

(No Model.)

2 Sheets—Sheet 1.

W. B. HALL.
BREECH LOADING FIRE ARM.

No. 414,213.

Patented Nov. 5, 1889.

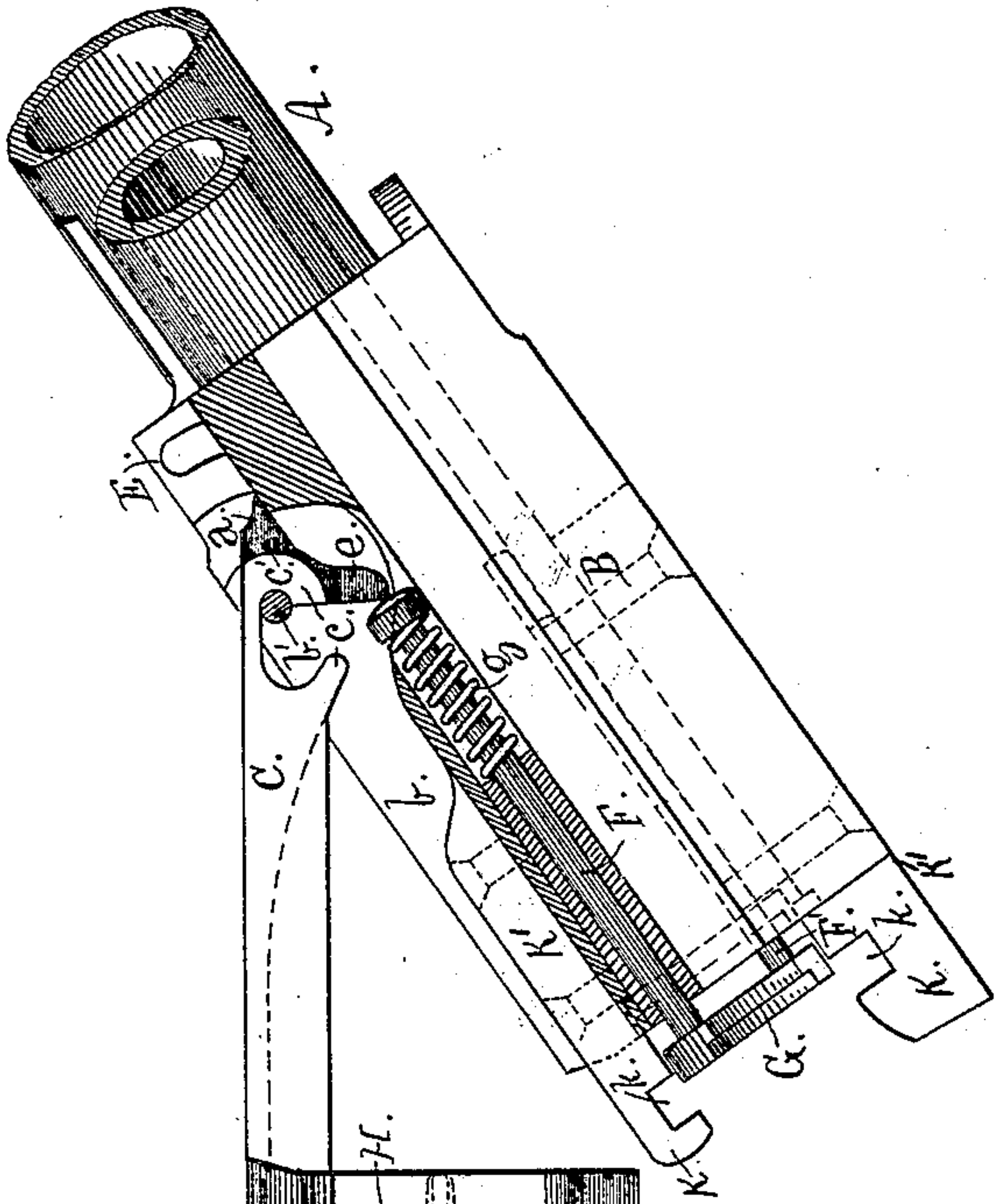


Fig. 1.

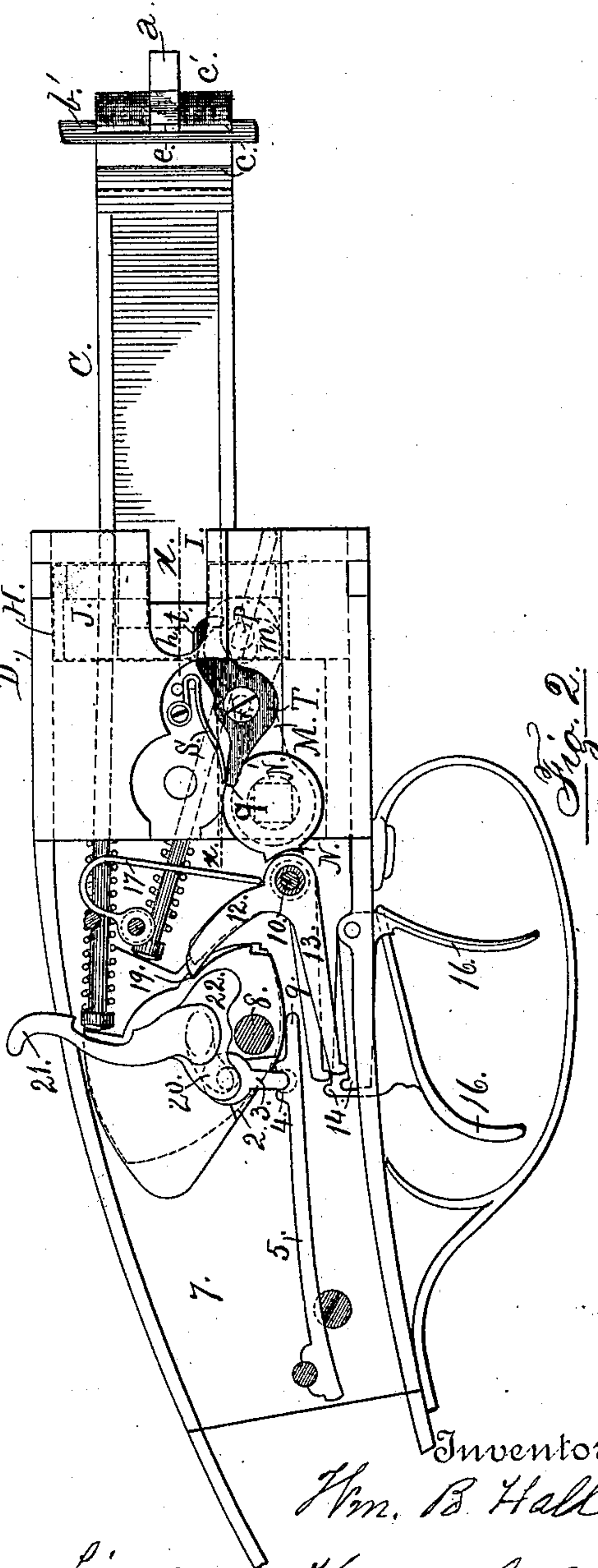


Fig. 2.

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2 Sheets—Sheet 2.

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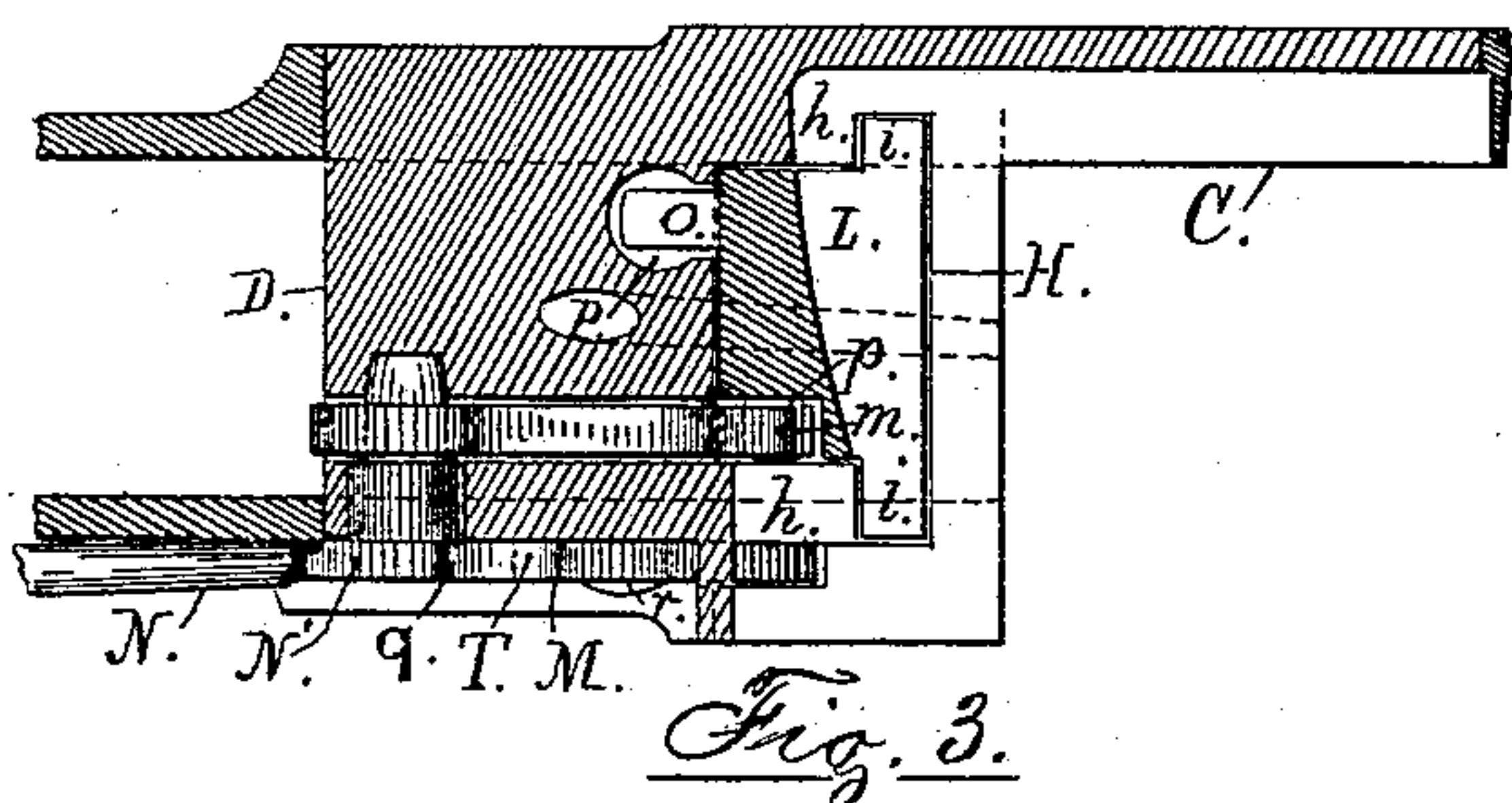


Fig. 3.

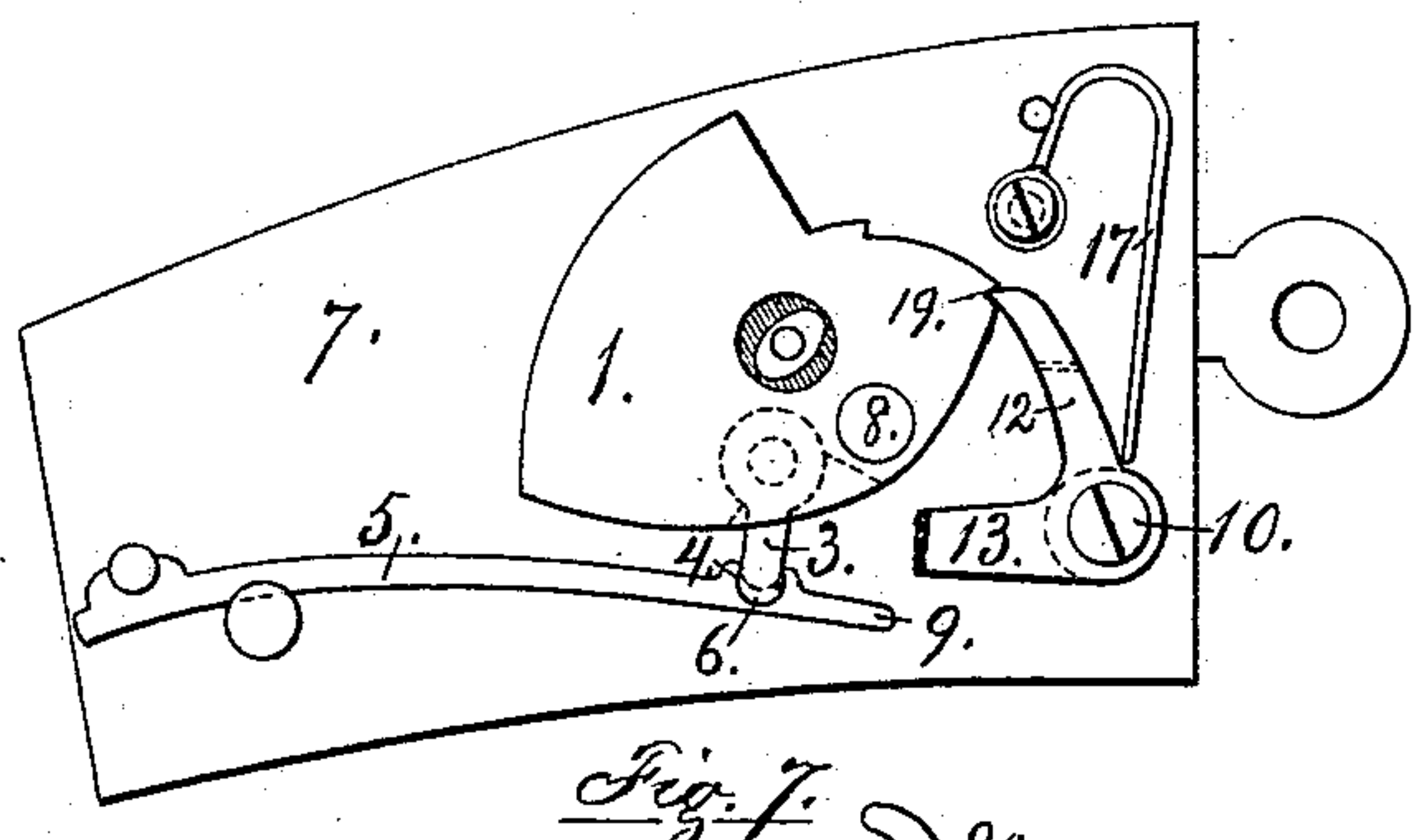


Fig. 7.

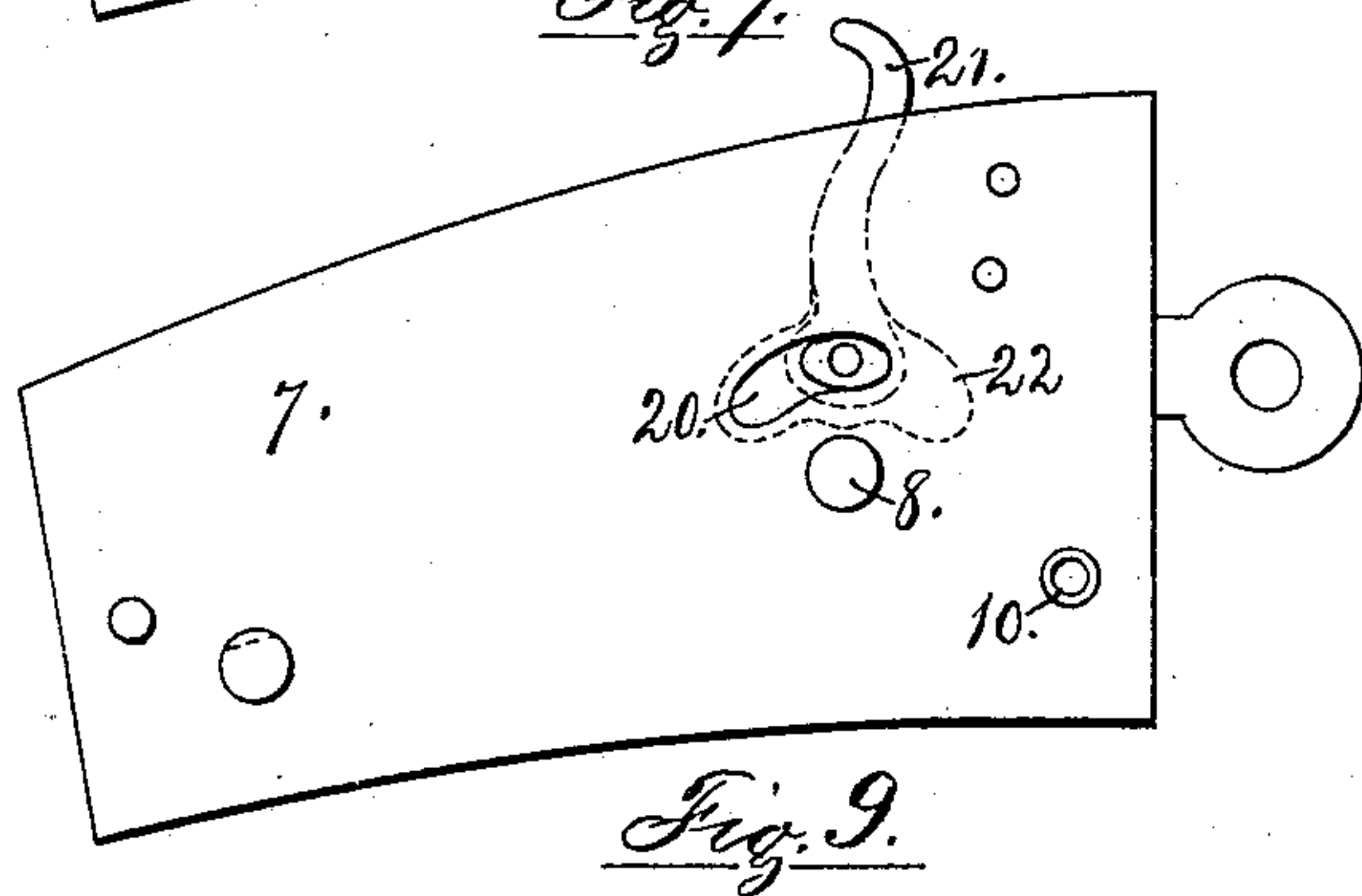


Fig. 9.

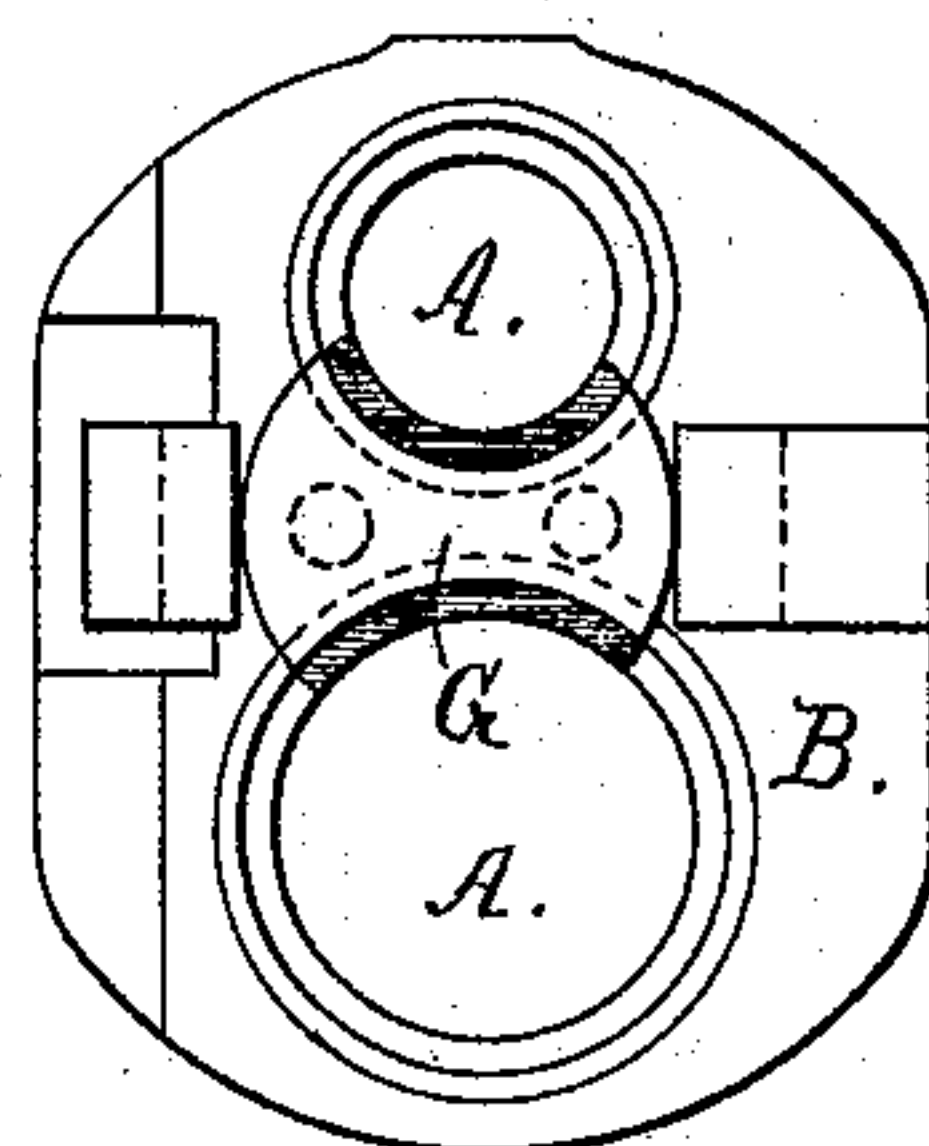


Fig. 4.

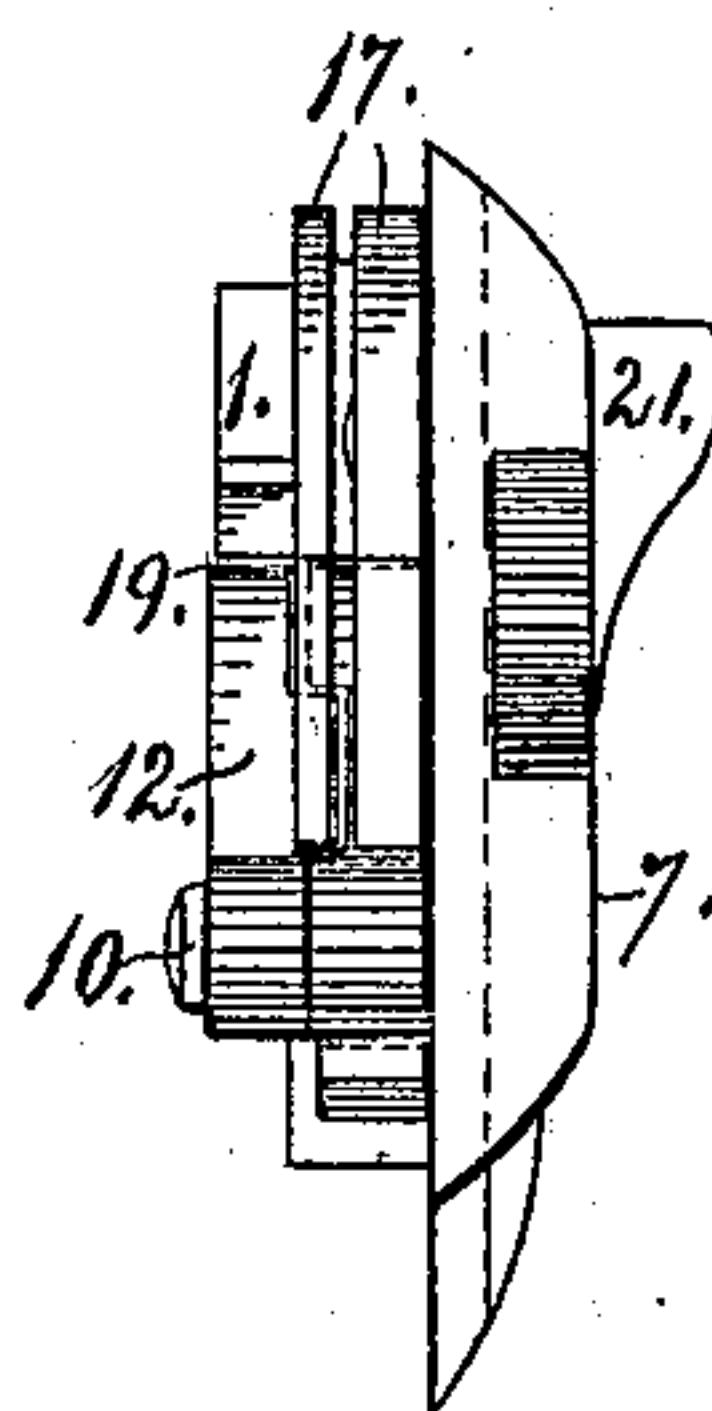


Fig. 5.

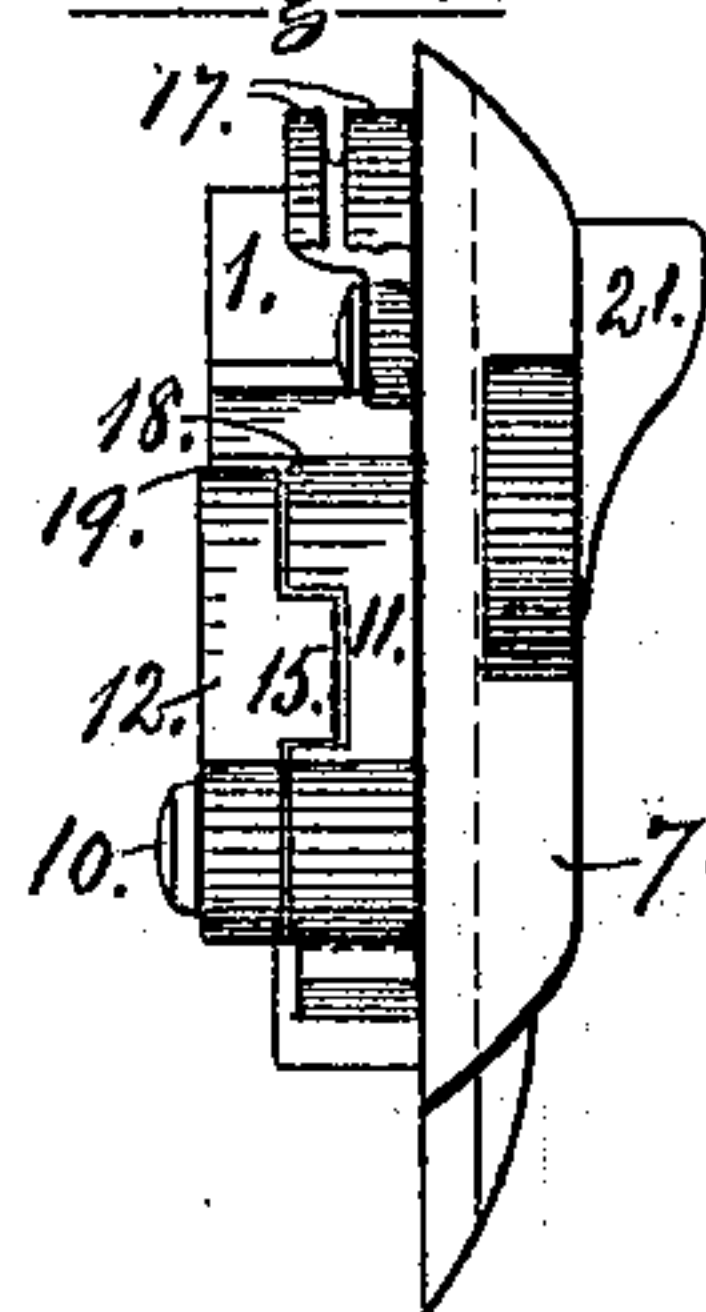


Fig. 6.

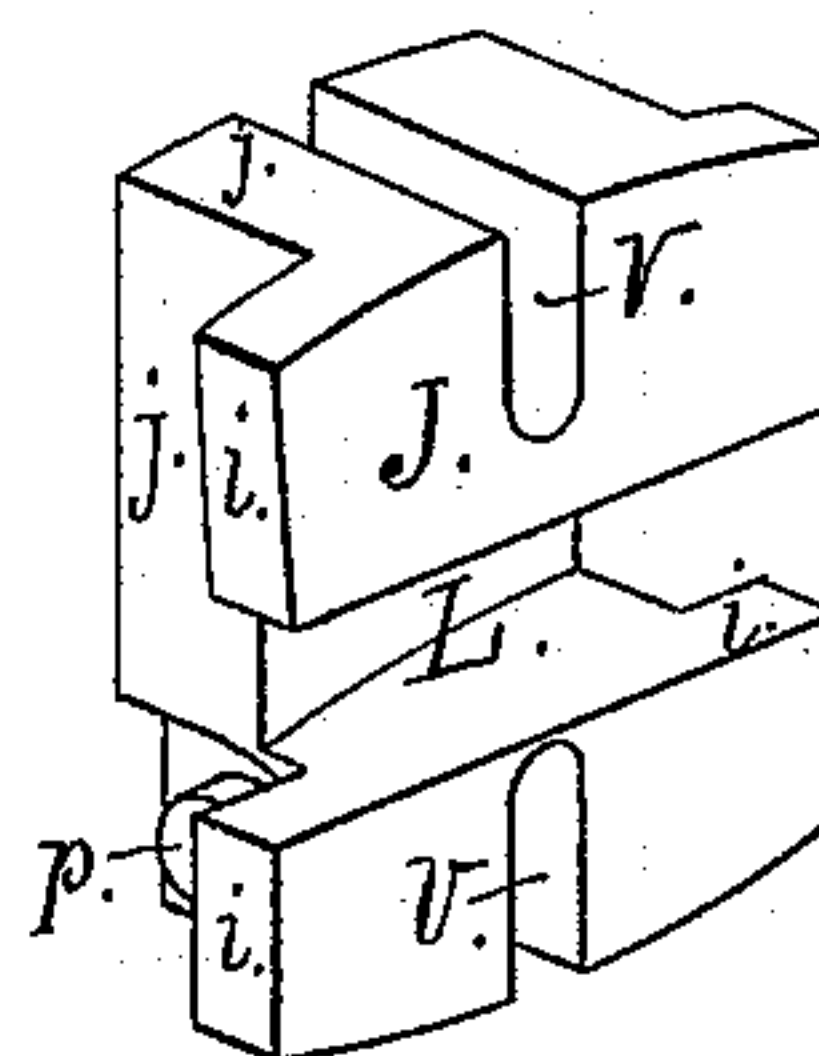


Fig. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM B. HALL, OF LANCASTER, PENNSYLVANIA.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 414,213, dated November 5, 1889.

Application filed November 1, 1888. Serial No. 289,740. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. HALL, a citizen of the United States, residing in Lancaster, in the county of Lancaster, State of Pennsylvania, have invented certain Improvements in Breech-Loading Fire-Arms, of which the following is a specification.

My invention relates to improvements in breech-loading fire-arms; and it consists, first, in the combination, with the standing-breech, of a supporting-arm secured in the side of the standing-breech, the front end of which engages in a recess in the side of the re-enforce of the barrels and is provided at the end with a hook which catches over a vertical hinge-pin in the recess, on which the barrels swing laterally when breaking away from the breech, an inwardly-projecting lug on the front of the hook, which engages the end of the extractor-stem, and a forwardly-extending stop for limiting the lateral movement of the barrels; second, the combination, with the standing-breech, having a vertical opening through the front end, with a horizontal slot cut through the front wall thereof, of a locking-bolt located in the opening in the standing-breech, an operating-lever for imparting vertical motion to the bolt, and the barrels pivoted to an arm secured to the standing-breech and provided with fastening-lugs adapted to pass through the slot in the front wall of the vertical opening through the standing-breech and be received in recesses at the sides of said opening and locked therein by the bolt; third, the combination, with the hammer, of a curved slot cut through the lock-plate concentric with the spindle of the hammer, and the cocking thumb piece or lever connected with the hammer through the slot; fourth, the combination, with the hammer and mainspring, of a bearing-rocker upon which the mainspring acts to throw the hammer forward against the firing-pin, the said rocker being pivoted in a recess in the lower part of the rear edge of the hammer, and a forward extension of the mainspring which projects under and engages the bottom of the hammer after it has struck the firing-pin to cause the hammer to rebound, that the sear may engage with the safety-notch; and, fifth, the combination, with the

hammer, of a safety-sear constructed and operating as will be hereinafter fully described.

In the accompanying drawings, Figure 1 is a top view of a fire-arm embodying my invention, the barrels being broken away from the breech, the tang removed from the top of the standing-breech and lock, and the re-enforce cut away sufficiently to show the connection of the supporting-arm with the barrels and the manner in which it acts upon the extractor-stem. Fig. 2 is a side view of the lock and standing-breech, the lock-plate and the plate covering the trip-lever being removed. Fig. 3 is a horizontal section of the standing-breech through the line *xx* of Fig. 2. Fig. 4 is a rear end view of the barrels. Fig. 5 shows a front end view of one of the lock-plates with hammer, sear, and sear-spring attached thereto; and Fig. 6, a similar view of the same with the sear-spring partially cut away. Fig. 7 represents a side view of one of the hammers when cocked and the position of the mainspring with reference thereto. Fig. 8 is a perspective view of the locking-bolt. Fig. 9 is an inner side view of the lock-plate, showing the slot through which the cocking-lever is connected with the hammer, the cocking-lever being in the position occupied by it when the hammer is not cocked.

A represents the barrels, placed vertically one above the other and having their rear ends secured in the re-enforce B. A supporting-arm C projects forward from one side of the standing-breech D, which engages in a recess *b* in the corresponding side of the re-enforce. There is an open hook *c* formed on the inner side of the front end of the supporting-arm, which catches over a vertical hinge-pin *b'* in the forward end of the recess *b*, about which the barrels revolve laterally when breaking away from or closing upon the standing-breech.

The front end *c'* of the arm C is rounded off and fits in a socket in the rear end of the fore-end E, and has a stop *a* projecting forward therefrom, which is brought into contact with the bottom of the front end of the recess *b* when the barrels are broken away from the breech to limit the movement of the same. By the same movement a pin *e*, projecting inward from one of the jaws of the

hook *c*, is brought into contact with the head *f* of the extractor-stem *F*, which extends backward through an opening in the re-enforce to the cartridge-extractor *G*, and forces the latter outward. When released from the pressure of the pin *e*, the extractor is returned to its normal position by the action of a spring *g*, coiled about the stem. The movement of the extractor is steadied by a rod *F'*, projecting forward from the inner face thereof, which slides back and forth in an opening on the side of the re-enforce opposite to that in which the stem is located. By the removal of the fore-end *E* the barrels are entirely disconnected from the breech by disengaging the hook *c* from the hinge-pin *b'*.

The standing-breech has a vertical transverse bolt-chamber *H* made in the front end, having recesses *h* at the sides thereof, which receive the fastening-lugs on the end of the barrels, and a horizontal slot *I* cut through its front wall. A locking-bolt *J* slides vertically in the chamber *H* and engages with the fastening-lugs *K* on the end of the barrels when the latter are closed against the breech. In plan view the bolt is T-shaped, as is the chamber in which it slides, the projecting portions forming flanges *i* upon the stem or body *j* of the bolt, which are received by slots *k* in the lugs *K*. Transversely across the front of the bolt there is a channel *L* made, which cuts through the flanges *i* into the body of the bolt. In the rear and near the bottom of one edge of the body *j* of the bolt there is a recess formed, in which there is a pin *p*, that is engaged by the jaws *m* of an arm *M* of the operating-lever *M N*, extending back through an opening to the rear of the breech, where it is engaged by the inwardly-projecting spindle *n* of the arm *N* of the said operating-lever, located on the outside of the lock. Behind the chamber *H* are placed two vertical chambers *P P'*, one of which *P* is connected with the chamber *H* by a slot, through which a pin *O* projects from the bolt *J*. The chamber *P'* extends downward and connects with the opening in which the lever-arm *M* operates. In these chambers *P P'* are placed coiled springs *Q*, one of which rests upon the pin *O* and the other on the lever-arm *M* to hold the bolt down, so as to keep the flanges *i* in engagement with the fastening-lugs *K*. The springs *Q* are held in place at the upper ends of the chambers *P P'* by retaining-plates *R*, dovetailed in grooves in the top of the breech. On the side of the breech there is a trip-lever *T*, pivoted at *r* and adapted to be forced into engagement with a notch *q* in the edge of the enlarged end *N'* of the lever-arm *N* by a spring *S*, located above it. The front end of the trip-lever projects forward through a recess *t* in the side of the breech far enough to be engaged and pressed down by the outer fastening-lug *K* as the ends of the barrels are locked against the standing-breech. The inner fastening-lug is thinner than the outer, in order to avoid com-

ing into contact with the trip-lever as it passes over it.

The fastening-lugs *K* are formed on the outer ends of arms *K'*, removably secured in the sides of the breech, and have recesses *h* formed in their inner faces, and the inner lug is made shorter than the outer, in order to pass through the horizontal channel *L* in the bolt as the barrels break away from or are closed against the breech. For the same reason the bottom of the channel slopes backward from the outer side toward the arm *C*.

When the barrels are closed against the breech, the fastening-lugs *K* rest in the recesses *h*, the trip *T* is disengaged from the notch *q* in the end of the lever-arm *N*, and the bolt *J* is held down by the springs *Q* with the channel *L* lying below the horizontal slot *I* and the upper flanges *i* in engagement with the slots *k* in the fastening-lugs *K*. By depressing the lever-arm *N* the arm *M* raises the bolt *J* until the channel *L* coincides with the slot *I*, the trip *R*, actuated by the spring *S*, at the same time engaging the notch *q* in the end of the lever-arm *N* to hold the bolt in its elevated position. The upward movement of the bolt disengages the flanges *i* from the recesses in the fastening-lugs *K* and leaves the slot *I* open for the passage of the lugs as the barrels break away from the breech. In closing the barrels against the breech the outer lug, which enters its recess last, presses upon the end of the trip in the recess *t* and disengages it from the notch *n* in the end of the lever-arm *N*, so that when that lug has fully entered the recess *h* which receives it the springs *Q* force the bolt *J* downward to lock the fastening-lugs in place. The breaking away of the barrels from the breech throws the cartridges out of the barrels by the pressure of the pin *e* of the arm *C* upon the head of the extractor-stem *F*.

The locking-bolt *J* is provided with centrally-located vertical slots *V*, which extend from the top and bottom toward the center to permit the passage of the firing-pins *W*. These slots are of sufficient length to permit the necessary vertical movement of the bolt without interfering with the pins.

Each hammer *1* has a recess *2* in the lower outer face of its rear edge back of its pivot *8*, in which is hinged a bearing-rocker *3*, the lower edge of which is rounded and rests in a trough *4* in the top of the mainspring *5*, and is provided with a downwardly-projecting lip *6*, which serves to prevent lateral movement of the mainspring. The mainspring extends forward under the hammer, and the front end *9*, bears against the bottom of the hammer in front of the pivot thereof.

The sear is formed of two sections pivoted side by side on the same pin *10*. One of these sections *11* consists simply of a toe for engaging the notches in the hammer, and is provided with a recess in the edge adjoining the other section *12*. Section *12* is provided with the usual arm *13* for engagement by the trig-

ger-head 14, and also has a projection 15 formed on the side adjoining the section 11, which dovetails into the recess therein from the back of the sections, so that the forward movement of the section 12, caused by the action of the trigger 16, also rotates section 11, while any backward movement of section 11 leaves section 12 unaffected thereby. The sections are held in engagement with the hammer by the bifurcated spring 17, each jaw of which engages one of the sear-sections. By this construction, should the section 11, the toe 18 of which is somewhat longer than that of section 12, accidentally fail to engage the safety-notch 19 of the hammer, section 12, being pressed forward independently of the other section, will do so.

Through the lock-plate 7 there is cut a curved slot 20, made concentric with the pivot of the hammer, through which the shank of the cocking-lever 21 passes and engages with the hammer. A covering-plate 22 is rigidly fastened to the shank of the cocking-lever and moves with it, being of such size as to cover the slot 20 with all the movements of the lever. The cocking-lever is thus engaged with the hammer at one side of the pivot about which the latter oscillates. This construction permits the parts to be fastened firmly in place and gives great rigidity to their connections.

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

1. The combination, with the standing-breech, of the supporting-arm fastened thereto, constructed to be received in a recess *b* in the re-enforce of the barrels, and having a hook formed on the forward end adapted to catch over a hinge-pin in said recess, the fore-end having a socket in the rear end thereof to receive the forward end of the supporting-arm, and a stop *a*, projecting from the end of the supporting-arm to engage the bottom of the recess *b* when the barrels are broken away, substantially as and for the purpose specified.

2. The combination, with the standing-breech having a bolt-chamber with recesses formed therein and a slot cut through the wall thereof, of the barrels provided with fastening-lugs adapted to pass through said slot and be received in the recesses of the bolt-chamber, the supporting-arm connecting the breech and barrels, and a locking-bolt located in the bolt-chamber and constructed to close the recesses and hold the fastening-lugs therein, substantially as and for the purpose specified.

3. The combination, with the standing-breech having a bolt-chamber with recesses formed therein and a slot cut through the wall thereof, of the barrels provided with recessed lugs adapted to pass through said slot and be received in the recesses of the bolt-chamber, the supporting-arm connecting the breech and barrels, and a locking-bolt located

in the bolt-chamber and constructed to engage the recesses in the fastening-lugs and hold said lugs in the recesses of the bolt-chamber, substantially as and for the purpose specified.

4. The combination, with the standing-breech having a bolt-chamber with recesses formed therein, of a locking-bolt located in said chamber and constructed to close the entrance to the recesses, a lever for removing the bolt from in front of the recesses, chambers *P P'* in the standing-breech, and springs secured in the chambers *P P'* and adapted to hold the bolt in front of the recesses in the bolt-chamber, substantially as and for the purpose specified.

5. The combination, with the standing-breech having a bolt-chamber and means for receiving the fastening-lugs, of fastening-lugs and a locking-bolt, springs for keeping the bolt locked in front of the said recesses, a lever for opening the bolt from in front of the lugs, having its operating-arm on the outside of the lock, a trip-lever for keeping the operating-lever in position as it holds the locking-bolt open, which is disengaged from said operating-lever by one of the fastening-lugs as said lug enters its recess in the breech, all constructed and operating substantially as and for the purpose specified.

6. The combination, with the hammer, of the mainspring constructed to engage the hammer in rear of its center of motion and extending forward under said hammer to engage it in front of said center as the hammer is forced forward, substantially as and for the purpose specified.

7. The combination, with the hammer having a bearing pivoted thereto back of its center of motion, of the mainspring constructed to engage said bearing and extending forward under the hammer to catch the same in front of its center of motion as it is forced forward, substantially as and for the purpose specified.

8. In a breech-loading fire-arm, the combination, with the hammer situated inside of the lock, of the cocking-lever located on the outside and engaged with the hammer at one side of the pivot thereof, the shank of the cocking-lever passing through a slot in the lock-plate, substantially as specified.

9. In a breech-loading fire-arm, the combination, with the hammer located inside of the lock and the cocking-lever located on the outside and connected with the hammer at one side of the pivot thereof, the shank of the lever passing through a slot in the lock-plate, of a covering-plate rigidly fastened to the lever and so constructed as to cover said circular slot in all positions of the lever, substantially as specified.

10. The combination, with the hammer, of the sear formed of two sections, one of which is connected with the other so as to disengage it from the hammer, and the bifurcated spring having each jaw engaged with one of

the sections of the sear, substantially as and for the purpose specified.

11. The combination, with the hammer, of the sear divided into sections, one of which
5 has the toe thereof shorter than that of the other and is connected therewith so as to disengage it from the hammer, and the bifur-

cated spring having each jaw engaged with one of the sections of the sear, substantially as and for the purpose specified.

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