

G. H. A. F. L. ROSS.

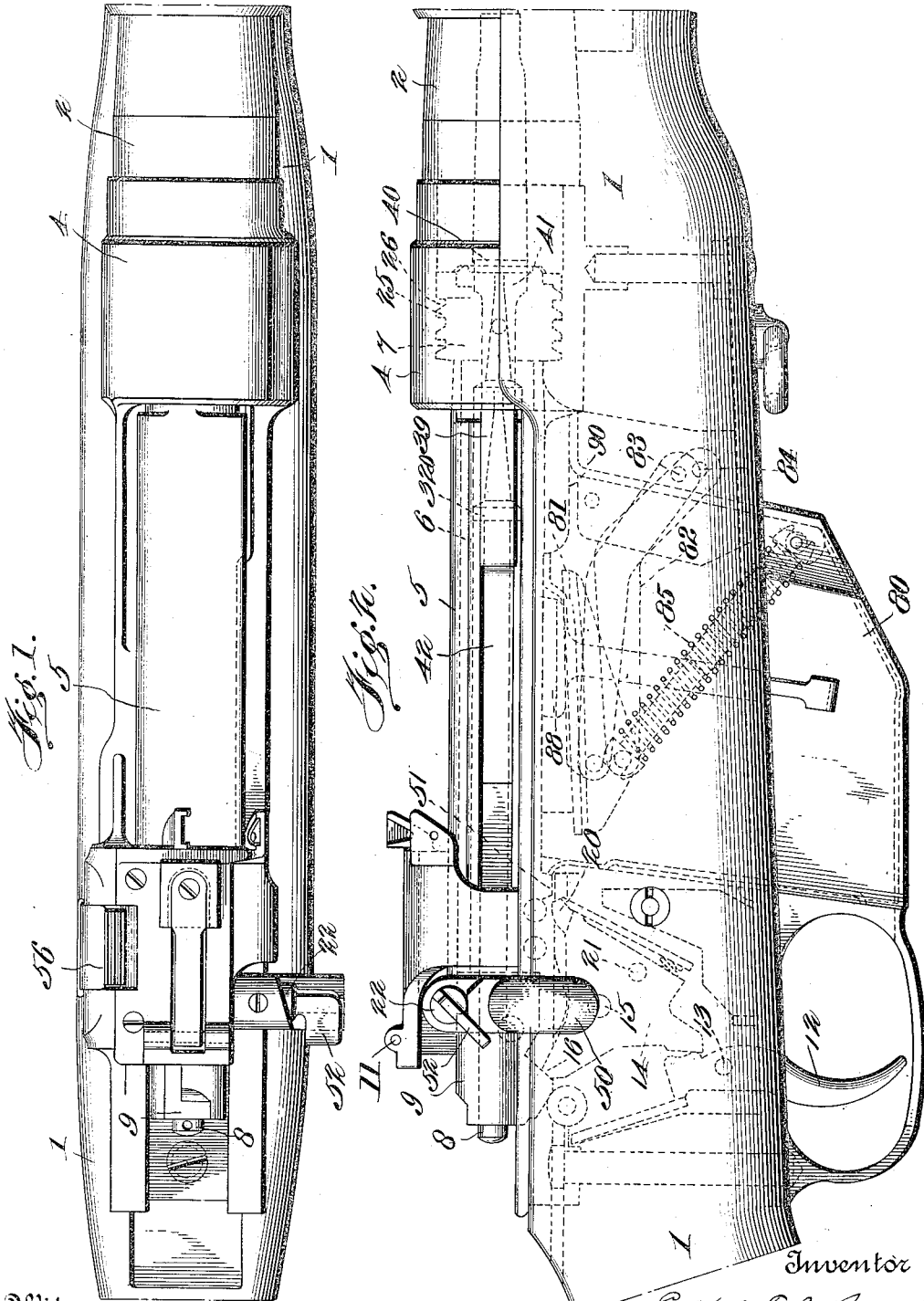
FIREARM.

APPLICATION FILED OCT. 30, 1913.

Patented June 1, 1915.

8 SHEETS—SHEET 1.

1,141,582.



Witnesses
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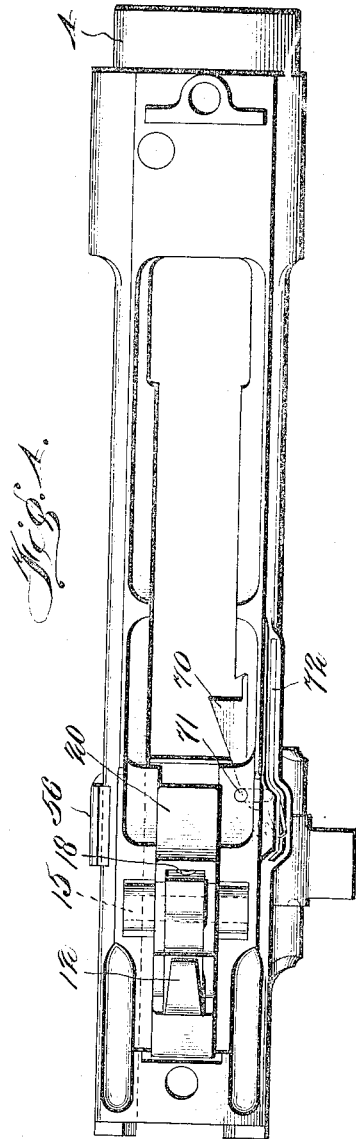
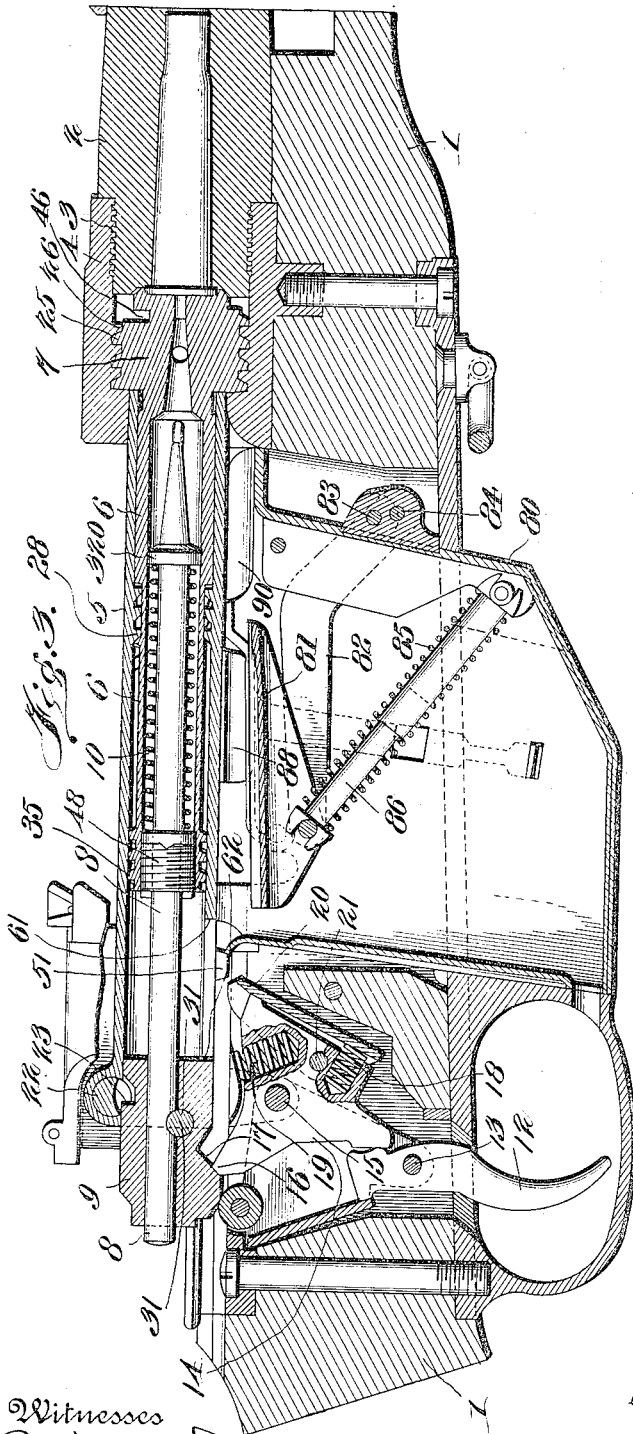
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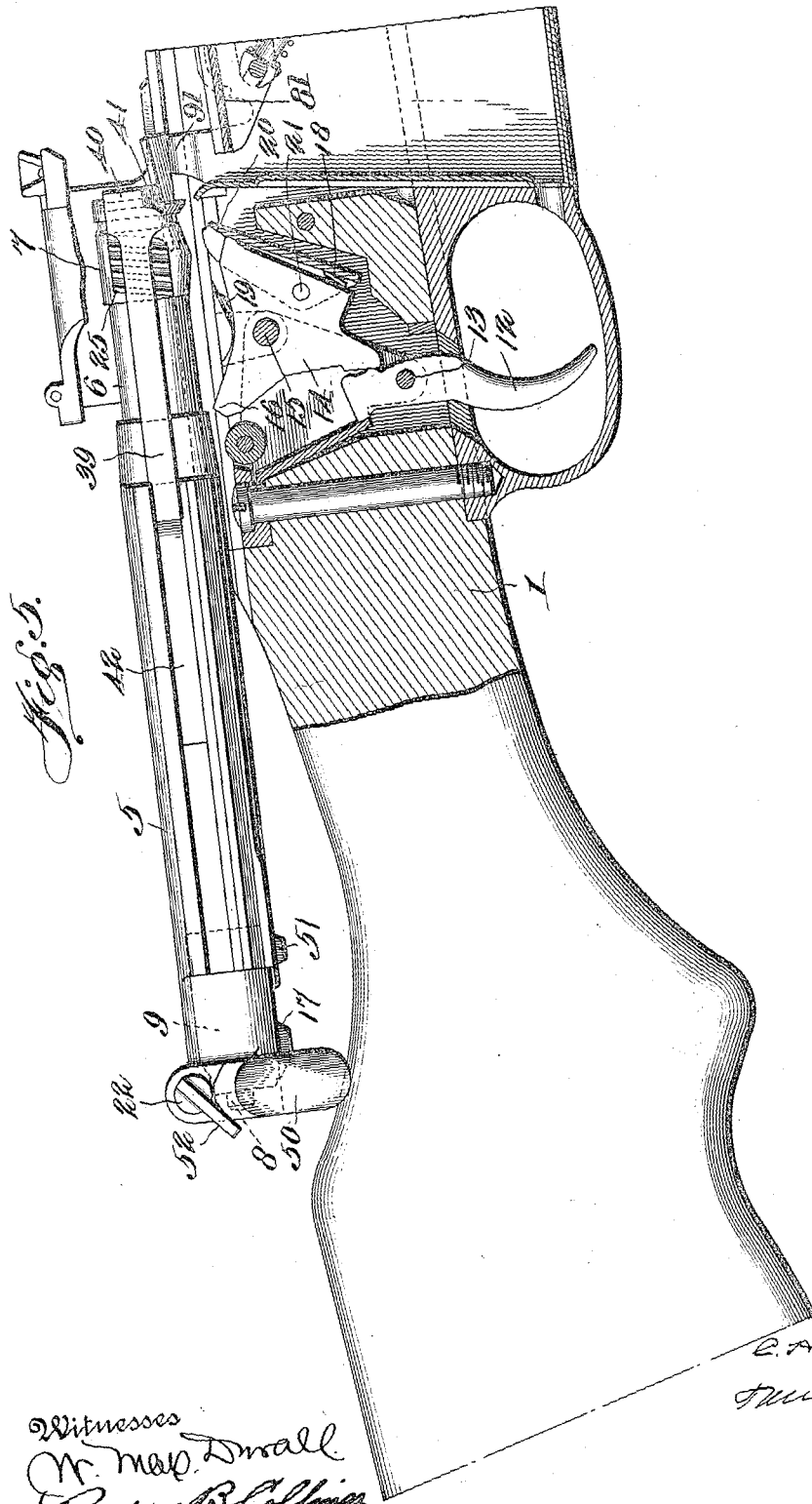
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8 SHEETS—SHEET 3.



Witnesses
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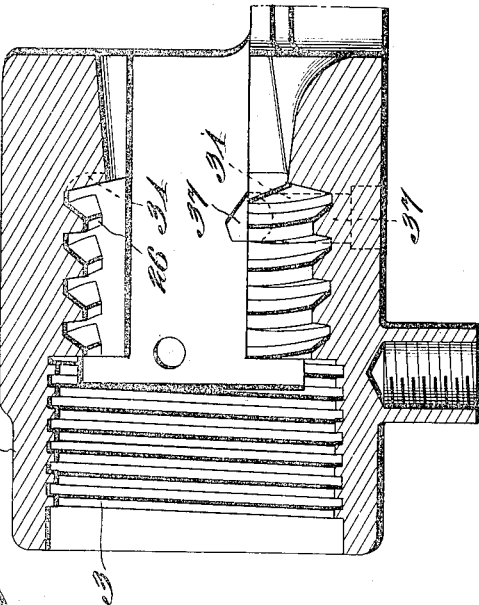
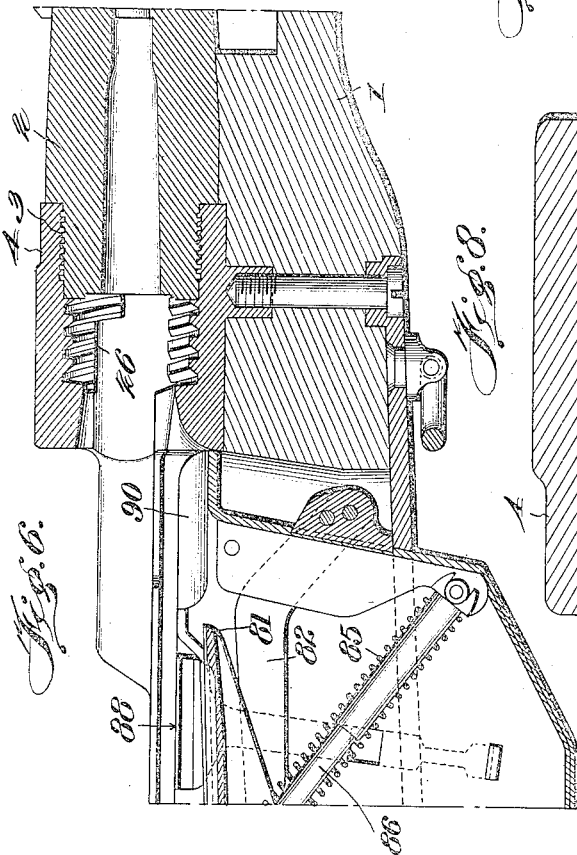
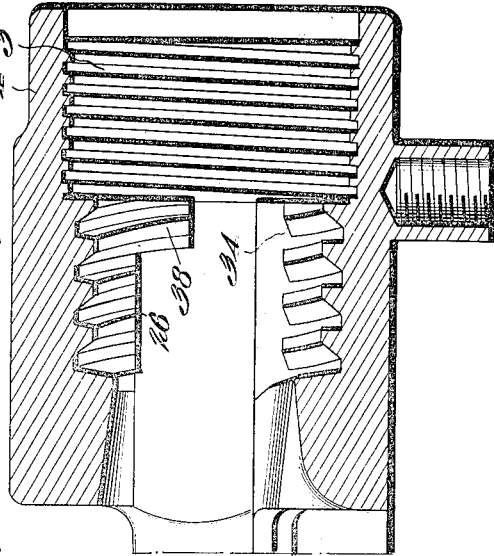
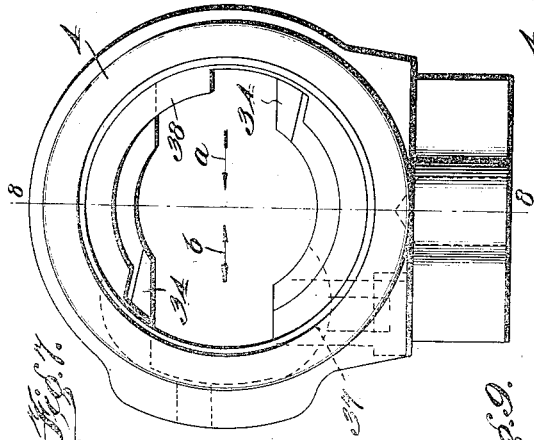
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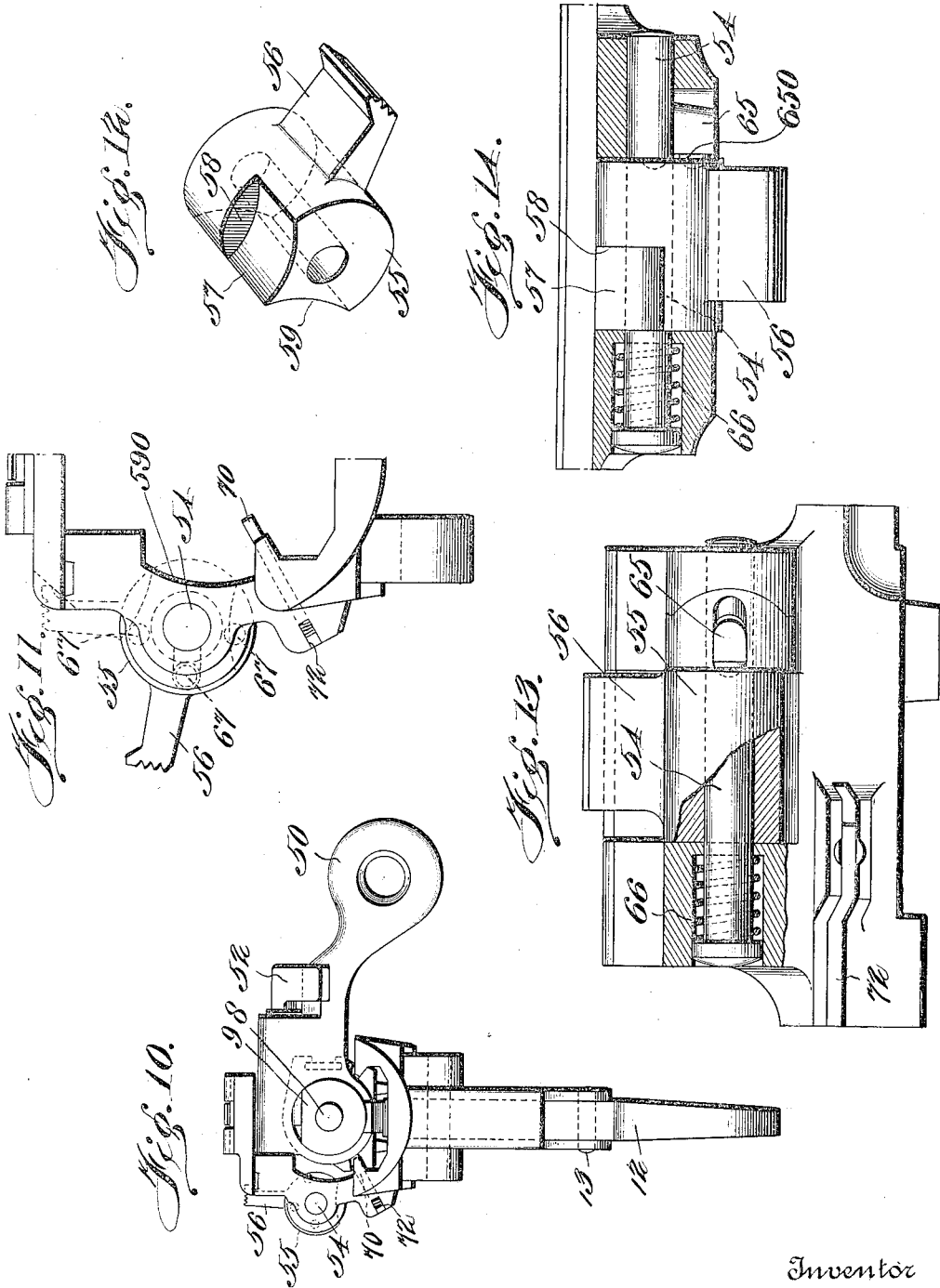
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1,141,582.

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 8 SHEETS—SHEET 5.



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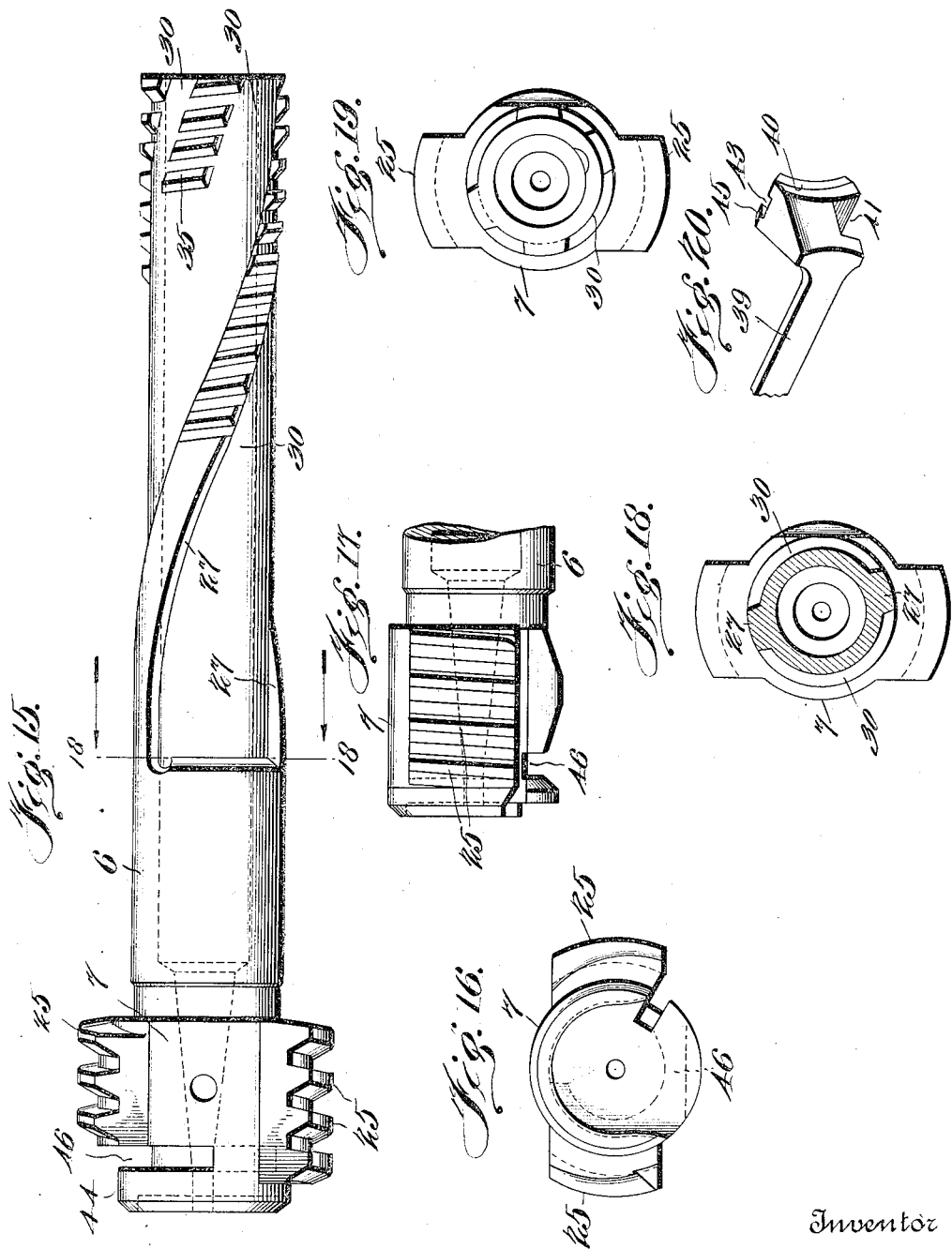
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FIREARM.

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1,141,582.

Patented June 1, 1915.

8 SHEETS—SHEET 6.



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FIREARM.

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8 SHEETS—SHEET 7.

1,141,582.

Fig. 23.

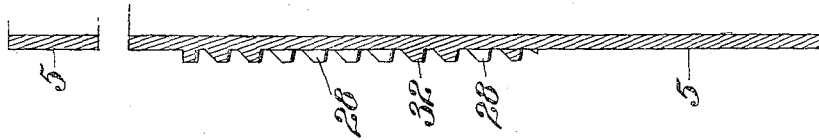


Fig. 24.

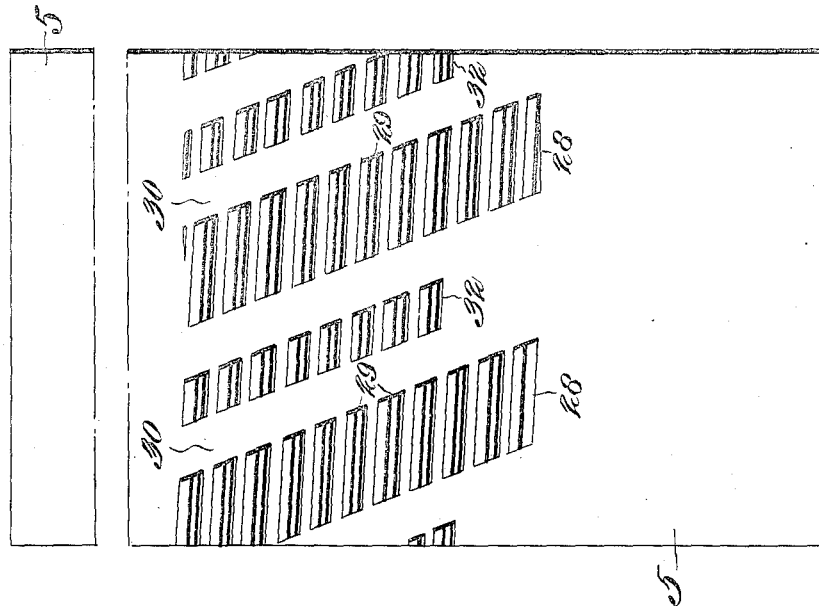
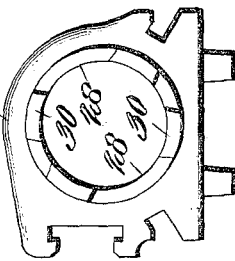


Fig. 25.



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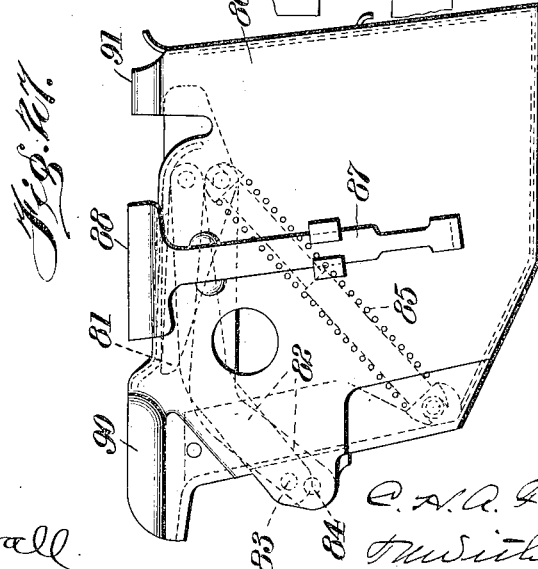
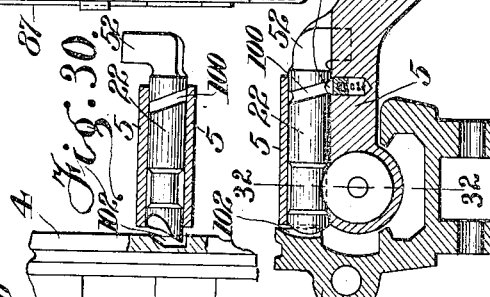
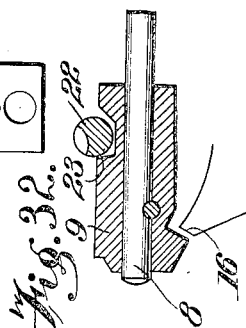
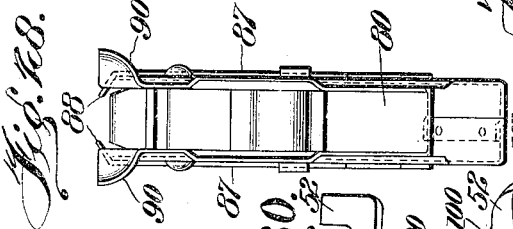
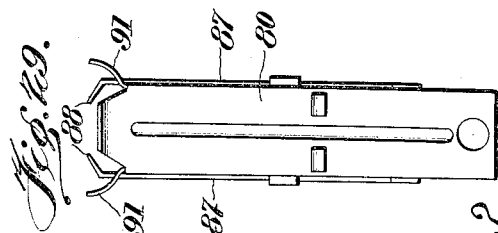
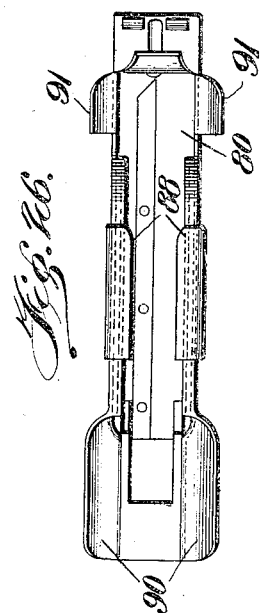
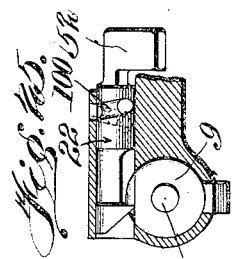
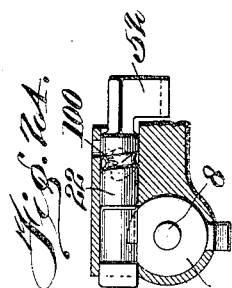
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1,141,582.

Patented June 1, 1915.

8 SHEETS—SHEET 8.



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UNITED STATES PATENT OFFICE.

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FIREARM.

1,141,582.

Specification of Letters Patent.

Patented June 1, 1915.

Application filed October 30, 1913. Serial No. 798,607.

To all whom it may concern:

Be it known that I, CHARLES H. A. F. L. Ross, a baronet, a subject of the King of Great Britain, residing at Balnagown Castle, Rossshire, Scotland, have invented certain new and useful Improvements in Fire-arms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to breech loading fire arms and has for its object to produce a rifle which will be simple in construction and more efficient in action than those heretofore proposed.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views: Figure 1 is a top plan view of a fire arm made in accordance with my invention; Fig. 2 is a side elevation of the parts shown in Fig. 1; Fig. 3 is a longitudinal vertical section of the parts shown in Fig. 2; Fig. 4 is a bottom plan view of the parts shown in Fig. 3, with the stock, trigger guard and magazine removed; Fig. 5 is a sectional view similar to Fig. 3 of the trigger mechanism, and the rear part of the magazine showing the breech bolt withdrawn to its rearmost position; Fig. 6 is a view similar to Fig. 5, but showing the forward part of the magazine, the receiver and the rear end of the barrel; Fig. 7 is an elevational view of the forward end of the receiver with the barrel removed; Fig. 8 is a sectional view of the receiver taken on the line 8—8 of Fig. 7, looking in the direction of the arrow *a*; Fig. 9 is a view similar to Fig. 8 also taken on the line 8—8 Fig. 7, but looking in the direction of the arrow *b* in Fig. 7; Fig. 10 is a rear end elevation of the parts shown in Fig. 4; Figs. 11, 12, 13, and 14 are detail views illustrating the safety bolt stop mechanism; Fig. 15 is an elevational view of the bolt removed from its sleeve; Fig. 16 is an end view of the parts shown in Fig. 15; Figs. 17, 18 and 19 are detail views of parts shown in Figs. 15 and 16; Fig. 20 is a detail view of the extractor head; Fig.

21 is a front end elevation of the bolt sleeve with the bolt removed; Fig. 22 is a development of the interior teeth and spirals with which the sleeve is provided; Fig. 23 is an edge elevation of the parts shown in Fig. 22; Figs. 24 and 25 are rear end elevations of the firing head and safety lock in different positions; Fig. 26 is a top plan view of the magazine casing removed; Fig. 27 is a side elevation of the parts shown in Fig. 26; Fig. 28 is a front end elevation; Fig. 29 is a rear end elevation of the parts shown in Fig. 27; Fig. 30 is a diagrammatic sectional plan view showing the safety locking bolt 22 in its safety position; Fig. 31 is an elevational sectional diagrammatic view showing the bolt 22 in its locked position; and Fig. 32 is a detail sectional view of certain of the parts taken on the line 32—32 of Fig. 31.

1 indicates the stock, 2 the barrel screw threaded as at 3 to the forward end of the receiver 4.

5 represents the bolt sleeve, 6 the bolt having the bolt head 7 fitting the receiver, and 8 represents the firing pin having the cocking head 9, and surrounded by the main spring 10.

11 indicates a suitable sight, 12 a trigger pivoted at 13, and 14 a sear piece pivoted at 15 and having a sear nose 16 adapted to engage a shoulder 17 on the cocking head 9.

19 represents a spring for returning the pivoted sear piece 14, and 18 a spring for returning the safety catch 20 pivoted at 21 to the sear piece 14, and to be more fully hereinafter described.

22 represents a locking bolt for the firing pin, adapted to engage and disengage the shoulder 23 on the cocking head 9, as will also be more fully hereinafter disclosed.

The construction involved in the operation of locking and unlocking the breech bolt is as follows: Referring particularly to Fig. 15 the bolt head 7 is provided with the mutilated screw threads 25, adapted to engage and disengage the corresponding threads 26 in the receiver 4, as will be clear from Figs. 6 to 9. The manner of unlocking and locking the bolt head and receiver will be best understood from Figs. 3, 15, 21, 22 and 23, in which 27 represents spiral cams on the exterior of the bolt adapted to be engaged by the end edges 29 of the spirally arranged teeth 28 on the interior

of the sleeve 5. That is to say, the continuous spiral cams 27 on the bolt fit the spaces 30 Figs. 21 and 22, between the wide teeth 28 and the narrow teeth 32, carried by the said sleeve 5, and the end edges 29 of the teeth 28 take against said cams as the sleeve moves longitudinally relative to the bolt and to the rear thus turning the bolt 6 on its axis, and therefore the teeth 25 of the head 7 are caused to disengage the threads 26 in the receiver 4. But at the instant the teeth 25 have rotated sufficiently to disengage said threads 26, the end edges 29 of the teeth 28 have traversed the length of the spirals 27 and the threaded short spirals 35 carried by the rear end of the bolt member 6 abut the threaded wide spiral teeth 28 carried on the interior of the sleeve. There now being no cams for the ends 29 of the teeth 28 to work on, no further rotation of the bolt by the action of withdrawing the sleeve alone is possible. The bolt head 7 as it continues to the rear, however, immediately contacts with the locking cams 34, Figs. 7, 8, and 9 in the receiver, and these said cams cause the bolt 6 to continue its rotation on its axis, while at the same time the bolt threads 35 become engaged with the sleeve threads sufficiently to lock the bolt and sleeve together and the two continue to the rear. The teeth on the bolt are made continuous with the cams 27 in order that they may freely traverse the spaces 30 on the sleeve when relatively moving said bolt and sleeve. When returning the bolt sleeve to reengage the teeth 25 with the threads 26, the head 7 first strikes the unlocking cam 37 as the sleeve 5 is pushed forward, which causes the bolt 6 to rotate sufficiently to unlock the threads on the bolt from those on the sleeve. Then the single thread 38 in the screw box of the receiver stops the bolt head from entering farther except upon a further rotation; and next the spirals 27 contact with the end edges 29 of the teeth 28 on the sleeve 5, and as the sleeve is further pushed forward the bolt and head are so rotated as to cause the threads 25 and 26 to be interlocked. The sleeve 5 is provided with a slot 42, Fig. 5, into which fits the spring shank 39 of the extractor 40, best shown in Fig. 20. This extractor is provided with a straight longitudinal slot 41 to enable it to pass the unlocking cam 37, Fig. 8; and also with a transverse curved slot 43 into which fits the circular rib 44 of the head 7, while the circular rib 45 of the extractor fits the curved slot 46 of said head 7. Since the sleeve 5 does not rotate, the extractor likewise does not rotate, but the rib 44 of the bolt head oscillates in the extractor head while the said bolt head is being engaged and disengaged from the screw box of the receiver. It results from this that as the threads 25 of the bolt head are drawn to the

rear during their rotation to disengage from the threads 26, a powerful initial withdrawing force is exerted by the extractor on the cartridge head.

From the construction so far disclosed it will further be clear that when the sleeve 5 is moved to the rear to unlock the head 7 from the threads 26, power will be transmitted by the shoulder 61 of said sleeve to the shoulder 62 on the cocking head 9, Fig. 3, and through the pin 31 to the firing pin 8, and thence to the piston 320 on said firing pin. This piston fits the interior of the bolt 6, and the firing pin slidingly fits the plug 48 screw threaded into the rear end of the bolt. Therefore when said bolt head 7 begins to unlock from the threads 26, owing to the rearward motion of the sleeve 5 under the action of the cams, the said bolt head 7 and sleeve begin to separate, and the piston 320 begins to move toward the rear with said cocking head 9 and to compress the main spring 10. This compression, it will be further observed, continues to increase as long as the bolt rotates and the sleeve moves to the rear faster than the bolt; and, therefore, by the time the bolt head is clear of the threads 26, sufficient power is stored up in the main spring when released to cause the reengagement of the teeth 25 and 26. This important feature of my invention will be more fully disclosed below. Further, as the sleeve 5 continues to move to the rear and to over run the bolt, a very considerable power has been stored up in the main spring 10 by the time an engagement between the teeth 28 of the sleeve and the teeth 35 of the bolt has occurred; but the bolt and sleeve being now locked together, there is no danger of the bolt shooting out of the sleeve, and the two can be withdrawn from the gun and handled as if they were in one piece. When in this condition, the head 7 of the bolt is separated from the forward end of the sleeve as is indicated in Fig. 5. Now upon moving the sleeve and bolt forward from the position shown in Fig. 5, to that shown in Fig. 3, the shoulder 17 of the cocking head contacts with the nose 16 of the sear, immediately before the head 7 strikes the unlocking cam 37 in the screw box. It follows that when said bolt head does contact with said cam 37, the head will be so rotated as to disengage the bolt threads from the sleeve threads, as above explained, and were it not for the power of the spring 10 being thus held in check by the engagement of the said shoulder 17 with the sear nose, the cocking head would bring its shoulder 62 into contact with the shoulder 61 and force the sleeve forward into the position shown in Fig. 3. This action would rotate the bolt head 7 and the teeth 25 into engagement with the teeth 26 if they are not already so engaged, and the spring would

no longer be in its cocked condition. After the sear is thus engaged and the cam 37 struck, a slight further forward push on the operating handle 50 will, through the
 5 cams above described, cause the bolt head to be firmly locked in the receiver, while a slight additional power is stored up in the spring 10. Upon now pulling the trigger, the firing pin is released and the cartridge
 10 will be exploded. Now, supposing while moving the bolt from the position shown in Fig. 5 to that shown in Fig. 3, the trigger is accidentally pulled before the sear contacts with the cocking head, it is evident no
 15 harm will result, because the firing pin is not sufficiently forward to reach the cartridge. Next, suppose the trigger is pulled as soon as the sear has received the power of the main spring, and before the threads
 20 25 have fully engaged the threads 26, then since the bolt head is in contact with the single thread 38 of the receiver and can go no farther except by rotation, as above explained, it is evident that the released power
 25 of the main spring will be exerted back through the piston 320, the firing pin, cocking head, shoulders 62 and 61, sleeve 5 and cams 27, to further rotate the head 7 and firmly lock the same in place, the piston 320
 30 in the mean time traveling forward with the sleeve 5. But since the firing pin cannot reach the cartridge until the sleeve is home, it is evident that in this case the piece cannot be fired until the head is firmly
 35 locked. Therefore, in this case, as in the preceding, no harm can result. Next, suppose the sear is in engagement with the shoulder 17, and the threads 25 of the head 7 are almost completely engaged with the
 40 threads 26, but not quite, so that the bolt would blow loose if the cartridge is prematurely exploded. In such case, as in the preceding, the piston 320 moves forward with the sleeve upon pulling the trigger, and
 45 as the sleeve must be home before the firing pin can reach the cartridge, it is not possible to fire the piece before the head 7 is locked in the receiver.

The above constitute important features
 50 of my invention, and when summarized, amount to saying that upon withdrawing the sleeve to the rear the shoulder 61 engages the shoulder 62, and thus compresses the main spring, while the cams on the bolt and
 55 sleeve so rotate the bolt as to cause the sleeve and bolt threads to engage and hold the spring under compression. When thus held it is evident a disengagement of the bolt and sleeve threads will permit the spring to cause
 60 the sleeve to move over the bolt until the end of the sleeve reaches the bolt head; and it follows that in closing the breech even if the trigger be continuously pulled, the piece cannot be fired until the bolt is locked.

65 The above compressed condition of the

spring 10 involves the bringing together of the shoulders 61 and 62, and this is the position of parts shown in Fig. 5. In Fig. 3, however, the spring has been compressed
 70 by simply holding back the firing pin and allowing the shoulders 61 and 62 to separate. This is the cocked position of the parts. Now, of course, it can happen that the sleeve may occupy all positions between those illustrated in these two figures, yet,
 75 nevertheless, as above stated, whenever and however the spring may be released, the bolt will first be locked in the receiver before the piece can be fired. There is still
 80 another possibility of accidentally discharging the piece to be considered as follows: Suppose the spring 10 is released, an unexploded cartridge is in the gun, the trigger is retracted and it is attempted to open the
 85 breech, thus putting the spring 10 under compression. In such case the latch 20 is forced in behind the lug 51 on the sleeve and the breech cannot be opened.

It follows from the above that the trigger
 90 may be kept continuously pulled and the breech mechanism manipulated in every conceivable way without being able to fire the gun unless the breech is securely locked. When it is desired to lock the firing pin it
 95 is only necessary to turn the locking bolt 22 by means of the lever 52, whereupon said bolt takes against the notch 23 in the cocking head and prevents the firing pin from going forward.

Pivoted as at 54 to the rear of the re-
 100 ceiver frame Figs. 10 and 14 is the safety bolt stop 55, provided with the operating extension 56, the partially cut away portion 57 forming the shoulder 58 against which the bolt head 7 contacts when withdrawn
 105 to the position shown in Fig. 5. In order that the bolt 6 and sleeve 5 may be completely withdrawn the bolt stop 55 is provided with a second cut away portion 59 which extends from end to end of the body
 110 portion, and which when the bolt stop is turned into the position shown in Fig. 11, registers with the wall of the longitudinal groove 590 of the receiver, and therefore offers no obstruction to the free passage of
 115 the bolt head 7.

65 is a catch provided with a projection
 650 for holding the bolt stop in the position to which it might be moved, and is mounted on the pivot pin 54, under the control
 120 of the spring 66.

67 represents recesses in the bolt stop adapted to be entered by the projection 650 of the catch 65. Located beneath the bolt stop is the spring controlled ejector 70, Figs.
 125 4, 10, 11 and 13, pivoted as at 71.

72 is a slit through the casing in which the ejector operates.

80 represents the casing of a box magazine provided with a follower 81, a set of
 130

levers 82 pivoted at 83 and 84, supporting said follower, and a spring 85 surrounding the telescoping rod 86 controlling said follower.

5 To the outside of the casing 80, I slid-
ingly secure one or more cartridge holding
members 87 provided with the turned over
lips 88, adapted to prevent the cartridges
from jumping while being fed and to be
10 pushed down over the cartridges in the
magazine and prevent them from being fed
to the gun by the follower, when the arm is
being loaded by hand. The magazine cas-
ing is further provided at its forward edge
15 with the flared lips 90 to fit the receiver,
and to receive the cartridge when passing
into the breech, while at the same time per-
mitting the head 7 to readily pass. At its
rear end said casing is provided with the
20 shorter but somewhat similar lips 91 like-
wise fitting the receiver, while permitting
the bolt head 7 to pass.

The safety locking pin 22, is provided
with a spiral groove 100, see Figs. 30 and
25 31, into which takes the spring controlled
pin 101 carried by the bolt sleeve 5, and
which causes said pin as it is oscillated, to
move longitudinally of its length to and
from the notch 102 in the rear end of the
30 receiver 4. The longitudinal and rotary
movement of said pin 22 and its engagement
with the notch 102 also causes it when in
its locked position to engage a shoulder 23
on the cocking head and to move said head
35 and sleeve 5 slightly to the rear so that said
head will be out of engagement with the
sear nose 16, as will be clear from Figs. 3
and 32.

The operation of my fire arm will be clear
40 from the foregoing but may be briefly sum-
marized as follows:—Suppose the piece has
been fired; the operator grasps the handle
50 and retracts the sleeve 5, which owing to
the edges 29 of its teeth taking against the
45 cams 27 on the bolt 6 (see Figs. 15 and 22),
will cause threads 25 of the head 7 of said
bolt to rotate sufficiently to disengage the
threads 26 in the receiver 4, whereupon the
50 threads 28 of said sleeve will be ready to in-
termesh with the threads 35 on said bolt, so
that a further slight rearward movement of
said sleeve will cause the head 7 to engage
the locking cam 34 with which said threads
55 26 are provided, and to further turn said
bolt threads 35 into mesh with said sleeve
threads 28, and thereby lock the bolt 6 and
sleeve 5 together. When the sleeve 5 moves
to the rear however, it transmits power
60 through the shoulders 61 and 62, the pin 31,
firing pin 8 and piston 320 to compress the
main spring 10 carried by the bolt, and
when said sleeve and bolt become interlocked
as just described the front end of the sleeve
65 will have left the bolt head 7 as indicated
in Fig. 5. The bolt and sleeve having been

interlocked, as above described, may be
withdrawn together and handled as a single
piece as indicated in Fig. 5. Cartridges
may be fed to the piece either by the maga-
zine or by hand, and the bolt and sleeve 70
pushed forward while the main spring is
under compression. As the bolt head 7
reaches the threads 26, the unlocking cam
37 first rotates said head sufficiently to dis-
engage the threads of the bolt from the 75
threads of the sleeve, whereupon, should the
trigger be retracted, the spring 10 reacting
through the piston 320, pin 31, cocking head
and shoulder 61 on sleeve 5, tends to bring
the forward end of the sleeve and the bolt 80
head together, and thereby causes said
threads 25 of the head to complete their
locking engagement with the threads 26 of
the receiver, which, of course, causes the
bolt to be firmly locked into place before 85
the piston 320 moves sufficiently far forward
to explode the cartridge. On the other
hand, if the trigger be not pulled, the notch
17 of the cocking head 9 engages the sear
nose 16 and holds the firing pin retracted, 90
and upon pushing the bolt head 7 home,
after the bolt and sleeve are unlocked the
single thread 38 in the screw box of the
receiver, prevents the head from entering
95 further until rotated, and this causes the
spirals 27 to contact with the edges 29 of the
teeth 28, so that as the sleeve is pushed fur-
ther forward the bolt head is turned and
locked in its firing position. The extractor
40, Figs. 2 and 20, does not rotate as it with- 100
draws the empty shell, and as said extractor
is slidingly forced to the rear by a screw
action it exerts a powerful pull. The ejector
70, Fig. 4, discharges the shell as will be
readily understood. Should it be attempted 105
to retract the bolt while the trigger is pulled,
and the spring 10 is not compressed, the lug
51, Fig. 3, on the sleeve, will engage the
pawl 20 on the sear, and the motion thereby
stopped. It thus results that it is not possi- 110
ble to fire the piece without first locking the
bolt head 7 firmly in place.

It is obvious that those skilled in the art
may vary the details of construction as well
as the arrangement of parts without depart- 115
ing from the spirit of my invention and
therefore, I do not wish to be limited to the
above disclosure except as may be required
by the claims.

What I claim is:—

1. In a fire arm the combination of a re- 120
ceiver having screw threads; a bolt having
a head adapted to engage said threads; a
longitudinally movable sleeve slidingly as-
sociated with said bolt; connections com- 125
prising cams between said sleeve and bolt
by which the latter may be rotated by the
movement of the former; interengaging
teeth carried by said bolt and sleeve; a fir-
ing pin; a cocking head rigidly connected 130

to said pin; and a main spring associated with said pin adapted to be compressed by the motion of said sleeve, substantially as described.

5 2. In a fire arm the combination of a bolt and sleeve slidingly associated and provided with interengaging teeth; a receiver having screw threads; a head carried by said bolt adapted to engage said screw threads; an
10 unlocking cam adapted to be struck by said head to disengage said teeth; and cams carried by said bolt and sleeve adapted to cause said head to be rotated into locking engagement with said screw threads, substantially
15 as described.

3. In a fire arm the combination of a bolt and sleeve slidingly associated and provided with interengaging teeth; a main spring held under compression by said bolt and
20 sleeve when said teeth are engaged; a receiver having screw threads; a head carried by said bolt adapted to engage said screw threads; an unlocking cam adapted to be struck by said head to disengage said teeth;
25 and cams carried by said bolt and sleeve adapted to cause said head to be rotated into locking engagement with said screw threads, substantially as described.

4. In a fire arm the combination of a bolt and sleeve slidingly associated and provided with interengaging teeth; a firing pin; a main spring associated with said pin and held under compression when said teeth are
30 engaged; a receiver having screw threads; a head carried by said bolt adapted to engage said screw threads; an unlocking cam adapted to be struck by said head to disengage said teeth; and cams carried by said bolt and sleeve adapted to cause said head
35 to be rotated into locking engagement with said screw threads, substantially as described.

5. In a fire arm the combination of a bolt and sleeve slidingly associated and provided with interengaging teeth; a receiver having screw threads; a head carried by said bolt adapted to engage said screw threads; an unlocking cam adapted to be
45 struck by said head to disengage said teeth; a single thread associated with said screw threads adapted to be struck by said head after said teeth are disengaged; and cams carried by said bolt and sleeve adapted to cause said head to be rotated into locking
50 engagement with said screw threads, substantially as described.

6. In a fire arm the combination of a bolt provided with a head having mutilated screw threads; a receiver provided with
60 mutilated screw threads with which said first mentioned threads are adapted to interlock; a sleeve slidingly fitting said bolt; external spirally arranged teeth on said bolt; internal spirally arranged teeth on said
85 sleeve adapted to engage said bolt teeth;

and a cam associated with said bolt adapted to be engaged by the edges of the teeth on said sleeve, substantially as described.

7. In a fire arm the combination of a bolt provided with a head having mutilated
70 screw threads; a receiver provided with mutilated screw threads with which said first mentioned threads are adapted to interlock; an unlocking cam associated with said receiver threads adapted to be struck by
75 said bolt head to turn the same; a sleeve slidingly fitting said bolt; external spirally arranged teeth on said bolt; internal spirally arranged teeth on said sleeve adapted to engage said bolt teeth; and a cam associated with said bolt adapted to be engaged by the edges of the teeth on said sleeve, substantially as described.

8. In a fire arm the combination of a bolt provided with a head having mutilated
85 screw threads; a receiver provided with mutilated screw threads with which said first mentioned threads are adapted to interlock; an unlocking cam associated with said receiver threads adapted to be struck by
90 said bolt head to turn the same; a long thread also associated with said receiver threads to stop the forward motion of said bolt head; a sleeve slidingly fitting said bolt; external spirally arranged teeth on
95 said bolt; internal spirally arranged teeth on said sleeve adapted to engage said bolt teeth; and a cam associated with said bolt adapted to be engaged by the edges of the teeth on said sleeve, substantially as described.

9. In a fire arm the combination of a bolt provided with a head having mutilated screw threads; a receiver provided with mutilated screw threads with which said
105 first mentioned threads are adapted to interlock; a sleeve slidingly fitting said bolt; external spirally arranged teeth on said bolt; internal spirally arranged teeth on said sleeve adapted to engage said bolt teeth; a
110 cam associated with said bolt adapted to be engaged by the edges of the teeth on said sleeve; a firing pin carried by said bolt; a main spring surrounding said pin; and a piston on said pin for facilitating the compression of said spring when said sleeve is retracted, substantially as described.

10. In a fire arm the combination of a bolt; a sleeve slidingly associated with said bolt; a firing pin and main spring associated with said sleeve and bolt; and connections between said bolt and sleeve whereby
120 said spring may be held under compression while said bolt and sleeve are locked together to be handled as a single piece, substantially as described.

11. In a fire arm the combination of a bolt; a sleeve slidingly associated with said bolt; a firing pin cocking head and main spring associated with said sleeve and bolt; **125**

and connections comprising interengaging rotatable teeth between said bolt and sleeve whereby said spring may be held under compression while said bolt and sleeve are locked together to be handled as a single piece, substantially as described.

12. In a fire arm the combination of a bolt; a sleeve slidingly associated with said bolt; a firing pin cocking head and main spring associated with said sleeve and bolt; a sear for engaging said cocking head; a trigger for controlling said sear; and connections between said bolt and sleeve whereby said spring may be held under compression while said bolt and sleeve are locked together to be handled as a single piece, substantially as described.

13. In a fire arm the combination of a bolt; a sleeve slidingly associated with said bolt; a firing pin, a cocking head and main spring associated with said sleeve and bolt; a sear for engaging said cocking head; a lug on said sleeve; a pawl on said sear adapted to engage said lug should the trigger remain pulled after firing and the bolt be drawn to the rear; and connections between said bolt and sleeve whereby said spring may be held under compression while said bolt and sleeve are locked together to be handled as a single piece, substantially as described.

14. In a fire arm the combination of a bolt; a sleeve slidingly associated with said bolt; a firing pin and cocking head associated with said bolt and sleeve; a pivoted sear adapted to engage said cocking head; a trigger controlling said sear; a lug on said sleeve; and a pawl on said sear adapted to engage said lug should the trigger remain pulled and the bolt be withdrawn after firing, substantially as described.

15. In a fire arm the combination of a bolt; a sleeve slidingly associated with said bolt; a firing pin and cocking head associated with said bolt and sleeve; a locking bolt for said cocking head; a pivoted sear adapted to engage said cocking head; a trigger controlling said sear; a lug on said sleeve; and a pawl on said sear adapted to engage said lug should the trigger remain pulled and the bolt be withdrawn after firing, substantially as described.

16. In a fire arm the combination of a rearwardly sliding sleeve; a breech bolt adapted to be unlocked by said sleeve; a lug carried by said sleeve; a sear; a pawl carried by said sear adapted to move into the path of said lug and prevent said sleeve from unlocking said bolt while the trigger is pulled, substantially as described.

17. In a fire arm, the combination of a pivoted trigger; a pivoted sear coacting with said trigger; a pivoted pawl carried

by said sear; a breech closure; and a reciprocating lug associated with said closure adapted to engage said pawl when the trigger is pulled, substantially as described.

18. In a fire arm the combination of a sliding sleeve; a locking bolt carried by said sleeve; a cocking head associated with said sleeve adapted to be locked by said bolt; and a receiver provided with a notch adapted to be entered by said bolt when in its locked position, substantially as described.

19. In a fire arm the combination of a sliding sleeve; a locking bolt provided with a spiral carried by said sleeve; a spring controlled catch adapted to enter said spiral and cause said bolt to move endwise; a cocking head associated with said sleeve adapted to be locked by said bolt; and a receiver provided with a notch adapted to be entered by said bolt when in its locked position, substantially as described.

20. In a fire arm the combination of a receiver provided with a longitudinal groove; a bolt head adapted to slide in said groove; and a pivoted member provided with a cut away portion forming a shoulder adapted to obstruct said groove in one position; said member also provided with a second cut away portion adapted to register with said groove and permit the passage of said head when said member is turned to another position, substantially as described.

21. In a fire arm the combination of a receiver provided with a longitudinal groove; a bolt head adapted to slide in said groove; a pivoted member provided with a cut away portion adapted to obstruct said groove in one position, and with a second cut away portion adapted to register with said groove and permit the passage of said head in another position; and a spring controlled catch adapted to hold said member in whichever position it may be placed, substantially as described.

22. In a fire arm the combination of a sliding bolt having a head; a receiver in which said head slides; a safety bolt stop provided with a partially cut away portion and a completely cut away portion pivoted to said receiver, and adapted in one position to prevent the withdrawal of said head and in another position to permit said withdrawal; and a longitudinally movable spring controlled catch for holding said safety stop in whatever position it may be placed, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES HENRY AUGUSTUS
FREDERICK LOCKHART ROSS.

Witnesses:
THOMAS CRAIG,
W. CAMPBELL.