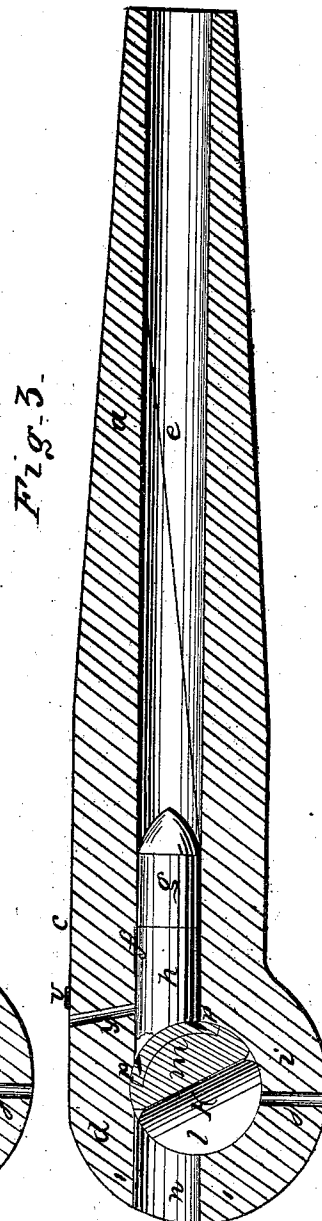
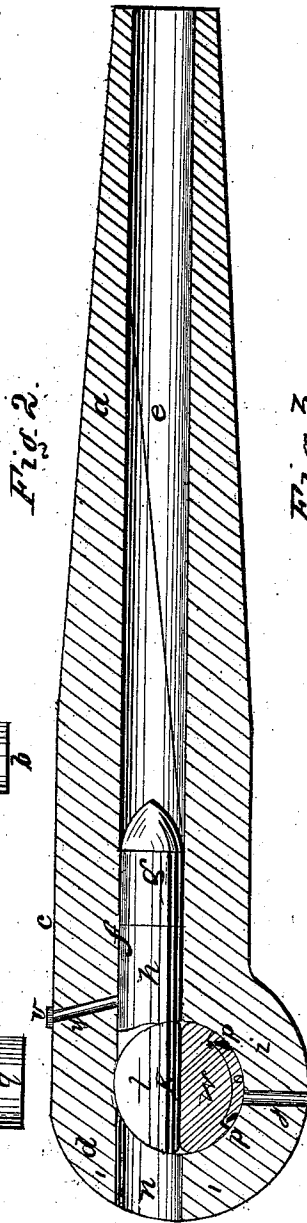
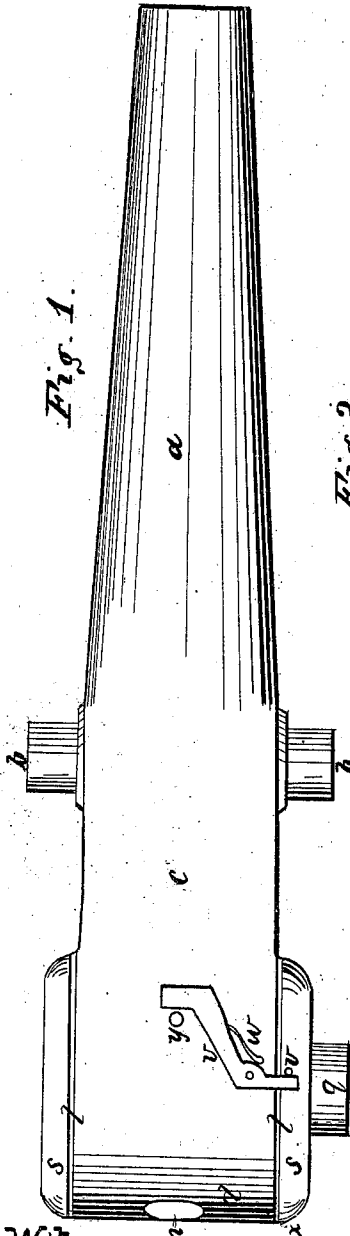


W. W. HUBBELL.
Breech-Loading Ordnance.

No. 43,412.

Patented July 5, 1864.



Witnesses

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J. L. Lamb

Inventor

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Fig. 4.

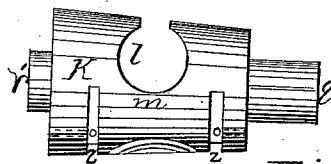


Fig. 5.

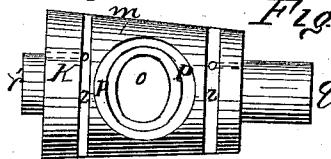


Fig. 6.

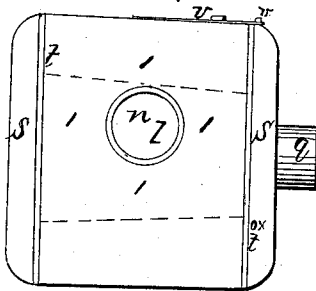


Fig. 7.

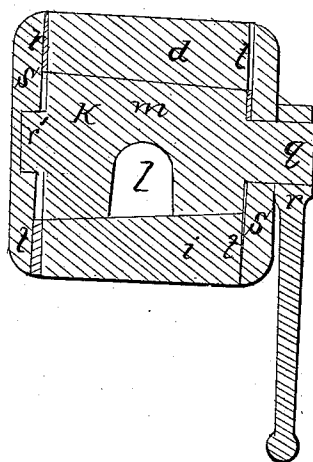
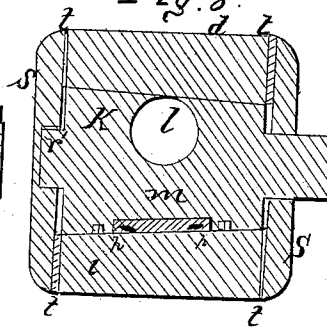


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM WHEELER HUBBELL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BREECH-LOADING ORDNANCE.

Specification forming part of Letters Patent No. 42,412, dated July 5, 1864.

To all whom it may concern:

Be it known that I, WILLIAM WHEELER HUBBELL, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Breech-Loading Ordnance; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, making part hereof, in which—

Figure 1 is a ground plan of the cannon. Fig. 2 is a vertical longitudinal section through the axis of the cannon with the faucet-breech open and the projectile and charge in the chamber in front of it. Fig. 3 is a vertical longitudinal section through the axis of the cannon with the faucet-breech closed, securing the projectile and charge in the chamber of the gun, ready to be fired. Fig. 4 is a view of the faucet-breech, exhibiting the opening through the upper half of its diameter to form the channel for loading the charge through, and the lower half of the faucet-breech is left solid to form a strong breech to the chamber of the charge. Fig. 5 is a front view of the faucet-breech, exhibiting the copper adjustable facing to tighten the joint at the breech. Fig. 6 is a view of the rear part of the gun. Fig. 7 is a cross-section through the center of the breech, with the breech closed, as shown in Fig. 3. Fig. 8 is a cross-section through the center of the breech with the breech open, as shown in Fig. 2.

The nature of my invention consists in the peculiar construction of the faucet-breech, the breech-cylinder, and its loading-hole and their combination with the side plates and other means presently described, to constitute a cannon or gun supported by trunnions for field, fortification, or ship's use, of sufficiently light weight and strength combined, and to load with facility at the breech, and keep tight, with provision to prevent binding from the expansion by heat and from dirt.

I am aware that faucet-breeches with a charging-hole across through the axis of the breech, and about an equal portion of metal left on each side of it to form a breech for small-arms, have been made; but such a breech for cannon would be too weak, and would require the breech-cylinder to be elevated above the top of the barrel, both of which are objectionable. The line of sight should be along the top of the barrel, as in my improved can-

non; also the screw and the cam-groove and pin applied to such faucet-breeches are inadequate to tighten and release the breech for a cannon, and clog up with dirt; also I am aware that Holensshade's gun, with the eccentric plates and charging-chamber contained within the faucet-breech, requires a heavier construction of breech than this present gun, and also shoots past a joint; and it is the object of my invention to construct the gun so as to diminish the size and weight, not shoot past a joint, and to have the gun sufficiently light and strong and otherwise serviceable, as herein described, to load at the breech, and use rifle or elongated projectiles to compress immediately on starting into the rifle-grooves.

a is the barrel of the gun. *b b* are the trunnions to sustain it.

c is the top of the barrel and line of sight.

d is the breech-cylinder.

e is the rifled or smooth bore. The diagonal line indicates that the rifle-grooves commence immediately in front of the projectile. In loading, it should be set against them.

f is the chamber containing the projectile *g* and the charge of powder, *h*.

i is the lower part of the breech-cylinder, which enlarges below the barrel *a* to receive the faucet-breech *k*.

j is a small hole, to discharge water and dirt from the faucet-breech through the bottom of the breech-cylinder *i*.

k is the coned faucet-breech; *l*, the loading-hole through its upper half, leaving *m*, the remaining metal, in a body to form a breech to the chamber *f*.

n is the loading-hole through the back part of the breech-cylinder, with the metal solid around it at 1 1 1 1, Fig. 6, to receive the recoil strain.

o is a curved copper plate, let into the faucet-breech, with *p p*, its bearing-face, against the back facing of the chamber *f*. Inside of the facing is a groove, shown in the drawings, so that the gas may from behind press the bearing-face forward and tighten the joint at *p p*, Fig. 3.

q is the shaft or projecting end of the coned faucet-breech, to which the handle *r* is attached to work the breech.

r is the opposite end of the breech, which keeps the plate *s* in position. The plates *s s* may be secured firmly to the ends of the fau-

cet-breech. One of them may be cast in one piece to or with the breech at its largest end. These plates *s s* have helical plates attached to their inner faces around the faucet-breech, and working against counter-plates secured to the sides of the breech-cylinder at *t t t t* to release and tighten up the breech. The breech is brought up with its face *o* firm against the rear face of the chamber *f*. The copper face *o* may be dispensed with and the breech-face left solid and plain to form the surface behind the charge; also, the copper face may be used plain or without the groove cut in it, so as to prevent the faucet-face from being burned, and the copper, when burned or worn, can be renewed. The faucet-breech may be shortened and the plates *s s* let in flush with the sides of the barrel to lighten the gun. The barrel of the gun may be made of bronze, cast around a wrought-iron or steel bore, or all of iron or steel, or all bronze, and the faucet-breech may be cast of bronze, and cored to lighten it; or it may be made of iron or steel. I do not limit myself to any particular metals to make the gun; and a wrought-iron band may be shrunk on a cast-iron barrel forward of the breech-cylinder, and the trunnions be afterward attached.

u is a lever to close the vent *y* when the breech is open, as in Fig. 2, and to open it when the breech is closed, as in Fig. 3, to prevent the gun from being fired when the breech is not fully closed.

w is a spring to force the lever over the vent.

v is a pin turning with the breech, to force the lever off of and uncover the vent *y* when the breech is closed, as in Fig. 1.

x is another pin on the plate *s*, to force the lever over the vent *y* in case the spring *w* is broken when the breech is open for loading, as in Fig. 2.

z z are grooves, one each side of the breech-facing *o*, to secrete any dirt, and a small hole extends from their base at right angles out at the ends to let the dirt escape.

The breech-cylinder may be provided with a spring and a catch on the plate *s* next to the handle *r*, to secure the breech when closed, and another catch or beveled face and shoulder to secure the breech when open. When the breech is open, as in Fig. 2, the projectile is inserted point foremost into the loading-hole *n* through and past the channel *l* of the breech into the chamber *f* of the barrel against the rifle-grooves and lands, and the charge of powder is passed in afterward, contained in a serge bag; or the charge *h* and projectile *g* may be

connected and inserted together, and the handle *r* is turned down, which moves and presents the metal *m* of the breech next to the charge, inclosing it tightly, the helical plates releasing and tightening up the breech in turning it, and the lever *u* closes and opens the vent *y* to receive the primer to fire when the breech is closed.

Another mode of securing the plates *s s* and the eccentric faces is to secure the plates *s s* firm to the sides of the breech of the barrel, having the eccentric faces formed on their inner sides around the shaft of the faucet-breech and extending radially from it equal to the diameter of the faucet-breech; and the counter eccentric faces are then formed on the ends of the faucet-breech extending radially from its shaft—one of them on each end of it—to tighten up and loosen this coned faucet breech-piece in loading and firing.

The side plates and metal of the breech behind the charge may be reduced in diameter and thickness below the thickness of the gun around the charge, and thus still further lighten this peculiar construction of gun for light artillery and boat service.

The great advantage of this gun is its peculiar and simple construction, adapted to the use of elongated projectiles within iron-clad vessels and in fortifications, whereby the gunners at the breech can be protected by a shield from sharpshooters.

When the plates *s s* are fixed firm, as last above described, then the pins *v* and *x*, to operate the lever *u*, are secured to the shaft of the faucet-breech outside of and close to the plate on either side.

What I claim is—

1. The peculiar combination of the loading-hole *n* through the breech-cylinder, with the metal solid around it, with the channel *l* through the upper side of the coned faucet-breech, and the chamber *f* in the barrel, for the purpose of forming a strong, light, and serviceable construction of breech-loading cannon, as described.

2. The automatic vent stopper or finger *u*, operated by the pin *w* and pin *v*, as described.

3. Enlarging the breech-cylinder beyond the barrel, on the lower side of the barrel, and leaving the straight line of sight on the upper part, with the loading-hole *n* through the metal to adapt it to the faucet-breech for cannon, as described.

WM. WHEELER HUBBELL.

Witnesses:

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T. L. LAMB.