

April 7, 1942.

P. B. RUTHERFORD

2,278,589

FIREARM

Filed Nov. 9, 1940

3 Sheets-Sheet 1

Fig. 1

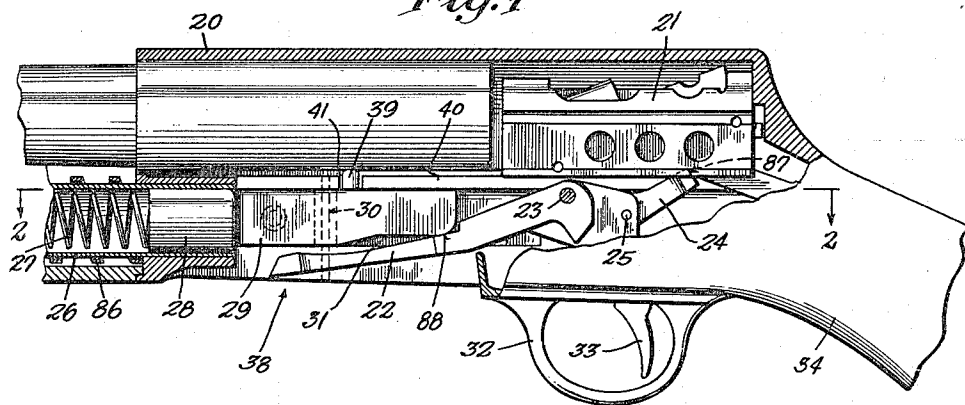


Fig. 2

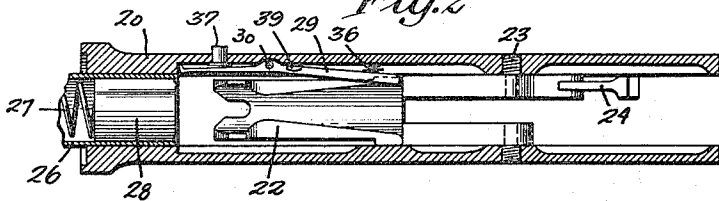


Fig. 3

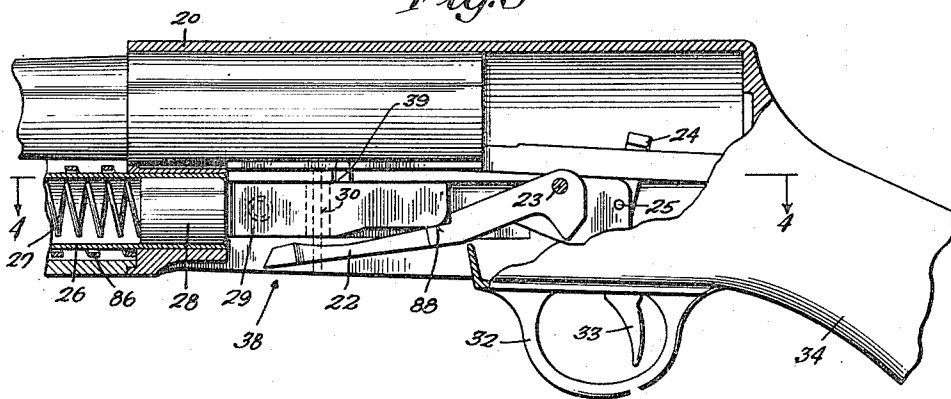
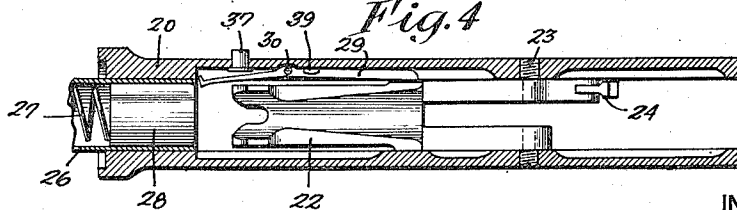


Fig. 4



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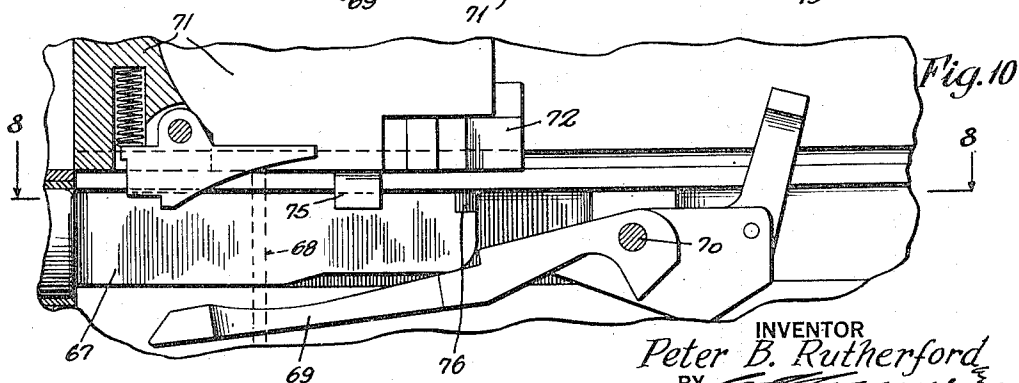
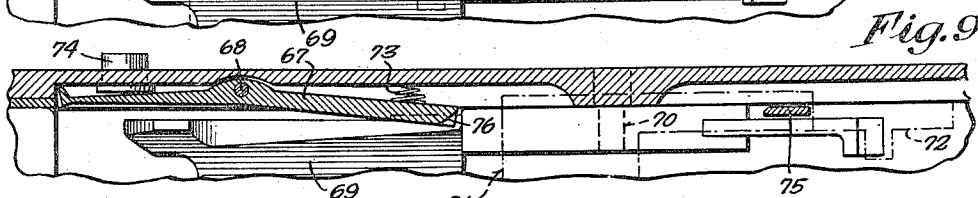
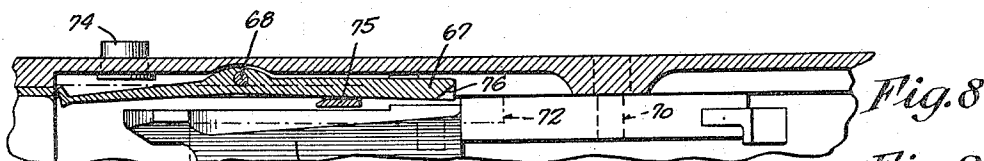
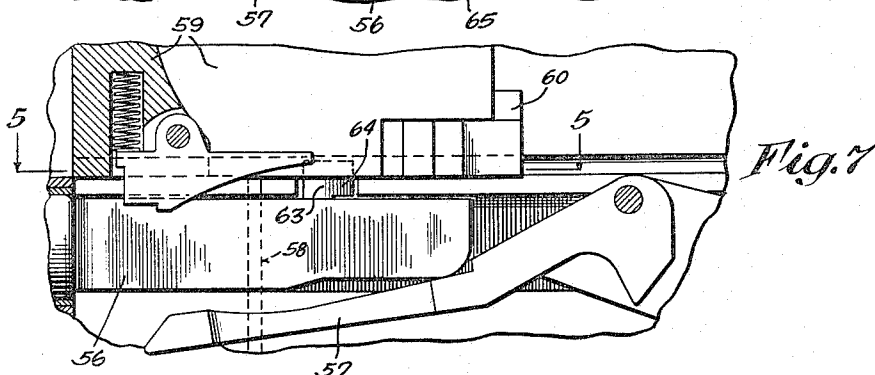
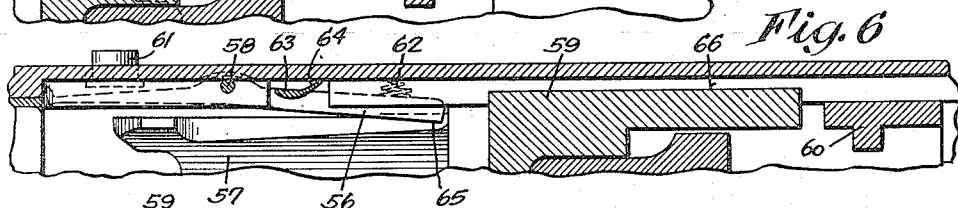
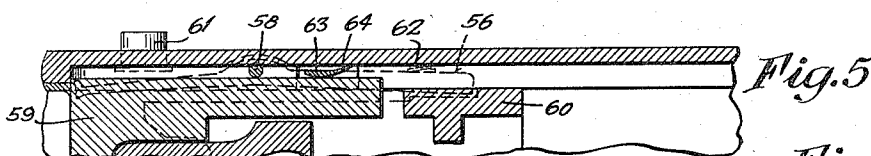
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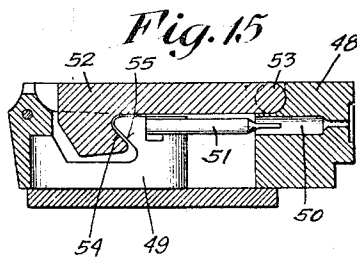
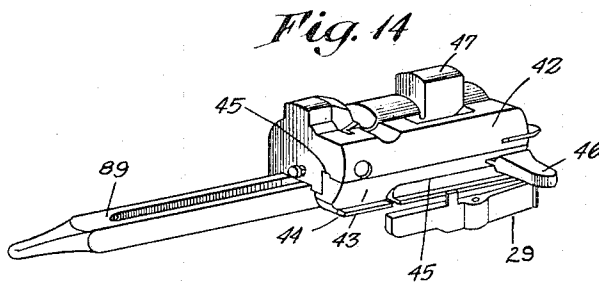
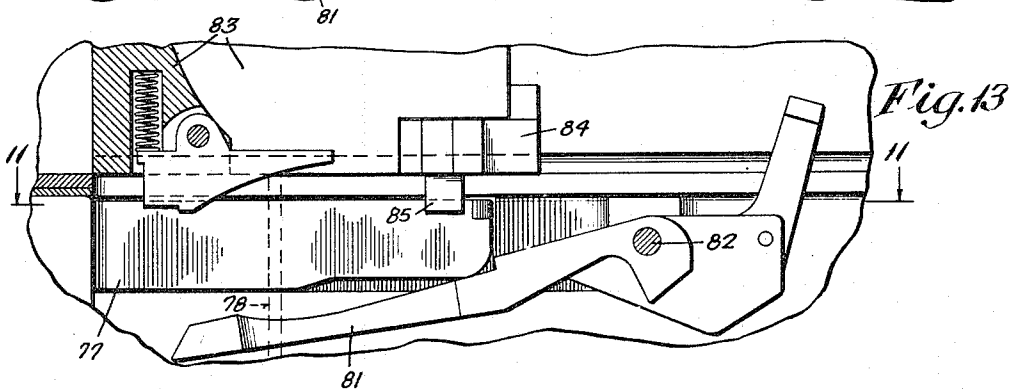
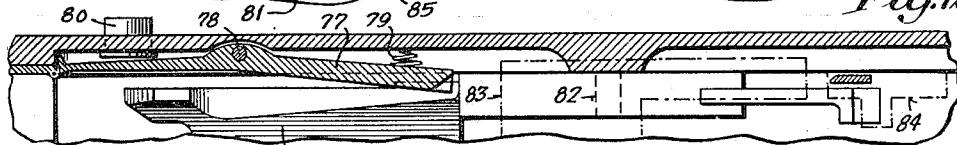
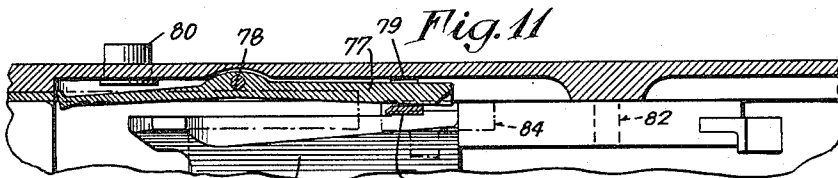
3 Sheets-Sheet 2



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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,278,589

FIREARM

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10 Claims. (Cl. 42—17)

This invention relates to firearms and particularly to the means for loading the magazine of a firearm. In firearms of the type, for example, of that shown in any of the patents to Browning, Nos. 659,507, 689,283 and 710,094, a magazine is provided below the barrel and a carrier is located within the receiver to transfer cartridges fed to the carrier from the magazine into such a position that the bolt may carry the cartridge into the chamber of the barrel. In this type of firearm an aperture is generally provided in the receiver, giving access to the magazine so that the magazine may be loaded. The carrier in this type of gun usually overlies the aperture opening. The carrier may be locked in its downward position by a suitable latch, and when this is the case, it is necessary to manually operate the latch so that the carrier may be raised for the insertion of cartridges into the magazine.

In the usual practice, when the bolt or other barrel closing means is opened and the chamber empty, it is possible to place a shell within the receiver and then to release the bolt which is held in its rearward position by some means located on the carrier, the carrier being held in such bolt-retaining position by the latch. The latch is manually released, thereby allowing the bolt to go forward and close the chamber and carry with it the cartridge. The carrier, during this operation, is raised upwardly and then returned to its original position so that it is engaged again by the latch.

It can be seen that in order to load the magazine it is necessary now to release the latch manually so that the carrier may be raised upwardly and cartridges inserted into the magazine. This necessitates a second manual operation of the latch and usually requires one hand to press the shell against the carrier and into the magazine at the time the latch is released by the other hand. The disadvantage of such an operation can be readily seen and the desirability of providing means whereby the carrier may be released automatically so that the magazine can be loaded with one hand and with ease.

It is to be distinctly understood that the invention is not limited to the particular embodiments shown nor to the particular firearms referred to, which are merely illustrative of embodiments thereof. The other objects of the invention will appear in the following description.

In the drawings:

Fig. 1 is a fragmentary sectional elevation of

a firearm generally similar to that shown in any of the above-referred to patents, showing one embodiment of the invention, the barrel closing means being in open position.

Fig. 2 is a fragmentary sectional plan view taken on line 2—2 of the firearm shown in Fig. 1.

Fig. 3 is similar to Fig. 1, with the exception that the barrel closing means is shown in closed position.

Fig. 4 is similar to Fig. 2 and is a sectional plan view taken on line 4—4 of the firearm shown in the position of Fig. 3.

Fig. 5 is a fragmentary sectional plan view taken on line 5—5 of Fig. 7 of a modification of the devices shown in Figs. 1 to 4, the action being in closed position.

Fig. 6 is similar to Fig. 5, with the exception that the action is open.

Fig. 7 is a fragmentary sectional elevation of a portion of the firearm of the modification shown in Figs. 5 and 6.

Fig. 8, taken on line 8—8 of Fig. 10, is a modification of the device previously shown, wherein a lug is provided on the bolt, the action being shown in closed position.

Fig. 9 is similar to Fig. 8 with the exception that the action is shown in open position.

Fig. 10 is a fragmentary sectional elevation of a portion of the firearm of the modification of Figs. 8 and 9.

Fig. 11 is a fragmentary sectional plan view of another modification, taken on line 11—11 of Fig. 13, the action being shown in closed position.

Fig. 12 is similar to Fig. 11, with the exception that the action is in open position.

Fig. 13 is a fragmentary sectional elevation of a portion of the firearm of the modification shown in Figs. 11 and 12.

Fig. 14 is a perspective view of one type of bolt and slide together with a carrier latch in its relative position to the bolt when the bolt is closed.

Fig. 15 is a sectional elevation illustrative of another type of bolt and slide that may be used in a firearm embodying the present invention.

Referring now to Fig. 1, 20 is the receiver, 21 is the bolt, and 22 is the carrier which is pivoted at 23. Carrier 22 has a bolt latch 24 pivoted at 25 thereupon. 26 is the usual magazine tube, having a spring 27 and follower 28 therein, said magazine being suitably supported in the receiver 20. 29 is a combined carrier latch and cartridge stop that is pivoted at 30 within an aperture 31 in the side of the receiver 20. There

may be the usual trigger guard 32, trigger 33, stock 34 and the other conventional parts of a gun.

For the purpose of illustration, an automatic firearm of the type referred to in the Browning patents above-mentioned is used wherein the force of the explosion of a cartridge causes the barrel and barrel-closing means to reciprocate rearwardly, said barrel-closing means during this movement being locked to the barrel extension. A lug located on the barrel surrounds the magazine tube and compresses a recoil spring 36 when the barrel moves rearwardly. When the rearward limit of the travel of the bolt is reached, the bolt latch 24 enters a notch 37 in the slide or other part of the bolt and holds said slide to the rear. The recoil spring 36 tends to move the barrel extension and bolt forward and this initial movement relative to the slide unlocks the barrel from the barrel-closing means and allows the recoil spring to force the barrel into battery or its original position, the barrel-closing means and associated parts remaining in the open position. If there are cartridges in the magazine tube in readiness to be fed into the chamber, suitable stop means allow the cartridge to move rearwardly onto the carrier 22. The cartridge so fed bears against the carrier latch 29 rearwardly of the pivot 30 and causes the carrier latch to rotate about said pivot, thereby releasing the latch from its contact at point 38 with the carrier. This allows the carrier to rotate about its pivot 23 under the urgency of the action closing spring (not shown), located in a guide in the stock. This forces the bolt forward and through latch 24, elevates the carrier and the cartridge thereon into a position in front of the barrel-closing means 21 so that the cartridge will be carried into the barrel or chamber. If there is no cartridge within the magazine, the carrier latch remains effective and the carrier remains in its downward position, thereby holding the barrel-closing means and slide to the rear. A spring 36 serves to urge the carrier latch 29 into the carrier latched position. A hand button 37, projecting through the side of the receiver, may be used to release the carrier latch and thereby allow the bolt and slide to move into their closed position. Upon the completion of this movement, the carrier is again moved into its downward position and, if the manual button has been released, the carrier will be latched in its lower position, which blocks access to the magazine through the receiver aperture 38.

It is seen, therefore, that in order to load the magazine it is again necessary to press the manual button 37 so as to release the carrier in order to allow cartridges to be fed through the aperture 38 into the magazine 26. It is necessary to either maintain pressure upon the manually operated button 37 so as to keep the latch 29 ineffective or else press it a second time in order to load the cartridges into the magazine. It is practically impossible to hold this latch in ineffective position and with the same hand load cartridges into the magazine, so therefore a second hand must be used for this purpose, which is inconvenient.

In order to facilitate the loading of the magazine and make it possible to do so with one hand, one embodiment of the present invention provides an upstanding portion 39 upon the carrier latch 29 rearwardly of the pivot 30. If the gun has a guide way 40, a portion thereof at 41 is cut out to allow for the presence of 39 upon

the carrier latch 29. When the bolt now moves forward to its closed position, the upstanding portion 39 is so located that it will be pressed inwardly by the barrel-closing means, thereby rocking the carrier latch 29 about its pivot 30 and releasing the carrier. Then, if the barrel-closing means is in its closed position, it is not necessary to manually operate the button 37 so that the cartridges may be placed into the magazine with one hand if desirable. The barrel extension in this case should be so designed as not to operate upon the lug 39.

The carrier latch 29 retains its normal function of latching the carrier in its down position, thereby holding the barrel-closing means 21 in its rear position if the magazine is empty, because it is necessary to have a cartridge fed onto the carrier to cause the carrier latch 29 to rotate about its pivot 30.

In Figs. 3 and 4, the barrel-closing means 21 is shown in the closed position with the carrier latch 29 rotated about its pivot 30, releasing the carrier 22 so that cartridges may be placed into the magazine 26 through the receiver aperture 38.

It is evident that various arrangements of bolts and slides may be used with the present invention, and a sample thereof is shown in Fig. 14 wherein 42 may be termed the bolt and 43 the slide. Portion 44 of slide 43 may fit in a suitable groove in one side of the interior of the receiver and a similar groove may be located in the other side of the receiver and a similar lug or portion on the bolt to engage the same, whereby the bolt and slide are supported. The bolt 42 may slide, relative to 43, on the surfaces indicated at 45. 49 is an action strut attached to the slide 43. Relative movement between the slide 43 and the bolt 42 may serve to rotate or move the bolt lock 47 so as to suitably lock the bolt to the barrel extension, as described more fully in the Browning patents aforementioned. A handle 46 may be attached to or be made an integral part of the slide 43 for manual operation thereof.

Similarly, Fig. 15 shows another style of bolt and slide wherein 48 may be termed the bolt and 49 the slide. Bolt 48 has a passage 50 to receive the firing pin 51. Bolt lock 52 is pivoted at 53 in the bolt 48 and is operated by means of the cam surfaces at 54 and 55. As the slide 49 moves rearwardly with respect to bolt 48, the cam surface 54 will cause lock 52 to rotate downwardly about the pivot 53. This type of bolt per se is generally shown in the patent to Swebilius, No. 1,572,450.

Referring now to Figs. 5, 6 and 7, a modification is shown which is generally similar to the devices of Figs. 1 to 4. In these figures, 56 is the carrier latch, 57 the carrier, 58 the carrier latch pivot, 59 the bolt and 60 the operating slide. It is to be understood that any of the various types of bolts and slides may be used. 61 is the manual button for operating the carrier latch and 62 is the carrier latch spring. An upstanding lug 63, generally similar to lug 39, is provided, with the exception that lug 63 is elongated and may have the tail 64 thereof in the form of a resilient portion so that the latch will be positively cammed outwardly by the bolt and will not stop the bolt. The tail 64 contacts or may be in the proximity of the side wall of the receiver in all positions of the latch.

It is to be understood that the same effect may be obtained in Figs. 1 to 4 by arranging the parts so that lug 39 and the retaining means on which

It is carried will be cammed to carrier releasing or ineffective position.

In Fig. 6 the action is shown in the open position wherein the carrier latch 56 engages the carrier 57 at 65, thereby holding the carrier 57 and the bolt and slide in open position. With the bolt and slide in closed position, the portion 66 of the bolt contacts the lug or upstanding portion 63 on the carrier latch and moves the carrier latch to its ineffective position, as shown in Fig. 5.

Figs. 8 to 10 inclusive show another modification of the invention wherein a lug is provided upon the barrel-closing means and in the particular embodiment shown is on the bolt itself. In these figures, 67 is the carrier latch which is pivoted at 68; 69 is the carrier pivoted at 70 in the usual manner; 71 is the bolt; 72 the slide; 73 the carrier latch spring; and 74 a manual means for operating the carrier latch. Depending lug 75 is located upon the bolt 71. When the action is open, as in Fig. 9, the carrier latch 67 engages the carrier 69 and holds the carrier in its downward position. As the bolt or barrel-closing means moves to its closed position, the depending lug 75 contacts cam surface 76 and compresses spring 73, pivoting the carrier latch about its pivot 68 and releasing the carrier 69.

Still another modification is shown in Figs. 11 to 13, wherein the carrier latch 77 is pivoted at 78 and has a carrier latch spring 79 and a manual button 80. Carrier 81 is pivoted at 82. A bolt 83 has a slide 84 in accordance with Figs. 14 and 15. The operating means for the carrier latch 77 in this modification is located on the slide itself at 85.

In Fig. 12 the action is shown in its open position with the operating slide to the rear and carrier latch 77 in its effective position under urging of carrier latch spring 79. When the action is closed the lug 85 contacts carrier latch 77 and moves the latch to its ineffective position, thereby releasing carrier 81 and allowing the loading of cartridges into the magazine through the aperture in the receiver.

By the present invention an improved means of loading a firearm has been provided wherein it is possible to load the cartridges into the magazine without the operation of other devices on the gun requiring the use of two hands.

The invention is not to be considered as limited to the specific construction shown and described by way of illustration since it extends to all equivalent construction falling within the scope of the appended claims, which claims are to be broadly construed.

What is claimed is:

1. In an auto-loading firearm, having a barrel, a receiver and a magazine, said receiver having an aperture giving access to the magazine, a carrier for transferring cartridges from the magazine to the barrel, means for retaining said carrier in a position blocking said aperture, and reciprocating means to automatically release said retaining means so that the magazine may be loaded with one hand.

2. In a firearm having a barrel, a magazine, a receiver and a reciprocable barrel-closing means, said receiver having an aperture giving access to the magazine, a carrier for transferring cartridges from the magazine to the barrel, retaining means adapted to hold said carrier in a position blocking said aperture, said reciprocable barrel-closing means having a portion thereof cooperating with said retaining means so as to release said retaining means and thereby allow

said carrier to be moved from its aperture-blocking position so that the magazine can be loaded.

3. In a firearm having a barrel, a receiver, a magazine and a reciprocable barrel-closing means, said receiver having an aperture giving access to the magazine, a carrier for transferring cartridges from the magazine to the barrel, pivoted retaining means adapted to hold said carrier in a position blocking said aperture, said reciprocable barrel-closing means having a portion thereof adapted to contact the retaining means and cause the retaining means to turn on its pivot and release the carrier.

4. In a firearm having a barrel, a receiver, a magazine and a reciprocable barrel-closing means, said receiver having an aperture giving access to the magazine, a carrier for transferring cartridges from the magazine to the barrel, pivoted retaining means adapted to hold said carrier in a position blocking said aperture, said reciprocable barrel-closing means having a lug mounted thereon adapted to contact said retaining means and turn the same on its pivot, thereby releasing the carrier.

5. In a firearm having a barrel, a receiver, a magazine and a reciprocable barrel-closing means, said receiver having an aperture giving access to the magazine, a carrier for transferring cartridges from the magazine to the barrel, pivoted retaining means adapted to hold said carrier in a position blocking said aperture, said retaining means having an upstanding portion adapted to be contacted by the reciprocable barrel-closing means to cause the retaining means to turn on its pivot and release the carrier.

6. In a firearm having a barrel, a receiver, a bolt, a slide for said bolt, a magazine, said receiver having an aperture giving access to the magazine, and a carrier for transferring cartridges from the magazine to the barrel, pivoted retaining means adapted to hold said carrier in a position blocking said aperture, said slide having a portion thereof co-operating with said retaining means so as to cause the retaining means to turn on its pivot at one position of the bolt and slide, thereby releasing the carrier.

7. In a firearm having a barrel, a receiver, a bolt, a slide for said bolt, a magazine, said receiver having an aperture giving access to the magazine, and a carrier for transferring cartridges from the magazine to the barrel, pivoted retaining means adapted to hold said carrier in a position blocking said aperture, said slide having a lug thereon adapted to contact said retaining means to cause the retaining means to turn on its pivot and release the carrier.

8. In an autoloading firearm having a barrel, a receiver, a reciprocable bolt, a magazine and a pivoted carrier for transferring cartridges from the magazine: means to lock the carrier in a position blocking access to the magazine from the exterior of the receiver, said bolt having a portion thereof co-operating with said means so as to release said lock when the bolt is in closed position and allow the placing of cartridges into the magazine.

9. In an autoloading firearm having a barrel, a receiver, a reciprocable bolt, a magazine and a pivoted carrier for transferring cartridges from the magazine: pivoted means in the receiver to lock the carrier in cartridge receiving position, which also blocks access to the magazine from the exterior of the receiver; means on said pivoted locking means adapted to be operated upon

by said bolt when the bolt is in closed position, so as to move said locking means to allow the pivoted carrier to be freely moved.

10. In a firearm having a barrel, reciprocable barrel-closing means, a receiver and a magazine, said receiver having an aperture giving access to the magazine, a carrier for transferring cartridges from the magazine to the barrel; retain-

ing means adapted to hold said carrier in a position blocking said aperture; and means associated with said barrel-closing means to release said retaining means when the barrel-closing means is substantially in closed position whereby the magazine may be loaded.

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