

F. ARPS.
 REPEATING FIREARM.
 APPLICATION FILED MAR. 23, 1911.

998,738.

Patented July 25, 1911.

4 SHEETS—SHEET 1.

Fig. 1.

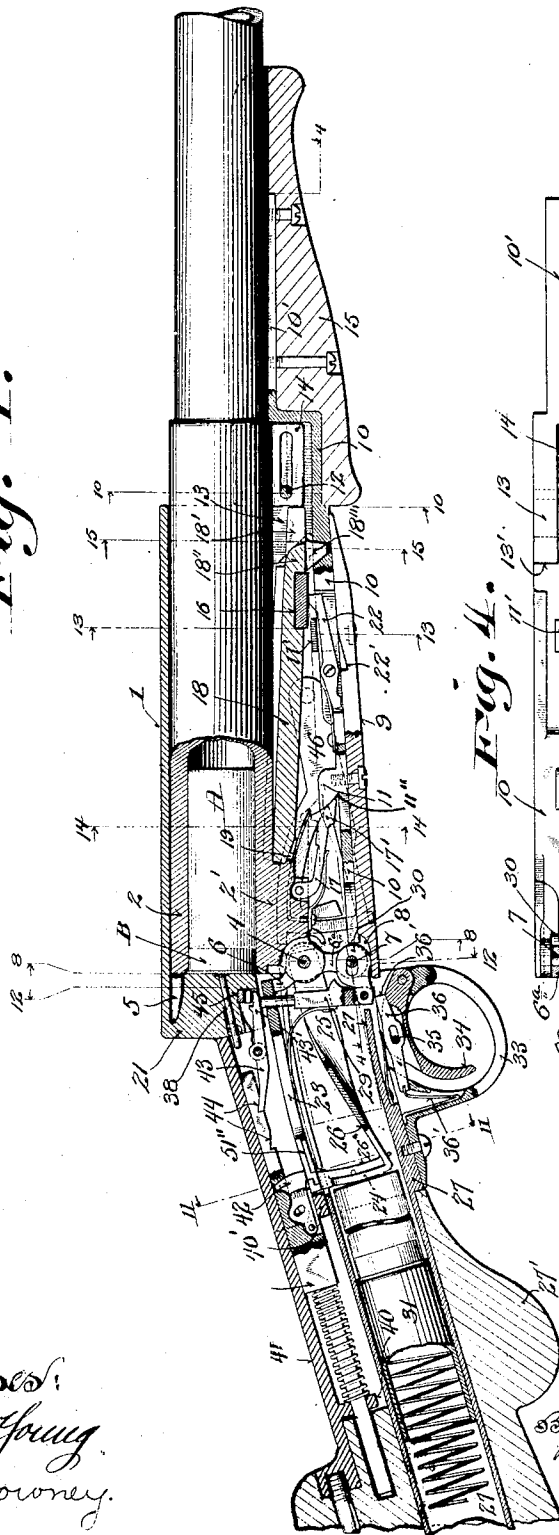
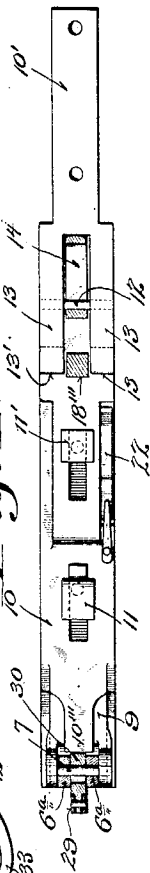


Fig. 4.



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4 SHEETS—SHEET 2.

Fig. 2.

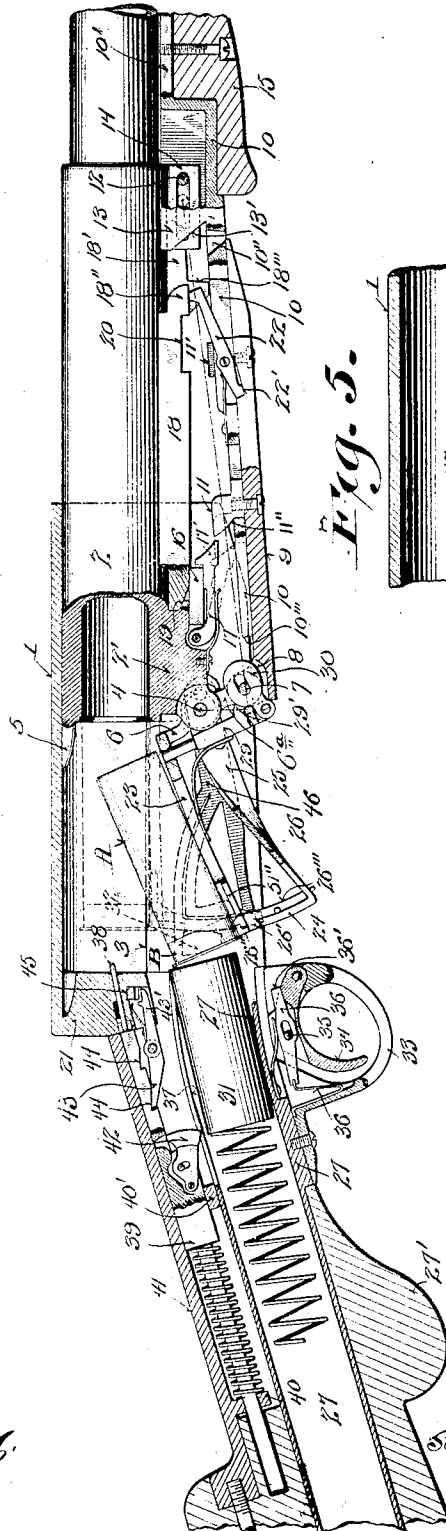
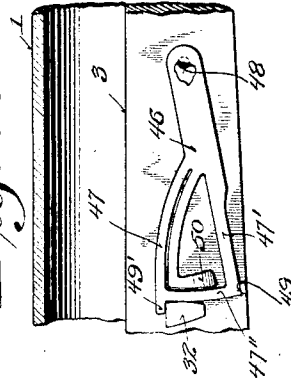


Fig. 5.



Witnessed
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By *Clifton Young*
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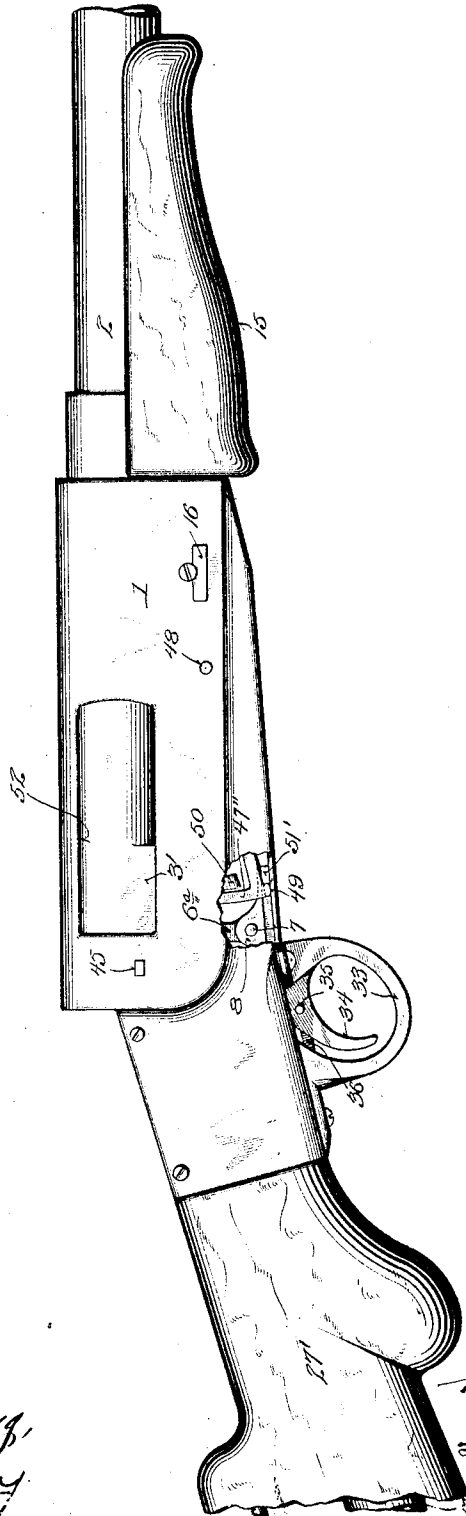
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4 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
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 May Downey.

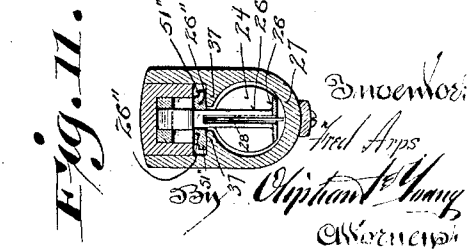
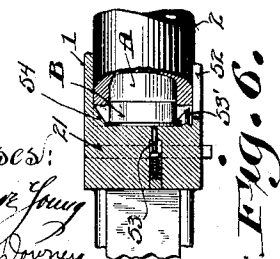
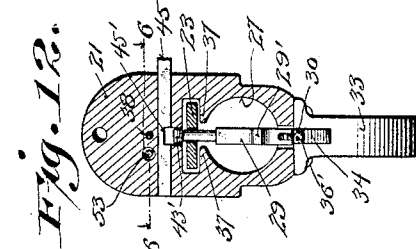
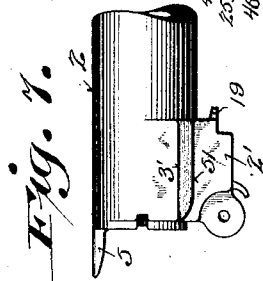
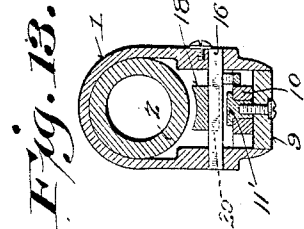
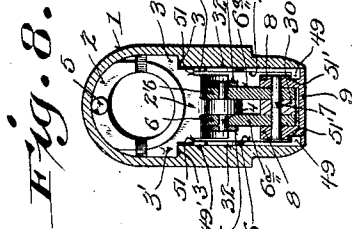
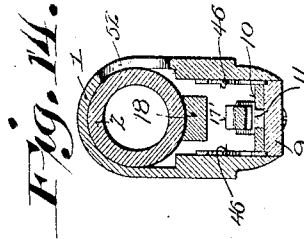
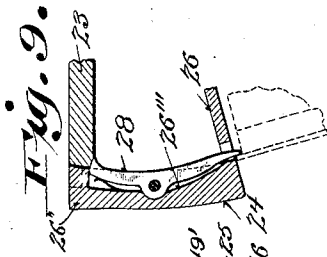
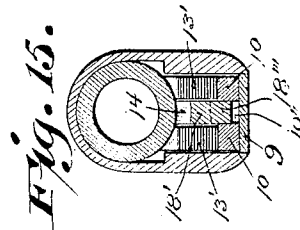
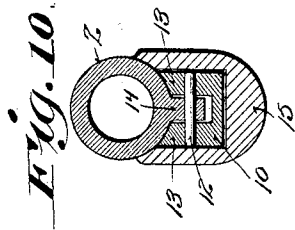
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4 SHEETS-SHEET 4.



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 Casimir Young
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Inventor:
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UNITED STATES PATENT OFFICE.

FRED ARPS, OF NEW HOLSTEIN, WISCONSIN.

REPEATING FIREARM.

998,738.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed March 23, 1911. Serial No. 616,475.

To all whom it may concern:

Be it known that I, FRED ARPS, a citizen of the United States, and resident of New Holstein, in the county of Calumet and State of Wisconsin, have invented certain new and useful Improvements in Repeating Firearms; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention refers to magazine or repeating fire-arms, its general object being to provide a simple, durable, safe and effective repeating fire-arm of this type.

Specific features of my invention are:

To provide means for locking the breech of a reciprocative barrel solidly to a receiver head;

To provide means whereby the usual breech-bolt is dispensed with and thus produce a gun having the same length of barrel as that of the ordinary type but much shorter in its entire length;

To provide means whereby the magazine is formed in the gun stock in place of being located under the barrel as in ordinary cases, whereby the extra weight of the ammunition so placed will counterbalance the weight of the barrel and render the gun capable of being handled more effectively and accurately, this even distribution of weight being also advantageous in carrying the gun as the extra load of the ammunition in the stock is disposed rearwardly of the point where the gun is usually supported in carrying. Further, a gun so balanced can be made proportionately heavier throughout to resist recoil owing to its perfect poise;

To provide means for cutting off the automatic magazine feed and inserting shells directly into the barrel whereby single shells varying in load from those in the magazine may be used in emergency without resorting to extraction of a shell that has previously been fed into the breech. This provision for hand-loading also renders the gun much safer when used as single loader in instances where the magazine ammunition is exhausted;

To provide an oscillatory shell-delivery bridge-block carrying a release plunger for the firing mechanism, the bridge-block being capable of entering and closing the mouth of the magazine when the breech is closed and coincident thereto actuates the loading spring of the hammer incidental to a movement whereby the bridge-block en-

ters the magazine, thus economizing space when the breech is closed;

To provide an ammunition feed-movement where the pump stroke is first forward and then backward for repeating, which movement is the reverse of the action usually employed in firearms of this character. The above mentioned movement avoids awkwardness, it being the natural tendency of a person to involuntarily first throw his arms outward in an emergency;

To provide a trigger mechanism that is absolutely disconnected from the firing mechanism and inoperative until such time as the breech is absolutely locked to the receiver, whereby premature explosion is avoided through manipulation of the trigger prior to the breech being closed and locked;

To provide a gun, the internal mechanism of which permits neat appearance and symmetrical lines, this being due to the fact that the exposed and clumsy magazine tube of ordinary type is dispensed with;

To provide an automatic shell guide whereby the shells are positively alined with the bore of the barrel and thus shells varying in length to a certain degree, or defectively crimped, or shells out of shape from other causes can be entered into the bore without sticking; and lastly to provide a simple and effective automatic shell extractor.

With the above objects in view my invention consists in what is herein shown, described and claimed.

In the drawings Figure 1 represents a sectional elevation of a gun embodying the features of my invention with parts broken away and parts in section to more clearly illustrate structural features, the view being shown with the breech closed; Fig. 2, represents a similar view illustrating the breech in its open or loading position; Fig. 3, an exterior elevation of the gun in its closed position with certain parts broken away to illustrate details of construction; Fig. 4, a detail plan sectional view of the gripping strap and its connected mechanism, the view being indicated upon line 4—4 of Fig. 1; Fig. 5, a detail sectional elevation of a portion of the gun chamber showing one of the shell guide wings in elevation in its position of rest; Fig. 6, a detail plan sectional view, as indicated by line 6—6 of Fig. 12, illustrating the shell ejector mechanism; Fig. 7,

a detail side elevation of the mouth portion of the breech; Fig. 8, a detail cross-section as indicated by line 8—8 of Fig. 1; Fig. 9, a detail central section of a portion of the bridge-block and shoe and the means for locking the same together, and Figs. 10, 11, 12, 13, 14 and 15, cross-sections of the breech mechanism as indicated by the respective lines 10 to 15 inclusive upon Fig. 1.

Referring by characters to the drawings, 1 represents a receiver or breech that is in the form of an inverted U in cross-section, in which receiver the butt end of a gun-barrel 2 is supported. The side-walls of the receiver are provided with longitudinal offset ways 3 for the reception of flats 3' of the barrel, which barrel is in telescopic union with the receiver and held against twisting therein by the sliding engagement of its flats 3' with the receiver ways 3, the same constituting guides therefor. The mouth of the butt end of the barrel 2 is provided with a depending lug 2' having an apertured ear, through which aperture a pin 4 projects, the same serving as a trunnion for the bifurcated shank 6 of a bridge-block, the bifurcated shank terminating with arms 6a that extend beyond its fulcrum point and have apertures in their ends for the reception of a stud 7, which stud also passes through ears 8 of a longitudinally disposed strap 9, whereby the same is held in hinge connection with the bridge-block, which bridge-block constitutes an elbow lever, its functions and structural features being more particularly hereinafter referred to. The strap 9 is adapted to fit within the open throat of the receiver and is in slidable union with a reciprocative grip-plate 10, the latter being secured to the strap by heads 11, 11', having guide-necks that are fitted into longitudinal slots of the gripping-plate, the heads being secured by retaining screws that pass through suitable apertures in the strap and are in threaded engagement with the necks of said heads, the head 11 being provided with an undercut beveled cam-face 11'', the function of which cam will be stated hereinafter. By the connection between the strap and grip-plate just described a limited play or yield between said parts may be had, the grip-plate, in turn, being connected to the gun-barrel by a pin 12 that is carried by and bridges side flanges 13 of said grip-plate. The pin 12 also engages a slot in a depending guide-lug 14 of the barrel, the lug being interposed between the grip-plate side flanges. The outer end of the grip-plate 10 terminates with a foot 10', to which is secured a suitable wood hand-grip 15, the same simulating the terminal of an ordinary gun-stock and when the breech is closed, the rear face of the hand-grip, as shown in Fig. 1, is adapted to abut the adjacent end or mouth of the receiver 1.

The receiver 1 carries a detachable transversely disposed stop-key 16 that is adapted to limit outward movement of the barrel by engagement with a notched recess of its breech-lug 2', which outward or opening movement of said barrel is automatically locked to the receiver through the stop-key 16 by a spring-controlled dog 17 that is fulcrumed to the breech-lug 2'. The barrel is also locked to the receiver through the stop-key 16 in its inward or closed position by a tumbler 18, which tumbler is fulcrumed upon a spur 19 of the barrel-lug and is provided with a rectangular notch 20 at its forward end for engagement with said stop-key, the tumbler being flat upon its under side and of such length to bridge the distance it traverses relative to the stop-key. Thus when the breech is opened, as indicated in Fig. 2, the stop-key being released by the dog 17 to close said bridge, the tumbler will ride upon the upper face of the aforesaid stop-key until its notch 20 registers therewith, at which time said tumbler will drop thereover and lock the barrel in its closed or firing position as shown in Fig. 1. The tumbler 18 is loosely fulcrumed, as stated, and is held against lateral play by an end finger 18' that abuts the end face of the guide-lug 14, the same being held against side play owing to its finger being fitted between the grip-plate side flanges 13.

The locking movement of the tumbler 18 with relation to the stop-key 16 is positively effected by a final inward movement of the grip-plate incidental to closure of the breech against a receiver head 21, which head is integral with the breech 1. To accomplish this positive lock between the tumbler and stop-key, the side-flanges 13 of the gripping-plate are provided with beveled terminal faces constituting cams 13'. The cams are adapted to engage beveled ends 18'' of the tumbler and force the same downward whereby its rectangular notch 20 will engage said stop-key. The grip-plate, however, prior to its final movement just mentioned, is locked to the strap 9 by a spring-controlled pawl 22 carried by said strap and engageable with a ratchet-tooth 22' that is formed in the face of the aforesaid strap. Thus when the initial closing action of the breech is effected, the pawl 22 causes the strap and gripping-plate to move inwardly as one and just prior to the tumbler locking movement, the tail of the pawl will engage the stop-key 16 whereby said pawl will be freed from the ratchet-tooth to thus permit independent movement of the grip-plate 10, causing the tumbler to drop. A tapered releasing nose 18''' of which tumbler, simultaneously enters a corresponding tapered recess 10'' of the gripping-plate, it being understood that the reciprocating movement of said gripping plate is permitted through its

pin and slotted lug connection with the breech.

A forward movement to open the breech causes the gripping-plate 10 to initially slide independently of the barrel a distance limited by the pin and slot connection therewith. The first effect of this initial movement of the gripping-plate causes the tapered releasing nose 18'' of the tumbler to withdraw from the gripping recess 10'', whereby said tumbler is released from locking engagement with the stop-key and is held in its lifted position by the nose 18'' resting upon the adjacent face of the gripping-plate until such time as the latter has completed its forward movement, at the completion of which movement the pawl 22 locks said gripping-plate and strap 9 together by entering the ratchet-tooth 22' therein, the bottom face of the tumbler resting upon the freed upper face of the stop-key.

In completing the outward stroke the barrel and gripping-plate move together until checked by the stop-key 16 abutting the notched recess of the barrel-lug 2', the said stop-key having, in the meantime, engaged a tapered nose 17' of the dog 17 and deflected the latter, whereby upon its return under spring control the aforesaid stop-key and barrel are locked together, the latter being now in its full open position. The same initial independent movement of the grip-plate and strap 9 takes place when the breech is closed with the exception that, in this instance, said grip-plate and strap are locked together, as previously stated, for a time, one function of this movement being to effect a release of the stop-key. This release is accomplished by engagement of the cam-face 11'' of the head 11 engaging the beveled nose of the locking dog 17, the gripping-plate and strap swinging as one piece between the pin 12 that is supported in the slotted guide-lug 14 and arms 6^a of the shell-bridge to which the strap 9 is hinged.

Owing to the length of the receiver 1 the sliding engagement between its ways 3 and the barrel-flats 3', there is ample support at all times to prevent sagging of the barrel when the parts are in their forward or open position. The bifurcated shank 6 of the bridge-block terminates at a distance from the axis of its trunnion approximately equal to the distance between the trunnion axis and bottom of the barrel bore, the mouth of which bore is vertically aligned with said axis.

A shell-track 23 forming part of the bridge-block projects rearward from its shank portion and at an angle thereto at this point, the length of the shell-track being approximately the same length of the longest shells to be used, its bottom being preferably formed with a slight concave to facilitate

centering the shells which are adapted to slide thereon. The bridge-block trunnion 4 has also hinged thereto branched arms of a magazine cut-off shoe 25, the branched arms merging into a concavo-convex skeleton shell-seat 26 that is disposed directly under the bridge-block track 23, the said shell-seat forming part of the cut-off shoe 25, which latter extends upwardly therefrom and is formed with a circular portion adapted to enter the mouth of a magazine tube 27 that projects rearwardly from the receiver 1, the structural features of which tube will be stated hereinafter. A contracted neck 26' extends from the upper edge of the circular portion of the cut-off shoe 25, from which neck oppositely disposed lateral wings 26'' are branched, the wings being notched for matched fit with similar notches formed in the end of the bridge-block track 23. The shoe 25 and free end of the track 23 are normally held in locked engagement by a spring-controlled dog 28 that is housed in the slotted rib 26'' of the shoe, the nose of the dog being arranged to engage the lower face of the shell-track while its tail projects through a slot in the shell-seat 26, whereby said dog may be tripped when it is desired to unlock the shell-seat and shell-track for the purpose of reloading the magazine tube 27, which operation will be hereinafter described. The shell-track 23 is apertured at its base for the reception of a vertically disposed spring-controlled hammer release-plunger 29, the lower end of which is connected to the stud 7 carried by the bridge-block arms 6^a, the connection being effected by means of a link 30 that is hinged to said plunger and in slotted engagement with said stud 7. The opposing spring of the release-plug 29 is arranged to normally hold the end of the same flush with the upper face of the shell-track and also adapted to force the slotted link 30 forward upon its supporting stud, the double action of the spring being due to a fin 29' of the plunger which has locking engagement with the link, whereby these two parts move downwardly together.

When the breech is open, as shown in Fig. 2, the shell-track 23 is swung downwardly at an angle due to its strap connection with the grip-plate 10, the end of said shell-track being approximately aligned with the bottom face of the mouth of the magazine tube 27. The shoe 25 is thus depressed to present an unobstructed passage for a shell A and the same, as shown, is forced out of the magazine tube upon the track 23 by a spring-controlled follower 31. In the above mentioned position the metallic bead B of the shell is caught by oppositely disposed delicate arc-shaped webs 32 that extend from the side-walls of the receiver 1, the arc of the same being described about

the axes of the bridge-block pin 4 and is of a radius equal to the length of its shell-track, assuming said bridge-block to be in the position shown in Fig. 2. Hence when the breech is closed the initial inward movement of the strap 9 and grip-plate 10 will cause the bridge-block to swing upwardly and aline the shell A with the mouth of the barrel-bore as indicated by dotted lines in Fig. 2, the circular portion of the cut-off shoe 25 being brought into approximate alinement with the magazine tube, whereby the same is cut off from the chamber portion of the receiver.

The trigger action comprises a standard trigger guard-bracket 33 that is attached to the bottom face of the magazine tube 27 adjacent to its mouth, into which bracket is fulcrumed a trigger 34 and mounted within a recess of the latter upon a pin 35 is a tumbler 36, the same being in slotted union with the pin to permit end play, which play is rearwardly opposed by a leaf-spring 36' that is seated within a recess of the trigger bracket having one end in engagement with the tumbler. For economy in construction a single leaf-spring secured to the magazine tube is arranged to oppose the trigger action and also the nose 36 of the tumbler, which nose normally rests upon a shoulder of said trigger, the tumbler being thus free to rise or recede as the case may require, it being understood that the tumbler is disposed just below the mouth of the magazine tube which is cut away at this point to permit clearance, whereby the release-plunger and the forward end of its link 30 may be brought into alinement over the nose 36' of the tumbler when the breech is closed. The magazine tube 27 is also slotted through its top surface whereby guide-rails 37 are formed, the space therebetween permitting the bridge-block to enter said tube, the rails 37 being alined with the lower surface of the bridge-block track 23 when the latter is swung to its shell-inserting position. These rails 37 terminate in the receiver chamber just below the breech head 21 thereof and when said breech is closed the circular portion of the shoe 24 enters the tube 27, while its neck portion 26' passes between the rails 37 and the wings 26'' ride over said rails. Thus the entire bridge-block enters the magazine tube and is deflected therein by the rails to a slight angle, as shown in Fig. 1, in order to conform to the angle of said magazine tube.

From the foregoing description with reference to the shell-bridge 23, it will be seen that when the breech is closed, as shown in Fig. 1, the release-plunger 29 is positioned just over the nose of the trigger tumbler 36, whereby action of the trigger 34 and tumbler will cause said plunger to rise and release the firing mechanism. The firing po-

sition of the release plunger is effected by the final backward independent motion of the grip-plate 10, which movement causes its end 10'' to engage the release plunger link 30 and force the same backward a sufficient distance to place its plunger carrying head over the tumbler. Should it happen that the operator incidental to this move had inadvertently held the trigger back in its firing position, the head of the link 30 will abut the nose 36' of the tumbler and thrust the same backwardly, whereby no damage can be done. In order to fire the gun, however, the operator must first relieve the before mentioned trigger pressure and when this is done said trigger and tumbler under spring control will drop, causing the tumbler nose to clear the bottom face of the link 30 and said tumbler under its independent spring pressure will be forced forward to its firing position thereunder, as shown in Fig. 1.

The receiver head 21 is provided with the usual firing pin 38, which pin is acted upon by a rearwardly disposed spring-controlled hammer-bolt 39 that is slidably mounted in guides 40, 40', of a bracket 41 secured to the receiver. The head of the hammer bolt 39 carries a loading tumbler 42, the nose of which normally lies in the path of travel of the bridge-block track 23, which latter abuts the loading tumbler as it enters the magazine tube 27 and in its travel backward therein pushes the hammer-bolt back past its full cock position. The last part of the backward movement of the hammer-bolt causes the tumbler to ride upward and over the face of the bracket-guide 40', which face is now alined with and upon the same plane as the upper face of the shell-track 23, the latter having come to rest. The hammer is now freed by the tumbler from engagement with the track and will shoot forward a slight distance, said tumbler traveling upon the upper faces of the guide 40' and track until such time as the hammer is caught by a spring-controlled trip-dog 43, the nose of which engages the second of a pair of notches 44 in the face of the hammer-bolt, whereby the same is locked in its loading position. The first notch of the hammer-bolt is provided for the purpose of permitting the trip-dog 43 to assume its normal position after the hammer has been shot forward in a firing movement. The tail 43' of the trip-dog extends into a recess formed in the receiver head 21 and is, as shown in Fig. 1, arranged to be alined over the end of the release-plunger 29 when the breech is closed, whereby said plunger will release the firing mechanism under control of the trigger action. A safety lock for the firing mechanism is also provided, the same comprising a transversely disposed hand-controlled slidable bolt 45 that is mounted in

an aperture of the receiver head 21, which bolt has a notch 45' therein so arranged that when the bolt is pushed in one direction, the notch registers with the tail 43' of the trip-dog and thus permits clearance for its movement incidental to a firing operation. Should the safety bolt be shifted in the opposite direction, the uninterrupted face of the latter will be alined with the tail of the trip-dog and the same is thus locked and rendered inoperative, whereby a firing movement cannot be effected, access for manipulation of the safety bolt 45 being had by means of its ends which protrude through the walls of the receiver in either direction alternately, it being understood that a suitable inscription is placed upon the receiver walls adjacent to the bolt ends to indicate safety and firing position. As shown, the usual wood stock 27' is secured about the rear end of the receiver, the same being provided with a bored aperture that is adapted to fit the magazine tube 27, whereby ammunition is all stored in the stock.

A pair of oscillatory guard wings 46 are pivoted to the inner side walls of the receiver chamber, each being adapted to operate in conjunction with the bridge-block and arranged to rise and fall incidental to swing of the latter, whereby a shell is firmly clamped at its sides and centered prior to its entrance into the bore of the barrel, in which instance the lower face of the shell rests upon the track 23 and its diametrically opposite edge is guided by a tapered finger 5 that extends outwardly from the mouth of the barrel, there being a recess in the receiver head to permit seating of the finger therein when said breech is closed. Each guard wing 46 is in the shape of a thin skeleton frame having an upper curved arm 47 and a lower straight arm 47' that are branched from a shank which carries a pivot-stud 48 that is journaled in a recess in the wall of the receiver, the outer end of the arms 47, 47' being connected by a web 47'', which web is struck from an arc of a circle described about the guard-wing axes. Each arc-shaped web is arranged to travel past its adjacent shell stop web 32 of the receiver, being flush therewith and just forward of the receiver head. The bottom of each guard-wing web 47'' terminates with an inturned offset lip 49 and the upper end of said web has a stop-finger 49' that is adapted to seat upon the top edge of the shell stop web 32 when the guard-wing is depressed, whereby downward movement of the same is limited. The curved upper arm of each guard wing is split in width to form a guard finger 50, the end section thereof being parallel with the arc-shaped web 47'' and is slightly flared or bowed inwardly for the purpose of engagement with the upper face of the shell-track 23, whereby the latter

lifts each guard-wing when the free end of the bridge-block is swung upwardly to deliver an alined shell to the bore of the barrel.

In the complete operation of the guard-wings when the breech is closed, depressed shoulders 51 of the barrel-lug 2' engage the curved arms 47 of said guard-wings and force the latter downward so as to present a clear field above the shell-track for the incoming shell and primarily for the purpose a rectangular feed and shell discharge aperture 52 that is formed in one wall of the receiver 1, through which aperture spent shells are ejected and single shells inserted when magazine fed shells are not desired. The guard-wings 46 are also held in their depressed position by the lips 49 that engage longitudinal grooves 51' formed in the edges of the strap 9, which grooves extend back a sufficient distance to permit clearance of the lips when the breech is entirely closed, it being understood that when the breech is open the grooves 51' recede clear of said lips. The initial opening movement of the breech has no effect upon the guard-wings but when the bridge-block has cleared the mouth of the magazine tube and swings downwardly, ledges 51'' that extend from the outer edges of the shell-track 23 engage and expand the spring-fingers 50 until such time as the ledges 51'' pass under the fingers when the same will spring back therefrom preparatory to being engaged by said ledges and in the meantime a shell has been discharged from the tube upon the track 23 and is gripped between the contracted spring-fingers 50, whereby said shell is centered. Rise of the free end of the bridge-block and guard-wings containing the gripped shell is then effected by the initial return or closing movement of the gripping-plate 10 and during the remainder of the breech-closing movement the ledges 51'' of the shell-track recede from the spring-fingers as said bridge-block enters the magazine tube whereby the spring-fingers 50 are cleared to permit a downward swing of the guard-wings, which swing is effected as previously stated by engagement of the curved arms 47 with the depressed shoulders 51 of the barrel-lug, it being understood that the lips 49 of the wings are just under the shell-track when the guard-wings are swung up, whereby overthrow of the same is prevented and that the downward movement of said guard-wings is limited by engagement of the stop-finger 49' with the receiver web 32.

When the gun is used as a single loader, the wood hand-grip 15 that is carried by the gripping-plate 10 and barrel are simultaneously securely gripped together by the operator when the gun breech is to be broken or opened and hence the final independent

movement of the breech relative to the gripping-plate is checked, whereby the bridge-block will not swing upwardly and consequently the forward magazine shell will be blocked from feeding. A single shell can then be inserted into the receiver chamber through its aperture 52, the shell being dropped upon the bridge-block and thereafter a final movement of the gripping-plate being completed independent of the breech movement, said shell will be alined with the bore of the breech preparatory to entering the same by a closing movement.

In order to eject an empty shell the breech head 21 is provided with a spring-controlled ejector plunger 53, which plunger is disposed in a line intermediate of the receiving aperture 52 and firing pin, there being a barbed head 53' also extending from said receiver head between the ejector plunger and receiving aperture. At the corner intersection of the inner faces of the barrel-head 21 and surface of the receiver diametrically opposite the barbed head 53', there is a projecting tapered lug 54, which lug engages the metal bead B of the shell when the latter is forced to its seat against the receiver head. Said lug 54 thus positively centers the cap of the shell with the firing pin, while at the same time the slight lateral movement imparted thereto forces the point of the shell bead that is diametrically opposite the lug under the barbed head 53', said shell being now seated for firing and locked under the barbed head, with the spring-controlled ejector plunger compressed. As the breech is opened it follows that the ejector plunger 53 will exert pressure upon the shell and the same will thereby be thrown out through the receiver aperture, its bead being engaged by the barbed head 53' which acts as a fulcrum point about which the shell is twisted as its mouth is cleared from the bore of the barrel causing said shell to describe an arc of a circle as it is ejected through the receiver aperture 52.

In loading the magazine tube 27 the gun is inverted so that the open throat of the receiver 1 is presented to the operator and the breech being open, the operator places a shell upon the shell-seat 26 that is carried by the bridge-block. The bead B of the shell is then pressed forwardly, whereby it engages the tail of the spring-controlled dog 28 and actuates the latter to thus unlock the shell-seat and shoe 25 from the track portion of the bridge-block. The shell-seat 26 together with its integral shoe 25 is then depressed, whereby the shoe will close the mouth of the magazine tube and said shell together with any number of such may be then inserted into the magazine tube, there being sufficient spring in the shell-seat 26 when the latter is closed to cause the heel of the shoe 25 to catch over the mouth

of each shell as it is inserted into the magazine tube, whereby each shell is held in the tube in opposition to the spring-pressed follower 31.

I claim:

1. In a repeating fire-arm having a stock, a magazine therein, a receiver secured to the stock, and a barrel reciprocally mounted within the receiver; the combination of a bridge-block in hinge connection with the barrel and a reciprocative grip-plate in yielding connection with the bridge-block and barrel whereby the free end of said bridge-block is adapted to swing upward and enter the magazine when the breech is closed and to clear said magazine and swing outwardly when the breech is opened.

2. In a repeating fire-arm having a stock, a magazine tube fitted therein, a spring-controlled follower mounted in the tube, an inverted U-shaped receiver secured to the stock having a head disposed above the mouth of the tube, a barrel reciprocally mounted within the receiver, and a guide-lug depending from the barrel; the combination of a bridge-block in hinge with the barrel-lug, and a grip-plate reciprocally connected to the barrel, and a yielding connection between said grip-plate and bridge-block whereby the free end of the bridge-block is swung upwardly from a registering position with the tube bottom to alignment with the lower face of the barrel-bore during an initial breech-closing movement, the bridge-block being thereafter forced into the tube during the remainder of said closing movement, and means for effecting automatic release and locking engagement between the barrel and receiver incidental to opening and closing of the breech.

3. In a repeating fire-arm having a stock, a magazine tube fitted therein, a spring-controlled follower mounted in the tube, an inverted U-shaped receiver secured to the stock having a breech head disposed above the mouth of the tube, a barrel reciprocally mounted within the receiver, and a lug depending from the mouth of the barrel; the combination of a bridge-block adapted to enter the tube comprising a shank portion in pivotal union with the barrel-lug, a shell-track extending from the shank portion, a shoe secured to the free end of the track, manually controlled means connecting the barrel and bridge-block, whereby its shoe portion is retracted from the tube and swung to a position below the same incidental to a breech-opening movement and is raised in an initial breech-closing movement to effect a closing of the magazine tube and bore of the barrel, the final closing movement being adapted to force the bridge-block into the tube, a spring-controlled release plunger carried by the bridge-block, a spring-controlled trigger mechanism dis-

posed below the mouth of said magazine tube, whereby the release-plunger is brought into an engaging position with the trigger mechanism incidental to full closure of the breech against the breech-head of the breech, and a spring-controlled firing mechanism located rearwardly of the receiver head arranged to be cocked by engaging the bridge-block when the breech is closed and released by the trigger action operated through the interposed release-plunger carried by said bridge-block.

4. In a repeating fire-arm having a stock, a magazine tube fitted therein, a spring-controlled follower mounted in the tube, an inverted U-shaped receiver secured to the stock having a side aperture therein, and a breech head disposed above the mouth of the magazine tube, a barrel reciprocally mounted within the receiver, a lug depending from the mouth of the barrel; the combination of a bridge-block adapted to enter the tube comprising a shank portion in pivotal union with the barrel-lug, a shell-track extending from the shank, a shell-seat in hinge connection with the shank provided with a shoe extension detachably secured to the end of the track, arms extending from the shank, a strap in hinge connection with the arms, a gripping-plate slidably secured to the strap and gun barrel, means for locking the strap and gripping-plate against relative movement, a transversely disposed key carried by the receiver, a spring-controlled locking dog carried by the barrel for effecting locking engagement between the key and barrel when the breech is open, a tumbler carried by the barrel for effecting locking engagement with the key when the breech is closed, means carried by the gripping strap for releasing the locking dog and tumbler from engagement with said key, a spring-controlled releasing plunger carried by the shank of the bridge-block, a trigger mechanism disposed under the magazine tube for engagement with the releasing plunger when the breech is closed, a spring-controlled firing mechanism disposed above the tube and rearward of the receiver head, and a spring-controlled trip-dog for the firing mechanism adapted to be engaged by said release plunger when the barrel is closed.

5. In a repeating fire-arm having a stock, a magazine tube fitted therein, a spring-controlled follower mounted in the tube, a receiver secured to the stock having a breech

head and shell-discharge aperture located above the mouth of the tube, a barrel reciprocally mounted within the receiver, and a lug depending from the mouth of the barrel; the combination of a bridge-block comprising a depending shank portion in pivotal union with the barrel-lug, a track portion extending from the shank, a shell-seat in pivotal union with the shank, a shoe extending from the shell-seat, means for detachably securing the shoe to the end of the track portion, whereby the shell-seat may be collapsed upon the track portion, actuating means connecting the shank of the bridge-block with the barrel, whereby the shoe of the same may be alined with and forced into the tube incidental to a breech-closing movement and retracted from and swung downwardly incidental to a breech-opening movement, means for locking the breech to the receiver when said breech is closed, a trigger mechanism disposed below the tube, a firing mechanism disposed above the tube, a trip-dog for the firing mechanism, and a release-plunger carried by the bridge-block adapted to be interposed between the trip-dog of the firing mechanism and trigger mechanism, whereby movement of the trigger mechanism is exerted upon said trip-dog.

6. In a repeating fire-arm having a stock, a magazine tube therein, a receiver secured to the stock having a breech head, a barrel reciprocally mounted in the receiver, and a shell ejector carried by the breech head; the combination of a bridge-block in hinge connection with the breech, a reciprocative grip-plate in yielding connection with the bridge-block and barrel whereby the free end of said bridge-block is adapted to rise from a point below the magazine tube, aline with and enter said tube in a breech-closing movement and retract from said tube and swing downwardly when said breech is opened, and shell-guard-wings in pivotal union with the receiver side-walls adapted to be engaged by and swung upwardly and downwardly incidental to movement of the aforesaid bridge-block.

In testimony that I claim the foregoing I have hereunto set my hand at New Holstein in the county of Calumet and State of Wisconsin in the presence of two witnesses.

FRED ARPS.

Witnesses:

JOHN SANSON,

FREDERICK BULLWINKEL.