

L. W. BROADWELL.  
BREECH LOADING ORDNANCE.

No. 43,553.

Patented July 12, 1864.

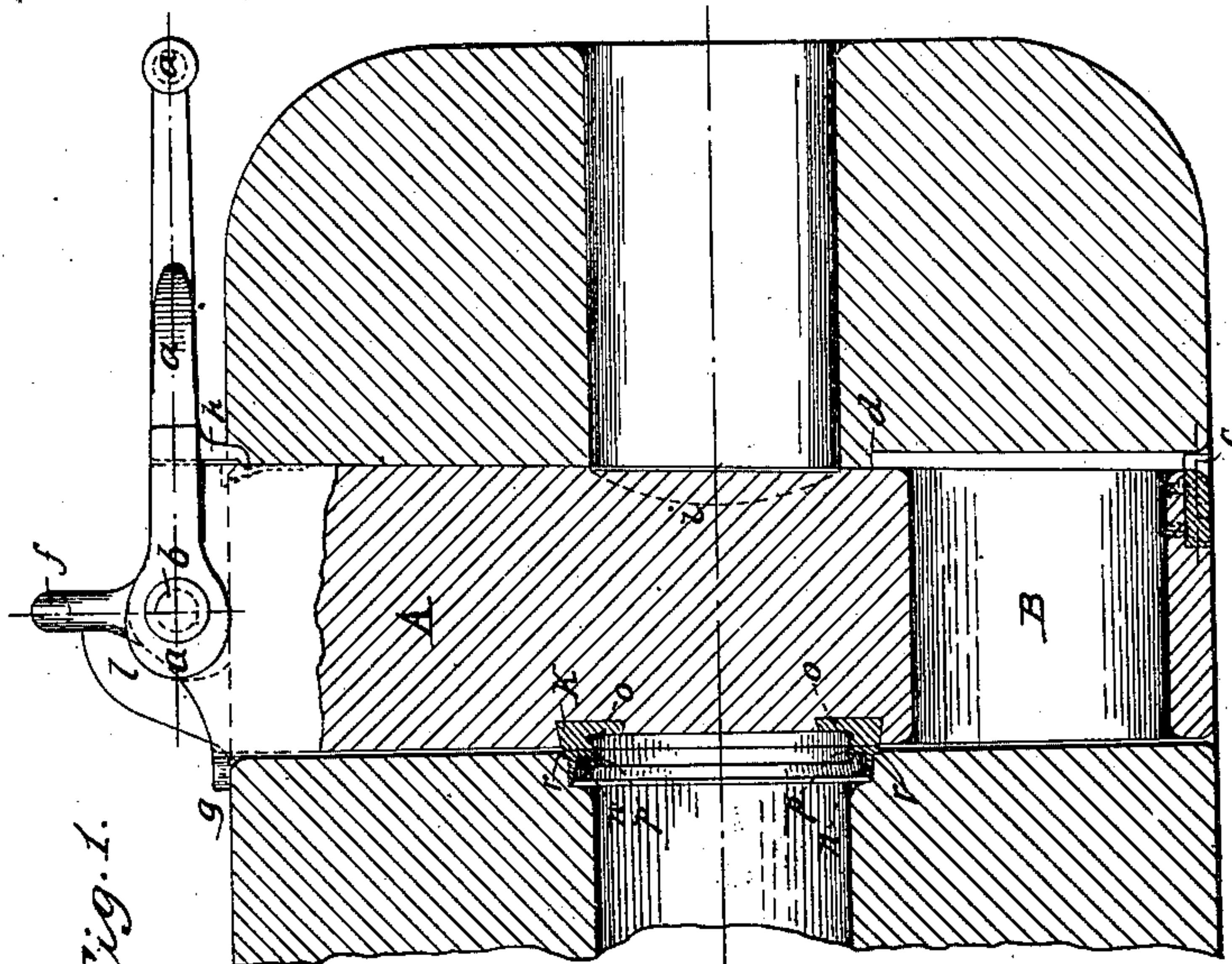


Fig. 1.

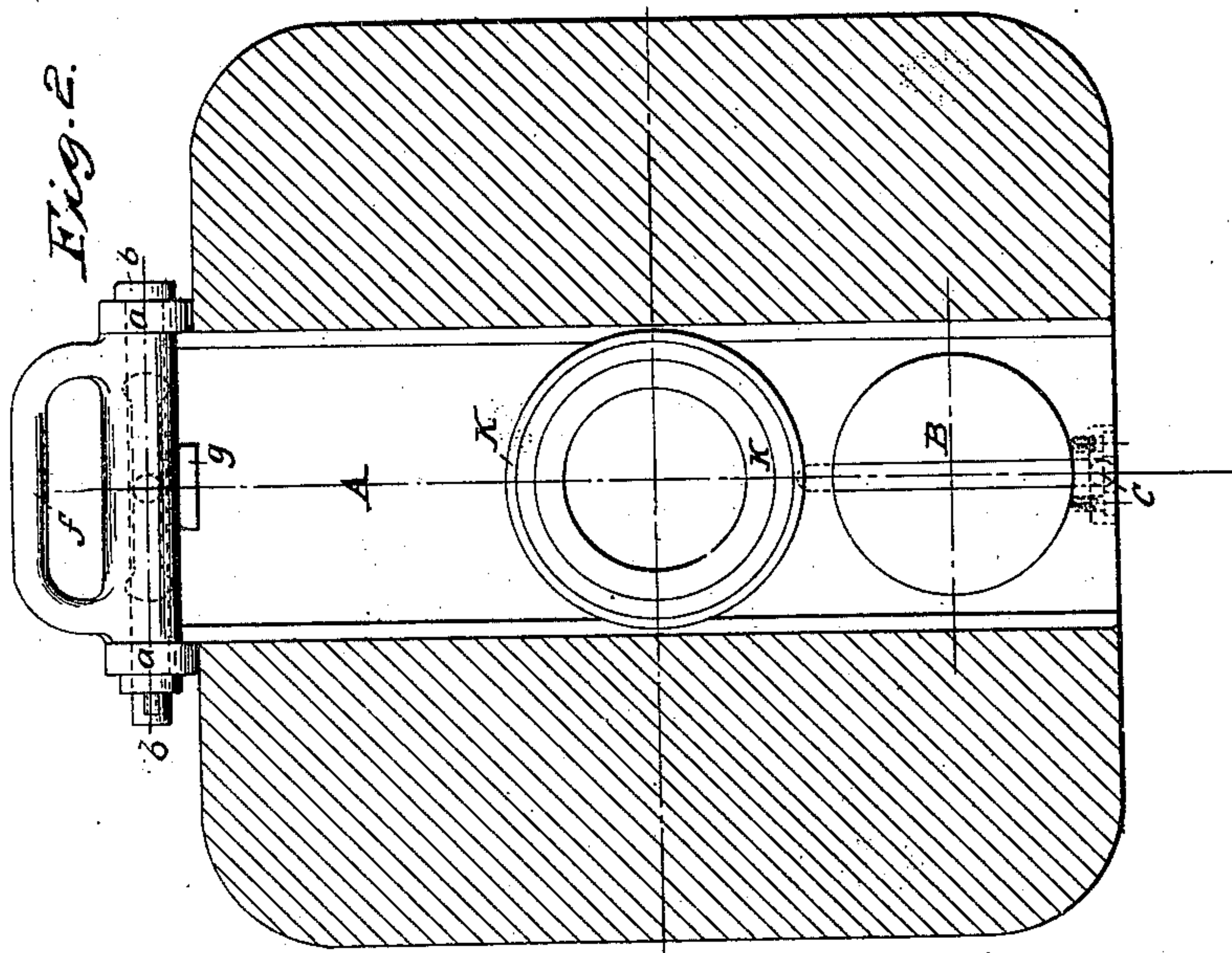


Fig. 2.

Witnesses:

*W. H. Miller*  
*George Handlin*

Inventor  
*Lewis Wells Broadwell*

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Fig. 4.

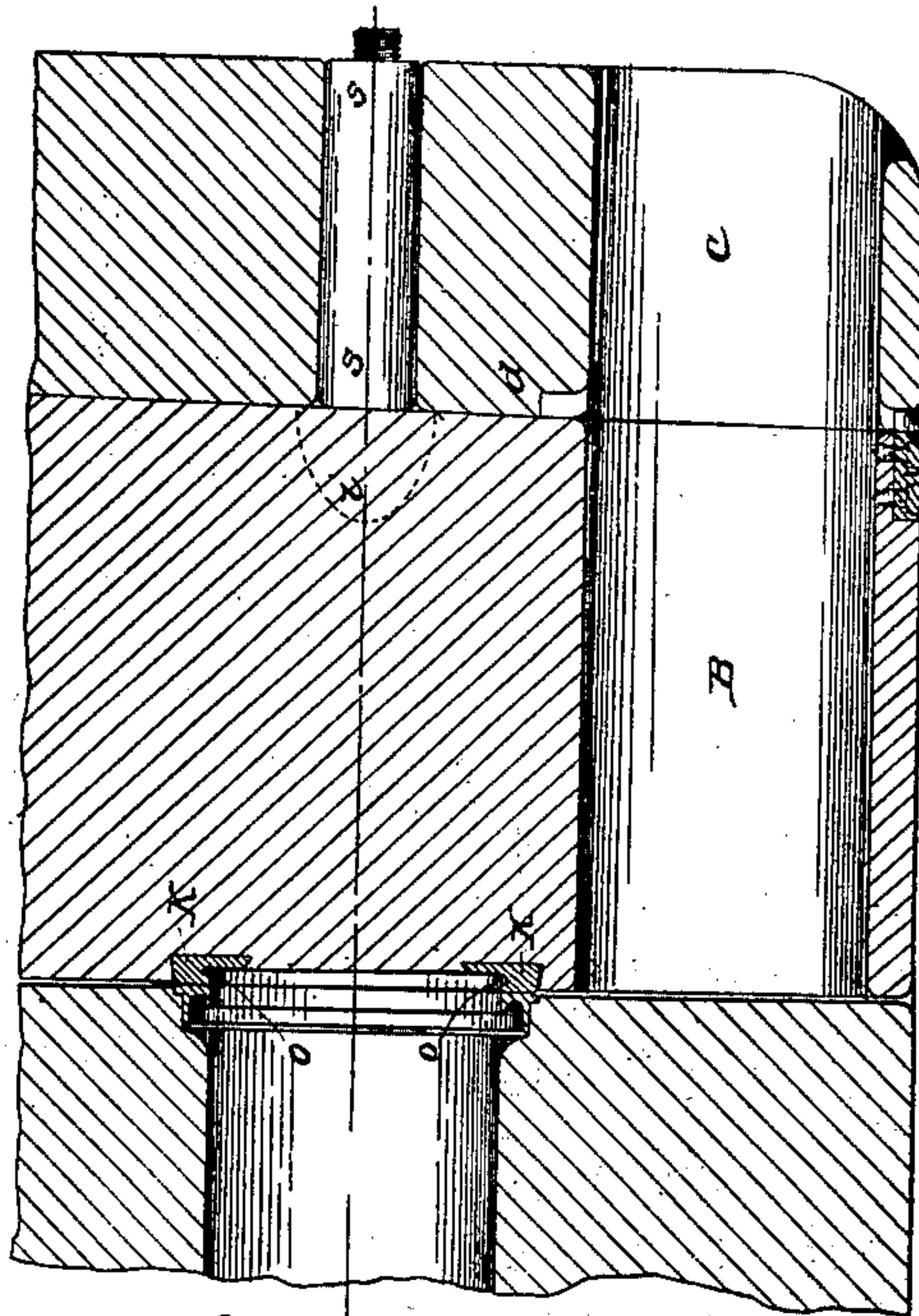
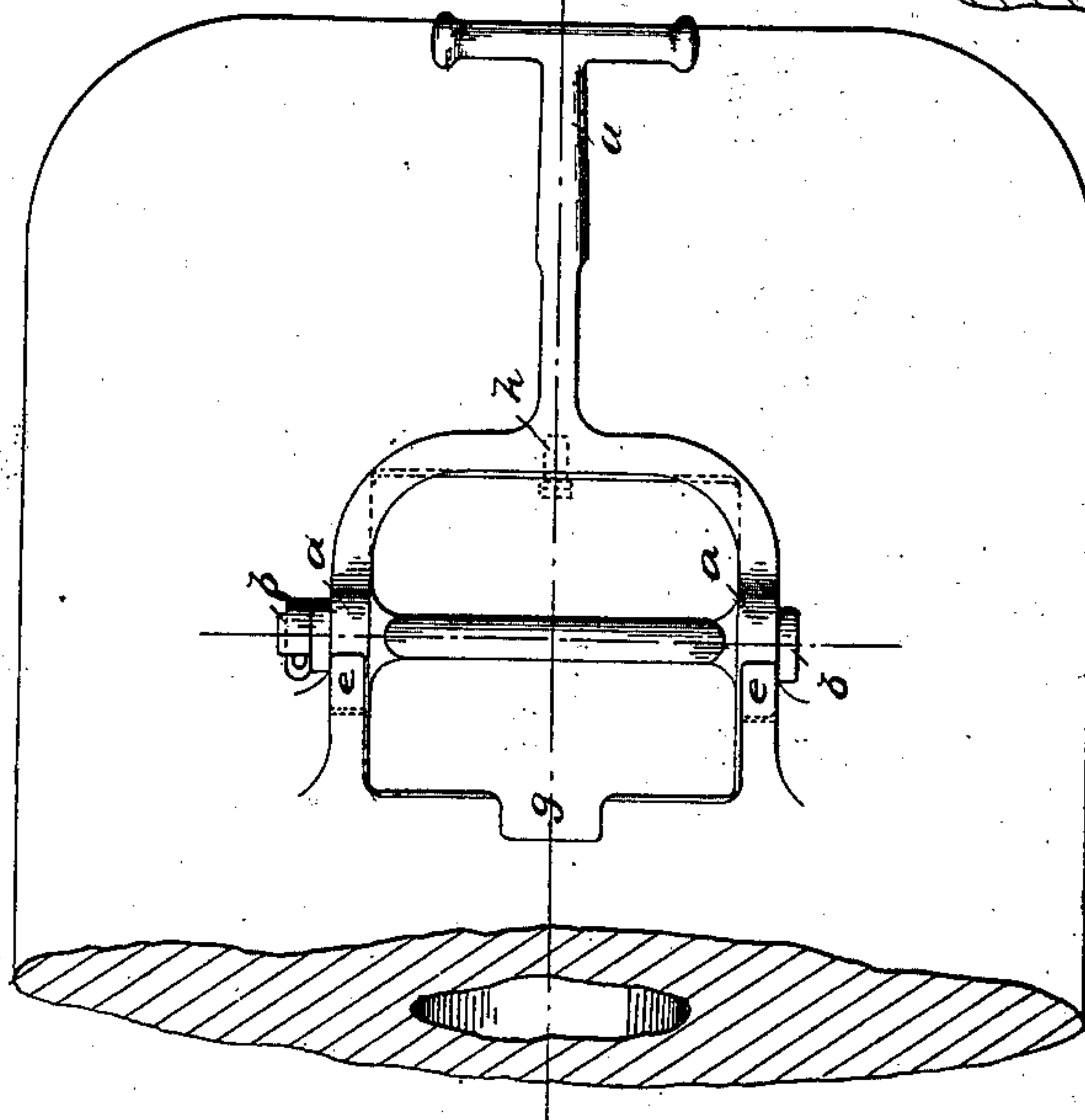


Fig. 3.



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Attest  
George H. Sullivan

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Fig. 5.

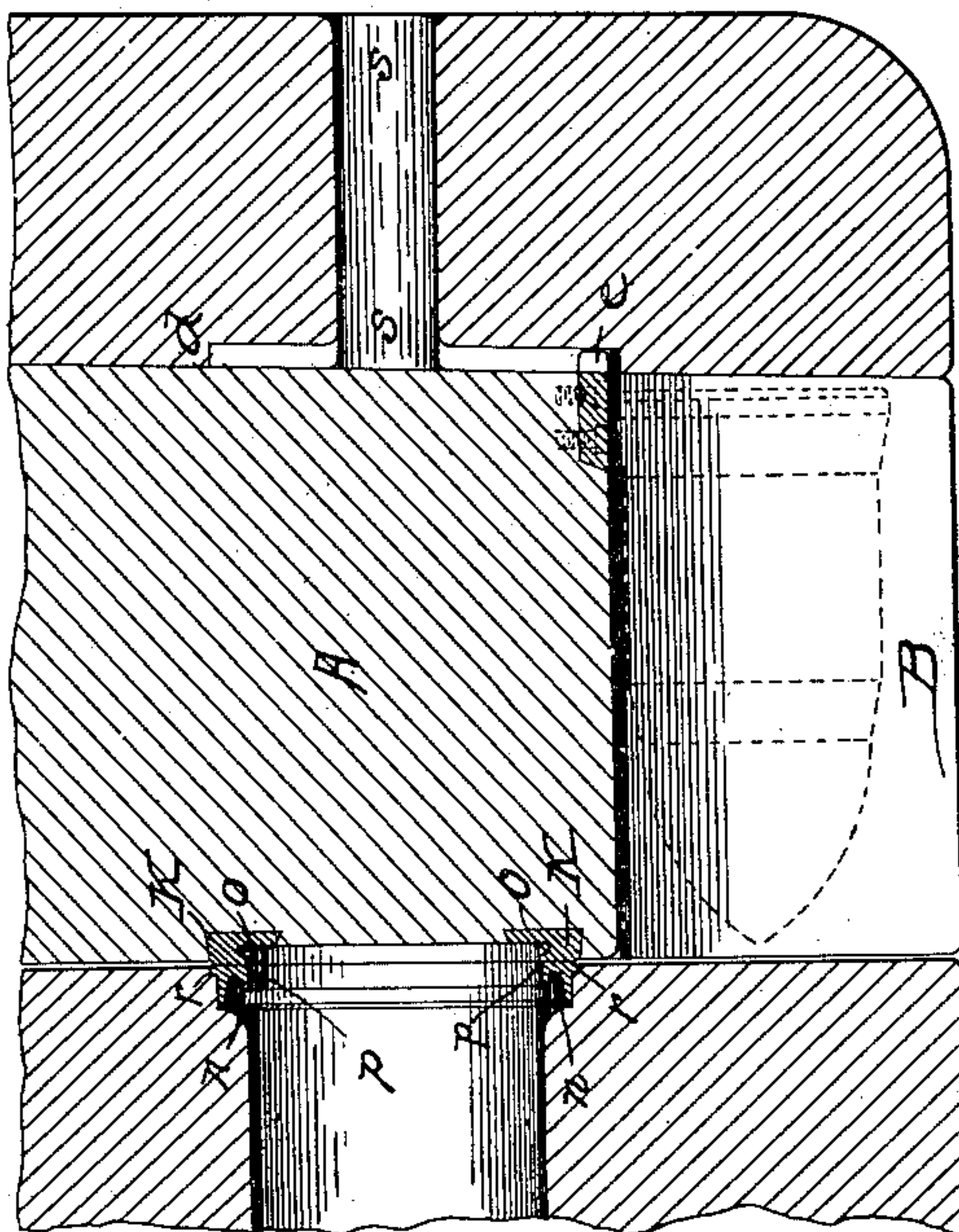
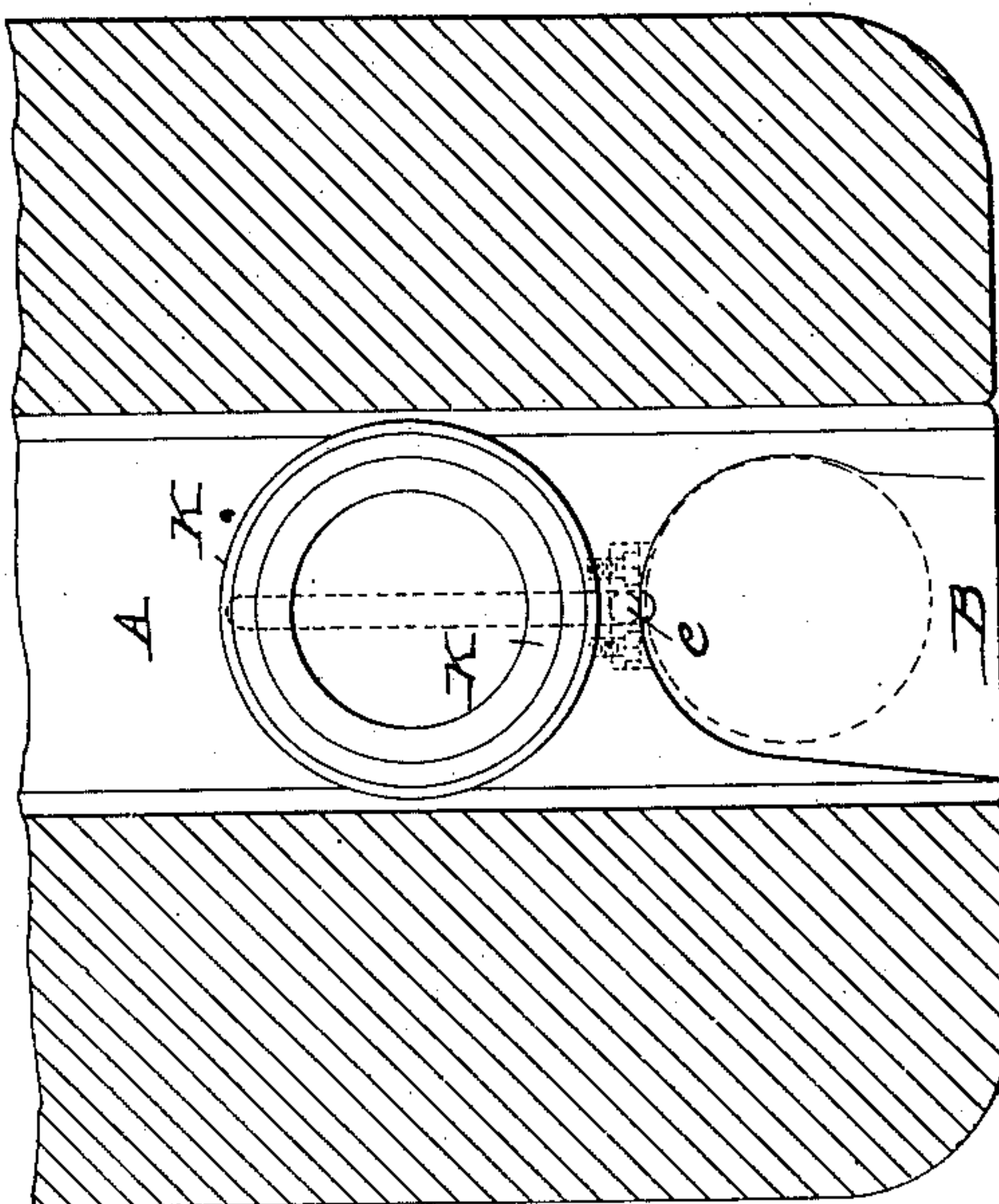


Fig. 6.



Witnesses:  
Malkin  
George Haseltine

Inventor:  
Lewis Wells Broadwell

*(Signature)*



# UNITED STATES PATENT OFFICE.

LEWIS WELLS BROADWELL, OF LONDON, ENGLAND, ASSIGNOR TO WILLIAM ISAAC TOWNSEND, OF NEW YORK CITY.

## IMPROVEMENT IN BREECH-LOADING ORDNANCE.

Specification forming part of Letters Patent No. 43,553, dated July 12, 1864.

*To all whom it may concern:*

Be it known that I, LEWIS WELLS BROADWELL, of London, in the Kingdom of Great Britain, have invented new and useful Improvements in Breech-Loading Ordnance, applicable also to small-arms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the figures and letters marked thereon.

The first part of my invention relates to the employment for opening and closing the breech of a piece of ordnance of a sliding block having a movement horizontal to the bore of the piece, and the second part to an expanding ring or valve located in a chamber at the rear of the bore and operating against a bearing in the face of the sliding block for the purpose of preventing the escape of gas; and my invention consists, first, in an improved mode of moving the said breech-block; secondly, in an improved construction and mode of applying the said ring or valve.

In the drawings, Figure 1 is a central horizontal longitudinal section of the breech of a piece of ordnance with my improvements. Fig. 2 is a transverse section of the same close in front of the sliding breech-block. Fig. 3 is a side elevation of the same. Fig. 4 is the same view as Fig. 1, with loading-chamber behind the block removed from the center to the side. Figs. 5 and 6 are the same views as Figs. 1 and 2 modified to receive the charge directly into the block from the side of the cannon.

Like letters refer to corresponding parts in all the figures.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The application of this invention is not confined to ordnance especially constructed for the purpose, but may be applied to cannon now in use; and the second part of my invention may be advantageously applied to small-arms.

In applying my invention to ordnance a square horizontal aperture is made through the breech at right angles to the bore, but slightly tapering on the rear side. In this aperture or chamber I fit a sliding block, A, with a perforation, B, the diameter of which

is the same as the diameter of the bore, and through which the charge is passed into the cannon, the block A being partially withdrawn for the purpose. The block A is operated in part by the pronged eccentric lever *a*, turning on the pivot *b*. When the lever is placed at right angles with the cannon and in a line with the block, the latter is sufficiently free to permit its being withdrawn by hand until arrested by the set-pin *c* coming in contact with the shoulder *d*. The loading-chamber B is then in a line with the bore of the cannon. When the charge is entered, the block A is forced into its chamber sufficiently to bring the eccentric lever to bear under the projections *e e*, by which means the block is pressed home, and the cannon is ready for discharging. The handle *f* is adapted for convenience in operating the block A, and may be formed in any suitable shape. The projection *g* is designed to stop the block at the desired point. The catch *h* is employed to retain the eccentric lever in the position shown in Fig. 1. The dotted line *i* indicates the shape of a recess that may be made in the rear of the block to prevent the latter from binding in the chamber in case the force of the charge should cause the block to yield slightly where it has no support. The ring *k*, made of copper or other similar metal, is set in a recess formed in the face of the block A, to afford a suitable bearing for the expanding ring *n*. This bearing is undercut at *o* for the purpose of admitting gas, which forces the rim against the ring *n* while the latter is being pressed forcibly back against the bearing *k*. The expanding ring or valve *n* is fixed in an enlargement of the bore; and effectually prevents the escape of gas by expansion in its own chamber, at the same time being forcibly pressed against the bearing *k*. The internal projection, *p*, is designed for giving sufficient strength to the ring to enable it to resist the severe pressure of the charge. The object of the flange *r* is to prevent the ring's being pressed so far into its chamber as to break the contact of the ring with the bearing *k*, when the breech is closed for discharging the cannon.

In Fig. 4 is shown a modification of my invention, the charge being introduced through the aperture C into the chamber B. By this arrangement greater strength is given to the



breech of the cannon immediately in rear of the charge. The projectile being first passed into the chamber B, the block A is withdrawn until the projectile comes in a direct line with the bore, into which it is forced by a rammer operated through the aperture *s*. The block is then returned until the apertures B and C come in a direct line, when the cartridge is introduced into the bore of the cannon in a similar manner as the projectile, and the block A again returned to the position shown in Fig. 4. In Figs. 5 and 6 is shown another modification, which effects the same object in a more desirable and convenient manner. By this arrangement the rear end of the cannon is constructed solid, with the exception of an aperture, *s*, sufficiently large to admit the rammer. The end of the block A being left open, the gunners have only to place the projectile in the position shown in the drawings, when the block is withdrawn sufficiently to bring the projectile in line with the bore, when it is forced into the cannon, as described in connection with Fig. 4. While the block remains in this position the gunner places, with the hands, the cartridge in line with the bore, when it is forced into the cannon by means of the rammer passed through the aperture *s*. The cartridge being entered, the block A is returned to its chamber and the cannon is ready

for discharging. In these modifications similar means may be employed for operating and regulating the movements of the block A to those before described. The different parts of my improved ordnance may be constructed of any suitable metal, and the form may be modified without departing from the spirit of my invention. The expanding gas ring or valve may be applied to breech-loading small-arms in a manner similar to that described.

Having fully described my said invention, I wish it understood that I do not confine myself to the exact details herein mentioned; but

What I claim, and desire to secure by Letters Patent, is—

1. The construction of the expanding ring *n* with the projection *p* and flange *r*, in combination with the undercut bearing *k*, substantially as and for the purposes herein specified.

2. The combination, with a perforation, B, in the sliding block A, of an opening in the breech of the gun, or their equivalents, for admitting, and an aperture, *s*, in a line with the bore, for driving in, the cartridge, substantially as herein described.

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Witnesses:

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