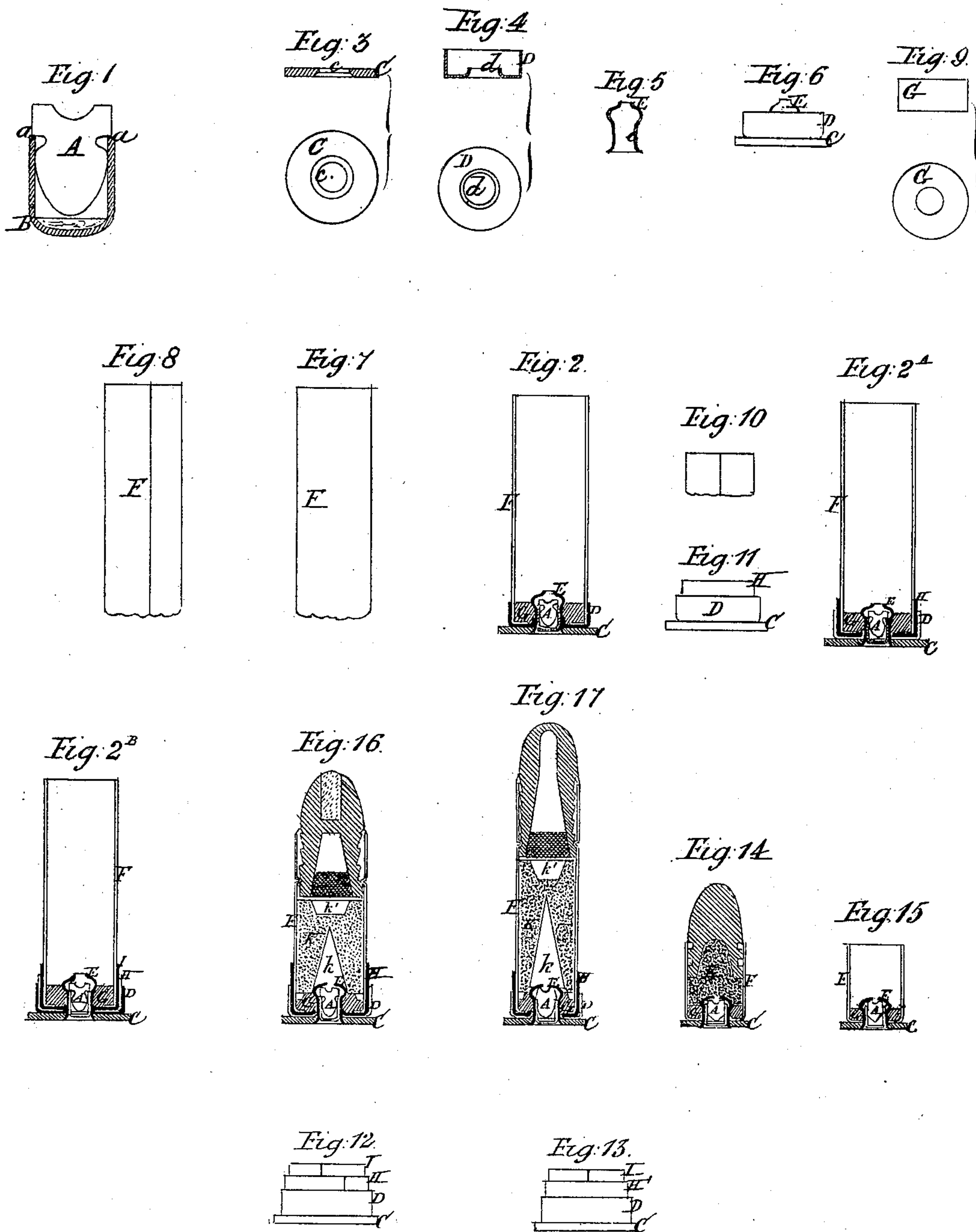


E. M. BOXER.  
METALLIC CARTRIDGE.

No. 91,818.

Patented June 29, 1869.



Witnesses

*W. H. Kel*  
*M. H. Taylor*

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# United States Patent Office.

EDWARD MOUNIER BOXER, OF THE ROYAL ARSENAL, WOOLWICH, ENGLAND.

*Letters Patent No. 91,818, dated June 29, 1869; patented in England, October 13, 1866.*

## IMPROVEMENT IN METALLIC CARTRIDGES.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, EDWARD MOUNIER BOXER, of the Royal Arsenal, Woolwich, in the county of Kent, England, Colonel Royal Artillery, have invented an "Improved Cartridge for Breech-Loading Fire-Arms;" and I do hereby declare that the following is a full and exact description of the said invention, reference being had to the accompanying drawing, and to the figures and letters marked thereon; that is to say—

My invention has reference, first, to an improved form and arrangement of the anvil to central-fire breech-loading cartridges generally, whereby the liability of the cartridge to explode, when accidentally dropped, or subjected to any other blow than by the striker of the fire-arm, is obviated. In the arrangements heretofore employed, the anvil has been made of such a form, that if the cartridge were subjected to a sufficiently sharp blow, it could pass, more or less, entirely into the percussion-cap, so as to strike against the fulminating-compound, and thus explode the cartridge.

Now, my improvement consists in forming shoulders or prejections of such a form on the sides of the anvil, that when the anvil is inserted into the cap, they rest against the edge of the latter, and thus prevent the anvil from passing further into the cap under any circumstances, the point of the anvil being then in such a position that it is impossible for it to cause the ignition of the fulminating-compound, except when the back of the cap is indented by the striker on firing.

My invention consists, secondly, in forming the base of the cartridge of a solid metal disk, and in securing the body of the case to this disk in the following manner: The flanged cap-chamber—that is to say, the flanged tube which contains the cap and anvil, or other means of ignition—has one or more cannelures or flanges formed upon its exterior surface. The rear end of the body of the cartridge, whether of paper alone, or of metal alone, or of paper, calico, linen, or other similar material, combined with metal, is turned over upon the wad, which forms the bottom of the body. This wad, when condensed, enters into the cannelures of the cap-chamber, and, at the same time, jams the turned-over portion of the body between its bottom surface and the surface of the metal disk, thus securely fastening the metal disk, the cap-chamber, and the body of the cartridge together. The wad I sometimes make of an alloy of lead and antimony, or lead and tin, or an alloy of a similar character, and of a cup-shape, so that the explosion of the charge readily expands the edges of the cup, and thus prevents the gas from passing down the sides of the case.

The above-described arrangement is applicable to blank ammunition, and to cartridges which have not

to sustain any severe strain. In ball-ammunition, I prefer to strengthen the bottom of the body of the cartridge by means of a thin metal cup, which fits over the end of the body. In cartridges which have to withstand a severe strain, I further strengthen the bottom of the body by means of one or more strips of thin sheet-metal, coiled on the exterior of the body, but inside the cup, which strip extends beyond the cup; and, in some cases, I employ a second cup, in place of or in addition to the strips of metal. The strip or strips of coiled metal or cup prevent the edge of the outer cup from cutting through the body of the cartridge when it is expanded on firing.

This form of charge is applicable to every description of fire-arm, and, when properly arranged, it increases the force of the charge from ten to fifteen per cent.

Having thus set forth the nature of my invention, I will now proceed more fully to describe the manner of performing the same.

Figure 1, on the accompanying drawing, shows a sectional elevation, to an enlarged scale, of the before-described shoulder-anvil A, inserted in the percussion-cap B, against the edge of which the shoulders *a a* of the anvil abut, thus preventing it from passing far enough into the cap to cause the ignition of the fulminate, which can, therefore, only be effected by indenting the cap by the action of the striker of the gun.

Figures 2 to 9 show one arrangement of my improved mode of forming the base of the cartridge. This consists of the following parts, namely: first, a metal washer, C, with a central hole, *c*, shown detached, in section and plan, at fig. 3; second, a thin metal cup, D, also having a central hole, *d*, shown detached, in section and plan, at fig. 4; third, a cap-chamber, E, shown detached, in section, at fig. 5.

These parts are fitted together, as shown in elevation at fig. 6, the cap-chamber E being passed through the holes, *c* and *d*, in the parts C and D. The body of the cartridge-case F, formed either of paper alone, as at fig. 7, or of tubular metal, or of paper, calico, linen, or other similar suitable material, combined with metal, as at fig. 8, is then inserted into the base, the rear end of the case having first been turned over a wad, G, (shown detached, in elevation and plan, at fig. 9,) as indicated at figs. 7 and 8. The case is then secured to the base, as shown in the section at fig. 2, by forming a cannelure, *e*, on the cap-chamber E, by upsetting the end thereof, into which cannelure the wad G fits, the latter being made to press firmly against the cap-chamber, and against the case F, by being condensed by pressure.

The upsetting of the end of the cap-chamber may be effected either before or after the wad is condensed.

Figure 2<sup>a</sup> shows a section of a cartridge, consisting



of the same parts described with reference to fig. 2, with the addition of a coil of thin metal, H, (shown detached at Figure 10,) turned over at the rear end, which coil is inserted between the case F and the cup D, and is made to extend beyond the edge of the latter, as shown in the detached elevation of these parts at Figure 11.

The base of the cartridge, shown in section at Figure 2<sup>a</sup>, is formed of the same parts as the cartridge fig. 2<sup>a</sup>, with the further addition of another coil of thin metal, I, extending beyond the first coil, H, as shown in the detached elevation at Figure 12. In this arrangement, I sometimes substitute a very thin cup for the first coil, as shown at H', Figure 13, in which case the base cup D is made thinner than when a coil is employed.

The object of these base coils in the cartridges, figs. 2<sup>a</sup> and 2<sup>a</sup> being principally to prevent the cutting through of the body of the case at the time of firing, (which sometimes occurs from the body expanding more readily than the base cup,) the relative thicknesses and resistance to expansion of the cups and coils must be regulated accordingly.

When the case of the cartridge consists of a solid metal tube, and where the strain is not great, as in pistol-charges, the base cups may be dispensed with, as before stated, and the case be secured by simply being turned over at the lower end, and jammed between the disk O and the wad G, as shown at Figures 14 and 15, of which fig. 14 shows a section of a pistol-cartridge, and fig. 15 shows a section of the case for the same.

Figures 16 and 17 show my improved form of compressed and recessed powder-charge for cartridges.

Fig. 16 shows a section of a rifle-cartridge of 0.577 bore, with the charge applied, and fig. 17 shows a section of a cartridge of 0.5 bore, with the same.

The construction of the cases of the cartridges is the same as before described with reference to fig. 2<sup>a</sup>.

K is the powder-charge, compressed as before described, and having a deep recess, *k*, formed at its rear end, and a shallow one, *k'*, at its front end.

On firing the cartridge, the charge is ignited on the entire surface of the recess *k*.

Having now described the nature of my invention, and in what manner the same is to be performed,

What I claim, is—

1. Constructing the anvil to cartridges for breech-loading fire-arms with shoulders or projections, so formed as to abut against the edge of the percussion-cap, and thus to prevent its entering the cap to such an extent as to cause the ignition of the fulminate, except when the cap is acted upon by the striker of the gun, substantially as hereinbefore described with reference to fig. 1 on the accompanying drawing.

2. The separate flanged cap-chamber E, so made as to enclose the cap and anvil, or other means of ignition, and, at the same time, by compression of a wad, G, around the same, to secure the body of the cartridge-case to a solid metallic disk, O, with or without the intervention of a base cup, D, substantially as hereinbefore set forth.

3. Interposing one or more pieces of coiled metal or cups between the base cup and the cartridge-case, which coiled metal or cups extend beyond the edge of the base cup, substantially as and for the purposes hereinbefore described with reference to figs. 10 to 13 on the accompanying drawing.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses, this 17th day of December, 1867.

Witnesses:

O. D. ABEL,  
THR. TAYLOR.

E. M. BOXER.