April 11, 1961 J. T. IVY 2,978,962

SELECTIVE AUTOMATIC FIRE CONVERTER FOR BOLT ACTION RIFLE

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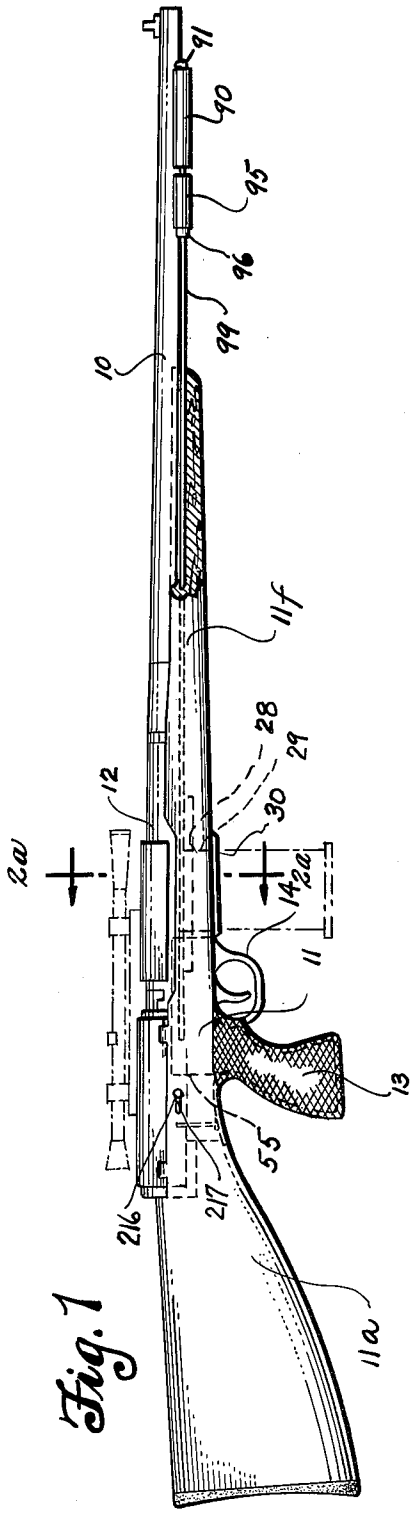


Fig. 1

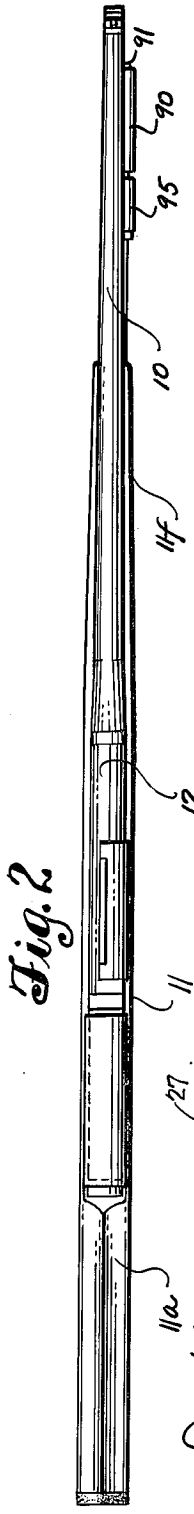


Fig. 2

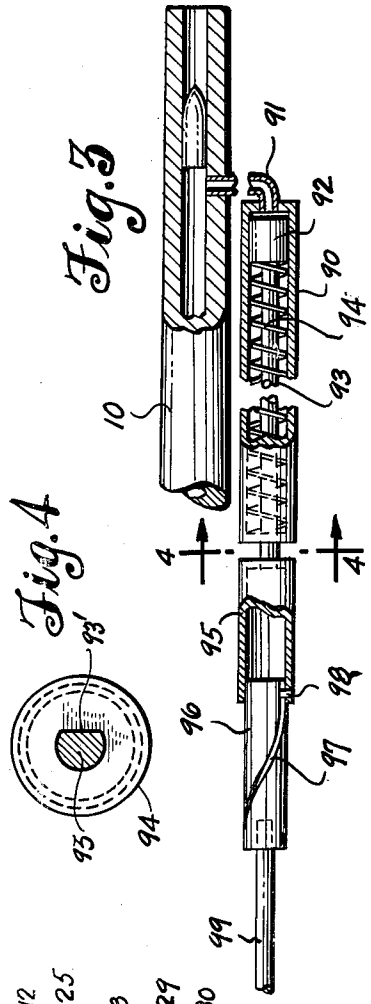


Fig. 3

Fig. 4

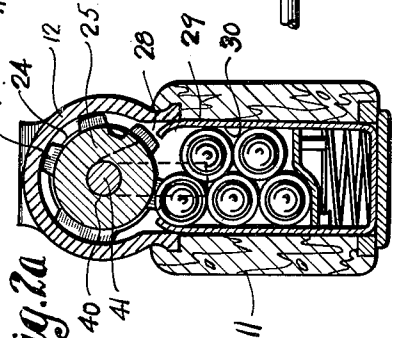


Fig. 2a

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Fig. 5

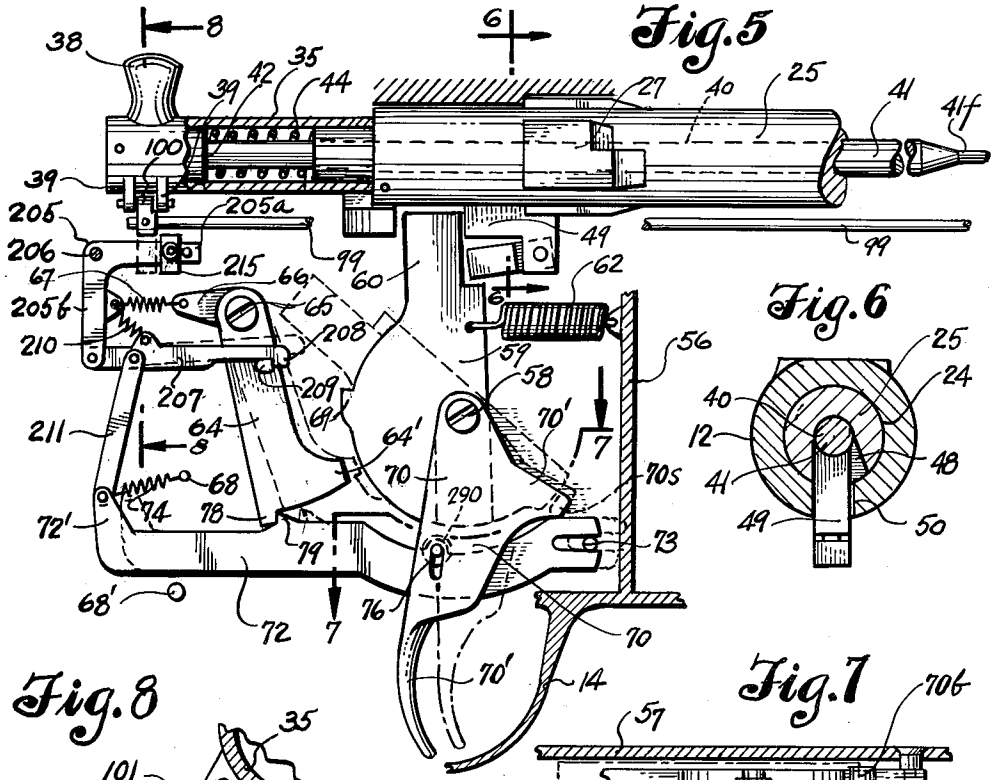


Fig. 6

Fig. 8

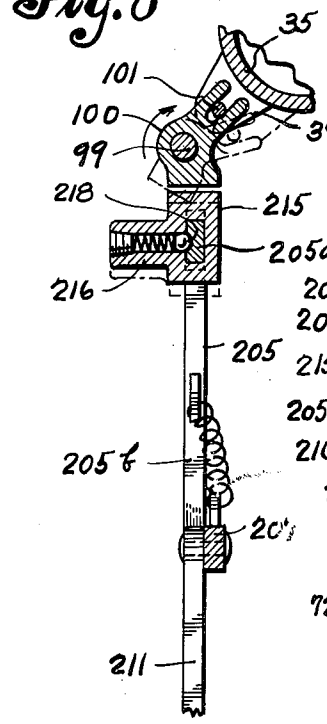
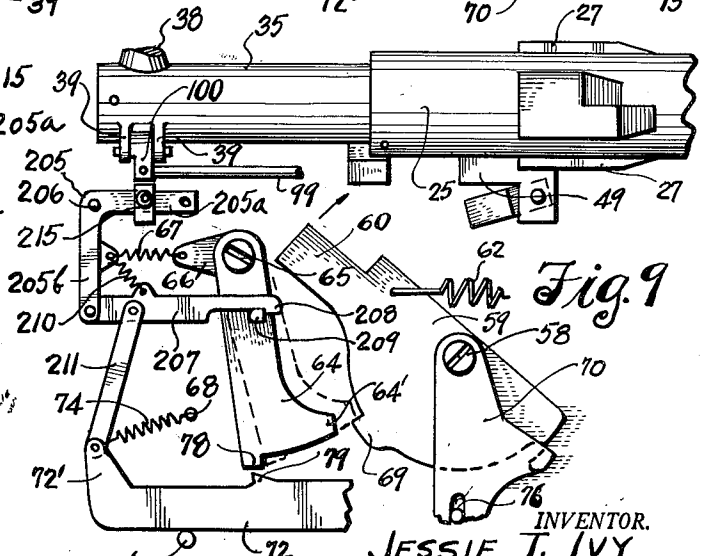


Fig. 7

Fig. 9



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SELECTIVE AUTOMATIC FIRE CONVERTER FOR BOLT ACTION RIFLE

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Fig. 10

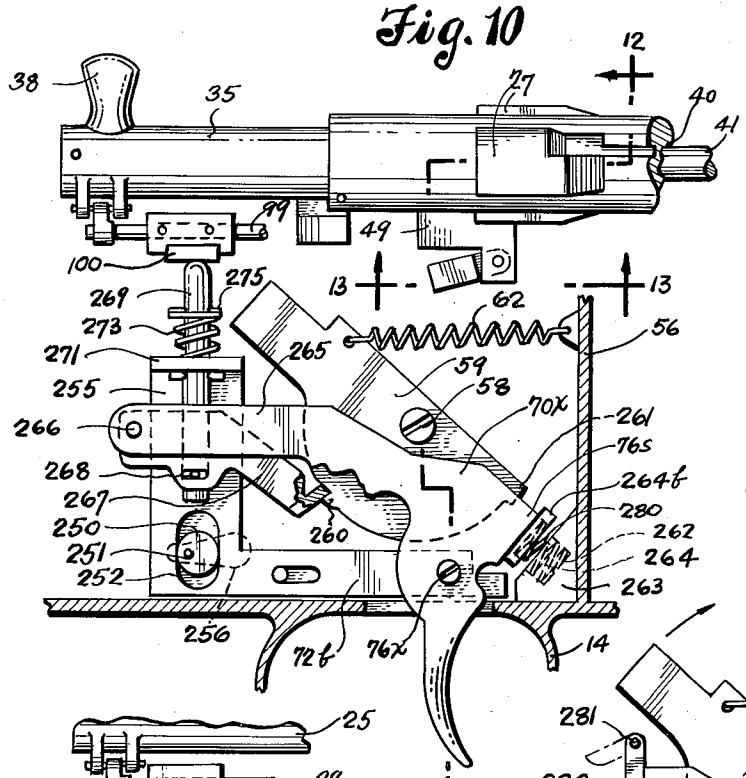


Fig. 12

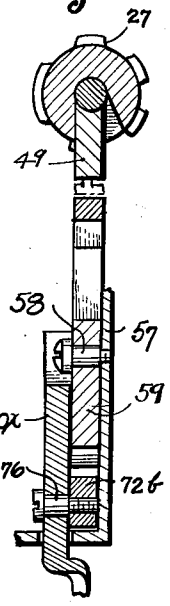


Fig. 11

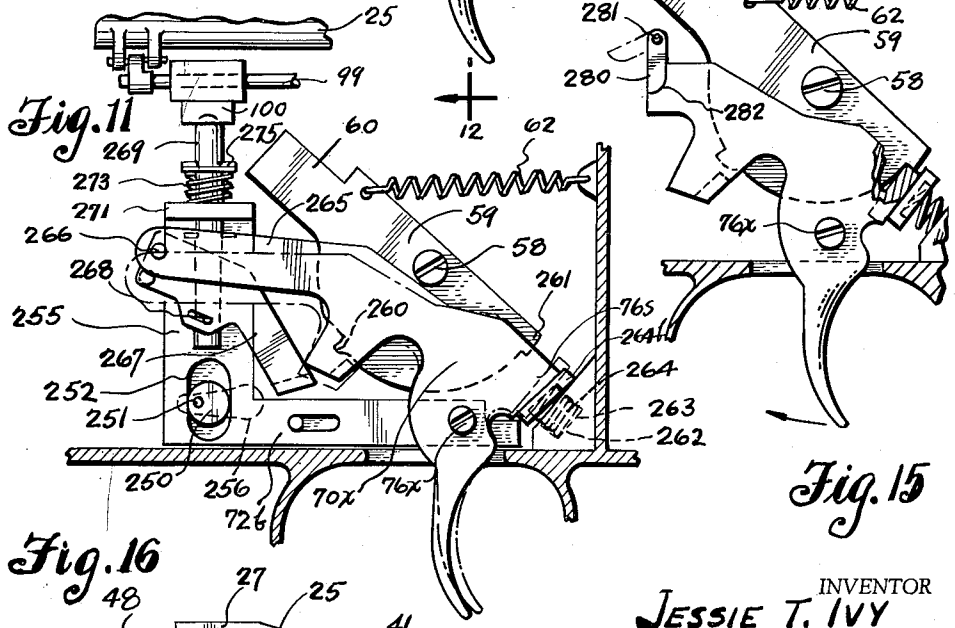
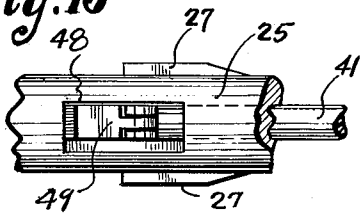


Fig. 15

Fig. 16



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SELECTIVE AUTOMATIC FIRE CONVERTER FOR BOLT ACTION RIFLE

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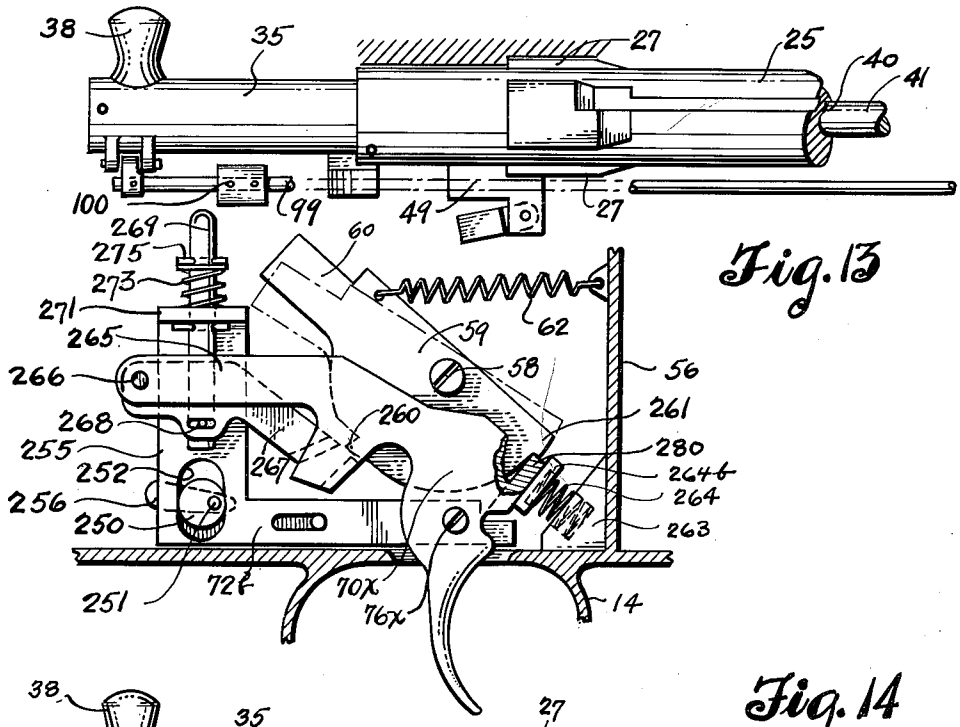


Fig. 13

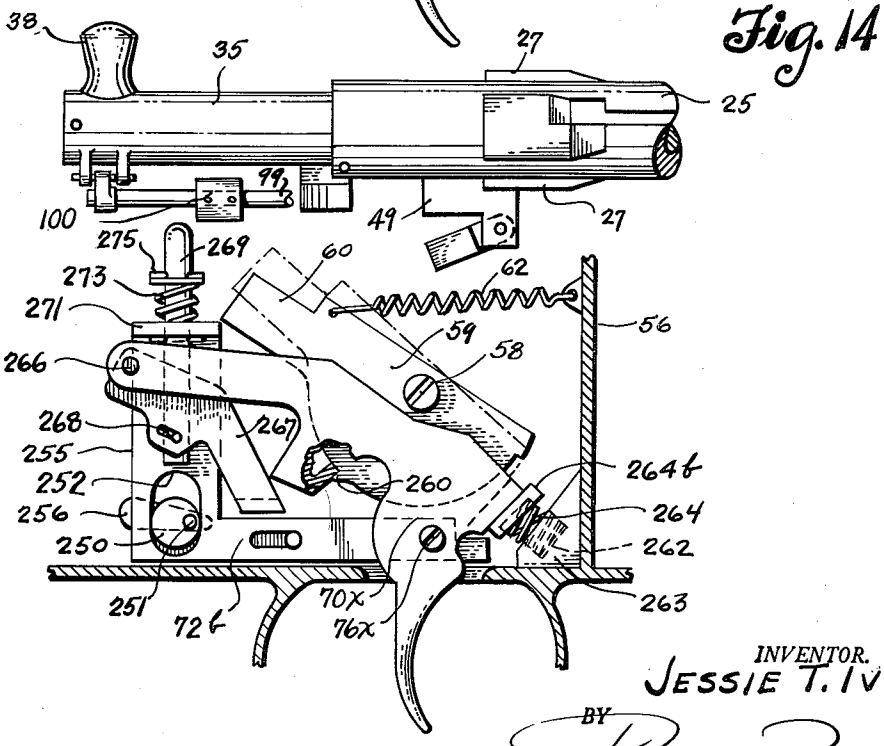


Fig. 14

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United States Patent Office

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SELECTIVE AUTOMATIC FIRE CONVERTER FOR BOLT ACTION RIFLE

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Filed Apr. 20, 1959, Ser. No. 807,645

6 Claims. (Cl. 89—140)

This invention relates to improvements in repeating rifles of those types employing a sliding bolt action. More particularly, the invention has reference to improvements in fire converter mechanisms selectively operable for full or for semi-automatic fire control.

This application is a continuation-in-part of my copending application filed under Serial No. 696,738 on November 15, 1957.

It is the principal object of this invention to equip a bolt action rifle with a novel means whereby the rifle user may selectively and quickly make adjustments in certain mechanisms used in conjunction with the hammer and trigger controls, to effect either the "full automatic" or the "semi-automatic" firing of the rifle.

Still further objects and advantages of the present invention reside in the combination of the various parts thereof; and in the mode of their selective adjustment and operation for the intended purposes, as will hereinafter be fully described.

In accomplishing the above mentioned and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a side elevation of a bolt action rifle embodying the improvements of the present invention therein.

Fig. 2 is a top view of the rifle, as shown in Fig. 1.

Fig. 2a is an enlarged cross-section, taken on line 2*a*—2*a* in Fig. 1.

Fig. 3 is an enlarged side view, with some parts in section, showing a part of a gas operated, automatic bolt actuating mechanism that is applied to and used with the rifle in Fig. 1.

Fig. 4 is an enlarged, cross-sectional detail, taken on the line 4—4 in Fig. 3.

Fig. 5 is a side view of the preferred form of hammer and trigger mechanism used in the present rifle, and also showing the fire control devices in the adjustment for "semi-automatic" action.

Fig. 6 is a cross-section taken on line 6—6 in Fig. 5, showing the longitudinal slotting of the receiver and bolt for reception and travel therein of the anvil as applied to the firing pin.

Fig. 7 is a longitudinal section, taken on the horizontal plane of line 7—7 in Fig. 5.

Fig. 8 is a vertical cross-section through the receiver, bolt, and rear retainer latch, taken substantially on the line 8—8 in Fig. 5.

Fig. 9 is a side view, similar to that of Fig. 5, but showing the selective fire control mechanism as adjusted for the fully automatic operation.

Fig. 10 is a side elevation of a modified, or alternative form of fire control mechanism that may be used in conjunction with the devices of Fig. 5, shown adjusted for a fully automatic operation.

Fig. 11 is a view, similar to that of Fig. 10, showing the sear released from the hammer by an initial trigger pull but held against striking the anvil.

Fig. 12 is a vertical cross-section, taken on line 12—12 in Fig. 10.

Fig. 13 is an enlarged side view of the hammer and trigger mechanism of Fig. 10 as adjusted for semi-automatic action.

Fig. 14 is a similar view of the parts shown in Fig. 10, showing the sear as released by initial pull on the trigger but the hammer restrained from striking by the trigger.

Fig. 15 is a side view illustrating the use of a safety latch for the trigger mechanism.

Fig. 16 is an underside view of the slotted portions of the receiver and bolt.

Referring more in detail to the drawings:

In Figs. 1 and 2, I have shown a typical rifle to which improvements embodied by the present invention have been applied. The rifle herein shown comprises the usual barrel 10, attached to a stock 11 and joined at its inner end to the receiver 12. The stock comprises a rear end, shoulder engaging portion 11*a* and an integral, forward or hand gripping portion 11*f*. Its medial portion is recessed to contain the receiver 12 and its forward portion extends along the underside of the rear end portion of the barrel and cradles it therein, as shown. It is also shown in Fig. 1, that the rifle is equipped with a pistol grip portion 13 that is fixed to the stock 11 below the receiver 12 and immediately back of the usual trigger guard, designated at 14.

The metal receiver 12 has a bore from end to end, designated at 24 in Fig. 6. Reciprocally contained in this bore is an elongated breach bolt 25. At its forward and rearward ends, the bolt is equipped with the usual locking lugs 27 adapted, by rotative adjustments of the bolt, in opposite directions to be lockingly engaged with and disengaged from coacting lugs or shoulders formed in the bore 24.

It is further to be understood that the receiver 12 is formed in its underside, and at a location below the bolt when the latter is open, as shown in Fig. 2*a*, with a longitudinal slot or passage 28. This passage registers with a similar passage 29, formed upwardly through the underlying portion of the stock, designed to receive the usual cartridge clip 30 from which cartridges are automatically spring fed, one at a time, into the receiver bore or chamber in accordance with the bolt action, as is well understood in the art.

In this connection, it will be explained also that in the rifle loading operation, a cartridge is advanced from the cartridge clip into the receiver when the bolt is fully retracted. Then, as the bolt is moved forwardly, it engages and pushes the received cartridge into the breech end of barrel. Then the bolt, when fully advanced, is locked by a rotative adjustment, thus to hold the cartridge for firing. After the cartridge has been fired, the bolt is released by its reverse rotative adjustment and is retracted. The empty cartridge is thus extracted and is automatically ejected by means associated with the bolt.

For effecting the rotative adjustment of the locked bolt for unlocking and then to effect its longitudinal movements, both for extraction and loading, various automatic means may be employed. In the present instance the bolt is equipped at its rearward end with a short tubular extension member 35 as shown in Fig. 5. Fixed on the rear end of this extension member, at its top side, is a knob form of handle 38 that may be grasped for the manual actuation of the bolt when such is desired, as for example, to open the receiver for initially loading the rifle. Also, the bolt extension 35 is formed on its underside at its rear end with longitudinally spaced, paired, outwardly directed ears 39—39 which are employed for the attachment to the bolt of the selected automatic means for its automatic reloading operations as presently explained.

Contained coaxially of and extending to the full length of the bolt **25** is a bore **40** containing the firing pin **41** which pin, at its forward end, as shown in Fig. 5, has a portion **41***f* of reduced diameter adapted, on hammer release, to strike the primer of the loaded cartridge in the barrel for firing. At its rear end, the firing pin extends into the sleeve **35** and has a head portion **42** fixed thereon. A coiled spring **44**, contained under compression in the sleeve and bearing at its ends against the bolt and head **42**, respectively, normally retains the firing pin in a slightly retracted position ready for firing.

Fixed rigidly to the rear end portion of the firing pin and extended downwardly therefrom and through a longitudinal slot **48** formed in the underside of the bolt as seen in Fig. 6, is an anvil **49** against which a hammer, as presently described and explained, is caused to strike to fire the rifle. This slot **48** is wider than the anvil **49** and so shaped as not to interfere with the required rotative movements of the bolt for locking and unlocking it. It is to be understood also that the base portion of the receiver is formed with a longitudinal slot **50**, as in Fig. 6, extending therealong, through which the anvil, as projecting downwardly from the firing pin and bolt, extends to a position for being struck by the hammer. The firing pin and anvil each have longitudinal movement in the receiver but the pin has no turning action axially of the receiver.

The trigger and hammer mechanism as applied to the rifle of Fig. 1 requires that the medial portion of the stock **11** be formed, below the rear end portion of the receiver **12**, with a chamber **55** as shown in dotted lines on Fig. 1, which leads upwardly thereinto and in which a metal frame is fixed. This frame is best shown in Figs. 5, 10 and 11 to comprise a front end wall **56** and also a sidewall plate **57**, as in Fig. 7. It also has a bottom wall to which the trigger guard **14** is fixed. Fixed in the side plate **57**, perpendicular thereto as noted in Fig. 12, is a shouldered stud **58** and pivotally mounted on this stud is the hammer which is shown to be in the form of a flat plate **59**, disposed below and in the vertical plane of the firing pin. As shown in Fig. 5, the hammer forming plate **59** comprises a substantially semi-circular body portion that is mounted on the pivot stud **58** at the center of curvature of its periphery and from which body portion an arm **60** extends radially in an upward direction. The arm **60** is of such length that it can be caused to strike the firing pin anvil **49** as in Fig. 5, incident to the presently explained rotative action of the hammer when released under spring tension.

To power the hammer for a cartridge firing operation, I provide a coil spring **62** that is attached at its opposite ends, under tension, to an ear on the front wall **56** of the enclosing and supporting frame and to the hammer body plate **59** at a point substantially away from the pivot stud **58**.

Retractive movement of the bolt after the cartridge has been fired, that may be effected either manually by grasping knob **38** as in initially loading, or by automatic means as presently explained, causes the hammer plate **59**, by reason of the engagement of a part on the anvil **49** with the extended arm **60**, to be rotated counterclockwise, in reference to its showing in full lines in Fig. 5, to a position just slightly beyond the dotted line latched position. When the hammer **59** is thus actuated slightly beyond its "dash line latched position," it is then, upon slight return movement, normally latched and held in readiness for trigger release. The latching means is a sear **64** that is pivoted at its upper end on the side plate **57** of the frame by a stud **65**. Fixed to the upper end of sear **64** is a short rearwardly directed lever arm **66** to which one end of a taut coil spring **67** is attached. The spring acts to yieldingly urge the lower end or toe portion **64'** of the sear toward and against the periphery of the hammer plate **59**. The hammer body **59** has a shoulder **69** projecting outwardly therefrom toward the

sear, and when the hammer is rotated by anvil contact and bolt action to a position just slightly beyond the dash line position of Fig. 5, the sear toe **64'** drops over the shoulder **69** and the hammer is thereby locked in cocked position by the sear.

The release of the cocked hammer for firing the loaded rifle is then effected by pull on the trigger. The trigger mechanism comprises a trigger lever **70** that is pivoted at its upper end on the stud **58** as shown in Fig. 5 and at its lower end is formed with a finger hold **70'** which is located within and is protected by the trigger guard **14**. Immediately below and in the plane of the hammer plate **59** is a horizontal, slidably supported release bar **72** with a pin and horizontal slot support **73** at its forward end and a short coiled spring **74** supporting it at its rearward end; this coiled spring being attached, under tension, at one end to a stud **68** that is fixed in the frame and at its other end is attached to an upward rear end extension **72'** of the bar **72** to pull upwardly and forwardly on the bar. Between its ends, the bar **72** has a pin and vertical slot connection **76** with the trigger lever **70** which crosses it. This provides for the rearward longitudinal actuation of the bar **72** by the rearward pull on the finger hold portion **70'** of the trigger. The return of the bar **72** to its normal forward position is effected when the trigger pull is discontinued, by the forward pull of the coiled spring **74**. This pull is such as to normally hold the rear end of the lever **72** slightly above a stud or pin **68'** that is fixed in the frame to limit the downward movement of the rear end portion of the release bar **72**.

The sear **64** also is formed at the heel of its lower end edge with a downwardly projecting lug **78**. When the hammer is cocked and is latched by the sear, **64**, this lug **78** is so positioned that it will be immediately engaged, when slide bar **72** is moved rearwardly by trigger pull, by an opposedly related shoulder **79** formed on the top edge of the bar **72**. The initial pull on the trigger for firing shifts bar **72** from its dash line showing, to its full line showing in Fig. 5. This causes the shoulder **79** to engage lug **78**, thus to move the sear rearwardly and release its toe **64'** from the shoulder **69** of the hammer plate. The spring **62** then powers the hammer plate and actuates it to cause arm **60** to strike the anvil **49** to fire the cartridge. Thus, the trigger and hammer mechanism as so far described, provides for single shot, manual firing of the rifle.

The "semi-automatic" operation of the rifle anticipates that after each shot is fired, the fired cartridge will be automatically extracted and ejected and a fresh cartridge loaded into the barrel by bolt action. This reloading requires first that the bolt is slightly rotated in one direction for unlocking; then shifted rearwardly for shell extraction and ejection, then returned forwardly for reloading and finally slightly rotated in the other direction for again locking it in closed position. In the present instance, I employ the gas operated reloading means shown in Figs. 1, 2, 3 and 4 which will now be described:

Fixed to and extending parallel with the rifle barrel, at its forward end, as in Fig. 3, is a gas cylinder **90** having a gas tube connection **91** at its forward end with the rifle bore. Fitted in the cylinder **90** is a piston **92** from which a piston rod **93** extends rearwardly. A coiled spring **94** contained under compression in the cylinder acts against the piston to urge it back to the forward end of the cylinder after rearward gas operation. When the rifle is fired, gas under compression contained in the barrel back of the bullet is forced into the cylinder **90** through tube **91** and drives the piston and rod **93** rearwardly.

The piston rod **93** is flattened along one side, as at **93'** in Fig. 4, or may be keyed to the cylinder **90** in any suitable way to prevent any relative rotation thereof.

Fixed to the rear end of piston rod **93**, coaxially thereof, is a cylinder **95** and fitted for reciprocal and rotative action therein is an elongated piston **96** which is formed with a spiral groove **97** extending therealong in which

groove a stud **98**, that is fixed in the sidewall of cylinder **95**, extends for sliding therealong.

Extending from the rear end of piston **96** is a rod **99**. This extends to the receiver end of the rifle through suitable supports and at its rear end has a lever **100** fixed thereto, as best shown in Figs. 5 and 8. This lever has an upwardly and inwardly directed end portion extended, as seen enlarged in Fig. 8, between the ears **39—39** of sleeve **35** on the rear end of the bolt **25** and joined by a sliding pin and slot connection **101** therewith. Thus, when the firing of a cartridge causes the cylinder **95** to be driven rearwardly, the stud and spiral slot connection of the cylinder and piston **96** causes rotative turning of rod **99** and lever **100** first, to rotate the bolt a required interval for unlocking it for its rearward travel under force of the exploded cartridge, then with continued rearward travel of the rod and piston under force of the fired cartridge the fired shell is extracted. Then the bolt is returned to and is locked in breech closing position. Thus, with the present bolt operating mechanism, each cartridge firing operation effects the unlocking of the bolt, the shell extraction and ejection, the reloading and the locking of the bolt. Also, and incident to shell extraction and ejection, the hammer mechanism is rotated rearwardly and latched in cocked position ready for release by trigger pull. This is the semi-automatic operation of the rifle.

To adapt the rifle for fully automatic firing, that is, to cause firing upon pulling the trigger and continuous and rapid firing as long as the pull on the trigger is retained, the following described mechanism is employed: This mechanism as shown in Fig. 5, comprises a right angle bell crank lever **205** that is pivotally mounted at the junction of its two arms by a stud **206**. One arm, **205***a*, of the bell crank extends horizontally below the rear end portion of rod **99** while the other arm **205***b* extends downwardly from the pivot **206**. Pivotally attached to the lower end of arm **205***b* is a horizontally directed latch lever **207** which extends forwardly across the sear **64** and is formed at its end with a downwardly directed hook **208** adapted, as presently explained, to be engaged with a stud **209** on the sear. A short coil spring **210**, attached to arm **205***b* and lever **207** normally holds the hook end of the lever up and slightly disengaged from the stud **209** as in dash lines in Fig. 5. It is also seen in Fig. 5 that a link **211** is pivotally joined at its opposite ends to the latch link **207**, near its rear end, and to the upper end portion of arm **72'** of bar **72**. Link **211** serves, as presently explained, to retain the latch lever **207** in position to cause the sear **64** to be released from hammer **59** at the exact instant the bolt is rotated to locked position.

Slidably mounted on the horizontal arm **205***a* of the bell crank lever **205**, is a block **215**. This is adjustable on the arm into and out of alignment with the lower end portion of lever **100**, as attached to rod **99**. When in alignment therewith, as in Fig. 9, each initial rotative action of rod **99** as effected upon the firing of a cartridge in the rifle, causes the lower end portion of the lever **100** to turn to its dotted line showing in Fig. 8 and in doing this to engage the top surface of block **215** and thus actuate the arm **205***a* downwardly. This movement of arm **205***a* causes arm **205***b* to pull the latch lever rearwardly. Immediately prior to this, the initial rearward pull on the trigger lever that started the firing operation, caused a lug **70***s* that is formed on a forwardly directed arm **70'** of the trigger lever, to engage against the top edge of the slide bar **72** as it moves rearwardly, and cause the bar to pivot on the pin **73**, that supports its forward end, and to be swung slightly downward at its rear end, until stopped by engaging stud **68'** and then the bar **72** being shifted rearwardly and downwardly. The connecting link **211** retains the hook **208** at the end of latch bar **207** in position to engage with sear stud **209**, thus to release sear **64** from hammer **59** each time the bolt is rotated to locked position. This retention of the latch lever **207** continues as long as trigger pull is retained. Thus firing will continue with rapidity until pull on the trigger is released and the latch lever **207** is allowed to return to that disengaged position in which it is shown in dash lines in Fig. 5. When pull on the trigger is released, the spring **74** returns slide bar **72** forwardly to its normal position; link **211** causes the hook end of latch lever **207** to be lifted to keep the latch hook **208** free and clear of the sear lug **209**. Spring **67** also returns the bell crank lever **205** to its normal position. When the fully automatic operation is not desired, then the block **215** is shifted on arm **205***a* of the bell crank forwardly to the position in which it is shown on Fig. 5. This block adjustment can be readily effected by the rifle user by the forward or rearward shifting of a lug **216** that is formed as a part of block **215** and extends outwardly therefrom through a horizontal slot **217** in the adjacent face plate of the rifle, as shown in Figs. 1 and 8. A spring latch means **218** that is contained in lug **216**, as shown in Fig. 8, operates to yieldingly retain the block **215** at one or the other of its two positions of adjustment.

It is not the intent that the reciprocal action of the bolt **25** be confined to use of the gas operated means of Fig. 3 herein shown, but that any other suitable means be employed that will accomplish the same result. For example, any of the devices shown or described in my copending applications filed under Serial Nos. 754,636, now Patent No. 2,952,088, or 696,738 may be used.

In Figs. 10 through 14, I have illustrated an alternative arrangement of parts whereby the firing mechanism may be selectively set for either semi-automatic or fully automatic operation. In this modification, the trigger and sear mechanisms are adjustable relative to the hammer and no adjustment of that mechanism which is directly associated with the fire controlled rod **99** and lever **100**, or equivalents thereof, is necessary.

Also, in this modification the breech bolt **25** and receiver may remain the same as in the rifle previously described and the same reference numerals as previously used for corresponding parts are applied thereto in these figures.

The hammer mechanism also remains the same in this modification and after each firing is returned to cocked position by the same manual or by a similar automatic means, that is, by the knob **38** for manual setting or by contact therewith of the anvil **49**, with the actuation of the bolt to its open position.

It is shown in Fig. 10 that the trigger lever here designated by numeral **70***x* is pivoted, as at **76***x*, on the forward end portion of a horizontally mounted slide bar **72***b* located immediately below and in the plane of the hammer plate **59**. This slide bar is mounted on edge along or against the back wall **57** of the enclosing frame structure for certain limited endwise adjustments in opposite directions that may be effected by opposite rotative adjustments of a circular cam **250** that is fixedly mounted on an eccentric pivot shaft **251** that is rotatably mounted in the wall **57**. The cam **250** is closely contained in a vertical slot **252** that is formed on and extends upwardly from the rearward end of the slide bar **72***b*. The pivot shaft **251** extends to the outside of the rifle stock and is there equipped with a thumb lever **256** that may be swung to a forwardly directed position, as indicated in Fig. 10, or swung to a rearwardly directed position, as in Fig. 13, thus to shift the entire trigger and selective fire control mechanism to a forward position as in Fig. 10 for fully automatic firing or to a rearward position, as in Fig. 13, for semi-automatic operation.

The hammer plate **59** is formed at its rear edge with a sear engaging shoulder **260** and at its lower edge, diametrically opposite the arm **60**, with a projecting stop **261**.

The trigger lever **70***x* is provided at its forward edge and above the level of the pivot **76***x*, with a shoulder **76***s* and mounted in a spring socket **262** formed in an abutment **263** that is formed in and as a part of the trigger

enclosing frame, is a coiled spring **264** which, at its outer end, carries a block **264***b* that bears against the shoulder **76***s* and constantly urges the trigger lever **70***x* to the normal position in which it is seen in Fig. 10.

Extended rearwardly from the upper end of the trigger lever **70***x*, is a lever arm **265**. This extends horizontally across and slightly beyond the arm **255** and at its end is pivoted, as at **266** to one end of a sear **267**. Between its ends this sear has a pin and horizontal slot connection **268** with the lower end portion of a push pin **269** that extends vertically and slidably through a hole in the forwardly turned upper end portion **271** of the arm **255**. This pin **269** is normally held in a lifted position by a coil spring **273** that is applied about its upper end portion between the outturned spring supporting flange **271** of the arm **255** and a key **275** applied through the pin. The upper end of pin **269** is rounded and is positioned to be operatively engaged by the lever **100** that is fixed on the rod **99** operated by a reloading mechanism like or corresponding to that of Fig. 3. The upward travel of pin **269** under pressure of spring **273** is limited by a pin or key **275'** passing through it to engage against the under side of flange **271**.

The arrangement of parts, as shown in Fig. 10, which is for fully automatic operation provides that as each cartridge is fired in the rifle the rod **99** is rotatably actuated to unlock the bolt. This rotation swings the lever arm **100** downwardly as previously explained. If the adjustment of the trigger mechanism, when the bolt is in its locked position, is for semi-automatic operation, as in Fig. 13, the turning of rod **99** and downward swing of lever arm **100** has no effect on the trigger mechanism because the pin **269** is then positioned out of line with the lever **100**. Sear **267** is also out of contact with hammer **59**. However, even at this adjustment, the opening action of the bolt **25** causes anvil **49** to cock the hammer in the same way previously explained.

Assuming that an adjustment for fully automatic operation has been made, as in Fig. 10, and the hammer has been manually cocked, it will be understood that this hammer cocking has caused the hammer to be latched by sear **267** and held ready for firing; the hammer shoulder **260** then being engaged by the toe of sear **267**. The bolt is now rotated to its locked position and lever **100** swings down with the locking to touching contact with the upper end of pin **269**. Then, to fire the rifle, the user merely pulls on the trigger. This swings the rear end of the trigger arm **265** upwardly as in Fig. 11 and by reason of the pin and slot connection **268** the sear will be disengaged from the hammer shoulder **260** and the hammer thus released and under pull of spring **62** caused to strike the anvil **49** and fire the cartridge. Upon release of the sear **267** from the hammer the cartridge is fired and the bolt is immediately rotated to unlocked position. This rotates rod **99** and swings lever **100** upwardly. Pin **269** is then free to move upwardly and return sear **267** to hammer latching position. Then with the next firing of the cartridge the rod **99** swings lever **100** upwardly and unlocks bolt **25** and moves it rearwardly and in its movement causes the anvil to engage with the hammer arm **60** and again cock the hammer; it being understood that the sear latches the hammer as the bolt is opened and returned. With the return travel of the bolt to its closed position, the rod **99** swings the lever **100** downwardly against the upper end of pin **269** and pushes the pin **269** downward a short distance, and by reason of the pin and slot connection at **268** between pin and sear, the latter is disengaged from the hammer and the loaded cartridge is caused to be fired.

As soon as firing is effected the reloading is repeated, and the reloaded cartridge is likewise fired. This cycle of loading and firing is continued until the pull on the trigger is released. With release of trigger pull the trigger lever is actuated back to the position of Fig. 10 by the pressure of the coiled spring **264** that is disposed between the upper end of the trigger lever and spring seating abutment **263**.

In Fig. 15, I have shown a semi-automatic mechanism as being equipped with a safety latch **280** that is fixedly mounted at the inner end of a pivot pin **281** that extends to the side face of the rifle may there be equipped with a lever not shown, for swinging the latch between its latched position in a seat **282** formed on the trigger lever arm, as shown, to a released position as shown in its dotted line showing. When latched, the trigger cannot be pulled for firing.

Another refinement in the present mechanism resides in the provision of a roller **290** mounted in the top edge of the slide bar **72** as shown in Fig. 5, in rolling contact with the under edge of the hammer plate **59**.

What I claim as new is:

1. In a bolt action repeating rifle including a bolt, a reciprocable bolt actuating rod to which limited rotative action in opposite directions is imparted on firing the rifle for unlocking the bolt for reloading and for locking it after loading, a spring loaded hammer, a means movable with the bolt in its opening reciprocation for actuating the hammer to cocked position; a selective fire control mechanism comprising a lever arm extended radially from said bolt actuating rod and arcuately movable with each bolt locking rotative movement of the rod, a sear for latching said hammer upon its being actuated to its cocked position by the bolt movement, a slidably adjustable support, a push pin slidably mounted by said support for downward actuation by said lever arm, incident to a bolt locking operation, a spring yieldingly urging said push pin to a raised position, a manual means for selectively adjusting said slidably adjustable support from a position at which said pin is engagable by said lever arm for a fully automatic firing operation, or to a position not operable by said lever arm thus to adapt the mechanism for semi-automatic operation.

2. In a bolt action repeating rifle including a reciprocally movable and rotatably adjustable bolt, and a reciprocable bolt actuating rod to which limited rotative movements, in opposite directions, are imparted for unlocking and locking the bolt in the automatic rearward and forward reciprocal action thereof, a selective fire control mechanism including a spring loaded hammer, means movable with the rifle bolt in its opening movement to actuate the hammer to its cocked position, a sear engagable with the hammer to restrain it in cocked position when so moved, a trigger, a trigger actuated means, operable by initial trigger pull to release the sear for semi-automatic operation and another means, operable by the final rotative action of the bolt actuating rod that effects the bolt locking operation, operable to disengage the sear from the hammer for fully automatic firing, if the trigger and said trigger actuated means is held in pulled position.

3. The combination recited in claim 2 wherein said another means includes a movably adjustable element for selectively rendering said another means effective for a fully automatic operation under control of the bolt actuating rod or for semi-automatic operation under control of said trigger.

4. The combination recited in claim 2 wherein said trigger actuated means for disengaging the sear from the hammer comprises a slide bar that is movable with trigger pull and wherein said another means comprises a pivoted bell crank lever, a latch lever pivoted to one arm of said bell crank to releasably engage the sear, a link connected with the slide bar and latch lever for moving said latch lever into sear engaging and releasing position when said trigger is pulled for firing, and means on the bolt actuating rod engagable with the other arm of said bell crank, incident to bolt locking action, to actuate the bell crank and latch lever to disengage the sear from the hammer for firing.

5. The combination recited in claim 4 wherein said last mentioned means comprises a lever arm fixed to and extending from said bolt actuating rod, and a block adjustable along an arm of the bell crank to be selectively positioned for engagement by said lever arm to effect bell crank actuation, or out of position for actuation of said bell crank.

6. A combination according to claim 5 wherein said slide bar has a pivotal sliding support at one end and a downwardly yieldable support at its other end, to which said latch lever is connected, and wherein said trigger also has a lug engagable with said bar incident to trigger movement for firing, to actuate said other end of said slide bar downwardly thus to pull said latch lever to its sear releasing position incident to the sear releasing pull initially applied to said slide bar by trigger pull, and whereby the latch lever is lifted to inoperative position with the return of said slide bar to normal position.

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