June 1, 1926. 1,587,003

J. T. KEWISH

AUTOMATIC FIREARM

Filed Sept. 7, 1921 4 Sheets-Sheet 1

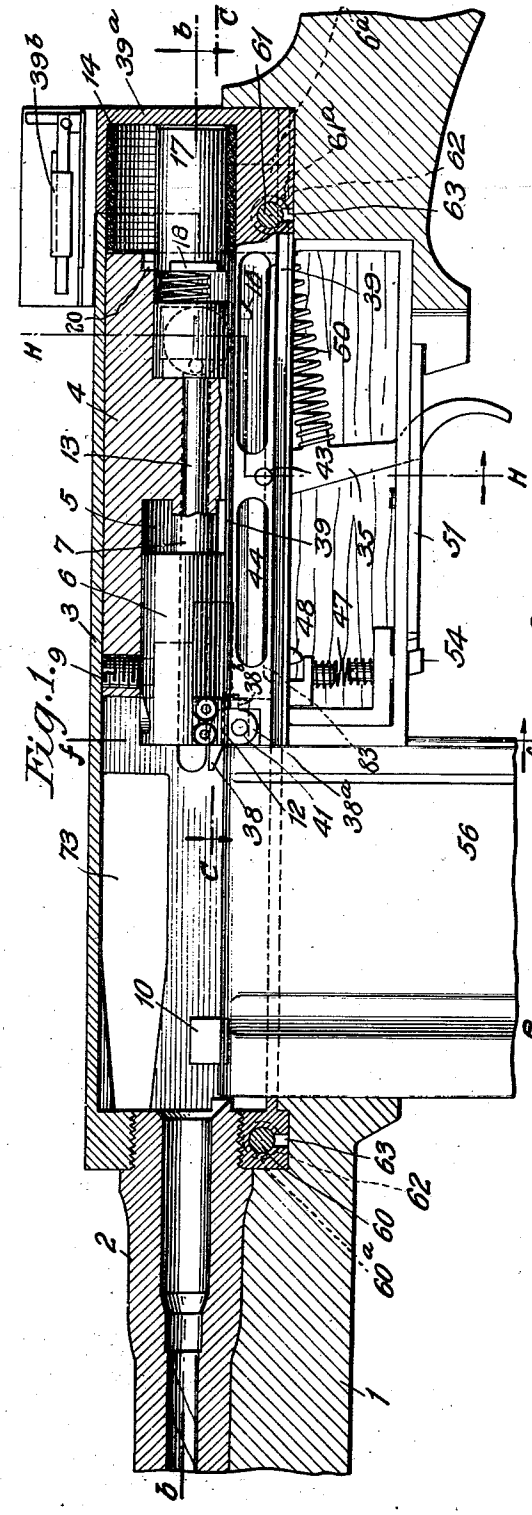


Fig. 1.

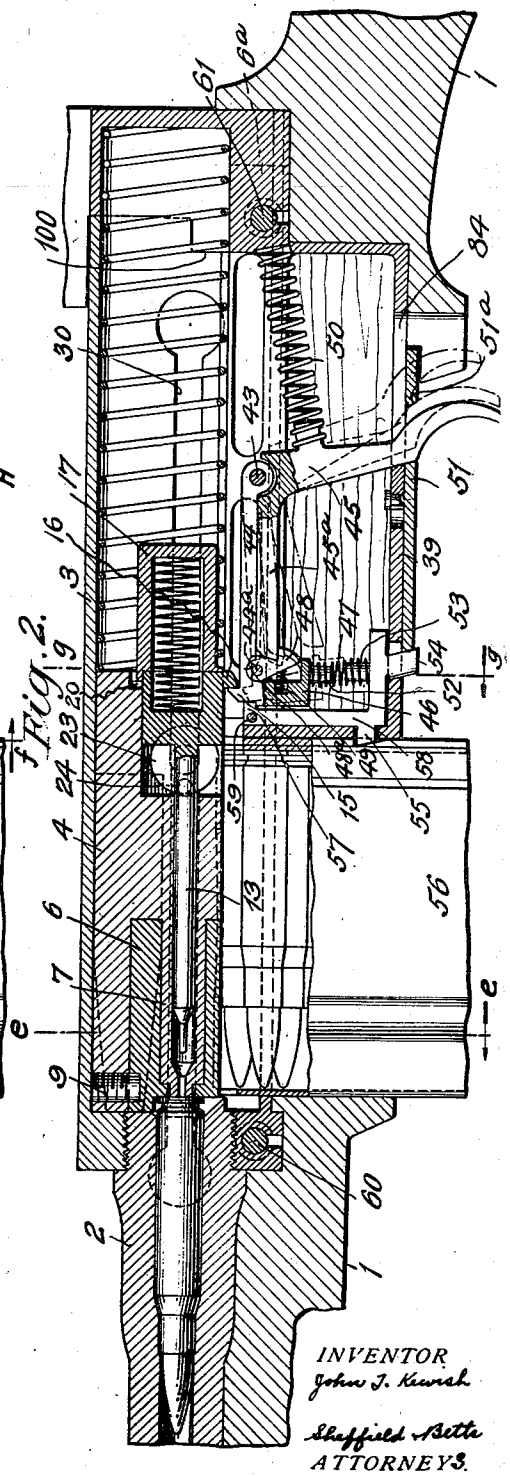


Fig. 2.

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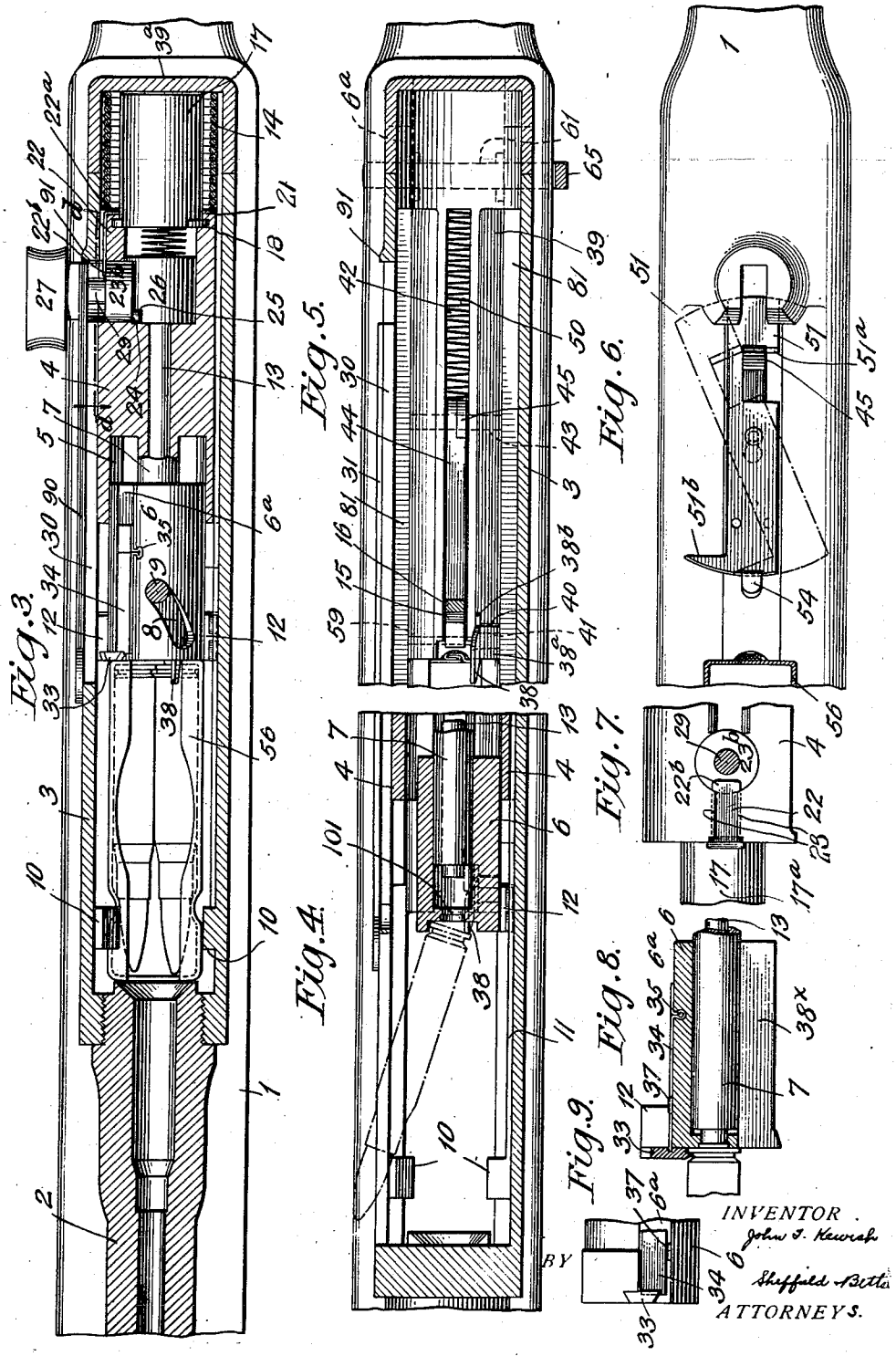


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

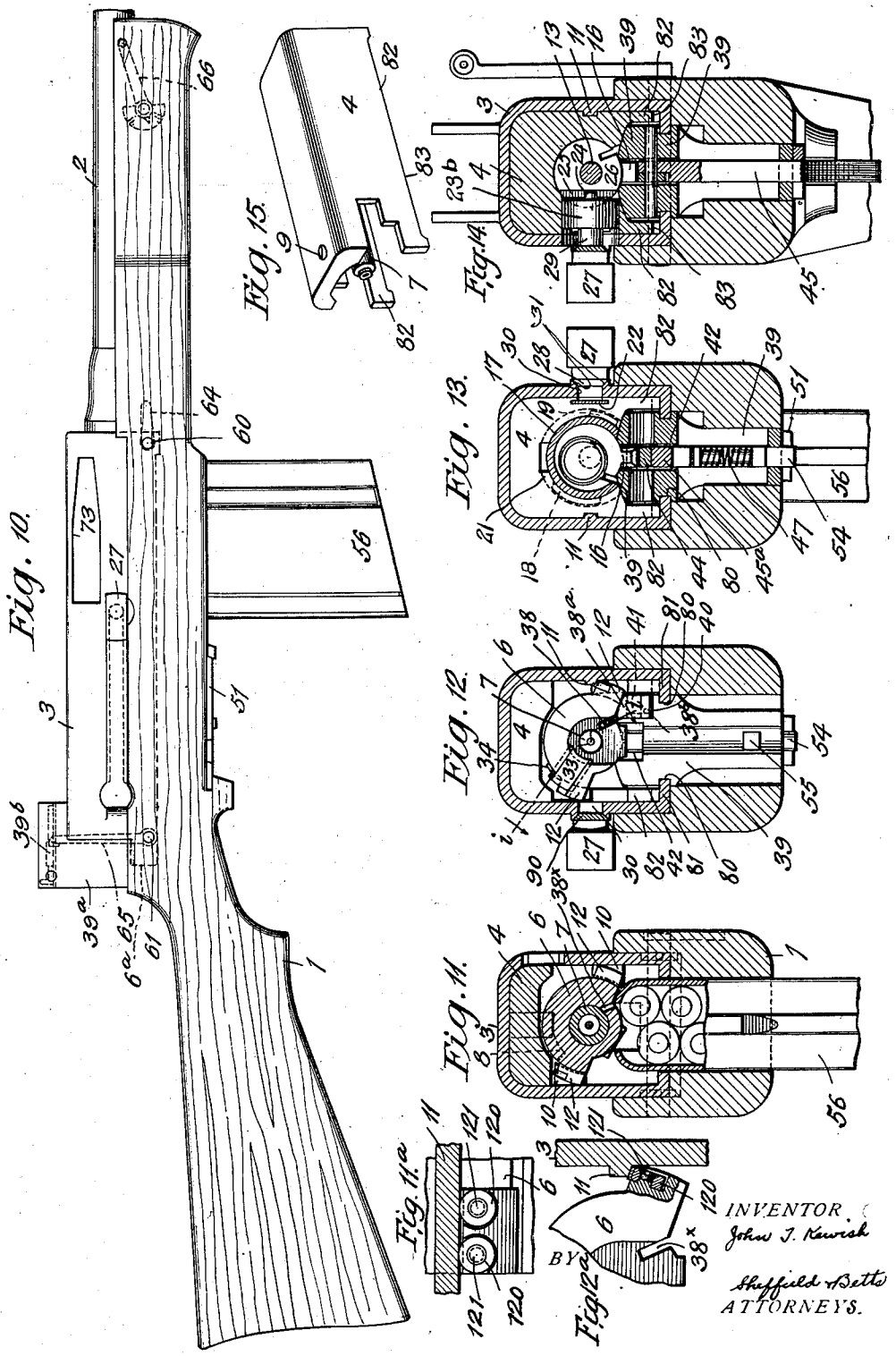
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AUTOMATIC FIREARM

Filed Sept. 7, 1921 4 Sheets-Sheet 3



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AUTOMATIC FIREARM

Filed Sept. 7, 1921 4 Sheets-Sheet 4

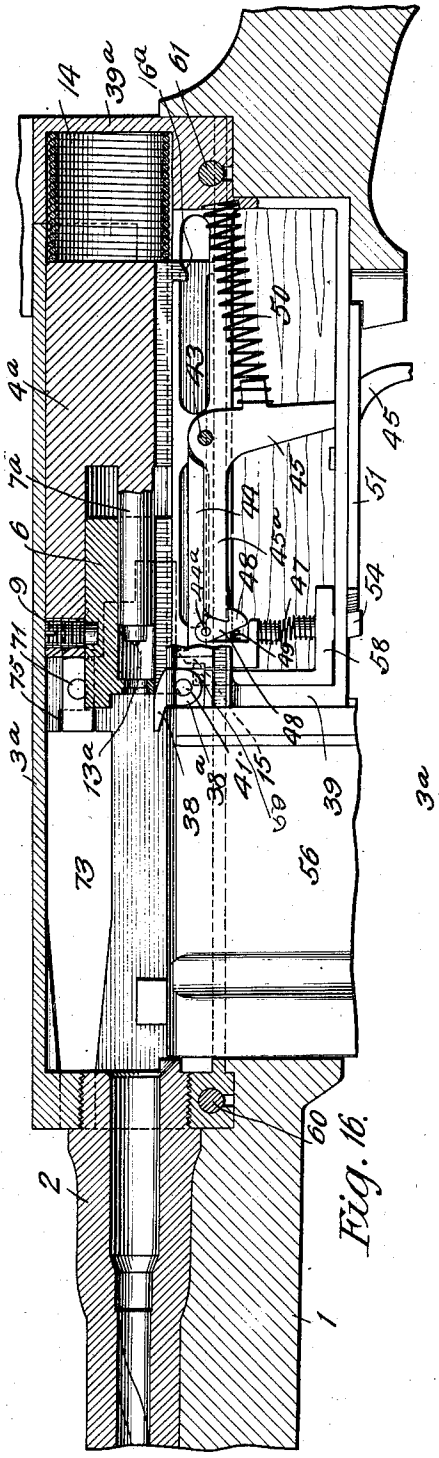


Fig. 16.

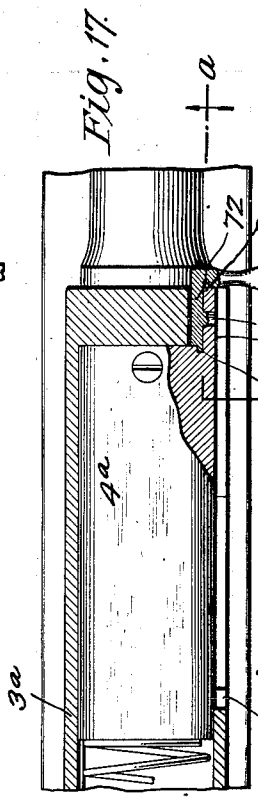


Fig. 17.

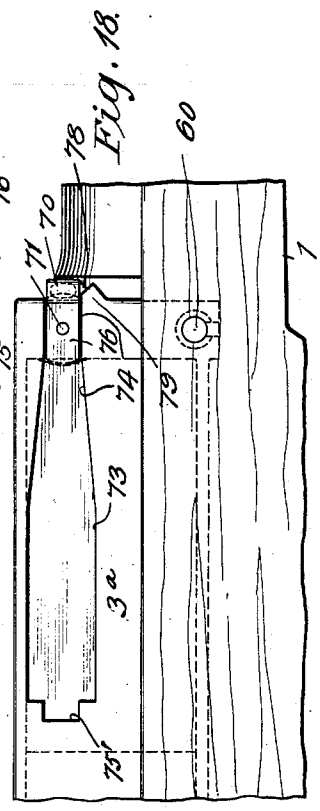


Fig. 18.

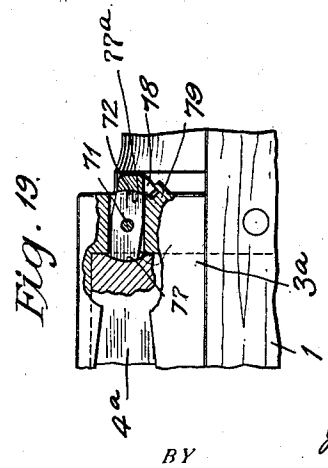


Fig. 19.

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Patented June 1, 1926. 1,587,003

UNITED STATES PATENT OFFICE.

JOHN T. KEWISH, OF NEW YORK, N. Y.

AUTOMATIC FIREARM.

Application filed September 7, 1921. Serial No. 499,014.

My invention relates to automatic rifles and embraces certain modifications of my prior constructions disclosed in my pending applications, Ser. No. 244,047, filed July 9, 1918, and Ser. No. 410,083, Sept. 14, 1920.

One of the objects of my present invention is to simplify the construction of rifles capable of either single shot or automatic action, and to render the operation of the same more reliable.

Another object of my invention is to provide a mechanism of extreme simplicity for automatic action only.

Further objects and advantages of my invention will be apparent upon reading the following description taken with the accompanying drawing in which—

Fig. 1 is a longitudinal view, parts being shown in vertical section and parts in elevation, of the mechanism of a rifle for both single shot and automatic action according to my invention.

Fig. 2 is a view similar to Fig. 1, but the breech being shown closed and all the parts being in section.

Fig. 3 is a horizontal section on the line *b—b* of Fig. 1, parts being shown in plan for purposes of illustration.

Fig. 4 is a section on line *b—b* of a portion only of the mechanism appearing in the preceding figures, the mechanism being illustrated in the act of ejecting an empty cartridge, and all the parts being sectioned.

Fig. 5 is a horizontal section on the line *c—c* of Fig. 1, the bolt and actuator being removed for purposes of illustration.

Fig. 6 is an inverted view partly in section of the trigger region of a gun according to my invention.

Fig. 7 is a detail view taken on the line *d—d* of Fig. 3, looking in the direction of the arrow.

Fig. 8 is a detail section on line *i—i* of Fig. 12 illustrating the extractor according to my invention.

Fig. 9 is a plan view of a portion of Fig. 8.

Fig. 10 is an elevational view of a gun according to my invention.

Fig. 11 is a cross-section on the line *e—e*, Fig. 2.

Fig. 11[a] is a detail of an anti-friction means.

Fig. 12 is a cross-section on the line *f—f*, Fig. 1.

Fig. 12[a] is a detail similar to Fig. 11[a].

Fig. 13 is a cross-section on the line *g—g*, Fig. 2.

Fig. 14 is a cross-section on the line H—H, Fig. 1.

Fig. 15 is a detail of an actuator according to my invention.

Fig. 16 is a longitudinal central vertical section of a gun according to my invention and designed for automatic action only.

Fig. 17 is a plan view, partly in section, of a portion of the mechanism shown in Fig. 16.

Fig. 18 is an elevation of the portion appearing in Fig. 17.

Fig. 19 is a detail on the line *a—a* of Fig. 17.

In the drawing, 1 is a stock on which is mounted a barrel 2. A receiver or casing 3 is fixed to barrel 2, and stock 1, and within receiver 3 is a reciprocatory weight or actuator 4 made in a single piece and receiving power from the primer of the cartridge in the guns illustrated in the drawing. However, an actuator of the type illustrated may also receive power, either partly or wholly from the recoil of the barrel, in the manner illustrated in my said application, Ser. No. 410,083. Actuator 4 is cut out as shown at 5 to receive the bolt 6, the bolt being supported on a hollow cylindrical piece 7 integral with the body of actuator 4, piece 7 projecting forward to receive the impulse from the primer when the cartridge is fired.

The bolt 6 has a spiral cam groove 8 cut therein to receive the end of a pin 9 fixed in the actuator 4 so that the bolt may be locked and unlocked by the relative movement of the actuator and bolt in an obvious manner. Pin 9 is illustrated as being threaded into actuator 4, but it may be pressed into the actuator or otherwise fixed therein as desired. The arrangement just described for turning the bolt is important, as it enables me to make the actuator in one piece and still be able to readily assemble the gun.

The bolt 6 locks behind lugs 10, 10 in the usual manner at the forward end of its travel. In order to prevent the bolt from turning when it strikes a cartridge in its forward travel, I provide a track 11 beneath

which one of the lugs 12 on bolt 6 rests after the bolt has been withdrawn from fixed lugs 10 and until it returns to this position.

Firing pin 13 works within the actuator and as actuator 4 recoils against main spring 14, the pin 13 rides over a sear or catch 15, the pin 13 being then detained and cocked or mounted upon the return forward movement of the actuator by engagement between lug 16 on the firing pin and the sear 15. A cap or hood 17 carried on the actuator 4 affords a recess in which is carried a spring 18 for driving the firing pin home when released from the sear 16 to discharge the cartridge. One of the improvements in the present application as compared with my said application #410,083 resides in the manner of fastening the hood 17 in place. The arrangement for doing this permits me to make other improvements at the same time. According to my present invention, hood 17 is provided with lugs 18 and 19 (Fig. 13) which may be inserted into a groove 20 cut in the rear face of actuator 4, the hood being then turned to bring the lugs 18 and 19 under the lip or flange 21 forming the rear wall of groove 20. The hood is then held in place so long as it is prevented from turning. To prevent the hood turning so that lugs 18 and 19 may not escape from groove 20, I provide the same with a flattened face 17^a (Fig. 7) against which bears the L-shaped end 22^a of a piece of spring steel 22. Piece 22 is held in place on actuator 21 by the overhanging edges 23, 23 of shallow groove in the actuator into which piece 22 is forced. The other end 22^b of piece 22 serves as a spring to hold in place the means for hand starting, hand cocking and locking, it being thereby possible to make the means for performing these functions in one piece. This piece comprises a cylindrical portion 23^b which is mounted in a complementally shaped recess in the actuator 4 and which carries a pin 24 adapted to engage a shoulder 25 on the head 26 of firing pin 13. By turning the cylinder 23 and pin 24 through 180° from the position shown in Fig. 3 the head 26 and pin 13 are forced back relatively to the actuator sufficiently for sear 15 to catch the lug 16, the pin then being cocked. If it is desired that the pin 13 be locked, the cylinder 23 and pin 24 are allowed to remain in the position 180° from that of Fig. 3; otherwise they are turned back again to the position in which they are illustrated and the gun may be fired. This method of cocking, however, is used only when there is a live cartridge in the breech. Otherwise a fresh cartridge must be inserted by first withdrawing and then throwing forward the actuator. This is done by a handle 27 integral with a slider 28, fixed to cylinder 23 by an integral shank 29. Slider 28 is V-shaped and works in an elongated opening 30 in the receiver, sides of opening 30 being raised and bevelled as shown at 31 to fit the sides of slider 28 and forming a track therefor. The spring piece 22, by virtue of the engagement between end 22^b and the cylinder 23, forces the slider into close engagement with its track and keeps it and the pin 25 in either one of the two positions in which they may be set and in which the slider 28 is seated in its track as illustrated in Fig. 13. In one of these two positions, 180° apart, the firing pin 13 is free and in the other one it is locked. The slider 28 and pin 25 can be moved from one of these positions to the other by simply turning the knob or handle 27, as the bevelled surfaces 31 act as cams to force the slider outwardly against spring 22, the slider dropping into position in its track automatically when it has been turned far enough.

It will be seen that piece 22 serves both as locking means for hood 17 and as spring for the hand operating and locking means.

I provide a flat cover piece 90 fixed to the slider 28 which entirely covers the opening 30 in the receiver when the actuator is retracted.

The extractor mechanism according to my present invention, is illustrated in detail in Figs. 3, 8 and 9, and comprises a finger 33 mounted in a dove-tail slot in the transverse face of bolt 6 and adapted to engage and withdraw a cartridge from the breech. A flat spring 34 is mounted on a flattened surface 6^a of the bolt 6 and has one end extending slightly beyond and engaging a slot in the rear face of part 33, spring 34 serving to thrust part 33 toward the axis of the bolt and firing pin. Spring 34 is formed with a closed loop 35 in its rear portion which is inserted into a complementally formed key-hole slot formed in the bolt 6. In the act of inserting the loop portion 35 into the slot in bolt 6, the spring 34 is sprung or lifted over a lug 37, this lug thereupon normally preventing the spring 34 from getting out of place, but permitting its removal from the bolt when desired.

The ejector according to my present invention is designated in the drawing as 38 and is illustrated Figs. 1, 5 and 12, the slot in the bolt to accommodate the ejector during the movement of the bolt being illustrated also in Figs. 11, 13 and 14. Ejector 38 is carried at the forward end of the trigger frame 39, a little to the left of the centre of frame 39 looking forward. At the left hand upper corner of the trigger frame 39, looking forward, according to my present invention, I mill a recess 40 (Fig. 5) inwardly from the outer surface of the trigger frame, leaving a pin 41 (Fig. 16) integral with the frame projecting into said recess. The ejector 38 has a large block-like body 38^a which

is pivotally mounted on said pin. The ejector is free to tilt forward on said pin in assembling, but is prevented from moving rearwardly from the position illustrated in Figs. 5 and 16 when in action by a lug 38^b (Fig. 5) which extends from the rear face of the ejector 38 and contacts with bottom of a small recess formed in the frame 39 when the ejector is in the position just mentioned, this being the position in which the ejector strikes the cartridge to throw the same out of the gun as illustrated in Fig. 4. The ejector may, however, according to my present invention be formed integrally with the trigger frame 39 but I prefer it to be pivoted thereto as just described for convenience in assembling. If the ejector is integral, hood 17 must be slotted as well as the bolt and actuator.

I have made a very important change in the trigger mechanism of my present invention as compared to the trigger mechanisms disclosed in my said prior applications. In the present arrangement, automatic firing is had when the trigger is prevented from being pulled back more than a certain distance and the single shot action occurs when the trigger is pulled back freely by the finger. The trigger frame 39 has a central slot therein indicated at 42 (Fig. 13) in which the trigger mechanism is mounted. Near the longitudinal center of slot 42, I insert through the frame 39 a pin 43 to which is pivoted lever 44 and trigger 45, the arrangement of parts 44 and 45 on pin 43 being clearly indicated in Fig. 5. The lever 44 carries a catch or detaining sear 15, previously mentioned, for the trigger. Lug or sear 15 has its forward face rearwardly and upwardly inclined and the cooperating lug 16 on the firing pin has its rearward face complementally inclined so that the lug 16 rides freely over the sear 15 during the rearward movement of the pin and associated parts, forcing the lever 44 outwardly about this pin 43. Lever 44, however, carries a downwardly projecting portion 46 against which bears a spring 47 so that the lever 44 and sear 15 are immediately thrust upward again as illustrated in Fig. 2 after the passage of the firing pin rearwardly and the pin is then detained and cocked on its forward movement by engagement between the flat vertical surfaces of sear 15 and lug 17. The same operation occurs in case of hand cocking by means of pulling back the actuator and thrusting it forward by the hand piece 27 and also when recocking the firing pin, in case of misfire, by turning the hand piece 27 through 180° when the bolt is locked. The trigger 45 has a forwardly extending arm 45^a thereon which lies beneath the lever 44 and normally engages with the upper face of a pawl 48 pivoted on a gudgeon 44^a formed on the lever 44 near its forward end. A spring 49 tends to hold the pawl 48 in the position in which its horizontal face supports the forward end of the trigger arm 45^a, the shoulder 48^a holding the pawl against the spring. The gun being loaded and cocked and the parts being in position shown in Fig. 2, a full automatic action is obtained by pulling back the trigger 45 against spring 50 until it contacts with the stop 51 at the point 51^a. When the trigger is in this position, as determined by the surface 51^a of stop 51, the sear 15 is drawn down out of the path of lug 16 and firing pin and parts are free to reciprocate rapidly under the alternate impulses received from the primers of cartridges exploded and the main spring 14 which returns the actuator and parts to the forward position automatically after each shot has been fired. The momentum of the firing pin 13, assisted by the spring 17, is sufficient to explode the cartridge under these conditions without having to detain or cock the firing pin during the forward movement of the members. During the automatic action as just described, the pawl 48 remains in engagement with trigger arm 45^a so that the sear 15 is held down as long as the pressure is maintained on the trigger.

When now, it is desired that single shot action be had, it is necessary that the pawl 48 be released from trigger arm 45^a so that the sear 15 may spring up into the path of the lug 17 on the firing pin before the firing pin has passed forward again on its return stroke. To accomplish this, I move the detaining piece 51 so that it no longer lies in the path of the trigger, such movement of the piece 51 being indicated in dotted lines in Fig. 6. Upon pulling rearwardly on the trigger 45 it is free to force the lever 44 carrying sear 15 downwardly until the pin 52 carried by member 46 of lever 44 strikes a fixed pin 53. When this occurs, the pawl 48 and arm 45^a are in the relative positions indicated in the upper dotted lines in Fig. 2, as it will be seen that there is a tendency for arm 45^a to draw away from the pawl during the downward movement of these parts owing to spring 47, to friction, to their being pivoted on different centers 43 and 44^a respectively, and the arm 45^a being of less length than the distance between the centres of pins 43 and 59. Consequently, when the pins 52 and 53 come together, the pawl 48 immediately jars off the arm 45^a, and the lever 44 and sear 15 are immediately pushed upward to the position shown in full lines in Fig. 2, by action of spring 47, the trigger 45 and lever 45^a swinging further in counterclockwise direction under the influence of the finger. The firing pin will now automatically cock and in order to fire another shot it is necessary that the trigger be released so that it may return to its upper position above the pawl 48, as in Fig. 2. This

it can readily do owing to the inclination of the forward end of arm 45ª and the opposite inclination of the rear lower corner of the pawl 48. Shoulder 48ª on lug 48 prevents spring 46 from throwing the pawl up too far.

Detaining piece 51, previously mentioned, is pivotally mounted on the lower surface of trigger frame 39 by means of a keyhole slot connection, as illustrated in Figs. 2 and 6, the stop piece 51 being cut out inwardly from one edge to provide a recess for receiving the trigger and permitting the stop to be swung out of the way of the trigger when desired. In order to prevent the piece 51 from working loose, I provide a pin 54 which projects downwardly through an opening in the lower part of trigger frame 39 and engages the forward end of the member 51 so that its pin and slot connection cannot work loose. In order that this may be the case even when the member 51 has been turned to give the single shot action, I provide the piece 51 with a lug 51ᵇ, which has an arcuate front face whereby the lug and pin 54 remain in contact when the piece is swung into the dotted line position (Fig. 6). I also provide a latch 55 which projects through an aperture in the forward portion of the trigger frame 39 and engages a notch in the magazine 56 so that the magazine may not accidentally be jarred out of place. I prefer also to provide a special stop 57 in the upward path of the lever 44 and sear 15 to prevent the lever and sear from flying upwardly further than desirable. I have found that I may place the four members, namely, pins 53, 54 and 55, and stop 57, on L-shaped member 58 which is pivotally secured in the frame 39 by means of transverse pivot pin 59 at the upper end of the L-shaped member. The part 51 by its engagement with pin 54 prevents the L-shaped member 58 from springing back to release the magazine 56, except when the member 51 has been intentionally turned to permit this.

The trigger frame 39 is extended rearwardly and upwardly in the form of a cap or hood 39ª, which forms the abutment for the main spring 14. The hood 49 closes the rear end of receiver and also carries the rear sight 39ᵇ as illustrated in Fig. 1. In assembling the gun according to my present invention, the stock 1, receiver 6 and trigger frame 39 are all bolted together. A forward pin 60 fastens the forward end of the receiver to the stock while a rear pin 61 passes through both the stock, the rear of the receiver and the rear of the trigger frame 39, the receiver having rearward extensions indicated at 6ª in dotted lines in Figs. 1, 2 and 5, to permit pin 61 to engage the receiver. Pins 60 and 61 have cross pins 60ª and 61ª thereon adapted to engage in recesses 62, 62 cut in the receiver and trigger frame, the receiver and trigger frame having transverse slots 63 therein permitting the cross pins on main pin 60 and 61 to be inserted through the metallic parts and then turned to engage the recesses or grooves 62 in the parts. Forward pin 60 may be turned into locking position by means of lever 64 (Fig. 10) while the rear pin 61 has a lever 65 thereon for the same purpose and which also serves as a rear side sight for long distances, the cooperating forward side sight being indicated at 66.

In case single shot action is not often used, it is possible to further simplify an automatic rifle according to my present invention as illustrated in Figs. 16 to 18, inclusive. In the gun illustrated in said figures, the actuator 4ª is in one piece, as in the arrangement previously described, but the recesses provided in the actuator 4 on account of the new operating and locking mechanism and the firing pin are omitted in the actuator 4ª. The bolt 6 is the same as in Figs. 1 and 16, but the forwardly projecting portion 7ª of actuator 4ª is provided with a small pin 13ª to explode the cartridge when the actuator reaches its forwardmost position. The arrangement in Fig. 16 may be the same as that in Figs. 1 and 3 with regard to the new operating, cocking and locking mechanism, but I find that many advantages may be obtained by the arrangement for locking the actuator 4ª when in its foremost position, as illustrated in Fig. 17. In this figure I provide a handle 70 fixed to a flat bar 72, bar 72 being pivoted to the inner face of extension piece 75 by means of a pin or gudgeon 71, integral with the bar 72. Piece 75 extends forward from the front end of actuator 4ª through an opening in the front of the receiver and the aperture 73 in the side of the receiver for ejecting the cartridge, is extended forwardly at 74 and rearwardly at 75′ to provide room for the handle 70 during the reciprocation of actuator 4ª. Preferably extension piece 75′ is integral with actuator 4ª and the forward face of the actuator is notched adjacent the base or root of the piece 75 to provide an arcuate recess 77, the rear end of bar 72 next to piece 75 having a finger 76 thereon complemental to the recess 77 and extending into said recess. The forward end of piece 75 fixed to the actuator is formed into an arcuate finger 76ª similar to finger 76 on the pivoted member 72, and bar 72 has a recess 77ª therein complemented to finger 76ª and into which said finger extends. Bar 72 is thus normally secured to and held on the actuator by the joint action of the pin 71 and the latches formed by the complemental fingers and recesses 76, 76ª and 77, 77ª respectively. The forward end of the lever 75 is formed into a hook 78 which may be thrown over the front face of the receiver 3ª thereby securely locking the actuator in

its forward position. The hook 78 is adapted to engage in a notch 79 formed at the forward end of receiver 3ª, the hook 78 and notch 79 being so formed that the actuator is locked against rearward movement by hook 78. The actuator is also prevented from moving forward from this position by virtue of the fact that the front of the actuator abuts against the receiver and barrel. In the arrangement illustrated, the actuator can be locked in this way only when there is no live cartridge in the barrel. If this form of lock is used with an actuator having a separate firing pin as in Fig. 1, however, the actuator may be locked in its forward position when a live cartridge is in the barrel, as the firing pin may be withdrawn at any time. This arrangement eliminates aperture 30 in the receiver.

It will be seen that the trigger mechanism illustrated in Fig. 16 is the same as that shown in Fig. 1 and its action is the same as that previously described for both automatic and single shot action. However, there being no firing pin separate from the actuator in the form of the invention illustrated in Fig. 16, I provide a lug 16ª on an actuator 4ª adapted to cooperate with the trigger mechanism in the same manner and perform all the functions described in connection with lug 15 (Fig. 2). In the operation of actuator 4ª, and associated parts, its rearward movement is the same as that previously described in connection with actuator 4, but in moving forward in single shot action lug 16ª catches on lug 15 and stops the actuator 4ª until released by pulling the trigger, the actuator being then thrown forward again by the main spring 14 to explode the cartridge by means of firing point 13ª. In case only automatic action is required the pawl 48 or equivalent catch may be formed integral with part 46.

In both forms of the invention, that illustrated in Figs. 1–15, and that in Figs. 16–19, the trigger frame is recessed as indicated at 80 (Figs. 12–13) so that it can be assembled by sliding the recesses or grooves 80 onto the inwardly projecting flanges 81, 81 of the receiver 3 or 3ª, the receiver and trigger frame being thereupon securely locked to each other as well as to the stock 1 by means of pins 60 and 61, as previously described. The receivers 3 or 3ª are cut out as clearly indicated in Figs. 11–14 inclusive, between the flanges 81 to provide room for the trigger frame 39 and magazine 56. It will be seen that the parts are very readily assembled, but securely held in place when in the desired position.

As clearly appears in Figs. 11–14, the actuator travels on the horizontal or inwardly extending flanges 81 of the receiver at sides of the trigger frame, the actuator having downwardly extending ribs 82, 82 for this purpose. However, as is indicated at 83 (Figs. 14–15), the lower edges of the flanges 82 are cut away to reduce the bearing surface of the actuator against the flanges 81, and I find that the friction of the actuator in its traversing movement is greatly reduced by thus reducing its bearing surface.

When the gun is not in use, the plate 51 is swung so as to permit the trigger to be pushed back entirely within slot 84 in the lower portion of the trigger frame 39 to stock 1, the plate 51 being then further turned into a position 180° from that shown in Fig. 2, the trigger being thereupon held within the trigger frame, the slot 84 being closed, mud and dirt being prevented from entering the gun through slot 84 and a trigger guard thus rendered unnecessary. Moreover, when the gun is not in use the actuator is locked forward thus closing the opening 72 through which the cartridge is thrown out of the receiver 3 or 3ª. Also, in the gun illustrated in Figs. 1 to 14, the opening 30 in the receiver 4 is closed when the gun is not in use by means of the plate 90. The actuator being in the forward position, plate 90 is swung 180° from the position illustrated in Fig. 3, thus closing opening 30 and also locking the actuator by bringing the end of plate 90 against a projection 91 on the receiver at the rear end of opening 30. The gun may now be put down without the actuator jarring or sliding back.

Referring again to magazine 56, it will be understood that it is important that this be securely locked in place when in use so that it may not be accidently jarred out. The catch or sear 55 on L-member 58 locks the magazine in place as previously mentioned, while the L-member is itself firmly locked forward by the plate 51 by means of the engagement of plate 51 and downwardly depending lug 54. When it is desired to remove the magazine, plate 51 is turned and L member 46 swung against the pressure of spring 47 to withdraw sear 55 from engagement with the magazine. When the magazine is pushed into place, spring 47 automatically swings member 46 so that sear 55 engages and locks the magazine.

It will be seen that a separate firing pin may be used with the hand operating arrangement of Fig. 17, or to state it differently, the hand operating mechanism of Fig. 17 may be used in the form of gun shown in Figs. 1, 2 and 5. In this case, however, it is necessary to pull the handle back to recock the firing pin after a misfire.

It will be seen, moreover, that the frame forms upstanding shoulders 100 at the lower forward edge of hood 39ª and the rear end of travel of the actuator 4. The actuator is positively stopped at this point, in case

some primer is stronger than the average, without doing any damage, a blow on shoulders 100 being transmitted directly to pin 61.

It will be seen, also, that hood 17 lies within the coils of the main spring 14 when the actuator is at the rear end of its movement, but hood 17 does not touch the wall of part 39ª.

In the operation of breech mechanism according to my invention, the primer of the cartridge, at the time the cartridge explodes, presses back the forward end of part 7 and so accelerates the actuator rearwardly. The travel of the primer is, however, limited by a shoulder 101 on bolt 6 (Figs. 1, 4 and 8) so that the primer cannot leave the cartridge and fall into the breech mechanism.

Referring particularly to Figs. 11ª and 12ª, I have therein illustrated in detail means which may be used for reducing friction between the locking lugs 12 on bolt 6 and the lugs 10 and guide rib 11 on the receiver. Such means comprises rollers 120 rotatably mounted on gudgeons 121 formed on the lugs 12, the gudgeons being riveted over to hold the rollers in place.

While I have illustrated and described specific embodiments of my invention, I do not limit myself to details of my disclosure herein except as such details are clearly expressed in the appended claims.

Having thus described my invention, I claim:—

1. A breech mechanism comprising in combination a bolt, an independent reciprocatory single-piece actuator which receives power directly from the recoil force recessed to carry said bolt slidably within itself, and means on said bolt and actuator for moving said bolt into locked and unlocked positions.

2. A breech mechanism comprising in combination an independent single-piece reciprocatory weight or actuator which receives power directly from the recoil force recessed to carry a slidable bolt on and within itself, a relatively movable bolt supported therein, and means between said actuator and said bolt limiting the relative movement of the bolt to said actuator as the actuator locks and unlocks said bolt.

3. A gun breech mechanism comprising in combination an independent single-piece reciprocatory weight or actuator which receives power directly from the recoil force recessed to receive a relatively movable bolt on and within itself, a cammed bolt supported therein relatively rotatable and slidable by said actuator, and a firing pin supported by said actuator relatively slidable to both said actuator and said bolt.

4. A trigger mechanism for firearms comprising in combination, a pivoted lever, a spring actuating said lever in one direction, a sear shoulder on said lever, a trigger member for actuating said lever in a direction opposite to said spring, a pawl mounted on said lever adapted to receive and engage said trigger member when moved to its forward position.

5. A trigger mechanism for firearms comprising in combination, a pivoted lever, a spring actuating said lever in one direction, a sear shoulder on said lever, a trigger member for actuating said lever in opposition to said spring, a pawl pivotally mounted on said lever and adapted to receive and engage said trigger member in mounted position, a spring on said pawl to throw it into engaged position with said trigger member when this member has passed to its mounted position, and a stop to prevent said pawl from getting out of relative position to said trigger member.

6. In combination with automatic breech mechanism comprising a firing pin, a sear adapted to engage said firing pin, a trigger having a partly drawn position and a fully drawn position in the former of which the sear is withdrawn from engagement with the firing pin and held down and in the latter of which the sear is released and arrests the firing pin.

7. A firearm having trigger mechanism, a magazine, and a trigger stop, and an L-shaped member having thereon a stop for said trigger mechanism, a locking dog for said magazine, and a pin adjacent said trigger stop and serving to hold the same in position.

8. In an automatic gun mechanism in combination an actuator, a hand cocking and locking piece mounted on said actuator, a hood or cap mounted on said actuator, and a single piece acting as retaining means for said cocking and locking piece and as locking means for said hood.

9. In a firearm in combination, an actuator, a firing pin mounted thereon, a receiver within which said actuator travels and having a slot therein and a hand cocking member connected to travel with said actuator and extending through said slot, said member being adapted to cock and lock said firing pin when turned a half revolution from normal position.

10. In a firearm in combination, an actuator, a firing pin mounted thereon, a receiver within which said actuator travels and having a slot therein and a hand cocking member connected to travel with said actuator and extending through said slot, said member being adapted to cock and lock said firing pin when turned a half revolution from normal position, and said receiver having means thereon guiding said hand cocking member and said receiver and member being formed so that the member is forced out of the guide means upon being turned.

11. In a firearm in combination a single

piece primer impelled traversing actuator, a relatively movable spiral grooved bolt carried therein, a pin connection between said actuator and said spiral in said bolt, a lug on said bolt, a receiver enclosing the actuator its full traversing distance and provided with tracks over which said actuator travels, and with a rib to hold said bolt in relatively forward position to the actuator and to prevent the turning of said bolt until desired.

12. In a firearm in combination a primer impelled traversing actuator, a relatively rotatable traversing bolt therein, an extractor on said bolt, a bracket over which actuator and bolt moves and an ejector on said bracket adapted to a fixed position relative to said bolt and actuator and the path of a cartridge held by said extractor, said bolt and actuator being slotted their full lengths in line with the path of said ejector, and said bolt being grooved in front to carry said extractor.

13. A firearm comprising in combination a trigger frame, a magazine mounted alongside said frame, a trigger stop and a magazine latch both mounted on said frame, said stop contacting with and acting as a lock for said latch, and means whereby said trigger stop may be moved out of the path of the trigger while maintaining contact with said latch.

14. A firearm comprising in combination a magazine, means for locking said magazine in place, said means having an extension whereby the magazine may be manually released, a trigger, a stop for said trigger for abutting said extension and holding said means in locking position, a trigger mechanism controlled by said trigger and comprising a sear lever, said locking means comprising a part carrying a spring adapted both to return the sear lever to normal position after the trigger mechanism has been operated by the trigger and to return said locking means to normal position, said locking member being also adapted to prevent the sear lever from going above its normal position.

15. In a firearm in combination, an actuator, a firing pin mounted thereon, a receiver within which said actuator travels and having a slot therein, and a hand cocking and locking member connected to travel with said actuator and extending through said slot, said member being adapted to cock and lock said firing pin and to lock said actuator when turned 180° from normal position.

16. In a firearm in combination, an actuator, a firing pin mounted thereon, a receiver with which said actuator travels and having a slot therein, a hand cocking member connected to travel with said actuator and extending through said slot, said member being adapted to cock and lock said firing pin and said actuator when turned a half revolution from normal position, and said receiver having means thereon guiding said hand cocking member and said receiver and member being formed so that the member is forced out of the guide means upon being turned.

17. In a firearm in combination, a traversing actuator, a bolt within said actuator, an extractor in the face of said bolt, a fixed bracket frame over which actuator and bolt move, and a deflectable ejector pivoted to said frame, adapted in stationary position to project into the path of a cartridge carried by said bolt and extractor, the bolt and actuator being slotted to permit said ejector to freely pass through while remaining in fixed normal position.

18. A firearm comprising in combination an automatic breech mechanism including a receiver having an internal rib guideway, a bolt having a locking and guiding lug, an actuator carrying said bolt against said rib in forward position relative to said actuator, and an antifriction roller supported in said lug.

19. In combination with automatic breech mechanism comprising an actuator, a bolt, a firing pin, a sear adapted to engage said firing pin, a trigger, a movable stop adapted in one position to arrest the trigger in a partly drawn position, and in another position to permit the trigger to be fully drawn, said trigger being adapted when partly drawn to withdraw said sear from engagement with said firing pin and to hold down the sear so as to permit rapid action without arresting the firing pin, and when fully drawn back to release said sear automatically to arrest said firing pin for single shot action.

20. In combination with automatic breech mechanism comprising an actuator, a bolt, a firing pin and a sear, a trigger adapted to withdraw the sear from engaged position on the firing pin and to hold down the said sear while said trigger is only partly drawn back to a stop, to permit rapid action without arresting the firing pin, and to release said sear to automatically arrest said firing pin for single shot action when said trigger is fully drawn back.

21. In combination, a trigger, a trigger frame having a slot in the lower surface thereof, means whereby the trigger may be passed through said slot into the trigger frame, a rotatable trigger stop member mounted on said frame and capable of rotation, whereby said stop member may be positioned to cover said slot.

22. In combination with a breech mechanism, a firing pin, a sear, a trigger stop member, a trigger and means for withdrawing and holding said sear from the path of said

firing pin in the partly drawn or first position of the trigger, said sear being released from said withdrawn position when the trigger stop is withdrawn and trigger is pulled to final position.

23. A firearm having trigger mechanism, a magazine, a trigger stop, an L-shaped member having thereon a stop for said trigger mechanism, a locking dog for said magazine, and a pin adjacent said trigger stop and serving to hold the same in position, and a projection on said L-shaped member serving as a finger piece and to hold both said L-shaped member and trigger stop piece in locked positions.

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