

J. P. TAYLOR.
MACHINE-GUN.

No. 174,872.

Patented March 14, 1876.

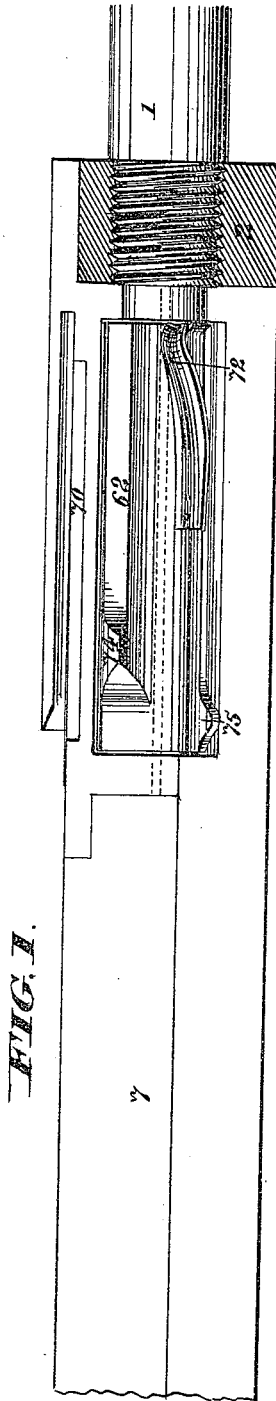


FIG. 1.

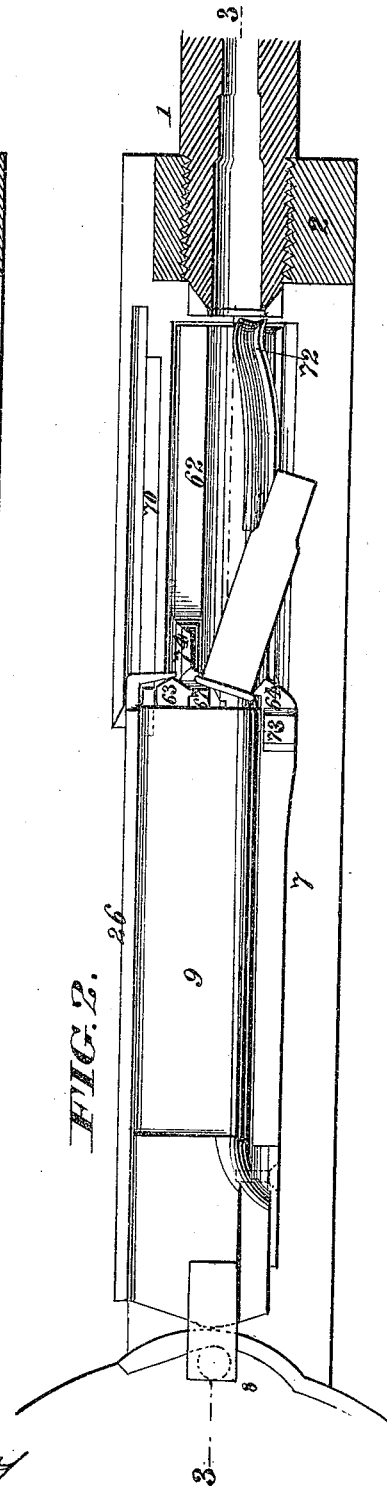


FIG. 2.

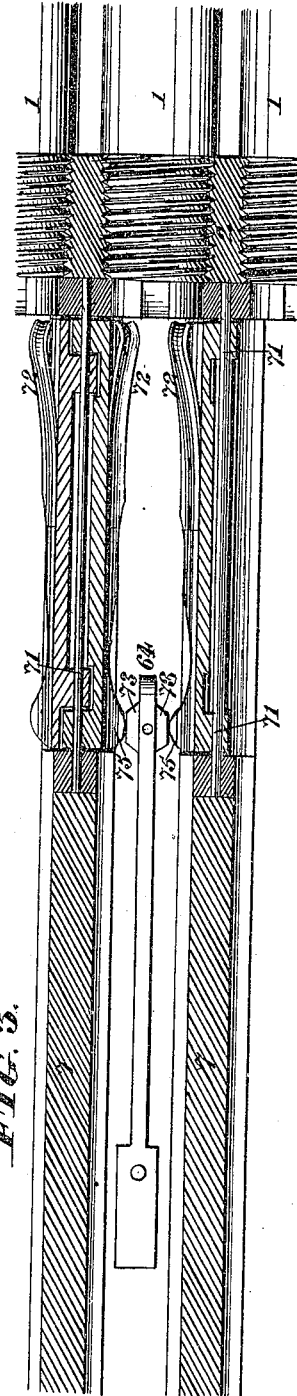


FIG. 3.

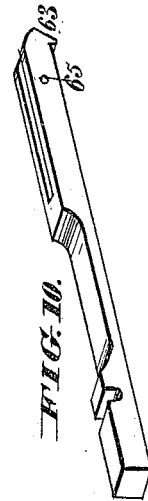
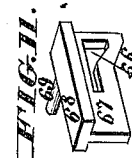
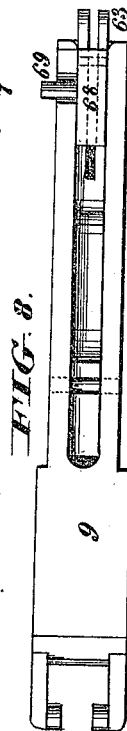
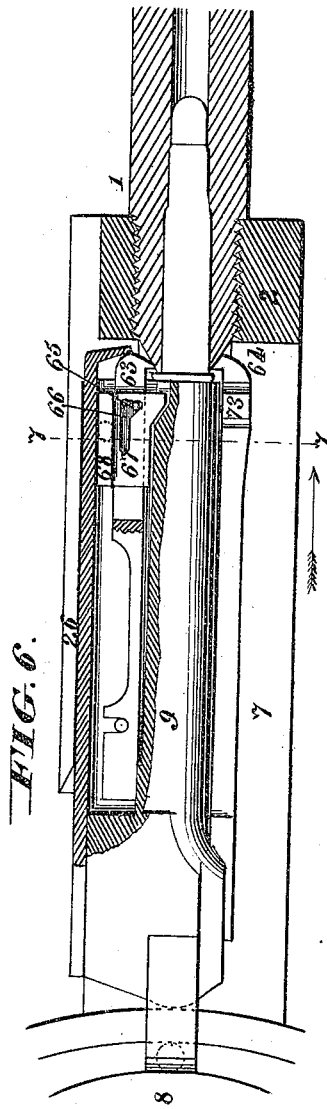
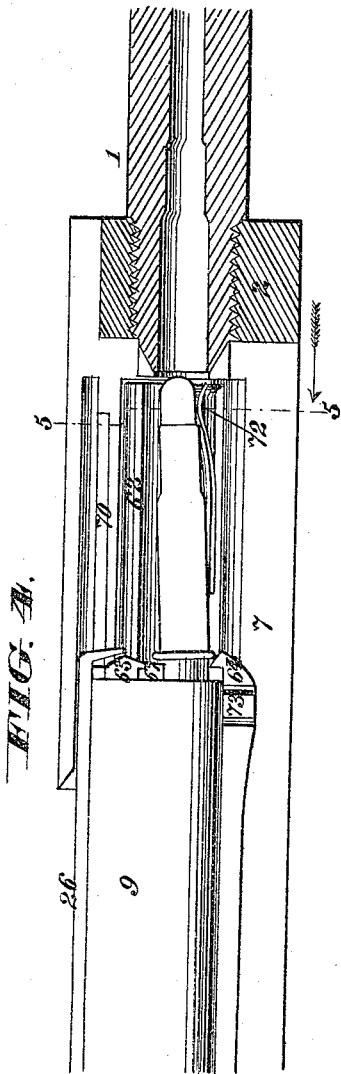
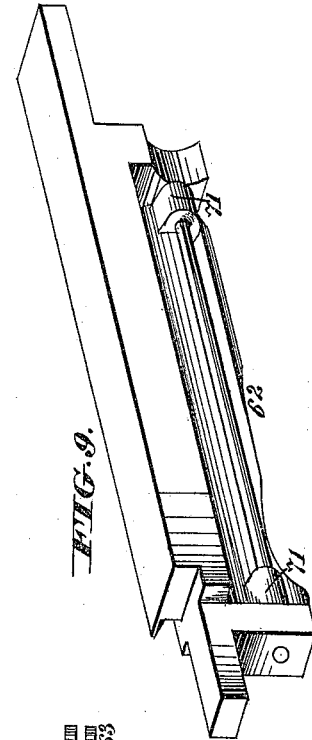
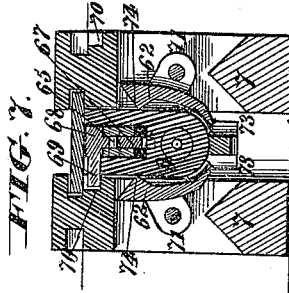
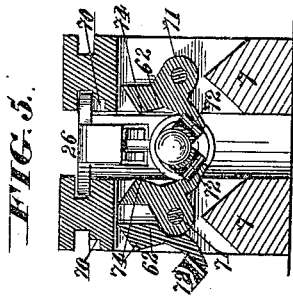
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UNITED STATES PATENT OFFICE.

JAMES P. TAYLOR, OF ELIZABETHTON, ASSIGNOR OF ONE-HALF HIS RIGHT
TO JOHN BAXTER, OF KNOXVILLE, TENNESSEE.

IMPROVEMENT IN MACHINE-GUNS.

Specification forming part of Letters Patent No. 174,872, dated March 14, 1876; application filed
January 11, 1876.

To all whom it may concern:

Be it known that I, JAMES PATTON TAYLOR, of Elizabethton, in the county of Carter and State of Tennessee, have invented a new and useful Improvement in Machine-Guns, of which the following is a specification:

My invention relates to machine-guns, whether made with one or any number of barrels, having a reciprocating plunger or plungers working, in connection with the barrel or barrels, to introduce the successive cartridges into the firing-chamber, withdraw and discharge the empty shell, and permit or cause the delivery from a suitable hopper of a new cartridge, which is, in turn, introduced into the barrel, as before.

My improvements are specially intended for use in connection with the system of machine-guns described in two other applications which I have already made for Letters Patent, in which a series of barrels is mounted either in a horizontal plane or in the arc of a cylinder, and are made to discharge in succession by revolving cams, or a rotating spirally-grooved cylinder operating on locks or plungers, one for each barrel. In connection with the aforesaid locks or plungers I employ oscillating feed-valves, in pairs, which, by the motion of the locks, are caused to open and close below and above alternately, so as to receive cartridges one by one from the hopper, deliver them to the trough below, from which they are forced by the lock into the barrel, and to discharge the empty shells when retracted from the barrel. The said valves work on longitudinal pivots, are fluted at the top to form a concave seat for the cartridge, which is to be delivered from the corresponding throat of the hopper above, and are provided on their inside with concave springs to support the point of the cartridge in line with the center of the barrel's bore. The lock, plunger, or follower carries retracting claws or hooks on its front end above and below, adapted to spring over the flange of the cartridge, the upper claw being also operated by a sliding cam-plate acted upon by stops near the termination of each stroke of the lock.

This cam-plate is formed with an inclined slot, which, at the end of the back stroke of the lock, by acting on a pin in the retracting claw, raises the said claw and releases the head of the cartridge-shell. The said cam-plate is formed, also, at its front end below with a downward-projecting lip or point, which, after the retracting-hook has been raised, strikes, in its forward motion, the rear of the cartridge-head, and imparts to the falling shell a greatly-accelerated motion. Just before this expulsion of the shell takes place the enlarged front end of the lower retracting-hook, in its backward movement, engages with corresponding projections or cam-surfaces on the oscillating valves, forcing open the under side of the said valves, and thus permitting the falling shell to drop through.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a portion of the breech with the locks removed. Fig. 2 is a similar view with the lock in retracted position, showing a cartridge shell falling from the gun. Fig. 3 is a horizontal section on the line 3 3, Fig. 2. Fig. 4 is a vertical longitudinal section, showing the lock retracted and a cartridge in readiness to be inserted in the barrel. Fig. 5 is a transverse section on the line 5 5, Fig. 4. Fig. 6 is a vertical longitudinal section, showing the lock advanced and the cartridge within the barrel in position for firing, and representing the lock partly in section, so as to exhibit the cartridge-extractor within the upper part thereof. Fig. 7 is a transverse section on the line 7 7, Fig. 6. Fig. 8 is a plan or top view of the lock with the top plate thereof removed. Fig. 9 is a rear perspective view of the one member of the housings or frame in which the cartridge-valves are mounted, as hereinafter described. Fig. 10 is a perspective view of the upper cartridge-extractor. Fig. 11 is a perspective view of the slotted cam-plate for operating the same.

The barrels 1 may be arranged in a horizontal plane, and connected to a breech, 2, consisting of plates and bars 7, as I have described in another application for Letters Pat-

ent. Portions of the operating cams or eccentrics 8 are shown at Figs. 2 and 6, and the locks guided between the plates 7 and actuated by the eccentrics 8, as described in my other application above referred to. The connections between the operating cams or eccentrics 8 and the locks 9, as well as other details not herein specifically described, may likewise be constructed and arranged as described in my other application. For the purpose of effecting the successive delivery of the cartridges one at a time from the hopper 44, (see my other application, filed September 10, 1875, case A,) and also for introducing them successively to the troughs of the breech behind the respective barrels, so that they may be loaded by the forward movement of the locks 9, I employ in each place a pair of oscillating feed-valves, 62, adapted to open above and below alternately, so as to receive a cartridge from above at one stroke, and discharge the unfired cartridge or the empty shell, as the case may be, at the other stroke.

For the purpose of illustration, I will describe this device in its application to the purpose of supplying cartridges in succession to the barrels 1 and discharging the empty shells. This will in great part enable a skilled mechanic to adapt the same device to the hopper for supplying or delivering the cartridges one at a time upon the tops of the valves.

To the top of each lock or plunger 9 is attached a guiding-plate, 26. At the forward end of each lock 9, above and below, is a pair of extractor claws or hooks, 63 and 64, the lower one of which, 64, is made simply to spring over the flange of the cartridge and engage therewith. The upper claw or hook 63 is likewise adapted to spring over and engage with the cartridge-flange, as illustrated in Fig. 6, at the termination of the forward stroke of the lock. It is formed with a bifurcated extremity, and provided with a pin, 65, passing transversely across the space between its two ends, and through the inclined slot 66 of the cam-plate 67, which moves in the said space. The cam-plate 67 is formed at the top with a flange, 68, by which it is guided in a horizontal path. It is formed, also, with a downward-projecting lip or point which fits a recess in the front end of the lock 9, and which serves to impart an increased momentum to the released cartridge-shell while in the act of falling from the gun. The shell is thus expelled by a positive agency. From one edge of the flange 68 projects a horizontal stud, 69, which works in a groove or slot, 70, in the face of one of the valve-frames, and comes in contact with the ends of the said groove, which serve as suitable stops, which arrest the motion of the cam-plate just before the termination of each forward and backward stroke of the lock, and cause a relative

movement between the lock and cam-plate, which has the effect of raising the hook 63 at the end of the backward stroke of the lock, expelling the empty shell, and of dropping the hook at the end of the forward stroke to permit it to engage the flange of the new cartridge, as before described.

The bifurcated upper extractor-hook is shown detached in Fig. 10, and the cam-plate which imparts the above described movement to it. (See Fig. 11.) This combination of the cam-plate and forked extractor-hook may be reversed in the adaptation by widening the cam-plate and narrowing the extractor, so as to allow the plate to straddle the extractor by means of a longitudinal slot in the said plate instead of the extractor.

62 62 represent concave valves, gates, or feeders, arranged in pairs and oscillating on pivots 71, so as to alternately close at the bottom to form a trough or cradle for the reception of the cartridge and open for the discharge of the empty shell. The closing of the bottom of the valves is effected by the pressure of the sides of the lock at front between beveled surfaces on the rear ends of the valves at the top 74, so that as soon as the lock 9 moves forward the top of the valves is opened to receive a cartridge and the bottom is closed so as to retain it. The point of the cartridge then rests on springs 72, which raise the point sufficiently to present it to the center of the barrel's bore and cause it to enter with ease. At the termination of the backward stroke lugs 73, projecting laterally from the forward end of the lower extractor-hook 64, press against projections 75 on the lower edges of the valves and force them apart, so as to allow the empty shell to fall through. The tops 74 of the valves are fluted to allow the point of the cartridge to fall as low as possible before the valves are opened above, in order to prevent the danger of the ball catching and jamming against the upper part of the barrel.

This device possesses the great advantage of facilitating and hastening the delivery of the cartridge and discharging the empty shell by positive movements, and is, therefore, more prompt and reliable in its operation than any device depending wholly on springs and gravity.

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

1. The oscillating feed-valves constructed with fluted concave or beveled upper parts 74, as and for the purpose set forth.

2. The combination, in a machine-gun, of a reciprocating lock or plunger and a pair of oscillating valves constructed and operating, substantially as herein described, to receive a cartridge from a feeding device above at one stroke and discharge the empty shell at the other stroke, and with supporting wings or flanges 74 at top to sustain the next successive

cartridge while the bottom is opened to discharge the empty shell.

3. The combination, with the feed-valves, of the springs 72, for supporting the point of the cartridge.

4. The combination of the sliding locks or plungers, the oscillating valves, and the tappets or projections for operating said valves, substantially as set forth.

5. The cartridge-extractor 63 64 and sliding cam-plate 67, combined to operate substantially as and for the purposes herein described.

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Witnesses:

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