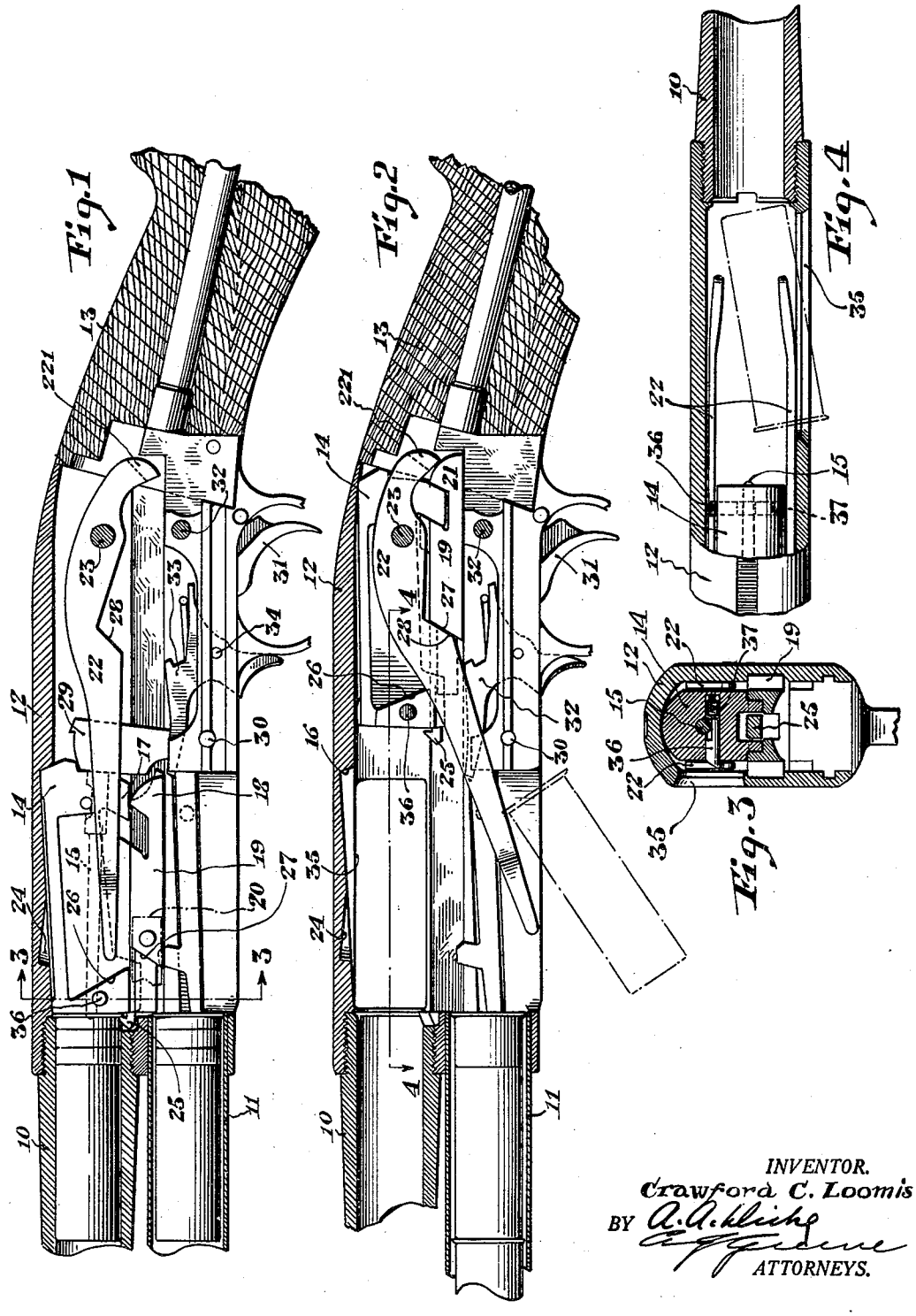
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FIREARM

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INVENTOR.
Crawford C. Loomis
BY A. A. Ehrlich
ATTORNEYS.

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CRAWFORD C. LOOMIS, OF ILION, NEW YORK, ASSIGNOR TO REMINGTON ARMS COMPANY, INC., A CORPORATION OF DELAWARE

## FIREARM

Application filed May 10, 1930. Serial No. 451,242.

This invention relates to firearms, and particularly to firearms of the type usually made to accommodate shot shells and ordinarily known as "shot guns".

For convenience of illustration, the invention has been illustrated in the accompanying drawing as applied to a firearm of the type disclosed in the patent to Browning, No. 1,143,170, June 15, 1915; although its utility is by no means limited to a firearm embodying Browning's construction.

The said Browning patent discloses a firearm mechanism arranged for the accommodation of shot shells in which a small number of shells, ordinarily not exceeding five, are stored in a tubular magazine which extends below the barrel of the firearm and are adapted to be transferred one at a time through the firearm receiver and into the firing chamber. The magazine is loaded through an opening in the bottom of the receiver. Subsequent to the firing of the shell or cartridge in the chamber, the empty shell is extracted therefrom and is ejected downwardly through the same opening in the bottom of the receiver which is utilized in loading the magazine. This type of shot gun is ordinarily termed "a bottom ejection gun", since the shells are ejected downwardly out of the bottom of the receiver. In another type of firearm an opening is provided in one side of the receiver, and the mechanism is of such construction that empty or unfired shells are ejected through this lateral opening. The bottom ejection type of gun offers certain distinct advantages over the side ejection type. The shell being expelled downwardly can in no way interfere with the shooter's manipulation of the gun, as sometimes occurs with side ejection, particularly with left-handed shooters. The arm of a left-handed shooter will be extended along the right side of the gun in such a position that it may obstruct the movement of the ejected shell. Furthermore, where there are several shooters in line, as for example in trap shooting, the ejected shell may encounter the gun or the person of an adjacent shooter, which is undesirable. However, bottom ejection guns have the disadvantage that they are not readily adapted to the loading of one cartridge at a time directly into the chamber and without working through the magazine. This is of importance in hunting in those states which prohibit the carrying of more than two cartridges in a gun, and is of even greater importance in trap shooting where the capacity of the magazine is much less than the number of shots desired.

When it is desired to use a bottom ejection gun as a single loader it is necessary to completely invert the gun and to press the shell into the receiver, past the magazine opening, to a position substantially opposite the chamber. This operation is difficult and troublesome in comparison with using a side ejection gun as a single loader. The side ejection gun being provided with a lateral opening opposite the chamber, it is necessary only to tilt the gun to a convenient angle, instead of entirely inverting it, and drop a cartridge through the ejection opening. Side ejection guns, however, have the substantial disadvantage of throwing the ejected shells laterally, instead of downwardly; this is undesirable for the reasons above mentioned.

The present invention contemplates the construction of a firearm having the advantages of bottom ejection, and at the same time the advantages of side loading. An illustrated embodiment of the invention is shown in the accompanying drawing in which:

Fig. 1 is a fragmentary longitudinal section through a firearm embodying the invention, the section being substantially on a line just inside the receiver wall.

Fig. 2 is a similar fragmentary longitudinal section showing the action open and a shell in the operation of ejection.

Fig. 3 is a transverse section substantially on the line 3—3 of Fig. 1.

Fig. 4 is a horizontal section substantially on the line 4—4 of Fig. 2.

The firearm embodies a barrel 10 and a magazine 11 secured to the forward end of a receiver 12, said receiver having secured at its rear end a stock 13. The receiver con-

tains breech closing mechanism, cartridge transferring mechanism, and fire control mechanism, which may be of the construction described in said Browning patent, or the improved construction described in my pending application, Serial No. 135,582, filed September 15, 1926. It is to be understood, however, that this receiver mechanism is shown merely for purposes of illustration and that the receiver mechanism may take a variety of forms. The breech closing mechanism comprises a breech block 14 traversed by a firing pin 15 and adapted when in breech closing position to be locked by engagement with a shoulder 16 in the top of the receiver. The breech block comprises a downwardly extending foot 17 adapted for engagement with a recess 18 in an action slide 19, said action slide being reciprocated through its connection with the action bar 20. The faces of the slot 18 are so inclined as to first move the breech block downwardly out of engagement with the locking shoulder 16 and then carry it rearwardly to the position illustrated in Fig. 2. Upon the forward movement of the action bar and action slide 19, this operation is reversed, the breech block in forward position riding out of the slot 18 and being securely locked in elevated position by the engagement of the surface 20 thereon with the foot 17, as clearly shown in Fig. 1.

The cartridge transferring devices comprise a pair of arms 22 pivoted in the receiver walls at 23 and adapted for movement from the position shown in Fig. 1 first to an elevated position in which their forward ends project into recesses 24 in the top of the receiver and subsequently downward to the position shown in Fig. 2. When the carrier arms 22 are in their elevated position they overlie the shell, which is extracted from the chamber upon the rearward movement of the breech block by means of a suitable extractor, such as 25; thus, the downward movement of said arms is effective to positively eject the shell from the bottom of the receiver, as illustrated in Fig. 2. In this position, the carrier arms are ready to receive a fresh cartridge from the magazine, said cartridge being released and moved rearwardly on to the carrier arms at this time by the mechanism fully described in said Browning patent or in my said co-pending application.

It will be noted that the forward ends of the carrier arms are curved inwardly, as shown in Fig. 4, in order to furnish a support for a cartridge which is placed thereon. Said arms are of sufficient resilience to be spread apart on their upward movement and to permit the breech block to pass between them. The necessary movement of the carrier arms is effected as follows: Upward movement from the position shown in Fig. 1 is by means of the engagement of the forward ends of one or both of the carrier arms with inclines or cam surfaces 26 on the sides of the breech block.

Downward movement from the elevated position to the depressed position shown in Fig. 2 is brought about at the end of the rearward movement of the action slide 19 by engagement of the rear ends of the carrier arms with the inclined rear end of the action slide as shown in Fig. 2. Upward movement of the arms from the Fig. 2 position to the Fig. 1 position on the forward movement of the action slide is effected by the engagement of cam surfaces 27 on the action slide with inclines 28 on the carrier arms.

Any suitable form of fire control mechanism may be provided. The drawing indicates generally a hammer 29 pivoted at 30; a trigger 31 pivoted at 32, and an action bar lock 33 pivoted at 34. These parts are all fully described in the aforementioned Browning patent and my co-pending application.

In order to permit of side loading, as well as the transfer of cartridges from the magazine in the manner heretofore described, the receiver is provided with a lateral opening or port 35; said port has been shown as placed in the right side of the receiver, this being the construction most in demand since it is adapted for the use of right-handed shooters. However, it is obvious that the port can with equal facility be placed in the left-hand side of the receiver, thereby adapting the gun for the use of left-handed shooters. Said port is of such size as to readily permit cartridges to be inserted therein. When the breech is closed, one side of the breech block stands opposite said port and if desired this exposed side of the breech block may be finished without the cam 26, and for better appearance may be smoothed and polished.

When the action is operated rapidly, while the gun is empty, the engagement of incline 28 with cam 27 may throw the carrier 22 to its uppermost position, instead of merely lifting it to the Fig. 1 position as it does if there is a shell on the carrier. The carrier being thus lifted to its uppermost position, one arm thereof extends diagonally across a part of the loading port 35. If this is considered undesirable, means may be provided for preventing movement of the carrier to this uppermost position while cam 27 is in engagement with incline 28. Such means may comprise a pin 36 extending transversely through the breech block near its forward end, and extending from the breech block in a position to overlie the carrier arm 22. Said pin is urged outwardly by suitable means, such as a spring 37, and its movement by springs 37 is limited by

its engagement with a suitable abutment. For simplicity, the firing pin may be used for this purpose, as clearly shown in Fig. 3. Said pin is slotted to receive the firing pin, and its engagement with the firing pin also prevents its rotation and maintains its bevelled exposed end in the Fig. 3 position. In the downward movement of the carrier arms for the ejection of a shell, the pin is cammed inwardly by the carrier arm, thus permitting the carrier arm to freely pass downwardly, while preventing upward movement of the carrier arm past the pin during the greater part of the movement of the breech block.

When the breech block is retracted to the Fig. 2 position, a cartridge casually dropped through the port 35 will rest upon the carrier arms 22 and in the subsequent closing movement of the mechanism will be carried into alignment with the chamber and advance into the chamber in exactly the same manner as though it had been released from the magazine. As the breech block begins to move rearwardly after firing the carrier arms pass upwardly into the top of the receiver; hence, as the breech block is retracted, said arms are above the shell or cartridge which is withdrawn from the chamber and are effective to expel said shell or cartridge downwardly out of the bottom of the receiver, instead of laterally through the loading port, as is the case with other guns which are provided with a lateral opening in the receiver. There is thus secured in a single firearm both the advantage of side loading and the advantage of bottom ejection.

It is obvious that the receiver mechanism may take many forms differing widely from that which has been illustrated, the only requisite being that a support be provided which is effective to direct the cartridge introduced through the lateral opening into the chamber, and in conjunction therewith an ejector device be provided which directs the shell or cartridge extracted from the chamber downwardly out of the bottom of the receiver. This desirable combination being entirely novel with this applicant, the appended claims are to be broadly construed:

What I claim is:

1. In a firearm comprising a firing chamber, a magazine, a receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position adjacent said chamber and subsequently moved to a position above said chamber; means for depressing said device, means for elevating said device to said intermediate position, and means for preventing said device from moving to its uppermost position during a part of the movement of said breech block.

2. In a firearm comprising a firing chamber, a magazine, a receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position adjacent said chamber and subsequently moved to a position above said chamber; means for depressing said device, means for elevating said device to said intermediate position, and means for preventing upward movement of said device past said breech block while permitting downward movement thereof past said breech block.

3. In a firearm comprising a firing chamber, a magazine, a receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position adjacent said chamber and subsequently moved to a position above said chamber; means associated with said breech block for preventing movement of said device to its uppermost position during the forward movement of said breech block.

4. In a firearm comprising a firing chamber, a magazine, a receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position adjacent said chamber and subsequently moved to a position above said chamber; means comprising a spring-pressed stud projecting laterally from said breech block for controlling the movement of said device.

5. In a firearm comprising a firing chamber, a magazine, a receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position adjacent said chamber and subsequently moved to a position above said chamber; means for controlling certain movements of said device comprising a spring-pressed stud extending transversely of said breech block and limited in its movement by the firing pin.

6. In a firearm comprising a firing chamber, a magazine, a receiver, a lateral port in said receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position between said magazine and said port and subsequently moved to a position above said chamber; means for depressing said device, means for elevating said device to said intermediate position, and means for preventing

said device from moving to its uppermost position during a part of the movement of said breech block.

7. In a firearm comprising a firing chamber, a magazine, a receiver, a lateral port in said receiver, a reciprocating breech block in said receiver, and a cartridge transferring and shell ejecting device in said receiver adapted to be moved from a position below said magazine to an intermediate position between said magazine and said port and subsequently moved to a position above said chamber; means associated with said breech block for maintaining said device in said intermediate position during the forward movement of sad breech block.

8. A firearm comprising a firing chamber and a receiver having a lateral port, a breech block adapted to stand opposite said port when in breech closing position, means for retracting said breech block to uncover said port and extract a shell from said chamber, a cartridge transferring and shell ejecting device, means for moving said device to eject the extracted shell downwardly, and means associated with said breech block for subsequently moving and maintaining said device in position to support a cartridge inserted through said lateral port.

9. In a firearm comprising a magazine, a receiver having a lateral port, and a firing chamber; a cartridge transferring and shell ejecting device in said receiver, means for moving said device to eject a shell extracted from said chamber downwardly, and means for moving and maintaining said device in position to support a cartridge inserted through said lateral port in alignment with said chamber.

CRAWFORD C. LOOMIS.