(No Model.)

A. C. KOERNER.

BREECH MECHANISM FOR ORDNANCE.

No. 393,436. Patented Nov. 27. 1888.

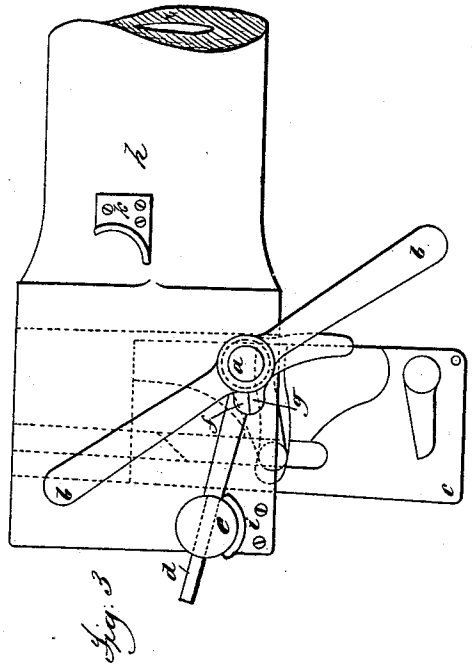


Fig. 3.

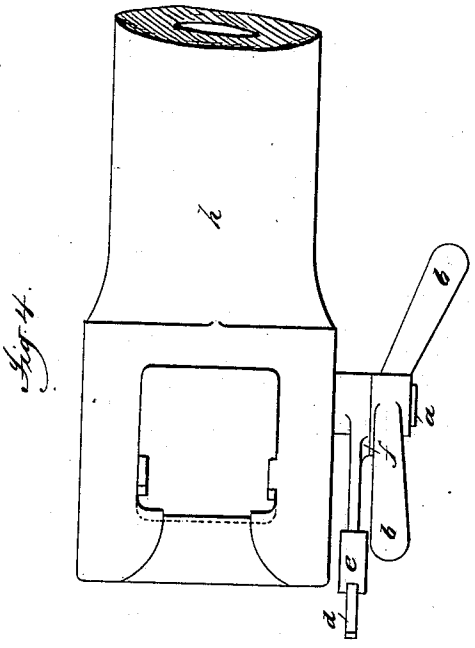


Fig. 4.

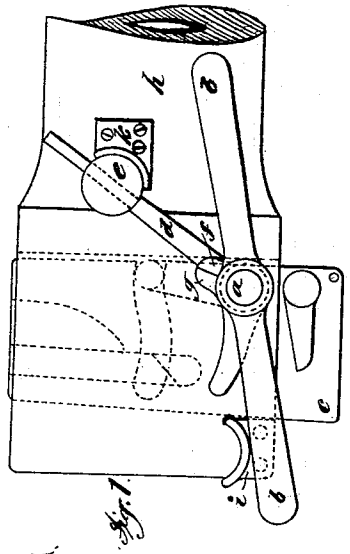


Fig. 1.

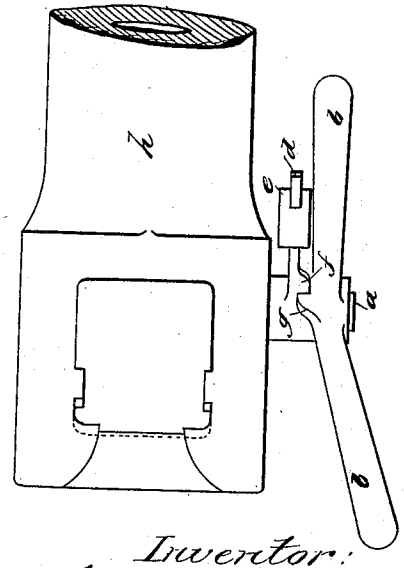


Fig. 2.

Attest.
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UNITED STATES PATENT OFFICE.

ALFRED C. KOERNER, OF PARIS, FRANCE, ASSIGNOR TO THE HOTCHKISS ORDNANCE COMPANY, (LIMITED,) OF LONDON, ENGLAND.

BREECH MECHANISM FOR ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 393,436, dated November 27, 1888.

Application filed July 6, 1888. Serial No. 279,168. (No model.) Patented in England February 29, 1888, No. 3,059; in France March 16, 1888, No. 189,391; in Belgium March 20, 1888, No. 81,118, and in Italy May 26, 1888, XLVI, 84.

To all whom it may concern:

Be it known that I, ALFRED C. KOERNER, a subject of the Queen of Great Britain, residing in Paris, in the Republic of France, have invented certain new and useful Improvements in Breech Mechanism for Rapid-Firing and other Guns, fully described and represented in the following specification and the accompanying drawings, forming a part of the same, the said improvements being embraced in French Letters Patent No. 189,391, dated March 16, 1888; Belgian Letters Patent No. 81,118, dated March 20, 1888; Italian Letters Patent No. 84, Vol. 46, dated May 26, 1888, and British Letters Patent No. 3,059, dated February 29, 1888.

This invention relates to a means for automatically opening the breech of a rapid-firing or other gun after each discharge. The apparatus for accomplishing the above result forms a part of the breech mechanism of the gun; and it consists, primarily, of an additional arm secured to the axis, from which extend the usual arm or arms for operating the breech-block in the ordinary manner. This additional arm is weighted and is so positioned that, broadly speaking, the action of the recoil will be sufficient to cause it to rotate about its axis, and thereby act on the breech-block-operating mechanism in such manner as to open the breech of the gun after each discharge.

The invention is herein shown as applied to the well-known Hotchkiss gun; but it is also capable of being applied to and operating in substantially the same manner in connection with other guns in which the breech-block, whether vertically moving or not, is operated from the outside by one or more hand-levers.

By means of this invention (since the breech of the gun is automatically opened and only after the discharge of the gun and during its counter-recoil) a dangerous element in extremely rapid firing is eliminated—namely, the danger that where the breech is opened and closed by hand it may, in case of a long fire or so-called "hang-fire charge," be thrown open before the explosion of the cartridge is completed or even commenced, and thus cause a full back fire from the breech, or an explosion of the ejected cartridge in the rear of the gun, with serious danger to the lives of the gunners and to the mechanism of the gun itself.

As a full understanding of the invention can best be given by an illustration and a detailed description of the apparatus embodying the same, all further preliminary description will be omitted and a full description given, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the breech of a rapid-firing gun, the breech being shown as closed. Fig. 2 is a plan view of the same. Fig. 3 is a similar view showing the breech-block lowered and the breech open. Fig. 4 is a plan view of the same.

Referring to said figures, it is to be understood that *h* represents the gun proper, and *c* the breech-block sliding vertically in the breech of the gun in the usual manner. The breech of the gun is provided with the usual axis, *a*, having a crank which is connected to the breech-block, and an arm or lever, *b*, through which the axis is operated to move the breech-block in the usual manner. Mounted upon the axis *a* is a supplemental arm, *d*, which is provided with a weight, *e*, or is otherwise suitably weighted, the weight of the arm being such that the momentum developed in the said arm by the shock of recoil upon the firing of the gun will be sufficient to rotate the arm from its normal position, which is somewhat in advance of or in front of its axis, to a position in the rear of its axis, in which latter position it will act by its weight to open the breech of the gun. For this purpose the arm *b*, which constitutes a part of the mechanism for operating the breech-block by hand, is provided with a projection, *g*, which is so arranged as to be engaged by a projection, *f*, upon the arm *d*, as the latter arm swings over to the rear of its axis, and thereby cause the weight and momentum of the arm *d* to be exerted to open the breech-block. When the parts are in this position, the arm *d* can be restored to its normal position without engaging with the breech-opening mechanism. This arrangement allows the breech of the gun

to be opened and closed by turning the arm *b* without moving the supplemental arm *d* as long as it is in the position shown in Figs. 1 and 2, where the breech is closed. On the other hand, when the breech is open, as shown in Figs. 3 and 4, movement of the arm *b* from left to right will carry the supplemental arm *d* around with it in the action of closing the breech, and so will bring it into proper position for the next shot. The movement of the arm *d* is limited in both directions by stops *i k* attached to the gun.

The operation of the apparatus thus organized is as follows: When the gun is fired, the recoil causes the weight *e* to be pressed against the stop *k* and carried rearward with the gun. The gun in recoiling will develop a recoil momentum in the weight, which, as soon as the counter-recoil takes place, will carry the weight rearward sufficiently to cause the weight to act in the opposite direction, and thus throw the supplemental arm *d*, and with it the arm *b*, over to the position indicated in Fig. 3, and open the breech and at the same time operate the extracting mechanism to throw out the empty cartridge-case in the usual manner. In some cases it may be desirable to interpose a spring between the stop *k* and the weight *e*, which will be compressed by the inertia of the weight as the gun recoils, and will thus as it expands upon the counter-recoil aid the momentum of the weight in rocking the arm *d* to open the breech. By thus rendering automatic one of the operations of reloading the gun the speed of its firing can be considerably augmented.

What I claim is—

1. The combination, with the gun, its breech-block, and the mechanism for operating the breech-block, of the weighted supplemental arm *d*, pivoted to swing from the front to the rear of its axis by the momentum developed by the recoil of the gun, and a projection, *g*, extending from the breech block-operating mechanism in position to be engaged by said weighted arm to open the breech-block when the arm swings to the rear of its axis, substantially as described.

2. The combination, with the gun, its breech-block, and the arm *b* for operating the breech-block, of the weighted supplemental arm *d*, pivoted to swing freely from the front to the rear of its axis, a stop carried by the gun, against which the arm *d* rests when in its forward position, and portions *f g* upon the respective arms, which engage when the arm *d* is rocked to the rearward, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED C. KOERNER.

Witnesses:
J. L. RATHBONE,
B. J. PRESTON.