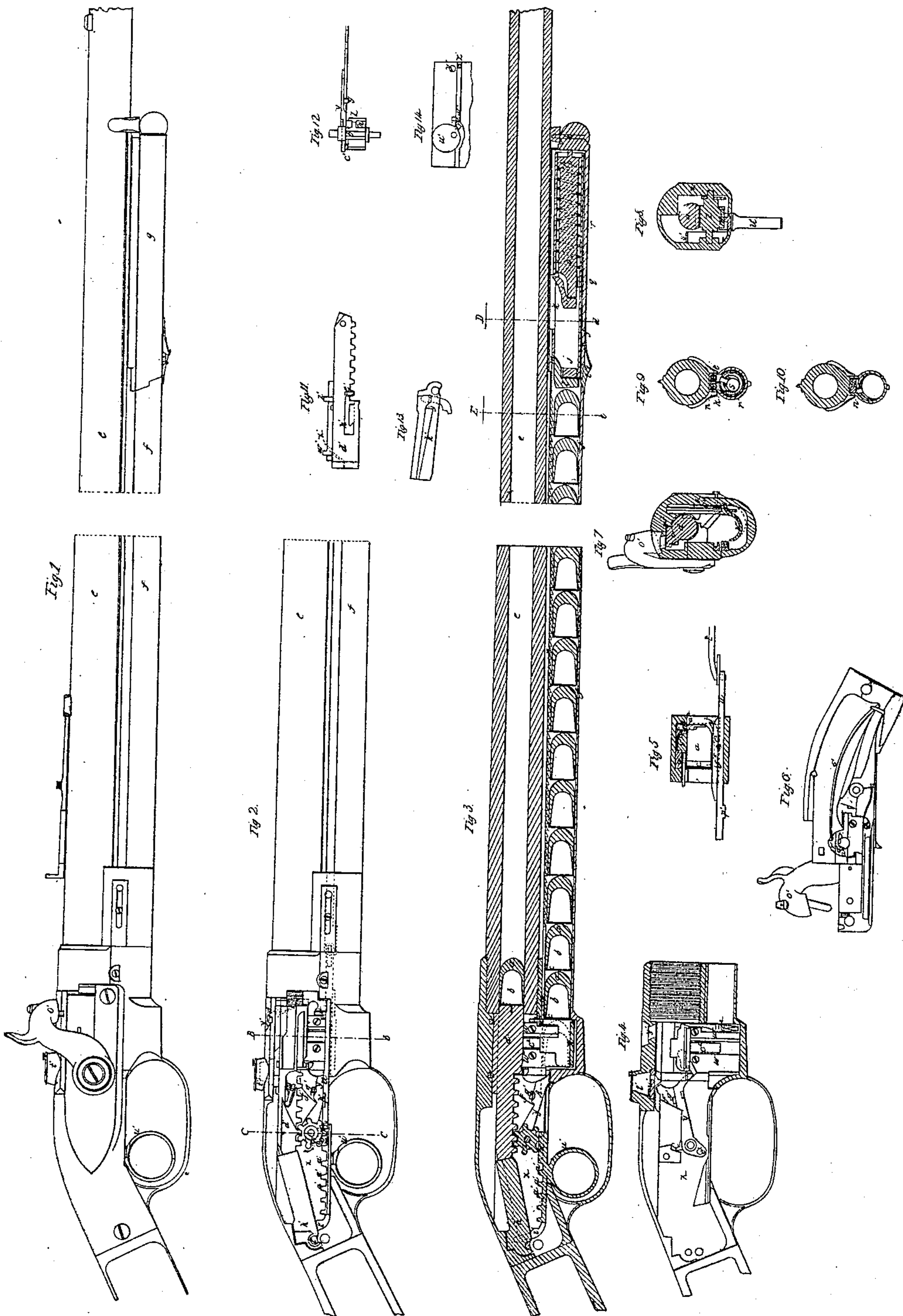


L. JENNINGS.  
BREECH LOADING FIREARM.

No. 6,973.

Patented Dec. 25, 1849.





# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 6,973, dated December 25, 1849.

*To all whom it may concern:*

Be it known that I, LEWIS JENNINGS, of the city, county, and State of New York, have invented certain new and useful Improvements in Fire-Arms; and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a gun on my improved plan; Fig. 2, a like elevation, with the lock removed; Fig. 3, a longitudinal vertical section; Fig. 4, a like section of the breech and stock-plate, with the breech-pin, pinion, and trigger-bar removed; Fig. 5, a horizontal section of the charge-receiving chamber, taken at the line A a of Fig. 3; Fig. 6, an inside view of the lock, which is represented as reversed; Figs. 7 and 8, cross vertical sections taken at the lines B b and C c of Fig. 2; Figs. 9 and 10, like sections at the lines D d and E e of Fig. 3; Fig. 11, a separate view of the breech-pin reversed; and Fig. 12, a plan of the pinion that operates the breech-pin.

The same letters indicate like parts in all the figures.

My invention relates to that class of fire-arms in which loaded balls are used and inserted in a tubular magazine below and parallel with the barrel, although some of my improvements may be employed without such balls; and

My invention consists, first, in the employment of a sliding charger, which slides in the tube-magazine to force down the loaded balls or cartridges, and operated by a sliding ratchet-rod connected with the bar of a sliding trigger, the teeth of the said ratchet-rod, as it is drawn back, taking hold of a jointed catch on the charger to draw it down, and with it the charges in the magazine, and on the back motion pass by the catch, the charger, during this back motion of the ratchet-rod, being retained by another catch, which takes into the teeth of a permanent ratchet lying by the side of the sliding ratchet.

Secondly, in making the charger in two parts, one sliding within the other, and the two

connected together by a spring, the catch of which is acted upon by the sliding ratchet being jointed to the inner part and passing through a slot made through the outer part. By this means any difficulty arising from irregularities in the motion of the sliding ratchet or in the length of the balls will be avoided; for, as the charger is drawn down, the spring which connects the two parts will be contracted, and the tension of the spring will continue to make pressure on the series of charges to insure the transfer at the proper time.

Thirdly, in employing a carrier in the breech of the gun, in combination with the magazine that contains the charges, the said carrier being adapted to receive a charge at each operation, to transfer it at the proper time to the breech of the barrel, and also in combining therewith a sliding breech-pin, which forces the charge from the carrier into the breech of the barrel, and there retains it for the discharge, the said sliding breech-pin being in turn combined with a jointed stop or abutting lever, which, so soon as the sliding breech-pin is forced up to its place in the barrel, is carried up behind the said breech-pin to constitute an abutment to resist the force of the discharge and prevent the breech-pin from being forced back.

Fourthly, in combining with the magazine and the carrier that elevates or transfers the charge from the magazine to the breech of the barrel a jointed stop, which, by the motion of the carrier, is thrown across the rear aperture of the magazine to prevent the delivery of the charges during the time that the carrier is elevated.

Fifthly, in combining with the receiving-chamber and the carrier that elevates the charge or cartridge a curved lever jointed to the side of the chamber, with the two ends either curved inward or provided with projections, so that when the rear end of the charge acts on the curve or projection at the rear end it shall cause the curve or projection at the forward end to hug the curve of the forward end of the ball or cartridge to hold it steadily in place until elevated by the carrier.

Sixthly, in combining with the carrier a catch-spring, with a thumb-piece that projects beyond the breech-plate, for the purpose of holding down the carrier during the operation



of cocking, so that in the event of a non-discharge of the gun the lock and the parts connected therewith may be operated to discharge the gun without elevating another charge.

Seventhly, in the use of a spur on the spindle of the cock, when combined with a catch-spring on the movable breech-pin, so that by the act of cocking the spur shall act on the spring-catch to give the breech-pin so much of a back motion as simply to relieve it from the breech of the barrel, that the remaining back motion may be given to it by the trigger-bar, which is thus relieved of the great strain required to liberate or start the breech-pin.

In the accompanying drawings, *a* represents the combined ball and cartridge, the forward end of which is elongated, to facilitate its passage through the air, and the rear end is cylindrical and hollow, as at *b*, to receive the charge of powder, which is confined therein by a cap, *c*, a hole being made in the center thereof, through which the charge is to be ignited.

It will be obvious that the forward end of the ball may be shaped in any desired manner, although I prefer the form represented in the drawings.

Below the gun-barrel *e*, (which is made in the usual manner,) and parallel therewith, is another barrel, *f*, which I denominate the "magazine." The bore thereof is somewhat larger than the bore of the barrel, that the cartridges may slide therein with facility. A section, *g*, of this magazine—that is, the forward end thereof—is made separate, and turning on a journal-pin, *h*, for the insertion into the magazine of the cartridges and the charger, to be presently described. The rear end of this section is provided with a latch, *i*, to secure it in place when in a line with the main part of the magazine.

The sectional part being opened the required number of cartridges is placed in the main part of the magazine, and the charger *j* inserted in the sectional part, which is then closed, and the butt of the gun slightly depressed, to permit the charger to descend by gravity until its rear end rests on the cartridges. So long as the charger is in the sectional part, the latch *i*, which secures it in line, will not close, because it is made with a projection inside, which rests on the charger; but so soon as the charger runs back into the main part, the spring of the latch forces it down and keeps the magazine closed.

The outer part of the charger *j* is a metal tube provided with a feather, *k*, which slides in a groove in the magazine, to insure its proper position during its passage. The rear end of the charger—that is, the end that bears against the cartridges—is provided with a jointed piece, *l*, which has a projection, *m*, that forms a catch on the upper surface that engages the teeth of a permanent ratchet, *n*, by which the charger is prevented from moving back toward the muzzle of the gun so long as the gun is held with the magazine below the barrel; but when reversed, the weight of the

jointed piece *l* will liberate the catch and permit the charger to run out.

Within the tube *j* of the charger is a follower, *o*, which slides therein freely, and which is made with a shoulder, *p*, at one end, and the cylindrical part back of the shoulder slides on a collar, *q*, attached to the outer tube, *j*; and between this collar and the forward shoulder there is a helical spring, *r*, the tension of which always tends to keep the follower toward the forward end, and therefore to force the outer tube, *j*, toward the breech or the rear end of the magazine, and, therefore, to make pressure on the cartridges.

The rear end of the follower is provided with a jointed catch, *s*, similar to the one on the outer tube, the catch part of which passes through a slot in the outer tube, that it may engage the teeth of a sliding ratchet-bar, *t*, that slides in a groove by the side of the permanent ratchet before described.

It will be obvious from the foregoing that when the sliding ratchet-bar is drawn back by means of the catch *s* the follower will be drawn back with it, and, by the intervention of the helical spring, the outer tube also, which will thus force all the cartridges toward the rear end of the magazine; and that when the cartridges can no longer move back, the sliding ratchet-bar may complete its back motion with the follower by reason of the interposed spring, which is thus contracted, that, by its tension, it may act on the cartridges so soon as the position of the other parts of the apparatus will permit; and it will also be obvious that whatever back motion is given to the outer tube of the charger will be retained by reason of the jointed catch engaging the teeth of the permanent ratchet.

For the purpose of giving the required motions to the sliding ratchet-bar, it is jointed at its rear end to a sliding trigger-bar, *u*, which is adapted to slide in the breech of the gun, and provided with a finger-loop or ring, *u'*, by which it is operated.

Back of the magazine there is what I term a "carrier," *v*—that is, a piece of metal in the form of a segment of a cylinder, adapted in form and position to receive and sustain the cartridges one by one as they are forced back by the charger. It slides freely up and down between ways *w* in the breech-plate *x*, and it is moved up and down by a lever, *y*, that turns on the axis of a pinion, *z*, to be presently described, (in Fig. 4 the carrier and lever are represented as elevated.) The form of this lever and the pinion is represented in the separate Fig. 12.

The trigger-bar is provided with rack-teeth *a'* on its upper surface, which engage the cogs of the pinion and give to it the required reciprocating rotary movements.

After a cartridge has been deposited or forced onto the carrier the trigger-bar is pushed forward, which causes the pinion to rotate in the direction of the arrow, and in its rotation a cog, *b'*, which in its longitudinal



direction is longer than the others, strikes a pin,  $c^1$ , on an arm of the lever  $y$ , which elevates the carrier to raise the cartridge in a line with the bore of the barrel.

When the parts are in this position the trigger-bar is drawn back to rotate the pinion in the direction the reverse of the arrow, which communicates motion to a sliding breech-pin,  $d^1$ , above and in a line with the bore of the barrel, provided with cogs for this purpose; and as this breech-pin is thus pushed forward it forces the cartridge from the carrier into the barrel, and so soon as it has entered the barrel the carrier is at liberty to descend to receive another cartridge, its downward motion being effected by a pin,  $e^1$ , on the sliding breech-pin, which strikes and acts on a cam-formed plane,  $f^1$ , of the lever; and as soon as it is entirely depressed this cam-formed part of the lever runs in a plane parallel with the line of motion of the breech-pin, that the pin  $e^1$ , which depresses the lever, may run thereon during the remaining portion of its motion to hold down the carrier.

It is necessary, or, rather, important, as the breech-pin begins to move forward, that the carrier should be securely held in its elevated position to insure the entrance of the cartridge into the barrel; but so soon as the cartridge has been partly inserted in the barrel, then the carrier should be at liberty to descend by the means before described. This holding up of the carrier is effected by a pin,  $g^1$ , on the lever  $y$ , which, as it is elevated, enters a groove,  $h^1$ , (seen in Fig. 11,) in the side of the breech-pin, and, as this groove runs in the line of motion, the pin runs therein so long as the carrier is to be held up. The groove then runs down to permit the lever to descend.

So soon as the breech-pin reaches the end of its forward movement, a projection,  $i^1$ , on the rear end of the trigger-bar strikes an arm,  $j^1$ , (see Fig. 13,) of a lever,  $k^1$ , that turns on a fulcrum-pin,  $l^1$ , and forces the forward end of the said lever up and back of the heel of the breech-pin to resist the force of the explosion and prevent its recoil. To give this lever or abutment the required strength to resist the recoil, in addition to the support which it receives from the fulcrum-pin, its rear end is rounded and fitted to a socket in the breech-piece of the lock. As the abutting lever  $k^1$  can only be elevated after the breech-pin has been forced to its place in the barrel, and the trigger-bar, which operates the abutting lever, also gives motion, by means of the pinion, to the breech-pin, it becomes necessary to arrest the pinion while the trigger-bar continues its motion. This is effected by making the rack on the trigger-bar so short that at the required time it shall cease to operate the pinion; but as the pinion and breech-pin must be held in this position while the abutting lever is carried up, this is effected by making a longitudinal fillet,  $m^1$ , on the trigger-bar, which runs in a groove cut in one cog,  $n^1$ , of the pinion, so that during the remaining motion of the trigger-bar this

fillet slides in contact with the tips of the two cogs of the pinion on each side of the grooved cog  $n^1$ .

On the return motion of the trigger-bar, preparatory to a repetition of the operations above described, the abutting lever must first be depressed, which is effected by a projection on the rear end of the trigger-bar that runs on a fillet projecting from the back face of the abutting lever. (See Fig. 13 and dotted lines in Fig. 3.) Toward the end of the back motion of the trigger-bar, by which the cartridge is inserted in the barrel, the hammer  $o^1$  of the lock is liberated by a projection,  $p^1$ , on the trigger-bar, which strikes the sear  $q^1$  and liberates the tumbler  $r^1$ , that the tension of the mainspring  $s^1$  may force down the hammer to discharge the piece.

Just at the back of the magazine there is what I have denominated a "jointed stop," which is simply a lever,  $a^2$ , the lower arm of which is curved, and the upper arm straight, so that when the carrier is elevated it bears against the straight arm, which throws the curved part across the bore of the magazine and prevents the next cartridge from being forced back, and as the carrier descends below the curved arm is struck by the under surface of the carrier, which is recessed to receive it, and thus depressed to permit a cartridge to pass onto the carrier. The priming must, however, have been effected before the discharge of the piece, and this is done in the following manner: In the top of the breech there is a reservoir,  $t^1$ , which contains the required quantity of pills of percussion-powder. This reservoir is provided with an appropriate turning cover, and in the bottom there is a large hole, which permits the pills or grains to drop freely in a hole in a rotating or vibrating plate,  $u^1$ , let into a recess in the inner face of the top plate of the breech, (see section Fig. 14, which is a reversed view of this part of the breech-plate;) and this rotating plate has an arm,  $v^1$ , which, as the breech-pin is moved back, is struck by a pin,  $w^1$ , on the breech-pin, and rotated so far around as to bring the hole in the rotating plate to coincide with the touch-hole  $x^1$  (see dotted lines) in the upper surface of the breech-pin, that a pill may drop therein, and when the hole in the plate coincides with the touch-hole it is under the bottom of the reservoir, to prevent more than one pill from passing into the touch-hole. As the breech-pin is moved forward preparatory to a discharge the touch-hole leaves the rotating plate, and is carried until it coincides with a hole,  $y^1$ , in the upper breech-plate, through which the hammer strikes; and during this forward movement of the breech-pin another pin,  $z^1$ , strikes the arm of the plate to rotate it far enough to receive another pill from the reservoir preparatory to another operation. The hole in the rotating plate should be of the required size to receive one pill at a time, and no more. The upper surface of the breech-pin should be as level as possible and well fitted to the under surface of the breech-



plate, to prevent the communication of fire from the touch-hole to the reservoir.

The forward end of the breech-pin is made with a sharp square edge, instead of being conical, as heretofore made, and this form is given to it to prevent the accumulation of dirt, which eventually has the effect to prevent the insertion of the breech-pin; but as this breech-pin must fit closely in the barrel, much force is required to start it, and as it is withdrawn by the operation of the trigger-bar, to avoid too much strain on this part of the apparatus and the finger that operates it, a spur,  $a^3$ , is formed on the inner end of the spindle of the cock, which, during the first part of the upward motion of the cock in cocking, acts against the end of a spring-catch,  $b^3$ , jointed to the sliding breech-pin, and in a recess therein, which has the effect to move back the breech-pin sufficiently to relieve it from the barrel, that the remaining portion of its motion may be given to it by the trigger-bar with facility. This catch has a spring over it to keep it down for the action described, but to permit it to be lifted up by the spur  $a^3$  during the operation of discharging the gun.

As it may happen that the gun may snap, it becomes important to recock the gun, and at the same time avoid the transfer of another charge to the barrel until the one already inserted shall have been discharged. To effect this, a spring-catch,  $c^2$ , is attached by its upper end to the breech-plate, (see Fig. 7,) and its lower end passing through a mortise therein, so that when it is desired to recock the piece without transferring a ball to the barrel this spring is forced in over a lip,  $d^2$ , in the side of the carrier, and effectually prevents it from being carried up by the operation of the parts within the lock.

It is important that the charge or loaded ball next to the one on the carrier should be held forward, to prevent it from being forced against the one on the carrier, which is effected by means of a horizontal lever,  $e^2$ , which lies in a recess in the receiving-chamber. The rear end of this lever, which turns on a fulcrum in the middle, is provided with a curved or cam-like projection,  $f^2$ , so that the rear end of the charge, as it enters, strikes against it, and causes the forward end,  $g^2$ , which is beveled at the end, to strike against the rear end of the next cartridge, and thus keep it in a proper position.

Having thus described the principle of my invention, by which it is distinguished from all other things before known, and minutely

described the manner of constructing and using the same, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a magazine for containing the cartridges or loaded balls, and which communicates with the barrel, the employment of a sliding charger, operated substantially as herein described, for the purpose of forcing the cartridges, as they are required, toward the rear end of the magazine, as described.

2. I claim making the charger in two parts, connected by a spring, and working substantially as herein described, whereby any difficulty arising from irregular working or yielding of the parts will be avoided, and by which also the transfer of the cartridges or charges to the carrier is insured.

3. I claim combining the carrier, the breech-pin, and the abutting or stop lever with the sliding trigger-bar, substantially as herein described, whereby all the movements of all these parts are effected by the motions of the trigger-bar, as described.

4. I claim the longitudinal fillet on the trigger-bar, in combination with the pinion having one cog grooved for the passage of the said fillet, substantially as described, by means of which the pinion is made to retain the sliding breech-pin in place while the trigger-bar completes its motion to discharge the piece and to elevate the stop or abutting lever, as described.

5. I claim the stop which prevents the passage of the cartridges from the magazine, when this is combined with the carrier and magazine, substantially as described.

6. I claim, in combination with the receiving-chamber and carrier, the lever which hugs and steadies the cartridge or ball therein, substantially as described.

7. I claim, in combination with the carrier that elevates and transfers the cartridges or charges, the spring-catch, by means of which the carrier can be held down to permit the piece to be recocked without transferring a charge to the barrel, substantially as described.

8. I claim the spur on the spindle of the cock, in combination with the catch on the sliding breech-pin, substantially as described, by means of which the pull on the cock has the effect to withdraw the breech-pin from the breech of the barrel, as described.

L. JENNINGS. [L. S.]

Witnesses:

A. P. BROWNE,  
E. P. MCCREA.