

Breech-Loading Ordnance.

Patented May 29, 1860.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BREECH-LOADING ORDNANCE.

Specification forming part of Letters Patent No. 28,486, dated May 29, 1860.

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 Cannon; 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 like letters of reference indicate the same parts.

Figure 1 represents a top perspective view of the gun. Fig. 2 is a longitudinal vertical section through the center of the gun. Fig. 3 is a back view of the hollow breech-screw, breech of the gun, and of the short hinged gate. Fig. 4 is a vertical section of this hinged gate and body of the gun, and Fig. 5 is a cross-section of the gun at the back part of the chamber in front of the gate.

The nature of my invention consists in the peculiar construction and combination of the breech, screw, short hinged gate, and barrel, to be presently described, so as to enable the gate to be easily raised and lowered in its proper place and locked by the screw, so as to secure it, and force its proper bearing-face firm against the barrel and tightly secure the charge in the chamber without impairing the proper strength of the barrel, without disconnecting the gate, and without excessive strain on the gate-operator in rapid loading and firing, and so as to allow the projectile and charge to be freely passed forward, through, and past the hollow adjustable breech-screw, short gate, and recess into a chamber, and the projectile compressed into a lengthened or long rifled bore of the barrel in discharging it, and without the expansion and contracting of the metal or the accumulation of residuum interfering with the working of the gun.

The barrel *a a* of the gun should be made of wrought-iron or cast of composition, and is a cylinder, open at the breech, which is about as thick as the diameter of the bore. The back part of the breech is bored out and fitted with a screw, *c c*, having a hole, *f*, through its center concentric with the bore of the gun, and sufficiently large to allow the projectile and cartridge to pass forward through it with ease into a chamber, *p*, when this hinged gate *g* is raised. This screw has a flange, *d*, and three arms, *e*, on its periphery, with which to screw

up and unscrew it, to secure and tighten up, and to release this hinged gate; and the front end, *s s*, of the screw forms a bearing-surface, to press forward this gate on its shaft *j*, lock it down, and tightly secure the charge. This gate *g*, from its left-hand side, has extended and curved downward over the side of the barrel a hinged arm, *q*, with a shaft, *j*, passing through it and lugs on the barrel and keyed, that the shaft may be knocked out, if necessary. This shaft *j* is parallel to the screw *c c* and to the barrel, and it is located between a plane through the axis of the screw and barrel and a parallel plane through the faces *l l* of the barrel, on which the arms *q r* of the gate rest, and the curved arm *q* is loose on the shaft, so that the faces *l l* and *t t* may fix the position of the gate in the barrel, and so that the breech-screw may force this gate-arm *q* along on the shaft as it presses it forward to secure the charge. A space is left between the curved edge *n* of this gate and the barrel, and a hole, *o*, bored through the bottom of the recess in front of the screw, to allow any refuse matter to escape without obstructing the screw; and the position of the shaft of the gate to the center of the screw and barrel, the space, the form of the lower part of this gate, and the position of the upper part of the recess allow this gate to operate without cutting away or weakening the sides of the barrel in the recess. On the back part of this gate is turned a circular raised face, *h*, of a diameter that will fit into the central hollow, *f*, of the screw, and thus enable it to secure the gate so that it cannot be forced up. On the front face of this gate is also turned a circular raised face, *w*, the diameter of which is about one inch larger than that of the chamber *p*, which receives the charge, which raised face on the gate forms a close joint where required, and frees the other portions of the front face of the gate from contact with the barrel without cutting away too much of the barrel to form a joint, *x*, and venting-space *v*. In the front side of this gate is bored a chamber, *k*, and from the top of the gate vertically into this chamber is bored a touch-hole, *m*, of sufficient size to receive a friction-primer. The chamber *k* is charged with a small cartridge, which is ignited by the explosion of the friction-primer and discharges its fire into the main cartridge

in the chamber *p*. The arm *r* on the right-hand side of the gun and gate, with the gate-shaft on the left, enables the gate-operator to raise this gate conveniently, hold it up with the left hand, and use the right hand to charge the chamber *k* in the gate, which expedites the loading. The grooves and lands in the gun should be about half an inch wide and an eighth of an inch deep.

The hole *f* of the breech is made about two-tenths of an inch larger in diameter than the diameter of the chamber *p*, and is about forty-five hundredths of an inch larger than the diameter of the rifled bore of the barrel *a* across the lands, and the projectile, which passes freely through the hollow *f* and into the chamber, and where the hollow breech and short gate afterward secure it, is compressed into the grooves and lands of the smaller rifled bore, which by this construction is made as long as the gun will allow. In guns of large size the hollow *f* of the breech may be made about two-tenths of an inch still larger in diameter, and a secondary cylinder, of brass or tinned iron or steel, about one-tenth of an inch thick, may fit easy inside of this hollow *f*, with a handle projecting out behind, to push it in past the recess in which the gate *g* fits, and when the gate is raised this cylinder, by being pushed forward, forms a continuous bearing-surface up to the chamber *p*, to enable large projectiles to be easily passed forward into the chamber without obstruction by the recess in which this gate fits; and by drawing this cylinder back past the recess it lets the gate come down. The bearing-faces of this gate in rear and front are parallel to each other and at right angles to the axis of the hollow *f*, the chamber, and the bore, and the gate is short, or less in thickness than the diameter of the bore, or about the same, as shown, so that the circular flat facing *s s* of the hollow breech may bear this gate against the rear facing of the chamber *p* with solidity, uniformity, and quickly, to tighten it, and this gate, being short, lengthens the rifle-bore. The locking raised surface may be formed on the gate outside of the diameter of the breech as well as inside, as shown. The lifting-arm *r* of this gate may be placed on the left side and the bent arm *q* on the right side of the gun; or two horizontal arms, *r*—one on each side may—be used in small guns to this gate without the center *j* to support it and raise it up; but the construction shown is the best for large guns. The vent or touch-hole to fire the gun may be made in the barrel *a* in front of the gate leading directly to the main chamber *p*, instead of connecting

with the auxiliary chamber *k* in the gate, as shown.

The projectile is cast-iron, surrounded by a lead band cast in a recess around the shot, with a shoulder before and behind it. The band may be as wide as the length of the shot will allow, should project beyond the diameter of the shot, and be cut with a series of circular grooves about half an inch wide and half an inch apart, extending around it and covered with canvas, so as to indent into the grooves readily, similar to a slug and patch, loaded at the breech.

To load and fire the gun, the screw-operator gives the screw about one turn backward, which releases the gate. The gate-operator then raises the gate by the arm *r* on its shaft *j* out of the recess and charges the chamber *k*. The screw-operator then pushes the projectile and then the main cartridge forward through the screw *f* into the chamber *p* by means of a short rammer with a shoulder to gage it. The gate is then lowered, the screw turned up, which sets this gate forward firm against the barrel and tightly secures the charge. The gun is then fired with a friction or percussion primer, and the long rifle-bore gives increased range and accuracy.

What I claim as my invention is—

1. The combination of the screw *c c f*, the parallel gate-shaft *j*, and the gate *g*, operating together, as described, so that the gate is moved forward without impinging on the parallel shaft by the cylindrical front face of the hollow screw and back as it releases from the facing of the chamber when presented on the shaft to the screw.

2. The curved gate-arm *q*, the gate-shaft *j*, the gate *g*, and the gate-arm *r* together, in combination with the screw *c c f*, and the bearing-surfaces *l l* and *t t* of the recess and barrel, so as to conveniently raise a heavy gate of large guns by the leverage of the arm *r* on the shaft of the arm *q*, and regulate the position of the gate in the recess, and with the barrel laterally and vertically to receive the action of the screw *c c f* by means of the bearing-surfaces *l l* and *t t* in the operation of loading, as described.

3. The circular raised face *h* on the back part of the gate, fitting into the central hollow *f* of the screw, so as to enable this screw to secure this gate so that it cannot be forced up, as described and shown.

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Witnesses:

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