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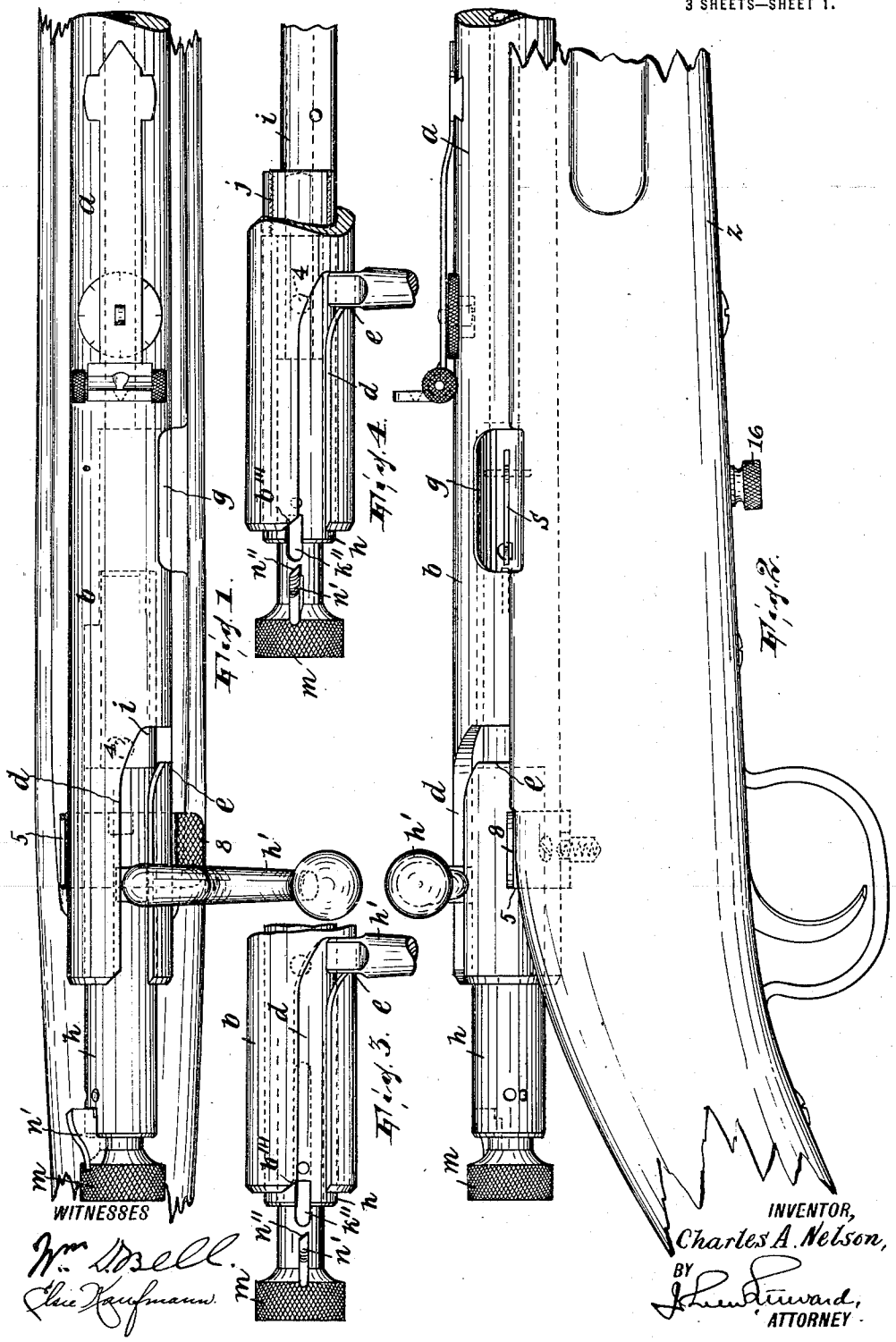
FIREARM.

APPLICATION FILED OCT. 6, 1914.

1,168,026.

Patented Jan. 11, 1916.

3 SHEETS—SHEET 1.



WITNESSES

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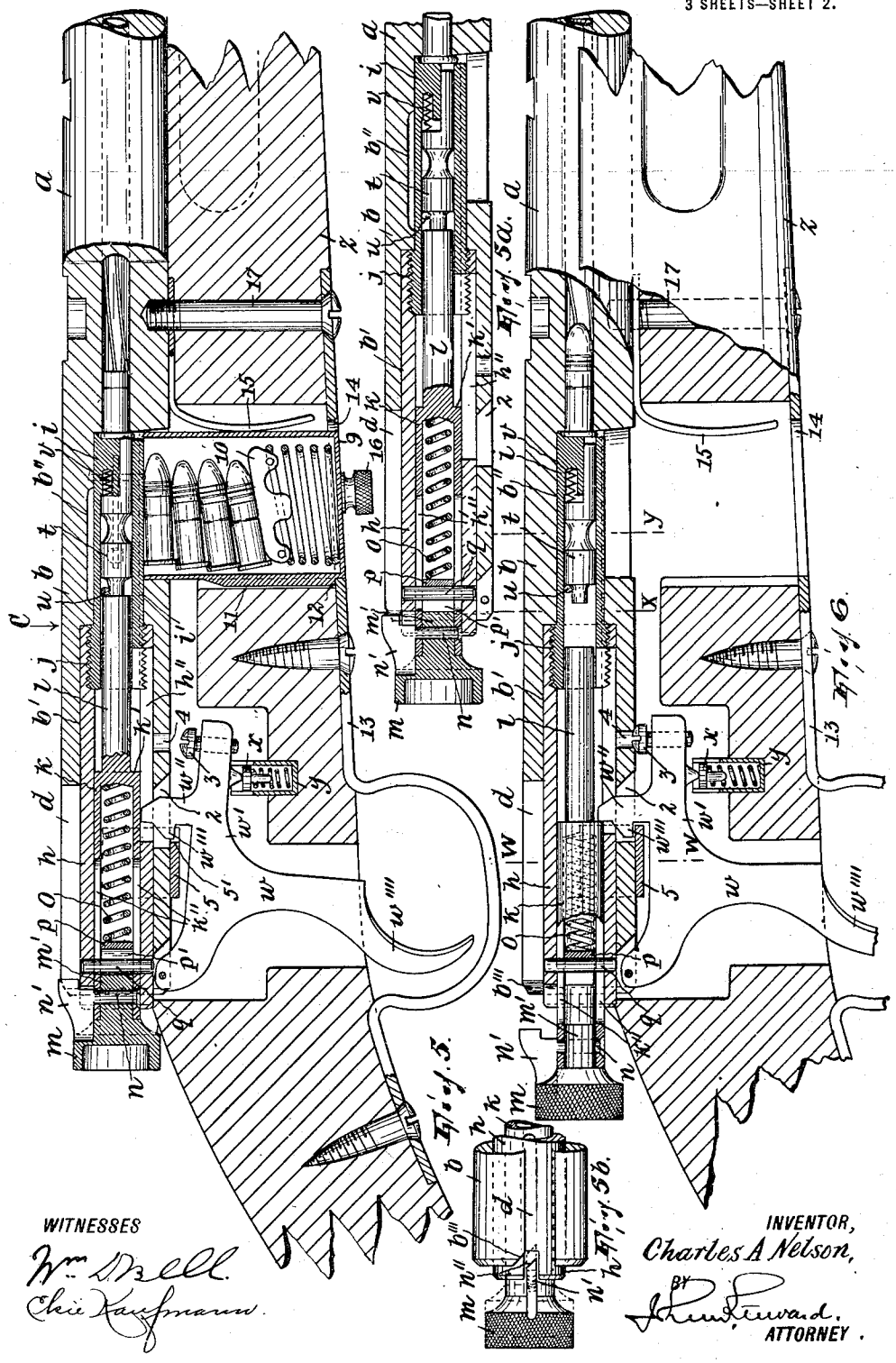
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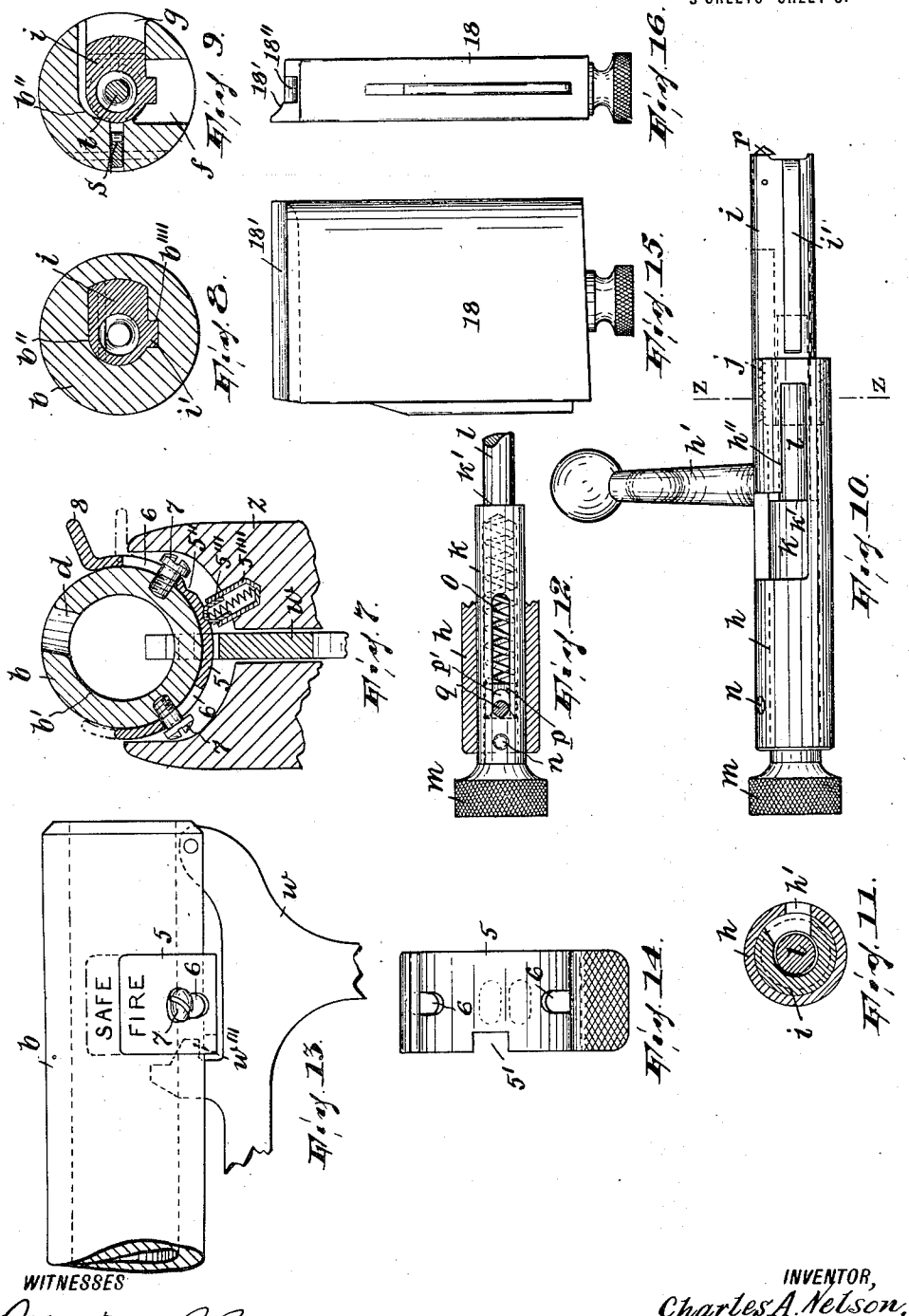
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WITNESSES

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UNITED STATES PATENT OFFICE.

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FIREARM.

1,168,026. Specification of Letters Patent. Patented Jan. 11, 1916.

Application filed October 6, 1914. Serial No. 865,266.

To all whom it may concern:

Be it known that I, CHARLES A. NELSON, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Firearms, of which the following is a specification.

This invention relates to firearms of the class in which the breech-bolt is movable for opening or closing the breech longitudinally of the barrel, and is locked in the closed position by turning the same into interlocked relation to a fixed part of the arm.

The invention consists in a novel construction of the breech-mechanism of an arm of the type indicated characterized by the following principal features, among others, to wit, that the forward part of the bolt is swiveled to the after part, so that the latter may be turned into or out of interlocked relation with a fixed part of the arm, as aforesaid, without turning the forward part; that the striker will expend its driving energy on some part of the arm other than the firing pin unless the bolt be properly locked in closed position on release of the striker; and that the withdrawal of the bolt from the arm in disassembling is prevented by the trigger, which may, however, be moved out of obstructing relation to the bolt to permit such withdrawal thereof.

In the accompanying drawings, Figures 1 and 2 are a top plan and side elevation of the breech-including portion of the improved arm, the breech-bolt being in the fully open position; Figs. 3 and 4 are fragmentary plan views of the breech-structure, the striker being cocked and the breech-bolt in the fully closed position in Fig. 3 but in only the partially closed position in Fig. 4; Figs. 5 and 6 are vertical longitudinal sectional views of the breech-including portion of the arm, showing the striker full forward in Fig. 5 and cocked in Fig. 6 and showing the safety locking means in the "unsafe" and "safe" positions, the magazine box being omitted in Fig. 6; Fig. 5^a shows certain parts as they appear in Fig. 5 excepting that the striker is retracted a distance equal to certain lost motion allowed the same; Fig. 5^b is a detail of Fig. 5^a in plan. Figs. 7, 8 and 9 are transverse sectional views on lines *w*, *x*, and *y* of Fig. 6; Fig. 10 is an underneath plan view of the breech-bolt and contained parts; Fig. 11 is a transverse sectional view on the line *z*—*z* of Fig. 10; Fig. 12 shows the striker in underneath plan and the rear part of the breech-bolt in section; Figs. 13 and 14 illustrate the safety locking device in side elevation, attached to the gun, and in plan, removed; and, Figs. 15 and 16 are a side and rear elevation of an adapter whereby the cartridges may be fed to the arm one by one by hand.

The barrel *a* is extended rearwardly of the breech, as at *b*, to form the breech casing. The rearwardly open bore of this casing is cylindrical, as at *b'*, from the transverse plane of the arrow *c* in Fig. 5 rearwardly, whereas forward of said plane, as at *b''*, it has a flattened-oval cross-section, this part of said bore being of less diameter than part *b'* and offset to the right of the barrel's axis. (Compare Figs. 7, 8 and 9.) A slot *d*, communicating with the part *b'* of the bore, extends from the rear end of the casing forward a suitable distance, being then deflected to the right and terminating in a locking shoulder *e*; entering the part *b''* of said bore from below and from the right side are the cartridge admission and shell ejection openings *f* and *g*, respectively.

The breech-bolt comprises the rear cylindrical member *h* and the forward block member *i* which respectively conform to the bore portions *b'* and *b''* of the breech casing in cross-section and which are connected by a swivel joint *j* which simply for convenience in construction has, as herein shown, the form of screw threading. The member *h* is furnished with the usual arm or handle *h'* whose shank travels in the slot *d* in a well-known manner, engaging with the shoulder *e* to lock the breech-bolt in blow-back-opposed relation to the breech casing, or closed; in the rectilinear movement of the breech-bolt it will be understood that, whereas the part *h* of the same rotates when the handle *h'* is traveling in the deflected part of the slot, the part *i* is confined against rotation. The non-rotatability of the member *i*, the arrangement of bore portion *b''* in which it moves relatively offset to bore portion *b'*, and the forming thereof of less diameter than bore portion *b'* have for their objects to effect the driving home of the cartridge without wiping of

the breech-bolt on the head thereof when handle h' is turned into locking engagement with shoulder e and to insure a space for the temporary reception of the cartridge that shall confine it against undue transverse play.

The member h of the breech-bolt receives in its bore the tubular body k of the striker, whose forwardly projecting reduced portion or stem l, forming the shoulder k', is received in the bore of the member i of the breech-bolt. The rear end of the striker has a knob m whose plug m' is fitted into the rear end of member k of the striker and held therein by the riveted pin n having a flattened upright head n', partially inset into the knob to reinforce it, and having its forward edge beveled on the left side to form an impact face or camming abutment n'' adapted when the breech is not fully closed and the cocked striker is released, to impinge against a corresponding beveled impact face or camming abutment b''' at the rear end and on the left side of the slot d. Contained in the bore of part k of the striker is a helical spring o held under some compression between the closed end of the bore and a forked plug p abutting (in the released position of the striker) the plug m' of the knob. To retain the striker in member h of the breech-bolt a pin q extends diametrically through the rear end of said member and the part k of the striker, penetrating the slot p' formed between the legs of the forked plug p. The relaxed striker has longitudinal lost motion in the member h for an extent determined by the distance between the closed end of slot p' and the opposing face of plug m' one or the other of which at the limits of such lost motion abuts pin q (compare Figs. 5 and 5[a]). Diametrically opposite longitudinal slots k'' are formed in the part k for the accommodation of the pin q, the same allowing the striker to move back and forth relatively thereto from the one to the other of the positions thereof shown in Figs. 5 and 6, the spring o being then in a state of compression more or less exceeding normal. When the striker is moved backward from the position shown in Fig. 5 there is initially a certain amount of lost motion (to the extent already indicated), after which the spring o is compressed; in its forward motion the spring is directly active to advance the striker until plug m' abuts the plug p, whereupon the remaining forward motion of the striker is attributable to some force other than direct pressure of the spring—normally the momentum of the striker. Member h has on the under side a longitudinal L-shaped slot h''.

The member i has on its under side a longitudinal rib i' fitting a corresponding groove b'''' in the bore portion b'' and it is equipped on the right side (Fig. 10) with the extractor r coöperative with the ejector s (Fig. 9) to discharge the extracted spent shell through the opening g in the well-known manner. The firing pin t, longitudinally movable in member i, is normally held retracted against a retaining pin u by a spring v.

The length of the striker is such that it about reaches to the firing pin when, with spring o extended to the limit afforded by contact of plug p with plug m', pin q contacts with the forward end of slot p' (Fig. 5[a]). Wherefore to impart a cartridge-exploding impulse to the firing pin the striker must avail itself of the lost-motion allowed by slot p' and advance with sufficient force for the purpose. This it will do if the gun has been properly closed, *i. e.*, so that the breech-bolt is effectively locked by the engagement of handle h' with shoulder e; but if, instead of the parts being in the position shown in Fig. 3, where handle h' is properly engaged with shoulder e to lock the breech-bolt (and so prevent a dangerous blowing back of the breech-bolt on explosion of the piece) and head n' of the striker registers with slot d, they are in the position shown in Fig. 4, where handle h' is not engaged with shoulder e for effective locking and head n' does not register with slot d but is longitudinally alined with impact face b''', when the striker is released its advance will be checked at or just before the instant the spring reaches the limit of its extension by the contact of impact face n'' with impact face b''' and the striker will not possess sufficient momentum to impart an effective impulse to the firing pin. (See Fig. 5[b], where the beveled head n' is shown in full lines in the same position relatively to impact face b''' as in Fig. 5[a], the dotted lines indicating the forward limit it may assume by virtue of the lost motion.)

It is not essential that the impulse given the firing pin be due to the momentum of the striker instead of to the direct action of the spring, though this is preferred because by interposing momentum as the factor directly or finally impelling the striker against the firing pin any chance of the spring after the impact of faces n'' b''' with each other (and incident to said faces camming past each other) still forcing the striker forward into contact with force sufficient to advance the firing pin and explode the cartridge is eliminated. The faces n'' and b''' are beveled principally to ease the impact and avoid undue wear of the parts concerned.

The trigger w is a bell-crank lever fulcrumed in the breech casing and having a forwardly extending arm w' equipped with an up-standing dog w'' formed with a rearwardly projecting lug w''' giving the dog substantially the character of a hook, the

downwardly projecting arm w'''' of the trigger being suitably shaped to afford a finger grip. The trigger has bearing against the under side of its arm w' a spring-pressed plug x housed in a cup y inset in the stock z of the arm. The dog w'', extending through an opening 2 in the breech-casing, is held by the spring-pressed plug x bearing against the under side of the striker, being accommodated by the slot h'' so as not to interfere with the longitudinal and rotary movements of the bolt, and adapted to dog the striker at shoulder h' in the cocking of the piece. The limit of rearward movement of the breech-bolt is normally determined by the contact of the forward end of the slot h'' as an abutment or stop with the dog w'', but upon retracting the trigger sufficiently so that the dog w'' clears the bolt the latter may be bodily removed rearwardly from the breech casing. The trigger may be set so as to require more or less movement to clear the striker shoulder h'' by turning the adjusting screw 3 tapped in its arm w' and having its head adapted to abut upwardly against the breech casing, which has a hole 4 registering therewith and, when the breech-bolt has been removed, allowing to a suitable implement access to the screw for turning the same.

A part-circular strap 5 extends under and embraces the breech-casing and is rotatively shiftable with reference thereto for a distance determined by the length of circumferential slots 6 through which extend the screws 7 for retaining the strap in place. One end of the strap is turned off to form a handle 8. Assuming the gun to be cocked, the forward edge of the strap underlies the lug w''' of the trigger when the strap is turned to the position shown in Fig. 6 and by full lines in Fig. 7; when it is turned to the position shown in Fig. 5 (dotted lines, Fig. 7) a recess $5'$ in the strap registers with the lug. The strap thus serves as a safety device for locking the gun against accidental firing. As a means for indicating whether the gun is thus locked or not suitable indices or inscriptions, as "Safe" and "Fire," may be provided on the breech-casing and one end of the strap in such relation that the strap will obscure "Safe" and expose "Fire" when turned to the dotted line position in Fig. 7 and "Safe" will be exposed and "Fire" hidden by the part of the stock z which flanks the breech casing when the strap is in the full line position in said figure (see Fig. 13). For holding the strap at either of its limits of movement one of two notches $5''$ in the strap is adapted to be engaged by a spring-pressed plug $5'''$ guided in a cup $5''''$ inset in the stock z.

The magazine box 9, containing a spring-pressed platform 10 for elevating the cartridges, has on its rearward side a vertical rib 11 beveled at its upper end and forming a shoulder 12 at its lower end. The trigger guard 13 has an opening 14 by which the box may be entered upwardly into the stock, being meanwhile pressed rearward by a spring 15; when the box is pushed home in the stock, the rib 11 snaps into abutting relation at 12 to the shoulder formed by the guard at one end of opening 14 to retain the box in place. The box may be withdrawn by employing its handle 16 to move it forward, so that its rib clears the guard, and then downward. Spring 15 is a plate spring having one end clamped between the barrel and stock and held in place by the screw 17 which secures the barrel to the stock and having its free end bent downwardly and curved. It will be understood that the rib i' on the under side of the breech-bolt member i is adapted to be blocked against forward movement by the platform 10 when the breech-bolt is retracted upon the firing of the last cartridge, thereby to indicate that the magazine is empty.

To adapt the gun for the firing of cartridges one by one by hand I provide the block 18 conforming generally to the outward shape of the box 9 except that its top surface affords a rigid cartridge seat $18'$ having a longitudinal depression or groove $18''$ to accommodate the rib i' of the breech-bolt member i. When this block or adapter has been fitted to the gun in the same manner as the magazine box each cartridge is of course introduced through the ejecting opening g, resting then on the adapter in the path of the advancing breech-bolt.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination, with a fixed breech-including part of a gun, a breech-bolt movable longitudinally therein to open and close the breech and rotative into and out of blow-back-opposed relation to said part, and firing mechanism including a cockable spring-pressed longitudinally movable firing means carried by and rotative with the breech-bolt, said part and the firing means having coactive means to obstruct the firing movement of the firing means on release of the latter when the breech-bolt is out of blow-back-opposed relation to said part.

2. In combination, with a fixed breech-including part of a gun, a breech-bolt movable longitudinally therein to open and close the breech and rotative into and out of blow-back-opposed relation to said part, and firing mechanism including a cockable spring-pressed longitudinally movable firing means carried by and rotative with the breech-bolt, said part and the firing means having abutments longitudinally alinable with each other, and also coactive to obstruct the fir-

ing movement of the firing means, when the breech-bolt is out of blow-back-opposed relation to said part.

3. In combination, with a fixed breech-including part of a gun, a breech-bolt movable longitudinally therein to open and close the breech and rotative into and out of blow-back-opposed relation to said part, and firing mechanism including a cockable spring-pressed longitudinally movable firing means carried by and rotative with the breech-bolt, said part and the firing means having abutments longitudinally alinable with each other, and also coactive to obstruct the firing movement of the firing means, when the breech-bolt is out of blow-back-opposed relation to said part, one of said abutments being oblique.

4. In combination, with a fixed breech-including part of a gun, a breech-bolt movable longitudinally therein to open and close the breech and rotative into and out of blow-back-opposed relation to said part, and firing mechanism including a cockable longitudinally movable firing means carried by and rotative with the breech-bolt and elastic means to press forward the firing means having a forward pressure-limit on the firing means not exceeding the forward limit of movement of the firing means, said part and firing means having camming abutments longitudinally alinable with each other, and also coactive to obstruct the firing movement of the firing means at approximately the point corresponding to the forward pressure-limit of said elastic means, when the breech-bolt is out of blow-back-opposed relation to said part.

5. In combination, with a fixed breech-including part of a gun, a breech-bolt movable longitudinally therein to open and close the breech and rotative into and out of blow-back-opposed relation to said part, and firing mechanism including a cockable longitudinally movable firing means carried by and rotative with the breech-bolt and elastic means to press forward the firing means having a forward pressure-limit on the firing means extending short of the forward limit of movement of the firing means, said part and firing means having camming abutments longitudinally alinable with each other, and also coactive to obstruct the firing movement of the firing means at approximately the point corresponding to the forward pressure-limit of said elastic means, when the breech-bolt is out of blow-back-opposed relation to said part.

6. In combination, with the breech-casing of a gun, a breech-bolt movable longitudinally therein to open and close the breech and including a forward portion and a rearward portion swivelled together, said forward portion being held against rotation by the breech-casing and the rearward portion being revoluble in the breech-casing into and out of blow-back opposed relation to the same in the breech-closing position of the breech-bolt, and firing mechanism.

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

CHARLES A. NELSON.

Witnesses:
W. J. GREEN,
CARLETON L. WOOD.