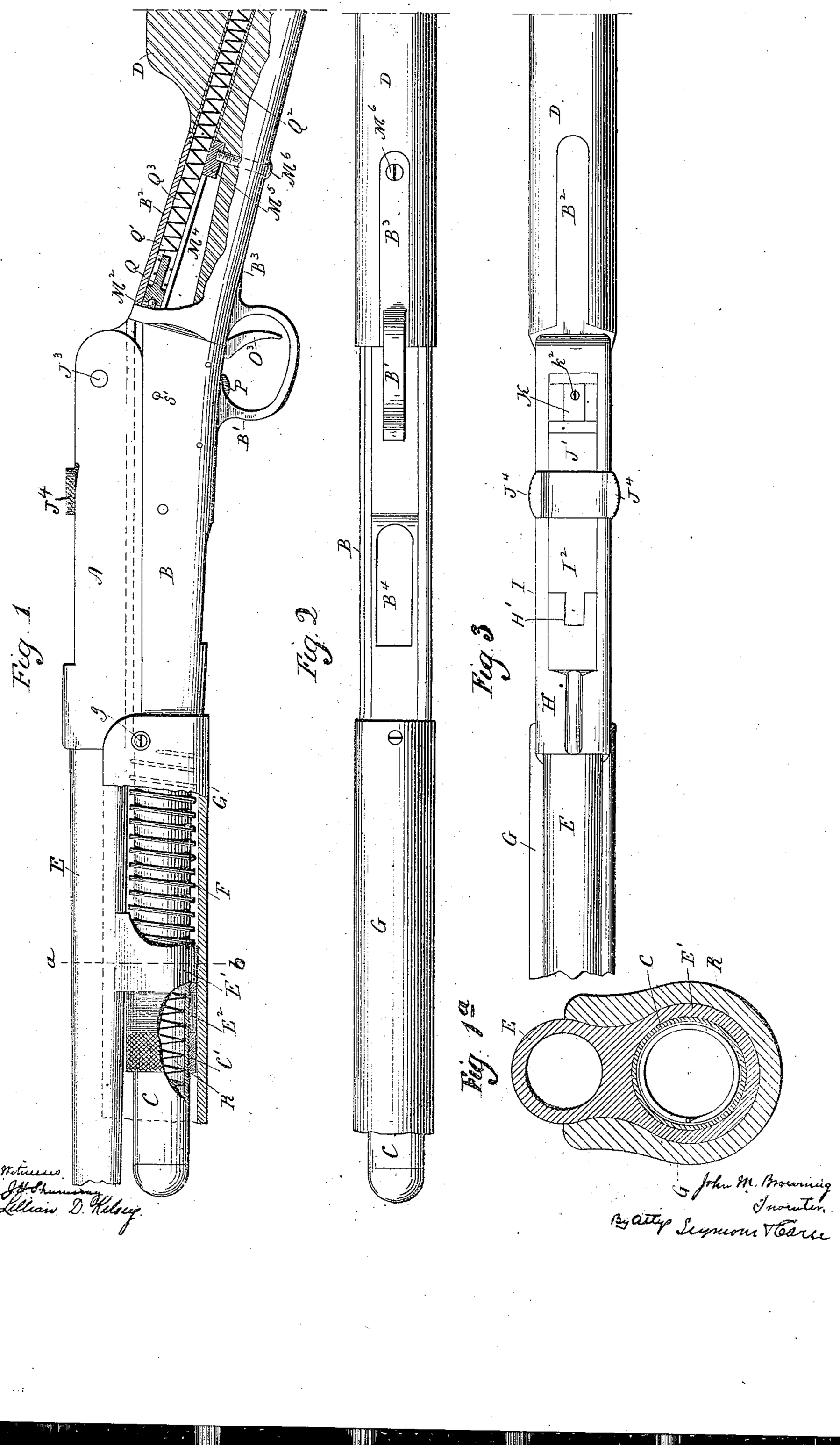
No. 730,870. PATENTED JUNE 16, 1903.

J. M. BROWNING.

RECOIL OPERATED FIREARM.

APPLICATION FILED MAY 6, 1899.

NO MODEL. 7 SHEETS—SHEET 1.



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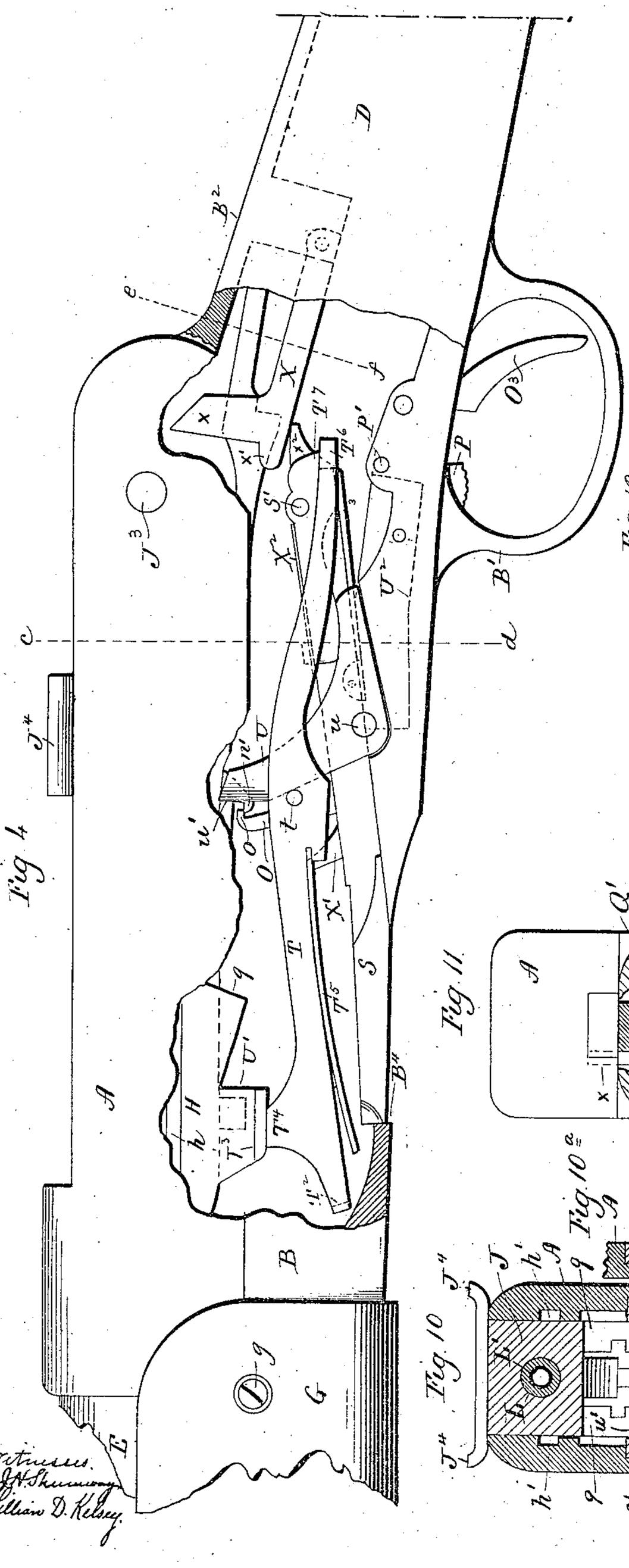

Fig. 4

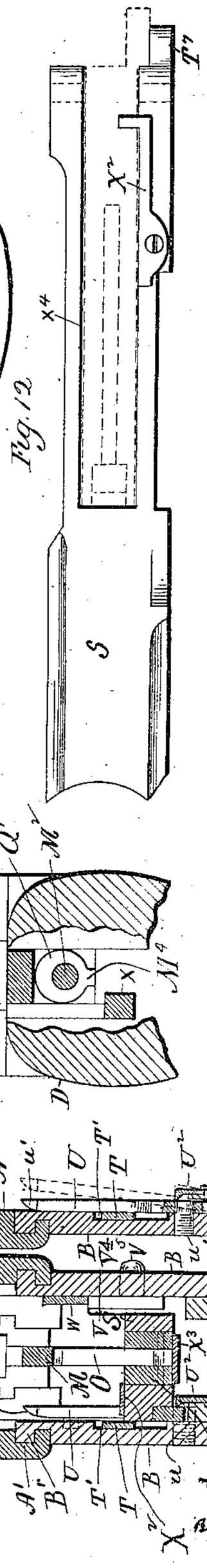

Fig. 12

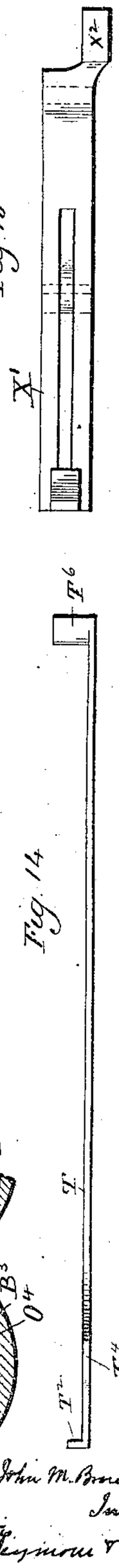

Fig. 13

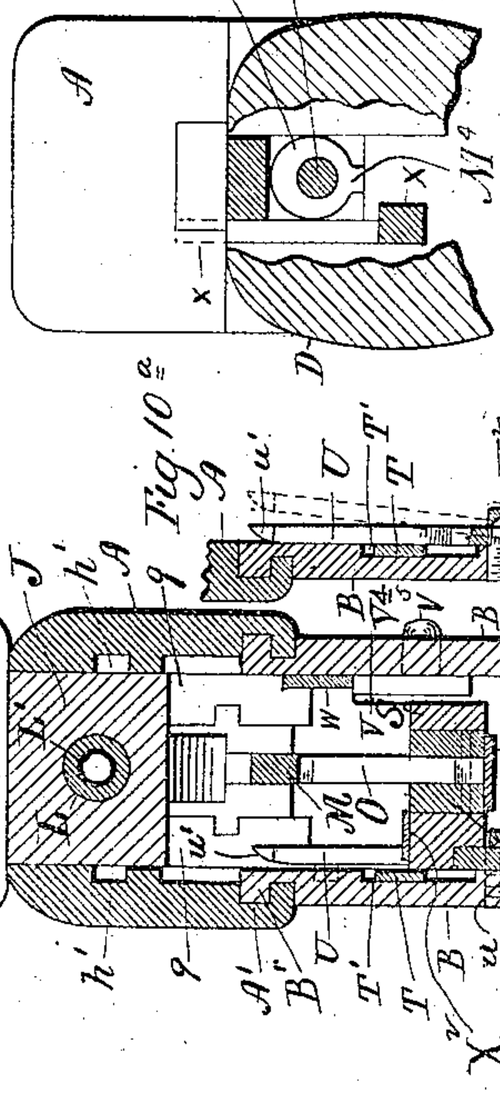

Fig. 11

Fig. 14

Fig. 10

Witnesses.
J. H. Shumway
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Benjamin & Carr

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NO MODEL. 7 SHEETS—SHEET 3.

Fig. 5

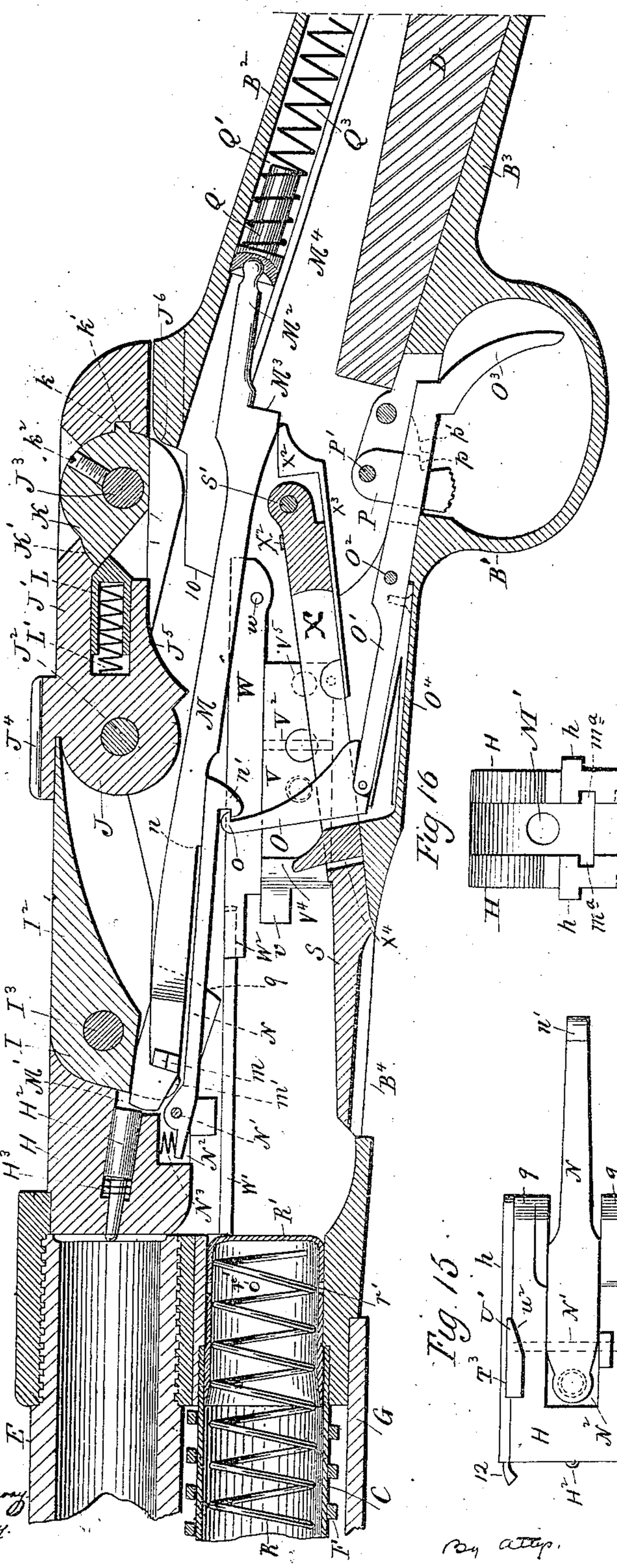

Fig. 17

Fig. 18

Fig. 16

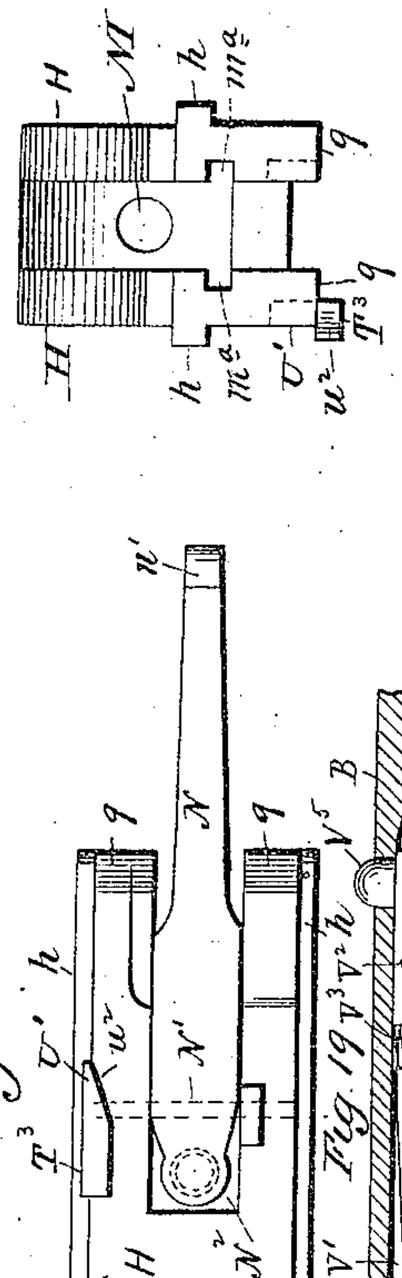

Fig. 15

Fig. 20

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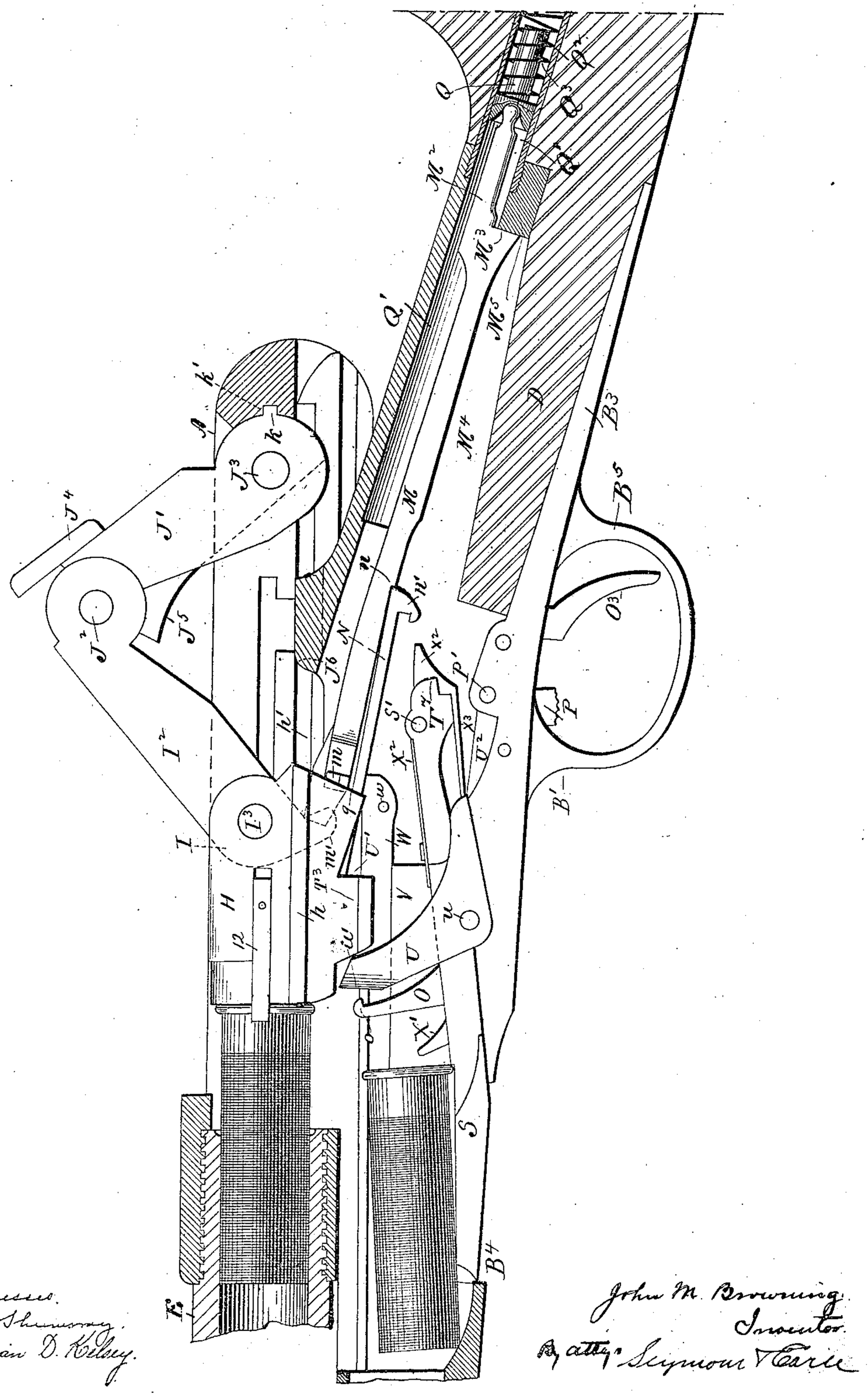
NO MODEL. 7 SHEETS—SHEET 4.

Fig. 6.



Witnesses.
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Lillian D. Kelsey.

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No. 730,870.

PATENTED JUNE 16, 190

J. M. BROWNING.

RECOIL OPERATED FIREARM.

APPLICATION FILED MAY 6, 1899.

NO MODEL.

7 SHEETS—SHEET

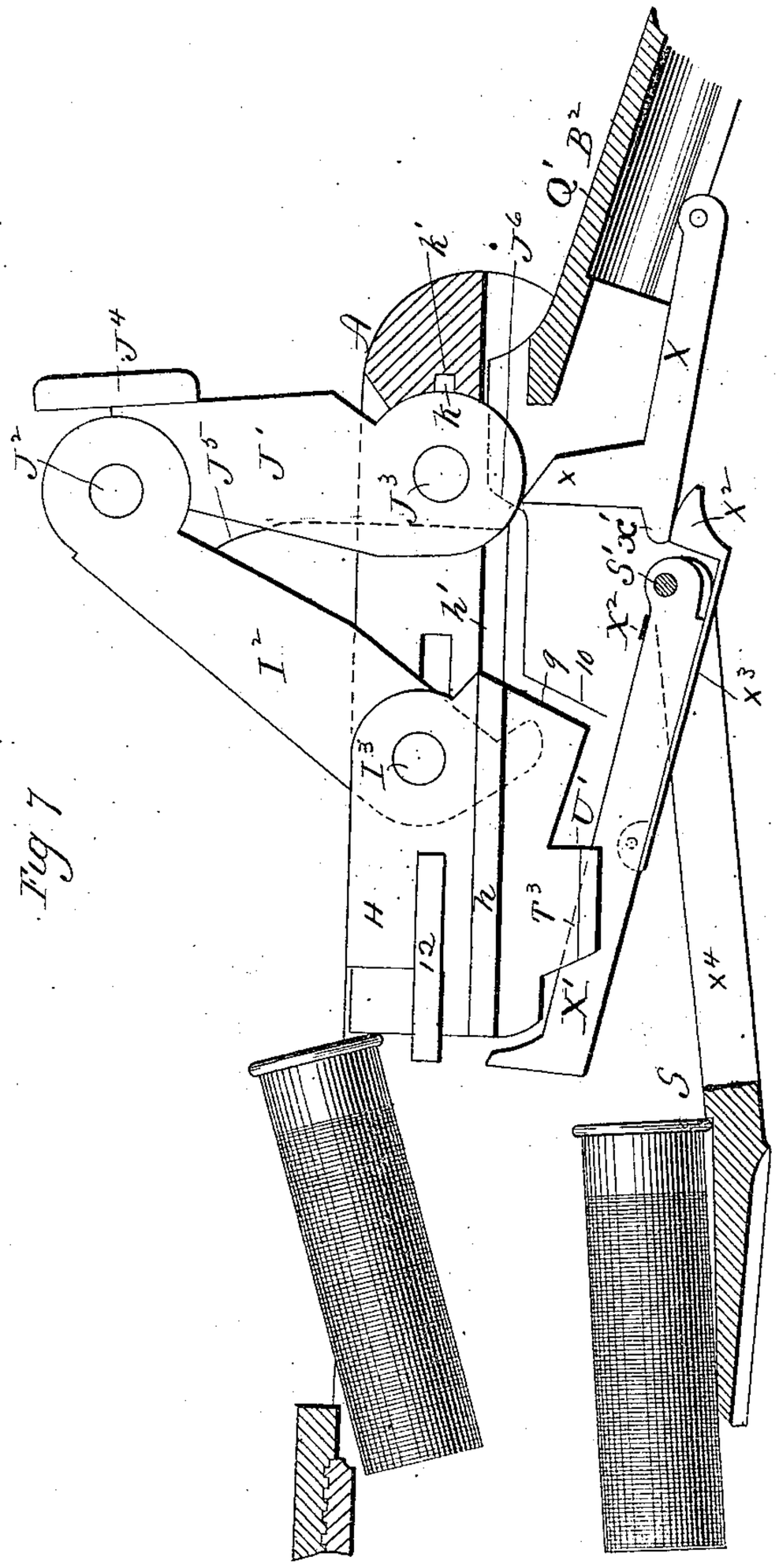

Fig 7

Witnesses.
J. H. Shumway
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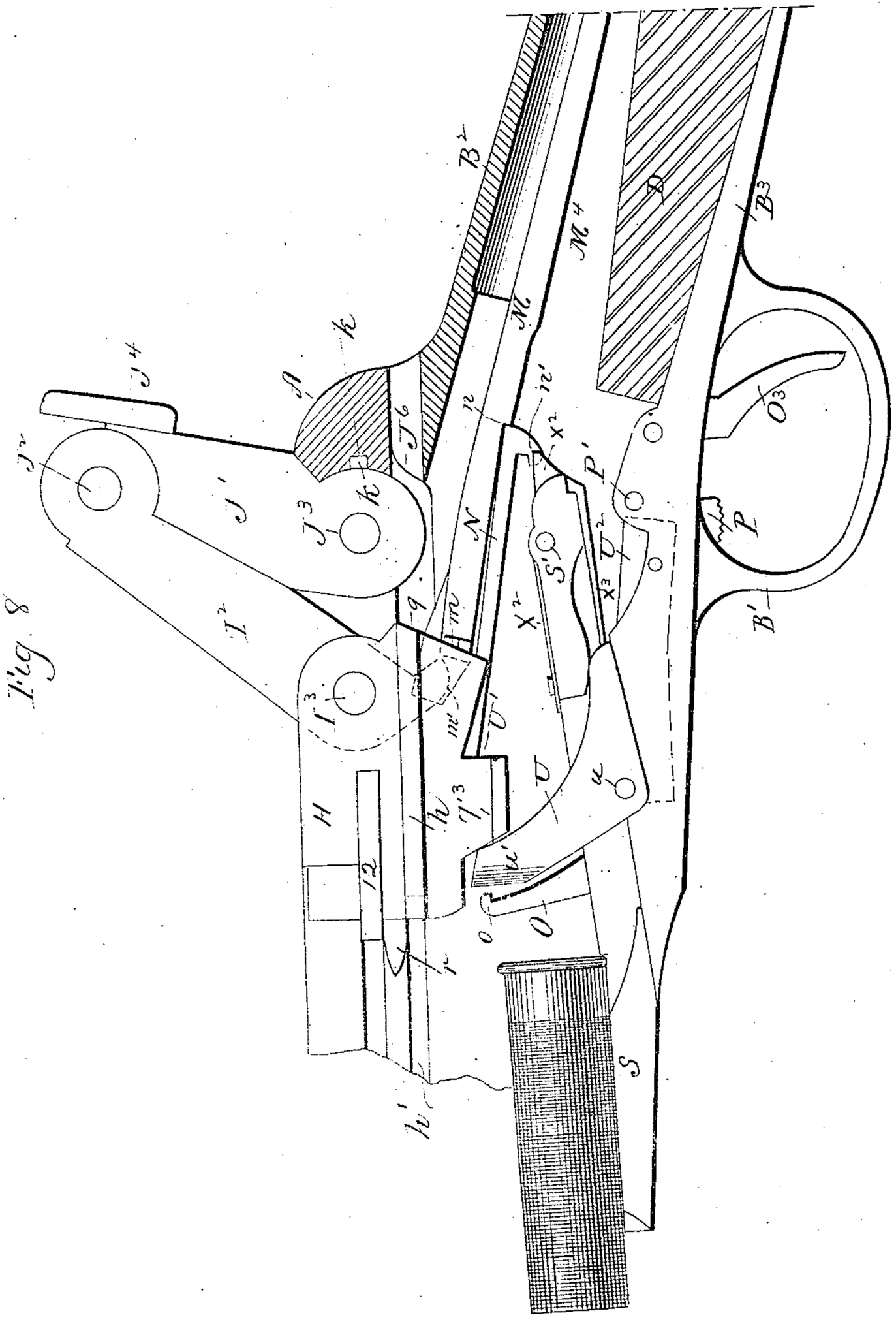
APPLICATION FILED MAY 6, 1899.

NO MODEL. 7 SHEETS—SHEET 6.

Fig. 8



Witnesses.
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NO MODEL. 7 SHEETS—SHEET 7.

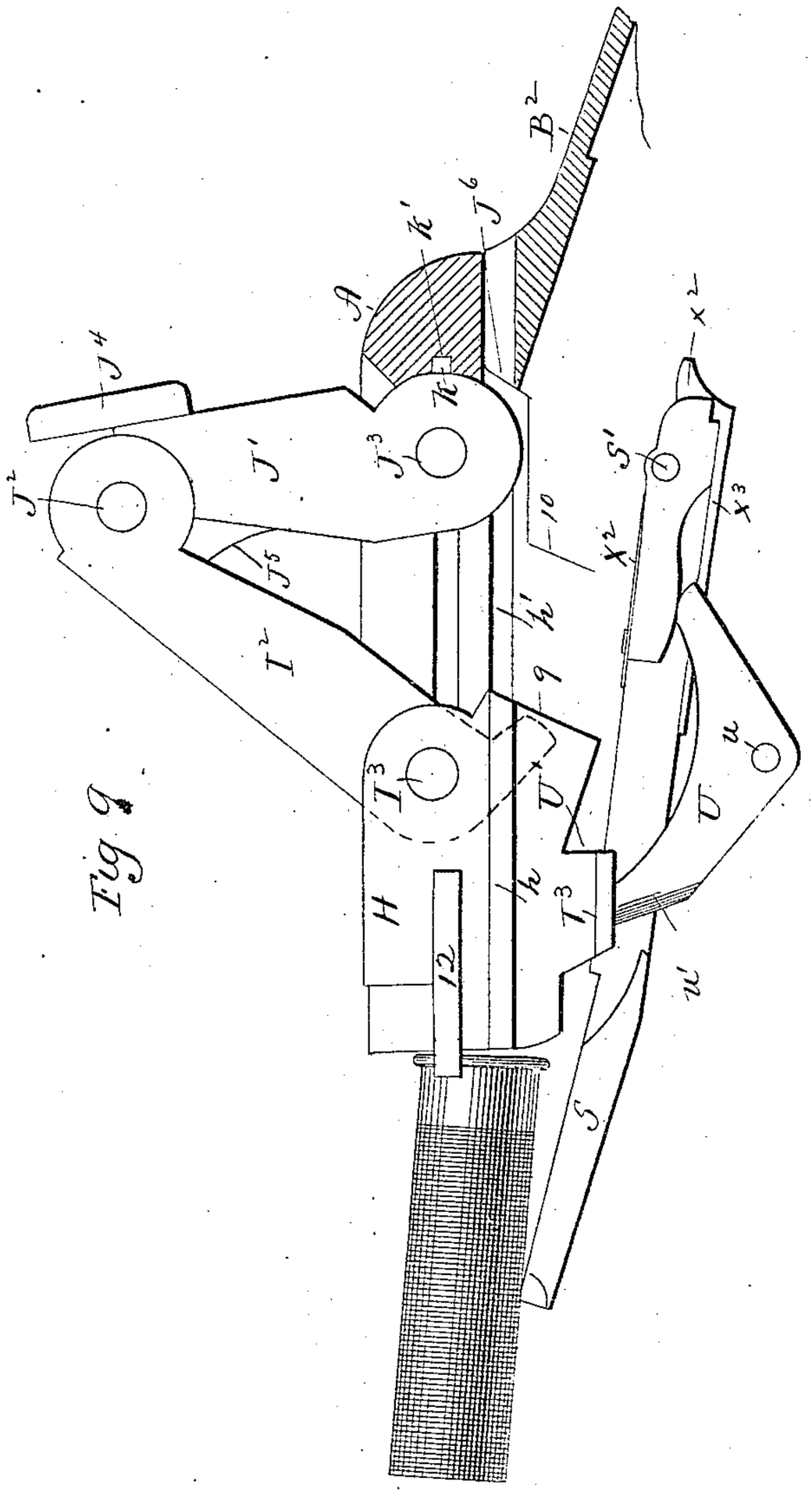

Fig. 9.

Witnesses
L. H. Shumway
Lillian D. Kelsey.

John M. Browning.
Inventor.
By Att'y's Seymour & Earle

No. 730,870. Patented June 16, 1903.

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

RECOIL-OPERATED FIREARM.

SPECIFICATION forming part of Letters Patent No. 730,870, dated June 16, 1903.

Application filed May 6, 1899. Serial No. 715,822. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, of Ogden, in the county of Weber and State of Utah, have invented a new Improvement in Recoil-Operated Magazine-Guns; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a broken view, in side elevation, of one form which a recoil-operated gun constructed in accordance with my invention may assume, a portion of the fore-arm being broken away to show the action-spring, a portion of the magazine being broken away to show the magazine-spring, and a portion of the stock being broken away to show the combined hammer and mainspring. Fig. 1ª is an enlarged view, in transverse section on the line *a b*, of the preceding figure to show the bearing-collar depending from the barrel and encircling and riding upon the magazine; Fig. 2, a reverse broken plan view of the gun; Fig. 3, a plan view thereof; Fig. 4, an enlarged broken view of the gun, in side elevation, with portions of the upper and lower members of its receiver broken away to show parts of its action mechanism, and particularly its feeding instrumentalities; Fig. 5, a broken view of the gun in vertical longitudinal section with its parts in the positions due to them when the gun is closed; Fig. 6, a broken view of the gun, partly in side elevation and partly in vertical longitudinal section, the upper member of the receiver being shown at the limit of its rearward excursion; Fig. 7, a partial view, in side elevation, of the action mechanism at the time the ejector is brought into operation for ejecting an empty shell by the engagement of the finger of the ejector-lever by the lower end of the rear link; Fig. 8, a similar but more comprehensive view showing the upper member of the receiver at the limit of its forward excursion, with the breech-bolt held back by the carrier-lever and a cartridge on the carrier ready to be lifted thereby to the barrel; Fig. 9, a similar but less comprehensive view showing the parts in the act of raising a cartridge to the barrel; Fig. 10, a view in vertical transverse section on the line *c d* of Fig. 4; Fig. 10ª, a partial section on the same line, showing the cartridge-lever by broken as well as by full lines; Fig. 11, a partial view, in transverse section, on the line *e f* of Fig. 4; Fig. 12, a detached plan view of the carrier, showing the ejector by broken lines; Fig. 13, a corresponding view of the ejector; Fig. 14, a corresponding view of the cartridge-stop; Fig. 15, a detached reverse plan view of the breech-bolt, showing also the sear and the extractors; Fig. 16, a view of the breech-bolt in rear elevation; Fig. 17, a detached view, in side elevation, of the hammer; Fig. 18, a plan view thereof; Fig. 19, a broken view, in horizontal section, through the right-hand wall of the lower member of the receiver, showing the carrier-catch; Fig. 20, a detached broken view, in horizontal section, showing portions of the right-hand walls of the upper and lower members of the receiver and the recesses formed in them for receiving and co-acting with the cartridge-guide.

My invention relates to an improvement in recoil-operated magazine-firearms in which all of the several operations of the arm, with the single exception of pulling the trigger, are performed by power derived from the successive explosions of the cartridges in the cartridge-chamber of the gun-barrel, the object of my present invention being to produce a simple, safe, compact, and effective firearm of the class described composed of comparatively few parts and not liable to become deranged.

With these ends in view my invention consists in a recoil-operated magazine-firearm having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings I have chosen to illustrate the application of my invention to a shotgun, for which it is particularly well adapted; but the invention may also be adapted, as I would have it understood, to other classes of magazine-firearms.

In carrying out my invention I employ a recoiling receiver A and a non-recoiling receiver B, the former being located upon the latter and so as to slide back and forth thereupon. These two parts constitute, in fact, the upper and lower members of a longitudinally-divided gun frame or receiver; but for

the sake of convenience I shall speak of them as the "recoiling" and "non-recoiling" receivers. Of course the non-recoiling receiver partakes of the recoil ensuing upon the explosion of a cartridge, and I do not wish to be understood that this part does not recoil; but its recoil, so far as it does recoil, is of a negative character, while the recoiling receiver has a considerable excursion back and forth. All of the recoiling parts of the action mechanism of the gun are connected directly or indirectly with the recoiling receiver, while the non-recoiling parts of the gun, such as the magazine C and the stock D, are firmly fixed to the non-recoiling receiver B. As shown, the inner faces of the lower ends of the side walls of the upper or recoiling receiver are formed with longitudinally-arranged grooves A', receiving outwardly-extending longitudinally-arranged ribs B', formed upon the upper edges of the side walls of the non-recoiling receiver B.

The gun-barrel E is screwed in the ordinary manner into the forward end of the recoiling receiver and provided a short distance forward of its butt-end with a depending collar or ring E', encircling the magazine C, as shown in Fig. 1[a], the fit between the collar and magazine being loose enough to permit the collar to slide back and forth upon the magazine. The collar, in connection with the magazine, therefore acts as a guide for the reciprocation of the barrel and the recoiling receiver and prevents the latter from cramping. Between the rear edge of the collar E' and the forward end of the non-recoiling receiver B, I locate a heavy action-spring F, which encircles the magazine, as clearly shown in Figs. 1 and 5. This spring is compressed during the rearward or recoiling excursion of the recoiling receiver A and barrel E and operates when it recovers to return those parts to the limit of their forward excursion after the force of the explosion of the cartridge has been spent. To limit this forward excursion, I locate upon the magazine C an adjustable nut C', which provides for adjusting the said spring in tension, which is located forward of the collar E', as shown in Fig. 1, and between the rear edge of this nut and the forward edge of the said collar I locate a buffer E^2 for which I shall preferably employ vulcanized fiber, which may, however, be replaced by any other suitable substance or material. The said nut C is employed for adjusting the tension of the action-spring F, so that the same will have just power enough to restore the recoiling receiver to its closed position and hold it there under proper tension, and no more, for if the spring is not under sufficient tension the parts will not be held in their closed positions with sufficient firmness. On the other hand, if the spring is placed under too much tension by the said nut the shock of the return of the recoiling receiver to its closed position will rack the gun. The mean tension is therefore determined by trial after the gun has been assembled. It may be said in this connection that the compression of the action-spring will not appreciably affect the relations of the sear N and the dog O, because any slight change in relation of those parts is provided for by the rocking of the dog under the influence of the spring O^4. It will be seen by reference to Fig. 1 that the action-spring F, the nut C', and the buffer E^2, as well as the rear portion of the magazine, are inclosed by a shield G, secured by a screw *g* to the forward end of the non-recoiling receiver B. This shield corresponds to the fore-arm of an ordinary gun and might with propriety be so designated.

The breech-bolt H is located in the extreme forward end of the recoiling receiver A and provided with two outwardly-extending rearwardly-arranged ribs *h*, which run back and forth in correspondingly-arranged grooves *h'*, formed in the recoiling receiver, as shown in Fig. 10. It is because this part is confined by the said ribs and grooves to longitudinal movement that I have chosen to designate it by the term "bolt" rather than by the term "block." At its rear end the breech-bolt is formed with a recess H', receiving a knuckle I, formed at the forward end of the forward operating-link I^2, a pivot-pin I^3 passing through the said knuckle and through the rear end of the breech-bolt, serving to pivotally connect them together. The breech-bolt is provided with a short firing-pin H^2, located in a slightly-inclined position and furnished with a retracting-spring H^3. The rear end of the forward link I^2 is slotted for the reception of a knuckle J, formed at the forward end of the rear link J', which is connected with the rear end of the forward link by means of a pivot-pin J^2, while the rear end of the rear link is pivotally connected with the rear end of the recoiling receiver by means of a pivot-pin J^3. By reference to Fig. 5 of the drawings, which represents the gun in its closed position, it will be observed that the center of the intermediate pivot-pin J^2 is in a plane slightly below the centers of the pivot-pins I^3 and J^2. Under this arrangement of the pivot-pins the two links and the breech-bolt form a solid and safe resistance against the rearward pressure of the exploding cartridges, for the greater the resistance the greater will be the tendency of the central pin J^2 to move downward, and the more that pivot-pin moves downward the greater the bracing action of the said parts. The forward end of the rear link J' is furnished with two laterally-extending wing-like finger-pieces J^4 J^4, which provide for opening the gun by hand. These wing-like finger-pieces are located entirely above the pivot-pin J^2 upon the edge of one of the links, which they permit to close down flush with the top of the recoiling receiver A, beyond the side walls of which they extend sufficiently to permit them to be seized with a strong grip, which is required in this arm for manually lifting the

links. The forward end of the rear link is also formed upon its lower face with a cam-surface J^5, which coacts with a rounded shoulder J^6, formed on the non-recoiling receiver at the rear end thereof, in lifting up or humping up the links, so as to carry the center of the pin J^2 above the centers of the pins I^3 and J^3, after which the rearward momentum of the recoiling parts will force up or hump up the links, with the effect of starting the breech-bolt back into its full open position, as shown in Fig. 9. I may here mention that the cam-surface J^5 and the shoulder J^6 might be reversed in location and the same result secured. By locating the cam-surface J^5 upon the rear link J' at a point forward of the pin J^3, I secure an economy of space and enable the mechanism of the gun to be made shorter than it could be if the cam-surface J^5 or its equivalent were located upon the rear link J' at a point to the rear of the pin J^3. The rear end of the rear link J' is slotted for the reception of a stationary locking-cam K, held in place by the pivot-pin J^3, which passes through it, as shown in Fig. 5, and is prevented from turning on the said pivot-pin by means of a lug k, entering a corresponding recess k', formed in the rear end of the recoiling receiver. The forward end of this cam is formed with a beveled nose K', coacting with the beveled rear end of a friction-stud L, located in a suitable recess formed in the rear link J', the stud itself being hollow for the reception of an actuating-spring L', which exerts a constant effort to force its beveled rear end into engagement with the nose K' of the cam. The beveled end of this stud engages with the lower face of the nose of the cam, and therefore holds the links down in their closed positions under the tension of the spring L', which, however, is readily overcome for the automatic opening of the gun, at which time the spring L' is compressed, allowing the nose of the stud to pass over the nose of the cam. I locate in the said cam a retaining-screw k^2, employed for holding the pivot-pin J^3 against endwise displacement. At its rear end the breech-bolt is formed with a depending recoil-face 9, which at the limit of the rearward excursion of the bolt engages with a recoil or abutment shoulder 10, formed near the rear end of the non-recoiling receiver B, as shown in Fig. 5. The breech-bolt is also provided, as shown in Fig. 15, with extractors 12, located upon its sides and of any approved construction, these operating in the usual manner to extract the spent cartridges from the gun-barrel. For the purpose of disengaging the cartridges from these extractors when the gun is operated by hand I employ two beveled ribs r, located opposite each other upon the opposite faces of the inner walls of the recoiling receiver A, one of these ribs being shown in Fig. 8. When the gun is being opened by hand, the head of the cartridge being held by and between the extractors 12 just mentioned is drawn back in a straight line, and when near the limit of its rearward movement the head of the cartridge comes in contact with the beveled upper faces of the said ribs r, by which it is forced upward and so disengaged from the extractors. Being thus disengaged from the extractors, the cartridge may be removed by hand or discharged from the gun by turning the same over. A cartridge may also be removed from the gun in this manner in case of a misfire. When the gun is being operated automatically, the cartridges are automatically discharged by mechanism to be described later on. The lower faces of the ribs r act to limit the upward movement of the cartridges when the gun is being operated automatically, as will also be described later on.

For the operation of the firing-pin H^2, I employ a longitudinally-movable hammer M, detached views of which are shown by Figs. 17 and 18. The forward end of this hammer extends forward into a recess M', formed in the rear end of the lower face of the breech-bolt H, the said end of the hammer being provided with two oppositely-projecting lugs $m\,m$, which slide in grooves $m^a\,m^a$, formed for their reception in the breech-bolt, as shown in Fig. 16. A pair of fingers $m'\,m'$, extending downward from the forward end of the forward link I^2, are sufficiently separated from each other for the reception between them of the extreme forward end of the hammer, with the forward faces of the said lugs $m\,m$ of which they engage. When the gun is opened, the fingers $m'\,m'$, acting against the lugs m, operate to force the hammer back into its cocked position.

A sear N, located directly under the forward end of the hammer, is hung on a horizontal pin N' in the lower face of the breech-bolt H, which is formed with a recess N^2 for the reception of the forward end of the sear, as well as for the reception of the sear-spring N^3, which is arranged to exert a constant effort to lift the rear end of the sear into engagement with the cocking-notch n of the hammer. The extreme end of the sear is formed with a forwardly-turned hook n', adapted to be engaged by a rearwardly-turned hook o, located at the upper end of a sear-dog O, pivotally mounted upon the extreme forward end of the trigger O', which is hung upon a pin O^2 in the lower tangs B^3, which is formed with a finger-guard B^5, into which the finger-piece O^3 of the trigger extends in the usual manner.

With the sear-dog O and the trigger O', I employ a double spring O^4, located directly below the rear end of the trigger in such position as to engage not only with the same to throw the same upward, but also with the forward corner of the dog, so as to throw the upper end of the same rearward. However, these results might be accomplished by a different spring or by the employment of more than one spring. By constructing the sear, sear-dog, and hammer as described I prevent the firing of more than one shot with

one pull of the trigger, for in this class of automatic arms the action of the mechanism is so rapid that some provision must be made for firing only one shot with one pull of the trigger, for otherwise two or more shots would be fired before the pressure upon the trigger could be released. Under this construction the hook of the sear is engaged by the hook of the sear-dog when the gun is ready for firing. Then when the trigger is pulled the sear-dog operates to draw the sear down out of the cocking-notch of the hammer. When the recoil takes place, the sear and hammer are driven rearward away from the dog; but as they come forward the hook of the sear instead of hooking into the hook of the dog merely engages with the upper face thereof and pushes the dog forward, whereby the dog is prevented from hooking into the sear until the pull upon the trigger is released and the spring O^4 allowed to act to lift the trigger and throw the dog rearward into position for engagement with the sear.

A vertically-split safety device P, suspended by its upper end from a pin P', terminates below the trigger in a roughened surface for engagement by the finger for its operation. The friction developed between the said safety device and the side walls of the opening in the lower tang B^3, in which it is hung, is sufficient to hold it in any position in which it may be set. It is formed with a shoulder p, which when it is swung rearwardly engages with a shoulder p', formed in the trigger, which is thus firmly locked against movement. In its normal position, in which it is shown in Fig. 5, the two shoulders of the trigger and safety device clear each other.

The rear end of the hammer terminates in a rod-like finger M^2, having a rounded end, which is seated in the cup-like forward end of a plunger Q, located in a cylindrical chamber Q', formed in the upper tang B^2 of the non-recoiling receiver B, this chamber Q' being extended by a long tube Q^2, located in the butt-stock D. The said chamber and tube contain the spirally-wound mainspring Q^3, which exerts a constant effort to press the plunger Q forward and which acts through the hammer M not only to give the same its forward impulse for operating the firing-pin H^2, but also through the medium of the hammer and sear to assist in restoring the action mechanism of the gun to its closed position, and more especially the breech-bolt, which it pushes forward for the insertion of the cartridges into the cartridge-chamber of the gun-barrel.

The action of the recoil throws the hammer back so quickly that if it is not limited in its rearward flight it will be liable to disarrangement. To avoid that, I form the hammer at its rear end with a stop-shoulder M^3, which moves back and forth in a long narrow slot M^4, formed to receive it in the lower face of the upper tang B^2 aforesaid. This slot terminates at its rear end at the lug M^5, formed upon the lower face of the rear end of the upper tang B^2 and receiving the threaded upper end of a screw-bolt M^6, extending upward through the stock D from the lower tang B^3. The engagement of the stop-shoulder M^3 with the forward edge of the lug M^5, as shown in Fig. 6, limits the rearward flight of the hammer.

The magazine C contains the usual spiral cartridge-feeding spring R, extending at its rear end into a cup-like follower R', which I prefer to form in its side walls with several air-holes r', which prevent the retardation of the movement of the follower by the action of suction. By the location of these holes in the side walls of the follower they are spaced so that dirt cannot well get into them and so that they will not be interfered with in their operation by the heads of the cartridges, as they would be if they were located in the closed rear end of the follower.

Under the action of the spring R and follower R' the cartridges are delivered from the magazine upon the forward end of a carrier S, hung upon a pivot S', passing through its extreme rear end and mounted in the non-recoiling lower receiver B. This carrier also serves as the gate through which the magazine is loaded through the feeding-opening B^4, formed in the forward portion of the lower end of the non-recoiling receiver B. A combined cartridge-stop and carrier-depressor T is located on the left side and in a recess T', formed in the inner face of the left-hand side wall of the non-recoiling receiver B, which is provided with a pin t, on which the said part is hung. The forward end of this part is turned at a right angle to form a stop-finger T^2, which in the elevated position of the part not only prevents the cartridge or cartridges in the magazine from following the cartridge which has already been pushed out upon the carrier, but also prevents the cartridge on the carrier from recoiling or being thrown back into the magazine. Here it may be stated that when the gun is fired with a heavily-loaded cartridge the recoil movement is so quick that unless there is something to prevent it the cartridge upon the carrier will be thrown back into the magazine, or, to speak more exactly, the cartridge upon the carrier will stand still and the gun will recoil back over it so quickly that the cartridge would be landed in the magazine if it were not for the obstruction offered by the stop-finger, which thus performs the double function of keeping not only the cartridge or cartridges in the magazine in their place, but the cartridge upon the carrier in its place. When the gun is closed, the said combined cartridge-stop and carrier-depressor has its forward end depressed and its rear end elevated by the coaction of a lug T^3, depending from the rear end of the breech-bolt, and an upwardly-extending lug T^4, formed near the forward end of the said part. When the forward end of

the said part is depressed as described, its stop-finger T^2 is depressed into a position in which it does not interfere with the emergence of the cartridges from the magazine. A spring T^5, carried by the said combined part and located under its forward end, provides for lifting the said end and depressing its rear end upon the opening movement of the breech-bolt, which does not take place until the recoiling receiver A has been thrown nearly to the limit of its rearward excursion by the recoil following the explosion of a cartridge in the gun-barrel. The said spring T^5 then lifts the forward end of the part, so as to bring its cartridge-stop T^2 into its operative position; but this spring T^5 has nothing to do with the action of the part T as a carrier-depressor, the entire part springing from end to end in the discharge of that function. At its rear end the combined part T is formed with an inwardly-turned lifting-finger T^6, which passes under a lifting-lug T^7, formed at the extreme rear end of the carrier, so that when the forward end of the part T is depressed by the action of the breech-bolt the forward end of the carrier will also be depressed in position to receive a cartridge by the lifting of its rear end through the medium of the finger T^6 and the lug T^7. The carrier will now be held in its normal or receiving position by the part T acting as a spring and yielding throughout its length to permit the forward end of the carrier to be pushed upward sufficiently to permit cartridges to be introduced one by one through the feeding-opening B^4, formed in the lower or non-recoiling receiver B. It will be understood, of course, that the magazine is charged while the gun is closed, and therefore while the part T is held in its depressed position by the breech-bolt. When, however, the breech-bolt moves rearward, so as to clear its lug T^3 from the lug T^4 of the part T, the forward end of the said part is lifted by the spring T^5 and the rear end thereof depressed, so as to clear the lifting-finger T^6 from the lifting-lug of the carrier, which is now free in the sense that no spring imposes any restraint against its being freely lifted for presenting a cartridge in front of the breech-bolt.

A carrier-lifter U in the form of a bell-crank lever is provided for lifting the carrier and hung upon a pin *u* in the non-recoiling receiver B. The lower end of this lifter extends rearwardly under the carrier, while its upper end extends upward into position to be engaged by a beveled lug U′, depending from the breech-bolt, as seen in Fig. 15, the said upper end of the lifter having its forward edge beveled, as at *u′*, so that when the breech-bolt moves rearward the bevel *u′* of the lifter will coact with the bevel u^2 of the lug U′ and push the upper arm of the lifter inwardly, so as to permit the lug U′ to pass it, after which the said arm will return and take a position directly in front of the square forward edge of the lug U′, as shown in Fig. 6. I should here explain that the lifter U is so loosely mounted upon the pivot-pin *u* that it is free to have a slight sidewise rocking movement, as well as a forward and back rocking movement. A spring U^2, engaging with the lower arm of the lifter, is employed for restoring it to its normal or vertical position, in which it is shown in Figs. 10 and 10^a.

A carrier-catch V is employed for locking the carrier in its depressed position while the opening of the gun is being completed, the shell ejected, and a new cartridge fed into position on the carrier for being lifted in front of the breech-bolt. This carrier-catch is located in a recess V′, formed in the inner face of the right-hand wall of the non-recoiling receiver B and hung upon a pin V^2. A small spiral spring V^3, located behind it, Fig. 19, provides for normally throwing it outward, so that a locking-lug V^4, extending inwardly from its forward end, will engage with the adjacent or right-hand edge of the forward end of the carrier. When the carrier is depressed, the lug V^4 of the catch springs over its upper edge and locks it in its depressed position, in which it will be held until the cam-finger *v*, formed at the forward end of the catch, is engaged by the head of the cartridge, which is moved onto the carrier from the magazine. The head of the cartridge then pushes the catch outward against the force of its spring V^3, whereby the carrier is released for being lifted by the action of the carrier-lifter U. If the recoiling receiver has completed its forward excursion, and therefore the opening of the breech of the gun, at the time the carrier-catch has been disengaged by the head of an incoming cartridge from the carrier, the mainspring Q^3, which, through the medium of the hammer M, is constantly pressing the breech-bolt H against the upper arm of the carrier-lifter, will then act and by forcing the square forward edge of the lug U′ against the rear edge of the upper arm of the carrier-lifter will cause the same to be rocked forward, whereby the carrier will be immediately lifted, so as to present the cartridge upon it in front of the breech-bolt, which will then be moved forward into its closed position, with the effect of inserting the cartridge into the cartridge-chamber of the gun-barrel; but to provide for the disengagement of the carrier-catch from the carrier by the head of a cartridge before the recoiling receiver has reached the limit of its forward movement and so fully opened the breech of the gun I provide a movable cartridge-guide W, which is located directly above the carrier-catch V, as shown in Fig. 5, and secured to the inner face of the right-hand wall of the non-recoiling receiver B by means of a pin *w*, Fig. 20. The heads of the incoming cartridges are caused to pass under this guide by means of a solid horizontally-arranged guide-rib W′, Fig. 5, formed upon the inner face of the right-hand side wall of the non-recoiling receiver B, the movable cartridge-guide W virtually forming an extension

of this fixed guide-rib W'. At a point above and a little in front of the forward end of the carrier-catch V the cartridge-guide is formed with an outwardly-projecting lug W^2, which extends through a transverse opening W^3, formed in the said side wall of the non-recoiling receiver, and permits the lug W^2 to ride upon the lower edge of the inner face of the right-hand wall of the recoiling receiver as the same moves back and forth; but the said wall of the recoiling receiver is formed with a shallow recess W^4, arranged in position so that when the recoiling receiver reaches its fully forward position the recess registers with the lug and allows the same, as well as the forward end of the cartridge-guide, to spring outward, and thus permit the cartridge, and hence the carrier, to be lifted. It will thus be seen that the cartridge-guide prevents the carrier from being lifted during the forward excursion of the recoiling receiver and before the same has been brought into its fully forward position, even if the coaction of a cartridge with the carrier-catch should prematurely unlock the carrier.

It will be seen from the foregoing that the breech-bolt is virtually locked in its open position by the carrier-lifter through the medium of the carrier, which is itself virtually locked in its depressed position by the carrier-catch and by the cartridge-guide acting through the medium of a cartridge, the breech-bolt being so locked while the action-spring F is moving the recoiling receiver forward and completing the opening of the gun.

For the rapid ejection of the spent cartridges I employ an ejector-lever X and an ejector X', which operate to eject the shell out of the gun directly after its withdrawal from the cartridge-chamber of the gun-barrel. The ejector-lever X is hung by its rear end from the upper tang B^2 and formed at its forward end with a beveled finger x, Fig. 4, which is engaged by the rear end of the link J'. The ejector-lever is also furnished at its forward end with a nose x', which coacts with a head x^2, formed on the rear end of a stiff spring x^3, secured to the lower edge of the ejector, which is hung upon the pivot S', on which the carrier S turns, the carrier being formed with a long longitudinally-arranged slot x^4 for the reception of the ejector. As soon as the rear end of the rear link J' passes over the finger x of the ejector-lever the ejector is allowed to fall back into its normal position in the carrier out of the way of the breech-bolt, which then passes over it. In the ordinary action of the ejector the spring x^3 does not yield; but if from any cause the breech-bolt should be moved forward prior to the action of the ejector, so that the ejector impinges upon its under face instead of striking up in front of it, then the spring will yield to permit the rear end of the link J' to ride over the finger x of the ejector-lever X, and no harm will result. I do not, however, limit myself to accomplishing these results in the particular way shown, as it will be understood that the spring x^3 might be mounted upon the ejector-lever, and, furthermore, that some other recoiling part might be utilized to actuate the ejecting instrumentalities represented by the ejector-lever and kicker.

In order to hold the ejector down in its normal posit' and prevent it from rattling, I employ a spring X^2, secured to the upper face of the carrier S, Fig. 12, and engaging with the ejector at a point just in advance of the pivot S', on which it is hung. I have explained that the ejector-lever is operated by the rear end of the link J' just before the forward movement of the recoiling receiver is completed, and it may be well to explain that during the rearward excursion of the recoiling receiver the link J', being in a horizontal position, does not engage with the ejector-lever, but simply passes over it.

Having now described the construction of my improved arm, I will briefly set forth the mode of its operation. For using it as a magazine-gun the magazine is charged when the gun is closed by introducing the cartridges one by one through the feeding-opening in the bottom of the non-recoiling receiver by pressing them upward against the carrier S, which yields for their admission against the tension of the combined cartridge-stop and carrier-depressor T. The magazine having been charged, the finger-pieces J^4 J^4 on the rear link J are grasped by the thumb and forefinger and the link and its connected parts are pulled upward and backward as far as they will go. They are then allowed to return to their closed positions under the influence of the mainspring, and the gun is ready for firing by pulling the trigger. When the gun is fired, the recoil ensuing from the explosion of the cartridge forces the recoiling receiver backward to the limit of its rear excursion. During this rearward excursion the breech-bolt and the links remain in their closed and locked positions until the said receiver has traveled nearly to the limit of its rearward excursion, when the cam-surface J^5 on the rear link impinges against the shoulder J^6, whereby the rear link is turned on its pivot-pin J^3 and thrown upward, carrying the forward link I^2 with it, so that the pin J^2 is lifted up out of line with the pins I^3 and J^3, thus unlocking the links, whereby the breech-bolt is withdrawn a short distance. During this rearward excursion of the recoiling receiver and barrel the action-spring F is compressed by the guiding-collar E', depending from the gun-barrel E, until it arrests the rearward excursion of the recoiling receiver and barrel. However, the momentum imparted to the breech-bolt and links causes their movement to be continued until the recoil-face 9 of the breech-bolt engages with the recoil-face 10 of the non-recoiling receiver. It may here be explained that the said links do not reach their full open positions until

after the recoiling receiver and barrel have nearly completed their forward excursion. The parts are now in the position in which they are shown in Fig. 6, with the hammer cocked and the breech-bolt held back at the limit of its rearward movement by the carrier-lifter, only the recoiling receiver is farther forward than shown, as it moves nearly to the point where the shell is kicked out while the breech-bolt is completing its rearward movement—*i. e.*, after the recoiling receiver has reached the limit of its rearward movement it is immediately started forward by the action-spring, so that while the breech-bolt is completing its rearward movement under the impulse of the recoil the receiver is at the same time moving forward under the pressure of the action-spring. In the construction of the gun it may, if desired, be arranged to operate without any mechanism for holding the bolt at the limit of its rearward movement by giving it a longer travel and the receiver a shorter movement; but in carrying out my present invention I prefer to hold the bolt back and let the receiver complete its forward movement somewhat later. This forward movement of the receiver while the bolt is held back at the limit of its rearward travel draws the cartridge-chamber away from the spent cartridge, which is held by the extractors, and as soon as the chamber has cleared itself from the forward end of the cartridge the ejector-lever and ejector operate to eject the cartridge from the gun, as shown in Fig. 7. At about this time the head of the next cartridge engages with the cam-finger *v* of the carrier-catch V and pushes the same outward into the recess V′, whereby the locking-lug V^4 is disengaged from the adjacent edge of the carrier, which is now unlocked, so far as the carrier-catch is concerned, and as soon as the recoiling receiver reaches the limit of its forward excursion its recess W^4 is brought into registration with the outwardly-projecting lug W^2 of the cartridge-guide W, which then immediately springs outward and releases the cartridge, leaving the same free to be lifted, whereby the carrier is unlocked so far as the cartridge constituted a lock for holding it in its depressed position. The unlocking of the carrier operates to unlock the carrier-lifter, which now no longer holds the breech-bolt in its retracted position against the constantly-exerted effort of the mainspring Q^3 to push it forward. As the breech-bolt moves forward the square forward edge of its lug U′ engages with the square rear edge of the upper arm of the cartridge-lifter, which is then rocked forward on its pivot *u*, whereby the carrier is lifted in season to present the cartridge upon it in front of the breech-bolt, as shown in Fig. 9, which in its forward movement pushes the cartridge into the cartridge-chamber of the gun-barrel. As the breech-bolt is thus moved into its closed position the links I^2 and J′ are drawn down into their closed positions, as shown in Fig. 5, with sufficient force to cause the spring-stud L to be snapped under the nose K′ of the cam K, the center of the pin J^2 being carried below the centers of the pins I^3 and J^3, whereby the breech-bolt is firmly held in its closed position against the rear end of the barrel. The gun is now in readiness for being fired again by pulling the trigger. It has already been explained that on account of the construction of my gun, and particularly on account of the employment of the dog O, the gun is prevented from being fired more than once by pulling the trigger once, even if the rearward draft upon the trigger is not removed until after the recoiling receiver has completed its forward excursion.

In using my improved arm as a single-loader the breech is opened as before through the medium of the operating-fingers J^4 J^4, whereby the hammer is cocked. A cartridge is then dropped into the open top of the recoiling receiver and received by the carrier. The carrier-catch V is then manually operated, by means of its outwardly-projecting button V^5, for unlocking the carrier, and hence the carrier-lever, and hence the breech-bolt, which then starts forward under the action of the mainspring Q^3 and inserts the cartridge in the gun-barrel and closes the gun, which when fired remains open, because the gun contains no reserve cartridge for automatically unlocking the carrier again. The user of the arm therefore has only to drop in another cartridge in the same way and again press the button. It will be understood, of course, that in opening the gun by hand the operator has only to compress the mainspring, as the action-spring remains at rest except when the gun is fired.

It is apparent that in carrying out my invention some changes from the construction herein shown and described may be made not only in utilizing the invention for shot-guns, but in employing it in the construction of other forms of magazine-arms. I would therefore have it understood that I do not limit myself to the construction set forth herein, but hold myself at liberty to make such alterations herein as fairly fall within the spirit and scope of my invention. I do not wish it to be understood, however, as claiming a breech-bolt locked by two links, as, broadly speaking, that is old.

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

1. A recoil-operated magazine-gun having a non-recoiling receiver and a magazine, a recoiling receiver and a barrel, an action-spring for returning the recoiling receiver and barrel to their normal positions, a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, a cartridge-carrier, a carrier-lifter coacting with the said instrumentality to hold the same in its retracted position, and acted upon and lifted thereby

in the forward movement thereof, means for locking the carrier in its depressed position and for unlocking it, and a spring for returning the said instrumentality to its closed position.

2. A recoil-operated magazine-gun having a non-recoiling receiver and a magazine, a recoiling receiver and a barrel, an action-spring for returning the recoiling receiver and barrel to their closed positions, a breech-closing instrumentality, two toggle-links connecting the said instrumentality with the recoiling receiver, and having their central pin located below their end pins when they are in their normal or closed positions, a longitudinally-movable hammer coacting at its forward end with the said instrumentality, and a spring coacting with the rear end of the said hammer and acting through the same, irrespective of the said links, to force the said instrumentality into its closed position.

3. A recoil-operated magazine-gun having a non-recoiling receiver and a magazine, a recoiling receiver and a barrel, an action-spring for returning the recoiling receiver and barrel to their normal positions, a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, a cartridge-carrier, means coacting therewith for holding the said instrumentality in its retracted position, and a spring for returning the said instrumentality to its closed position.

4. A recoil-operated magazine-gun having a non-recoiling receiver and a magazine, a recoiling receiver and a barrel, a guiding-collar depending from the barrel and embracing the magazine over which it moves back and forth in correspondence with the excursions of the recoiling receiver and barrel, an action-spring for returning the recoiling receiver and barrel to their closed positions, a buffer consisting of a collar mounted upon the magazine at a point in front of the said guiding-collar, and an adjusting-nut also mounted upon the magazine and located in front of the said buffer, the position of which it controls as well as the tension of the spring.

5. A recoil-operated magazine-gun having a non-recoiling receiver and a magazine, a recoiling receiver and a barrel, an action-spring for returning the recoiling receiver and barrel to their closed positions, a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, a cartridge-carrier, a carrier-lifter coacting with the said carrier for lifting the same and coacting with said instrumentality for holding the same in its retracted position, a spring for returning the said instrumentality to its closed position, and means interposed between the said instrumentality and the said spring for communicating the power of the latter to the former independently of the said links.

6. A recoil-operated magazine-gun having a non-recoiling receiver and magazine, a recoiling receiver and barrel, a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, and having their central pin located below their end pins when they are in their normal or closed positions, means for lifting and thus unlocking the said links during the latter part of the rearward excursion of the said recoiling receiver and means for holding said instrumentality in its retracted position and for automatically unlocking it therefrom.

7. A recoil-operated magazine-gun having a non-recoiling receiver and magazine, a recoiling receiver and a barrel, a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, and having their central pin located below their end pins when they are in their normal or closed positions, means for lifting and unlocking the said links during the latter part of the rearward excursion of the recoiling receiver, and a cam and spring-controlled stud for normally holding the said links in their closed and locked positions.

8. A recoil-operated magazine-gun, having a non-recoiling receiver and a barrel, a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, and having their central pin located below their end pins when they are in their normal or closed positions, means for lifting and unlocking the said links, a cam located in a recess in the rear end of the rear link, and a spring-actuated friction-stud mounted in the said rear link and engaging with the cam for holding the links in their closed and locked positions.

9. In a recoil-operated magazine-gun, the combination with a non-recoiling receiver and a magazine, of a recoiling receiver and a barrel, an action-spring for returning the said recoiling receiver and barrel to their closed positions, a breech-closing instrumentality, two toggle-links for connecting the said instrumentality with the recoiling receiver, a firing-pin mounted in the said instrumentality, a longitudinally-movable hammer coacting at its forward end with the said firing-pin, and a spring coacting with the rear end of the said hammer, and operating through the same and irrespective of the said links, to actuate the firing-pin, and to force the said instrumentality into its closed position after the action-spring has returned the recoiling receiver and the barrel to their closed positions.

10. In a recoil-operated magazine-gun, the combination with a non-recoiling receiver and a magazine, of a recoiling receiver and a barrel, an action-spring for returning the said recoiling receiver and barrel to their closed positions, a breech-closing instrumentality, a long longitudinally-movable hammer engaged at its forward end with the said instrumentality, and a spring extending rearward into the

stock of the gun, and coacting with the rear end of the said hammer through the medium of which it forces the said instrumentality into its closed position.

11. In a recoil-operated magazine-gun, the combination with a non-recoiling receiver, an upper tang having a spring-chamber formed in it, of a recoiling receiver and a barrel, an action-spring for returning the said recoiling receiver and barrel to their closed positions, a breach-closing instrumentality, a firing-pin mounted in the said instrumentality, a long longitudinally-movable hammer coacting at its forward end with the said firing-pin, and a spring located in the said spring-chamber, and coacting with the rear end of the hammer for causing the same to strike the said pin, and also to force the said instrumentality into its closed position after the recoiling receiver and barrel have been returned to their closed positions through the medium of the action-spring.

12. In a recoil-operated magazine-gun, the combination with a non-recoiling receiver and a magazine, of a recoiling receiver and a barrel, a breech-closing instrumentality, a firing-pin mounted in the said instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, and having their central pin located below their end pins when they are in their normal or closed positions, and a long longitudinally-movable hammer extending rearwardly beyond the said instrumentality, coacting with the firing-pin and cocked by one of the said links, and a spring coacting with the rear end of the said hammer for actuating the firing-pin and for causing the hammer to force the said instrumentality into its closed position irrespective of the said links.

13. In a recoil-operated magazine-gun, the combination with a recoiling receiver, of a breech-closing instrumentality, a firing-pin mounted in the said instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, and a hammer coacting at its forward end with the said pin, engaged at its forward end by the forward link which cocks it when the links are lifted and extending rearward beyond the said instrumentality, and a spring coacting with the rear end of the said hammer.

14. In a recoil-operated magazine-gun, the combination with a recoiling receiver, of a breech-bolt, a sear directly connected with the said bolt and extending rearwardly therefrom, two upwardly-opening toggle-links connecting the said bolt with the recoiling receiver, and having their central pin located below their end pins when they are in their closed or normal positions, a longitudinally-movable hammer coacting with the said sear and retracted and cocked by the action of one of said links which engages it with the sear, and a trigger for actuating the sear.

15. In a recoil-operated magazine-gun, the combination with a hammer, a trigger, a dog pivotally mounted in the trigger, means for lifting the trigger upward and yieldingly holding the dog at the limit of its pivotal rearward movement, a sear adapted to be engaged by the upper end of the dog, and a sear-spring operating to engage the sear with the hammer every time the same is moved into its cocked position, the coacting portions of the sear and dog being constructed to require the releasing and pulling of the trigger every time the gun is fired to effect the engagement of the dog with the sear so that the firing of the gun will not be automatic even if the pull upon the trigger is maintained.

16. In a recoil-operated magazine-gun, the combination with a breech-closing instrumentality, of a carrier, means for locking the carrier in its depressed position, means for automatically unlocking the carrier, and a carrier-lifter engaged and held by the carrier when the same is in its locked position, and engaging the said instrumentality to hold the same at or near the limit of its rearward excursion until after the carrier has been unlocked when the said instrumentality operates the lifter to lift the carrier.

17. In a recoil-operated magazine-gun, the combination with a breech-closing instrumentality, of a carrier, means for locking the carrier in its depressed position, means for automatically unlocking the carrier, and a carrier-lifter engaged and held by the carrier when the same is in its locked position, and engaging the said instrumentality to hold the same at or near the limit of its rearward excursion until after the carrier has been unlocked when the said instrumentality operates the lifter to lift the carrier, the said carrier-lifter consisting of a bell-crank lever, the upper end of which coacts with the breech-closing instrumentality and the rearwardly-extending lower end of which coacts with the carrier.

18. In a recoil-operated magazine-gun, the combination with a breech-closing instrumentality, of a carrier, means for locking the carrier in its depressed position, means for automatically unlocking the carrier, and a carrier-lifter engaged and held by the carrier when the same is in its locked position, and engaging the said instrumentality to hold the same at or near the limit of its rearward excursion until after the carrier has been unlocked, when the said instrumentality operates the lifter to lift the carrier, the said carrier-lifter consisting of a bell-crank lever loosely mounted upon a pivot to rock forward and back and sidewise, having its rearwardly-extending lower arm adapted to coact with the carrier, and having its upper arm beveled to coact with a beveled lug depending from the said instrumentality, which, in its rearward excursion, rocks the said lifter sidewise so as to clear its upper arm with the rear edge of which the said lug engages in the forward movement of the instrumentality, which then

rocks the lifter forward and effects the lifting of the carrier.

19. In a recoil-operated magazine-gun, the combination with a carrier for lifting the cartridges upward preparatory to their insertion into the gun-barrel, of a carrier-catch which normally locks the carrier in its depressed position, and which is automatically disengaged from the carrier by a rearwardly-moving cartridge, and means for lifting the carrier after it has been unlocked.

20. In a recoil-operated magazine-gun, the combination with a carrier for lifting the cartridges upward preparatory to their insertion into the gun-barrel, of a carrier-catch which normally locks the carrier in its depressed position, and which is automatically disengaged from the carrier by a rearwardly-moving cartridge, means for lifting the carrier after the same has been unlocked as described, and means for manually disengaging the carrier-catch from the carrier in using the arm as a single loader.

21. In a recoil-operated magazine-gun, the combination with a carrier for lifting the cartridges into position for insertion into the gun-barrel, of a cartridge-guide acting through the medium of a cartridge to lock the carrier in its depressed position, and released by one of the recoiling parts of the gun as the same is closed.

22. In a recoil-operated magazine-gun, the combination with a non-recoiling and a recoiling receiver, of a carrier for lifting the cartridges into position for insertion into the gun-barrel, and a cartridge-guide acting through the medium of a cartridge to lock the carrier in its depressed position, and formed with an outwardly-projecting lug which extends through an opening formed in one wall of the non-recoiling receiver into position to be engaged by the recoiling receiver as the same moves back and forth, the recoiling receiver being adapted to permit the lug to move outward when the said receiver reaches its fully forward position, whereby the cartridge-guide retires and releases the cartridge and hence permits the lifting of the carrier with the cartridge, which is then inserted into the gun-barrel.

23. In a recoil-operated magazine-gun, the combination with a non-recoiling and a recoiling receiver, of a carrier for lifting the cartridges upward preparatory to their insertion into the gun-barrel, a carrier-catch which engages directly with and normally locks the carrier in its depressed position, and which is automatically disengaged from the carrier by a rearwardly-moving cartridge, a cartridge-guide acting through the medium of the cartridge to additionally lock the carrier in its depressed position and released by the recoiling receiver when the same reaches its fully forward position, and means for lifting the carrier after the carrier-catch and cartridge-guide have been retired.

24. In a recoil-operated magazine-gun, the combination with two upwardly-opening toggle-links, of an ejector for ejecting the spent cartridges from the gun, and an ejector-lever located in the rear of the said ejector in position to coact therewith and to be operated by the rear link.

25. In a recoil-operated magazine-gun, the combination with an ejector, of an ejector-lever operating the ejector, and itself operated by one of the recoiling parts of the gun, and a safety-spring through which the ejector-lever acts upon the ejector and which yields if the free operation of the ejector is obstructed.

26. In a recoil-operated magazine-gun, the combination with an ejector pivoted at its rear end, of an ejector-lever located in rear of the ejector, pivoted at its rear end, having yielding connection at its forward end with the ejector and provided with an upwardly-extending finger which is engaged by one of the recoiling parts of the gun for operating the lever, which in turn actuates the ejector.

27. In a recoil-operated magazine-gun, the combination with a recoiling and a non-recoiling receiver, of a breech-closing instrumentality, two toggle-links connecting the said instrumentality with the recoiling receiver, an ejector, and an ejector-lever coacting with the ejector to operate it and engaged by the rear link which operates it in actuating the ejector.

28. In a recoil-operated magazine-gun, the combination with a carrier for lifting the cartridges into position to be inserted into the gun-barrel and formed with a long longitudinally-arranged slot, of an ejector located in the said slot and pivoted at its rear end, and means for operating the said ejector by one of the recoiling parts of the gun.

29. In a recoil-operated magazine-gun, the combination with a pivotal carrier for lifting the cartridges into position for insertion into the gun-barrel, and formed with a long longitudinally-arranged slot, of an ejector located in the said slot and hung at its rear end upon the pivot of the carrier and operated by one of the recoiling parts of the gun.

30. In a recoil-operated magazine-gun, the combination with a carrier for lifting the cartridges into position for insertion into the gun-barrel, and formed with a long longitudinally-arranged slot, of an ejector located in the said slot, and pivoted upon the pivot of the carrier, an ejector-lever hung by its rear end, and a yielding connection between the ejector and the forward end of the ejector-lever which is engaged for operation by one of the recoiling parts of the gun.

31. In a recoil-operated magazine-gun, the combination with a breech-bolt provided with cartridge-extractors, of a receiver in which the said bolt is mounted, and which is provided with one or more longitudinally-arranged ribs located in position to limit the upward movement of the cartridges as they are lifted from the magazine, and having their

upper faces beveled to engage with the under sides of the heads of the cartridges to lift them and free them from the grip of the extractors when the cartridges are withdrawn by hand.

32. In a recoil-operated magazine-gun, the combination with a carrier, of a carrier-catch which normally locks the carrier in its depressed position, and which is automatically disengaged from the carrier by a cartridge when the same is fed from the magazine of the gun and moves into right position upon the carrier.

33. In an automatic gun, the combination with a breech-bolt, of a pivotal carrier, a carrier-lifter which acts to lift the carrier and to hold the breech-bolt in its open position, and means to hold the carrier in its depressed position at which time it acts through the said lifter to hold the bolt in its open position; the said means being automatically released from the carrier to permit the same to be lifted, by a rearwardly-moving cartridge.

34. In an automatic gun, the combination with a carrier, of a carrier-catch normally locking the carrier in its depressed position, automatically disengaged from the carrier by a cartridge when the same is fed from the magazine of the gun and moves into right position upon the carrier, and having an exposed part or button adapted to be manually operated to release the carrier.

35. In an automatic gun, the combination with a breech-bolt which slides rearward and forward for opening and closing the breech, and means for holding the said bolt at the limit of its rearward excursion, the said means being automatically released by the cartridges as they are fed from the magazine, and provided with an exposed part or button for manually releasing the bolt when there are no cartridges in the magazine.

36. In an automatic gun, the combination with a recoiling and a non-recoiling receiver, of a breech-closing instrumentality, two upwardly-opening toggle-links connecting the said instrumentality with the recoiling receiver, means for holding the said instrumentality at or near the limit of its rearward excursion, whereby the links are held in their elevated or open positions, and manually-operable means for releasing the said instrumentality when held as described, to permit it to move forward into its closed position, and to permit the links to assume their closed positions.

37. In recoil-firearms having movable barrels, the combination of the rearward-moving barrel with linked levers, a stud or projection at the bending or "knee" point of the linked levers and a curved guide-surface of the casing located in the path of the said projection, which in consequence of the recoil after firing is pressed against the said surface, substantially as shown and described.

38. In a recoil-operated magazine-gun, the combination with the receiver or casing, of a recoiling or sliding barrel, a breech-closing instrumentality, and two upwardly-breaking toggle-links connecting the said instrumentality with the recoiling or sliding barrel, the rear link of the two toggle-links being provided at a point forward of its rear pin with a surface for engagement with a surface upon the receiver or casing for lifting and unlocking the links during the rearward excursion of the recoiling or sliding barrel.

39. In a recoil-operated magazine-gun, the combination with the receiver or casing, of a recoiling or sliding barrel, a breech-closing instrumentality, and two upwardly-breaking toggle-links connecting the said instrumentality with the recoiling or sliding barrel, one of the said links being provided at a point forward of the rear pin of the rear link with a surface for engagement with the said surface upon the receiver or casing, for lifting and unlocking the links.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN M. BROWNING.

Witnesses:
J. W. F. VOLKER,
N. GAIL NORTON.