

No. 638,858.

Patented Dec. 12, 1899.

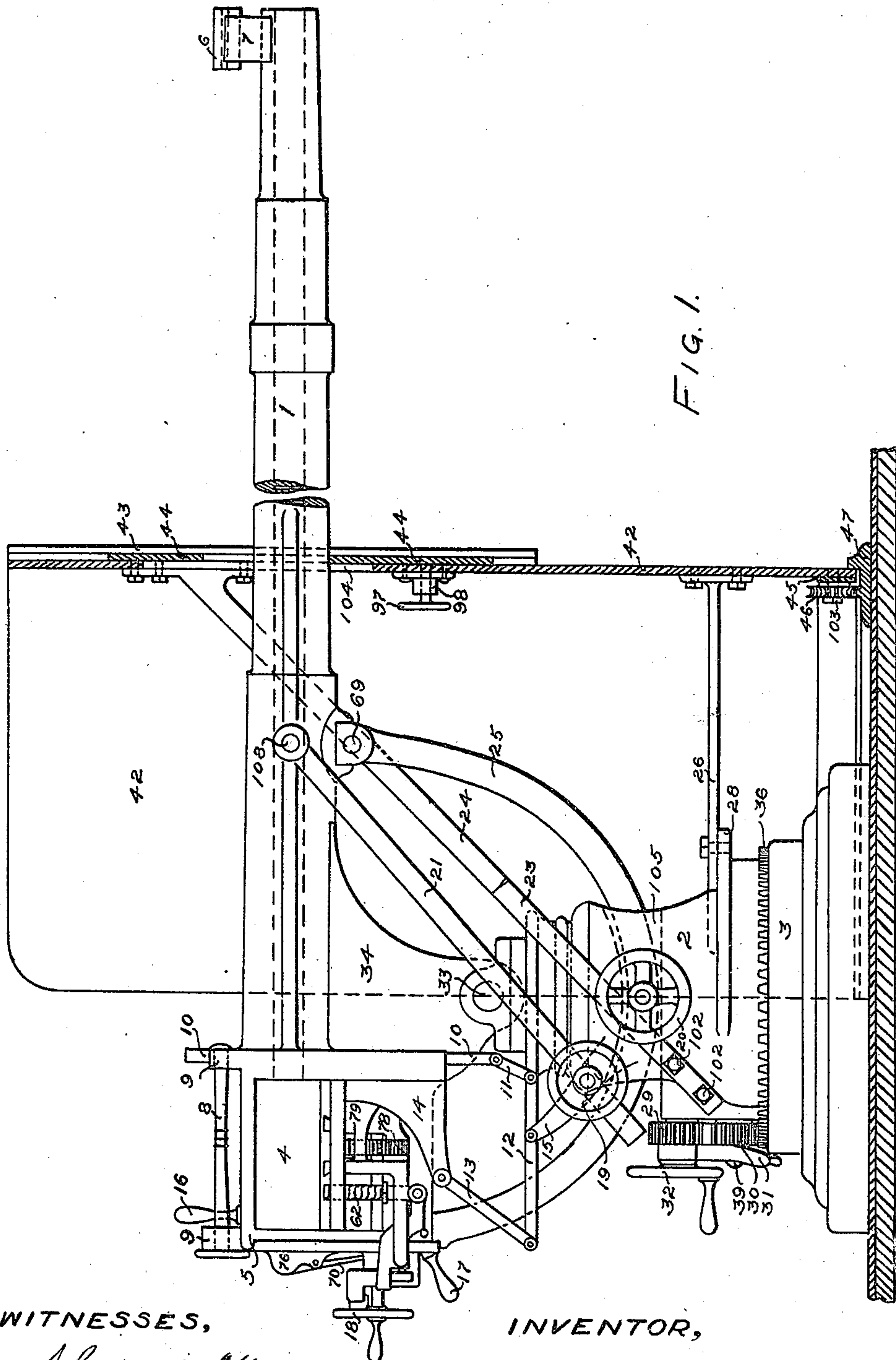
A. F. WARREN.

BREECH MECHANISM FOR RAPID FIRE GUNS.

(Application filed July 17, 1899.)

(No Model.)

4 Sheets—Sheet 1.



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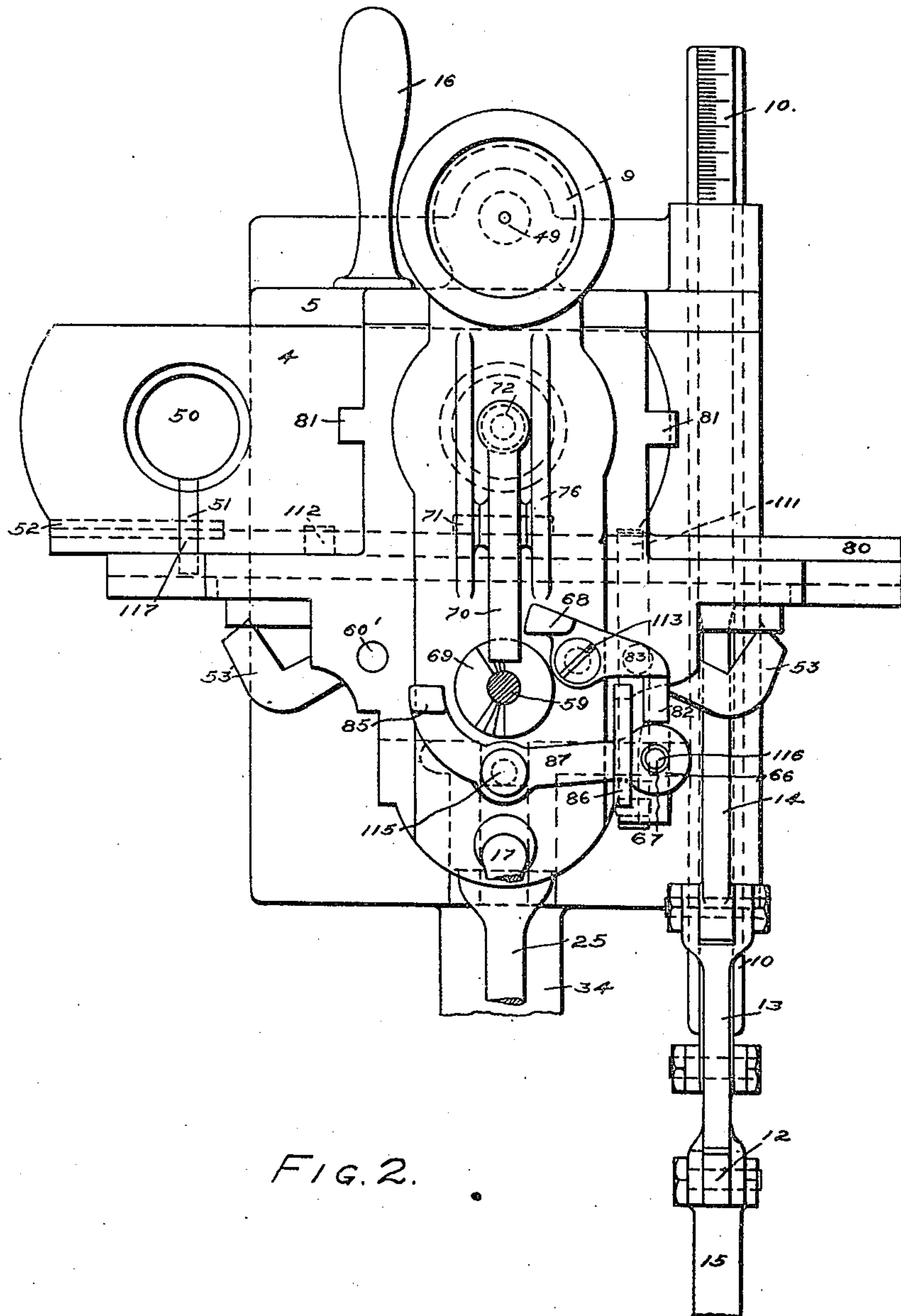


FIG. 2.

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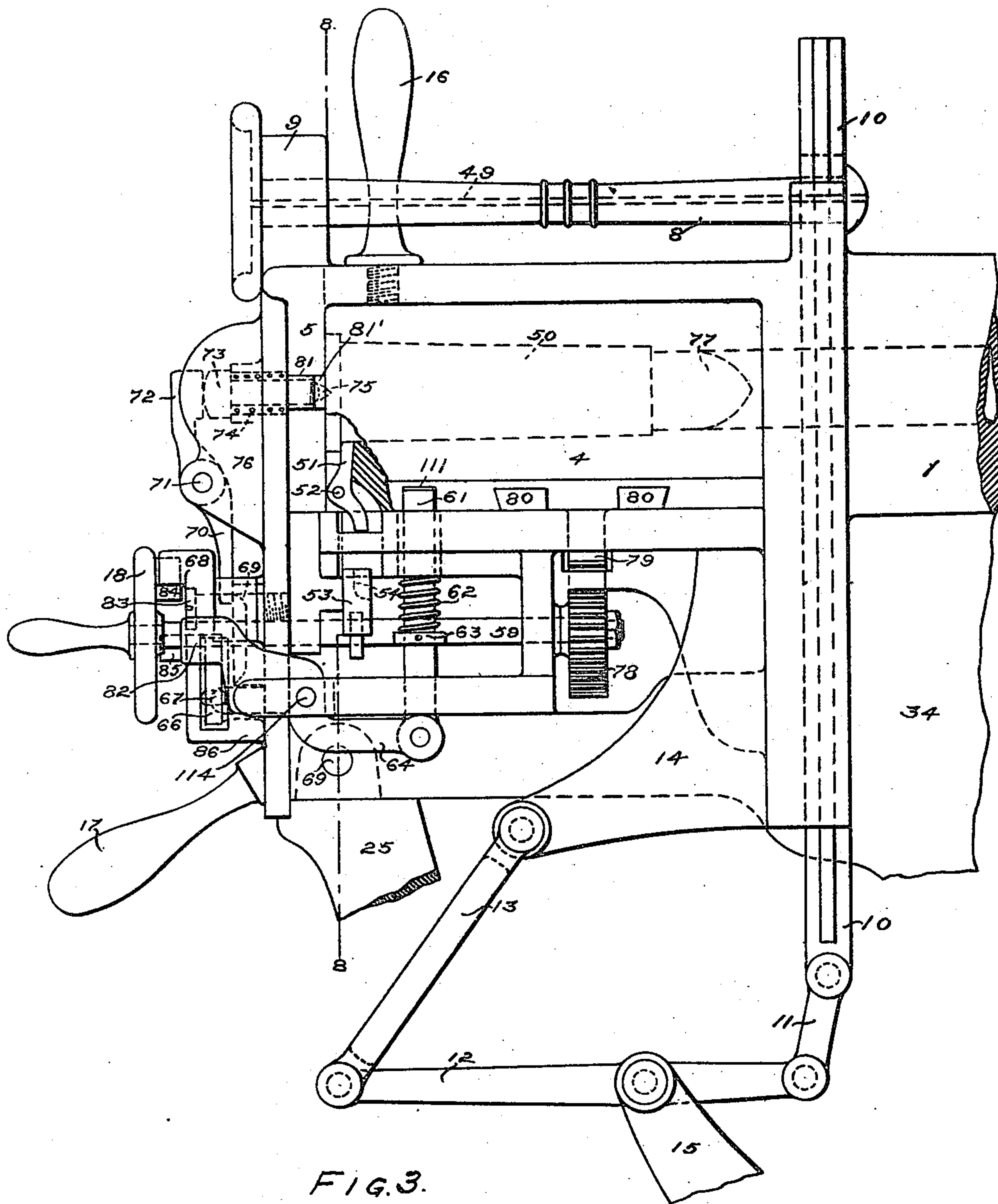


FIG. 3.

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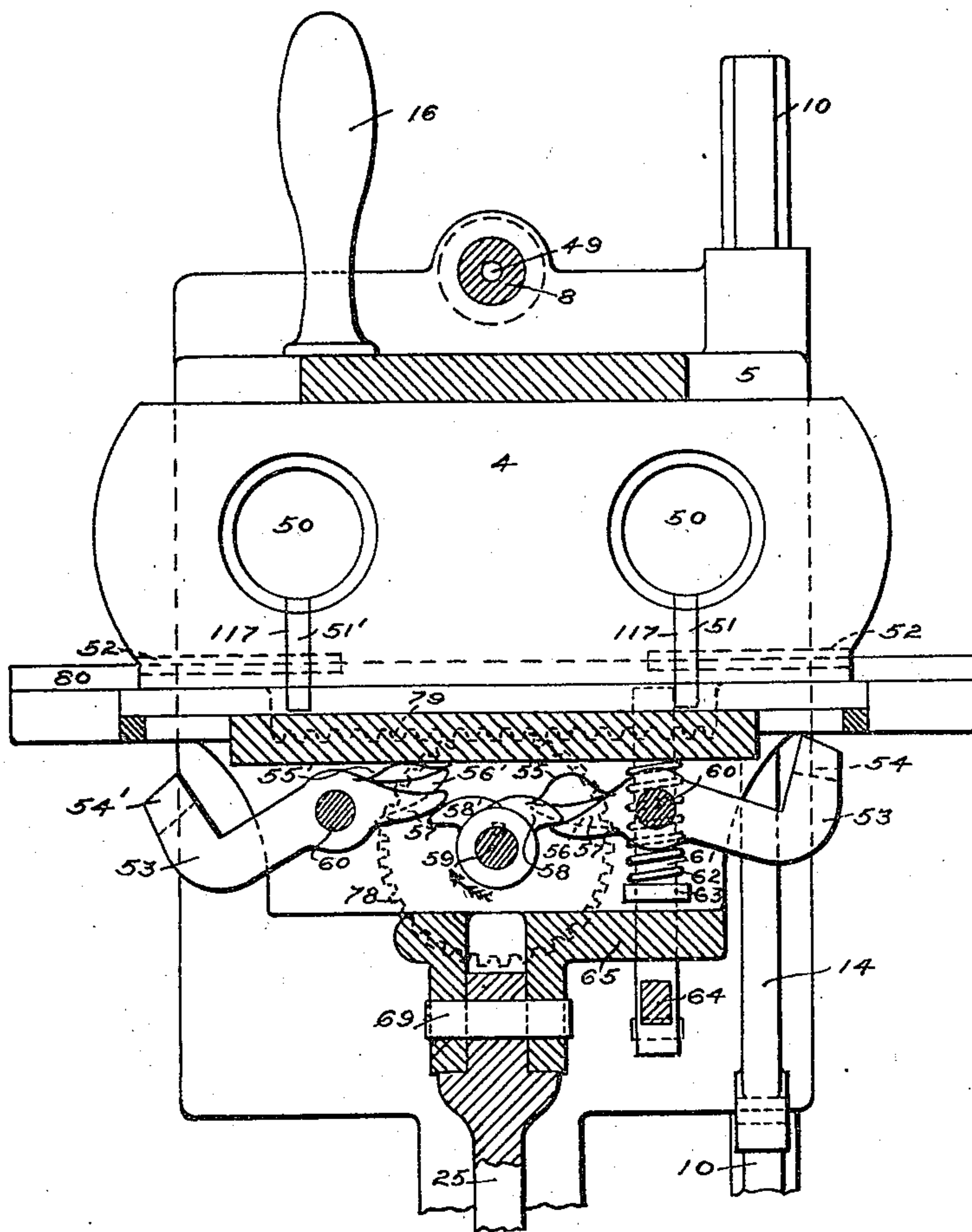


FIG. 4.

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UNITED STATES PATENT OFFICE.

ALVA F. WARREN, OF PROVIDENCE, RHODE ISLAND.

BREECH MECHANISM FOR RAPID-FIRE GUNS.

SPECIFICATION forming part of Letters Patent No. 638,858, dated December 12, 1899.

Application filed July 17, 1899. Serial No. 724,122. (No model.)

To all whom it may concern:

Be it known that I, ALVA F. WARREN, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Breech Mechanism for Rapid-Fire Guns, of which the following is a specification.

My invention relates to new and important improvements in the construction of the breech mechanism for rapid-fire guns, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 represents a side elevation of the gun. Fig. 2 represents an enlarged rear view of the breech of the gun. Fig. 3 represents an enlarged side view of the same. Fig. 4 represents an enlarged transverse section taken in line 8 8 of Fig. 3.

In the drawings, 1 represents the barrel of the gun. The breech 5 of the gun is chambered rectangulary to receive the rectangular cartridge-block 4, provided with the two cartridge-receiving chambers 50 50, as shown in Fig. 4.

The cartridge-block 4 is provided at its lower side with the rack 79, the teeth of which engage the teeth of the pinion 78, the said pinion being secured to the inner end of the shaft 59, (shown in Fig. 3,) to the outer end of which is attached the hand-wheel 18, by means of which the said shaft is to be rotated to cause the lateral movement of the cartridge-block 4 within chamber 80 as to bring the cartridge-chambers 50 50 alternately in line with the axis of the bore of the gun-barrel 1.

The cartridge-block 4 is provided with the notch 111 at one side and also with a recess 122, both adapted to receive the engaging end of the sliding bolt 61, which serves to lock the cartridge-block in its position for firing, and a sliding bolt 61 is thrown downward out of engagement with the cartridge-block by means of the compression-spring 62, which is upon the bolt between the collar 63 and the breech of the gun, so that the bolt will be normally out of engagement with the cartridge-block, but will be thrown into engagement therewith in proper timely relation to the firing action of the gun by means of the lug 84 upon the inner side of the hand-wheel 18. The said lug when the hand-wheel is

turned in one direction will engage with the under side of the forwardly-projecting lug 68 of the lever 83, which is pivoted to the breech of the gun at the point 114 and jointed to the lower end of the bolt 61, so that the said bolt will be thrown up into the notch 111 to hold the breech-block in position, as shown in Fig. 3, in which the cartridge-chamber 50 is in position for firing, and when the hand-wheel 18 is turned in the opposite direction the lug 84 will come into engagement with the projecting lug 85 of the lever 87, which is pivoted to the breech at the stud 115, and provided at the outer end with the enlarged end 66 and with a perforation 116, which is adapted to receive the cylindrical stud 67, which projects outwardly from the end of the lever 64, whereby when the lug 84 comes into engagement with the under side of the lug 85 the lever 64 will be actuated to force the bolt 61 upward into the recess 112 to hold the breech-block while firing the gun, and upon the initial reverse movement of the hand-wheel the bolt 61 will be removed from the said recess to allow the proper lateral movement of the breech-block by means of the rack and gear.

When the breech-block 4 has been brought into position for firing the cartridge, the pointed end 75 of the firing-pin 73, which is held in a suitable perforation in the breech of the gun and actuated in the outward direction by means of the spiral spring 74, is forced outward by means of the lever 70, pivoted to the breech at the point 71, the head 72 of the said lever being made to rest against the head of the firing-pin, as shown in Fig. 3, the lower end of the said lever being thrown backward in timely relation to the movement of the breech-block by means of the face-cam 69, secured to the shaft 59, the firing position of the said lever and cam being shown in Fig. 2.

Within suitable recesses 117, made in the breech-block 4 at the rear end of the cartridge-chambers 50 50, are placed the cartridge-shell ejectors 51 51, which are pivoted upon suitable pins 52 52, the said ejectors being actuated to withdraw the empty cartridge-shells by means of the levers 53 53, which are pivoted to the breech of the gun by means of the stud 60 60 and having their beveled engaging ends 54 thrown upward for engage-

ment with the lower end of the cartridge-ejectors 51 by means of the toe-cams 58 58, secured to the shaft 59, the said toe-cams being caused to engage with the upper side of the arms 57 of the levers 53, as shown in connection with the right-hand lever 53 in Fig. 4, where a movement in the direction of the arrow will cause the upward movement of the inclined end 54 of the lever 53 into the path of the lower end of the cartridge-ejector 51 to cause the initial withdrawal of the empty cartridge-shell from the chamber.

At the inner side of the arms 57 of the levers 53 are placed the arms 56, over which are placed the springs 55, the action of which will be such as to allow the toe-cams 58 to pass from the under to the upper side of the arms 57 of the levers 53, the said springs 55 being compressed between the arms 56 and the under side of the breech 5.

Upon the sides of the breech 5 of the gun are arranged the lugs 81 81, which are beveled at their inner faces 81' (shown in Fig. 5) in order to crowd the cartridges forward in its chamber in case it has not been properly entered therein, and the permanently-attached handles 16 and 17 are provided for the convenient manipulation of the gun by hand.

I claim as my invention—

1. In a rapid-fire gun, the combination of the gun-barrel, and the sliding breech-block provided with the two cartridge-chambers, and the rack, with the hand-operated rock-shaft, the gear for moving the breech-block back and forth, secured to the rock-shaft, the spring-actuated sliding bolt for locking the

breech-block in its position for firing the gun, the lever connected with the sliding bolt, means in connection with the rock-shaft for actuating the said lever, the spring-actuated firing-pin, and lever, for firing the cartridge, means connected with the rock-shaft for actuating the said lever, the levers for withdrawing the cartridge-shell, the toe-cams upon the rock-shaft for actuating the said levers, and the hand-wheel for operating the rock-shaft, substantially as described.

2. In a rapid-fire gun the combination of the gun-barrel; the sliding breech-block provided with cartridge-chambers; and the shell-extracting levers pivoted to the breech-block, with the rack and gear for imparting lateral movement to the breech-block; the levers provided with compression-springs and the beveled outer ends for engagement with the shell-extracting levers upon the lateral movement of the breech-block; and the two cams for actuating the beveled levers to engagement, substantially as described.

3. In a rapid-fire gun the combination of the gun-barrel and the sliding breech-block provided with the cartridge-chambers and the rack and gear for actuating the breech-block; with the inclined lugs upon the side of the breech of the gun adapted to carry the cartridge into the chamber whenever the cartridge has not been properly entered therein, substantially as described.

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Witnesses:

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