

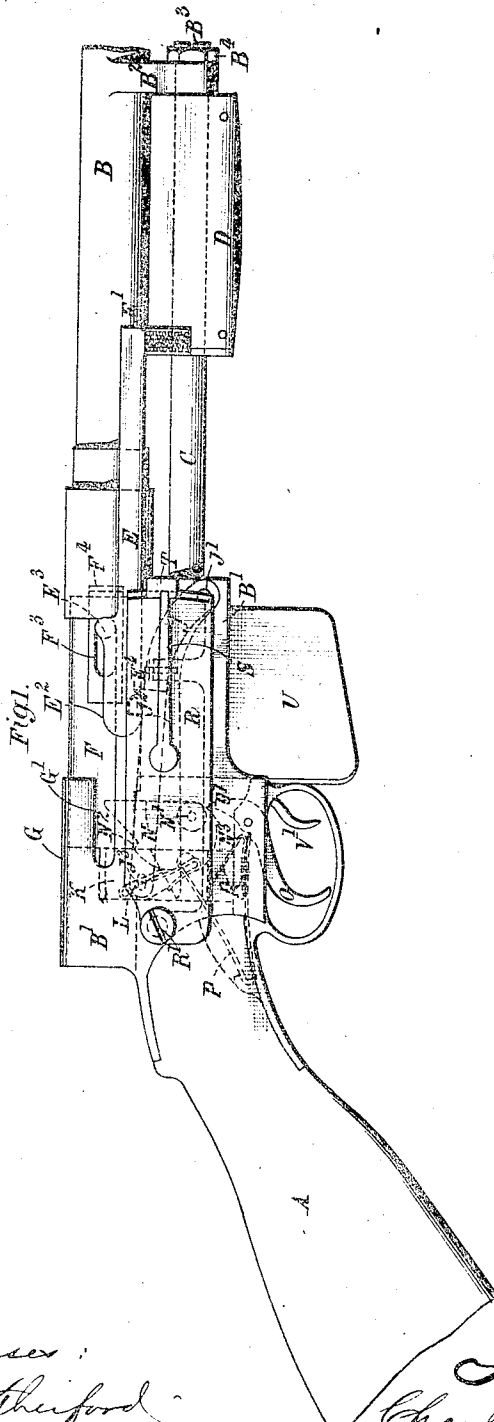
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11 Sheets—Sheet. 1.

C. S. LOTT.
BREECH LOADING GUN.

No. 507,823.

Patented Oct. 31, 1893.



Witness:
J. A. Ruthinford
Robert Barrett.

Inwitness:
 Charles S. Lott
 By James H. Norris,
 Attorney

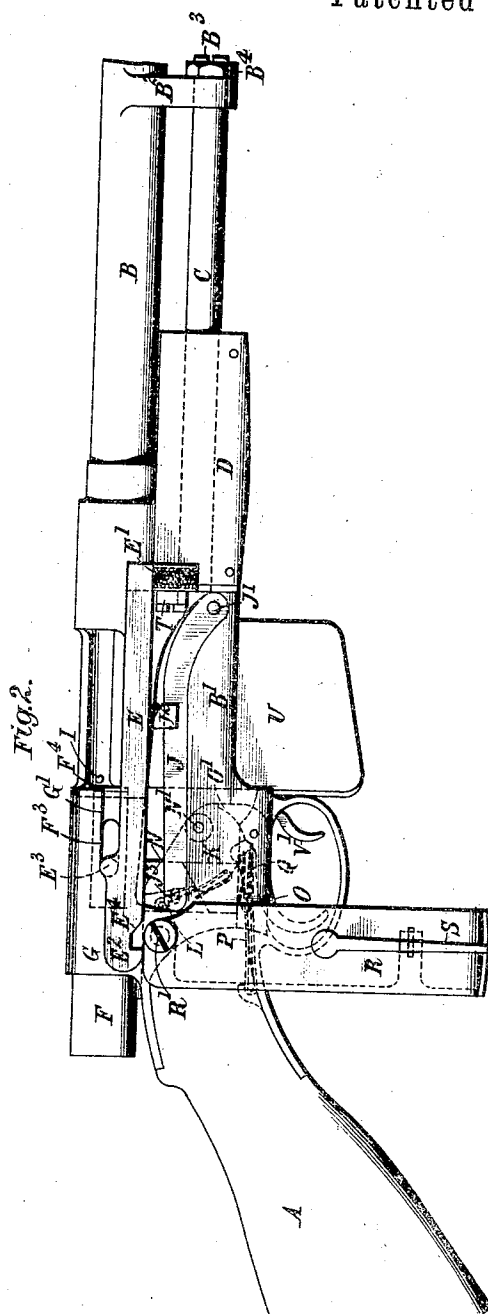
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Witnesses:
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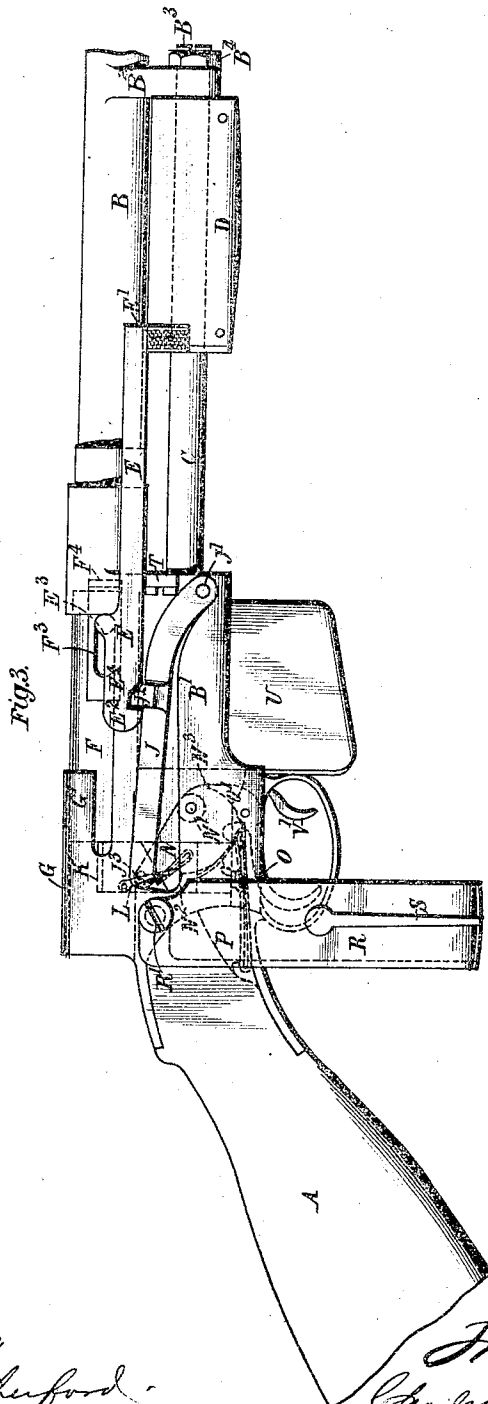
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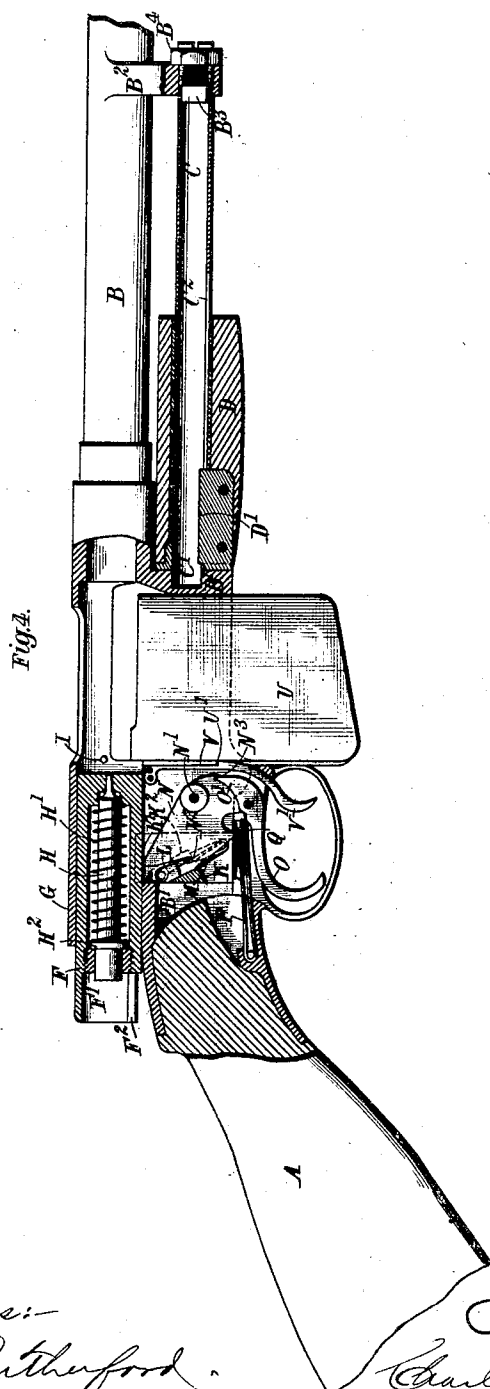
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11 Sheets—Sheet 5.

C. S. LOTT.
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Fig. 4^c

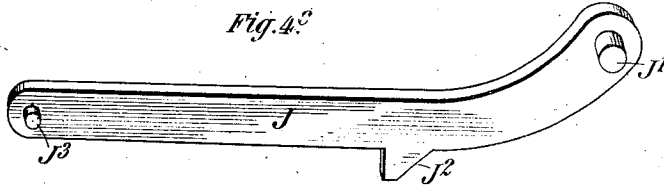


Fig. 4^b

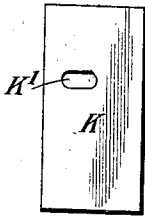


Fig. 4^a

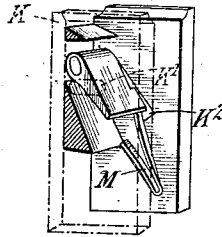
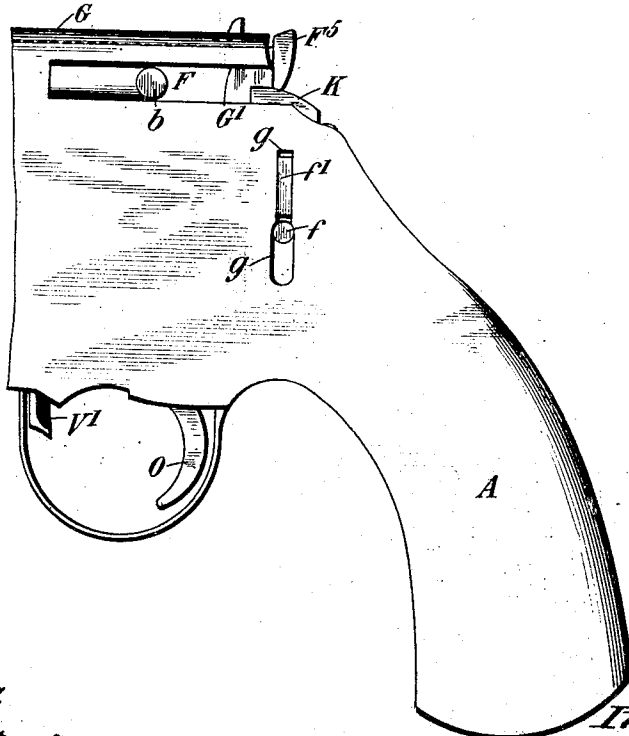


Fig. 9^a



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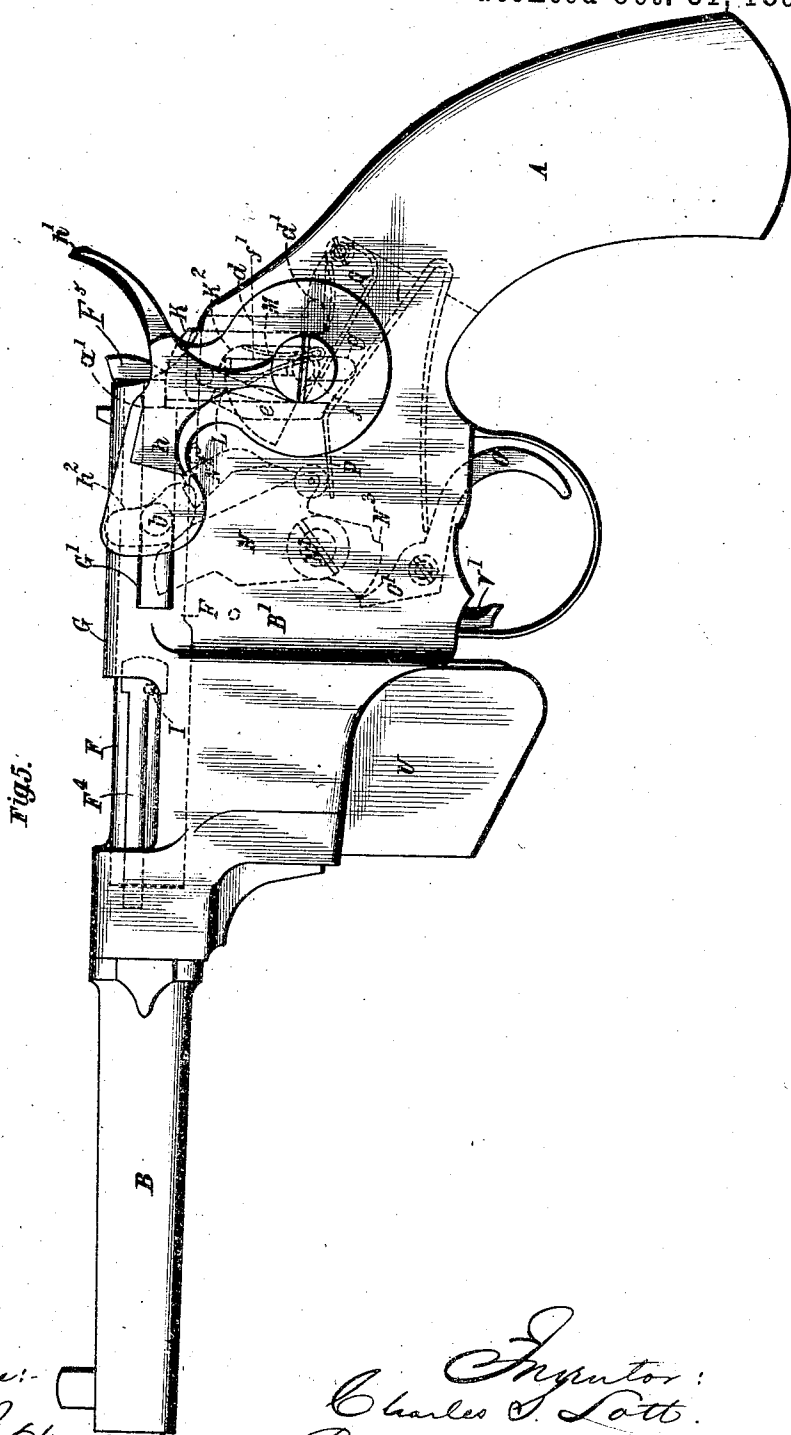
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Patented Oct. 31, 1893.



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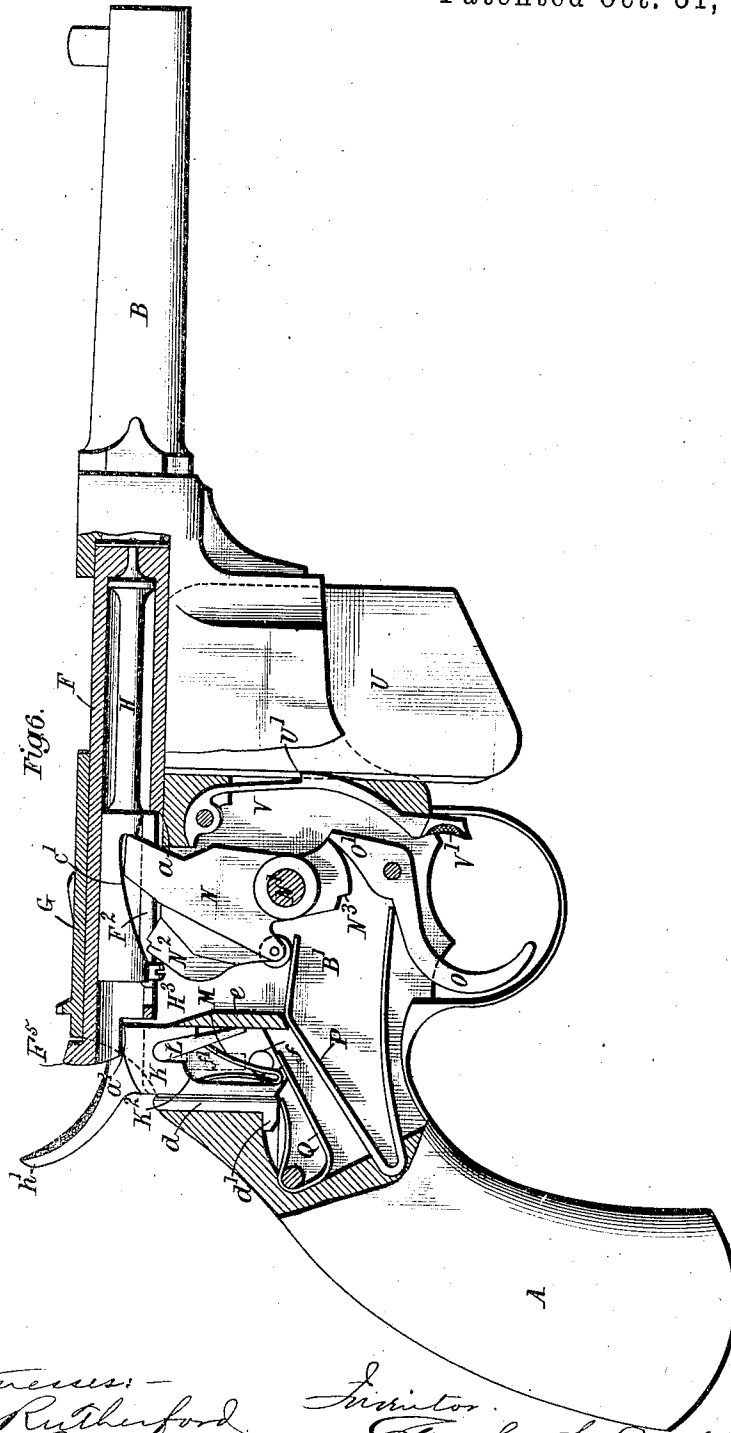
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Witnesses:
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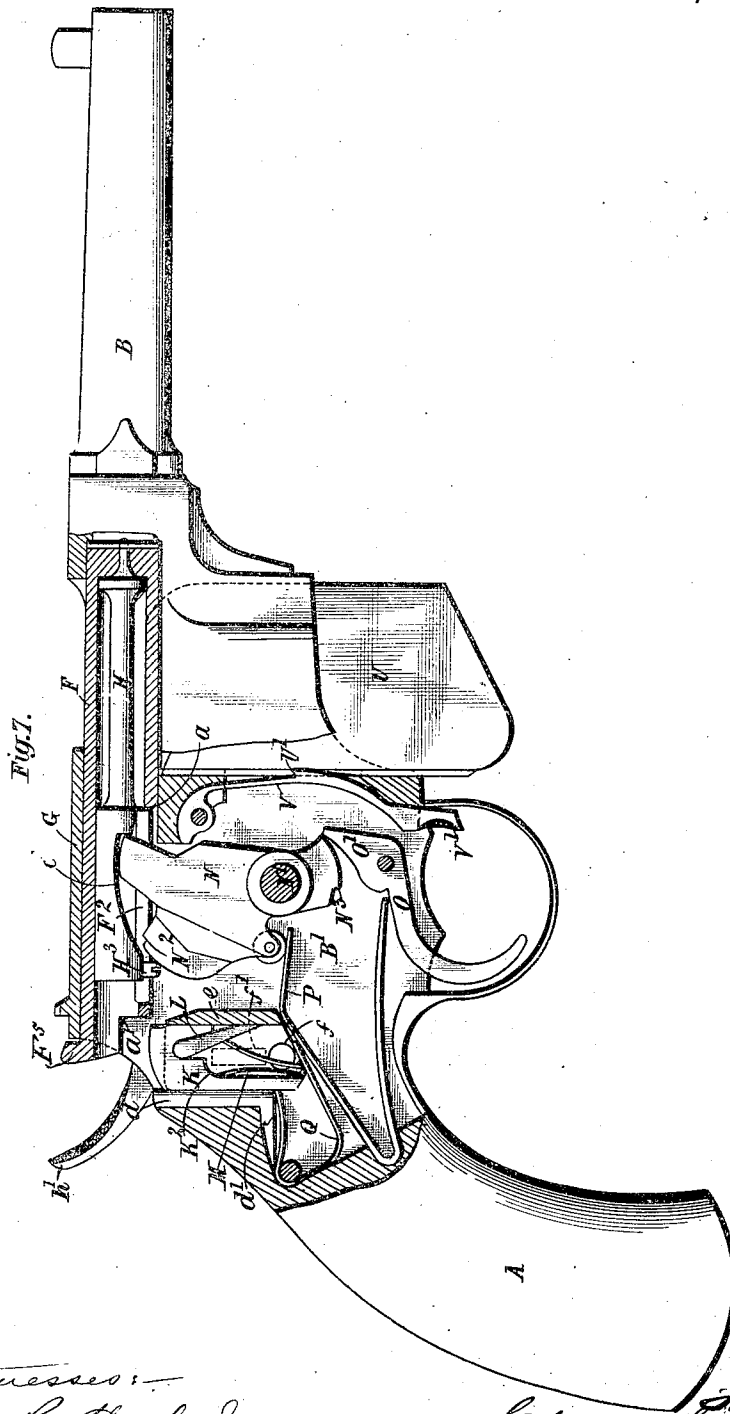
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11 Sheets—Sheet 8.

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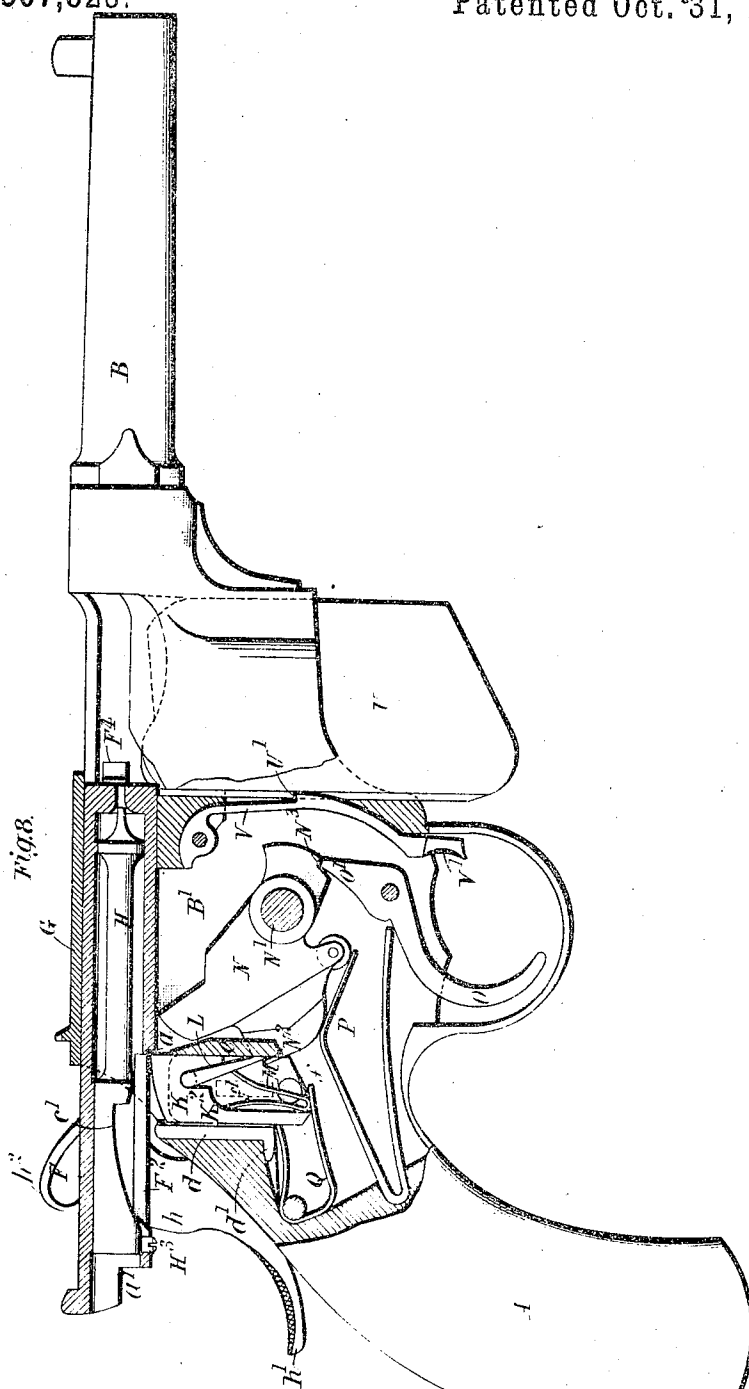
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Patented Oct. 31, 1893.



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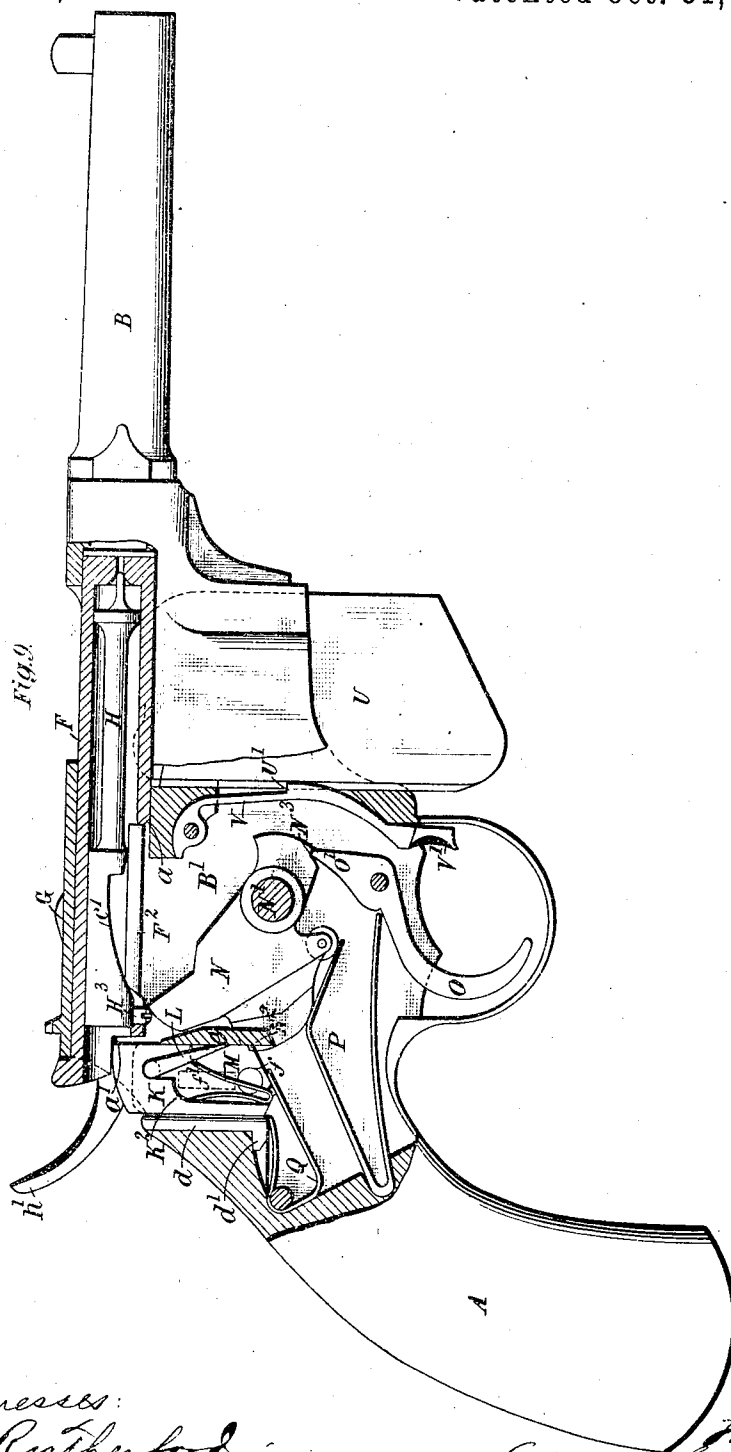
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11 Sheets—Sheet 10.

C. S. LOTT.
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Witnesses:
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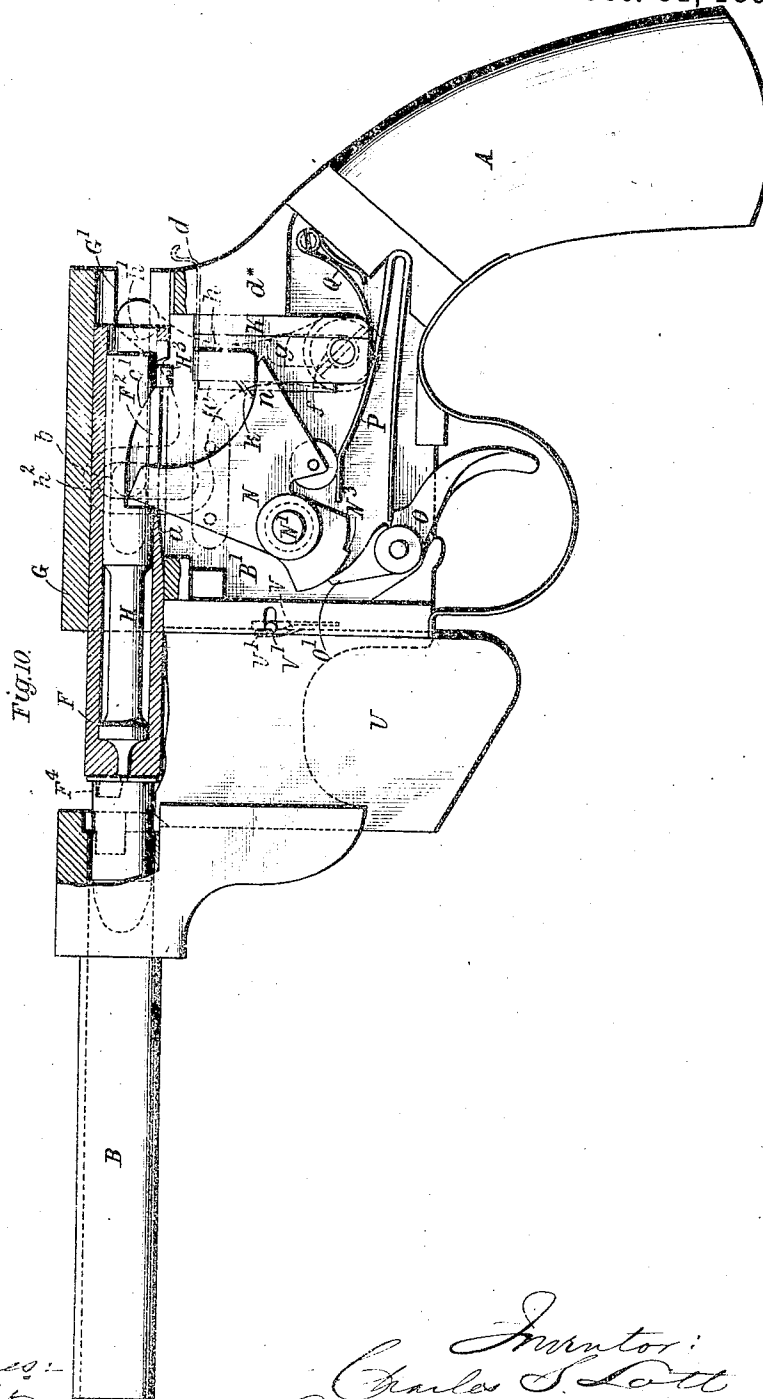
(No Model.)

C. S. LOTT.
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11 Sheets—Sheet 11.

No. 507,823.

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UNITED STATES PATENT OFFICE.

CHARLES STEWART LOTT, OF LONDON, ENGLAND.

BREECH-LOADING GUN.

SPECIFICATION forming part of Letters Patent No. 507,823, dated October 31, 1893.

Application filed May 3, 1892. Serial No. 431,659. (No model.) Patented in England July 27, 1891, No. 12,746.

To all whom it may concern:

Be it known that I, CHARLES STEWART LOTT, accountant, a subject of the Queen of Great Britain, and a resident of London, England, have invented certain new and useful Improvements in Small-Arms, (for which I have obtained a patent in Great Britain, No. 12,746, bearing date July 27, 1891,) of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in breech-loading fire arms and more especially to repeating small-arms. The mechanism is of a strong and simple type not liable to derangement by wear or by rough usage. It may be adapted to the requirements of a magazine arm or of a single loader. I prefer, however, to use it with a cartridge magazine of the "Lee" type which may be rapidly inserted in or removed from its place in the arm. The said invention is herein described by way of example in its applications to sporting guns and to pistols.

According to my invention I provide a breech bolt which carries the firing pin and the extractor and travels backward and forward in the axial line of the barrel for the purpose of opening the breech, extracting the spent cartridge, cocking the hammer, pushing a fresh cartridge into the breech and closing the breech. I provide also a locking piece which is automatically operated to lock the breech bolt, to prevent the latter from recoiling when subjected to the force arising from the explosion of a charge. When the said mechanism is applied to a sporting gun, it is operated by a sliding block adapted to move to and fro on or in guides provided on the barrel in such a position that the said sliding block can be conveniently grasped and operated by the hand that supports the barrel. Pistols to which the said mechanism is applied may be operated by one hand for in such a case I substitute for the sliding block hereinbefore referred to, a thumb lever arranged as herein-after explained to be operated by the hand which grasps the stock of the pistol.

In order that the nature of my said invention may be readily understood I will now proceed to describe the same with reference to the accompanying drawings in which—

Figure 1 is a side elevation of a sporting

gun constructed according to this invention.

Fig. 2 is a side elevation somewhat similar to Fig. 1 but with the mechanism exposed, the breech bolt in its rearmost position, and the hammer cocked. Fig. 3 is a view similar to Fig. 2, but with the breech closed, the hammer remaining cocked. Fig. 4 is a central longitudinal section of Fig. 2 certain of the parts being left in elevation. Fig. 4^a is a perspective view to a large scale, of a locking-piece forming part of the weapon illustrated in Figs. 1, 2, 3, and 4. Fig. 4^b is an elevation of the exterior of the said locking-piece, apart from the weapon. Fig. 4^c is a perspective view of a lever J forming part of the said weapon. Fig. 5 is a side view of a pistol constructed according to this invention. Fig. 6 is a central longitudinal section of Fig. 5 viewed from the opposite side. Fig. 7 is a view similar to Fig. 6 but with the locking piece lowered from behind the breech bolt. Fig. 8 is a view similar to Fig. 7 showing the breech bolt in its rearmost position, and the hammer cocked. Fig. 9 is a view similar to Fig. 7 showing the relative positions of the parts when the breech bolt has closed the breech and the hammer is cocked in readiness to be released by the trigger. Fig. 9^a is an exterior view of the pistol illustrated in Figs. 5, 6, 7, 8 and 9, with the thumb-lever removed, in order that the shape of a slot in the wall of the breech frame may be clearly seen. Fig. 10 is a side view partly in section, showing an alternative arrangement of certain parts of the pistol according to this invention.

Similar letters of reference indicate corresponding parts throughout the drawings.

With reference first to Figs. 1, 2, 3 and 4 A is the stock or butt. B is the barrel. B' is the breech shoe or frame.

C is a tubular guide the end C' of which is received in a socket formed in the breech frame, and the opposite end of which is held in the lug B² on the barrel and secured in place by the screw plug B³ and lock nut B⁴.

D is a block which slides upon the guide C and is prevented from rotating thereupon by means of a tongue piece D' projecting from the block into a slot C² in the guide. The said block D is connected by the link E to the breech bolt F. The said link is formed in one piece with a screw E' by means of which it is

secured to the block D, the said screw being so arranged that when the link is in place and lying parallel with the barrel B, the friction set up by screwing the screw into the block sufficiently far to get the link into that position suffices to maintain it in the said position without the necessity for any other fastening. The said breech bolt is hollow and moves longitudinally in a tubular guide G formed in the rear end of the breech frame. The said guide is slotted at G' to permit the entry of a pin for a purpose hereinafter explained. Within the breech bolt is the firing pin H which is free to move endwise therein when impelled forward by the hammer but at other times is retained in its rearmost position in the bolt by the spring H' which surrounds the firing pin and bears against the collar H² formed thereon.

The head of the firing pin extends through the plug F' and the rear end of the breech bolt is slotted or notched at F² to permit the head of the hammer to obtain access to the head of the firing pin. Upon the side of the breech bolt is a slot F³ which in the present example is made in the extractor F⁴ which is secured upon the side of the bolt. The barrel-end is recessed to take the rim of the cartridge and is notched in the usual manner to allow the cartridge to be forced home in the chamber while the extractor is in engagement with the rim.

The breech-bolt is grooved to pass over a stud I placed in the side of the breech-shoe. The groove is situated at the opposite side of the bolt to that upon which the extractor is placed, and the said stud is for the purpose of assisting in the ejection of the spent cartridges in the manner hereinafter described.

The link E is provided at its end E² with a pin E³ and with a notch having an inclined cam surface E⁴. The said pin engages with the slot F³ formed in the extractor and parallel with the direction of movement of the block D. A lever J pivoted at J' to the breech frame is provided with a projection J² adapted to be acted upon by the cam surface E⁴, and is provided with a pin J³ to enable it to engage with the locking piece K. The said locking piece, which is an important feature of my invention slides vertically in guides in the breech frame, and is provided with a recess K' into which the hammer enters as shown in Fig. 4. In the outer face of one side wall of the locking piece is a slot K' which receives the said pin J³ on the lever J. Upon one of the inner walls of the locking piece is a recess K² in which a pawl L is pivoted so as to be able to oscillate therein. In the said recess and behind the pawl is a spring M by which a constant pressure upon the pawl is maintained, to keep it at one of the extremes of its travel which, in the direction in which it is forced by the spring, is limited by the side of the recess, so that the pawl can be depressed, by the hammer as hereinafter de-

scribed, but cannot be moved farther forward than the position in which it is shown in the drawings.

N is the hammer which turns between the cheek plates of the breech frame upon the pin N'. The said hammer is provided with a sear notch N² with which notch the pawl L is adapted to engage, and with another notch N³ adapted to engage with the trigger sear.

O is the trigger arranged in the usual manner with a sear O'.

P is the hammer spring secured in the breech frame with one of its ends bearing upon the hammer and the other upon the trigger.

Q is a spring which maintains an upward pressure upon the locking piece K.

R is a cover plate for the mechanism within the breech frame. It is secured to the breech frame by the screw R' about which it may be turned into the position in which it is shown in Figs. 2 and 3 to expose the said mechanism.

S is a spring secured to the cover plate, and adapted to engage with a recess formed in the projection T upon the breech frame, when the free end of the plate R is put into the position in which it is shown in Fig. 1 in order to cover the said mechanism. The said spring may be readily depressed by hand to disengage it from the said recess when it is desired that the cover plate should be moved to remove the bolt to enable the barrel to be cleaned from the breech.

U is the magazine of the ordinary "Lee" type. The said magazine is inserted between guides provided in the body of the weapon for its reception, and is so placed that the cartridges will be fed successively therefrom into the barrel in the well-known manner. To prevent accidental displacement of the magazine the end thereof is provided with a notch U' with one edge of which, when the magazine is pushed into place, a spring V attached to the body of the weapon engages as shown in Fig. 4. To permit of the withdrawal of the magazine when desired the spring is provided with a head V' which projects to the exterior of the weapon and by means of which the spring may be retracted so that the magazine may be easily withdrawn.

It is obvious that with sporting guns constructed according to my invention as exemplified by the foregoing description very rapid firing can be obtained, quite as rapid as with a double barreled gun where the finger has to be moved from one trigger to another, and the gun having only one barrel is more convenient than the ordinary double barreled gun.

With reference now to Figs. 5, 6, 7, 8 and 9 which illustrate the application of my invention to a pistol, the arrangement of mechanism within the breech frame thereof is similar to that described with reference to

the sporting gun but the breech bolt and locking-piece are arranged to be operated by a lever as will now be explained.

It is an important feature of pistols constructed according to my invention that the whole of the mechanism of the weapon, comprising means for cocking the firing hammer, for inserting a cartridge in the barrel, for releasing the firing hammer, for extracting and ejecting the spent cartridge and including the safety locking piece, can be manipulated by one hand of the operator. The trigger is conveniently controlled by the forefinger, while the thumb is used to operate a lever by which the rest of the mechanism is worked in the manner now to be described.

The breech bolt is hollow, and fitted at its forward end with an extractor, and contains a firing pin adapted to impinge upon the cartridge in the barrel and to have a certain slight amount of free longitudinal motion within the breech bolt. The under side of the breech bolt is slotted longitudinally at F^2 and is beveled at a as shown and is cut away at a' . The groove or slot affords an opening through which the hammer may act upon the firing pin, and the portion cut away at a' provides a recess which receives the head of the locking piece. Upon the top side of the breech bolt at its rear end is a projection to form a push piece F^3 upon which the thumb of the user of the weapon may bear when the breech bolt is operated in the manner hereinafter explained. A projection b upon the breech bolt extends to the exterior of the weapon through a longitudinal slot G' formed in one of the cheek plates of the breech frame. A stud II^3 attached to the firing pin projects through the said slot F^2 . The firing pin is drawn back as the breech bolt moves forward, by the stud II^3 which is dragged over the upper end of the plate d hereinafter referred to, so that the said firing pin does not protrude from the front end of the breech bolt and obstruct the proper rising of the cartridge from the magazine into engagement with the extractor. The said stud II^3 also serves to retain the firing pin in the bolt. The locking piece is guided by and between the plate d , and a guide e which is formed upon the interior of the breech frame. The plate d is provided with a toe d' and is thereby retained in place in the breech frame against the upward pressure of one end of a spring Q which is supported by a pin in the breech frame and permits the said plate to descend slightly as the stud II^3 passes over its upper end, returning the plate d to the normal position as soon as the stud II^3 is clear of it. The other end of the said spring maintains an upward pressure upon the locking piece K . Upon one side of the locking piece K is a recess K^2 in which is placed a pawl L which has a pivot formed in one piece therewith and entering a hole formed in the wall of the recess so that the pawl may have a limited amount of oscillation in the said recess. In the same recess

behind the pawl a spring M is inserted which tends to keep the detent always in the position in which it is shown in the drawings. Upon the side of the locking piece opposite to that in which the recess is formed, a pin f and the projection f' are provided. The said pin and projection pass through a slot g made in the cheek plate of the breech, the upper part of the said slot being suitably shaped to guide the projection and the lower part thereof being suitably shaped to allow of the movement of the pin f therein, when the locking piece is moved up or down. Upon the outer end of the said pin is pivoted a thumb lever h . The said thumb lever is provided with a projection h' upon which the thumb may bear and is also formed with a portion having a recess h^2 to receive the said projection b from the breech bolt. That portion of the firing pin which is immediately above the slot F^2 in the under side of the breech bolt is recessed at c' so that the hammer head, when the hammer is forced sharply forward by the main spring, upon the pulling of the trigger, may pass into the said recess and strike the body of the firing pin at the forward end of the recess, driving the firing pin into the cartridge.

The form and arrangement of the hammer, the magazine and the means for retaining the same in place are similar to the like parts described with reference to Figs. 1 to 4.

In Fig. 10, a toe k upon the locking piece K is substituted for the pawl L and is arranged to lie in the path of the portion n of the hammer and the thumb lever is slotted at h^2 instead of being recessed. A spring d is fixed to the breech frame and bent at its end so as to bear against the stud II^3 on the firing pin as the breech bolt is moved forward to close the breech.

The operation of the sporting gun shown in Figs. 1 to 4 will now be described. Let it be assumed that the gun has been fired, that the parts of the mechanism are in the positions indicated in Fig. 1 and that the stock A of the weapon is grasped by the right hand and the block D by the left hand. If now the block D be moved toward the rear the link E will move with it, and the cam surface E^4 thereof will act upon the projection J^2 and depress the lever J causing the pin J^3 to force the locking piece K downward from behind the breech bolt. During the first portion of the rearward movement of the block D , the pin E^3 will slide toward the rear end of the slot F^3 and the breech bolt F will not be affected, and consequently no jamming of the breech bolt with the locking piece can occur, but a continuance of the said movement will bring the pin into contact with the rear end of the slot, and the locking piece being down, the breech bolt will be moved to the rear. In the rearward movement of the breech bolt the forward edge of the slot F^2 acts upon the head of the hammer, bringing it below the breech bolt, against the under side of

which it presses as the bolt slides over it. By the cocking of the hammer as described a portion thereof presses back the pawl L in the locking piece. The sear notch N² in the hammer is brought below the end of the said pawl which is moved out in readiness to engage with the said notch, by the action of the spring M. The hammer when cocked as described is held farther back than it would be by the trigger. Consequently as long as the breech is open the trigger is not in engagement with the hammer but the latter is held back entirely by the aforesaid pawl. The ejection of the empty cartridge is effected during the rearward movement of the breech bolt and takes place when the breech bolt F has moved sufficiently to the rear to bring one edge of the cartridge rim against the ejector stud I; the extractor continuing its movement to the rear with the breech bolt, draws one side of the cartridge rim farther to the rear than the opposite side of the rim which is stopped by the stud. Thus the cartridge is smartly jerked out of the space between the breech bolt and the end of the barrel. The parts upon the completion of the rearward movement of the breech bolt will be in position indicated in Fig. 4. Into the lower portion of the space left between the front end of the said breech bolt F and the rear end of the barrel B the uppermost cartridge in the magazine rises, when the breech bolt has moved sufficiently far to the rear to permit its doing so, the cartridge being still retained by the magazine. The said cartridge then occupies such a position in the said space, that a portion of its base is in the path of the breech bolt F. The block D is now returned to the forward end of the guide C drawing the breech bolt forward by means of the link E and pin E³ so that it pushes the uppermost cartridge from the magazine, the said cartridge simultaneously rising so that its rim comes behind the extractor F⁴ carried by the breech bolt, the cartridge being finally forced home into the chamber and the breech closed. The locking piece K bears against the under side of the breech bolt and therefore cannot rise behind it until the breech bolt is right home and the breech completely closed. When the breech block in closing the breech brings the slot or notch F² above the head of the cocked hammer the hammer does not at once rise thereinto, being prevented from moving as long as the locking piece is down, by the pawl L which is engaged with the sear notch N². When the locking piece rises the pawl L rises with it and releases the hammer which is then held only by the trigger sear O' and can be released by pulling the said trigger. When the pawl is raised and moves up with the locking piece it is prevented by the side of the recess K² from moving in the said recess and its end occupies a position in which the hammer will just pass clear of it when released by the trigger. By the use of this arrangement of locking piece and pawl the

cocked hammer is held while the breech is open quite independently of the trigger, so that discharge of the weapon is prevented until the breech is safely closed. 70

With reference to the operation of the pistol illustrated in Figs. 5, 6, 7, 8 and 9 assuming as in the previous case that the weapon has just been discharged, the thumb lever h' is first forced downward to remove the locking piece K from behind the breech bolt F by means of the pin f upon which the said thumb lever turns and which is fixed upon the locking piece. The said locking piece having thus been removed from behind the breech bolt the thumb lever is turned upon the pin f and draws back the breech bolt by means of the pin or projection b upon the bolt, which pin is in engagement with the recess h² in the said lever. In the rearward movement of the breech-piece the hammer is cocked by the forward edge of the slot F² and when cocked is engaged by the pawl L which with the locking piece K constitutes a safety device operating similarly to that hereinbefore described with reference to the sporting gun. The breech bolt is pushed back into place to close the breech by the thumb for which the rear end of the bolt is formed as a push piece. The said breech bolt in its return movement operates to insert a fresh cartridge in the breech in the same manner as the breech block of the sporting gun. 75 80 85 90 95 100

In the operation of the modified arrangement of breech mechanism illustrated in Fig. 10 depression of the locking piece K by the thumb rest h' and thumb lever h simultaneously effects the partial cocking of the hammer by means of the toe k which bears upon the portion n thereof so that the head of the hammer is moved out of contact with the firing pin H and a short distance away from the forward end of the slot F² in the under side of the breech bolt. This movement of the hammer partially compresses the main spring P acting through the anti-friction roller carried by the said hammer. The thumb lever is next turned about the pin f and moves the breech bolt to the rear, bringing the inclined surface a of the breech bolt into contact with the hammer and forcing it back until the act of cocking is completed by the engagement of the hammer with the trigger sear O', the head of the hammer then resting against the under side of the breech bolt. The toe k is always in the path of the portion n of the hammer while the locking piece is lowered, so that until the breech is closed and the locking piece raised, the hammer cannot assume the firing position. In Fig. 10, as in Figs. 5 to 9, the spring d acting upon the stud H³ keeps the firing pin back in the breech bolt so that its forward end does not offer any obstacle to the rise of the uppermost cartridge from the magazine. In Fig. 10 the breech block is seen to be partly withdrawn and the cartridge partially extracted. 105 110 115 120 125 130

It should be particularly noted with refer-

ence to the pistol illustrated in Fig. 10 that the initial compression of the mainspring P, the first part of the extraction of the spent cartridge during which practically the whole of the force required to dislodge the cartridge is exerted and the final compression of the main spring are three distinct and successive operations effected during the movements of the thumb lever, as described and not occurring simultaneously. The extraction of the spent cartridge is effected by the thumb lever at a time when the breech bolt is performing no other operation—that is to say, at a time when the preliminary compression of the hammer spring is completed and the final compression not commenced. By this arrangement the force required to be exerted is considerably less than would be the case if the operations were simultaneous.

It is obvious that magazine pistols constructed as hereinbefore described possess great advantages with regard to safety and rapidity of fire.

If any of the weapons herein described are used as single-loaders, that is to say without a magazine, the cartridges are inserted by hand and ejected as hereinbefore described.

I do not limit myself to the particular details of construction hereinabove described as these can be modified without departing from the nature of my invention.

What I claim is—

1. In a small arm, the combination with the barrel of an axially sliding breech bolt, a transversely sliding locking piece, a block D sliding in or upon guides on the barrel, a link E secured to the block D and having a pin and slot connection with the breech bolt, a lever J pivoted to the breech frame and connected with the locking piece and having a cam projection J² adapted to engage with a recess E¹ in the link E, substantially as described.

2. In a small arm provided with a sliding breech bolt the combination with the said breech bolt and the barrel of a hammer having a sear notch N² and a trigger notch N³ a transversely sliding locking piece K, and a spring actuated pawl L carried by the said locking piece, and adapted to engage with the notch N² as set forth.

3. In a small arm provided with a sliding breech bolt the combination with the said breech bolt and the barrel, of a hammer having a sear notch N² and a trigger notch N³ a transversely sliding locking piece K and a spring actuated pawl L carried by the said locking piece, and adapted to engage with the notch N³ the forward movement of the said pawl being limited by a stop in the sliding piece, as set forth.

4. The combination of the barrel B, the breech frame B', the breech bolt F slotted as at F³ and sliding in the breech frame, the firing pin and extractor carried by the said breech bolt, the locking piece K sliding in the breech frame transversely in the direction of movement of the breech bolt, and carrying the pawl L, the hammer N having a notch N² adapted to engage with the pawl L and the trigger notch N³ the block D sliding in guides upon the barrel, the link E secured to the block D and connected with the breech-bolt, and the lever J connected with the locking-piece and having a cam projection J² adapted to engage with a notch in the link D substantially as described.

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

CHARLES STEWART LOTT.

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