

May 9, 1933.

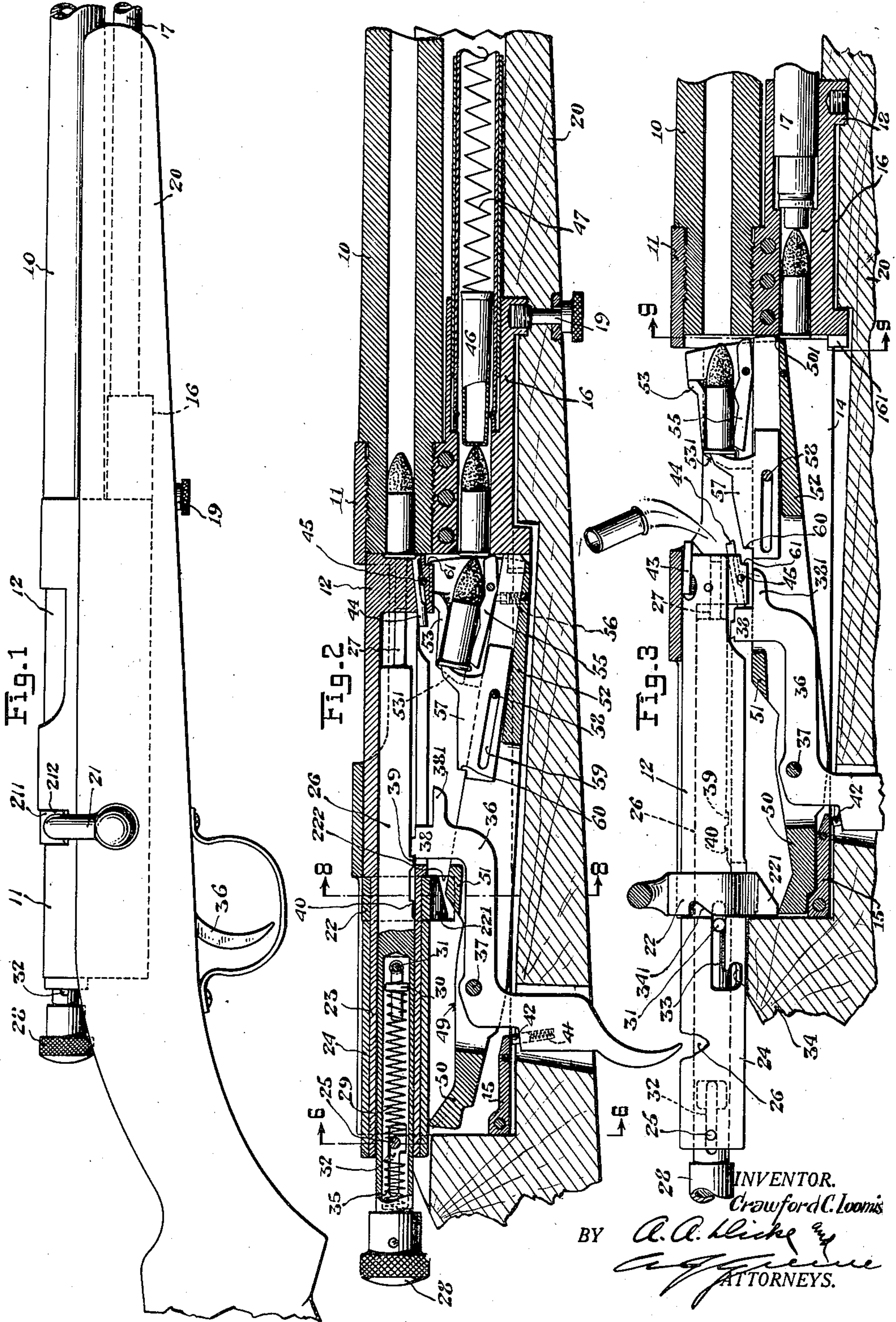
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FIREARM

Filed June 5, 1931

2 Sheets-Sheet 1



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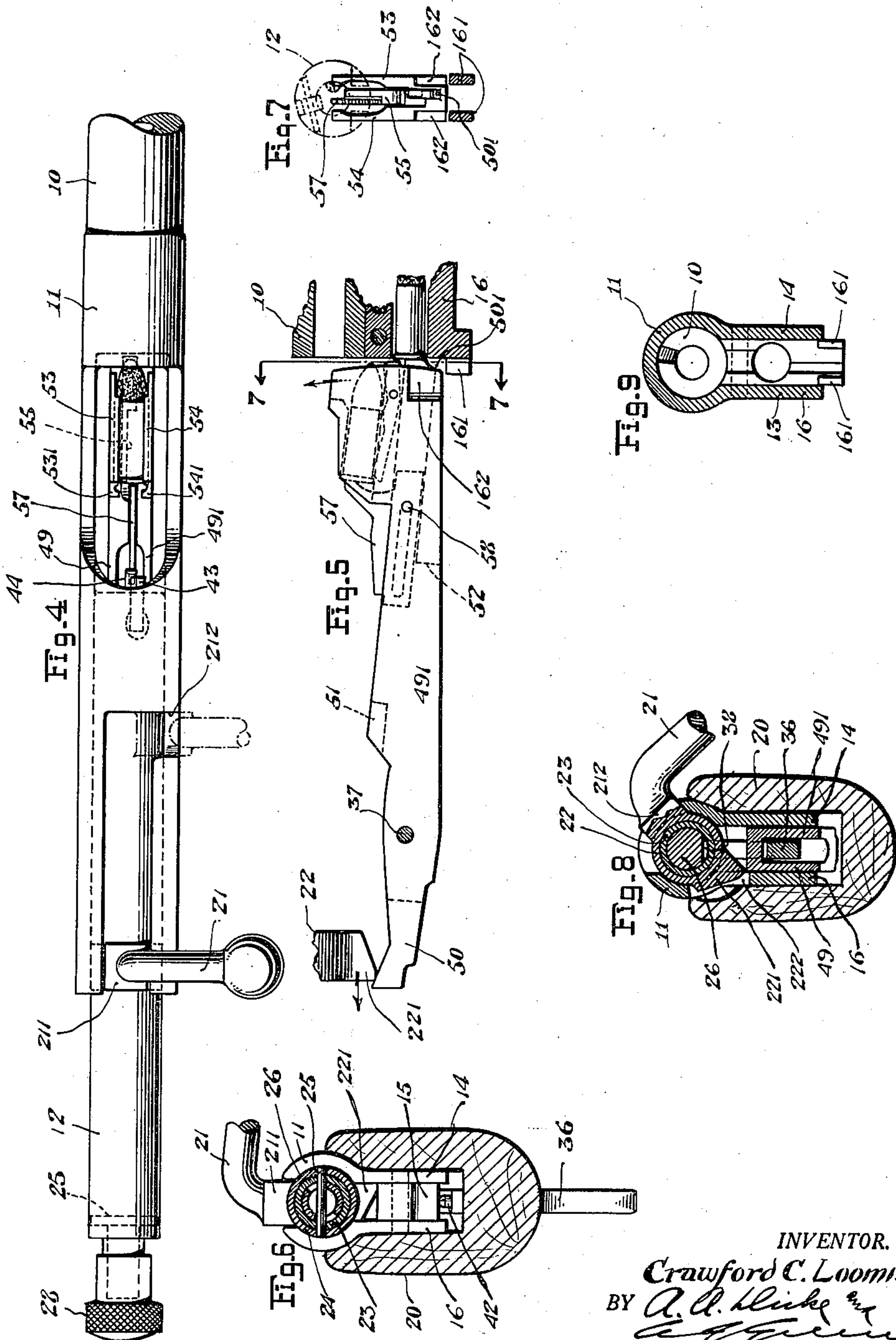
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FIREARM

Application filed June 5, 1931. Serial No. 542,267.

This invention relates to firearms of the bolt action repeating type.

The object of the invention is to produce an improved and simplified receiver construction, fire control mechanism, and cartridge transferring mechanism.

With these and other objects in view, the invention consists in the novel constructions, combinations and arrangements of parts, hereinafter more fully described, and illustrated in the drawings, in which:

Fig. 1 is a fragmentary side elevation of so much of a firearm as is necessary to show the present invention.

Fig. 2 is a fragmentary, substantially central longitudinal sectional elevation, the breech being closed.

Fig. 3 is a sectional elevation of a part of the mechanism shown in Fig. 2, the breech being open and the cartridge transferring means holding a cartridge in alignment with the chamber ready to be inserted therein on the closing movement of the breech bolt.

Fig. 4 is a plan view of the bolt, receiver, and a short section of the barrel.

Fig. 5 is a side elevation of the carrier with a short section of magazine and barrel, and a fragment of the carrier operating device, showing the carrier in an intermediate position in its upward movement.

Fig. 6 is a transverse section substantially on the line 6—6 of Fig. 2.

Fig. 7 is a transverse section on the line 7—7 of Fig. 5, showing particularly the front end of the carrier.

Fig. 8 is a transverse section on the line 8—8 of Fig. 2.

Fig. 9 is a transverse section on the line 9—9 of Fig. 3.

The firearm comprises a barrel 10 to which is secured, by threading or other suitable connection, a receiver 11. The receiver is preferably formed of folded sheet metal, the upper part thereof being substantially cylindrical and adapted to receive a breech bolt 12; the cylinder, however, is not closed on the bottom, the sheet metal being turned downwardly to form a pair of spaced flanges 13 and 14, clearly shown in Figs. 8 and 9. Said flanges are spaced and joined at the

lower rear corner by a spacer block 15 (Figs. 2 and 3) secured by suitable means such as rivets, and are likewise spaced and joined at their forward ends by a member 16 which is elongated and cylindrically bored and counter-bored to receive the rearward end of a magazine tube 17. Said member 16 likewise comprises a downwardly extending boss 18 into which is threaded a take-down screw 19 by which a stock 20 is detachably secured to the barrel, magazine and receiver assembly.

The breech bolt consists essentially of a hollow cylindrical member, which has been identified by numeral 12. The bore of said hollow member is closed at its forward end except for a small aperture through which the firing pin passes, and a second aperture occupied by the ejector. A bolt handle 21 is suitably mounted for rotation on the bolt 12, the mounting means preferably comprising a ring 22 integral with or rigidly secured to the handle and fitting upon a rearward reduced diameter section 23 of the bolt 12. A sleeve 24 of substantially the same outside diameter as the forward section of bolt 12 is placed over the rearward section 23 in the rear of the bolt handle ring 22 and is secured in place by an assembly pin 25.

Bolt locking surfaces are associated with the bolt handle. These may comprise a squared section 211 of the handle shank, adapted to be received in a transversely extending part 212 of the receiver slot traversed by the bolt; and a projection 221 (Fig. 8) on the ring 22 substantially opposite the shank 211. Projection or lug 221 is received in an aperture 222 in the receiver wall. Thus, a double bolt lock is provided. The locking surfaces may be slightly inclined to give the bolt a slight retracting movement as the handle moves to unlocked position.

The bore of the bolt 12 contains a striker 26 terminating at its forward end in a firing pin 27 and at its rearward end in a striker handle 28. Said striker is urged forward by a firing or main spring 29 housed within a bore in the rearward part of the striker

and compressed between assembly pin 25 and a spring pilot 30 which abuts a transverse stud 31. The striker bore likewise houses a rebound spring 35 compressed between the assembly pin 25 and the striker handle 28.

The assembly pin 25 passes through L-slots 32 in the striker 26, said slots being transversely widened at their forward ends to permit the striker to be rotated within the bolt when in cocked position for the purpose of rendering the gun safe while cocked. When the striker is thus rotated, the stud 31, which projects into a bayonet slot 33 in the bolt, is moved into the short section 34 of said slot, thus positively holding the striker in cocked position. When the striker is forward, and the bolt locked, the stud 31 occupies a recess 341 in the bolt handle ring 22. As the bolt handle is lifted to unlock the bolt the inclined edge of said recess cams the stud, and with it the striker, back to the Fig. 3 position. Movement of the firing pin against the shell head when the bolt is unlocked is thus positively prevented.

The striker is controlled by a trigger 36 pivoted at 37 between the flanges 13 and 14 of the depending portion of the receiver. Said trigger is provided with a nose 38, passing through a longitudinal slot in the bolt 12 to prevent rotation of the bolt, and adapted to engage either a shoulder 39 or a shoulder 40 on the striker. As shown in Fig. 2, the nose or sear 38 engages the shoulder 39, holding the striker cocked. When the striker is forward, said sear engages the shoulder 40 for the purpose of positively preventing the firing pin being driven into contact with the head of a shell in the chamber by a blow upon the bolt handle. The trigger is urged to striker engaging position by a trigger spring 41 housed in a well in the trigger and abutting a pilot 42 the upper end of which rests against the filler block 15. Adjacent to and integral with the sear 38 is a ledge 381 adapted to contact with the periphery of the forward end of the bolt to prevent abnormal upward movement of the sear by trigger spring 41 when the bolt is retracted with the striker cocked.

Mounted in the forward end of the bolt 12 is an extractor 43 of conventional type. An ejector pin 44 extends through a suitable bore in the lower part of the forward end of the bolt, being held therein by a retaining stud 45. As the bolt reaches the rearward limit of its travel, the rear end of ejector pin 44 is engaged by the forward edge of the sear 38, thereby driving the pin forward and positively ejecting the shell, as shown in Fig. 3.

Cartridges are stored in a column in the tubular magazine 17, and are urged rearwardly in said magazine by a spring follower 46 and magazine spring 47. Upon leaving the rearward end of the tube 17, the

cartridges pass one at a time through the aforementioned bore in the member 16 (which for convenience will be considered as part of the magazine) into the receiver, and are transferred to the chamber by a carrier which may be constructed as follows:

The carrier body may be made from a single piece of metal, but consists essentially of two arms 49 and 491, joined at their rearward ends by a block 50, at an intermediate point by ledge 51, and at their forward ends by shelf 52. Said carrier is pivoted at 37 between the flanges 13 and 14 and adapted to be rocked about its pivot to raise and lower its forward end by engagement of suitable surfaces thereon with parts associated with the bolt and bolt handle. Figs. 2 and 6 show the bolt in forward position. The carrier has been depressed until its downward movement is stopped by the engagement of lugs 161 on the member 16 in shouldered cut-outs 162 in the forward end of the carrier. Fig. 3 shows the bolt fully retracted, the carrier having been moved to its fully elevated position as the bolt approached its rearmost position by the engagement of the projection 221 on the bolt handle ring 22 with the inclined upper surface of the carrier arm connecting block 50. As the bolt moves forward, the carrier is held elevated until positively depressed in the manner hereinafter described by the engagement of the rim of the rearmost cartridge in the magazine in a shallow inclined recess 501 in the underside of the carrier.

The forward end of the carrier comprises cartridge holding means consisting in part of upwardly extending flanges or plates 53 and 54 (Fig. 7), the upper parts of which may project toward each other, leaving a longitudinal slot of less width than the diameter of a cartridge shell. A cartridge released from the magazine moves into the recess between the lower parts of plates 53 and 54 over a cartridge cut-off and latch member 55 carried on a transverse pivot between plates 53 and 54. The section of said cartridge cut-off member in the rear of its pivot is substantially longer than the section forward of its pivot, and its rearward end is held elevated by a suitable spring 56. As soon as the head of a cartridge moving out of the magazine onto said carrier cut-off member passes its pivot the member will be rocked, elevating its forward end to the position shown in Fig. 2 in which it serves as a stop or cut-off for the column of cartridges still in the magazine.

It will be apparent that the construction of cartridge cut off member 55 illustrated will function properly with cartridges of varying length. Moreover, the forward end of the cartridge cut-off 55 is so inclined that its engagement by a cartridge in the magazine serves to yieldingly hold the car-

rier in depressed position (Fig. 2). As the forward end of the carrier is elevated, the cartridge cut-off moves upwardly beyond the magazine opening, and cartridges are held in the magazine by the end of the carrier (Fig. 3).

The rearward motion of a cartridge between plates 53 and 54 is stopped by the engagement of the head of said cartridge with the nose of a translator member 57, which is slidably mounted in a suitable groove or recess in the carrier; the mounting means may comprise a transverse pin 58 and a slot 59 in the translator member. When there is a cartridge in the carrier, said translator member occupies its rearmost position, with the stud 58 engaging the forward end of the slot 59. Movement of the cartridge in the carrier from the position shown in Fig. 3 into the chamber is performed in part by moving the translator member 57 forward upon the carrier. This movement is effected by the engagement of a shoulder 60 on the translator with a shouldered notch 61 on the underside of the forward end of the breech bolt. As the bolt moves forward, notch 61 engages the shoulder 60, sliding the translator member forward on the carrier and starting the cartridge into the chamber. In the continued forward movement of the breech bolt, the carrier, and with it the translator, is depressed by the engagement of the forward end of the breech bolt with the inclined rearward ends 531 and 541 of the cartridge holding plates 53 and 54, after which the cartridge is engaged directly by the breech bolt. As the bolt approaches its forward position the handle ring lug 221 engages the carrier ledge 51 to complete the downward movement of the carrier, and insure the engagement of the nose of latch 55 below the cartridge in the magazine. This latching of the carrier in depressed or normal position is desirable by reason of the fact that the rotation of the bolt handle 21 to locked position tends to elevate the projection 221 out of engagement with ledge 51.

The operation of the firearm may be summarized as follows:

The arm being loaded and cocked, as shown in Fig. 2, it may be placed in a "safe" condition by drawing the striker back slightly and rotating it to bring the pin 31 opposite the short slot 34. When it is desired to fire, the striker must be again slightly retracted and rotated to bring the pin 31 opposite the slot 33. With the arm in this condition, pressure upon the trigger releases the sear 38 from the striker 40 and the striker is thereupon propelled forwardly by the main spring 29 causing the firing pin to strike the head of the cartridge, after which the striker is immediately retracted to dis-

engage the firing pin from the cartridge by the rebound spring 35.

The breech may now be unlocked by rotating the bolt handle 21 to disengage the squared shank 211 from the recess 212 and the lug 221 from the slot 222. When thus unlocked, the bolt may be retracted, the extractor 43 withdrawing the fired shell from the chamber and the ejector 44 ejecting the fired shell when it engages the forward edge of the sear 38 as the bolt approaches the end of its rearward movement. The carrier remains depressed by reason of the engagement of the forward end of latch 55 with the rim of the rearmost cartridge in the magazine until the bolt nears the end of its rearward movement, when the lug 221 engages the inclined face of the carrier block 50 depressing this block and thus elevating the forward end of the carrier to the Fig. 3 position. The carrier is yieldingly held in this position by the engagement of the under-cut 501 with the rim of the rearmost cartridge in the magazine, cartridge in the carrier being aligned with the chamber. As the breech bolt is moved forward, the shoulder 60 of translator member 57 engages the notch 61 on the breech bolt, and the translator member is moved forward upon the carrier until the inclines or cams 531 and 541 are engaged by the forward end of the breech bolt, when the carrier is depressed by this engagement, the cartridge being subsequently seated in the chamber by the breech bolt. As the breech bolt approaches its forward position, the lug 221 engages a ledge 51 on the carrier and forward from the carrier pivot, and completes the downward movement of the carrier. As the latch or cartridge cut-off 55 moves past the magazine opening, the rearmost cartridge in the magazine will be propelled by the magazine spring over this cut-off, rocking the cut-off to engage the head of the second cartridge and at the same time providing a substantial resistance to upward movement of the carrier.

The embodiment of the invention herein described, and illustrated in the drawings, is to be understood as illustrative, rather than restrictive, the invention being susceptible of embodiment in many other forms all falling within the scope of the appended claims.

What is claimed is:

1. A firearm comprising a receiver, a chamber, a magazine, and a cartridge carrier in said receiver adapted to transfer cartridges from said magazine to said chamber; in combination, a reciprocating breech bolt in said receiver, an operating handle for said breech bolt mounted for rotation with respect thereto, and an operating device for said carrier mounted on said bolt operating handle.

2. A firearm comprising a receiver, a breech bolt reciprocable therein, and a striker mounted in said breech bolt; in combination, an operating handle for said breech bolt mounted for rotation with respect thereto, co-operating breech locking surfaces on said handle and said receiver respectively, and means for holding said breech bolt against rotation comprising a slot in said bolt communicating with said striker and a sear pivoted in said receiver and projecting into said slot.

3. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt reciprocable in said receiver; in combination, a carrier in said receiver, means on said carrier adapted to hold a cartridge delivered from said magazine, an operating handle for said breech bolt, means mounted on said operating handle adapted when the breech bolt is retracted by said operating handle to elevate the cartridge carrying portion of said carrier into alignment with the chamber, a sliding cartridge engaging element on said carrier, co-operating means on said element and said breech bolt whereby said element is moved with respect to said carrier while said carrier is in elevated position to insert the cartridge on said carrier into said chamber.

4. In a firearm comprising a chamber, a magazine, and a receiver; in combination, a carrier for receiving cartridges from said magazine and delivering them to said chamber pivoted in said receiver and comprising a cartridge retaining recess, a cartridge cut-off member pivoted in said recess and adapted to be actuated by the movement of a cartridge from said magazine into said recess to prevent the movement of a second cartridge from said magazine, means for elevating said carrier to bring the cartridge in said recess into alignment with the chamber and said cartridge cut-off member out of alignment with said magazine, and means on said carrier adapted to retain cartridges in said magazine when said carrier is thus displaced.

5. In a firearm comprising a chamber, a magazine, and a receiver; a carrier in said receiver comprising a recess adapted to receive a cartridge from said magazine, a cartridge cut-off member adapted to be actuated by the movement of a cartridge from said magazine into said recess to prevent the movement of a second cartridge from said magazine, means for stopping the rearward movement of the cartridge in said recess comprising an element mounted on said carrier for movement relative thereto, means for elevating said carrier to bring the cartridge in said recess into alignment with said chamber, a reciprocating breech bolt, means associated with said breech bolt adapted to move said element to insert the

cartridge in said recess into said chamber while the carrier is held in elevated position, and means for subsequently depressing said carrier after said element has reached the limit of its movement with respect to said carrier.

6. In a firearm, a receiver of sheet metal comprising an upper substantially cylindrical bolt receiving portion and substantially parallel spaced flanges depending from said bolt receiving portion, means for spacing and joining said flanges comprising an apertured block adapted to receive and support a tubular magazine and to furnish a communication from said magazine to said receiver.

7. A firearm comprising a barrel, a magazine, and a receiver of sheet metal having a substantially cylindrical upper portion, and a lower portion comprising a pair of spaced flanges, a spacing block secured to and between said flanges and serving as a support for said magazine, the upper surface of said spacing block and the forward end of said sheet metal receiver forming a continuous ring which is threaded to receive a threaded extension of said barrel.

8. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt mounted for reciprocating movement in said receiver; a carrier for transferring cartridges from said magazine to said chamber, an element slidably mounted on said carrier adapted to be engaged by a cartridge moved from said chamber onto said carrier, stop means for limiting the movement of said element by said cartridge, an operating handle on said breech bolt, carrier actuating means mounted on said operating handle, and means associated with said breech bolt adapted to engage and move said element on said carrier, whereby the cartridge on said carrier is moved into said chamber.

9. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt mounted for reciprocating movement in said receiver; a pivoted carrier for transferring cartridges from said magazine to said chamber, an element slidably mounted on said carrier adapted to be engaged by a cartridge moved from said chamber onto said carrier, stop means for limiting the movement of said element by said cartridge, an operating handle rotatably mounted on said breech bolt, a bolt locking lug carried by said handle and adapted to engage and rock said carrier about its pivot to bring the cartridge thereon into alignment with said chamber, means associated with said breech bolt adapted to engage and move said element on said carrier, whereby the cartridge on said carrier is moved into said chamber, and means for subsequently depressing said carrier.

10. In a firearm comprising a chamber, a

magazine, a receiver, and a breech mechanism mounted for reciprocating movement in said receiver; a carrier for transferring cartridges from said magazine to said chamber and having a depressed cartridge receiving position and an elevated cartridge delivering position, means associated with said breech mechanism for moving said carrier, a cartridge cut-off device adapted by co-operation with a cartridge in the magazine to yieldingly retain said carrier in cartridge receiving position, and means on said carrier adapted by co-operation with a cartridge in the magazine to yieldingly retain said carrier in cartridge delivering position.

11. In a firearm comprising a chamber, a magazine, a receiver, and a breech mechanism mounted for reciprocating movement in said receiver; a carrier for transferring cartridges from said magazine to said chamber and having a depressed cartridge receiving position and an elevated cartridge delivering position, means associated with said breech mechanism for moving said carrier, a cartridge cut-off device pivoted on said carrier and adapted by co-operation with a cartridge in the magazine to yieldingly retain the carrier in cartridge receiving position, and an inclined surface on said carrier adapted to be engaged by a cartridge in the magazine thereby yieldingly holding the carrier in cartridge delivering position.

12. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt mounted for reciprocating movement in said receiver; in combination, a bolt operating handle comprising a hub surrounding said bolt, a bolt locking lug projecting from said hub and adapted to cooperate with said receiver to lock said bolt in breech closing position, a carrier for transferring cartridges from said magazine to said chamber pivoted in said receiver and comprising an arm projecting rearwardly from its pivot, and surfaces on said carrier on opposite sides of its pivot adapted for engagement by said locking lug whereby said carrier is shifted both to cartridge receiving position and to cartridge delivering position.

13. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt mounted for reciprocating movement in said receiver; in combination, a bolt operating handle comprising a hub surrounding said bolt, a bolt locking lug projecting from said hub and adapted to cooperate with said receiver to lock said bolt in breech closing position, a carrier for transferring cartridges from said magazine to said chamber, and means on said carrier adapted for engagement by said lug for actuating said carrier.

14. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt

mounted for reciprocating movement in said receiver; in combination, a lug on said bolt adapted to cooperate with said receiver to lock said bolt in breech closing position, a carrier for transferring cartridges from said magazine to said chamber, and means on said carrier cooperating with said lug when in unlocking position for actuating said carrier.

15. In a firearm comprising a chamber, a magazine, a receiver, and a breech bolt mounted for reciprocating movement in said receiver; in combination, a cartridge carrier pivoted in said receiver and extending both rearwardly and forwardly from its pivot, a single carrier actuating member associated with said breech bolt, and means on said carrier on opposite sides of its pivot adapted for engagement by said single member whereby said carrier is positively rocked in both directions about its pivot.

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