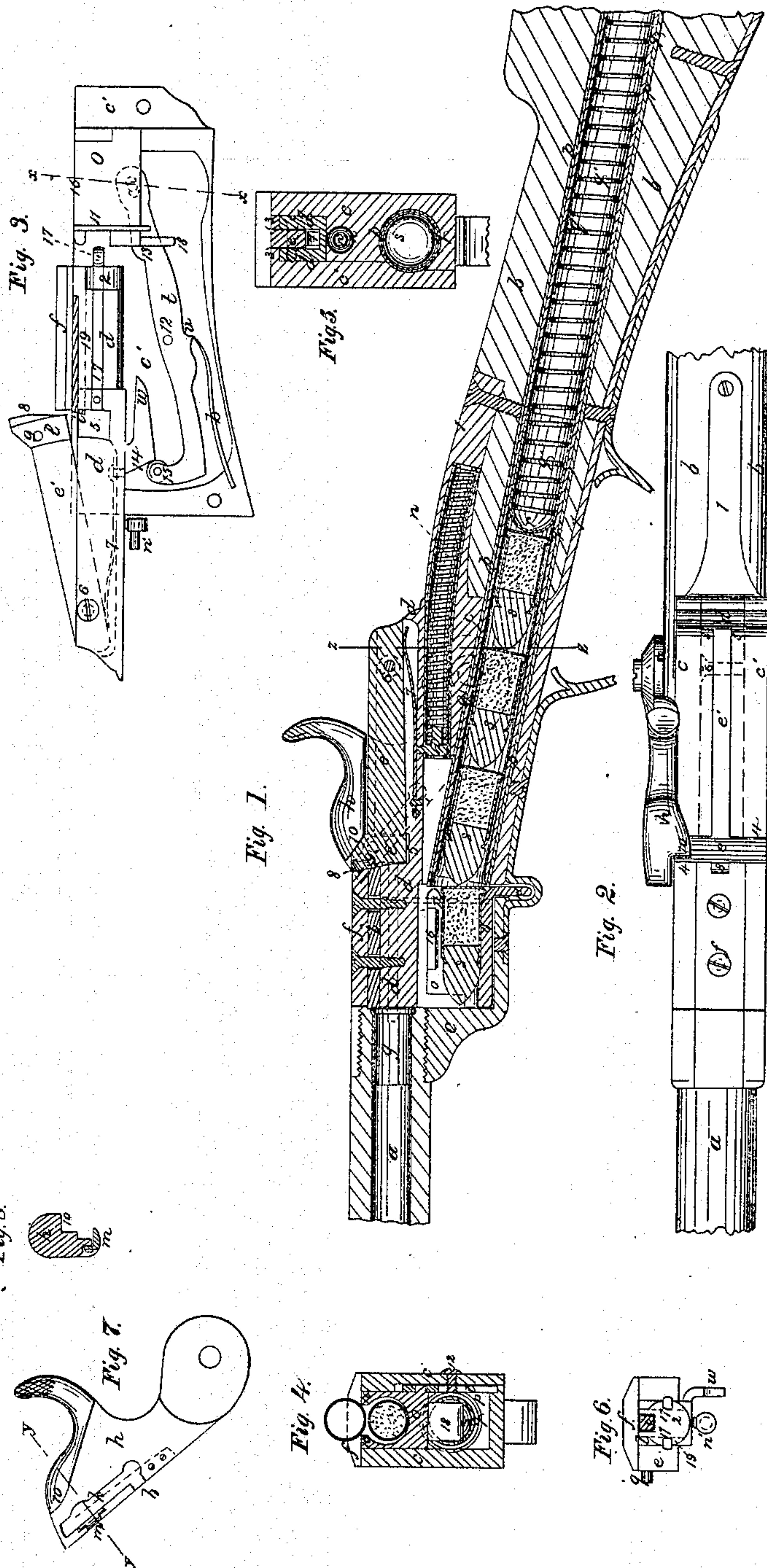


H. W. HAYDEN.
MAGAZINE FIREARM.

No. 56,939.

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Witnesses
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IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. 56,939, dated August 7, 1866; antedated August 3, 1866.

To all whom it may concern:

Be it known that I, HIRAM W. HAYDEN, of Waterbury, in the county of New Haven and State of Connecticut, have invented, made, and applied to use a certain new and useful Improvement in Breech-Loading Fire-Arms; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is a longitudinal section of my improved fire-arm. Fig. 2 is a plan of the same. In both these figures the breech is represented as closed. Fig. 3 is an elevation of the breech as detached and drawn back, showing also the interior of the cap or side plate to the housing or breech-mortise. Fig. 4 is a cross-section at *x x*, Fig. 3, representing the cartridge-conveyer as ejecting a discharged metallic cartridge-case and bringing another cartridge into position. Fig. 5 is a cross-section through the rear end of the sliding breech-pin and stock at the line *z z*, Fig. 1. Fig. 6 is a detached view of the breech-pin from the forward end. Fig. 7 represents the side of the hammer next the gun; and Fig. 8 is a section through the hammer at the line *y y*, Fig. 7.

Similar marks of reference denote the same parts.

The nature of my said invention consists in a lifting-block acting to sustain the breech-pin against the explosion, said lifting-block setting into notches in the body of the gun and being lifted by the action of the hammer in cocking the piece, which movement of the hammer is also employed for drawing back the breech-pin; and I employ a magazine containing cartridges, and convey one of such cartridges to the line of the barrel as the breech is drawn back by a sliding conveyer actuated in a peculiar manner by a lever that is moved by the breech as it is slid back, and said conveyer also discharges the cartridge-case from between two springs that are upon the breech-pin, and withdraw said case from the barrel.

In the drawing, *a* represents a portion of the barrel, which may be of any desired size or character. *b* is the wooden stock, of any usual shape. *c* is the metallic body portion of the gun, uniting the barrel and stock, and form-

ing a housing for the parts at the rear of the barrel. This body *c* is formed with straps 1, as usual, to connect the stock, and at one side is a movable plate, *c'*, (see Figs. 3 and 4,) by which access is allowed to the parts of the gun.

The breech-pin *d* is fitted to slide in a recess to the rear and on line with the barrel. The forward portion of this breech-pin is circular, as at 2, Figs. 3 and 6, while the rear portion is square, and slides beneath the overhanging lips or flanges 3 3. (See Fig. 5.) Said lips 3, however, do not extend forward of the notches that are provided in *c* and *c'* at 4 4 for the reception of the movable cross-block *e*. This cross-block *e* forms a T-head to the shank *e'*, that occupies a groove running longitudinally of the breech-pin *d*; and said breech-pin has also a cross-notch, as seen at 5, Fig. 3, into which the block *e* can drop when in the position shown in Fig. 1.

It is to be understood that when the breech is closed by the pin *d* setting against the rear end of the barrel the cross-block *e* will fall into the notches at 4 and 5, and sustain the breech-pin against the explosion of a cartridge in the barrel, and that when the said cross-block *e* is raised the breech-pin can be slid back. I set the shank *e'* upon a cross-pin or screw, 6, and provide a spring, 7, that tends to throw the block *e* down into the notches 4 and 5 when the breech is slid forward.

I make use of a punch, *i*, set in a groove in the top of the breech-pin *d*, and covered by a cap, *f*, by which punch I explode the fulminate contained in the ring-flange of the metallic cartridge-case *g*, (see Fig. 1,) and the length of this punch is such that the closing down the cross-block *e* entirely shall drive said punch against the cartridge-case for its explosion. This block *e* ordinarily, therefore, is not to be fully pressed down to its place, the pressing down being effected by a blow of the hammer, as next described, which causes the wedge-shaped projection 8 to drive the punch *i* forward.

On the side of the block *e* is a pin, 9, (see Figs. 3 and 6,) which is acted on by the hammer *h*. This hammer *h* is to be actuated by any well-known or desired lock, and a trigger is to be employed, as usual, to discharge the same. In the inner and forward edge of the

hammer is a groove, *k*, that terminates at the bottom with a forward opening, *l*, and I provide a spring-latch, *m*, near the upper end of this groove, (see Figs. 7 and 8,) which, yielding as the hammer is discharged, passes the pin 9, so that said pin is received into the groove *k*. On reference to the dotted lines, Fig. 1, it will be seen that the angle at which this groove *k* stands to the breech-pin is such that as the hammer is cocked the block *e* will first be lifted out of its notches 4 and 5, and the further movement of the hammer will draw the breech-pin *d* back, the pin *g* coming down into the lower portion of the slot *k*, so that when the hammer is cocked said pin 9 is opposite to the opening *l*, so that the breech-pin can be again pushed forward, the pin 9 passing out at this opening *l*.

In order to make the breech-pin self-acting as far as possible, so that the only motion is that of cocking and firing, I employ a spring, *n* below the breech-pin *d*, acted on by the pendent arm *n'* of the breech-pin, so that said spring, being compressed by the backward movement of the breech-pin, will send the breech-pin again forward so soon as the pin 9 comes opposite the opening *l* in the hammer. The cross-block *e* will descend into the notches provided for it, and when the hammer *h* is discharged a projection, 10, thereon will drive the block *e* fully down to its place, and by the incline 8 project the plug *i* and fire the piece.

I will now describe the manner in which I combine with my breech-loading mechanism a magazine containing cartridges.

p is a pipe or tube in the stock of the gun. *q* is a tube containing a spring, *q'*, and follower *r*. The metallic-case cartridges *s s* are to be dropped ball end first into the tube *p*, when the tube *q* is withdrawn, after which the tube *q* is again inserted and the spring is compressed by the act of forcing in said tube, the said tube *q* passing around at the sides of the cartridges as pressed into place, as now usual, and the spring forces the cartridges forward, so that the end one is taken by the conveyer *o*. This conveyer *o* is formed as seen in Figs. 1, 3, and 4, and slides in the body of the gun (*c c'*) at right angles to the breech-pin, and is guided by a feather, 11, taking a groove in *c*. This cartridge-conveyer is actuated by a lever, *t*, on a fulcrum, 12, (see Figs. 3 and 4,) in the cap-plate, *c'*. *u* is a toe on the lever *t*, behind which the end of the spring *v* sets when the conveyer *o* is elevated, as in Fig. 3, to hold said conveyer up; and *w* is a projecting cam on the breech-pin *d*, that presses this lever *t* down, together with the conveyer, as the breech-pin is pressed forward by said cam *w* taking against the parts 13 of said lever *t* sufficiently to throw the toe *u* the other side of the point of the spring *v*, so that said spring acts to throw the conveyer *o* down; but on the reverse movement, as the breech-pin is drawn back, the incline at 14, taking

the roller 15 of the lever *t*, causes the said lever *t* to elevate the conveyer *o*, and a cartridge is carried up with it from the magazine to the line of the barrel, and the shoulders at 16 on *o*, in so doing, discharge the shell of the previous cartridge by lifting the same up vertically from between spring-catches 17, that are provided at the sides of the breech-pin *d*, for drawing said case back out of the barrel as the breech-pin is withdrawn. It will now be understood that as the breech-pin is withdrawn the conveyer *o* rises, carrying with it a cartridge from the magazine, the pendant 18 keeping the other cartridges back. The breech-pin then goes forward, the round end 2 passing through the conveyer *o* and forcing the cartridge into the barrel, and the sides of the breech-pin *d* at 19 are cut away at the rear of the round head 2, (see Fig. 3 and dotted lines, Fig. 6,) so that the narrower portion of the conveyer at the shoulders 16 shall pass down at the sides of the breech-pin as said conveyer descends to receive another cartridge.

I am aware that a piston-slide has been employed in connection with a carrier that brings the cartridge up from a magazine, as may be seen in the patent of H. Smith and D. B. Wesson, granted February 14, 1854. In this case, however, the piston-slide has projections on its end taking the flange of the cartridge, the parts being so fitted that the carrier forces the cartridge-case out from said projections and delivers a new cartridge between said projections, these movements being effected by a lever.

In my fire-arm the movement of the breech, giving motion to the carrier, renders it impossible for the breech to remain stationary while the carrier is elevated; hence I am obliged to make use of spring-catches 17 to pass over the flange of the cartridge as the breech-pin goes forward, and I employ a separate punch to explode the cartridge by the action of the hammer upon the cross-block instead of the forward movement of the breech-pin itself.

In my fire-arm there is but one movement performed by hand—viz., cocking the piece—the forward movement of the breech being self-operating by the action of the spring, while in fire-arms heretofore made the breech has usually been opened by moving a lever in one direction and closed by the reverse movement.

It will be seen that my breech is constructed so that all the parts are closed tightly against the action of dampness, and for the exclusion of dust and dirt.

What I claim, and desire to secure by Letters Patent, is—

1. The block *e*, formed as a T-head to the shank *e'*, and both occupying grooves in the breech-pin *d*, in combination with the housing *c c'*, having notches for the reception of the ends of block *e* at each side of the breech-pin, as and for the purposes specified.
2. I claim the cross-block upon a shank pass-

ing into a groove in the breech-pin, in combination with a spring, to throw said block down into place as the breech is closed, as set forth.

3. I claim the slide exploding-punch, fitted as specified, and actuated by forcing the said cross-block down to its place, as set forth.

4. I claim constructing the hammer with the latch and groove taking the pin on the said cross-block, as and for the purposes specified.

5. I claim the combination of the hammer, the cross-block, the breech-pin, and the spring *n*, as specified, whereby the said hammer lifts the said cross-block and draws back the breech-

pin in the act of cocking the piece, and the breech closes itself, as set forth.

6. I claim the combination of the breech-pin and sliding cartridge-conveyer with the lever *t*, actuated substantially as and for the purposes specified.

In witness whereof I have hereunto set my signature this 23d day of December, 1864.

H. W. HAYDEN.

Witnesses:

THEODORE S. BUEL

J. W. SMITH.