

May 24, 1938.

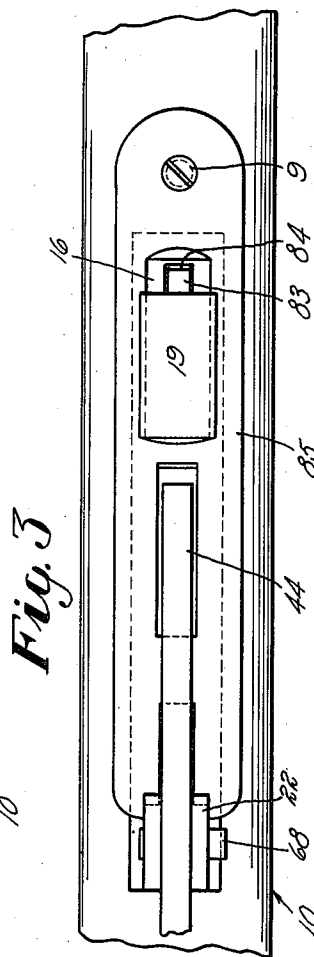
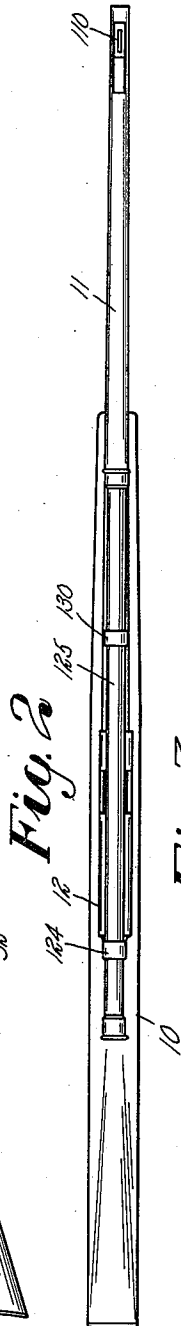
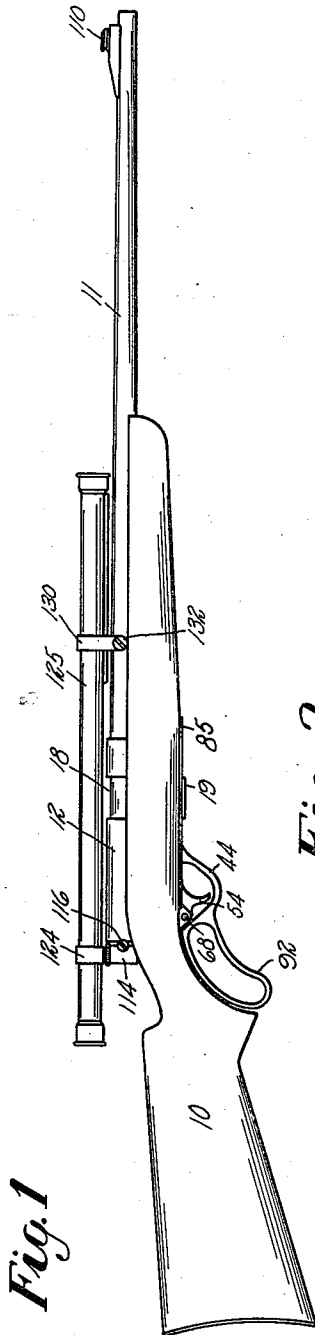
M. A. BROWNING

2,118,536

FIREARM

Filed May 27, 1935

4 Sheets-Sheet 1



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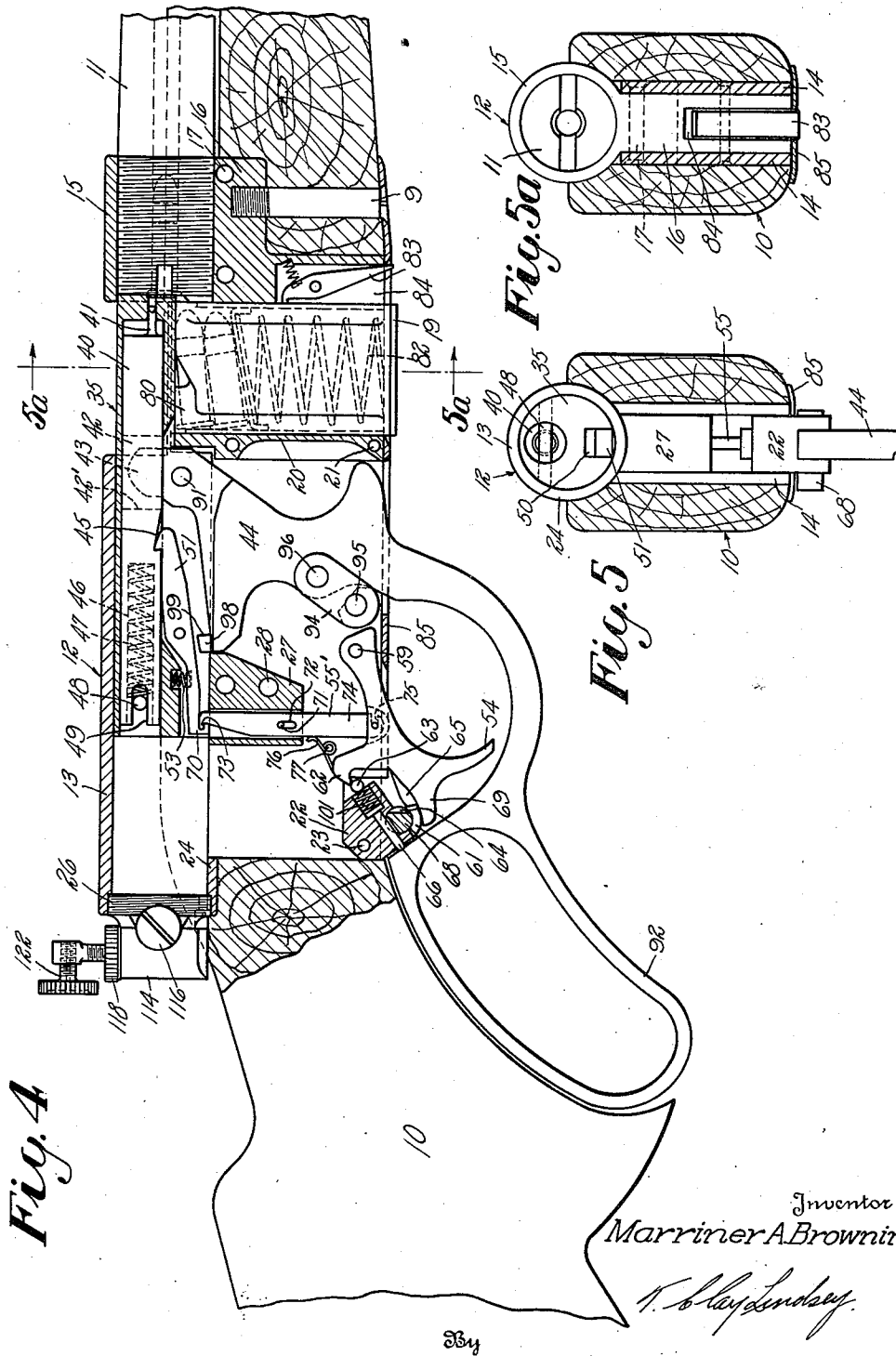
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4 Sheets-Sheet 2



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Fig. 7

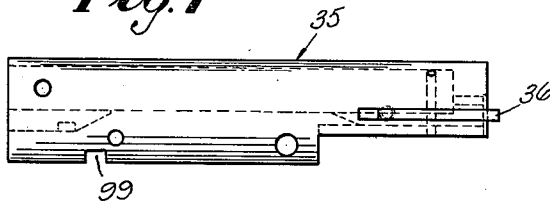


Fig. 8

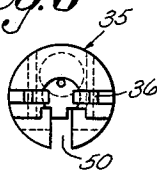


Fig. 9

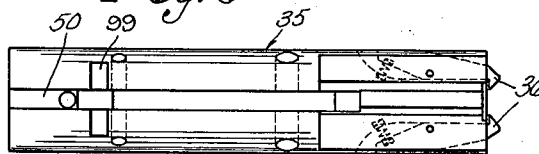


Fig. 10

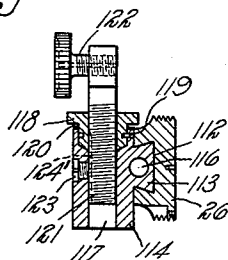


Fig. 11

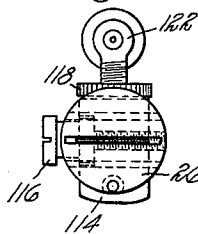


Fig. 12

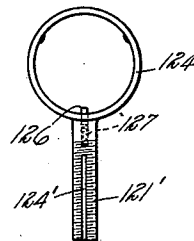
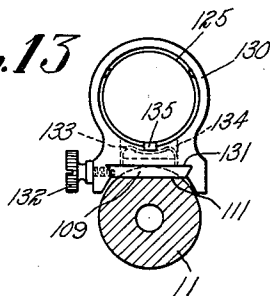


Fig. 13



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UNITED STATES PATENT OFFICE

2,118,536

FIREARM

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Application May 27, 1935, Serial No. 23,561

9 Claims. (Cl. 42—16)

This invention relates to firearms and particularly to a firearm of the lever action type.

The aim of the invention is to provide a firearm of the character described having various features of novelty and advantage and which is particularly characterized by its simplicity in construction and economy in manufacture, and by its reliability and smoothness in operation.

A more particular object of the invention is to provide an improved, simplified, economical, and effective arrangement of breech action which is characterized by the extreme smoothness and ease with which its operations may be carried out, and wherein the breech unit is effectively locked in advanced position during the firing operation.

A still further aim of the invention is to provide an improved arrangement of sights.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings:

Figure 1 is an elevational view of the right hand side of firearm constructed in accordance with the present invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is an elevational view looking at the under side of that portion of the gun provided with the receiver;

Fig. 4 is a sectional view taken generally longitudinally and vertically through the receiver and shows the parts in their normal or firing positions;

Fig. 5 is a rear view of the receiver or frame;

Fig. 5a is a transverse sectional view through the receiver or frame, the same being taken on line 5a—5a of Fig. 4;

Fig. 6 is a view similar to Fig. 4 but showing the operating lever in forward position;

Fig. 7 is an elevational view looking at the right hand side of the detached breech block;

Fig. 8 is a front view of the breech block;

Fig. 9 is a bottom plan view thereof;

Fig. 10 is a vertical sectional view through the mounting for the rear sight;

Fig. 11 is a view looking at the rear or left hand end of what is shown in Fig. 10;

Fig. 12 is a detail view of a rear support for the telescopic sight; and

Fig. 13 is a detail view of a front support for the telescopic sight.

Referring to the drawings in detail, 10 designates the usual combined stock and forearm generally of the military type; 11 is the barrel, and 12 designates the receiver or frame of suitable

construction. In the present illustrative disclosure, this receiver is shown, by way of exemplification, as being formed from a piece of sheet metal which is bent to form so as to provide a generally parti-cylindrical breech receiving portion 13 and a pair of depending spaced parallel flanges 14. Secured to the forward end and constituting a part of the receiver is a barrel attaching member which, in the present illustrative disclosure, is in the form of a ring 15 having a depending web or block 16. This block fits between the forward portions of the flanges 14 and may be secured in place by rivets 17. The stock and forearm 10 may be secured to this block by a screw 9. The rear end of the barrel may be screwed into this ring, as illustrated. Between the cylindrical portion 13 of the receiver and the ring 15 is the usual loading and ejecting opening 18. The block 16 extends downwardly to the lower edges of the flanges 14 and its rear face constitutes a guide for the magazine 19. Rearwardly of the block 16 is a partition 20 secured in place by rivets 21 and forming a rear guide for the magazine. Located between the flanges at their rear lower corners is a block 22 secured in place by rivets 23. A safety is supported by this block, as hereinafter described more in detail. At the rear end of the cylindrical portion of the receiver is a ring portion 24 which is internally threaded, as illustrated, so as to receive a plug or closure member 26. There is further provided between the flanges a cross block 27 which serves as a lock abutment and as a guide for the trigger connector. It is secured in place by rivets 28.

Mounted for reciprocation in the cylindrical portion of the frame is a breech block which comprises generally a cylindrical steel rod or bar 35 having its forward end slabbed or cut-away on its under side so as to clear the rear magazine guide 20 and the magazine. At the forward end and on opposite sides of the breech block are the usual spring pressed extractors 36 which need not be described in detail here as their construction and operation are well-known in the art. On the top of the rear magazine guide or partition 20 is a lug 37 which serves as an ejector to throw out the cartridge through the ejection opening when the breech block is retracted. The breech block is bored out so as to accommodate a striker 40 which is generally in the form of a round pin having, at its forward end, the usual firing point 41 adapted to strike against the rim of the cartridge when the firearm is fired. Intermediate its ends, the striker is vertically slotted, as at 42, so as to accommodate a cam 43 on the upper end of an operating lever 44. The rear wall 42' of this opening constitutes an abutment against which the cam operates when the lever is operated. The striker, on its under side and

rearwardly of the slot 42, is provided with a sear notch 45. The rear end of the striker is bored out, as at 46, so as to accommodate a main spring 47 which is maintained under compression by a pin 48 carried by and extending transversely of the breech block. The rear end of the striker is slotted, as at 49, so as to accommodate this pin.

The breech block is longitudinally slotted on its under side, as at 50, so as to accommodate a sear 51. The sear has the usual sear notch at its forward end adapted to cooperate with the notch 45 in the striker. The sear is pivoted on a pin 52 and is normally urged into holding or cocked position by a sear spring 53. In the embodiment shown in Fig. 6 the sear is associated with a trigger 54 by means of a connector 55 which is mounted for vertical sliding movement in a bore 56 located in the cross piece or block 27. Within this bore is a spring 58 normally urging the connector down and the trigger into unpulled or normal position. The trigger is pivoted at its forward end on a pin or pivot 59. It is pivotally connected by a pin 60 to the lower end of the connector. The block 22, at the lower rear corner of the receiver is slotted, as at 61, so as to accommodate a rearwardly extending projection 69 on the trigger when the latter is pulled. The trigger also has a hooked shaped projection 62, the end of which is adapted to engage a pin 63 carried by said block so as to limit the downward movement of the trigger under the influence of the spring 58. Adapted to extend into the slot 61 is a safety 68 comprising a transversely shiftable member having a notch 64 adapted, when the safety is in "off" position and the trigger is pulled, to accommodate a lug 65 on the trigger. As is usual, when the safety is moved to "on" position, the slot is moved out of registry with said lug so that the trigger cannot be pulled. The safety is maintained against turning by a pin 66. This pin has another function which will be described later.

In the embodiment shown in Fig. 4, the firing mechanism is such that accidental operation of the sear and firing of the gun, due to a shock or jar, are prevented. In this instance, the rear end of the sear has a hooked portion 70, the notch of which faces forwardly. The connector 55' is pivoted between its ends to the cross block 27 as at 71. The connector has a vertical slot 72 which accommodates the pin 71. The connector has, at its upper end, a rearwardly extending lug 73 adapted to engage in the notch provided by the hooked portion of the sear. The trigger is mounted as before described but, in the present instance, the trigger has between its ends a pin 74, and the lower end of the connector has a horizontally extending notch 75 which receives this pin. A spring 76 serves to urge the connector into sear engaging position and also serves to urge the trigger into unpulled or normal position. This spring is coiled about a pin 77 and has one end engaging the rear face of the connector below the pivot 71 thereof. The other end of the spring engages on the top of the projection 62 of the trigger. With this arrangement, it will be seen that, when the safety is "on", the trigger, the connector, and the sear are positively locked in the positions shown in Fig. 4 and, therefore, the sear cannot be jarred out of striker holding position. When it is desired to fire the gun, the safety is moved to "off" position, and the trigger is pulled. Pulling of the trigger raises the connector, (vertical movement of the same being permitted by the slot

72) and the tail end of the sear is raised so as to disengage the sear from the striker 40 whereupon the latter will move forwardly with a quick, sharp movement under the influence of the main spring 47. The purpose of permitting a slight pivotal action of the connector is to insure that the connector will properly engage the sear, in the event they may not be properly lined up at the time of initial engagement of the sear with the connector as the breech block is moved forwardly.

The magazine 19 is illustrated as being of the box type and is somewhat of the usual construction. It comprises a casing in which the cartridges are laid one upon the other. Its upper end has fingers 80 so arranged that, when the breech block is retracted, the uppermost cartridge has the upper edge of its rim lying in the line of travel of the breech block so that, when the latter is advanced, it will engage that cartridge and feed it into the firing chamber. The arrangement is such that the cartridges, when placed in the magazine, have their heads in staggered or stepped relation. The numeral 81 designates the usual follower beneath which is a spring 82. The magazine is held in position by a spring pressed latch 83 which is pivoted in a recess 84 in the block 16. The lower end of the latch projects downwardly below a trigger plate 85 so that it may be readily engaged with the finger or thumb when it is desired to withdraw the magazine from the receiver.

Referring now to the mechanism for operating the breech block, the same comprises generally the lever 44 pivoted by means of a pin 91 to the breech block beneath the vertical slot 42 so that the cam 43 extends into this slot. The lever projects down between the flanges of the receiver and through a slot in the trigger plate 85 and has, at its lower or free end, the usual handle 92 which is more or less in the form of an elongated loop. This handle normally lies closely adjacent to the pistol grip provided on the stock. The operating lever is pivotally connected to the receiver through the instrumentality of a link 94. The link is pivoted between the flanges of the receiver on a pin 95. The link is slotted so as to receive the lever and is pivoted to the lever by a pin 96. This link motion is provided for the reason that the upper end of the lever is pivoted, as described, to the breech block and it is desirable that the latter travel on a straight line during the operations of retracting and advancing it. The lever 44 has, beneath its pivot with the breech block, a rearwardly extending arm 97 of such length that, when the lever is in the position shown in Fig. 4, the rear end of this arm engages the front face of the cross block. When the breech block is in its advanced position, (in which case, of course, the lever is in its rearmost position) the pivot 96 between the link and the lever is approximately at dead center between the pivots 91 and 95, and the arm 97 is in engagement with the cross block. By preference, the arm 97 of the lever is provided, adjacent its rear end, with an upwardly extending locking lug 98 which is adapted to take into a cross notch 99 on the under side of the breech block. The lever is releasably held in its rearmost position shown in Fig. 4 by the pin 66 heretofore referred to as being mounted in the rearmost spacer block 22. The rear end of this pin projects slightly beyond the block, and the lever has a parti-spherical recess 100 which receives the rounded end of the pin. Behind the pin is a

spring 101 which is held in place by the pin 63 heretofore described.

The lever action is briefly as follows: Assuming that the cartridge has been fired, the striker will be in its advanced position and with the rear shoulder 42' of the vertical slot 42 closely adjacent to the cam 43 on the upper end of the operating lever 44. When the operating lever is thrown forwardly from the position shown in Fig. 4 to that illustrated in Fig. 6, the lever will fulcrum about the floating pin 96 and the breech block will be retracted due to the pivotal connection 91 and, at the same time, the striker will be cammed rearwardly with respect to the breech block by the cam 43. It is important to note that movement of the striker rearwardly of the breech block is simultaneously effected with the rearward movement of the breech block itself and substantially throughout the entire length of travel of the latter so that the operation is an extremely smooth one requiring but very little effort of a uniform nature throughout the entire operation. It is understood, of course, that, as the breech block is retracted, the extractors 36 will pull the cartridge from the firing chamber, and then the ejector 37 will eject the extracted cartridge through the ejecting opening 18 in the receiver. It is also clear that, when the parts are retracted, the sear will move into striker holding position. When the lever is now thrown rearwardly, the breech block will be advanced with the sear holding the striker in cocked position, and the forward end of the breech block will engage the uppermost cartridge in the magazine and feed it into the firing chamber. As the lever is brought to final rearmost position, the floating pivot 96 will be brought substantially to dead center and, at the same time, the arm 97 on the lever will be brought to final position in front of and against the cross block 27, and the lug 98 on that arm will engage in the cross slot 99 on the under side of the breech block. With the arrangement of pivots described, this operation is brought about in a most effective manner. The breech block is now locked in its advanced position by the engagement of the arm against the cross block and by the engagement of the lug in the cross slot. In the event that the firearm is of low power, the lug may be dispensed with, but in higher powered firearms, it is preferably provided so as to insure of a more secure lock. As previously stated, when the striker is in fired position, the shoulder 42' thereon is closely adjacent the cam 43 of the operating lever. It, therefore, follows that, in the event the trigger should be pulled and the striker released while the lever is not substantially in its full rearmost position, the striker would come up against the cam and stop there so that the cartridge would not be fired.

In accordance with the present invention, I provide an improved arrangement of sights which will now be described. The barrel, at its forward end, is provided with the usual front sight 110 which may be of any suitable construction. The barrel is also provided, adjacent its rear end, with a dove-tailed cross groove 111 in which may be mounted the usual rear open sight, the same not being illustrated here as the construction thereof is old and well-known. It is usual to provide this dove-tailed cross slot and to position therein a blank 109 (see Fig. 13) when the open sight is not in use. As previously stated, screwed into the rear end of the cylindrical portion of the receiver is a plug 26, and I employ this plug for

carrying, interchangeably, either a rear peep sight or a support for the rear end of a telescope. Referring to Figs. 10 and 11, wherein the peep sight is shown, the plug has on its rear face a transversely extending dove-tailed groove 112 which slidably receives a dove-tailed gib 113 on a transversely adjustable block 114. This block is adjusted transversely for windage by a screw 116 having a screw threaded engagement with the block and rotatably held against axial movement with respect to the plug. The block has a vertical opening 117 which is counterbored at its upper end. Extending into this counterbore is an internally threaded nut or bushing 118 which is held by a key 119 against axial movement but for rotation. Between the head of the bushing and the top of the block is interposed a spring friction washer 120. Threaded into the bushing is a screw 121 which carries, at its upper end, a peep sight 122. The screw 121 is held against rotation by a screw 123, the inner end of which engages in a longitudinal groove 124' in the screw 121.

When it is desired to use the telescope, the screw 121 is removed and there is substituted in its place a rear telescope support or bracket which comprises a screw 121' to the upper end of which is fixed a ring 124 which slidably receives the telescope 125. This ring is adjustable in the same manner as was the peep sight. In order to take up play between the telescope and the ring 124, there is provided a plunger 126, behind which is a spring 127, as shown most clearly in Figure 12. The forward support or bracket for the telescope is shown most clearly in Figure 13. It is generally in the form of a ring 130 and is secured to the blank 109 heretofore referred to. The base of the forward bracket has a dove-tailed groove 131, and the ends of the blank 109 are bevelled so that the groove will snugly receive the blank. The front bracket is secured to the blank by a screw 132. A U-shaped spring 133 is positioned in a recess 134 in the bracket in order to take up any play between the telescope and the bracket. The telescope has a small lug 135 adapted to engage the central portion of this spring.

It may be seen from the above descriptions of the sights taken in connection with the accompanying drawings, that I provide a very simple and effective arrangement wherein the peep sight or the rear end of the telescope may be easily and accurately adjusted both for windage and elevation. The telescope and rear peep sight may be quickly and easily substituted one for the other, depending on which it is desired to use in any instance. When the telescope is in place, its axial center is substantially the same as the line of the iron sights when the latter are in place. Ordinarily it has been the practice to adjust the comb of the stock of the gun to what is commonly termed iron sights which may include either open sights or peep sights, such adjustment being made for the purpose of a cheek rest with the eye in line with the sights. For the purpose of mounting a telescope, a cheek pad is ordinarily fastened to the comb of the stock in order to elevate the comb to a point where the eye will be in line with the sights, and the cheek is rested on the pad. Heretofore, in some instances, the telescope has been so high as to preclude the use of a telescope where the gun is to be carried in a saddled scabbard. With my improved arrangement the use of cheek pads and the like is avoided, and other disadvantages to

telescopes as heretofore mounted are overcome. With my improved arrangement, instead of elevating the telescope well above the barrel, it lies close to the frame.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope, thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block, means resiliently urging the striker forwardly into a striking position, and an operating lever pivotally connected to said receiver and operatively connected with said breech block and engageable with said striker for moving said breech block to retracted position and simultaneously moving the striker rearwardly and independently of the breech block into cocked position.

2. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block, and an operating lever pivotally connected to said receiver and pivotally connected to said breech block and having means for effecting a movement of the striker rearwardly and independently of the breech block to a cocked position and simultaneously with the rearward movement of the breech block itself and substantially throughout the entire length of travel of the latter.

3. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block, and an operating lever pivotally connected between its ends to said receiver and pivotally connected adjacent its upper end to said breech block, said operating lever having on its upper end a cam for moving said striker rearwardly and independently of said breech block into a cocked position while the breech block is being retracted by said lever.

4. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block and having a forwardly facing abutment, and an operating lever pivotally connected between its ends to said receiver and pivotally connected adjacent its upper end to said breech block, the upper end of said lever having a cam cooperating with said abutment and arranged to cam the striker rearwardly and independently of the breech block into a cocked position during that movement of the lever which results in retraction of the breech block.

5. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block, an operating lever, a link pivotally connected to said receiver and pivotally connected to said lever intermediate the ends of the latter, a pivot for connecting said lever to said breech block, said lever hav-

ing means on its upper end for moving said striker rearwardly into a cocked position relative to said breech block while said breech block is being retracted by said lever, and means removably securing said striker in cocked position.

6. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block and having a forwardly facing abutment, an operating lever pivotally connected adjacent its upper end to said breech block, and a link pivotally connected to said receiver and lever intermediate the end of the latter, the upper end of said lever having a cam cooperating with said abutment and arranging to cam the striker rearwardly of the breech block into a cocked position during that movement of the lever which results in retraction of the breech block.

7. In a firearm, a receiver, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block, an operating lever, a link pivotally connected to said receiver and pivotally connected to said lever intermediate the ends of the latter, and a pivot for connecting said lever to said breech block, said lever having means on its upper end for moving said striker rearwardly into a cocked position and independently of said breech block substantially during the entire length of breech block travel while said breech block is being retracted by said lever, the pivot between said link and lever being substantially at dead center with respect to the pivot between the link and the receiver and the pivot between the lever and the breech block when the lever is in full rearmost position.

8. In a firearm, a receiver having an abutment, a breech block slidably mounted in said receiver, a striker slidably mounted in said breech block, an operating lever pivoted adjacent its upper end to said breech block, and a link pivotally connected to said receiver and pivotally connected to said lever intermediate the ends of the latter, said lever having a lug fixed to move with said lever and adapted to engage said abutment when the lever is in full rearmost position for holding the breech block in advanced position when the firearm is fired, the pivot between said link and lever being substantially at dead center with respect to the pivot between the link and the receiver and the pivot between the lever and the breech block when the lever is in full rearmost position.

9. In a firearm, a receiver having a forwardly facing abutment, a breech block slidably mounted in the receiver, a striker slidably mounted in said breech block, an operating lever pivotally connected adjacent its upper end to said breech block to retract the breech block, and a link for pivotally connecting said lever between its ends to said receiver, means on said lever engageable with the striker to retract the striker to a cocked position independently of and during substantially the entire retractive movement of said breech block, said lever having between the breech block and the link a rearwardly extending arm adapted to engage said abutment when the lever is in its full rearmost position, said breech block having a notch, and said arm having a lug engaged in said notch when the operating lever is in full rearmost position.

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