

(No Model.)

4 Sheets—Sheet 1.

C. RÖSTEL.  
BREECH LOADING GUN.

No. 422,838.

Patented Mar. 4, 1890.

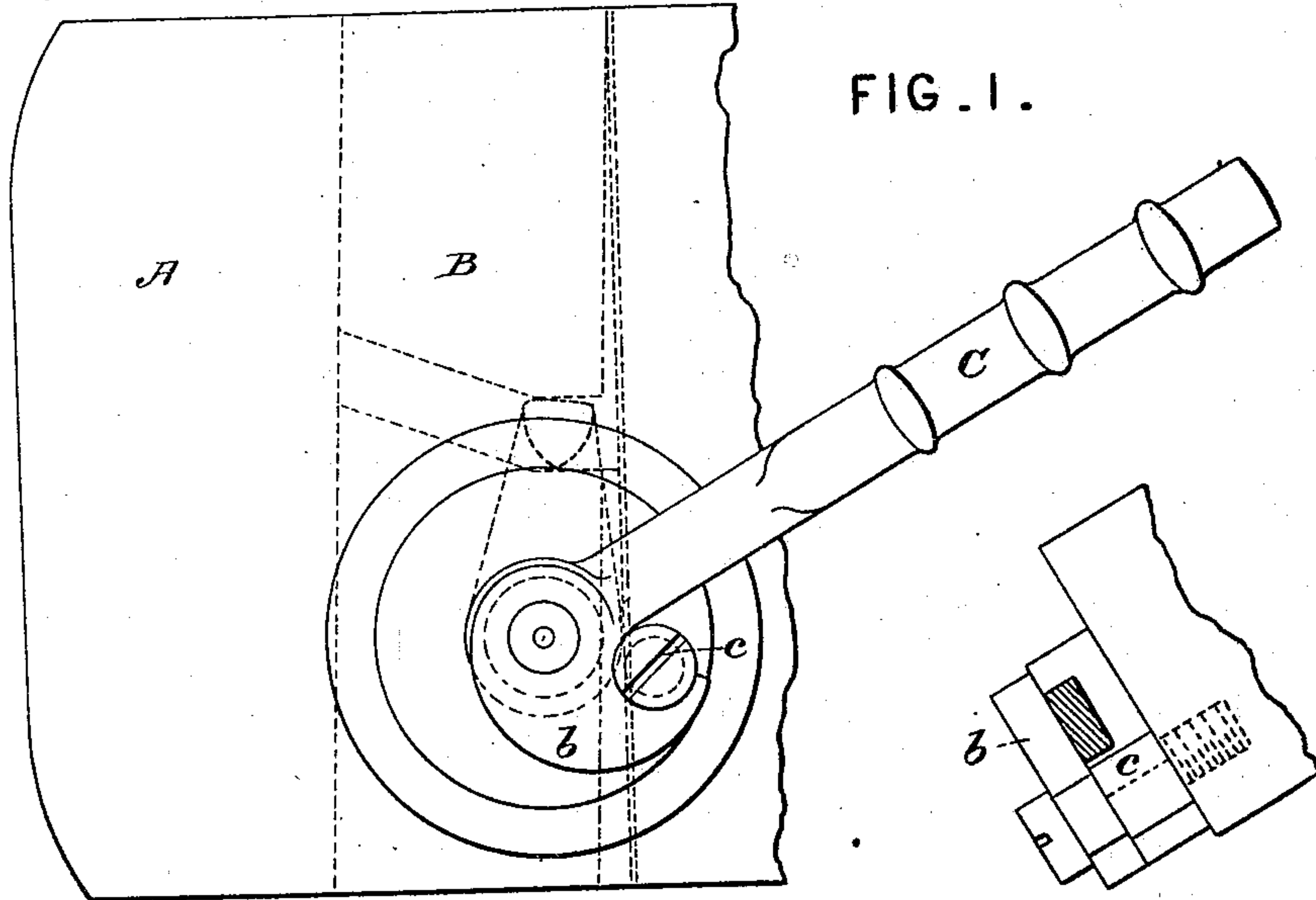
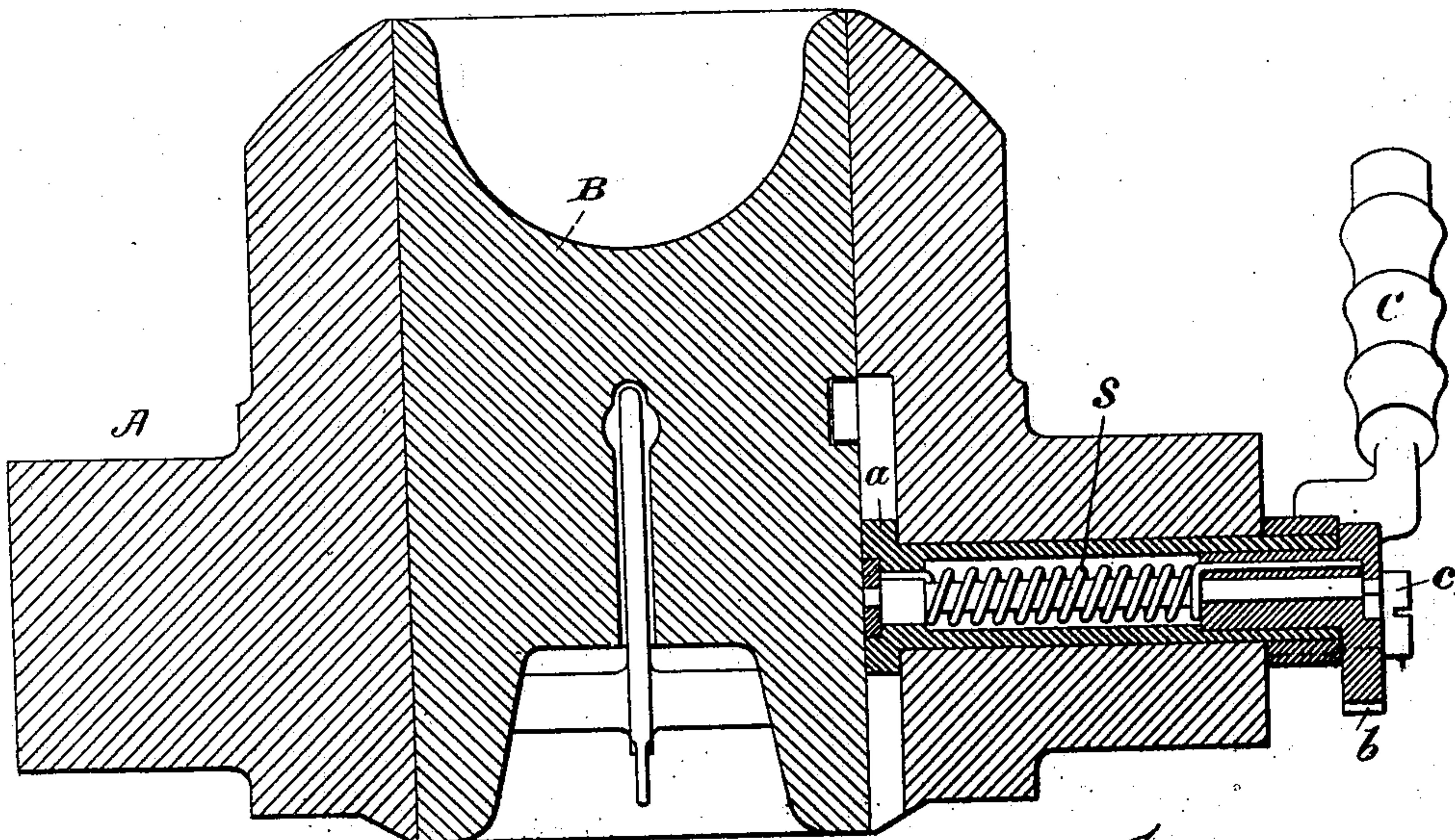


FIG. 2.



Attest:

Geo. T. Smallwood,  
E. Arthur

Inventor

Carl Röstel.  
by Knight Bros. attys



(No Model.)

4 Sheets—Sheet 2.

C. RÖSTEL.  
BREECH LOADING GUN.

No. 422,838.

Patented Mar. 4, 1890.

FIG. 3.

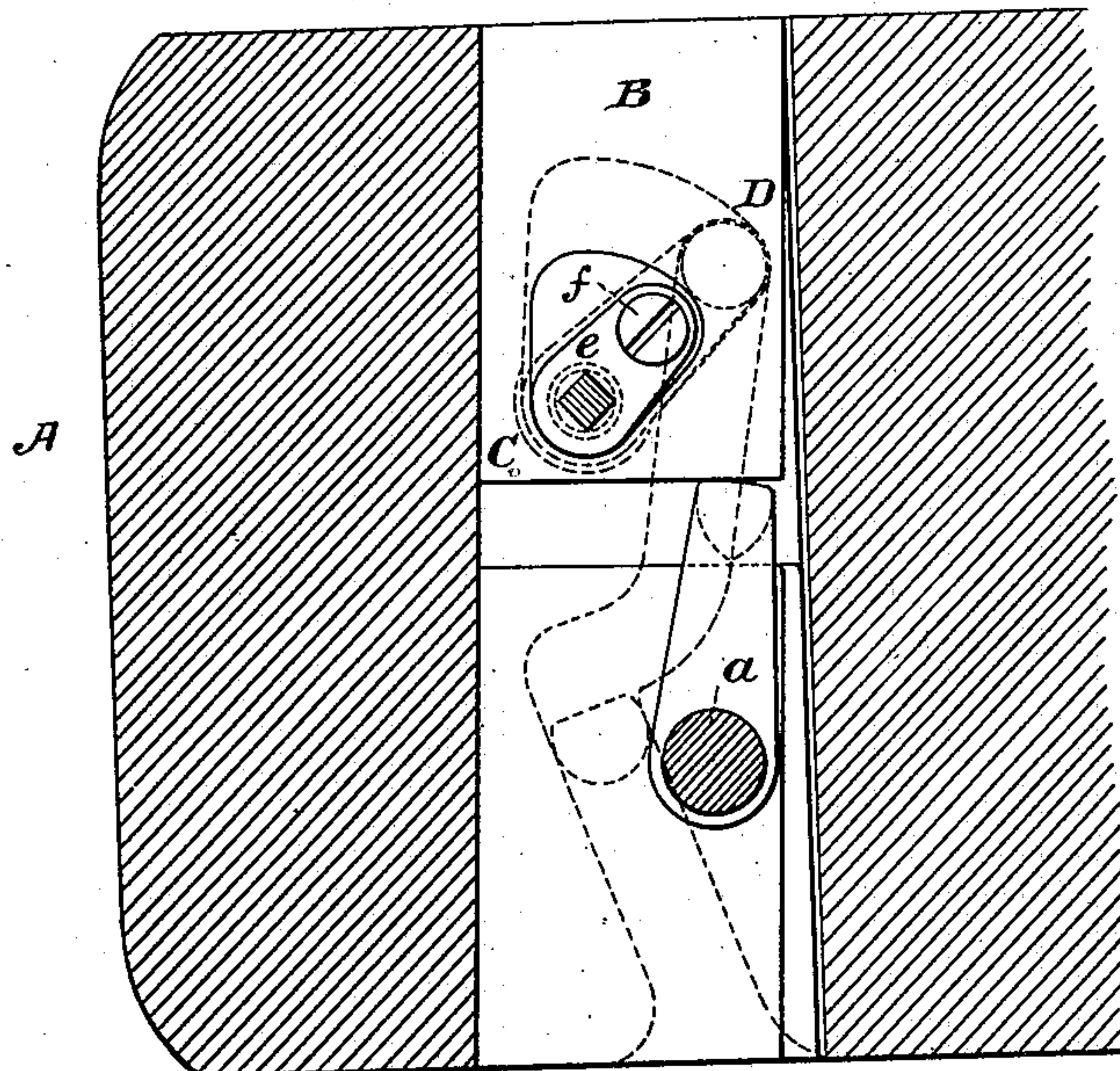
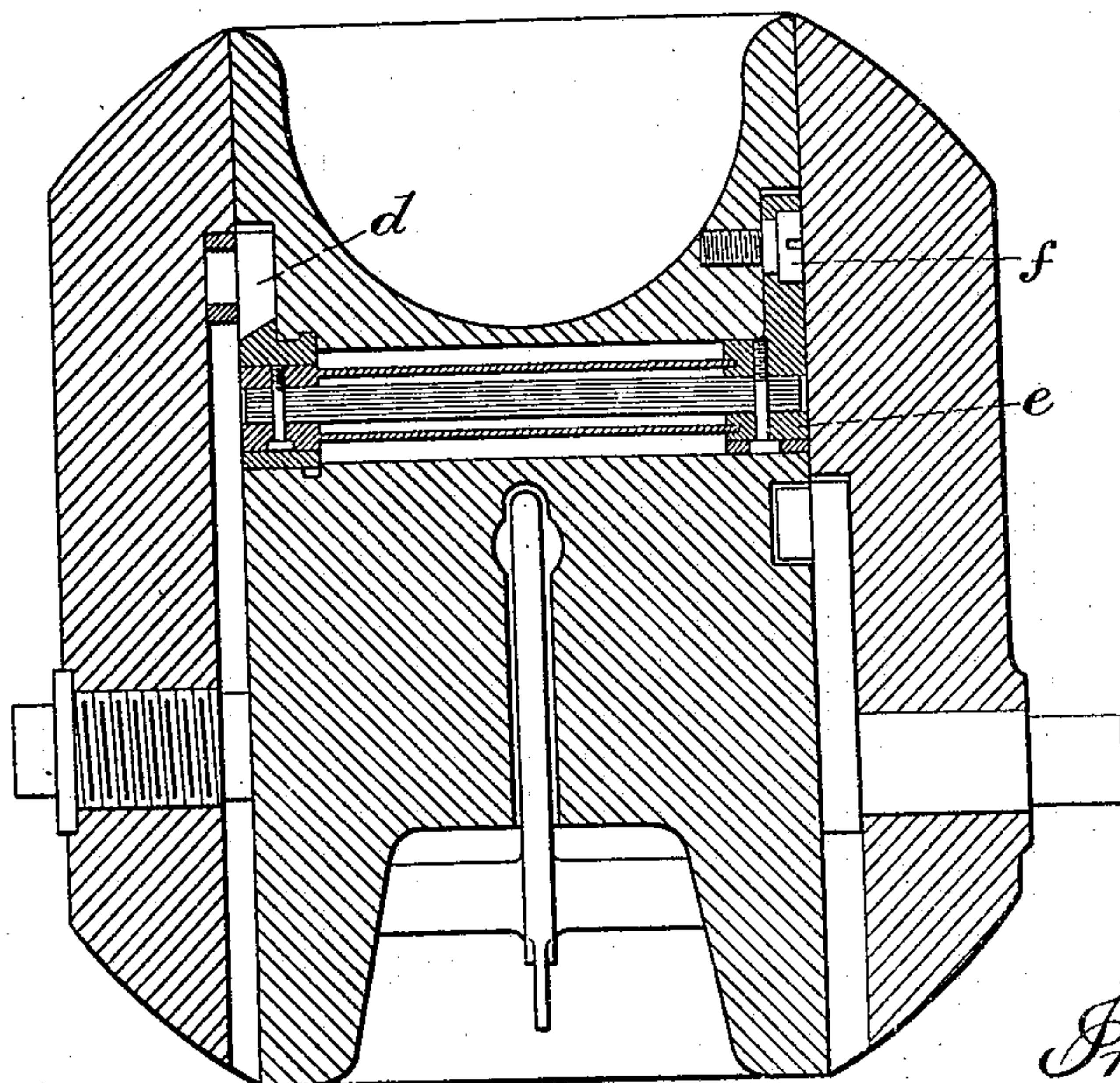


FIG. 4.



Attest.  
Geo. T. Smallwood.  
C. Arthur

Inventor  
Carl Röstel.  
by Knight Bros. attys.

(No Model.)

4 Sheets—Sheet 3.

C. RÖSTEL.  
BREECH LOADING GUN.

No. 422,838.

Patented Mar. 4, 1890.

FIG. 5.

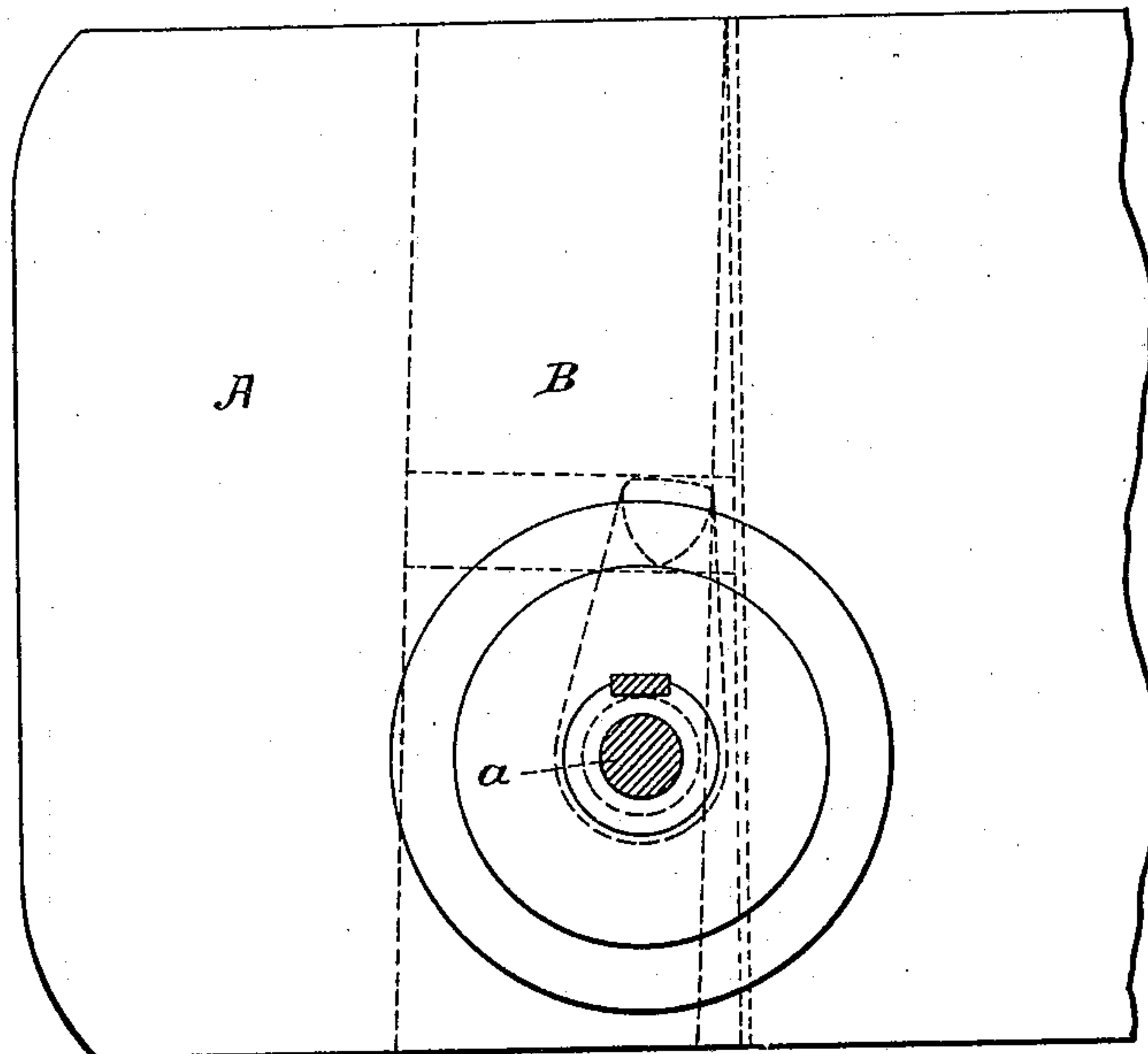
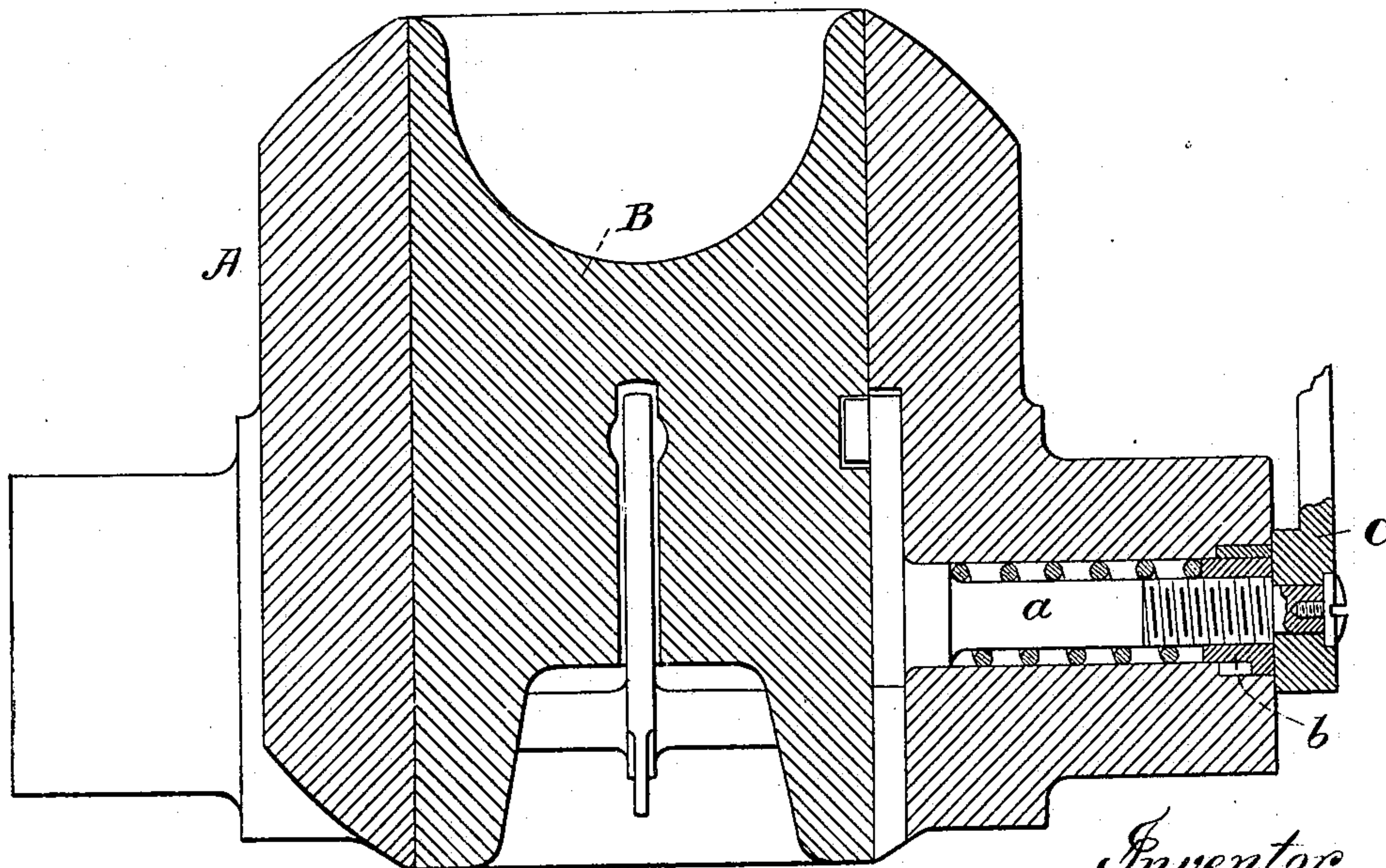


FIG. 6.



Attest.  
Geo. T. Smallwood,  
Clerk.

Inventor  
Carl Röstel  
by Knight Bros.  
attys



(No Model.)

4 Sheets—Sheet 4.

C. RÖSTEL.  
BREECH LOADING GUN.

No. 422,838.

Patented Mar. 4, 1890.

FIG. 7.

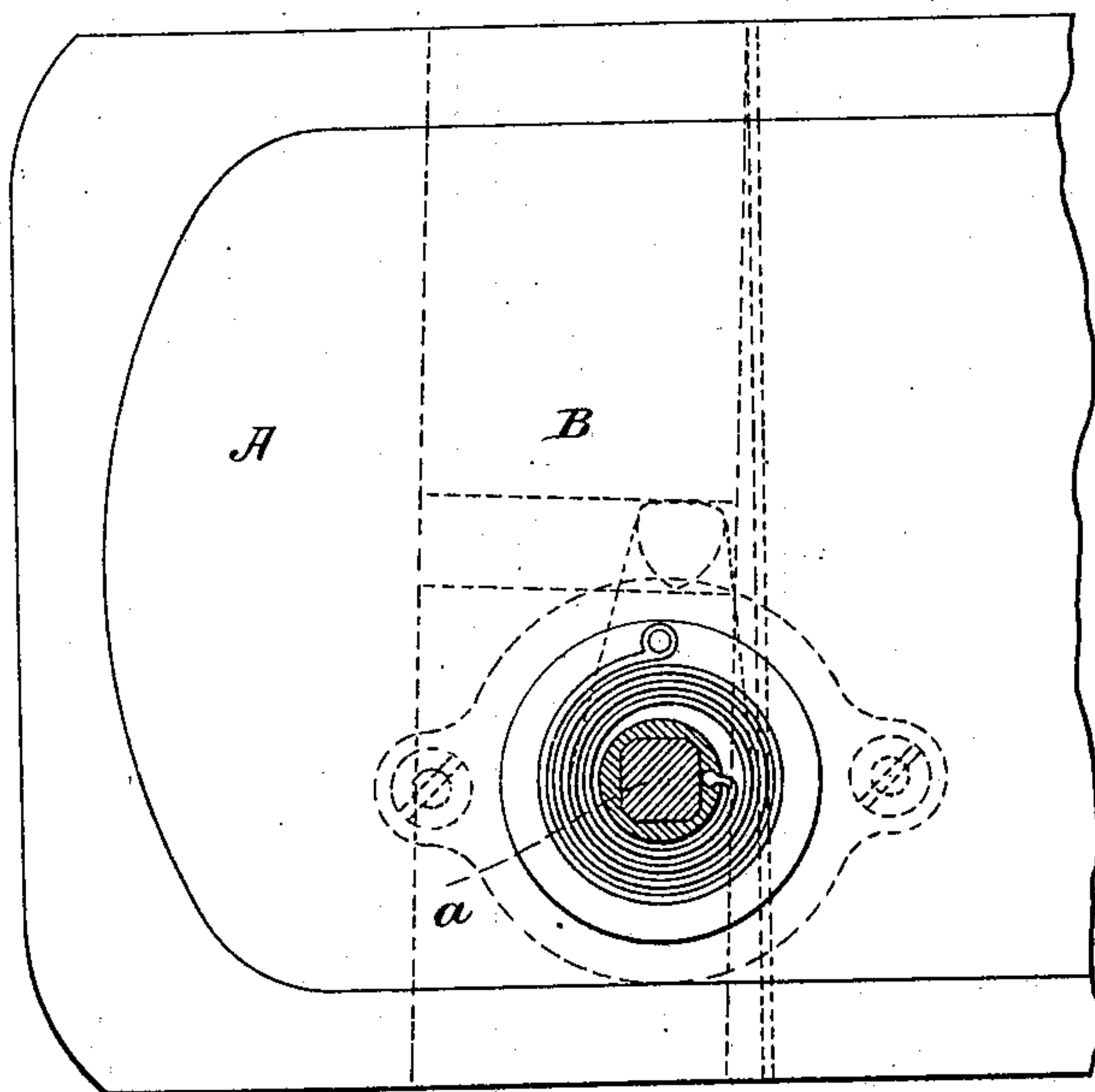
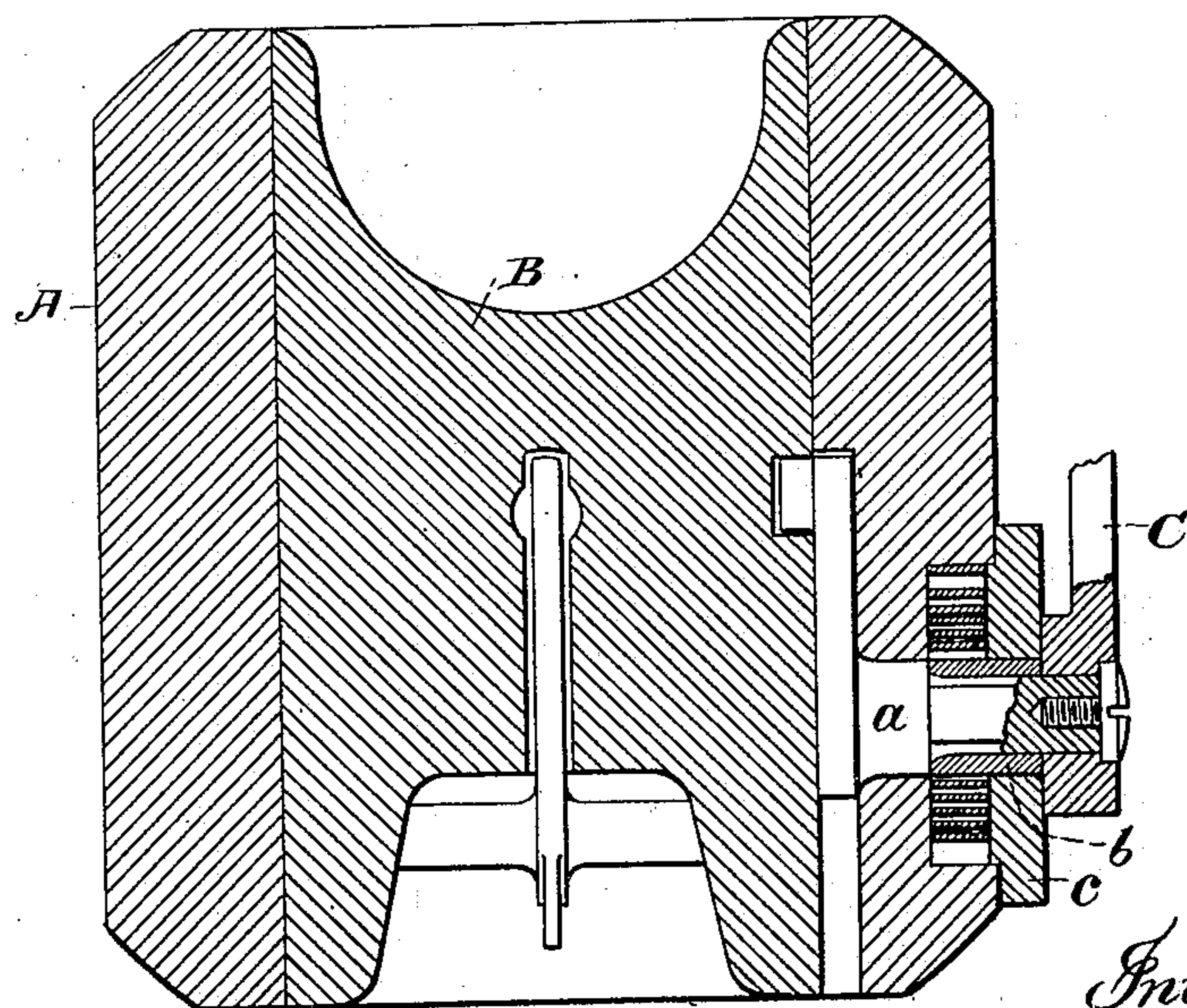


FIG. 8.



*Attest:*  
*Geo. T. Smallwood.*  
*E. Arthur*

*Inventor*  
*Carl Röstel*  
*by Knight Bros.*  
*attys*



# UNITED STATES PATENT OFFICE.

CARL RÖSTEL, OF MAGDEBURG, PRUSSIA, GERMANY, ASSIGNOR TO  
GRUSONWERK, OF SAME PLACE.

## BREECH-LOADING GUN.

SPECIFICATION forming part of Letters Patent No. 422,838, dated March 4, 1890.

Application filed May 23, 1889. Serial No. 311,872. (No model.) Patented in Germany November 25, 1888, No. 5,123; in Belgium December 13, 1888, No. 84,276, and in France December 19, 1888, No. 194,886.

*To all whom it may concern:*

Be it known that I, CARL RÖSTEL, a subject of the King of Prussia and Emperor of Germany, residing at Magdeburg, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Breech-Loading Guns, (for which I have obtained Letters Patent in Belgium, No. 84,276, dated December 13, 1888; in France, No. 194,886, dated December 19, 1888, and in Germany, No. G. 5,128, dated November 25, 1888,) of which the following is a specification.

The invention hereinafter described relates to guns of the same general structure as that described in Patent No. 383,372, of May 22, 1888, and is designed to facilitate the working of breech-loading guns, wherein the breech-block slides in a vertical or approximately vertical path by balancing or equalizing the forces required to be exerted in raising and lowering the breech-block.

Figures 1 and 2 represent, respectively, a side elevation and transverse section through the trunnions of one form of my invention. Figs. 3, 4, 5, 6, 7, and 8 are views illustrating modifications.

A is the re-enforce, which is provided with the trunnions of the gun, and B is the breech-block, which is moved up and down by a crank *a*. The said crank, which in the gun shown is supported in one of the trunnions arranged on the re-enforce, is turned by means of a hand-lever C and transmits movement to the breech-block through the medium of its pin, which slides in a groove formed in the said block. Now in order to diminish the impact of the falling breech-block, and at the same time to store the force exerted in the descent thereof for the subsequent raising of the said block, the crank-shaft *a* in Fig. 2 is provided with a torsional spring. For this purpose the said crank-shaft is bored out and the spiral spring *s* is inserted, and one end thereof introduced into a hole in the wall of a casing *b*, which is supported in the bore of the crank-shaft, so that it can be turned in the latter. The head or disk of the casing *b* is provided with a hook which bears at the commencement of the raising movement against

a pin or stud *c*, fixed in the front surface of the trunnion, and is prevented from turning in one direction by the said pin. The other end of the spiral spring is firmly connected with the crank and takes part in the turning movement of the same. By the latter movement the torsional spring is accordingly wound up or put under tension and the velocity of the falling breech-block is decreased; but in the next operation of raising the breech-block the spiral spring assists in the upward movement thereof by means of the hand-lever C, and consequently a balancing or equalizing of the forces which are used in the downward and upward movement of the breech-block is obtained.

In Figs. 3 and 4 is represented a modification of the device. The trunnions in this case are not arranged on the re-enforce, consequently there is not space for a sufficiently long spiral spring arranged as above specified. The problem is solved by the employment of a special crank *d*, the pin of which slides in an oblique groove formed in the wall of the re-enforce. The crank *d* is pivoted in the breech-block, and is provided with a square hole, in which a torsional spring composed of plate-springs is inserted. The other end of this spring is secured in the boss of a lever *e*, which is supported in a cavity of the breech-block, and is secured by means of a screw *f* in a position corresponding to the desired initial tension of the spring. A sleeve arranged on the boss of the lever *e* surrounds the spring and prevents undue bending of the latter. In the lowering of the breech-block the crank *d* is turned by the sliding of its pin in the oblique groove and the torsional spring is put under tension. This tension assists in the next upward movement of the breech-block, so that in this modification, also, a balancing or equalizing of the force is obtained.

Figs. 5 and 6 illustrate the solution of the problem by means of a pressure-spring. This spring is supported upon the shaft of the crank *a*, which is provided at its free end with a quick-pitch screw-thread. The nut *b* forms a sleeve which can be displaced in the re-enforce of the gun, but cannot be turned.



If, now, the crank-shaft *a* is turned through the medium of the hand-lever *C*, the sleeve *b* is moved into the re-enforce and compresses the spiral spring. In the next backward turning of the hand-lever the spiral spring expands, and by its pressure upon the nut *b* facilitates the raising of the breech-block *B*.

In the gun shown in Figs. 7 and 8 the problem is solved by means of a powerful spiral plate-spring or involute spring arranged in a recess in the re-enforce, the outer end being secured to the re-enforce and the inner end to a sleeve *b*, placed upon the square part of the shaft *a*. A disk *c*, for closing the said recess and for guiding the sleeve *b* on crank-shaft *a*, is connected therewith. The mode of operation of this device is exactly the same as repeatedly above described.

The number of the modifications might of course be increased, but this would be superfluous, as the nature of the invention—namely, the balancing of the breech-block by a crank which is under spring-pressure—has been made sufficiently clear by the examples selected.

Having thus described my invention, the

following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with the breech-block and crank engaging the same and adapted to be turned by the withdrawal of the block, of a torsional spring connected to the crank and opposing its movement, substantially as explained.

2. In a breech-loading gun, the combination, with a shaft of the breech-lowering mechanism, of a spring connected with the shaft and opposing the movement thereof with a yielding force, substantially as and for the purpose set forth.

3. The combination, with the breech and the block sliding therein, of the shaft having on one end the crank engaging the breech and on the other the hand-lever for controlling the shaft, and the spring mounted on the shaft for opposing the rotation thereof, all substantially as and for the purposes set forth.

CARL RÖSTEL.

Witnesses:

JULIUS VON STINTZ,  
EMIL KALLNECKER.