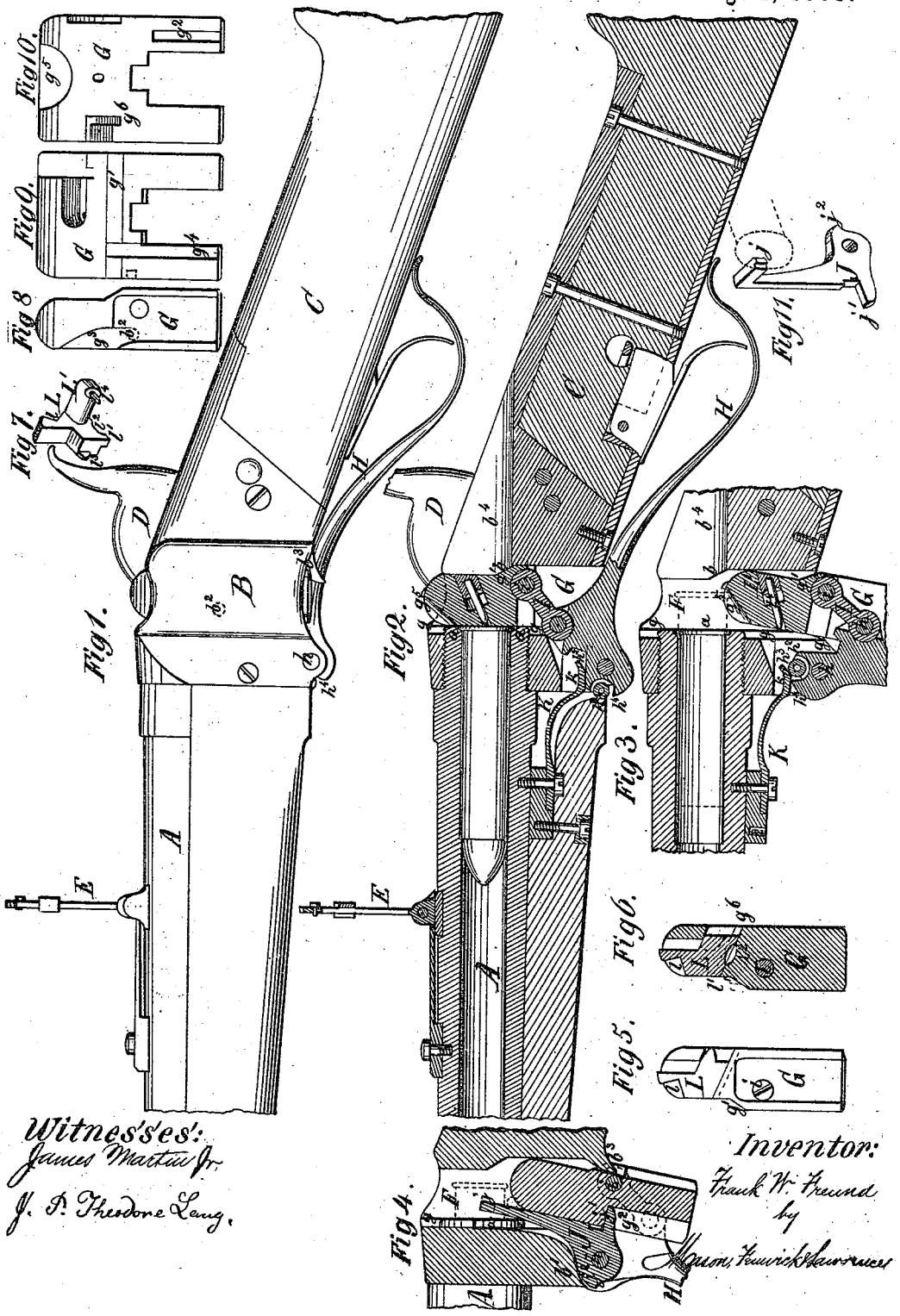
2 Sheets—Sheet 1.

F. W. FREUND.

BREECH-LOADING FIRE-ARM.

No. 180,567. Patented Aug. 1, 1876.



Witnesses:
James Martin Jr.
J. F. Theodore Laug.

Inventor:
Frank W. Freund
by
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2 Sheets—Sheet 2.

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Fig 12.

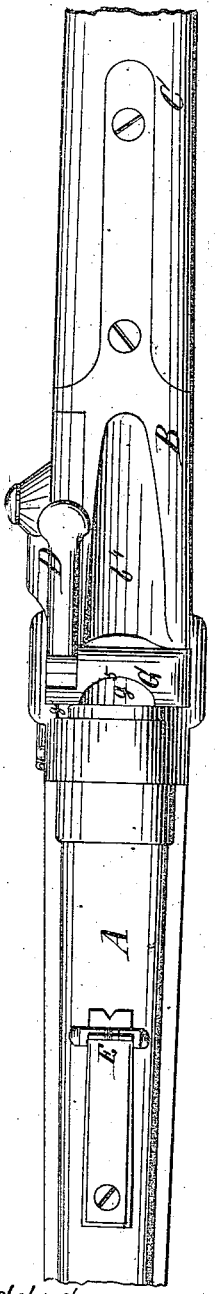
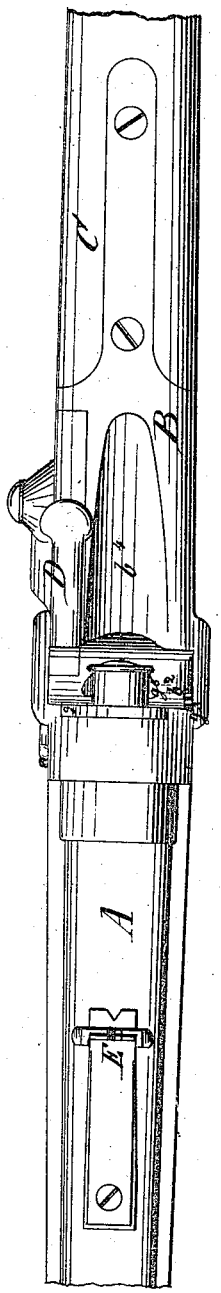


Fig 13.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK W. FREUND, OF CHEYENNE, WYOMING TERRITORY.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **180,567**, dated August 1, 1876; application filed June 1, 1876.

To all whom it may concern:

Be it known that I, FRANK W. FREUND, of Cheyenne, in the county of Laramie, in the Territory of Wyoming, have invented a new and useful Improvement in Breech-Blocks for Fire-Arms, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a gun provided with my improved beech-block. Fig. 2 is a longitudinal, vertical, and central section of the said gun as it appears just before firing. Fig. 3 is a similar section of the said gun as it appears during the act of loading. Fig. 4 is a vertical longitudinal section through the retractor of the cartridge-shell, showing the retracting-head at its extreme distance from the gun-breech. Figs. 5, 6, 8, 9, 10 are detailed views of my improved breech-block, hereafter fully described. Fig. 7 is a perspective view of the firing-pin slide-block. Fig. 11 is a perspective view of the retractor. Fig. 12 is a top view of my gun, with the breech closed; and Fig. 13 is a top view of the same, with the breech open.

The nature of my invention consists in certain constructions, combinations, and arrangements of parts, as hereafter described and specifically claimed, whereby an improved breech-loading gun is produced at a very slight cost.

The chief object of my invention is to make a breech-block for a breech-loading gun, which cannot be moved beyond the limit of its ascent, and which stands at a right angle to the center of the gun-barrel, and which, in its descent, gradually swings around its horizontal axis, with its top off the breech to shorten its downstroke, and to operate the retractor, and which in its ascent gradually, and with ease, pushes the fresh cartridge into its proper position.

To enable others skilled in the art to understand my invention, I will proceed to describe it.

In the accompanying drawings, A represents a gun-barrel, and B the breech-frame, to which it is fastened; C, the rear stock; D, the hammer, and E the sight, all constructed in the manner as generally adopted. The breech-space F, in which the breech-block G is operated, is provided with guide-strips *g* right and left of the breech end *a* of the gun-barrel, which breech end is made to project beyond the front wall of the space F to avoid unnecessary friction of the breech-block in the mortise of the breech-frame. The rear side of the breech-block G is provided with an inclined offset, g^1, whereby the parallel top part of the breech-block is reduced in thickness. The mortise of the breech-frame has a corresponding offset, *b*, against which the offset of the breech-block rests in its normal position. The remaining sides of the breech-block and mortise are all vertical and parallel, so that when the breech is closed there is a perfect fit between the breech-block, the guide-strips *g*, the breech end *a* of the gun-barrel, the sides, and the rear abutment of the mortise. The movement of the breech-block G is effected by the trigger-guard H, which is pivoted at *h* to the breech-frame, and is connected by means of the eccentric pin h^1, the link I, and pin *i* to the breech-block, which, for the reception and easy operation of the said link is slotted below the level of the bore of the gun. The pin *h* serves also as a pivot for the retractor J, as seen in Fig. 4, which, in its normal position, stands between the breech-block and the fore end of the mortise in the breech-frame aside from the breech end *a* of the barrel A. The retracting-arm *j* is inserted into the metal of the breech end *a* in the usual mode, and may form a horizontal or other extension of the same. A lever, j^1, extends from the retractor toward the rear into a slot, g^2, in the breech-block, the end of which serves to throw the retractor backward, when the breech-block is moved down, as Fig. 4 shows.

An eccentric check, j^2, serves to limit the back swing of the retractor by coming in contact with the lower end b^1 of the breech-frame. The descent of the breech-block G is vertical until its parallel top part comes to the offset *b*, when by means of a curved slot, g^3, in the side of the breech-block, (shown in Fig. 8,) and a rigid guide-pin, b^2, in the side of the mortise, (shown in Fig. 13,) the said breech-block becomes lifted with its top to the rear, which movement is steadied by a lug, b^3, below the rear end of the mortise. A straight guide-

way, g^4, in the breech-block prevents any lateral deviation of the breech-block from its true course. The trigger-guard H is held in position by means of a spring, K, fastened to and below the gun-barrel A. The said spring K has a curved or angular head, k, the horizontal part of which bears upon a horizontal extension, h^2, of the trigger-guard H. Below the said extension a friction-roller, h^3, is inserted into the metal of the trigger-guard, and at a small distance below a heel, h^4, juts out from the rounded surface of the trigger-guard, which serves as a check against the further progress of the trigger-guard, when the friction-roller h^3 travels over the inclined end of the spring-head k, which it does freely and without assistance of the operator, as soon as the said roller h^3 is moved beyond the perpendicular position with the pin h. This described movement is quick, and serves to violently throw the retractor backward, and remove and throw the empty cartridge beyond its own sway. The trigger-guard, by its momentum, is forced back until it is stopped by the locking of the breech-block with the retractor, as seen in Fig. 4, thereby moving the breech-block far enough down to allow free passage-way to the back speeding cartridge, which glides into a gutter, b^4, in the rear end of the breech-frame. As soon as the force of the momentum in the trigger-guard is spent, the head k of the spring K, by bearing on the heel h^4, moves it back until the roller h^3 comes in contact with it, when the trigger-guard assumes the position shown in Fig. 3, and the breech-block G is at an elevation preventing the passage of a cartridge into or out of the gun-barrel. An inclined semi-cylindrical notch, g^5, at the top of the breech-block, serves to push the fresh cartridge into the gun-barrel when the breech-block is raised. By turning up the trigger-guard the breech-block is moved up, gradually assuming a vertical position until it arrives at the upper corner of the slope b, when it finishes its upward stroke in a vertical direction and wedges tightly against the breech, thereby driving the cartridge home by degrees, and with more force than the operator could exert upon it by means of his hand.

The lock of the gun may be of any construction, the hammer D having an angular face which fits an angular recess, l, in a sliding block, L. The said block L is inserted into the side of the breech-block G, wherein it slides in an inclined direction, being steadied by a groove, g^6, in the breech-block shown in Fig. 6, and a thereinto fitting rib, l^1, shown in Figs. 6 and 7. The said rib l^1 and the groove are provided with cavities or notches forming a hollow trap, l^2, for the reception and reduction of escaping gases. The block L has a rim-firing pin, l^3, and a center-firing pin, l^4, at the end of an arm, L′, of the said block.

Operation: After the gun has been fired, the operator turns the trigger-guard down, letting it go as soon as he feels the pressure of the spring K assisting his action. The trigger-guard swings violently forward until checked by the contact of the eccentric projection j^2 of the retractor with the breech-frame at b^1. By this described movement the breech-block is moved down to the end of its stroke, and the cartridge-shell is extracted and thrown back into the gutter b^4, from which it is removed by the operator. To insert a new cartridge it must be forced over the rounded top of the breech-block, thereby lowering the breech-block sufficiently to permit the cartridge to pass above it. The trigger-guard then again assumes the position shown in Figs. 3 and 13, keeping the breech-block at such an altitude as to prevent the passage of the cartridge. By turning the trigger-guard up again, the breech-block G is moved up, and the cartridge is pushed first by the inclined notch g^5 and then by the approaching face of the breech-block into the gun-barrel. After the top of the breech-block has passed the slope b the breech-block begins to fit tightly in its mortise and it moves perpendicularly up until its offset g^1 meets with the slope b in the breech-frame, when the breech is perfectly closed, and the gun ready for firing. The pin h^1 is at that time on the other side of the dead-center of the pins h and i, or the whole toggle-joint is locked, and thus a downward movement of the breech-block by any accident is prevented. The offset g^1 and the slope b at the same time prevent the upward movement of the breech-block, so that the breech-block is truly immovable by any other accident than the movement of the trigger-guard.

The described breech-block may be adopted in any breech-loading gun with very little labor and expense. I have shown the construction of a barrel, breech-frame, and lock of a "Sharps rifle," only for illustrating the adaptation of my invention thereto, and for want of time necessary for the manufacture of an entire new gun of other description.

The shape of the breech-block as described may be so modified that the lower part is curved instead of straight, so it does not interfere with the above-described vertical movement of the said breech-block. The necessarily-corresponding concave shape of the breech-frame would, in that case, permit a greater swing or oscillation of the breech-block.

The tilting or oscillation of the breech-block may be effected by other means than those described, as, for instance, curved ribs on the sides of the breech-block with rigid lugs, grooves, or guides in the breech-frame, a curved bottom in the slot g^2 sliding against the end of the arm j^2 on the retractor, and many more devices of this kind.

Swinging breech-blocks are not novel in general, but the construction and operation of my improved breech-block are such that a number of difficulties and annoyances connected with old constructions are entirely avoided. I interpose a vertical and parallel piece of metal of sufficient strength between the cartridge and the back of the breech-frame, with

no chance for sway or other movement, and the swinging movement of my breech-block is necessarily connected with a vertical movement, which is not the case in old constructions.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a breech-loading fire-arm, a breech-block, having a reduced upper part and parallel front and back sides, the upper and lower parts having a connecting-surface adapted to wedge the said breech-block firmly into its normal position, substantially as described.

2. In a breech-loading fire-arm, a breech-block, which is moved vertically into or out of the range of explosion, and in a curved direction and inclined position beyond the said range, by mechanism substantially as described.

3. The breech-block G, having an inclined offset, g^1, and a vertically-mortised breech-frame, B, having a corresponding inclined offset, b, constructed and operating substantially as set forth.

4. The retractor J, having a retracting arm or wing, j, a lever, j^1, and an eccentric check, j^2, constructed and operating substantially as set forth.

5. The combination of the breech-block G, having an inclined groove, g^5, and being rounded at the top, the spring K, the trigger-guard H, and the link I, whereby the cartridge may be forced over the said breech-block into the gun-barrel, and whereby the cartridge is prevented from falling accidentally off of the gun-barrel before the breech is closed, substantially as set forth.

6. The combination of the breech-block G, having a groove, g^3, and the breech-frame B, having a guide pin or lug, b^2, substantially as and for the purpose set forth.

7. The combination of the breech-block G, the spring K, and the trigger-guard H, having a horizontal surface, h^2, a friction-roller, h^3, and a check or heel, h^4, substantially as and for the purpose set forth.

8. The combination of the breech-block G, having a guideway, g^4, and the breech-frame B, having a lug, b^3, substantially as and for the purpose set forth.

9. The gas-trap l^2, formed partly on the rib l^1 of the sliding block L, and partly in the bottom of the groove g^6 in the breech-block G, substantially as set forth.

Witness my hand in matter of my application for a patent for improved breech-block for fire-arms.

FRANK WM. FREUND.

Witnesses:

CHAS. N. POTTER,

E. P. JOHNSON.