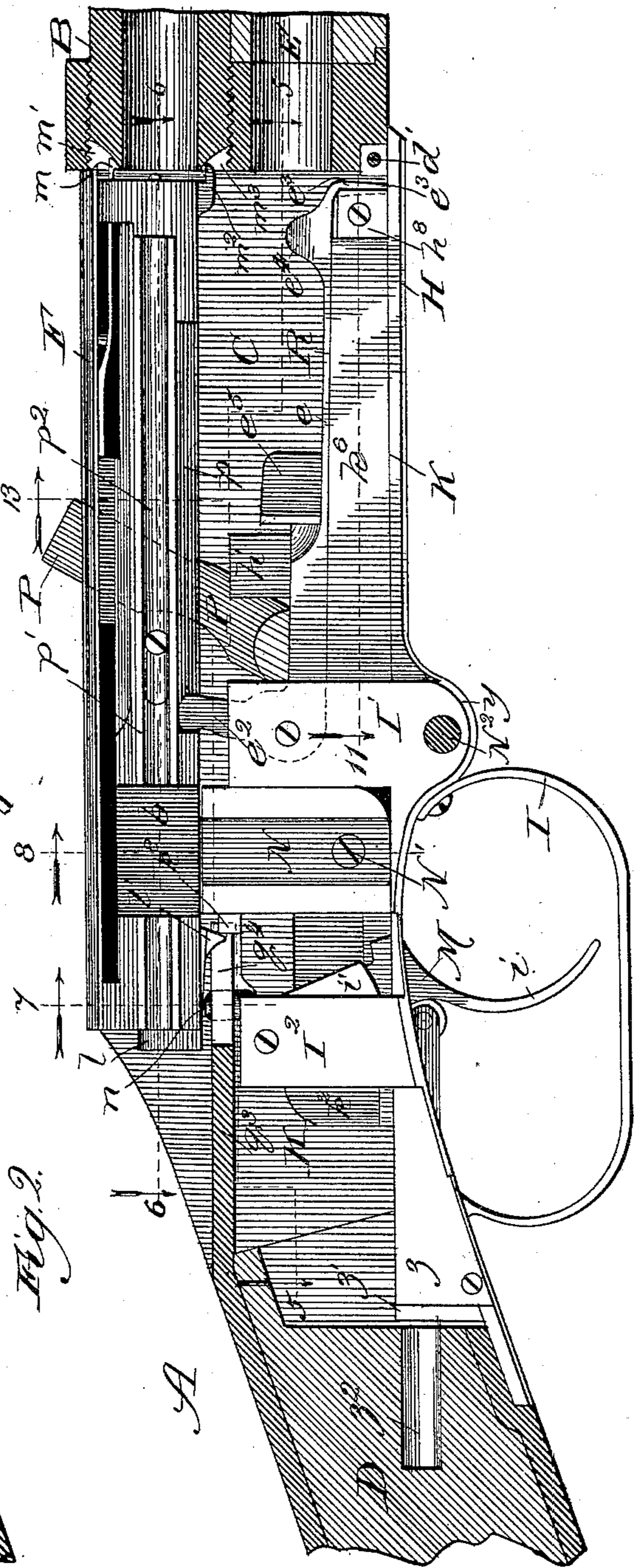
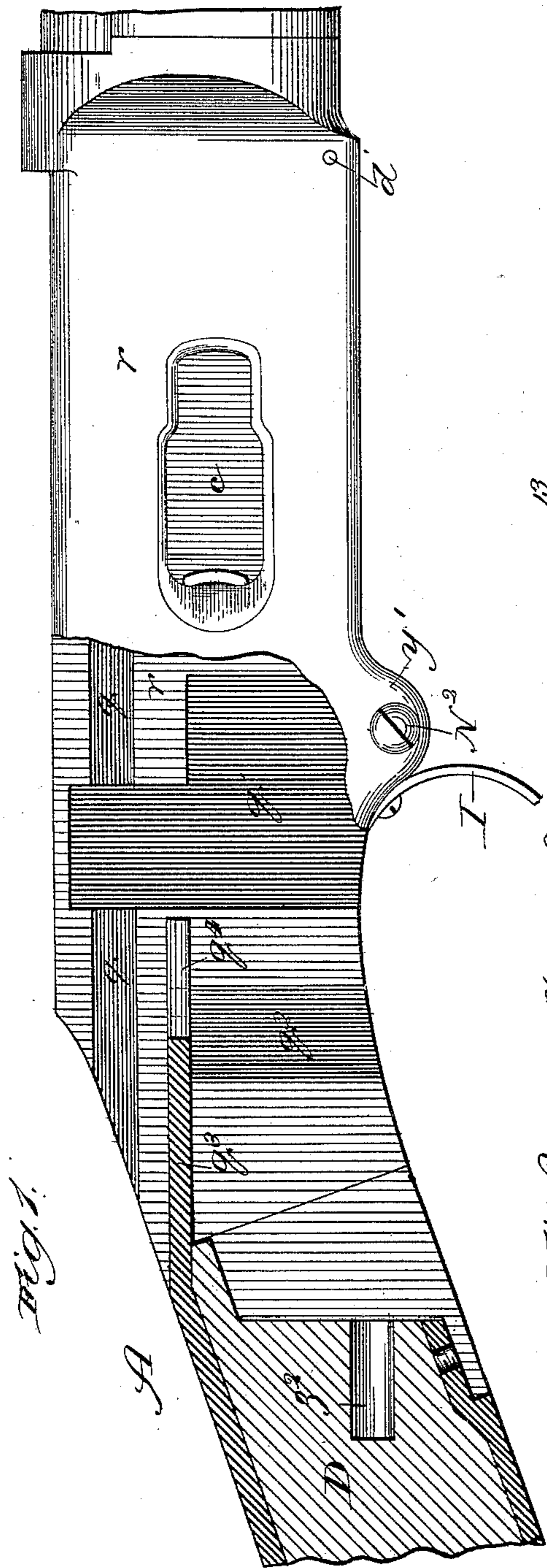


H. LEINEWEBER.
RECOIL OPERATED MAGAZINE GUN.

No. 428,813.

Patented May 27, 1890.



Witnesses:
E. E. Claydon,
J. H. Dyrenforth

Inventor:
Hermann Leineweber,
By Dyrenforth & Dyrenforth
Attys

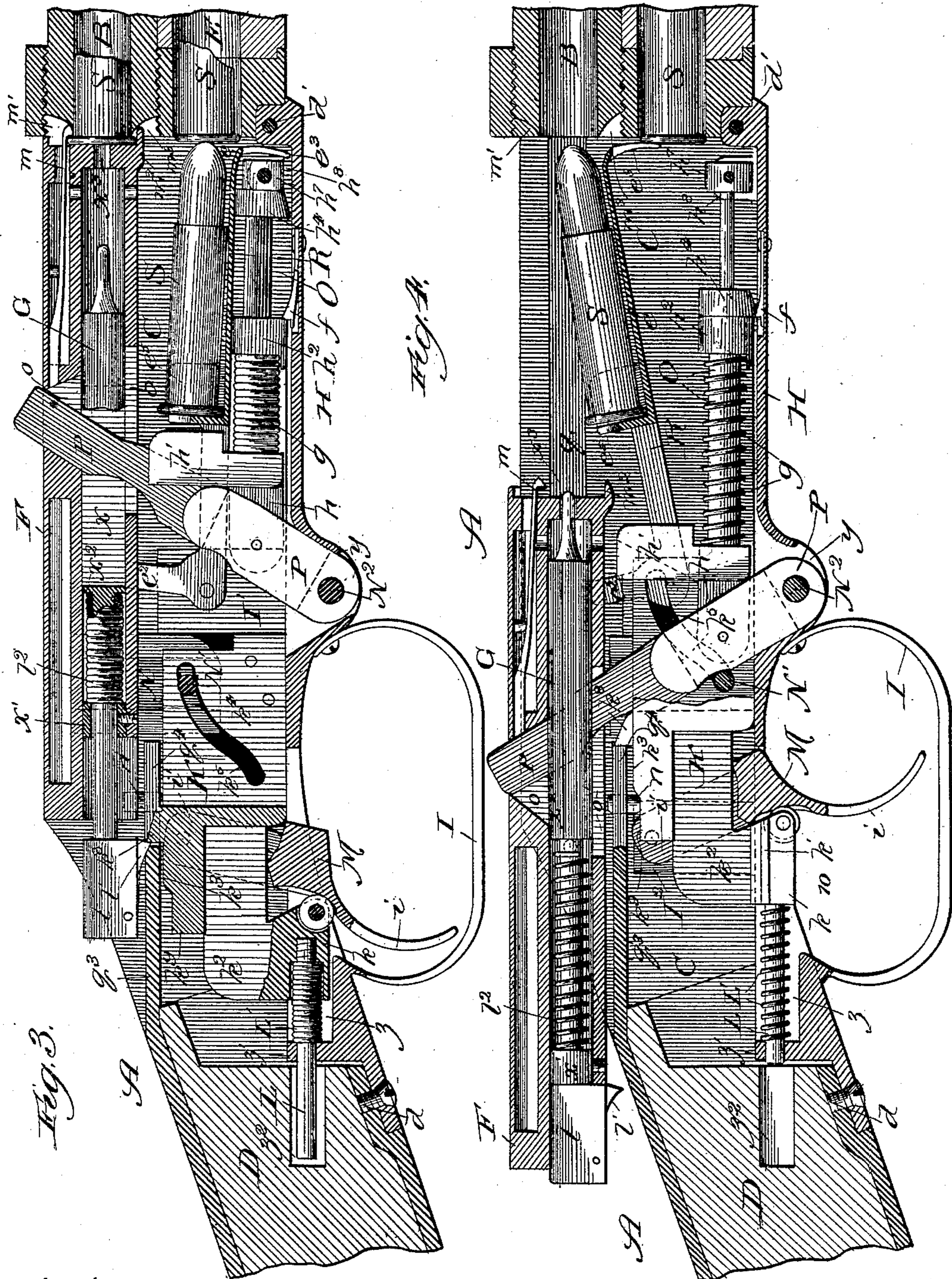
(No Model.)

4 Sheets—Sheet 2.

H. LEINEWEBER.
RECOIL OPERATED MAGAZINE GUN.

No. 428,813.

Patented May 27, 1890.



Witnesses:
C. A. Gaylord,
J. H. Dyrenforth

Inventor:
Hermann Leineweder,
By Dyrenforth & Dyrenforth,
Attys

(No Model.)

4 Sheets—Sheet 3.

H. LEINEWEBER.
RECOIL OPERATED MAGAZINE GUN.

No. 428,813.

Patented May 27, 1890.

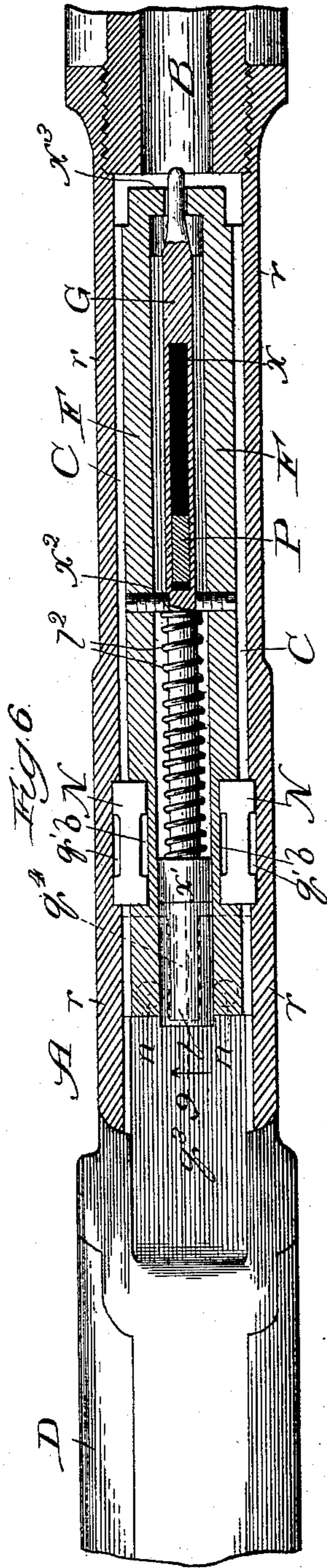
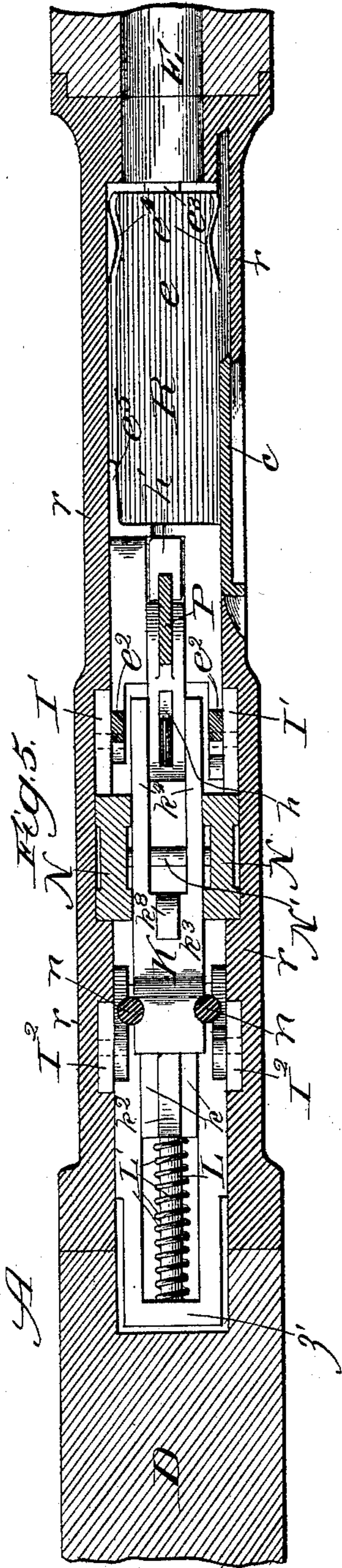


Fig. 9.

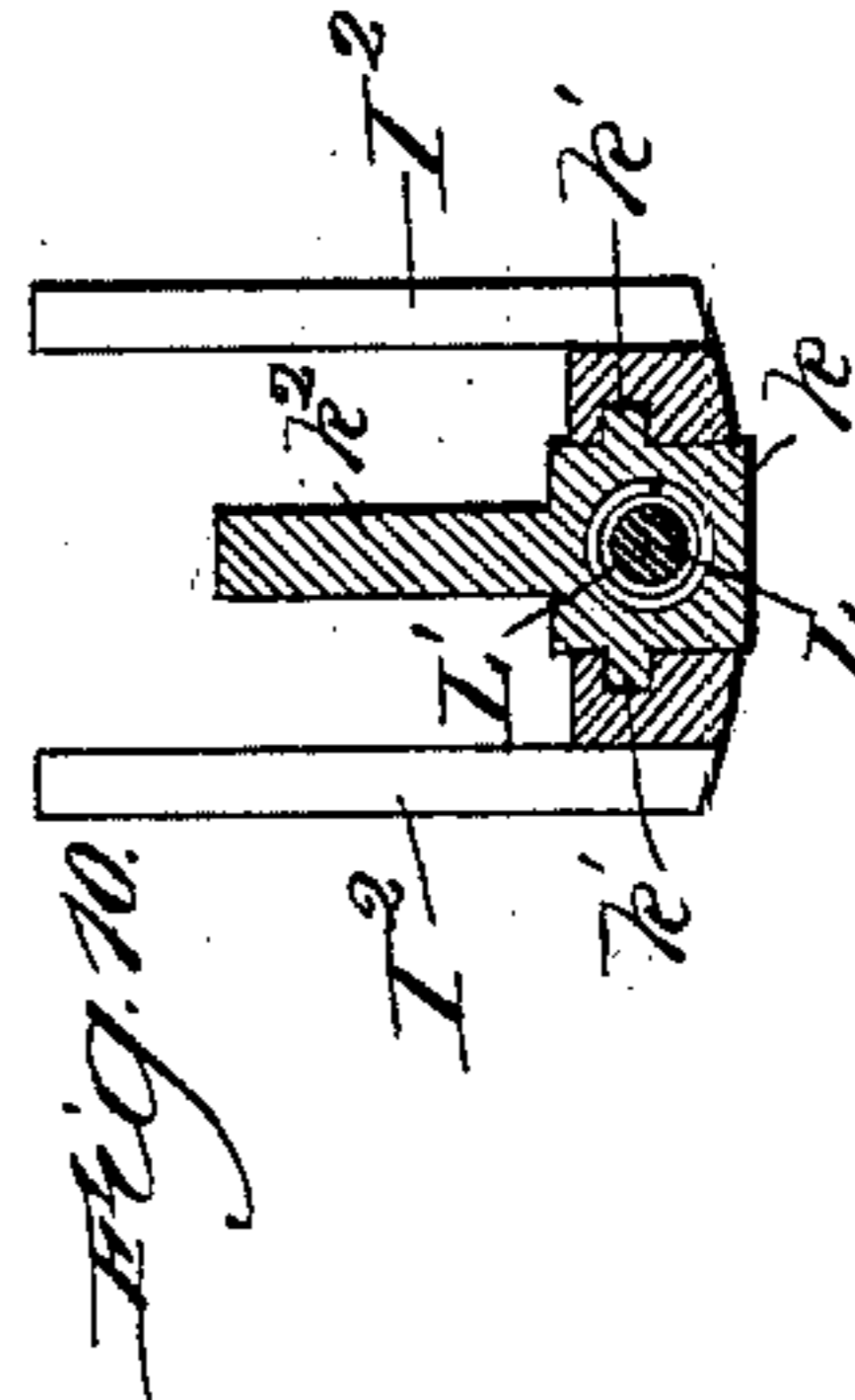
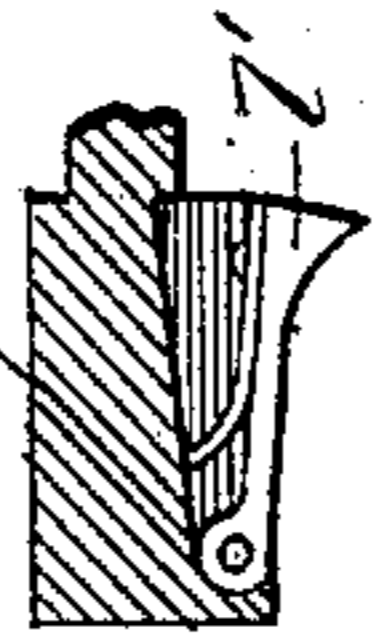
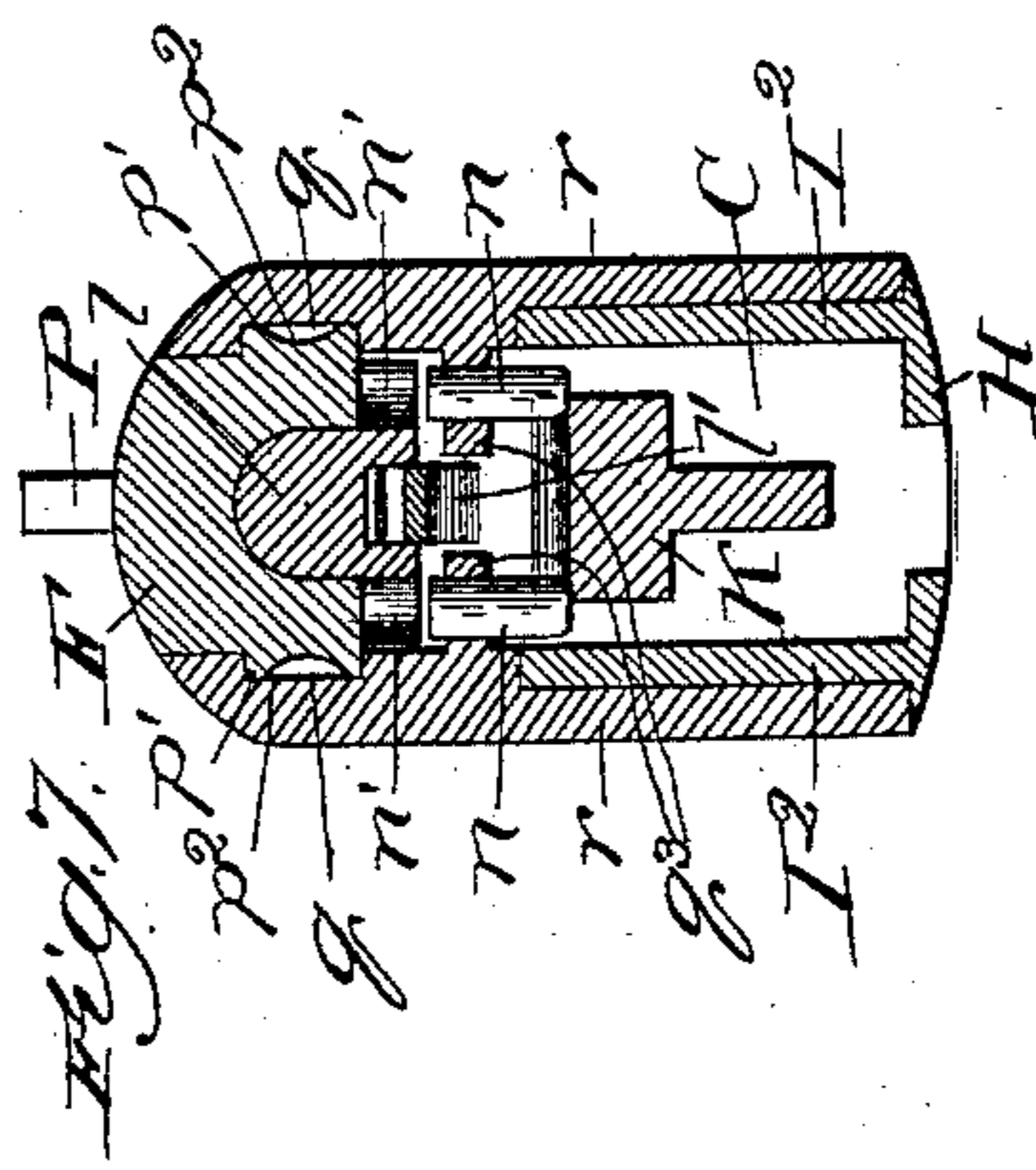
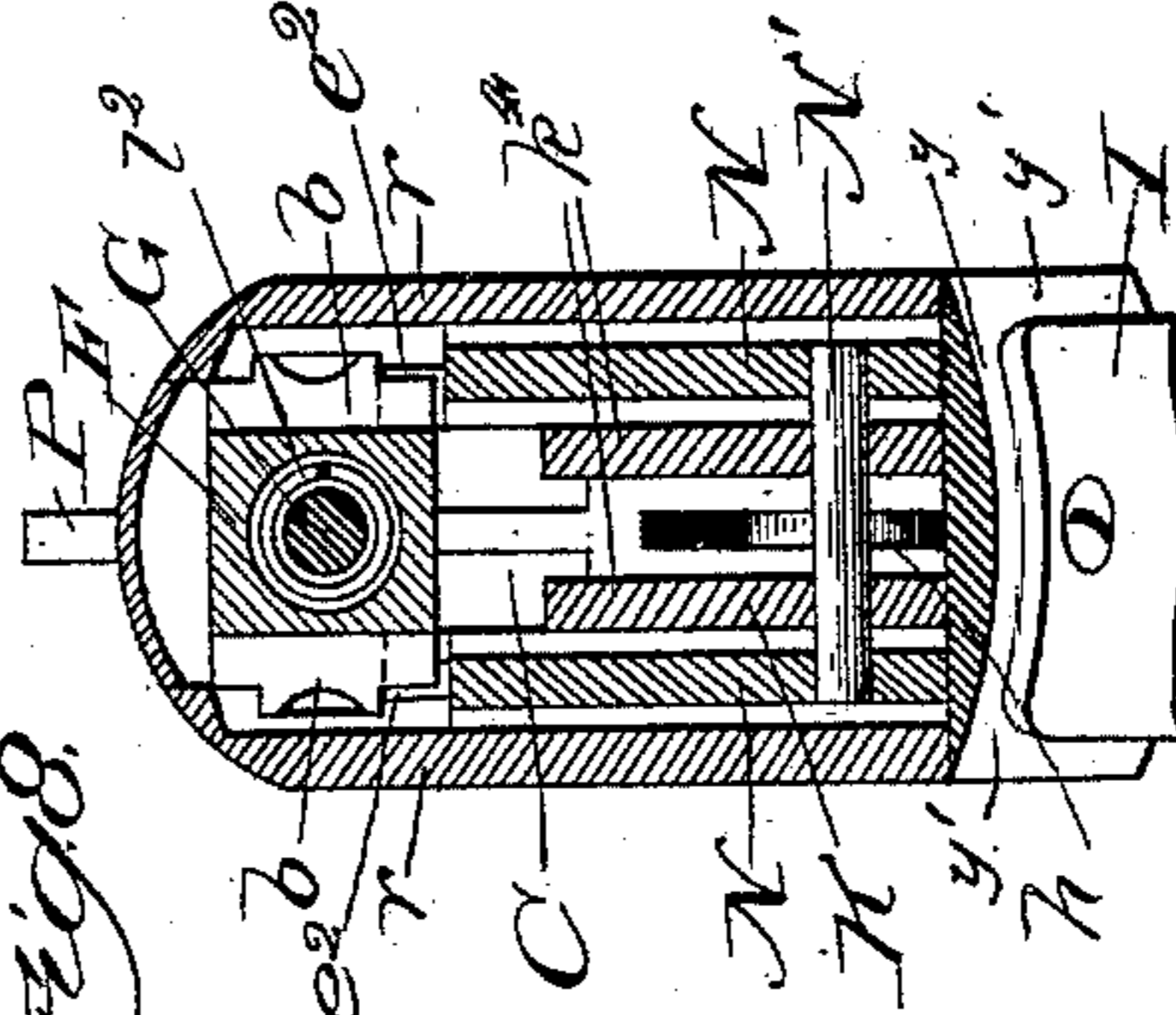


Fig. 8.



Witnesses:
C. C. Dyrenforth,
J. H. Dyrenforth

Inventor:
Hermann Leineweber,
By Dyrenforth & Dyrenforth,
Attys

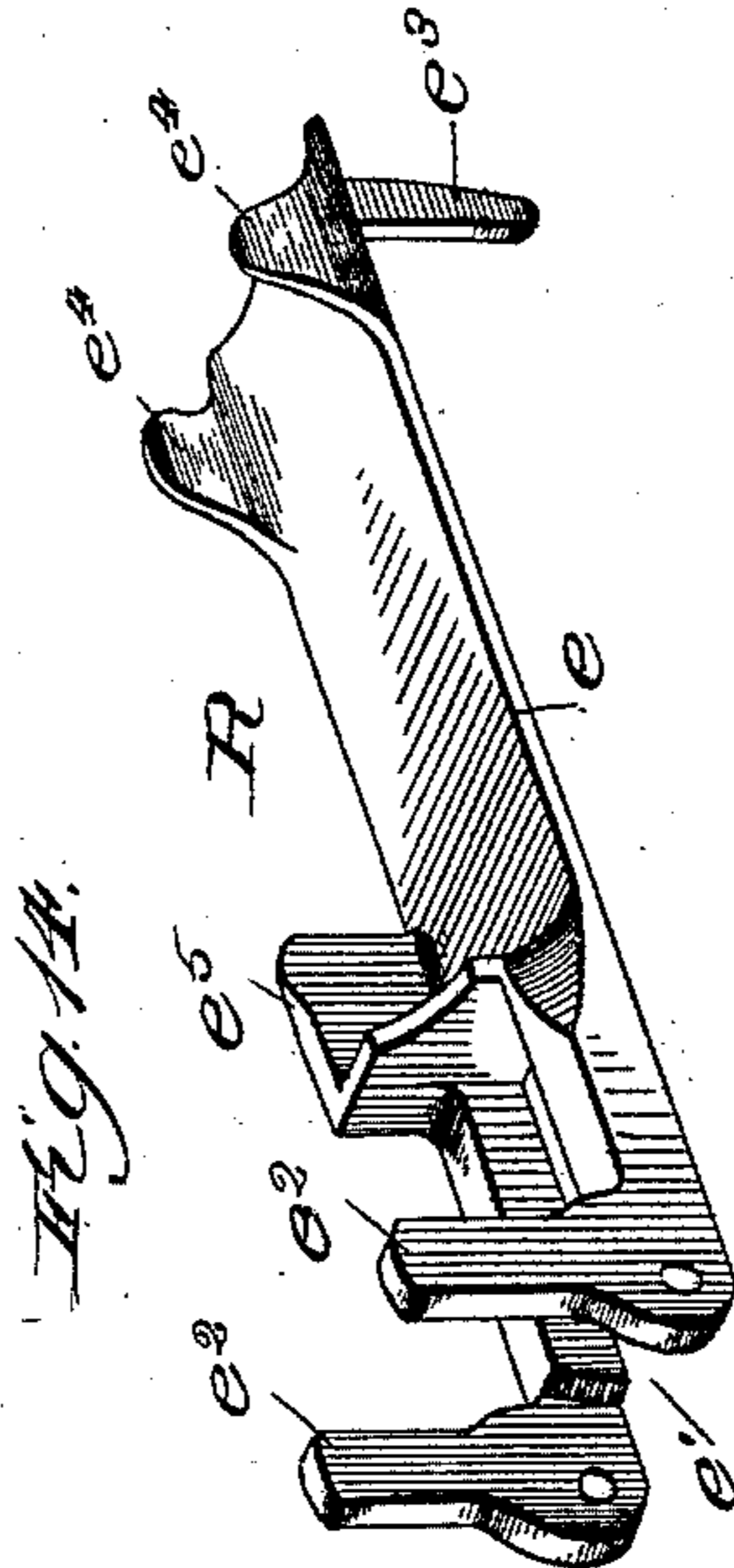
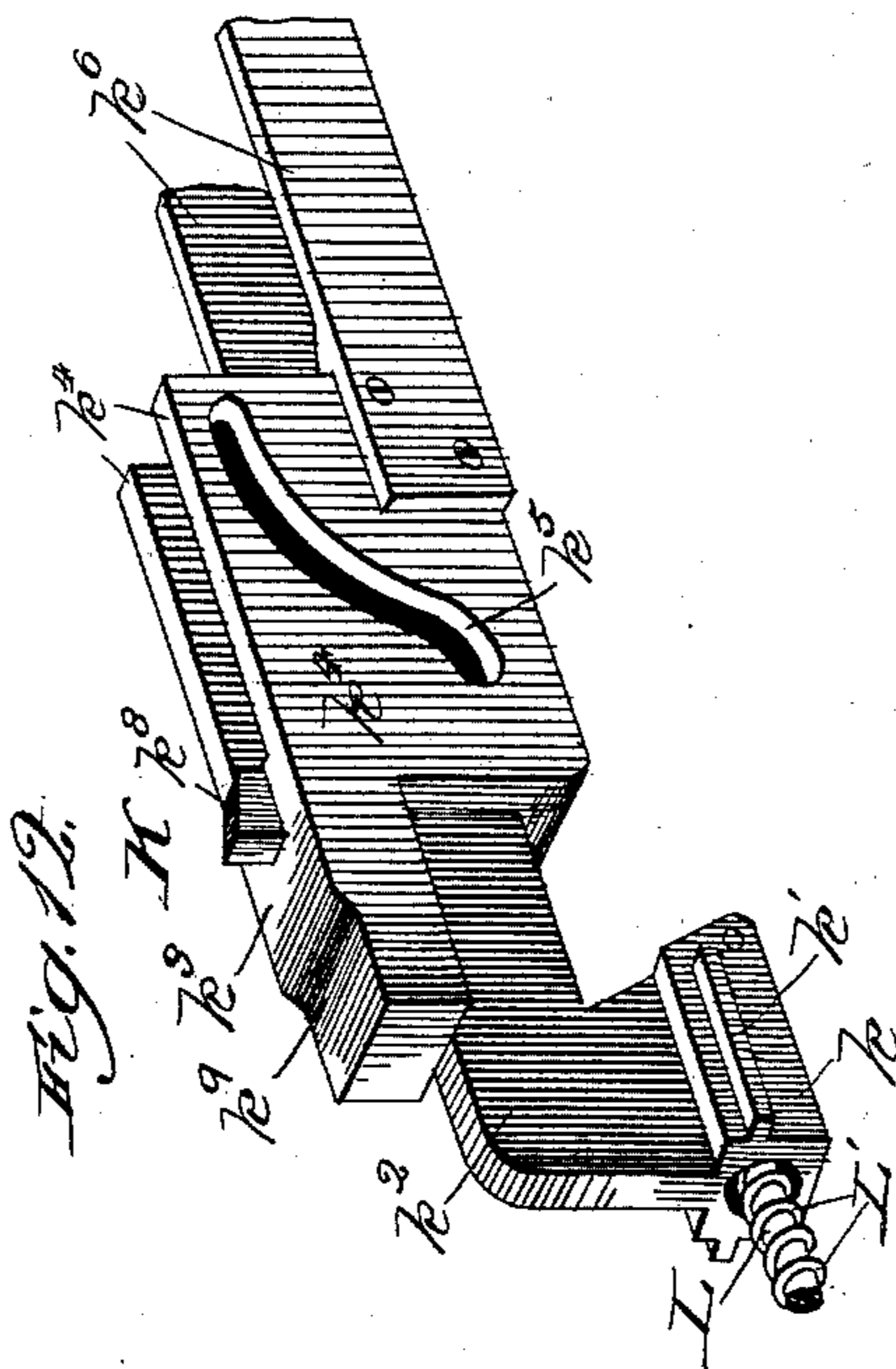
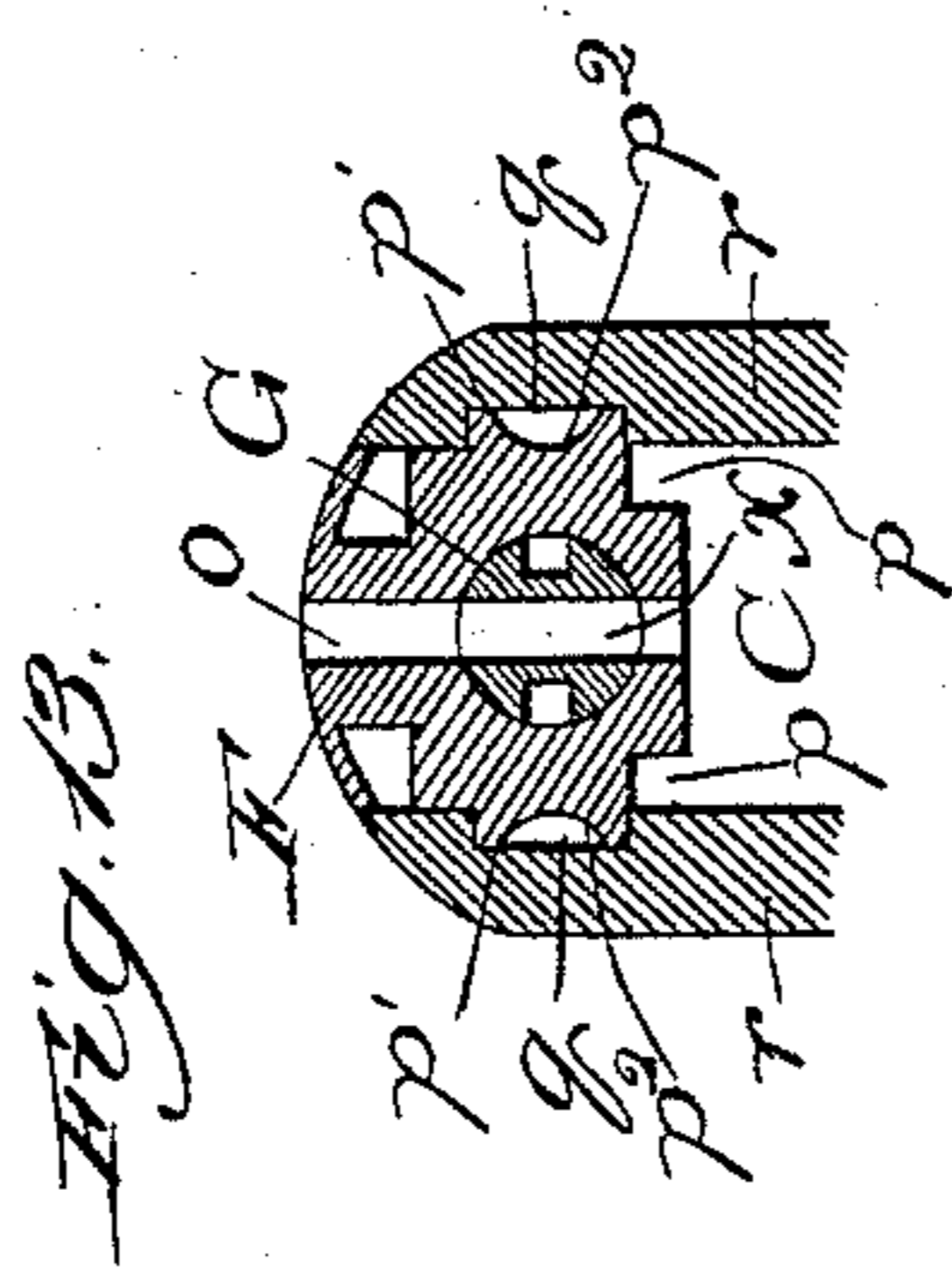
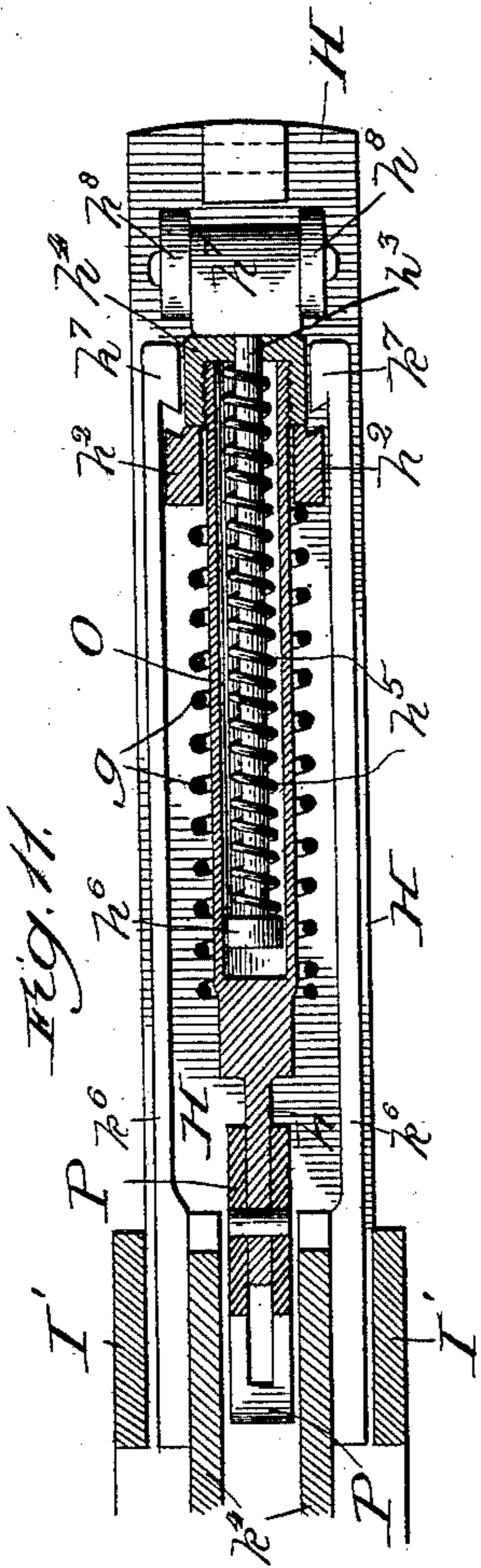
(No Model.)

4 Sheets—Sheet 4.

H. LEINEWEBER.
RECOIL OPERATED MAGAZINE GUN.

No. 428,813.

Patented May 27, 1890.



Witnesses:
J. H. Dyrenforth,
J. H. Dyrenforth.

Inventor:
Hermann Leineweber,
By Dyrenforth & Dyrenforth,
Attys.

UNITED STATES PATENT OFFICE.

HERMANN LEINEWEBER, OF SOUTH CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO THOMAS E. HALL, OF KANSAS CITY, MISSOURI.

RECOIL-OPERATED MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 428,813, dated May 27, 1890.

Application filed September 14, 1889. Serial No. 323,929. (No model.)

To all whom it may concern:

Be it known that I, HERMANN LEINEWEBER, a citizen of the United States, residing at South Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Magazine Fire-Arms, of which the following is a specification.

The object of my invention is to provide a self-acting gun which, when its magazine is supplied with the ammunition and a cartridge has been brought into position for firing, will by a pull on the trigger fire the gun, then by release of the trigger withdraw and eject the shell of the spent cartridge and thereupon immediately reload with a fresh cartridge, thereby to afford simplicity in the handling of the gun in shooting, and to permit all the cartridges contained in the magazine to be fired successively without requiring the operator to take the gun from his shoulder or lose his aim. This object is accomplished by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a broken and partly-sectional view showing that portion of a gun between the stock and barrel (this being the part to which my improvement is applied) prepared to receive my improved mechanism, but which is not shown in position; Fig. 2, a similar view with a side of the casing removed and displaying in side elevation the mechanism affording my improvement; Fig. 3, a view of the same in vertical longitudinal sectional elevation, showing the parts in the relative positions to which they are brought in pulling the trigger; Fig. 4, a view like that presented in the preceding figure, but showing the parts in the relative positions they assume on releasing the trigger. Figs. 5 and 6 are sectional views taken, respectively, on the lines 5 5 and 6 6 of Fig. 2, looking in the direction of the arrows; Figs. 7 and 8, similar views taken, respectively, on the lines 7 and 8 of Fig. 2, looking in the direction of the arrows. Fig. 9 is a sectional view taken on the line 9 of Fig. 6, viewed in the direction of the arrow, and illustrating a spring-stop detail; Fig. 10, a similar view taken on the line 10 of Fig. 4, looking in the direction of the arrow; Fig. 11, a similar view taken on the

line 11 of Fig. 2, but somewhat enlarged, and looking in the direction of the arrow; Fig. 12, a broken perspective view of the reciprocating lock-actuating and spring controlling and controlled carriage detail; Fig. 13, a section taken on the line 13 of Fig. 2, looking in the direction of the arrow; and Fig. 14, a perspective view of the pivotal lever for ejecting the spent cartridges and receiving and directing the loading of fresh cartridges.

A general description of the mechanism I have provided to carry out my invention and of the operation is as follows: A longitudinally-reciprocating breech-block containing a spring-controlled firing-pin in line with the bore of the barrel is locked against movement in pulling the trigger by vertically-sliding bolts actuated to rise and engage the breech-block by a pull on the trigger. The pull on the trigger also retracts the firing-pin against the force of its spring, and the resilience of the spring when released, to effect which release provision is made while the trigger is being pulled to or when it has reached the limit of its movement, shoots the pin forward to explode the cartridge. There is also connected with the trigger a reciprocating carriage below the breech-block and retracted by the pull on the trigger to raise the locking-bolts, and also to compress a spring at its forward end and one at its rear end. The forward spring is confined around a horizontally-reciprocating tube between a sliding head surrounding it normally at its forward end and a lever pivoted above its fulcrum to the end of the tube, and another spring being provided inside the tube and confined around a rod projecting into the latter, the pivotal lever extending upward through a slot in the breech-block, so that when the trigger is pulled it not only effects locking of the breech-block, but also compression of the spring (from the forward end of the latter) surrounding the tube, which is held from sliding backward by the pivotal lever being confined in the slot of the locked breech-block.

When a cartridge in position has been fired by the shooting forward of the firing-pin, the trigger is released, permitting the resilient

force of the spring in rear of the carriage to shoot it forward, thereby lowering the locking-bolts out of engagement with the sliding breech-block, and thus freeing the latter and permitting the forward compressed spring around the sliding tube to expand backward against the pivotal lever, which is thereby turned on its pivot and carries with it the breech-block. The backward movement of the breech-block opens the top of the chamber behind the barrel, and in moving backward it pulls the shell of the spent cartridge out of the bore upon a pivotal substantially bell-crank-shaped lever, the horizontally-disposed part of which is normally in position to receive a cartridge from the magazine and is shaped to afford a suitable receptacle for it. As the breech-block is retracted, it trips the cartridge-holding lever and raises it to eject the shell of the spent cartridge through the opening left by the breech-block and to bring another cartridge into position to be introduced into the barrel.

The resilience of the backward-expanding spring on the sliding tube draws the latter backward, and thereby compresses in the same direction the spring inside the tube, so that when the resilient force of the first-named spring is exhausted and has driven the breech-block backward to the limit of its play the spring-stop holding it at its forward end is automatically released, permitting the inside spring to act, and by its resilience in a forward direction force the tube back to its normal or forward position, whereby it carries the breech-block back to its normal position, and the new cartridge, being in the path of the breech-block, is pushed into the bore of the gun-barrel.

A is a gun, between the barrel B and stock D of which is a chamber C, afforded by two sides r , and thus open along its top and base, and which contains the mechanism involving my invention. Along the under side of the gun-barrel extends the magazine E, closed at its outer end (not shown) and leading at its opposite end into the chamber C. The inner surfaces of the sides r are provided near their upper edges and longitudinally with rectangular grooves q , Fig. 1, forming guides and supports for the breech-block F, which fits between the guide-grooves, being inserted therein from their rear end, from which, just below the grooves q , extends a web q^3 , having a slot q^4 in its forward edge, and supporting at opposite sides of the slot spring-studs n , and the sides r are further provided, vertically, with recesses q' , which intersect the grooves q , as shown, and behind the recesses q' with recesses q^2 , the said recesses affording guides for the introduction of and confines for parts of the mechanism inserted into the chamber C below the breech-block and hereinafter described.

The breech-block F has lateral longitudinal guides p' , Fig. 2, which should be grooved along their outer sides, as shown at p^2 , and

are provided lengthwise on their under sides with recesses p , and a slot o , Figs. 3 and 4, extends transversely through the breech-block midway between its sides, and is longer at the bottom than at the top of the block. From the forward upper end of the breech-block extends a spring-hook m , which projects into a recess m' in the barrel B, when the breech-block is in its normal position, to engage with the flange of the cartridge, as and for the purpose hereinafter explained, and opposite the spring-hook there extends from the breech-block to enter a recess m^3 in the inner end and at the lower side of the barrel a guide-lip m^2 .

G is the firing-pin, resembling other firing-pins in its general form, but involving a different construction as to details, being slotted, as shown at x , Fig. 6, where it coincides longitudinally with the slot o in the breech-block, and provided at its rear end with a head l , having let into its lower side a spring-stop l' , which normally projects beyond such side. The firing-pin is housed in a suitably-formed bore in the breech-block, and is surrounded toward its rear end by a coiled spring l^2 , (though the spring for actuating it may be of different form and arrangement,) confined at its rear end in the bore by a stationary stop x' and at its opposite end by a stop x^2 on the pin G. The forward play of the firing-pin is sufficient to permit it to be projected at its pointed end beyond the orifice x^3 , though the extent of the normal condition of expansion of the spring l^2 does not protrude it beyond that orifice, the pin having sufficient play independent of its spring to permit it to be normally housed as to its point in the breech-block and requiring its inertia after the expenditure of the inherent resilient force of the spring to protrude the point, and thereby force it into the barrel B.

The mechanism contained in the chamber C below the breech-block is all supported on a suitable bed H, conforming to the shape of the open bottom of the said chamber, of which it forms the base when adjusted into place, wherein it is properly secured, as shown, and the bed H also carries the trigger-guard I and lateral upright bearings I' and I^2 , respectively, in pairs on its opposite edges for the parts of the mechanism it supports, the bearings I' extending from coincidence with a transversely-perforated lug y , formed on the bottom side of the bed H, just in advance of the trigger-guard. Toward the rear end of the bed, where it curves slightly to conform to the bend in the neck of the stock, it is provided with lateral flanges z , the upper edges thereof forming continuations of the planes of the lateral edges of the straight portion of the base, and the flanges z are grooved longitudinally along their inner sides near the upper edges to form guides, for a purpose hereinafter described, extending to the ends of the flanges, where a bearing z' is provided, having a perforation near its upper end in

line with a tubular socket z^2 , formed in the gunstock.

K is the reciprocating carriage, (shown clearly in Fig. 12,) comprising a head k at its rear end, having guide-feathers k' at opposite sides extending into the guide-grooves referred to as being provided in the flanges z , and a socket in its rear extremity to receive one end of a rod L , surrounded by a spring L' , confined between the head k and stop z' , the perforation in which stop affords the bearing for the rear end of the rod, and from the center of the upper side of the head k an elbow k^2 extends, having secured to or integral with its upper edge the rear extension k^3 of a rectangular bifurcated block k^4 , the sides of which contain coincident curved slots k^5 , and from which sides extend parallel arms k^6 , terminating at their forward extremities in inward-projecting hooks k^7 . The extension k^3 is slightly beveled toward its extremity, as shown at k^9 .

M is the trigger, extending through the bed H, with the finger portion i inside the guard I, and the portion in the chamber C formed into a yoke or stirrup i' , embracing the part k^3 of the carriage K, and pivotally connected with the bearings I^2 , toward their upper ends, and between which bearings and the sides of the said part k^3 they extend. The base of the stirrup i' bears against the inner end of the head k of the carriage, as shown, and on the upper surface of the extension k^3 is a lug k^8 .

NN are the locking-bolts, rigidly connected together by a pin N' , extending through the curved slots k^5 in the carriage K, and thus flanking the latter.

O is a tube extending between the parallel arms k^6 of the carriage K and terminating at its rear end, where it reaches normally between the vertical forward edges of the part k^4 of the carriage in a laterally-flattened head h , and near the base of the head is a vertically-extending rest h' for a lever P, hereinafter described. A spring g surrounds the tube O, and is confined at opposite ends, respectively, between the head h and a washer h^2 , loosely surrounding the tube, into which, from its forward end, extends through a perforated cap h^4 , screwed on such end, a rod h^3 , Fig. 11, surrounded by a spiral spring h^5 , confined between a stop h^6 on the inner end of the rod and the perforated cap h^4 . The rod h^3 terminates at its forward extremity in a head h^7 , at which it is fastened to lugs h^8 , provided on the bed H.

The lever P is pivoted between its extremities to the head h of the tube O, and is fulcrumed below its pivotal connection to the bed H and sides of the chamber C by a pin N^2 , passed through it and the lug y and the correspondingly-formed parts of the lower edges of the sides of the chamber C.

In the bed H, near its forward end, is a spring-catch f , the head of which normally projects beyond the upper surface of the bed,

but which is depressed to bring it flush with such surface as the washer h^2 passes over it by pulling the trigger, as and for the purpose hereinafter described, but springs back into its normal position as soon as the washer has passed it to hold the latter against backward movement by the force of the spring g .

R, Fig. 14, is the substantially bell-crank-shaped lever or carrier for receiving from the magazine the cartridges successively and so directing them to the barrel, and in doing so ejecting the shell of the spent cartridge. This device involves a horizontal arm e , which should be somewhat thickened toward one end, as shown, where it is provided longitudinally with a slot e' , from the ends of the margins of which extend the vertical arms e^2 , and at its angle the lever is pivotally supported between the upright bearings I' , as shown, whereby the vertical arms extend upward into the lateral grooves in the breech-block, and the horizontal arm extends along and rests normally upon the arms k^6 of the carriage K, projecting somewhat beyond the forward end of the latter, where it is provided with a downward-projecting curved stop e^3 and ears e^4 , forming lateral confines for the tapering end of a cartridge S. At the inner end of the slot e' (from which the arm e should be of about the length of a cartridge) an angle-piece e^5 is provided to afford a back and lateral stop for the cartridge.

To adjust the parts into co-operative position, the breech-block F is first applied by introducing it with its lateral guides p' into the guide-grooves q , provided in the sides r of the chamber C, and when so adjusted in its normal position it reaches with its forward end against the rear end of the barrel B, whereby the spring-catch m and lip m^2 enter, respectively, the recesses m' and m^3 . Near the rear end of the breech-block in its under side, at opposite sides of the spring-stop l' in the head l , are sockets n' , Fig. 7, which are located to be slightly out of coincidence with (that is, in advance of) the spring-studs n , which, as hereinafter stated, extend through the web q^3 at opposite sides of the slot q^4 therein, and the normal tendency of the studs is to spring and remain out of the sockets n' , into which they are pressed, however, as and for a purpose hereinafter described, by the beveled end k^9 of the carriage K, through the medium of the trigger at the beginning of the pull thereon.

When the breech-block has been inserted into position, as described, the parts supported on the bed H are adjusted through the open base of the chamber C in a manner to pass the projecting portion of the lever P through the slot o in the breech-block, the lock-bolts N then entering the longer portions of the recesses q' , provided in the inner sides of the chamber C, the bearings I' the shorter portions thereof, the bearings I^2 entering the recesses q^2 , and the lug y being brought to coincide with the analogous parts y' on the

edges of the opposite sides r . The pin N^2 may then be passed through the coincident perforations in the lugs y and y' , and thereby also through the lever P , for which it thus affords the fulcrum. After the bed H has been adjusted as described it is further secured in place, as shown, by a screw d at the rear end and a pin d' at the opposite end.

With the parts relatively adjusted in the manner described (as they are shown in Fig. 2) all the springs g , h^5 , and L' are in their normal distended conditions, the lever P inclines forward from its fulcrum M^2 , the lock-bolts N are down and thus out of engagement with the breech-block, (their connecting-pin N' being at the lower extremities of the curved slots k^5), and the cartridge-lever R lies with its arm e flat upon the arms k^6 of the carriage K , and in that position extends to the base of the magazine E , which, as it may be of common construction, is not shown in detail, the construction I employ involving a tube extending below the barrel B longitudinally thereof, closed at its outer end, and communicating at its opposite end with the chamber C near its base, and containing a normally-distended helical spring having a head which extends, when the spring is distended, to the mouth or inner end of the magazine.

The magazine is supplied, on moving forward the slide c (shown in Fig. 1) in a side r , which covers an opening coinciding with the part e of the lever R , by inserting, one after another, cartridges S , taper end foremost, upon the lever, and thence forcing each by a succeeding one into the magazine, the magazine-spring always keeping the lever R , when in position to receive it, supplied with a cartridge.

A pull on the trigger first retracts the carriage K until the hook ends k^7 on the arms k^6 , which hooks are normally somewhat in advance of the washer h^2 , are engaged with the latter. This much of the trigger movement wedges the beveled end k^9 of the carriage underneath the spring-studs n (which, as will be noticed, are somewhat tapering at their upper ends) into the sockets n' , and they hold the breech-block against retraction by the frictional strain against it while being locked by the rise of its locking-bolts N , as hereinafter described. The effect through the medium of the carriage K of the pull on the trigger (besides that just described) is fourfold—namely, to lock the breech-block, retract and release the firing-pin, and compress the springs L' and g .

The bolts N , by the backward sliding of the carriage, owing to their connecting-pin N' being in the curved slots k^5 , rise and enter lateral recesses b , Figs. 2 and 6, in the breech-block, which, when the latter is in its normal position, coincide with the upper portions of the recesses q' , and they thus firmly lock the breech-block against retraction while the trigger is being pulled. The carriage K in

its backward movement also impinges its lug k^8 against the projecting spring-stop l' at the under side of the head l of the firing-pin and retracts the firing-pin against its spring l^2 , compressing the latter until the stop l' is forced into the head by moving against and over the slightly-beveled forward edge of the web q^3 , which releases it from engagement with the lug k^8 and permits the resilience of the spring l^2 to act to shoot the firing-pin forward and discharge a cartridge S , previously inserted into the barrel B , with the flange or rim at its rear end engaged by the spring-hook m . The retraction of the carriage K by the pull on the trigger also obviously compresses the rear spring L' , and also the spring g , by the hook ends k^7 compressing it through the medium of the washer h^2 against the head of the tube O . At the extreme limit of compression of the spring g the washer h^2 passes the spring-stop f , which then rises and holds the washer against the compressed spring, preventing the latter from expanding against the direction of its compression, it being prevented from expanding in the opposite direction by the hold of the lever P , which is held against backward turning on its pivot by confinement in the slot o of the breech-block, the latter being, as already explained, held against retraction by the bolts N . As soon as the firing-pin has been released and has discharged a cartridge the trigger is released. This permits the compressed spring L' to act and by its resilience force the carriage K forward, thereby lowering the locking-bolts N and disengaging them from the breech-block, which (the studs n being thereby also removed from the sockets n') is thus freed and must yield to the resilient force in a backward direction of the compressed spring g , exerted upon it through the medium of the lever P . This obviously turns the lever P backward on its fulcrum N^2 and slides the breech-block back, thereby opening the top of the chamber C , and as the hook m is in advance of the rim or flange on the rear end of the cartridge the retraction of the breech-block also withdraws from the barrel the empty cartridge-shell. As the breech-block flies back it engages the upright arms of the cartridge-holding lever R and suddenly trips the latter, thus by a quick movement raising the part e of the bell-crank on its fulcrum and causing it, through the medium of the cartridge S supported upon it, to impinge against the withdrawn spent shell and eject the latter through the breech. This rise in the cartridge-carrier also brings the supported cartridge into line with the lip m^2 on the breech-block (as will be seen on inspection of Fig. 4) and the forward end of the cartridge coincident with the barrel B , while in the raised position of the carrier R the lip e^3 , depending from its forward end, extends below the magazine-opening and prevents egress into the chamber C of another cartridge until the carrier resumes its normal position, attained with the movement of the

breech-block back to its normal position, to which it is returned as follows:

The backward expansion of the spring g carries with it, in turning the lever P backward on its pivot to effect retraction of the breech-block, the tube O and compresses the spring h^5 therein confined in a backward direction against the stop h^6 on the rod h^3 by the pressure against the forward end of that spring of the perforated cap or nut h^4 , which obviously, being practically integral with the tube, moves with the latter, and as the nut h^4 approaches the washer h^2 it engages with the spring-stop f in the base of the bed H and forces it out flush with the surface of the bed, thereby releasing the washer and permitting the resilience of the spring h^5 , which begins to expand as soon as the spring g has become inert by the expenditure of its resilient force to return, by expansion against the cap or nut h^4 , the tube O to its normal or forward position, and through the latter pull the lever P back to its position of forward inclination and cause the lever to shoot the breech-block forward, which, in resuming its normal position of closing the breech, pushes the cartridge in its path into the barrel, thus reloading.

The firing-pin G , the play of which is sufficient, as already explained, to carry it slightly beyond the opening x^3 , is arrested in the return of the breech-block by impingement of the spring-stop V against the lug k^3 on the carriage to retract the firing-pin and hold it normally back from protrusion beyond the aperture x^3 , where danger of its accidentally striking and exploding the cartridge with the advance of the breech-block is obviated.

The foregoing is a minute description of all the details of the mechanism and of their co-operation, rendered necessary by their somewhat intricate nature. It must not, however, be understood that the exact construction shown and described is indispensable as alone constituting my invention, because this I desire to be understood as claiming so broadly as to include any mechanism which will operate by a single pull on the trigger to lock the breech-block and actuate the firing-pin, and by releasing the trigger to effect automatically unlocking and retraction of the breech-block, withdrawal of the spent cartridge and its ejection out of the top of the chamber, of which the breech-block forms the top or sliding cover, and the storage of force to produce automatically the return of the breech-block to advance it to its normal position, and in its advancement reload with a cartridge brought into position from the magazine by the retraction of the breech-block.

Obviously the mechanism shown and described may be variously changed, and perhaps improved, to effect the action of the gun set forth without departing from the spirit of my invention, as, to cite one change that suggests itself to me, the manner of co-operation and construction of the springs g and h^5 may be variously modified or simplified with ref-

erence to that described and shown to produce the desired result of retracting the breech-block and simultaneously storing power to return it with the attendant results set forth.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a magazine fire-arm, in combination, the reciprocating spring-controlled breech-block carrying the independently-movable spring-controlled firing-pin, the reciprocating spring-controlled carriage engaging with the firing-pin and with the spring-controlling mechanism of the breech-block and carrying the lock for the breech-block, the cartridge-carrier extending into the path of the breech-block, and the trigger engaging with the carriage, substantially as described, whereby a single pressure on the trigger retracts the carriage against and actuates the firing-pin, locks the breech-block, and sets its spring-controlling mechanism, and release of the trigger unlocks the breech-block and actuates its said spring-controlling mechanism successively to retract and return it, as and for the purpose set forth.

2. In a magazine fire-arm, in combination, the reciprocating spring-controlled breech-block, the spring-controlled firing-pin carried by the breech-block and provided near its rear end with a yielding stop, the reciprocating spring-controlled carriage engaging with the yielding stop on the firing-pin and with the spring-controlling mechanism of the breech-block and carrying the lock for the breech-block, the cartridge-carrier extending into the path of the breech-block, and the trigger engaging with the carriage, substantially as described, whereby a single pressure on the trigger retracts the carriage against the yielding stop on the firing-pin and actuates the latter, locks the breech-block, and sets its spring-controlling mechanism, and release of the trigger unlocks the breech-block and actuates its said spring-controlling mechanism successively to retract and return it, as and for the purpose set forth.

3. In a magazine fire-arm, in combination, the reciprocating spring-controlled breech-block, the spring-controlled firing-pin carried by the breech-block and having limited longitudinal play independent of its spring, the reciprocating spring-controlled carriage engaging with the firing-pin and with the spring-controlling mechanism of the breech-block and carrying the lock for the breech-block, the cartridge-carrier extending into the path of the breech-block, and the trigger engaging with the carriage, substantially as described, whereby a single pressure on the trigger retracts the carriage against and actuates the firing-pin, locks the breech-block, and sets its spring-controlling mechanism, and release of the trigger unlocks the breech-block and actuates its said spring-controlling mechanism successively to retract and return it, as and for the purpose set forth.

4. In a magazine fire-arm, in combination,

the chamber C, having a web q^3 near its rear end supporting a stud n , the reciprocating spring-controlled breech-block F, forming the top of the chamber in line with the barrel and provided with a socket n' to receive the stud n , the spring-controlled firing-pin G, carried by the breech-block and provided near its rear end with a yielding stop l' , the reciprocating spring-controlled carriage K, engaging with the stop l' and with the spring-controlling mechanism of the breech-block and carrying the lock N for the breech-block, the cartridge-carrier R, extending into the path of the breech-block, and the trigger M, engaging with the carriage, substantially as described, whereby a single pressure on the trigger retracts the carriage against the stop l' , actuates the firing-pin, locks the breech-block, and sets its spring-controlling mechanism, and release of the trigger unlocks the breech-block and actuates its said spring-controlling mechanism successively to retract and return it, as and for the purpose set forth.

5. In a magazine fire-arm, in combination, the chamber C, having a web q^3 near its rear end supporting a stud n , the reciprocating spring-controlled breech-block F, forming the top of the chamber in line with the barrel and provided with a hook m at its forward end and with a socket n' near its rear end to receive the stud n , the spring-controlled firing-pin G, carried by the breech-block and having limited longitudinal play independent of its spring and provided near its rear end with a yielding stop l' , the reciprocating spring-controlled carriage K, engaging with the stop l' and with the spring-controlling mechanism of the breech-block and carrying the lock N for the breech-block, the cartridge-carrier R, extending into the path of the breech-block, and the trigger M, engaging with the carriage, substantially as described, whereby a single pressure on the trigger retracts the carriage against the stop l' , actuates the firing-pin, locks the breech-block, and sets its spring-controlling mechanism, and release of the trigger unlocks the breech-block and actuates its said spring-controlling mechanism successively to retract and return it, as and for the purpose set forth.

6. In a magazine fire-arm, in combination, the chamber C, the reciprocating spring-controlled breech-block F, forming the top of the chamber in line with the barrel, the spring-controlled firing-pin G, carried by the breech-block, the reciprocating carriage K, engaging with the firing-pin and with the spring-controlling mechanism of the breech-block and having the lateral slots k^5 , the pivotal lever P, engaging with the breech-block and connected with its spring-controlling mechanism, a spring L' for the carriage, locking-bolts N, supported in the slots k^5 , the cartridge-carrier R, extending into the path of the breech-block, and the trigger M, engaging with the carriage, substantially as described, whereby a single pressure on the trigger retracts the

carriage against and actuates the firing-pin, locks the breech-block, and sets its spring-controlling mechanism, and release of the trigger unlocks the breech-block and actuates its said spring-controlling mechanism through the medium of the lever P to retract and return the breech-block, as and for the purpose set forth.

7. In a magazine fire-arm, in combination, the chamber C, the trigger M, the reciprocating breech-block F, forming the top of the chamber in line with the barrel, the spring-controlled firing-pin G, carried by the breech-block, the laterally-slotted carriage K, supporting locking-bolts N, connected through the obliquely-slotted bifurcated portion k^4 of the carriage and engaging in its backward movement with the firing-pin and locking the breech-block, substantially as described, arms k^6 , extending from the part k^4 of the carriage and provided at their extremities with hooks k^7 , the pivotal lever P, engaging with the breech-block, the spring L' , spring mechanism engaged by the hooks k^7 and set by movement of the carriage with a single pull on the trigger to exert its resilient force against the lever P and generate a counter spring force then exerted upon the said lever, and the cartridge-carrier R, actuated by the movement of the breech-block, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

8. In a magazine fire-arm, in combination, a chamber C between the stock and barrel and having a web q^3 , supporting a yielding stud n , a magazine, a reciprocating breech-block F, forming the top of the chamber in line with the barrel and provided with a socket n' to receive the stud n , a spring-controlled firing-pin G, housed in the breech-block, a laterally-slotted carriage K, having a beveled rear extension k' and supporting locking-bolts N, connected through the obliquely-slotted bifurcated portion k^4 , and engaging in its backward movement with the firing-pin and locking the breech-block, substantially as described, arms k^6 , extending from the part k^4 of the carriage and provided at their extremities with hooks k^7 , a trigger M, pivotally supported at its yoke i' to engage with the carriage, a pivotal lever P, engaging with the breech-block, a spring L' , spring mechanism engaged by the hooks k^7 and set by movement of the carriage with a single pull on the trigger and released by the release of the trigger to exert its resilient force against the lever P and generate a counter spring force then exerted upon the said lever, and a pivotal cartridge-carrier R, extending, with its part e , normally along the arms k^6 toward the magazine and actuated by the movement of the breech-block, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

9. In a magazine fire-arm, in combination, a chamber C between the stock and barrel, a magazine E, a trigger M, a reciprocating

breech-block F, forming the top of the chamber in line with the barrel, a spring-controlled firing-pin G, carried by the breech-block, a laterally-slotted carriage K, supporting locking-bolts N, connected through the obliquely-slotted portion k^4 of the carriage and engaging in its backward movement with the firing-pin and locking the breech-block, substantially as described, arms k^6 , extending from the part k^4 of the carriage and provided at their extremities with hooks k^7 , a pivotal lever P, engaging with the breech-block, a spring L', spring mechanism engaged by the hooks k^7 and set by movement of the carriage with a single pull on the trigger to exert its resilient force against the lever P and generate a counter spring force then exerted upon the said lever, and a cartridge-carrier R, comprising a substantially bell-crank-shaped lever pivotally supported at its angle to extend with its upward-projecting portion into the path of the breech-block, and having its part e formed into a cartridge-receptacle extending normally in line with the magazine and provided with a stop e^3 , the whole being constructed and arranged to operate substantially as and for the purpose set forth.

10. In a magazine fire-arm, in combination, a chamber C between the stock and barrel and having a web q^3 , a magazine E, a reciprocating breech-block F, forming the top of

the chamber and having a slot o and provided at its forward extremity with a hook m , a spring-controlled firing-pin G, housed in the breech-block and having limited longitudinal play independent of its spring and provided toward its rear end with a yielding stop l' , a bed H, forming the base of the chamber and supporting the firing-pin, and breech-block-actuating mechanism comprising a reciprocating carriage K, having a stop k^8 , arms k^6 , provided with hooks k^7 and lateral oblique slots k^5 , locking-bolts N, connected through the slots k^5 , a trigger M, pivotally supported at its yoke i' to engage with the carriage, a lever P, fulcrumed to the bed H and extending through the slot o in the breech-block, a spring L' behind the carriage, spring mechanism, substantially as described, in front of the carriage and connected with the lever P above its fulcrum, and a pivoted cartridge-carrier R, normally in position to receive a cartridge from the magazine and extending into the path of the breech-block, the whole being constructed and arranged to operate by a single pressure upon and release of the trigger, substantially as set forth.

HERMANN LEINEWEBER.

In presence of—

J. W. DYRENFORTH,
M. J. FROST.