

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. 57,808, dated September 4, 1866.

To all whom it may concern:

Be it known that I, O. F. WINCHESTER, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Repeating Fire-Arms; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view; Fig. 2, a top view; Fig. 3, a sectional side view; Fig. 4, a longitudinal central section; Fig. 5, a section through the frame on line *x x*, looking to the rear; Fig. 6, a section of the carrier-block on the same line; Fig. 7, a section of the inner tube of the magazine; Fig. 8 illustrates the manner of filling the magazine with cartridges; and in Figs. 9 and 10, a device for converting the arm into a breech-loader.

My invention relates to an improvement in the repeating fire-arms patented by Horace Smith and Daniel B. Wesson the 14th of February, 1854, improved by B. T. Henry, patented October 16, 1860, in which several metallic cartridges are placed in a tube or magazine beneath the barrel of the arm and carried therefrom to the barrel by the movement of the trigger-guard; and my invention consists in an improvement in the said tube or magazine whereby the cartridges may be placed therein with greater facility and without other objections which exist to the tube as heretofore constructed.

Before proceeding to describe my improvement I will first describe the construction of the operative parts of the arm.

A is the barrel, of any known construction; B the frame, to the forward end of which the barrel is secured, and to the rear end a wooden stock, C. In the frame B, and directly in the rear of the barrel, is formed a chamber or mortise, D, in which is placed a carrier-block, E, the office of which is to receive a cartridge from the magazine and raise it for insertion into the barrel, also to throw the discharged shell from the arm after it has been withdrawn from the barrel. For this purpose the said carrier-block E is constructed with a chamber, E², (see Fig. 6,) to receive the cartridge from

the magazine, and it is moved up within the chamber or mortise D to present the cartridge to the barrel for insertion, and down, when the cartridge has been removed from the carrier, to the barrel, and is thus moved by means of the lever F, one end of which lies within the carrier-block E, the other hung to the pivot G.

H is a lever, serving both as a trigger-guard and as an instrument by which the several mechanical parts of the arm are made to operate. It is hung to the pivot G, upon which both the levers F and H may be freely moved. By moving the lever H from the position denoted in Fig. 3 to that denoted in Fig. 4 a shoulder, *a*, formed upon the lever H strikes a corresponding shoulder, *b*, upon the lever F, raising the said lever and carrier-block E, as denoted in Fig. 4. By returning the said lever H the upper arm, I, of the lever H strikes another shoulder, *c*, on the said lever F, and returns the lever F, with the carrier-block E, to the position denoted in Fig. 3.

L, the breech-pin, is hollow, of cylindrical form, through which passes a piston, M. The rear end of the said pin L is formed, as seen in Figs. 3 and 4, so as to attach upon either side to a pivot, *d*, a link, N, of a toggle-joint, as denoted in broken lines, Fig. 2. The other links, P, of the toggle are hinged to the frame by a pivot, *e*, and the two links hinged together at *f*. The upper arm, I, of the lever H extends up between the two toggle-joints, and through the said arm I a pin, *g*, passes, extending out upon either side so as to enter a slot or groove, *h*, upon the inside of the links P, so that, as the lever H is moved, as from the position in Fig. 3 to that in Fig. 4, the pin *g* will act to close the toggle and draw back the breech-pin L, which moves freely back and forth in the frame B, as denoted in Fig. 4, and by the return of the lever H will extend the toggle and return the breech-pin L, as seen in Fig. 3. The raising of the carrier-block E, as before described, occurs after the breech-pin has been drawn back, and the breech-pin is returned before the return of the carrier-block, passing through the chamber E² in the carrier-block for the purpose (as more fully hereinafter shown) of removing the cartridge from the chamber E² in the carrier-block to the barrel. Therefore, in order to allow the carrier-block to return, it is necessary to cut

a slot, E^3 , from the chamber E^2 up through the carrier-block, as seen in Fig. 6. This slot must be narrower than the chamber in order to prevent the accidental removal of the cartridge in the said chamber, as also to cause the raising of the carrier-block to eject the discharged and withdrawn shell; and that this narrow slot may pass down over the breech-pin, which is nearly the same diameter as the chamber in the carrier-block, the breech-pin is reduced upon its two sides, as seen in Figs. 2 and 3.

On the lower side of the breech-pin L is formed a projecting lip, i , and upon the upper side a spring-latch, m . A cartridge, R , lying upon the carrier-block, as seen in Fig. 4, will, by the return of the breech-pin L , be forced into the rear of the barrel, the lip i entering a recess, n , below, and the latch m , rising and hooking over the flange of the cartridge, will enter a similar recess, r , above, as seen in Fig. 3, so that when the breech-pin is withdrawn the latch m will hold and withdraw the cartridge or discharged shell, as the case may be.

The piston M is enlarged to form a shoulder, as denoted at s , at the rear of the pin L , thence extends back through the frame and so as to slide freely therein to the hammer S , so that when the pin is drawn back, as before described, the said piston will force the hammer back to full-cock, as denoted in Fig. 4, and on being returned to the position denoted in Fig. 3 will leave the hammer held at full-cock by the trigger T , which, when released in the usual manner, will, by the reaction of the mainspring U , fly back to the position denoted in Fig. 3, striking the end of the piston M . To the inner end of the piston M is fixed a collar, t , having projecting points x upon either side. (See Fig. 5.) The said collar t is of larger diameter than that part of the piston M to which it is attached, and the recess made in the breech-pin to receive the said collar is made a little deeper than the thickness of the collar, so as to allow the piston M , with the collar t , to move back, so that when the pin L is forced up against the cartridge, as before described, the projecting points x , as they press against the cartridge, will force the piston back; and thus situated when the hammer strikes the piston M , as before described, the projecting points x will indent the metal of the cartridge sufficiently to explode the fulminate and ignite the powder within the cartridge.

A separate spring, z , for each of the levers F and H is secured upon the frame, the ends of which bear one upon the lever H , as seen in Fig. 3, to retain the lever in its home position, as in Figs. 1 and 3, the other upon the lever F , (see Fig. 4,) for the purposes more fully hereinafter described.

The lever H is held in its position against the frame by means of a thumb-screw, W , or an equivalent therefor. This completes the general construction of that part of the arm contained within the frame as heretofore con-

structed. The space in the frame where the operative parts are placed is inclosed by a plate, S^3 , upon each side of the frame.

In the magazine as originally constructed, and as shown and described in the patent of Smith & Wesson before referred to, the magazine or tube was fixed to the barrel, and a slot cut through the entire length of the tube, through which a pin or projection from the follower within the tube extended, by means of which the follower was drawn up to near the muzzle end of the said tube, where the follower with the spring and the upper portion of the tube were turned to one side, so as to allow the cartridges to be inserted within the tube; then the upper portion of the tube with the follower and spring were returned, so that the follower would again enter the tube and force the cartridges toward the rear or lower end of the tube into the carrier, for the purpose hereinbefore described. In this construction a great objection has existed from the fact that the open slot upon the under side of the tube would admit more or less dirt, or other substances foreign and injurious to the proper workings of the follower and spring, within the magazine, and the necessary complication in the construction of the upper part of the magazine and barrel renders them very liable to get out of repair.

I will now proceed to describe my improvements for which I seek Letters Patent.

Beneath the barrel A , I place a thin metal tube, A' , extending along the barrel and terminating in a band, B' , and secured to the barrel in any convenient or well-known manner. Within the tube A' , I place a second tube, C' , which extends nearly the length of the barrel, constructed so as to enter easily and fill the outer tube, A' . That portion of the tube C' above the band B' , I make, in its external diameter, the same as the outer tube, so that when placed one within the other they present the appearance of a single tube extending nearly or quite the length of the barrel. To the upper or muzzle end of the said tube I fix a latch for the purpose of holding the said tube in its proper position, which I construct as follows: I cut the tube C' a little shorter than the barrel, and into the end insert a tubular plug, D' . Into the said plug D' , I fix a spindle, F' , (seen in Fig. 3,) extending out beyond the tube and terminating in a cap or head, E^1 , formed with a ledge or rim, a' , around its outer surface, which sets into a notch, b' , in the barrel. The spindle F' is sufficiently elastic to permit the head E^1 to be drawn away from the barrel, so as to take the ledge a' out from the notch b' , which, when done, the inner tube may be readily withdrawn from the outer tube. Within the said inner tube I place a follower, G' , and between the said follower and the plug D' , I place a helical spring, as denoted in red, the tendency of which is to force the follower G' toward the lower end of its tube. To prevent the said follower from being forced

from its tube, upon one side of the follower I form a small projection, d' , which enters a groove, r' , in the said tube, (see Fig. 7,) the said groove terminating at the proper distance from the end, so as to form a shoulder against which the projection d' may strike, as at e' , Fig. 4.

When it is desired to place one or more cartridges in the tube or magazine C' , withdraw the said tube entirely from the outer tube, A' , and insert the cartridges (the rear end of the cartridge down, as seen in Fig. 8) into the upper or open end of the outer tube until the said tube is filled, or the requisite number placed therein; then return the inner tube, C' . The follower G' will strike upon the point of the ball of the last-inserted cartridge. Pressing the tube C' down into the outer tube it will pass freely over each and all the cartridges therein, the follower sliding up within its tube until the tube C' reaches its place of rest, when the ledge upon the cap E^1 shall enter the notch b' , as seen in Fig. 3. The ledge, extending entirely around the head, will catch and hold the tube whichever side of the tube is placed next the barrel.

The spring within the tube C' will force the column of cartridges down until the first one, R , inserted will enter the chamber E^2 in the carrier-block E , (see Fig. 3,) from which position it will be carried up to the position in Fig. 4 and inserted into the barrel, and the block returned to receive a second cartridge, as before described. When the first cartridge has been discharged, as in Fig. 3, withdraw the shell, as before described. The latch m upon the breech-pin will hold the discharged shell until the carrier-block is again raised, when the block will strike the shell, tip it up from the lip i until the carrier is nearly up to its full height, when the spring z will fall into a notch, w , on the lever F , giving a sudden movement to the carrier, which will eject the discharged shell entirely from the arm, as denoted in Fig. 4, and thus the operation of firing may be continued until all the cartridges within the magazine have been each in their turn discharged.

In practice it is found advisable that the arm should be constructed so that it may be loaded like ordinary single breech-loading arms, while the cartridges in the magazine are reserved for an emergency. To do this it is necessary to arrest the movement of the lever H as soon as it has drawn the breech-pin back from the rear of the barrel and before the carrier-block

has been raised. To thus positively arrest the movement of the lever H at that position, (which is as denoted in red, Fig. 4,) I place a hinged stop, S^1 , upon the frame, so that when turned in the position denoted in Figs. 1 and 3 the lever H will strike the said stop at the proper time to prevent the movement of the carrier-block E , or when turned as in the position denoted in Fig. 4 will permit the full movement of the lever H .

It is sometimes desirable to use this arm as a muzzle-loader. For this purpose I construct a steel case, S^2 , as denoted in Figs. 9 and 10, formed to fit the rear end of the barrel like the shell of a metallic cartridge, placing in the rear end of the said tube a cone-seat to receive an ordinary percussion-cap. The arm thus arranged may be loaded from the muzzle in the usual manner, while the breech-pin is held against the said case. When thus loaded (or, if preferred, before the loading is commenced) place a percussion-cap upon the cone, then cock the arm, as before described, and release the hammer, which, on striking the piston M , will explode the percussion-cap and ignite the powder within the arm. In order that the latch and points on the breech-pin and spindle may not interfere with this operation I cut recesses in the flange of the said case, as seen in Figs. 9 and 10.

Thus the arm may be used to automatically insert the cartridges taken from the magazine, or, holding the cartridges in the magazine in reserve, may be loaded as ordinary single breech-loading arms, or as a muzzle-loader, and the objections heretofore existing in the construction of the magazine are fully overcome.

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

1. Constructing the tube or magazine, substantially in the manner described, so that the inner tube may be removed, in combination with the carrier-block E , breech-pin L , and barrel A , as and for the purpose specified.

2. The combination of the stop S^1 , lever H , and carrier-block E , when arranged to operate substantially as and for the purpose specified.

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Witnesses:

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