

(Model.)

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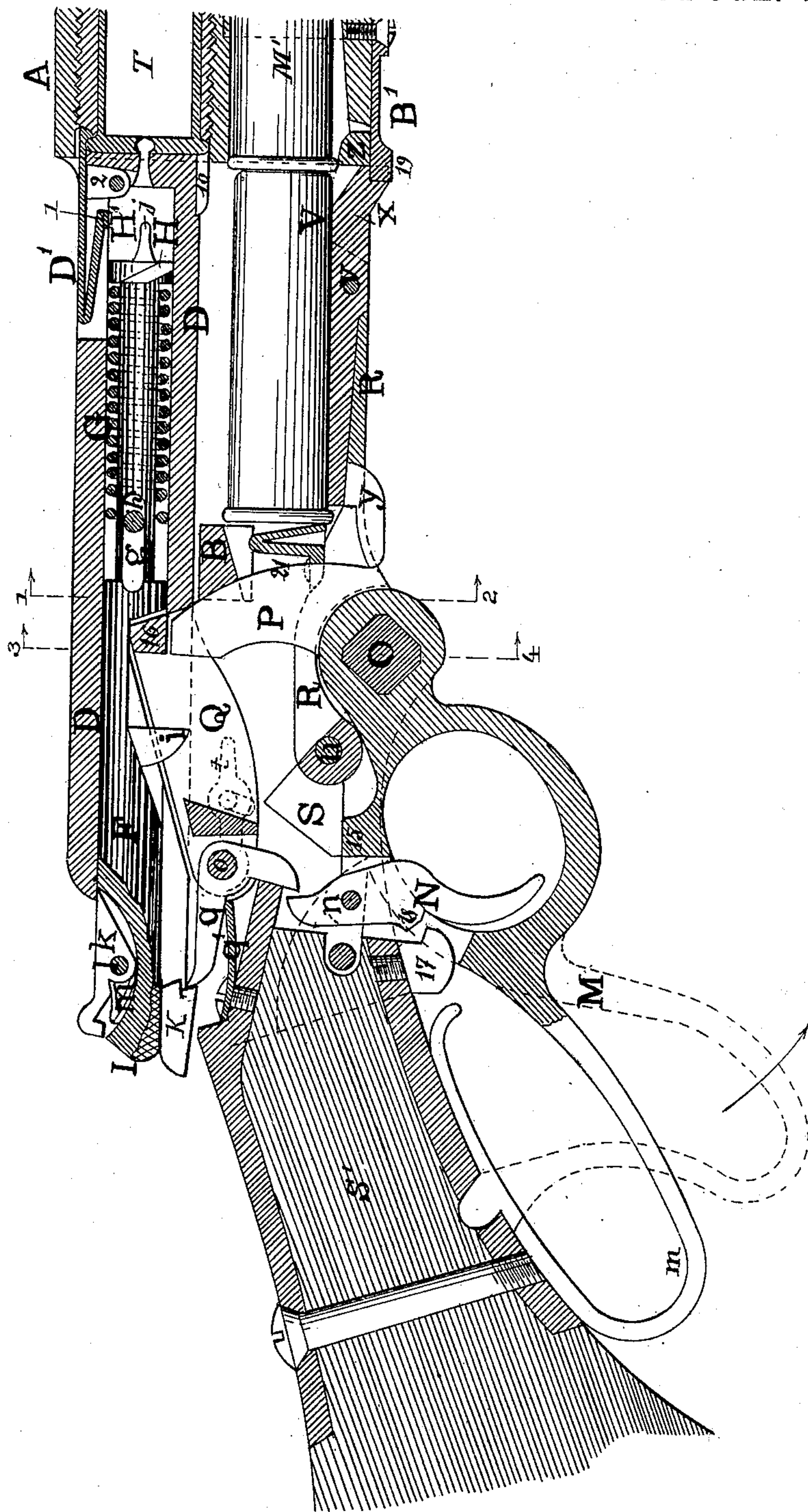
A. L. LARSEN & C. E. WINTERROS.

MAGAZINE FIRE ARM.

No. 334,244.

Patented Jan. 12, 1886.

Fig. 1



Witnesses:

John E. Parker  
Henry Bossert.

Inventors

A. L. Larsen, and  
C. E. Winterros,  
by their Attorneys  
Howson and Sons



(Model.)

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Fig. 2

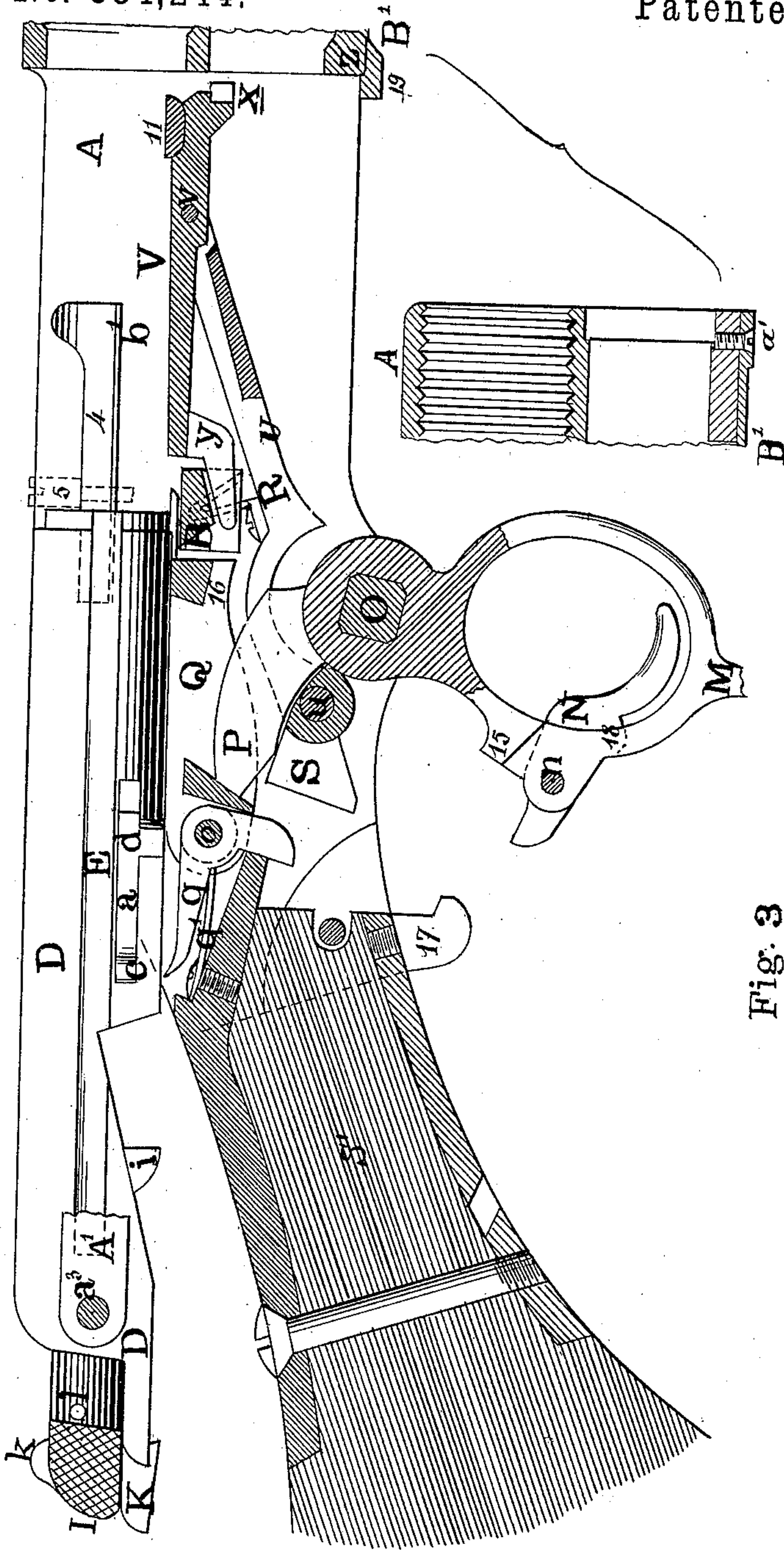
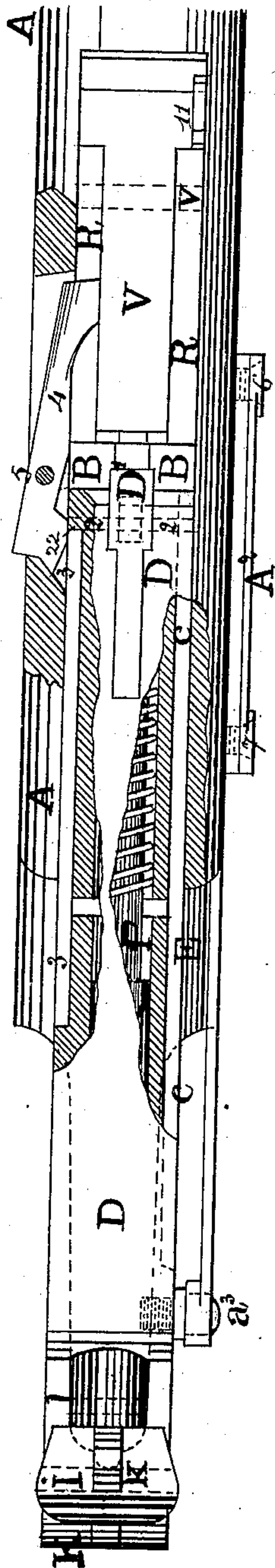


Fig. 3



Witnesses:

John E. Parker  
Henry Bossert.

Inventors:

A. L. Larsen, and  
C. E. Winterros,  
by his Attorneys  
Howson and Sons

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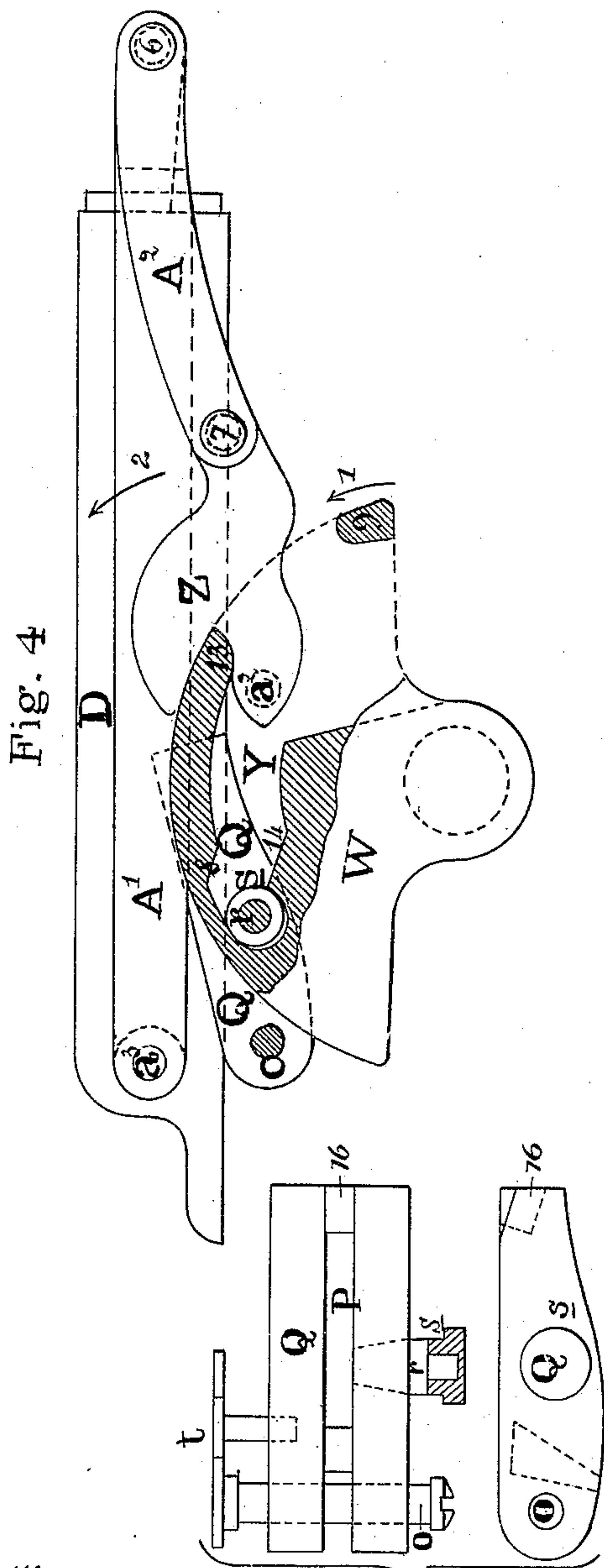


Fig. 4

Witnesses:

Henry Bossert.  
John E. Parker

Fig. 5.

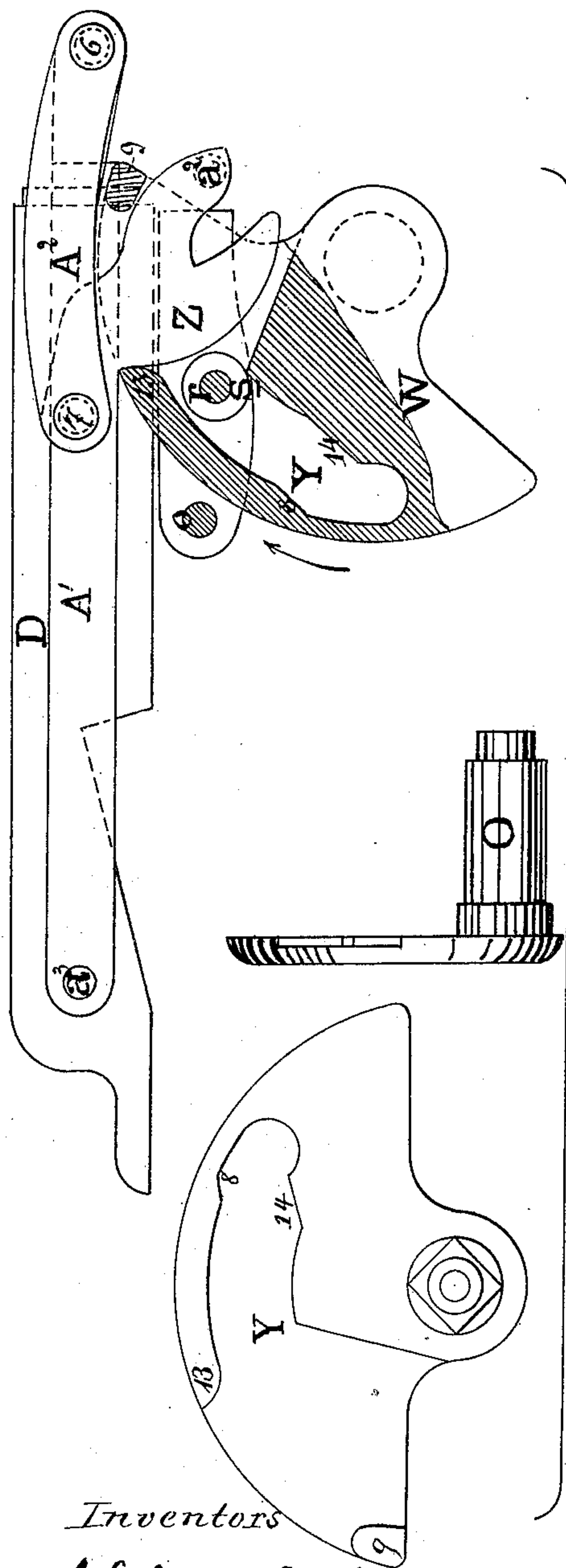


Fig. 4a

Inventors

A. L. Larsen, and  
C. E. Winterros  
by their attorneys  
Howson and Sons



(Model.)

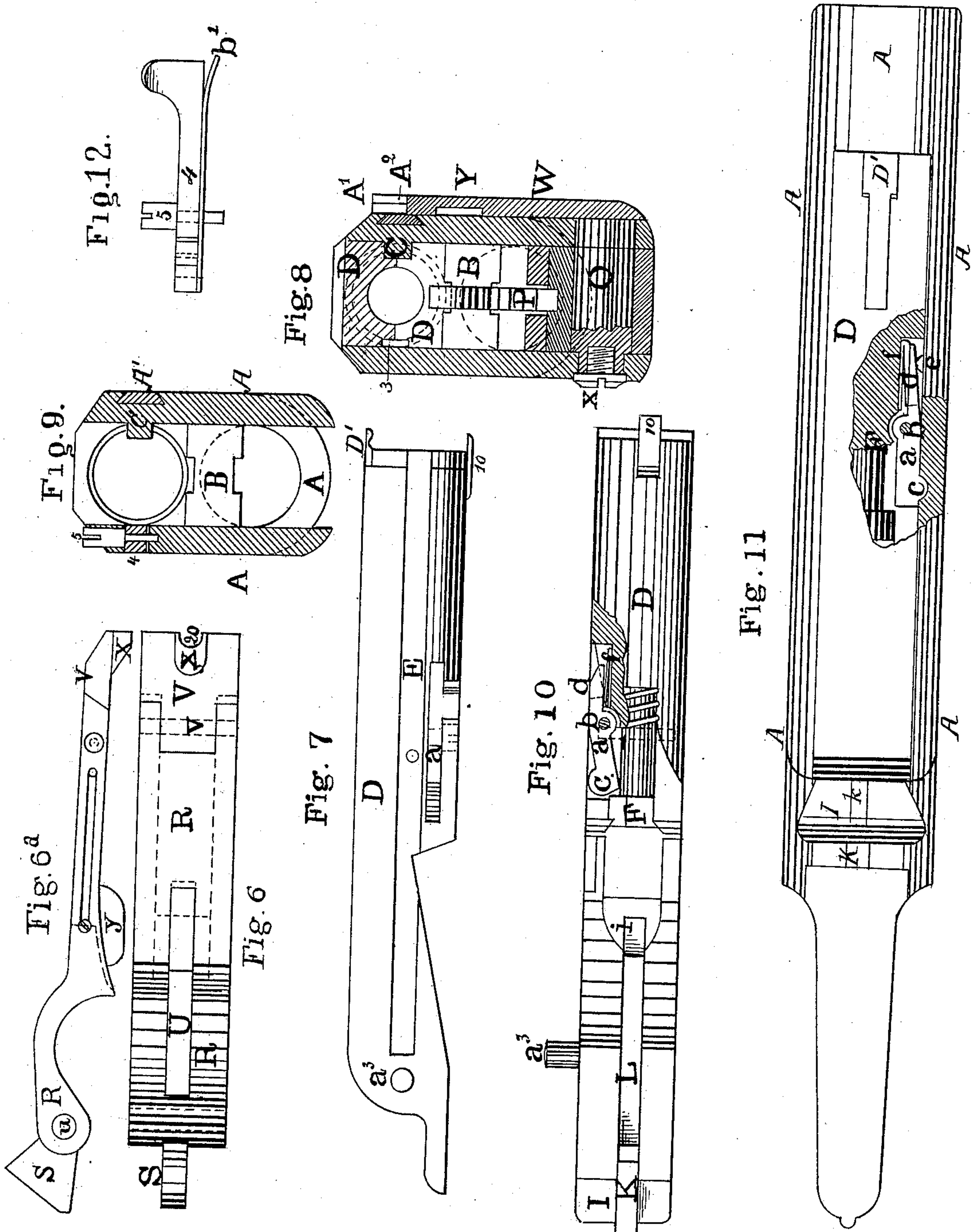
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Witnesses:

Henry Bossert

John E. Parker

Inventors:

A. L. Larsen, and

C. E. Winterros

by their atty  
Howson and Sons



# UNITED STATES PATENT OFFICE.

AUGUST LEFREDIUS LARSEN AND CLAS ERIK WINTERROS, OF LIEGE,  
BELGIUM.

## MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 334,244, dated January 12, 1886.

Application filed September 18, 1884. Serial No. 143,439. (Model.) Patented in Belgium October 6, 1883, No. 26,814, and in England December 29, 1883, No. 5,935.

*To all whom it may concern:*

Be it known that we, AUGUST LEFREDIUS LARSEN, a subject of the King of Norway, and CLAS ERIK WINTERROS, a subject of the King of Sweden, both residents of Liege, Belgium, have invented certain Improvements in Magazine-Guns, (for which we have obtained a Belgian patent, dated October 6, 1883, No. 26,814, and British patent, dated December 29, 1883, No. 5,835,) of which the following is a specification.

Our invention consists of certain improvements in the detailed construction of the operating mechanism of breach-loading guns, rifles, and pistols, and the main object of our invention is to provide durable and simple mechanism, which can be easily and rapidly worked by the movement of a lever.

Our improved gun is constructed on the principle of that class of magazine fire-arms having a magazine which extends under the barrel, and provided with means for successively pushing the cartridges back into position to be raised into line with and then introduced into the barrel at the breech, although some of our improvements may be applied to other constructions of fire-arms.

The mechanism is so constructed that the gun cannot be discharged before all the parts are in the closed position ready for firing, and during the pulling out of the trigger it locks the main lever and prevents its being opened.

In the accompanying drawings, Figure 1 is a longitudinal section of our improved mechanism, showing the sliding breech-bolt closed and the gun ready to be fired. Fig. 2 is a similar longitudinal section, except that in this case the entire breech-bolt is shown in outside view and open or pulled back for the introduction of a fresh cartridge into the breech of the barrel. In this view a portion of the front end of the frame, owing to the limitations in the size of the sheet, is shown separately below the main view. Fig. 3 is a plan view of the parts in the same position, but partly in section. Fig. 4 is a diagrammatic side view, partly in section, and illustrating the mechanism for throwing the breech-bolt, the parts being in the position when the latter

is closed. Fig. 4<sup>a</sup> illustrates an edge and side view of the cam-plate controlling the movements of the breech-bolt, and also a diagrammatic view corresponding to Fig. 4, but showing the parts in the positions occupied when the breech-bolt is thrown back. Fig. 5 illustrates in side view and plan what we term the "recoil-piece," with its attachments. Fig. 6 is an inverted plan view of the cartridge-elevating lever and plate. Fig. 6<sup>a</sup> is a side view of the same. Fig. 7 is a detached side view of the sliding breech-bolt with the firing-pin removed. Fig. 8 is a transverse section on the line 1 2, Fig. 1. Fig. 9 is a transverse section on the line 3 4, Fig. 1, with the breech-bolt out. Fig. 10 is an inverted plan view, partly in section, of the sliding breech-bolt carrying the firing-pin. Fig. 11 is a plan view of our improved fire-arm with both breech-bolt and firing-pin in the closed position, but with part in section to illustrate the safety-lock of the firing-pin; and Fig. 12 is a detached side view of the cartridge-retainer.

A is the frame, attached at one end to the stock S' of the gun and carrying at the other the barrel T and magazine, and this frame is open at the top and bottom, Fig. 9, throughout almost its entire length, but is connected about midway by a transverse bar, B, as well as by the pivot-pins of the operating parts, as hereinafter described. The front part of the frame is provided with two openings—one above the other—the lower one for the introduction of cartridges from the magazine M', Fig. 1, and the upper one being the nut into which the end of the barrel T is to be screwed.

The main parts of the operating mechanism of the fire-arm are, first, the sliding breech-bolt D, carrying the firing-pin F; second, the main operating-lever M, which also carries the trigger N; third, the recoil-piece or lock Q, to prevent the recoil of the breech-bolt, and carrying an outside indicator; fourth, the cam-plate W and levers to impart motion to the sliding breech-bolt D from the lever M; fifth, the cartridge-elevator V and its operating-lever R; sixth, the cartridge-retainer 4 to prevent the ejection of a freshly-introduced cartridge, and, seventh, the safety-locking device



*a* to lock the firing-pin to the breech-bolt on withdrawing the latter.

In connection with the above devices there are others, hereinafter fully described, and which it is not necessary here to set forth in detail.

We will describe the construction of the several parts in their order. The sliding breech-bolt D is nearly square in section almost throughout its length, except at its front forward end, as illustrated in Figs. 2 and 7, and on its right-hand side it is provided with a longitudinal groove, E, adapted to a guiding-rib, C, on the right-hand inner side of the frame, as shown in Fig. 8. This rib guides the sliding breech-bolt in its longitudinal movements and keeps it in place. On the opposite side of the breech-bolt is a longitudinal groove, 3, terminating at a short distance from its forward end, Figs. 3 and 8, so as to leave a shoulder or projection, 22, at that point, for a purpose explained hereinafter.

The forward end of the breech-bolt D is notched at its upper side to receive the spring cartridge-extractor D', pivoted to a transverse pin, 2, Fig. 1, and having its rear end bent into a spring, which rests on a transverse connecting-strip, 1, of the breech-bolt, so as to tend to keep the outer projecting hooked end of the extractor D' over the rim of the cartridge, as shown in Fig. 1. The forward end of the breech-bolt D is provided on its lower side with a lip, 10, Fig. 7, to support the cartridge on withdrawing it from the breech until it is ejected by the elevation of a fresh cartridge from below, as hereinafter described.

The breech-bolt D is provided with a cylindrical bore throughout almost its entire length to near its front end, which is closed, with the exception of a small central opening for the passage of the point *j* of the firing-pin F. The breech-bolt is also cut away to receive the recoil-piece Q, and form a shoulder for the nose thereof, as shown in Fig. 1, and at the rear of this, below its central bore, the bolt is slotted for the reception and guidance of a rib, K, Figs. 1, 2, and 10, on the under side of the firing-pin at its outer end. This firing-pin F is made all in one piece, its front being partly reduced in diameter to receive the coiled spring G, but leaving a collar, H', at and near the end against which the forward part of the spring bears, while the rear end of the coiled spring bears against a transverse pin, *h*, secured in the breech-bolt D, and passing through a slot, *g*, in the firing-pin. The firing-pin being made with a collar, H', in one piece with the rest, we form in the latter a spiral groove, H, in order to permit the introduction of the spring G, which is threaded onto the reduced portion of the firing-pin through this spiral groove, Fig. 1. The firing-pin carries on its under side a projecting finger or lug, *i*, to be acted on by a cam, P, on the operating-lever M, as hereinafter described.

We prefer to provide the firing-pin at its

rear end with a locking-lever, *k*, which may be brought into use whenever it is desired to throw the firing-pin out of action, by locking it in its rearward position to the breech-bolt to prevent accidental discharge. This locking-lever *k* is adapted to a vertical recess or notch at the rear end of the firing-pin and pivoted on a transverse pin, *l*, but acted on at the rear by a spring, *n*, Fig. 1, to tend to keep the point or nose of the lever *k* down into contact with the firing-pin; but when the latter is pulled backward as far as it can go and the elevated rear end of the lever *k* is pressed down against the action of the spring *n*, so as to throw the nose of the lever up, and the firing-pin is then allowed to move forward slightly, the nose of the lever *k* will engage with the upper rear end of the breech-bolt D, and retain the firing-pin in that position until the locking-lever *k* is again released. The rear end of the firing-pin F is enlarged at I, as shown in Fig. 11, and the opposite edges of this enlarged portion are milled, as shown in Fig. 2, in order to form a handle or means of pulling the firing-pin back by hand as well as by the operating mechanism hereinafter described.

As we have before described, the rear end of the firing-pin is provided with a rib, K, projecting downward through a slot in the rear of the breech-bolt, and it is there provided with a notch, with which engages one arm of a bell-crank lever or sear, *q*, pivoted on a transverse pin, *o*, passing through the frame A, and acted on by a spring, *q'*. The other arm of this lever, as shown in Fig. 1, is adapted to be acted on by the nose of the trigger N, which is pivoted at *n* in a slot in the operating-lever M. This operating-lever M carries the usual guard for the trigger N, and has an extension, *m*, which may be in the form shown by full lines in Fig. 1, or by dotted lines in that figure, to constitute a convenient handle to move the lever and the operating parts of the mechanism. This lever is fixed on a squared portion of the pivot-pin O, which is adapted to bearings in the frame A, and held in these bearings by a screw, *x*, Fig. 8. Secured to or forming part of this pin O, on the opposite side of the frame and outside of the latter, is a cam, W, illustrated more fully in Figs. 4 and 4<sup>a</sup>. This plate has on its inner face, adjacent to the outer wall of the frame, a cam-groove, Y, with cams or inclined edges 8 and 14, and projections 9 and 13, for purposes explained hereinafter.

To the slotted outer portion of this groove Y is adapted a plate or lever, Z, of the peculiar form illustrated in Figs. 4 and 4<sup>a</sup>, and pivoted at *a*<sup>2</sup> to the frame. This plate Z has a pivotal connection at 7 with a link, A<sup>2</sup>, which is in turn connected by a pivot-pin, 6, to a sliding connecting-rod, A', united with the sliding breech-bolt D by a pin, *a*<sup>3</sup>. This sliding connecting-rod A' is preferably adapted to a dovetailed guide in the upper outer face of the frame, as shown in Figs. 8 and 9. When the breech-bolt is in the closed position,



the parts last above described are in the relative positions shown in Fig. 4. When it is desired to throw the breech-bolt back, the lever M is pulled downward, and the plate W thereby moved in the direction of the arrow 1, Fig. 4, so that the projection 13 will first be withdrawn from the notch in the plate Z, and then the projection *g*, coming into contact with the under side of the plate Z, will swing said plate around on its pivot *a*<sup>2</sup> in the direction of the arrow 2, and through the link A<sup>2</sup> and connecting-rod A' will throw the breech-bolt D back to the open position, Figs. 2 and 4<sup>a</sup>. To return the breech-bolt to the closed position, the lever M, Fig. 2, is moved back again toward the position Fig. 1, and the projection 13 on the plate W, acting against the edge of the plate Z, Fig. 4<sup>a</sup>, will turn the latter back on its pivot *a*<sup>2</sup>, and through the link A<sup>2</sup> and connecting-rod A' will move the breech-bolt up into contact with the breech or end of the barrel. The projection 13 will then occupy a position in the notched part of the plate Z, as shown in Fig. 4, and practically lock the latter and the breech-bolt until the lever M is moved again.

To the cam-groove Y, on the inner face of the plate W, is adapted an anti-friction roller, *s*, carried by a pin, *r*, secured in the recoil-piece Q, pivoted to the same pin *o* as the sear *q*, above described, and this cam Y, with its inclined faces 8 and 14, is of such a character that when the plate W is in the forward position, (illustrated in Fig. 4,) with the breech-bolt closed, the recoil-piece Q will be turned on its pivot *o* to the elevated position, Figs. 1 and 4, with its outer end in the notch formed in the under side of the breech-bolt and firing-pin, and in close engagement with the breech-bolt, so that when the firing-pin is released to fire again there can be no recoil of the breech-bolt, but when the plate W is turned from the position, Fig. 4, as indicated by the arrows, its first action will be to throw down the recoil-piece Q out of engagement with the breech-bolt by the cam-groove Y, with its incline 8 acting on the anti-friction roller *s*, carried by the pin *r*, and this before the projection *g* has turned the lever *z* sufficiently far to again throw the breech-bolt D back.

Connected with the recoil-piece Q on the opposite side from the pin *r* is an index-finger *t*, Fig. 5, and in dotted lines in Fig. 1, which occupies a position on the outside of the frame A, and which there can indicate to the user of the weapon whether the recoil-piece is in the proper position or not. The recoil-piece Q is slotted, as shown in Fig. 5, for the passage of the cam P, Figs. 1 and 2, which is carried by the lever M, and is adapted to act on the downwardly-projecting finger *i* on the firing-pin F to pull the latter back to cock the firing-pin by pushing the lug K sufficiently far back that its notch will engage with the sear *q* under the action of the spring *q*'.

Referring now to the device for locking the firing-pin to the breech-bolt, it will be found

illustrated more fully in Figs. 2, 7, 10 and 11, and consists of a lever, *a*, which is pivoted at *b* to the breech-bolt, and has one arm, *d*, acted on by a spring, *f*, tending to throw the opposite end into engagement with the shoulder formed on the firing-pin by the reduction in the diameter of the latter for the reception of the spiral spring G, Fig. 10. The end of the lever *a* is provided on the outer side with a projection, *c*, which, when the breech-bolt is moved to the closed position, Figs. 1 and 11, is caused to enter a corresponding notch on the inner face of the frame A, being forced therein by a projection or cam, *e*, on the frame acting against the pressure of the spring *f*. Thus, as shown in Fig. 11, the latch-lever *a* will be thrown out of engagement with the shoulder on the firing-pin when the bolt D is closed, and the firing-pin is then free to move forward under the action of the spring when released by the sear *q*; but as soon as the breech-bolt is pulled back the latch-lever *a* will be released from the cam or projection *e*, while the projection *c* will be moved at the same time out of the notch or recess in the frame by the action of the spring *f*, and the lever will therefore engage with the lock and firing-pin F, and insure its being pulled back together with the breech-bolt.

The cartridge-elevator consists of a plate, V, which is pivoted at *v* to a lever, R, mounted on a transverse pivot-pin, U, in the frame A. This lever R is slotted at *u* for the passage of the cam P on the lever M, and also for the reception of a nose, Y, on the rear of the plate V, Figs. 1, 2, and 6. The front end of the plate V is provided with a downwardly-projecting recessed lug, X, Figs. 2 and 6, and a notch, 20. When the plate is in its depressed position, Fig. 1, the projecting end 19 of a spring, B', (secured by a screw, *a*', to the under side of the magazine,) fits into the recess in the lug X, while a finger, *z*, on the upper side of the spring is adapted to the notch 20.

On the inner wall of the frame A, near the front end, is a projection, 11, Figs. 2 and 3, with which the front end of the plate V comes into contact when the latter is raised, as shown in Fig. 2, so as to limit its upward movement and bring it to a horizontal position, while the nose Y finds a stop in the cross-bar B.

At the rear end of the lever R is a projecting arm, S, with which the nose of the cam P comes into contact when the lever M is thrown down, so that toward the end of its movement it will raise the lever R from the position Fig. 1 to that shown in Fig. 2, and thereby elevate a fresh cartridge into line with the bore of the gun to be introduced into the latter by the forward movement of the breech-bolt.

In order to prevent a fresh cartridge from following the empty shell which has been ejected by the raising of the fresh cartridge, we provide a retainer, 4, which comes into action as the empty shell is thrown out by the pulling back of the breech-bolt. This retainer 4 is adapted to a horizontal recess in the left



wall of the frame A, and is pivoted on a vertical pin, 5, and its projecting front end is curved over toward the center of the piece, as indicated in Figs. 3 and 12, while its rear end has a projection which normally rests in the groove 3 in the edge of the sliding breech-bolt, except when the latter is pulled out to the extreme limit of its movement. When this takes place, the projection on the rear of the lever 4 comes into contact with the shoulder at the end of the groove 3, with the result (shown in Fig. 3) of throwing the curved front end of the retaining-lever 4 over into the path of the cartridge, thereby preventing it from jumping out, while in the meanwhile the empty shell has been ejected. The lever 4 is provided with a friction-spring, *b'*, Fig. 12.

Assuming the parts to be in positions, Fig. 1, and the fire-arm cocked, ready to discharge, the trigger N is then pressed to act on the sear *q* against the spring *q'*, and release the firing-pin F, which, impelled by the spiral spring G, has its point thrown against the cartridge to discharge the latter. In the meanwhile the lever N cannot be accidentally moved down, owing to a finger, 17, on the frame, Fig. 1, lying in the path of the projection 18 on the trigger, and so long as the lever M is closed or maintained in the position shown in Fig. 1 the breech-bolt, cartridge-elevator, and recoiling-piece are all locked in their closed positions, the breech-bolt being retained by the recoil-piece Q, as well as by the cam-plate W, and the recoil-piece Q cannot descend, owing to the cam P, lying in the path of the portion 16 of the piece Q; nor can the lever R, which carries the cartridge-elevator, be moved while the lever remains closed, because a projection, 15, on the latter is in close contact with the under side of the arm S of the lever R, as shown in Fig. 1.

To withdraw the shell of the discharged cartridge and reload, the lever M is thrown down to the position shown in Fig. 2, with the result of first lowering the recoil-piece Q, and then moving back the breech-bolt D, with its firing-pin and the bolt, through the medium of the extractor D' and finger 10, withdraws the empty shell until it comes into contact with the end of the rib or rail C, when the shell will be released from the extractor D', and at the same time the lever R will quickly raise the plate V with its fresh cartridge, and thereby eject the empty shell. The fresh cartridge is thus brought into position to be introduced into the breech, being caught by the retainer 4, and the lever M is then immediately moved back to push the cartridge into place, the projection K being at the same time caught on the sear, so that while the breech-bolt is moved to its entirely closed position the firing-pin will be held back in the cocked position, ready to fire, Fig. 1. When the plate V is raised, its lug X, Fig. 2, prevents the cartridges from escaping from the magazine.

When the magazine is to be loaded with cartridges, the mechanism is moved to the po-

sition shown in Figs. 2 and 3, and the cartridges are inserted below the elevator-plate V one after the other into the magazine below the barrel. The cartridges are pushed in over the projection *z* on the end of the spring B' by depressing the latter, and as each cartridge passes the projection the spring moves back to prevent the cartridge jumping out again.

The cartridges shown in the drawings are shot-cartridges. When bullet-cartridges are to be used, a spring, 21, may be provided upon the lever R, in order to diminish the shock on the adjoining cartridges when the latter are pushed outward by the magazine-spring.

We claim as our invention—

1. The combination of the frame and sliding breech-bolt, carrying the firing-pin, with a recoil-piece, Q, pivoted to the frame and adapted to engage with the breech-bolt when in its closed position, and an operating-lever controlling the movements of the breech-bolt and recoil-piece.

2. The sliding breech-bolt of a magazine-gun, carrying a firing-pin, F, and a spring, G, acting thereon, with a locking-lever, *k*, engaging with the breech-bolt to lock the firing-pin to the latter.

3. The combination of the sliding breech-bolt, carrying the firing-pin, and recessed on its under side, with a recoil-piece, Q, pivoted to the frame to engage with the bolt, and an operating-lever, M, therefor, carrying a cam-plate, W, acting on said recoil-piece and controlling its movement, substantially as set forth.

4. The combination of the sliding breech-bolt, a firing-pin, the recoil-piece Q, pivoted to the frame and adapted to engage with said bolt, an operating-lever therefor, and an index-finger on the outside of the gun connected to and moving with the recoil-piece, substantially as and for the purpose described.

5. The combination of the sliding breech-bolt, carrying a firing-pin, and a recoil-piece, Q, pivoted to the frame and engaging with the bolt, with an operating-lever, M, connected to the said bolt and recoil-piece and controlling their movements, and carrying a cam, P, to lock the recoil-piece when the bolt is closed, substantially as set forth.

6. The combination of the sliding breech-bolt, carrying a firing-pin, and a plate, Z, pivoted to the frame and connected to the sliding breech-bolt, with an operating-lever carrying a plate, W, embracing the said plate Z, and provided with projections 9 and 13 to engage with the opposite edges of the plate Z to throw the bolt, substantially as described.

7. The combination of the frame and sliding breech-bolt, with an operating-lever, carrying a plate, W, having projections 9 and 13, a pivoted plate, Z, embraced by the plate W and acted on by its said projections, link A<sup>2</sup>, connected to the plate Z, and rod A', adapted to a groove in the frame and connected to the breech-bolt.



8. The combination of the sliding breech-bolt, carrying a spring firing-pin, with a spring safety-lock, *a*, pivoted to the bolt and engaging with the said pin to automatically lock the pin to the bolt when the latter is drawn back from the closed position.

9. The combination of the frame *A* and sliding breech-bolt, carrying a spring firing-pin, with a pivoted lever, *a*, carried by the bolt and adapted to engage with the firing-pin, and having a projection, *c*, and a spring, *f*, to act on the lever *a*, the said frame having a recess to receive the projection *c*, and a cam, *e*, to act on the said lever against the spring *f*.

10. The combination of the frame having a fixed finger, 17, behind the trigger, and a sliding breech-bolt, and firing-pin, with an operating-lever carrying the trigger, provided with a projection, 18, engaging with said fixed projection, as and for the purpose set forth.

11. The combination of the sliding breech-bolt of a magazine gun, having its magazine below the barrel, with a pivoted lever carrying the cartridge-plate *V*, pivoted at one end thereof, and having at the other end an arm, *S*, and an operating-lever having a cam to act on the arm to raise the cartridge-plate, substantially as set forth.

12. The combination of the sliding breech-bolt of a gun, having a magazine below the barrel, and a projection, 11, on the frame, with a lever, *R*, carrying the cartridge-plate adapted to come into contact with said projection on the elevation of said lever, and an operating-lever, *M*, controlling the movements of the lever *R*.

13. The combination of the pivoted cartridge-elevating lever of a magazine-gun, hav-

ing a rearwardly-extending arm, *S*, with an operating-lever having projection 15 to engage with the under side of said arm to throw down the lever, and a cam, *P*, to engage with the upper side of the arm for the reverse movement.

14. The combination of the sliding breech-bolt of a magazine-gun, having the magazine below the barrel, and a spring, *B'*, on the lower side of the mouth of the magazine, and carrying a projection, with the cartridge-elevating lever having a plate, *V*, to engage with said spring when depressed, substantially as set forth.

15. The combination of the sliding breech-bolt of a fire-arm, with a magazine below the barrel, and a spring, *B'*, on the lower side of the mouth of the magazine, and having a finger, *z*, and projecting end 19, with a movable cartridge-plate having a lug, *X*, notched and recessed at the end to engage with the spring when the plate is depressed, substantially as described.

16. The combination of the frame of a magazine-gun, a cartridge-retaining lever pivoted thereto, and a cartridge-elevator with the sliding breech-bolt having a shoulder near its outer end to act on the said lever to throw it into the path of the cartridge when the bolt is drawn back, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

AUGUST LEFREDIUS LARSEN.

CLAS ERIK WINTERROS.

Witnesses:

H. C. LARSEN,

H. KIRRHÜD.