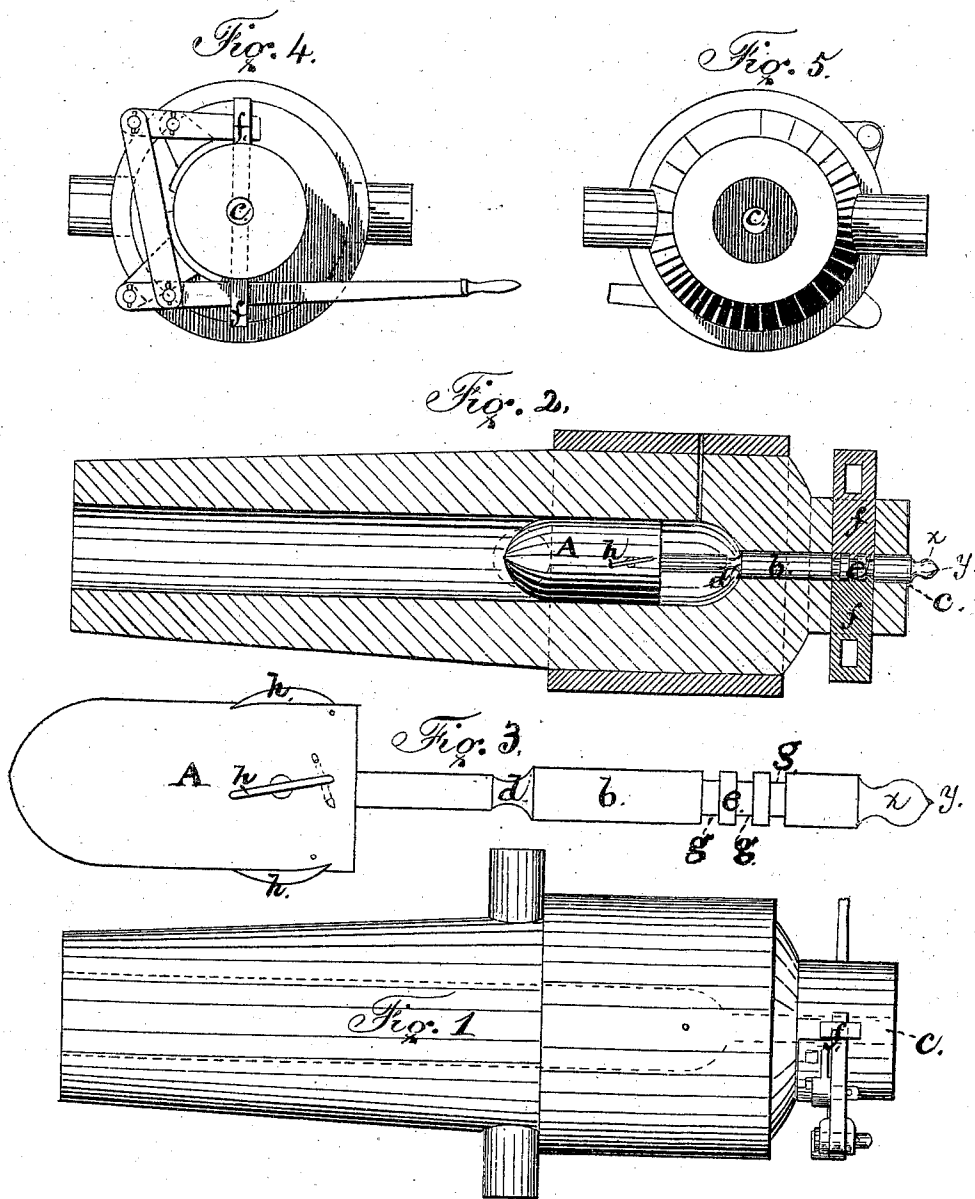


B. C. POLE.

Ordnance and Projectiles Therefor.

No. 143,251.

Patented September 30, 1873.



Witnesses.
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Fig. 6.

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IMPROVEMENT IN ORDNANCE AND PROJECTILES THEREFOR.

Specification forming part of Letters Patent No. **143,251**, dated September 30, 1873; application filed January 22, 1873.

To all whom it may concern:

Be it known that I, BENJAMIN C. POLE, of the city and county of Washington, in the District of Columbia, have invented certain Improvements in Projectiles and Guns or Mortars; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In the drawings, Figure 1 is a plan, and Fig. 2 a longitudinal section, of a gun constructed according to my present invention, the latter figure also showing the projectile, but not in section. Fig. 3 shows the projectile, constructed according to my improvement, in an enlarged view. Figs. 4 and 5 illustrate end views of my gun with the central axial hole or bore extending from the barrel to the end of the breech. Fig. 6 is a fragmentary view, showing one of the spring sails or wings of the projectile, illustrating its position while within the gun and before it has been permitted to fly outward or beyond the surface of the projectile by the action of its springs, such outward position being plainly shown in Fig. 3.

I make my projectile A with a metallic axial tail or tag, *b*, of sufficient length to extend entirely through the axial bore *c*, made through the breech of the gun; and I reduce the size or diameter, and, consequently, the capacity to resist tensile strain at a point in the tag, as at *d*, somewhere between the rear of the barrel and the rear of the body of the projectile. The tensile power of metals being understood and determinable, according to the character of the metal and the size of the bar or rod, the degree to which the tail *b* requires to be reduced will depend upon how great a pressure for the particular gun employed shall be fixed upon as desirable before the tail shall be torn apart at *d*. In order to positively hold to place in the breech the rear part of the tag *b*, and thereby prevent all possibility of the discharge of the projectile until the force of the explosive material shall have reached the desired degree sufficient to give the maximum impulse and to rupture the tag at *d*, the part *e* is provided with grooves, into which project strong teeth of keys *f f*, which may be forced home

into the grooves *g g* by any proper mechanical appliance or device, a compound set of levers for such purpose being shown in Fig. 4. I take especial care to make the annular grooves *g g* of such depth as not to make the tag at these points as weak as at the groove *d*.

It will be understood that the part of the tag which is in the breech is to fit snugly thereto, and that when severed from the projectile it may readily be removed by unlocking or loosening the keys or clamps, and withdrawing it from the breech, it being provided with a projecting end or knob, *x*, to facilitate such removal. This knob I make somewhat tapering at its tip, as seen at *y*, and this facilitates the entering of the tag into the small axial bore of the breech when the gun is being loaded.

Wings *h h* are preferably furnished to the projectile. These are placed somewhat inclined to its axis, in order to cause a revolution on such axis after leaving the gun, and each wing has a spring beneath it, which permits the wings to lie flush with the surface of the projectile when the latter is in the gun, but which also forces them outward, as seen in Fig. 3, the moment the projectile is discharged. These sails give all the advantage of rifle-guns, while my gun may be smooth-bored.

Any ordinary ammunition may be used with my gun by simply omitting to remove from its breech the part *b* of the projectile from which the discharged part has been severed or ruptured.

By my construction there is no need of the usual length of barrel, because I do not rely upon the supposed accelerated force due to the increasing expansion of the gases as in ordinary guns, and the consequent need of having a long bore in order that the projectile shall get the benefit of this increase; on the contrary I need no more length of barrel than is sufficient to guide and steady the shell after the slight tremor it may receive from the rupture of the tag. I can also, by my construction, economize the quantity of powder used, because the projectile or shell starts with its full force and velocity, and there is no accelerated force needed to follow it down the bore, and for the same reason the barrel may be made much shorter than usual.

The projectile or shell may be spherical or

of any other well-known shape. With a spherical one wings would not be used, especially when thrown from mortars constructed agreeably to my above described invention.

Besides being able to employ a smooth-bored gun with all the advantages of a rifled gun, another advantage grows out of my construction—namely, I am not obliged to protect or strengthen by coils or otherwise any portion of the gun, except that which receives the greatest expansive strain of the exploded ammunition, because there is no possibility of the shell or projectile ever lodging or remaining lodged, when rammed down, at any point in the barrel forward of its true place. It must be properly positioned before it can be fastened to place by the teeth of the locking device entering the grooves in the tag. This positive positioning determines accurately the proper place of the projectile in the gun, and also the certainty that the knob *x* shall pro-

ject beyond the breech, and be readily grasped for withdrawal of the tag. This construction also insures that in battle, or on a retreat, the guns, if loaded, are always in condition for firing, inasmuch as the shell or projectile cannot accidentally get misplaced in the barrel.

I claim—

For use in a gun having an axial bore extending entirely through the breech, a projectile, having a tag, *b*, provided with the tapering tip or knob *xy*, for the purposes set forth, the grooves *g g* for positively locking the projectile to its proper position, and the groove *d* to determine the point of rupture, the construction permitting the ready withdrawal of the tag from the rear of the butt, or the use of the gun with any ordinary projectile by leaving the tag unremoved.

Witnesses: BENJAMIN C. POLE.

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