May 10, 1927. 1,628,548

C. C. LOOMIS

FIREARM

Filed July 29, 1922 5 Sheets-Sheet 1

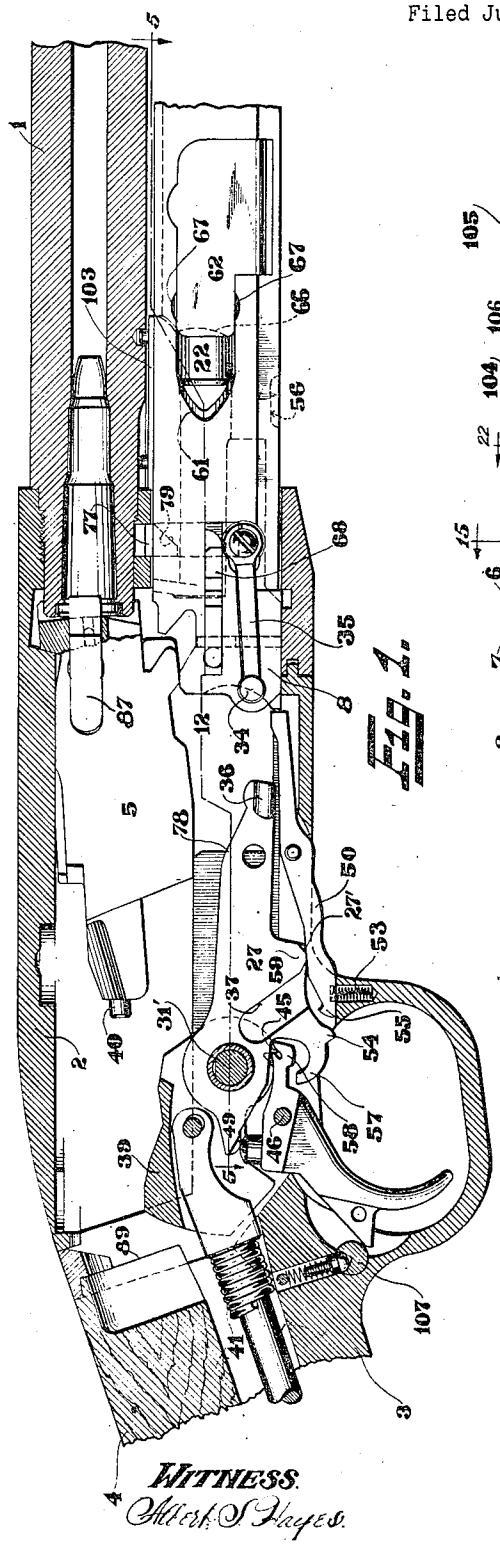


Fig. 1.

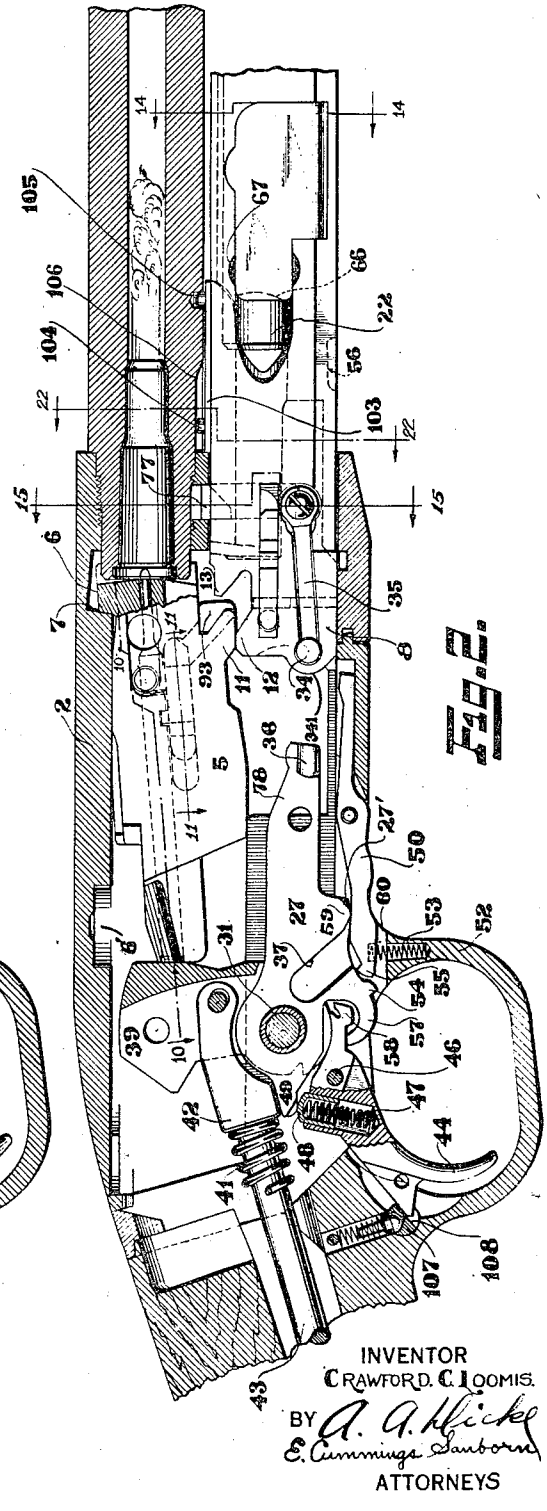


Fig. 2.

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FIREARM

Filed July 29, 1922 5 Sheets-Sheet 2

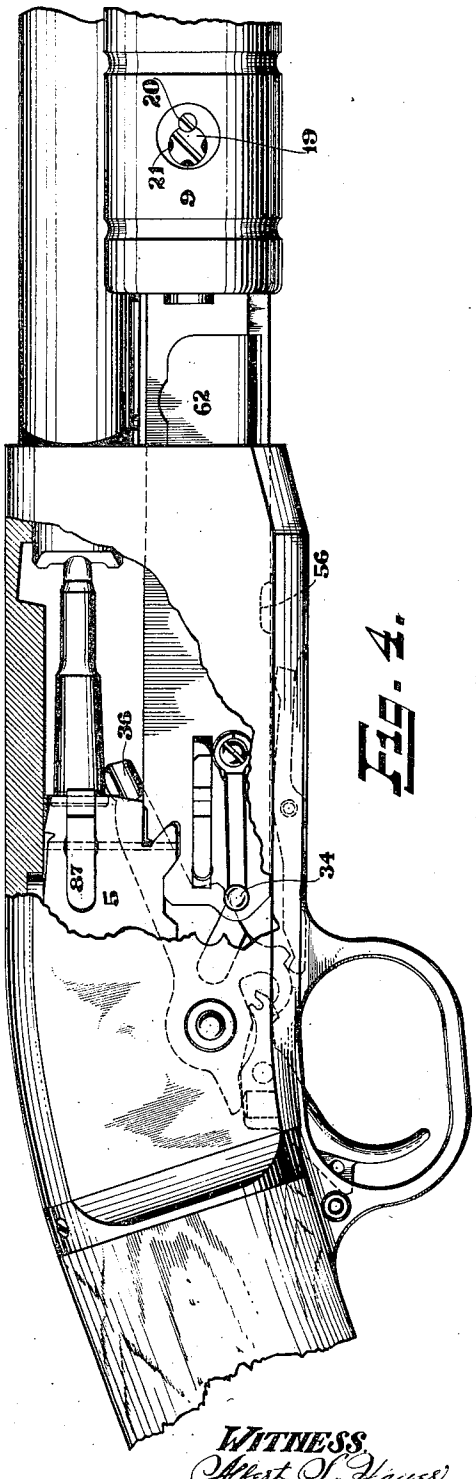


Fig. 4.

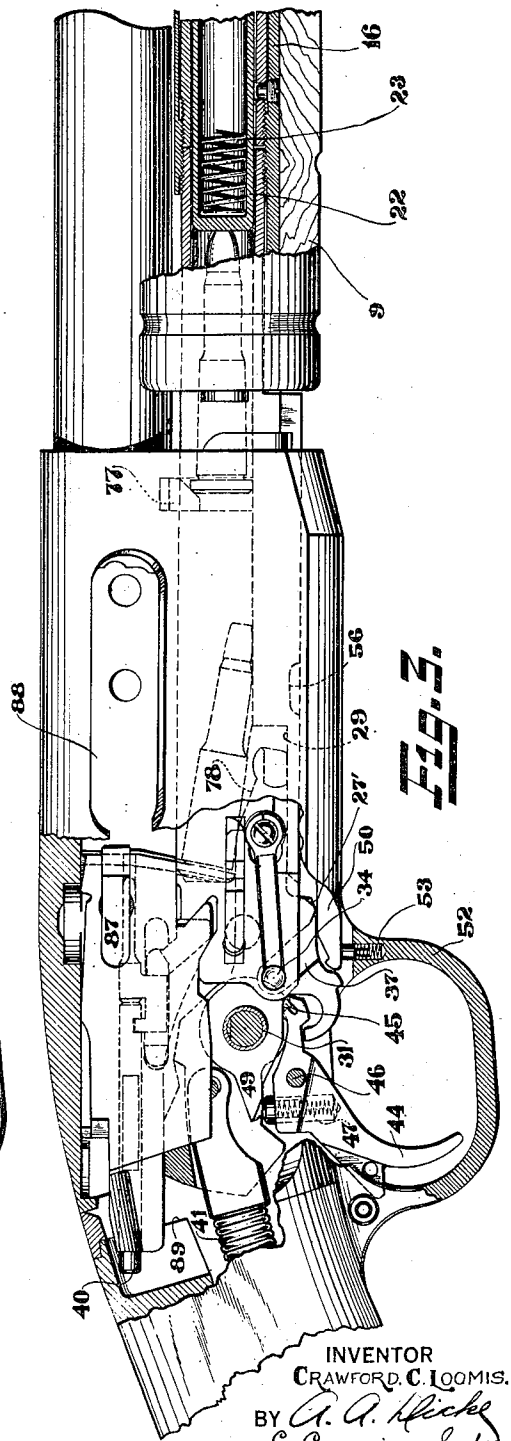


Fig. 2.

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FIREARM

Filed July 29, 1922 5 Sheets-Sheet 3

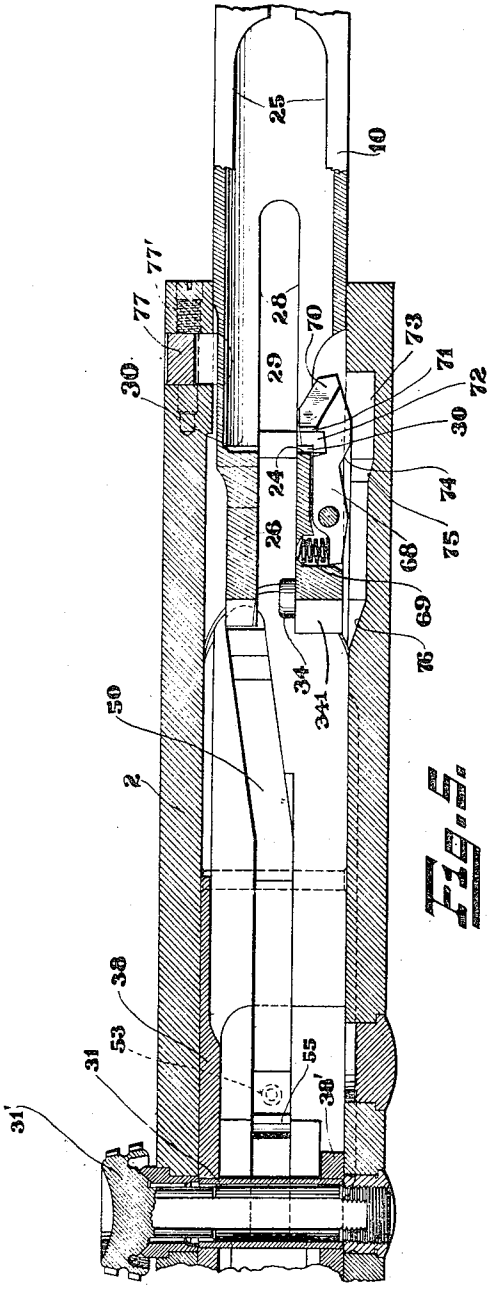


Fig. 5.

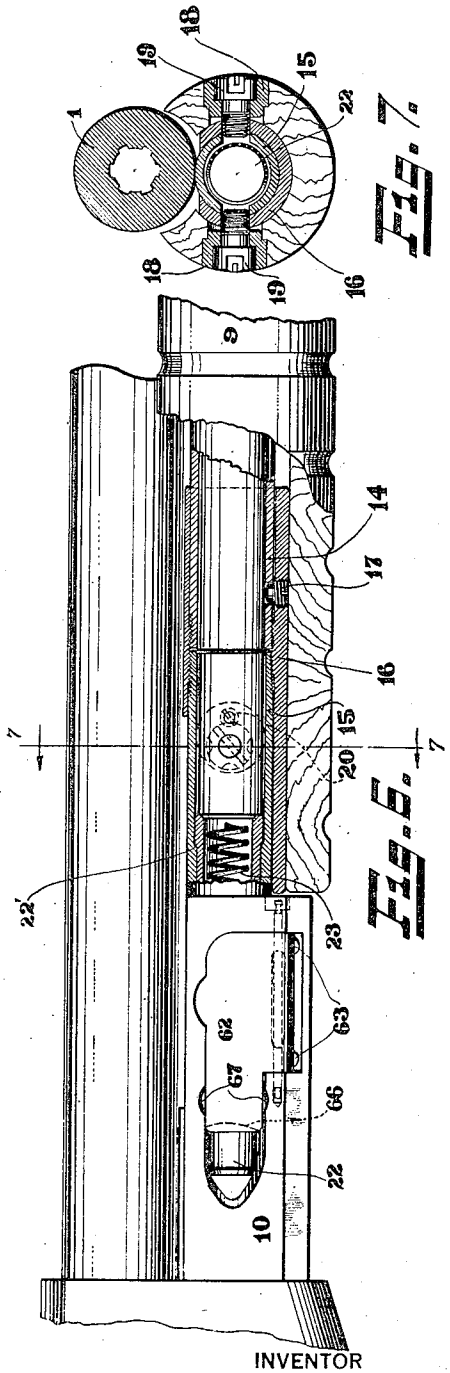


Fig. 7.

Fig. 6.

WITNESS.
Albert S. Hayes.

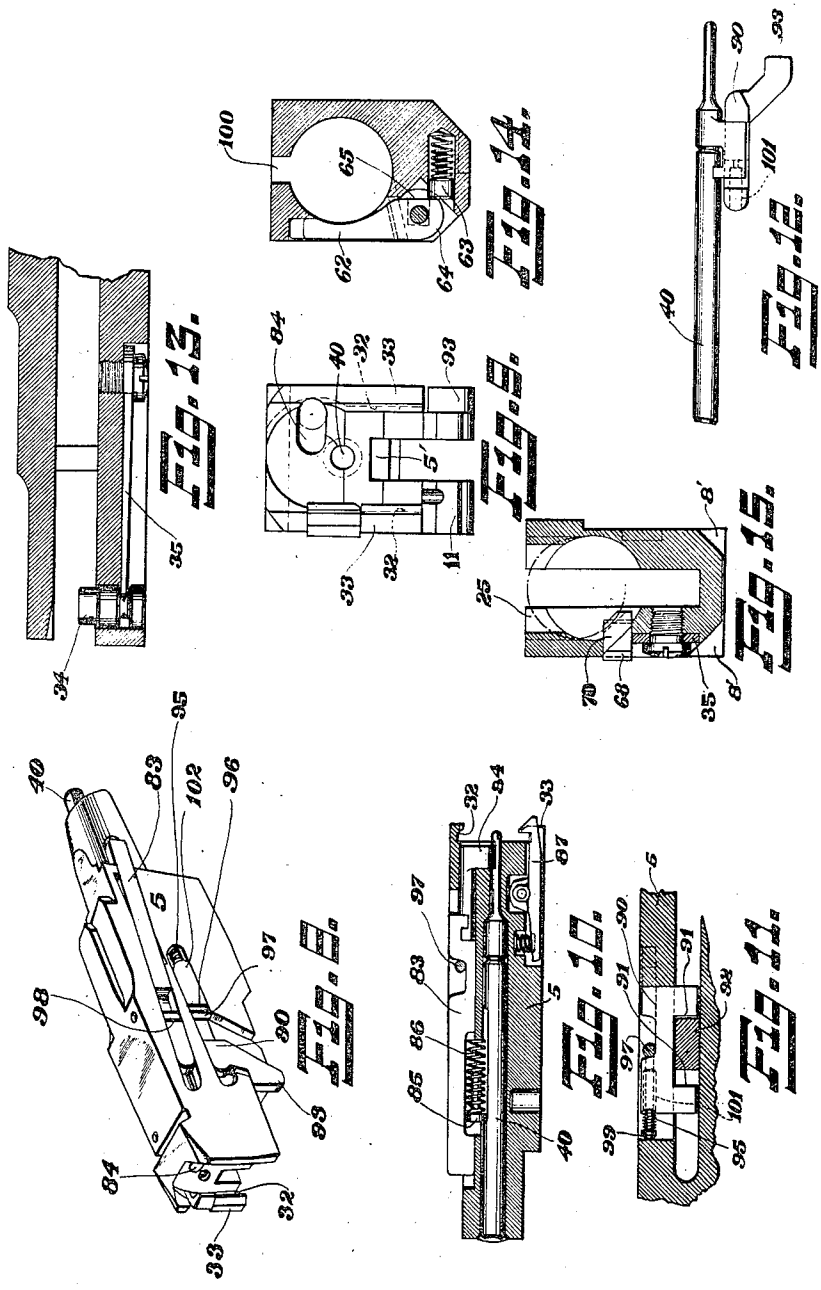
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C. C. LOOMIS

FIREARM

Filed July 29, 1922 5 Sheets-Sheet 4



WITNESS.
Albert S. Hayes.

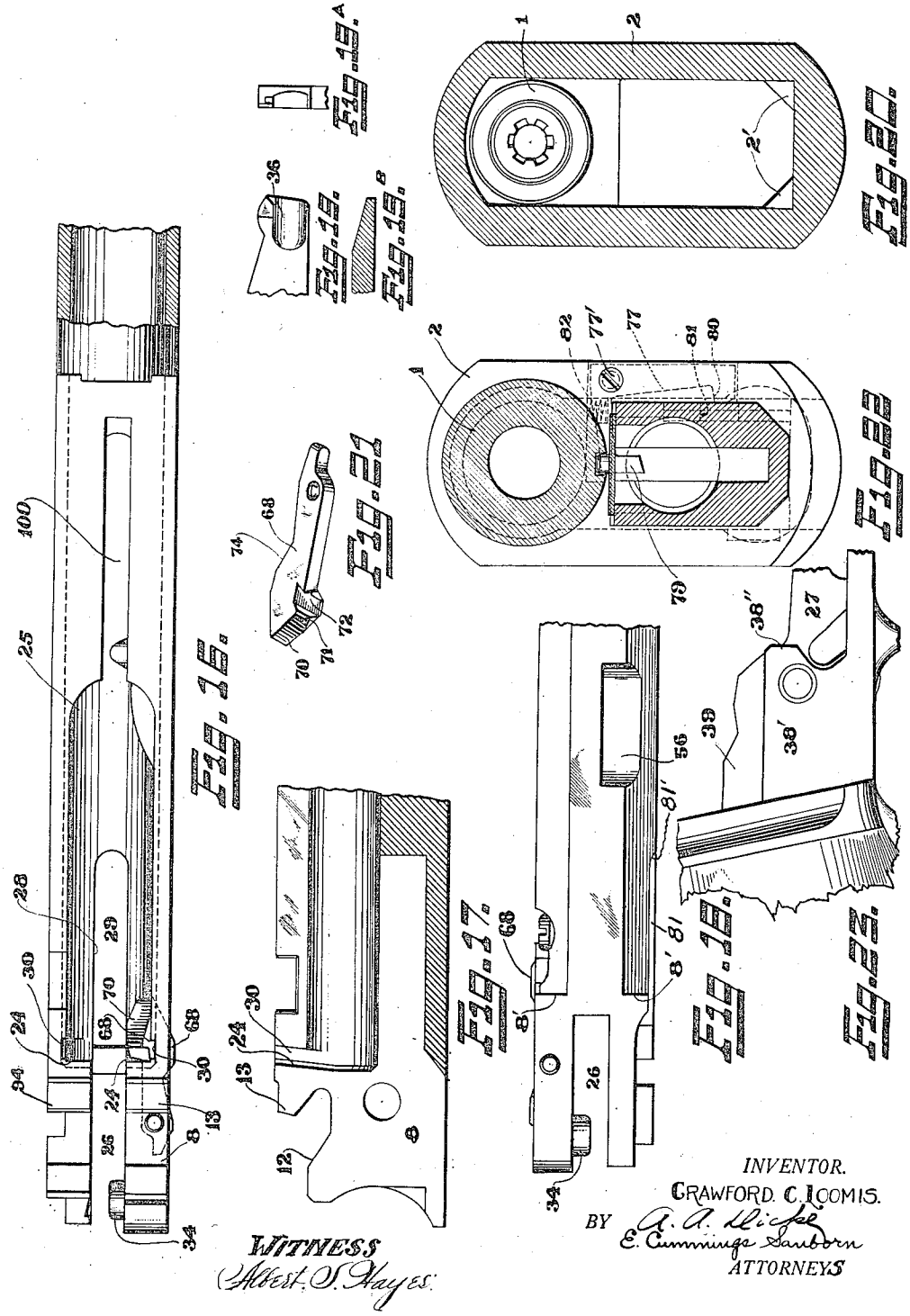
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FIREARM

Filed July 29. 1922 5 Sheets-Sheet 5



Patented May 10, 1927. 1,628,548

UNITED STATES PATENT OFFICE.

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

FIREARM.

Application filed July 29, 1922. Serial No. 578,436.

This invention relates generally to firearms, and especially to the type of firearm disclosed in the patent J. D. Pedersen, 908,833, Jan. 5, 1909. In said patent there is disclosed a carrier which is pivoted within the frame or receiver and which acts at its forward end to lock the action bar in its forward position while the hammer is cocked, and at its rear end to prevent operation of the trigger until the action bar is fully forward. One of the objects of my invention is to provide means whereby the receiver may be lengthened to accommodate longer cartridges, while at the same time providing for the locking of said action bar as well as the trigger. To avoid the necessity of changing the length of the carrier and to thereby avoid considerable changes in the parts cooperating with the carrier, I provide a member in the receiver, which member at its forward end acts as an action bar lock and at its rear end co-operates with the carrier to lock the trigger. Thus a carrier and coacting parts of standard size may be employed in the lengthened receiver, and the locking of the action bar and trigger may be accomplished at the proper time.

Another object of my invention is the provision of means, simple in construction and reliable in operation, for preventing forward movement of the rearmost cartridge when the magazine is being loaded with the muzzle inclined downwardly; and for positively camming the rim of the rearmost cartridge into guideways in the magazine action bar during rearward movement of the latter, thereby preventing forward movement of said cartridge by the carrier when the pressure of the follower spring is removed from said cartridge.

A further object is to provide a novel form of cartridge stop for regulating the feeding of the cartridges thru the magazine.

Still another object is the provision of simple and efficient means for retracting the firing pin from the cap of the exploded cartridge prior to the unlocking of the breech block.

Another object is to provide a novel combination of an ejector and firing pin wherein a single spring may be employed for maintaining both said firing pin and ejector in retracted position.

Another object is the provision of a spring-pressed door for covering the cartridge entrance opening in the magazine, which door shall remain open without the necessity of continual opposition by the operator to the action of the springs that act on said door.

A further object is to provide a novel and reliable connection between the magazine action bar and the forearm.

Other and further objects reside in certain details of construction and in certain combinations and arrangements of parts which will become apparent as the description of my invention is hereinafter developed.

Referring to the drawings wherein I have shown what I now consider to be the preferred form of my invention:

Fig. 1 is a longitudinal section through the frame or receiver and adjacent parts, showing the action bar forward, the breech block locked, and the hammer cocked.

Fig. 2 is a similar longitudinal section showing the hammer and associated parts in firing position.

Fig. 3 is a side elevation, partly in section, of the frame or receiver and adjacent parts, showing the action bar and breech block retracted.

Fig. 4 is a similar view showing the action bar and breech block during the initial portion of the return movement thereof and showing the carrier raised by such movement of the action bar, to feed a cartridge to the breech block.

Fig. 5 is a horizontal section through the frame or receiver and a portion of the action bar, said section being taken on line 5—5 of Fig. 1.

Fig. 6 is a side elevation, partly in section, of a portion of the gun in front of the receiver, showing means for connecting together the front and rear sections of the magazine action bar and for connecting said action bar with the forearm.

Fig. 7 is a vertical section taken on line 7—7 of Fig. 6.

Fig. 8 is a perspective view of the breech block.

Fig. 9 is a front view of the breech block.

Fig. 10 is a substantially horizontal section through the breech block taken on line 10—10 of Fig. 2.

Fig. 11 is a horizontal sectional detail

view partly in elevation, taken on line 11—11 of Fig. 2 and illustrating the coaction between the retractor and firing pin.

Fig. 12 is a detail view showing the firing pin and retractor in elevation.

Fig. 13 is a horizontal sectional view of the rear portion of the magazine action bar, showing the dog for coacting with the carrier.

Fig. 14 is a vertical sectional view through the magazine action bar, taken on line 14—14 of Fig. 2, and showing the loading door.

Fig. 15 is a vertical sectional view through the magazine action bar, taken on line 15—15 of Fig. 2, and showing the cartridge dog in front elevation.

Fig. 16 is a top view of the rear part of the action bar.

Fig. 17 is a vertical longitudinal section thru the rear part of the action bar.

Fig. 18 is a bottom plan view of the rear portion of the action bar.

Fig. 19 is a detail view of the front portion of the carrier.

Fig. 19^{A} is an end view of the front portion of the carrier.

Fig. 19^{B} is a longitudinal vertical section thru the forward end portion of the carrier.

Fig. 20 is a vertical sectional view thru the front portion of the receiver with the action bar removed, and showing the stop shoulder in the receiver for limiting the forward movement of said action bar.

Fig. 21 is a perspective of the cartridge dog.

Fig. 22 is a transverse vertical section on line 22—22 of Fig. 2 showing the cartridge stop.

Fig. 23 is a fragmentary side elevation of the stock portion of the receiver.

As in the Pedersen Patent, 908,883, previously referred to, the barrel 1 is secured to the barrel portion 2 of the frame or receiver, while the butt stock 4 is secured to the stock portion 3 of said receiver. The parts 2 and 3 of the frame or receiver enclose a chamber in which are located most of the working parts of the gun, including the breech block 5. The latter is reciprocable in the receiver and at its upper forward end is provided with an upwardly extending shoulder 6 for engaging the recoil shoulder 7 in the forward top portion of the receiver.

For moving the breech block backwardly and forwardly in the receiver as well as for engaging and disengaging the breech block lug 6 with the recoil shoulder 7, the action bar 8 is employed, said action bar having secured thereto a forearm 9. As in the aforesaid Pedersen patent, this action bar also forms a magazine and may be designated by the term "magazine action bar." The rear portion 10 of said magazine action bar extends thru an opening in the receiver below the barrel. The breech block is provided near its forward end with a downwardly extending inclined projection 11, which projection, when the breech block is in its closed and "breeched-up" position, (Fig. 2) rests on a shoulder 12 on the rear end of the part 10 of the action bar, so that the shoulder 6 of the breech block is locked in engagement with recoil shoulder 7. When it is desired to depress the forward end of the breech block and thereby remove projection 6 from engagement with shoulder 7 the action bar is drawn rearwardly, whereby an inclined face 13 thereof strikes the forward inclined face of projection 11 and draws the breech block downwardly until projection 11 is brought into a recess formed between face 13 and shoulder 12. The breech block is now withdrawn from engagement with recoil shoulder 7 and is locked to the rear end of the magazine action bar, so that by moving said action bar further rearwardly the breech block may be moved into the rear portion of the receiver, as shown in Fig. 3. When the action bar is moved forwardly the breech block is carried along and is held against rising by the top of the receiver until the projection 6 arrives in front of shoulder 7, whereupon further forward movement of the action bar into its fully forward or home position raises the breech block due to the rear inclined face of projection 11 in cooperation with the inclined rear surface of the aforesaid recess in the action bar, whereby the forward end of the breech block is raised so that projection 6 engages recoil shoulder 7 and the breech block is locked against rearward movement. The bottom of the action bar is provided with shoulders 8′ adapted to strike against corresponding stop shoulders 2′ in the lower front portion of the receiver to limit the forward movement of the action bar. (See Figs. 18 and 20.)

Both the rear section 10 and the forward section 14 of the magazine action bar are hollow to accommodate cartridges. (See Fig. 6.) The section 14 is shown as tubular, as is also a portion 15 extending forwardly from the rear part of section 10. The forward part of portion 15 aforesaid is screw threaded exteriorly, as is also the rear portion of section 14. A connecting sleeve 16 is provided intermediate its length with interior screw threads, whereby both sections of the magazine action bar may be threaded into said sleeve and thereby connected together. A small screw 17 is threaded through sleeve 16 and projects into a hole in the action bar section 14, so that the latter cannot be unscrewed until said screw is removed. Said screw is covered by the forearm 9, which is provided on opposite sides with two escutcheons 18, 18 (Fig. 7), through which screws 19, 19 extend into opposite sides of sleeve 16. Said screws are threaded

into said sleeve and project into holes in portion 15 of the rear section 10 of the action bar to prevent turning of the sleeve 16 with respect to said rear section until said screws 19, 19 are removed. Associated with each screw 19 is a small locking screw 20 mounted in the corresponding escutcheon and adapted to engage in one of a series of arcuate notches 21 in the head of the corresponding screw 19 (Fig. 4). Said screws 19 may thus be locked in adjusted portion.

A follower 22 in the form of a hollow plunger is mounted in the magazine, said follower being pressed rearwardly by a spring 23. As shown in Fig. 6 said follower is provided with a circumferential shoulder 22′ adapted to strike against a corresponding shoulder in the tubular section 15 whereby the rearward movement of the follower is limited. The magazine portion of the action bar terminates rearwardly in shoulders 24, 24. Forwardly of said shoulders there is provided in the top of the action bar an enlarged slot 25 of sufficient size for permitting the body of a cartridge to pass vertically out of the magazine. Below said slot 25 the side walls of the magazine are curved, thereby forming a tubular magazine portion which extends forwardly and forms a rearward continuation of the tubular interior of magazine portions 14 and 15. That part of the action bar that extends rearwardly of shoulders 24 is slotted vertically, as shown at 26 to accommodate the vertically swinging cartridge carrier 27. Forwardly of the shoulders 24 a groove 28 is cut in the floor of the magazine portion of the action bar to accommodate the forward end of the carrier aforesaid, the bottom of said groove forming a shelf or ledge 29. (Figs. 3 and 16.) At the rear end of the enlarged slot 25 are lateral recesses 30, 30, which extend downwardly into the tubular magazine and form a passage for the rim of the cartridge head.

The carrier 27 is pivotally mounted on a sleeve 31 which is mounted in vertical side flanges 38, 38′ of the receiver portion 3. A screw 31′ is passed thru the sleeve 31 for securing together the parts 2 and 3 of the receiver, as disclosed in the Pedersen patent previously referred to. As in said patent the forward portion of said carrier is rocked upwardly during the initial part of the forward movement of the action bar to feed a cartridge out of the magazine and into lateral undercut guideways 32 inside extensions 33 on the face of the breech block 5. (Figs. 8 and 9.) This swinging of the carrier is caused by a dog 34 carried by the action bar, in cooperation with a cam groove 37 in the side of the carrier. Said dog 34 is mounted on one end of a leaf spring 35 which at its other end is secured to the action bar by a screw having a fine thread, the head of said screw being undercut as much as possible to allow greatest possible bearing surface and thus relieve strain, and the end of the spring is slotted to also relieve strain. As shown in Fig. 13, said spring is positioned in a groove in one of the side walls of the action bar and holds said dog projected thru an opening in said wall of the action bar, so that said dog extends into the path of the carrier. When the action bar is drawn rearwardly from its forward position, said dog enters a cam groove 36 in the forward end of the carrier. The floor of said groove is inclined upwardly from the front to the rear thereof so that as the rearward movement of the action bar is continued the dog 34 is cammed laterally onto the adjacent side of the carrier. In Fig. 19 I have shown the walls of said groove curved for cooperation with dog 34, whereby the latter, when in engagement with said groove, steadies the carrier. After the dog 34 is cammed laterally onto the side of the carrier said dog rides along the side of the carrier during the continued rearward movement of the action bar and finally, at or near the end of said rearward movement, said dog snaps into the cam slot 37 aforesaid, so that when the action bar is moved forwardly the forward portion of the carrier is raised as mentioned above. The front face 38″ (Fig. 23) of the side flange 38′ of the receiver portion 3 may serve as a stop to limit the rearward movement of the action bar, said face being shown in Fig. 23 as having a contour suitable for receiving the rear end of the adjacent side portion of the action bar and preventing further rearward movement of the latter.

When the gun is "taken down," that is when the stock assembly is removed from the receiver and barrel assembly, the rearward movement of the action bar is stopped by the engagement of the end 341 of the magazine action bar 8 which surrounds the dog 34, with the take down screw 31′. It will be noted (Figs. 5 and 13) that the part 341 surrounding the dog 34 projects somewhat beyond the opposite side of the forked end of the magazine action bar. The engagement of the projecting end 341 with the take down screw stops the movement of the action bar before the locking lug 6 has reached the recess or well 6′ (Fig. 2) in the top of the receiver, thus preventing the accidental disengagement of the breech block from the action bar which might occur if the lug 6 reached and entered the well 6′. In prior guns of this type it has been necessary to provide special action bar stopping devices for preventing such an accidental separation of the action bar and breech block, which devices are eliminated by the present invention.

The hammer 39 and the means for driving the same against the firing pin 40 are the same as disclosed in the Pedersen patent

previously referred to. The driving means aforesaid takes the form of a coiled spring 41 which acts upon the head 42 of a rod or plunger 43 connected to the hammer 39. The hammer is cocked by rearward movement of the action bar and breech block and is held in cocked position by the engagement of the notched forward end of trigger 44 with a catch shoulder 45 on said hammer. Said trigger is pivoted at 46 in the stock portion 3 of the receiver and is urged by a spring 47 to position for holding the hammer cocked. Said spring 47 is shown mounted within a recess in the trigger 44 and, thru a plunger 48, acts on a tail portion 49 of carrier 27.

Pivotally mounted in the bottom of portion 3 of the receiver is a lever 50, which, at its forward end, acts to lock the action bar against retraction when the hammer is cocked, and which, at its rear end, coacts with the carrier to lock the trigger and hammer during movement of the action bar from its rearmost to its forward position. A spring 53 or spring and plunger, as shown in Fig. 3, interposed between the rear end of lever 50 and the trigger guard 52, tends to raise said rear end and hence to lower the forward end of said lever 50. Assuming the hammer 39 to be cocked and the magazine action bar to be fully forward, the rear end of lever 50 is rocked downwardly by spring 47 acting thru the carrier, whereby the forward end of said lever is raised into the path of the action bar. The latter is thereby locked against rearward movement. The spring 53 is weaker than the spring 47, so that the latter can overcome the action of spring 53 and lower the rear end of lever 50 as described. If now, the trigger is pulled, the hammer 39 is driven forwardly by spring 41 and explodes the cartridge in the barrel. During this movement of hammer 39, head 42 of rod or plunger 43 strikes the tail 49 of carrier 27 and raises the forward end of said carrier, as shown in Figs. 2 and 3, so that spring 53 can now rock lever 50 out of the path of the action bar. The latter is thereby unlocked. If the action bar now be moved rearwardly, the breech block is retracted and the hammer cocked, as aforesaid, during which time the head 42 of plunger 43 moves out of contact with tail 49 of the carrier. The latter is prevented from dropping by the locking lever 50 in cooperation with the bottom of the action bar and also by the shelf or ledge 29 previously described, which shelf comes beneath the forward portion of the carrier during rearward movement of the action bar. The dog 34 is meanwhile cammed laterally by the floor of groove 36, as previously described, and at or near the end of the rearward movement of the action bar said dog snaps into cam slot 37, so that when the action bar is moved forwardly the carrier is raised. Raising of the carrier causes a toe 54 on the bottom thereof to cam against a toe 55 on the rear end of lever 50, whereby the rear end of said lever is lowered and the toe 54 of the carrier is permitted to pass to the front of the toe 55 of said lever. Lowering of the rear end of said lever and consequent raising of the front end thereof by the aforesaid toe 54 is permitted by a clearance notch 56 in the action bar, which clearance notch is at that time over the front end of lever 50. When the carrier is raised, as aforesaid, so that toe 54 thereon is in front of toe 55 on the locking lever, a rearwardly extending hook 57 on the carrier is beneath a projection 58 on the trigger so that the latter and consequently the hammer, are locked against operation. Said hook 57 of the carrier remains beneath the projection 58 of the trigger to lock the latter against operation until the forward movement of the action bar is completed, whereby the hammer 39 is locked in cocked position until the breech block 5 is fully forward and engaged with recoil shoulder 7. After the dog 34 moves out from under the shoulder 59 of the carrier during forward movement of the action bar the carrier drops slightly until the toe 54 thereon strikes the front side of toe 55 on the locking lever, the upper end of said carrier thereby clearing the body portion 5′ (Fig. 9) of the breech block, but the hook 57 aforesaid is still in position for preventing operation of the trigger. Further dropping of said carrier during the forward movement of the action bar is prevented by lever 50, since the toe 55 on the rear end of said lever is behind the toe 54 on the carrier and the bottom of the action bar prevents the forward end of lever 50 from moving upwardly. When, however, the action bar clears the forward end of the locking lever, at which time the breech block is fully home and the action bar is fully forward, the spring 47 raises the tail 49 of the carrier, and, thru the co-operating toes 54 and 55 on the carrier and lever, respectively, cams the rear end of said lever downwardly so that the toe 54 on the carrier passes over the toe 55 on the lever and the carrier returns to normal position wherein the top of the hook 57 thereof is opposite a depression in the trigger. The latter can be now operated to release the hammer. At the same time, the forward end of lever 50 is in the path of the action bar, being so held by spring 47 thru shoulder 59 of the carrier, whereby rearward movement of the action bar is prevented until the cartridge in the barrel is fired or until the rear end of lever 50 is raised manually. The bottom of the frame or receiver is provided with a slot 60 forwardly of the trigger guard 52, thru which slot a por-

tion of the lever 50 is adapted to project, as shown in Fig. 2. Access to the rear portion of said lever is thus permitted so that the latter can be moved manually to unlock the action bar.

To permit the insertion of cartridges into the magazine I provide an elongated opening 61 in the rear section 10 of the magazine action bar, said opening having a beveled rear edge. The major portion of said opening is closed by a door 62, which is pivoted to the side of the magazine and is urged by spring plungers 63 to closed position. Sufficient friction is provided so that the door will remain open against the action of the springs so that the necessity of continually overcoming the action of the spring or "fighting the door" is obviated. This friction may be provided by a curved portion 64 of the door in cooperation with the spring plungers 63, as shown in Fig. 14. When the door is in closed position, the spring plungers 63 bear against a flat surface 65 on the door, but as the door is moved away from closed position the curved portion 64 is brought into contact with the plungers 63, whereby the door is held open until closed by the operator. In loading, the operator holds the cartridge against the inclined rear end of the opening 61 with the forward end of the bullet in contact with the rear end of the follower 22, or of a cartridge in the magazine as the case may be, and pushes forwardly. The follower 22 and any cartridges in the magazine forward of the cartridge being inserted are thereby pushed forwardly and the body of the cartridge which is being inserted strikes the rear beveled edge 66 of the loading door 62, thereby deflecting said door. The forward movement of the cartridge being inserted is continued until the rim thereof coincides with clearance grooves 67—67 in the loading port 61, whereupon the cartridge can be pressed inwardly into the magazine. Assuming the magazine to be empty prior to loading a cartridge, the spring-pressed follower 22 forces said cartridge into the rear position of the magazine so that the head of said cartridge abuts the rear magazine shoulders 24. The next cartridge is then pushed forwardly against the action of the follower 22 and, when entered into the magazine, assumes a position immediately in front of the first cartridge. The third cartridge loaded assumes a position ahead of the first cartridge but behind the second cartridge, and so on. Thus, the first cartridge is at the rear of the magazine, the second cartridge at the front thereof, and the succeeding cartridges occupy successive positions between said second and first cartridges. When the loading door 62 is open it acts as a stop to prevent retraction of the action bar thru more than a limited distance. Retraction of the action bar with door 62 open brings said door into contact with the end of the receiver before the action bar is moved more than a short distance.

For preventing forward movement of the rearmost cartridge in the magazine, which movement might otherwise occur if, for example, the gun is being loaded with the muzzle tilted downwardly, and for raising the rim of said cartridge into the recesses or guideways 30—30 during the rearward movement of the action bar, I provide a dog 68, which dog is pivotally carried by the action bar near the rear end thereof. The forward portion of said dog projects thru an opening in the side of the action bar and extends into the rear part of the magazine portion thereof. A spring 69 interposed between the action bar and the rear end of dog 68 urges the forward portion of said dog into the magazine. The forward portion of the dog 68, which may be termed the "cartridge dog," is provided with a face 70 inclined laterally from top to bottom and from the front of the dog toward the rear thereof as shown in Fig. 21. To the rear of said face 70 is a shoulder 71, behind which shoulder is another face 72 which inclines laterally from the top to the bottom thereof. Assuming the magazine to be empty and a cartridge to be inserted therein, the spring-pressed follower 22 in the magazine moves said cartridge rearwardly so that the rim of said cartridge strikes the inclined face 70 of the cartridge dog 68 and cams the front portion of said dog laterally into a recess 73 in the adjacent side wall of the receiver. As the head of the cartridge approaches the rear end of the magazine the rim of the cartridge passes behind the shoulder 71, whereupon the spring 69 rocks the forward portion of the dog 68 slightly inwardly with respect to the magazine so that the shoulder 71 is brought immediately in front of the rim of the cartridge. Forward movement of said cartridge is thus prevented. Should the muzzle of the gun be tilted downwardly when the next cartridge is being inserted into the magazine, the first mentioned cartridge, being held by the dog 68, cannot move forwardly to interfere with the loading of said next cartridge.

When a cartridge is forced by the spring follower 22 so that the rim of said cartridge lies behind the shoulder 71 on the cartridge dog, said rim rests on the inclined face 72 of said dog. Now when the action bar is moved rearwardly, an inclined shoulder 74 on the outer side of the forward portion of dog 68 strikes an inclined shoulder 75 in the recess 73 in the adjacent wall of the receiver, whereby the shoulder 71 is pressed inwardly into firm engagement with the

cartridge. During further rearward movement of the action bar the cartridge dog 68 rides for a limited distance upon a straight portion or dwell of the recess 73 and then the shoulder 74 of said dog comes into contact with a portion 76 of said receiver which is inclined from said straight portion of said recess to the inner wall of the receiver. The forward portion of the cartridge dog is thereby rocked further inwardly and the inclined face 72 thereof raises the rear end of the rearmost cartridge so that the rim of said cartridge enters the guideways or recesses 30—30 in the sides of the magazine. While the spring 69 might be utilized to rock the cartridge dog sufficiently for raising the rim of said rearmost cartridge into said guideways, I prefer to employ more positive means for this purpose and have therefore provided the inclined surface 76 for co-operating with the shoulder 74 of the cartridge dog, as above described. The raising of the rear end of the rearmost cartridge into engagement with the guideways aforesaid is accomplished before the pressure of the follower spring 23 on the rearmost cartridge is relieved by the striking of the next forward cartridge, or of the follower, against the cartridge stop 77, which will be described hereinafter. If the rearmost cartridge were not engaged with the aforesaid guideways prior to the relieving of the pressure of the follower spring on said cartridge, said cartridge would be likely to be moved forward when brought into contact with the inclined forward portion 78 of the carrier 27 during the rearward movement of the action bar. However, by engaging the rim of said cartridge with said guide-ways before the pressure of the follower spring on said cartridge is relieved, such forward movement of the cartridge is prevented and the cartridge, upon striking the inclined front portion 78 of the carrier during rearward movement of the action bar, will be cammed further upwardly into the guide ways aforesaid. Then, after the rearward movement of the action bar is completed the carrier 27 is raised during the initial portion of the subsequent forward motion of the action bar and raises the cartridge aforesaid out of the magazine and into engagement with the guideways 32—32 on the face of the breech block so that as the breech block is moved into its forward position the cartridge is inserted into the barrel.

To prevent the cartridges immediately ahead of the rearmost cartridge from partaking of the full rearward movement of the magazine action bar, whereby the forward end of the rearmost cartridge is spaced from the head of the immediately preceding cartridge during the final portion of the rearward and the initial portion of the forward movement of the action bar, I provide the cartridge stop 77. This stop, as shown in Fig. 22, is in the form of a bell crank lever pivoted at 77′ in the receiver. The horizontal arm of the cartridge stop 77 extends over a portion of the magazine and is provided with a nose or projection 79 extending downwardly into the magazine for cooperation with the cartridge therein. The vertical arm of the cartridge stop has a projection or toe 80 extending laterally therefrom and adapted to enter an exterior groove 81 in the adjacent side of the magazine action bar. A spring 82 may be interposed between the horizontal arm of the cartridge stop and the receiver to prevent any possible vibration of the stop although this spring may be omitted if desired. The forward face of the nose 79 aforesaid projecting from said horizontal arm is beveled so that when the magazine action bar is fully forward a cartridge contacting with said nose, will, under the influence of the spring-pressed follower 22, lift said horizontal arm and pass under said nose to the rear of the magazine. At this time the groove 81 is opposite the toe 80 on the vertical arm of the cartridge stop so that rocking of said stop to raise the horizontal arm thereof is permitted. Now, if the action bar be moved rearwardly, the beveled end portion 81′ of groove 81 cams the toe 80 and vertical arm of the cartridge stop outwardly whereby the horizontal arm of said stop is moved downwardly and nose 79 is moved into the path of the cartridge immediately preceding the rearmost cartridge. As the rearward movement of the action bar continues, the side of the action bar comes opposite the toe 80 so that when the cartridge immediately preceding the rearmost cartridge strikes nose 79 the cartridge stop cannot be rocked and further rearward movement of all cartridges forward of the rearmost cartridge is prevented. Continued rearward movement of the action bar then moves the rearmost cartridge away from the preceding cartridge. The rearmost cartridge is thus separated from the preceding cartridge during the final portion of the rearward and the initial portion of the forward movement of the action bar, thus obviating the danger of exploding said preceding cartridge by the forward end of the rearmost cartridge, and also facilitating moving of said rearmost cartridge out of the magazine by eliminating the possibility of friction between the forward end of said rearmost cartridge and the head of said preceding cartridge. A slot 100 in the top of the section 10 of the magazine action bar extends forwardly from the enlarged slot 25 for the purpose of receiving the nose 79 of cartridge stop 77 during the rearward movement of the action bar.

Breech block 5 has slidably mounted therein the firing pin 40 and an ejector 83. Firing pin 40 is mounted in a longitudinal bore in the breech block, while the ejector 83 is mounted in a groove in the side of the breech block. Said ejector has a foot or projection 84 extending laterally from the front end thereof and extending into a recess in the front of the breech block, the front of said recess being open so that said foot 84 may be projected beyond the face of the breech block. Said ejector foot 84, which may be made separate from the ejector 83 and operatively connected therewith, is positioned above and to the side of the firing pin. A single spring-pressed plunger 85 is provided for co-operating with both the ejector and the firing pin to maintain said ejector and firing pin in normal position. Said plunger 85 and the spring 86 that acts thereon are positioned between the firing pin and the ejector, the plunger coacting with shoulders cut into the ejector and the firing pin while the spring 86 bears at one end against the plunger aforesaid, and at its other end against a portion of the breech block. A spring-pressed pivoted extractor 87 of ordinary construction is carried by the forward portion of the breech block and the hooked forward end of said extractor projects beyond the forward face of the breech block for gripping one side of the rim of a cartridge. One of the side extensions 33 on the face of the breech block 5 is cut away to permit the extractor hook to form part of the corresponding guideway 32.

The upper portion of the opposite guideway which is adjacent the foot 84 of the extractor is beveled or inclined upwardly and is curved to conform somewhat with the rim of the cartridge, as disclosed in the patent to Pedersen, 963,171, July 5, 1910. It will thus be seen that the ejector foot 84, when moved forwardly, can readily push the adjacent portion of the carriage forwardly, so that the entire cartridge turns about the extractor hook as a pivot and is ejected thru an opening 88 in the side of the frame or receiver.

When the cartridge is ready to be fired, its rim is held on one side by the extractor hook and on the other side by the straight portion of the opposite guideway 32. When the trigger is pulled, the hammer falls and drives the firing pin 40 forward against the action of the spring 86 and the cartridge is thereby exploded. Upon retracting the action bar, the breech block 5 is moved rearwardly as aforesaid, and the ejector is brought against a shoulder 89 on the stock portion 3 of the receiver, whereby the ejector foot 84 is thrust forward and the cartridge is ejected through the aforementioned opening 88. The ejector foot 84, being in the upper portion of the breech block, imparts a downward, as well as a sideways motion to the cartridge. Both the ejector and firing pin are preferably made in two pieces to facilitate assembling in the breech block and to permit a more solid breech block to be used.

For withdrawing the firing pin from the primer cap as the action bar is moved rearwardly, to permit the breech block to be readily moved downwardly out of engagement with the recoil shoulder 7 in the top of the receiver, I provide a retractor 90 slidably mounted in the side of the breech block. Said retractor is provided with laterally extending shoulders 91, 91 between which shoulders is received a foot 92 projecting downwardly from the forward portion of the firing pin 40. An extension 93 of the retractor projects downwardly and forwardly and is adapted to be struck by a shoulder 94 on the action bar before the latter has moved rearwardly sufficiently to exert a downward force on the breech block, whereby the retractor is drawn rearwardly and in turn moves the firing pin rearwardly out of engagement with the primer of the cartridge prior to downward movement of the breech block. A spring 95, bearing at one end against a portion of the breech block and at its other end against the retractor, tends to move the latter forwardly, said forward movement of said retractor being limited by the striking of a shoulder 96 thereof against a pin 97 at the side of the breech block. The upper portion of said pin coacts with a shoulder 98 on the ejector to limit the rearward movement thereof. The retractor spring 95 is coiled around a rod 99 which abuts at one end against the breech block and which projects into a bore 101 extending thru a rear shoulder 102 of the retractor.

A cover 103 is preferably interposed between the bottom of the barrel and the rear part of the top of the magazine action bar to prevent the entrance of dirt and other foreign matter into the magazine thru slot 25. Said cover is preferably resilient and is shown provided with projections or studs 104, one of which is adapted to enter a recess 105 in the barrel and the other of which is adapted to enter a groove 106 in said barrel.

A slidable safety lock 107 is shown for preventing operation of the trigger, said lock having a notch 108 for permitting the trigger to be operated when the lock is moved to the proper position. This lock, being conventional and well known in the art, need not be described herein.

It may be desired at times to retract the action bar after the latter has been moved forwardly far enough for dog 34 to pass from under carrier shoulder 59 but before

said action bar has moved forwardly completely. To permit such retraction of the action bar I have shown the part 59 of the carrier provided with a cutaway portion terminating in an inclined shoulder 27′ for co-operation with dog 34. If the action bar has been partially moved forward so that dog 34 has moved from under shoulder 59, the shoulder 27′ permits the action bar to be retracted immediately without the necessity of completing the forward movement of the action bar, and the dog 34, in co-operation with shoulder 27′, simply raise the carrier slightly during such retraction of the action bar, until said dog passes rearwardly into cam groove 37. A cartridge may thus be ejected by moving the action bar rearwardly before the forward movement of the action bar has been completed.

While I have shown the various features of my invention applied to the type of firearm disclosed in the Pedersen Patent 908,883, above referred to, it will be understood that my invention is not limited to any particular type of firearm. Also it is apparent that the specific structure herein disclosed may be modified and varied in numerous ways without departing from the spirit of my invention.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a firearm, the combination of an action bar, a hammer, a member for locking said hammer pivoted concentric therewith, and an element for locking said action bar, and co-operating with said member for controlling the unlocking of said hammer.

2. In a firearm, the combination of an action bar, a pivoted hammer, a trigger pivoted concentric with said hammer, a member for locking said trigger, and an element for locking said action bar and co-operating with said member for controlling the unlocking of said trigger.

3. In a firearm, the combination with an action bar, a hammer, and a carrier for locking said hammer during forward movement of said action bar; of an element for locking said action bar against retraction and co-operating with said carrier for preventing movement thereof out of hammer-locking position until the action bar is in its forward position.

4. In a firearm, the combination with an action bar, a trigger, and a carrier for locking said trigger during forward movement of said action bar; of an element for locking said action bar against retraction and co-operating with said carrier for preventing movement thereof out of trigger-locking position until the action bar is in its forward position.

5. In a firearm, an action bar, an element for locking said action bar against retraction, and means comprising a carrier for moving said element into locking position.

6. In a firearm, an action bar, an element for locking said action bar against retraction, a carrier controlling said element, and a spring normally pressing said carrier into operative engagement with said element.

7. In a firearm, an action bar, an element for locking said action bar against retraction, a spring for moving said element out of position for locking said action bar, and a carrier for moving said element against the action of said spring into position for locking said action bar.

8. In a firearm, an action bar, an element for locking said action bar against retraction, a spring for moving said element out of position for locking said action bar, a carrier for moving said element against the action of said spring into position for locking said action bar, a hammer, and means for simultaneously driving said hammer into firing position and moving said carrier to permit said spring to move said element out of position for locking the action bar.

9. In a firearm, a magazine having guide ways, a member pivotally carried by said magazine having an inclined face adapted to engage the rim of a cartridge, and means for positively moving the inclined face of said member into the magazine, thereby engaging the rim of the cartridge in said guide ways.

10. In a firearm an action bar comprising a magazine, guide ways on said magazine adapted to engage the rim of a cartridge, a cartridge dog carried by the magazine adapted to lift a cartridge into said guide ways and means effective on retraction of said action bar to positively actuate said cartridge dog to move a cartridge into the guides.

11. In a firearm, an action bar, an element for locking said action bar against retraction, a spring for moving said element in one direction, a carrier, and a spring acting upon said carrier for causing the latter to move said element against the action of the first-mentioned spring.

12. In a firearm, an action bar, an element for locking said action bar against retraction, a spring for moving said element out of position for locking said action bar, a carrier, a spring acting upon said carrier for causing the latter to move said element into position for locking said action bar, a hammer, and means for simultaneously driving said hammer into firing position and moving said carrier to permit the first mentioned spring to move said element out of position for locking the action bar.

13. In a firearm, the combination with an action bar, a hammer, and a carrier for locking said hammer during forward movement of the action bar, of a lever for preventing

movement of said carrier out of hammer locking position until the action bar is in its forward position.

14. In a firearm, the combination with an action bar, a trigger, and a carrier for locking said trigger during forward movement of the action bar, of a lever for preventing movement of said carrier out of trigger locking position until the action bar is in its forward position.

15. In a firearm the combination with an action bar, a hammer, and a locking member for said hammer pivoted concentric therewith and effective to lock said hammer during the forward movement of the action bar, of a lever for preventing movement of said member out of hammer locking position until the action bar is fully forward.

16. In a firearm, the combination with an action bar, a trigger, and a member for locking said trigger during forward movement of the action bar, of a lever for preventing movement of said member out of trigger locking position until the action bar is fully forward.

17. In a firearm, the combination with an action bar, a hammer, and a carrier for locking said hammer during forward movement of the action bar, of a toe on said carrier, and an element having a toe for cooperation with said toe on said carrier for preventing movement of the latter out of hammer locking position until the action bar is in its forward position.

18. In a firearm, the combination with an action bar, a trigger, and a carrier for locking said trigger during forward movement of the action bar, of a toe on said carrier, and an element having a toe for co-operation with said toe on said carrier for preventing movement of the latter out of trigger locking position until the action bar is in its forward position.

19. In a firearm, the combination with an action bar, a hammer, and a carrier for locking said hammer during forward movement of the action bar; of a toe on said carrier, and an element for locking the action bar against retraction and having a toe for cooperating with the toe on said carrier for preventing movement of the latter out of hammer locking position until the action bar is in its forward position.

20. In a firearm, the combination with an action bar, a trigger, and a carrier for locking said trigger during forward movement of the action bar; of a toe on said carrier, and an element for locking the action bar against retraction and having a toe for cooperating with the toe on said carrier for preventing movement of the latter out of trigger locking position until the action bar is in its forward position.

21. In a firearm, an action bar, a hammer, a pivoted action bar locking element, and a separate pivoted hammer locking member adapted to engage and actuate said action bar locking element.

22. In a firearm, an action bar, a trigger, a pivoted action bar locking element, and a separate trigger locking member adapted to engage and actuate the action bar locking element.

23. In a firearm, an action bar, a hammer, a pivoted action bar locking element, a separate hammer locking member adapted to control said action bar locking element by engagement therewith.

24. In a firearm, an action bar, a trigger, an action bar locking element, a separate trigger locking member adapted to control said action bar by engagement therewith.

25. In a firearm, an action bar, a hammer, a hammer locking member, a separate action bar locking element, means for moving said element in a given direction, and means associated with said hammer locking member adapted to engage the action bar locking element and move it in the opposite direction.

26. In a firearm, an action bar, a trigger, a trigger locking member, a separate action bar locking element, means for moving said action bar locking element in a given direction, and means associated with said trigger locking member adapted to engage said action bar locking element and move it in the opposite direction.

27. In a firearm, an action bar, an element for locking said action bar, a hammer, and a member for locking said hammer, said member controlling said element at a certain time in the operation of the firearm and being controlled by said element at another time in the operation of the firearm.

28. In a firearm, an action bar, an element for locking said action bar, a trigger, and a member for locking said trigger, said member controlling said element at a certain time in the operation of the firearm and being controlled by said element at another time in the operation of the firearm.

29. In a firearm, an action bar, a hammer, a member for locking said hammer during the forward movement of said action bar, and means controlled by said member for locking the action bar against retraction, said means preventing movement of said member out of hammer locking position during forward movement of said action bar.

30. In a firearm, an action bar, a trigger, a member for locking said trigger during the forward movement of said action bar, and means controlled by said member for locking the action bar against retraction, said means preventing movement of said member out of trigger locking position during forward movement of said action bar.

31. In a firearm, a hammer, an action bar, a carrier for locking said hammer during forward movement of said action bar, a lever for locking said action bar against retraction, means for moving said lever out of position for locking said action bar, means for forcing the carrier against said lever to move the latter into position for locking said action bar, and means comprising co-operating projections on said carrier and lever for preventing movement of the carrier out of hammer-locking position until the action bar is in its forward position.

32. In a firearm, a trigger, an action bar, a carrier for locking said trigger during forward movement of said action bar, a lever for locking said action bar against retraction, means for forcing the carrier against said lever to move the latter into position for locking said action bar, and means comprising co-operating projections on said carrier and lever for preventing movement of the carrier out of trigger-locking position until the action bar is in its forward position.

33. In a firearm, a hammer, an action bar, a carrier having means for locking said hammer, a lever for locking the action bar against retraction, means for moving said carrier into hammer-locking position during forward movement of the action bar, means comprising co-operating projections on said carrier and lever, for preventing movement of the carrier out of hammer-locking position until the action bar is in its forward position, means acting upon the carrier for moving the latter to hammer-unlocking position when the action bar reaches its forward position and for simultaneously moving said lever into position for locking the action bar, and a clearance notch in the action bar for receiving the forward end of said lever thereby permitting the projection on the carrier to pass in front of the projection on the lever when said carrier is being moved into hammer-locking position.

34. In a firearm, a trigger, an action bar, a carrier having means for locking said trigger, a lever for locking the action bar against retraction, means for moving said carrier into trigger locking position during forward movement of the action bar, means comprising co-operating projections on said carrier and lever, for preventing movement of the carrier out of trigger-locking position until the action bar is in its forward position, means acting upon the carrier for moving the latter to trigger-unlocking position when the action bar reaches its forward position and for simultaneously moving said lever into position for locking the action bar, and a clearance notch in the action bar for receiving the forward end of said lever thereby permitting the projection on the carrier to pass in front of the projection on the lever when said carrier is being moved into trigger-locking position.

35. In a firearm, a hammer, an action bar, a carrier having means for locking said hammer, a lever for locking said action bar against retraction, means for moving said carrier into hammer-locking position during forward movement of the action bar, means comprising co-operating projections on said carrier and lever, respectively, for preventing movement of the carrier out of hammer-locking position until the action bar is in its forward position, and means acting on the carrier for moving the latter to hammer-unlocking position when the action bar reaches its forward position and for simultaneously moving said lever into position for locking the action bar.

36. In a firearm, a trigger, an action bar, a carrier having means for locking said trigger, a lever for locking said action bar against retraction, means for moving said carrier into trigger-locking position during forward movement of the action bar, means comprising co-operating projections on said carrier and lever, respectively, for preventing movement of the carrier out of trigger-locking position until the action bar is in its forward position, and means acting on the carrier for moving the latter to trigger-unlocking position when the action bar reaches its forward position and for simultaneously moving said lever into position for locking the action bar.

37. In a firearm, an action bar, a carrier, a dog carried by said action bar, and a groove in the forward end of said carrier having an inclined floor for camming said dog laterally during rearward movement of said action bar, said groove also having curved walls for co-operating with said dog for steadying the carrier.

38. In a firearm, an action bar, and a carrier-operating dog resiliently mounted on said action bar and projecting through an aperture therein.

39. In a firearm, a magazine, and means carried directly by said magazine for gripping the rearmost cartridge to prevent forward movement thereof.

40. In a fire arm, a magazine, and means comprising a pivoted member carried directly by said magazine for gripping the rearmost cartridge to prevent forward movement thereof.

41. In a firearm, an action bar having a magazine portion, guideways in the magazine for the rim of the rearmost cartridge, and means comprising a pivoted member carried by said action bar for moving the rim of the rearmost cartridge into the guideways.

42. In a firearm, a magazine having guideways for the rim of the rearmost cartridge, and means comprising a pivoted mem-

ber carried by said magazine for moving the rim of the rearmost cartridge into said guideways.

43. In a firearm, a magazine, a pivoted member carried directly by said magazine for preventing forward movement of the rearmost cartridge therein.

44. In a firearm, a magazine having guideways, and a member carried by said magazine for preventing forward movement of the rearmost cartridge and for moving the rim of said cartridge into said guideways.

45. In a firearm, a magazine having guideways, and a member pivotally carried by said magazine for preventing forward movement of the rearmost cartridge and for moving the rim of said cartridge into said guideways.

46. In a firearm, an action bar having a magazine portion, a member pivotally carried by said action bar, said member having an inclined forward face and a shoulder behind said face, and a spring interposed between said member and said action bar for urging said face and said shoulder into the magazine.

47. In a firearm, an action bar having a magazine portion, a member pivotally carried by said action bar and having a shoulder, and a spring interposed between said member and said action bar for urging said shoulder into the magazine.

48. In a firearm, an action bar having a magazine portion, and means carried directly by said action bar and projecting into the magazine for preventing forward movement of the rearmost cartridge therein.

49. A cartridge dog having a pivot between its ends and having an inclined front face, a shoulder behind said face, and an inclined face behind said shoulder adapted when said dog is turned in one direction about its pivot to lift the cartridge in engagement therewith.

50. In a firearm, an action bar having a magazine portion, guideways in said magazine, means for forcing a cartridge rearwardly in the magazine, a member carried by the action bar and having an inclined forward face and a shoulder behind said face, means for urging said member into the magazine so that said face lies in the path of said cartridge and for bringing said shoulder in front of the rim of said cartridge when the latter is forced sufficiently rearwardly by the first mentioned means, said member having a second inclined face behind said shoulder, and means for automatically moving said member further into the magazine during rearward movement of the action bar for causing said second inclined face to raise the rim of said cartridge into said guideways.

51. In a firearm, an action bar having a magazine portion, guideways in said magazine, means for forcing a cartridge rearwardly in the magazine, a member carried by the action bar and having an inclined forward face and a shoulder behind said face, means for urging said member into the magazine so that said face lies in the path of said cartridge and for bringing said shoulder in front of the rim of said cartridge when the latter is forced sufficiently rearwardly by the first mentioned means, said member having a second inclined face behind said shoulder, a receiver in which the action bar is movable, and means comprising an inclined surface in the receiver for automatically moving said member further into the magazine during rearward movement of the action bar to cause said second inclined face to raise the rim of said cartridge into said guideways.

52. In a firearm, an action bar having a magazine portion, guideways in said magazine, and means for forcing a cartridge rearwardly in the magazine, a member carried by the action bar and having an inclined forward face and a shoulder behind said face, means for urging said member into the magazine so that said face lies in the path of said cartridge and for bringing said shoulder in front of the rim of said cartridge when the latter is forced sufficiently rearwardly by the first mentioned means, said member having a second inclined face behind said shoulder, a receiver in which the action bar is movable, an inclined surface in the receiver adapted to co-act with said member to move said member further into the magazine during the initial part of the rearward movement of the action bar to cause said shoulder to press firmly against the body of the cartridge, and a second inclined surface in the receiver for coacting with said member to move said member still further into the magazine upon further rearward movement of the action bar to cause said second inclined face of said member to raise the rim of said cartridge into said guideways.

53. In a firearm, an action bar having a magazine portion, guideways in said magazine, a member carried by the action bar and having an inclined face projecting into the magazine, a receiver in which the action bar is movable, and means comprising inclined surfaces carried by said member and said receiver, respectively, and causing said inclined face of said member to raise the rear end of the cartridge into said guideways during rearward movement of the action bar.

54. In a firearm, an action bar having a magazine portion, guideways in said magazine, a member pivotally carried by the action bar and having an inclined face, and means for automatically causing said inclined face to raise the rim of a cartridge

into said guideways during rearward movement of said action bar.

55. In a firearm, an action bar having a magazine portion, means for forcing a cartridge rearwardly in the magazine, a member carried by the action bar and having an inclined forward face, and a shoulder behind said face, and means for urging said member into the magazine so that said face lies in the path of said cartridge and for bringing said shoulder in front of the rim of said cartridge when the latter is forced sufficiently rearwardly by the first mentioned means.

56. In a firearm, a magazine having an opening for the insertion of a cartridge, a door for closing said opening, means for retaining said door in closed position said means being also effective when said door is slightly displaced from closed position to yieldingly retain said door in any set position.

57. In a firearm, a magazine having an opening for the insertion of a cartridge, a door for closing said opening, resilient means, and devices associated with said door and acted upon by said resilient means whereby said door is yieldingly held in closed position, but when slightly displaced from closed position is frictionally held in any set position.

58. In a firearm, a magazine having an opening for the insertion of a cartridge, a door for closing said opening, resilient means for urging said door into closed position, said door having a curved portion contacting said resilient means when the door is slightly displaced from closed position, whereby said door is held in any set position slightly removed from closed position.

59. In a firearm, in combination, a magazine having an opening for the insertion of a cartridge, a pivoted door for closing said opening, a device associated with said pivot effective to yieldingly retain said door in closed position and to frictionally retain said door in any position removed a predetermined distance from closed position to which said door is set.

60. In a firearm, in combination, a magazine having an opening for the insertion of a cartridge, a pivoted door for closing said opening, said door comprising a face curved concentric with said pivot and a flat face adjacent said curved face, and a spring pressed plunger adapted to engage said flat face when said door is closed and said curved face when said door is slightly displaced from closed position.

61. In a firearm, a longitudinally movable magazine, a receiver in which said magazine is movable, a cartridge stop pivotally carried by the receiver and having a projection extending into the magazine, resilient means for urging said projection into said magazine, said cartridge stop having another projection adapted to enter a groove in the magazine when the latter is in a given position.

62. In a firearm, a longitudinally movable magazine, means in said magazine for forcing a cartridge rearwardly therein, a receiver in which said magazine is movable, a cartridge stop in the form of a bell crank lever pivotally carried by said receiver, a projection with a beveled face extending from one arm of said lever into the magazine, a projection on the other arm of said lever, said magazine having an exterior groove for receiving the last mentioned projection to permit said means to move a cartridge rearwardly past the first mentioned projection when the magazine is in a given position, and means for urging said first mentioned projection into the magazine.

63. In a firearm, a longitudinally movable magazine, a receiver in which said magazine is movable, and a cartridge stop pivotally mounted in said receiver, and extending into said magazine for controlling the passage of cartridges therethrough.

64. In a firearm, a longitudinally movable magazine, a receiver in which said magazine is movable, a cartridge stop movably mounted in said receiver, and means for automatically moving said stop out of cartridge-stopping position when said magazine is in a given position.

65. In a firearm, a breech block, a firing pin mounted in said breech block, an ejector mounted in said breech block, and a spring for normally maintaining both said firing pin and said ejector retracted.

66. In a firearm, a receiver, a breech block adapted for reciprocation in said receiver, an ejector slidably mounted in said breech block, a cartridge case engaging foot separate from but operatively connected with said ejector and projecting forwardly and laterally therefrom, means for retracting said ejector and means in said receiver adapted to engage and operated said ejector during the reciprocation of said breech block.

67. In a firearm, a receiver, a breech block arranged for reciprocation in said receiver, an ejector slidably mounted in said breech block, a cartridge case engaging foot separate from but operatively connected with said ejector, extending laterally and forwardly therefrom, adapted to engage the cartridge shell to eject the same laterally and downwardly, and means on said receiver adapted to positively operate said ejector in the reciprocation of said breech block.

68. In a firearm, a breech block, a firing pin slidably mounted in said breech block and having a shoulder, an ejector slidably mounted in a groove in the side of said

breech block and having a shoulder adjacent the first mentioned shoulder, a plunger adapted to bear against both of said shoulders, and a spring interposed between said plunger and a portion of the breech block.

69. In a firearm, a breech block, a firing pin slidably mounted in said breech block and having a shoulder, an ejector slidably mounted in said breech block and having a shoulder adjacent the first mentioned shoulder, a plunger adapted to bear against both of said shoulders, and a spring interposed between said plunger and a portion of the breech block.

70. In a firearm comprising a breech block and an action bar, a firing pin carried by said breech block and having a downwardly extending foot, a firing pin retracting member slidably carried by said breech block and having shoulders between which said foot extends, and a lug on said action bar adapted to actuate said firing pin retracting member.

71. In a firearm, a receiver, a breech block arranged for reciprocation in said receiver, an extractor pivoted in said breech block, an ejector slidably mounted in said breech block, a cartridge shell head engaging foot separate from but operatively connected with said ejector, extending forwardly and laterally therefrom and so related to said extractor that the cartridge shell is ejected laterally and downwardly, and means associated with said receiver adapted to positively operate said ejector in the reciprocation of said breech block.

72. In a firearm, a breech block, a firing pin carried by said breech block, and having a downwardly extending foot, and a firing pin retracting member slidably carried by said breech block and having shoulders between which said foot extends.

73. In a firearm, a breech block, an action bar, a firing pin carried by said breech block and having a downwardly extending foot, and a firing pin retracting member carried by said breech block and having shoulders between which said foot extends, said member also having an extension projecting into the path of said action bar.

74. In a firearm, a breech block, a firing pin slidably carried by said breech block and having a downwardly extending foot, a firing pin retracting member slidably carried by said breech block and having shoulders between which said foot extends, an ejector slidably carried by said breech block, and a spring for normally maintaining both said ejector and said firing pin retracted.

75. In a firearm, a breech block, a firing pin slidably carried by said breech block and having a downwardly extending foot, a firing pin retracting member slidably carried by said breech block and having shoulders between which said foot extends, an ejector slidably carried by said breech block, a spring for normally maintaining both said ejector and said firing pin retracted, another spring for normally maintaining said member in forward position, and an element carried by the breech block for limiting forward movement of said member and rearward movement of said ejector.

76. In a firearm, a breech block, an ejector carried thereby, means for moving said ejector, a firing pin, a member carried by said breech block for retracting said firing pin, means for moving said member, and an element carried by said breech block for limiting the movement of both said member and said ejector.

77. In a firearm, a magazine action bar, comprising a pair of sections, means for connecting said sections, a forearm and means for securing said forearm to said connecting means.

78. In a firearm, a magazine action bar comprising a pair of sections, a sleeve for connecting said sections, means for preventing rotation of one of said sections with respect to said sleeve, a forearm, means for securing said forearm to said sleeve, and means for preventing relative rotation between said sleeve and the other of said sections.

79. In a firearm, a magazine action bar comprising a pair of sections, a sleeve for connecting said sections, means for preventing rotation of one of said sections with respect to said sleeve, a forearm and a screw passing thru said forearm and threaded into said sleeve, said screw projecting into the other of said sections to prevent relative rotation between said section and said sleeve.

80. In a firearm, a magazine action bar comprising a pair of sections, a sleeve for connecting said sections, means for preventing rotation of one of said sections with respect to said sleeve, a forearm, a screw passing thru said forearm and threaded into said sleeve, said screw projecting into the other of said sections to prevent relative rotation between said section and said sleeve, said screw also having a notch in the head thereof, and means for engaging said notch to prevent turning of said screw.

81. In a firearm, a breech block, a firing pin carried by said breech block, a hammer for driving said firing pin against a cartridge, a longitudinally slidable member carried by said breech block for retracting said firing pin, an action bar for actuating said member, and an element for preventing rearward movement of said action bar when the hammer is cocked.

82. In a firearm, a breech block, a firing pin carried by said breech block, means carried by said breech block for retracting said firing pin, a carrier for feeding a cartridge to said breech block, an action bar for actu-

ating said means during rearward movement thereof and for actuating said carrier during forward movement thereof, a member for locking the action bar in forward position, and means including said carrier for moving said member into position for locking said action bar.

83. In a firearm, a breech block, a carrier for feeding a cartridge to said breech block, a firing pin, a hammer for driving said firing pin against a cartridge, a trigger for releasing said hammer from cocked position, a carrier for feeding a cartridge to said breech block, an action bar for actuating said carrier, means on said carrier for preventing operation of said trigger during forward movement of said action bar, a member for controlling the unlocking of said trigger and movable into position for locking said action bar, means including said carrier for moving said member into said position, and means responsive to the release of the hammer from cocked position for moving said member out of said position.

84. In a firearm, an action bar having a magazine portion, means in said magazine for forcing a cartridge into the rear part thereof, guideways in the rear part of said magazine, a member carried by said action bar for preventing forward movement of the rearmost cartridge in the magazine and for raising the rim of said cartridge into said guideways during rearward movement of the action bar, a breech block having guideways on the face thereof, a carrier for raising the rearmost cartridge out of the magazine and into engagement with the guideways of the breech block during forward movement of the action bar, and a member controlled by the carrier for locking the action bar against rearward movement.

85. In a firearm, an action bar having a magazine portion, means in said magazine for forcing a cartridge into the rear part thereof, guideways in the rear part of said magazine, a member carried by said action bar for preventing forward movement of the rearmost cartridge in the magazine and for raising the rim of said cartridge into said guideways during rearward movement of the action bar, a stop for preventing the cartridges forwardly of said rearmost cartridge from partaking of the full rearward movement of the action bar, a breech block having guide ways on the face thereof, a carrier for raising the rearmost cartridge out of the magazine and into engagement with the guideways of the breech block during forward movement of the action bar, and a member controlled by the carrier for locking the action bar against rearward movement.

86. In a firearm, a breech block, having guideways on the face thereof for receiving a cartridge, a firing pin carried by said breech-block for exploding said cartridge, a member carried by said breech block for retracting said firing pin, an action bar for actuating said member, said action bar having a magazine portion, means in said magazine for forcing a cartridge into the rear part thereof, guideways in the rear part of said magazine, a member carried by said action bar for raising the rim of the rearmost cartridge into said guideways in the magazine during rearward movement of the action bar, a carrier for raising the rearmost cartridge out of the magazine and into engagement with the guideways of the breech block during forward movement of the action bar, and a member controlled by the carrier for locking the action bar against rearward movement.

87. In a firearm, an action bar having a magazine portion, said magazine portion having an opening for the insertion of cartridges thereinto, a door pivotally mounted on said magazine for closing said opening, means in said magazine for forcing a cartridge into the rear part thereof, and a member pivotally carried by said action bar for preventing forward movement of said cartridge.

88. In a firearm, an action bar having a magazine portion, said magazine having an opening for the insertion of cartridges thereinto and having guideways in the rear part thereof, a door pivotally mounted on said magazine for closing said opening, means in said magazine for forcing a cartridge into the rear part thereof, and a member carried by said action bar for preventing forward movement of said cartridge and for raising the rim of said cartridge into engagement with said guideways when the action bar is moved rearwardly.

89. In a firearm, an action bar having a magazine portion, said magazine having an opening for the insertion of cartridges thereinto and having guideways in the rear part thereof, a door pivotally mounted on said magazine for closing said opening, a cartridge stop projecting into said magazine for regulating the passage of cartridges therethru, means in said magazine for forcing a cartridge into the rear part thereof when said magazine is in a given position, and a member carried by said action bar for preventing forward movement of said cartridge and for raising the rim of said cartridge into engagement with said guideways when the action bar is moved rearwardly.

90. In a firearm, a receiver, an action bar movable in said receiver, an element for locking said action bar against retraction, means for moving said element out of position for locking said action bar, and a carrier for moving said element into position for locking said action bar, said receiver having an opening adjacent said element for

permitting the latter to be moved manually out of said locking position.

91. In a firearm, in combination, a receiver, an action bar, a breech block separably connected with said action bar for reciprocation thereby in said receiver, means permitting the separation of said breech block from said action bar when in one position in said receiver, and means comprising a screw extending transversely through said receiver for normally preventing movement of said action bar to breech block disengaging position.

92. In a firearm, in combination a reciprocable action bar, a breech block connected with said action bar for reciprocation thereby, means for permitting the separation of said action bar and said breech block in one position of the action bar only, and means comprising a transversely extending screw adapted to normally prevent the movement of the action bar to breech block disengaging position.

93. In a take down firearm comprising a receiver and a stock assembly, means for securing said stock assembly to said receiver comprising a transversely extending take down screw, an action bar, a breech block reciprocable by said action bar in said receiver and separable therefrom in one position of said action bar, and means comprising said take down screw for preventing movement of said action bar to breech block disengaging position when the stock assembly is removed from the receiver.

94. In a take down firearm comprising a receiver, a stock assembly, and means including a transversely extending take down screw for securing said stock assembly to said receiver, a chamber, a reciprocating magazine action bar a breech block normally engaged by said magazine action bar for reciprocation thereby but adapted to be released therefrom in one position of the magazine action bar, a carrier for delivering cartridges from the magazine action bar to the breech block for transfer to the chamber, a carrier operating dog extending transversely through a part of the action bar, a projection on the action bar surrounding the carrier operating dog, said projection being adapted to engage said take down screw when the stock assembly is removed, thereby preventing the movement of the action bar to breech block disengaging position.

In witness whereof I have signed my name hereto this 26th day of July, 1922.

CRAWFORD C. LOOMIS.