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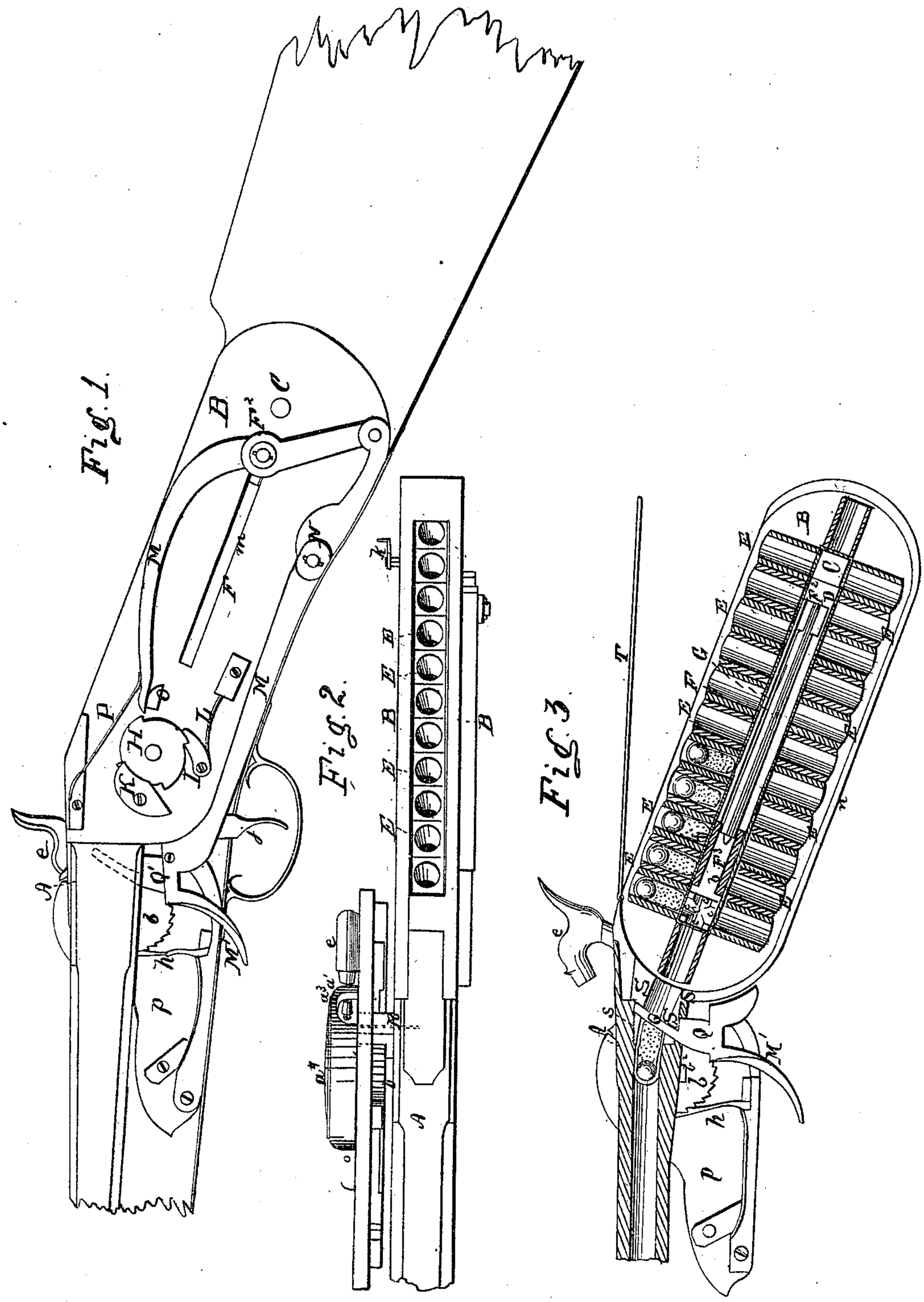
Magazine Fire-arm.

No. 5,814. Patented Sept. 26, 1848.



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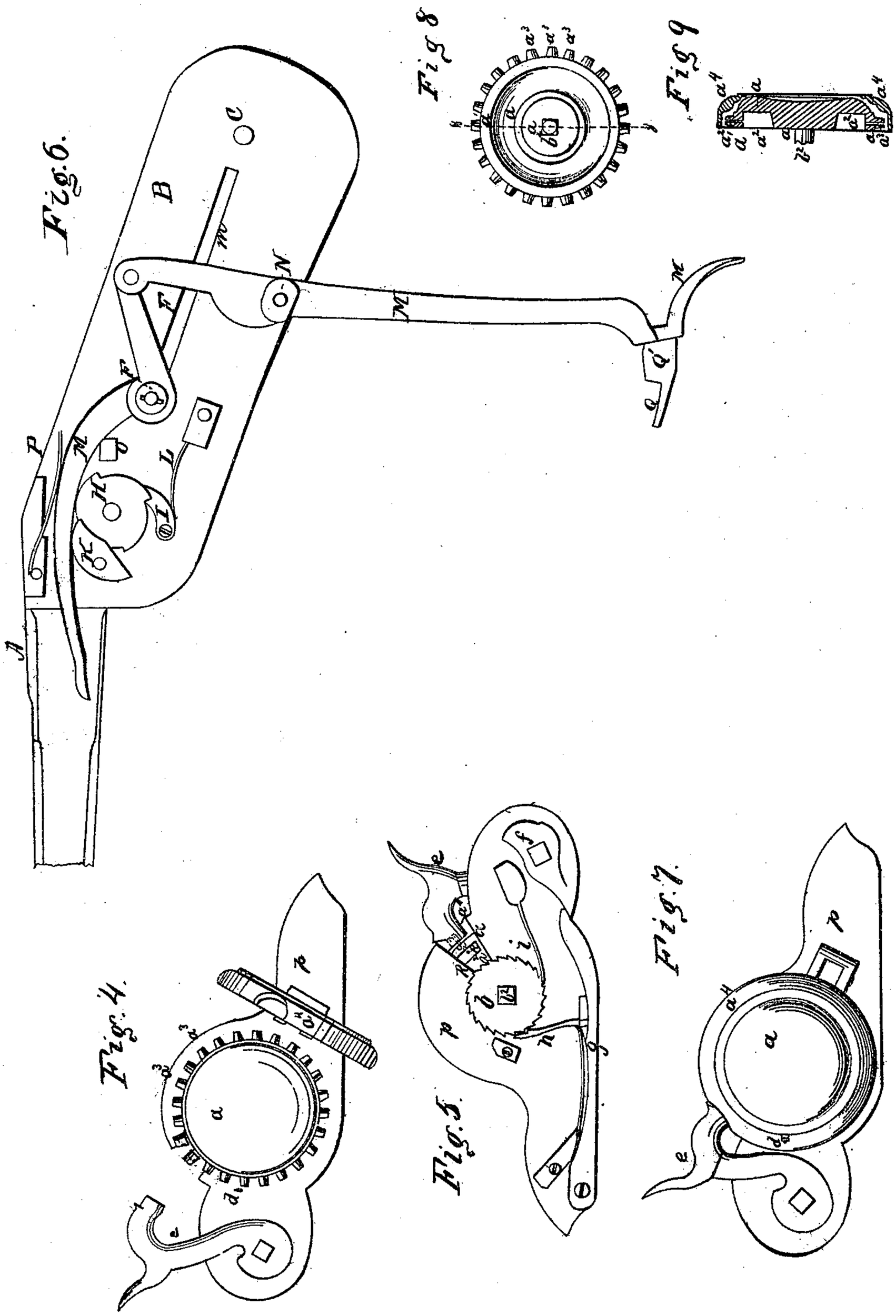

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UNITED STATES PATENT OFFICE.

MILO M. CASS, OF UTICA, NEW YORK.

IMPROVED SELF-LOADING AND SELF-CAPPING REPEATING FIRE-ARM.

Specification forming part of Letters Patent No. **5,814**, dated September 26, 1848.

To all whom it may concern:

Be it known that I, MILO M. CASS, of the city of Utica, in the county of Oneida and State of New York, have invented a new and useful Improvement in Fire-Arms and ordnance loaded at the breech and fired in quick succession by simply moving a lever, hammer, and trigger, called "Cass' Revolving Self-Loading and Self-Capping Repeating Fire-Arm," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a vertical longitudinal section, showing the jointed lever for turning the square or polygonal shafts or drums around which the endless chain of cartridge-boxes is extended, and for operating the ramrod, and for inserting and withdrawing the segment breech-pin, the rifle being charged and ready to fire; likewise showing the case containing the revolving priming-wheel and cock and the end of a rifle-barrel to which the apparatus is applied, and the ratchet-wheels, dogs, and springs, the hammer not being cocked. Fig. 2 is a horizontal section, showing the top edges of the plates between which the endless chain of cartridge-boxes is arranged, a section of the barrel to which the plates are affixed, several of the cartridge-boxes, the jointed lever, and the case containing the disk of primers or caps and the hammer, the lid being removed in order to show the mouths of the cartridge-boxes. Fig. 3 is a section showing the endless chain of cartridge-boxes and the revolving square shafts or drums around which the chain is passed, the ramrod, and other appendages, the piece being loaded and hammer cocked and ready to be fired. Fig. 4 is a view of the lock-plate and priming apparatus next the barrel, the percussion-hammer not being cocked. Fig. 5 is a view of the opposite side of the lock-plate, the front of the priming-case being opened in order to show the revolving disk and circle of nipples uncapped, except two of them. Fig. 6 is an elevation of the apparatus, the same as represented in Fig. 1, except that the lever and segment breech-pin are thrown down and the ramrod forward to the position required in conveying a cartridge from one of the cartridge-boxes into the barrel of the arm. Fig. 7 is a view of the outside of the lock, showing the cover of the cap-case closed. Fig. 8 is an elevation of the recessed face of the circular revolving percussion-cap plate. Fig. 9 is a cross-section of ditto on the line 8 8 of Fig. 8.

Similar letters in the several figures refer to corresponding parts.

A is the breech of a rifle to which my self-loading and self-priming apparatus are affixed, which is made in the usual manner.

B B are two parallel metallic plates, between which the endless chain of cartridge-boxes, the revolving propelling shafts or drums, and the ramrod are placed. These plates are fastened to the breech of the rifle, which is pierced longitudinally with a cylindrical opening, through which the cartridge is conveyed into the chamber of the rifle, and transversely for the insertion of a segment sliding breech-pin.

C C are propelling shafts or drums, around which the endless chain of cartridge-boxes is arranged.

These shafts or drums may be made of a square or polygonal form, or of any convenient form, to move with regularity and convey with certainty the endless train of cartridge-boxes.

Each propelling-shaft is provided with round gudgeons that turn in corresponding round apertures or holes in the parallel plates. One of the gudgeons of the propelling-shaft next the breech of the gun extends through the plate to receive a ratchet-wheel, which is affixed to it, and by which it is turned. One of the gudgeons of the other shaft also extends through the plate to receive a key, *k*, Fig. 2, or a crank for turning the cartridge-boxes by hand in charging them with cartridges. The forward shaft is pierced with two round apertures *c'* for the ramrod to pass through freely in loading the fire-arm.

D is the endless chain to which the separate cartridge-boxes are secured. This chain is composed of metallic links, flexible straps, or other suitable material. It is extended around the propelling-shafts, and is of a length to correspond with the number and size of the cartridge-boxes to be used.

E are the cartridge-boxes. These may be made of metal, wood, horn, or any suitable material. They may be made of a rectangular

form and bored through, the bore being a little greater than the bore of the barrel to which it is to be applied, and the length equal to the length of the cartridge, or more. If the boxes be made of metal the inner corners may be extended, lapped, and pierced for the insertion of connecting-rods that are to perform the double office of connecting the cartridge-boxes and forming the chain. If made of wood they may be affixed to the leather band D by some adhesive substance, or in any suitable manner.

The endless chain of tubular cartridge-boxes may be made of gutta-percha in a single piece, as it merely has to perform the office of conveying the cartridges to the opening in the breech of the gun.

F is the ramrod or piston for pushing the cartridge from the box into the chamber of the gun. This is placed longitudinally in the space surrounded by the chain, and plays back and forth through a hollow guide-block, *l*, Fig. 3, fixed to one of the parallel plates B, which guides it in its movement, the axis of the opening in said block being coincident, or on a line, with the bore of the breech-pin, and also in a line, with one of the cross-openings of the turning shaft or drum C when that is turned so as to bring one of said openings on a line with the said opening in the breech-pin.

The ramrod F is connected to the jointed lever M, hereinafter described, by means of a connecting-pin, F^2, which slides back and forth in an oblong slit, *m*, in the plate, against which the jointed lever plays, having on its end next the vent, when pushed into the breech-pin, a cutter, F^3, for cutting the cartridge and exposing the powder to the vent.

G is a flat table or rest, upon which the cartridge-tubes slide as the endless chain is revolved, for preventing the descent of the cartridges.

The curved extension of the breech or finishing-plate *n*, to which the parallel plates B are fixed, performs the same office of preventing the cartridges falling out of the cartridge-boxes.

H is a ratchet-wheel fixed to the outer end of the perforated propelling shaft or drum C, for turning the endless chain of cartridge-boxes, having as many notches in its periphery as there are sides to the shaft, or otherwise.

I is a dog for holding the ratchet-wheel from turning back.

K is a fixed guide, screwed to the plate overlapping a segment of the ratchet-wheel for guiding and lifting the curved arm of the jointed propelling-lever M from the notched wheel when the propelling-shaft shall have turned as far as it is intended to go, and thus to stop the movement of the endless chain.

L is a spring for keeping the dog in gear with the ratchet-wheel.

M is the jointed lever for turning the ratchet-wheel and shafts and endless chain of cartridge-boxes, and for propelling the ramrod F through the perforated shaft C and one of the cartridge-boxes, and carrying forward a cartridge into the chamber or bore of the gun, and also for withdrawing the segment breech-pin Q from its chamber at the breech-pin of the fire-arm, the motions of the several parts being simultaneous, while the operation of withdrawing the segment breech-pin or slide Q, turning the endless chain and moving the ramrod, are in succession. This jointed lever is composed of three parts, to one of which the segment breech pin Q is affixed, and through this part of the lever the fulcrum N passes. To the middle part the ramrod F is attached, the third part being the curved arm for turning the ratchet-wheel.

M′ is a handle attached to and forming part of the lever, and by which the lever is operated. N is the fulcrum of this jointed lever, being a short pin inserted into one of the parallel plates. The center of this fulcrum is the point from which is scribed the curve of the segment breech-pin Q and the curve of the segment-mortise in the breech of the gun, into which said segment breech-pin is inserted.

O is a rest fixed to the plate, over which the curved arm of the jointed lever moves in operating the ratchet-wheel, said rest being used for preventing the point of said lever descending below the required level to reach the notch of the wheel. P is a spring for keeping this end of the jointed lever in contact with the notched wheel.

Q is the segment breech-pin or slide for preventing the escape of the explosion at the breech. It is made of steel, or other suitable material, in the form represented at Q, Figs. 6 and 3. The upper end, Q, that enters the curved mortise in the breech-pin, is made of less thickness than the lower portion, Q′, which joins the lever, and is the segment of a circle scribed from the fulcrum N of the lever, as above stated. The lower or stout portion, Q′, enters a mortise of corresponding shape in the under side of the barrel for producing greater strength.

The breech-pin S screws to a shoulder, S′, that fits against the end of the barrel, and the shoulder is fitted into the lining of the gun and secured in any convenient way.

The breech-pin S is made hollow, and is screwed into the end of the barrel in the usual manner.

The transverse mortise in the breech-pin is made the same size as the segment-slide Q, which is pushed into the same previous to each discharge of the gun.

R is a lateral tube extending from the side of the barrel into or under the rim a^1 of the cap-disk *a*, through which tube the vent is formed, as in other fire-arms.

T is a lid hinged to the finishing-plate *n*, to be raised to charge the boxes with cartridges, and to be shut down to protect them from the weather.

a is a circular revolving disk, having radial

nipples a^3 formed around its periphery for the reception of the percussion-caps, which may be of the same number as the cartridge-boxes, or more or less. A circular groove, a^2, is turned in this disk next the lock-plate, forming a rim, a^1, into which the nipples a^3 are inserted.

The center, *a*, of the disk is left solid in the form of a hub, from which there extends an axle, b^2, that passes through the lock-plate *p*, and on which it turns. A ratchet-wheel, *b*, is fixed to this axle and revolves against the inside of the lock-plate, while the disk turns against the outside.

The outer surface of the disk is made convex, and is covered by a cap, a^4, very much like the cap of a watch, being hinged to the plate, and secured by a catch, *d*. This cap preserves the percussion-caps from the weather and from derangement. The center circular space of the cap is left uncovered.

The percussion hammer or cock *e*, the tumbler *f*, and mainspring *g* are made, arranged, and operated in the manner of a common percussion-lock.

h is an arm for turning the ratchet-wheel and cap-disk simultaneously with the movement of the hammer. In this arrangement it is represented as attached to the mainspring; but it may be arranged in any convenient way.

When the hammer is drawn back to be cocked it raises the tumbler, and this raises the mainspring and driving-arm attached to it, which turns the ratchet-wheel *b* the length of a notch, causing the cap-disk to turn and bring a capped nipple in a position to be struck by the hammer in its descent.

The lock-plate is made in the usual manner, except in being rounded on its upper edge and open or slotted next the hammer, through which the vent-tube R from the side of the barrel is extended to the circular groove a^2 in the disk and under the rim a^1, into which the nipples are inserted.

i is a spring-dog for holding the ratchet-wheel.

The trigger *j* and dog are made and operated in the usual manner.

The above-described improvements may be applied to ordnance as well as small-arms by changing the number, size, and proportion of the several parts.

Any convenient number of cartridge-boxes may be arranged on the endless strap, band, or chain, according to the size of the gun or pistol or other fire-arm to which the improvement may be applied.

The materials, of course, may be varied to suit circumstances.

When applied to heavy ordnance the hammer must be arranged so as to clear the vent as soon as the explosion takes place to avoid being broken.

The revolving priming cap-disk can be applied to almost any description of fire-arms, and will be found highly useful as a continued self-primer and cap-preserver.

The ordinary lock-plate will require but a slight alteration to adapt it to the reception of this improvement.

Gun-stocks may be easily prepared for the reception of the endless train of cartridge-boxes and sliding ramrod, jointed propelling-lever, and other appendages, above described, by making the proper chambers therein, and fitting them with the requisite plates and other fixtures.

I do not claim to be the inventor of an endless chain or belt, nor of an endless chain or belt of metallic charge-chambers with solid ends and percussion-cap tubes; but

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

1. The employment of an endless chain of cartridge-boxes open at both ends for conveying the cartridges in succession to the chamber of the fire-arm, in combination with the table G for preventing the descent of the cartridges, the guide-tube *l* for guiding the ramrod, and the propelling-axle C, perforated through at right angles, for the passage of the ramrod through the same in driving the cartridge from the conveyer into the chamber of the gun, as herein set forth.

2. I also claim the employment of the jointed lever M, in combination with the endless chain of cartridge-boxes E for revolving the same, propelling the ramrod F or piston, and closing the segment-stopper Q into the hollow breech-pin S, as described.

3. I claim the use of a revolving disk of nipples containing the percussion-caps, in combination with the lock, for producing successive discharges, as described, irrespective of the endless chain of cartridge-boxes and jointed lever, and other parts of the fire-arm.

In testimony whereof I have hereunto signed my name before two subscribing witnesses this 20th day of July, 1848.

MILO M. CASS.

Witnesses:
L. WASHINGTON, Sr.,
WM. P. ELLIOT.