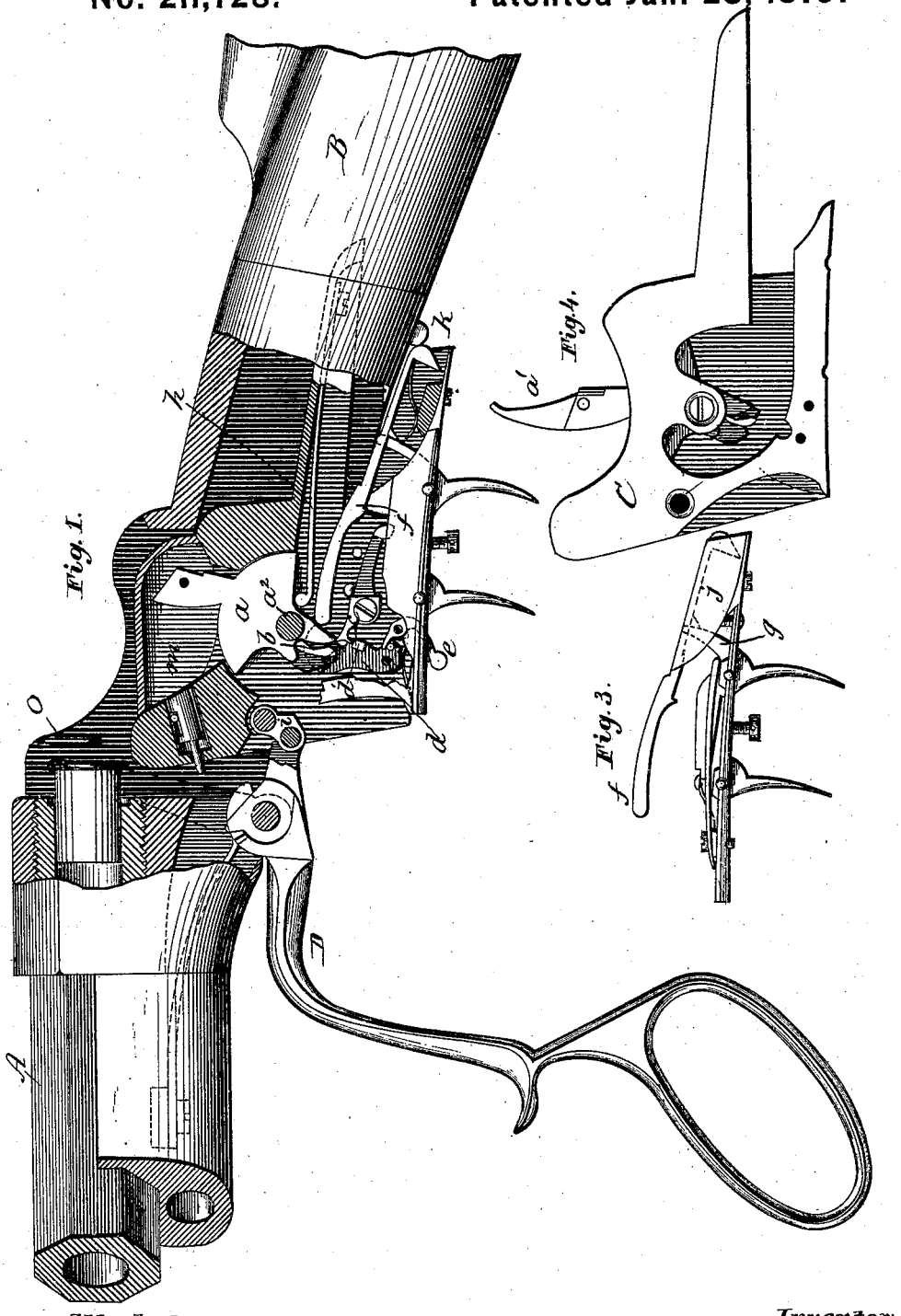
2 Sheets—Sheet 1.

F. W. FREUND.

Breech-Loading Fire-Arm.

No. 211,728. Patented Jan. 28, 1879.



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Inventor:
Frank W. Freund

2 Sheets—Sheet 2.

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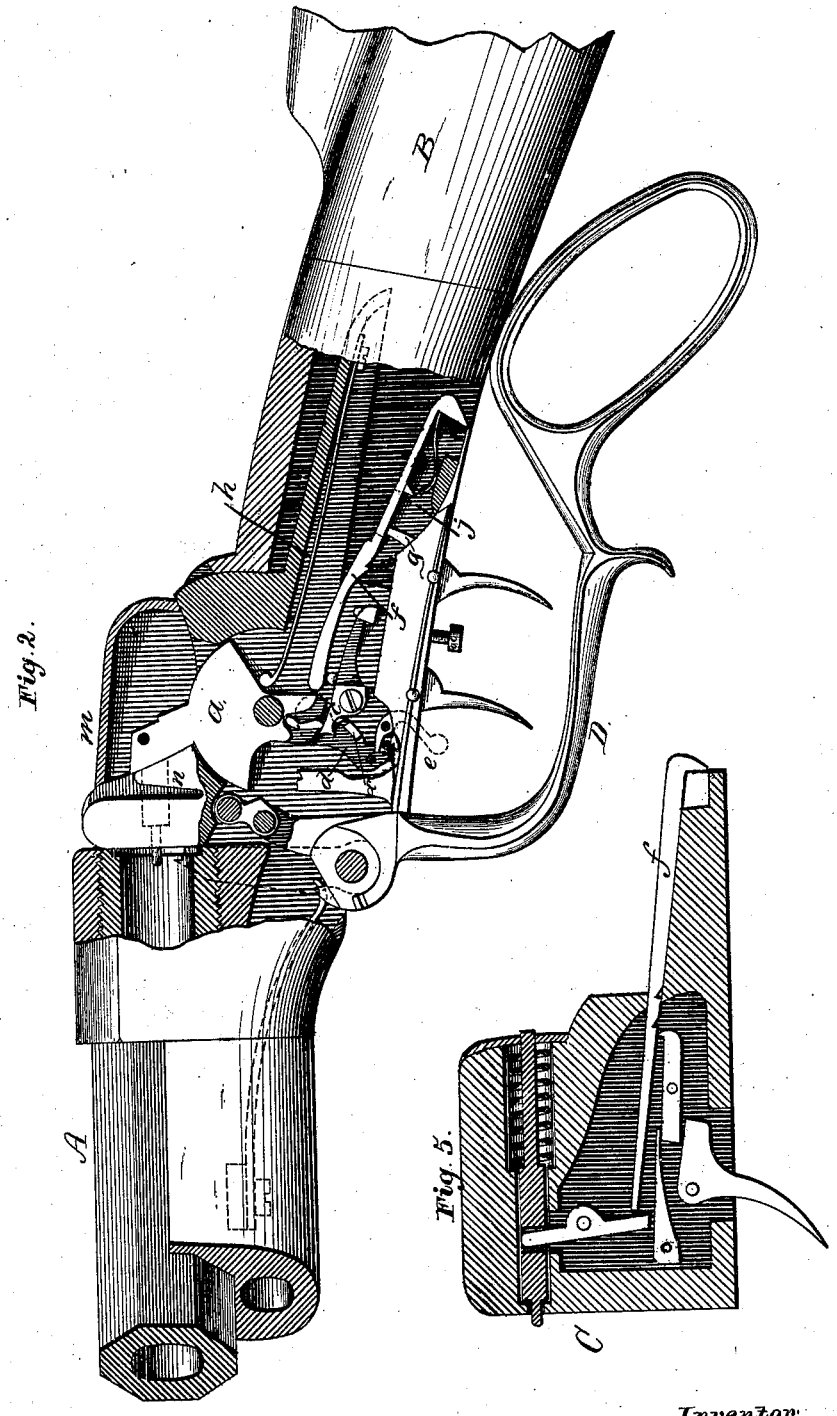

Fig. 2.

Fig. 5.

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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. **211,728**, dated January 28, 1879; application filed October 5, 1878.

To all whom it may concern:

Be it known that I, FRANK W. FREUND, of Cheyenne, in the county of Laramie and Territory of Wyoming, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, of which the following, in connection with the drawings which form a part hereof, is a sufficient description to enable any one skilled in the art to understand the same.

My improvements relate especially to the arm known as the "Ballard gun;" and consist in certain combinations of parts and details of construction, which will be hereinafter particularly pointed out.

While my improvements are especially applicable to the Ballard gun, it will be understood that by certain modifications, which will also be herein described, they may be applied to many other styles of arms without departing from the nature of my invention.

The principal feature of my invention consists in the application of a slide, which is operated by the opening of the breech to cock the hammer, and, if desired, to set the triggers, said slide being arranged within the movable breech-block, so that when the latter is moved to open the breech of the gun the rear end of the slide will strike a fixed projection or obstruction on the frame, and be moved forward, so that its front end will strike the tumbler of the hammer, and bring it to half or full cock, as may be desired.

Figure 1 of the accompanying drawings shows a longitudinal vertical section through the lock and breech mechanisms of a gun embodying my invention, and with the breech open. Fig. 2 is a similar view with the breech closed, and the parts in position as after firing. Fig. 3 is a side elevation of the trigger-plate and triggers, with the slide for cocking the hammer and setting the triggers. Fig. 4 is a side elevation of the breech-block, with the top cover removed, and an extension or thumb-piece attached to the hammer, to enable the latter to be cocked by the hand of the operator; and Fig. 5 is a sectional view of a modification of my invention.

In the several figures, A denotes the barrel, B the rear stock, C the breech-block, and D the guard-lever, by which the breech-block is operated. The guard-lever is pivoted in the lower part of the frame, as shown in Figs. 1 and 2, and its upper extension or arm is connected with the breech-block by a toggle-connection, *i*, in the usual manner. The rear face of the breech-block is nearly or quite vertical to the line of the axis of the barrel, and bears against a corresponding shoulder in the frame of the gun, and it has a rearward extension, which receives the main-spring *h*. The breech-block is recessed, and contains within it the lock mechanism, which consists of the hammer *a*, sear *c*, levers *d e*, and slide *f*. The hammer is pivoted at a^2, and is provided with the usual half and full cock notches. Below the hammer is pivoted the sear *c*. This is provided at its forward extremity with a point or edge for engagement with the notches of the hammer, and with an enlargement on the lower side, which is designed to engage with a lug, *d'*, on the side of a lever, *d*, which is pivoted in front of and below the sear *c*, as shown in Figs. 1 and 2. This lever *d* has a pin or stud projecting laterally from its lower extremity, in rear of its pivot, with which the point of the lever *e* engages, for a purpose hereinafter to be explained.

The trigger-plate consists of a flat plate, as shown in Fig. 3, and carries the double or set triggers, which may be of the usual or any suitable construction.

At the rear end of the trigger-plate I attach a piece, *j*, which carries the slide *f*. This slide is mounted in a groove in the upper side of the piece *j*, and is secured therein in any suitable manner, preferably by dovetailing the parts together, so as to permit longitudinal movement of the slide.

In order to prevent the slide from working too freely when it becomes worn, it is provided with a friction-spring, as shown in Figs. 1 and 2.

From the under side of the frame, and a little in rear of the end of the trigger-plate, when the breech is closed, is a lug or projection, *k*, with which the rear end of the slide *f* comes in contact when the breech-block is lowered to open the breech, and by which the slide is

moved forward against the lower part of the tumbler, and by the pressure thus applied the hammer is turned upon its pivot to bring it to half or full cock, as may be desired, for it will be understood that by locating the lug or projection farther back, so as not to arrest the slide till the breech-block has nearly finished its backward movement, the slide will not be moved far enough to bring the hammer to full-cock. The slide *f* is of sufficient width to engage also the lever *d*, which, as shown in dotted lines in Figs. 1 and 2, extends upward by the side of the hammer nearly to the pivot of the latter, and in the act of cocking the hammer the upper end of lever *d* is pushed forward, so as to bring its lug *d'* under the end of the sear and lock the latter in the notch of the hammer, so as to prevent accidental discharge of the arm.

The breech-block having been lowered into the position shown in Fig. 1, by which the slide *f* is moved forward, the hammer cocked, and the sear locked in the notch of the hammer, all as above explained, when the piece has been loaded and the breech closed, as in Fig. 2, it cannot be discharged until the lever *d* has been moved out of engagement with the point of the sear. This is accomplished by means of lever *e*, the lower end of which being pressed backward, its point engages with the laterally-projecting stud on lever *d*, and by pressing down on the same rocks lever *d* on its pivot, and brings it into the position shown in Fig. 2, when its lug *d'* is below the notch in the lower side of the sear, and the operation of the latter is permitted. The lever *d* being thus rocked on its pivot, its upper end presses against the end of the slide *f* and pushes it back out of the way of the hammer, so as not to obstruct the latter in its fall.

The lever *d* is formed with an angle at its lower end, and a spring is arranged to bear upon the sides of this angle, so as to hold the lever in either its forward or backward position. In lieu of this arrangement of the spring, a friction-spring may be attached to the side of the lever to bear against the side wall of the breech-block or lock-case, and the same result will be thereby accomplished. The sear-spring is attached, for convenience, in a groove on the outside of the breech-block, and has an angular end which projects through an opening in the breech-block and bears upon the sear, as shown in Figs. 1 and 2. If preferred, it may, however, be placed on the inside of the breech-block or lock-case.

A case or cover, *m*, is attached to the top of the breech-block, within which the top of the hammer plays. This cover serves to exclude dirt from the lock mechanism, and gives a more finished appearance to the arm. In order that the gun may be used with or without this cover, I attach the latter by means of screws, so that it can be easily removed; and I form an extension or thumb-piece for the hammer, which is also detachably connected, as shown in Fig. 4. This thumb-piece permits the hammer to be cocked by the hand of the operator. When the cover is used the thumb-piece is detached, as seen in Figs. 1 and 2.

The detachable cover and thumb-piece enable the arm to be readily adapted to the wants of different persons. Some prefer the arm to be cocked by the hand of the operator in the usual manner, while others prefer an arm with concealed hammer, and that will be cocked by the operation of the breech mechanism in the act of opening or closing the breech. To adapt the arm to the wants of the first class, the cover *m* is removed, the thumb-piece attached to the hammer, and the slide *f* taken out; while to adapt it to the wants of the second class the thumb-piece is removed, the cover attached to the breech-block, and the slide *f* replaced. Thus I provide an arm that is readily convertible, so as to meet the wants of different users without the trouble and expense of alteration—a feature which I regard as of considerable advantage.

When it is desired to set the triggers automatically in the act of opening the breech an upward extension or arm, *g*, is formed on the rear trigger, which arm extends into or through a mortise in the slide *f*. By this means, when the slide is moved forward, the triggers are set and the arm is ready to be fired as soon as the breech is closed. This construction, it will be understood, is only necessary when double or set triggers are used.

At the sides of the forward upper part of the breech-block are formed grooves or slots *n*, one on each side, and on the inside of the frame or receiver are formed corresponding ribs, which engage in the slots in the breech-block when the breech is closed, and which are designed to assist in retaining and supporting the breech-block when the gun is fired.

In opening the breech the breech-block moves backward as well as downward, so that when the breech is fully opened the breech-block is in the position relatively to the breech of the barrel, about as shown in Fig. 1. When the cartridge is inserted into the chamber, if for any reason it should not be fully seated, the forward movement of the breech-block will force it in by a strong pressure in the manner designated in the Letters Patent No. 180,567, granted to me on the 1st day of August, 1876.

The extractor is pivoted on the pivot of the guard-lever, and operates in the ordinary manner.

As before stated, these improvements are applicable to other arms besides the Ballard gun. For instance, they may be applied to the arm known as the "Sharps rifle," in which the breech-block moves vertically in a mortise in the frame by making the slide to extend slightly in rear of the breech-block, and forming an inclined lug or projection, so as to intercept it and move it forward at the point at which the breech-block completes its downward movement. They may also be applied to what is known as the "Peabody gun," in which the breech-block is pivoted at its rear

end and swings downward into the receiver at its front end, by allowing the slide to extend beyond the rear end of the breech-block below its pivot, so as to come in contact with the rear wall of the receiver or frame when the breech-block is lowered to open the breech. So also they may be applied to arms in which the breech-block moves longitudinally backward to open the breech.

I have not considered it necessary to illustrate these modifications, as they will be readily understood from the foregoing description in connection with the illustrations of their application to the Ballard gun.

In Fig. 5, I have shown the slide *f* applied to the operation of a spring-acted bolt. In this case a pivoted lever is interposed between the slide and the bolt, and the slide is provided with notches, with which the end of the sear engages to hold it in position. The upper end of the interposed lever projects into a mortise in the bolt, and the lower end is acted on and pushed forward by the end of the slide when the latter is moved forward in the manner above described. The sear engages with the notches in the slide and retains the latter in its forward position until released by a pull upon the trigger, when the force of the spring upon the bolt throws it forward.

Instead of the sear *c* (shown in Figs. 1 and 2) I may use the hooked sear shown in Fig. 5, a screw-hole being formed in the side of the lock-frame for that purpose, as shown in Figs. 1 and 2. It will be observed that in Figs. 1 and 2 the slide *f* has a notch formed in its under side, with which the hook on the sear may engage to hold the slide, and thereby retain the hammer in cocked position. Instead of a single notch, as shown, there may be two or more to hold the hammer at half or full cock, as desired.

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

1. The combination of the hammer and a longitudinally-moving slide, both carried by the breech-block, with a fixed stop or projection on the frame, for cocking the hammer by the movement of the breech-block in the act of opening the breech.

2. The combination of levers *d e* and slide *f*, as and for the purpose set forth.

3. The combination of sear *c*, lever *d*, and slide *f*, as a means for locking the sear, as described.

4. The combination of levers *d e* with sear *c*, as and for the purposes described.

5. The combination of slide *f*, the set-triggers, and a stop on the frame, as a means for setting the triggers, as described.

6. The combination of the hammer, the sear *c*, and the lever *d*, for holding the sear in engagement with the hammer, as described.

7. A hammer for fire-arms made in two parts, adapted to be connected together, the upper part, when connected, serving as a thumb-piece for cocking the hammer by hand, and when removed permitting the application of a removable cover to the breech-block for concealing the hammer, as set forth.

8. In breech-loading fire-arms, a detachable or removable cover, *m*, applied to the breech-block in the manner described, whereby the arm is adapted to be converted and used either with an outside hammer or with a concealed hammer, as set forth and described.

FRANK W. FREUND.

In presence of—
E. J. GODFREY,
GEO. B. STIMPSON.