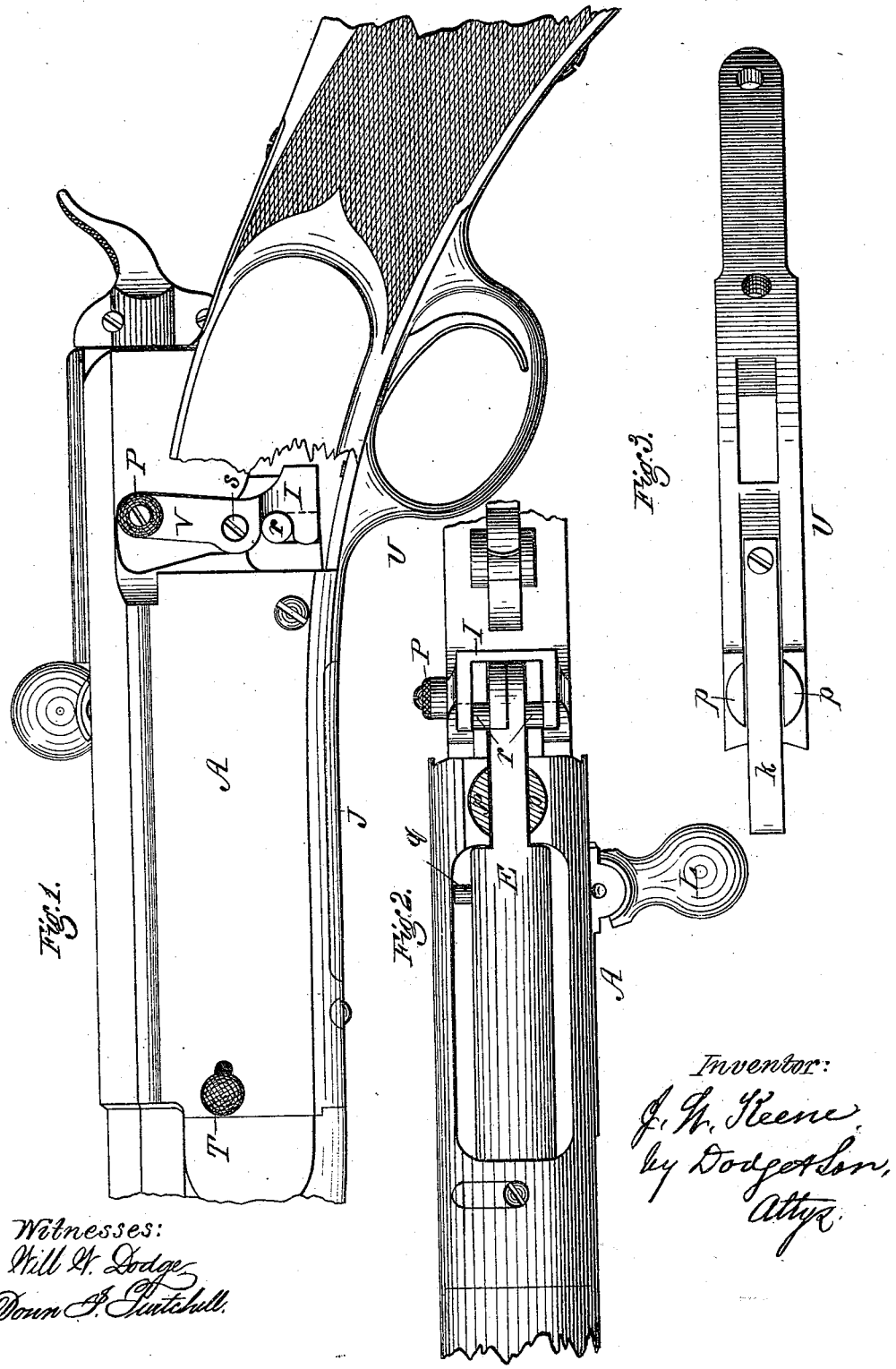
3 Sheets—Sheet 1.

J. W. KEENE.

MAGAZINE FIRE-ARM.

No. 188,468. Patented March 20, 1877.



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J. W. KEENE.

MAGAZINE FIRE-ARM.

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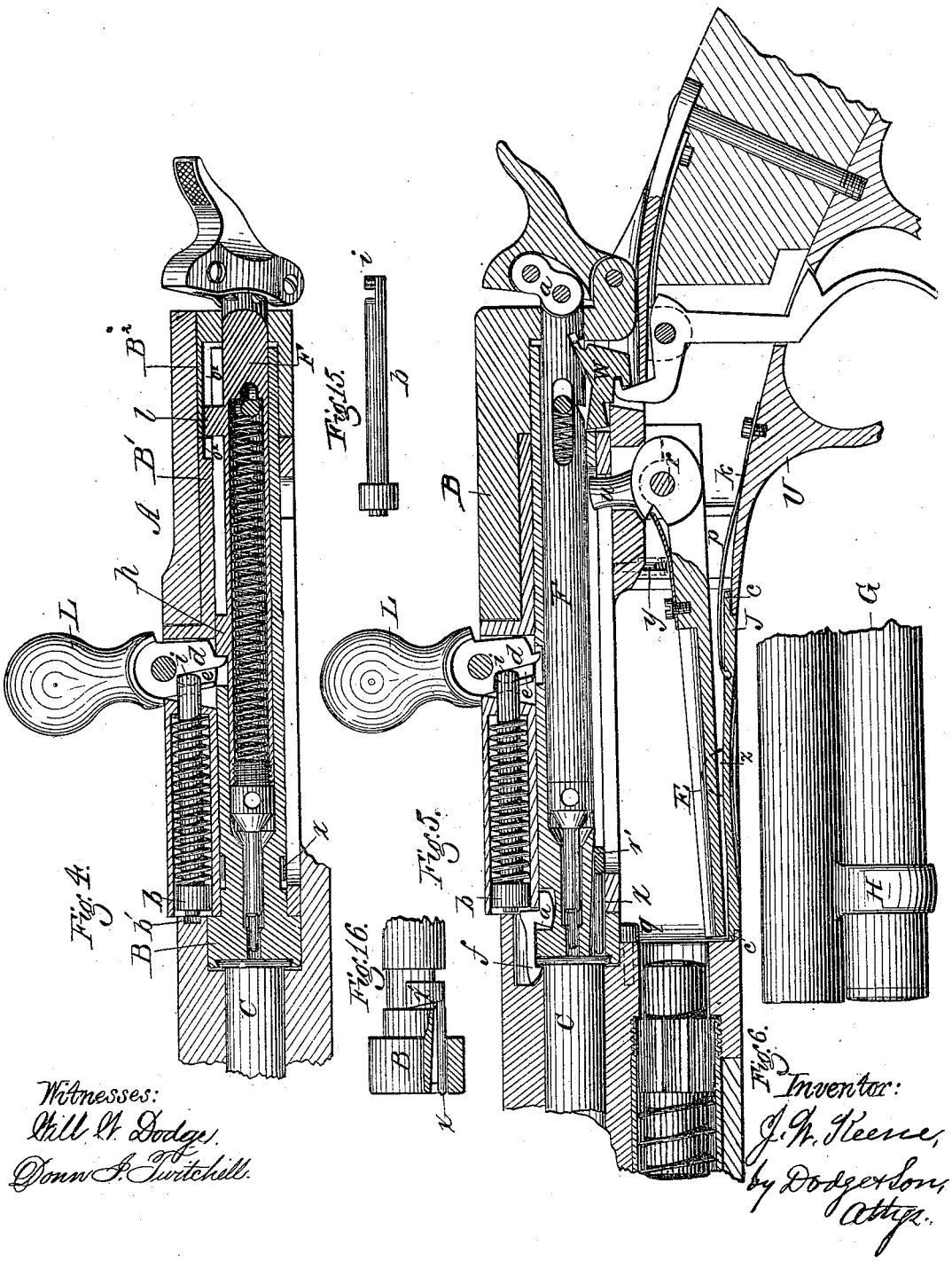

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3 Sheets—Sheet 3.

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MAGAZINE FIRE-ARM.

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Fig. 7.

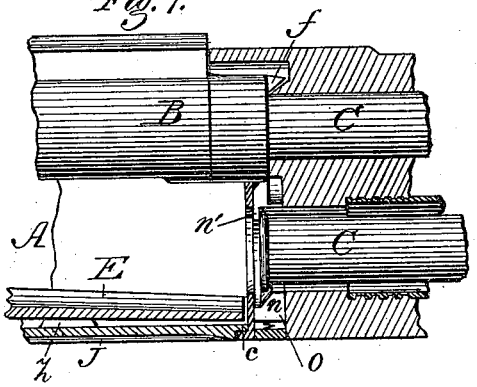


Fig. 8.

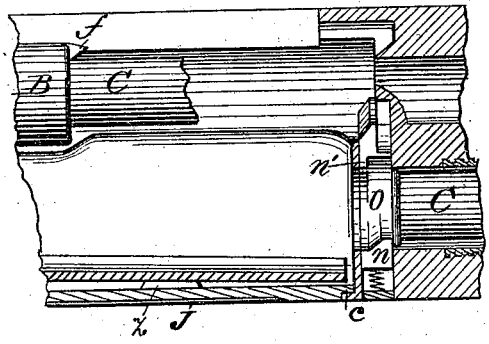


Fig. 9.

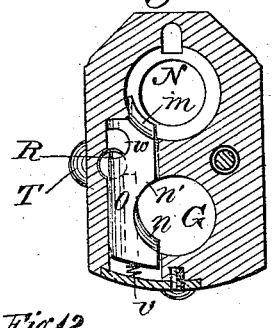


Fig. 10.

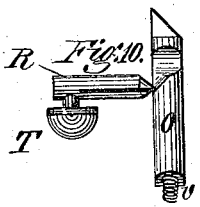


Fig. 11.

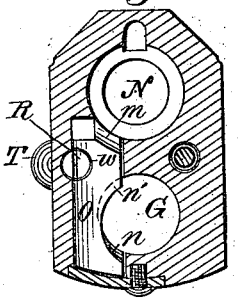


Fig. 12.

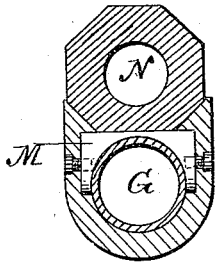


Fig. 13.

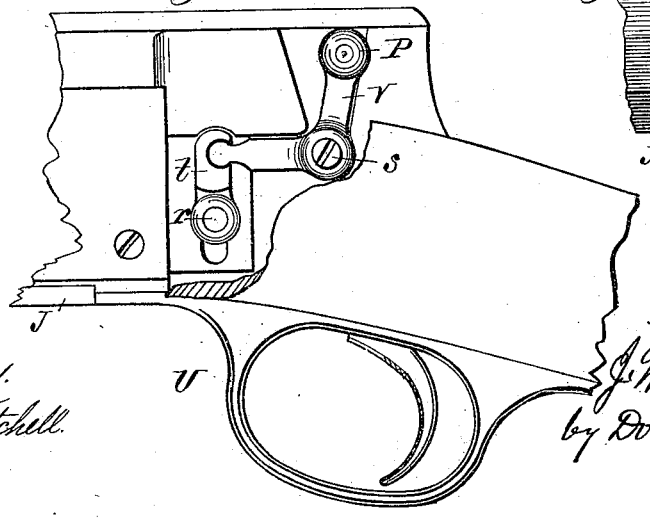
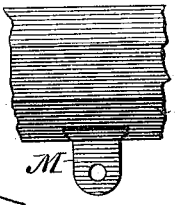


Fig. 14.



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UNITED STATES PATENT OFFICE.

JOHN W. KEENE, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. 188,468, dated March 20, 1877; application filed December 19, 1876.

To all whom it may concern:

Be it known that I, JOHN W. KEENE, of Newark, in the county of Essex and State of New Jersey, have invented certain Improvements in Breech-Loading Guns, of which the following is a specification:

My invention consists in certain improvements in magazine-guns, said improvements being more especially applicable to that class or style of guns denominated "bolt-guns," on which several patents have heretofore been granted to me, the same being enumerated in my last patent, No, 182,583, bearing date September 26, 1876. These improvements consist of certain details, which I will now proceed to describe at length and in detail.

Figure 1 is a side elevation of that portion of the gun which contains the breech mechanism. Fig. 2 is a bottom-plan view, and Figs. 4 and 5 are longitudinal sections of the same, showing the internal arrangement and construction of the mechanism, while Figs. 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16 are views of portions shown more in detail.

In this case the receiver or frame A and the breech-bolt B are constructed substantially the same as in my previous patent of September 26, 1876; but in this the handle L, by which the bolt is operated, instead of being rigidly attached, is pivoted thereto, as shown in Figs. 4 and 5. At its lower end it has a projecting arm, *d*, which bears against the front side of a lug, *h*, on the firing-pin F, Fig. 5. This arm *d* also has a groove, *e*, formed in its side, in which engages a lug or projection, *i*, formed on the rear end of a locking-bolt, *b*, which latter is shown detached in Fig. 15, and in position in Figs. 4 and 5, it being located within a projecting rib on the side of the bolt, and having a spiral spring arranged to shove it forward and cause it to engage in a recess, *b'*, as shown in Fig. 4, whereby the breech-bolt is locked fast when closed. From this construction and arrangement of parts it will be seen that the breech-bolt cannot be turned, as is necessary in this style of guns, before drawing it back to open the breech, until it has been unlocked; and this is effected by pushing the outer end of the handle L forward, which will draw back and disengage the locking-bolt *b*, at the same time pushing back the firing-pin F far enough to secure it at half-cock, so that both these objects are accomplished by one and the same movement of the handle L.

The extractor *f* consists in this, as in my former patent, of a rigid hook, set loosely in a recess in the upper side of the breech-bolt, as shown in Fig. 5; but it will be observed that in this case its shoulder *a* is inclined or beveled, and is made longer than before, and that the front shoulder of the recess in the bolt against which it rests is vertical or slightly undercut, so that the nose or front end of the extractor is thrown downward by the pressure of the locking-bolt *b*, and thereby made to have a firm hold on the flange of the cartridge-shell, and if more force is required it is obtained by drawing the upper end of the handle back, by which the locking-bolt can be pressed against the extractor with any degree of force required. This result is also accomplished, even when the pressure of the locking-bolt is removed, by the fact that the point of the shoulder *a* of the extractor bears against the wall of the recess in which it is placed, at a point considerably lower than the hook of the extractor, so that, as the breech-bolt is drawn back, the point or front end of the extractor is drawn down and made to keep a firm hold on the shell during its withdrawal from the chamber of the gun. Inasmuch as the front end of the locking-bolt *b* is shoved back when the breech-bolt is shoved forward, by its striking against the wall of the receiver, as shown in Fig. 5, it will be seen that the extractor is then loose and free to rise and ride over the flange of the shell to engage therewith, and that when the breech-bolt has been turned over sidewise to lock it closed the locking-bolt *b* then enters its recess *b'*, thereby bringing its shoulder against the rear shoulder of the extractor, thereby insuring its engaging with the flange of the shell. It will also be observed that the under side of that portion of the extractor which rests in the recess in the breech-bolt is made in the form of an arc of a circle, whereby it is enabled to rock freely thereon.

By examining Fig. 4 it will be seen that the shell or sleeve of the breech-bolt is made in two parts, B^1 and B^2, so that the front part B^1, to which the handle L is attached, can be

turned laterally on the breech-bolt, independently of the rear part B^2, and that there is a lug, *l*, on the firing-pin F, in the vicinity of the joint where these two parts of the sleeve come together. On the inside of each of these parts B^1 B^2 there is a longitudinal groove, as shown at o^1 and o^2, Fig. 4, in which the lug *l* of the firing-pin slides. These two grooves o^1 and o^2 are arranged in such relation to each other that when the breech is closed and the front sleeve B^1, with the handle L, is turned over in the position necessary to lock the breech-bolt fast, they are in line, thus permitting the lug *l* to slide freely back and forth therein; but at all other times—as, for instance, when the handle is turned in the opposite direction to open the breech—the two grooves are thrown out of line, and then the lug *l* will rest against the end of the front sleeve B^1, thereby preventing the firing-pin from going forward in case the sear should be broken, or for any reason should fail to hold the firing-pin back. By this means the danger of a premature or accidental explosion of the cartridge by the closing of the breech-bolt is rendered impossible, inasmuch as the firing-pin cannot possibly touch it until after the breech is closed and locked fast.

The carrier E, for elevating the cartridges from the magazine to the chamber, is constructed in essentially the same manner as in my last patent; but, to enable the breech-bolt to be readily removed, I pivot the rear end of the carrier in such a manner that it can be depressed at will, thereby lowering the stud or arm *u*, which serves as a stop to prevent the bolt from being drawn entirely out, and as a means of operating the carrier, the bolt, in its to-and-fro movements, striking against this arm *u*, first on one side and then on the other, thereby alternately raising and lowering the carrier.

The manner in which I prefer to hold the pivoted end of the carrier E is shown in Figs. 1 and 2. As there shown, I construct a lever, V, having its lower end provided with two arms or hooks, I, in the front edges of which are notches or recesses for the journal or pivot pin *r* of the carrier to rest in. This lever is pivoted, as shown at *s*, and at its upper end is provided with a button or thumb-piece, P, by which it is shoved forward or back at will, the upper arm of the lever working in a recess made for it in the side of the receiver, as shown in Fig. 1, and being provided on its under side with a small pin or projection, to rest in a cavity, and thus prevent it from being accidentally moved. By throwing the upper end of the lever V forward, the hooks or arms I are disengaged from the pivot-pin *r* of the carrier, when the latter can be shoved down, thereby depressing the lug or arm *u* out of the way of the breech-bolt, which can then be at once taken out. After the breech-bolt is replaced, the pivot of the carrier is raised to its position, and the lever V is thrown back, thereby causing the hooks I to engage again with its journal or pivot pin *r*, when it is again ready for use.

In Fig. 13 I have shown the lever V as made in the form of an elbow-lever, with its front end engaging with a vertically-sliding piece, *t*, to the lower end of which the carrier is pivoted, so that by operating the lever V the carrier with its arm *u* can be raised and lowered without detaching its pivot from its support. Either of these plans may be used; but I prefer the former, as I consider it more secure.

In order to hold the carrier up while the cartridge is being shoved into the chamber, I arrange a small friction-pin, *q*, having a spring to press it slightly outward, at any suitable point in the receiver, it being shown in Fig. 5 as being arranged at the front end of the carrier well or cavity, so as to press against the front end of the carrier when the latter is raised with just sufficient force to prevent the latter from dropping or being jarred down, but leaving it so it can be easily thrown down by the forward movement of the breech-block. The friction-pin *q* is to be applied to the carrier, and is arranged to press against the side of the receiver, as shown in Fig. 2.

In like manner a friction-pin, *y*, Fig. 5, is arranged to press against the breech-bolt with sufficient force to prevent it from sliding of its own weight when the gun is being handled or turned in different positions.

Another and important feature of my improvements is the cut-off for the magazine. (Shown in Figs. 7, 8, 9, 10, and 11.) This consists of a plate, O, arranged at the rear end of the magazine-tube at one side, as shown in Figs. 9 and 11. It is so arranged as to have a slight movement up and down, it being pressed upward by a spring, *v*, as shown in Fig. 9. Its upper end, *m*, is cut out in a circular shape to correspond with the bore of the receiver, and is beveled on its rear face, as shown, so that when the front end of the breech-bolt, in closing the breech, strikes against this beveled face, it will force the plate O downward, as shown in Figs. 7 and 11. A semicircular notch is cut in the side of plate O where it comes opposite the magazine-tube G, the upper half of this notch being beveled on the side toward the muzzle of the gun, and the lower half being beveled on its opposite face, as shown in Figs. 7, 8, and 11, thus forming two oppositely-inclined lips, *n'* and *n*, which, as the cut-off plays up and down, come alternately over the mouth of the magazine, it being shown up in Figs. 8 and 9, and down in Figs. 7 and 11.

In order to fasten it down, so as to permanently cut off the passage of the cartridges from the magazine, in order to use the gun as a single-loader and reserve the cartridges in the magazine, I arrange a bevel-pointed thumb-bolt, R, in a suitable recess in front of the cut-off plate O, in such a manner that it can be moved back and forth by its thumb-piece T, which projects at the side of the receiver,

as shown in Fig. 1, the sliding thumb-bolt R and the cut-off plate being shown detached in Fig. 10. A notch is cut in the plate O for the point of the bolt R to enter, its front side also being beveled, so that by pushing the bolt R toward the plate O the latter is forced down to the position shown in Fig. 11, and held there until the thumb-bolt R is shoved back again. When in that position it will be seen that the lip *n'* of the cut-off O enters or comes opposite the magazine G, and prevents the cartridges from being pushed out onto the carrier, and it thus becomes a permanent stop or cut-off. When the thumb-bolt R is shoved back so as to leave the cut-off plate free, its operation is as follows: Supposing the gun to be open, the cut-off O will then be up, as shown in Fig. 9, in which case its lower lip N will be in front of the cartridge C, as shown in Fig. 8, thereby holding the cartridge in the magazine. As the breech-bolt is closed its front end strikes against the beveled end *m* of the plate O, shoving it down to the position shown in Fig. 11, which throws the lip *n* down on a line with the bottom of the magazine-tube G, at the same time bringing the lip *n'* down so that the cartridge will then rest against its beveled face, with the flange of the cartridge back of the lip *n*, as shown in Fig. 7. As soon as the breech-bolt starts to move back again the plate O is left free to be raised by its spring *v*, which shoves it up until the edge of the lower lip *n* bears slightly against the body of the shell, and which causes the upper lip *n'* to rise far enough to let the head of the shell pass it, when the magazine-spring shoves the cartridge out upon the carrier E, and this operation is repeated every time the breech is opened and closed. By this arrangement it will be seen that the cartridge is retained within the magazine until after the one in the chamber of the gun has been fired, and that it is forced out upon the carrier almost at the instant the breech-bolt commences its backward movement, so as to rest securely on the carrier by the time the breech-bolt has receded far enough to raise the latter.

The opening in the bottom of the receiver A is closed by a plate, J, (shown in Figs. 1, 5, 7, 8, and 11,) it being provided with a small projection or tongue, *c*, at each end, which rests loosely in recesses, as shown in Fig. 5, a spring, *k*, attached to the inner face of the guard-strap, and bearing on the plate J to hold it down, but permitting its front end to be raised when desired, in order to insert the cartridges in the magazine, the carrier E being tipped up out of the way at such times. It is provided on each edge with a vertically-projecting lip, *z*, as shown in Figs. 5 and 7, which serve to prevent it from being turned over or getting misplaced when raised. This is a simple and cheap way of constructing and securing the plate J, and dispenses with all hinges, screws, &c.

The guard-strap U is provided at its front end with two semicircular studs, *p*, as shown in Fig. 3, which project up into the receiver A, and are secured thereto by a screw which passes transversely through both. As these studs *p* are both formed by making a single round stud, and then cutting a slot through the center for the spring *k*, they are exceedingly simple and easy to make by machinery.

In order to secure the magazine to the barrel, I use a ring, H, Fig. 6, which, instead of passing around the barrel, as usual, is fitted into a dovetailed recess made in the under side of the barrel, as there shown; and as a means of securing the tip or front part of the stock, and also help hold the magazine, I secure at the proper point, in like manner, a piece, M, as shown in Figs. 12 and 14, this piece being made in form like an inverted U, so as to straddle the magazine-tube and fit on each side in a recess on the inner faces of the wood composing the tip or front stock, which is secured thereto by a short screw inserted from each side, as shown in Fig. 12.

By examining Fig. 4 it will be seen that the front end of the breech-bolt is recessed, so as to fit over the end of the cartridge C, and that the wall of this recess is beveled, or, as it is technically termed, is "undercut." This is done for the purpose of holding the cartridge more securely as it is drawn out, the pressure of the extractor on its upper side pressing the flange of the shell down into the dovetailed recess formed by undercutting, as above described. The ejector-pin is shown in Figs. 4, 5, and 16.

It is essentially the same as in my former patent, but is constructed with two semicircular arms, *x'*, which fit in recesses in the sides of the breech-bolt. As shown in Fig. 16, these arms *x'* are made inclined on their front face, so that when it is shoved forward these arms will first strike against the shoulder of the breech-bolt at their extremities, and then, as pressure is applied to it, its front end will be thrown upward, so that, in this case, the ejector-pin has two movements—first a forward motion, and then an upward movement of its outer end—whereby it is made to operate more effectually in throwing the shell from the receiver.

Having thus described my invention, what I claim is—

1. The combination of the pivoted handle L with the firing-pin F, substantially as described, whereby the firing-pin is retracted by the movement of the handle.

2. The combination of the pivoted handle or lever L with the locking-bolt *b* and firing-pin F, constructed to operate substantially as described, whereby the breech-bolt is unlocked and the firing-pin is retracted by the single movement of the handle.

3. The combination of the pivoted handle L, firing-pin F, and sear W, substantially as shown and described, whereby the movement of the handle shoves back the firing-pin and half-cocks the gun.

4. The combination of the extractor *f*, lock-

ing-bolt *b*, and pivoted handle L, substantially as set forth, whereby additional force can be applied to the extractor by drawing the handle back when desired.

5. The firing-pin F, provided with a stud, *l*, in combination with the sleeve B^1 and B^2, provided with the grooves o^1 and o^2, arranged to operate as described, whereby the firing-pin is held back until the breech is closed and locked.

6. The swinging or pivoted hooks I, constructed to operate as described, whereby it is made to support the pivot of the carrier E, and can be detached therefrom at will, substantially as set forth.

7. The cut-off O, in combination with the sliding thumb-bolt R, constructed to operate substantially as described, for shutting off the flow or passage of the cartridges from the magazine.

8. The cut-off O, provided with the beveled or oppositely-inclined lips *n* and *n'*, and the beveled top *m*, in combination with a sliding breech-block, said parts being constructed to operate substantially as described.

9. As a means for closing the bottom of the receiver, the plate J, provided with the projections or tongues *c* at its ends, for holding it in place, substantially as described.

10. The breech-bolt B, provided at its front end with the undercut recess, for more securely holding the cartridge-shell while it is being withdrawn, substantially as set forth.

11. The ejector-pin *x*, provided with the inclined or beveled faced arms *x'*, arranged to operate in connection with the breech-bolt, substantially as set forth, whereby said ejector has imparted to it both a forward and an upward movement, as described.

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