L. A. MERRIAM.

Cartridge.

No. 211,665. Patented Jan. 28, 1879.

Fig. 1.

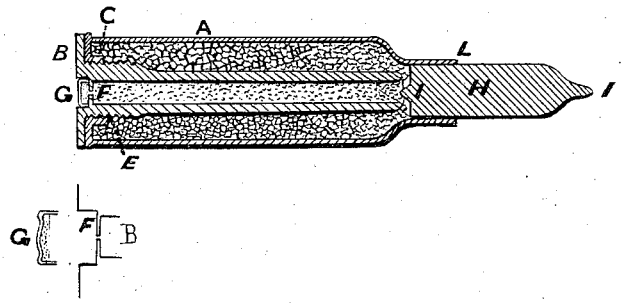

Fig. 2.

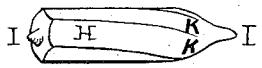

Fig. 3.

Fig. 4.

WITNESSES

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LINCOLN A. MERRIAM, OF NEW YORK, N. Y.

IMPROVEMENT IN CARTRIDGES.

Specification forming part of Letters Patent No. **211,665**, dated January 28, 1879; application filed September 4, 1877.

To all whom it may concern:

Be it known that I, LINCOLN A. MERRIAM, of the city, county, and State of New York, have invented certain new and useful Improvements in Cartridges for Fire-Arms, Muskets, and Cannons; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the figures and letters thereon.

Figure 1 is a longitudinal section of my cartridge loaded for use; Fig. 2, a projectile. Figs. 3 and 4 are views of that portion of the shell in which the projectile is inserted.

The object of my invention is to secure greater facility in use and efficiency to the projectile than has heretofore been attained. Hitherto cartridges have been constructed to explode in such a manner as to strike a severe blow on the shot in starting it, greatly straining the piece and giving a severe recoil. This unscientific construction of the cartridge limits the amount of the explosive used, and consequently of the results, by the upset of the bullet, the strength of the gun, and the endurance of the man. Some progress has been made by the use of a coarser and slower explosive, and various efforts have been made to obtain better results by dividing the explosive into small quantities and successively exploding them, as the Crary patent of 1871, which claim is not here contested, but may be under a future application. All energetic explosion, however instantaneous it may appear to the eye, is the aggregate of minute explosions, in accomplishing which time is an element. This knowledge of the true principle of combustion teaches that it is only necessary to provide for the direct pressure of the gas upon the projectile from the beginning of the explosion, and to adjust the time of the combustion to the movement of the projectile through the bore of the gun.

To effect this I construct my cartridge, Figure 1, with an elongated and continuous powder-chamber, inclosed by the projectile and exterior and interior shells, A and B, so arranged as to delay the burning of the explosive, and at the same time secure the direct action of the gas upon the projectile during the whole period of the explosion.

It is obvious that additional interior shells or tubes, B, may be used, and these shells, exterior and interior, may be drawn, forged, or punched from steel, brass, or other suitable material. The size and length of the bore of the gun must determine the proportions of the powder-chamber, which will be found best adapted to its uses when made of varying capacity, and lighted at the smaller end. I effect this by tubes, which may be united at the base or other suitable point of the cartridge by a threaded screw or any other suitable device.

A flange, C, may be made, turning inward at the base of the exterior shell, to receive the interior tube, B. This flange, under the pressure of the explosion, will operate as a gas-check on the joint seen at E, Fig. 1. I do not intend, however, to confine myself to this method of inserting and attaching the interior tube. It may be constructed so as to form a considerable part or the whole base of the cartridge, with the exterior shell united to it at any desirable point or in any required manner; and the point of ignition may be either within or outside of the interior tube.

The part L of the shell A, Figs. 1 and 2, may be drawn or reduced to a cylindrical, hexagonal, or any other form required to fit the projectile and retain a uniform thickness, Fig. 3; or the shell may be reduced cylindrical on the outer surface, as shown at M, Fig. 4, and so thickened as to conform on its interior surface, at L, to any shape of the projectile required.

To explode the cartridge with a primer I make at its rear end a small cylindrical cavity, having a flat or slightly concave base, as shown at F, Fig. 1, which may be pierced at any desirable point or points to admit the fire to the explosive within the cartridge. I construct my primer G with flanged sides, carried sufficiently forward to form on the sides of the cavity a gas-check to the vent, in the well-known manner, and construct the base in an irregular form, that will give it a greater superficial area than a flat surface, and which will be most readily moved forward by the striker or firing-pin to the base of the cavity, there to be exploded in the impact upon it without the interposition of the usual nipple or anvil.

Without intending to confine myself to a particular form, I prefer to construct my primer with a base cupped at the center, holding the fulminate, and corrugated toward the sides, as the form that will move forward most freely and with least danger of bursting.

What I claim is—

1. The cartridge having inside tube to contain a portion of the charge, said tube extending nearly, but not quite, to the base of the projectile, substantially as described.

2. In combination, the gas-check flange C, having a screw-thread, and the screw-threaded shell B, forming the joint E, constructed and operating in the manner described.

3. The interior tube, C, with a flange at the rear, forming or covering a part or the whole of the base of the cartridge, and attached to the outer shell by a threaded screw or its equivalent, as described.

4. The primer G, with the cupped and corrugated base, constructed in the manner and for the uses described.

5. In combination, the primer G, constructed as described, and the base of the cavity F, constructed, arranged, and operating in the manner and for the purposes described.

In witness whereof I have subscribed my name hereto in the presence of two witnesses.

LINCOLN A. MERRIAM.

Witnesses:
OCTAVE WHITTAKER,
J. H. PARSONS.