(No Model.) 3 Sheets—Sheet 1.

G. GERDOM.

BREECH LOADING ORDNANCE.

No. 451,241. Patented Apr. 28, 1891.

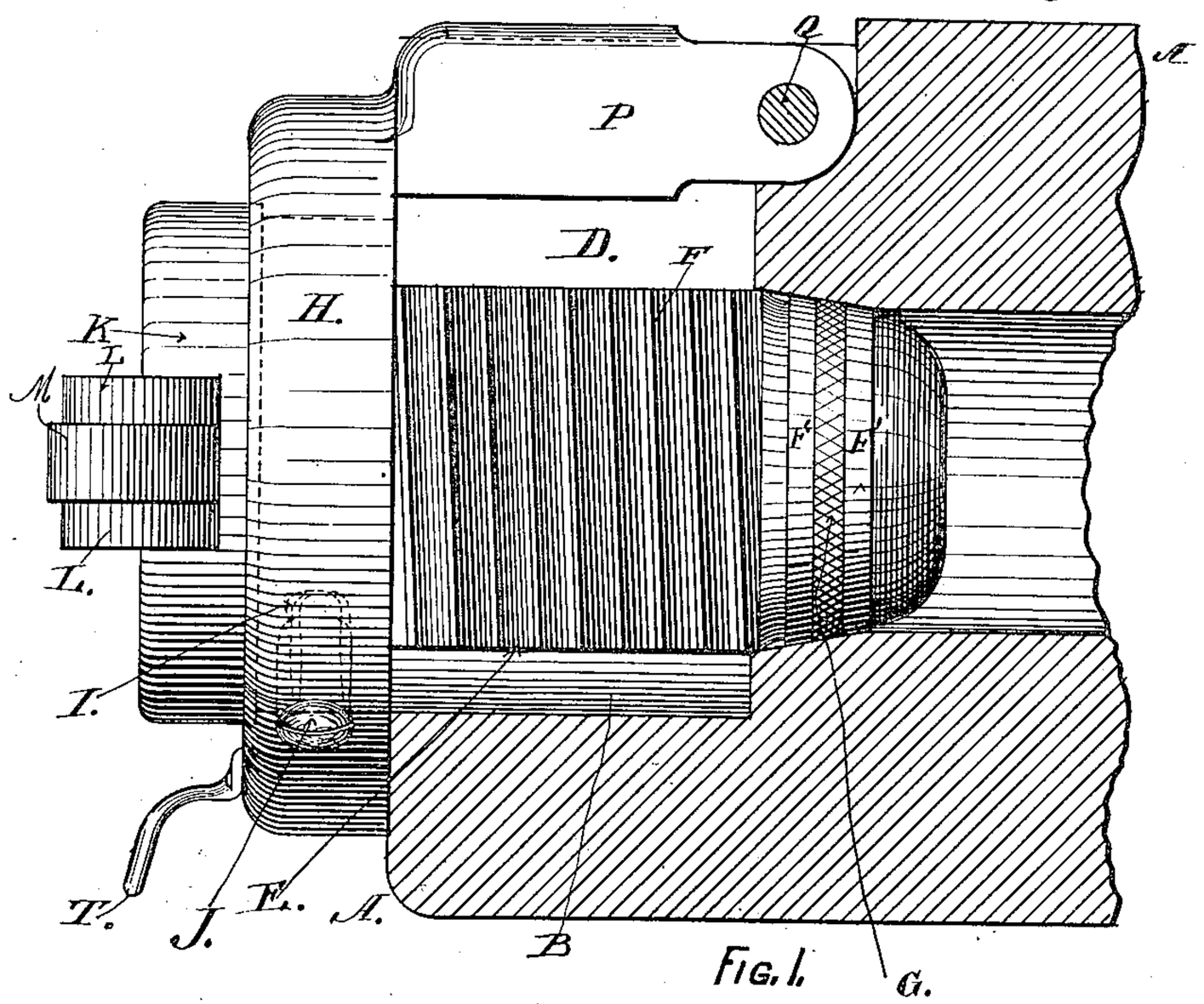

FIG. 1.

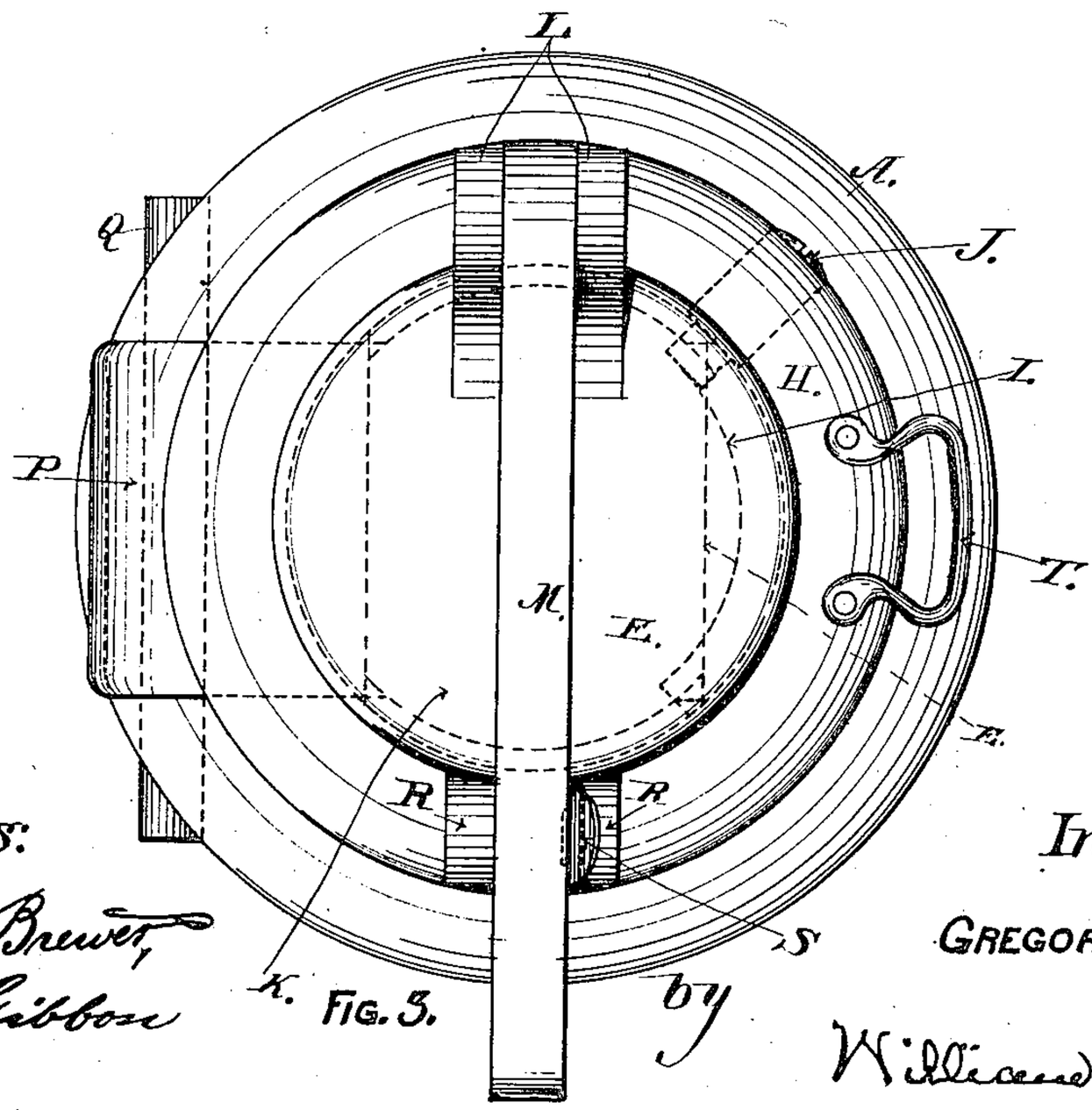

FIG. 3.

Witnesses:
S. B. Brewer,
Thos. H. Gibbon

Inventor:
GREGORY GERDOM,
by
William W. Lowe,
Attorney.

(No Model.) 3 Sheets—Sheet 2.

G. GERDOM.

BREECH LOADING ORDNANCE.

No. 451,241. Patented Apr. 28, 1891.

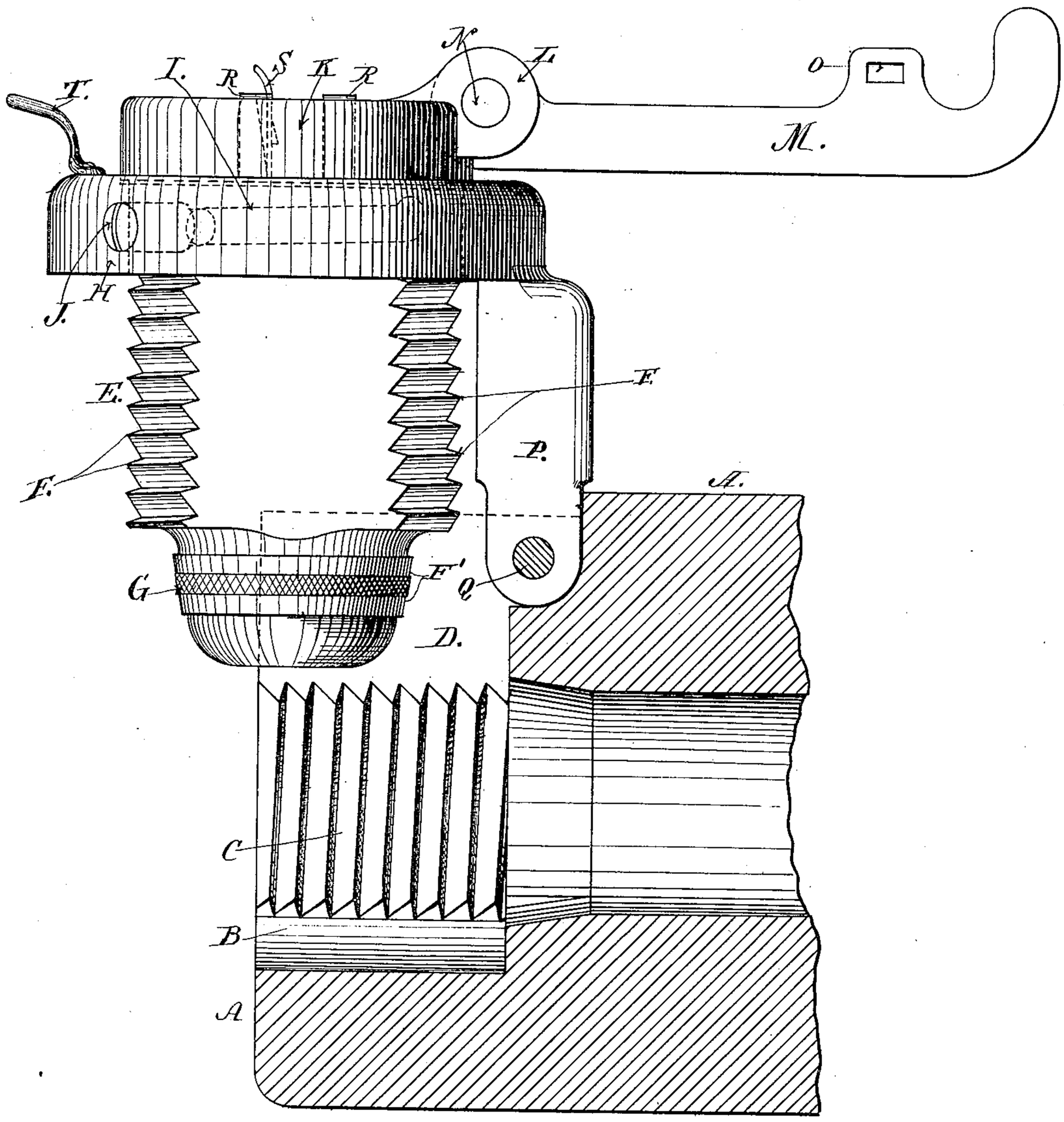

FIG. 2.

Witnesses:
S. B. Brewer,
Thos. H. Gibbon

by

Inventor:
GREGORY GERDOM,
William A. Law,
Attorney.

(No Model.) 3 Sheets—Sheet 3.

G. GERDOM.

BREECH LOADING ORDNANCE.

No. 451,241. Patented Apr. 28, 1891.

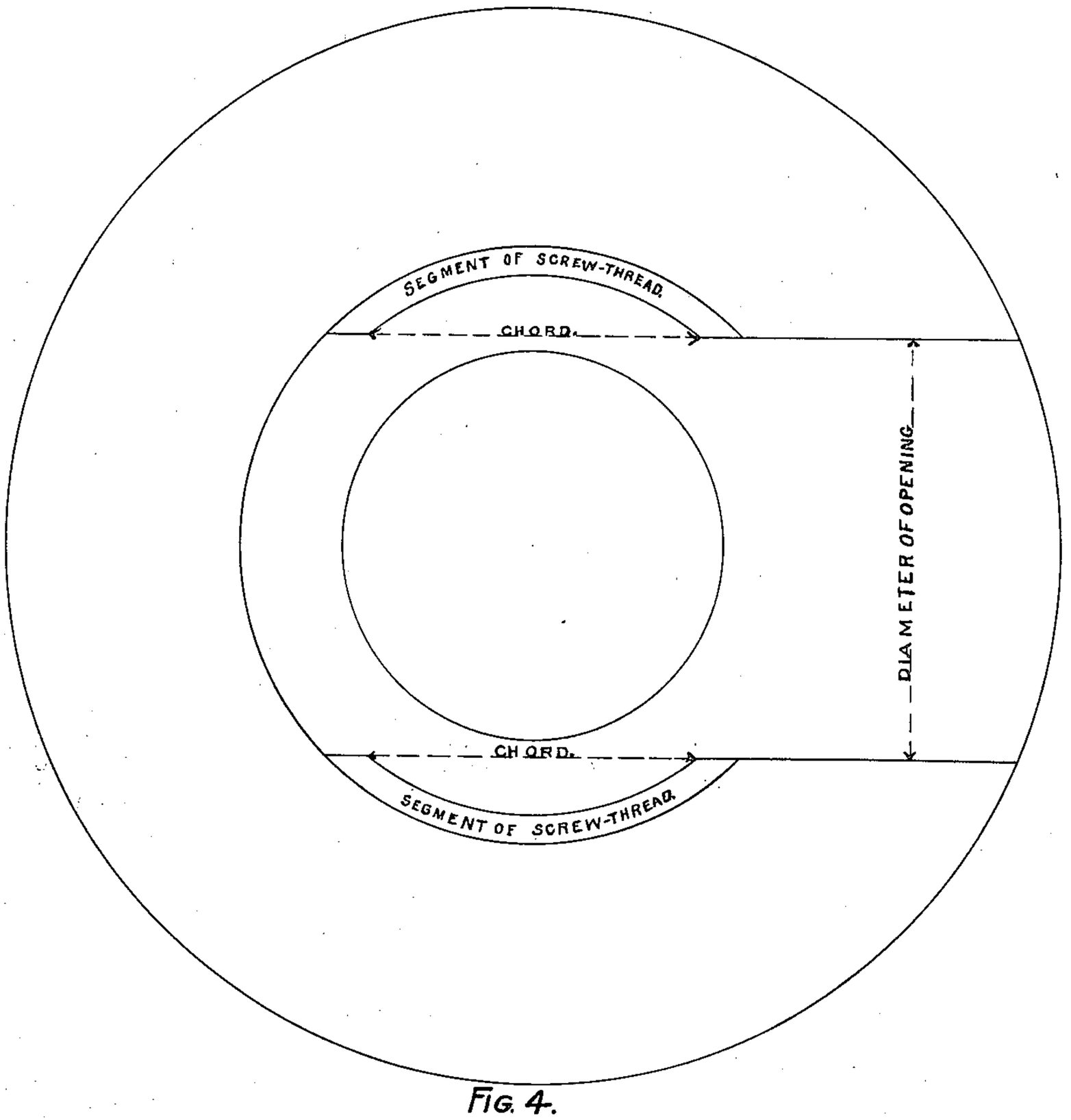

FIG. 4.

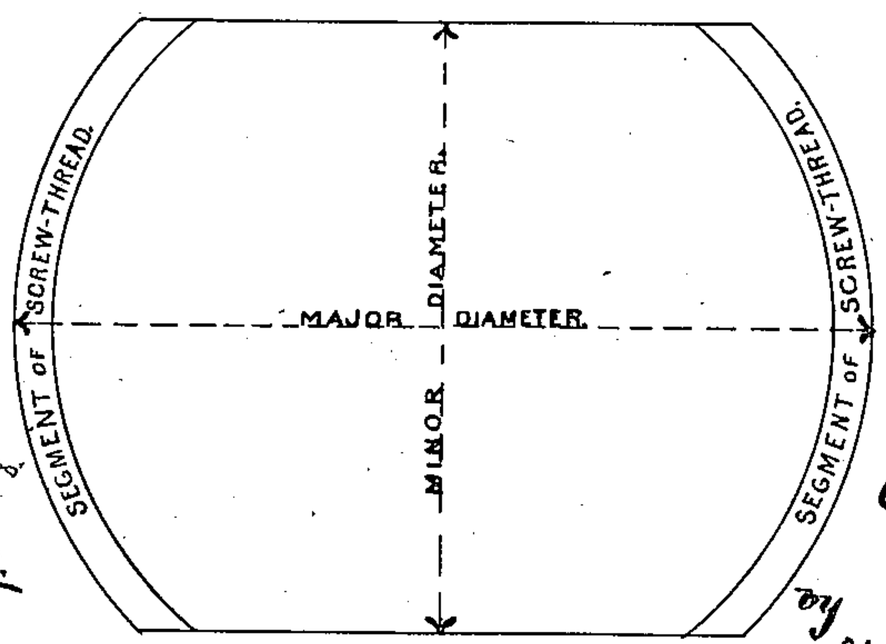

FIG. 5.

Witnesses:
L. B. Brewer,
Chas. Hattorne.

Inventor:
GREGORY GERDOM,
by William H. Lee
attorney.

UNITED STATES PATENT OFFICE.

GREGORY GERDOM, OF WEST TROY, NEW YORK.

BREECH-LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 451,241, dated April 28, 1891.

Application filed May 20, 1890. Serial No. 352,532. (No model.)

To all whom it may concern:

Be it known that I, GREGORY GERDOM, of West Troy, in the county of Albany and State of New York, have invented new and useful Improvements in Breech-Loading Ordnance, of which the following is a specification.

My invention relates to improvements in breech-loading ordnance, and it relates especially to the construction of the breech and breech-block of this class of ordnance.

The object of my invention is to simplify the construction and to render the operations of opening and closing the breech less complex than in the ordinary mode of construction. I attain this object by means of the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification, and in which—

Figure 1 is a horizontal longitudinal section of part of the breech of a cannon provided with my improvements, with the breech-piece and carrier-ring secured in position to close the breech of the cannon, shown in plan view. Fig. 2 is a like section showing the breech-piece in position to open the breech of the cannon. Fig. 3 is a rear end elevation of Fig. 1. Fig. 4 is an end elevation in outline of the breech of the cannon without the breech-piece, and Fig. 5 is an outline transverse section of the breech-piece detached from the carrier-ring.

As heretofore commonly constructed, breech-loading ordnance, the breech of the cannon, and its breech-block have been provided with corresponding sectors of screw-threads, and the breech-block has been fitted to receive an endwise sliding movement in a carrier-ring hinged to the rearmost end of the cannon, and that construction has required three movements of the breech-block—to wit, a partial rotation to effect the engagement or disengagement of its screw-threads from those in the breech of the cannon, an endwise-sliding movement into or out of the opening of the breech, and a swinging movement on the hinge-joint of the carrier-ring, and these three movements are required to effect either an opening or closing of the breech of the cannon. By my invention the endwise-sliding movement of the breech-block is dispensed with. Thereby a saving of two movements is effected every time the breech of the cannon is opened and closed.

As represented in the drawings, A designates the breech of a breech-loading cannon having an enlarged chamber B at its rear end, the axis of said chamber coinciding with that of the bore of the cannon. The upper and lower sides of said chamber are provided with segmental sections of screw-threads C, whose length is preferably made equal to the length of the chord of an arc of ninety degrees of a circle whose diameter equals the larger diameter of the screw-threads. A lateral opening D, whose height is equal to the length of the chord above referred to, is formed in one side of said chamber. The opposite side of the latter is divested of screw-threads and has a concave surface for a space which corresponds to the height of said opening, and the length of said opening equals the length of the screw-threaded portion of said chamber. The outer part of said opening at the side of the cannon is lengthened to form part of the hinge-joint for a carrier-ring.

E is the breech-block, having a screw-threaded portion F, which corresponds to the screw-threads C, formed in the chamber B of the breech of the cannon. Said threaded portion is flattened by the removal of segments from its opposite sides to reduce the thickness of said threaded portion to correspond to the height of the opening D, through which said portion of the breech-block is fitted to swing with freedom. The inner end of said breech-block has a coniform extension F′, which enters a tapering enlargement of the rearmost end of the bore of the cannon. Said coniform extension is provided with a gas-check G, of a common and well-known construction, which forms a gas-tight stopper for the bore of the cannon at its rearmost end; but it should be understood said gas-check forms no part of my invention, and any other form of gas-check may be substituted therefor when preferred. Near the outer end of said breech-block, just beyond the threaded portion F, a cylindrical portion of said block is fitted to turn loosely in the bore of a carrier-ring H, in which said breech-block is constantly retained. Said cylindrical portion of the breech-block is

provided with a short groove I, (shown by dotted lines in Fig. 2,) which conforms to the angle of the screw-thread on said breech-block, and into said groove the point of a screw J enters to limit the rotative movement of the breech-block and to prevent the latter from being accidentally detached from the carrier-ring H. The screw J is screwed into the carrier-ring H to form a permanent part thereof, and the groove I is enlarged at the end, which stops the rotative motion of the breech-block in the operation of screwing the latter into the cannon-breech, and by this enlargement the carrier-ring I and screw J are relieved from the danger of being damaged by reason of any shock due to the explosion of the charge in the cannon. The outer end of the breech-block E is enlarged to form a head K, which has a greater diameter than the bore of the carrier-ring H, and which projects rearwardly beyond the outer face of said ring. Said head is provided with lugs L, to which a locking-lever M is hinged by means of a hinge-pin N, and said locking-lever affords the means for turning the breech-block H in the operations of screwing and unscrewing the latter into and out of the breech of the cannon.

The locking-lever M is provided with an opening or indentation O for receiving a spring-catch, as hereinafter explained.

The carrier-ring H is provided with an arm P, which is integral with it, and which extends at right angles from its inner face for the purpose of forming a hinge-joint for said carrier-ring with the breech of the cannon. Said arm enters a forward extension of the opening D and forms a hinge-joint therein by means of a joint-pin Q, which passes through the hole in said arm and corresponding holes in the breech of the cannon. By means of the arm P the carrier-ring H is provided with an offset hinge, which extends forwardly into the opening D, and thereby provision is made for swinging the breech-block H, through said opening directly into the chamber B, into a position where the screw-threads of said breech-block can properly engage with the screw-threads in said chamber, and by this means the sliding movement commonly required for engaging the screw-threaded breech-block in the breech of a cannon is rendered superfluous. The outer face of the carrier-ring H is provided with lugs R, between which the locking-lever M enters to effect the locking of the breech-block E, and one of said lugs is preferably provided with a spring-catch S or other suitable fastening, that is fitted to engage in the opening O or other part of said lever for the purpose of securing the locking-lever in position to lock the breech-block in the breech of the cannon.

The carrier-ring H has a handle T on its outer face, preferably on the side opposite to the arm P, for the purpose of affording means for swinging the carrier-ring and breech-block on the joint-pin Q.

My invention operates in the following manner: Premising that the breech-block E is screwed into the breech of the cannon and is locked therein by the locking-lever M, as shown in Fig. 3, the latter is first drawn out from between the lugs R and turned upward into a position where it will serve as a lever for the purpose of unscrewing the breech-block. When the latter has been unscrewed, the carrier-ring H is swung by means of the handle T to carry the breech-block E into the position shown in Fig. 2, whereby the bore of the cannon will be opened for the reception of ammunition at its breech, and in said position the inner end of the flattened sides of the breech-block will be retained in the opening D, whereby said breech-block will be prevented from rotating in the carrier-ring H, ready for its return into chamber B, and when the latter is accomplished a quarter-revolution is imparted to said breech-block by means of the lever M to screw the breech-block home in the breech of the cannon. Then the lever M is swung downward and caught by the spring-catch S to lock the breech-block E in its closed position.

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

1. The combination of a breech-loading cannon having a breech-chamber of a greater diameter than the bore of the cannon, said chamber being provided with segmental sections of screw-threads and having a slotted opening which leads radially from one side of said chamber through the perimeter of the breech of the cannon, the diameter of said opening being substantially the same as the chordal length of the segments of said screw-threads, and a breech-block embracing a cylindrical portion and a screw-threaded portion, the latter having a cross-sectional form of the zone of a cylinder, whose minor diameter is fitted to swing loosely in the slotted opening of the breech and whose major diameter is provided with segmental sections of screw-threads fitted to engage in the screw-threads in said breech-chamber, substantially as herein specified.

2. The combination of a breech-loading cannon having a breech-chamber provided with segmental sections of screw-threads and having a slotted opening which leads radially from said chamber through the perimeter of the breech of said cannon, the diameter of said opening being substantially the same as the chordal length of the segments of said screw-threads, a breech-block embracing a cylindrical portion and a screw-threaded portion which has the cross-sectional form of the zone of a cylinder, whose minor diameter is fitted to swing loosely in the slotted opening of said breech and whose major diameter is provided with segmental sections of screw-threads fitted to engage in the screw-threads of said breech-chamber, and a carrier-ring in which said breech-block is fitted to partially rotate, provided with an arm projecting perpendicularly from one of its plane faces, said

arm forming an offset hinge-joint, whereby said breech-block can be swung into and out of said breech-chamber, substantially as specified.

3. In a breech-closing mechanism for ordnance, the combination of a carrier-ring provided with a stop-screw whose point projects into the bore of said ring, and a breech-block fitted loosely in said ring and provided with a groove into which the point of said stop-screw enters and whereby the rotative movement of said breech-block is limited in both directions, one end of said groove being enlarged, as and for the purpose herein specified.

4. In a breech-closing mechanism for ordnance, the combination of a breech-block fitted to be secured into the breech-chamber of a cannon by means of screw-threads and having a locking-lever hinged thereto, whereby said breech-block may be rotated, of a carrier-ring provided with a locking mechanism, whereby said locking-lever can be secured to retain said breech-block in position in said breech-chamber, substantially as herein specified.

GREGORY GERDOM.

Witnesses.
WM. H. LOW,
S. B. BREWER.