BATES & MACY.

Ordnance.

No. 46,625. Patented March 7, 1865.

Fig. 1.

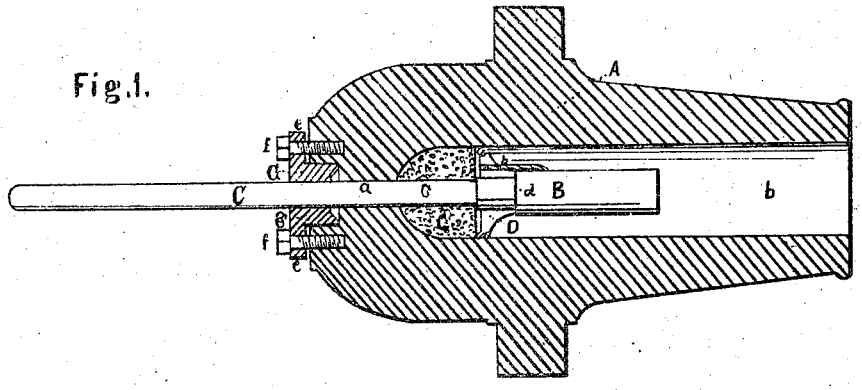

Fig. 4.

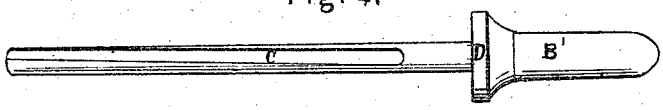

Fig. 3.

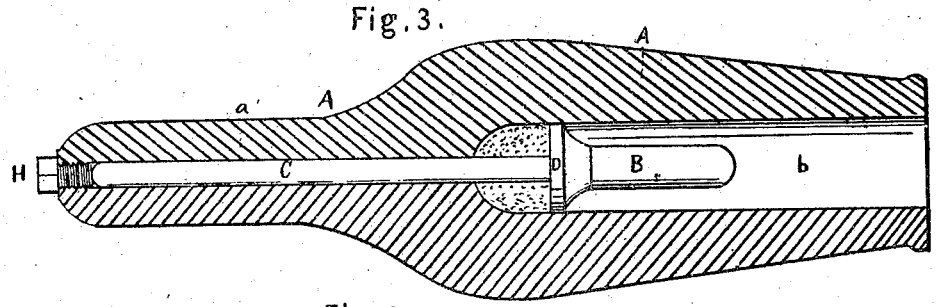

Fig. 2

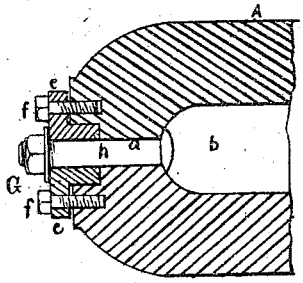

Fig. 5

Witnesses:

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The drawing in this patent is not in print.

UNITED STATES PATENT OFFICE.

BENJAMIN F. BATES AND CHARLES R. MACY, OF NEW YORK, N. Y.

IMPROVEMENT IN ORDNANCE AND PROJECTILES.

Specification forming part of Letters Patent No. **46,625**, dated March 7, 1865.

To all whom it may concern:

Be it known that we, BENJAMIN F. BATES and CHARLES R. MACY, of the city, county, and State of New York, have invented a new and useful Improvement in Ordnance; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 represents side sectional elevations of a cannon provided with our improvements; Fig. 3, a side sectional elevation of the same, showing our improved tail-casing attached; Fig. 4, an elevation of an elongated projectile; Fig. 5, an elevation of the twisting guide-block.

Similar letters of reference indicate like parts.

The object of our invention is to obtain a high degree of penetration with great accuracy of aim by the use of a projectile of very great length in proportion to its caliber, such caliber being much less than the bore of the gun, so that the whole force of the charge of gunpowder and the whole momentum of the projectile may be concentrated in a very small area.

A further object is to provide novel and improved means for imparting rotation to the projectile.

A, Fig. 1, is the piece of ordnance cast or constructed upon any known and approved plan, and having bored through its breech a small opening, *a*, concentric with its ordinary bore, *b*.

B is the body of the projectile, of a caliber much smaller than the bore *b*, and either solid or hollow, and charged like a shell or other explosive projectile.

C is the shaft, still smaller than the body B, and of a length equal to or greater or less than the whole length of the bore *b*, passing through the hole *a*. This shaft is made in the same piece with or otherwise attached to the body B, concentric therewith.

D is a disk of metal or other material fitting to the bore *b*, with or without a suitable expanding packing, and having a central opening for the passage through it of the shaft C. This disk is placed against the powder *c*, with which the gun is charged, and a shoulder, *d*, at the rear of the body B abuts against the said disk when the projectile is placed in the gun.

At *b'* is an aperture through the disk for a fuse, for the explosion of the powder without a vent in the cannon, but the gun may be fired, if desired, by the usual manner through a vent, and the whole force of the gases eliminated from the charge acts upon the disk D, by which it is transmitted through the shoulder *d* to the projectile, which, having a transverse area so much smaller than that of the disk, while its weight may be made of any amount desired by giving it proper length, has immense penetrating power, which renders it capable of entering the water and piercing the submerged portions of vessels, or of passing through the strongest armor.

When it is desired to impart a spiral motion to the projectile B, its shaft C, instead of being made cylindrical, as shown in Fig. 1, may be made of polygonal form, and twisted, or may be flattened upon one or two sides, and twisted, as shown in Fig. 4.

In order to qualify the gun for the firing of projectiles, either with or without spiral rotation, we provide the breech of the gun with a guide-block, G, having a central aperture corresponding to the shaft C, and with lugs or ears *e e*, by which and screws *f f* it is secured to the breech, the central or enlarged portion, *g*, being let into a corresponding cavity in the breech, as shown in Fig. 1.

The guide-block G (shown in Fig. 1) is used for firing projectiles having plain cylindrical bodies only, without rotation. In order to use the same cannon and impart axial motion to the projectiles, we remove the block G and substitute the block G', Fig. 5, in connection with which we also employ a projectile, Fig. 4, having the spiral twist upon its body, with which twist or form the aperture in the block G' corresponds.

When it is desired to use the cannon for firing common round shot, we pass a bolt, *h*, through the orifice *a* and block G, as shown in Fig 2, whereby the hole *a* is sealed, and the gun is then loaded and fired in the ordinary manner.

Fig. 3 shows a form of gun in which the body of the projectile is entirely incased, the breech of the gun being extended so as to form

a tubular tail-piece, A′, to receive the body C of the projectile.

H is a screw-plug to close the rear of the opening *a*′.

Instead of extending the breech of the gun as shown in Fig. 3, a tubular jacket may be secured to the breech of the gun in any suitable manner.

The head of the projectile may be either square, conical, round, or formed in any desired manner, according to the purpose for which it is wanted.

The projectile is intended to occupy only about one-eighth of the space of the bore of the gun, while its weight may be varied according to the velocity which it is desired to impart to it, distance to be thrown, &c.

The center of gravity of the projectile is to be placed forward of the center of bulk and lateral resistance, so that in its flight it will move through the air like an arrow.

The cartridge *c* is to be made of annular form, with an orifice in its center for the passage of the shaft C of the projectile.

We do not confine or limit our invention to its application to ordnance or heavy guns. It may be applied with equal advantage to small fire-arms, and to every description or size of guns.

By the use of our invention the advantage of the rifle motion can be gained without grooving the bore of the gun, which tends to weaken the gun, besides increasing the cost of constructing the same.

Our improvement may be applied to all smooth-bore ordnance and fire-arms already in use, by suitably boring and fitting up the breech.

We do not confine ourselves to the forms of parts herein shown, for they may be varied in many ways, according to the skill of the builder.

The shaft C of the projectile may be made hollow or tubular when desired.

Between the guide-blocks G G′ and the seat thereof in the breech of the gun, a suitable annular packing may be introduced to prevent the escape of gas at said seats and around the shaft C.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A projectile made with a small head, B, a smaller body, C, to pass through an aperture in the breech of the gun, and a disk, D, to fit the bore of the gun, substantially as herein shown and described.

2. A gun having guide-blocks G G′ applied to its breech in the manner described, and employed in connection with a projectile formed with a longitudinal rear extension, C, either for the purpose of guiding the latter in a central position, or imparting rotation to the projectile, as herein set forth.

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