E. MATTESON

Projectile.

No { 2,742, / 33,746 }

Patented Nov. 19, 1861.

Fig. 1.

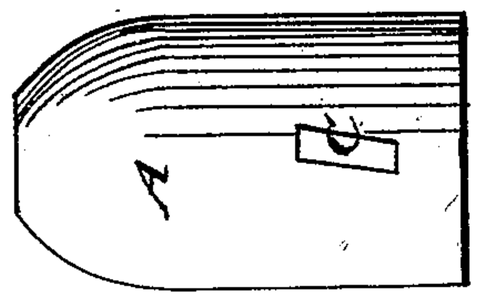


Fig. 2.

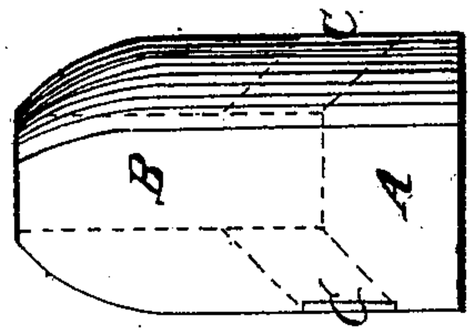


Fig. 3.

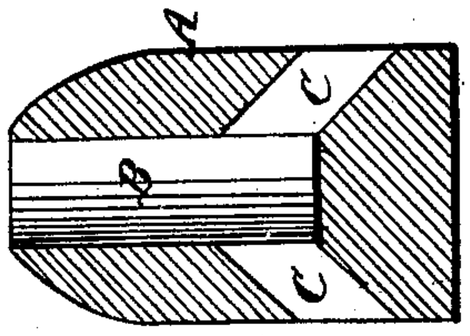


Fig. 5.

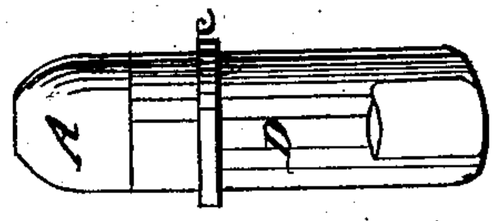


Fig. 4.

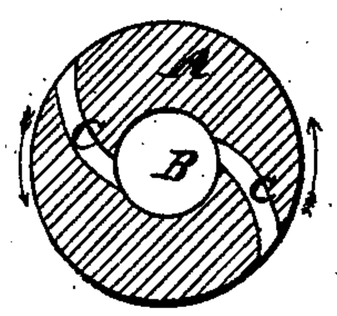
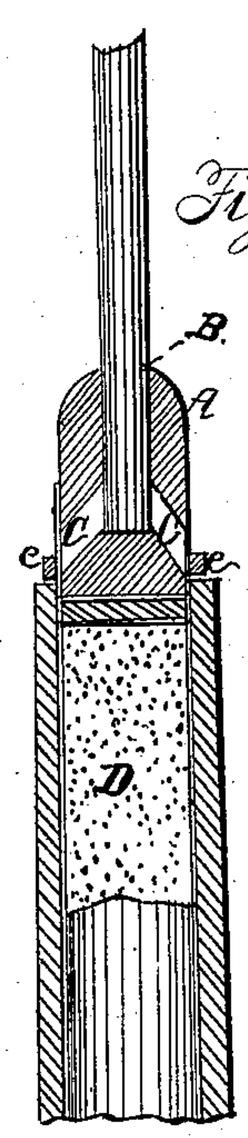


Fig. 6



Witnesses:

Gustavus Dieterich

R. L. Cobbs.

Inventor:

Elisha Matteson

UNITED STATES PATENT OFFICE.

ELISHA MATTESON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PROJECTILES FOR FIRE-ARMS.

Specification forming part of Letters Patent No. **33,746**, dated November 19, 1861.

To all whom it may concern:

Be it known that I, ELISHA MATTESON, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Projectiles for Fire-Arms and Ordnance; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are side elevations of my projectile. Fig. 3 is a vertical section, and Fig. 4 a transverse section, of the same. Fig. 5 is an elevation of a cartridge with my projectile applied to it. Fig. 6 is a vertical section of the same as it appears when being forced into a gun or cannon.

Similar letters of reference in the several figures indicate corresponding parts.

My invention relates to that description of projectile which receives in its flight the resisting air at the center of its cone end, and discharges it at its circumference in such manner that the necessary rotary or rifle motion is imparted to the ball on the same principle as water rushing out of a turbine wheel produces a rotary motion in the same.

My improvements consist, first, in making the base of the angular passage through the ball in the form of a section of a truncated cone, instead of in the form of a section of a complete cone, so that a larger central chamber for the entrance of the resisting air shall be formed, and particularly so that there shall be presented a square horizontal surface for the small end of the ramrod to rest against squarely when it is used for forcing the projectile into the gun; second, in a cartridge formed of my improved projectile and the ordinary charged paper or bag case and a rubber band in such manner that it perfectly confines the charge, supports itself on the muzzle of the gun, and admits the small end of the ramrod into its cone end.

It is very essential to have the central passage through the ball deep, and the base of the passage square or flat, inasmuch as the ball should take in a quantity of air to produce its rotation, and also inasmuch as the ramrod should press against a flat surface in order to force the charge in a straight line into the barrel of the gun. It is also very essential with such a ball to have the self-detaching rubber tie, inasmuch as the projectile is to be supported on the end of the gun until the small end of the ramrod descends to the base of the central passage of the base of the projectile, and therefore if any device but one that holds by its elasticity and detaches automatically as the charge descends into the gun be employed, the charge cannot descend into the gun before the supporting-flange is mashed down to a diameter just equal to that of the bore of the gun, and to accomplish this great force must be applied. Besides this, the shoulder will be forced into the gun, whereas my rubber-band shoulders collapse upon the ramrod and can be slipped off with the hand, and thus be saved for a new use.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A represents a cylindrical projectile with its front end of conical shape and its base or rear end flat. The circumference of the projectile has no wings or spiral grooves or planes upon it. In other words, my projectile has a plain cylindric surface externally, and therefore all parts of it fit snugly to the bore of the fire-arm or ordnance.

Centrally from the cone end of the projectile A to near the base or flat end thereof is cut or molded a circular or other suitable passage, B. The base A′ of this passage is flat or horizontal, as shown, so that the end of the ramrod may rest squarely against it, and also so that the passage may be deeper and larger than it is in the projectile patented in England in 1855 by Mr. Brooman; and laterally in an oblique spiral manner two or more passages, C C, are cut or molded, the lateral passages communicating with the central longitudinal passage, and from the same leading to the circumference of the projectile, as shown in Figs. 1, 2, 3, 4, and 5 of the drawings.

It will be observed that the branch passages C C run obliquely out from the passage B, and also that they are in form of a spiral volute, and therefore the resisting air which is compressed in the central passage, B, as the projectile makes it flight escapes in an oblique and circular direction at the circumference of the projectile, and owing to its being compelled to take this circuitous course, instead of

being allowed to pass off radially as it naturally would, it impinges upon the surface which incloses the passages C C, and causes a rapid and forcible revolution of the projectile. The motion, however, is a steady one, and the passages, by being located as shown, distribute the air in such a manner that any material deflection of the projectile from its straight course does not occur during its flight.

The projectile answers all the purposes of the most approved winged, grooved, and ribbed projectiles, and is far superior to the same, as it fits at all points the bore of the fire-arm or ordnance, and has no projecting and unequally proportioned projections for the resisting air to act against and deflect it out of its true course. It further presents a square or flat end to the action of the charge, and thus insures greater accuracy in its flight, and it also admits of the small end of the ramrod being used to force home the charge—a thing which is very desirable, owing to the frequent accidental discharge of the ramrod from the hand in reversing it to bring the large end in proper position for entering the muzzle of the gun, it either flying out of the hand accidentally or being knocked therefrom by a fellow soldier's ramrod.

The projectile A is attached to the ordinary paper cartridge, D, in the ordinary manner, and the two are held together by means of an india-rubber band, *c*, a soft packing disk, *d*, being first interposed between the powder and the projectile, as shown in Fig. 6.

When the cartridge is to be placed in the gun or piece of ordnance, the paper portion of the cartridge D is inserted into the muzzle thereof a sufficient distance to bring the rubber band *c* to the position shown in Fig. 6. When in this position, the band supports the cartridge until the small end of the ramrod is inserted into the passage B of the projectile and the charge is forced home. The charge, in descending, slips through the band *c*, and the band collapses round the ramrod or falls into the gun. The rubber band serves all the purposes of a tie to fasten the projectile to the cartridge, and also the additional advantage of a support to the cartridge while the ramrod is being adjusted for forcing home the charge.

My improvement has been thoroughly tested, both with small fire-arms and large ordnance, and the most satisfactory results as to accuracy of shot and length of movement, &c., have been experienced, it performing, when fired from a smooth-bored gun, all that is performed by the most approved rifle-grooved guns and ordnance.

I do not claim the principle of rotating a projectile by the action of resisting air on its interior surface; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. Making the base of the angular passage B C C A′ of the projectile in its transverse vertical section in the form of a section of a truncated cone, in the manner and for the purpose herein described.

2. A cartridge formed of the improved projectile A B C A′ and the ordinary charged paper or bag case and a rubber band, in the manner and for the purpose herein described.

ELISHA MATTESON.

Witnesses:

ROBT. W. FENWICK,

DE WITT C. LAWRENCE.