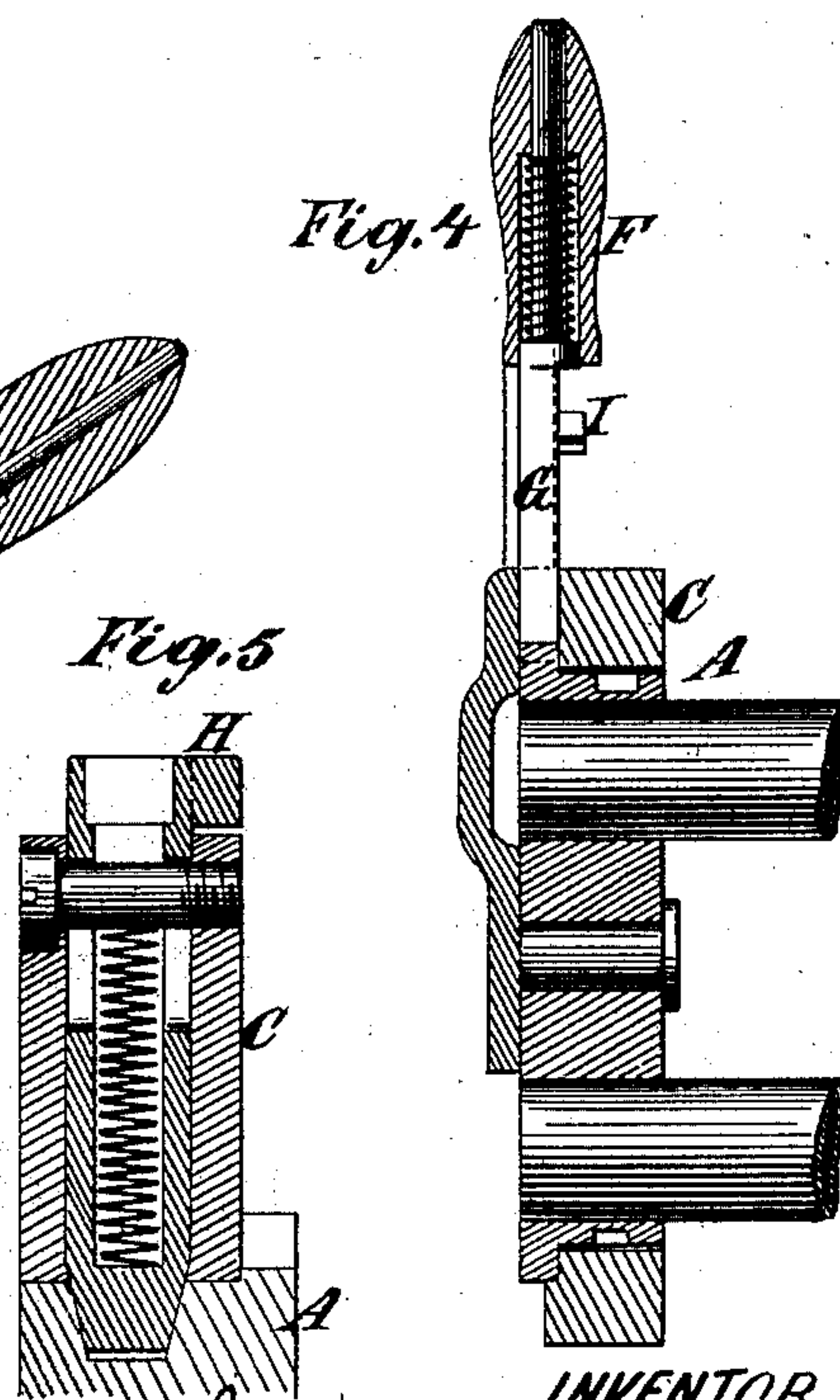
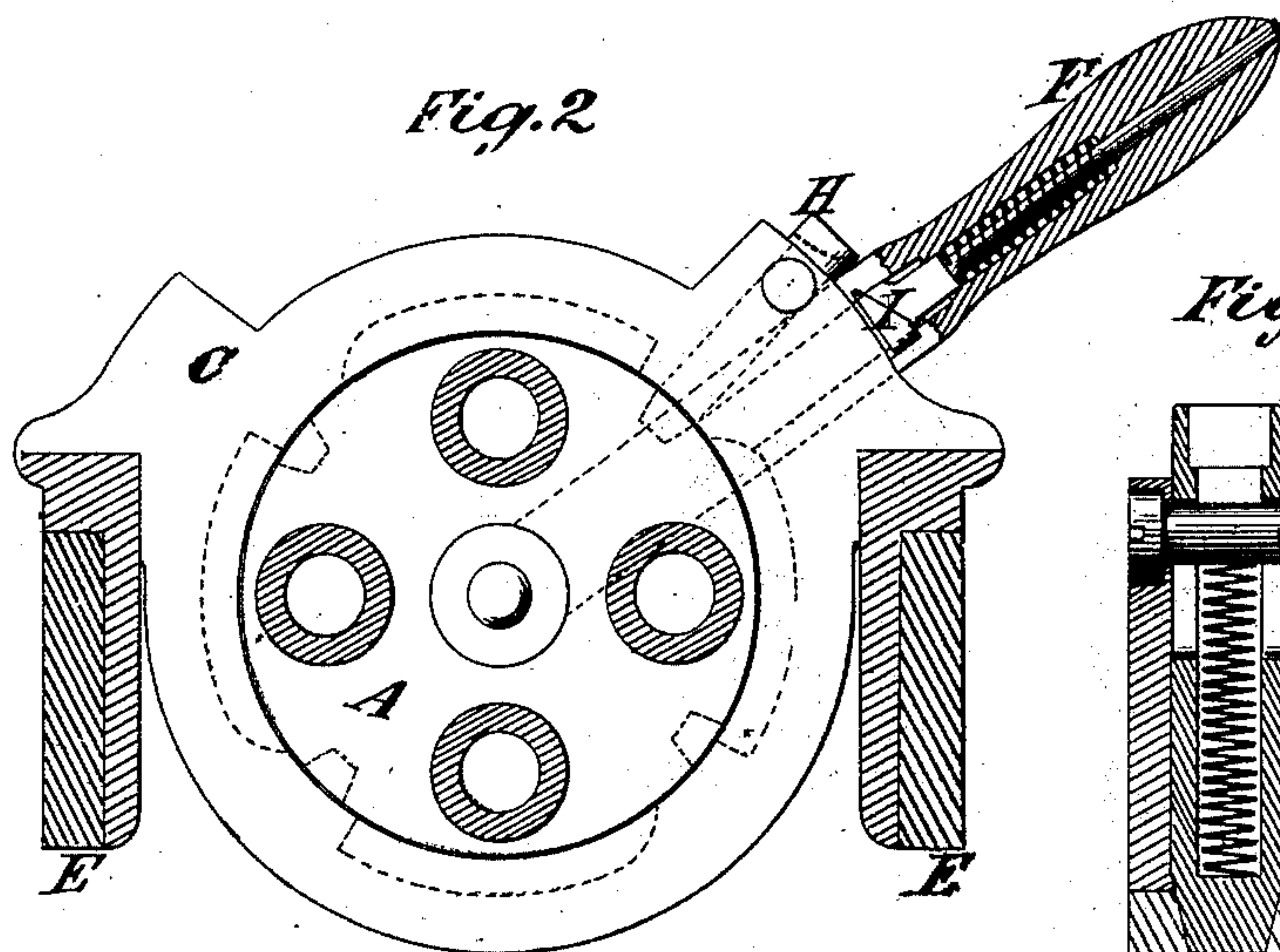
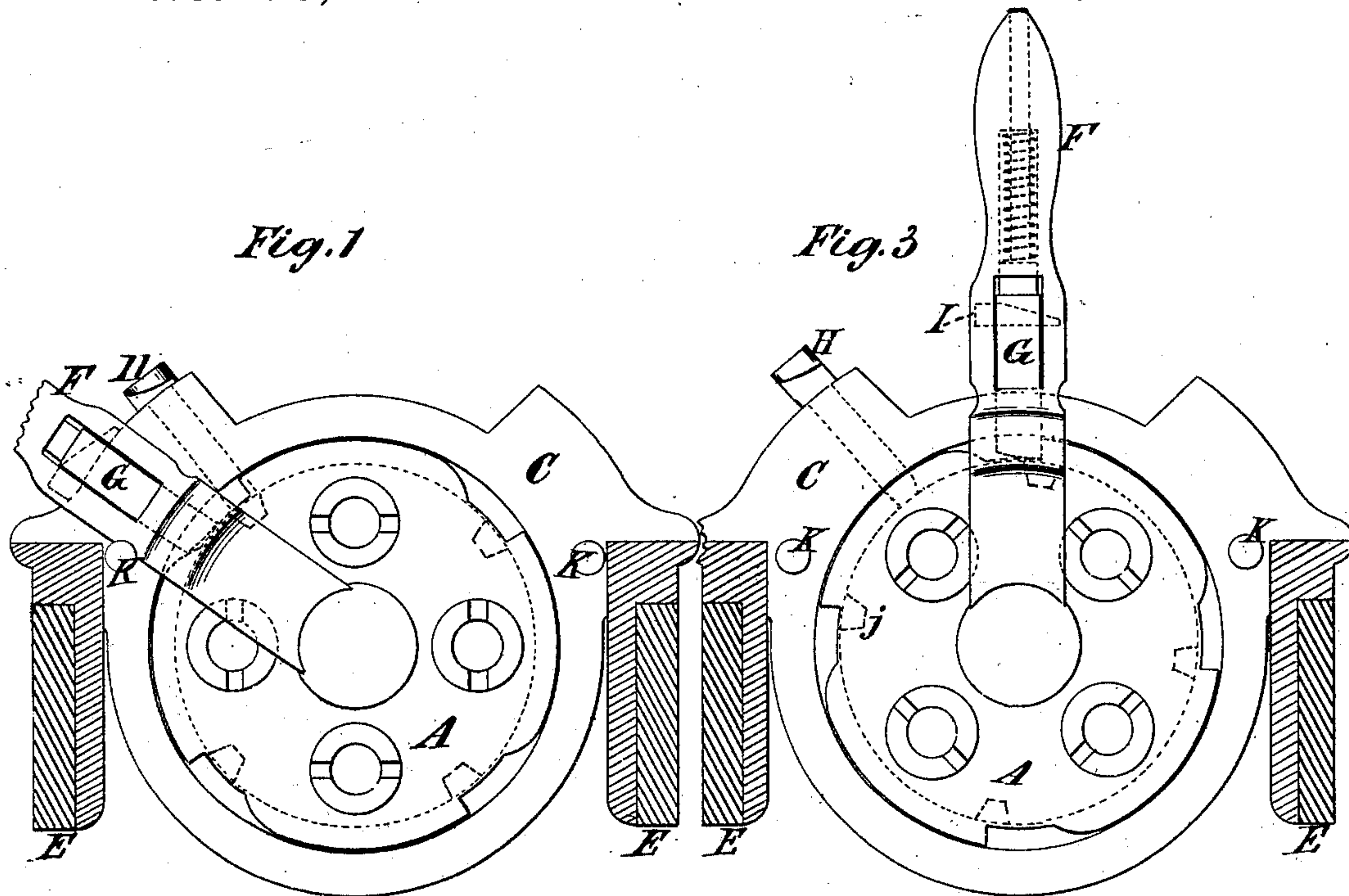


DeW. C. FARRINGTON.  
Barrel-Shifting Mechanisms for Machine-Guns.

No. 198,366.

Patented Dec. 18, 1877.

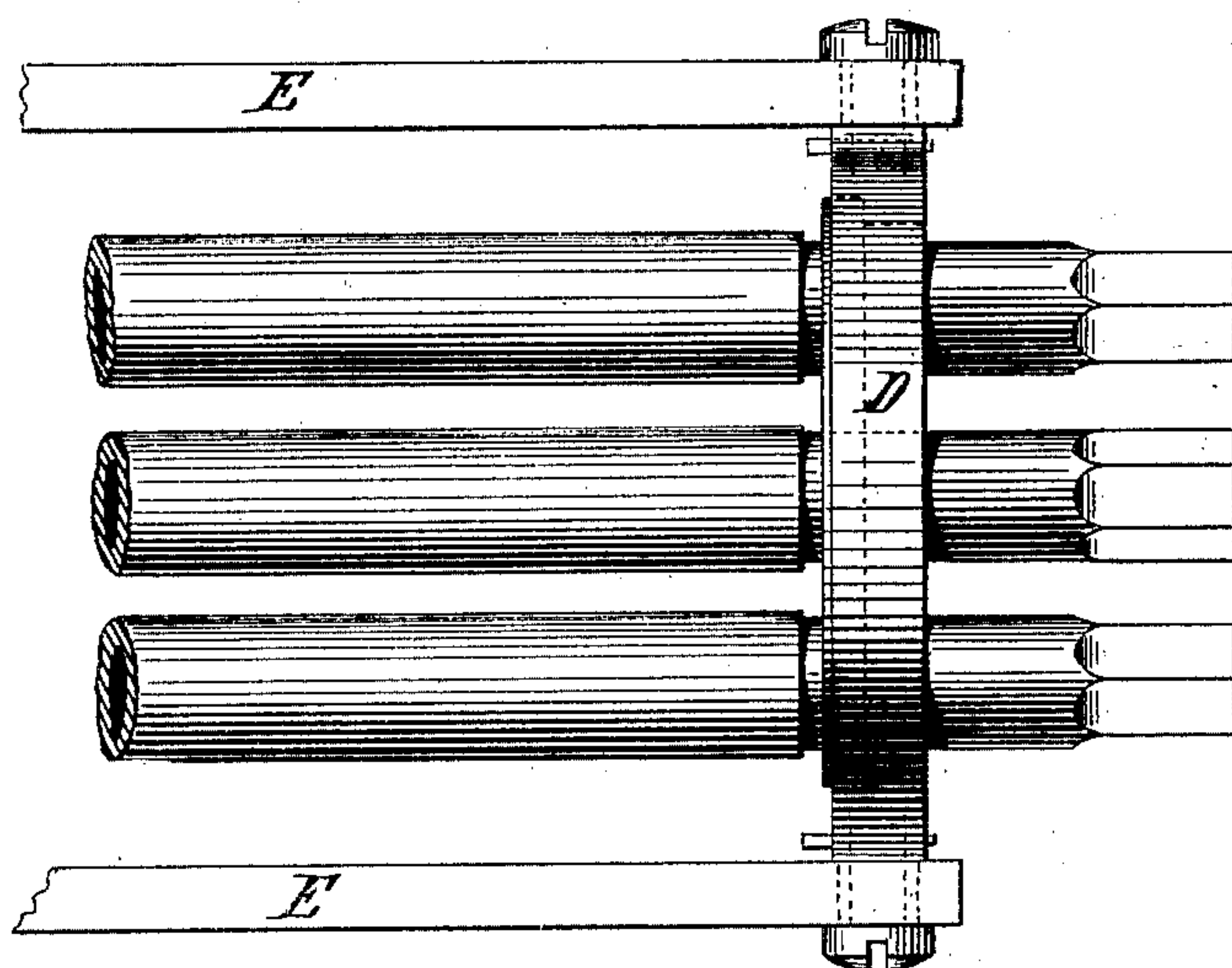


Witnesses.  
W. Ryan  
Robt. H. Duncan.

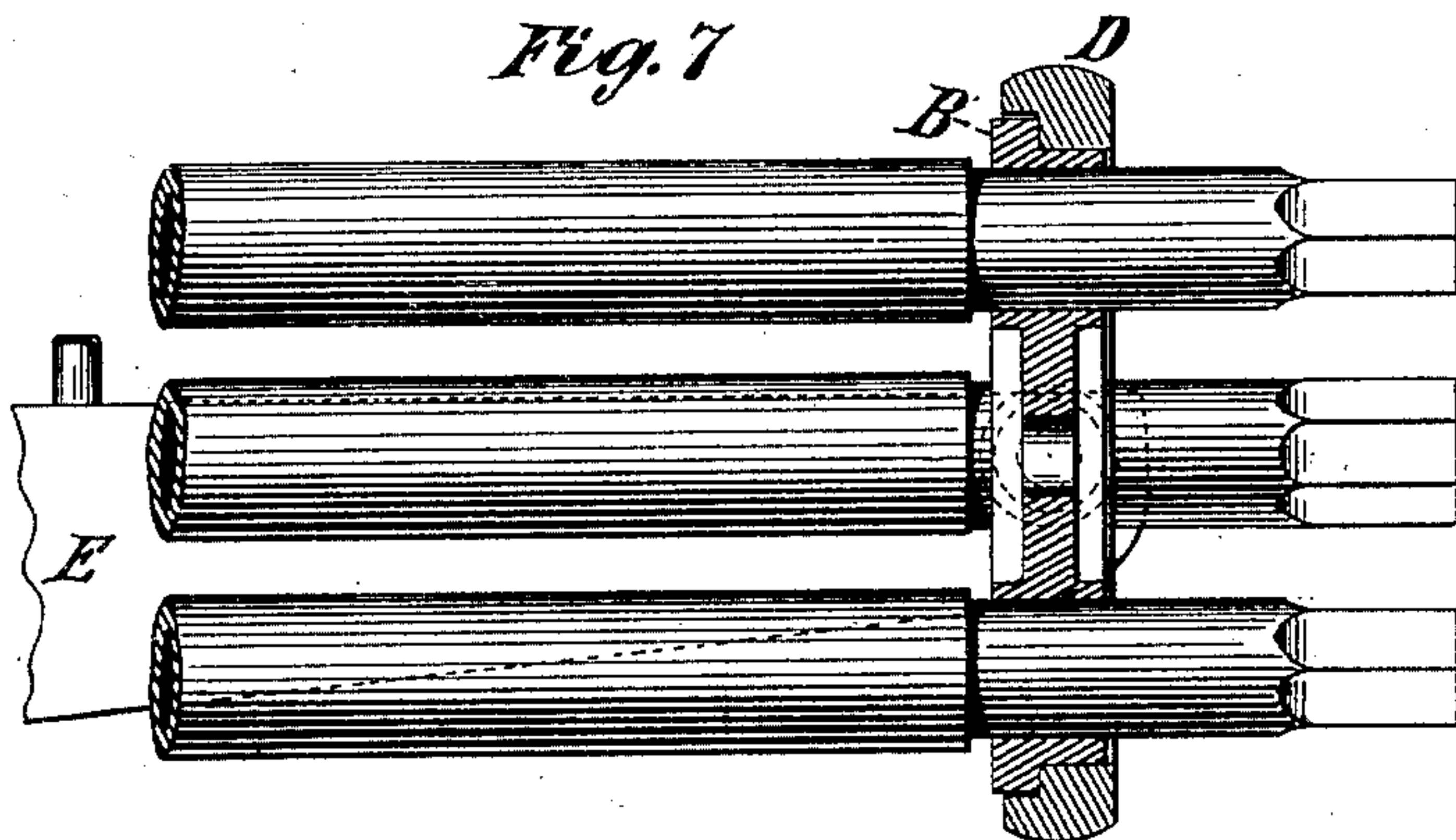
INVENTOR  
De Witt C. Farrington  
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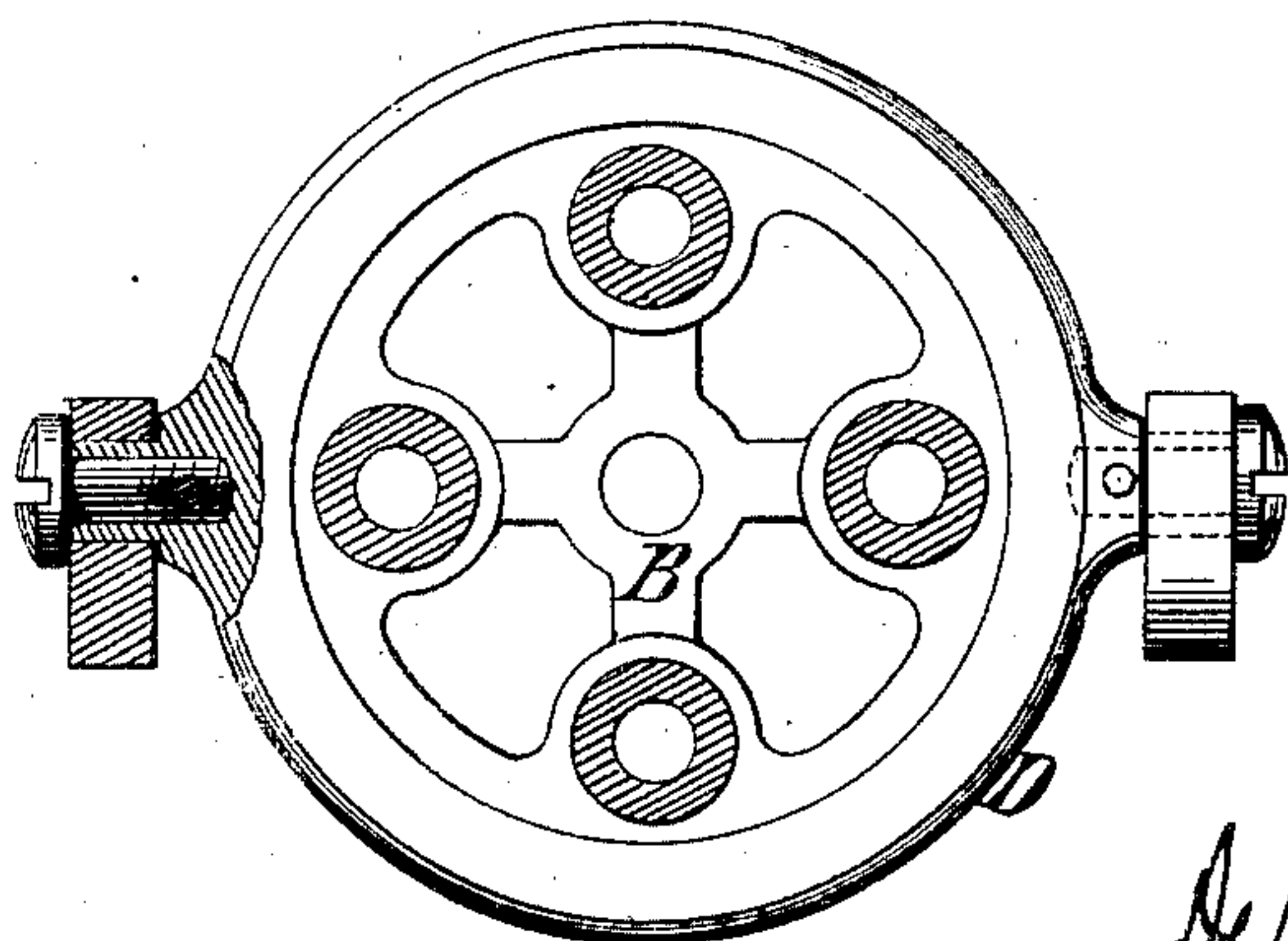
No. 198,366. *Fig. 6* Patented Dec. 18, 1877.



*Fig. 7*



*Fig. 8*



Witnesses:

*W. H. Ryan*

*Robt. H. Duncan*

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# UNITED STATES PATENT OFFICE.

DE WITT C. FARRINGTON, OF LOWELL, MASSACHUSETTS.

## IMPROVEMENT IN BARREL-SHIFTING MECHANISMS FOR MACHINE-GUNS.

Specification forming part of Letters Patent No. **198,366**, dated December 18, 1877; application filed May 31, 1877.

*To all whom it may concern:*

Be it known that I, DE WITT C. FARRINGTON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Barrel Shifting and Supporting Mechanism for Machine-Guns, of which the following is a specification:

The present invention relates to machine-guns which have a group or nest of barrels; and it has for its main object to provide an efficient and ready means of shifting the barrels, at the pleasure of the gunners, as one barrel after another becomes heated, and also to provide a means of supporting the barrels, whereby they will have the requisite longitudinal play, to compensate for any extension produced by the high temperature which accompanies rapid firing, without having their parallelism with each other disturbed, and whereby they may be readily lifted and conveniently supported for purposes of examination or cleaning.

The accompanying drawings (two sheets) show the improved mechanism as applied to a group of four barrels, the five figures on Sheet 1 (Figs. 1 to 5, inclusive) giving various views of the shifting devices, and the several figures on Sheet 2 (Figs. 6 to 8, inclusive) showing the mode of supporting the muzzle end of the barrels and providing for the longitudinal play.

Figure 1 is a rear elevation of the barrels and the shifting devices. Fig. 2 is a front elevation of the same, the shifting-lever being shown partly in section. Fig. 3 is a rear elevation of the same parts, showing the barrels as partially rotated and midway between two consecutive firing positions. Fig. 4 is a vertical section of the parts as shown in Fig. 3. Fig. 5 is an enlarged detail view of the spring-bolt for locking the barrels against accidental rotation. Fig. 6 is a plan view of the muzzle-supporting devices. Fig. 7 is a side elevation of the barrels, showing the muzzle-supports in section; and Fig. 8 is a transverse view of the parts on a plane immediately behind the muzzle-supporting ring.

Referring to these drawings, it will be seen that the barrels are mounted in two disks—one, A, at their rear, and one, B, near their muzzles—and these disks again are supported by, and turn within, the rings C and D. Of

these rings, the rear one is sustained by means of side ears resting on the breech-frame of the gun, while the other one is pivoted to the forward end of the arms E E, projecting forward from the breech-frame, so as to turn freely on a horizontal axis. An annular shoulder or step is formed on each of the barrel-supporting disks. In the case of the rear disk this shoulder is cut into a series of ratchet-teeth, corresponding in number to the number of the barrels, and designed to work in conjunction with the pawl of the shifting-lever, as hereinafter explained; and in the case of the forward disk the shoulder on its periphery is arranged to abut against a corresponding shoulder on the inner face of the supporting-ring, which construction is designed to prevent the barrels from falling through the muzzle-ring when they are tilted upon the horizontal pivots of such ring.

F is the shifting-lever, provided with a spring-pawl, G, and pivoted to the disk A, so as to turn freely thereon, and H is a spring-detent for locking the barrels against further or accidental rotation when once shifted. The pawl G carries upon its side a trippet or lifter, I, which passes alternately under and over the head of the detent H as the shifting-lever moves forward and back.

The operation of this part of the mechanism is as follows: As the shifting-lever is thrown from left to right the toe or lifter I passes under the head of the detent-bolt H, and lifts its point out of engagement with the periphery of the disk A, thus leaving the barrels free to be rotated. Immediately thereafter, and before the lifter I has released the bolt H, the pawl G has engaged with a tooth of the ratchet, and begun to rotate the disk, so that the bolt H will be sustained in its elevated position even after the lifter I has passed out from under its head, and will remain so until the lever reaches its extreme throw, when the bolt will drop into the next hole, *j*, in the disk A, and thus securely lock the barrels against further rotation until the detent is again raised.

In returning the shifting-lever to its original position, the barrels are held by the detent H, and the pawl G rides up on the inclined face of the ratchet-tooth next behind it. This keeps the lifter I raised until it has passed



over the head of the detent, when the pawl drops into the next succeeding depression of the ratchet, ready, when required, to move the barrels forward another step.

K K are two pins projecting rearward from the ring C, designed to operate in conjunction with the housing of the hopper, which fits down upon them, to lock the barrels down against vertical displacement.

The barrels are screwed into the rear disk A, having no longitudinal play therein; but, as is clearly shown in the drawings, each barrel has an independent play within certain limits in the muzzle-supporting disk B, and this disk, in turn, has a limited play in its supporting-ring.

From this construction it follows that when a barrel becomes heated under rapid firing and expands, it can slide in the muzzle-disk; and if this expansion proceeds until the shoulder on the barrel meets the disk, then the disk can be carried bodily forward within the surrounding ring, sliding on the other barrels. Thus both the disk and all the other barrels are protected from injurious strain and warping by the heating of any one barrel.

Whenever, for the purpose of inspection, cleaning, or removal of a foreign body, it becomes necessary to get access to the rear of the barrels, this is easily effected by the use of the horizontal pivots or trunnions on which the muzzle-ring D is hung. Upon releasing the rear of the barrels from the holding-down

devices, the entire system of barrels can be tilted up upon these trunnions, and secured temporarily in such position by passing a bar across the two arms E E underneath the barrels. The annular shoulder on the periphery of the disk B prevents the barrels, when thus tilted, from sliding through the muzzle-ring.

What is claimed as new is—

1. The combination of the ratchet-disk supporting the rear of the barrels and the shifting-lever with its pawl.

2. In combination with the shifting-lever, the spring-detent, operating in combination with the barrel-supports, for locking the barrels against accidental rotation.

3. In combination with the barrel-supports, pins or lugs projecting rearwardly therefrom, for locking down the barrels against vertical displacement, substantially as set forth.

4. In combination with a group of barrels in a machine-gun, external supports in the form of rings, for permitting the barrels to be readily shifted, the parts being constructed substantially as described.

5. In combination with a group of barrels in a machine-gun, a muzzle-supporting disk working in a ring mounted on trunnions, for permitting the barrels to be readily tilted, as occasion requires.

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Witnesses:

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