

**Dec. 25, 1928.**

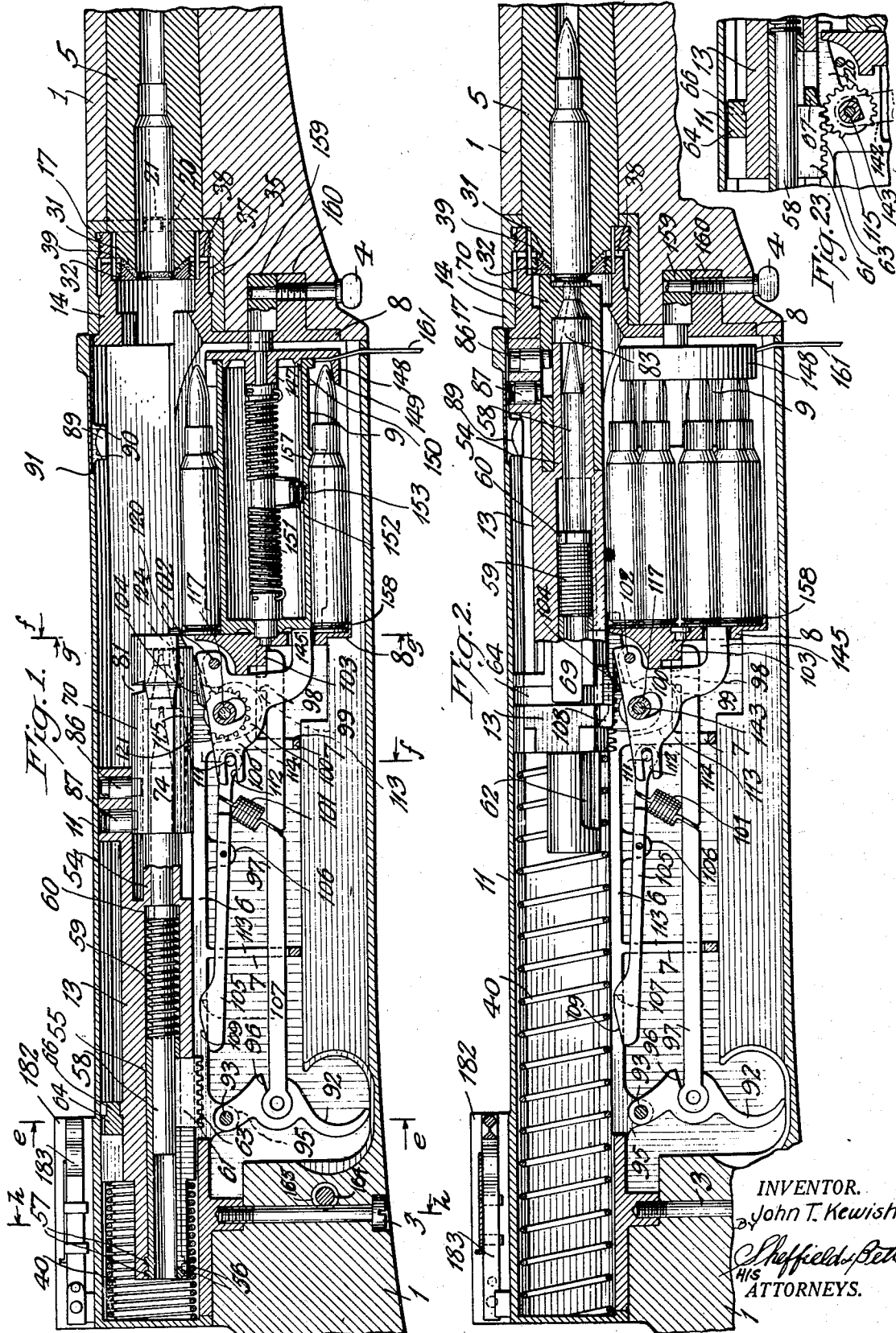
**1,696,537**

**J. T. KEWISH**

**AUTOMATIC FIREARM**

Filed April 13, 1927

6 Sheets-Sheet 1



Dec. 25, 1928.

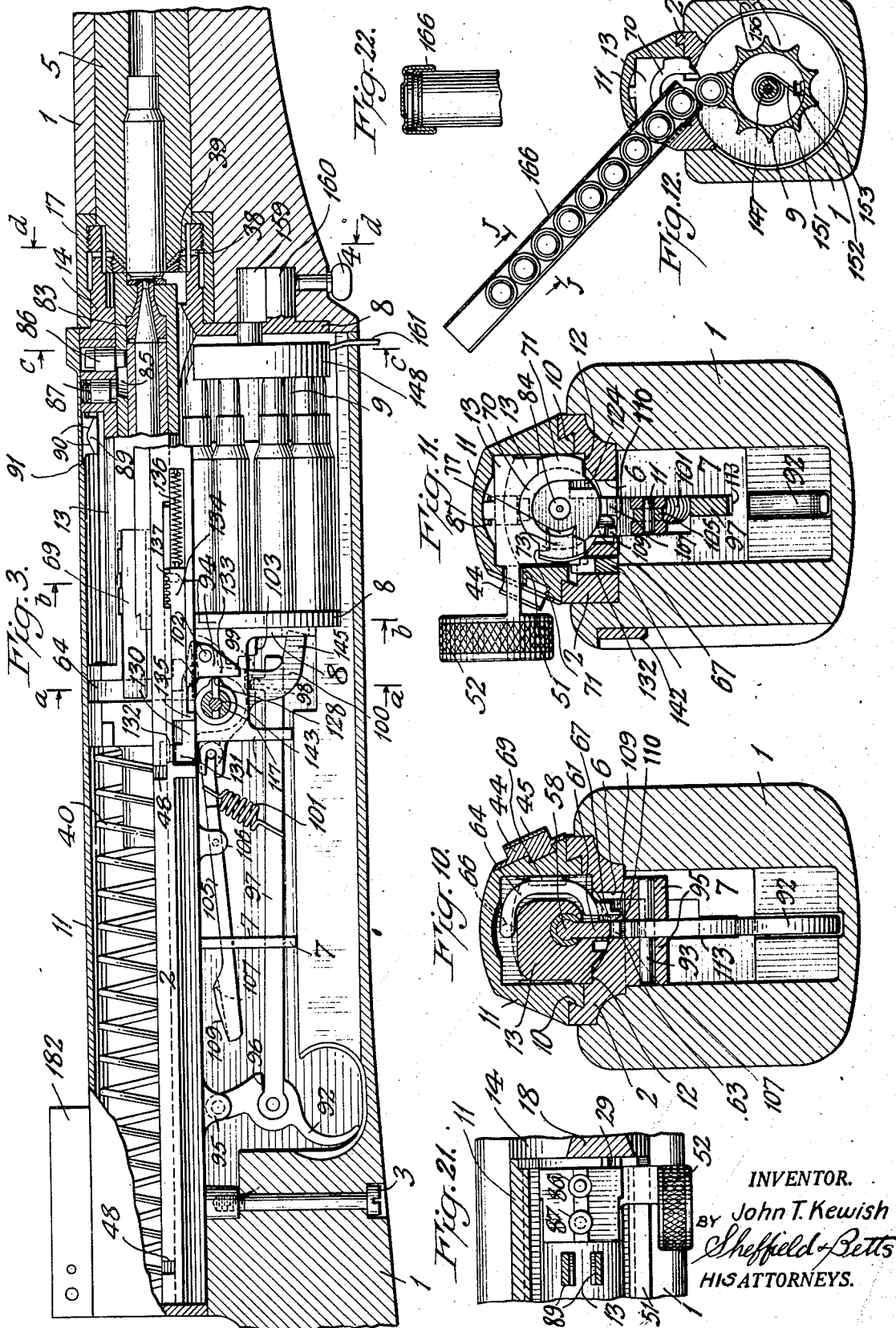
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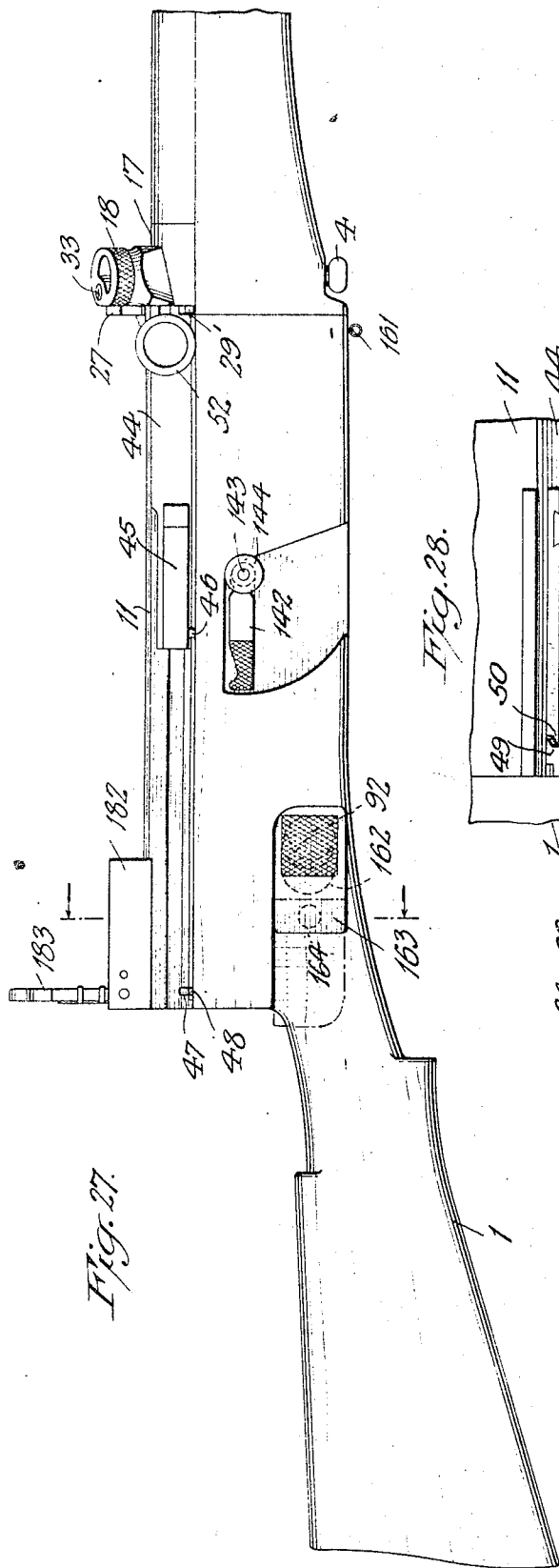


*Fig. 28.*

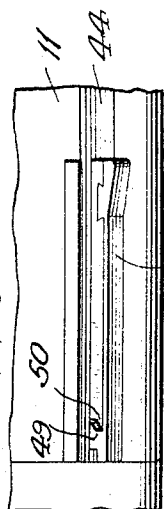


*Fig. 13.*

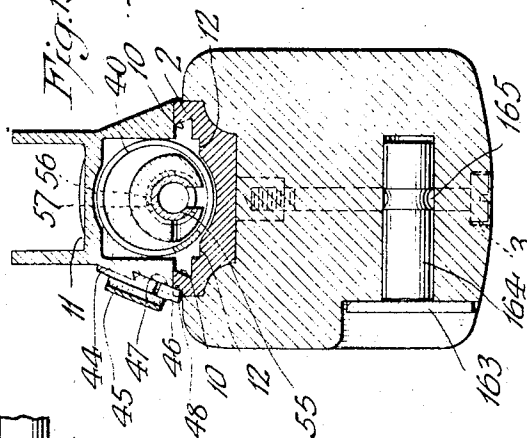


*Fig. 29.*

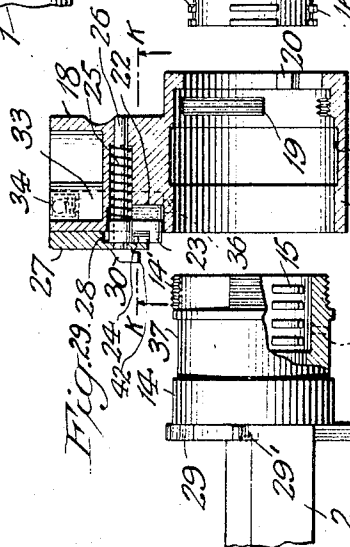


*Fig. 31.*

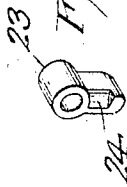
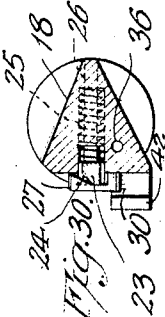


*Fig. 30.*



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Dec. 25, 1928.

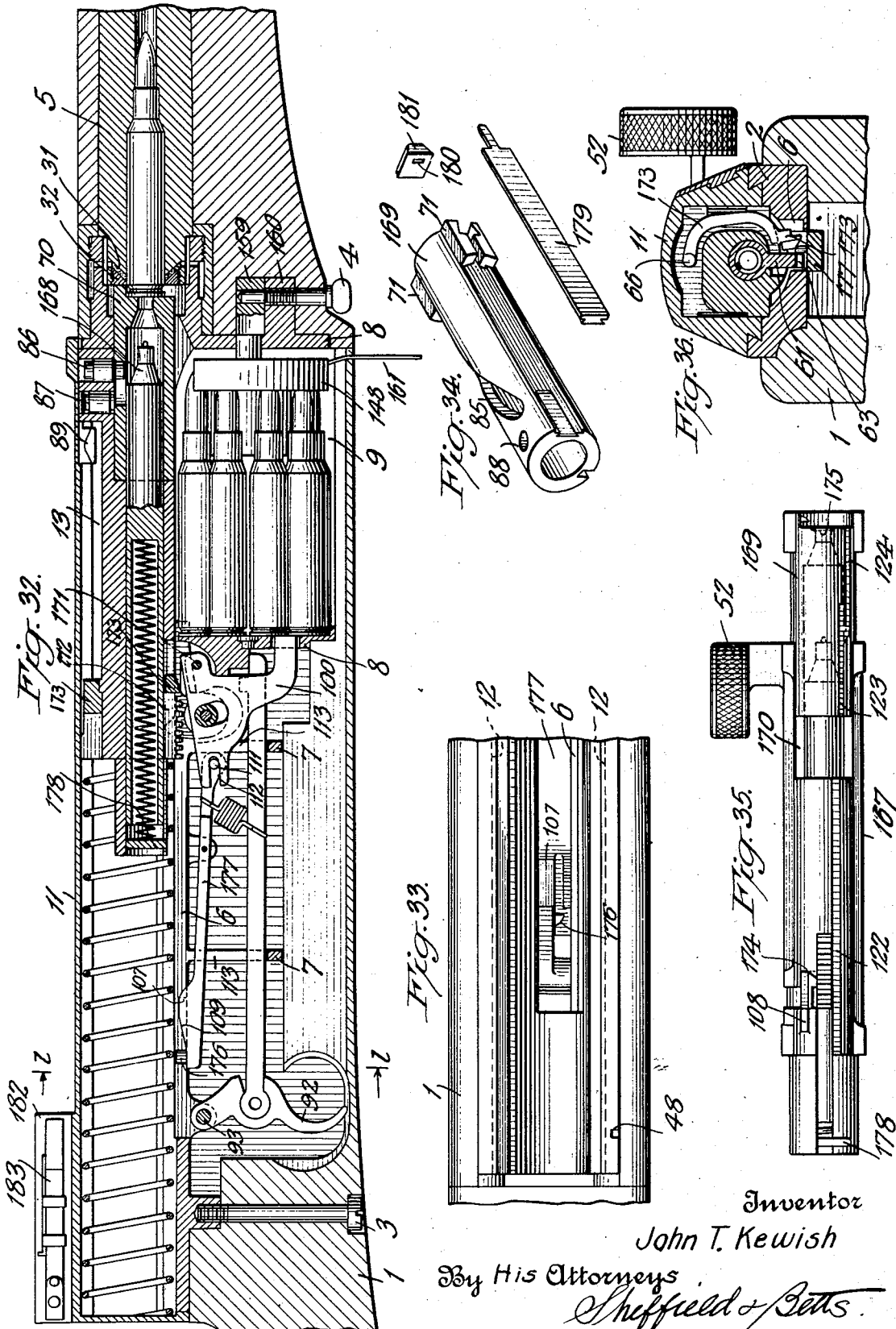
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AUTOMATIC FIREARM

Filed April 13, 1927

6 Sheets-Sheet 6



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## UNITED STATES PATENT OFFICE.

JOHN T. KEWISH, OF NEW YORK, N. Y.

## AUTOMATIC FIREARM.

Application filed April 13, 1927. Serial No. 183,390.

This invention relates to an improved automatic firearm of the type adapted to be carried on and fired from the shoulder of the user as an ordinary rifle.

5 The principal object of my invention is to simplify the construction of automatic firearms in which the power for actuating the automatic parts is derived from the primer of the cartridge and to provide a  
10 light-weight, reliable and easily assembled firearm.

Another object of my invention is to provide means for removably attaching the barrel of the gun to the forward end of the receiver and to provide means associated therewith to lubricate the cartridges while the same are being inserted within the barrel.

Another object of my invention is to provide means for preventing the primer from coming completely out of the cartridge when it is fired.

Another object of my invention is to provide a cartridge magazine of an improved construction whereby a relatively large number of cartridges may be held within a compact space.

A further object of my invention is to provide a trigger mechanism of simple construction adapted to perform in addition to the usual function of the trigger mechanism, various other functions as will more clearly appear from the description set forth hereinafter.

Another object of my invention is to provide means to enclose the actuating parts of the gun and to lock them in position when the gun is not in operation.

Further objects of my invention will be apparent from the description hereinafter made.

In particular, this invention relates to improvements made by me over the automatic firearm described in my prior Patent No. 1,563,751, dated December 1, 1925.

45 A preferred embodiment of my invention is shown in the accompanying drawings forming a part of this specification in which

Fig. 1 is a vertical sectional view of a portion of a gun embodying my invention showing the actuator in its rear position and showing the interior construction of the cartridge magazine;

Fig. 2 is a vertical sectional view of a portion of a gun embodying my invention showing the actuator and its associated parts in

firing position with the firing pin cocked;

Fig. 3 is a vertical sectional view showing the actuator and its associated parts in position immediately after the firing of a cartridge;

Fig. 4 is a plan view of a portion of the gun with the cover removed showing the interior of the receiver, the trigger mechanism and a retaining member adapted to hold the cartridges in position in the magazine;

Fig. 5 is a plan view of a portion of the gun with the cover removed showing the actuator in its forward position and showing the cartridge retaining member positioned out of the path of the actuator as indicated in dotted lines;

Fig. 6 is a cross-sectional view taken on the line *a-a* of Fig. 3;

Fig. 7 is a cross-sectional view taken on the line *b-b* of Fig. 3;

Fig. 8 is a cross-sectional view taken on the line *c-c* of Fig. 3;

Fig. 9 is a cross-sectional view taken on the line *d-d* of Fig. 3;

Fig. 10 is a cross-sectional view taken on the line *e-e* of Fig. 1;

Fig. 11 is a cross-sectional view taken on the line *f-f* of Fig. 1;

Fig. 12 is a cross-sectional view taken on the line *g-g* of Fig. 1;

Fig. 13 is a cross-sectional view taken on the line *h-h* of Fig. 1;

Fig. 14 is a detail view of the cocking means for the firing pin;

Fig. 15 is a cross-sectional view taken on the line *i-i* of Fig. 14;

Fig. 16 is a bottom view of the actuator.

Fig. 17 shows in perspective the construction of the bolt, the tappet means, the extractor and a spring which is associated with the tappet means and which holds the extractor in position;

Fig. 18 is a cross-sectional view of the forward end of the actuator showing it in firing position and showing the tappet piece associated with the bolt in contact with the primer of the cartridge;

Fig. 19 is a cross-sectional view of the forward end of the actuator and the bolt showing them in their rearmost positions while a fired cartridge is being ejected.

Fig. 20 is a cross-sectional view of the forward part of the bolt showing the face of the bolt recessed to permit the insertion of the cartridge more readily;

Fig. 21 is a plan view of the forward end of the actuator showing it in position in the gun;

Fig. 22 is a cross-sectional view taken on the line j—j of Fig. 12;

Fig. 23 is a detail view of the means employed to recock the firing pin by hand;

Fig. 24 shows in detail the means employed to remove the cartridge retaining member from the cartridges and the locking means employed to hold the actuator in its rear position during the reloading of the gun;

Fig. 25 shows in perspective, the sear, the hand recocking pinion, the ejector and the cam shaft upon which said parts are mounted;

Fig. 26 is a perspective view of the locking means for cocking the firing pin on the actuator;

Fig. 27 is a side elevation of the gun showing how the operating mechanism is completely enclosed when the gun is not in use;

Fig. 28 is a perspective view of the spring locking means associated with the receiver cover;

Fig. 29 shows the construction of the forward end of the receiver, the rear end of the barrel and the means employed for connecting the two removably together;

Fig. 30 is a cross-sectional view taken on the line k—k of Fig. 29;

Fig. 31 is a perspective view of the locking means shown in Fig. 29;

Fig. 32 is a vertical sectional view of a portion of the gun showing modified forms of actuator, bolt and firing pin;

Fig. 33 is a plan view of a portion of the receiver showing the cocking lever provided with a projection adapted to detain the firing pin;

Fig. 34 is a perspective view of a modified form of bolt showing the extractor and the spring for holding the extractor in position;

Fig. 35 is a bottom view of the modified form of actuator with the bolt mounted upon the modified form of firing pin showing the lock associated with the firing pin, and

Fig. 36 is a cross-sectional view taken on the line L—L of Fig. 32.

In the drawings, the numeral 1 indicates the stock of a gun embodying my invention upon which the receiver 2 is mounted and held in position thereon by means of the stock-bolt 3 and the thumb screw 4. The stock 1 is made in two parts and the forward part which extends beyond the front face of the receiver 2 carries the barrel 5.

The receiver 2 which is adapted to support the actuating mechanisms of the gun comprises a longitudinal member as shown in the drawings having a central slot 6 extending substantially the length of the receiver. The trigger mechanism of the gun is located in the slot 6 and in slots made

in the projections 7 which extend downward from the receiver as shown in the drawings. The receiver 2 is provided with depending portions 8 which form supporting means for the magazine 9 as hereinafter described. The receiver 2 has cut therein longitudinal grooves 10 preferably in the form of a dove tail in which the receiver cover 11 is adapted to slide. Between the grooves 10 the receiver 2 is provided with bearing surfaces as indicated at 12 in Figs. 6–11 on which the actuator 13 is free to reciprocate within the receiver cover 11.

In guns of the type described herein it is desirable to provide a means whereby the barrel of the gun may be readily replaced by another barrel when it becomes too hot from constant firing or when incapable of further use for any other reason. To accomplish this purpose I employ the following construction more clearly illustrated in Fig. 29. The forward end of the receiver 2 is provided with a preferably integral projection or boss 14 which is provided with external threads 14' and internal threads 15, which are partially stripped as shown. The end of the barrel 5 is provided with partially stripped threads 16 similar to the threads 15, whereby the barrel 5 may be readily inserted within the boss 14 and upon being rotated with respect thereto, will engage the threads 15' and be securely held in position thereby.

A coupling member 17 is provided to removably connect the barrel 5 to the receiver 2 and to lock the same in position while the gun is in operation. The coupling member 17 consists of a substantially cylindrical portion having a boss or handle portion 18 projecting therefrom as shown. The interior surface of the member 17 is provided with screw threads 19 adapted to engage the threads 14' on the boss 14. These threads 19 are likewise partially stripped whereby the member 17 may be readily placed over the boss 14 and screwed into position. The coupling member 17 is provided with two or more projecting pieces or lugs 20, preferably formed integral therewith, which are adapted to be placed in the slots 21 in the barrel 5, whereby a turning movement of the coupling member 17 will be transferred to the barrel 5. When it is desired to attach a new barrel to the gun, the barrel 5 is inserted within the coupling member 17 so that the lugs 20 are positioned within the slots 21. The coupling member 17 is then placed on the boss 14 and turned with respect thereto so that the threads 19 engage the threads 14' and the threads 16 engage the threads 15 and the barrel is thus brought into position.

In order to hold the barrel 5 in position the following locking means are employed. The handle portion 18 of the coupling mem-

ber 17 is recessed as shown at 22, and a lock 23 having a bevel face 24 as shown in Fig. 31 is inserted therein. A spring 25 normally urges the lock 23 outward. The lock 23 and the spring 25 are mounted upon a pin 26 which extends through the handle portion 18 and which has formed integral therewith, a lever 27, the inner surface of which is recessed as indicated at 28 in Fig. 30. When the lever 27 is in the vertical position shown in Figs. 29 and 30, the upper part of the lock 23 projects into the recess 28 of the lever 27 while the lower part of the lock 23 projects into a notch 29 cut in a flange on the boss 14 as shown more clearly in Fig. 8. When the lever 27 is rotated approximately 90° from the position shown in Figs. 29 and 30, the edge of the recess 28 rides over the bevel face 24 of the lock 23 and forces the latter into the recess 22 against the action of the spring 25. This movement of the lock 23 withdraws it from the notch 29 in the flange on the boss 14 and permits the coupling member 17 and the barrel 5 to be rotated. In order to prevent the lock 23 and the lever 27 from being forced away from the handle portion 18 by the spring 25, a projection 30 is provided preferably formed integral with the handle portion 18, and having a slot cut therein in which the lever 27 is adapted to rotate during the unlocking movement described above. In Fig. 30, the lever 27 is shown being held in position against the face of the handle portion 18 by the slot cut in the projection 30 as described above. The pin 26 is positioned eccentrically with respect to the sides of the lever 27 so that this lever may be rotated to a position where one side thereof will be clear of the projection 30 whereby the lever 27 and the lock 23 may be inserted within or withdrawn from the handle portion 18. When it is desired to change barrels the coupling member is unlocked as described above and is rotated about the boss 14 until the barrel 5 is out of engagement with the threads 15 in the boss 14. The coupling member 17 may be locked in this position by having another notch 29' cut in the flange on boss 14 into which the lock 23 may be positioned. While the coupling member 17 is in this second locked position, a new barrel may be inserted therein and when the coupling member 17 is rotated, the new barrel will be connected to the boss 14 as described above.

It is desirable to supply oil to the cartridges as they are being inserted into the barrel in order that they may be more easily withdrawn therefrom after being fired. The means which I preferably employ to do this may be described as follows, reference being made more particularly to Figs. 1-3 and 29. An annular pad washer 31 of felt or similar material is positioned in a suitable recess in the end of the barrel 5 and held in position

therein by means of a retaining member 32 threaded in the barrel. This retaining member 32 is screwed into the barrel 5 so as to hold the washer 31 in position but not so tightly as to compress the oil from the washer or to prevent the oil from flowing freely in the washer. The interior of the barrel 5 may be and preferably is provided with a shoulder which limits the position of the retaining member 32. As shown in Fig. 3 the recess in the barrel 5 is bevelled whereby the washer 31 is inclined toward the rear of the gun so that the inner edge thereof which projects slightly into the barrel bore is adjacent the end face of the barrel. The cartridges will therefore be oiled throughout their entire length. Another very important advantage of this construction is that the cartridges are supported along their entire length in the barrel 5 without there being any recess into which the cartridges could expand to make extraction difficult.

The oil is supplied to the pad washer 31 from an oil well 33 located in the handle portion 18 of the coupling member 17. This oil well 33 is preferably provided with a ball cup 34 of the usual design to prevent leakage of the oil therefrom. The oil well 33 is connected with a circular recess 35 in the interior of the coupling member by a small hole indicated at 36 in Fig. 29. When the coupling member 17 is in position on the gun the recess 35 lies adjacent to a similar recess 37 on the exterior surface of the boss 14. A small hole 38 is made in the lower part of the boss 14 to permit the oil to flow from the recess 35-37 to the interior of the boss 14. A plurality of holes 39 are made in the end of the barrel 5 adjacent the pad washer 31 through which the oil may flow from the interior of the boss 14 to the pad washer 31 and from the latter to the cartridges as they are being inserted into the barrel 5.

It will be observed from Fig. 3 that when the barrel 5 and the coupling member 17 are in their normal positions on the gun the rear face of the coupling member 17 contacts with the flange on the forward end of the receiver 2 and the internal flange on the forward end of the coupling member 17 (see Fig. 29) contacts with the barrel 5 and the front of boss 14. This construction prevents leakage of the oil from the interior of the gun.

Receiver cover 11 which is slidably mounted in dovetail connection upon the receiver 2 and which is locked thereto is provided to enclose the operating parts of the gun and to house the actuator 13 and its associated parts including the main spring 40. The receiver cover 11 is locked on the receiver 2 by means of the following construction. On the under surfaces of the receiver cover 11 dovetail flanges are formed to slide

in and lock against the receiver in grooves 10, and at the forward end of the cover 11 there is a raised portion in which a lateral groove 41 having one end open is cut as indicated in Fig. 8 to form a means for locking the cover to the member 17. The projection 30 on the rear face of the handle portion 18 of the member 17 (see Fig. 29) has a depending portion 42 which is adapted to be positioned in the groove 41 when the coupling member 17 is rotated to its normal position on the gun. The forward end of the receiver cover 11 also has a longitudinal slot 43 through which the empty cartridge shells are ejected after the firing of the gun and through which the magazine is reloaded as described hereinafter. This slot 43 is open while the gun is in operation but may be closed when the gun is not in use in order to protect the mechanism of the gun. A member 44 adapted to cover this slot 43 is slidably mounted in dovetail connection upon the receiver cover 11 as shown clearly in Figs. 10 and 27. This slidable member 44 is provided with a flat spring 45 which is held thereto by means of a dovetail connection as shown in Fig. 28. The spring 45 is provided at its rear end with an integral locking projection 46 which extends inwardly from the inner surface of the spring 45 and downwardly from the lower surface of this member as shown in Figs. 13 and 27. This projection 46 is adapted to be placed in recesses 47 cut in the lateral face of the receiver cover 11 and also in recesses 48 cut in the lateral face of the receiver 2. The object of such construction is to lock the slidable member 44 to the receiver cover 11 and to lock the latter to the receiver 2 when the slidable member is in rear position when the gun is in use or in its forward position when the gun is closed. The end of the spring 45 is provided with a forwardly extending projection 49 and the slidable member 44 is provided with a rearwardly extending projection 50 in order to prevent breakage of the spring 45 when it is being lifted out of locked position. The slidable member 44 has a slot 51 (see Fig. 27) in its forward end adapted to accommodate the handle 52 of the actuator 13 to hold the same in locked position when the gun is not in use. The slot 43 in the receiver cover 11 extends rearwardly as indicated at 53 in Fig. 24 to accommodate this handle 52 when the actuator 13 is in its rearmost position.

The opening and closing of the breech of the gun to withdraw a fired cartridge and to insert a loaded one into the barrel is performed by a longitudinal reciprocating weight or actuator 13 and its associated parts including a bolt to be more fully described hereinafter. The actuator 13 which is adapted to reciprocate within the receiver 2 as described above has a reduced section

at the rear end upon which the main spring 40 is mounted to normally urge the actuator 13 forward. The forward end of the actuator 13 is provided with an integral cylindrical projection 54 upon which the bolt (hereinafter described) is slidably and rotatably mounted. A slotted sleeve 55 is placed within the actuator 13 and extends a substantial distance therein as shown clearly in Fig. 1. To hold this sleeve in position in the actuator 13, the interior surface of the rear end of the actuator 13 has cut therein a plurality of circular grooves as indicated at 56. The teeth thus formed in the actuator 13 are stripped in a plurality of places similar to the stripping of the threads 15 illustrated in Fig. 29 and described above. The rear end of the sleeve 55 is provided with arcuate projections or teeth 57 corresponding in thickness to the grooves 56 and corresponding in length to the stripped portions described above whereby the sleeve 55 may be inserted longitudinally into the actuator 13 until the teeth 57 are brought in alignment with the grooves 56 when the sleeve 55 is rotated to position the teeth 57 within the grooves 56. This turning movement of the sleeve 55 is accomplished by means of the firing pin mechanism to be more fully described hereinafter.

The firing pin 58 is rotatably and slidably mounted within the sleeve 55 and the projection 54, and its length and position with respect to the actuator 13 is such that it projects through the bolt when the gun is fired. A spring 59 on the firing pin is placed within the actuator 13 between the sleeve 55 and a collar 60 on the firing pin 58 as shown in Fig. 1, and normally urges the firing pin forward. When the gun is in firing position and the firing pin 58 is uncocked by pulling the trigger as described hereinafter, this spring causes the firing pin to be moved forward to strike the primer of the cartridge. The firing pin 58 is provided with an integral projection 61, hereinafter referred to as the rack projection, which extends through slots in the actuator 13 and the sleeve 55 as shown in Figs. 6 and 10 and which projects below the lower surface of the actuator 13. The sleeve 55 is turned out of locked engagement with the actuator 13 by means of the rack projection 61 as follows: The firing pin 58 is pulled backward against the action of the spring 59 until the rack projection 61 is in alignment with a recess 62 (see Fig. 16) cut in the reduced end of the actuator. Since the rack projection 61 lies within the slot in the sleeve 55 when it is pushed into the recess 62, the sleeve 55 will be rotated. This movement of the sleeve 55 brings the arcuate projection 57 in alignment with the stripped portions of the actuator 13 whereby the sleeve 55 may be withdrawn from the

actuator 13, and likewise inserted in assembling.

The projection 61 is provided with rack teeth as indicated at 63 which are adapted to engage a hand operated pinion, more fully described below, whereby the firing pin 58 may be recocked by hand operation without moving back the actuator or opening the breech of the gun in case recocking is desired because of failure of a cartridge to explode struck, or when, for any other reason hand recocking of the firing pin is desirable. The number of teeth on the rack projection 61 is proportional to the distance through which the firing pin must be moved to be recocked.

The firing pin 58 is locked in cocked position on the actuator 13 by a locking member 64, shown in perspective in Fig. 26. This locking member 64 is positioned in a recess 65 formed in the rear end of the actuator 13 in front of the reduced end thereof and is pivotally connected thereto by a trunnion 66 adapted to be inserted longitudinally in a suitable bearing in the actuator (see Figs. 6 and 10). On the lower end of the locking member 64 there is a sear projection 67 having a bevel face 68 and adapted to contact with the front face of the rack projection 61 to hold the firing pin in cocked position on the actuator until it is desired to release the same by pulling the trigger. When the trigger is pulled, a sear tripper or releaser, hereinafter described, wedges in between the rack projection 61 and the bevel face 68 of the locking member 64 and forces the latter to turn on its trunnion 66 into the position indicated by the dotted lines in Fig. 6 whereby the locking member is removed from the path of the rack projection 61 thereby releasing the firing pin from cocked position. When thus released the firing pin 58 is urged forward by the spring 59 and strikes the primer in the cartridge and causes the same to explode.

A longitudinal flat spring 69 adapted to hold the locking member 64 in the recess 65 in the actuator lies in an inclined groove on the lateral face of the actuator 13 and is held in position at its forward end by a dovetail connection (see Fig. 6). The springs 69 is located a sufficient distance below the face of the actuator 13 so that when the locking member 64 is turned about its trunnion 66 the distance required to release the firing pin, the spring 69 will not project beyond the face of the actuator 13 to interfere with the reciprocation of the same within the receiver 2.

The bolt 70 which is slidably and rotatably mounted on the projection 54 of the actuator is a substantially cylindrical member having two diametrically opposite locking lugs 71 which are adapted to slid through corresponding recesses 72 in the forward end of

the receiver 2. One of the recesses 72 is of greater depth than the other to permit the extractor 73 and a spring 74, adapted to hold the extractor in position, to move out from the bolt 70 in the event there is a cartridge in the barrel when the bolt 70 is placed in firing position over the head of which cartridge the extractor would be obliged to pass. The spring 74 is held in a fixed lateral position by reason of its rear end extending into a recess 75 in the actuator 13, as shown in Fig. 18, in which recess said spring reciprocates between the actuator 13 and bolt 70 by the movement of the latter.

The extractor 73 which is adapted to withdraw freely the empty cartridge from the barrel is a flat member having beveled edges adapted to be positioned in a dovetail groove in the front face of one of the lugs 71 on the bolt as shown in Fig. 17. When in place the extractor 73 has its face flush with the front face of the bolt. The end of the extractor 73 is recessed as indicated at 76 and beveled in front as shown at 77. This beveled and recessed edge is adapted to engage in the circular grooves on the head of the cartridges. A projection 78 on the extractor 73 shouldering in recess 79 in the bolt 70 restricts said extractor to its proper position relative to engagement on the cartridge at the same time holding it in position. When the extractor 73 is withdrawing an empty cartridge, the spring 74 lies directly over the extractor forcibly pressing the same against the cartridge. The forward end of the spring is offset as shown for the purpose of contacting with the extractor 73. When this offset end of the spring 74 is carried into the recess 72 in the receiver by the bolt 70, the recess 72 cooperates with the recess 75 to hold the spring firmly at both ends while the bolt 70 is being turned in and out of locking position.

A stud or trunnion 80 projects from the inner face of the spring 74 and is adapted to engage in a spiral slot 81 cut in the face of the bolt 70, as shown in Fig. 17. This stud 80 extends through the slot 81 into a longitudinal groove 82 cut in a tappet 83 which is positioned within the bolt 70 at its forward end. Integral with the tappet 83 is a projection 84 which extends slightly beyond the face of the bolt 70. The purpose of this construction is to bring the tappet 83 into contact with the primer of the cartridge when the gun is ready to fire. When the gun is in firing position, the front of the tappet 83 is in contact with the primer while its rear end is abutted against the projection 54 of the actuator 13. When the gun is fired the primer is instantly forced back against the face of the tappet, said primer coming out of its cartridge such distance as is permitted by the limited backward movement of the

tappet 83 (about .05 inch being a preferred distance). This limited backward movement of the tappet is determined by the length of the groove 82 in the tappet into which the stud 80 projects. At the instant of firing the bolt 70 is locked to the receiver by reason of the lugs 71 being positioned behind the internal flange of the receiver adjacent the recesses 72 therein. The face of the bolt 70 is held firmly against the end of the cartridge thus momentarily preventing the cartridge from moving backward when the primer and tappet move back. As, however, the power generated in the firing is instantly transmitted through the tappet to the actuator, the latter is forced back the full distance required to open the gun breech, compress the main spring and operate the parts preparatory to inserting a loaded cartridge in the barrel. This backward movement of the actuator 13 leaves the tappet 83 in its rearmost position with respect to the bolt 70. The bolt 70 is locked to the receiver by means of the lugs 71 while the actuator moves a part of its distance backward. This momentary retention of the bolt 70 allows the bullet enough time to get out of the barrel before the bolt is unlocked, and allows the actuator the same time to turn the bolt out of locked engagement on the receiver. Rotation of the bolt 70 and reciprocal movement thereof relative to the actuator is accomplished by means of a spiral groove 85 cut in the face of the bolt 70 into which there projects a pin 86 which is set in the actuator on the forward end of the same. The groove 85 is cut parallel with the centerline of the bolt for a short distance at its forward end whereby the pin 86 is carried a short distance in the groove 85 without affecting the position of the bolt as the actuator is urged rearwardly. But as the actuator continues to travel backward the pin 86 is brought into contact with the sides of the spiral groove 85 and thereby turns the bolt 70. When the pin 86 has reached the rear end of the groove 85, the bolt has been turned out of engagement with the receiver and its lugs 71 are in alignment with recesses 72. The actuator continues to move backwards and carries the bolt 70 along with it by means of the pin 86, and also by means of a cammed pin 87, positioned in the actuator a little to the rear of the pin 86, where it is forced into a locking recess or hole 88 in the bolt behind the spiral groove 85. The bolt 70 is then in its forward position relative to the actuator and is locked to the actuator in this position by the said pin 87.

At the moment the bolt 70 begins to turn as described above, the stud 80 which projects through the spiral slot 81 into the groove 82 in the tappet 83 is moved for-

ward and forces the tappet 83 back to its most forward position with respect to the bolt. This forward movement of the tappet 83 forces the primer of the cartridge back into its original position from which it had moved in striking back the tappet the required limited distance to transmit power to the actuator. It is obvious that these movements of bolt and tappet must restore the primer to its original position after the firing, as the bolt in the meantime has not been permitted to leave its locked position in the receiver.

The cammed pin 87, which locks the bolt 70 to the actuator 13 is made with a head having a beveled under surface. The top surface of this pin normally contacts with the inner surface of the receiver cover 11. On this surface near its forward end there are two projections 89 between which the pin 87 must pass as the actuator reciprocates and which are provided with camming surfaces 90. Between the projections 89 the cover has a groove cut therein which terminates a little to the rear of said projections in an inclined camming surface 91. The projections and camming surfaces function in conjunction with the pin 87 to lock and unlock the actuator to and from the bolt. When the actuator 13 is urged forward by the main spring 40 the head of the pin 87 contacts with the cammed surfaces 90 and causes the head of the pin to be raised into the groove in the receiver cover 11 between the projections 89 while the lower end of the pin 87 is drawn out of the hole 88 in the bolt. This movement of the pin frees the bolt in time to permit it to be locked in firing position. When the actuator travels backward, the head of the pin 87 after passing between the projections 89, contacts with the inclined surface 91 which forces the pin downward into the hole 88, locking the bolt and actuator together as they thereafter continue to travel backward.

One of the main objects of locking the bolt 70 to the actuator 13 when the bolt is in its relative forward position is to hold the bolt firmly in alignment with the recesses 72 and to avoid wedging of the pin 86 in the spiral groove 85 because of any tendency the bolt might have to turn when inserting a cartridge into the barrel.

To start the gun in operation the actuator must be pulled back by hand to permit the first cartridge to be lifted from the magazine and inserted into the barrel, unless a cartridge has first been placed in the barrel. Accordingly the actuator 13 is provided with a handle 52 which projects laterally from the forward end of the actuator and terminates in a recessed knob as shown. The handle 52 travels in the slot 43-53 in the receiver cover 11 (see Fig. 24). When the actuator is in its most forward position it

may be locked there if desired when the gun is not in use, by the slidable member 44, in the forward end of which there is a slot 53 to accommodate the handle 52 when the member 44 is locked on the receiver and the receiver cover as described above. In the event of disablement of some of the automatic parts of the gun, the actuator may be operated by hand by means of the handle 52.

A trigger 92 is pivotally mounted on a pin 93 between two spaced projections 95 formed integral with the receiver 2. A lever 94 is pivotally connected to the receiver 2 as shown and is adapted to hold the actuator 13 in its rearmost position at the time the magazine is being reloaded. The trigger 92 has a substantially circular recess connected with cam surfaces 96 cut therein in which the end of a lever 97 is adapted to be inserted so as to pivotally connect this lever to the trigger. This lever 97 is adapted to actuate a sear tripper or releaser by movement of the trigger 92. Near the forward end of the lever 97 and on the upper sides thereof a projection 98 is formed which is adapted to contact with a projecting step 99 formed in one face of the sear tripper 100. A spring 101 normally holds the projection 98 against the front of the step 99. If the trigger 92 be pulled back the lever 97 will move back in a horizontal line, the rear end of the lever 97 turning in its limited pivotal joint connection on the trigger. This backward movement causes the sear tripper 100 to turn about its pivot point 102. When the sear tripper has thus been lifted the required distance to release the sear projection 67 from the firing pin, the cam surface 96 on the front of the trigger contacts with the upper surface of the lever 97 and forces the lever downwards and backwards thus causing the projection 98 to come away from the step 99. The sear tripper 100 is then instantly brought down to its normal position by the action of the spring 101 which is connected to the lever 97 and the firing pin cocking lever, hereinafter described. As there is still considerable tension on the spring 101 after the sear tripper 100 has been returned to its normal position, because of the angular position of the spring, the lever 97 is instantly urged forward and upwards to again engage with the step 99 at the moment the trigger 92 is released by the operator. In order to limit the upward movement of the lever 97 a projection 103 is formed integral with the receiver 2 against which lever 97 abuts, as shown in Fig. 2. This projection also serves to limit the return movement of the sear tripper 100.

The upper edge of the sear tripper 100 has a beveled surface 104 adapted to contact with the bevel face 68 on the sear pro-

jection 67, as shown in Fig. 6, to remove the locking member 64 from the path of the rack projection 61 thereby releasing the firing pin.

A lever 105 which is pivotally connected to the receiver 2 in the lugs 106 is provided to detain the firing pin 58, while the actuator moves forward, in order to cock the firing pin on the actuator. At the rear end of the lever 105 and to one side of the centerline thereof, a step 107 is provided in line with the path of the rack projection 61 on the firing pin 58 against which step the rack projection is detained when the lever 105 is in its upward position, as shown in Figs. 1 and 2. The firing pin is detained a sufficient time to permit the actuator during its forward travel to bring the locking member 64 just in front of the rack projection 61 when it will be forced into the path of the rack projection by the spring 69 thus locking the cocked firing pin on the actuator. While the firing pin is thus being cocked a projection 108 on the under face of the actuator, behind the locking member 64, is traveling up an inclined surface 109 on the rear end of the lever 105, the lever being gradually depressed by this projection as the actuator moves forward. At the same time the locking member 64 is permitted to pass through a groove 110 cut in the lever 105, adjacent the inclined surface 109, as shown in Figs. 10 and 11. As the member 64 emerges from the groove 110 and locks the cocked firing pin, the projection 108 is just reaching the top of the inclined surface 109 and has depressed the lever 105 far enough to throw it out of the path of the already cocked firing pin 58. While this cocking operation is going on the actuator continues to move forward under the urge of the main spring 40. After the firing pin is cocked it is carried forward on the actuator to the position from whence it is fired under the urge of its own spring 59 against the pressure of which it has been cocked.

The lever 105 is provided with trunnions 111 adapted to engage in slots 112 in the sear tripper 100 as shown in Fig. 25, to keep the sear tripper 100 and the lever 105 in alignment cooperatively with the other parts of the gun mechanism while leaving the trunnions 111 free to slide in the slots 112, as the sear tripper 100 and the lever 105 move in opposite directions around their respective pivotal points in the lifting operation, and adapted to provide a fulcrum base for spring 101.

The spring 101 is fastened at one end to lever 105 and at the other end to the lever 97 in the inclined position shown. As tension is placed on the spring 101 by the drawing apart movement of the levers 97 and 105 in the lifting operation of the sear tripper 100 the spring acts to pull down the le-

ver 105 as soon as the sear tripper 100 is freed from the projection 98. The lever 105 by reason of the trunnions 111 being in the slots 112 forces the sear to return to its normal position. As it is impossible to release the trigger quick enough to let the lever 97 go forward before the sear tripper 100 has returned to its normal position, the lever 97 becomes the base for operation of the spring 101. After the sear tripper 100 is in its normal position the lever 105 becomes the base for the spring 101 to draw the lever 97 again into cooperative engagement with the sear.

The lever 97 is so positioned in guideways 113, formed in the depending portions 7 of the receiver 2, that this lever is confined to a limited downward movement. When the trigger 92 is pulled back until the cam surface 96 contacts with the lever 97, a slight further movement of the trigger brings the lever 97 in contact with the bottom of the guideways 113. The construction thus described restricts the lever 97 and the trigger 92 to their required backward movements.

One of the lateral faces of the sear tripper 100 has a substantially circular recess 114 cut therein to house a partially stripped pinion 115 as shown in Fig. 25. The teeth on this pinion are adapted to engage the teeth 63 on the rack projection 61 to cause the firing pin, if it is desired, to be drawn back for recocking by hand means. As the pinion 115 lies in the path of the rack projection 61 a section of its teeth is cut away to allow the rack projection to pass when the pinion is in its normal position with the stripped section uppermost. A slot 116 is cut in the sear tripper 100 to accommodate a rotatable shaft member 117 upon which the pinion 115 is keyed by means of a flat projection 118 on the member 117 which contacts with the surface 119 of the pinion. The rotatable shaft member 117 in mounted position, extends through the lower part of the receiver 2, having its bearings in holes therein, one of which is larger than the other to allow said projections 118 to pass when going to mounted engagement with the pinion 115 when assembling the gun. The slot 116 allows the sear tripper 100 to turn freely about its pivot point 102.

The ejector 120 is rotatably mounted on the smaller end of the member 117. The rear end of the upper surface of the ejector 120 is provided with a projection or cam 121 which is adapted to raise and lower the front end of the ejector so that the ejector may be placed in the path of the cartridge shells as they are withdrawn from the barrel or be positioned out of the path of the cartridges as they go forward. The cam 121 is in alignment with and travels in a groove 122 in the underface of the actuator 13 and

also in a groove 123 in the under surface of the bolt 70, when the bolt is in its relative forward position on the actuator (see Fig. 16). When, in the course of the backward movement of the actuator 13, the cam 121 reaches the forward end of the groove 123 in the bolt it is forced down by the inclined termination of the groove 123. This action forces the front end of the ejector 120 upward into an inclined groove 124 in the forward end of the bolt adjacent the groove 123, in which inclined groove 124 the ejector rises to its uppermost position so that its forward end projects beyond the face of the bolt 70. The ejector 120 emerges through the slot 124 just in time to force the shell from the bolt 70 as it reaches its most rearward position to which the actuator has carried it. Going forward from this rearmost position the bolt 70, by means of the inclined slot 124, forces down the front end of the ejector 120 which action at the same time forces the cam 121 back into the groove 122. The ejector then remains in this position, held under the lower surfaces of the bolt and the actuator until the actuator 13 returns to its rearmost position.

Reference to Fig. 2 will show that when the forward end of the ejector 120 lies in its lowermost position, it projects beyond the face of the depending portion 8 of the receiver 2 and lies in the circular path of the cartridges on the magazine. In its upper position in which it is adapted to eject the empty shells the said ejector is out of the path of the cartridges on the magazine. The front end of the ejector 120 is provided with clearance recesses as indicated at 125 and 126 to allow the bolt and actuator to pass the ejector 120 when the latter is in its upper and lower positions respectively. The rotatable shaft member 117 is provided with a head or circular enlargement 127 at one end as shown in Fig. 25, which is provided with a radially projecting cam 128 adapted to raise the lever 94, above mentioned, and to actuate a slidable member hereinafter described. On the outer face of the head 127 there are provided radial projections 129. The outer end of one of these projections is integral with the cam 128 as shown in Fig. 25. The lever 94 has an extension 130 which, when the lever 94 is in its normal position, rests on the head 127 of the rotatable member 117 as seen in Fig. 3. Turning of the member 117 about its axis brings the cam 128 into contact with the under surface of the extension 130, causing the lever 94 to be raised so that its vertical portion 131 passes through a slot 132 in the receiver 2 into the path of the actuator 13. This arrangement serves to hold back the actuator when it is in its rearmost position to allow the magazine to be reloaded. The lever 94 is provided with a vertical projection 133

adapted to contact with the cam 128. Turning of the member 117 about its axis brings the cam 128 into contact with the vertical projection 133 on the member 94 and causes this member to turn about its pivot point to turn the lever 94 out of the path of the actuator and back to its normal position.

A slidable member 134 is suitably mounted on the lateral face of the receiver 2 as shown in Figs. 3 and 24. At the rear end of this member there is a downward projection lug 135 against which the projection 129 on the rotatable member 117 is brought in contact when the member 117 is rotated, such rotation bringing the cam 128 and the projection 129 into action simultaneously to lift the lever 94 and to push back the slidable member 134 respectively, which parts lie out of the path of each other. The slidable member 134 is provided with a spring 136 at its forward end to draw it back to position after it has been released from the rearward position to which it was drawn by the cam 128. Rack teeth 137 are cut on the inner side of the forward end of the slidable member 134 and are adapted to mesh with the teeth 138 in a member 139 which is adapted to hold the uppermost cartridges in position on the magazine. The retaining member 139 is pivoted in place by means of an integral trunnion 140 which lies in a suitable recess 141 cut in the receiver 2 as shown in Figs. 4 and 5. The slidable member 134 in engagement with the member 139 holds the trunnion 140 in the recess 141. In the operation of the gun the retaining member 139 is moved in and out of position over the cartridges on the magazine with every stroke of the bolt 70 and the actuator 13 to open and close the breech of the gun. When the bolt 70 moves forward pushing a cartridge off the magazine it pushes the retaining member 139 to one side causing it to push back the slidable member 134. When the bolt returns again to the rear of the retaining member 139 the spring 136 acts to draw the slidable member 134 forward, placing the retaining member 139 again over the cartridges in the magazine to prevent them from falling off should the gun be turned up side down.

To reload the magazine with cartridges it is necessary to put the retaining member 139 out of the way by hand operated means. This is accomplished by a handle 142 (Fig. 27) located within a suitable recess in the lateral face of the stock 1 held in position by a bolt 143 which extends through the handle 142 and through the stock of the gun, as well as through the rotatable member 117 as shown in Fig. 6. The handle 142 has a slot cut therein adapted to engage the projecting portions 129 on the rotatable member 117. The bolt 143 which extends through the stock 1, the member 117 and the

handle 142 holds these parts together, and is held in place by a recessed nut 144 adapted to accommodate the end of the handle 142 as shown in Fig. 6. In the outer portion of the nut 144 there is a threaded hole by means of which the nut 144 is adapted to be threaded on the bolt 143 to hold the rotatable member 117 and handle 142 in position on the gun. The handle as it lies in the recess of the nut 144 is therefore free to turn its required distance. When the handle is thus mounted and joined to the rotatable member 117, the handle 142 and the rotatable member 117 turn together to actuate the lever 94, the pinion 115 and the slidable member 134 as above described.

From the following description it will be seen that the hand recocking mechanism does not interfere with the operation of the other parts of the mechanism which are associated with the rotatable member 117. In the operation required to cock the firing pin, the pinion 115 has its teeth brought into engagement with the teeth on the rack projection 61 thus causing the firing pin to go back to recocking position. As, however, this operation is being performed when the actuator and its associated parts are in their forward position, the lever 94, which was raised at the same time, is free to rise behind the actuator 13 without interference. The bolt 70 has pushed the retaining member 139 to one side as described above. The release of the firing pin 58, by means of the trigger causes the rack projection 61 to go forward with its teeth still engaged with the teeth of the pinion 115, thus causing the pinion 115, the rotatable member 117 and the handle 142 to rotate and depress the lever 94 thereby returning these parts to their normal positions.

In the operation required to position the projection 131 of the lever 94 in front of the actuator 13, the said actuator and associated parts are in their rearmost position and there is nothing to interfere with the pinion 115 as it turns with the handle 142 and the rotatable member 117.

The sear tripper 100 is provided with an offset projection 145 adapted to pass through a slot in the projection 8 of the receiver 2 to engage as a pawl in a ratchet 146 cut in the rear surface of the magazine 9. The end of the projection 145 is beveled so that it can easily slide over the ratchet teeth 146 when the magazine is rotated in one direction. This it does when the magazine is rotated for the purpose of loading with cartridges, and for winding its operating spring at the same time. The projection 145 is moved back and forth by the ratchet teeth 146 on the magazine and the spring 101. The projection 145 is pulled out of engagement with the magazine by means of the trigger 92 lifting up the sear tripper

100. This disengagement of the projection 145 is only for an instant as the spring 101 again throws it back as the sear tripper 100 is released. During this instant of disconnection the magazine rotates less than one notch because the ejector projects, as above stated, into the path of the cartridges and acts as a stop to hold the magazine to a slight movement. While the magazine is thus held back and the projection 145 is pressing against the bevel of the next ratchet tooth, the actuator 13 and bolt 70 are returning from firing position and upon contact of the bolt with the cam 121 on the ejector 120, the magazine 9 is released by the bolt forcing the detaining ejector out of the way of the cartridges. The magazine then continues to rotate until the projection 145 slides into the notch and holds the magazine to a one tooth movement for each reciprocation of the breech mechanism.

In this construction a definite relationship must be maintained between the length of the pawl projection 145 on the sear tripper 100 and the depth of the ratchet teeth 146 formed in the rear face of the magazine.

When the trigger 92 is released the pawl projection 145 immediately contacts with the bevel face of the next ratchet tooth and slides along this face as the magazine continues to rotate.

The magazine 9 comprises a substantially hollow cylindrical member which is supported upon a shaft 147 having a large integral inwardly flanged head 148, the interior of which forms a circular guideway 149 for the forward end of the cartridges. A central flange 150 on the inner face of the member 148 is adapted to form the bearing for the forward end of the magazine 9 as shown in Fig. 1. The rear end of the shaft 147, reduced as shown, forms the bearing for the rear end of the magazine. Around the shaft 147 a spring 151 is mounted which has a central loop 152 adapted to engage on a stud 153 which is provided in the interior of the magazine 9. The spring 151 is fastened to the shaft 147 at each end. Stop projections 154 and 155 provided on the magazine 9 and the member 148 respectively, serve to limit the rotation of the magazine 9 to one turn.

The exterior of the magazine 9 is provided with a plurality of grooves 156 in which the cartridges are positioned in loading. These grooves 156 terminate in front in inclined surfaces 157 adapted to raise the forward end of the cartridges as they are inserted in the barrel of the gun by the bolt. To place the magazine 9 in position in the receiver 2, the magazine and the member 147 must first be assembled. The magazine 9 is set back within the flange 158 formed integral with the depending portion 8 on the receiver. A cen-

tral supporting pin 159 is then inserted through the shaft 147 having its bearings in the depending portions 8 of the receiver. The forward end of the pin 159 is made large in order to abut against the member 148 to hold the magazine 9 in position. The enlarged end of the pin 159 extends beyond the receiver projection 8 and is of semi-circular cross-section and adapted to lie on a similar projection 160 formed integral with the receiver projection 8. A circular hole in the gun stock receives these projections and the bolt 4 is screwed into the projection 160 with a free end adapted to pass into a hole in the head of the pin thus securely holding these parts to the stock.

In case it may be desired to assist the rotation of the magazine 9 when loading it with cartridges, a flexible wire or string 161 is provided which is connected with the stop member 154 on the magazine and which passes through the front of the member 148 so as to be out of the path of the cartridges. The wire 161 hangs down in sufficient length to allow it to be wound on the magazine 9 when said magazine is turned for loading.

Opposite the trigger 92 a hole 162 is made in the lateral face of the stock 1 to accommodate the finger when the gun is in use. To protect the interior mechanism and enclose the trigger with the other parts when the gun is not in use, a cover plate 163 is provided (Fig. 27) which has a cylindrical projection 164 integral therewith in which a groove 165 is formed. This groove is adapted to engage the bolt 3 to hold the cover plate 163 on the gun so that it is free to open and close the hole 162.

To load the gun a clip 166 adapted to hold a plurality of cartridges is placed in the slot 43 in the receiver cover 11 as shown in Fig. 12.

Figs. 32 and 36 show a modification of my invention. My object in making this design is mainly to bring the power generated in the gun to bear through the cartridge primer directly against the forward end of the firing pin and through the firing pin to the actuator without the use of an intermediate tappet piece.

As shown in Figs. 32 and 35 the actuator 167 is made without an interior forward projection such as has been described, and the firing pin 168 is enlarged in diameter to accommodate the bolt 169 which is mounted thereon in the front recess 170 in the actuator. The rear end of the firing pin is hollow for a considerable distance to accommodate the firing spring 171. The firing pin is provided with a rack projection 172 similar to the one previously described except in this design there are two locking points on the rack projection instead of only one to which the locking member 173 is locked, namely: 130

the front face of the projection 172 and a point further back 174 where the locking member locks when the firing pin has been sent to forward position in the firing of the gun. Thus locked in this forward position to the actuator by means of the locking member 173, the firing pin and the actuator function as one piece. Therefore, at the moment of firing, the blow on the front of the firing pin is passed instantly to the actuator resulting in the actuator and firing pin being thrust back together. The primer in going back after the firing pin and actuator, is stopped by a shoulder 175 cut in a little below the front face of the bolt 169. By the movement rearwardly of the actuator 167 the bolt is turned as before described. After reaching its rearmost position the actuator is forced forward by the action of the main spring with the firing pin still locked to it. However, on reaching a cam projection 176 on the lever 177 the locking member 173 is forced out of engagement with the rack projection 172 on the firing pin as said locking member goes past. As this movement takes place the firing pin is being detained as before described to cock on the locking member 173, from which position it is fired when the breech of the gun is closed and the bolt and actuator are in firing position. A member 178 is suitably fastened to the reduced rear end of the actuator and serves as the rear abutment for the interior firing pin spring 171.

These changes in the construction of the firing pin necessitate changes in the bolt as well as the actuator. As in this case it is not necessary to have a spring on the extractor and bolt that is relatively rotatable to the bolt, the extractor spring 179 is located in a groove on the face of the bolt 169 and has its rear end connected to the bolt by a dovetail joint. The forward part of the spring extends through a longitudinal slot in one of the lugs on the bolt and the end of the spring is inserted in a groove 180 in the extractor 181. This construction enables the extractor to move across the face of the bolt when it is forced to go over the head of a cartridge or when a cartridge is being ejected from the bolt.

In both designs of my invention the bearing surfaces on the actuator are reduced to a minimum to eliminate friction as much as possible. The top surface of the actuator is provided with a central ridge at front and rear ends, one of which ridges houses and guards the pins in the forward end of the actuator while the other protects the bearing for the trunnion on the firing pin locking member.

I depend, of course, on the power applied to the primer at the time of the explosion of the powder in the cartridge, to run the gun; but, in addition to this action on the primer

there is a substantial recoil thrust applied directly to the actuator by reason of the front of the actuator being in direct contact with the forward flange on the end of the receiver.

The rear end of the receiver cover 11 is provided with parallel walls 182 adapted to support a suitable rear sight 183 and to house the sight when the gun is not in use.

Having thus described this form of my invention, I wish it to be understood that various changes may be made by those skilled in the art without departing from the spirit and scope of my invention.

What I claim and desire to protect by Letters Patent is:

1. In a gun, a receiver having guideways for a breech lock and locking grooves in which a breech cover is slidably locked and provided with depending portions adapted to support a trigger and associated parts and to carry a magazine and provided at its forward end with a sectionally threaded projecting head adapted to receive a barrel on the inside and to receive a rotatable, barrel-detachable, coupling member on the outside.

2. In a gun, a receiver having guideways for a breech block and locking grooves in which a breech cover is slidably locked and provided with depending portions to support a trigger and associated parts and adapted to carry a magazine and provided at its forward end with a sectionally threaded projecting head adapted to receive a barrel on the inside and to receive a rotatable, barrel-detachable, coupling member on the outside, said head having interior and exterior threads cut in sections adapted to receive the barrel and coupling member and to bring both into locked position on the receiver simultaneously.

3. In a gun, a receiver provided at its forward end with a coupling head having inside and outside threads to which the barrel of the gun and a barrel-detachable, coupling member are rotatably and removably connected and means adapted to lock the coupling member in position on the barrel and on the receiver while simultaneously locking the barrel to the receiver.

4. In a gun, a receiver provided at its forward end with a coupling head having inside and outside threads to which the barrel of the gun and a barrel-detachable, coupling member are rotatably and removably connected; means adapted to lock the coupling member, the barrel and the receiver together simultaneously, said coupling member and receiver head having adjacent recesses adapted to contain a supply of oil.

5. In a gun, a receiver provided at its forward end with a coupling head to which the barrel of the gun is adapted to be removably connected, a coupling member

adapted to be placed over said head and to rotate the barrel, a handle adapted to rotate said coupling member and means for locking said coupling member to said head.

5 6. In a gun, a receiver provided at its forward end with a coupling head having partially-stripped interior threads, a barrel having a similar threaded portion where-  
10 by the barrel may be inserted longitudinally within said head and be connected there-  
with, a coupling member adapted to be placed over said head and to rotate said barrel, a handle adapted to rotate said cou-  
15 pling member and means for locking said coupling member to said head when said barrel is in position.

7. In a gun, a receiver provided at its forward end with a coupling head to which the barrel of the gun is adapted to  
20 be removably connected, a coupling member adapted to be placed over said head and to rotate the barrel, a handle adapted to rotate said coupling member, a receiver cover and means for locking said coupling  
25 member to said head and for locking said receiver cover to said receiver.

8. In a gun, a barrel and means positioned in and surrounding a part of the firing chamber of the barrel for lubricating the  
30 cartridges as they are inserted into the barrel.

9. In a gun, a barrel having means positioned in and surrounding a part of the firing chamber of the barrel to oil the car-  
35 tridges as they pass into said chamber, a retaining member adapted to hold said means in position and passageways adapted to supply oil from an oil well to said means.

10. In a gun, a barrel having a recess in its rear end, an oil pad therein adapted to  
40 apply oil to the cartridges as they are inserted into the barrel and a retaining member connected with said barrel to hold said pad in position.

45 11. In a gun, a barrel having a recess in its rear end, an oil pad therein which projects slightly into the bore of the gun adjacent the rear face of the barrel adapted to  
50 apply oil to the cartridges as they are inserted into the barrel and a retaining member located in said recess to hold said pad in position.

12. In a gun, a receiver, a barrel and means for rotatably connecting the barrel to the receiver, an oil well associated with said  
55 means and means associated with the barrel for applying oil to the cartridges as they are inserted into the barrel.

13. In a gun, a barrel, a receiver provided  
60 at its forward end with a coupling head to which said barrel is adapted to be connected, a coupling member adapted to lock said barrel to said head, an oil well associated with said coupling member and receiver,  
65 and an oil pad associated with said barrel

for applying oil to the cartridges as they are inserted into the barrel.

14. In a gun, a barrel, a receiver provided at its forward end with a coupling head to which said barrel is adapted to be connect-  
70 ed, a coupling member adapted to lock said barrel, to said head, a handle for turning said coupling member, an oil well associated with said handle and an oil pad located in a recess in the rear end of said barrel for  
75 applying oil to the cartridges as they are inserted into the barrel.

15. In a gun, a barrel, a receiver provided at its forward end with a coupling head to which said barrel is adapted to be connected,  
80 a coupling member adapted to be placed over said head and to rotate said barrel, a handle for turning said coupling member, an oil well associated with said handle, an oil pad located in a recess in the rear end  
85 of said barrel for applying oil to the cartridges as they are inserted into the barrel and means for holding said pad in position.

16. In a gun, a barrel, a receiver provided at its forward end with a coupling head to  
90 which said barrel is adapted to be connected, a coupling member adapted to be fastened over said head and to rotate said barrel, a handle for turning said coupling member, means for locking said coupling member to  
95 said head, an oil well associated with said handle, an oil pad located in a recess in the rear end of said barrel for applying oil to the cartridges as they are inserted into the barrel and means connected with said barrel  
100 for holding said pad in position, said head, coupling member and barrel having suitable passages whereby oil may flow from said oil well to said pad.

17. In a gun, an actuator having an in-  
105 ternal firing pin chamber and a slot in the under surface of the actuator connecting with said chamber for a limited distance at the rear end of the actuator, a firing pin reciprocal within said chamber and pro-  
110 vided at its rear end with a depending projection extending through and reciprocal in said slot and means pivoted to said actuator and adapted to contact with said projection to lock the firing pin to the actuator.  
115

18. In a gun, an actuator having an in-  
120 ternal firing pin chamber opening at its rear end into a slot in the bottom of the actuator for a limited distance, a firing pin reciprocal within said actuator and provided at its rear end with a depending projection extending through and reciprocal in said slot, a sear member pivoted to said actuator and pro-  
125 vided with a projection adapted to make locking contact with said firing pin projec-  
130 tion to lock the firing pin and actuator together and a spring adapted to urge said sear member into locking engagement with the firing pin and the actuator.

19. In a gun, an actuator having at the

rear end thereof a slot in the under surface, a firing pin reciprocal within said actuator and provided with a depending projection at its rear end adapted to reciprocate in said slot, a sear member pivoted to said actuator and provided with an inward bevel-faced projection adapted to contact with said firing pin projection, a spring adapted to urge said sear member into locking engagement on said actuator and firing pin and a sear tripper adapted to contact with said bevel face to release said sear from contact with the firing pin.

20. In a gun, an actuator provided with an interior projection, a bolt rotatably and slidably mounted on said projection, means for rotating said bolt and means for locking said bolt on said projection.

21. In a gun, an actuator provided with an interior projection, a bolt rotatably and slidably mounted on said projection, means for rotating said bolt, a member in the forward end of said actuator for locking said bolt on said projection and means for positioning said member in locked and unlocked engagement.

22. In a gun, an actuator provided with an interior projection, a bolt rotatably and slidably mounted on said projection, means for rotating said bolt, a member in the forward end of said actuator adapted to be positioned in said bolt to lock said bolt on said projection and means for inserting said member in said bolt.

23. In a gun an actuator provided with an interior projection, a bolt rotatably and slidably mounted on said projection, means for rotating said bolt, a member in the forward end of said actuator adapted to be positioned in said bolt to lock said bolt and said projection, a receiver and cover therefor and camming means associated with said cover adapted to insert said member in said bolt and to withdraw the same therefrom during the reciprocation of said actuator.

24. In a gun, an actuator having a slot therein and provided with an interior projection, a firing pin reciprocable within said actuator and provided with a projection adapted to reciprocate in said slot, means pivoted to said actuator and adapted to contact with said firing pin projection to lock said firing pin to said actuator, a bolt rotatably and slidably mounted on said interior projection, means for rotating said bolt and means for locking said bolt to said interior projection.

25. In a gun, an actuator having a slot therein and provided with an interior projection, a firing pin reciprocable within said actuator and provided with a projection adapted to reciprocate in said slot, a locking member pivoted to said actuator and provided with a projection adapted to contact with said firing pin projection to lock

said firing pin to said actuator, a spring adapted to urge said locking member against said actuator, a bolt rotatably and slidably mounted on said interior projection, means for rotating said bolt, a member in the forward end of said actuator adapted to be positioned in said bolt to lock said bolt on said interior projection and means for inserting and withdrawing said member in and out of locking engagement.

26. In a gun, an actuator, a bolt having a spiral slot therein, a tappet member within said bolt and having a groove restricted in length to the reciprocal movement of said tappet and a member mounted on said bolt with a projection adapted to engage in said groove in the tappet through said spiral slot in the bolt whereby the tappet is forced to push back the primer in the cartridge by the rotation of the bolt after the tappet has transmitted power to the actuator.

27. In a gun, a receiver, an actuator, a bolt having a spiral slot therein, a tappet member reciprocable in said bolt and adapted to transmit power from the primer of the cartridge to said actuator and a member having a projection thereon extending through said slot and adapted to move said tappet member forward when said bolt is rotated away from locked position in the receiver.

28. In a gun, an actuator, a bolt having a spiral slot therein, a tappet member reciprocable in said bolt, adapted to transmit power from the primer of the cartridge to said actuator and having a groove therein and a member slidably mounted on said bolt and having a projection thereon extending through said slot into said groove whereby said tappet member is moved forward to replace the primer in the cartridge when said bolt is rotated from locked position in the receiver.

29. In a gun, a receiver provided with a plurality of depending portions, a substantially hollow, cylindrical, cartridge magazine supported along a longitudinal axis between two of said depending portions and having a fluted exterior surface adapted to carry a plurality of cartridges and provided with means to rotate said magazine, a ratchet on the rear face of said magazine, a pawl co-operating with said ratchet to restrict the rotation of said magazine one lateral cartridge space at a time and means for releasing said pawl from said ratchet when the gun is fired.

30. In a gun, a receiver provided with a plurality of depending portions, a substantially hollow, cylindrical, cartridge magazine supported along a longitudinal axis between two of said depending portions and having a fluted exterior surface adapted to carry a plurality of cartridges and provided with

means to rotate said magazine, a ratchet on the rear face of said magazine, a pawl co-operating with said ratchet to restrict the rotation of said magazine one lateral cartridge spaced at a time, means to retain the cartridges on the magazine until displaced by the forward movement of the breech bolt.

31. In a gun, a receiver provided with a plurality of depending portions, a substantially hollow, cylindrical magazine supported along a longitudinal axis between two of the said depending portions and having a fluted exterior surface adapted to carry a plurality of cartridges and provided with means to rotate said magazine, a ratchet on the rear face of said magazine, a pawl co-operating with said ratchet to restrict the rotation of said magazine one lateral cartridge space at a time, means to retain the cartridges on said magazine until forced into the firing chamber by the breech mechanism and means to rotate said magazine in the operation of reloading the same with cartridges.

32. In a gun, a receiver provided with a plurality of depending portions, a substantially hollow, cylindrical, cartridge magazine supported between two of said portions and having cartridge beds around its exterior surface adapted to carry a plurality of cartridges, a spring adapted to rotate said magazine, a ratchet on the rear face of the magazine, a pawl adapted to cooperate with said ratchet and means associated with said magazine adapted to control the rotation of the magazine in a movement restricted to less than one lateral cartridge space when said pawl moves from one ratchet tooth to the next one.

33. In a gun, an actuator, a receiver provided with a plurality of depending portions, a substantially hollow, cylindrical, cartridge magazine supported between two of said depending portions and having cartridge beds around its exterior surface adapted to carry a plurality of cartridges, a spring adapted to rotate said magazine, a ratchet on the rear face of the magazine, a pawl adapted to cooperate with said ratchet, means projecting into the path of the cartridges to restrict the rotation of the same to less than one cartridge space when said pawl is released from said ratchet at the moment of firing, means to hold the uppermost cartridge on the magazine in its bed when the actuator goes to the rear of the magazine and means to stop the magazine at a fixed point thereby restricting the rotation of the magazine to one revolution on its axis when loading and unloading the same.

34. In a gun, an actuator, a receiver provided with a plurality of depending portions, a substantially hollow, cylindrical, cartridge magazine supported between two of said portions and having grooves around

its outside surface adapted to carry a plurality of cartridges, a spring adapted to rotate said magazine, a ratchet on the rear face of the magazine, a pawl adapted to co-operate with said ratchet, means mounted on the receiver and projecting into the path of the cartridges to restrict the rotation of said magazine to less than one cartridge space movement when said pawl is withdrawn from the ratchet at the moment of firing, means to hold the upper cartridge in its groove on said magazine and means to rotate the magazine to reload the same with cartridges and to rewind its spring simultaneously.

35. In a gun, a receiver, an actuator, a firing pin and means for locking said firing pin to said actuator, a trigger, a sear tripper pivoted to said receiver and adapted to release said locking means, a member pivotally connected to said trigger and adapted to engage said sear tripper to rotate the same about its pivot point and a member pivoted to said receiver and to which said sear tripper is slidably and rotatably connected, said member being adapted to detain said firing pin as said actuator moves forward.

36. In a gun, a receiver, an actuator, a firing pin and means for locking said firing pin to said actuator, a trigger, a sear tripper pivoted to said receiver and adapted to release said locking means, a lever pivotally connected to said trigger and provided with a projection adapted to engage in a suitable recess in said sear tripper to rotate the same about its pivot point, a lever pivoted to said receiver and to which said sear tripper is slidably and rotatably connected, said member being adapted to detain said firing pin as said actuator moves forward and a spring connecting said levers.

37. In a gun, a receiver provided with a grooved head having both inside and outside threads cut in sections, a barrel-detachable, coupling member having an interior groove or channel and interior threads cut in sections, a handle on said coupling member adapted to rotate and screw the coupling on the receiver while simultaneously rotating and screwing the barrel of the gun to the said receiver, and locking means on said coupling member adapted to lock the barrel, the receiver and the coupling together at the same time, said grooves or channels co-operating to form an oil well.

38. In a gun, a receiver having a grooved and sectionally threaded head, a barrel adapted to screw in said head, a detachable coupling member having an oil well therein, said receiver and barrel having passages through which oil may flow from said oil well into the firing chamber of the barrel, a spring-actuated lock adapted to lock the coupling to the receiver when the barrel is screwed in place in said receiver head.

39. In a gun, a receiver, an actuator, a trigger mechanism mounted between the walls of said receiver comprising a trigger, a sear tripper associated with said trigger, a pawl extension on said tripper, a lever journaled in said trigger and releasably connected to said sear tripper, a sear, a magazine adapted to rotate laterally with respect to the line of the cartridges and provided with ratchet teeth on its rear face with which the pawl is adapted to engage, a firing pin in said actuator provided with a depending projection at its rear end having a rack cut therein, said trigger lever being adapted to release said tripper and its pawl simultaneously with the release of said sear from the firing pin and release of said lever from said sear tripper.

40. In a gun, a receiver, an actuator, a firing pin slidable within said actuator and provided with a depending projection, a sear pivoted to the actuator and adapted to hold the firing pin in cocked position on said actuator as the same moves forward to firing position, means lying in the path of said projection adapted to detain the firing pin as the actuator moves past until the firing pin is mounted on said sear and means on the actuator adapted to release said detaining means from the firing pin when the firing pin is mounted on said sear.

41. In a gun, a receiver, an actuator, a firing pin, means locked on said actuator and comprising a sear, means mounted on the receiver to detain the firing pin to be cocked on said sear while the actuator moves forward and means on the actuator to remove said detaining means when the firing pin is cocked, a sear tripper adapted to release the sear, a member connected to the trigger operating said sear tripper and means for releasing said trigger member from said tripper and for remounting said trigger member on said tripper with each operation of the trigger to fire the gun.

42. In a gun, a receiver, an actuator, a firing pin, a sear and means for locking said firing pin to said sear and actuator, a trigger, a sear tripper adapted to release said locking means, a member pivoted to said trigger adapted to operate said sear tripper, a member pivoted to the receiver adapted to detain said firing pin to be cocked on said sear as the actuator moves forward, means adapted to depress and displace said detaining member from the path of the firing pin when said firing pin is being cocked and a spring connected to said trigger pivoted member and to said tripper whereby said last member and said tripper act successively as bases for the spring to pull the other into normal position.

43. In a gun, a receiver, an actuator, a firing pin and means for locking said firing pin to said actuator, a trigger, a sear tripper

pivoted to said receiver and adapted to release said locking means, a member pivotally connected to said trigger and adapted to engage said sear tripper to rotate the same about its pivot point and a member slidably and rotatably connected to said sear tripper and adapted to detain said firing pin to be cocked as said actuator moves forward.

44. In a gun, a magazine provided with a ratchet, a trigger, a firing pin a sear tripper adapted to release said firing pin and provided with a pawl projection adapted to engage with said ratchet, a trigger lever connected to said trigger and said sear tripper, a detaining member connected to said sear tripper and adapted to detain said firing pin to be cocked and a spring connected to said lever and said member and adapted to force the detaining member downward thus returning the sear tripper to its normal position when the trigger lever is released from said sear tripper, said spring being also adapted to urge said trigger member forward to engage said sear tripper when the trigger is released.

45. In a gun, a receiver, an actuator having a slot at the rear end thereof in its under surface connecting with a firing pin chamber in the actuator, a firing pin provided with a depending projection adapted to reciprocate in said slot, said projection having rack teeth cut in its under surface to engage with a pinion, a lever connected to said pinion to rotate the same to draw back the firing pin to cocked position on the sear for refiring, if needed, after the firing pin has been released for firing.

46. In a gun, a receiver, an actuator, a member pivoted to said receiver and adapted to hold the actuator in its rearward position while the magazine is being reloaded and a rotatable member provided with a handle and provided with a cam which contacts with said member to place the same in the path of said actuator and to remove it therefrom.

47. In a gun, a receiver, an actuator, a magazine, a member pivoted to said receiver and adapted to hold the actuator in its rearward position while the magazine is being reloaded, a retaining member pivoted to said receiver and adapted to hold the uppermost cartridge on the magazine, a slidable member connected to said retaining member and a rotatable member provided with a handle and provided with a cam which contacts with first said member and said slidable member to withdraw said retaining member from the cartridges.

48. In a gun, a receiver, an actuator, a firing pin provided with a rack projection, a locking member adapted to hold the actuator in its rear position, a magazine, a retaining member adapted to hold the uppermost cartridge on the magazine, a slidable mem-

ber connected to said retaining member, a pinion adapted to engage with said rack projection, a rotatable member adapted to rotate said pinion to cock the firing pin and provided with a cam adapted to position said locking member and said retaining member and a handle adapted to turn said rotatable member.

49. In a gun, a receiver, an actuator, a bolt provided with camming surfaces on the under side thereof, an ejector provided with a cam, a rotatable magazine adapted to hold a plurality of cartridges, said camming surfaces being adapted to contact with said cam to raise and lower the forward end of said ejector which when down projects into the path of the cartridges to limit the rotation of said magazine.

50. In a gun, an actuator provided with a handle, a receiver, a spring, a receiver and breech cover slidably mounted and locked to said receiver and adapted to house said

spring, a slot in one side of said cover at the forward end thereof through which empty cartridge shells are ejected and in which said handle reciprocates, a member slidable on said cover and adapted to cover said slot and enclose the breech mechanism of the gun, means adapted to lock the cover, receiver and slidable member together simultaneously and to lock the actuator in its forward position when the said slot is enclosed by said member.

51. In a gun, a stock, a receiver, a bolt connecting said receiver with said stock, a trigger and trigger mechanism housed within said stock in a suitable recess, a hole in one side of said stock opening into said recess adjacent said trigger and a rotatable member adapted to cover said hole in the stock, said member being provided with a projection having a locking groove in engagement with said bolt.

JOHN T. KEWISH.

#### CERTIFICATE OF CORRECTION.

Patent No. 1,696,537.

Granted December 25, 1928, to

JOHN T. KEWISH.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 11, line 83, claim 1, for the word "lock" read "block"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of February, A. D. 1929.

(Seal)

M. J. Moore,  
Acting Commissioner of Patents.