartridges lie in a magazine, being too large to enter the recess containing the fulminate far enough to ignite the same. It will be readily seen that a primer thus constructed can only be fired by being struck by the point of a firing-pin or hammer that is small enough

to enter the recess or cup that contains the fulminate, and that its safety from accidental explosions is greatly increased.

I am aware that a primer has been made in the form of two cups united mouth to mouth, as in the Sharps' pellet or primer, and also that one has been patented consisting of a cup with a thin disk closing its mouth, and also that one has been patented consisting of a saucer-shaped anvil or disk inserted within a cap, the edges of the latter being turned down over the edge of the anvil.

I am also aware that a primer has been described consisting of a cap with a cup-shaped lining inserted therein with its open end outward; but in that case the inner cup or lining had no perforations, it being intended that the fulminate should burst a hole through it when exploded, which would require an excessive amount of fulminate; and, moreover, in that case the primer was designed to be used on a nipple, so that the interior cup did not serve as an anvil to resist the impact or blow of the hammer, as in my primer.

Having thus fully described my invention, what I claim is—

A primer consisting of the cap or shell and the perforated cup-shaped anvil inserted therein with its open end or mouth outward, with their adjacent sides in close contact, and having the receptacle for the fulminate formed between the heads.

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Witnesses:

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