(No Model.)

W. H. ELLIOT.

MAGAZINE FIRE ARM.

No. 262,023. Patented Aug. 1, 1882.

Fig. 1.

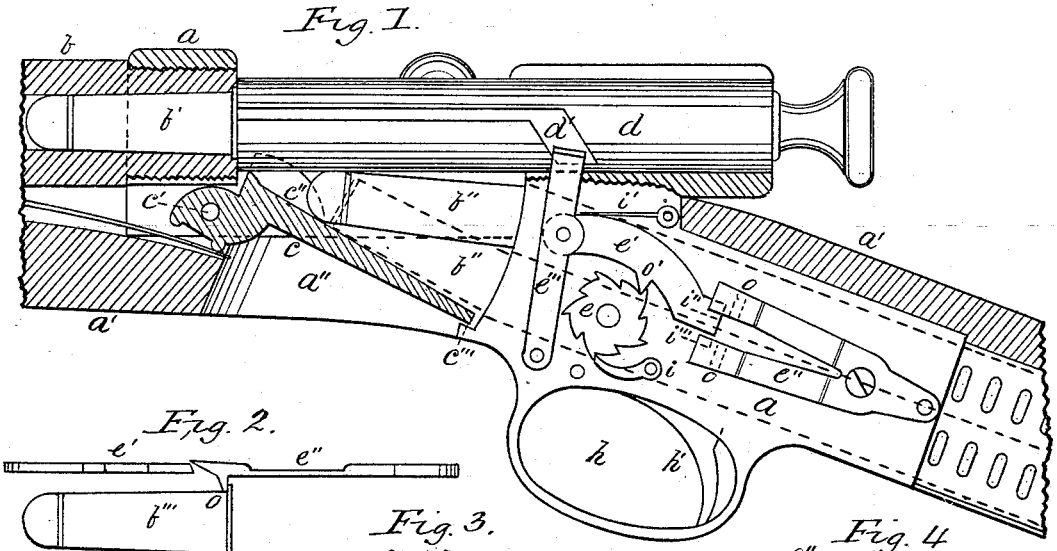


Fig. 2.

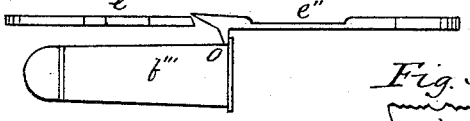


Fig. 3.

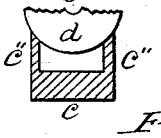


Fig. 4.

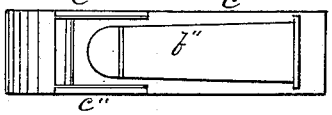


Fig. 5.

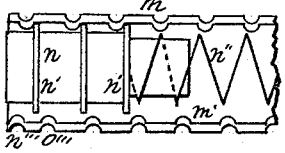


Fig. 6.

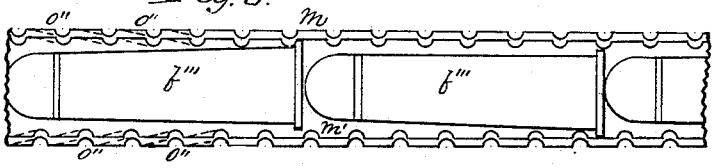


Fig. 7.

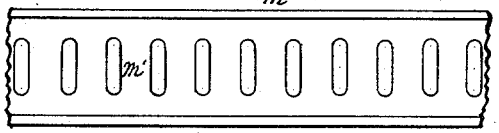


Fig. 8.

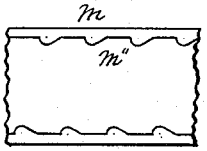


Fig. 9.

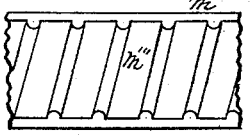


Fig. 10.

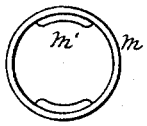


Fig. 11.

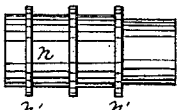


Fig. 12.

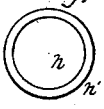


Fig. 13.

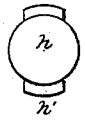
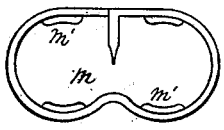


Fig. 14.



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Geo. H. Richardson

Inventor:

Wm. H. Elliot

UNITED STATES PATENT OFFICE.

WILLIAM H. ELLIOT, OF NEW YORK, N. Y.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 262,023, dated August 1, 1882.

Application filed March 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ELLIOT, of New York, county of New York, and State of New York, have invented a new and Improved Magazine Fire-Arm, of which the following is a specification.

The object and nature of my invention may be described as follows:

The object of my invention is to provide a safer and more practical fire-arm than any now in use; and the nature of my invention consists in the use of certain appliances and methods, which are fully set forth in the following specification and claims.

Figure 1 is a vertical longitudinal section of the arm, showing the bolt and feeding devices in elevation. Fig. 2 is a plan of feeding devices. Fig. 3 is a vertical cross-section of the carrier through the cam. Fig. 4 is a plan of the carrier. Fig. 5 is a horizontal longitudinal section of the end or mouth of the magazine. Fig. 6 is a horizontal longitudinal section of a portion of a magazine, showing cartridges within. Fig. 7 is a vertical longitudinal section of a magazine. Fig. 8 is a horizontal longitudinal section of a portion of a magazine, showing a modification of the ribs or projections. Fig. 9 is the same, showing another modification of the ribs. Fig. 10 is an end view of a magazine. Fig. 11 is a side elevation of a follower. Fig. 12 is an end elevation of the same. Fig. 13 shows a modification of a follower. Fig. 14 is an end view of a double magazine.

The invention herein described refers to that kind of arm in which the bolt or breech-block has a reciprocating movement in a line with the barrel for opening and closing the chamber, and is an improvement upon arms represented in applications of mine now pending before the Commissioner of Patents.

In the drawings I have shown both single and double tubular magazines adapted to be arranged either under the barrel or in the butt-stock of the arm, and in Figs. 1 and 2 may be seen a novel method of feeding the cartridges alternately from two tubular magazines located in the butt-stock. The devices consist of a ratchet, *e*, pivoted to the side of the receiver, and provided with ten ratchet-teeth—five high ones and five low ones—and a revolving feed pawl or link, *e'*, which is actuated by the bolt either by direct connection with it or by the connection or lever *e'''*. This lever is pivoted to the lower part of the receiver, near the guard, and is adapted at its upper end to work in the groove *d'* in the side of the bolt. This groove is widened diagonally backward at its rear end, and as the bolt is rotated to the right in locking the arm the upper end of the lever is carried back by the diagonal portion of the groove. The rear end, *i''*, of the revolving pawl *e'* is thrust under one of the arms of the double spring feed-pawl *e''*, which releases a cartridge from one of the magazines. When the bolt is rotated to the left in unlocking the arm the revolving pawl engages another notch on the ratchet *e*.

In Fig. 1 the point *o'* of the revolving pawl is represented as resting in one of the high notches on the ratchet, which raises the rear end of that pawl high enough to pass under the upper arm of the feed-pawl and release a cartridge from the upper magazine. As the notches on the ratchet are alternately high and low, the next rearward movement of the revolving pawl will be with its point *o'* in a low notch, which will allow it to drop low enough to be thrust under the lower arm of the feed-pawl, as shown in open lines *i'''*, and release a cartridge from the lower magazine, and so on, the point *o'* alternately resting in high and low notches and alternately raising the upper and lower arms of the feed-pawls. The action of the revolving pawl upon the feed-pawl to release a cartridge is shown in Fig. 2. The revolving pawl is forced downward upon the ratchet by spring *i'*, and the ratchet may be prevented from turning backward by pawl *i*, provided with a spring, or by any other suitable means.

When the upper arm of the feed-pawl is raised the whole column of cartridges in the upper magazine moves forward. The first cartridge, being guided by the under side of the bolt, is arrested by abutting upon the straight unobstructed upper surface of the carrier. When the lower arm is raised the cartridges in the lower magazine move forward. The first, being guided by the carrier, is arrested by abutting upon the bolt. The angle formed by the lower side of the bolt and the upper sur-

face of the carrier is so arranged in relation to the mouth of the magazine and the point *o* of the feed-pawl that when a cartridge is in said angle its head still remains a little way in the mouth of the magazine, which prevents the feed-pawl from engaging the head of the second cartridge. When the bolt is withdrawn the first cartridge glides forward upon the straight unbroken surface of the carrier out of and away from the magazine, entirely unobstructed by either the recess or cam shown in the before-mentioned applications, and the feed-pawl engages the head of the second cartridge, and so arrests the movement of the rest of the column. When the backward movement of the bolt is completed the carrier, sweeping over the mouth of both magazines, raises the cartridge from either to the receiving-chamber before the bolt.

It may be seen in Figs. 3 and 4 that the cam C″, which occupies the forward end of the carrier, and by means of which the bolt depresses the carrier, has its central portion cut away, leaving but little more than two upward-projecting wings, one at each side, the remaining portion of said cam serving to guide the cartridge into the chamber of the barrel as it is pushed forward by the bolt. The cam is arranged upon the carrier so far from the mouth of the magazine that the cartridge has room to lie upon the level bed of the carrier between the cam and the magazine after the magazine-spring has ceased to act upon it. From this position the cartridge is carried forward by the bolt into the chamber of the barrel. By this construction and arrangement of devices the sudden throwing up of the ball end of the cartridge as it is shot forward over the recess or cam, before referred to, is avoided, and the tendency of the cartridge to settle back into the recess, and thereby force its head back against the mouth of the magazine, so as to cause it to interfere with the movement of the carrier, is very much lessened. When the first cartridge strikes into the angle formed by the bolt and carrier the latter, being pivoted at *c′*, is forced down upon the stop *c‴*.

As a cheap modification of the devices for revolving the ratchet *e*, I dispense with the lever *e‴* and extend the rear end of the pawl *e′* up into the groove *d′*, and provide for it a suitable support upon the receiver. The action of the bolt upon the pawl would then be direct.

There are other modifications of these devices; but any suitable one which will communicate the movement of the bolt to the ratchet *e* will serve the purpose.

In the use of all tubular magazines, particularly of those located under the barrel, there is danger of exploding accidentally some of the cartridges within them from various causes. Premising that these accidents are due more to the rapidity of movement than to the amount of force with which the cartridges strike each other in jolting or manipulating the arm, I have endeavored to remedy the evil by introducing into the tubes devices which make rapid movement of the cartridges in either direction impossible. For this purpose I employ short ribs *m′*, projecting inward from the inner surface of the tube, and arranged at right angles, or nearly so, to its axis, as shown in Figs. 5, 6, 7, 8, 9, 10, and 14. These ribs are arranged in rows on either side of the tubular space, and those on one side are so arranged in relation to those on the other that the cartridge-heads impinge them upon each side alternately. The proportion of the tubes with their ribs in relation to the diameter of the cartridge-heads is such that when the cartridges are moving slowly through the tubular space the heads barely touch the ribs and are but slightly bent out of a direct course by them; but when the cartridges are moving under the influence of a strong spring their heads vibrate with considerable force from side to side, striking fully upon the ribs on either side alternately, so that the force of the spring is spent in producing a rapid vibration laterally, while the rapidity of the movement of the cartridge toward the mouth of the magazine is but very little, if any, greater than when a weak spring is used.

To facilitate charging the magazine the side of the ribs toward the mouth may be beveled off or have a greater inclination toward the axis of the magazine than on the other side, as shown at *m″*, Fig. 8. This feature is also shown by open lines at *o″*, Fig. 6. The latter figure represents a portion of a magazine arranged under the barrel, into which the cartridges are introduced head foremost, and as they are inserted against the spring their heads glide over the long and easy bevel represented by the open lines, and in so doing offer but little more resistance than that of the spring alone; but when the column of cartridges is permitted to move toward the mouth of the magazine they vibrate violently from side to side, while their movement forward is too slow to be dangerous.

In Fig. 5 I have represented the mouth of a magazine, with a suitable follower, *n*, provided with flanges *n′* and a propelling spring, *n″*. The follower is also shown in Figs. 11 and 12. The flanges on the follower are of the same diameter as the heads of the cartridges, and are the same distance apart as the ribs in the tubes, so that the three flanges strike three ribs at the same instant. A follower so constructed has the same vibratory movement and passes through the magazine as readily as a cartridge, the axis of the follower being at all times parallel with the axis of the tubes.

To stop the follower at the mouth of the magazine, I shorten the space between the ribs *n‴* and *o‴*, so that (referring to Fig. 5) when the follower moves downward and forward until the three flanges are exactly opposite the first three ribs on the upper side the first flange

strikes square against the rib n''' and prevents farther movement of the follower. These flanges should be as thick as the ribs and considerably thicker than the heads of the cartridges.

In applying these improvements to magazines located in the butt-stock the ribs in the forward end of the tubes have to be dispensed with, so that they may not interfere with the operation of the feed-pawls.

There are many modifications of the form and constructions of the tubes and the projections within them. One is shown in Fig. 9. In this case the projection is spiral, like the thread of a screw-nut. A suitable follower for such a tube is shown in end elevation in Fig. 13. These magazines are usually made of steel plate, bent into the form of a tube and brazed, and the ribs may be formed by dies, either rotary or reciprocating, the tubes during the operation being filled by a mandrel of suitable shape, and composed of three longitudinal sections to facilitate its removal from the tube after the ribs are formed.

By reference to Figs. 5 and 6 it may be seen that raising the ribs within the tube by dies leaves a corresponding depression on the outside of the tube over each rib.

The form of the tubes should be oval, the short diameter being a little greater than that of the head of a cartridge, while its long diameter should be sufficient to make room for the projections; or, as a modification, the tubes may be bored of the usual size to fit the cartridges, and depressions cut in their inner surfaces for the heads of the cartridges to catch in. These depressions should, like the ribs, be made substantially at right angles to the axis of the tubes; or they may be cut spirally entirely around the inner surface of the tubes, like the spaces between the threads of a screw-nut. In any case the form of these grooves should be like the spaces between the ribs in Fig. 8 to facilitate charging the magazine, and if spiral grooves be used they should have a twist opposite to the twist of the spiral magazine-spring, as shown in the two figures, 5 and 9, to prevent the coils of the spring from falling into the grooves. The rear end of the tube, or such portion of it as is covered by the tip-stock only, need be provided with obstructions.

Having described my invention, what I desire to have secured to me by Letters Patent of the United States is—

1. In a magazine fire-arm, a tubular magazine provided with a cartridge-propelling spring and follower, and with obstructions or ribs projecting from the inner surface of the tube, said ribs being arranged upon opposite sides of the magazine-tube and in such relation to each other that the ribs on one side shall be opposite to the spaces between the ribs on the other side, whereby the cartridges are prevented from moving with dangerous rapidity, substantially as shown and described.

2. In a magazine fire-arm having a bolt for closing the chamber which moves in a line with the barrel, and is provided with grooves d', a double tubular magazine located in the butt-stock, and in combination therewith the following feeding devices: a ratchet, e, pivoted to the side of the receiver and provided with notches, each alternate notch being high and each other alternate notch being low, and a revolving pawl actuated through a suitable connection by the bolt, and provided with point o' to work in the ratchet and point o'' to raise the feed-pawls, whereby the cartridges are fed from the tubes alternately, substantially as shown and described.

3. In a magazine fire-arm, a tubular magazine provided with obstructions or ribs for preventing a too rapid movement of the cartridges, and with the usual cartridge-propelling spring, and in combination therewith a follower, n, provided with flanges n', whereby it is forced to make a lateral or vibratory movement while moving toward the mouth of the magazine, substantially as shown and described.

4. In a magazine fire-arm, a tubular magazine provided with ribs arranged at regular intervals and in rows upon each side of the tubes, but having one of the ribs in the mouth of the magazine arranged at an irregular distance from the others, and in combination therewith a follower provided with two or more flanges arranged at the same distance apart that the ribs are placed, whereby the follower is stopped in the mouth of the magazine, substantially as shown and described.

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GEO. D. RICHARDSON.