

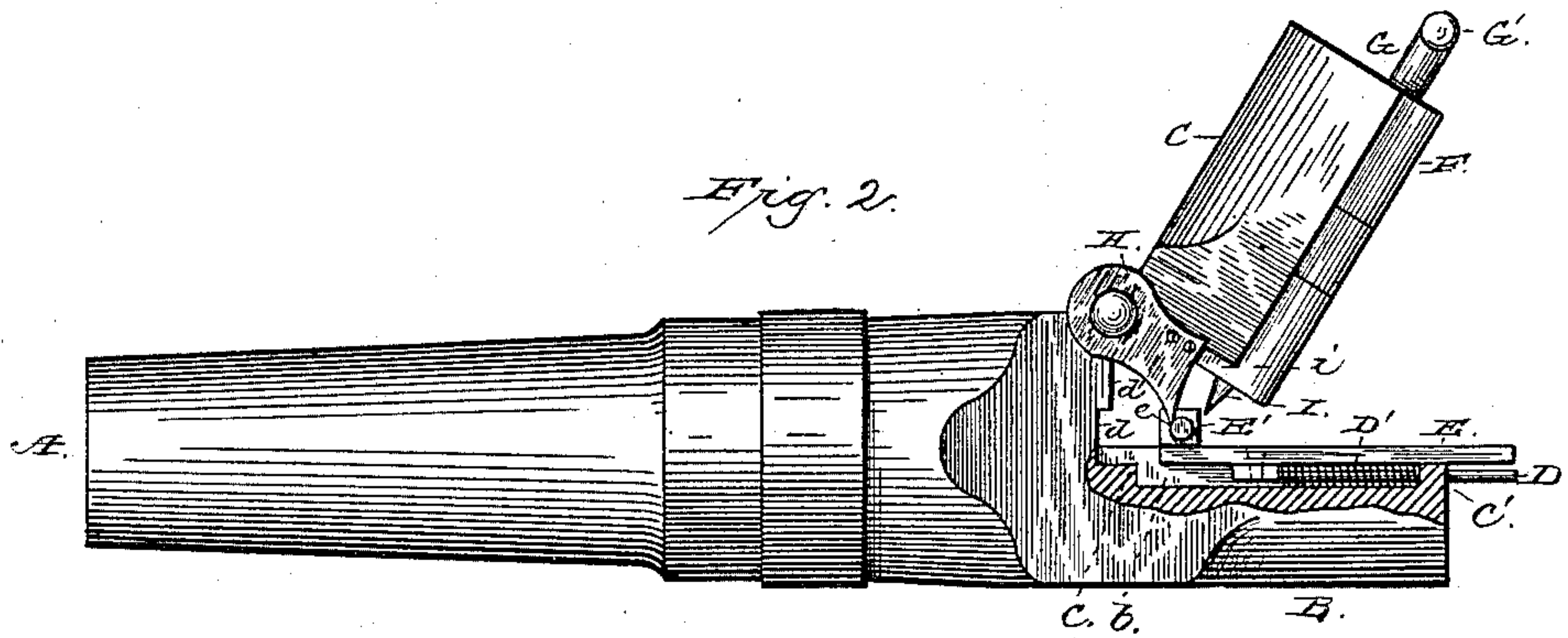
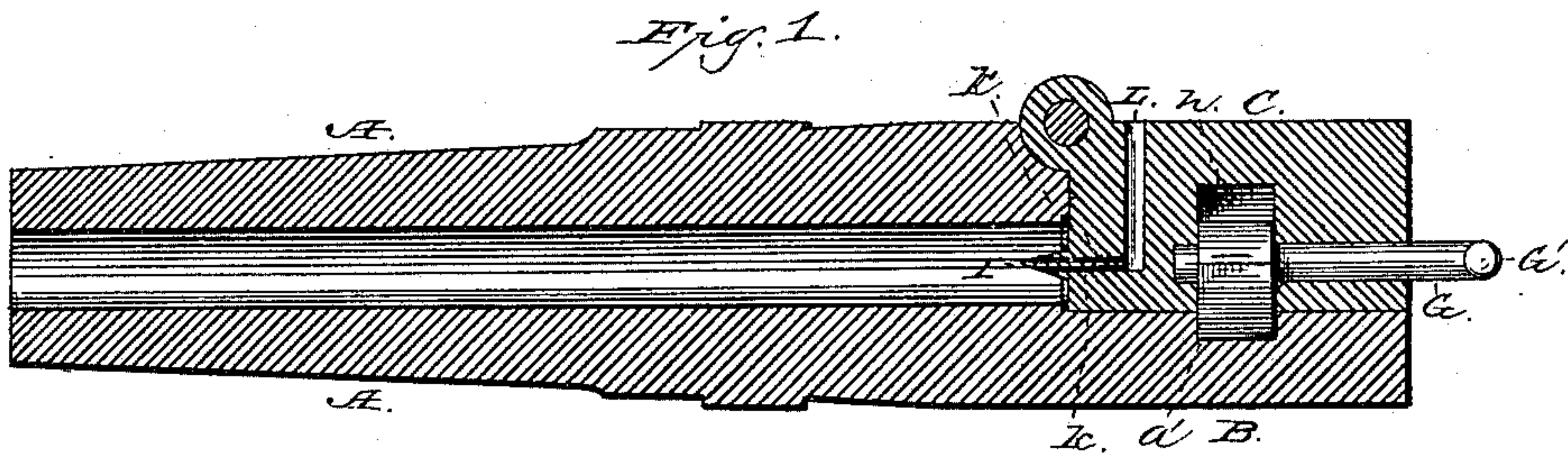
(No Model.)

2 Sheets—Sheet 1.

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BREECH LOADING ORDNANCE.

No. 280,207.

Patented June 26, 1883.



witnesses;

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John B. Schroeder.

Inventor,  
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Attorney

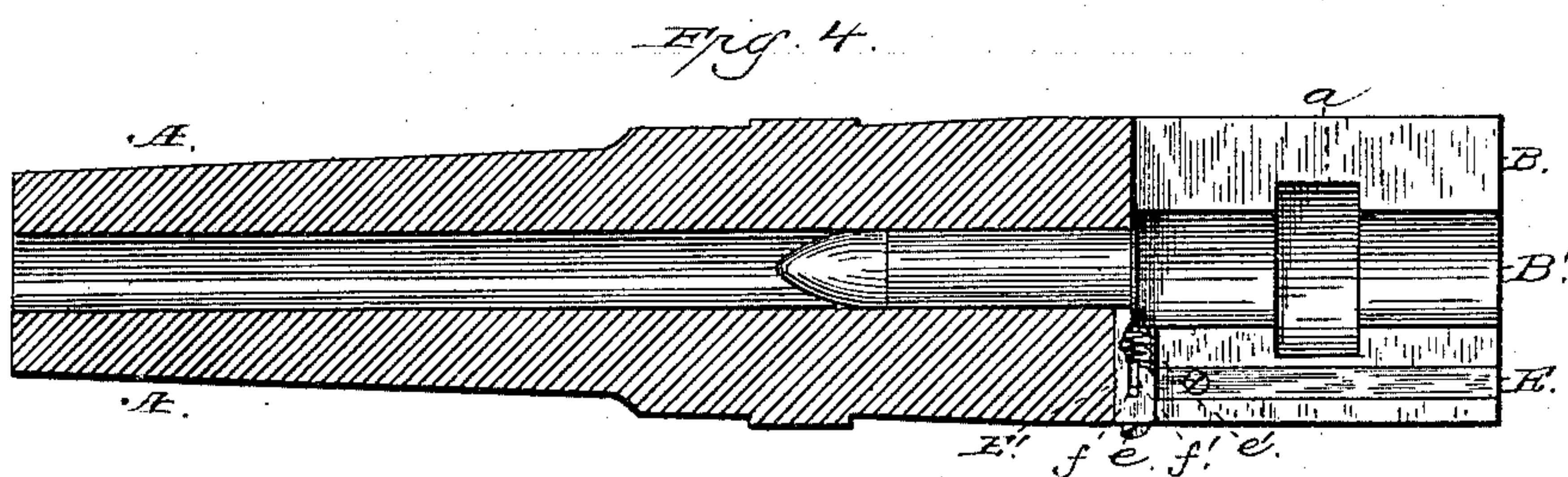
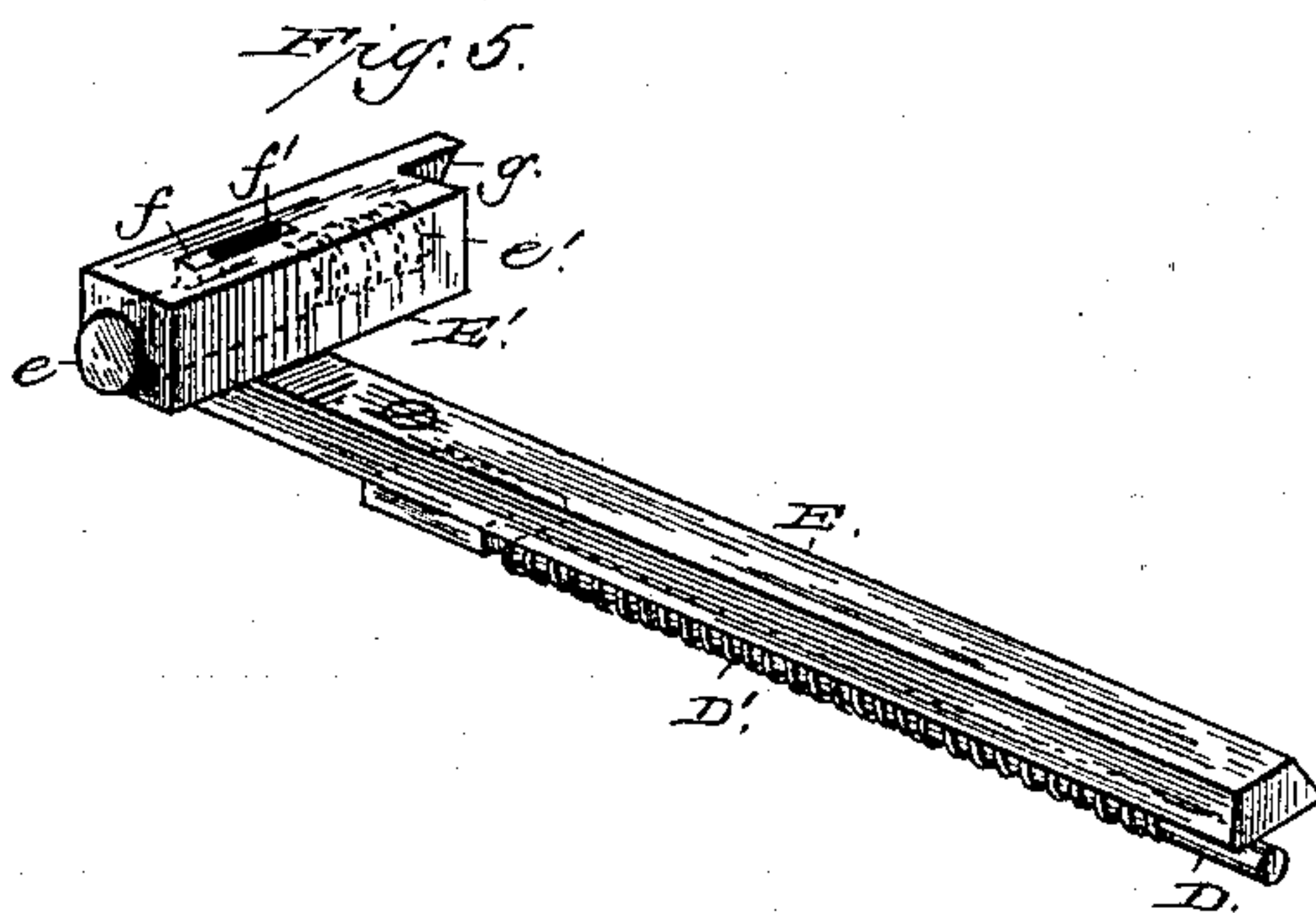
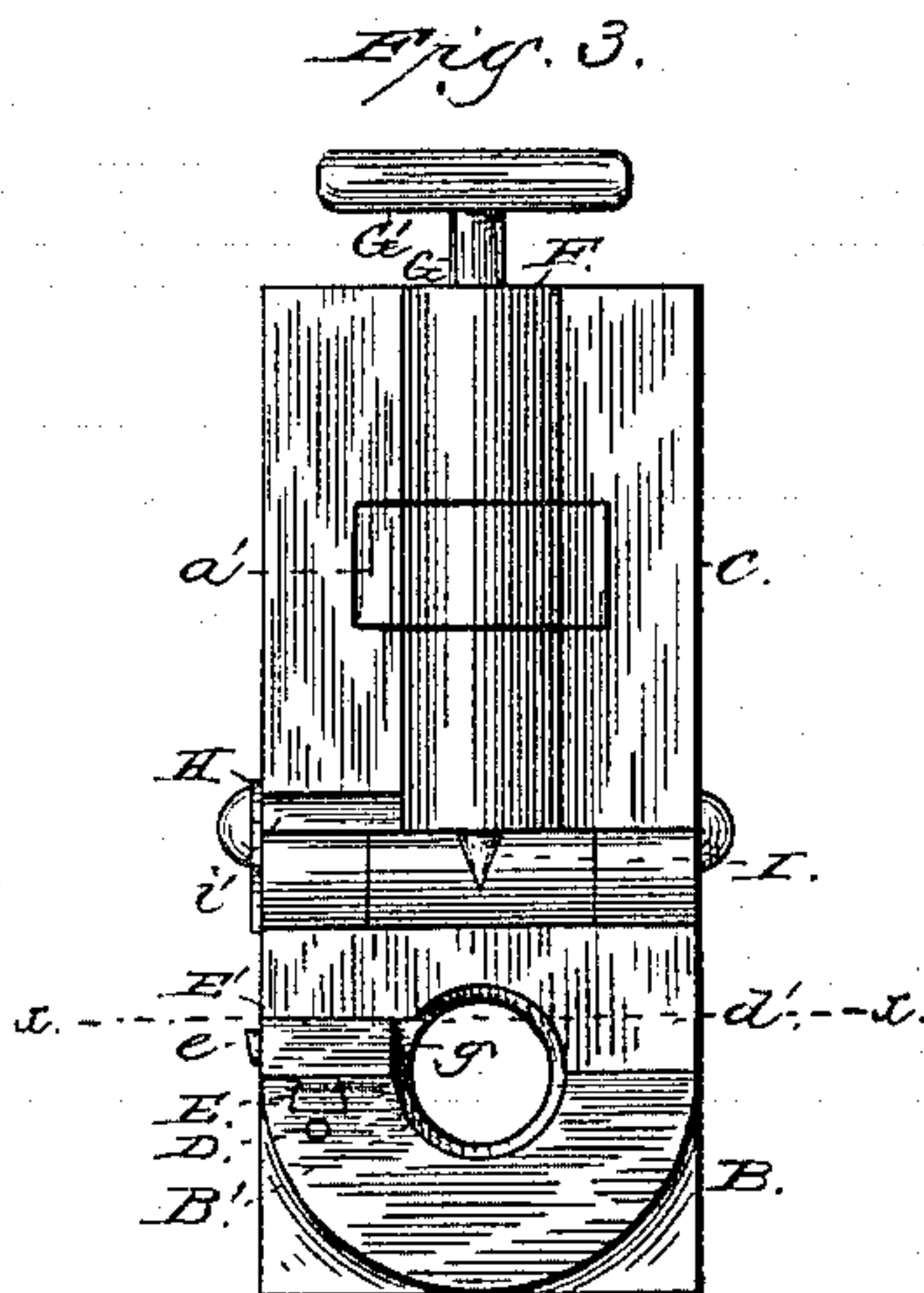
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# UNITED STATES PATENT OFFICE.

WILLIAM H. MELHUISE, OF WILLIAMSPORT, PENNSYLVANIA.

## BREECH-LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 280,207, dated June 26, 1883.

Application filed September 18, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. MELHUISE, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Breech-Loading Ordnance; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The invention involved in the subject-matter of this application relates to certain improvements in breech-loading ordnance, whereby the same is enabled to more effectively prevent and resist, respectively, the rearward flash and impact of the charge when ignited, to more readily and quickly extract the shell, and to fire either by friction, primer, or percussion, as may be incident to the kind of shell employed.

The invention therein consists, principally, in the adaptation of a divided breech, and in the construction, arrangement, and combination of the various operative parts thereof, all as more particularly hereinafter described, designated in the claims, and illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section of a cannon with its breech closed and locked by means constructed in accordance with my invention; Fig. 2, a side elevation with the hinged cap or cover raised and acting upon the shell-extractor; Fig. 3, a rear elevation of the breech with hinged cap or cover raised; Fig. 4, a horizontal section taken on the line *x x* of Fig. 3, with a shell inserted in its chamber; and Fig. 5, a view in detail of the mechanism for extracting the shell.

Like letters of reference indicate corresponding parts in each figure.

A represents the barrel of a cannon, cast and bored in any desired manner, with its breech horizontally divided to form the portion B and the cap or cover C, which is hinged, as shown, to open and close the breech, respectively, by an up-and-down vertical movement in the arc of a circle. The lower half or portion, B, of the breech is cast with the barrel A, and is provided with a semi-cylindrical bore, B', in the base of which is located, as shown, a cavity or key-chamber, *a*, whose transverse diameter is much greater than that of the bore, and its longitudinal width and

axial depth sufficient to receive and accommodate a cam or block, *a'*, rigidly secured to a breech-key (hereinafter described) and turning coincident with the revolution of the same. This lower half or portion, B, of the breech is provided on its upper surface and on one side of its bore B' with a deep longitudinal groove or slot, *b*, which is adapted for the reception and accommodation of several of the component parts of the shell-extracting mechanism, presently to be described. In the bottom and at each end of this groove or slot *b* is located a block or seat, *c* and *c'*, respectively, above which, to the upper surface of the breech portion B, the entire length of the groove or slot is of dovetail construction to admit a correspondingly-shaped portion of the shell-extracting mechanism. This mechanism consists of a rod, D, having one end made broad and flat, equal in width to that of the groove, and the other end free to pass through an opening extending longitudinally through the center of the block or seat *c'*. This rod is placed in the bottom of the groove or slot *b*, and for a portion of its length is incased in coil-spring D', which has bearing at each end, respectively, against the block or seat *c'* and the inner shoulders of the broad and flattened end of said rod.

In the upper or dovetail portion of the groove or slot *b* is inserted a correspondingly-shaped bar, E, of equal length to said groove or slot, and supported at each end by the blocks *c* and *c'* therein. This bar is provided on its inner end, as shown, with a rectangular block, E', cast therewith at a right angle to its length, and in its normal position fits partially within a depression or recess, *d*, made in the vertical side *d'* of the barrel A. The center of this block, for a portion of its length, is provided with a cylindrical chamber of sufficient diameter to receive a pin, *e*, between the inner end of which and the termination of such chamber is located a coil-spring, *e'*. The pin *e* is beveled or inclined at its protruding end, (for a purpose hereinafter to be described,) and is limited in its movement in either direction by means of a small pin, *f*, secured to its periphery, and coming in contact with the ends of a slot, *f'*, cut in the center and upper surface of the block E', and communicating with the chamber therein. The portion of this block which fits within the depression or



recess *d* projects in toward the bore of the barrel, and forms a ledge, *g*, which is flush with and forms a portion of the seat provided in the rear end of the bore of the barrel for the flange of the shell or cartridge, as shown in Fig. 4. This ledge is curved on its inner edge, as shown, to correspond with the curvature of the base and adapt itself to the accommodation of the shell or cartridge.

The bar *E*, with its block, is secured, as shown, to the rod *D* by means of a screw-threaded bolt passing through a hole drilled in the former and in the broad and flattened end of the latter, which is correspondingly threaded to receive and hold such bolt.

The hinged cap or cover *c* is provided on its under or contact surface and along its entire length with a convex extension, *F*, rising from its central portion, and equal in diameter to the width of the bore *B'*, in which it is adapted to fit closely when the cap is closed down upon the lower half or portion, *B*, of the breech. This extension is divided transversely at its center by a cavity or key-chamber, *h*, which is made precisely in accordance with that in the bore of the lower half or portion, *B*, of the breech, and incases the cam or block *a'* of the breech-key. This key consists of a shaft, *G*, carrying near its inner end the cam or block *a'*, which is transversely arranged and rigidly secured thereon, while upon the outer end, and parallel with the cam or block *a'*, is fastened the lever-handle *G'*, by means of which the key is operated. This shaft *G* passes longitudinally through the convex extension *F* and a correspondingly-shaped extension rising from the center of the cam or block *a'*, and terminates and has bearing at its inner end, a short distance beyond the cavity or chamber *h*.

The cam or block *a'* is designed to fit and fill somewhat loosely the chamber *h*, in order to have free and unimpeded movement therein when the lever handle is manipulated. Its diameter in the axial direction is made to correspond with the axial depth of both the cavities or key-chambers *a* and *h*, so that when the hinged cap or cover is closed down upon the lower half or portion of the breech and a half-revolution is given to the lever-handle it will enter and closely fit within the cavity or chamber *a*, and thereby securely close and lock the breech of the gun.

The cap or cover is further provided on its under or contact surface with a recess, *i*, located as shown, and designed, when the breech is closed and locked, to fit closely over that portion of the block *E'* (of the shell-extracting mechanism) not covered by the depression or recess *d*, and thereby produce a perfect airtight joint and prevent the emission of any gas when the gun is fired.

The extraction of the shell, after firing, is effected by the raising of the cap or cover *C*, which, for the successful accomplishment of this result, is provided on the outer end of the hinging bolt or shaft, and next to the inner

face of its head, with a pawl, *H*, mounted loosely thereon and rigidly secured to the outer side of said cap or cover, as shown in Fig. 2. This pawl consists preferably of a flat metal plate, shaped as shown, and terminating at its lower end in a beak-shaped point or projection adapted to engage with the protruding end of the pin *e* of the block *E'* and press the latter, with its bar *E*, backward, carrying therewith the shell whose flange is bearing against or in contact with the ledge *g* of said block.

When the cap or cover *C*, in being raised, attains the height shown in Fig. 2, the beak-shaped point or projection of the pawl *H*, by means of its curvature, is caused to pass over the periphery of the pin *e*, thus freeing the same from its engagement and permitting the entire shell-extracting mechanism to resume its normal position by the pressure of the coil-spring *D'*. When the cap or cover is lowered, the beak-shaped point or projection of the pawl *H* readily passes the protruding end of the pin *e* by means of the bevel or incline thereon, and the coil spring *e'*, which presses said pin forward to its normal position. The firing is effected by means of a pin or needle, *I*, secured to the inner end of the convex extension *F* on the cap or cover *C*, and on a line with the axial center of said extension and the bore of the barrel *A*. It is provided on each side of its point with a vent, *K*, extending backward and communicating with a single vent, *L*, opening through the top of the cap or cover *C*, as shown in Fig. 1.

It will thus be seen and understood by those versed in the art that this construction and arrangement of the needle or pin adapt the gun for firing by either friction, primer, or percussion, as may be incident to the kind of shell employed.

It may be well to here state that the rearward flash of the charge, when ignited, may be more effectively prevented by placing in the bottom of the shell, before loading, a piece of thick paper or other like material, which is penetrated by the point of the needle or pin when the breech is closed, and when the charge is ignited the pressure forces the material tightly around the same, forming a packing, and thereby rendering it almost impossible for the rearward flash to occur.

From the foregoing description it will be manifest that the different parts composing my invention could be modified in their construction and respective locations without effecting any material change in the operation and result of the same. It will, however, be found that if constructed as herein described, they will prove the best upon practical test, and the cheapest and most durable in use.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A breech-loading gun or cannon having a horizontally-divided breech consisting of the



portion B and the hinged cap or cover C, provided, respectively, with the bore B' and the cavity or key-chamber *a* and extension F, cavity or key-chamber *h*, and the breech-key, 5 all constructed, arranged, and operating substantially as described, and for the purpose set forth.

2. In a breech-loading gun or cannon having a horizontally-divided breech, the combination, with the portion B, provided with the dovetail groove or slot *b* and blocks or seats *c* and *c'*, as described, of the shell-extracting mechanism consisting of the rod D, its coil-spring D', bar E, and block E', provided with 15 the spring-actuated pin *e*, beveled at its protruding end, the several parts constructed, arranged, and secured together substantially as described, shown, and for the purpose set forth.

3. In a breech-loading gun or cannon having a horizontally-divided breech, the combination, with the portion B, provided with the dovetail groove *c*, and the shell-extracting

mechanism constructed, arranged, and traveling in said groove, substantially as described and shown, of the pawl H, mounted upon one 25 end of the hinging-shaft of the cap or cover C, to engage with the spring-actuated pin *e* of the shell-extracting mechanism, substantially as described, shown, and for the purpose set forth.

4. In a breech-loading gun or cannon having a horizontally-divided breech, the hinged cap or cover C, provided with means for firing the piece by friction, primer, or percussion, consisting of the cone-shaped needle or pin I, cast with said cap or cover C, as shown, and 35 provided with vents arranged substantially as described and shown.

This specification signed and witnessed this 29th day of July, 1882.

WILLIAM H. MELHUISE.

Witnesses:

JNO. H. BURROWS,

JNO. E. JONES.