

No. 837,141.

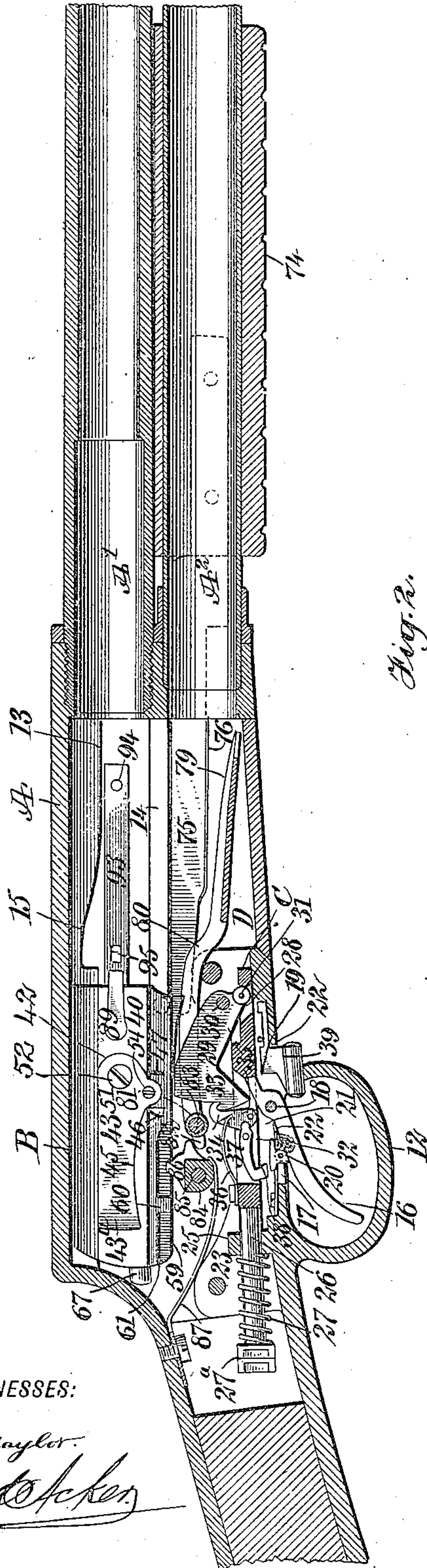
PATENTED NOV. 27, 1906.

W. SONNENBERG.
MAGAZINE FIREARM.

APPLICATION FILED NOV. 21, 1905.

3 SHEETS—SHEET 1.

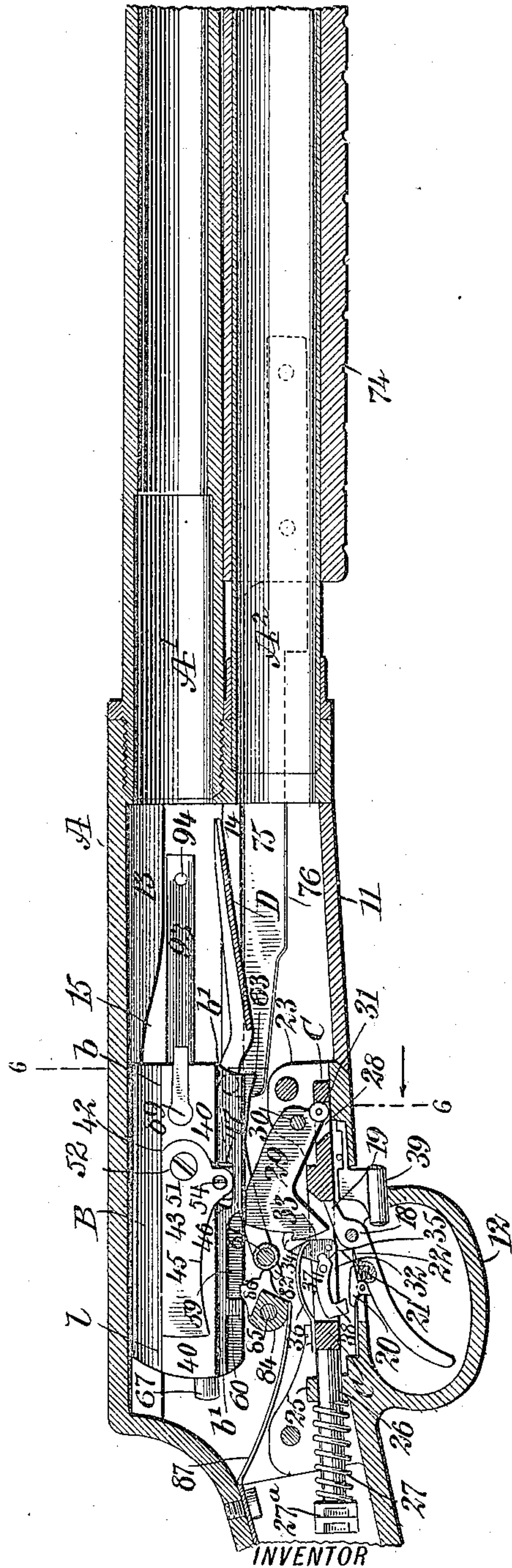
Fig. 1.



WITNESSES:

Geo. H. Maylor.
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Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

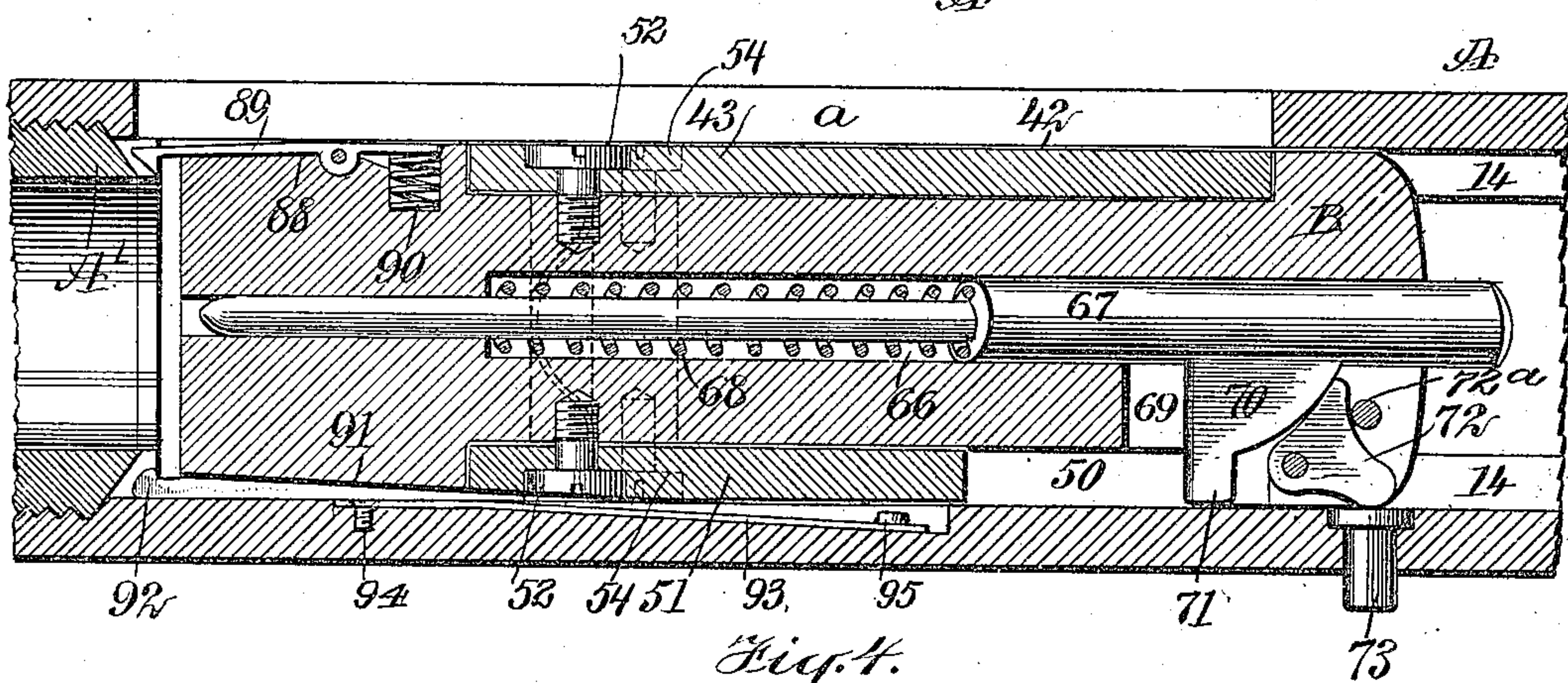
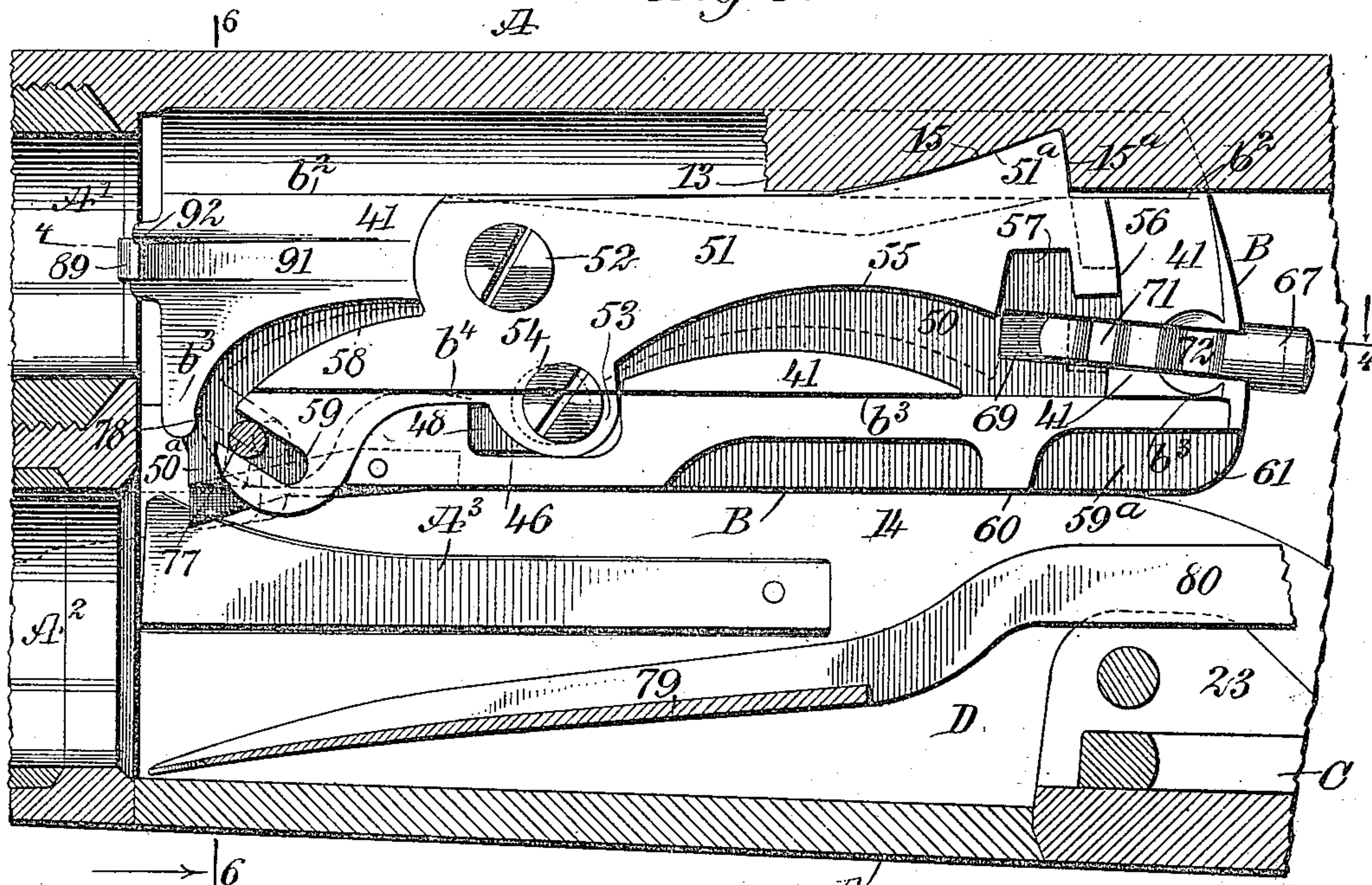


Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 5.

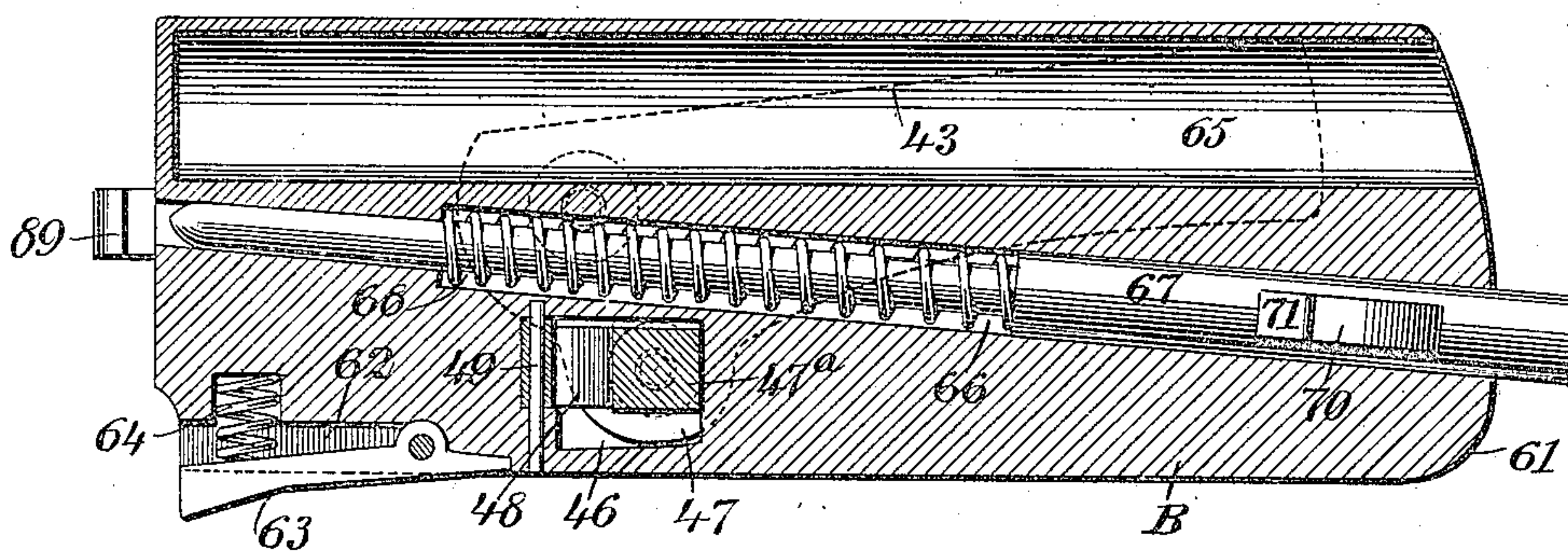
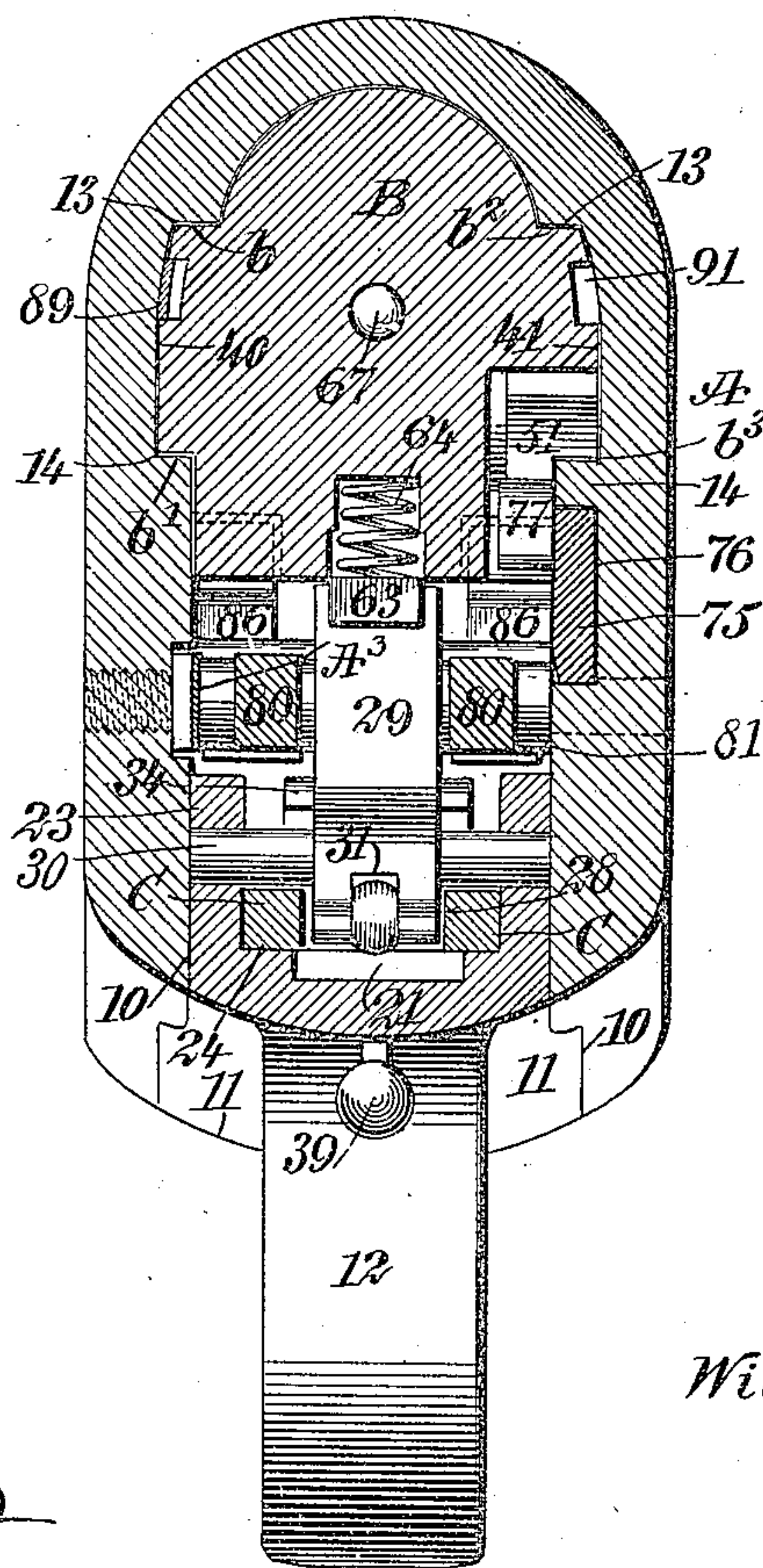


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM SONNENBERG, OF WINONA, MINNESOTA.

MAGAZINE-FIREARM.

No. 837,141.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed November 21, 1905. Serial No. 288,383.

To all whom it may concern:

Be it known that I, WILLIAM SONNENBERG, a citizen of the United States, and a resident of Winona, in the county of Winona and State of Minnesota, have invented a new and useful Improvement in Magazine-Firearms, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a very simple form of breech-bolt and means for accurately guiding the same in the frame, together with means for automatically locking the breech-bolt when in firing position, which locking means are rendered inactive only when the hammer is in an uncocked position or through the medium of a push-button operated at the exterior of the frame.

Another purpose of the invention is to provide a stationary ejector in the frame, which at a point in the rearward throw of the breech-bolt will automatically disengage the empty shell from the extractors, causing said shell to be thrown out through the side opening in the frame.

A further purpose of the invention is to provide a simple and effective form of trigger and hammer controlling mechanism which will admit of the trigger being held pressed by the finger during the entire time that the breech-bolt is carried back to expel the empty shell and cock the hammer and is returned to firing position, thus preventing accidental discharge during such time as the gun cannot be fired until the trigger is first released.

Another purpose of the invention is to provide a safety-bolt in the trigger-guard, which when in action prevents the trigger being pulled.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section through the frame, barrel, magazine, hammer-slide, and carrier, the right-hand side of the breech-bolt and hammer and its locking mechanism being shown in side elevation, the breech-bolt being in its rearmost position and the carrier being in its lower or receiving position. Fig. 2 is a view similar to Fig. 1, but

the breech-bolt is shown as carried sufficiently forward to raise the carrier. Fig. 3 is an enlarged longitudinal section through the frame, a portion of which is broken away, a longitudinal section through the carrier, and an elevation of the left-hand side of the breech-bolt, illustrating the manner in which it is locked in firing position. Fig. 4 is a horizontal section taken practically on the line 4 4 of Fig. 3. Fig. 5 is a longitudinal vertical section through the breech-bolt; and Fig. 6 is a transverse vertical section through the frame and breech-bolt, the view being drawn upon an enlarged scale and the section being taken practically on the line 6 6 of Fig. 3.

A represents the frame of the gun, A' the barrel, and A² the magazine-tube, both the barrel and the tube being secured in the frame in the customary manner, and A³ is the ordinary check-spring for the magazine. The upper portion of the frame is exteriorly convexed and interiorly concaved, its sides being flat, and in the right-hand side at the top a longitudinal opening *a* is made, through which the empty shells are ejected.

The bottom portion of the frame A is provided with a longitudinal opening 10, which opening is normally closed by the trigger-plate 11, having the customary trigger-guard 12 attached. A longitudinal guide-shoulder 13 is formed on each inner side face of the frame at the top, and parallel guide-ribs 14 are also interiorly formed in the frame. The guide-shoulders 13 and the guide-ribs 14 constitute slideways for the breech-bolt B, to be hereinafter described, and opposite the rear end of the side opening *a* in the frame upwardly and rearwardly inclined recesses are made in the guide-shoulders 14, producing vertical abutments 15^a, as is shown in Fig. 3.

The trigger 16 is pivoted in an opening 17, made in the plate 11, the pivot-pin 18 being passed through the upper forward portion of the trigger, as best shown in Figs. 1 and 2. The forward end of the trigger is provided with a nose 19, whose front edge is straight and whose upper edge is inclined. The said trigger is further provided well to the rear of its pivot 18 with an upwardly-extending spring-controlled substantially T-shaped safety-sear-operating dog 20. The head of the trigger 16 is located in a channel 21, centrally and longitudinally produced in the upper face of the trigger-plate 11, and the sear-op-

erating dog 20 likewise extends into said channel, as is best shown in Figs. 1 and 2, and a spring 22 exerts downward tension on the trigger about centrally between its ends.

5 The trigger-plate 11 is provided with upwardly-extending side flanges 23, also best shown in Fig. 6, and adjacent to the inner side of each flange 23 and parallel therewith a slideway 24 is constructed. At the rear of
10 the trigger-head an apertured block 25 is formed upon the upper face of the trigger-plate 11 between the flanges 23, being adapted to loosely receive a bolt extension 26 from the rear end of a carriage C, mounted for
15 movement upon the slideways 24. A spring 27 is coiled around the bolt 26, having bearing against the rear face of the block 25 and against nuts 27^a at the rear end of the bolt.

The carriage C is provided with an opening
20 28 at its forward end, the rear wall of which opening is upwardly and rearwardly inclined, while its forward end wall is upwardly and forwardly curved, as is shown in Figs. 1 and 2. The hammer 29 is pivoted
25 above the opening 28 by a pin 30 passed through the hammer and into the side flanges 23 of the trigger-plate 11. The lower end of the hammer below its pivot is contracted and is provided with a friction-roller 31, which
30 contracted end of the hammer and its roller enter and have movement in the said opening 28, as is shown in Fig. 6, and in the cocked position of the hammer (shown in Figs. 1 and 2) the reduced end of the ham-
35 mer engages with the forward wall of the opening 28, and as the hammer is cocked it forces the carriage C forward, placing the spring 27 under tension, and at such time the
40 nose 19 of the trigger 16 will have engaged the front wall of a second opening 32 in the carriage, located to the rear of the opening 28, and this nose 19 will therefore hold the carriage in its forward position until released by pulling the trigger, as is shown in Figs. 1
45 and 2.

The head of the hammer 29 extends at an angle beyond its rear edge, and such projec-
50 tion 33 is provided with a notch in its upper face near its rear end, adapted to receive in the cocked position of the hammer the safety-seat 34 of a latch-lever 35, fulcrumed at its bottom portion in the opening 32 of the carriage, as is also illustrated in Figs. 1 and 2. The safety-sear 34 is normally held in posi-
55 tion to engage with the said hammer-head by a spring 36, attached to the carriage C and having bearing against the rear of the safety-sear, as is shown also in Figs. 1 and 2.

A trip-lever 37 is employed in connection
60 with the latch-lever 35 to release it from the hammer 29. The trip-lever 37 is pivoted near its forward end in the opening 32 of the carriage C and terminates at its forward portion in a ball-head which enters and remains
65 in a socket, which socket is produced in the

rear edge of the latch-lever at the bottom, but above and to the rear of the pivot of the latch-lever, as is illustrated in Figs. 1 and 2.

The latch-lever is more or less downwardly curved and is provided with a downwardly-
70 extending lug 38 at its rear end. This lug 38 is immediately over the sear-operating dog 20 of the trigger, so that as the trigger is pulled the sear-operating dog 20 lifts up the rear end of the trip-lever 37 and causes said
75 trip-lever to rock the latch-lever 35 rearward, thus freeing the hammer 29 from engagement with the safety-sear, and the spring 27 then acts to draw the carriage backward, it having been released from the nose 19 of the trigger. 80
The rearward movement of the carriage forces the hammer upward to an engagement with the firing-pin of the arm.

It will be observed that when the hammer
85 is cocked and the nose 19 of the trigger is in engagement with the carriage the carriage is locked to such an extent that it cannot be shaken or jarred from its position or jarred to such an extent that the hammer will be re-
90 leased; but in order to give positive security a safety-latch 39 is mounted to slide in suitable bearings in the trigger-guard 12, the said latch being provided with a head, as is shown
95 in Figs. 1 and 2, which when the safety-latch is forced inward will be carried to an engagement with the under forward portion of the trigger 16, thus preventing the said trigger
100 from being accidentally pulled, as the trigger cannot be moved until the safety catch or latch 39 is purposely carried out from engagement with it.

It will be observed that the trigger mechanism is such that after a charge has been
105 fired the trigger may be held back by a finger of one hand while the breech-bolt is operated to throw out the empty shell, cock the hammer, and place a new shell in position, thus rendering the gun safe during the loading operation, as a discharge cannot be effected until the trigger under such conditions, is first
110 released and then pulled.

It is possible to hold the trigger back during the operation of loading and until it is desired to fire, since when the carriage C moves
115 back as the trigger 16 is drawn the head or projection 38 of the trip-lever 37 will be back of the sear-operating dog 20, and the latter will be elevated, so that when the carriage C is moved forward as the hammer is cocked the latch-lever 35 can engage with the head
120 of the hammer 29 to lock it in cocked position, and the roller end of the said hammer will hold the carriage in its forward position. The trigger not having been released, the projection on the head 38 of the trip-lever
125 will now be beneath the rear end of the sear-operating dog 20, causing its forward end to be pressed down upon its spring, and therefore the trip-lever cannot again be raised until the trigger is released to again bring the
130

sear-operating dog beneath the head 38 of the trip-lever 7, which will occur the moment the spring of the sear-operating dog 20 can right said lever.

5 The breech-bolt B is provided with a flat bottom and a convex top, as is best shown in Fig. 6, and with two longitudinal side guide-breasts located about centrally between the top and the bottom of the bolt and extending from end to end. The right-hand breast is designated as 40 and is shown in Figs. 1, 2, and 6, and the left-hand breast is designated as 41 and is illustrated in Figs. 3 and 6.

When the breech-bolt is in the frame, the upper longitudinal edge b of the right-hand breast and corresponding edge b^2 of the left-hand breast are in sliding engagement with the guide-shoulders 13 of the frame, and the lower longitudinal edges of the right and the left hand breasts (designated, respectively, as b' and b^3) are in sliding engagement with the guide-ribs 14 of the frame A, as is also best shown in Fig. 6. A recess 42 is longitudinally made in the right-hand breast 40, being carried out through the upper edge b of said breast. A locking-arm 43 is fitted for vertical pivoted movement in the said recess 42, said arm extending from end to end of the recess, as is shown in Figs. 1 and 2. The locking-arm 43 is pivoted at the forward end of the recess 42, and preferably the under edge of the locking-arm 43 from a point near its pivot to its free end is concaved, and the corresponding wall of the recess 42 is convexed, as is also shown in Figs. 1 and 2, so that the outer or free end 43^a of the locking-arm 43 is made quite wide. In the normal position of the locking-arm 43 its upper edge constitutes a continuation of the upper bearing edge b of the right-hand breast; but when the breech-bolt is in position for firing the free end 43^a of the locking-arm 43 is forced up into one of the recesses 15 in the guide-shoulder 13, engaging with the vertical wall 15^a of said recess to form a lock, which will prevent the breech-bolt from moving backward under fire.

A transverse opening 46 is made in the lower portion of the breech-bolt B at a point adjacent to the pivot 44 of the locking-arm 43, and said opening 46 extends from side to side of the breech-bolt. An ear 47 extends down from the lower edge of the locking-arm 43 at its pivot end over the opening 46, and a rectangular bar 47^a (best shown in Fig. 5) is secured to said ear and passes loosely through said opening 46, said bar being rectangular in cross-section, and a spring 48, preferably a double-bow spring, has bearing against the forward wall of the bar 47^a and tends to press said bar backward, and consequently tends also to throw the free end 43^a of the arm 43 upward the moment there is any opportunity to take such a position. Consequently the locking of the breech-bolt

is automatic when the free end of the arm 43 is brought opposite a recess 15 in the aforesaid guide-shoulders 13. The spring 48 is held in position usually by a pin 49, passed through it and through a portion of the breech-block, as is also illustrated in Fig. 5.

A recess 50 is made in the left-hand breast of the breech-bolt, as is shown in Fig. 3, which recess corresponds to the recess 42 in the right-hand breast of the breech-bolt; but the recess 50 in the left-hand breast of the breech-bolt is provided with a downwardly-curved extension 50^a, which is carried out at the lower front end of the breech-bolt. A locking-arm 51, corresponding to the locking-arm 43, is similarly pivoted in the recess 50 by means of a suitable pin or bolt 52 and has similar movement in its recess to the movement of said locking-arm 43, as the recess 50 extends out through the upper edge b^2 of said left-hand breast. The free end of the locking-arm 51 is preferably made wider than the corresponding end of the locking-arm 43, its upper edge being provided with an upward and rearward taper, so as to fit to the left-hand recess 15^a in the left-hand guide-shoulder 13 when the breech-bolt is in firing position, as is illustrated in Fig. 3, as it is possible at this side of the frame to give a better bearing to the free end of the locking-arm 51 than it is possible to provide at the opposite side of the frame for the locking-arm 43, since the shoulder 15^a at the right-hand side of the frame, with which said arm 43 engages, is adjacent to the rear end of the opening a , through which the shell is ejected.

The left-hand locking-arm 51 is provided with a downwardly-extending ear 53 below its pivot, which ear is attached by a screw 54 or its equivalent to the spring-controlled bar 47^a, and thus through the medium of said bar 47^a the free ends of both of the locking-arms 43 and 51 are made to simultaneously rise and enter their respective keeper-recesses in the guide-shoulders 13 of the frame.

The lower edge 55 of the left-hand locking-arm 51 is concaved, the concavity extending from a point to the rear of the pivot of the frame to its free end, and the corresponding lower wall of the recess 50 is correspondingly convexed, as is shown in Fig. 3. A downwardly-extending lip 56 is formed at the free end of the left-hand locking-arm 51, which lip is offset from the upper end edge of said arm which enters the recess 15, and just forward of the lip 56 a recess 57 is made in the lower edge of the said locking-arm 51, the lip and recess being for a purpose to be hereinafter described.

The left-hand locking-arm 51 is provided with a downwardly and forwardly grooved extension-arm 58, having a slot 59 in the forward edge of its lower portion extending in a downward and rearward direction, and the lower end of the arm 58 when the arm 51 is

in a recess 15 lies snugly upon the convexed lower wall of the extension 50^a of the recess 50, and the extension-arm 58 at its lower edge and the screw 54 and the ear 53 are cut away to form a continuation b^4 of the lower bearing-surface b^3 of the left-hand breast 41.

A recess 59^a is made in each side of the breech-bolt B at its bottom rear portion, and in each recess a transverse bar 60 is formed for a purpose to be hereinafter described. The rear end of the breech-bolt between the recesses 59^a is more or less rounded off or beveled, as shown at 61 in the drawings, so as to facilitate the passage of the breech-bolt B over the hammer 29 at the rearward movement of the bolt to cock the hammer. At the forward end of the breech-bolt B a recess 62 is made centrally and longitudinally in its bottom surface, and in said recess a finger 63 is pivoted at its rear, its forward end being normally pressed downward by a spring 64, and the forward or free end of the said finger is thicker than its other portions and is rearwardly beveled upon its under face, as is shown in Fig. 5. This finger is to insure the cartridge being picked up from the carrier, to be hereinafter described, and is spring-controlled and beveled to facilitate the removal of the breech-bolt from the frame A. In order to make the breech-bolt B as light as possible consistent with strength, a longitudinal chamber 65 is made in its upper portion, extending nearly from end to end, being open at the rear end of the bolt, as is shown in Fig. 5.

The chamber 66 for the firing-pin 67 extends diagonally upward from the rear bottom portion of the breech-bolt B to a central point at the front of the bolt, and the said firing-pin is normally held in at its point and out at its heel by the tensional spring 68.

Just below the rear end of the left-hand locking-arm 51 a horizontal slot 69 is made in the left-hand side of the breech-bolt B, as is shown in Figs. 3 and 4, and said slot 69 extends to the rear end of the breech-bolt and communicates with the firing-pin chamber 66. A segmental lug 70 extends from the firing-pin out through the slot 69, its convex edge facing the rear, and said lug is provided with a lip 71, which extends out beyond the side wall of the recess 50 in the left-hand breast 41 of the breech-bolt, as shown in Fig. 4. This lip 71 occupies such a position relative to the lip 56 of the left-hand locking-arm 51 as to be immediately below it while the firing-pin is in normal position, and at such time the arms 43 and 51 are in the recesses 15 and cannot be dropped from said recesses until the firing-pin is struck by the hammer, and at that time the lip 71 will be opposite the recess 57 in the left-hand locking-arm 51, leaving said arms at liberty to be drawn down at their free ends; whereupon the lip 56 of the left-hand arm 51 will be at the rear of

the lip 71, carried by the firing-pin, and will occupy such position during the backward movement of the breech-bolt and during its forward movement until the breech-bolt is fully home, when the free ends of the locking-arms 43 and 51 will simultaneously spring up into the locking-recesses 15.

It is sometimes desirable to move the breech-bolt while the hammer is cocked, and this may be accomplished by the auxiliary mechanism shown in Fig. 4, wherein it will be seen that an elbow-lever 72 is pivoted in the slot 69 of the breech-bolt, one member whereof has play against the convexed edge of the segmental lug 70 from the firing-pin 67, while another member is in engagement with a push-button 73, carried by the frame A. A pin 72^a acts in conjunction with the button 73^a to limit the outward movement of the elbow-lever 72, so that when the button 73 is pushed inward it presses through the lever 72 upon the lug 70, compelling the firing-pin to move forward and take the lip 71 of the lug 70 out of the path of the lip 56 of the left-hand locking-arm 51.

The breech-bolt B is operated by the usual slide 74, mounted upon the magazine A². A flat operating-bar 75 is attached to the slide 74 and is carried into the frame A at its front left-hand portion and has movement in a channel 76, formed in the inner left-hand face of the frame below the left-hand guide-rib 14, as illustrated in Fig. 6, and, as shown in said Fig. 6 and in Fig. 3, said operating-bar at its inner end has a cam-head 77 offset inwardly from the inner face of the said bar. The cam-head 77 enters the extension 50^a of the recess 50, and when the slide 74 is drawn rearward its head travels in the inclined slot 59 and forces the said extension 58 upward to the dotted position shown in Fig. 3, whereupon the free ends of the locking-arms 43 and 51 are drawn downward out of the recesses 15, and the continued rearward movement of the slide 74 will carry the breech-bolt to its rear position, where it engages with the hammer to cock the same, as is shown in Figs. 1 and 2. When the breech-bolt is to be drawn forward or returned to firing position, the head 77 of the bar 75 will draw against a shoulder 78, located at the upper outer portion of the extension-section 50^a of the recess 50 in the said breech-bolt.

With reference to the carrier D, it consists of a body-section 79, arms 80, which extend rearwardly from the body, a tubular cross-bar 81, connecting the rear ends of the arms 80, and lugs 82, which extend rearwardly from the end portions of the cross-bar. The carrier D is pivoted in the frame A by passing a pin 83 through the cross-bar 81 and securing the ends of the pin in the frame. The pivot-pin 83 for the carrier is located back of the hammer 29 when in a cocked position, as

shown in Figs. 1 and 2, and the hammer 29 has play between the arms 80 of the carrier, as is shown in Fig. 6. The body 79 of the carrier, which is cradle-shaped, but very shallow at its forward end, occupies a downwardly-inclined receiving position (shown in Fig. 1) when the breech-bolt B is in firing position and while the bolt is carried to its rear position and during the time the bolt remains in its rear position; but shortly after the breech-bolt commences to return to firing position the body of the carrier is automatically raised to present a cartridge to the barrel, as shown in Fig. 2, said cartridge to be forced into the barrel by the breech-bolt in taking up its firing position. This operation of the carrier is accomplished as follows: A sleeve 84 is mounted to turn in the frame A at the rear of the carrier by passing a pin 85 through the sleeve and securing it in the frame, and, as shown in Figs. 1 and 2, the sleeve is provided with two forwardly-extending tumblers 86, one near each end of the sleeve, each tumbler having two distinct spurs, as shown in Figs. 1 and 2, one spur being adapted for engagement with a bar 60 on the breech-bolt and the other being adapted for depressing engagement with a lug 82 on the carrier cross-bar 81. Where the tumblers 86 are secured to the sleeve 84, the said sleeve is provided with a vertical front face and a horizontal top face, while the rear top and bottom surfaces are flat and the surface between more or less rounded off, as is also shown in Fig. 1, and a forked spring 87 is secured within the frame at its upper portion, and the members of said spring have bearing against the under face of the sleeve 84 at its end portions, as clearly shown in Figs. 1 and 2. When the body-section 79 of the carrier D is elevated, it presses back the cartridge-stop into the recess over which it lies, and the cartridge is forced to move upon the said body-section of the carrier; but the spring resumes its normal retaining position as soon as it is freed from the body of the carrier.

In the operation of the breech-bolt as the breech-bolt is carried back it passes by the upper spurs, having no particular action thereon, and consequently the spurs on the tumblers which are to operate on the carrier are also out of action, as shown in Fig. 1, and the carrier is in its lowest position. When, however, the breech-bolt commences to return, its bars 60 engage with the upwardly-extending spurs on the tumblers 86 and press the said spurs downward, causing the lower spurs of said tumblers to press down upon the lugs 82 at the rear of the carrier, and thus raise its body portion, which has received a cartridge, to the upper position, (shown in Fig. 2,) when the point of the cartridge is presented to the barrel of the gun and the cartridge is forced into the barrel by the full return of the breech-bolt, and as the tumblers are re-

leased at the time the cartridge is taken up by the breech-bolt at the release of the said tumblers the body of the carrier again drops to its receiving or normal position.

It is evident that when the breech-bolt B engages the spurs of the tumbler 86 on its backward movement it rocks the spurs rearward until released from contact with the bars 60, whereupon the spring 87 returns the tumblers to their normal position (Shown in Fig. 1.)

In the right-hand side of the breech-bolt, at the front, a longitudinal recess 88 is made, and in this recess an extracting-finger 89 is pivoted, the head of which finger extends the conventional distance beyond the front of the breech-bolt, and in a depression in the said recess 88 a spring 90 is located, which spring has bearing against the inner end of the extracting-finger 89, holding the head thereof normally over the front of the breech-bolt. At the opposite or left-hand side of the breech-bolt a longitudinal recess 91 is produced, corresponding to the recess 88; but the recess 91 is deepest at the front and is substantially level at its bottom wall at its inner end with the outer face of the left-hand locking-arm 51, as is shown best in Figs. 3 and 4. At the upper and lower walls of this recess 91 hook-shaped heads 92 are formed, which heads are stationary and extend slightly beyond the front face of the breech-bolt. When the breech-bolt is carried forward to push the cartridge in the barrel, the rim of the cartridge is caught by the head of the extracting-finger 89 and the extracting-heads 92, just described, so that on the return or backward movement of the breech-bolt the empty shell will be drawn from the barrel after firing.

The ejector consists of a horizontally-located spring-plate 93, which is made to lie in a groove in the left-hand side of the frame and is secured to the frame at its forward end, as is shown at 94 in Figs. 1 and 2. This plate 93 carries an angular or claw shaped spring ejecting-lug 95, and as the breech-bolt is carried rearward, taking with it the empty shell, the ejecting-lug 95 will ride down the recess or groove 91 and will withdraw the left-hand portion of the rim of the cartridge from the left-hand extracting-heads 92 and will tend to throw the empty shell out through the opening *a* at the right-hand side of the frame.

In the operation of the gun, supposing the cartridge to have just been exploded, at which time the slide 74 will be in an advanced position relative to the frame, the slide is drawn rearward, and the cam-head 77 of the slide will then enter the extension 50^a of the recess 50 and will engage with the left-hand locking-arm 51 to raise its forward end and carry both of the locking-arms 51 and 43 out from the recesses 15. The continued rear-

ward movement of the slide 74 will carry the breech-bolt rearward, during which movement the breech-bolt first commences to depress the hammer 29 to carry it to the cocked position (shown in Figs. 1 and 2) and draws the empty shell from the barrel, and before the breech-bolt reaches its rear position the ejecting-lug 95 releases the empty shell and directs it to the opening *a* in the side of the frame.

The hammer is brought to its full-cocked position when the breech-bolt is at the limit of its rearward movement, and the body 79 of the carrier is then in the lower position, (shown in Fig. 1,) having received a cartridge from the magazine. Next the slide 74 is moved forward, carrying the breech-bolt with it, and as the breech-bolt commences to move forward it engages the tumblers 86, pressing them downward in a forward direction and by contact with the lugs 82 of the carrier depresses the rear end of the carrier, raising its body portion 79 with the cartridge to the position shown in Fig. 2, whereupon the bullet of the cartridge is directed to the barrel of the arm and the continued forward movement of the breech-bolt forces the cartridge into the barrel and at the same time the extracting-heads, carried at the forward portion of the breech-bolt, engage the rim of the cartridge, and as soon as the breech-bolt is in its firing position the free ends of the locking-arms 43 and 51 will automatically move upward into the recesses 15 in the frame, occupying the position shown in Fig. 3.

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

1. A frame, a hammer pivoted in the frame, a breech-bolt which acts to cock the hammer, a tension-controlled carriage operated in one direction by the hammer in cocking, a cocking-latch for the hammer and a trip-lever for the cocking-latch, said latter-named parts being pivoted in the carriage, a trigger, and a sear extension from the trigger adapted for engagement with the trip-lever.

2. A frame, a hammer pivoted in the frame, a breech-bolt which acts to cock the hammer, a tension-controlled carriage operated in one direction by the hammer in cocking, a cocking-latch for the hammer, and a trip-lever for the cocking-latch, said latter-named parts being pivoted in the carriage, a trigger, and a spring-controlled substantially T-shaped sear-operating dog pivoted to the cocking-latch, which dog is adapted for releasing action upon the trip-lever and for locking engagement therewith.

3. A frame, a hammer pivoted in the frame, a breech-bolt which acts to cock the hammer, a tension-controlled carriage mounted to slide in the frame, operated in one direction by the cocking movement of the ham-

mer, said carriage being provided with an opening in which the head of the hammer lies when cocked, a spring-controlled cocking-latch pivoted in said opening and adapted for locking engagement with the hammer when in cocked position, a trip-lever connected with the cocking-latch and also pivoted in said opening in the carriage, a trigger having a nose projection forward of its pivot and adapted for engagement with the forward wall of the opening in the carriage when the hammer is cocked to prevent the return movement of the carriage, a substantially T-shaped spring-controlled sear-operating dog adapted when the trigger is pulled to engage with and lift the trip-lever, the said sear-operating dog being adapted likewise for locking engagement with the trip-lever when the hammer is cocked while the trigger is held back.

4. In firearms, a frame, a hammer mounted in the frame, having a heel projection, a tension-controlled carriage having sliding movement beneath the hammer and provided with a forward and with a rear opening, the forward opening receiving the heel projection of the hammer and the rear opening the head of the hammer when in cocked position, a trigger, a sear-operating dog pivoted on the trigger, a cocking-latch for the hammer pivoted in the carriage and adapted for engagement with the sear-operating dog of the trigger, and means for cocking the hammer.

5. In firearms, a frame, a hammer pivoted in the frame having a heel projection and a roller in said projection, a breech-bolt adapted at its rearward movement to cock the said hammer, a spring-controlled carriage mounted to slide upon the trigger-plate of the frame, which carriage is provided with a forward opening and with a rear opening, a heel projection from the hammer entering the forward opening of the carriage and the roller of the hammer having bearing against the forward wall of said forward opening when the hammer is cocked, at which time the head of the hammer enters the said rear opening, a spring-controlled cocking-latch for the hammer, pivoted in said rear opening of the carriage, the cocking-latch being curved and provided with a downwardly-extending head, a trip-lever for the cocking-latch, a trigger provided with a nose extending forward of its pivot in the normal position of the trigger to engage with the forward wall of the rear opening, and a spring-controlled substantially T-shaped sear-operating dog carried by said trigger at the rear of its pivot, which dog is adapted for lifting engagement with the head of the trip-lever.

6. In firearms, a frame, a hammer pivoted in the frame and having a heel projection and a roller in said projection, a breech-bolt adapted at its rear movement to cock said

hammer, a spring-controlled carriage mounted to slide upon the trigger-plate of the frame, which carriage is provided with a forward opening and with a rear opening, a heel projection from the hammer entering the forward opening of the carriage and the roller of the hammer having bearing against the forward wall of said forward opening when the hammer is cocked, at which time the head of the hammer enters said rear opening, a cocking-latch for the hammer, pivoted in the said rear opening in the carriage, said cocking-latch being curved and provided with a downwardly-extending head, a trip-lever for the cocking-latch, a trigger provided with a nose extending forward of its pivot in the normal position of the trigger to engage with the forward wall of said rear opening, a spring-controlled substantially T-shaped sear-operating dog carried by the trigger at the rear of its pivot, which dog is adapted for lifting engagement with the head of the trip-lever, and a safety-slide having movement in the trigger-guard and provided with a member which when the slide is carried rearward engages with the said nose projection from said trigger, for the purpose described.

7. In firearms, a frame, upper and lower parallel guides in the frame, the upper guides having recesses therein at predetermined distance from their forward ends, a breech-bolt mounted to slide between the guides, spring-controlled locking-arms pivoted at the sides of the breech-bolt, the free ends of which are adapted to enter the said recesses to lock the breech-bolt during firing, and means for simultaneously releasing the arms from said recesses and forcing the breech-bolt rearward.

8. In firearms, a frame, upper and lower parallel guides in the frame, the upper guides having recesses therein at predetermined distance from their forward ends, the rear walls of the recesses being straight and the forward walls inclined, a breech-bolt mounted to slide between the guides, having longitudinally-recessed breast-sections, locking-arms pivoted in said recesses, a connecting member for the arms located at their pivot portions, a spring acting upon said connecting member to normally force the free ends of the arms upward to enter the recesses in the said upper guides, a slide, a bar operated from the slide and adapted to impart movement to the breech-bolt, and means whereby as the breech-bolt is pushed rearward said slide draws down the forward ends of the locking-arms.

9. In firearms, the combination with the frame of the arm, upper and lower parallel guides at the sides of the said frame, the upper guides having recesses therein at predetermined distances from their forward ends, the said recesses having inclined forward and

vertical rear walls, of a breech-bolt having side breasts, the said breasts having a recess therein extending through the top, the recess in one breast extending through from end to end of the bolt; locking-arms pivoted to the said bolt in the said recesses, a connection between the lower portions of the said arms, a spring bearing on said connection, normally forcing the free ends of the arms upward, one of the said arms being provided with a curved extension at its forward end, which extension from the arm is located in an extension from the longer recess mentioned, a space intervening between the forward end of the extension and the forward wall of the extended portion of the recess, a slide, a bar connected with the slide and having movement in the frame, and a cam-head extending from the said bar, adapted for engagement with the extension from the said locking-arm to lower the arms at their free ends and carry the bolt rearward at the same time, and at the forward movement of the slide to draw the bolt to a closed position.

10. In firearms, the combination with a frame having parallel upper and lower guides at its inner side portions, the upper guides having recesses therein at predetermined distances from their forward ends, of a breech-bolt mounted to slide between the guides, spring-controlled connected arms pivoted upon the said bolt, one at each side, the free ends of which arms are normally forced upward, one of said arms being provided with a downwardly-extending lip at its free end and a recess adjacent to the said lip, a firing-pin having movement in the breech-block, which firing-pin is provided with a lip extending from its rear end out beyond the side of the breech-bolt, being normally beneath the said lip of one of the said locking-arms, whereby the said arms cannot be lowered until the firing-pin is moved forward to bring the lip extension therefrom in registry with the said recess adjacent to the lip from said arm, a slide, a bar connected with the slide, having movement in the frame, which bar is provided with a head arranged to operate the said arms to bring their free ends downward and to move the bolt forward and rearward.

11. In firearms, the combination with a frame having parallel upper and lower guides at its inner side portions, the upper guides having recesses therein at predetermined distances from their forward ends, of a breech-bolt mounted to slide between the guides, spring-controlled connected arms pivoted upon the said bolt, one at each side, the free ends of which arms are normally forced upward, one of said arms being provided with a downwardly-extending lip at its free end and a recess adjacent to the said lip, a firing-pin having movement in the breech-block, which firing-pin is provided with a lip extending from its rear end out beyond the

side of the breech-bolt, being normally beneath the said lip of one of the said locking-arms, whereby the said arms cannot be lowered until the firing-pin is moved forward to
5 bring the lip extension therefrom in registry with the said recess adjacent to the lip from said arm, a slide, a bar connected with the slide, having movement in the frame, which bar is provided with a head arranged to op-
10 erate the said arms to bring their free ends downward and to move the bolt forward and rearward, a lever fulcrumed upon the breech-bolt in engagement with the lip extending from the firing-pin, and a push-button
15 mounted in the said frame and engaging with the said lever to move the firing-pin forward when desired.

12. In firearms, a frame, a cartridge-carrier pivotally mounted in the said frame,
20 comprising a body, arms extending from the body, a pivot-section and lugs extending from the pivot-section, a tumbler mounted to

turn in the frame to the rear of the lugs of the carrier, the said tumbler being spring-controlled and provided with projections from
25 its forward surface, each projection being provided with an upper and a lower spur, the lower spur being adapted for engagement with the lugs of the carrier, a breech-bolt mounted to slide in the frame above the
30 carrier and above the said tumblers, and members carried by the breech-bolt and adapted to engage with the upwardly-extending spurs of the tumblers, whereby to cause the
35 said tumblers to depress the lower portion of the carrier and raise its body portion, as described.

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

WILLIAM SONNENBERG.

Witnesses:

M. VATEE,
A. G. ARTZ.