

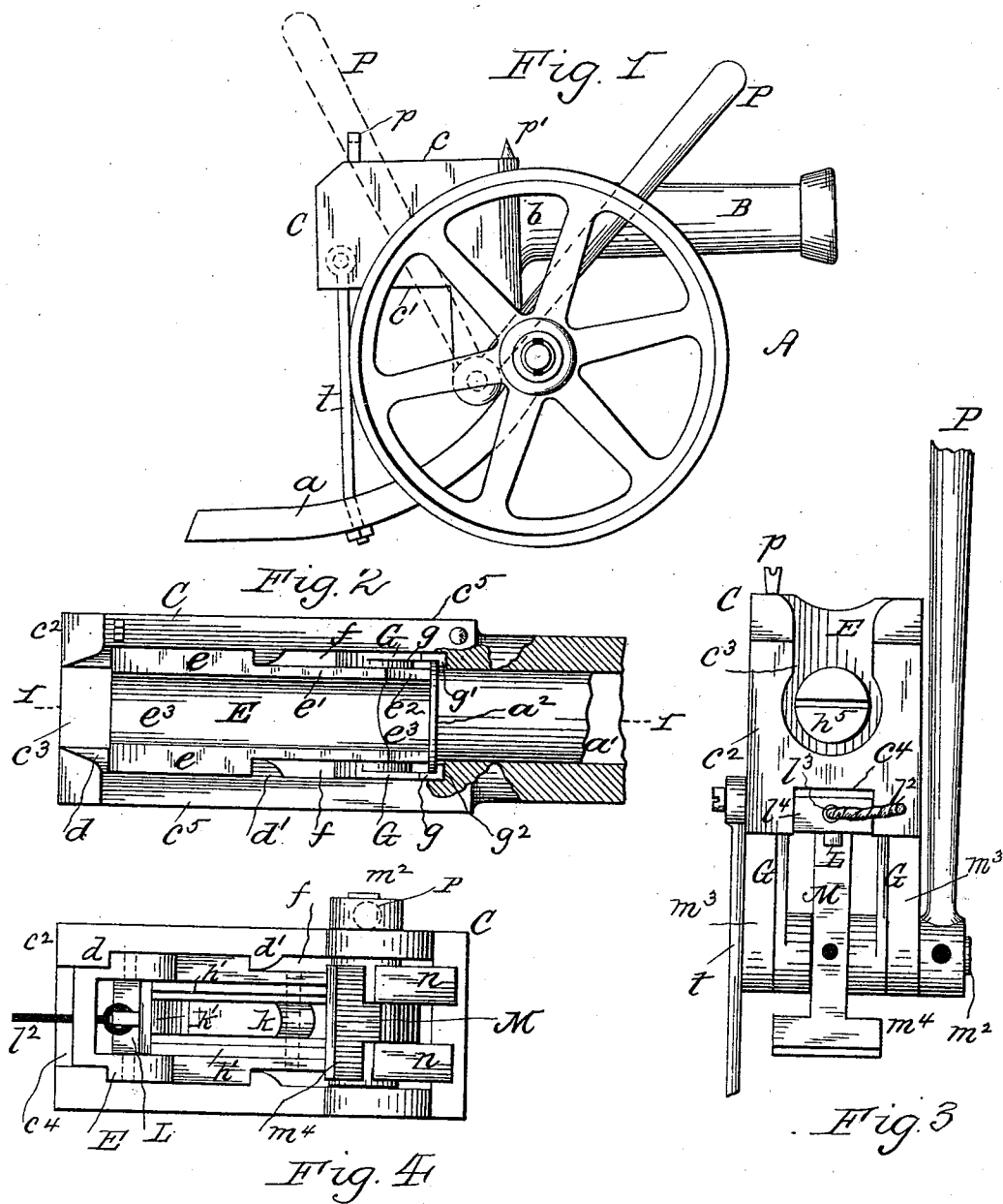
(No Model.)

3 Sheets—Sheet 1.

S. O. LEIJONSTEIN.
BREECH MECHANISM FOR ORDNANCE.

No. 529,394.

Patented Nov. 20, 1894.



WITNESSES:
L. Van Stavoren.
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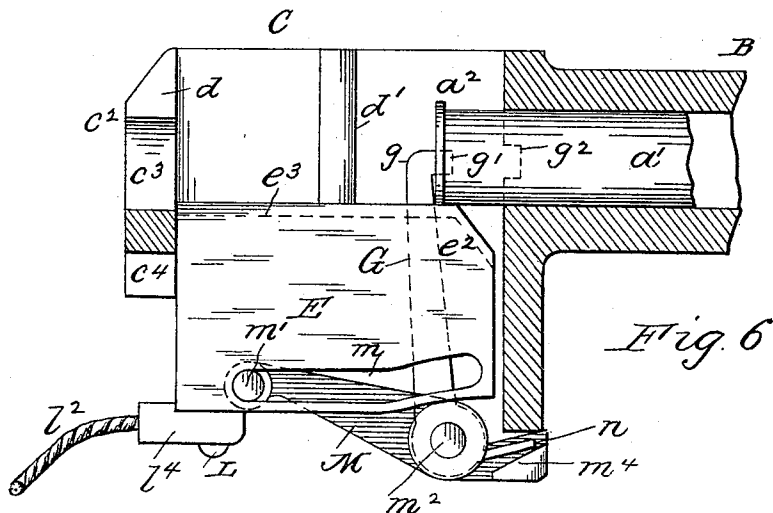
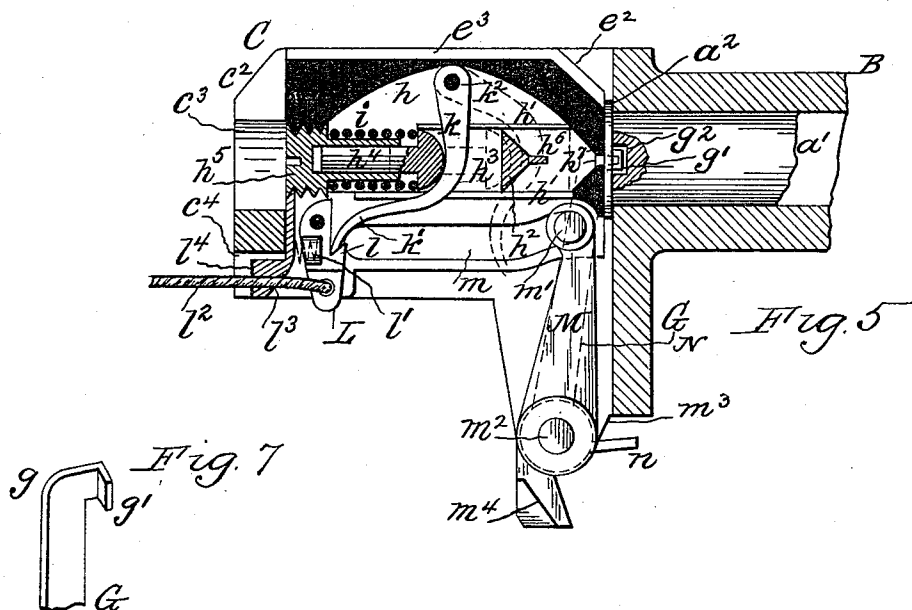
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3 Sheets—Sheet 2.

S. O. LEIJONSTEIN.
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3 Sheets—Sheet 3.

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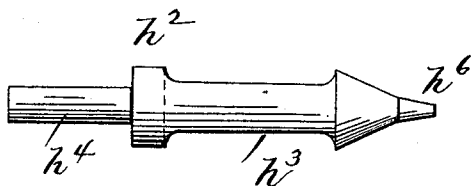
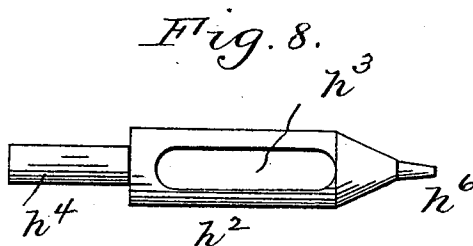


Fig. 9.

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UNITED STATES PATENT OFFICE.

SVEN OLOF LEIJONSTEIN, OF PHILADELPHIA, PENNSYLVANIA.

BREECH MECHANISM FOR ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 529,394, dated November 20, 1894.

Application filed May 18, 1893. Serial No. 474,727. (No model.)

To all whom it may concern:

Be it known that I, SVEN OLOF LEIJONSTEIN, a subject of the King of Sweden and Norway, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Guns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to breech-loading cannons or heavy ordnance; and it has for its object simple, effective and durable breech-loading appliances which admit of easy insertion of the ball or cartridge into the rear end of the barrel and for locking the cartridge firmly in said barrel end; of rapid firing and of easy and quick extraction of the cartridge-shell from the barrel.

My invention accordingly consists of the combinations, constructions and arrangements of parts as hereinafter more particularly described in the specification and pointed out in the claim.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a side elevation of a cannon with breech-loading devices in normal position embodying my improvements. Fig. 2 is a top view of the breech-loading end of the cannon, partly sectional and drawn to an enlarged scale, with the cartridge or ball in position for firing. Fig. 3 is rear end view of same. Fig. 4 is an inverted plan of Fig. 2. Fig. 5 is a section on the line 1—1 Fig. 1, showing more plainly the vertically sliding breech-block, exploder, extractors and actuating mechanism therefor. Fig. 6 is a like view showing the breech-block in elevation and in its lowered position and the cartridge-shell initially extracted. Fig. 7, is a perspective showing the upper end of the extractors. Fig. 8 is a plan, drawn to an enlarged scale, of the firing pin detached from the breech-block, and Fig. 9 is a side elevation of the same.

A represents a cannon or other heavy ordnance which is shown provided with a trail α and tail-plate as is usual for field pieces, but it may have other supports, portable or fixed, as the demands of service require. The rear

end b of the barrel B is formed with or has secured to it a guide-frame C open at its top and bottom c and c' respectively and having upper and lower recesses c^3 and c^4 respectively in its rear end c^2 for purposes hereinafter described. Within the guide-frame C are rear-end ribs or cleats d and middle ribs or cleats d' between which the main body e of the breech-block E snugly fits. The forward end e' of said block is narrower than the end e or than the vertical opening in the guide-frame C so as to leave longitudinal spaces ff between the sides c^5 of frame C and the adjacent sides of the forward end e' of block E for the reception and movement of the upper ends g of the extractors G. The front upper corner of the block E is shown cut-away or beveled or rounded off as shown at e^2 so as to be out of the way of the rear end a^2 of the cartridge a' as it is initially extracted while the block E is being lowered as hereinafter described.

The top surface of the block E and of its beveled corner e^2 is shown concave in cross-section as at e^3 to correspond to the configuration of the ball or cartridge in which grooved surface it rests as the block E is raised to bring it in line with the bore of the gun as hereinafter explained. The breech-block E is formed with an inner chamber N open at its bottom. It has longitudinal ways or guides h' for a longitudinally sliding firing-pin h^2 having intermediate of its ends a vertically arranged elongated slot h^3 and at its rear end a striker h^4 which slides in a tubular guide screw h^5 entering the chamber h of block E through its rear side and the upper recess c^3 of frame C which recess is provided to admit of inserting said tubular screw h^5 in position in the block E and to withdraw it when necessary for repairs or other purposes. The firing pin point h^6 of pin h^2 is in line with an opening h^7 in the front end of block E through which opening the pin-point h^6 passes to the fulminate or other analogous cap in the rear end of cartridge a' . The firing pin h^2 is actuated by the reaction of a compression spring i surrounding the tubular-screw h^5 and striker h^4 and having suitable end abutments on said screw and trigger as shown. Through slot h^3 of firing-pin h^2 passes the free end k' of a lever k suitably curved as shown and pivoted

at its other end k^2 to the block E. The free end k' of lever k normally engages a lip l on a pivoted trigger L having a suitably located reaction spring l' for maintaining such engagement of lever end k' and lip l . To one end of trigger L a cord or lanyard l^2 is attached. This passes through an opening l^3 in the lower rear end l^4 of block E which normally is in position in the lower recess c^4 in the rear end c^2 of guide frame C. See more plainly Fig. 5. By pulling on lanyard l^2 the trigger L is moved to release the engagement of its lip l from the end k' of lever k and the spring i is then free to forcibly project the firing-pin h^2 to the rear end of the cartridge for exploding the same.

In the sides of the block E near its bottom are longitudinal slots m of any suitable form or configuration which receive and in which moves a transverse pin or roller m' on the upper end of a lever M mounted on a cross-shaft m^2 having its bearings m^3 in the frame C. Lever M actuates block E to raise and lower it. Upon shaft m^2 on each side of the lever M are mounted the extractor levers G G which have forwardly bent upper ends g with inwardly projecting lips g' which enter recesses g^2 in the rear end of the barrel B in order to be in advance of the end flange a^2 of the cartridge, see more plainly Fig. 5, so that when moved their lips g' engage the cartridge-flange a^2 and initially extract the cartridge as the block E descends. To effect this movement of the extractors G G their lower ends are provided with tail-plates n which are moved by a tripper plate m^4 on the lower end of lever M. This shaft m^2 is provided with a suitably located actuating lever P, worked by the gunner or other attendant. Suitably located sights p p' are provided as desired and they may be of the usual or other construction.

The operation is as follows: When the cartridge a' is in position in the barrel B the block E is raised to its full extent as shown in Fig. 5 to lock the cartridge in the barrel B and the lever k is in locking engagement with trigger L as indicated in full lines Fig. 5. By manipulating lanyard l^2 lever k is released from trigger L and the reaction of spring i actuates the firing-pin h^2 to fire the ball or cartridge. As the firing-pin so moves the lever k is oscillated on its pivot to assume the position shown by dotted lines Fig. 5 with its free end in the path of movement of pin m' of lever M. When the block E is elevated as described the lever P is in the position shown in full lines Fig. 1. As soon as the cartridge is fired the lever P is moved to the position indicated by dotted lines Fig. 1, which actuates lever M to lower

the block E to the position shown in Fig. 6. As the lever M moves to effect the lowering of block E, the lever pin m' impinges against the free end k' of lever k to move it simultaneously therewith and into locking engagement with the trigger L which engagement is effected when the block E is fully lowered. The said movement of lever k causes it to slide the firing-pin h^2 rearwardly or away from opening h^7 to compress spring i . Hence the return of the firing-pin h^2 to its normal position and consequent compression of the spring i for actuating the firing-pin h^2 are effected automatically when the block E is lowered. As the latter descends its beveled or cut away upper front corner allows ample space back of the cartridge-shell for initially moving or extracting it from the barrel before the block E is fully lowered. As soon as the lever M is oscillated far enough to cause its tail plate m^4 to impinge against the tail plates n of extractors G G they are oscillated to move the cartridge shell rearwardly or partly out of the barrel onto the grooved way e^3 of block E as indicated in Fig. 6, from whence it is removed and a new ball or cartridge substituted and inserted in the barrel, after which the lever P is moved to the position shown in full lines Fig. 1 to raise the block E to its normal position.

If desired suitable braces t may be used for connecting the stock a and frame C to give rigidity to the latter.

What I claim is—

In combination with a gun-frame, a vertically sliding breech-block E having slot m , shaft m^2 transversely mounted in said gun-frame, lever M on shaft m^2 having a lower cam-end m^4 and an upper end engaging with the slot m' of block E, a sliding firing-pin h^2 having a striker-end h^4 and slot h^3 , a tubular-plug h^5 in one end of the block E for the reception of the firing-pin striker-end h^4 , a spring i interposed between the head of plug h^5 and firing-pin h^2 , a pivoted lever k passing through slot h^3 of firing-pin h^2 and having its free end k' in the path of movement of lever M in slot m , pivoted trigger L for engagement with the free end k' of lever k , a spring l' for trigger L, a lanyard for said trigger, and cartridge-extractors G loosely mounted on shaft M^3 and having tail-pieces n actuated by the lower cam-end m^4 of levers M, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

SVEN OLOF LEIJONSTEIN.

Witnesses:

JOHN RODGERS,
S. J. VAN STAVOREN.