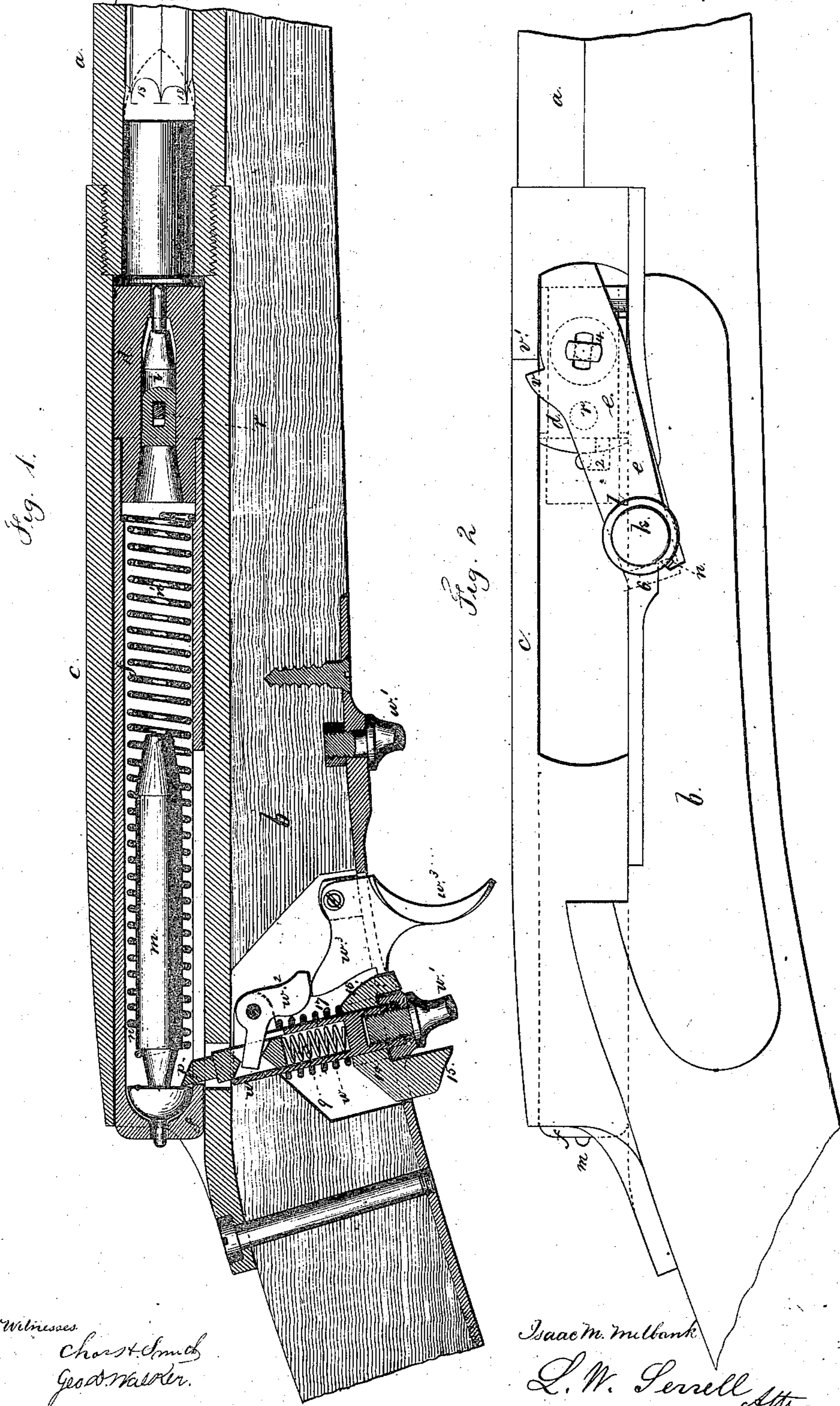


I. M. MILBANK.

Improvement in Breech-Loading Fire-Arms.
No. 125,829.

Patented April 16, 1872.



Witnesses
Chas. Smith
Geo. W. Miller.

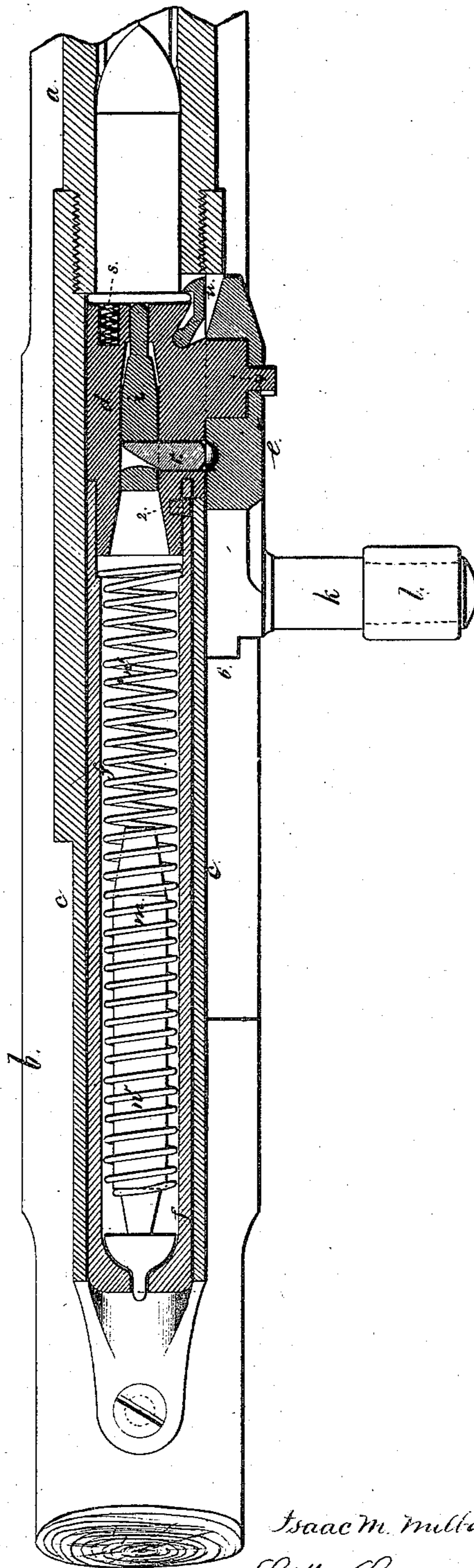
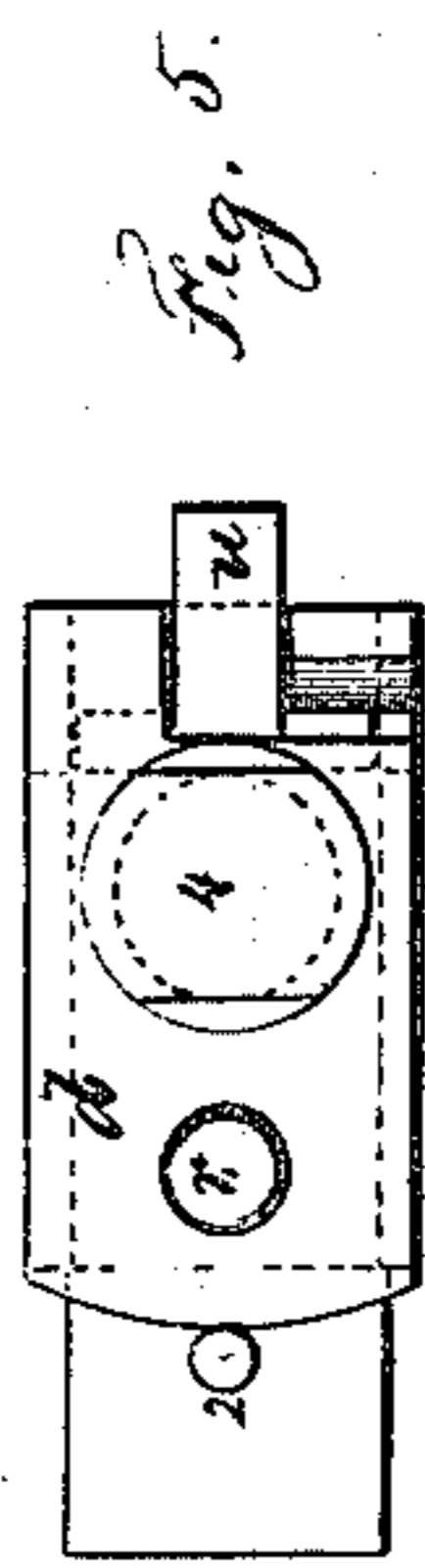
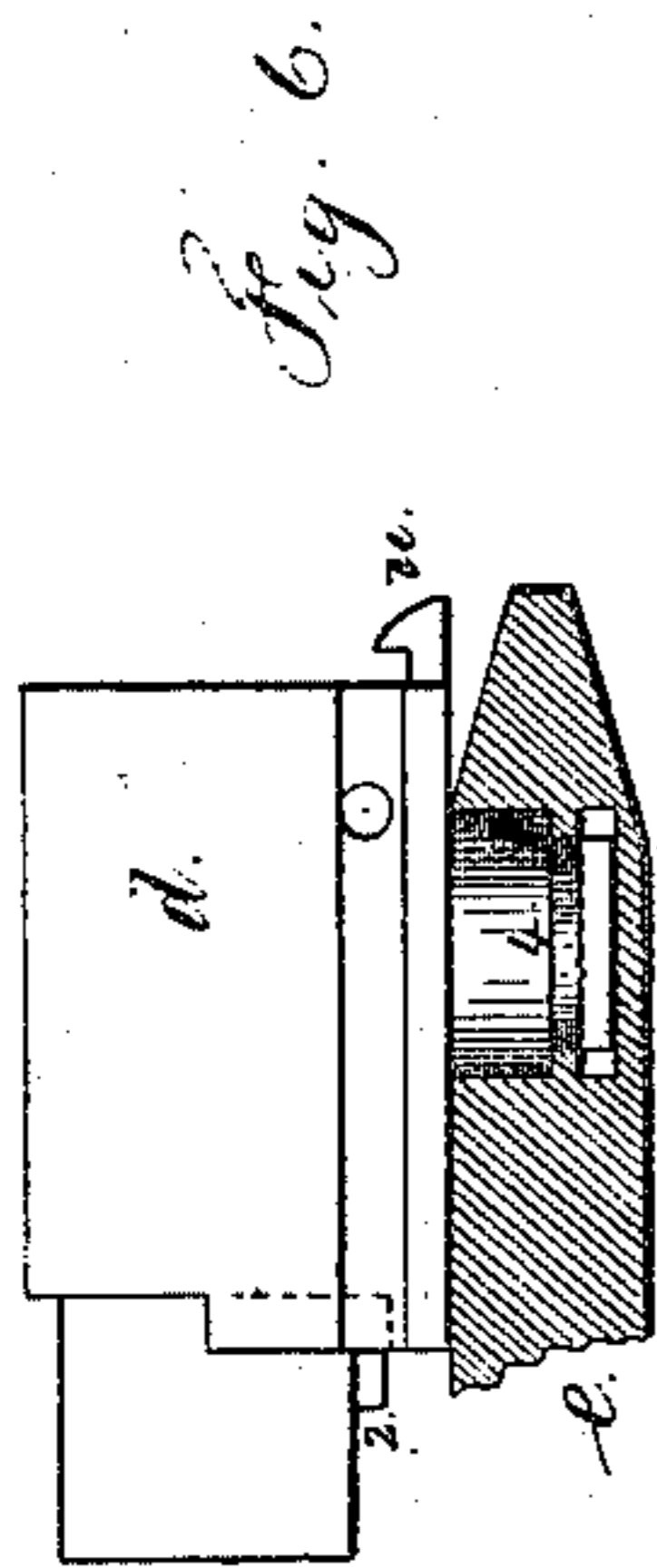
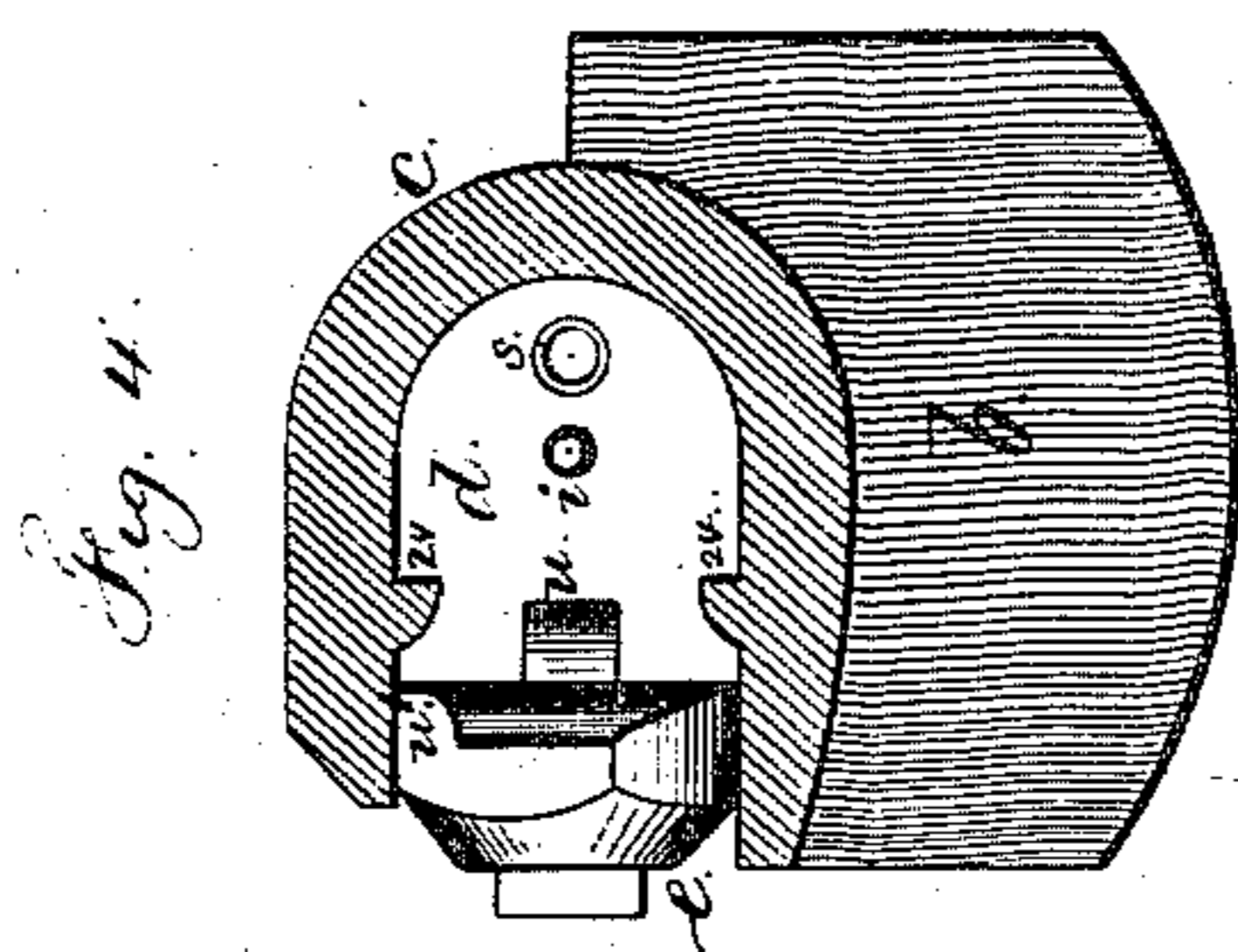
Isaac M. Milbank
L. W. Serrell Atty.

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Witnesses
 Charles Smith
 Geo. D. Maier

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UNITED STATES PATENT OFFICE.

ISAAC M. MILBANK, OF GREENFIELD HILL, CONNECTICUT.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 125,829, dated April 16, 1872; antedated April 13, 1872.

To all whom it may concern:

Be it known that I, ISAAC M. MILBANK, of Greenfield Hill, in the county of Fairfield and State of Connecticut, have invented an Improvement in Breech-Loading Fire-Arms; and the following is hereby declared to be a correct description of the same.

This invention relates to a breech loading fire-arm with a sliding breech operated by a direct movement of the hand, and in which the hammer acts upon the rear end of a central-fire cartridge. The sliding breech-block is connected with a tube, in which is the hammer and a spring to actuate the same. The breech-block is held against the explosion by a lever that also serves as part of the handle in moving said breech. This lever acts upon the swinging retractor to cause it to hold the flange of the cartridge in withdrawing said cartridge. It also acts upon a safety-pin that prevents the hammer driving the firing-pin forward except when the swinging lever is fully to its place.

In the drawing, Figure 1 is a longitudinal section of the breech portion of the fire-arm fitted with my improvements. Fig. 2 is an elevation of the parts in place for firing. Fig. 3 is a horizontal section, showing the breech-block and lever-handle. Fig. 4 is a cross-section of the breech, showing the front end of the breech-pin and lever. Fig. 5 is a side view, and Fig. 6 is a plan, of the breech-block separately; and in the latter figure the lever is shown in section and the connecting device represented in a modified form; and Fig. 7 is a section of the handle to the breech-lever.

The barrel *a*, stock *b*, and housing *c* for the breech mechanism are of the usual character, except so far as being adapted to the improved parts hereafter described. A breech-block, *d*, is made to slide in the housing *c*, said housing being open at the side for inserting the cartridge and for the lever-handle *e* that sustains said breech-block against the explosion, and is also used to give motion to said breech-block endwise. At the rear end of the breech-block *d* is a cylindrical projection receiving the tubular hammer-case *f*, the two being preferably connected by a bayonet-lock, 2, so that the case *f* can be disconnected and drawn out from the rear of *c*, when the trig-

ger-pin is withdrawn from the longitudinal slot of the said case *f*; and I remark that the ribs or grooves 24, serving to guide the breech-block *d* near the barrel, do not extend the entire length of its movement, so that the breech-block can be taken out sidewise after the hammer-case *f* has been disconnected. The grooves may be in the housing, with notches at the points where the breech-block is to be withdrawn, the ribs being on the breech-block. The lever-handle *e* is connected with the breech-block *d* by passing over a gudgeon, 4, projecting from its side, and a screw might be employed to prevent the parts separating; but I prefer and use a circular groove around the outer end of the gudgeon receiving a circular rib in the hole of the lever, a section of said rib being removed, and also a section of the rib on 4 outside said groove, so that the parts will pass each other, and the position of these is such, as shown in Figs. 5 and 6, that the parts can be connected or disconnected when the lever is nearly at right angles to the breech-block and while the parts are out of the gun. When placed in the gun the lever *e* slides in the opening at the side of the housing *c*, and it is turned down into the notch on the shield 6 to take the recoil of the explosion, and the ribs and grooves, being locked together, prevent the lever separating from the gudgeon 4. The handle *k*, projecting from the lever *e*, serves to actuate the breech-block and connected parts; and, in order to lessen concussion of the hand against this handle, I make use of a rubber cylinder, *l*, around said handle, such cylinder contracting into the space provided for it in the handle, and requiring no other attachment. The catch *n* that is in this handle *k* springs into a notch in the recoil-shield 6, and this spring is pressed in by the hand as the lever is turned to open the breech. Within the breech-block *d* is the firing-pin *i*, and within the case *f* is the hammer *m* surrounded by the spring *n'*, said spring being connected at the rear end to the hammer and at the forward end to the interior of the case *f* so that the spring is distended when the hammer is held by the trigger-pin *p*, and the breech is closed; and when said pin or sear *p* is withdrawn the contraction of the spring projects the hammer, and, by striking the fir-

ing-pin *i*, throws that against the center of the cartridge and explodes the same. The spring *n'* might be fitted so as to be compressed in opening the breech and expand in projecting the hammer. A mortise is made through the firing-pin *i*, and in this is a cross safety-pin, *r*, that is made as an incline on the end, and there is a cavity in the side of the lever *e* in line with this safety-pin when the breech *d* and lever *e* are properly in place, so that the firing-pin can be thrown forward by the hammer and the inclines will force the safety-pin partly into such cavity; but, if the lever *e* is not properly turned, then the cavity not coinciding with the pin, the inner surface of the lever will keep the safety-pin projected into the firing-pin, so that the hammer will not project said firing-pin; hence, the cartridge will not be exploded if the parts are not in proper position for resisting the concussion. The shape of this safety-pin may vary, as a neck turned upon the firing-pin and a safety-pin with a concave notch may enter the neck, the safety-pin being operated by the lever *e*, as before.

In order to draw out the cartridge I make use of the retractor *u*; that is hook-shaped at the end, and catches over the flange of the cartridge-case. The breech-block is mortised out so that this retractor and its axis, made in one piece, may be slipped edgewise into place, or removed in the same manner for cleaning or otherwise, thereby simplifying the parts and avoiding risk of loss of small screws or pins in cleaning the gun.

Upon the inner face of the lever *e*, at the end contiguous to the said retractor, a small incline, *u'*, (see Fig. 4,) serves to press down the hook of the retractor and make it hold the cartridge while being drawn out. This incline is operative upon the retractor just as the lever *e* is swung up to draw back the breech-block and cartridge-shell; and a spring-ejector, *s*, made as a slight spiral spring, inserted in a hole at the front of the breech-block, throws out the empty case just as its forward end clears the rear end of the barrel. The projection *v* on the lever *e*, taking against the shoulder *v'* upon the housing *c*, serves to start the cartridge-case and parts in drawing back the breech at the same time that the hook of the retractor is held firmly to the flange of the cartridge-case.

The trigger-pin *p* is placed in a cylinder, *w*, that is screwed upon the inner portion of the trigger-guard *w*¹, and a sear or lever, *w*², interposed between this pin *p* and the trigger *w*³, serves to communicate motion from the latter to draw down the trigger-pin *p* against the action of the spring 9, and liberate the hammer *m* so that it can be projected by its spring *n'*.

The safety-trigger is formed of a slide, 14, around the cylinder *w*, with a projecting end, 15, to be operated by the finger, and a block, 16, to intervene behind the trigger *w*³, and

prevent the trigger being pulled and the arm fired except when the safety-trigger block 16 is pressed up out of the way. The spring 17 around the cylinder *w* presses this safety-trigger down to place when not otherwise acted upon.

The rear end of the rifling in the barrel is made in such a manner as not to scrape the lead of the ball, but to compress the same, and also to produce a firm hold of the rifling on the ball at the commencement of the movement, and thereby insure the rotation of the ball.

Instead of tapering the forward end of the chamber of the barrel where the rifling ends, as usual, I simply taper the rib portion of the rifling, as shown at 18, and leave the edges of the rifling in the form of projecting chisel-shaped points or edges, in order that these may score the ball or its case as soon as it commences to move and before the compression of the ball or its case takes place in entering the smaller part of the barrel. Thereby the ball will be effectually rotated by the rifling. This construction of rifling also allows the ball or its sabot to be pressed into place with ease.

The hammer and firing-pin might be made in one piece if the safety-pin acted against a sloping shoulder instead of passing through a mortise.

It is to be understood that when the breech-block, spring-case, and parts are drawn back the trigger-pin *p* holds the hammer; and as the breech-block is forced forward the hammer-spring is strained. Thereby the hammer has the same extent of motion as the breech; and when the breech is closed, the rear end of the hammer, projecting slightly, shows that the parts are in place. The hole in which the retractor works may be slightly elongated to allow of an end movement to the retractor to accommodate the position of the flange of the cartridge.

I claim as my invention—

1. The hammer-case *f*, receiving the hammer *m* and contractile spring *n'*, as shown, and removably connected to the breech-block *d*, as and for the purposes set forth.

2. The breech-lever *e* upon a gudgeon at the side of the breech-block, and connected thereto substantially as set forth, in combination with the recoil shield 6, substantially as specified.

3. The swinging retractor *u* and its axial pin slipped into a notch in the edge of the breech-block, in combination with the lever *e*, as and for the purposes set forth.

4. The safety-pin *r* operated by the lever *e*, in combination with the firing-pin *i* and breech-block *d*, substantially as and for the purposes set forth.

5. The spring *s* inserted in the face of the breech-block *d* and acting as an ejector, for the purposes and as set forth.

6. The rubber cylinder *l* combined with and

applied to the handle *k* of the breech-lever *e*, in the manner and for the purposes set forth.

7. The lever *e* made with the projection *v* for starting the breech and cartridge-case as they are drawn back, as set forth.

8. The safety-trigger sliding upon the cylinder *w*, in combination with said cylinder *w*, trigger *w*³, trigger-pin *p*, and sear *w*², as set forth.

9. The rifling in the barrel made with the

edges of the rifling-grooves projecting toward the ball, and the rifling-ribs beveled between said projecting edges at the forward end of the cartridge-chamber, for the purposes specified.

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