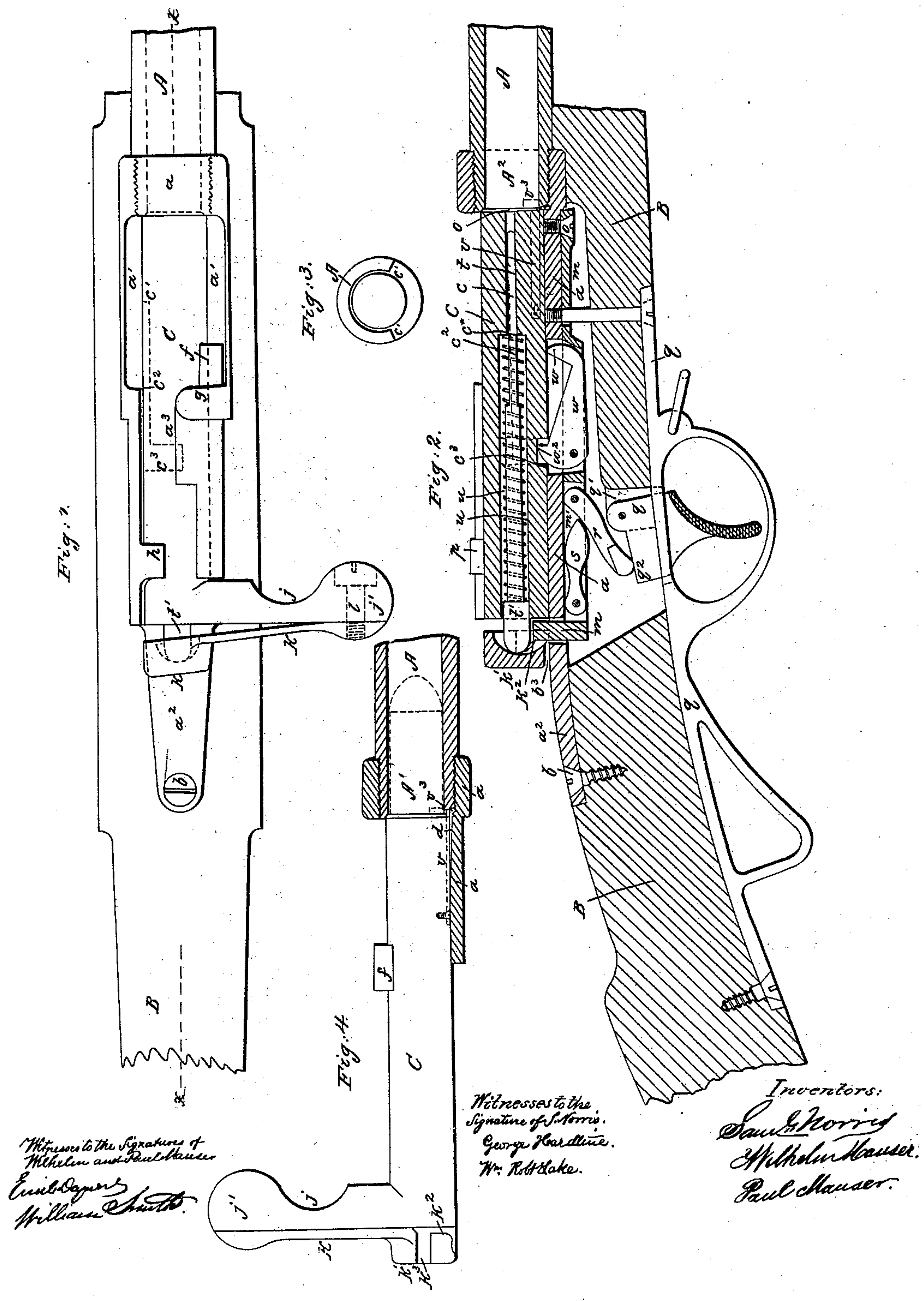


S. NORRIS & W. & P. MAUSER.

Breech Loading Fire Arm.

No. 78,603.

Patented June 2, 1868.



Witnesses to the Signature of
Wilhelm and Paul Mauser.
Emil Dapert
William Chubb.

Witnesses to the
Signature of S. Norris.
George Hardline.
Mr. Robt. Lake.

Inventors:
Saml. Norris
Wilhelm Mauser.
Paul Mauser.

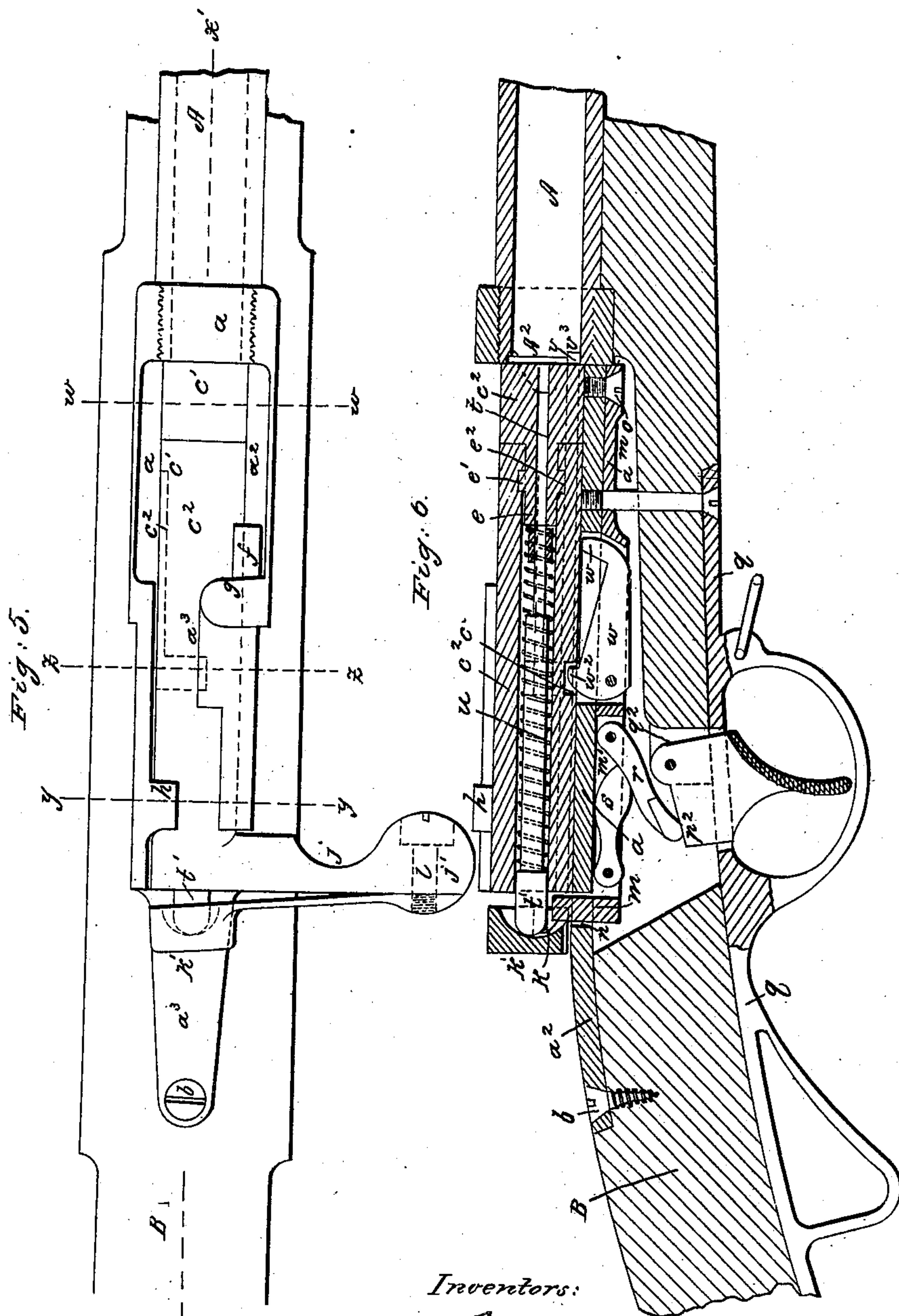
S. NORRIS & W. & P. MAUSER.

6 Sheets—Sheet 2.

Breech Loading Fire Arm.

No. 78,603.

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Witnesses to the
Signature of S. Norris.
George Bonelline.
Wm. Rott Lake.
Witnesses to the Signatures
of Wilhelm and Paul Mauser
Emile Dufour
William Smith.

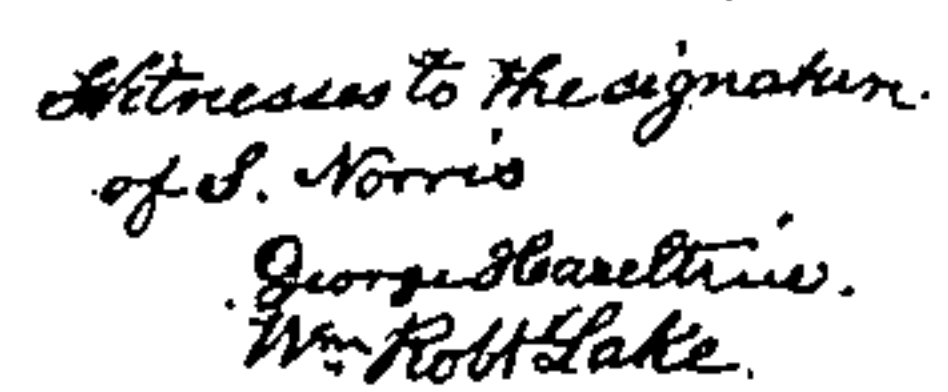
Inventors:

Saml. Norris.
Wilhelm Mauser.
Paul Mauser.

6 Sheets—Sheet 3.

No. 78,603.

Patented June 2, 1868.



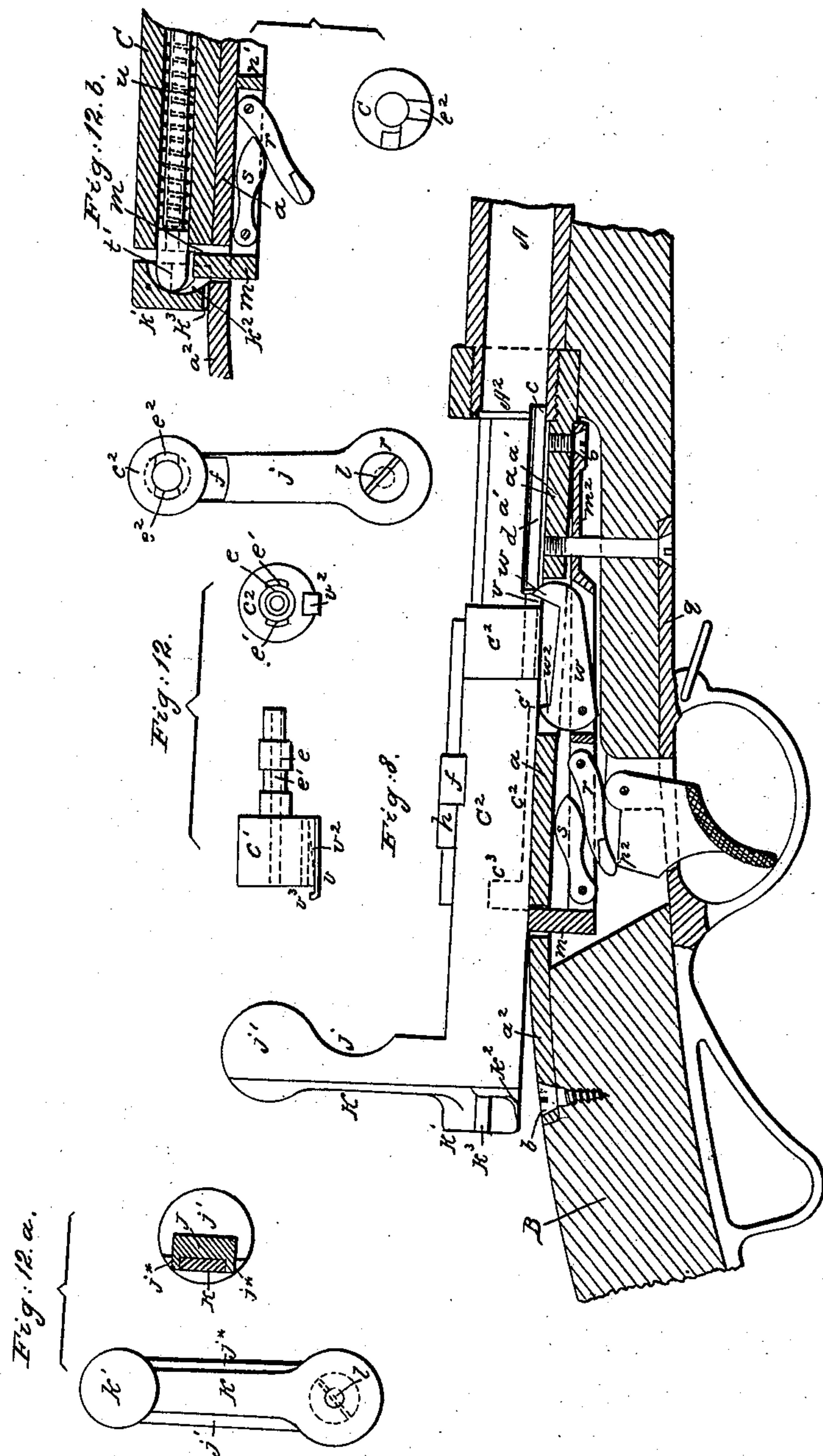
Witnesses to the signatures
of Wilhelm and Paul Mauser
Emiled Sprengel
William Smith.

Saml. Morris
Wilhelm Hauser.
Paul Hauser.

6 Sheets—Sheet 4.

No. 78,603.

Patented June 2, 1868.



Witnesses to the
Signature of Sir Morris.
George Carstairs
The Robt Lake.
Witnesses to the Signature
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Erich Rapp
William Smith.

Inventors:

Sankt Noris.
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Paul-Haus.

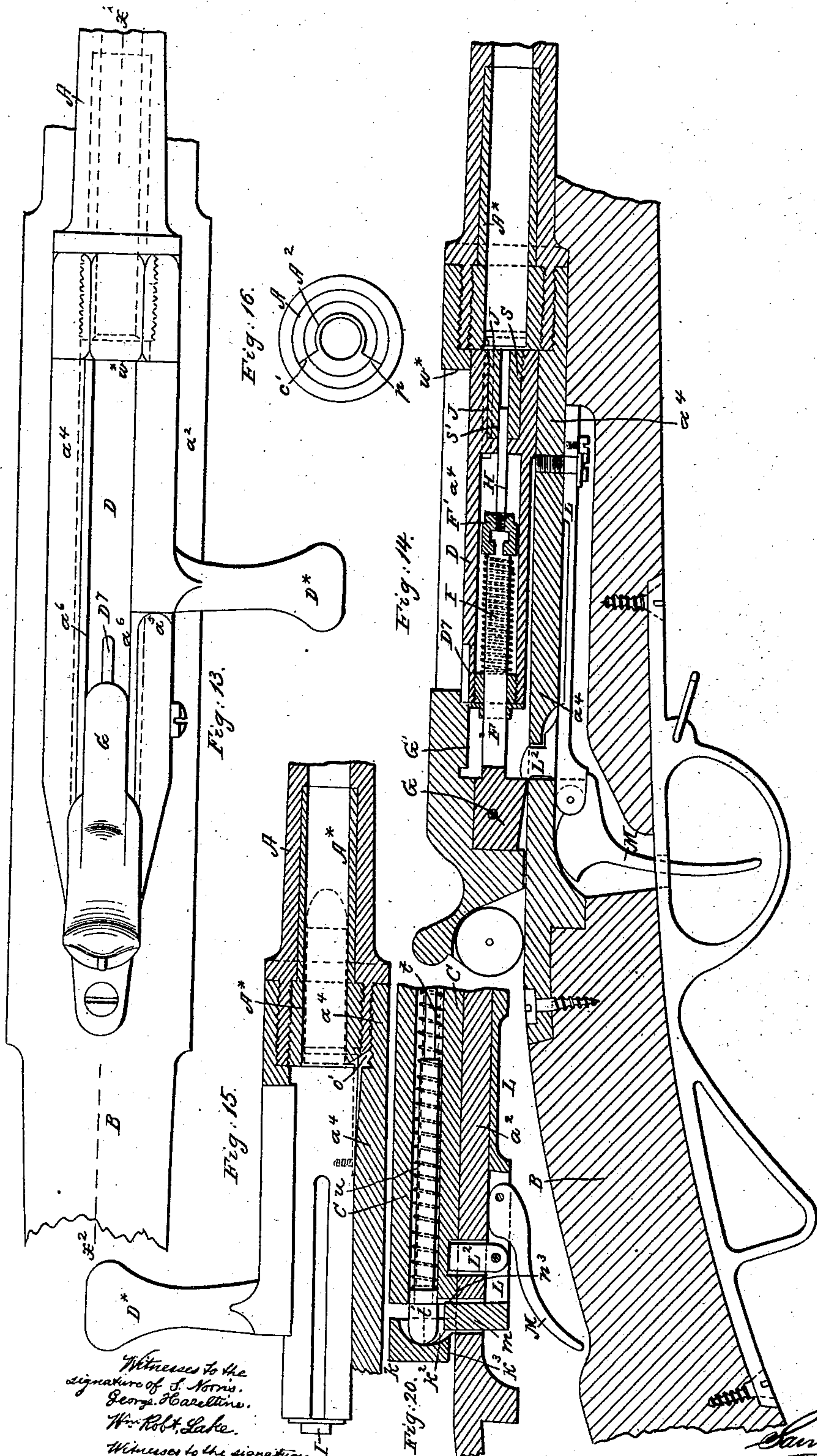
S. NORRIS & W. & P. MAUSER.

6 Sheets—Sheet 5.

Breech Loading Fire Arm.

No. 78,603.

Patented June 2, 1868.



Witnesses to the
signature of S. Norris.
George H. Carverline.
Wm. Holt Lake.

Witnesses to the signatures
of Wilhelm and Paul Mauser.
Emile Dreyer.
William Smith.

Inventors:

S. Norris.
Wilhelm Mauser.
Paul Mauser.

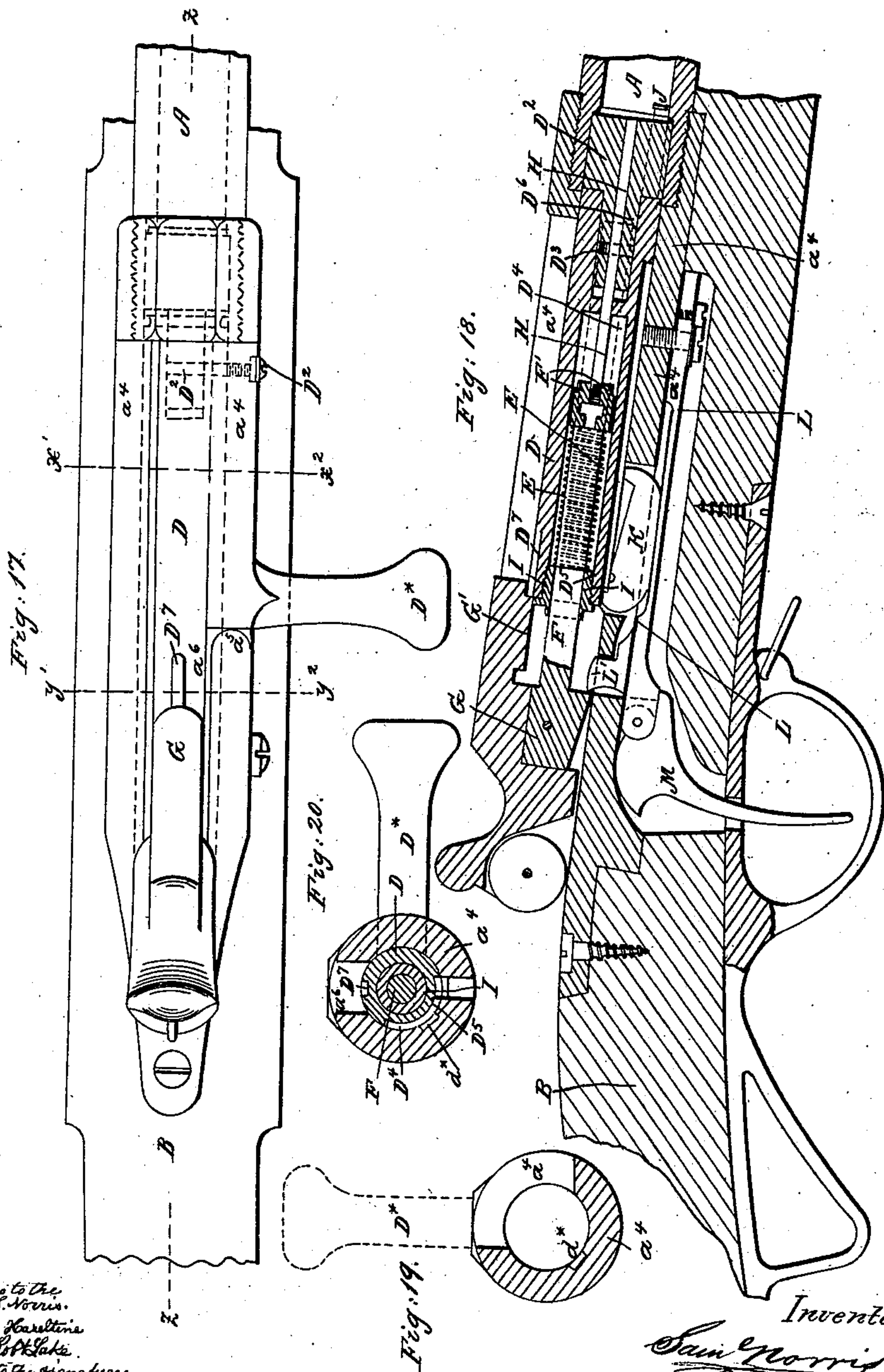
S. NORRIS & W. & P. MAUSER.

6 Sheets—Sheet 6.

Breech Loading Fire Arm.

No. 78,603.

Patented June 2, 1868.



Witnesses to the
signature of S. Norris.
George Hareline
Wm. R. Lake.
Witnesses to the signatures
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Louis Dupont
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Inventors:
Sam Norris
Wilhelm Mauser.
Paul Mauser.

United States Patent Office.

SAMUEL NORRIS, OF SPRINGFIELD, MASSACHUSETTS, AND WILHELM MAUSER AND PAUL MAUSER, OF OBERNDORF, WURTEMBERG, ASSIGNORS TO SAMUEL NORRIS.

Letters Patent No. 78,603, dated June 2, 1868.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, SAMUEL NORRIS, of Springfield, Massachusetts, United States of America, at present residing in London, England, and WILHELM MAUSER and PAUL MAUSER, both of Oberndorf on the Neckar, in the Kingdom of Wurtemberg, have invented certain new and useful "Improvements in Breech-Loading Fire-Arms;" and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings forming a part of this specification.

The said improvements relate, first, to breech-loading mechanism of novel construction for fire-arms, whose breech is closed by a cylindrical block fitted to slide endwise in a chamber at the rear of the barrel. The said block is provided with a catch or projection extending from its surface, and, to close the breech, is turned upon its axis, so as to bring the said catch in front of a shoulder on the side of the breech-chamber, and thereby keep the said block securely up to the breech. In opening the breech, the catch is turned back into line with a longitudinal aperture, which allows the said catch to pass, and the block to be drawn back.

The cartridges are ignited by the blow of a firing-pin, which passes through the cylindrical block, and is driven forward by a spring, which is held by a catch, and is released by means of an ordinary trigger.

The said improvements consist chiefly in the peculiar construction and arrangement of the main-spring, and in the devices employed in connection with the trigger for holding and releasing the said spring. The latter is attached at one end to the extremity of a handle, which projects radially from the rear of the cylindrical breech-block, the other end of the said spring being free, and arranged exactly opposite the centre of the said block, which is in line with the barrel.

The rear end of the firing-pin lies in contact with a head formed on the end of the spring, and when the latter is released from its catch, it drives the said pin forward into contact with the cartridge in the charge-chamber. The said pin is kept in contact with the head of the main-spring by a light spiral spring, which bears against the rear end of the pin, and the forward end of the breech-block.

The head of the main-spring lies close to the end of the cylindrical block, except when the piece is cocked, and is formed with an inclined surface or cam. This surface is arranged to act in such a manner upon the catch or stop that when the cylindrical block is turned in the proper direction upon its axis, the main-spring is forced back behind the said catch, the piece being then cocked. This movable stop is fixed upon the end of an elastic bar, which is secured at its forward end to the under side of the metal shoe, wherein the breech-chamber is formed. This bar is so formed and arranged that, when free, its elasticity forces it upward, and keeps the catch in the proper position to hold the main-spring back.

A central longitudinal aperture is formed in the elastic bar to receive a small arm, which is pivoted in this aperture near the rear end of the said bar. The free end of this arm lies in contact with the under surface of the breech-shoe. A small lever, which is also pivoted to the elastic bar, extends under the free end of this arm, and lies in contact with a shoulder or projection on the trigger, which is arranged in the usual position at the under side of the stock. When this trigger is pulled, the said shoulder or projection forces the small lever upward, and the said lever acts on the small arm, which, being thereby pressed against the bottom of the breech-shoe, forces the elastic bar down, and draws the catch away clear of the spring. The latter being then released, flies forward, driving the firing-pin sharply against the cartridge, and causing its explosion.

The breech-block is kept from being accidentally turned into such a position as will allow it to escape from its chamber by a catch connected with the elastic bar. When the block is turned with its stop in front of the shoulder which keeps it up to the breech, this catch fits into a recess formed on the surface of the head of the main-spring, and prevents the turning of the block till the trigger is pulled.

The forward portion of the block may be made separate from the main or rear portion, and attached thereto in such a manner that the rear portion will turn on its axis without turning the forward portion, but so that both parts are kept firmly together endwise. The firing-pin extends through the central perforation in the said block.

This arrangement of parts is especially applicable to central-fire cartridges, but our improvements may be adapted to rim-fire cartridges by a simple modification of the end of the firing-pin and block.

The said improvements also consist in the construction and arrangement of the devices for removing the shells of the exploded cartridges from the piece. The said shells are drawn from the charge-chamber by an extractor, which is attached to the breech-block. This extractor is elastic, and has a claw or hook, which, as the breech is closed, passes over the rim of the cartridge, into the proper position to take hold of the same, and draw it back when the breech is opened.

The end of the barrel or charge-chamber is chamfered or bevelled away, for a portion of its circumference, to receive the hook or claw of the extractor, which is thus kept in the proper position to extract the cartridge, without interfering with the turning of the block. This form of block with the chamfered end of the barrel is more especially applicable when cartridges are used which have a solid metallic disk or flange at the base.

The proper action of the block and extractor may be also effected by attaching a loose piece to the end of the block to carry the extractor, which lies in a groove or guide-way formed in the side of the breech-chamber, and prevents the turning of the loose piece with the rear portion of the said block, when the breech is being opened or closed.

This last-described arrangement is preferable with ordinary metallic cartridges.

An aperture or slot is formed through the bottom of the breech-chamber, and in this aperture is arranged a lever, which forms the device for ejecting the cartridge from the said chamber. The extractor draws the cartridge back till its rear end rests on a nose or projection on the extremity of the long arm of this lever. When the piece is closed, this projection lies a little below the bottom of the chamber so as not to interfere with the movements of the block. The short arm of this lever extends into a longitudinal groove or channel, formed along the breech-block to allow the same to pass over the said projection. This groove is formed with a lateral extension in the proper position to allow the block to clear the ejector when turned on its axis.

The longitudinal groove extends nearly to the forward end of the block, and the shoulder formed by its termination strikes the short arm of the ejector, when the block is drawn back, and jerks the long arm sharply upward, thereby throwing the cartridge out of the piece.

The said improvements relate, secondly, to certain modifications or alterations in needle-guns, and more especially to the arm known as the "Chassepot" gun. In the said "Chassepot" gun, the breech is closed by a cylindrical block, which is provided with a metal needle-guide, and a disk or ring of prepared India rubber, or like substance, to prevent the escape of gas at the time of explosion. This gun is constructed only for firing cartridges with cases of paper or other soft material. These cases being consumed, no extracting or ejecting-devices are required. The said cartridges are ignited by a needle, which is driven forward by a spiral spring placed in the centre of the cylindrical block.

The chief object of this part of our improvements is to adapt the said "Chassepot" gun to the firing of metallic cartridges. For this purpose, we remove the India-rubber washer and the metal guide from the breech-block, and attach to the forward end of the said block our improved extracting-device, as described in a former part of this specification. We also form an aperture through the bottom of the breech-chamber to receive our improved ejecting-device, which may be, in this case, attached to the under side of the breech-chamber or to the elastic bar below the same. If desired, this ejector may be dispensed with, and the cartridges thrown out by simply reversing the arm.

We remove the needle, and substitute for the same a firing-pin, which is arranged to strike the rear of the cartridge when forced forward by the spiral spring, which we retain.

The end of the barrel which is screwed into the breech-shoe is chambered for some distance, to receive the end of the block; or a ring or bush may be fitted into the end of the barrel, and a chamber so formed in the said bush that the rim of the cartridge lies flush or nearly flush with the rear of the barrel.

The breech-block is adjusted by means of a handle, which forms the stop for holding the said block when the breech is closed.

Description of the Drawings.

Figure 1 is a plan of the top of part of a rifle with our improved breech-mechanism, showing the breech closed.

Figure 2 is a longitudinal section on the line $x x$, fig. 1.

Figure 3 shows the end of the barrel of the said rifle.

Figure 4 represents detached portions of our improved mechanism.

Figure 5 is a plan of the breech of a rifle constructed according to our improvements, with parts in position for firing.

Figure 6 is a longitudinal section on the line $x' x'$, fig. 5, also showing the parts in position for firing.

Figure 7 is a similar section, showing the position of the parts after firing.

Figure 8 is a similar section, showing the parts in position for inserting a cartridge.

Figures 9, 10, and 11 are transverse sections on the lines $w w$, $y y$, $z z$, fig. 5.

Figure 12 represents detached portions of our improved mechanism.

Figures 12^a and 12^b illustrate modifications of parts of the same.

Figure 13 is a plan, illustrating the adaptation of our improvements to the "Chassepot" gun.

Figure 14 is a longitudinal section of the same on the line $x^2 x^2$, fig. 13.

Figure 15 represents detached portions of the said improvements.

Figure 16 represents the end of the barrel.

Figures 17, 18, 19, 20, illustrate modifications in this adaptation of our improvements.

Figure 20* illustrates another modification of our improvements relating to the "Chassepot" and similar arms.

Like letters indicate the same parts in each of the figures.

The barrel A, figs. 1, 2, 3, and 4, may be screwed or otherwise attached to the metal shoe a , in which the breech-chamber a^1 is formed, or the said shoe and the barrel may be constructed in one piece.

The shoe a is formed with a tongue or extension, a^2 , at the rear, through which a screw, b , is passed into the stock B.

The end of the charge-chamber A' is recessed or countersunk, to receive the rim of the cartridge.

The cylindrical block C is fitted to its chamber, a^1 , in such a manner as to slide and turn freely therein, but without unnecessary slackness or play. The front surface of the said block, which closes the chamber A', is preferably made slightly concave, to fit closely and evenly all round the base of a cartridge lying in the said chamber, without touching the central portion of the said base.

The projection or stop f , on the block C, which holds the same against the shoulder g when the breech is closed, is preferably so arranged that the handle of the said block is turned downward towards the right hand, as shown in fig. 1, to keep the breech closed. The shoulder or abutment g , on the shoe a , against which the said stop rests when thus turned down, is preferably slightly inclined or bevelled, as shown in fig. 1, so as to act as a cam upon the projection f , on the block C, and draw the latter forcibly and closely in contact with the end of the barrel A.

The longitudinal aperture a^3 , in the top of the breech-chamber a^1 , is made of just sufficient width to allow the stop or projection f to pass freely when the cylindrical block C is turned into the position to open the breech, as shown in fig. 11.

Another shoulder, h , is formed at the rear of this aperture a^3 , to act as a stop to the breech-block C, and prevent its being drawn out of the chamber a^1 , when the breech is opened, in working the gun rapidly. If desired, a stud or other device may be employed to form a stop, instead of the shoulder h . The longitudinal aperture a^3 is continued on one side of this shoulder h to the rear of the breech-chamber, as shown in figs. 1 and 10; and by turning the block C in the position shown in these figures, and pulling the trigger, the said block can be removed from the piece when required.

The handle j , for operating the breech-block C, is formed upon or attached to the rear extremity of the said block.

The main-spring k is placed upon the outer or rear surface of the handle, and is preferably dove-tailed upon the ball or knob j' , at the outer extremity of the said handle.

A strong screw, l , is also preferably passed through the centre of the said ball, and tapped into the end of the spring k , (see fig. 1.)

We sometimes construct the handle j with a groove, as shown in fig. 12^a, to receive the spring k , which lies between the flanges j^* . These flanges form guards to keep dirt or foreign substances from getting between the hand and spring.

If it should be found necessary to use a more powerful spring than the one shown, the said spring may be formed with a curved portion extending over the end of the handle j , and secured at the front of the same, or may be otherwise formed and arranged to act with the required force.

The head, k^1 , on the end of the spring k , is preferably chambered or recessed, to receive the rear end of the firing-pin.

The inclined or cam-surface k^2 , on the head of the spring k , must be so formed that, by its action on the movable catch m , the said spring will be drawn back to its full extent when the handle j of the breech-block C is turned into the position shown in figs. 1 and 9.

The said movable catch projects upward through an aperture, n , in the bottom of the shoe, and is of such a length as to hold the spring back when the piece is cocked, but to clear the head, k^1 , of the said spring, and allow the same to pass endwise over the said catch when the latter is drawn down into the position shown in fig. 7.

The elastic bar m' , upon whose rear end the said catch is fixed or formed, extends nearly to the front end of the shoe a , to which its other end is secured by a screw, o , or other suitable fastening. The said bar is only held upward by its own elasticity, and is therefore moved by the application of a very slight force, though perfectly secure till the trigger is pulled.

By forming the catch m with a shoulder, m^* , as shown in fig. 12^b, the accidental discharge of the piece, before the breech is properly closed, is entirely prevented. The said shoulder rests upon the surface, n^* , of the block, and prevents the drawing down of the catch m till the handle of the block is turned quite down, as shown in fig. 1. The shoulder m^* then coincides with the recess o^* , and can be drawn down through the same when the trigger is pulled.

The trigger is pivoted or jointed upon a piece, q' , projecting upward from the trigger-plate q , and is arranged in such a position, that, when pulled, the part p^2 will act upon the free end of the lever r , attached to the elastic bar m' . The said bar is thus forced upward, the arm s acting as a fulcrum, whereby the force exerted upon the trigger is caused to act through the said lever and arm upon the bottom of the shoe a , and force the elastic bar m' down till the catch m is clear of the spring k .

The firing-pin t is preferably made of such a length as to leave a space between its front end and the cartridge when the main-spring is in its forward position, so that when said pin strikes the cartridge it is free from the spring, and acting by the momentum resulting from its velocity and weight.

The light spiral spring u , in the centre of the cylindrical block C, bears against the head t' , on the rear end of the firing-pin t , and against the shoulder e^* , and its strength is just sufficient to carry the pin t backward, and keep its head, t' , in contact with the main-spring k .

The extractor v is preferably formed of steel. The hook or claw v^3 is properly formed and arranged to catch the rim of the cartridge when pushed over the same. The small groove d' allows the extractor to yield and pass freely over the rim of the cartridge. The bevelled or chamfered portion, o' , is so formed that the hook or claw v^3 , when forced over the rim of the cartridge, can turn freely with the block C.

When a cartridge is drawn from the charge-chamber, it is brought by the extractor v over the nose or projection, w^1 , of the lever w . The shoulder c' , on the block C, then strikes the short arm w^2 , causing the projection w^1 to fly up and expel the cartridge in a lateral and slightly forward direction.

The groove or channel c^2 allows the block C to slide endwise over the ejector, and the lateral extension, c^3 , of this groove allows the said block to turn properly on its axis. If found desirable, two of these extractors may be employed.

The block C is kept from turning round, and getting free from the shoulder g , by means of the catch m , which fits into the recess k^3 , in the head of the spring k . To secure the block in this manner, the trigger is pulled, to depress the catch m , while the handle j is turned down. To cock the piece, it is only necessary to turn the handle j up, and then again bring it down, without pulling the trigger.

In the modification of our improvements, illustrated in figs. 5, 6, 7, 8, the charge-chamber A' is formed with a groove, e , which is a continuation of the groove d in the breech-chamber a^1 .

The cylindrical block C is provided with a loose piece, C^1 , which closes the charge-chamber, and carries the extractor v . The said loose piece is formed with a neck or extension, e , which is fitted to turn freely in the central perforation of the part C^2 .

The two parts are kept together endwise by the collar e^1 , which fits the enlarged chamber in the part C^2 , wherein it is introduced through the elongated aperture e^2 , fig. 12, or the said neck may be formed with a groove or channel around its periphery, and a screw or pin may be passed through the part C^2 into the said groove, to hold the parts C^1 C^2 properly together.

The extractor slides in the groove or channel d , which is in this case continued to the rear of the chamber a^1 , to allow the block C to be inserted and removed.

The groove e , (which forms the continuation of the groove d ,) in the charge-chamber A' , allows the necessary freedom to the extractor as it is forced over the rim of the cartridge. By means of the groove d , in this arrangement of parts, the extractor v , while allowing the free endwise movement of the portion, C^1 , of the block C, also acts as a key or stop, to prevent the turning round of the said portion.

In the modification of parts, illustrating the adaptation of our improvements to the arm known as the "Chassepot" gun, figs. 13, 14, 15, and 16, a^4 is the breech-shoe, in which the block or bolt D is fitted to slide and turn in the manner already described.

The said block is adjusted by means of the handle D^* , which also forms a stop to hold the said block when the breech is closed, the said handle being then turned down in front of the shoulder or abutment a^5 , as shown in fig. 13. The aperture a^6 allows the said handle to pass when the block D is drawn back to open the breech. The said block is formed with a central perforation, to receive the spiral spring E, the said spring being supported upon the rod F, which extends from the piece G, at the rear of the block or bolt D. The forward end of this rod F, in the said "Chassepot" gun, carries the needle for exploding the cartridges, which needle slides through the metal guide, which carries the India-rubber disk or washer, and is fitted into the forward end of the block D.

In converting or changing the said gun according to our improvements, we remove the said needle from the end of the rod F, and attach thereto the striking-pin H, which may be secured in the holder F' , or directly into the end of the said rod. We retain the main-spring E and the hollow screw I, which is fitted into a screw-thread formed in the rear of the block D, and forms the support for the corresponding end of the spring E. We also remove the metal guide and India-rubber washer from the end of the block D, and provide the latter with an extracting-device, J, which is in all respects similar to the extractor, v , of the piece illustrated in figs. 1, 2, 3, 4.

The ejecting-lever may be arranged as shown in fig. 2, or may be pivoted upon the bar or spring L. When this ejector is used, the groove in the block D, which in the "Chassepot" gun is provided to allow the said block to slide over the catch L' , is extended, to allow the said block to pass over the ejector, and is also provided with a lateral extension, to allow the block to clear the said ejector in turning. The shoulder formed at the end of the groove comes in contact with the short arm of the ejector, and operates the same, as already described.

If desired, the said ejecting-arm may be dispensed with, and the empty cartridges removed, after extraction, by any other convenient means.

If desired, the bush A^* may be extended, to lie flush with the shoulder w^* , the block being reduced in length to a corresponding degree.

The said block, as originally formed, is provided with a groove or channel, which slides over the point of a screw, projecting through the side of the breech-shoe.

We find it desirable to shorten the distance to which the block is drawn back in opening the breech, and for this purpose we fill up the end of the said groove, or place a stop therein, at the proper distance, to arrest the block D when its forward end is flush with the shoulder.

The aperture formed in the forward end of the block of the "Chassepot" gun, to receive the metal needle-guide, is now fitted with a bush, s' , which is formed with a central perforation, to allow the firing-pin to slide through the same.

In figs. 17, 18, 19, and 20 the said "Chassepot" gun is shown, with other modifications. The breech-block or bolt D is shown, with a loose portion, D^1 , which carries an extracting-device, J, similar to the device employed

in the gun illustrated in figs. 5, 6, 7, and 8. This extractor slides in the groove d^* , and thereby prevents the turning of the piece D^1 .

The piece D^1 is secured in the block D by means of the screw D^2 , whose point projects through the side of the block into the groove D^3 , in the neck of the piece D^1 .

The ejector K , shown in this case, is similar in construction to that hereinbefore described.

The groove D^4 , in the block D , allows the latter to pass over the point of the said ejector, and the lateral extension, D^5 , of the said groove, allows the block to turn.

When the block D is drawn back, the shoulder D^6 strikes the short arm of the ejector K , which is then caused to throw out the cartridge, as already set forth.

In this modification of parts we do not alter the piece G , or the key G' , or grooves D^7 ; neither do we remove or change the trigger M or the bar L , which, by means of the catch L^1 , holds the piece G and rod F back when the gun is cocked.

It is obvious that, by our invention, but very slight alterations are required to adapt the "Chassepot" gun to the firing of metallic cartridges, and, at the same time, it is greatly improved with regard to rapidity of working, durability, and in the facility with which any of its parts may be repaired or renewed.

The "Chassepot" and other arms which have a similarly-formed breech-chamber may be provided with one of our improved bolts, as seen in fig. 20*, the said bolt having the main-spring k , firing-pin t , and extracting-device v in all respects similar to those shown in figs. 1 and 2.

In this modification of my improvements, I employ a stop, L^2 , which is pivoted to the bar L , and is drawn down out of the groove in the block C when the same is to be removed from the arm. The said groove is extended laterally, to allow the block to turn in its chamber over the stop L^2 .

The bar L is extended beyond the stop L^2 , to carry the catch n , which acts on the spring K , as already described.

With other slight modifications, our improvements may be adapted to the conversion of muzzle-loading rifles into breech-loaders.

What we claim, and desire to secure by Letters Patent, is—

1. The combination of a main-spring, k , formed substantially as herein described, with the handle of the breech-block C , and arranged to propel the firing-pin or other striking-device of a breech-loading fire-arm, substantially as and for the purpose herein set forth.

2. The sliding block C , handle j , spring k , and catch m of a breech-loading gun, constructed, combined, and operating in such manner that the piece is cocked by turning the said handle, substantially as herein set forth.

3. Securing the breech-block C by means of the recess k^3 and catch m , substantially as and for the purpose herein set forth.

SAM'L NORRIS,
WILHELM MAUSER,
PAUL MAUSER.

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Witnesses to the signatures of WILHELM and PAUL MAUSER:

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