

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MAGAZINE FIRE-ARMS.

Specification forming part of Letters Patent No. 54,068, dated April 17, 1866.

To all whom it may concern:

Be it known that I, JOSHUA GRAY, of Medford, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Magazine-Rifles; and I do hereby declare that the following full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, is sufficient to enable others skilled in the art to make and use my invention.

Figure 1 is a side elevation with the parts in position. Fig. 2 is a similar elevation with the parts removed and the magazine drawn.

The nature of my invention consists in the shape and arrangement and combination of the guard-lever, tumbling-block, and breech-block of a magazine-rifle both with each other and with the retractor and retracting-link; in a new mode and method of operating the relieving-finger, which discards the shells of the cartridges after they have been fired, and in an improved magazine and magazine-stop.

A is the guard-lever, pivoted on the guard-pin *p*, and recessed on either side to receive the retractor *r* and slotted tang *t* of the tumbling-block B. Upon a short neck on the upper side of the guard-lever is a cylindrical dowel, *d*, connecting the guard-lever with the tumbling-block.

B is the tumbling-block, shaped somewhat like a bell-crank lever. It has a cylindrical mortise in its lower edge near its rear end, as shown, into which fits the dowel *d* of the guard-lever. On its lower edge, near its forward end, is a slotted tang, *t*, about half as thick as the block, and sliding in the recess of the guard-lever A, its slot surrounding pivot-pin *p*.

In the top of the rear end of the tumbling-block is a mortise, *g*, to receive the rear end of the cartridge-carrier, and in the forward end is another for the cartridge-carrier. A cylindrical hole is made in the bottom of the tumbling-block to receive the helical spring *s*, which presses asunder the guard-lever and tumbling-block. The upper branch of the tumbling-block is about half as thick as the lower branch, and is mortised into the breech-block C, as drawn, and is slightly recessed to allow the action of the retracting-link *l*.

The breech-block C is shaped, recessed, and mortised as drawn, *x* being the mortise of the relieving-finger on the upper side of the block, *m* being the recess for the retracting-link, *n* the recess for the link-pin, *o* the mortise of the tumbling-block, *i* the central mortise of the cartridge-carrier, and *k* the front mortise of the cartridge-lifter. Recesses *m* and *n* and mortise *o* are in full lines, and mortises *i*, *k*, and *x* in dotted lines.

F is the relieving-finger, serving also as a cartridge-guide, shaped as drawn, pivoted on pin *e*, and working in a recess of the abutment *j*. It has a tang, *g*, against which the breech-block strikes on throwing forward the guard-lever. The inner side of receiver-plate H has guideways *w* and *v* for the cartridge-lifter and guide-pin *z* of the breech-block. At the opening of the magazine is placed a crooked finger, *y*, hinged as drawn, for a magazine-stop. The magazine (see Fig. 2) has a case, *a*, tube *b*, spring *c*, follower *f*, and two set-screws, *h h'*. The top of the spring presses against the muzzle end of the tube. Its bottom is fastened to the follower. The follower is fastened to the case, when the latter is drawn up, by the set-screws *h'*, fastened to the case itself, and *h*, fastened to the follower, the tip of *h'* striking the head of *h* when the case is drawn out, but allowing the follower to remain at any point of the tube necessary when the magazine is loaded, while the case is shut down and protects completely from dirt and air. The set-screws slide in a longitudinal slot in the tube.

The operation of this gun is as follows: Guard-lever A is thrown forward. Tumbling-block B moves directly downward, depressing spring *s* and drawing with it breech-block C, guided by guide-pin *z* in guideway *v* and by abutment *j*, till it is free from the perpendicular part of the abutment. Block C then moves back upon pin *p* as a pivot, pressed upward by spring *s*, and oscillating on the circular dowel at the upper end of the upper branch of the tumbling-block B, as compelled by guide-pin *z* and the salient and re-entering angles of the abutment, against which its upper rear edge presses. Between angles 1 and 2 of the abutment recess *n* gears with the link-pin of the retracting-link, bringing back the retractor,

while at the same time the cartridge-lifter is moved down in its guideway w by the action of mortise i on the cartridge-carrier, and the rear end of the breech-block, striking tang g of the relieving-finger F , throws the finger down to receive the shell drawn out by the retractor. A continuation of the movement of the guard-lever forward moves the cartridge-lifter past the end of the magazine, and a cartridge is pushed out by the force of spring c past the magazine-stop y , which is thus folded over on the cartridge-lifter. We then move the guard-lever back, the first effect of which is to make salient angle 1 of the abutment a fulcrum, as it were, and raise the forward end of the breech-block, thus raising the cartridge-lifter quite rapidly, folding in the magazine-stop, which, of course, forces into the magazine any cartridge which, from a defect of its own construction or that of the cartridge about to be fired, may project too far from the magazine. The upper rear edge of the breech-block then follows the inclined planes of the abutment, and pin z slides in guideway v , slightly raising the cartridge-lifter till the cartridge is opposite the bore, when the said rear edge will have reached re-entering angle 2. In the meantime the flange of the cartridge will have caught the retractor, and the relieving-finger will be acting as a cartridge-guide, being raised by the lifting of the cartridge and the upward motion of the breech-block. The rear half of the upper edge of the breech-block now coincides with the incline of the abutment between angles 2 and 3, and on moving the guard-lever still farther back the breech-block is pressed forward against the end of the cartridge and forces it into the bore of the gun until the upper rear edge of the breech-block

reaches salient angle 3, when the breech-block rises into its original place, carrying up the cartridge-lifter and relieving-finger.

The motion of the breech-block is in my gun controlled by the motion of guide-pin z in guideway v , as well as by the pressure of its upper rear edge against the irregularities of the abutment. Owing to the position of spring s with regard to dowel d and pivot-pin p and the upper branch of the tumbling-block, it exerts its power to greater advantage on the tumbling-block than on the guard-lever, and thus raises the latter against its own pressure, giving animation to the last motion of loading and performing it automatically.

To load the magazine, case a is drawn, as shown in Fig. 2, and cartridges are inserted into tube b through an opening, S . Case a is then pushed down over them, completely protecting them from dust.

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

1. The shape, arrangement, and operation of guard-lever A , tumbling-block B , and breech-block C , and their combination with pivot-pin p and spring s , substantially as and for the purpose described.

2. The arrangement of the relieving-finger F and its tang g , in combination with the breech-block C , substantially as and for the purpose described.

3. The arrangement of magazine-stop y , in combination with the magazine and cartridge-lifter, constructed and operating substantially as described.

JOSHUA GRAY.

Witnesses:

H. FLOYD FAULKNER,
FRANK SMITH.