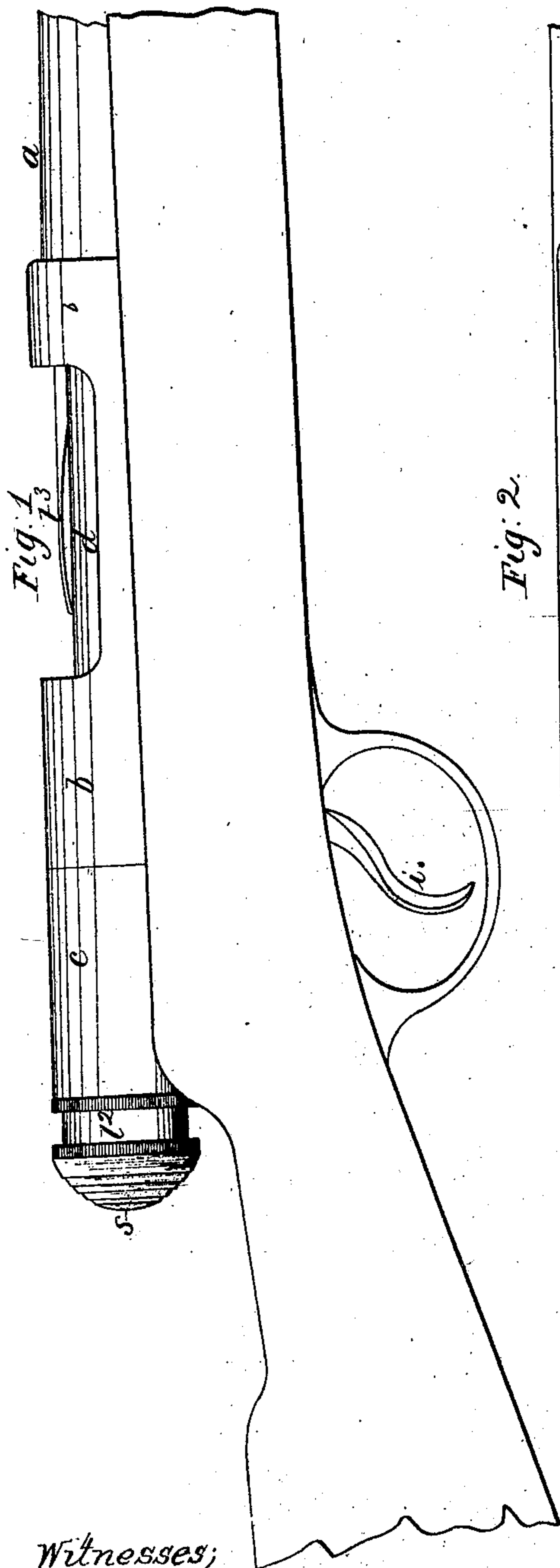


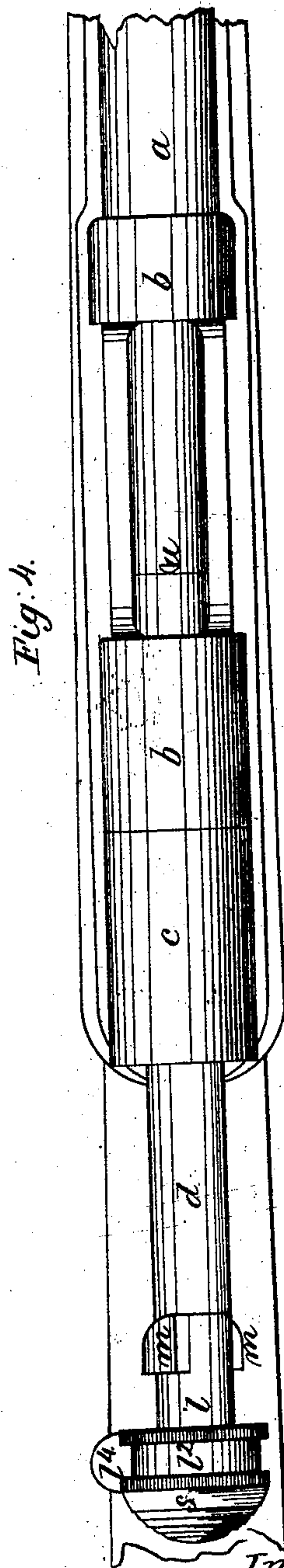
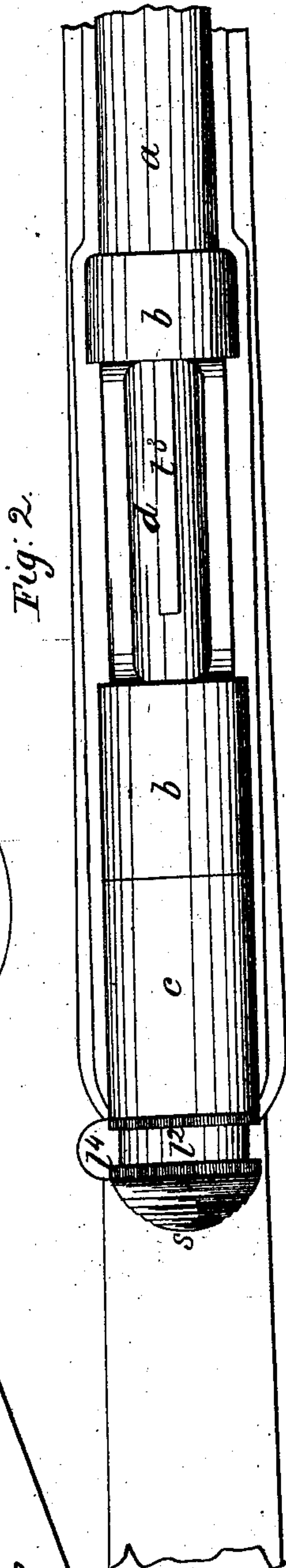
T. Wilson.
Breech Loader.

No 80,043.

Patented Jul 14, 1868.



Witnesses;
George Henry
Richard Merritt

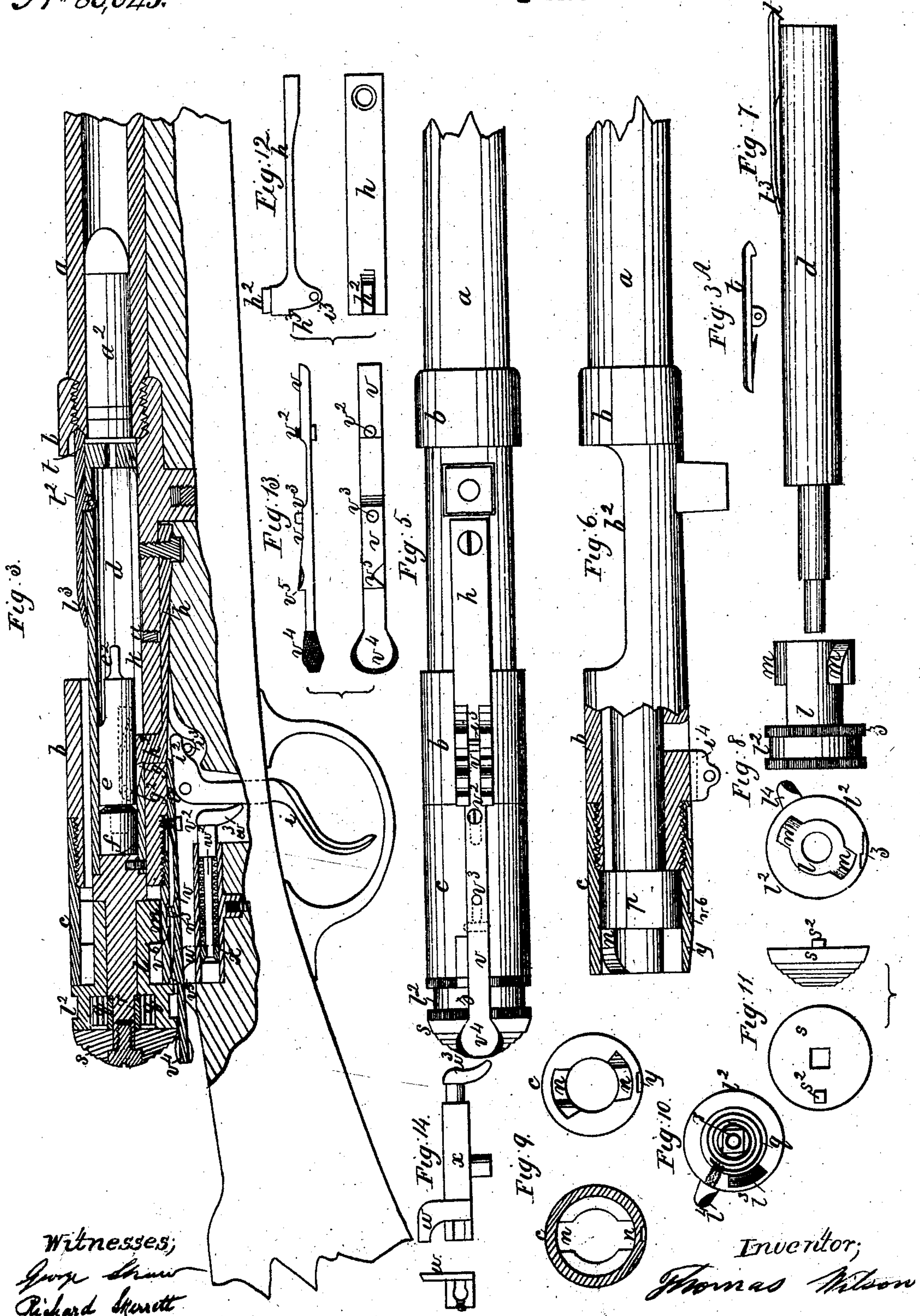


Inventor;
Thomas Wilson

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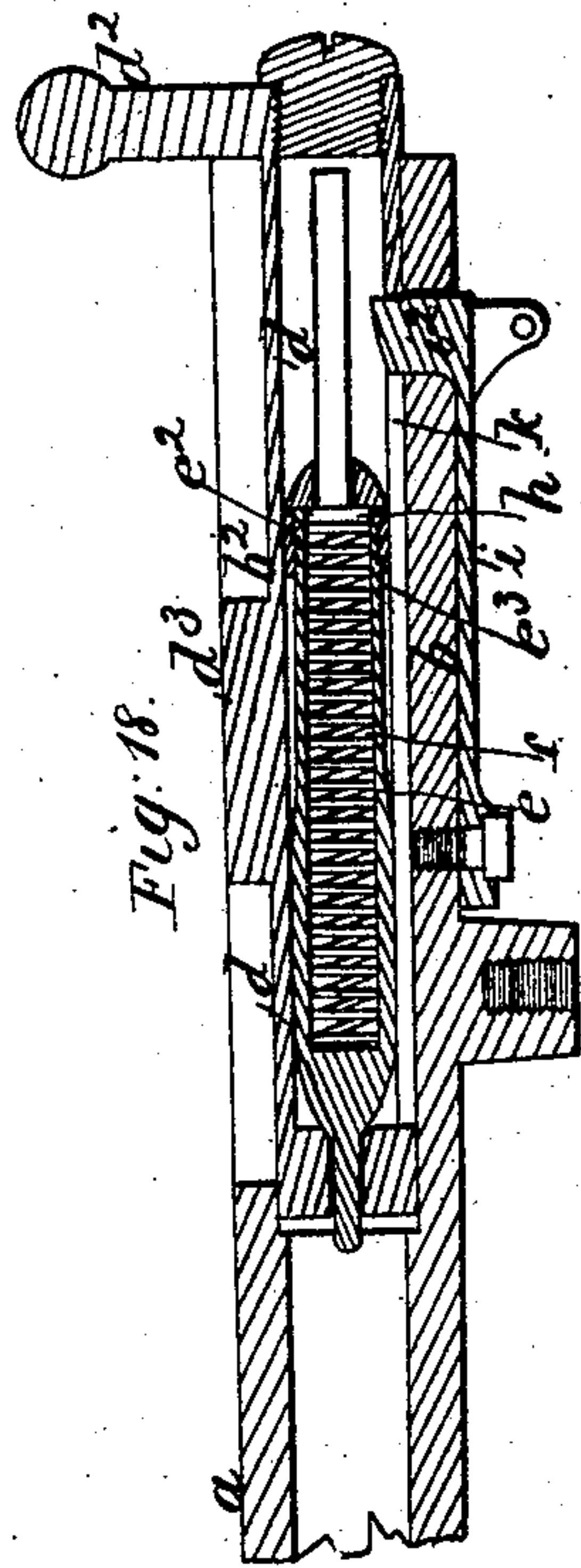
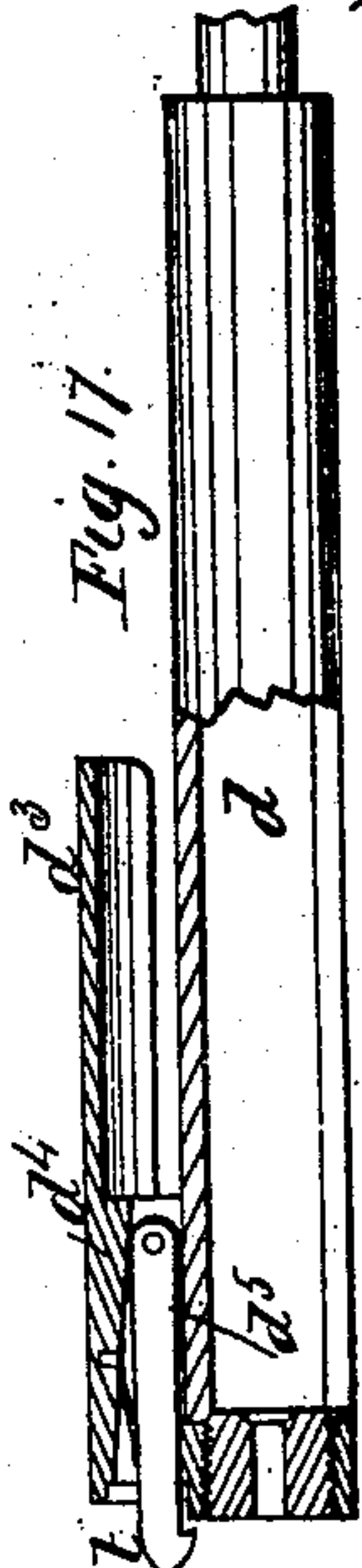
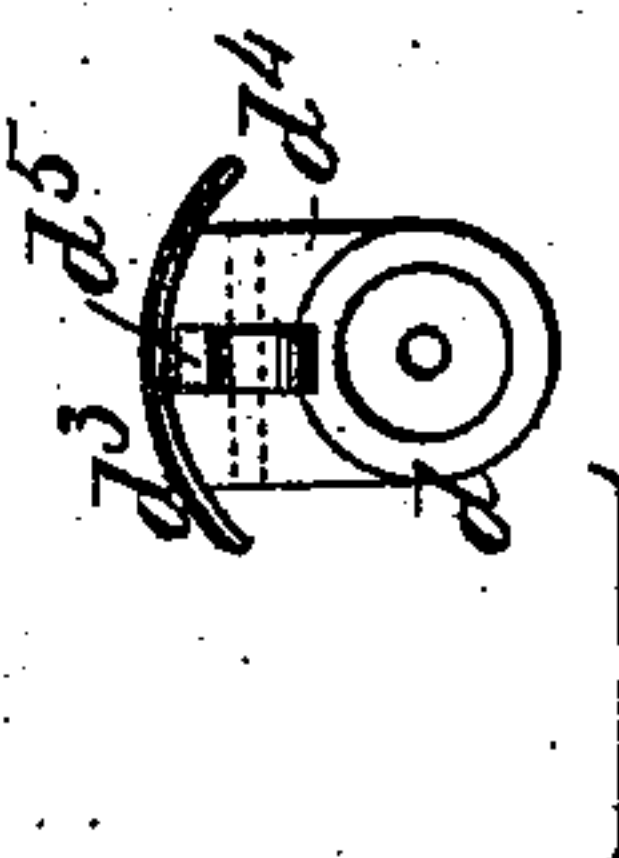
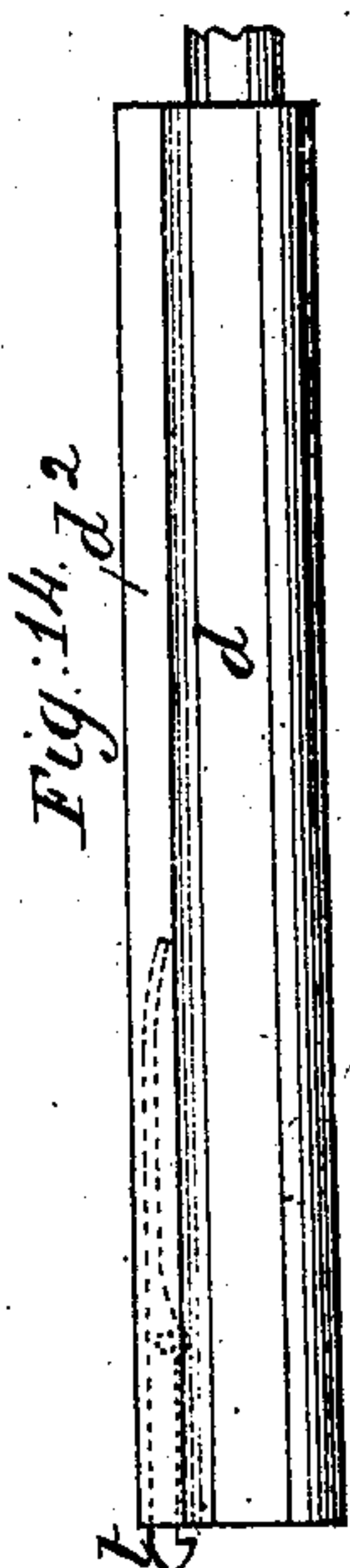
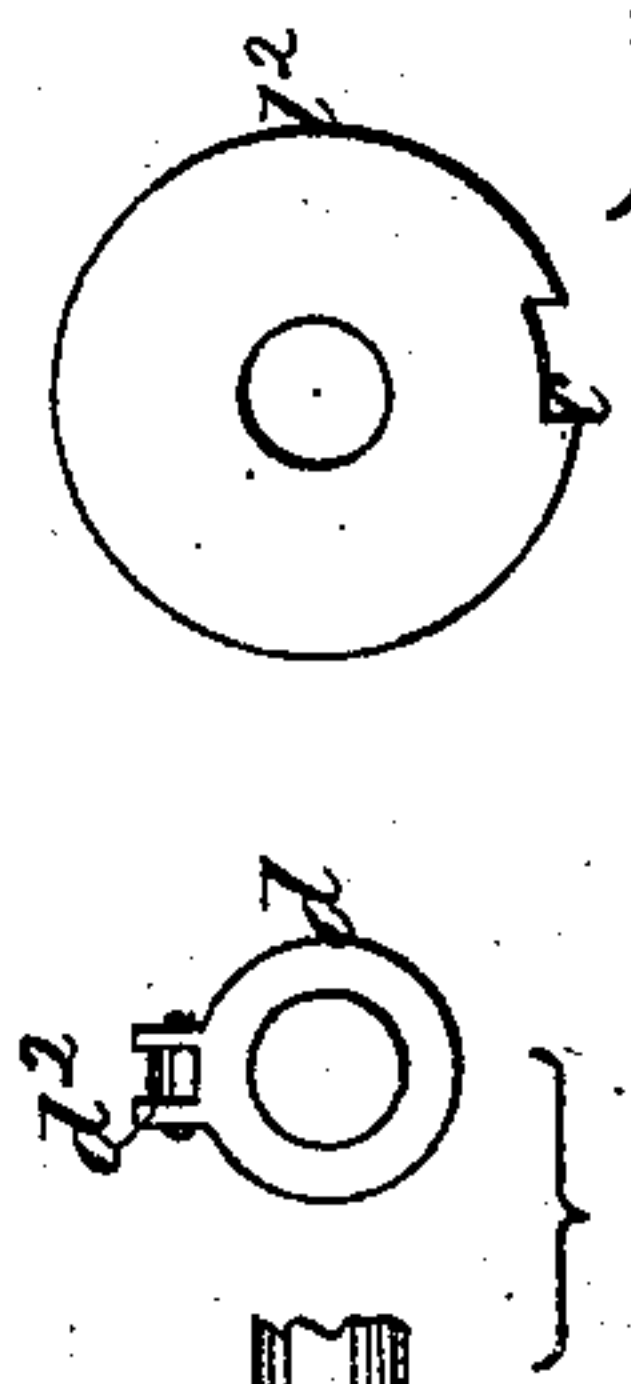
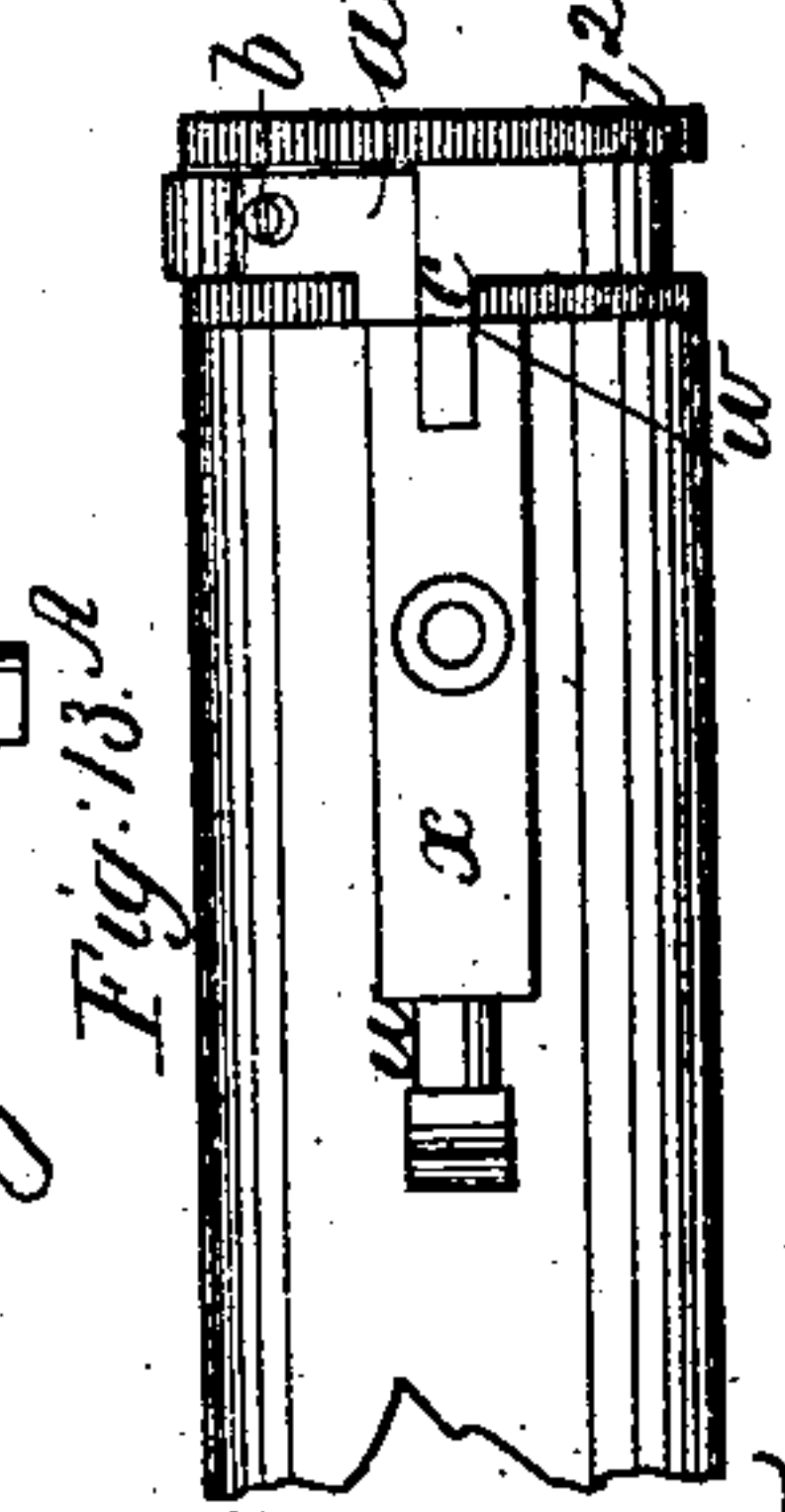
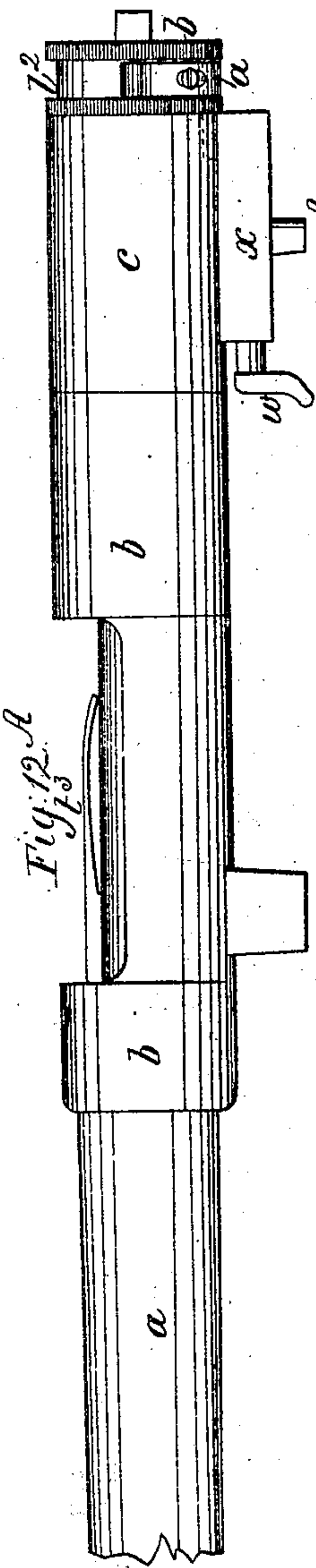
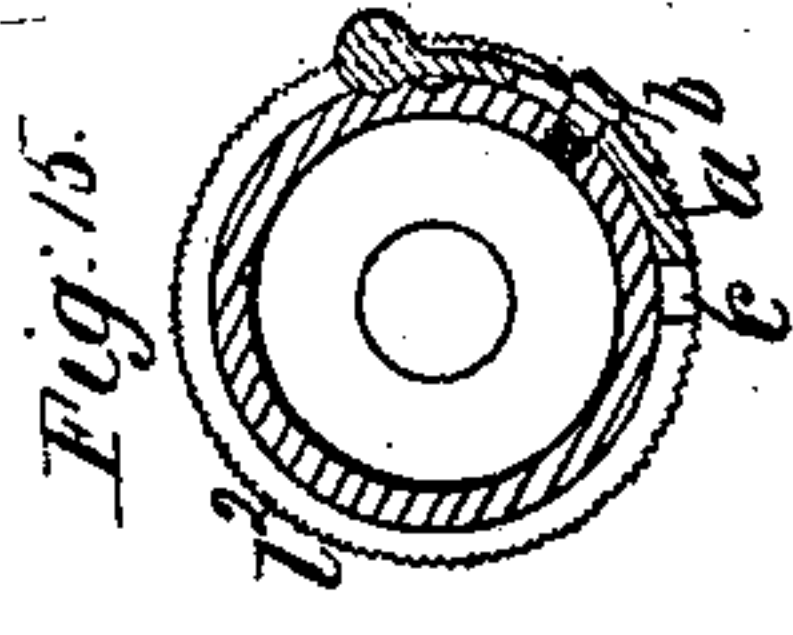
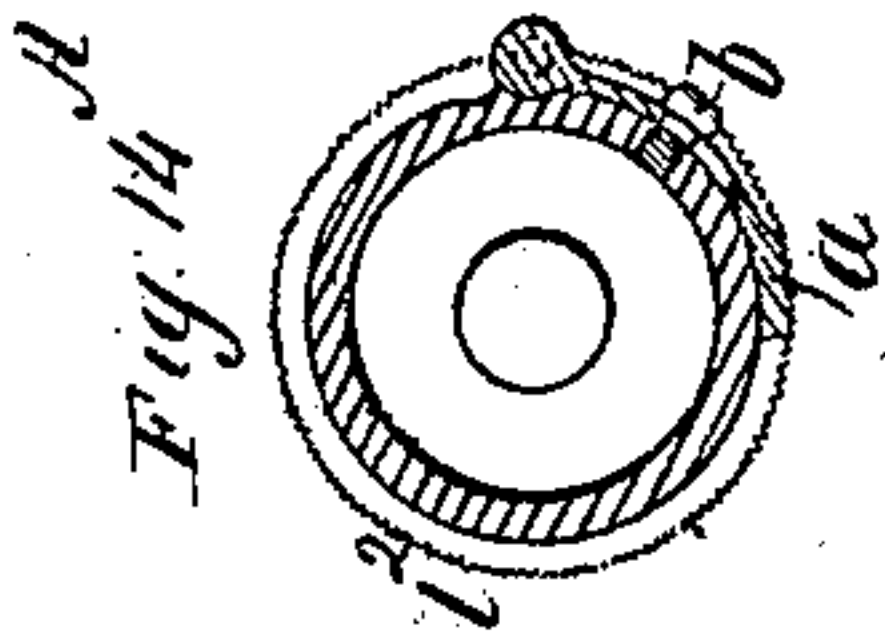
Witnesses;
George Shaw
Richard Bennett

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Witnesses;
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United States Patent Office.

THOMAS WILSON, OF BIRMINGHAM, ENGLAND.

Letters Patent No. 80,043, dated July 14, 1868.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

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

TO ALL TO WHOM IT MAY CONCERN:

Be it known that I, THOMAS WILSON, of Birmingham, in the county of Warwick, England, mechanical engineer, a subject of the Queen of Great Britain, have invented or discovered new and useful "Improvements in Breech-Loading Fire-Arms;" and I, the said THOMAS WILSON, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof; that is to say—

My improvements in breech-loading fire-arms relate to those kinds called self-ignition fire-arms, and consist of the several arrangements or combinations of parts of the said fire-arms, hereinafter described, and illustrated in the accompanying drawings.

One part of my invention consists in making the cylindrical piston or hammer, working in the tubular closing-plug of the gun hollow or tubular, and in arranging the parts for cocking the said tubular hammer.

Another part of my invention consists in providing the cylindrical piston or hammer with a jointed steel catch or sere, for holding the hammer in its cocked position prior to the discharge of the gun.

Another part consists of a rotating locking-handle or collar, for locking or fixing the closing-plug prior to the discharge of the gun; also fitting the rear of the shoe or breech-chamber or shoe-cap to receive the said locking-handle or collar; also modifications of the locking-arrangement for guns, the plugs of which have both a sliding and a motion of partial rotation.

Another part consists of improvements in extractors for withdrawing the cases of the exploded cartridges from the barrel; also for expelling or ejecting the said cases from the shoe or breech-chamber, after their withdrawal from the barrel.

Another part consists in constructing and working a spring-stop and guide for guiding the plug and cylindrical hammer, and for holding and releasing the cocked hammer.

Another part consists of a safety-slide or bolt for preventing the accidental discharge of the gun by pressure on the trigger.

Another part consists of a locking check-bolt for preventing the discharge of the gun until the closing-plug is securely locked in its place, or for preventing, in combination with a safety-slide, the accidental discharge of the gun by pressure on the trigger.

Figure 1 represents a side elevation.

Figure 2 in plan, and

Figure 3 in longitudinal vertical section, a direct-acting breech-loading gun, constructed according to my invention; the parts being in the positions which they respectively occupy when the gun is ready to be discharged.

Figure 4 is a plan of the gun, with the breech open ready for the introduction of a cartridge.

Figure 5 is a plan of the under side of the gun without the stock, and the trigger removed, and

Figure 6 is the same, partly in longitudinal section and partly in elevation.

Figure 7 represents the closing-plug separately.

The other figures represent separate portions of the gun, as hereinafter particularly explained.

The same letters of reference are used to indicate the same parts in Figures 1 to 14, both inclusive.

a is the barrel of the gun, *b* the shoe or breech-chamber, and *c* the shoe-cap, screwed to the rear end of the said shoe. Or the shoe *b* and cap *c* may be made in one piece, but it is preferred to make them separately. *d* is the tubular plug or closer, for opening and closing the breech of the barrel *a*. The said plug has in its interior the nearly cylindrical sliding hammer *e*, carrying the percussion-pin or striker *e*², for exploding the cartridge *a*². The sliding hammer *e* is urged forward to discharge the gun by the helical spring *f*, fixed at one end to the rear of the sliding hammer *e*, and bearing at the other end against the solid end or abutment of the plug *d*, as seen in fig. 3. Instead of the riband-spring *f*, a coiled-wire spring may be employed. In the said hammer, *e* is a steel catch or sere, *g*, with which catch or sere the upper hooked end *h*³ of the spring-stop, or arm *h* on the under side of the shoe *b*, engages to hold the said hammer *e* in its cocked position. The spring-arm *h* *h*² is shown separately in Figure 12.

The said catch or sere g turns on a centre at g^1 , and is pressed outwards by a spring, as indicated in dotted lines in fig. 3. The catch or sere g can by this construction be pressed inwards, so as to allow the plug d to pass the hooked end h^2 of the spring-stop or arm h , when the said plug is withdrawn to open the breech. The hooked end h^2 of the stop or arm h is depressed to release the sliding hammer e , by means of the short arm i^2 of the trigger i , bearing on the cross-pin i^3 , carried by the said spring-arm. The spring-arm h h^2 , besides serving to hold the hammer e in its cocked position, serves also as a guide and stop for limiting the motion of the closing-plug d and hammer e , and for guiding them in their motion on opening, closing, and discharging the gun. This is effected by making the hooked end h^2 pass through and work in a longitudinal slot, k , in the bottom of the plug d , and also enter a slot in or bear against the flattened bottom of the hammer e .

The shank of the plug d is prolonged, and has fitted thereon a rotating locking-handle or collar, l . This locking-collar l is shown separately in side elevation and end elevation in Figure 8. On the forward end of the locking-collar l are two lugs or projections m m , the top side of one and the bottom side of the other being bevelled or inclined, as illustrated in the drawing.

In the cap c of the shoe, openings n n are made, the said openings n n being bevelled or inclined on opposite sides. The shape of these opening will be best seen by referring to Figure 9, which represents a cross-section and end elevation of the cap c , the cross-section representing the inner ends of the openings n n , and the elevation the outer ends of the said openings. On pushing the plug d forward to close the breech, the lugs m m enter the openings n n , and by the action of the bevelled parts of the said lugs and openings, the collar l is partly rotated. As soon as the lugs have passed through the openings n n in the shoe-cap c , a partial rotation, in an opposite direction to that described, is given to the said collar, and its lugs m m are made to take into the annular space p behind the solid end of the shoe-cap, and interlock with the said shoe-cap by a self-acting motion. The twisting or partial rotation of the locking-collar l to engage its locking-lugs m m with the shoe-cap, is effected in the following manner: The end of the said locking-collar is made into a box or circular chamber, l^2 , in which a coiled spring, q , is placed, one end of the said spring being fixed to the inner side of the said chamber, and the other end being hooked to a collar or short tube, r , fixed on the end of the shank of the plug d . The end of the chamber l^2 is covered by a cap or plate, s , which said plate carries a stud, s^2 , which works in a slot, l^3 , in the front of the chamber l^2 , and thereby limits the motion of the said locking-collar. The cap or plate s has no rotatory motion, being fixed to the end of the shank of the plug, in the manner represented in fig. 3. A front elevation of the locking-collar, with the cap or plate s removed, is represented in Figure 10, and a front and side elevation of the plate or cap s is represented in Figure 11.

When the lugs m m enter the openings n n in the shoe-cap c , and a partial rotation thereby given to the locking-collar, as hereinbefore described, the spring q is brought into a state of tension, so that when the said lugs have entered the annular space p in the shoe-cap, the said spring being at liberty to move, uncoils itself, and, in doing so, gives a partial rotation to the locking-collar l in the opposite direction, and thereby causes the lugs m m to interlock with the shoe-cap c , as hereinbefore described, and to securely fix the plug in its place.

When it is wished to withdraw the plug d , a motion of partial rotation is given to the locking-collar l , so as to bring its lugs m m opposite the openings n n in the shoe-cap, when the said plug may be withdrawn and the breech opened.

The exterior of the circular chamber l^2 of the locking-collar l is milled, and, with the projecting thumb-piece l^4 , constitutes a handle, by which the locking-collar is rotated, and the breech-plug operated.

Instead of making the locking-lugs on the locking-handle or collar, and openings in the shoe-cap to receive them, as hereinbefore described and represented, the parts may be reversed, that is, the locking-lugs may be formed upon the outside of the shoe-cap, and the handle or collar made to pass over and interlock with the said lugs, substantially in the manner previously described. More than two lugs and openings may be used if thought desirable.

Although I have only described and represented my improved locking-handle or collar as applied to the locking of a hollow or tubular plug in its place, yet the said locking-handle or collar, and the modification thereof, herein described, may be applied to the locking or fastening of all kinds of tubular or solid plugs or breech-closers of breech-loading fire-arms, as have a sliding motion in the breech-shoe or chamber, to open or close the breech.

t is the extractor for withdrawing the case of the exploded cartridge from the barrel a . The said extractor consists of a lever-catch, jointed at t^2 to the forward end of the plug d , as best seen in fig. 3, a hole or recess being made in the said plug, in which the extractor is jointed. The tail t^3 of the extractor-catch or hook t , is made into a spring, and bears upon the top of the plug. Or, instead of making the tail of the extractor hook into a spring, the said tail may be shortened, and a separate spring be employed to raise it, as illustrated in Figure 3'. On pushing home the plug d to close the breech after the introduction of the cartridge a^2 into the barrel a , the extractor-hook t passes over and engages with the rim of the said cartridge, and is pressed firmly upon the said rim while withdrawing the exploded case of the said cartridge from the barrel a , by the spring-tail or the spring under the tail of the extractor. Instead of one extractor-hook, as described and illustrated, the plug may be made to carry two or more extractor-hooks.

In order to eject or expel the exploded case of the cartridge from the shoe or breech-chamber b , upon its withdrawal from the barrel a , a notch or step, u , (see figs. 3 and 4,) is made in the lower side, and near the rear end of the shoe b . The acting edge of the step u is made by a pin, the front edge of which is filed flat, as seen in fig. 4. After the exploded case has been withdrawn from the barrel a by the action of the extractor t , the rim of the said case strikes against or is caught by the said notch or step u , and the said case is tilted or thrown from the breech-chamber, and the breech cleared for reloading.

On the under side of the shoe-cap c is a safety slide or bolt, v , (shown separately in Figure 18,) for prevent-

ing the trigger acting until the said slide or bolt is withdrawn, and thereby preventing the accidental discharge of the gun. The said slide v works in a channel, i^4 , (see fig. 6,) formed in the lump to which the trigger is jointed, and its sliding motion is limited by the stop-pins v^2 and v^3 . The front end of the slide v , when it is pushed home, as represented in fig. 3, engages under a shoulder at h^3 , (see fig. 12,) in the spring-arm h h^2 . The hooked end h^2 of the spring-arm h is thereby incapable of motion, and the sliding hammer e cannot be released to discharge the gun so long as the slide v occupies the position represented. The said slide v projects outside the cap c , and is provided with a handle, v^4 , for working it. The safety-slide or bolt v is made self-acting, by making on the rear and upper side of the said slide or bolt, a projection or shoulder, v^5 , which projection or shoulder, on pushing up the plug d to close the breech, is caught by the inner flange of the handle l^2 of the locking-collar l , and carried forward to the position represented in fig. 3, and thereby prevents the descent of the spring-catch or stop h^2 .

When it is wished to discharge the gun, the slide v is pulled outwards by its handle v^4 . The stud v^3 is thus brought to the bottom of its slot, and the front end of the slide removed from the spring-arm h h^2 . The hooked end h^2 of the said spring-arm or stop may now be depressed by the action of the trigger for releasing the hammer e .

When the gun is required to be fired rapidly, the safety-slide or bolt v is withdrawn, and fixed out of the line of action of the locking-collar l l^2 , by depressing the said slide and removing its stud v^3 from the slot in which it works, and engaging the said stud with the depression v^6 in the under side of the shoe-cap c .

Also, working on the under side of the shoe-cap c , is a locking check-bolt, w , (shown separately in Figure 14,) by the use of which the gun cannot be discharged until the closing-plug d is securely locked in its place. The check-bolt w is connected to a stem, w^2 , in the box or case x embedded firmly in the stock. The inner expanded end w^3 of the stem w^2 bears against the trigger i . The said check-bolt w works in a slot in the box x , a coiled spring in the said box pressing the said bolt towards the trigger i . The bolt w projects upwards and traverses a groove, y , in the shoe-cap c . A groove, z , is also made in the back flange of the handle l^2 of the locking-collar l , the said groove z being made at such a point on the said handle of the locking-collar, as, when the latter is in its locked or secured position, the said groove is opposite the groove y in the shoe-cap.

When the plug d is securely fixed by the position described of the locking-collar, and the trigger i is pulled, the said trigger acts upon the inner end w^3 of the bolt w , and pushes it outwards, the check-bolt w being free to pass through the groove z in the locking-collar. Should, however, the locking-collar not have been turned sufficiently to gain its secure position, the check-bolt w bears against a solid portion of the flange of the handle l^2 of the locking-collar l , and the said bolt, as well as the trigger, is thereby incapable of motion, and the gun cannot be discharged.

The return motion of the trigger i i^2 is produced by the action of the check-bolt w , as will be understood by an examination of the drawing.

Having described in detail the construction and action of the novel parts of the gun, I will now briefly describe the operation of the several parts in opening and closing and discharging the gun.

The parts of the gun being in the respective positions represented in figs. 1, 2, and 3, the safety-slide v has only to be withdrawn to make the gun ready to be discharged. On pulling the trigger i , the check-bolt w passes through the slot z of the locking-collar l , and the hook h^2 of the spring-arm or stop h h^2 is, by the action of the short arm i^2 of the trigger, depressed, and the hammer e released. By the action of the compressed spring f the said hammer e is urged forward, and its pin or striker e^2 is made to pass through the hole in the front end of the plug d , and explode the cartridge a^2 and discharge the gun.

On loosing the trigger i , the spring-arm h h^2 rises by its elasticity, and the check-bolt w and the trigger are returned to the positions represented by the spring of the said check-bolt. In order to reload the gun the handle l^2 of the locking-collar l is partly rotated, and its lugs m m thereby brought opposite the openings n n in the shoe-cap. By now sliding the plug d by the said locking-collar, the breech is opened, as illustrated in fig. 4. In the act of opening the breech, the exploded case of the cartridge is first withdrawn by the extractor-hook t , and next ejected by the step u . The jointed catch or sere g is also pressed inwards, so as to permit the hammer e to pass the hooked end h^2 of the spring-arm or stop h h^2 .

A fresh cartridge being introduced into the barrel a , through the opening b^2 in the shoe b , the plug d is pushed home and made to close the breech, as illustrated in figs. 1, 2, and 3. In closing the breech by the plug d , the following operations are caused to be performed:

The hook of the extractor engages with the rim of the cartridge. The sere or catch g of the hammer e , coming against the part h^2 of the spring-stop, arrests the motion of the said hammer, and causes the spring f to be compressed behind the said hammer, and thereby to cock the gun. The safety-slide v is advanced to the position represented, and finally the plug is locked in its place, by the lugs of the locking-collar engaging with the solid part of the shoe-cap, as hereinbefore described.

Instead of the rectilinear safety-slide or bolt under the shoe-cap, for preventing the accidental discharge of the gun, a circular spring-slide or bolt around the handle of the locking-collar, in combination with the locking check-bolt, hereinbefore described, may be employed in place of the said rectilinear safety-slide or bolt. This arrangement of my invention is represented in figs. 12^a, 13^a, 14^a, and 15—

Figure 12^a representing a side elevation of the gun,

Figure 13^a a plan of under side and end elevation, and

Figures 14^a and 15 cross-sections of the handle of the locking-collar of the gun.

a is the spring-slide or bolt, fitting the periphery of the handle l^2 of the locking-collar, and being situated between the flanges of the said handles. The said slide a is connected to the handle l^2 , and its motion limited

by the pin and slot at *b*, the elasticity of the said spring-slide tending to keep it in the position in which it is placed.

c is the opening in the handle *l'*, through which the check-bolt *w* may pass.

When it is wished to prevent to accidental discharge of the gun, the slide *a* is pushed down by hand, so as to cause it to cover the opening *c* in the handle *l'*, and the check-bolt cannot pass through it, as illustrated in figs. 12^a and 14^a. By removing the slide *a* to the position represented in figs. 13^a and 15, the check-bolt *w* may pass through the opening *c*, and the gun may be discharged, as will be understood from the description hereinbefore given. In this arrangement the box *x* in which the check-bolt works is made solid with the shoe-cap. A separate box is thereby saved.

Figures 16 and 17 represent modifications of the closing-plug of the gun represented in figs. 1, 2, 3, and 4.

In fig. 16, which represents a side and end elevation of the plug *d*, a longitudinal rib, *d'*, is made, along the upper side of the said plug, the rib *d'* being grooved, as best seen in the end elevation. In the groove of the said rib *d'* the extractor-hook or catch *t* is jointed, instead of being jointed in a recess made in the plug, as hereinbefore described.

In fig. 17, which represents a longitudinal section and end elevation of the plug *d*, a cover, *d''*, is attached to the plug at its front end, the said cover being of a length proper to cover the opening in the breech-shoe when the plug is pushed home. The said cover is attached to the plug by the rib *d'*. An opening, *d'''*, is made in the said rib, in which the extractor-hook or catch is jointed, as illustrated in the drawing.

The improvements hereinbefore described, and illustrated in figs. 1 to 17 of the drawings, are applicable to double guns as well as single guns, and either for military or for sporting purposes.

Figure 18 represents, in longitudinal vertical section, a modification of the sliding hammer of the gun, already described, and also a modification for fastening the tubular closing-plug in its place for discharge.

a is the barrel; *b*, the shoe or prolonged breech-end of the barrel; *d*, the tubular closing-plug; *e*, the sliding hammer, made tubular, and containing the coiled spring *f*, for driving forward the hammer *e* to discharge the gun.

The coiled spring *f* bears at one end against the closed front end of the tubular hammer, and at the other end against a piston, *h*, capable of working in the hollow of the said tubular hammer. A cap, *e'*, screwed on the rear end of the said hammer, closes the said end, and the front or shoulder of the said cap *e'* acts as the catch of the hammer. The plug *d* has both a sliding motion and a motion of partial rotation in the breech-shoe, the said plug being operated by the handle *d'*. The plug *d* is provided with a lug, *d''*, which, by a motion of partial rotation, may be brought against the shoulder *b''* in the breech-shoe, so as to lock or securely fasten the plug during fire. The lug *d''* works, on the sliding of the plug, in a longitudinal slot in the breech-shoe.

i is a spring-arm or stop, of the kind hereinbefore described, for holding the hammer *e* in its cocked position. The hook, *i'*, of the said stop works in a longitudinal slot, *k*, in the plug, on the sliding of the said plug, and works in a cross-slot in the said plug when it is partly rotated to lock it for firing.

In the drawing the parts of the gun are represented in the positions which they respectively occupy after the gun has been discharged.

To reload and cock the gun, the handle *d'* of the plug is turned, so as to release its lug *d''* from the shoulder *b''* on the breech-shoe. By then sliding the plug outwards, the breech is opened, the cap *e'* depressing the hooked end *i'* of the arm or stop *i* on passing over it. On pushing up the plug *d*, after the introduction of a fresh cartridge, the motion of the sliding hammer *e* is arrested by the circular shoulder, at *e'*, of the cap *e'* coming against the end, *i'*, of the arm *i*. On continuing the motion of the plug, its rear end strikes against the rod of the piston *h*, and, advancing the said piston in the hollow hammer *e*, compresses the coiled spring *f*. The hammer *e* is thereby cocked and held in its cocked position. After the plug *d* has been pushed home, by giving it a partial rotation, it is locked by the lug *d''* and shoulder *b''*, and the gun is ready to be discharged. On pulling the trigger, the hook *i'* is depressed, and the hammer *e* liberated and driven forward by the compressed spring *f*, and made to discharge the gun, in the manner hereinbefore described.

The tubular hammer *e* and arrangement for cocking the said hammer are applicable to direct-acting guns generally.

Instead of giving the closing-plug a partial rotation by hand, to cause its lug to engage with the fixed shoulder on the breech-shoe, the locking of the plug may be made self-acting, as in the gun herein first described. I effect this by modifying the parts of the gun last described in the manner represented in plan in Figure 19, where *b* is the breech-shoe, *d* the tubular plug, *d''* the locking-lug, *b''* the fixed shoulder against which the lug *d''* bears to fasten the plug, *f* is the slot in the breech-shoe, in which the lug *d''* works when the plug *d* is moved to open or close the breech. Carried by and working with the plug *d*, but capable only of a sliding motion, is a saddle-piece, *c*, to which the extractor-hook or catch may be affixed. On the saddle-piece *c* is a flat spring, *e*, the free end of which bears upon the lug *d''*, and tends to keep it locked or engaged with the shoulder *b''*. When the plug *d* is partly rotated to unfasten it, the spring *e* is compressed, and, on pushing home the plug to close the breech, the said spring *e*, acting on the lug *d''*, gives a partial rotation to the plug, and causes the said lug to engage with the shoulder *b''*, and thereby fasten the plug in its place for discharge. Both the plug *d* and saddle-piece *c* may be provided with covering-plates.

Having now described the nature of my invention, and the manner in which the same is to be performed, I wish it to be understood that I do not limit myself to the precise details herein described, as the same may be varied, without departing from the nature of my invention; but

I claim as my invention—

1. The combination, with the breech-shoe or shoe cap, of the breech-plug, and a spring-locking collar or handle, attached to but having a rotary movement independent of said plug, together with the self-engaging lugs, or their equivalents, for holding the collar to the breech-shoe, in the manner specified, so that, when the

breech-plug is pushed up to close the breech, the said collar shall be first partially rotated in one direction by the action of the said lugs in entering the openings or recesses in which they are held, and then, by the action of its spring, rotated in the opposite direction, to effect the engagement of the lugs, and the consequent interlocking of the collar and breech-shoe, substantially as set forth.

2. The rotating locking-collar, with its lugs and enclosed spring, constructed and combined with the breech-plug, upon which it is mounted in the manner specified, and arranged to operate in connection with the rear of the breech-shoe or shoe-cap and the bevelled openings and annular space formed in said shoe for the reception of the lugs, substantially as and for the purposes set forth.

3. The combination, with the breech-plug and sliding hammer, of a spring-stop and guide h^2 , for guiding the said plug and hammer, and for holding and releasing said hammer, substantially as shown and set forth.

4. The combination, with the slotted tubular breech-plug and the spring-stop and guide h^2 , of the enclosed sliding hammer and its jointed catch and sere, both the said stop and the catch or sere being arranged so as to lie partly within the slot in the tubular breech-plug, substantially as herein shown and set forth.

5. The safety-slide or bolt under the breech-shoe or shoe-cap, for preventing the accidental retraction of the detent or stop h^2 , constructed and arranged to operate in connection with the locking-handle or collar, in the manner shown and specified.

6. The combination and arrangement, with the rotating locking-handle or collar, of the locking check-bolt for preventing the movement of the trigger until the collar and the breech-plug are securely fixed or locked in their places, substantially in the manner set forth.

7. The combination of the trigger check-bolt, and the safety-slide for locking the detent, with the sliding breech-plug and its rotating locking-handle or collar, under the arrangement and for operation as set forth.

THOMAS WILSON. [L. S.]

Witnesses:

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