C. F. BROWN.

Breech-loading Ordnance.

No. 30,045. Patented Sept. 18, 1860.

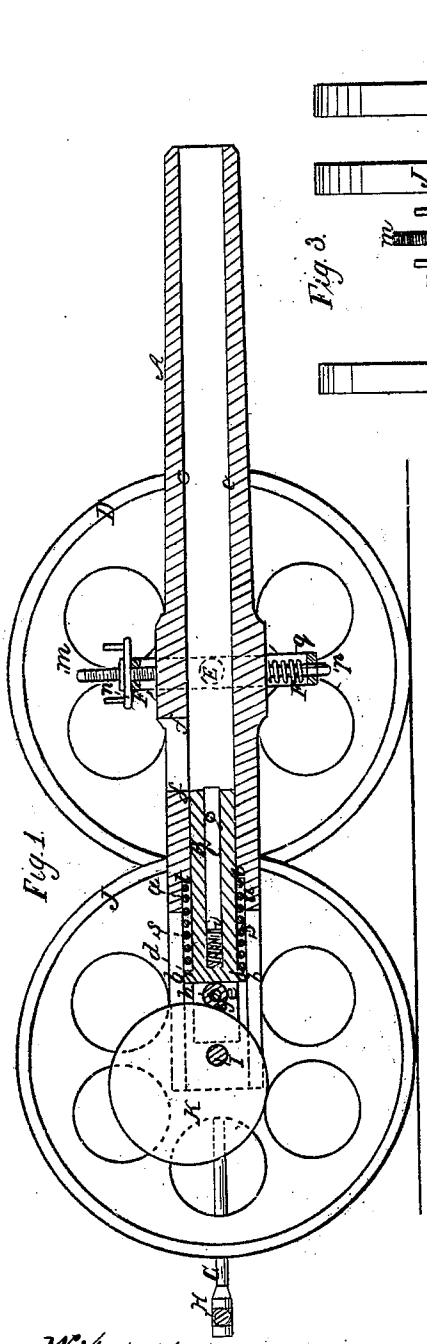


Fig. 1.

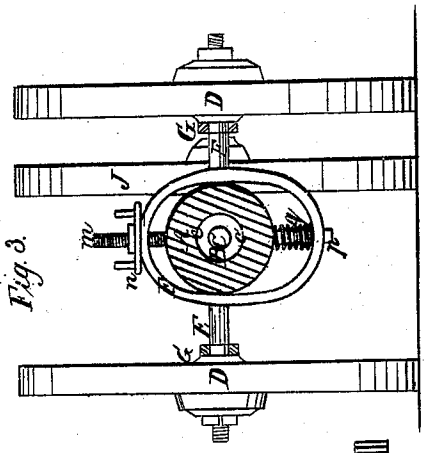


Fig. 3.

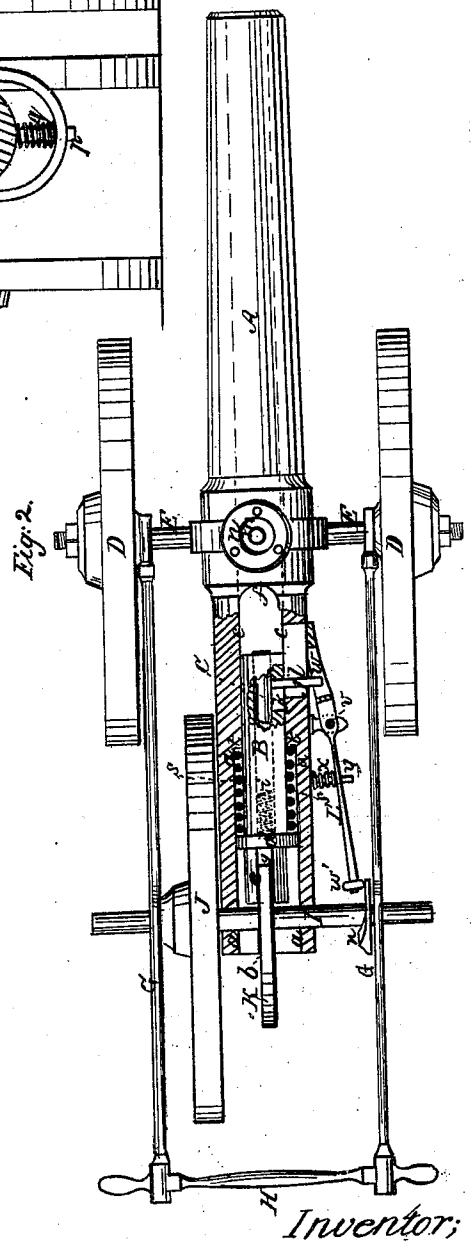


Fig. 2.

Witnesses;

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UNITED STATES PATENT OFFICE.

CHARLES F. BROWN, OF WARREN, RHODE ISLAND.

IMPROVEMENT IN FIRE-ARMS.

Specification forming part of Letters Patent No. **30,045**, dated September 18, 1860.

To all whom it may concern:

Be it known that I, CHARLES F. BROWN, of Warren, in the county of Bristol and State of Rhode Island, have invented certain new and useful Improvements in Breech-Loading 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—

Figure 1 is a longitudinal vertical section of a light field-piece with my improvements. Fig. 2 is a plan of the same. Fig. 3 is a transverse section of the same.

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

The object of my invention is to enable a piece of ordnance to be fired repeatedly by the act of its being drawn over the ground, so that it may be made very effective in advancing to meet or pursue or in retiring from before an enemy.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the gun, having its bore continued right through the breech, and counterbored from the breech of a size larger than the regular bore *c c*, as shown at *a a* in Figs. 1 and 2, and having a narrow slot, *b b*, cut vertically through the counterbored portion. Some distance in front of the counterbore *a a* there is an aperture, *f f*, in the top of the gun, for the admission of the cartridges.

B is the plunger-like sliding breech-pin, fitted to work snugly but easily within the rear portion of the bore *c c*, and having near its rear end a flange, *d d*, which fits easily but snugly to the counterbore *a a*, and in rear of this flange a slot, *e e*, extending to its rear end, said slot being of the same width as the slot *b b*. In the front portion of this slot *e e* there is arranged a roller, *g*, which is fitted to turn freely on a fixed pin or axle, *h*, which is inserted transversely through the breech-pin across the said slot. This breech-pin B is also bored from the front end nearly through, to receive the sliding cylinder pin or plunger C, which constitutes the hammer, and in the rear portion of the said bore there is placed, behind the said plunger C, a spiral spring, *i*, which serves to drive the said plunger forward to effect the explosion of the cartridges, which are intended to contain in their rear ends a portion of fulminating compound, to be exploded by the blow of the said plunger or hammer. From one side of the said sliding plunger there projects a pin, *j*, which passes through a slot, *k*, in the side of the breech-pin, and a slot, *l*, in the side of the gun.

s is a spiral spring coiled round the breech-pin B, within the counterbore *a a*, between the flange *d* of the breech-pin and the shoulder *t*, that is formed at the front of the counterbore, and exerting a constant tendency to force back the breech-pin by its pressure against the flange.

D D are the main wheels of the gun-carriage, fitted to axles E E, which are forged in the same piece with or otherwise firmly secured to the sides of a frame, F, of elliptical form, through which the gun passes. The gun is secured to this frame by means of a screw, *m*, which is attached to the top of the gun, and stands up therefrom perpendicular to the bore, and a nut, *n*, fitted to the said screw, the said screw passing freely through a hole in the top of the said frame, and the said nut being fitted to the said screw above the said frame and resting on the top thereof. To the under side of the gun, opposite to and in line with the said screw *m*, there is secured a pin, *p*, which passes freely through a hole in the bottom of the frame F, and between the frame and the gun there is coiled round the said pin *p* a spiral spring, *q*.

G G H is a frame having the front ends of its parallel sides fitted loosely to the axles E E inside of the wheels D D, and having handles *r r* at its rear end, by which the gun may be laid hold of by men to push or draw it.

I is a shaft fitted to bearings in the sides G G of the frame G G H, and passing transversely through the slotted rear portion of the gun.

J is a wheel of the same size as D D, or thereabout, secured to the shaft I close to one side of the gun. This wheel J and the wheels D D support the gun and the frames F and G G H, axles E E, and shaft I constitute the carriage, and in running over the ground the wheels all revolve, and the revolution of the wheel J causes the shaft I to revolve in its bearings in the frame G G H. The said shaft I has secured to it a cam, K, which works in the slots *b* and *e* of the gun and breech-pin,

and in contact with whose periphery the roller *g* in the slot *e* of the breech-pin is held by the back-pressure of the spring *s* on the breech-pin, the said cam serving, by its revolution, to drive forward the breech-pin beyond the aperture *f f*, to close the breech for firing, and the said spring to force it back behind the said aperture *f f*, to permit the insertion of the cartridges through the said aperture. The said shaft has also secured to it a laterally-operating cam, *u*, to operate on a roller, *w'*, on the rear end of a lever, L, which works on a fulcrum-pin, *v*, attached to one side of the gun, and which has in front of the said fulcrum-pin a slot, *w*, in which is received the pin *j*, that is attached to the firing-plunger C. Behind the fulcrum-pin *v* there is applied, between the gun and the lever L, a spiral spring, *x*, which is kept in place by a pin, *y*, said spring serving to press out the rear portion of the lever toward the cam K and keep the slot *w* in the pin *j*.

The operation is as follows: The gun is brought to the proper elevation by turning the nut *n* on the screw *m*, leaving the front part suspended from the upper part of the frame F by the said nut and screw, while the rear part rests upon the shaft F; but until it is desired to fire, the said nut is screwed up so far as to leave it clear of the top of the frame and leave the gun resting upon the spring *q*, and thus prevent any jar of the carriage or mechanism in traveling over uneven ground. As the gun is moved from place to place, the revolution of the shaft I with the wheel J causes the cam K by its revolution to drive forward the breech-pin B beyond the apertures *f f*, and close the breech once during every revolution of the shaft; but the said pin is driven back by the spring *s* as the cam recedes from its roller *g*, in each revolution opening the aperture *f f*, to permit the insertion of a cartridge. As the breech-pin B advances, the plunger C moves with it for a certain distance, its pin *j* being held in contact with the front end of the slot *k* in the breech-pin; but at a certain point in the advance of the breech-pin the pin *j* comes in contact with the front end of the slot *w* in the lever L, and is thereby arrested during the continued advance of the breech-pin, causing its spring *i* to be compressed by such continued advance. Just as the breech-pin completes its advance, and after it has closed the aperture *f f*, the cam *u*, which up to this point has left the lever L stationary during the advance of the breech-pin, forces the rear end of the said lever laterally toward the gun, and so causes the slotted front part to move outward far enough to liberate the pin *j* and leave the plunger C under the uncontrolled influence of the spring *i*, which suddenly drives it forward in the breech-pin with great force so far that its front extremity protrudes through the front of the breech-pin. As the breech-pin recedes again, the plunger C comes back with it, and the pin *j*, coming back with them, arrives opposite the slot *w* before the cam *u* permits the lever L to be moved back by the spring *x* far enough to interfere with it, so that when the said lever arrives at the first-mentioned position (represented in Fig. 2) the said pin will be in a condition to be again arrested by the said lever the next time the breech-pin moves forward. The inner face of the front end of the lever may, however, be so beveled that the pin *j* in moving back may pass it independently of the action of the cam *u*. In advancing toward an enemy or in retreating, the same action of the breech-pin and firing-plunger C is produced, and one of the men attending the gun has in readiness a ball-cartridge to drop into the aperture *f f* every time the breech-pin is drawn back, and as the breech-pin advances the said cartridge is pushed forward beyond the said aperture, and after the said aperture has been closed by the breech-pin, the plunger C, being liberated from the lever L, as above described, and driven forward by the spring *i*, effects the explosion of the charge in the cartridge, and causes the ball to be discharged. In this way a rapidly-repeated fire is kept up so long as cartridges are supplied on the withdrawal of the breech-pin beyond the aperture *f f*.

Instead of supplying the cartridges one by one to the aperture *f f* by hand, as above described, a number of cartridges may be arranged one above another in an upright fixed magazine above the said aperture, and they will drop into and through the said aperture one by one as the said aperture is opened by the retreat of the breech-pin during each revolution of the shaft I.

The same rapid repetition of the fire may be effected while the gun is stationary by raising the rear end of the carriage high enough for the wheel J to clear the ground, and applying a crank to one or to each end of the shaft I, to give it and the cam K a rotary motion.

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

The wheel J, applied in combination with the cam K, or its equivalent, for the purpose of producing the necessary operation of the said cam or equivalent to effect the rapidly-repeated firing of a piece of ordnance by the act of its movement from place to place, substantially as herein specified.

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Witnesses:
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