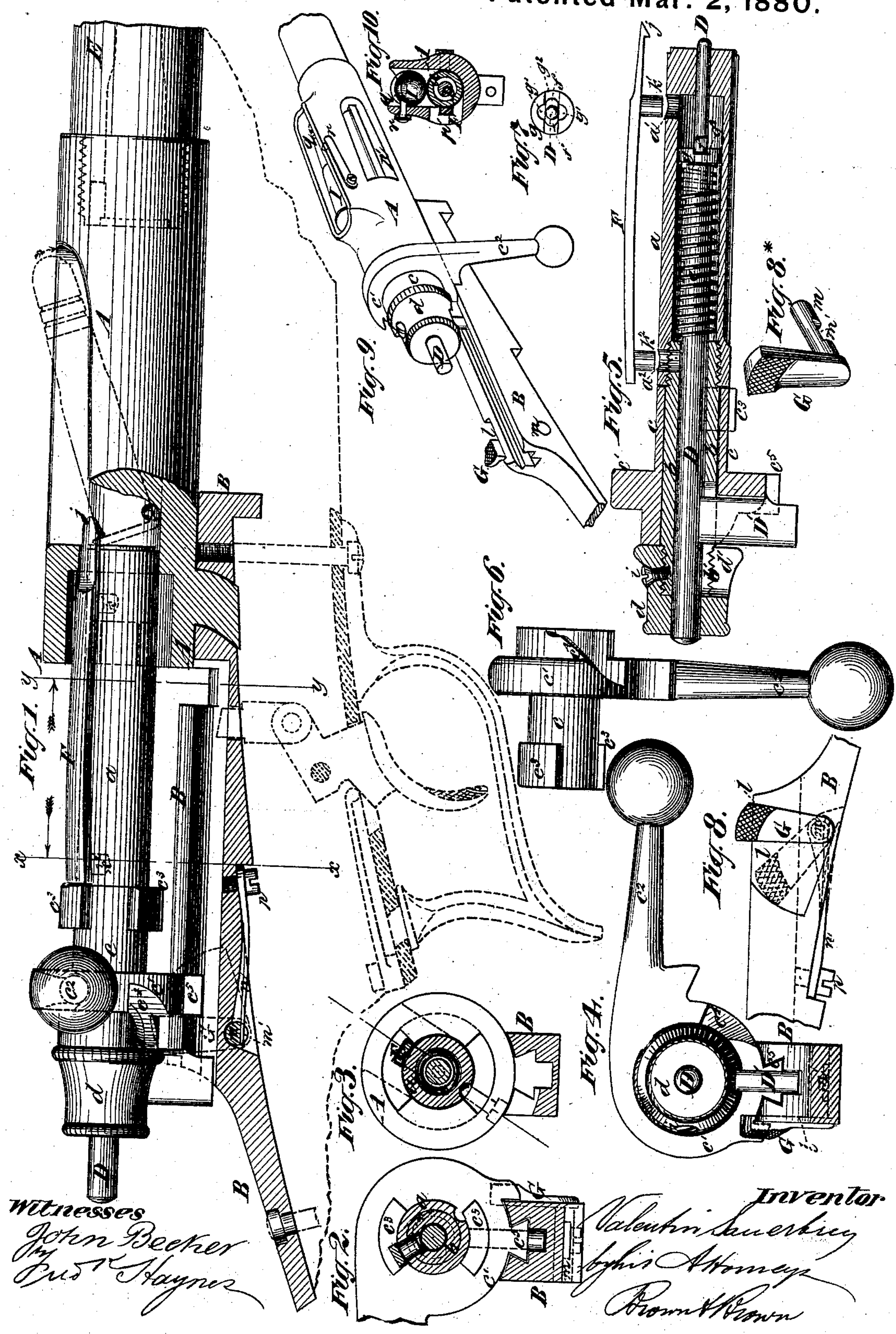


V. SAUERBREY.
Breech-Loading Fire-Arm.

No. 225,168.

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BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 225,168, dated March 2, 1880.

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To all whom it may concern:

Be it known that I, VALENTIN SAUERBREY, of Basle, in the Republic of Switzerland, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, for which I have obtained a brevet in the Kingdom of Belgium, dated December 4, 1877; a brevet in the Republic of France, dated December 5, 1877, and a patent in the Empire of Germany, dated December 22, 1877; and I do hereby declare that the following is a description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to that class of breech-loading fire-arms having a cylindrical bolt-like breech sliding backward and forward longitudinally toward and from the barrel.

The invention consists in a novel and simple construction of such breech, whereby facility and cheapness of construction are provided for, and great facility is afforded for the insertion of the mainspring and firing-pin; also, in a novel method of attaching the cartridge-shell extractor to said breech, whereby it is made to lock together the principal pieces of which the said breech is composed; also, in a novel method of providing for the application of the pressure of the mainspring to the firing-pin within such breech.

It further consists in a novel and simple construction of the breech-receiver, whereby convenient provision is afforded for firing two consecutive shots in rapid succession without the necessity of handling the second cartridge after the first is fired.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a longitudinal vertical and partly sectional view, exhibiting my improved breech system. Fig. 2 is a transverse sectional view taken in the line $x x$, looking backward. Fig. 3 is a transverse sectional view taken in the line $y y$, looking forward. Fig. 4 is a transverse sectional view taken in the rear of the breech. Fig. 5 is a central longitudinal sectional view of the breech, showing the cartridge-shell extractor detached. Fig. 6 is a side view of the breech-operating lever. Fig. 7 is a front view of the end of the firing-pin and the device for confining the mainspring thereto. Fig. 8 is a

side view of the device for stopping and permitting the entire withdrawal of the breech. Fig. 8* is a perspective view of the same. Fig. 9 is a perspective view of a breech system, illustrating my improvement in the breech-receiver. Fig. 10 is a transverse section corresponding with Fig. 9.

A is the breech-receiver, which is shown in Figs. 1 and 3, of a cylindrical construction, and having the barrel E screwed into its front end, substantially like that of other breech-loading fire-arms of this class, but which is shown in Figs. 9 and 10 as somewhat modified, as will be hereinafter explained.

B is the tail-piece or false breech, through the medium of which the breech-receiver is secured to the stock.

$a b c d$ indicate the breech, which presents externally the form of a cylindrical bolt, having around its rear portion a collar, c' , from which projects the handle c^2 , by which it is manipulated in loading and firing. This breech, (shown most clearly in Fig. 5, but also shown in Figs. 1, 2, 3, 4,) though externally like the breech-piece of other fire-arms of this class, is differently constructed—viz., it consists of four distinct pieces, $a b c d$.

The front piece, a , of the breech is externally of cylindrical form and of the full size of the bolt. Its forward part is nearly solid, being only bored large enough for the passage of the forward part of the firing-pin D; but for the greater part of its length it is bored large enough for the reception of the spiral mainspring e , which surrounds the firing-pin, and in the extreme rear portion there is cut a left-handed female screw-thread.

The piece b is a hollow cylinder of an external diameter smaller than a , with a male screw-thread at its front end to screw into the female screw-thread in the rear end of a , and with an external screw-thread at its rear end. Its internal diameter is just large enough for the free passage of the firing-pin D.

The piece c , which is shown separately in Fig. 6, and which may be called the "locking-piece," is a sleeve fitting loosely to the exterior of b , and has the collar c' and handle c^2 formed upon the exterior. In front of the said collar it is cylindrical, of an external diameter cor-

responding with the piece *a*, and near its front end are the tenons $c^3 c^3$, which are locked in the usual manner into the breech-receiver, by turning the handle c^2 after the breech has been pushed forward after loading. This locking-piece *c* has provided upon it the spiral-faced incline or tumbler c^4 (see Fig. 6) for operation on the tail-piece *D'* of the firing-pin, to draw back the said pin for cocking the gun. The collar c' has formed upon it a dovetail, c^5 , which slides in a corresponding dovetail groove in the top of the false breech *B*, as the breech is moved backward and forward for loading.

The piece *d*, which constitutes the head of the breech, has its rear part bored to correspond with the bore of *b* for the passage of the firing-pin *D*, and has in its front part a female screw-thread, to provide for its being screwed onto *b* after the insertion of the firing-pin through the latter. A screw, *i*, inserted through *d* and screwing into *b*, prevents the former from turning on the latter, and keeps in line the slots $b' d'$, provided in *b* and *d* for the passage of the tail-piece *D'* of the firing-pin.

The firing-pin *D* consists of a cylindrical pin, the front portion of which is of reduced size, and which, near the rear of its reduced portion, is provided on opposite sides with feathers *f f*, which are capable of passing through an oblong opening, g' , in a collar, *g*, which, on being slipped back over the reduced front portion of the pin beyond the feathers *f f*, and then turned on the neck behind the said feathers, is made to form a bearing for the front end of the mainspring, the rear end of which bears against the front end of the piece *b*. A notch, g^2 , provided in the front face of the collar, and running transverse to the length of the elongated opening *g*, to receive the feathers *f f*, prevents the accidental turning of the collar, the mainspring pressing the collar toward the feathers and preventing the latter from leaving the notch.

F is the cartridge-shell extractor, consisting of a slightly-curved piece of spring-steel, as shown in Fig. 5, with a hook, *j*, at its front end, and with two studs, $k' k^2$, on its inner face for attaching it to the breech. The front stud, k' , enters a hole, a' , in the front piece, *a*, of the breech, and the rear stud, k^2 , enters matching holes a^2 , which are provided in the said piece *a* and the piece *b*, so that by means of the stud k^2 the extractor is made to serve the additional purpose of securing the parts *a b* of the breech together by preventing the unscrewing of the one from the other. The extractor works in a longitudinal groove in the breech-receiver, and is so supported at its back in the breech-receiver that it will draw the cartridge-shell from the barrel as it is drawn back with the breech, but that its hook will spring over the flange of the cartridge-shell as it moves forward with the breech.

To put the parts of the breech, the mainspring, the firing-pin, and the extractor together, first insert the firing-pin through the

piece *b* from the rear thereof; second, screw the head *d* on the piece *b*; third, insert and screw in the screw *i*; fourth, slip the mainspring over the front of the firing-pin back to the piece *b*; fifth, push the collar *g* over the front of the firing-pin beyond the feathers *f* and turn it one-quarter round; sixth, place the piece *c* over the piece *b*; seventh, screw the front piece, *a*, onto *b*; eighth, insert the studs of the extractor in the holes $a' a^2$. To take out the mainspring it is only necessary, first, to take off the extractor, next to screw off the front piece, *a*, and then to remove the collar *g*, when the spring will slip off the firing-pin.

The manipulation of this breech in loading and firing does not differ from that of many other fire-arms of this class—viz., when the breech is forward it may be locked and unlocked by taking hold of the handle c^2 and turning the locking-piece *c*, and when unlocked it may be moved back and forth by means of the handle.

To prevent the breech from being drawn entirely out of the gun until desired to do so, and then affording facility for doing so, I arrange in one side of the false breech or tail piece *B* a stop-piece, *G*, the form and position of which are shown in Figs. 2, 4, 8, 8*, 9. This stop-piece is partly received within a recess, *l*, in one side of the piece *B*, and it has secured firmly to it a pivot, *m*, which fits a hole bored wholly or partly through the piece *B*. This pivot has a flattened notch, m' , at about the middle of its length for the reception of a spring, *n*, which is secured to the bottom of the piece *B* by a screw, *p*, as shown in Fig. 1. This spring serves two purposes, viz: first, by entering between the sides of the notch m' , it retains the pivot in its place in the piece *B*, and, second, by pressing against the flat of the notch, as shown in Fig. 1, it holds the stop in a nearly upright position against the back of the recess *l*, as shown in Figs. 8 and 9, in which position it projects above the piece *B*, and so that as the breech is drawn back the collar c' comes against it, as shown in Fig. 4, and prevents any further backward movement.

To permit the taking out of the breech it is only necessary to push the stop-piece *G* forward and downward to the position shown in dotted outline in Fig. 8, in which the collar c' may pass over it, when the breech may be withdrawn entirely from the breech-receiver.

In reinserting the breech-piece the stop *G* will yield to the passage of the collar c' , and will spring up behind the said collar as soon as the latter has passed by.

The breech-receiver *A* shown in Figs. 9 and 10 only differs from that shown in Figs. 1 and 3, and from others, in the opening p' , for the ejection of the cartridge-shell more to the right than usual, and in having another opening, *q*, at the top for the insertion of the cartridges. This latter opening is made with an upward projection high enough to form a magazine

of sufficient depth to receive one reserve cartridge after the gun has been loaded, the said reserve cartridge I, Fig. 10, then lying above the breech, where it is retained by a spring, 5 *r*, which is attached to the exterior of the breech-receiver, and which projects a little way into the magazine over the reserve cartridge.

When the first cartridge has been fired and 10 the breech has been drawn back and the shell of that cartridge ejected through the opening *p'*, the second cartridge drops from the magazine *q* into the center of the breech-receiver, whence it is forced into the chamber or barrel 15 by the next forward movement of the breech.

What I claim as my invention is—

1. The breech composed of the two rigidly-attached cylindrical centrally-bored pieces *a* 20 *b*, the former having a bore of larger diameter than that of the latter, the head *d*, firmly secured to the said piece *b*, and the sleeve *c*, provided with the spiral-faced tumbler *c'*, fitted to the said piece *b*, and confined between the piece *a* and head *d*, and carrying the locking- 25 tenons *c''* and the handle *c'''*, in combination with the firing-pin *D*, provided with the tail-piece *D'*, and having the mainspring *e* coiled around its forward portion, said spring abut-

ting at its front end against a collar on the pin, and its rear end against the end of piece 30 *b*, the whole constructed and arranged substantially as herein described.

2. The ejector constructed with studs *k'* *k''*, in combination with the two cylindrical portions *a* *b* of the breech, into both of which one 35 of the said studs enters for the purpose of locking them together, substantially as herein described.

3. The combination, with the mainspring, of the firing-pin *D*, constructed with feathers 40 *f* *f'*, and the collar *g*, constructed with an elongated opening, *g'*, and a groove, *g''*, at right angles to said opening, substantially as and for the purpose herein specified.

4. The combination, with the sliding-bolt 45 breech, of the breech-receiver having a lateral discharge-opening for the ejection of the cartridge-shell and the separate top opening or magazine *q*, for receiving an extra cartridge, and provided with the spring *r*, for retaining 50 the cartridge from escaping outwardly from said magazine, substantially as described.

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Witnesses:

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