

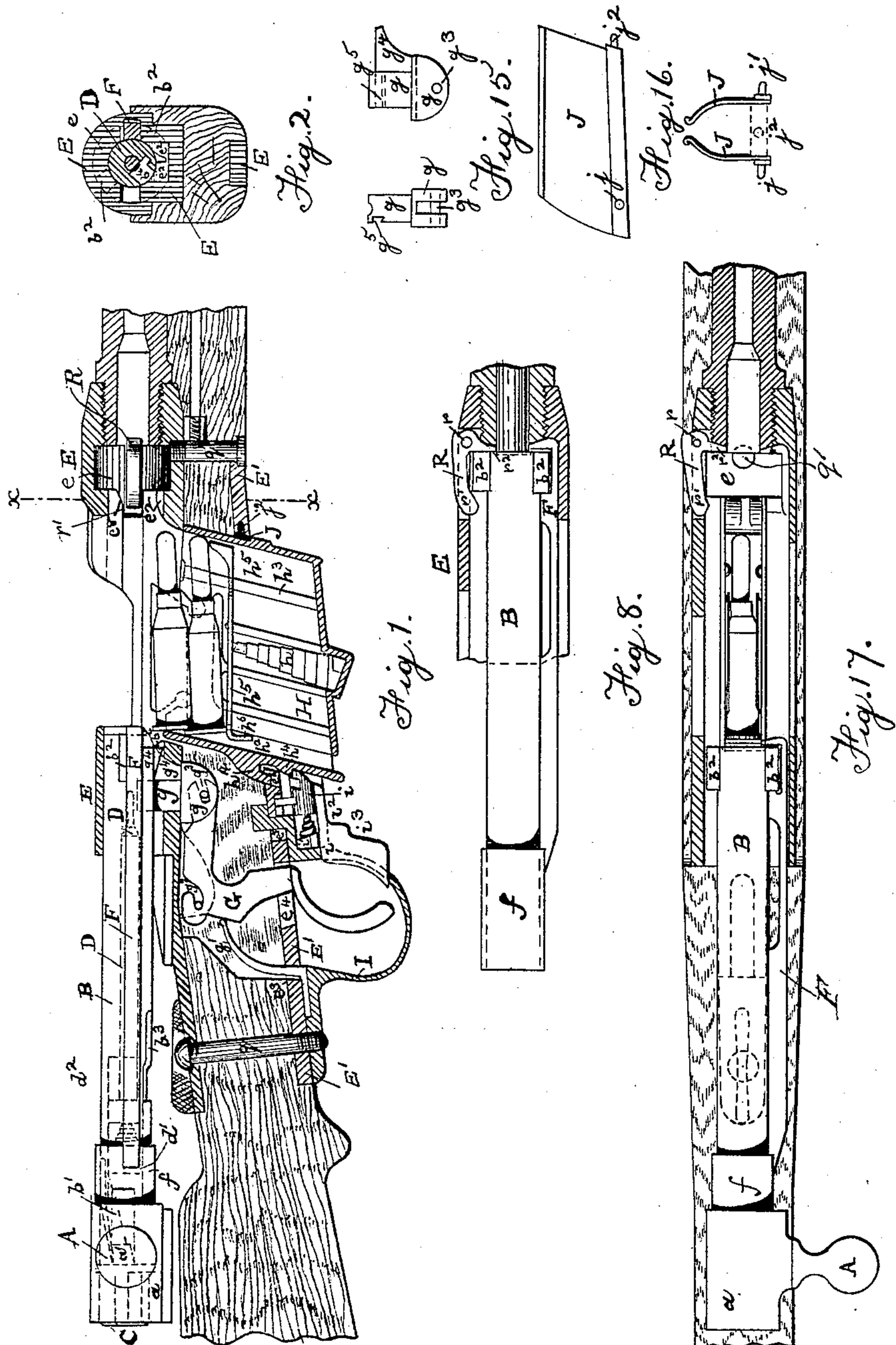
(No Model.)

3 Sheets—Sheet 1.

K. KRINKA.
MAGAZINE GUN.

No. 442,058.

Patented Dec. 2, 1890.



Witnesses:
H. S. Lamb
G. M. Copenhaver

Inventor.
KARL KRINKA,
By his Attorney
R. L. Swin.

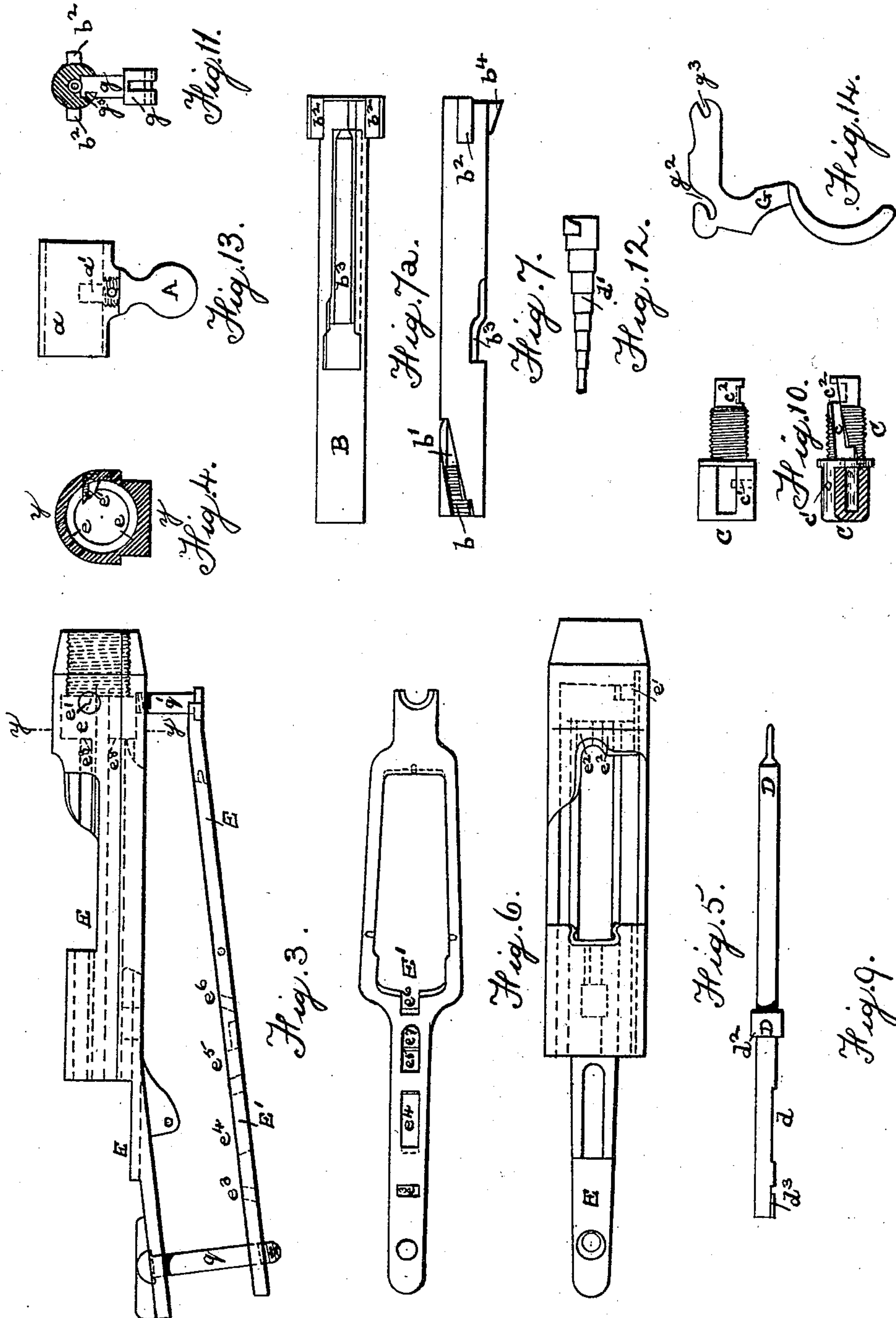
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3 Sheets—Sheet 2

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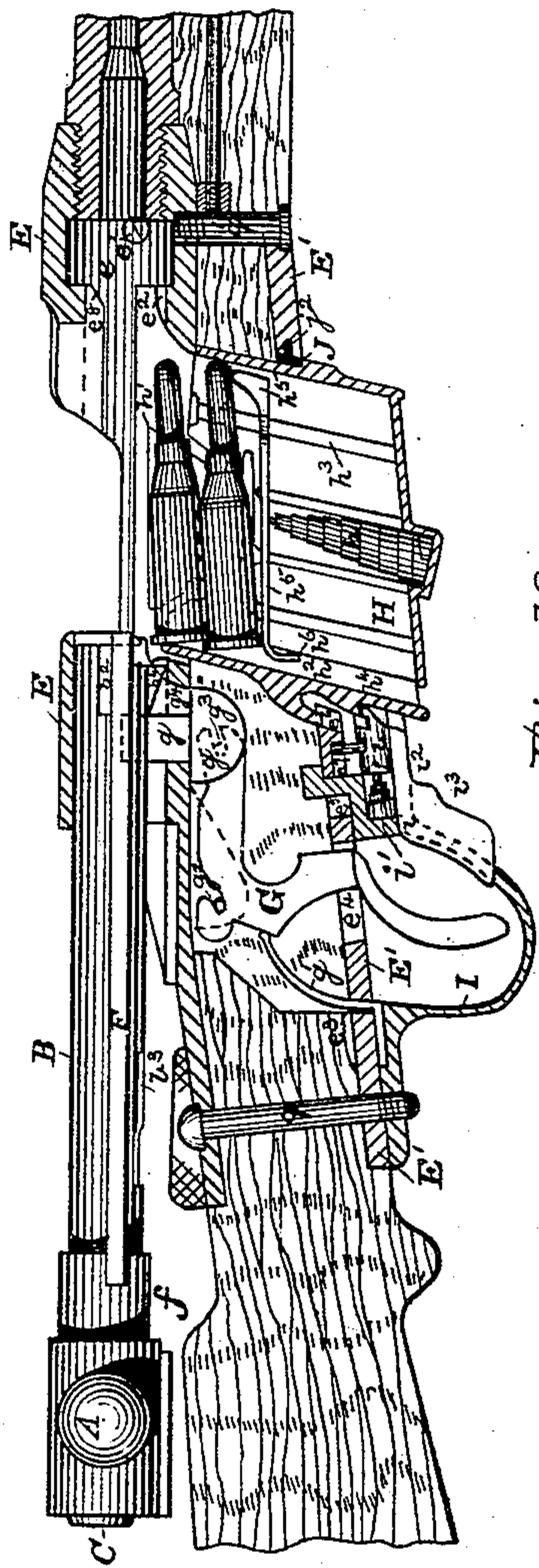


Fig. 18.

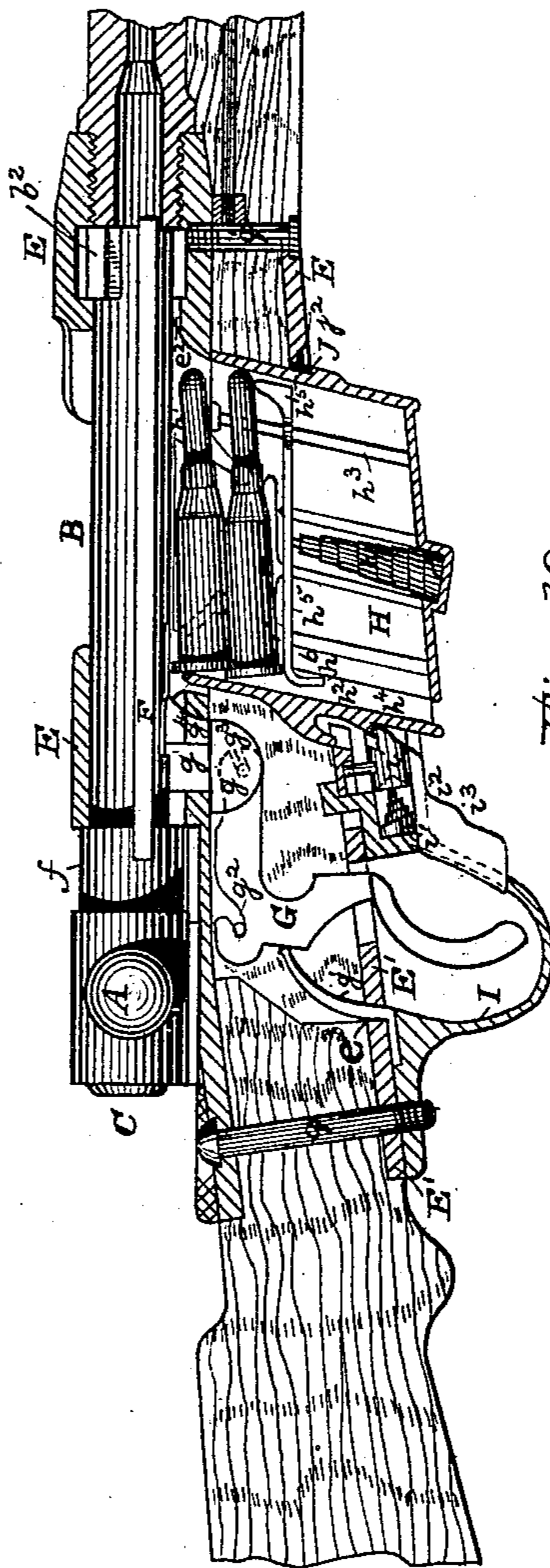


Fig. 19.

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Geo. M. Whitney.
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Inventor:
Karl Krinka
By his Attorney
R. L. Ewin

UNITED STATES PATENT OFFICE.

KARL KRNKA, OF LONDON, ENGLAND, ASSIGNOR TO THE KRNKA REPEATING RIFLE COMPANY, OF SAME PLACE.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 442,058, dated December 2, 1890.

Application filed January 25, 1890. Serial No. 338,162. (No model.)

To all whom it may concern:

Be it known that I, KARL KRNKA, a resident of London, England, and a subject of the Emperor of Austria, have invented an Improvement in Magazine Fire-Arms, of which the following is a specification.

My invention relates to improvements in magazine fire-arms of the type already patented in the United States to Silvester Krnka and myself under No. 386,638, on the 24th of July, 1888, and for which further Letters Patent were applied for by us under Serial No. 299,789, on the 13th day of February, 1889.

The general action of loading and firing this rifle and the principles of action of the breech-bolt are the same as described in the specification forming part of the aforesaid patent and application for patent; and the present invention consists in modifications of detail to obtain lighter weight and more perfect and reliable action of the parts and to cheapen the price of manufacture.

In order that my present invention may be the better understood, I now proceed to describe the same in relation to the drawings hereunto annexed, reference being had to the letters marked thereon.

Figure 1 is a sectional elevation of the rifle with the breech open. Fig. 2 is a transverse section on the line $x x$, Fig. 1, with the breech closed. Fig. 3 is an elevation of the shoe and shoe-plate. Fig. 4 is a transverse section on the line $y y$, Fig. 3. Fig. 5 is a plan on the top of the shoe. Fig. 6 is a plan of the shoe-plate. Fig. 7 is an elevation of the breech-bolt removed. Fig. 7^a is a view of the under side of the breech-bolt. Fig. 8 is a sectional plan of the closed breech, showing the breech-bolt and cartridge-loosener extractor. Fig. 9 is a view of the firing-pin detached. Fig. 10 represents two views of the breech-bolt screw detached. Fig. 11 is a sectional view of the breech-bolt engaged with the sear. Fig. 12 is a view of the firing-pin volute spring. Fig. 13 is a view of the breech-bolt handle detached. Fig. 14 is a view of the trigger detached. Fig. 15 represents two views of the sear detached. Fig. 16 represents two views of the spring-flap. Fig. 17 is a sectional plan

of the open breech, as shown in Fig. 1. Fig. 18 is a sectional elevation showing the breech open, as in Fig. 1, and slightly modified; and Fig. 19 is a like view showing the breech closed.

With regard to improvements in the shoe-stock of the gun, the shoe E is made in a single piece, guiding the action of the breech-bolt. A shoe-plate E' is attached under the stock for the reception of the magazine and trigger-guard and carrying the trigger apparatus.

Fig. 3 shows the shoe E, in combination with the shoe-plate E', connected by the breech-screw q and the shoe-plate screw q' . The breech-screw q passes through a plain hole in the shoe-plate E', entering into a tapped hole in the trigger-guard I, which when screwed home thus holds the shoe-plate E' in place. In the breech-bolt B both locking-ribs b^2 are coincident in position at the end of the bolt. A circular groove e in the shoe E is now made of sufficient diameter to allow of the two locking-ribs b^2 rotating in this groove without friction. Further, a fixed screw e' , Figs. 3 and 4, is tapped into the wall of the shoe and projects into the circular groove into which the locking-ribs are pushed through suitable side slots to admit them. The end of the said screw e' is prepared so as to present a diagonal face to the end of the locking-ribs b^2 , and serves to produce a first rotary movement of the breech-bolt when the latter is forced home. A cartridge-bridge e^2 , Figs. 1 and 5, is left in the shoe E at the forward edge of the magazine, which enables the cartridge as it is pushed from the magazine to enter into the breech of the rifle. This takes the place of the spring-tongue described in the specification of said application Serial No. 299,789 as attached to the front of the spring flaps or gills, and offers the advantage that the breech-bolt nose b^4 does not constantly wear against the bridge, which is now provided with a central groove or slot in which the breech-bolt nose can enter, and permits a considerable width to the breech-bolt nose.

The longitudinal under slot b^3 of the breech-bolt is provided with a recessed groove on its

inner face, in which engages a nose g^5 of the sear. (Shown engaged together at Fig. 11.) This arrangement is designed to prevent the premature firing of the rifle effected by pulling down the sear accidentally by the trigger. As a consequence of this arrangement, the sear cannot be disengaged from the breech-bolt until the breech is absolutely closed, the engaging lip being at that point cut away. A further advantage, also obtained, is that when the breech is fully opened and the bolt withdrawn it is prevented from falling out of the shoe by its fixed engagement with the sear, which cannot be removed by accident; but when the sear is withdrawn from engagement with the breech-bolt at the proper place, where the ridge is cut away, the breech-bolt can be withdrawn from the shoe without the loosening of any screw if the trigger is then continually pressed. The position of the helical slot b' of the breech-bolt has been changed to suit the altered position of the bolt-handle A, the engaging pin a' of the handle-socket being formed as a continuation of the said handle A within the socket, Fig. 13, to engage in the said helical slot.

Now I apply a modified extractor F, Figs. 1, 8, 17, and 19, which is attached rigidly at its back end to or is part of a socket f , and projects entirely beyond the body of the breech-bolt, the clip end being capable of elastic spring on the bolt sufficient for the nose of the extractor to lift over and engage with the flange of the cartridge. This arrangement is much stronger than the one formerly patented, and the friction which formerly existed between the elastic part of the old extractor and the breech-bolt shoe is removed. The breech-bolt, in its rotary motion, turns within the socket f , clearance being allowed in the extractor for the rotation of the bolt-lugs b^2 . Thus the extractor does not turn with the bolt, but, entering a suitable slot in the shoe, acts as a guide for the handle A, which engages into the socket f of the extractor. This facilitates the opening of the breech after firing. The helical slots b' in the breech-bolt and c in the breech-screw C, Fig. 10, terminate in a recess in the outermost ends of the slots, in which engages the little pin a' of the handle A. When, then, the breech-bolt is opened, its motion is first rotary, on account of the backward motion of the handle A and its pin a' , traveling in the said helical slots. When, however, the handle has been pulled back so far that the pin a' is drawn back to the backward end of the bolt-screw C, the breech-bolt B has not yet finished its rotary motion; but when the handle of the bolt is drawn back farther, the breech-bolt ends its rotation by means of the oblique faces of the two shoulders $e^8 e^8$, Fig. 3, to the rear of the locking-chamber e . The back ends of the two locking-ribs b^2 are pressed back, rotating the breech-bolt by their disengagement from the oblique faces of the said shoulders. The handle A, therefore, by its little pin a' en-

gages into the recess or shoulder to the rear of the aforesaid helical slot, and is engaged there ready for the return-stroke, the handle A being held at rest as compared with the rotation of the breech-bolt by means of the aforesaid extractor F. A similar first rotation of the breech-bolt, when forced home upon the breech, takes place relatively to the fixed handle by one of the locking-ribs b^2 being forced home first against the oblique face of the screw e' , the bolt so far being pressed home without rotation by the direct thrust of the pin a' against the shoulder of the slot.

The extractor-socket f is provided with a slot to permit the travel of the pin a' longitudinally within the said socket. A similar rotative motion of the breech-bolt B takes place at the closing of the breech independent of the driving effect of the little pin a' in the helical slots b' and c . The pin a' is thus released from the shoulder-notch, and, passing down the helical slot, completes the locking of the bolt in the locking-chamber.

The improved cartridge-extractor has the further advantage that, during the repeating firing from the magazine, it catches each cartridge as soon as the same leaves the magazine, so that the cartridges are prevented from meeting each other during fire. The helical slot remains always covered by the improved cartridge-extractor.

The improved cartridge-extractor may be removed from the breech like the other parts without the use of any special appliances.

I apply a cartridge-starting apparatus, as in Figs. 1, 8, and 17, in order to start a jammed cartridge from the breech before the dead pull of the breech-bolt comes upon it by the beforementioned extractor F. The nose of the extractor F in this case leaves a small space—such as one-sixteenth of an inch—between itself and the inner face of the cartridge-flange. I fit a lever R in a slot through the side or other part of the breech-chamber E, pivoted upon a pin r , so placed that the distance from the pivot r to the foot of the projection r' is double the length of the nose r^2 , which rests against the cartridge-flange. When the cartridge is home, as shown in Figs. 8 and 19, the breech-bolt B is rotated by the action of the helical slot b' and the handle-pin a' before there is any longitudinal motion of the breech-bolt. As the breech-bolt is then withdrawn, a further rotation is caused by the locking-ribs b^2 striking against the inclines e^8 . This further rotation and the straight-pull longitudinal motion of the breech-bolt forces one of the locking-ribs b^2 under the projection r' of the lever R, thus causing the said lever to rotate on its pivot r and ejecting the cartridge a short distance by the nose r^2 of the said lever. After this the nose of the extractor F will have passed through its clearance and have seized hold of the flange of the cartridge to complete the withdrawal of the exploded cartridge-case by the

longitudinal travel of the bolt. Should, then, the exploded cartridge-case be jammed, the first starting motion effected by the lever R is done under great mechanical advantage from the part rotating and part longitudinal motion of the breech-bolt through a short distance before the ordinary extractor F completes the withdrawal. I may place this starting-lever at either side or underneath the breech-chamber. In the latter case the starting-lever may be operated by the nose b^4 of the breech-bolt. When the cartridge-starter is arranged in other positions than that shown, a second oblique-faced screw e' is used, as in Fig. 18.

In the improved firing-pin D, Fig. 9, instead of the former hollow collar, I construct upon it the short full collar d^2 , and where the space for the firing-pin spring is small I use a conical volute spring of thin steel ribbon d' , Fig. 12. The improved trigger-guard I is no longer elastic, as before, to release the magazine, but is now supplied with an independent catch i , Figs. 1, 18, and 19, which is capable of longitudinal motion in a corresponding recess of the trigger-guard I. A small catch-spring i' presses the catch continuously forward against the magazine, so that the latter finds the necessary support on this catch i . The downward arm of this catch i has two steps $i^2 i^3$, Fig. 1. When the lower step is pressed backward to the front of the trigger-guard, by applying a finger to said step i^3 the magazine is released only as regards the lower catch h^4 . This permits the dropping of the magazine to permit of single firing by the insertion of single cartridges from the top of the breech. When, however, it is desired to drop the magazine entirely it is only necessary to press the finger against the higher step i^2 until the finger is stopped by the front of the trigger-guard, when the magazine is entirely released and disengages and falls out. This, however, can only be effected by the complete pull-back of the said catch in one movement, as in the intermediate position of single firing the catch i is locked so as to prevent accidental dropping of the magazine from that position. This is effected by the interlocking of the notch in the top of the catch with the overhanging lower end of the top catch on the lowered magazine, when said catch is only partially retracted as above. The forward movement of this catch is limited by an upright pin in the cylindrical part which engages in a corresponding groove e^7 , Fig. 6, in the shoe-plate E'.

The trigger-spring g' , Figs. 1, 18, and 19, is here shown as distinct from the trigger-guard to facilitate manufacture. This spring is screwed to the mechanism at the same time as the trigger-guard I, by means of the breech-screw q . In order to put this mechanism together, the trigger-guard I is hooked with the hook on its front end into the slot e^5 in the shoe-plate E', the trigger-spring g' being at the same time inserted through the slot e^3 in the said shoe-plate. On screwing up the breech-

screw q , which can be done by hand, everything is then secured in place. The shoe-plate E' is removed and fixed in the same manner by the removal or tightening of the breech-screw q . The shoe-plate screw q' need not be removed, as it merely forms a fixed shoulder over which the front end of the shoe-plate E' may be inserted and readily removed upon taking out the breech-screw q . The gills or flaps J, Fig. 16, are fixed in place by three studs $j j' j^2$ upon the shoe-plate; but these gills need not be removed for cleaning except together with the shoe-plate. In my improved magazine, Figs. 1, 18, and 19, the follower h^5 is now confined by the two guides $h^2 h^3$, the former h^2 being a recess to receive the heel h^6 of the follower, and the latter h^3 being a corrugation in each side of the case, forming a guide for a suitable recess in the follower. The follower has its heel h^6 turned down, so that when the magazine is exhausted the said heel checks any further movement of the breech-bolt as it rises to the top of its travel until checked by the elastic lugs h' of the magazine. A projecting pin upon the follower h^5 engages into the topmost spiral of the magazine-spring to keep it in place, the said spring lying in a suitable recess in the bottom of the magazine to present the action in the required direction.

To prevent excessive stiffness of the elastic lugs h' of the magazine, they have slots terminating at bottom in circular perforations at their front and back ends.

On the front of the magazine is a small plate extending on either side beyond the walls of the magazine for the purpose of facilitating correct and quick insertion into the rifle.

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

1. In a repeating-rifle, the combination, with a rotating breech-bolt having laterally-projecting locking-ribs at its front end, of a breech-shoe having a recess to receive said ribs and provided with a fixed screw or screws e' , having oblique-faced inner ends projecting into said recess, substantially as shown and described.

2. In a repeating-rifle, the combination, with a rotating breech-bolt having laterally-projecting locking-ribs at its front end, of a breech-shoe having a recess to receive said ribs, grooves leading thereto, means for reciprocating and rotating the bolt, including inclines e^8 within the breech-shoe, and a starting-lever R, pivoted to said shoe and acted on by a projection on said bolt during its rotation preliminary to its direct retraction, substantially as described.

3. In a repeating-rifle, the combination, with the breech-bolt, of a cartridge-extractor and socket carrying the bolt-handle and projecting from the body of the bolt and sliding in a slot in the shoe to act as a guide to the bolt-handle independent of the rotary mo-

tion of the breech-bolt, substantially as described.

4. In a repeating-rifle, the sear g , constructed with a groove or lip engaging in a
5 corresponding lip or groove within the breech-bolt to prevent the accidental lowering or disengagement of the sear, except in a predetermined position where the said engaging lip or groove is cut away, substantially as described.
10 5. In a repeating-rifle, the combination, with a gravitating magazine H , having double catches h^4 , projecting rearwardly different distances, of the forwardly-projecting magazine-catch i , having the two finger-steps $i^2 i^3$,
15 a spring i' , which normally projects said catch i into the path of said double catches h^4 , and a trigger-guard I , the front of which constitutes a stop for the finger applied to either of said finger-steps and is located a given distance
20 behind said finger-step i^3 and a greater distance behind said finger-step i^2 , substan-

tially as shown and described, for dropping the magazine for single firing or so as to detach the magazine at will, in the manner set forth.

6. In a repeating-rifle, the combination, with the one-part breech-shoe E and the shoe-plate E' , of the permanent shoe-plate screw q' passing through the stock and tapped into said breech-shoe near its front end and engaged
30 by the front end of said shoe-plate, and the removable breech-shoe screw q , extending through and uniting the rear ends of said breech-shoe and shoe-plate, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

KARL KRNKA.

Witnesses:

RICHARD A. HOFFMANN,
ALBERT E. NASH.