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Patented Oct. 8, 1901.

J. F. MEIGS & S. A. S. HAMMAR.

BREECH MECHANISM.

(Application filed Jan. 26, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

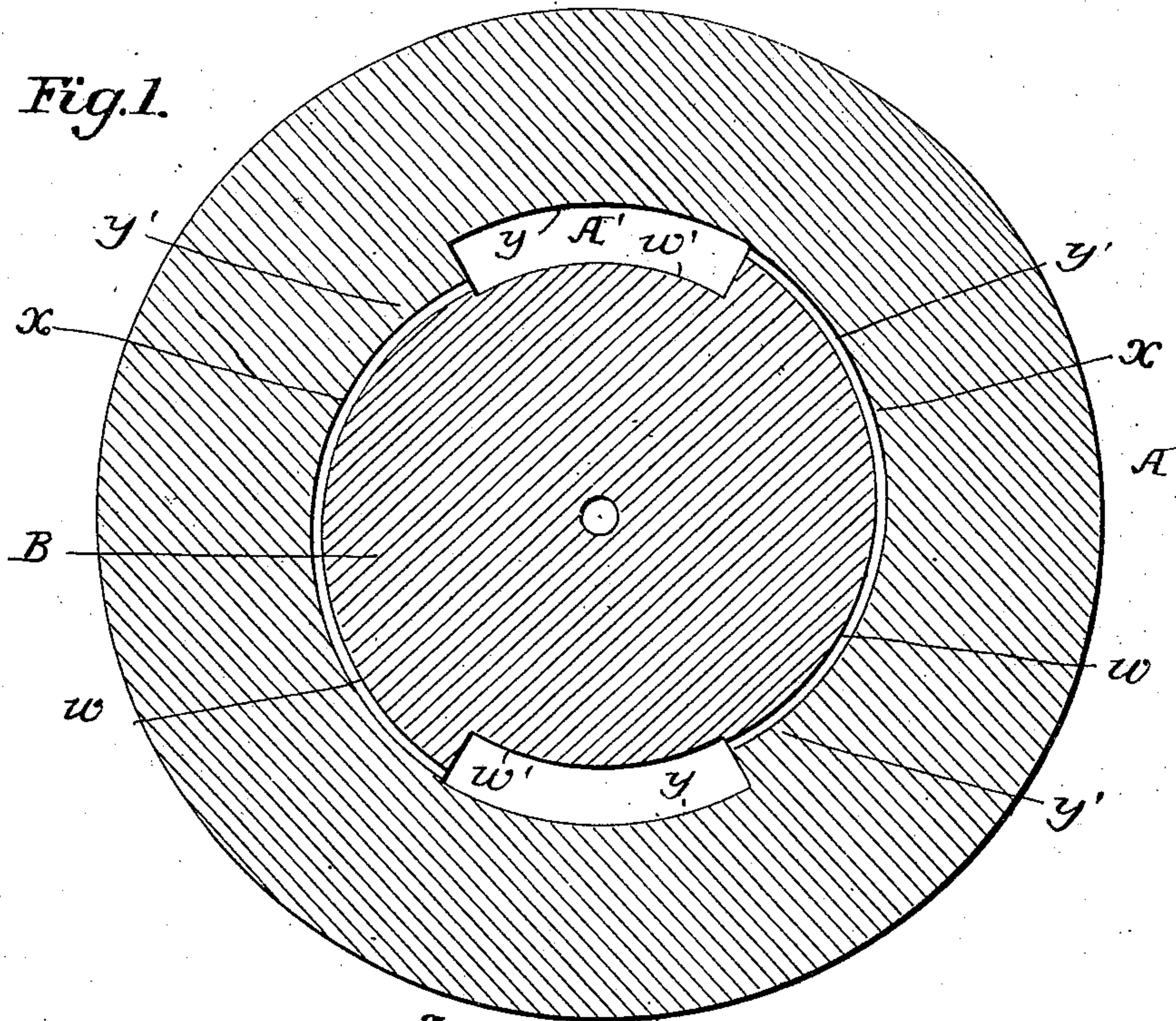
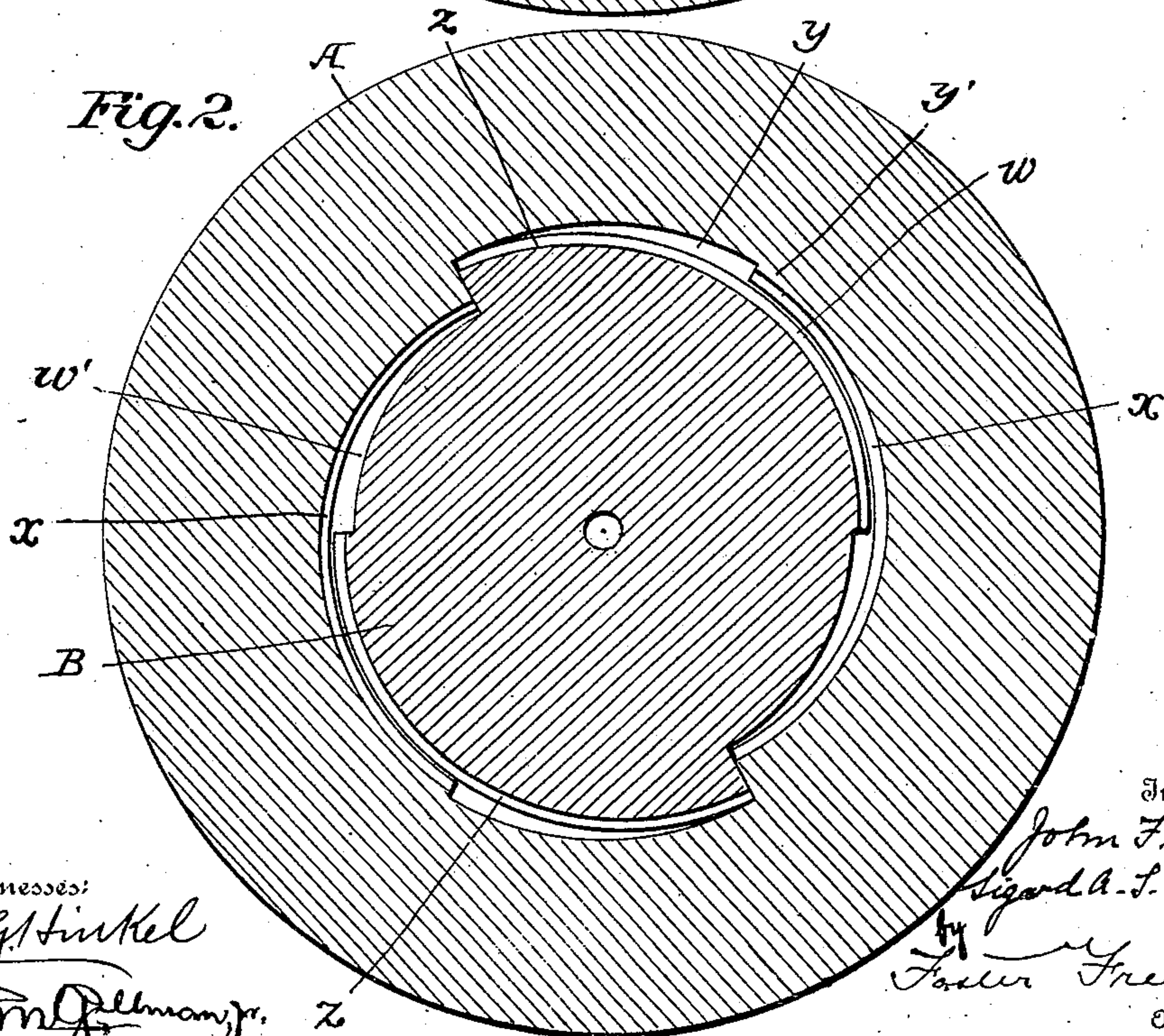


Fig. 2.



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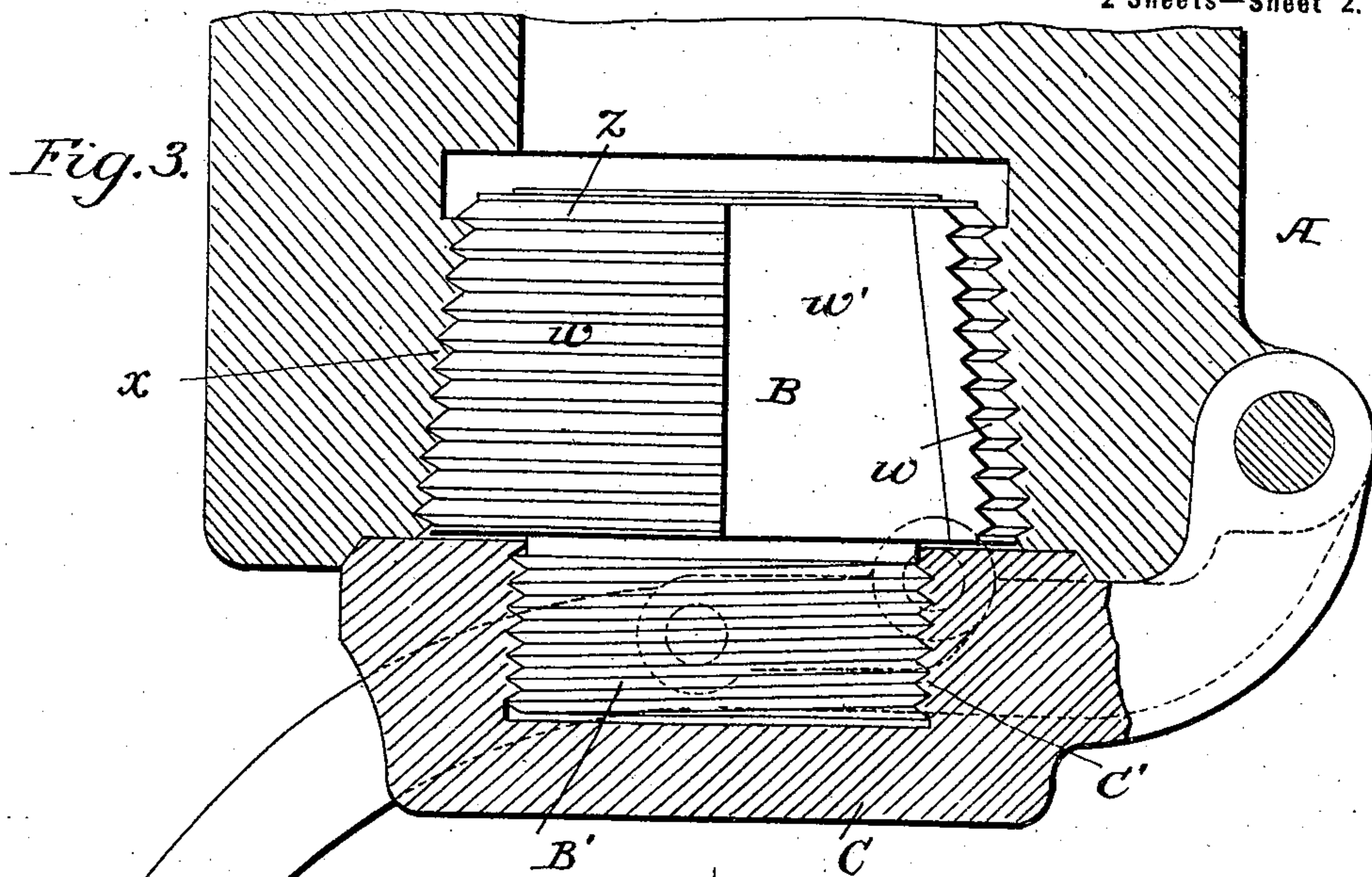
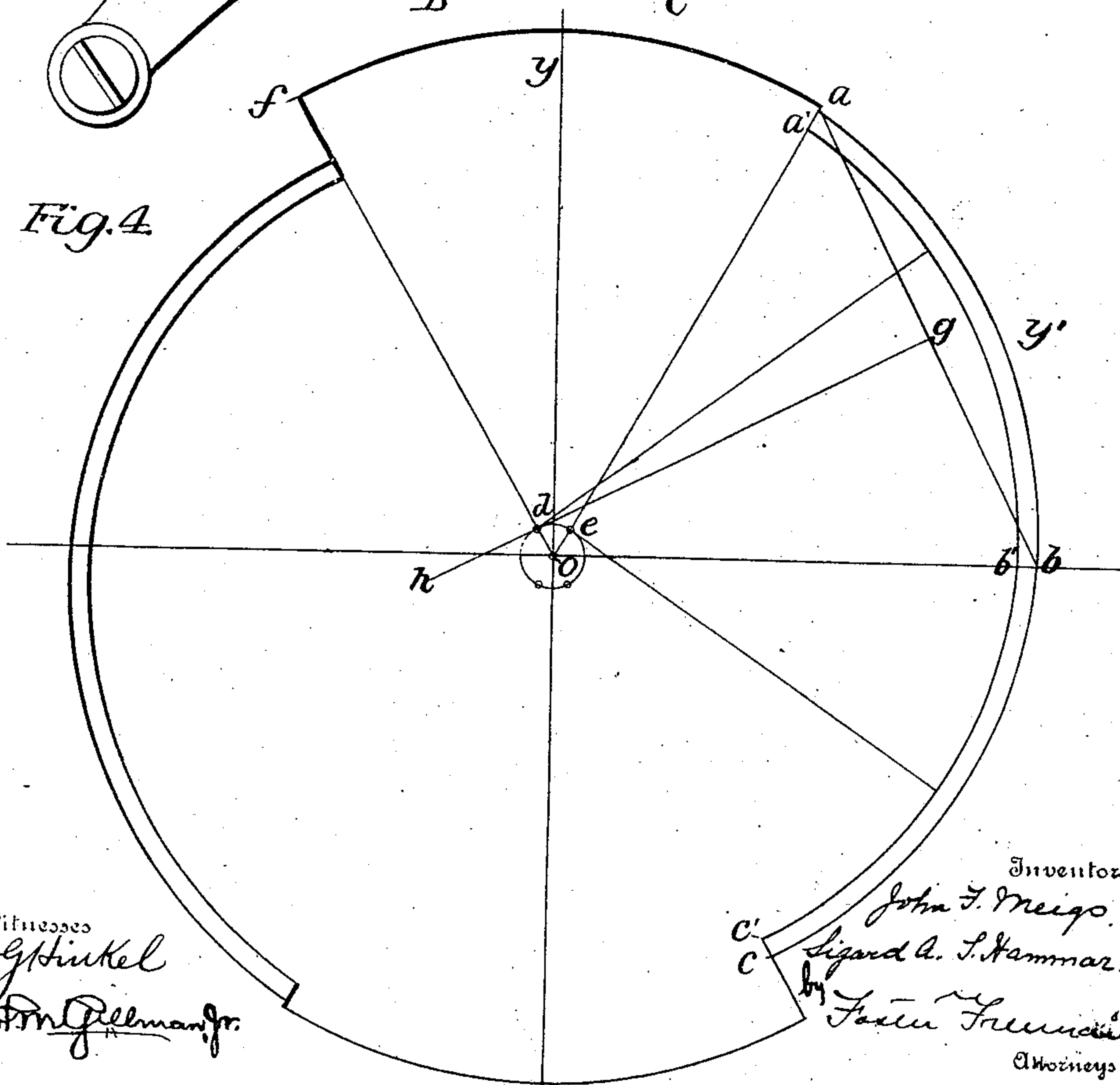


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BREECH MECHANISM.

SPECIFICATION forming part of Letters Patent No. 683,963, dated October 8, 1901.

Application filed January 26, 1901. Serial No. 44,873. (No model.)

To all whom it may concern:

Be it known that we, JOHN F. MEIGS, a citizen of the United States, residing at South Bethlehem, and SIGARD A. S. HAMMAR, a subject of the King of Sweden and Norway, residing at Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Breech Mechanism, of which the following is a specification.

Our invention relates to breech mechanism for guns, and has for its object to improve and simplify such mechanism; and it consists in the features of construction and arrangement of parts having the general mode of operation substantially as hereinafter more fully set forth.

Referring to the accompanying drawings, wherein we have illustrated a preferred embodiment of our invention, Figure 1 is a transverse section of a breech, showing a plug therein in its locked position. Fig. 2 is a similar section showing the plug in its unlocked position. Fig. 3 is a longitudinal section through the breech, showing the plug in position, with a carrier therefor; and Fig. 4 is a diagram illustrating the circular arcs of the breech-plug and screw-box.

Among the principal objects of our invention we may mention that we provide such a construction that an extended rotation of the breech block or plug is not required in order to engage or disengage it from the screw-box, that the threaded or collared portions of the circumference of the breech-block and screw-box are greater than the slotted portions, that the threads or collars on the breech-block and screw-box move radially with relation to each other when the breech-block is rotated, and that proper means are provided to secure the seating of the gas-check and the withdrawal of the same, and these and other objects are accomplished by a construction substantially such as is set forth hereinafter. In order to attain these and other objects of our present invention, we provide the breech-block and the screw-box with threads or collars, the edges or faces of which coincide with or are composed of a succession of relatively eccen-

tric circular arcs, and, further, we construct and arrange the parts substantially as hereinafter set forth.

Referring to the drawings, the breech A is provided with a screw-box A', which receives the breech block or plug B, which plug may be supported upon any suitable carrier in any suitable and well-known manner, and the screw-box and block may be cylindrical or tapering or of other form, as desired. The interior of the screw-box is divided in the present instance into alternate recesses y and projections y' , the latter having internal threads or collars x , and the block B has alternate projections w and recesses w' , the projections being provided with threads or collars z . Preferably the projecting portions having the threads or collars are greater circumferentially than the intermediate recessed or slotted portions, as shown, as by this construction we are enabled to secure a greater extent of bearing-surface and a better support with a shorter block than when the block and screw-box are provided with recessed and projecting portions equal in circumferential extent. There may be any desired number of recesses and projecting portions in the breech-block and screw-box. The internal and external threads or collars x and z are so formed that their edges or faces coincide with or are composed of a succession of relatively eccentric circular arcs so constructed and arranged that the threads or collars make contact throughout their entire length when the breech is closed and parallelism between the threads or collars on the breech-block and those in the screw-box is preserved when the block is unscrewed or unlocked, and this contact is indicated in Fig. 1 and the parallelism is indicated in Fig. 2 of the drawings. The faces or edges of the threads or collars may be composed of any desired number of circular arcs in succession, arranged to accomplish the objects of our invention; but for the sake of clearness and as a preferred construction we show each of the projections on the breech-block and screw-box as having threads or collars composed of a succession of two circular arcs,

and these may be drawn or designed as more fully indicated in Fig. 4.

Referring to the diagram, Fig. 4, let $a c$ represent the face of the bottom of the grooves or recesses of a projection y' of the screw-box, and $a' c'$ the face of the threads or collars of the same. Let $a f$ represent one of the slotted portions y of the screw-box, and let o represent the center of the breech. The point b is then located radially, so as to give the desired eccentricity to the threads or collars or the desired depth to the grooves or recesses between the threads or collars. This point b is then connected to a by a right line, and this right line $a b$ is bisected at g by a perpendicular $g h$. Then with o as a center draw a circle tangent to $g h$, and with the tangent-point d as a center describe the arc $a b$ and the arc $a' b'$. Make the angle $d o e$ equal to $a o b$, and with e as a center describe the arcs $b c$ and $b' c'$. Now if the arc $b c$ is swung around the point o until $o b$ coincides with $o a$, e will fall on d , because $a o b$ equals $d o e$ and $b c$ and $a b$ become concentric, and consequently parallel. $a' b'$ and $a b$ are parallel and $b' c'$ and $b c$ are parallel, and therefore $b c$ and $b' c'$ are parallel to $a' b'$. From this it will appear that all the edges of the threads or collars are parallel when the breech block or plug is in its unlocked position, and when in their locked position the threads or collars of the block make contact throughout their length with the threads or collars of the screw-box.

When collars are used, the rotation of the breech-block to disengage the collars has of itself no effect in forcing the breech-block backward to detach the gas-check, and we provide some suitable means for doing this, which may be varied according to the requirements of any particular case; but in the present instance we have shown the breech-block B as mounted in a carrier or hinged plate C , and this is provided with screw-threads, lugs, or grooves C' , engaging with similar screw-threads, lugs, or grooves on the projection B' of the breech-block; and when the breech-block is rotated to disengage the threads or collars the breech-block is forced outward to detach the gas-check by means of the screw-threads, lugs, or grooves in the hinged plate or carrier C .

Any suitable or well-known means may be

used to rotate the breech-block, it being deemed unnecessary to show and describe the same herein.

What we claim is—

1. A breech-loading gun, the screw-box and breech-block of which are provided with threads or collars, the faces of which threads or collars coincide with or are composed of a succession of relatively eccentric circular arcs, substantially as described.

2. A breech-loading gun, the screw-box and breech-block of which are provided with alternately slotted and threaded or collared portions, the curves of the threads or collars being composed of a succession of relatively eccentric circular arcs, substantially as described.

3. A breech-loading gun, the screw-box and breech-block of which are provided with alternating slotted and threaded or collared portions, the threaded or collared portions being circumferentially greater than the intermediate slotted portions, and the curves of the threads or collars being composed of a succession of relatively eccentric circular arcs, substantially as described.

4. In a breech-loading gun, a screw-box and a breech-block each provided with threaded or collared portions composed of a succession of relatively eccentric circular arcs so constructed that the threads or collars make contact throughout their entire length when the breech is closed, and the threads or collars of the breech-block are parallel with those of the screw-box when the block is unscrewed or in an unlocked position, substantially as described.

5. In a breech-loading gun, the combination with a screw-box and breech-block each provided with collars, of a carrier supporting the breech-block, and connections between the carrier and breech-block for forcing it outward when it is rotated to disengage the collars, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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