

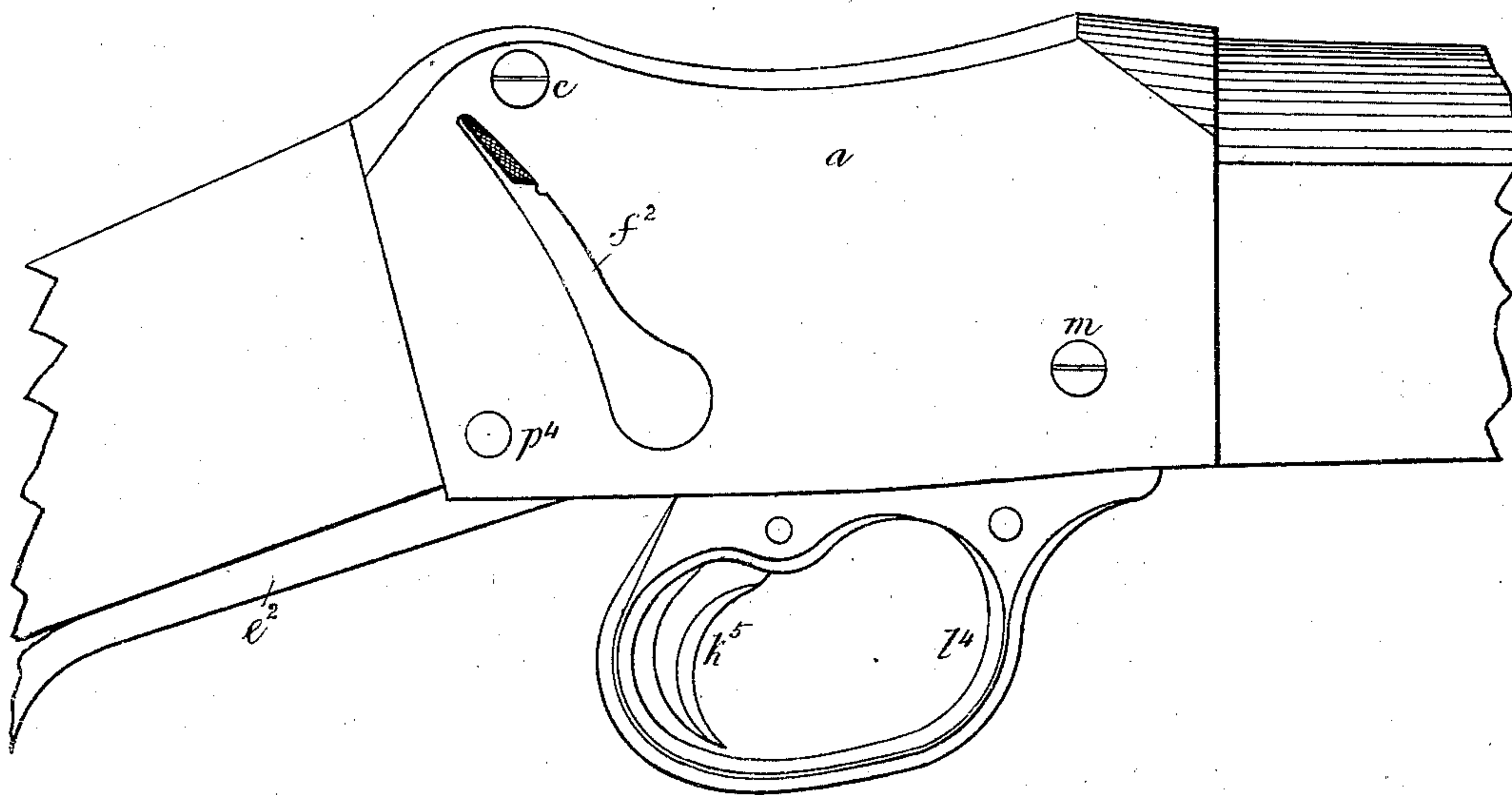
J. F. SWINBURN.

Breech-Loading Fire-Arms,

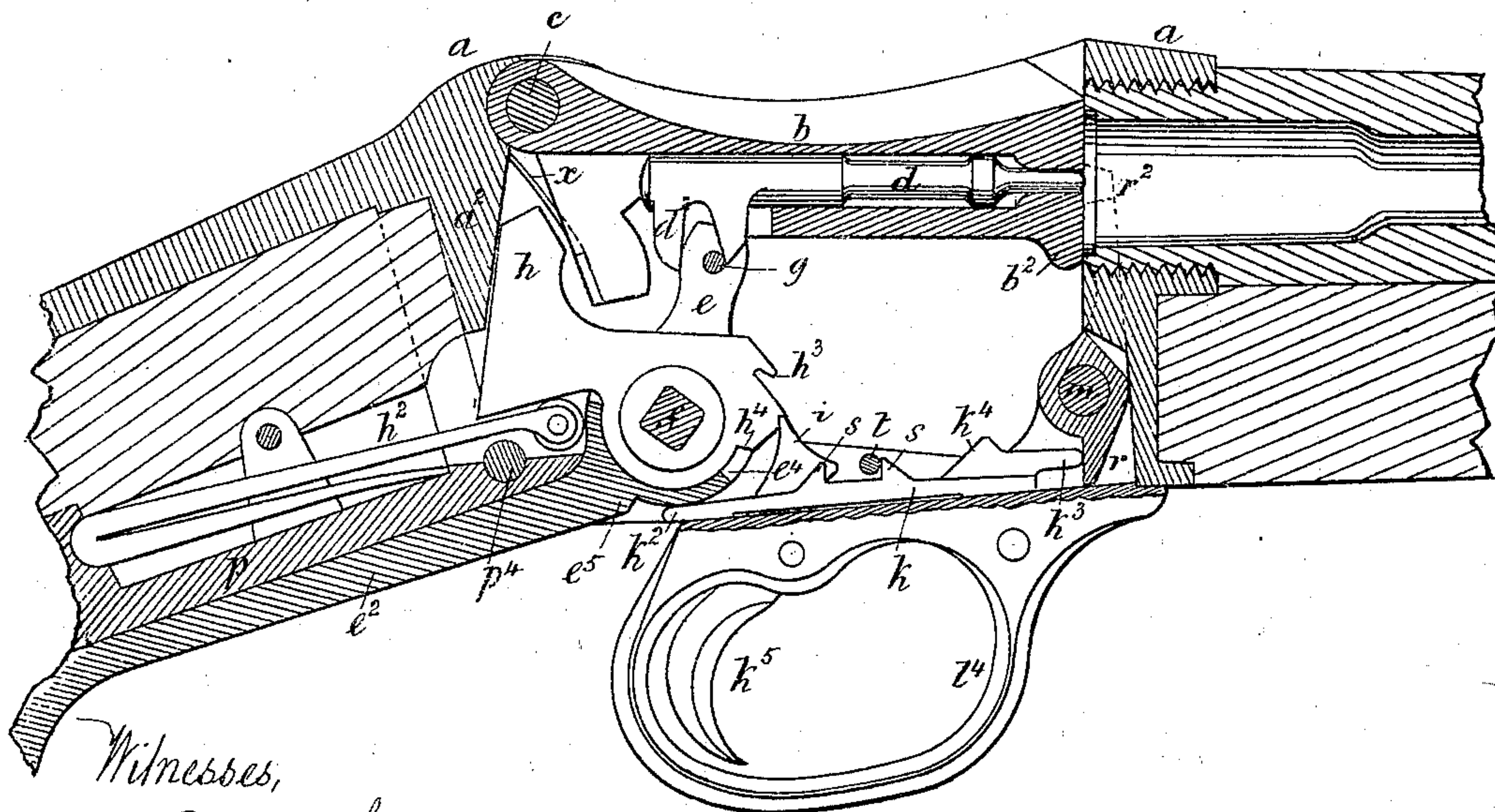
No. 134,014.

Patented Dec. 17, 1872.

F I G I



F I G II



Witnesses,

Richard Sherrett  
Henry Sherrett

Inventor

John Field Swinburn

## Breech-Loading Fire-Arms,

Patented Dec. 17, 1872.



Richard Skerrett  
Henry Skerrett

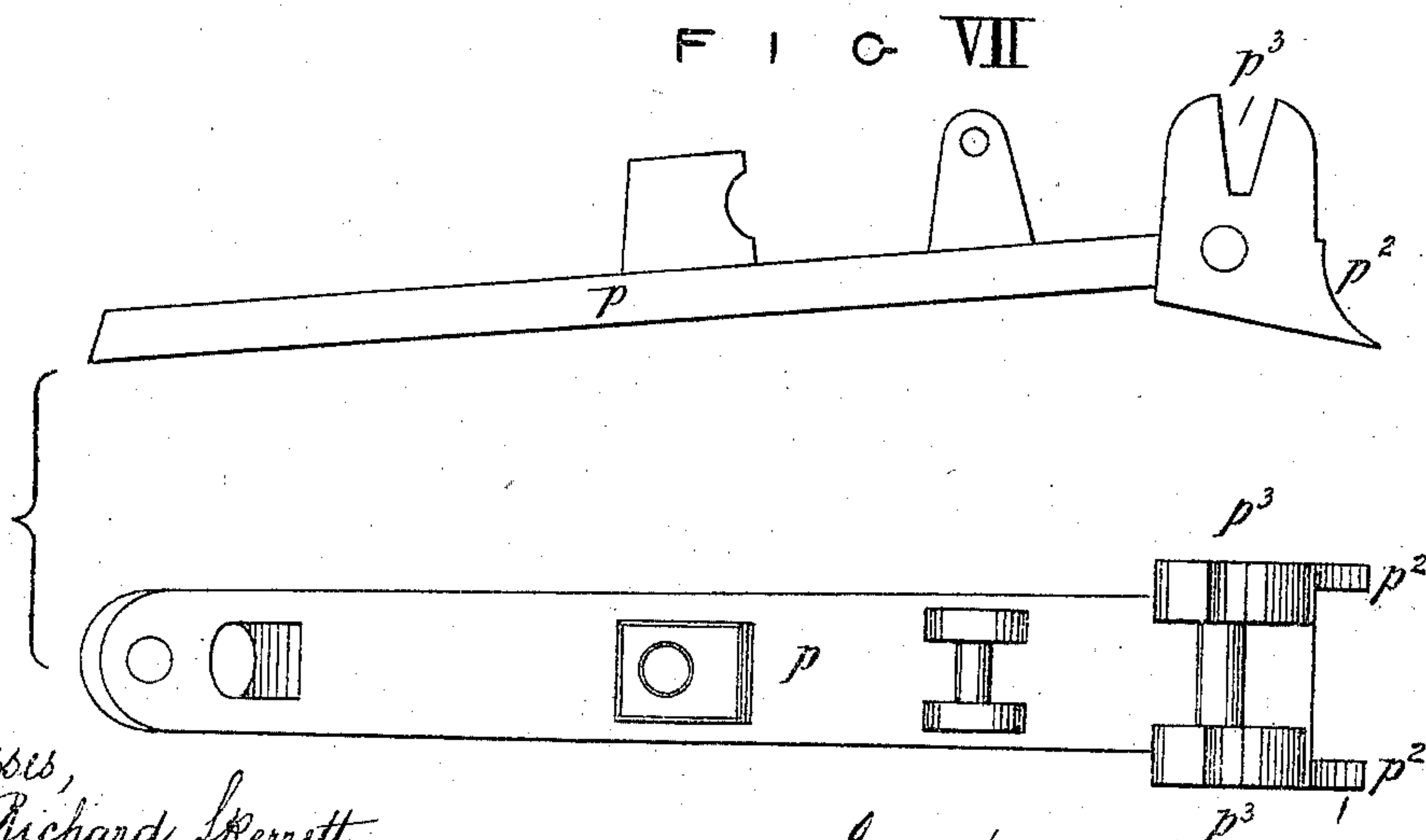
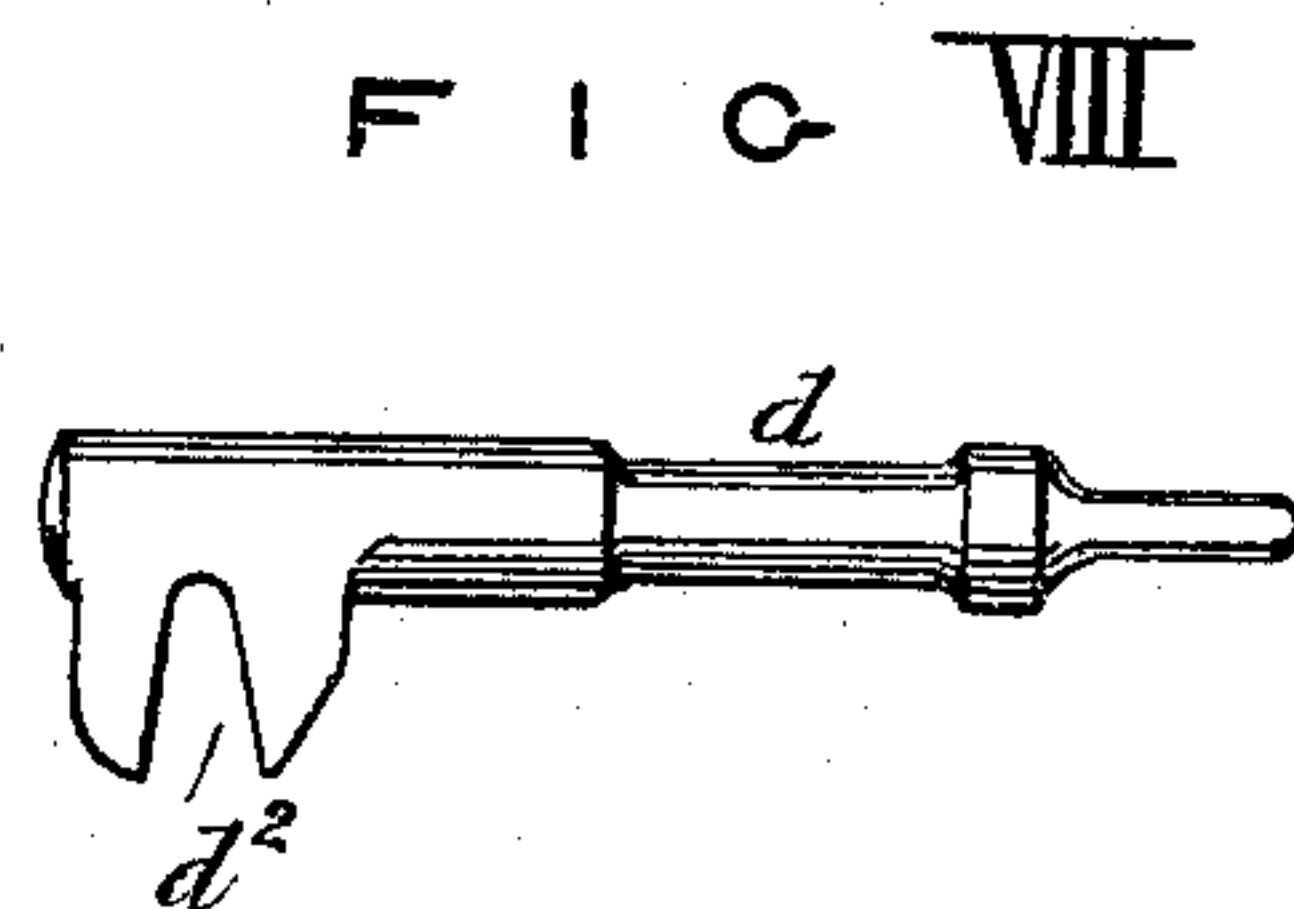
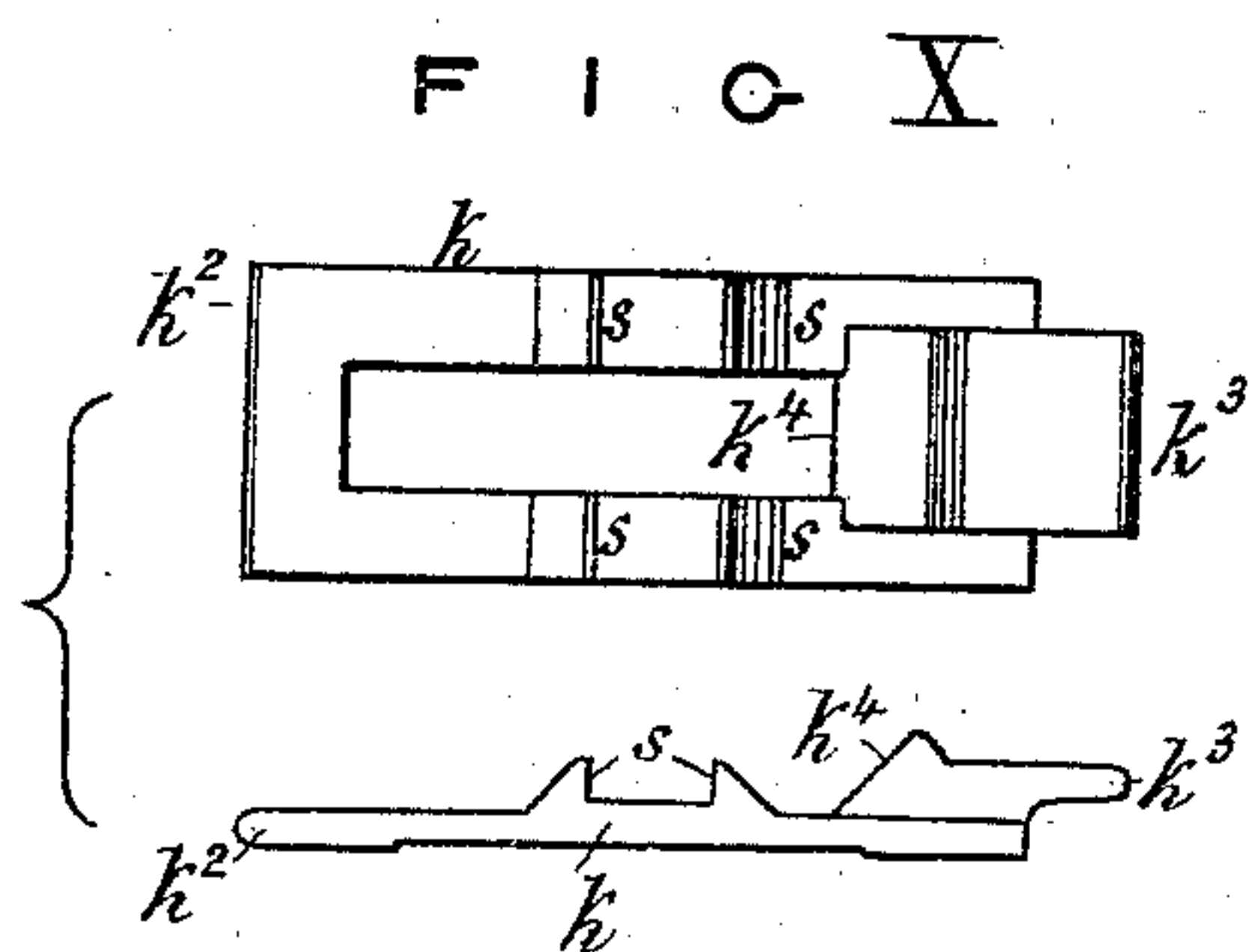
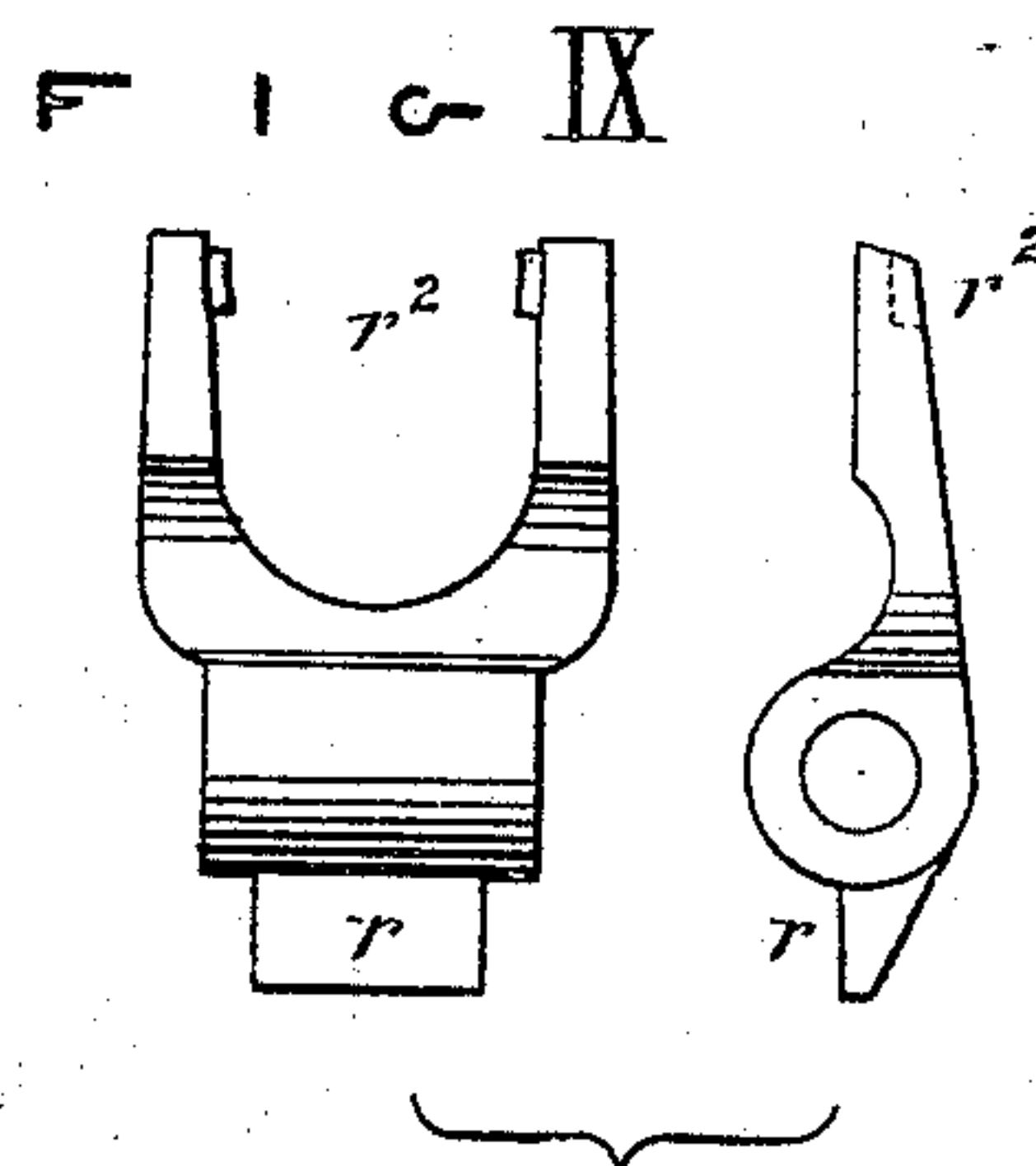
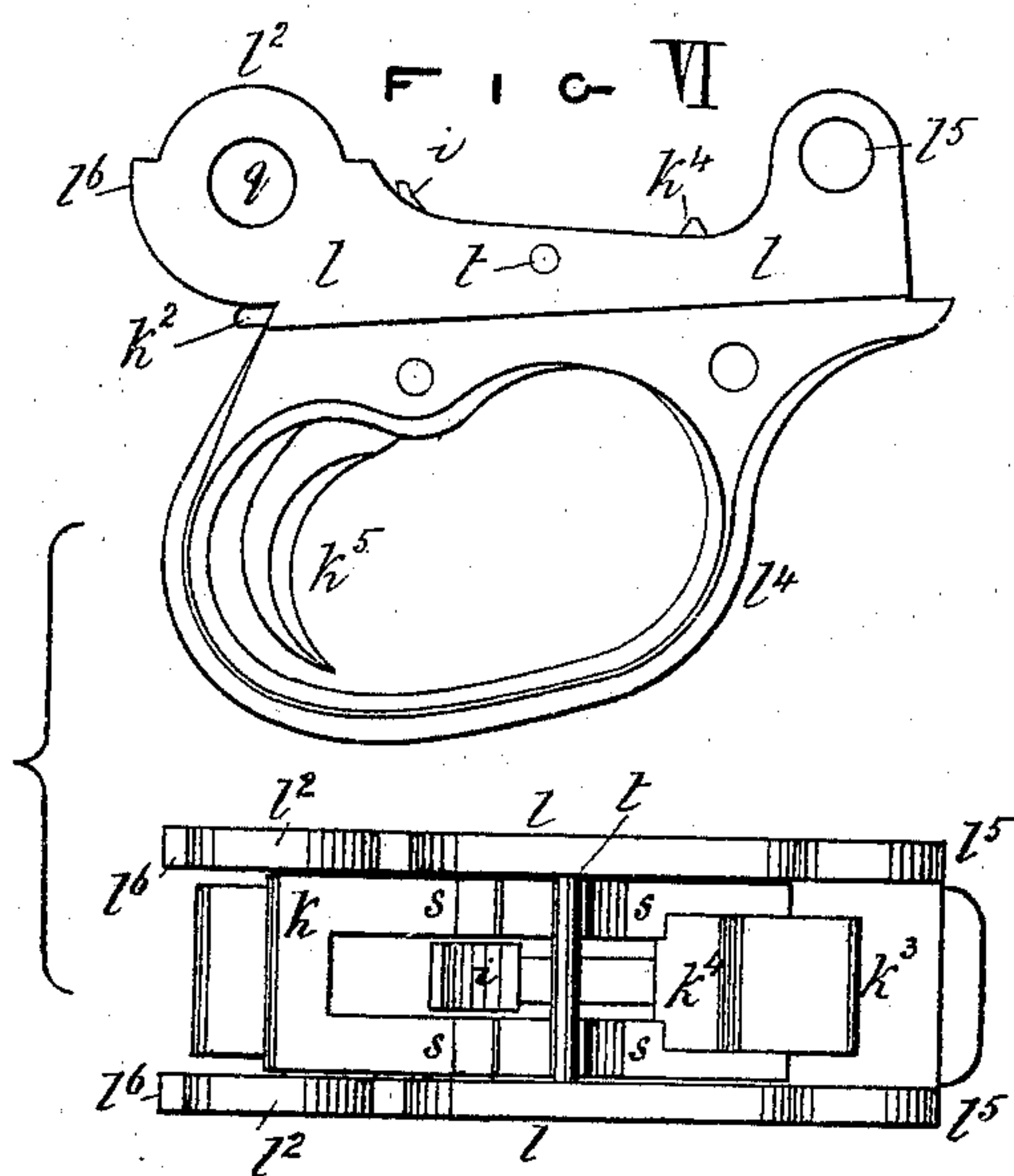
Inventor

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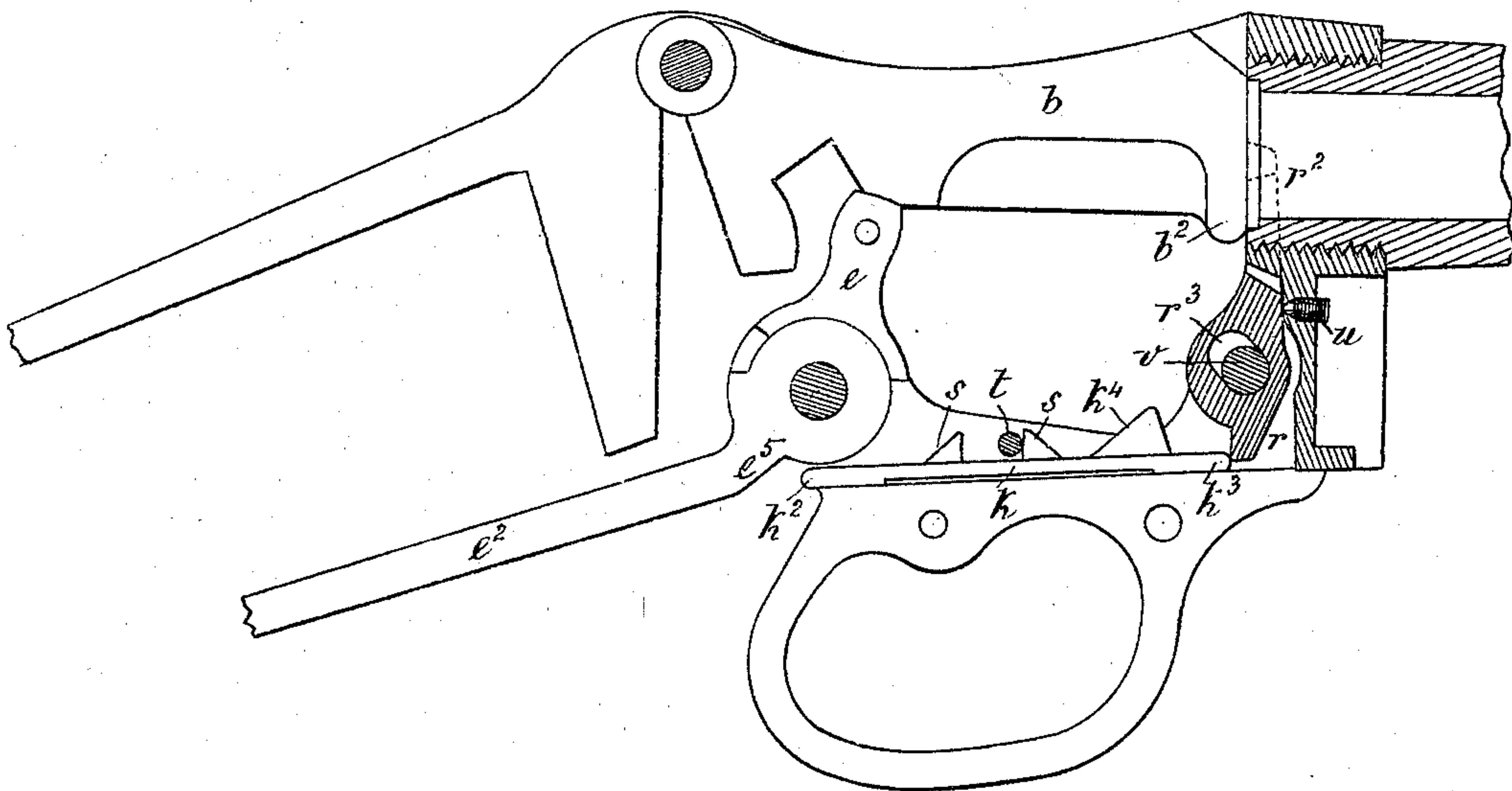


**J. F. SWINBURN.**  
**Breech-Loading Fire-Arms,**

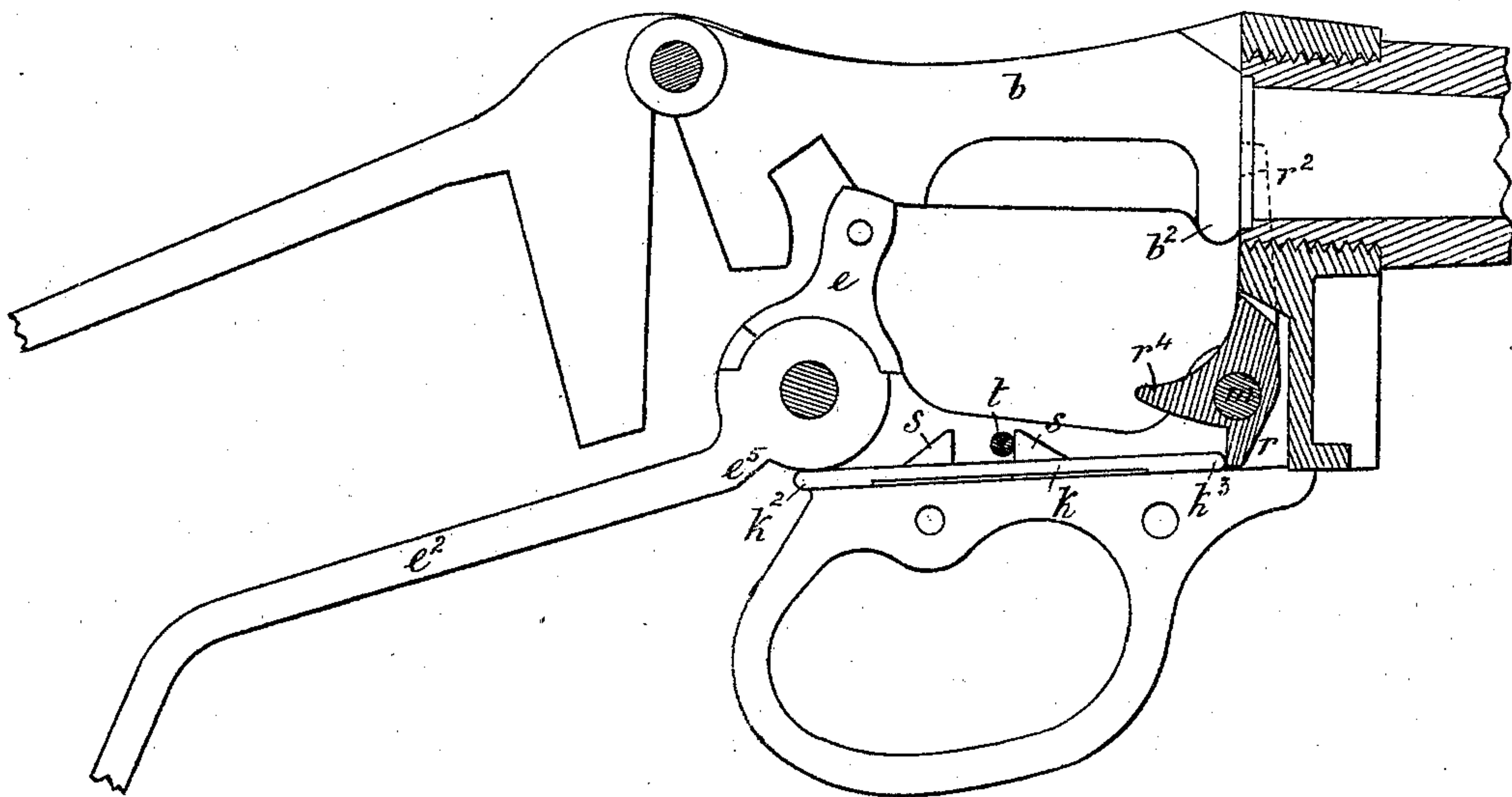
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**FIG XI**



**FIG XII**



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# UNITED STATES PATENT OFFICE.

JOHN F. SWINBURN, OF BIRMINGHAM, ENGLAND.

## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 134,014, dated December 17, 1872.

*To all whom it may concern:*

Be it known that I, JOHN FIELD SWINBURN, of Birmingham, in the county of Warwick, England, gun-manufacturer, have invented certain Improvements in Breech-Loading Small-Arms, of which the following is a specification:

My invention relates principally to breech-loading small-arms in which the breech is opened and closed by means of a jointed or hinged falling-block working in a mortise in the body or shoe of the fire-arm. Part of my improvements may, however, be applied to breech-loading small-arms of other kinds. My invention consists, first, of the arrangement or combination of parts, hereinafter described and illustrated in the accompanying drawing, for withdrawing the striker or striking-pin on the opening of the breech and returning the said striker or striking-pin on the closing of the breech into the position for firing. My invention consists, secondly, of the combination or arrangement of parts, hereinafter described and illustrated in the accompanying drawing, for attaching the trigger and guard plate to the body of the fire-arm. My invention consists, lastly, of the arrangements or combinations of parts, hereinafter described, and illustrated in the accompanying drawing, for effecting the extraction of the empty cases of cartridges from the barrel of the fire-arm.

Figure 1 represents in side elevation, and Fig. 2 in longitudinal vertical section, the breech end of a falling-block gun containing my improvements, the parts being represented in the positions which they respectively occupy when the gun is ready for discharge. Fig. 3 represents a side elevation of the same, a portion of the breech-body or shoe being broken off. Figs. 4, 5, 6, 7, 8, 9, and 10 represent detached portions of the same, as hereinafter described.

The same letters indicate the same parts in the several figures of the drawing.

$a$  is the breech-body or shoe in a mortise, in which the falling-block  $b$  works, said block turning on the hinge or center at  $c$ .  $d$  is the striker or striking-pin, shown detached in Fig. 8, the rear end of which is acted upon by the hammer to discharge the gun. The said striking-pin  $d$  works freely in a cylindrical hole in the hinged block  $b$ , the said striking-pin, when the block is raised and supported in the body

$a$  for firing, working in a line with the axis of the barrel. The motion of the said pin is thus direct, and there is little risk of miss fire.  $e e^2$  is the hand-lever by means of which the block  $b$  is lowered for opening the breech and the hammer cocked, the said block raised and supported for closing the breech and the striking-pin  $d$  withdrawn on the lowering of the block. The said hand-lever turns freely without friction on the pin or center  $f$ , the said hand-lever being supported in the manner hereinafter described. The long arm  $e^2$  of the lever is situated on the under side of the gun, and the upper end or head  $e$ , which is forked, works within the breech-body. The hand-lever  $e e^2$  is represented detached, in elevation and plan, in Fig. 4. The striking-pin  $d$  has at the under side of its rear end a fork,  $d^2$ , in which a cross-pin,  $g$ , at the head  $e$  of the hand-lever engages, as represented in the drawing. When the hand-lever  $e e^2$  is depressed to open the breech the pin  $g$  strikes against the rear branch of the fork  $d^2$  and withdraws the striking-pin  $d$  from the barrel. On the raising of the hand-lever to close the breech the cross-pin  $g$  at the head of the lever brings the striker or striking-pin into the position ready to receive the blow of the hammer, as represented in Fig. 2, and prevents it retiring from that position.  $h$  is the hammer of the gun, situated and working between the branches of the forked head  $e$  of the hand-lever  $e e^2$ , and turning on the same center  $f$  as the said lever  $e e^2$ .  $h^2$  is the mainspring actuating the hammer.  $h^3$  is the tumbler on the hammer, provided with half and full cock bents.  $i$  is the sear for engaging with the bents of the tumbler, and  $k^5$  is the trigger. On the head  $e$  of the hand-lever is a shoulder,  $e^4$ , and on the tumbler of the hammer is a shoulder,  $h^4$ , which, when the hammer has been discharged, is situated near the shoulder  $e^4$  on the lever. On the depression of the hand-lever to open the breech, the shoulder  $e^4$  of the said lever, acting upon the shoulder  $h^4$  of the hammer  $h$ , lifts the said hammer into its cocked position, the said hammer being held in that position by the sear  $i$  engaging with the full-cock bent of the tumbler, as represented in the drawing. On raising the hand-lever  $e e^2$  so as to bring the block  $b$  into the position proper for firing, the mainspring  $h^2$  offers no resistance to the motion of the block, and the wearing of the head



of the lever, which takes place in guns having the mainspring within the block, is avoided. In place of, or in addition to the shoulders  $e^4 h^4$  for cocking the hammer  $h$  the said cocking may be effected by a heel-piece at the rear end of the block  $b$  acting on the hammer when the said block is lowered to open the breech. The hammer  $h$  is situated upon a square part of the axis or pin  $f$ , and consequently moves with the axis, while the hand-lever  $e e^2$  works loosely upon the cylindrical parts of the said axis on either side the square part of the said axis. The axis  $f$  is shown separately in Fig. 5. By this means the hand-lever  $e e^2$  moves with little friction on the pin or axis  $f$ , the said hand-lever being supported by the concave flanges  $e^3 e^3$  of the head  $e$  of the hand-lever working upon the bushes  $l^2$  on the trigger and guard-plate  $l$ . On the end of the axis  $f$  of the hammer is an indicator,  $f^2$ , (see Fig. 1,) for indicating the position of the said hammer. This indicator is made in the form of an arm or thumb-plate, and may be used to half-cock the hammer and to full-cock the hammer for discharge without moving the hand-lever  $e e^2$ .

The trigger and guard plate is connected to the body of the gun in the following manner: The trigger and guard plate  $l l^4$  is shown separately, in side elevation and plan, in Fig. 6, and the under strap  $p$  is represented separately, in side elevation and plan, in Fig. 7. The said plate  $l$  and the guard  $l^4$  are made in one piece, the trigger  $l^5$  and the sear  $i$  being carried by the said plate, as represented. The fore end of the plate  $l$  has a knuckle with a hole at  $l^5$ , through which the extractor-pin  $m$  passes, and the rear end of the said plate  $l$  has a second knuckle with a hole,  $q$ , through which the axis  $f$  of the hammer and hand-lever passes. Each side of the plate  $l$  is similarly formed, as seen in the plan view of Fig. 6. The rear end of the trigger-plate  $l$  is curved at  $l^6$ , and abuts against and is supported by the curved seats  $p^2$  on the front end of the under strap  $p$ . The upper side of the front end of the under strap  $p$  has V-shaped depressions  $p^3$  in it, and when the said under strap is fixed in its place by the pin  $p^4$  wedge-shaped lugs  $a^2$  (see Figs. 2 and 3) on the body or shoe  $a$  take into the said depressions  $p^3$ , and thereby bind the parts securely together. By this construction the trigger and guard plate  $l$  is supported in its place at the fore end by the extractor-pin  $m$ , and at its rear end by the curved seats  $p^2$  of the under strap  $p$ .

In putting the trigger and guard plate  $l$  and under strap  $p$  in their places, respectively, the under strap  $p$  is first secured to the stock and shoe by means of the pin  $p^4$  and screws, shown in the drawing. The guard and trigger plate  $l$  is next put into its place and secured by the pins or axes  $f$  and  $m$ .

Instead of placing the lever  $e e^2$  on the under side of the gun, the said lever may be placed on the side of the body or breech-shoe of the gun.

I will now describe my improvements in ex-

tracting the empty cases of the cartridges from the barrel of the gun: Supported on the trigger-plate  $l$  is a sliding frame,  $k$ , the rear end  $k^2$  of which is situated under the axis  $f$ , on which the hand-lever  $e e^2$  turns. The said sliding frame  $k$  is shown separately in Fig. 10. The fore end  $k^3$  of the said sliding frame  $k$  is situated immediately under the open breech end of the barrel.  $r r^2$  is the forked extractor, shown separately in Fig. 9. The said extractor  $r r^2$  turns upon an axis,  $m$ , immediately over the fore end  $k^3$  of the sliding frame  $k$ , the tail or lower arm  $r$  of the extractor terminating in front of the fore end of the sliding frame. (See Fig. 2.) On the sliding frame  $k$ , and at a short distance from its fore end, is an incline,  $k^4$ , against which the front lower end  $b^2$  of the falling-block  $b$  strikes immediately after the said block has completely opened the breech. The sliding frame  $k$  is held down by a fixed cross-pin,  $t$ .

The action of the parts is as follows: After the discharge of the gun, and when the hand-lever  $e e^2$  is depressed for the purpose of opening the breech a shoulder at  $e^5$  on the under side of the said hand-lever, and near the joint-pin  $f$  on which it turns, comes against the rear end  $k^2$  of the sliding frame  $k$  and urges it forward with great force. The fore end  $k^3$  of the sliding frame  $k$ , acting upon the tail or short arm  $r$  of the extractor  $r r^2$ , causes the extractor to turn on its pin or center  $m$ , and the forked end  $r^2$  to rise from its seat and start the empty cartridge-case from the barrel. As the falling-block completes its descent, the part  $b^2$  strikes against the incline  $k^4$  on the sliding frame  $k$ , and by communicating a rapid motion to the said sliding frame causes the extractor to complete the extraction of the empty case of the cartridge, and eject it from the barrel. On loosing the hand-lever  $e e^2$  the spring  $x$  raises the block  $b$  into the position proper to guide the cartridge into the barrel in the process of loading. After the introduction of a fresh cartridge into the barrel, and on the raising of the hand-lever  $e e^2$ , the normal position of the sliding frame  $k$  is restored.

In order to increase the power of the extractor on its first motion to start the empty cartridge-case from the barrel, the center  $m$  of the extracting-lever may be raised so as to equalize the length of the arms of the extracting-lever; or the arrangement represented in Fig. 11 may be adopted—that is to say, I provide the extractor  $r r^2$  with two centers, marked, respectively,  $u v$ , the lower arm  $r$  of the extractor being furnished with a slot,  $r^3$ , which works upon the fixed center  $v$ .

The extractor, when turning on the center  $u$ , has arms of nearly equal length, and when turning on the center  $v$  the extracting or upper arm  $r^2$  is about double as long as the lower or driving arm  $r$ .

On depressing the hand-lever  $e e^2$  to open the breech the sliding frame  $k$  acts upon the tail or lower arm  $r$  of the extractor in the man-



her hereinbefore described, the said extractor turning on the center  $u$ , and starting the empty cartridge-case from the barrel with great power. As the extractor moves on its center  $u$  the tail  $r$  moves toward the barrel and brings the top of the slot  $r^3$  onto the center  $v$ . As the motion of the sliding frame continues the extractor  $r r^2$  now turns on the center  $v$  and completes the further withdrawing of the cartridge-case, the complete extraction and ejection of the said cartridge-case being effected, as hereinbefore described, by the part  $b^2$  of the falling-block striking the incline  $h^4$  on the sliding frame  $k$ .

The incline on the sliding frame  $k$  may be dispensed with and the complete extraction and ejection of the empty cartridge-case effected by the action of the falling-block on a projection on the tail end of the extractor.

This modification of my invention is represented in Fig. 12, where the projection on the tail end  $r$  of the extractor  $r r^2$  is marked  $r^4$ , and the part of the block  $b$  which strikes the said projection  $r^4$  to complete the extraction and ejection of the cartridge-case is marked  $b^2$ .

The action of the other parts is the same as in the arrangement first described, and corresponding parts are marked with the same letters of reference.

Besides being applicable to block-guns of the particular construction represented in the drawing, the several extractors hereinbefore described and illustrated may be applied to other block-guns.

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 and illustrated, as the same may be varied without departing from the nature of my invention; but

I claim as my invention of improvements in

breech-loading small-arms, in which the breech is opened and closed by a hinged falling-block or similar block—

1. The arrangement or combination of parts, described and represented in the accompanying drawing, for withdrawing the striker or striking-pin, on the depression of the hand-lever, to open the breech, and returning the said striking-pin into the position ready for firing on raising the lever to close the breech—that is to say, by means of a cross-pin on the head of the hand-lever working in a fork at the under side of the rear end of the said striking-pin, substantially as described and illustrated.

2. The construction and method of attaching the trigger and guard plate and under strap to the body of the gun, hereinbefore described and illustrated in the accompanying drawing—that is to say, so constructing the trigger and guard plate that it is supported at its fore end by the extractor-pin and at its rear end by curved seats at the fore end of the under strap, substantially as described and illustrated.

3. The combination or arrangement of parts, hereinbefore described, for extracting the empty cartridge-cases from the barrels—that is to say, by means of a sliding frame on the trigger-plate acting upon the tail or lower arm of the forked extracting-lever, the said sliding frame being operated by the hand-lever and falling-block, respectively, of the gun, to effect the starting and complete extraction and ejection of the empty cartridge-case from the barrel, substantially as described and illustrated.

JOHN FIELD SWINBURN. [L. S.]

Witnesses:

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