

(No Model.)

2 Sheets—Sheet 1.

C. RÖSTEL.
BREECH LOADING FIRE ARM.

No. 430,973.

Patented June 24, 1890.

FIG. 2-

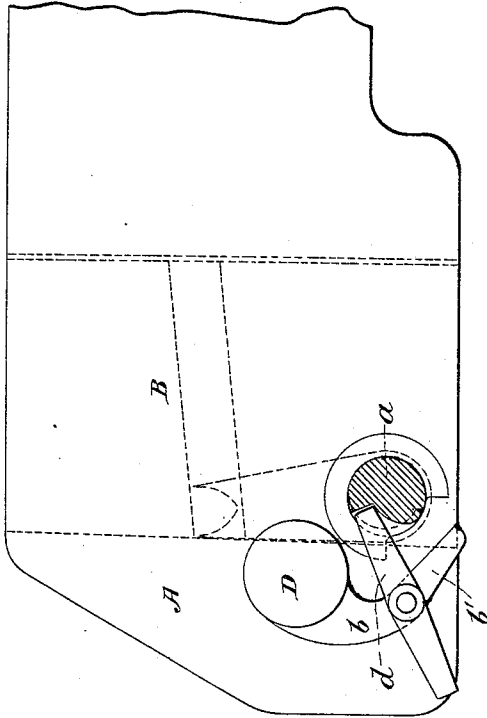


FIG. 4.

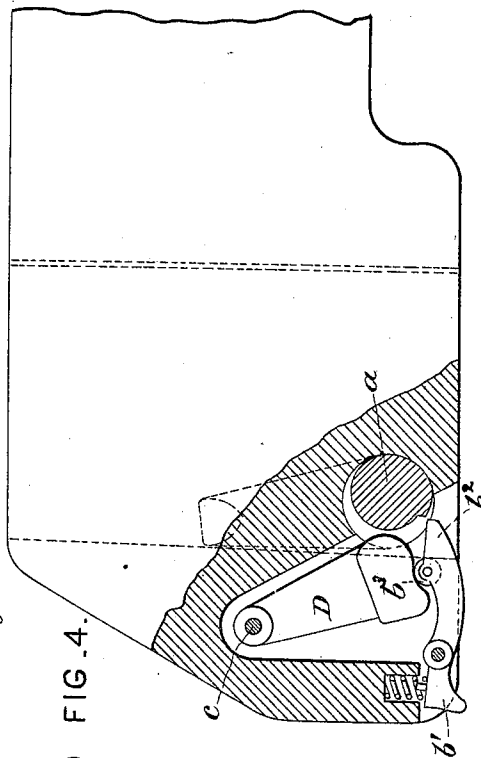


FIG. 1-

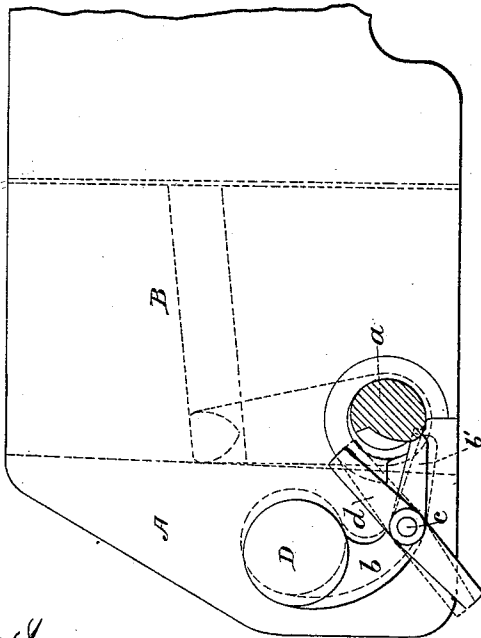
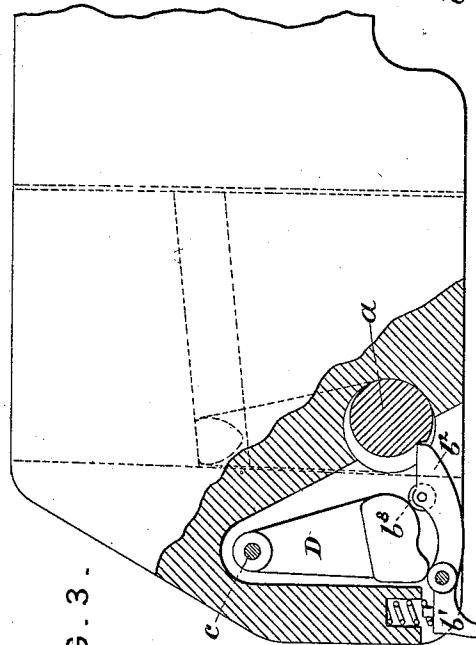


FIG. 3.



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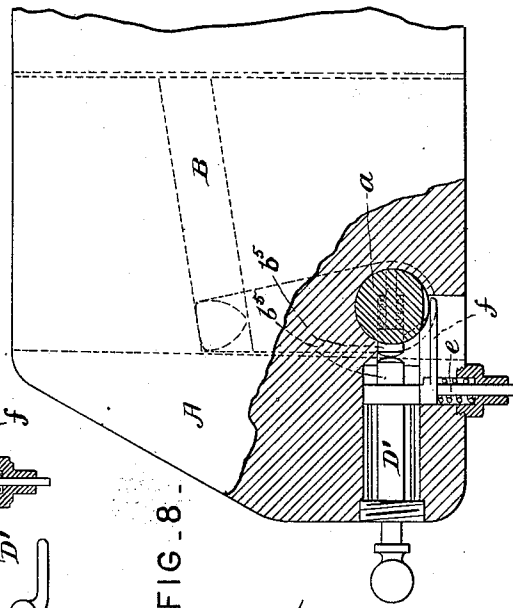
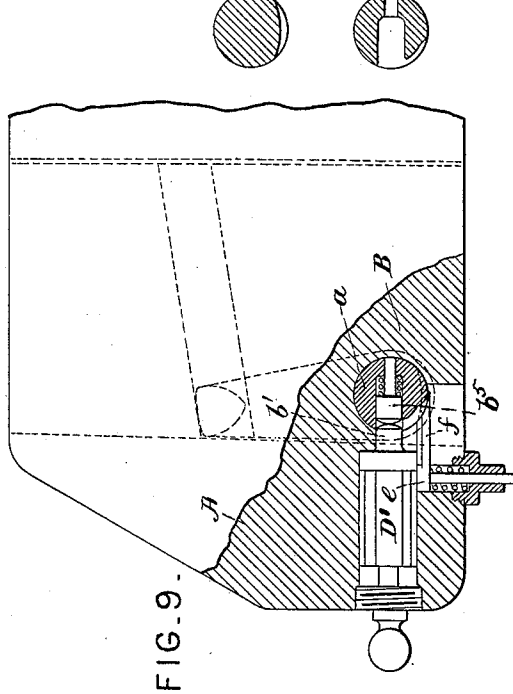
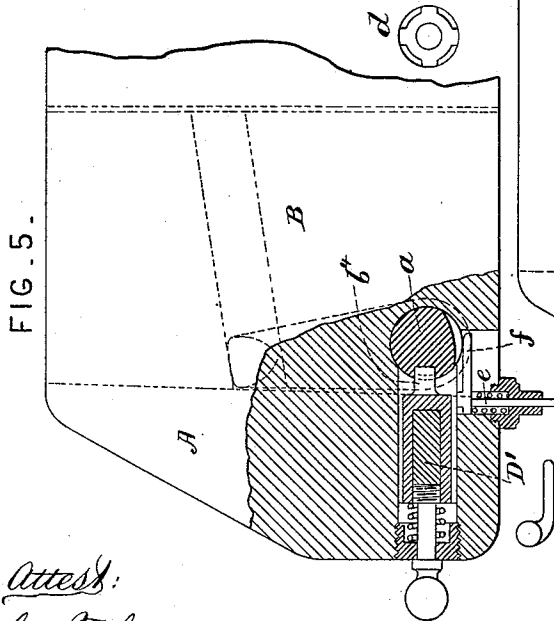
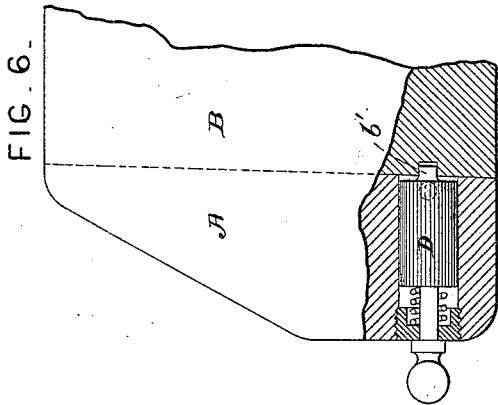
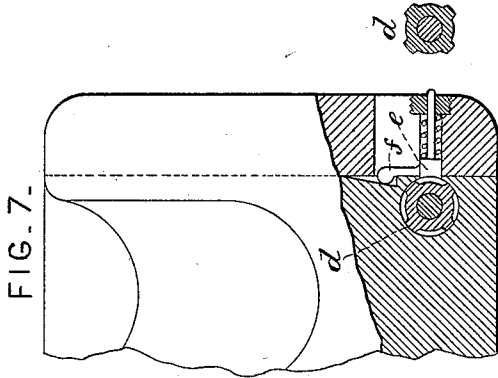
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UNITED STATES PATENT OFFICE.

CARL RÖSTEL, OF MAGDEBURG, PRUSSIA, GERMANY, ASSIGNOR TO
GRUSONWERK, OF SAME PLACE.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 430,973, dated June 24, 1890.

Application filed May 23, 1889. Serial No. 311,871. (No model.) Patented in Germany November 23, 1888, No. 5,124; in France November 29, 1888, No. 194,421, and in Belgium November 30, 1888, No. 84,135.

To all whom it may concern:

Be it known that I, CARL RÖSTEL, a subject of the King of Prussia, and a resident of Magdeburg, Prussia, Germany, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, (for which Letters Patent have been granted in France, No. 194,421, dated November 29, 1888; in Belgium, No. 84,135, dated November 30, 1888, and in Germany, No. 5,124, dated November 23, 1888,) of which the following is a specification.

This invention relates to breech-loading fire-arms, and more especially to those in which metallic cartridges are employed.

The main object of the said invention is to afford protection against or avoid accidents, such as are frequently occasioned by cartridges which hang fire. For this purpose a locking device is provided which prevents premature opening of the breech, and the recoil of the gun is utilized to disengage the said locking device.

The invention therefore consists in combining with the breech and block a locking device carried by one and engaging in the other and a weight having a freedom of movement for a limited distance controlling the locking device. In all the arrangements described in this case the movement of the breech-block is prevented by a rod, bar, catch, or other locking device until the disengagement of the latter is effected by the action of the recoil, said locking devices being each controlled by a freely-movable weight adapted by its own inertia to withdraw the locking device at the recoil of the gun.

In the accompanying drawings I have shown how the said invention may be conveniently and advantageously carried into practice.

Figure 1 is a side elevation, partly in vertical section, of the breech portion of a gun with one form of the present invention applied thereto. Fig. 2 is a similar view to Fig. 1, showing the working parts in a different position. Fig. 3 represents a form of my invention in which a locking device is controlled by a depending pivoted weight. Fig. 4 is a similar view showing the parts in different positions. Fig. 5 is a form in which

the locking device is carried by a sliding weight mounted in a cavity in the re-enforce and having a projecting spring and a catch for retaining the locking device against its spring when driven back by the recoil of the gun. Figs. 6, 7, 8, and 9 represent modifications of the same embodiment of my invention, as illustrated in Fig. 5.

A is the re-enforce of the gun; B, the breech-block, and *a* is the crank for reciprocating or moving the breech-block upward and downward by means of its crank-pin, which slides in a groove in the said breech-block, as will be fully understood by reference to Patent No. 383,372 of the 22d of May, 1888.

b is a lever arranged to turn or pivot freely upon a pin *c*, and provided at one extremity with a suitable counterbalance-weight D. The other extremity or free end *b'* of the said lever engages in a notch or groove in the crank-shaft *a*. At the recoil of the gun the counterbalance-weight D, by reason of its inertia, is caused to move forward and assume the position shown in Fig. 2. By this movement the extremity *b'* of the lever *b* is disengaged from the notch or groove in the shaft *a*. To the lever *b* is rigidly attached a rod or piece *d*, which, during the recoil, engages in an eccentric-shaped notch or groove provided in the shaft *a*. When the said shaft *a* is rotated and the breech opened, the lever *b* and the rod or piece *d* are carried back to their original position by the eccentric form of the groove.

In Fig. 1 the parts of the device are shown in the position they assume when the gun has missed fire or hangs fire, and in Fig. 2 in the position they assume after the firing of a shot.

When the gun has missed fire and it is desired to open the breech, the extremity *b'* of the lever *b* is disengaged from the notch or groove by means of the extremity of the rod or piece *d*, which extends through the re-enforce, and the breech can then be opened in the usual manner.

Figs. 3 and 4 show another form. The extremity *b'* of the lever *b* is acted upon by a small spiral spring, which maintains the extremity *b'* of the said lever engaged in the

groove or notch in the shaft *a*. *D* is a weight pivoted at *c*. At the recoil of the gun the weight *D*, by reason of its inertia, is caused to move forward and disengage the extremity *b*² of the lever *b'* from the notch or groove in the shaft *a* by striking against a projecting portion of the said lever *b'*, provided with a suitable anti-friction roller *b*³. The weight *D* is carried back again to its original position by the projecting or cam portion of the notch or groove when the shaft *a* is rotated.

Fig. 5 illustrates a modification wherein the inertia of a bar or rod caused to move by the sudden stoppage of the gun at the termination of its recoil movement is employed. Under normal conditions the rod or bar *D*, which is attached to a heavy bolt or piece *b*⁴, is held to engagement in a recess provided in the shaft *a* by means of a spiral spring. When the gun comes to rest at the termination of the recoil movement, the inertia of the bolt *b*⁴ causes it to continue the rearward movement, and to overcome the pressure of the said spiral spring and the said bolt or piece *b*⁴ and the rod or bar *D'* are moved backward and kept in that position by a catch *e*, provided with a spiral or other suitable spring. During the rotary movement of the crank-shaft *a* the said catch *e* is disengaged by an eccentric or cam groove in the said shaft, which presses upon an arm or projection *f*, firmly attached to or forming part of the said catch, which enters the said groove when the catch *e* is in its highest position, and the rod or bar *D'* again engages in the recess as soon as the breech is closed. When the gun has missed fire and it is desired to open the breech, the rod or bar *D'* is disengaged by operating a knob provided on the exterior of the breech.

Figs. 6 and 7 show a similar arrangement to that above described, only the rod or bar *D'*, instead of engaging in a recess in the crank-shaft *a*, engages in a recess provided in the breech-block *B*. When the bolt *D'* is thrown back at the termination of the recoil, the catch *e*, which is acted upon by its spring, engages in a recess in the said bolt *D'* and prevents the latter springing forward again, and the breech can therefore be opened. In the downward movement of the breech-block *B* the catch *e* is drawn back by an arm or projection *f*, sliding upon an inclined plane provided for that purpose, and the bar *D'* moves forward into engagement again as soon as the breech-block has arrived in its proper position—that is to say, is completely closed.

Figs. 8 and 9 illustrate a modification in which the inertia of a heavy bolt or piece is utilized to unlock the breech at the beginning of the recoil movement of the gun. In a suitable recess in the crank-shaft *a* is fitted a bar or catch *b*⁵, provided with a spiral or other suitable spring. The rod or bar *b*⁵, when the breech is closed, engages in a recess in the re-enforce and prevents the shaft *a*

from being rotated. During the recoil of the gun the bolt *D'* is caused to move forward and is maintained in that position by a catch *e*, actuated by a spring, as hereinbefore described. The bar is thus pressed back and the crank-shaft *a* can be turned for the purpose of opening the breech. In cases where the gun has missed fire the breech can be released or unlocked by operating the handle or knob.

Fig. 8 shows the mechanism in its normal or locked condition, or after the gun has missed fire or hung fire. Fig. 9 shows the position of the parts after a shot has been fired.

In all these forms the controlling projection is carried by the breech and the engagement is in the breech-block, whether it be with a portion of the block or with a part of the block-lowering mechanism. It is obvious, moreover, that the said invention can be somewhat further modified, so as to render it applicable to other portions of the breech mechanism; but the main feature in every case is the displacement of a suitable bolt, bar, or locking device by the inertia of a weight caused to move by the action of the recoil of the gun.

The locking device and its controlling-weight are movable independently of the breech and breech-opening mechanism, and the latter may be operated at will any time after the lock is released. I therefore desire it understood that I do not limit myself to any particular form of mechanism, as my invention consists in preventing the lowering of the breech-block by a suitable locking device and controlling the locking device by a movable weight independently of any movement in the breech-block.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, what I claim is—

1. In a breech-loading gun having breech-opening mechanism, the combination, with the breech and the breech-block, of a locking device carried by one and engaging in the other and adapted to be operated independently of the breech-lowering mechanism, and a movable weight having working-connection with said locking device for controlling its engagement, substantially as and for the purpose set forth.

2. In a breech-loading gun having suitable breech-opening mechanism, the combination, with the breech and the movable block, of a bolt, bar, or locking device carried by the breech, engaging in the block to prevent its movement, and movable independently of the block and lowering mechanism, and a movable weight having working-connection with the bolt, bar, or locking device, and adapted to change its relative position to the gun by its inertia at the recoil of the gun, substantially as and for the purpose set forth.

3. The combination, with a breech-loading

gun having suitable breech-opening mechanism, of a movable locking device carried by the gun and engaging the opening mechanism to prevent the movement of the said mechanism, and a movable weight having working-connection with the locking mechanism and adapted to release the same by its inertia at the recoil of the gun, said locking device being independent of the breech-opening mechanism in operation, all substantially as set forth.

4. In a breech-loading gun, the combination, with the breech and block, of the counterbalanced pivoted forked lever carried by the breech and adapted to engage in the block, substantially in the manner and for the purpose set forth.

5. In a breech-loading gun, the combination, with the breech and lowering mechanism, of the pivoted lever, a spring for holding said lever into engagement with the lowering mechanism, and a movable weight adapted to engage said lever and overcome said spring by its inertia at the recoil of the gun, substantially as herein set forth.

6. In a breech-loading gun, the combination, with the breech and the block, of the locking device carried by the breech and adapted to engage in the block, a spring for holding said locking device into engagement in said block, a weight controlling the movement of the locking device and adapted to overcome the spring by its inertia at the recoil of the gun, and a catch or trigger for retaining the locking device in its disengaged position, all substantially as set forth.

7. In a breech-loading gun, the combination, with the breech and the block, of the locking device carried by the breech and adapted to engage in the block, a weight controlling the movement of the locking device, a catch or trigger for retaining the locking device in its disengaged position, and a cam on the block for releasing said trigger, all substantially as and for the purpose set forth.

CARL RÖSTEL.

Witnesses:

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EMIL KALLNECKER.