

(No Model.)

2 Sheets—Sheet 1.

C. A. YOUNG & S. H. BARTON.
EJECTOR AND FIRING PIN OPERATED BY MAINSPRING.

No. 523,845.

Patented July 31, 1894.

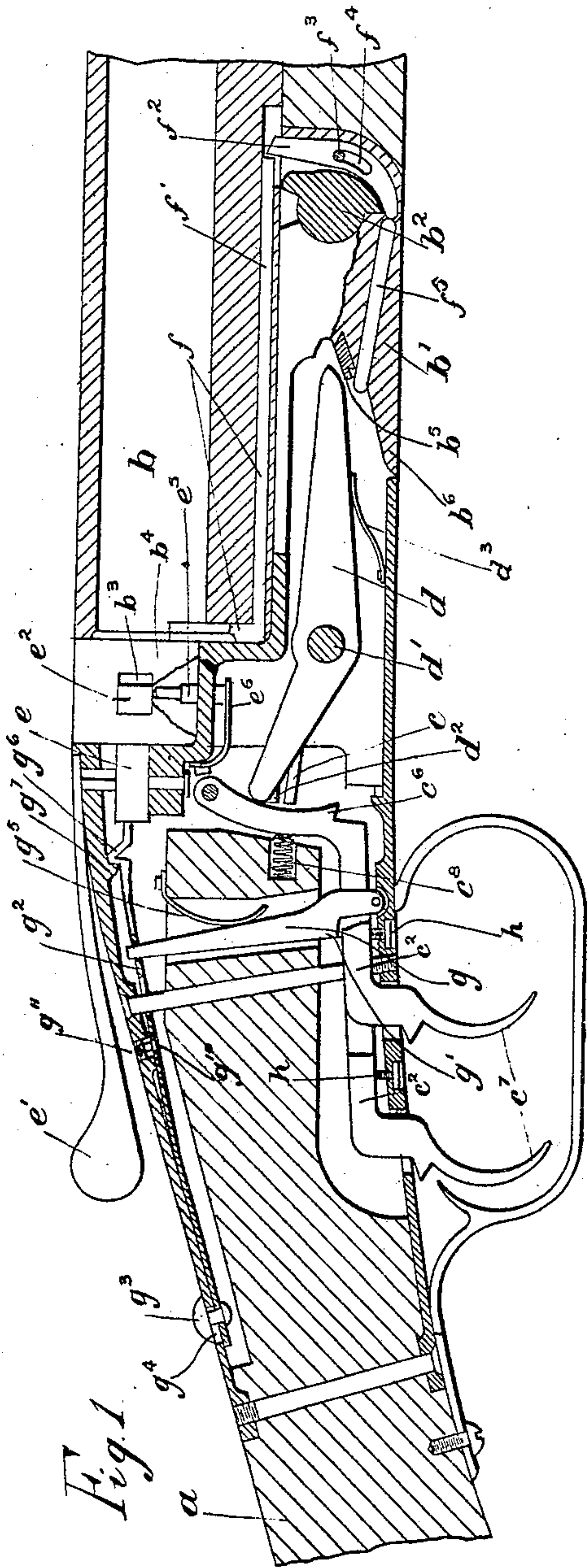
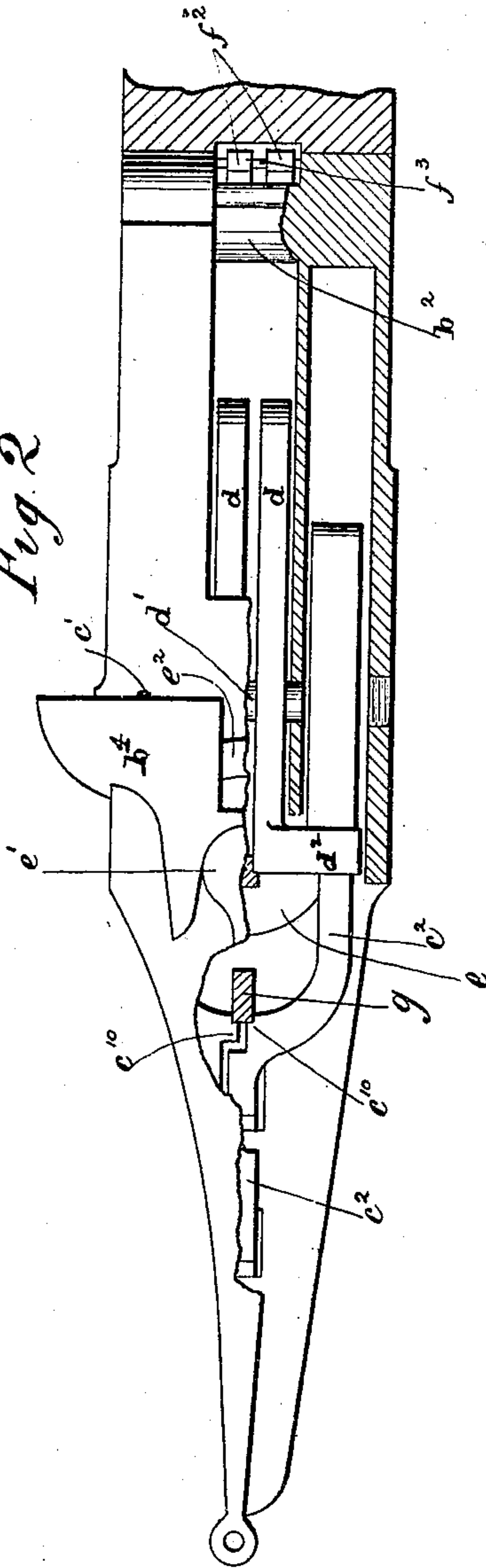


Fig. 2



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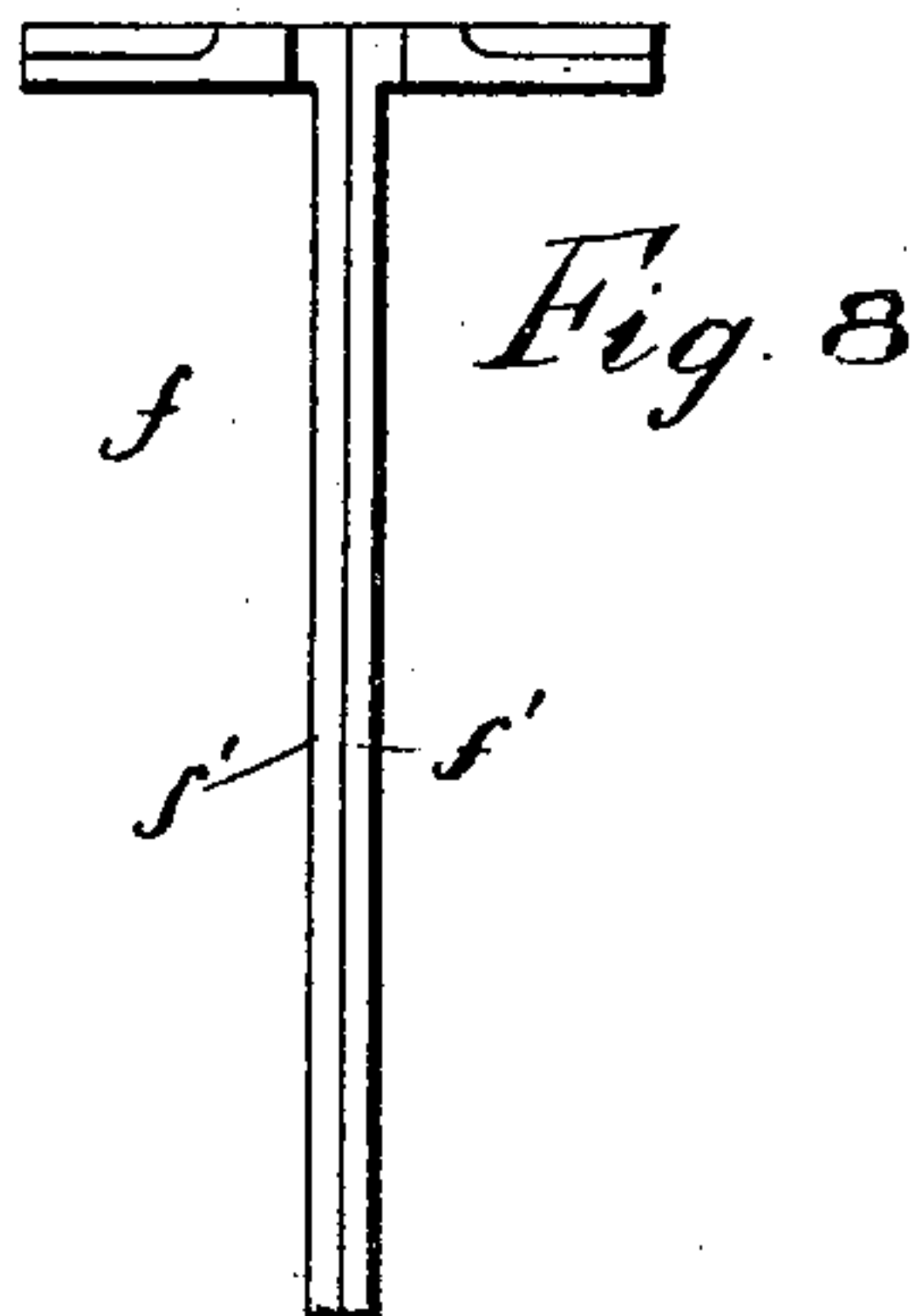
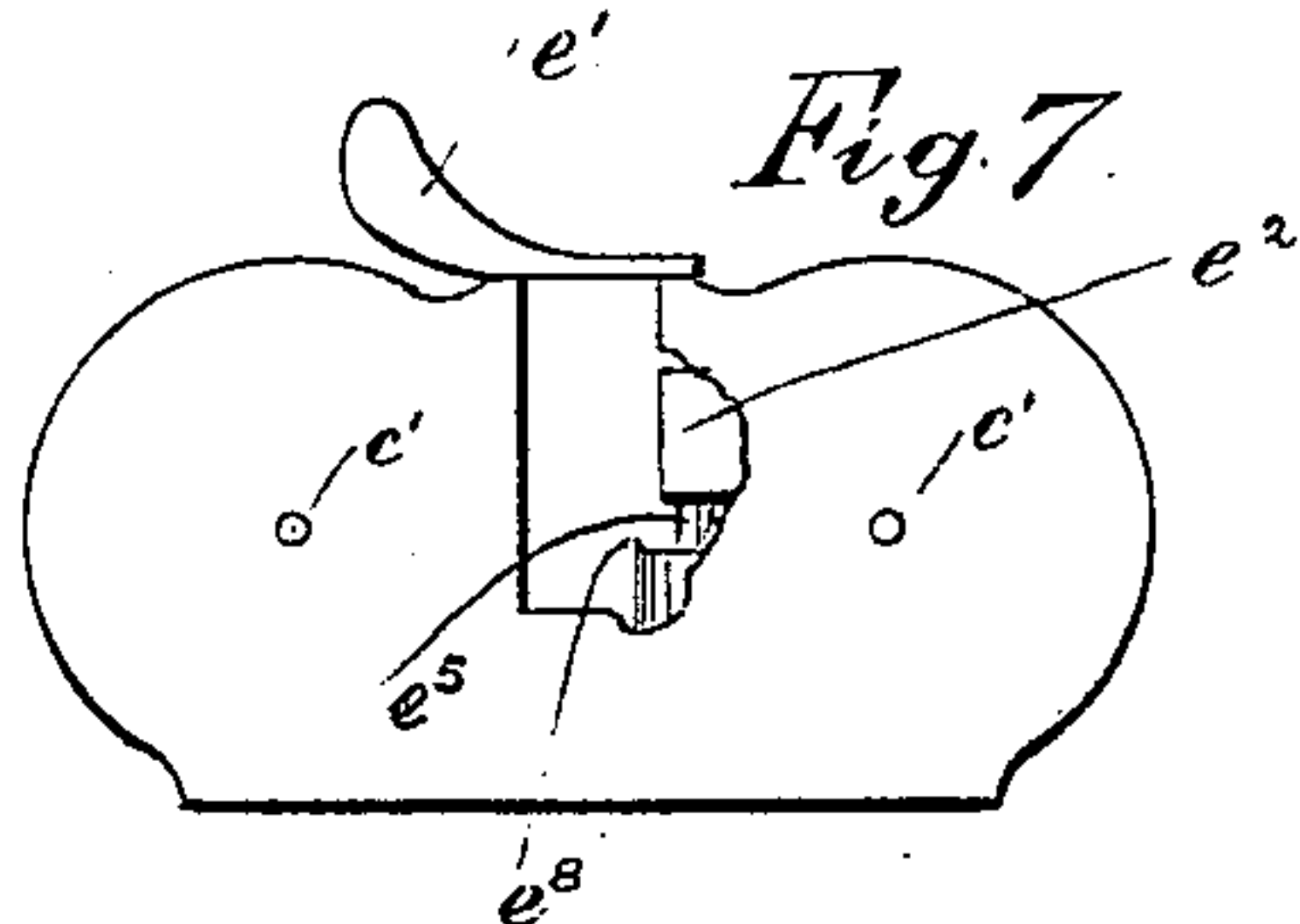
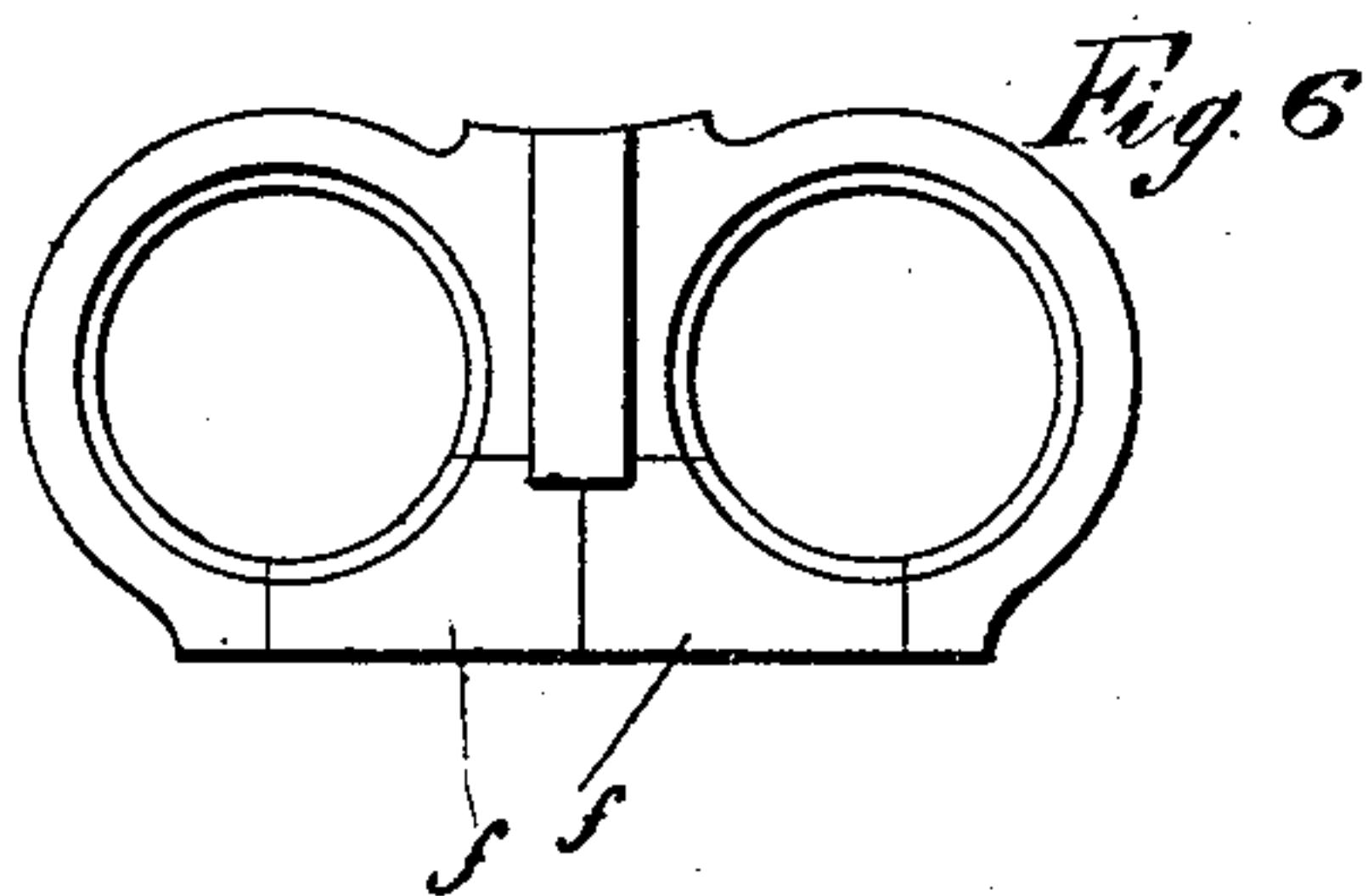
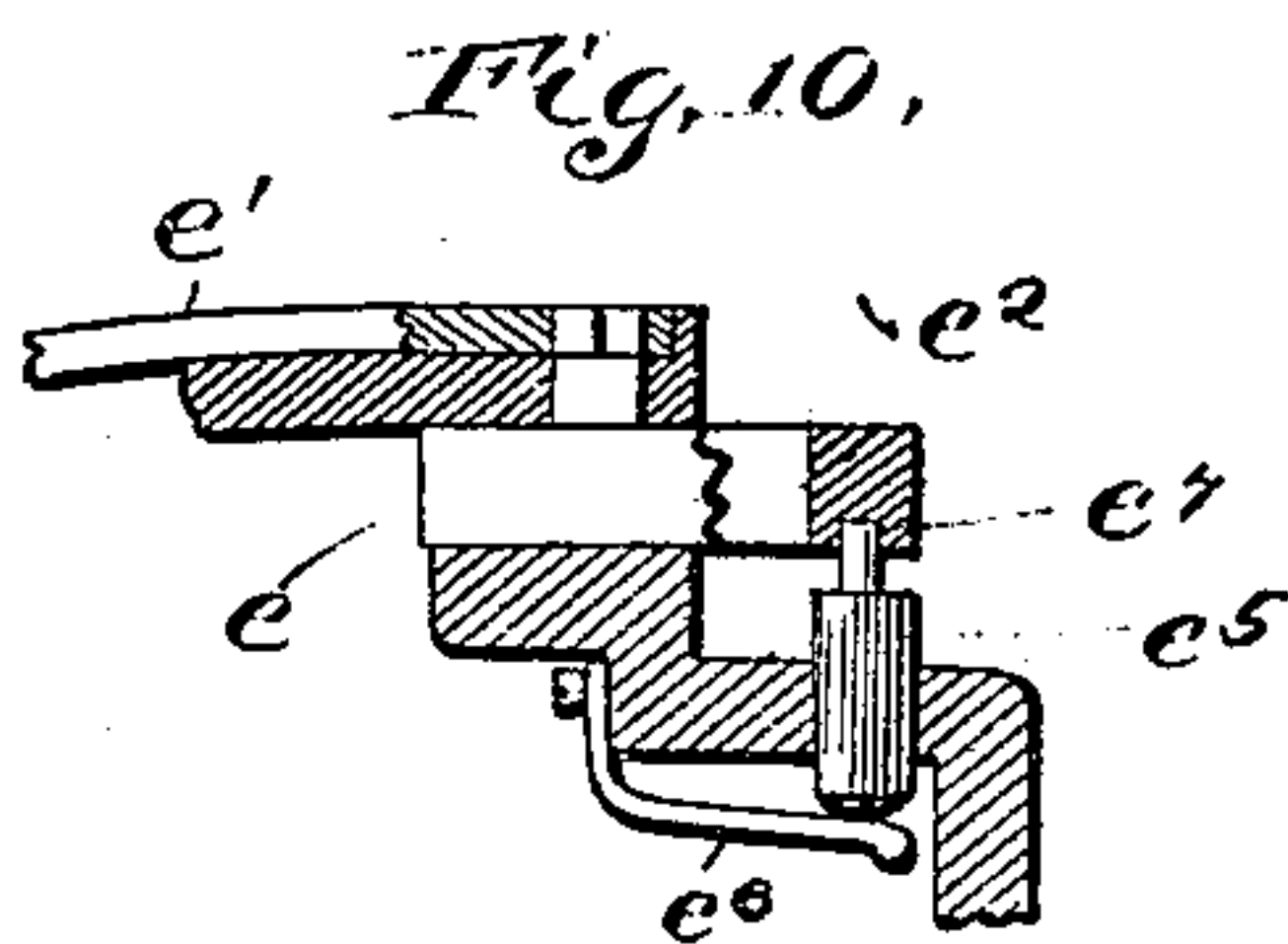
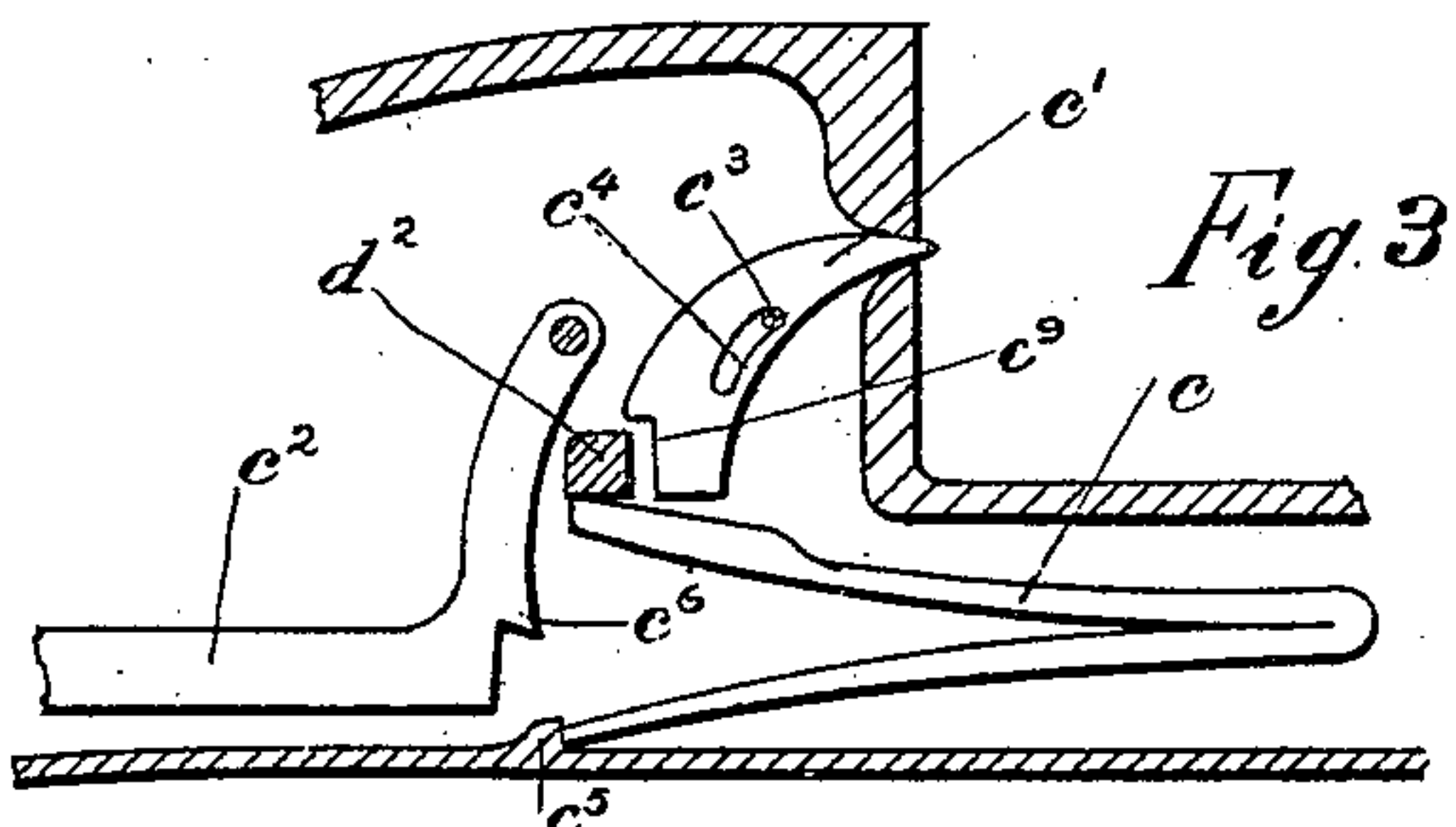
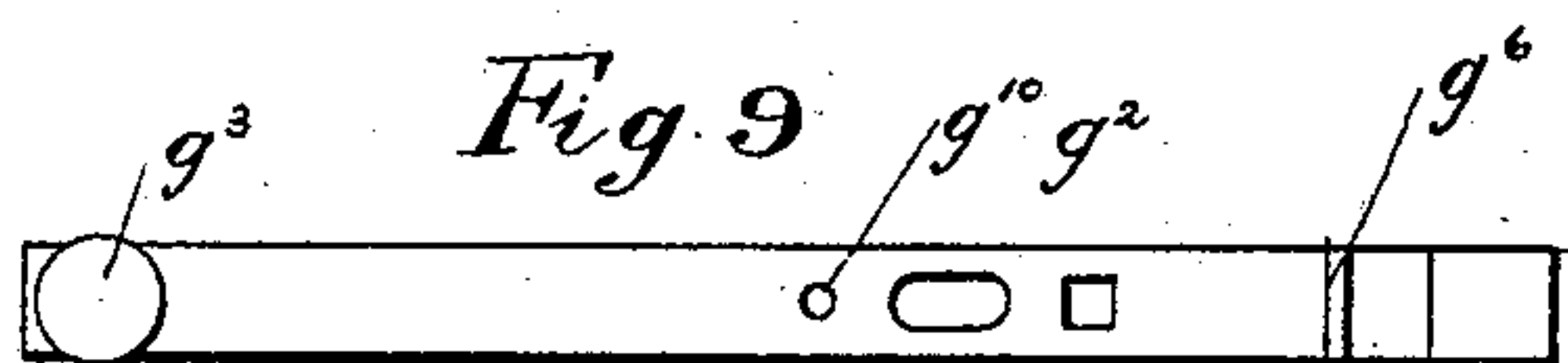
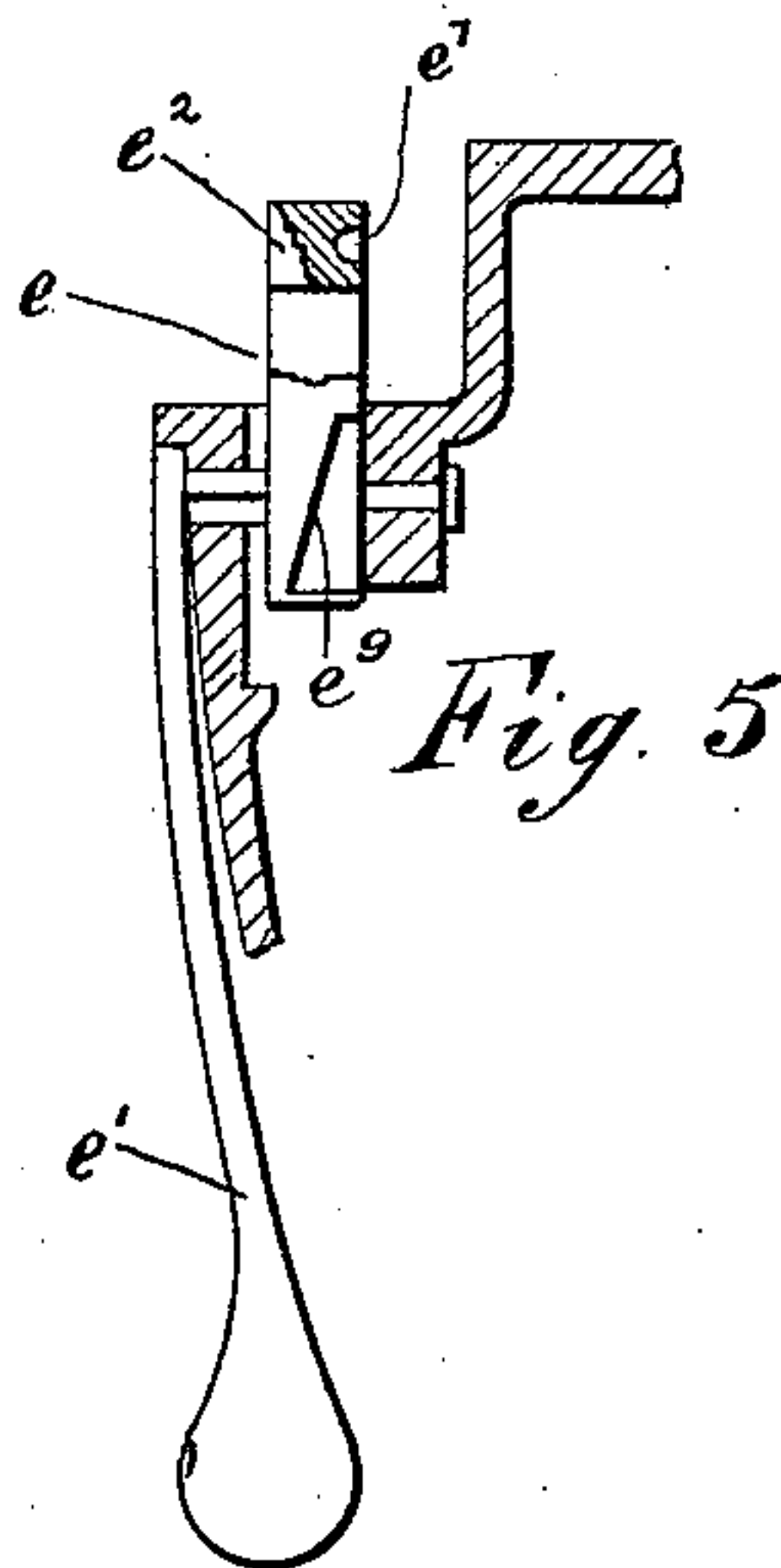
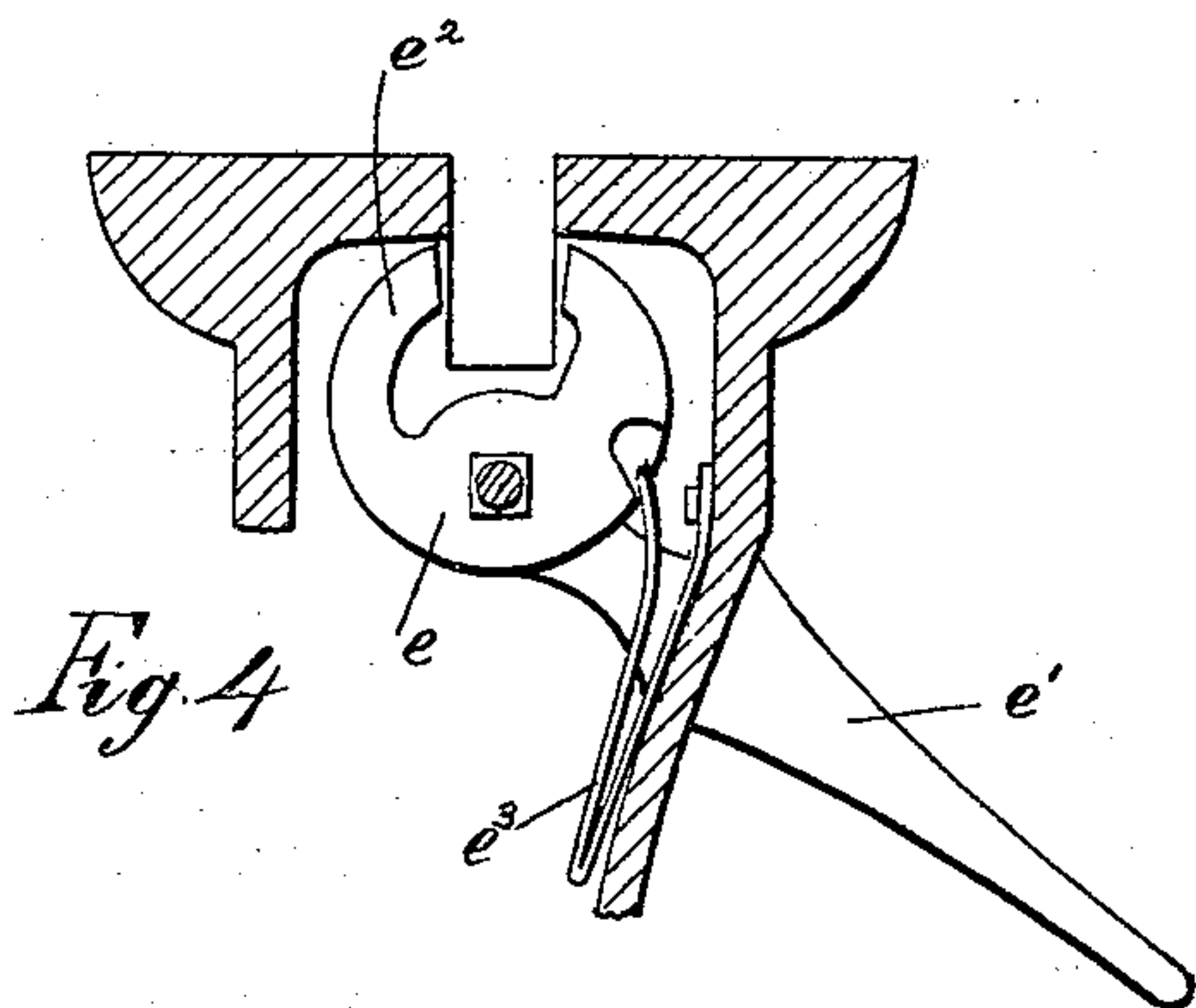
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WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES A. YOUNG AND SILAS H. BARTON, OF ENON, OHIO.

EJECTOR AND FIRING-PIN OPERATED BY MAINSPRING.

SPECIFICATION forming part of Letters Patent No. 523,845, dated July 31, 1894.

Application filed November 24, 1893. Serial No. 491,846. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. YOUNG and SILAS H. BARTON, citizens of the United States, residing at Enon, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Guns, of which the following is a specification.

Our invention relates to improvements in guns, and it especially relates to breech-loading shot guns.

The object of our invention is to provide a hammerless gun, the firing pin being operated directly from the main spring.

A further object of our invention is to provide novel means for ejecting the shell when the gun is opened for reloading, the construction being such that the shell is ejected only after it has been fired, so that if one shell only is fired, that one will be ejected. If neither shell has been fired, neither one will be ejected.

A further object of our invention is to provide an improved form of safety device, by means of which the firing mechanism is automatically locked under certain conditions of adjustment, the device being so constructed that the firing mechanism may be locked or unlocked at will.

A further object of our invention is to simplify the construction of the guns heretofore in use, and thus produce a gun of light weight and fewer parts than heretofore employed in guns capable of the same adjustment.

A further object of the invention is to provide novel means by which the main spring serves the double purpose of ejecting the shell and operating the firing pin.

We attain these objects by the constructions shown in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a gun embodying our invention. Fig. 2 is a plan view of the lock and operating parts, a portion of the same being shown in section. Fig. 3 is a side elevation of a portion of the same, taken on a different plane from Fig. 1. Figs. 4 to 10, inclusive, are details referred to hereinafter.

Like parts are represented by similar letters of reference in the several views.

In the drawings, *a* represents the gun stock, and *b* the barrel or barrels, and which is pro-

vided with the downwardly projecting lug *b'*, hinged to the stock at *b²*, in the usual manner.

The lock or firing mechanism proper consists essentially of three pieces, a main spring *c*, a firing pin *c'*, and a combined sear and trigger *c²*. (See Fig. 3.) The firing pin *c'* is formed on the arc of a circle, and is held in its proper position by a pin *c³*, which passes through the slotted opening *c⁴*. The main spring *c* consists simply of a U-shaped spring, the arms of which are practically of the same length; the spring being placed in a retaining receptacle in the receiver and held therein by a small projection *c⁵*, formed on the base plate. The spring *c*, when depressed, is engaged by a shoulder *c⁶*, on the sear *c²*. By drawing on the trigger *c⁷*, which is preferably formed integral with the sear, the spring is released and flies upward, striking the bottom of the firing pin, which is forced upward and outward on the arc of a circle and contacts with the cartridge. A sear spring *c⁸* is preferably employed for returning the sear and trigger to its normal position.

To provide for setting the main springs and thus cocking the gun, we employ pivoted levers *d*, one for each main spring employed. These levers *d* are pivoted at *d'* in the forward portion of the frame, and lie alongside of and preferably between the respective main springs. They are each provided at their rear ends with laterally projecting arms or lugs *d²*, which project over the main springs *c*; the firing pin *c'* being preferably notched out, as shown at *c⁹*, to form a recess for the arms or lugs *d²*, when the main spring is in contact with the bottom of the firing pin. The forward ends of the levers *d* are adapted to contact with the lug *b'* on the barrels, so that as the barrels are turned on the pivoted bearing *b²*, the front ends of said levers are elevated by said lug, thus bringing the arms or lugs *d²* on said levers in contact with the main spring and depressing the same until the end of said spring is engaged by the sear *c²*. Both of the springs are thus set and both barrels cocked when the gun is opened.

Located at the rear of the barrels and above the firing pins is a pivoted catch *e*, connected to a thumb lever *e'*, and having a projecting finger *e²*, adapted to engage in an opening *b³*, formed in a projection *b⁴*, at the rear end of

the barrels. A spring e^3 tends to hold the latch in its normal position; that is, with the finger e^2 in engagement with the projection b^4 . When the latch is operated, however, by the lever e' , so as to withdraw the finger e^2 from the projection b^4 , the latch is held in this position by a small spring-actuated pin e^5 , which is pressed upwardly by a spring e^6 , so that the upper end engages in a notch e^7 , formed on the lower side of the finger e^2 . The pin e^5 is provided with a projecting shoulder e^8 , adapted, as the barrels are forced downwardly to their normal positions, to be engaged by the projection b^4 , so that the pin is withdrawn from the notch, thus allowing the same to be forced by the spring e^3 into engagement with the projection b^4 .

To provide for ejecting the shells when the barrels are opened, and to further provide that no shell shall be ejected unless the same has been fired, we construct at the inner lower corner of each of the barrels, ejector slides f , which in their normal positions form a portion of the rear end of the barrels, and are recessed in the usual way to receive the rim of the cartridge. These ejector slides f are independent of each other, and are provided with projecting stems f' , which extend forwardly so as to contact with pivoted and sliding levers f^2 , secured in the fore-arm or to the stock, as preference may dictate. These pivoted levers f^2 are secured by pins f^3 in their proper positions, which pins pass through slotted openings f^4 , the levers and openings being formed on the arc of a circle struck from the center of the pivoted bearing on which the barrels are hinged.

Extending backwardly and upwardly through the lug b' are ejector pins f^5 , the front ends of which are adapted to contact with the lower and rear ends of the curved levers f^2 . The rear ends of these pins f^5 are rounded or beveled, and stand in their normal position immediately below the front ends of the pivoted levers d , which are correspondingly beveled. The lug b' on the barrel is provided with a cam face b^5 , immediately above the ends of the pins f^5 , adapted, as the barrels are opened, to contact with said levers and thus operate said levers so as to partially compress the main springs; the construction being such that the lever or levers will, as the barrels continue to move in opening, be released from said cam face and be forced in contact with the beveled ends of the pins f^5 by the action of the partially compressed main spring. The result of this operation will be to force the pin f^5 longitudinally so as to contact with the ejector lever f^2 , which in turn contacts with the stem f' , of the ejector slide f , thus ejecting the cartridge shell in contact with said ejector slide. The construction is such that the cam face b^5 releases the lever d just as the lower side of the barrels have cleared the breech-block, so that the action of the lever d , impelled by the main spring, will, through the connection de-

scribed, produce such a rapid and sudden movement of the ejector slide as to throw the cartridge shell some distance out from the gun. As the barrels are further depressed in opening, a projecting cam face b^6 , below the pins f^5 , comes in contact with the levers and produces a further movement thereof, so as to completely compress the main spring (or springs) until it is engaged by the sear c^2 . Now, it will be seen that if the main spring is already compressed and in position for firing, the ejecting action cannot take place, as the pivoted levers d , in this case, will be normally held out of engagement with the sliding pins f^5 , a small spring d^3 , being preferably provided for this purpose.

In order to provide for locking the firing mechanism so as to absolutely prevent the discharge of the gun, accidentally or otherwise, when in this locked position, we provide a locking lever or catch g , pivoted to the bottom plate of the lock and adapted to project upwardly between the respective sears c^2 , which are formed with inwardly extending projections c^{10} , immediately in front of the locking lever g . (See Fig. 2.) This locking lever g is provided with a hook-shaped projection g' , adapted, when moved in one position, to engage with the projection c^{10} , on the respective sears, and thus hold said sears against an upward movement, which is necessary to release the main spring.

The locking lever g is extended upwardly and passes through a perforation in a sliding bar g^2 , preferably formed of resilient metal and connected at its rear end to an operating thumb stud g^3 , which projects through a slotted opening g^4 in the upper portion or tang of the lock. By pushing the bar g^4 forward or back, by means of the stud g^3 , the locking lever is caused to engage or disengage the sears. A spring g^5 is preferably employed behind the locking lever so as to normally press said locking lever into engagement with the sears. The sliding bar g^2 is provided with a hook-shaped catch g^6 , adapted to engage with a projection g^7 and hold the locking lever out of engagement with the sears when the bar is pressed forward, until said catch engages with said projection. The bar g^2 is provided in front of the catch g^6 with an extended portion g^8 , which is projected forward in line with a cam face g^9 , formed on the pivoted catch e , which cam face is adapted, as the catch is revolved, to depress said bar and thus release the catch g^6 from the projection g^7 , and permit the spring g^5 to force the locking lever into engagement with the respective sears. The result of this construction is, that each time the gun is opened the locking lever is forced by the spring g^5 into engagement with the sears, and when in this position it is impossible to discharge the gun until the locking lever is again moved out of engagement with said sears. Means are provided by which the safety locking device may be thrown

out of use. This is accomplished by providing an opening g^{10} in the sliding bar g^2 , into which a small screw g^{11} is adapted to be inserted when the bar is moved to the position which unlocks the sears. This screw g^{11} is extended through the upper plate or tang of the frame so as to be readily engaged by a screwdriver; the head of the screw being preferably countersunk so as to be entirely out of the way. When the screw is forced into the opening g^{10} , then the safety locking device is held in such a position that it cannot engage with the sears, and thus becomes wholly inactive.

To provide for adjusting the pull of the gun so that the movement of the trigger necessary to discharge the gun may be varied as desired, we preferably employ adjusting screws h , immediately under the sears, and adapted to form stops therefor. By adjusting these screws more or less through the bottom plate, the sears are more or less removed from the ends of the springs so that the engagement of the sears with said springs is varied, and thus the amount of the movement of the trigger necessary to disengage said springs is varied at will.

It will be seen from the above description that the construction of the gun, while extremely simple, is such as to render automatic the ejection of the shell by the same springs which accomplish the discharge of the gun. The gun is absolutely hammerless, as the spring acts directly on the firing pin. By the employment of the pivoted lever in connection with the springs and ejectors, only such cartridge as has been fired is ejected. The safety locking device is, in its normal position, operated every time the gun is opened, so that it is necessary to first unlock said device before the gun can possibly be discharged after it has been opened for any purpose.

Having thus described our invention, we claim-

1. In a gun, a firing pin, a main spring for operating the same, and a sear to engage the main spring, a pivoted lever to contact with said main spring, a hinged barrel to operate said lever and an ejector in said barrel, means, substantially as described, for connecting said lever to said ejector to cause the same to be operated by said spring whereby the main spring is adapted to successively operate the ejector and the firing pin, substantially as and for the purpose specified.

2. A main spring, a sear for holding said main spring, and a pivoted lever to contact with said spring, a pivoted barrel having a projection to engage said lever when said barrel is moved on its pivoted connection, and sliding pins adapted to contact with said lever when said spring is out of engagement with said sear, and a connection from said pins with ejector slides arranged in said gun barrel, substantially as and for the purpose specified.

3. In a gun, a pivoted barrel and a pivoted lever, to contact with said barrel when said

barrel is turned to open the gun, a main spring and a sear to engage said main spring, said spring being adapted to contact with said pivoted lever and be compressed thereby when the gun is opened, a cam face on said barrel adapted to engage said lever during a portion of the movement of said barrel, and a sliding pin under said cam face adapted to contact with said lever when released by said cam face, and a connection, as described, from said sliding pin to an ejector slide in said barrel, substantially as specified.

4. In a gun, a main spring, pivoted levers, hinged barrel to operate said pivoted levers, sliding pins to contact with said levers when operated by said spring, pivoted ejector levers to contact with said sliding pins, and ejector slides to contact with said pivoted levers, substantially as specified.

5. In a gun, the combination with a U-shaped main spring and its supporting and operating mechanism, of a firing pin arranged above and in line with said spring so as to contact directly therewith when said spring is released, said firing pin being provided with a curved slotted opening, and a supporting stud extending through said slotted opening to support and limit the movement of said firing pin, substantially as and for the purpose specified.

6. In a gun, a hinged barrel, a pivoted latch for locking and unlocking said barrel, a main spring having an engaging sear, a spring-pressed locking lever to engage said sear, a sliding bar to operate said locking lever, and means, substantially as described, for operating said bar to cause said locking lever to engage said sear by the movement of said pivoted latch, substantially as specified.

7. A pivoted sear, and a main spring adapted to be engaged thereby, a curved firing pin to contact with said main spring when released, a pivoted locking lever adapted, when moved in one position, to engage with said sear, and means, substantially as described, for operating said lever to automatically lock said sear when the gun is opened, substantially as specified.

8. A main spring, and a sear adapted to engage the same, a spring-pressed locking lever to engage and lock said sear, a sliding bar having a projecting stud to operate said locking lever, said bar being provided with a catch adapted to hold said locking lever out of engagement with said sear, a pivoted catch for locking and unlocking the barrel, and a cam face on said catch adapted to disengage said sliding bar and permit the locking lever to engage said sear when the barrel is unlocked, substantially as specified.

9. A main spring, a sear to engage the same, and a curved firing pin adapted to contact therewith, a pivoted lever, and a hinged barrel to operate said lever, an ejector slide in said barrel, and contacting devices adapted to contact with said lever when operated by said spring, and means for connecting said

contacting devices to said ejector slide whereby a single spring is adapted to operate the firing pin and the ejector slide, substantially as and for the purpose specified.

- 5 10. The combination with a hinged barrel having a backwardly extending projection, of a pivoted plate having a projecting finger adapted to engage in said barrel-projection, a sliding pin having a shoulder adapted to
o contact with said barrel-projection when said barrel is closed, said pin being adapted, when

the barrel is opened, to engage with said latch and hold the same in an opened position, substantially as specified.

In testimony whereof we have hereunto set 15
our hands this 18th day of November, A. D.
1893.

CHARLES A. YOUNG.
SILAS H. BARTON.

Witnesses:

A. L. DE LEEUM,
CHAS. I. WELCH.