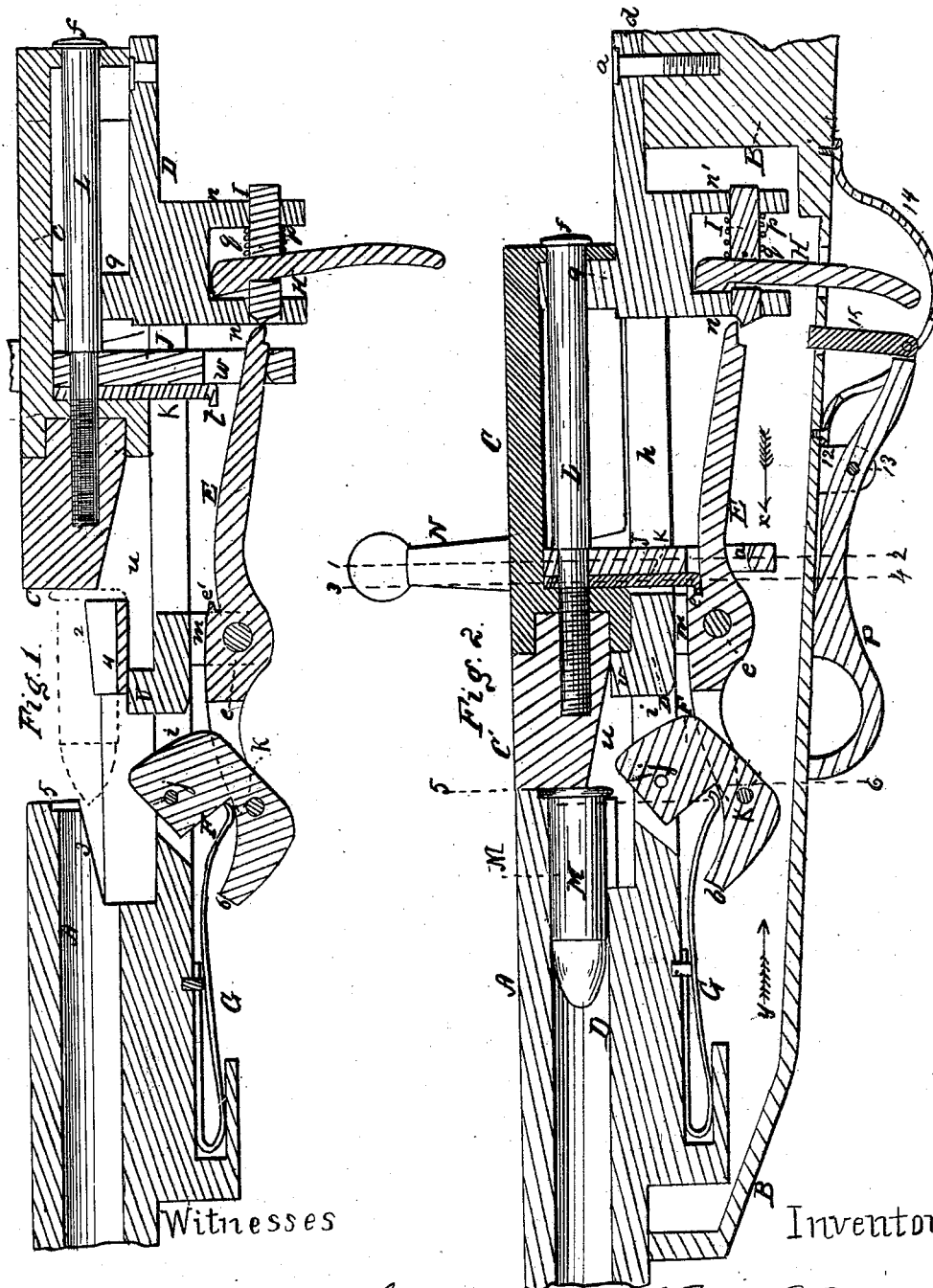


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Breech-Loading Fire-Arm.

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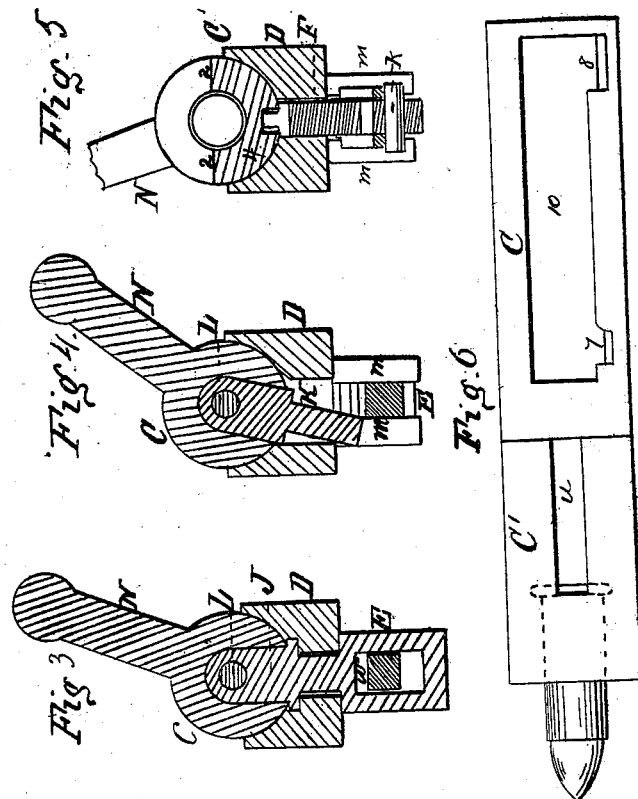
Patented Nov. 29, 1864.



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Witnesses

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UNITED STATES PATENT OFFICE.

WM. MORGENSTERN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 45,262, dated November 29, 1864.

To all whom it may concern:

Be it known that I, WILLIAM MORGENSTERN, of Philadelphia, Pennsylvania, have invented certain Improvements in Breech-Loading Fire-Arms; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to a peculiar, simple, and economical mode of constructing breech-loading fire-arms for the use of ordinary metallic and other cartridges; and my improvements consist, first, in a breech arranged to slide from and toward the open rear of a barrel of a fire-arm, in combination with a slotted arm, or its equivalent, and an inclined lever, so constructed and arranged and so connected with a hammer that the latter shall be cocked by and during the manipulation required to effect one movement of the breech from and one movement to the rear of the barrel; secondly, in a slot or recess formed in the under side of the breech, and so arranged in respect to the projection which holds the cartridge that a portion of the head of the latter shall be exposed to the action of a hammer hung to the frame beneath the breech; thirdly, in a device, described hereinafter, for assisting to control the hammer; fourthly, in a device, hereinafter explained, for raising the hammer; fifthly, in a device, described hereinafter, for preventing the accidental discharge of the load prior to the locking of the breech to the frame; sixthly, in a certain trigger mechanism for retaining and releasing the lever through the medium of which the hammer is operated; seventhly, in a device for uncocking and cocking the hammer after the breech-piece has been locked to the frame.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a longitudinal section of as much of the breech-loading fire-arm as will suffice to illustrate the improvements when adapted to the use of metallic cartridges, the breech in this view being shown as moved back from the rear of the barrel; Fig. 2, the same as Fig. 1 with the breech in contact with the rear of the barrel; Fig. 3, a transverse section on the line

1 2, Fig. 2, looking in the direction of the arrow *x*; Fig. 4, a transverse section on line 3 4, Fig. 2, looking in the same direction; Fig. 5, a transverse section on the line 5 6, Fig. 2, looking in the direction of the arrow *y*; Fig. 6, an inverted plan view of the breech; Fig. 7, a longitudinal section of part of the fire-arm, illustrating the improvements as adapted to the use of cartridges of peculiar construction; Fig. 8, a transverse section on the line 5 6, Fig. 7.

On reference to Figs. 1, 2, 3, 4, 5, and 6, A represents the rear portion of the barrel, B the stock, and C the sliding breech, of the fire-arm.

D is what may be termed the "frame," and is secured to or forms a part of the barrel, from the rear of which it is continued to the termination D, which is secured by the screw *a* to the stock B, the front end of the latter being also secured to the barrel or frame in the usual manner. Throughout the greater portion of its length the frame D is hollowed out, as best observed on reference to Figs. 3, 4, and 5, so as to be adapted to the reception of the cylindrical sliding breech C, which fits snugly, but so as to be moved to and fro and turned laterally to a limited extent, in the said frame. In the present instance the sliding breech consists of two pieces, *c* and *c'*, a portion of the latter fitting into the former, as seen in Figs. 1 and 2. A pin, L, passes through the closed rear of the piece *c*, and through a projection, 9, on the frame, the end of the pin being screwed into the piece *c'*, which is thus secured to the piece *c*, not so tightly, however, as to prevent the piece *c* from being turned laterally to a limited extent without disturbing the lateral position of the piece *c'*, there being in the under side of the latter piece a longitudinal slot, *u*, (see Fig. 6,) for the reception of a projection, *v*, on the frame. The portion *c* of the sliding breech is made hollow between its two closed ends, and in the under side of the breech is a longitudinal slot, 10, two recesses, 7 and 8, being formed on one edge of this slot, as seen in Fig. 6, for the purpose described hereinafter. The projection 9, Figs. 1 and 2, fits snugly into the slot 10 of the sliding breech, as does also the pendent arm J, which is hung loosely to the pin L, and projects through and is guided by a longitudinal slot, *h*, in the frame D. Another pendent arm,

K, is also hung to the pin L, but is so adapted to the sliding breech as to turn with the latter, while the lateral position of the arm J is not, as before remarked, disturbed by the partial turning of the breech. When the sliding breech is moved forward, so as to be in contact with the rear of the barrel, as seen in Fig. 2, the portion *c* of the said breech can be turned laterally to a limited extent by means of the handle N, or other suitable appliances, and when thus partly turned a portion of the pendent arm occupies a position in the recess 7 of the breech, and a portion of the projection 9 of the frame D takes its place in the recess 8, Fig. 6. The breech is thus so firmly locked to the frame as to resist the reacting force which takes place on the discharge of the cartridge. When the breech has to be moved from the rear of the barrel, it is necessary in the first instance to turn the portion *c* of the breech back laterally, thereby withdrawing the recessed edge of the slot 10 away from the pendent arm J and from the projection 9, and consequently unlocking the breech from the frame, when the former is at liberty to be moved back along the latter to the position seen in Fig. 1.

It will be observed that the sliding breech is maintained in its proper vertical position on the frame D by the pin L, which also serves as a guide for the breech and as a central opening on which it turns. On withdrawing this pin the two portions of the breech can be separated from each other and from the frame, as well as from the pendent arms J and K. The portion *c'* of the sliding breech terminates at the front in the projection 4, which consists of the section of a hollow cylinder so cut away as to leave the two inclined edges 2, which, when the breech is in contact with the barrel, coincide with the inclined edges 3, formed on the said barrel by cutting away the rear of the latter from the under side. In other words, the projection 4 is formed to fit snugly and accurately in the recess at the end of the barrel, and when thus fitting may be said to form a portion of the barrel, the concavity of the projection forming a continuation of the bore.

In the upper surface and at the rear of the projection 4 of the portion *c'* of the sliding breech is formed a semi-annular recess for the reception of a portion of the head or flange of the metallic cartridge M, the body of the latter resting in the concavity of the said projection 4, (see dotted lines, Fig. 1,) and the longitudinal slot *u* is so formed and made of such a depth as to communicate with the semi-annular recess at one point, thereby allowing for the free operation of the hammer F, which, when released, strikes at its upper corner against that portion of the flange of the cartridge which projects through the above-mentioned semi-annular recess into the slot *u* of the breech. The upper portion of the hammer fits snugly, but so as to move freely, in a slot, *i*, in the frame, and is hung to a pin, *j*, which passes through the frame D. The front edge

of the hammer is recessed for the reception of the end of the spring G, which is secured to the frame on the under side of the barrel in any convenient manner. A lever, E, is hung to a pin, *e*, which passes through two projections, *m m*, on the under side of the frame, the front forked arm of this lever embracing the hammer F, on each side of which projects a pin, *k*, the latter being acted on by the rounded under edges of the said forked arm of the lever. The long arm of the lever E is curved and inclined, as shown in the drawings, and passes through a slot, *w*, in the pendent arm J, the end of this arm of the lever being rounded above and recessed below, and the recessed portion resting (when the fire-arm is cocked) on the point of a pin, I, which passes through and is guided by the two projections *n* and *n'* on the under side of the frame D, a trigger, H, passing through an opening in this pin and bearing with its enlarged end against the inside of the projection *n*. A coiled spring, *p*, bears at one end against the inside of the projection *n'*, and the other against a pin, *q*, which passes through the pin I and tends to force the latter forward.

On the upper edge of the lever E is a projecting lip, *e'*, by which a recess is formed for the reception of a lip, *t*, on the end of the pendent arm K. The portion of the stock B under the rear of the barrel and the sliding breech is made hollow, so as to inclose the whole or nearly the whole of the above-described works. The trigger H, however, projects through an opening in the stock, and is protected by a suitable trigger-guard, 14, in front of which and to a suitable projection, 12, on the under side of the stock is hung a lever, P, to the short arm of which is connected a rod, 15, the latter passing through an opening in the stock, and being so situated that on being elevated by the depression of the long arm of the lever P it will come in contact with and elevate the long arm of the lever E.

Operation: Let us suppose, in the first place, that the several parts above described are in the relative position shown in Fig. 2—that is to say, that the sliding breech has been moved forward until its front end is in contact with the rear end of the barrel; that the breech has not been turned laterally, or, in other words, not locked to the frame; that the long arm of the lever E is elevated and rests on the point of the pin I; that the hammer is moved back; that the cartridge M is inclosed partly by the rear of the barrel and partly by the projection 4 of the portion *c'* of the breech, and that the lip *t* at the end of the pendent arm K occupies a position in the recess formed by the projection *c'* of the lever E. Although the said lever may be accidentally released on drawing back the pin I by means of the trigger H, it is so held by the arm K that it cannot be moved by the spring G, which is thus prevented from causing the hammer F to strike the flange of the metallic cartridge until the sliding breech, by being turned laterally, is

securely locked to the projection 9, which now projects into the recess 8 of the breech. As the pendent arm K moves laterally with the turning of the breech and away from the lever E, the latter is released, so that on pulling the trigger H the lever E ceases to be a bar to the action of a spring, which causes the hammer F to strike the flange of the cartridge, thereby exploding the detonate therein and discharging the load. It will be seen, therefore, that until the sliding breech is locked and in a condition to resist the reacting force of the explosion of the cartridge no premature discharge can take place. When the spent cartridge has to be withdrawn and another cartridge introduced into the bore of the barrel, the breech-piece is, in the first instance, unlocked from the frame by turning it back laterally, and then pulled back to the position shown in Fig. 1. On thus moving the sliding breech the pendent arm J accompanying the breech so acts on the under side of the inclined long arm of the lever E as to elevate the same, its rounded end coming in contact with the inclined end of the pin I and forcing the same back until the end of the lever has passed the point of the pin, when the latter, through the action of the spring *p*, is instantly projected forward, its point being immediately beneath the end of the lever. On raising the long arm of the lever E the short forked arm is depressed, and, acting on the pin *k*, turns the hammer F back and its upper corner away from the head of the cartridge to the position shown in Figs. 1 and 2, where it remains as long as the lever F is held by the pin I. As a portion of the head or flange of the cartridge is contained within the semi-annular recess of the portion *c'* of the sliding breech, it will be evident that on drawing the latter back the spent cartridge must be withdrawn from the barrel, after which it can be readily removed from the projection 4 of the sliding breech, to make way for a new cartridge. When the sliding breech and the pendent arms J and K are again moved forward, the arm J, owing to the inclination of the long arm of the lever, ceases to support the latter, which rests on the point of the pin I, and when the breech has been moved to the limit of its forward movement, as seen in Fig. 2, the lip *t* of the arm K again takes its place in the recess formed in the lever E by the lip *c'*, and there remains holding the lever until the breech, by the lateral movement described above, is locked to the frame, when the fire-arm is in a condition to have its load discharged by the pulling of the trigger and the consequent action of the above-described operating parts.

When the fire-arm has been loaded and its immediate discharge is not necessary, it would be unsafe to carry it or to move it about when the breech is locked, as a slight movement of the trigger would cause an unpremeditated discharge of the load, and to leave the breech unlocked when the loaded fire-arm is carried

about would be equally unsafe. When the loaded arm is not required for immediate use, therefore, the long arm of the lever P is depressed, and the bar 15 thereby elevated until it is in contact with the under side of the long arm of the lever F, where it is held while the trigger is pulled and the lever E released, when, by the proper handling of the lever P, the long arm of the lever E is permitted gradually to fall through the action of the spring G, and the hammer is thus brought gently into contact with the head of the cartridge. The loaded arm is then in a condition to be moved about and handled, even roughly, without danger of a premature explosion.

When the fire-arm has to be used, all that is necessary is to again depress the long arm of the lever P, thereby elevating the long arm of the lever E and placing it under the control of the pin I and trigger H.

It will now be seen, without further description, that by and during the backward and forward and locking movement of the sliding breech three duties are accomplished: first, the withdrawal of the spent cartridge from the bore of the barrel; second, the exposure of the rear of the barrel for the ready introduction therein of a new cartridge, and, third, the cocking of the hammer. It will also be seen that the hammer and appliances connected therewith are inclosed within the stock, and thus protected from injury.

It will be evident to those familiar with the construction of fire-arms that many of the above-described parts may be altered in form and in arrangement without departing from the main features of the invention.

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

1. A breech-piece arranged to slide to and from the open end of the barrel of a fire-arm, in combination with the slotted arm J, or its equivalent, and an inclined lever, E, the whole being so constructed and arranged and so connected with the hammer that the latter shall be cocked by and during one movement of the breech from and one movement to the rear of the barrel.

2. A slot or recess, *u*, so formed in the breech and so arranged in relation to the recessed projection 4 that a portion of the head of the metallic cartridge shall be accessible to a hammer hung beneath the breech.

3. A hammer, F, with a pin or pins, *k*, or their equivalents, the spring G, or other appropriate spring, the lever E, the pin I, and trigger H, or other analogous devices for retaining and releasing the said lever, the whole being arranged on a fire-arm, and operating substantially as set forth.

4. The pendent arm J, so connected to the sliding breech or to the pin I that it can move longitudinally but not turn laterally with the said breech, in combination with the inclined arm of the lever E.

5. The arm K, attached to or forming a part of and arranged to move laterally and longi-

tudinally with the sliding breech, in combination with the lever E, when the latter and the said arm K are so constructed and so arranged in respect to each other that the said lever F is held stationary until the said breech is locked to the frame.

6. The pin I, arranged to slide in the projections *n* and *n'* of the frame D, the spring *p*, and trigger H, the whole being constructed and arranged in respect to the lever E and operating substantially as set forth, for the purpose specified.

7. The lever P and bar 15, or their equivalents, arranged in respect to the lever E and operating substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM MORGENSTERN.

Witnesses:

HENRY HOWSON,
JOHN WHITE.