

E. K. ROOT.  
PRIMING METALLIC CARTRIDGES.

No. 45,079.

Patented Nov. 15, 1864.

Fig. 2.

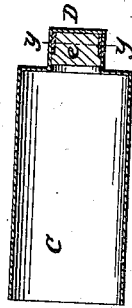


Fig. 3.

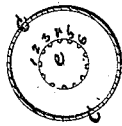


Fig. 1.

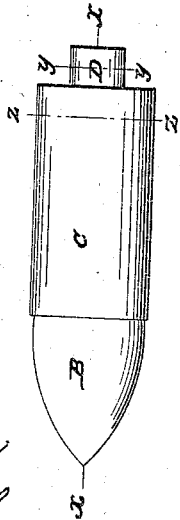


Fig. 7.

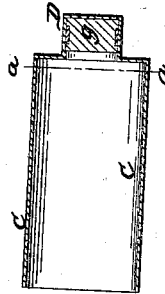


Fig. 8.

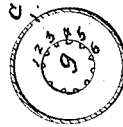


Fig. 6.

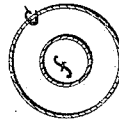
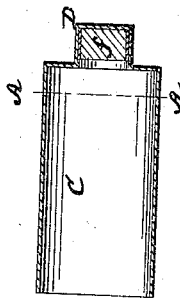


Fig. 5.



Witnesses:  
Wm. A. Bishop  
Andrew DeLay

Inventor  
E. K. Root  
By his Attorney  
J. A. McIntire

# UNITED STATES PATENT OFFICE.

E. K. ROOT, OF HARTFORD, CONNECTICUT.

## IMPROVEMENT IN PRIMING METALLIC CARTRIDGES.

Specification forming part of Letters Patent No. 45,079, dated November 15, 1865.

### *To all whom it may concern:*

Be it known that I, E. K. ROOT, of Hartford, of the county of Hartford in the State of Connecticut, have invented certain new and useful improvements in cartridges; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My present invention relates to that kind of metallic cartridges the case of which is formed with a projecting teat in which the fulminate is placed.

Previous to my invention this kind of cartridge has been made with the projecting teat, or portion in which the fulminate is confined, flattened in one direction, (that is, in the form of a hollow cylinder collapsed or pressed between two parallel surfaces,) with the fulminate arranged in a thin layer or stratum between its flattened surfaces.

One great objection to a cartridge thus made is the necessity of inserting the cartridge-case in a certain position in the chamber of the fire-arm, so that the hammer of the latter will strike on one of the (two) flattened surfaces of the fulminate-teat, (while the other flattened surface rests on a suitable supporting surface of the arm.)

It has also been customary to make cartridges with a projecting teat at the rear end of the case, having an inserted cylindrical anvil, as, for instance, as shown in the French patent "Houllier, April 7, 1846." With this mode of construction the cartridge need not be adjusted to any given position, but a cartridge made in accordance with this said patent is much too complicated for economical manufacture and general use.

My invention has for its objects to overcome these objections and afford a cartridge which will be more desirable than those heretofore made; and to these ends my invention consists in a cartridge having its case formed with a projecting teat at its rear end provided with an inclosed disk or block, and so shaped that a layer or fulminate arranged between the periphery of the said disk and the internal surface of said teat may be exploded with certainty by a blow struck upon any point in the periphery of the latter, all as hereinafter more fully set forth.

To enable those skilled in the art to make and use my invention, I will proceed to describe the construction and operation of my improved cartridge, referring by letters to the accompanying drawings, making part of this application, and in which—

Figure 1 is an elevation of one of my improved cartridges. Fig. 2 is a longitudinal section of the same at the line *xx*, Fig. 1, (with the ball and powder removed.) Fig. 3 is a cross-section of *zz*, Fig. 1; and Fig. 4 is a cross-section at *yy*, Fig. 1. Fig. 5 is a longitudinal section through the center of a cartridge, showing another form of disk or modification of my invention. Fig. 6 is a cross-section of the same, (at line *AA*, Fig. 5.) Fig. 7 is a longitudinal section of a cartridge showing still another modification of my invention, and Fig. 8 is a cross-section of the same (at the line *aa*, Fig. 7.)

In the several figures of the drawing, C represents the metallic case of a cartridge, which is charged in the usual manner with powder and furnished with a suitable ball, as, for instance, as seen at B, Fig. 1. This case C is form with a concentric or centrally projecting teat or portion, D, at its rear end, which portion D is closed at its rear end as clearly shown in the drawing.

Within the portion D I place a metallic disk, on the periphery of which is placed a layer or stratum of fulminate or detonating powder. This disk I denominate the "fulminate-disk" and propose to make in either of the several ways shown in the drawings. At Figs. 1, 2, 3, 4, I have shown the fulminate-disk *e* as formed like a plain solid cylinder, with the greater portion of its periphery turned down to a diameter just sufficiently less than the internal diameter of D to admit of a layer of fulminate between the disk *e* and internal surface of D, as shown by the red tinted portion of Figs. 2 and 4, and with small channels cut longitudinally through the larger portion of said disk (which fills the portion D,) as seen at 1, 2, 3, &c., Fig. 3, through which channels the ignited fulminate passes to ignite the charge of powder. At Figs. 5 and 6 I have shown the fulminate-disk *f* of a plain cylindrical form, of a diameter a little less than the internal diameter of the teat D and having the fulminate (shown in red) arranged on its entire periphery.

At Figs. 7 and 8 I have shown the fulminate-disk *g* in the form of a cylinder fitting the interior of teat *D*, but having a shallow broad channel cut circumferentially in its periphery, in which the fulminate (shown in red) is placed, and having numerous channels, 1, 2, 3, &c., (see Fig. 8,) cut longitudinally of the disk, through the larger portion next to the powder, to admit the free passage of the ignition from the belt of fulminate to the charge of powder.

The operation of my improved cartridge will be readily understood to be as follows: When the exterior of the teat or projecting portion *D* is struck by a blow from the hammer of the gun (or other arm) at any point on its periphery, the concussion ignites the fulminate confined or arranged between the periphery of the fulminate-disk and the internal surface of teat *D*, and the ignited fulminate communicating with the charge of powder ignites it and explodes the charge.

It will be seen that the arrangement of the fulminate entirely around the circumference of the interior of a teat, *D*, and the employment within said teat of a fulminate disk, as described, to sustain the concussion or momentum of the blow exerted against the exterior of said teat *D*, the cartridge-case may be inserted in any position within the chamber where it is to be exploded; and it will be understood that by making the case of the cartridge itself with a teat struck up as shown,

and a simple disk inserted therein, as shown, the cartridge as an entirety is exceedingly simple and economic of manufacture and adapted to general use. And it will also be observed that in my improved cartridge the quantity of fulminate necessary to insure as a certainty the explosion of the charge is much less than in cartridges where it is distributed over a surface quite as extended as the extreme circumference of the case, while at the same time my improved cartridges may be packed and transported with much less risk of accidental explosion.

Of course the peculiar form of the fulminate-disk may be varied from any that I have shown without departing from the spirit of my invention, which is not dependent solely on the form of the said disk.

Having fully explained my improved cartridge, what I claim as new, and desire to secure by Letters Patent, is—

A cartridge-case formed with a centrally located teat or projection, in combination with a fulminate-disk, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand and seal this 3d day of May, 1864.

E. K. ROOT. [L. S.]

In presence of—

GEORGE G. SILL,  
R. D. HUBBARD.