

(No Model.)

E. D. BRAINARD.  
CARTRIDGE.

No. 522,313.

Patented July 3, 1894.

FIG. 1.

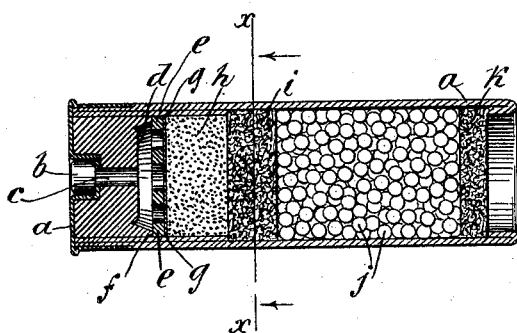


FIG. 2.

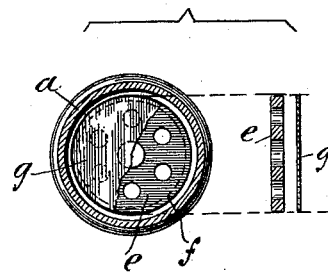


FIG. 3.

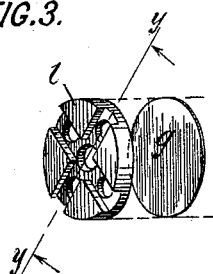


FIG. 4.

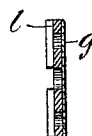


FIG. 7.

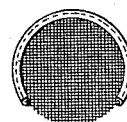
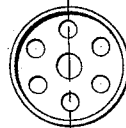


FIG. 6.



FIG. 5.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 522,313, dated July 3, 1894.

Application filed December 31, 1892. Serial No. 456,976. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN D. BRAINARD, a citizen of the United States, and a resident of Great Barrington, in the State of Massachusetts, have invented certain new and useful Improvements in Cartridges; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

My invention consists in a disk which is to be inserted in a cartridge shell prior to the introduction of powder and shot and at a short distance from the fulminating cap, thereby leaving an air chamber, so that upon exploding the fulminating cap, the flame will be equally distributed to the base of the charge of powder.

It also consists in attaching to one surface of the disk a thin material, so as to prevent the powder from falling through the openings of the disk in case of the use of fine grain powder, thereby avoiding the filling up of said air chamber with powder.

It further consists in the combination of a shoulder in the lower portion of the shell, with a disk resting thereon, thereby forming a chamber in the lower portion of the shell and between the fulminate and the charge.

It further consists in certain other details hereinafter described and claimed.

In the drawings:—Figure 1, is a longitudinal central section of a cartridge shell containing my improvements. Fig. 2, is a cross section of the shell on line  $x-x$ , Fig. 1, looking in the direction of the arrows, the wad and powder being removed, showing the disk containing a tissue diaphragm partly broken away, also showing the disk and tissue in section. Fig. 3, is a modification of the disk which is to be used when the cartridge shell is not provided with a shoulder; also shows the tissue diaphragm. Fig. 4, is a sectional view of Fig. 3, through the line  $y-y$ . Fig. 5, is another modification in the construction of the disk showing a rim, which is to be used when the cartridge shell does not contain a shoulder. Fig. 6, is a central cross section of Fig. 5. Fig. 7, is a view of a disk made of wire cloth and reinforced at its circumference.

$a$ , is the cartridge shell.

$b$ , is the fulminate cap.

$c$ , is an aperture through which the fulminate passes into an air chamber  $d$ , which I provide. This air chamber  $d$  is formed when my disk  $e$  is rammed down into the cartridge shell, there being a shoulder  $f$  in most of the cartridge shells now manufactured, against which the disk  $e$  rests.

$g$ , is a tissue diaphragm which is pasted over one face of the disk  $e$ , when fine grain powder is used.

$h$ , is the charge of powder.  $i$ , is a wad placed between the charge of powder and the charge of shot  $j$ , and  $k$  is also a wad which is placed on the shot before the cartridge shell is crimped.

$l$ , Fig. 3, is a modification of my disk, which I propose to use when the cartridge shell is made without the shoulder  $f$ .

I place the disk  $e$  as shown in Fig. 1 in the mouth of the shell and ram it down until it rests on the shoulder  $f$  and then load the shell in the ordinary manner. I thus provide an air chamber for the more perfect combustion of the powder, as when the cap  $b$  is exploded the fulminate passes through the aperture  $c$  and is equally distributed in the air chamber to the base of the charge of powder through the numerous perforations or openings in the meshes of the disk. The charge of powder is consequently all burned and the disk  $e$  serves as a cushion for the reaction of the gun at the moment of starting the shot or ball.

The trouble heretofore experienced with cartridge shells, is that the powder is not all burned and hence the barrel of the gun is smutted up with the unburned powder; the powder is wasted, and where large charges of powder are used, there results a reaction of the gun, commonly called kicking. These and other disadvantages are overcome by my improvements and the results I obtain are as follows: More powder can be used by reason of my improvement and with little recoil or kicking, since I have provided an air cushion. All the grains of powder in the charge will be burned by reason of the supply of air furnished from the air chamber below the disk and thus no unburned power will be blown out of or remain in the gun. There being no recoil, the alignment of the gun is not disturbed and greater accuracy is had, while better pattern is obtained there being no separate grouping of the shot.

The grains of powder in the base of the

charge being simultaneously ignited there results better distribution of the shot from shot-guns, as also better penetration of the shot by reason of the ability to burn more powder without recoil.

5 I prefer to use the disk *e*, as shown in Fig. 1, when the cartridge shell is provided with a shoulder *f*, otherwise, namely, when the cartridge shell is not provided with a shoulder, 10 I use either a flange shaped disk as shown in Figs. 5 and 6 or a disk with a ring reinforcement of rubber, leather or metal either fixed thereon or capable of being sprung thereon as shown in Fig. 7. These disks may have 15 any number of openings and may be made of such material as is in accordance with the charge to be exploded so that I provide a sufficient and suitable cushion such as where my improvements are applied to cannon.

20 My disks may be made from a suitable thickness of paper and then perforated, or from woven wire cloth, the meshes of which would permit of the passage through of the fulminate, as I would preferably make them.

25 The mesh of the wire cloth is made large or small, so as to give the best result where large or small grain powder is used.

I claim—

1. A cartridge shell provided with a shoulder near the head thereof and having a disk 30 substantially as described resting thereon, thereby forming a chamber between the fulminate and the charge substantially as and for the purposes described.

2. In a cartridge shell, a disk having openings or perforations set therein so as to provide an air chamber between itself and the fulminate substantially as described. 35

3. In a cartridge shell, a disk having openings or perforations covered by a thin film, 40 such as paper or its equivalent, set therein so as to provide an air chamber between itself and the fulminate substantially as described.

4. In a cartridge shell, a chamber providing disk substantially as described to be inserted 45 in the rear of the charge of powder and resting on a peripheral shoulder of the shell forward of the fulminate substantially as set forth.

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Witnesses:

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