

(No Model.)

2 Sheets—Sheet 1

I. E. McABOY.
AUTOMATIC RAPID FIRING GUN.

No. 566,214.

Patented Aug. 18, 1896.

WITNESSES

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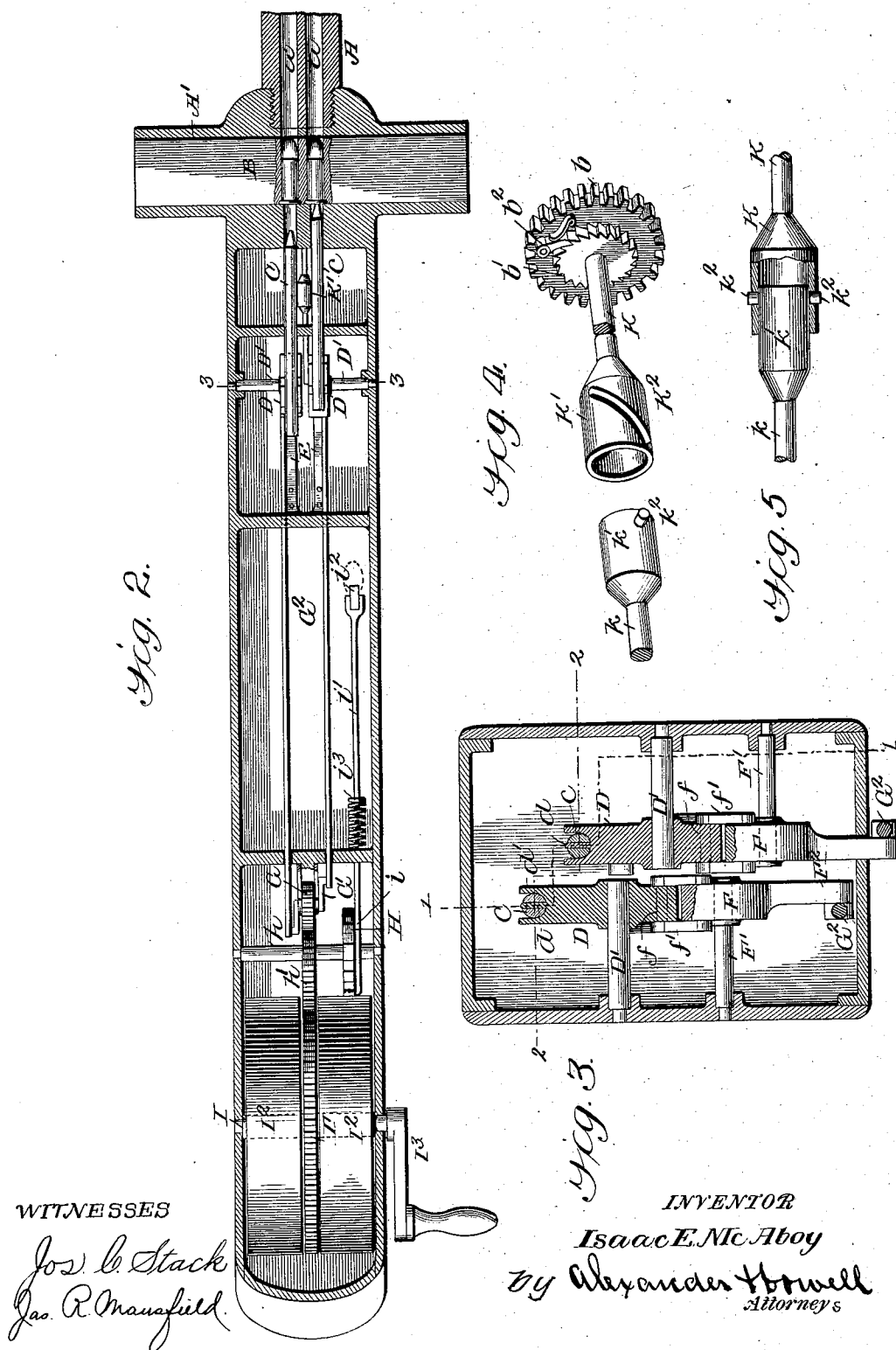
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UNITED STATES PATENT OFFICE.

ISAAC E. McABOY, OF HUNTINGTON, WEST VIRGINIA.

AUTOMATIC RAPID-FIRING GUN.

SPECIFICATION forming part of Letters Patent No. 566,214, dated August 18, 1896.

Application filed October 7, 1895. Serial No. 564,823. (No model.)

To all whom it may concern:

Be it known that I, ISAAC E. McABOY, of Huntington, in the county of Cabell and State of West Virginia, have invented certain new and useful Improvements in Magazine-Guns; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention is an improvement in rapid-firing automatically-operating magazine-guns, and the invention is applicable to hand-guns or light field-battery guns; and its object is to enable the gun to be discharged with great rapidity by simply pulling and holding the trigger back, the firing devices and cartridge-cases being automatically worked by spring-power.

The invention consists in the novel constructions and combinations of parts set forth in the claims, and the following is a description of the best form of the invention now known to me applied to a double-barreled rifle, as illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section through the gun stock and barrel on line 1 1, Fig. 3, showing the operating devices in side elevation. Fig. 2 is a horizontal section through the stock and barrel on line 2 2, Fig. 3, showing the operative parts in plan view. Fig. 3 is a transverse section, much enlarged, on line 3 3, Fig. 2. Fig. 4 is a detail perspective view of the cartridge-feeding mechanism. Fig. 5 is a detail section of parts shown in Fig. 4. Figs. 6 and 7 are detail views of cartridge-cases. Fig. 8 is a detail section through a hammer and its operating-disk. Fig. 9 is an enlarged perspective view of the hammer-operating devices. Fig. 10 is a detail cross-section of the barrel.

The gun shown has a double barrel A, the upper bore *a'*, as shown in Fig. 10, being above and to one side of the lower bore *a*. At the breech is a horizontal transverse slot A', in which fit the cartridge-cases B, each case having two rows of cartridges, which respectively register with the bores *a a'*, the cases being fed through the slot A' step by step, by means hereinafter described, and

stopped in position to register the cartridges with the bores and the firing-pins or hammers C c, which play through suitable guide-openings in the breech of the gun in rear of the slot A'. Both pins are constructed alike and operated by like devices, and I will describe those for operating the hammer C, similar parts being lettered on the drawings alike, so that the construction and operation of both devices will be clear.

Below the hammer C is a rocking disk D, pivoted on a stub-shaft D', rigidly fastened to the side of the stock. This disk has a tongue *d*, which projects into a slot C' in the hammer C, so that when the disk is rocked the pin will be reciprocated. The disk also has upstanding ears *d'*, which embrace the hammer and are recessed at *d''* over hammers C', projecting from the sides of the hammer C for the purpose of keeping the hammer in proper engagement with the tongue *d*. The disk is rotated forward, so as to project the hammer against the cartridge by means of a flat spring E, one end of which is fastened to the stock and the other end loosely engaged in a notch *d'''* in the side of the disk, as shown. In the disk at the side opposite the notch *d'''* is a slot *d''''*, through which passes a pawl-bar *f*, which is adapted to engage a notch *d'''''* in the lower side and near the lower end of the slot.

The pawl-bar *f* is connected by links *f'*, on opposite sides of the slot *d''''*, to a rocking segment or disk F, pivoted on a stub-shaft F' on the side of the stock, and this segment has a depending arm F', which is connected by a rod G' to a crank-arm G' on the shaft of a pinion G, journaled in suitable supports in the stock, said pinion meshing with a gear *h'* on a shaft *h*, the gear *h'* meshing with a pinion I' on a shaft I, upon which are mounted two coiled springs I', which are connected to the shaft and to the stock, so that when wound they can rotate the shaft I and thus impart motion to the other parts when released. The springs may be wound by any suitable means. A crank-handle I' is indicated in the drawings, said handle being preferably detachable, and an ordinary clock-spring ratchet-and-pawl connection (not shown) is made between the shaft I and gear I', so as not to rotate the gear when the springs are being wound.

On the shaft h is a notched wheel H , which is normally engaged by a tooth on a sliding dog i , which is connected by a rod i' to a trigger i^2 , so that by pulling the trigger the wheel h' is released and the springs can operate the parts. When the trigger is released, a coiled spring i^3 pulls the rod forward and draws the dog into engagement with the notched wheel, locking the parts.

For each rotation of the pinion G the segment F is rocked back and forth. On its backward movement the pawl-bar f is brought into engagement with the notch d^5 , and on the forward movement of the sector pawl f rotates the disk D backward, tensioning the spring E and cocking the hammer C . When fully cocked, and just before the forward motion of the segment F ceases, a tooth d^6 on the periphery of the disk D strikes the short arm J of a pivoted trip, having a curved arm J' , which projects beside the disk, and when the arm J is raised the arm J' is simultaneously raised and strikes the pawl-bar f , forcing it out of the notch d^5 . Instantly the spring E rotates the disk D forward, thereby projecting the hammer C forward and exploding a cartridge, while the pawl-bar is lowered more slowly by the backward rocking of the segment F .

The hammer c is operated alternately with the hammer C by duplicate mechanism, as indicated by like letters of reference on the drawings. After each hammer has operated to explode a cartridge the cartridge-case is moved forward one step by the following devices or other suitable means:

The cartridge-cases have a rack B' on their under sides, which mesh with a pinion b , located in a recess in the bottom of the groove A' and loosely mounted on the end of a short shaft K , which extends rearward toward the disk D . On this short shaft, beside the pinion b , is a ratchet b' , engaged by a pawl b^2 , pivoted to the pinion b , so that the pinion will be rotated with the shaft in one direction, but remain at rest when the shaft is rotated in the opposite direction. On the other end of the shaft K is a sleeve K' , which has oppositely-inclined slots K^2 in opposite sides, and in said sleeve fits the enlarged end k' of a rod k , which is pivotally connected at its rear end to the disk D , as shown, so that the rod k will be reciprocated by the rocking of the disk D . Pins k^2 on the head k' engage the slots K^2 , so that when the rod k is reciprocated a rotary motion is imparted to the rod K . This motion is such that at the proper time the cartridge-case is moved forward, so as to shift the exploded shells out of the way and bring fresh ones into place. For convenience the cases B may be coupled together, so that they can feed in very rapidly in any quantity. As shown, the rear end of the cases have spring-catches B^6 , adapted to engage grooved pins B^7 on the front ends of other cases. For additional safety registering notches B^8 may be formed in the cases and a registering spring-

tooth B^9 be arranged in the slot, so that the cases will be certain to register with the bores before the hammers operate.

Obviously the invention is not restricted to any particular number of hammers. I contemplate using but one in light firearms, as that would fire as rapidly, perhaps, as it could be effectively aimed and cartridge-cases supplied by the soldier; but in larger field or battery guns mounted on a support even more than two trigger mechanisms could be employed, in which case the barrel and cartridge-cases would be modified accordingly.

From the foregoing it will be seen that, after a cartridge-case has been placed in the slot A' , by simply pulling the trigger the actuating mechanism is released, and the cartridges are fired in rapid succession, and the cartridge-case shifted as the loads are fired, all being effected mechanically with great rapidity and precision, the gunner simply having to aim the arm, the firing ceasing the instant he releases the trigger. Furthermore, I do not confine myself to the employment of the specific form of gun-locks herein shown, as others might be substituted therefor without departing from my invention. Neither do I confine myself to the precise construction of the spring actuating devices for imparting motion to the rods G^2 , as these may also be varied according to the size and power of the gun. Obviously also various modifications may be made in the construction of other parts and details thereof within the scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. In a rapid-firing magazine-gun, the combination of the barrel, the hammer, the rocking disk engaging the hammer, a spring for rocking said disk in one direction, spring actuating mechanism for rocking said disk in the opposite direction, a locking device for said mechanism and a trigger for releasing said locking device at the proper time, whereby the hammer is repeatedly operated until the trigger is released; with mechanism for feeding cartridges successively to the firing-point after each stroke of the hammer, operated from and by the disk, substantially as and for the purpose set forth.

2. In a rapid-firing gun, the combination of the barrel, the hammer, the rocking disk engaging the hammer, a spring for rocking said disk in one direction, spring actuating mechanism for intermittently and repeatedly rocking said disk in the opposite direction, a locking device for said mechanism, and a trigger for releasing said mechanism at the proper time, and allowing it to operate until the trigger is released, substantially as and for the purpose described.

3. In a rapid-firing gun, the combination of a hammer a rocking disk for reciprocating said hammer, a spring for forcing said disk in one direction, a cocking mechanism, con-

sisting of a pawl adapted to engage and rock said disk against the action of said spring, a spring-operated mechanism for reciprocating said dog, and a trip whereby said dog is caused to release the disk when the hammer is cocked, substantially as described.

4. In a rapid-firing gun, the combination of a hammer, a rocking disk for reciprocating said hammer, a spring for forcing said disk in one direction, a cocking mechanism, consisting of a pawl adapted to engage and rock said disk against the action of said spring, a spring-operated mechanism for reciprocating said dog, and a trip whereby said dog is caused to release the disk when the hammer is cocked; with a cartridge-case, and mechanism for feeding said case through a slot in the breech, step by step, substantially as and for the purpose described.

5. The combination of the gun having a slot in its breech, and a cartridge-case moving in said slot, with the pinion for moving said case, the ratchet and pawl for operating said pinion, a shaft carrying said ratchet, an end-wise-movable shaft, and the slotted sleeve-and-pin connections between said shafts, substantially as described, whereby the reciprocation of the latter intermittently rotates the former, as and for the purpose described.

6. In a rapid-firing gun, the combination of the hammer, the rocking disk, the spring for rotating said disk in one direction, the rocking segment, the pawl operated by said segment engaging said disk, the clockwork and connections for rocking said segment, the trip for disengaging the pawl from the disk, and the trigger devices for releasing the clockwork, substantially as described.

7. In a rapid-firing gun, the combination of the hammer, the rocking disk, the spring for rotating said disk in one direction, the rocking segment, the pawl operated by said segment engaging said disk, the clockwork and connections for rocking said segment, the trip for disengaging the pawl from the disk, and the trigger devices for releasing the clock-

work; with a cartridge-case, a ratchet-and-pawl mechanism for feeding said case, and connections substantially as described whereby said feeding mechanism is operated from said disk, substantially as described.

8. The combination of the hammer, the rocking disk for reciprocating the hammer, a spring E for rocking the disk in one direction, the segment F, for rocking the disk in the opposite direction, and the pawl *f* and trip J; with the crank-shaft G, a rod connecting said shaft to the segment; and the train of spring-propelled gearing for operating shaft G, all substantially as described.

9. The combination in a rapid-firing gun, of a gun-barrel having a double bore, one above and to one side of the other, and a transverse slot in its breech; a cartridge-case fitting said slot; and mechanism for feeding said case forward step by step in the slot; with the hammers C, *c*, the rocking disks D, springs E for rocking the disks in one direction; the segments F and pawls *f* for rocking the disks in the opposite direction; and spring mechanism substantially as described for rocking said segments, all substantially as and for the purpose set forth.

10. The combination in a rapid-fire gun, of the barrel, a cartridge-case adapted to move in a slot in the barrel and a pinion *b* for feeding said case forward, with a shaft K, having a slotted sleeve K'; a ratchet *b'* on said shaft and beside the pinion *b*, and the pawl *b''* for locking the pinion to the ratchet; and a reciprocating shaft *k* having pins *k''* engaging the slots in sleeve K', whereby shaft K is rotated intermittently when shaft *k* is reciprocated and means for reciprocating shaft *k*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ISAAC E. McABOY.

Witnesses:

J. H. CAMMACK,
E. H. LEMLEY.