B. B. HOTCHKISS.

MAGAZINE FIRE-ARMS.

No. 184,285. Patented Nov. 14, 1876

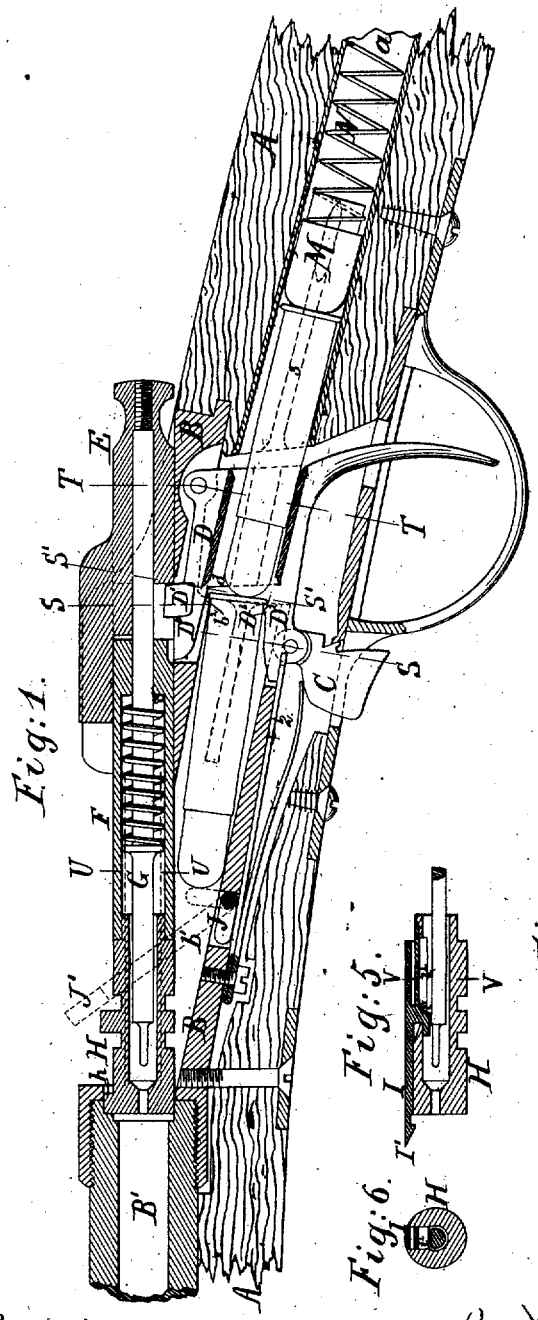

Fig. 1.

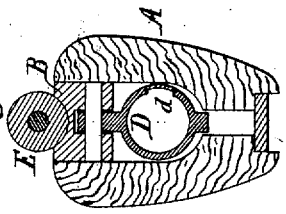

Fig. 3.

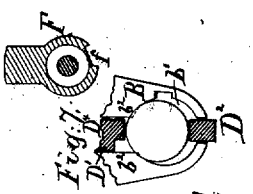

Fig. 4.

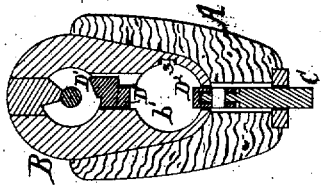

Fig. 2.

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

BENJAMIN B. HOTCHKISS, OF NEW YORK, N. Y.

IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. **184,285**, dated November 14, 1876; application filed September 22, 1876.

To all whom it may concern:

Be it known that I, BENJAMIN B. HOTCHKISS, of New York city, in the State of New York, temporarily residing in Paris, France, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, of which the following is a specification:

This invention constitutes an improvement upon the arm described in Patent No. 169,641, granted to me November 9, 1875; and it consists in features of construction which enable the arm to be used at will, either as a single breech-loader, to which the cartridges shall be supplied successively by hand, or as a magazine-arm, in which to store a number of cartridges, which will present themselves automatically, and allow their being fired in rapid succession, the said cartridges being impelled forward successively without the aid of a magazine mechanism operated by, or dependent upon, the movements of the breech-block bolt or "system."

The extracting of the shell is effected by an extractor constructed in an improved form, which extractor is relieved from its previous function of guiding the nose-piece to prevent its turning, and the trigger-locking device is attached in a different position, and adapted to subserve a new function in its new combination.

In the drawings, which form a part of this specification, Figure 1 represents a longitudinal section of this improved arm, with its extreme muzzle and breech ends broken away. Fig. 2 is a cross-section on the line S S of Fig. 1, as seen looking from the muzzle end of the arm. The cartridge is omitted for greater clearness of illustration. Fig. 3 is a cross-section on the line T T of Fig. 1, as seen looking from the muzzle end of the arm. Fig. 4 is a cross section, taken on line U U of Fig. 1, as seen looking from the muzzle end. Fig. 5 is a longitudinal section, in a horizontal plane, through the nose-piece and extractor. Fig. 6 is a cross-section on line V V of Fig. 5, and Fig. 7 is a cross-section on line S′ S′, as seen looking from the butt toward the muzzle. It shows the head of the foremost cartridge in the magazine as it is held previous to its liberation by the movement of the trigger.

A is the stock or butt of the arm. B is the shoe, and B′ the barrel. The hammer E, the firing-pin G, and its spiral spring are similar to those referred to in the aforesaid patent. The bolt F is modified by having the groove *f* for the sear formed at one side of the center, as will be further explained.

The shoe B, in addition to the ordinary cylindrical channel for the sliding system, as in other bolt-guns, is perforated with a passage, b^1, which forms an immovable guide for conducting the cartridges into the magazine *a* in charging the same, and outward therefrom and into the chamber of the arm in loading it. It may also contain a special stop for the purpose of holding back the cartridges in the magazine when the gun is to be used as a single-loader.

The magazine *a* is a cylindrical hole bored in the stock or butt, and is connected with the immovable guide in the shoe B, so as to provide a continuous passage or guideway for the cartridges from the magazine directly to the chamber of the arm.

The trigger D differs from the one described in the aforesaid patent, being made of greater dimensions in width and length, and traversed by a tubular passage of sufficient size to allow the cartridges to be fed through it into the magazine, and to pass in the opposite direction toward the chamber of the arm.

The diameter of this tubular passage is, at the point *d*, equal to the caliber of the magazine-tube, being a little greater than the diameter of the flange at the head of the cartridge.

Forward of the tubular portion *d* of the trigger, it is provided at the bottom with an arm, D^2, and at the top with an arm, D^4, Fig. 2. Both the bottom arm D^2 and the top arm D^4 are provided on their inner faces, at their forward ends, with rounded surfaces, so that the tubular portion of the trigger is, in effect, extended forward above and below at the front and flared. The rear end of the tubular passage through the trigger is also rounded off, as is also the mouth of the magazine, such construction aiding the proper movement of the cartridges. There is also provided a slight projection, D^3, on the lower arm D^2, in the position represented in Fig. 1.

It will be observed that the trigger is prop-

erly equipped to perform its ordinary functions unaffected by the presence of the cartridges. The sear D^1, for retaining the hammer E when the gun is cocked, is, however, set at one side of the center line, Fig. 2, to suit the corresponding position of the groove *f* in the bolt F, the purpose of this arrangement being to so locate the groove that it shall not interfere with the passage of the cartridges from the magazine, but provide a smooth bearing-surface for them upon the under side of the bolt. The recess formed in the shoe, Figs. 2 and 7, for the sear D^1, is, of course, in a proper relative position at one side of the center. The rear end of the shoe B is slotted vertically, which space is occupied by the trigger and its attachments.

The trigger-locking arrangement, Fig. 1, is analogous in its construction and operation to the one described in the patent hereinbefore referred to; but the depth of the stock at that part is so increased that the point of attachment of the locking-lever C is lower, to allow the large space necessary for the passage of the cartridge over it.

The extractor I and loose nose-piece H are modified as follows: The part i^1 terminates at its rear with a tail, i^2, which constitutes the spring of the extractor I, and allows the extracting-hook I′ to yield sufficiently to snap over the head of the cartridge when the bolt is closed. The nose-piece H is provided at its front end with a projecting stud, *h*, Fig. 1, which enters a corresponding longitudinal groove in the shoe and barrel, and serves as a guide, preventing the nose-piece from following the rotary motion of the bolt, and thus relieves the extractor from the side strain, and the consequent abrasion of the metal of the barrel, heretofore experienced. This arm can be used as a repeater, automatically feeding forward cartridge after cartridge from the magazine, or as a single-loader, by stopping the forward movement of the cartridges from the magazine, or rendering such feed-motion inoperative.

The mode of using the gun as a repeater will now be described.

The magazine is loaded by sliding the system rearward and inserting the cartridges through the feeding-aperture in the shoe, which is an opening in the forward end of the immovable guide b^1. As each cartridge is inserted, its head abuts against the upper walls at the rear end of the immovable guide, bears upon the projection D^2 on the lower arm of the trigger, and depresses the trigger until such movement shall permit the cartridge-flange to pass the shoulders b^2 at the rear end of the shoe. The trigger, now no longer pressed downward by the cartridge-flange, rises and presses the body of the cartridge upward behind the shoulders b^2 of the shoe, against which it rests, as seen in Fig. 7, supported by the lower arm D^2 of the trigger. Its retention in that position is aided by the projection D^3 on the lower arm of the trigger; but this auxiliary detent, while advantageous, may be dispensed with.

As each cartridge is thus introduced into the magazine it drives the previously-inserted one or ones farther back in the magazine, and is caught in its turn by its flange resting against the shoulders b^2, until the magazine is completely filled. The introduction of the cartridges forces backward the pusher piece or head M, carried by the magazine-spring N, and compresses said spring, thus imparting to it the requisite power to impel the cartridges forward when they are liberated by the yielding stop constituted by the trigger. When the magazine is filled, one cartridge may be thrust forward into the chamber of the barrel.

The preparation for firing is effected in the ordinary manner of operating bolt-guns by closing the system, and thereby cocking the arm. On pulling the trigger to fire the arm, the motion of the trigger at the same time liberates the forward cartridge, which has been previously held by the stops b^2, which said cartridge is then instantly impelled forward by the force of the magazine-spring N until its further progress is arrested by contact of the bullet against the under surface of the bolt F. All the cartridges in the magazine move correspondingly forward under the impulse of the spring N. The trigger immediately rises under the pressure of its spring 2 and breaks the continuity of the cartridge passage-way, so that the flange of the second cartridge will abut against the shoulders b^2 when it reaches the point occupied by them, thus arresting itself and the cartridges lying behind it, and permitting only the forward cartridge to pass onward toward the chamber of the gun.

The extracting is effected in the usual way. In closing the system the extracting-hook is passed over the head of the cartridge to engage its flange, and in opening the system it draws back the empty shell, and the latter is ejected through the lateral opening in the shoe. So soon as the space in the shoe becomes free the foremost cartridge in the magazine is impelled forward by the spring N until the succeeding cartridge is arrested by contact of its flange against the shoulders b^2. The momentum thus imparted to the forward cartridge by the spring will usually be sufficient to carry the cartridge directly into the chamber; but even if the cartridge should remain in the immovable guide in the shoe, the closing of the system will push it forward into the chamber of the barrel. By this movement the hook of the extractor is passed over the flange of the cartridge in the chamber, and the arm is again ready to be discharged. In this manner the arm can be fired until the magazine is exhausted.

To use the gun as a single-loader, if the magazine is empty, the gun can be loaded and fired at once, like an ordinary bolt-gun—that is, each cartridge may be inserted by

hand into the chamber when the bolt is retracted.

If the magazine is fully or partially filled with cartridges, the stop J may be raised, so as to stand in the position indicated by dotted lines in Fig. 1, by moving the lever J′, (shown in dotted lines,) to which it is attached or forms a part. In this erect position it acts as a stop to the further advance of the magazine-cartridges. This stop is not essential in effecting this mode of operating the arm. When omitted the arm may be used as a single-loader, as follows: When a cartridge has been delivered into the chamber and fired, and the bolt has been retracted, the forward cartridge in the magazine will be forced into the chamber of the arm, as has been described with reference to the mode of using it as a magazine-arm. At this time, and before moving the bolt forward, a new cartridge is forced into the magazine, and will, of course, be the one which is next carried forward into the chamber and fired. Thus each time the bolt is withdrawn after firing a cartridge a new one (that which is to be next fired) may be inserted into the magazine, by which operation a new cartridge is supplied each time that one is expended, and the supply in the magazine remains intact.

The advantage of retaining a fully-charged magazine and the capacity of loading single shots will be apparent to those skilled in the use of magazine-arms.

One of the especial advantages of this construction of arm is its capacity to use cartridges of varying lengths, for it is apparent that the cartridges may vary in length within wide limits without affecting the action of the mechanisms which control them, and hence that accuracy in their length is not at all requisite to secure the perfect action of the arm.

The head M of the spring N is provided with a stud projecting from it at one side, which stud runs in a slot or recess, 3, cut in the side of the magazine-tube, continued through the trigger, and extended into the shoe for a short distance. The purpose of this slot 3 is to limit the forward movement of the spring-head M, so as to prevent its being projected forward far enough to interfere with the movements of the system. This arm is constructed so that its parts may be taken apart and put together with great facility.

Modifications may be made without defeating the object of the invention. Instead of the tubular construction of the trigger, as shown, it may be left, if made sufficiently strong, with one side of its tubular passage open; or the main body of the trigger may be set at one side, with the top and bottom surface properly positioned to receive and deliver cartridges between them. Some of the features may be used without the others; but the whole construction shown is advantageous and efficient.

The trigger constitutes a yielding device, moving so as to alternately release one cartridge to move forward toward the chamber of the gun, and to permit the succeeding cartridge to engage a stop, which arrests it until the trigger is again moved to liberate it. Since this yielding device, interposed between the magazine and the immovable guide which directs the cartridges into the chamber, so operates that it alternately stops and releases the cartridges, it is to be understood that any equivalent mechanism having such mode of operation is to be regarded as within the scope of this invention; and, furthermore, that it is not essential that this yielding cartridge-controlling mechanism shall be comprised in the trigger, though that is the preferable construction, but that a lever or a spring-seated pin which shall alternately interrupt and clear the cartridge-passage may be employed.

What therefore is claimed is—

1. The guide through the shoe, arranged at an angle to the axis of the bolt or system, and leading directly to the chamber in the barrel, in combination with an independently-acting cartridge-impelling mechanism and a sliding bolt, substantially as described.

2. In a breech-loading arm having a magazine, *a*, and suitable means for impelling the cartridges forward, the combination of the shoulders b^2 and the supporting-arm D^2, adapted to arrest the cartridges, substantially as described.

3. The combination of the barrel with a device for impelling the cartridges, and an immovable device for guiding the same from the magazine into the barrel upon the retraction of the bolt, substantially as described.

4. In a magazine-arm in which the cartridges are liberated by the movement of the trigger, the shoulders or stops b^2, engaging the head of the cartridge on one edge, and the additional stop or projection D^3 on the trigger, adapted to aid in holding the cartridge by its opposite edge, substantially as described.

5. In a breech-loading-arm having a magazine, *a*, and means adapted to impel the cartridges forward, the trigger provided with the two arms D^2 and D^4, forming a part of and moved by the trigger, adapted, the one to hold the cartridge out of line of the channel, and thus to arrest it, and the other to compel the movement of the arrested cartridge into the proper position for moving forward when the trigger is pulled, substantially as described.

6. The tubular construction of the trigger D, substantially as described.

7. In a magazine-arm, a trigger having the arm D^2 for engaging and retaining the cartridge, and the arm D^4 for liberating it, substantially as described.

8. The magazine-arm described, adapted to receive and expel the cartridges without any magazine mechanism, operated by or through the bolt, but independent therefrom, substantially as described.

9. The combination of the bolt, the stop, and a device operated by the trigger, whereby the forward cartridge in the magazine is liberated by the movement of the trigger, and allowed to move forward till it strikes the bolt, is again liberated by the withdrawal of the bolt, and allowed to be projected forward, while the succeeding cartridges are arrested, substantially as described.

10. The bolt arranged, with relation to the magazine and shoe, substantially as described, whereby, when the bolt is withdrawn far enough to liberate the extracted cartridge or shell, the next succeeding cartridge is permitted to move forward toward the barrel, as described.

11. The extractor constructed with the engaging-hook I′, pivot-hook *i*, abutting-piece i^1, and spring i^2, substantially as described.

12. The projection *h* on the nose-piece, adapted to match in a corresponding groove in the fixed parts, and to relieve the extractor from side strain, as herein described.

13. The beveled surfaces provided upon the front and rear ends of the trigger, adapted to cause the cartridges to enter the tubular trigger and force it into alignment with the magazine-passage, substantially as described.

14. An oscillating trigger, constructed with a passage through it, whereby its movements shall interrupt the continuity of the cartridge-passage, substantially as described.

15. A projecting stud on the head of the magazine-spring, in combination with a slot in the magazine and trigger, whereby the forward movement of the spring is limited, substantially as described.

16. The construction herein described, by which the magazine is permitted to be filled through the opening in the bottom of the shoe when the bolt is withdrawn, substantially as described.

17. The combination of the locking-piece C with the trigger and shoulders or stop b^2, substantially as described.

In testimony whereof I have hereunto set my hand this 13th day of September, 1876, in the presence of two subscribing witnesses.

B. B. HOTCHKISS.

Witnesses:

PHILLIPS ABBOTT,

CHAS. C. STETSON.