3 Sheets—Sheet 1.

G. UTLEY.

Machine Gun.

No. 20,229. Patented May 11, 1858.

Fig: 1.

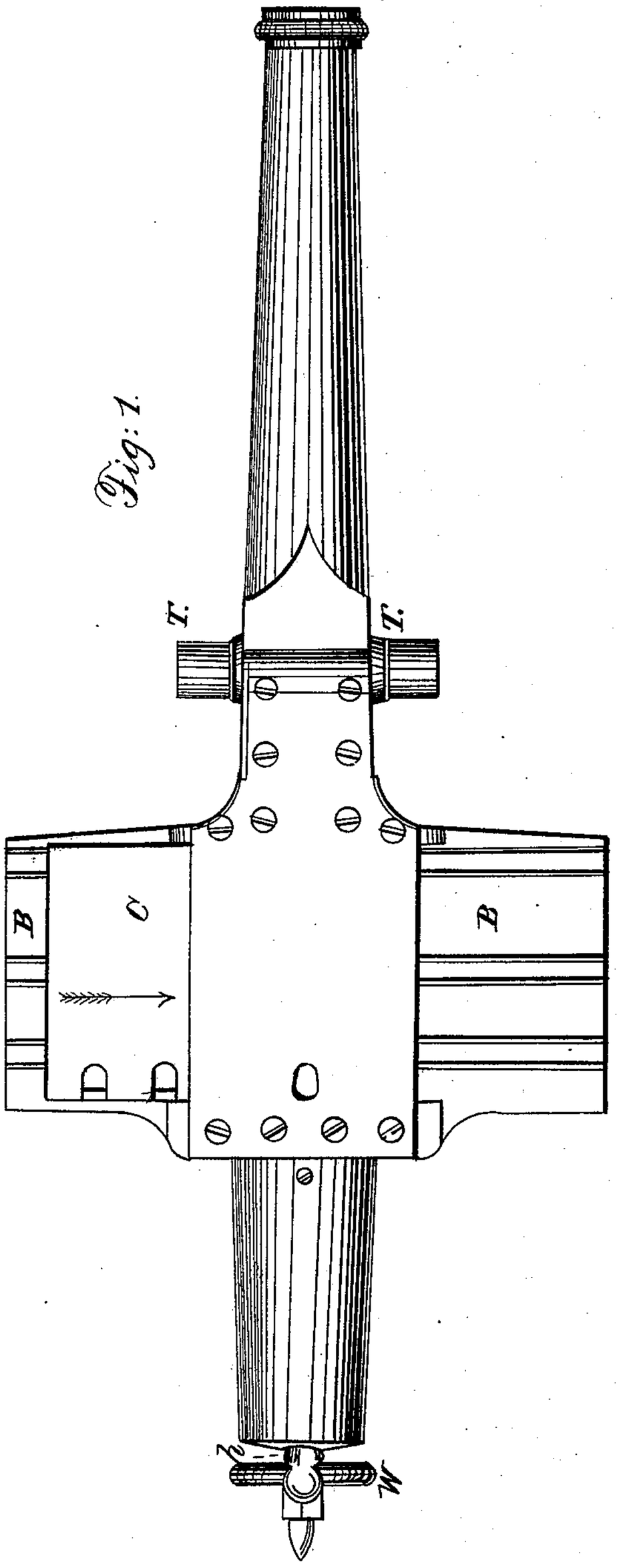

Fig: 2.

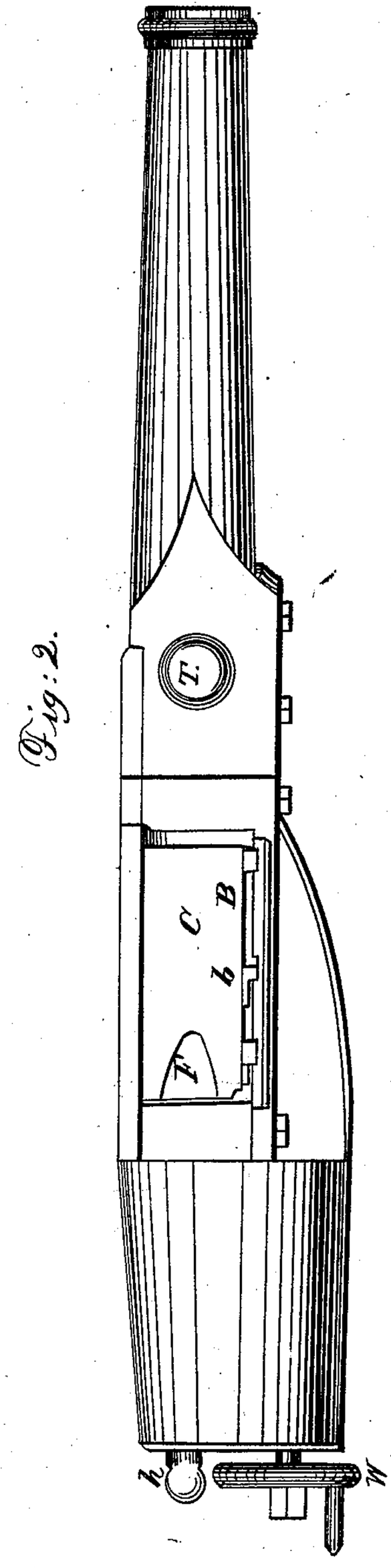

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Fig: 4.

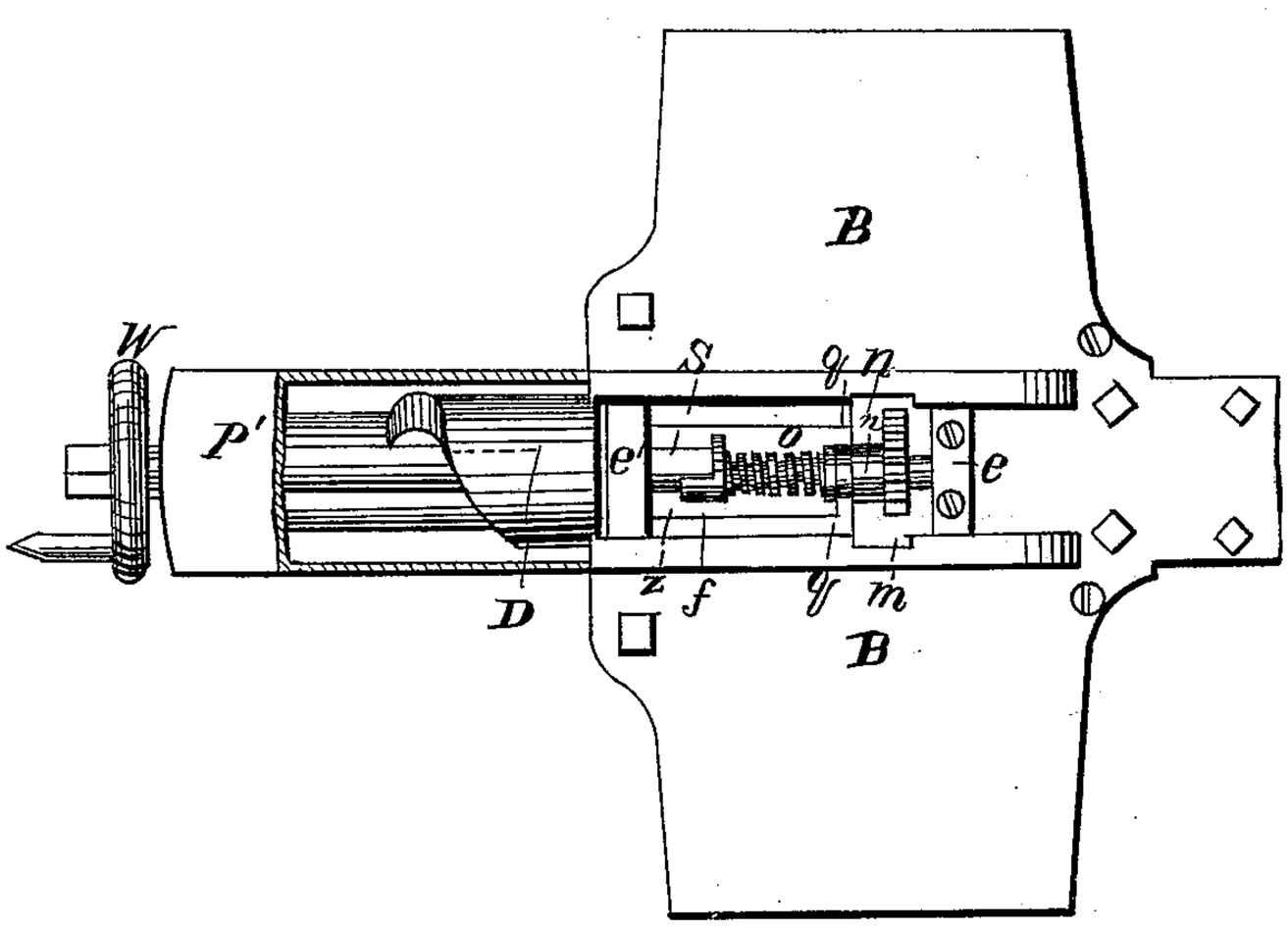

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Fig. 6

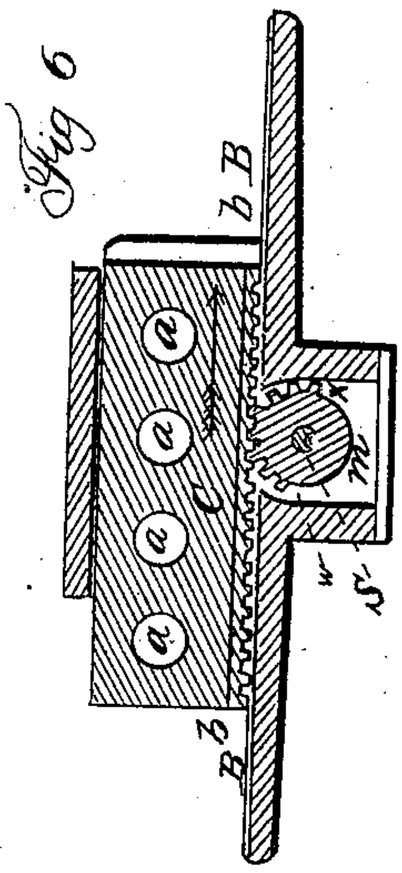


Fig. 7

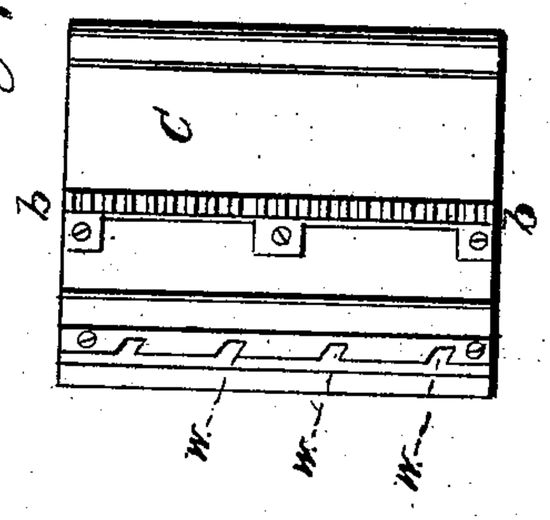


Fig. 3.

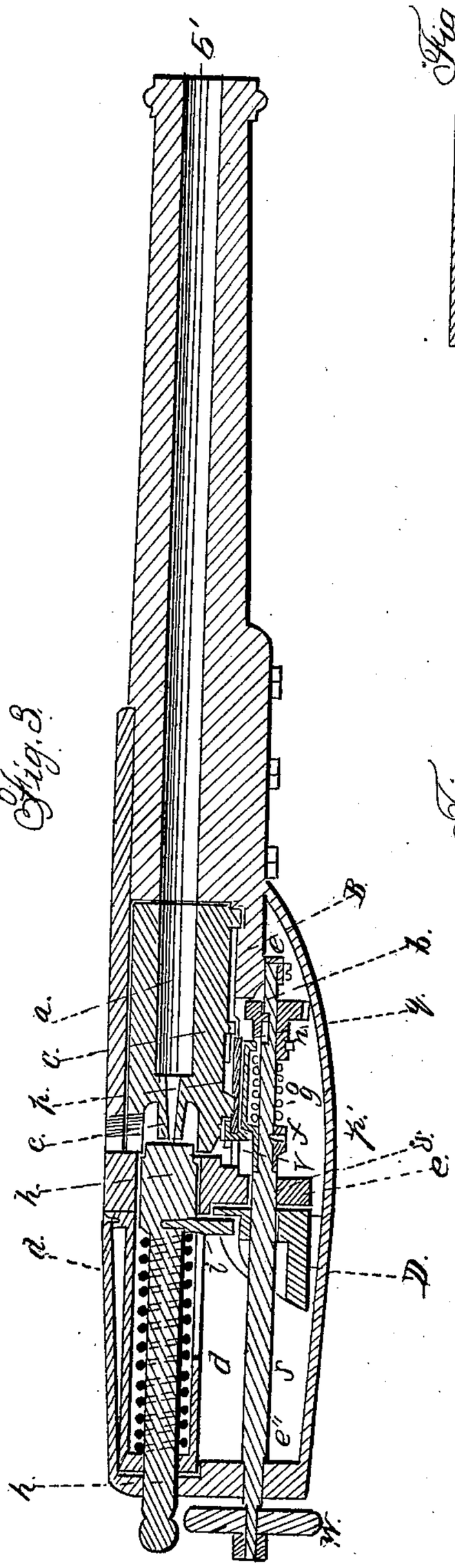
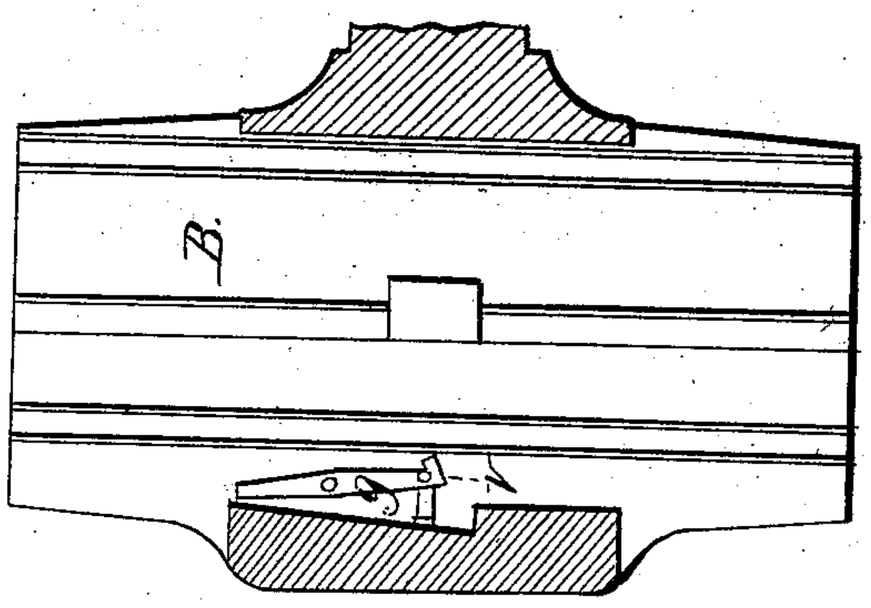


Fig. 5.



UNITED STATES PATENT OFFICE.

GREY UTLEY, OF LOUISBURG, NORTH CAROLINA.

IMPROVEMENT IN REPEATING-ORDNANCE.

Specification forming part of Letters Patent No. **20,229**, dated May 11, 1858.

To all whom it may concern:

Be it known that I, GREY UTLEY, of Louisburg, in the county of Franklin and State of North Carolina, have invented a new and useful Improvement in Repeating-Ordnance; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, forming part of this specification, in the several figures of which similar characters of reference denote the same part.

Figure 1 is a top view of the cannon. Fig. 2 is a side view of the same. Fig. 3 is a vertical longitudinal section through axis of bore. Fig. 4 is a bottom view with plate *p'* removed from the operating mechanism. Fig. 5 is a top view of bed-piece on which the breech moves, showing the detent by which the chamber is held in line with bore. Fig. 6 is a transverse section through moving pinion and rack of breech-piece, looking toward muzzle. Fig. 7 is a bottom view of chamber-piece.

The invention here considered has reference to the construction of ordnance with many-chambered breech-pieces movable in a rectilinear direction for bringing each chamber in rear of the bore in rapid succession.

The nature of the invention consists in certain devices, hereinafter to be set forth, for effecting the movement of the breech-piece and the discharge of the load from the rotation of a single shaft, the details of construction and operation being as follows:

In the drawings, T T are the trunnions of the piece, behind which is the bed B, extending on each side at right angles to the axis of the piece, the metal being cut away above this bed to admit the breech-piece *c*. The breech-piece is of the form shown in Figs. 6 and 7, with any desired number of chambers, *a*, and is designed to be moved along bed B by means of a rack, *b*, on its under side meshing with a toothed wheel, under circumstances hereinafter to be set forth. The vent-tubes *c* of the chambers are in the rear portion of the breech-piece, the discharge being effected by means of the longitudinally-moving hammers, *h*, carried forward by the spring *d*.

Under the piece is a longitudinal shaft, *s*, having its bearings at *e e' e''* and rotated by wheel W. Secured to this shaft are two cams, D and *f*, the former in rear and the latter in front of bearing *e'*. The cam D has against its edge the stud *i* of hammer *h*, and serves by the rotation of shaft *s* to draw the hammer rearward.

Secured to the shaft *s*, and capable of a longitudinal movement thereon, is the wheel *m*, partially toothed, as shown in Fig. 6. The hollow shaft *n* of this wheel (whose movement on the shaft *s* gives the wheel its lateral play) is forced forward by the spring *o* between its extremity and the cam *f*, so that the tendency of wheel *m* is to assume the position shown in Fig. 3.

Above the shaft *s* is a bar, *p*, having at one extremity a forked stud, *q*, embracing hollow shaft *n* in a groove, as shown in Fig. 3. At the other extremity of this bar is a pin, *v*, whose lower end is acted upon by cam *f* and whose upper extremity passes through the detent *g* on the upper surface of bed B.

The several parts being properly adjusted, the operation is as follows: The chambers *a* are duly loaded and capped and the breech-piece inserted at the left side, as shown in Fig. 1. Wheel W is then turned from left to right. The rotation of shaft *s* thus produced has the following effect: Cam D, acting upon stud *i*, withdraws hammer *h* from its contact with cavity F, Fig. 2, of the breech-piece, the breech having been run in upon the bed until this contact was produced. Cam *f* then comes into action, drawing bar *p* rearward, and with it wheel *m*. When the wheel has reached a position directly under rack *b* the extreme tooth, *x*, of the wheel engages the rack, and by the continued rotation of shaft *s* the breech C is moved along bed B in direction of arrow. As the tooth *x'* of the wheel *m* leaves the rack *b* pin *v* slips from the extreme point, *z*, of the cam *f*, permitting spring *o* to force wheel *m* into the position shown in Fig. 3 and carry the detent *g* into the first notch *w* of the breech-piece, the movement of the breech C having been just sufficient to make the axes of chamber *a* and bore *b'* coincident. During this movement of the breech the hammer *h* has been drawn rearward by cam D. Stud *i* reaches its extreme rear position an instant after the movement of the breech terminates, and detent *g* secures it. The slipping of the stud *i* from the cam permits spring *d* to carry the hammer forward against the cap and dis-

charge the piece. The continued rotation of shaft causes a renewal of the before-described actions of the several parts and a second discharge of the piece. As the load in the last chamber is discharged the chamber is drawn out at the right and another chamber properly loaded inserted, in the manner before described, at the left. The discharge may thus be rendered continuous for any desired period, a suitable number of breech-pieces being prepared and loaded in a cool state. It will be observed that the detent *g* is withdrawn from its notch *w* at the commencement of the rearward movement of wheel *m*, and that the rear movement of the wheel *m* ceases on the meshing of its teeth with rack *b*, the cam *f* being of such form as merely holds the said wheel in position during the movement of the breech-piece.

I do not claim effecting the movement of the breech and discharge of the piece by the continuous rotation of a shaft when applied to revolving-breech ordnance. Neither do I claim of itself a reciprocating hammer thrown forward by a spring; but

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

The shaft *s*, with cams D and *f*, as described, in combination with the reciprocating hammer *h*, the laterally-moving toothed wheel *m*, and the detent *g*, said parts being connected and with a many-chambered breech-piece having a rectilinear movement, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

GREY UTLEY.

Witnesses:
GEO. PATTEN,
JOHN S. HOLLINGSHEAD.