

C. H. GRIFFITH.
BREECH LOADING CANNON.

(Application filed Dec. 26, 1901.)

(No Model.)

4 Sheets—Sheet 2.

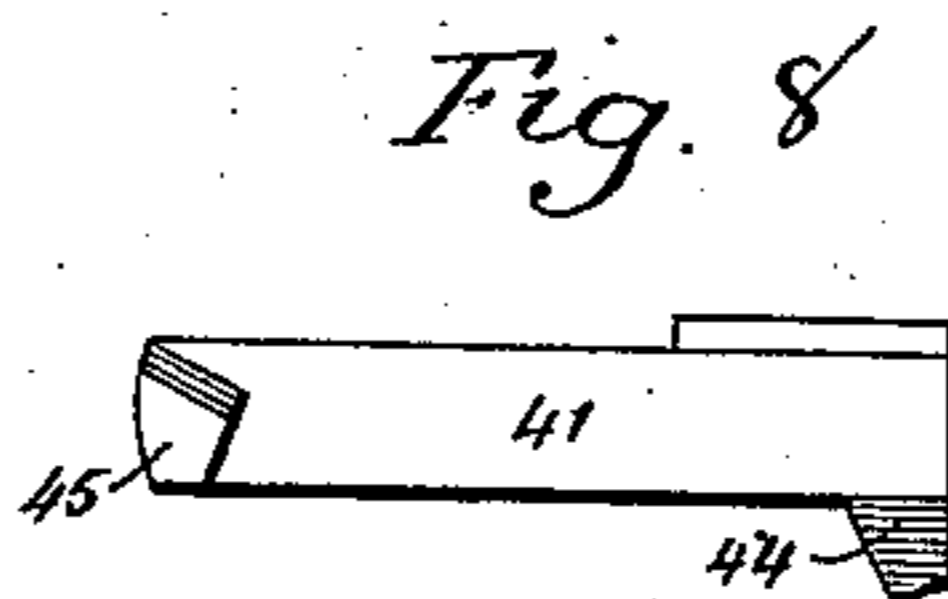
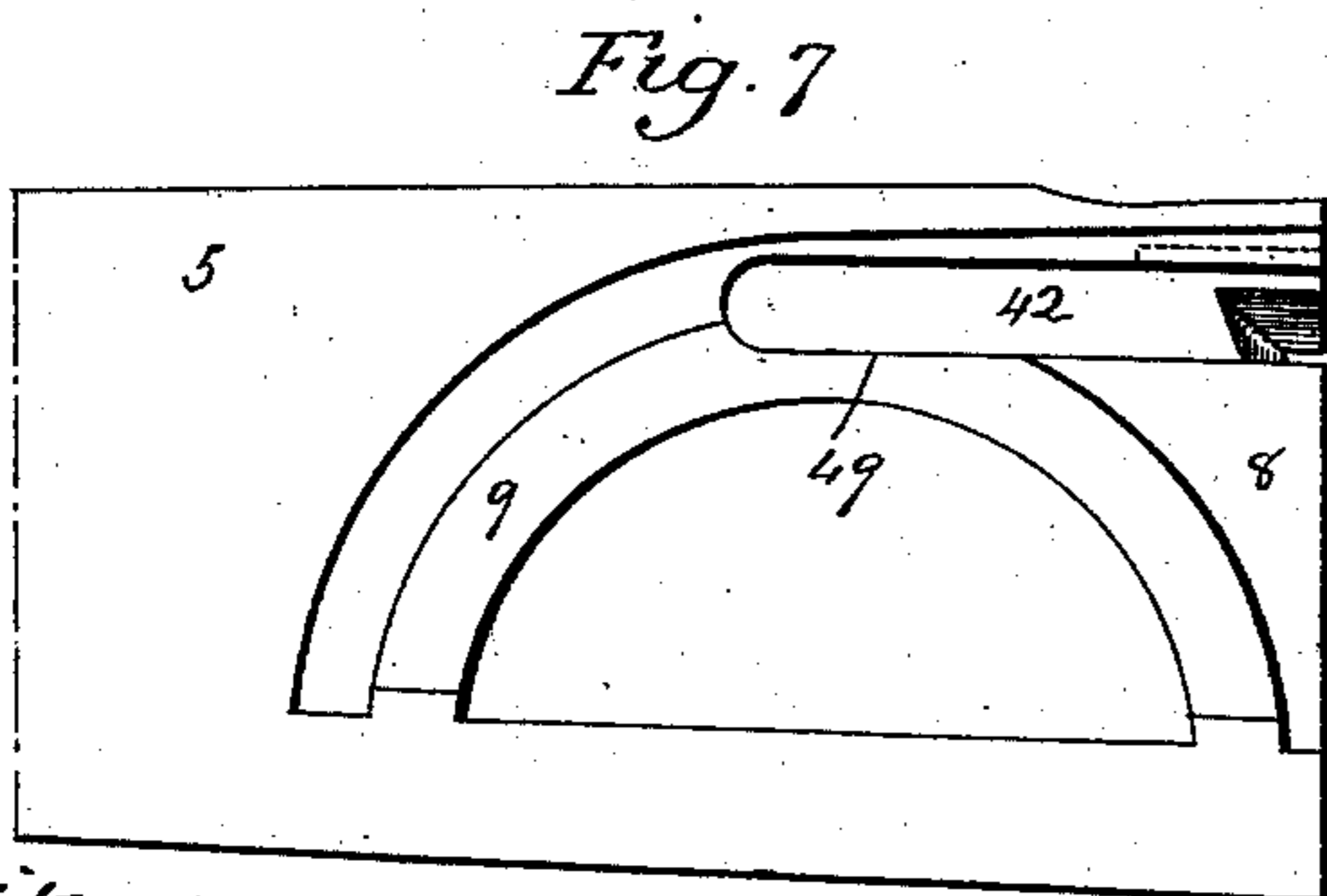
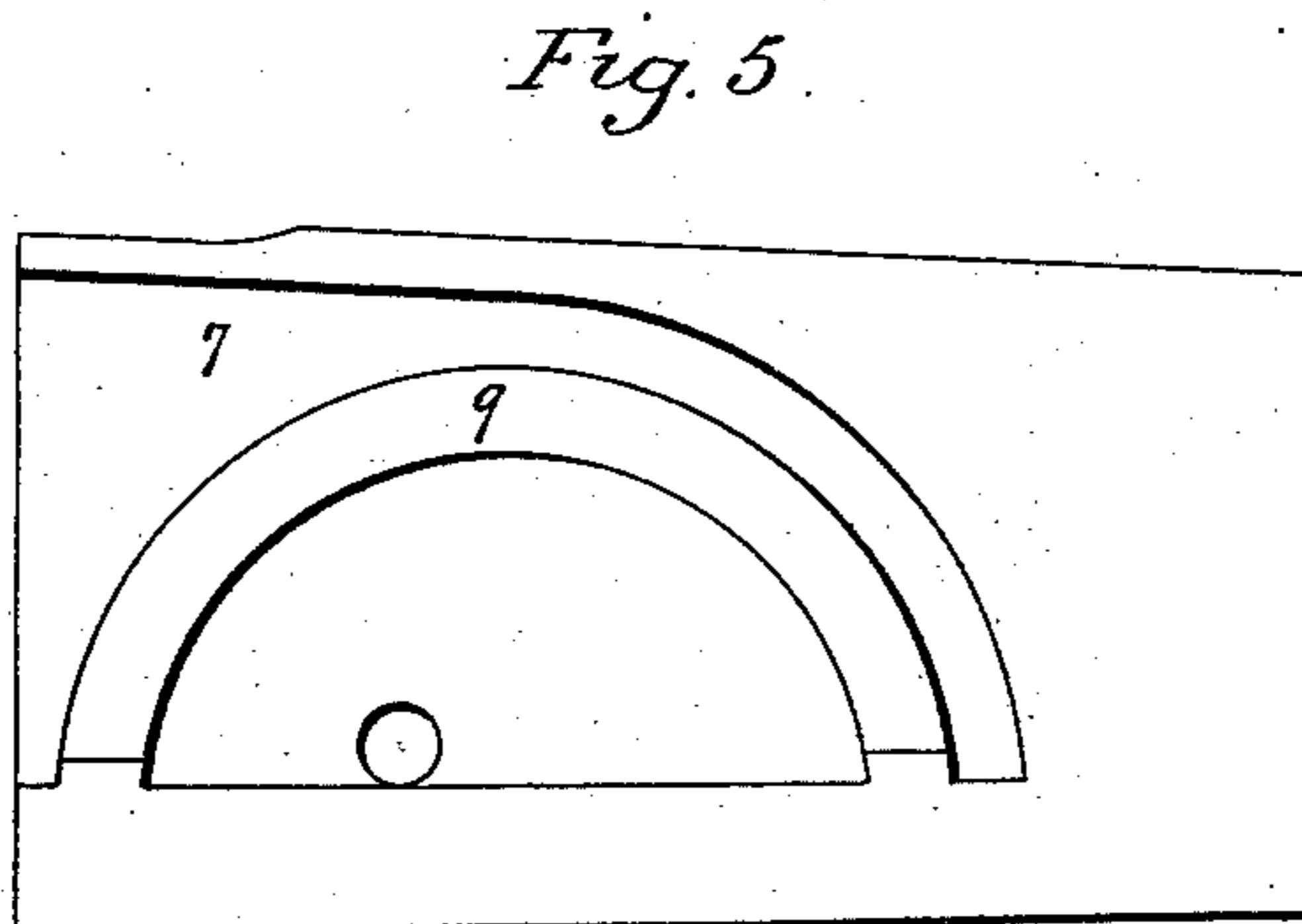
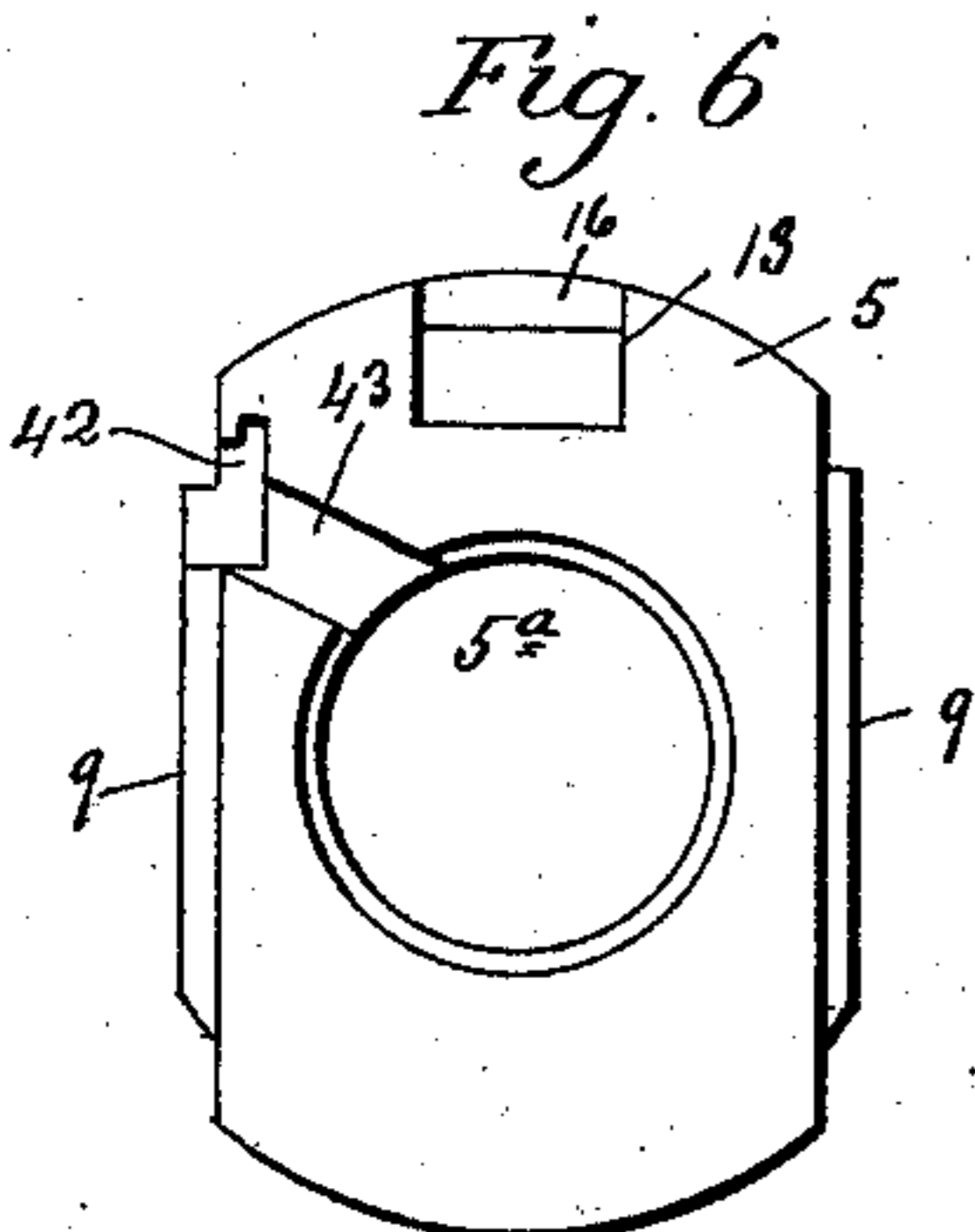
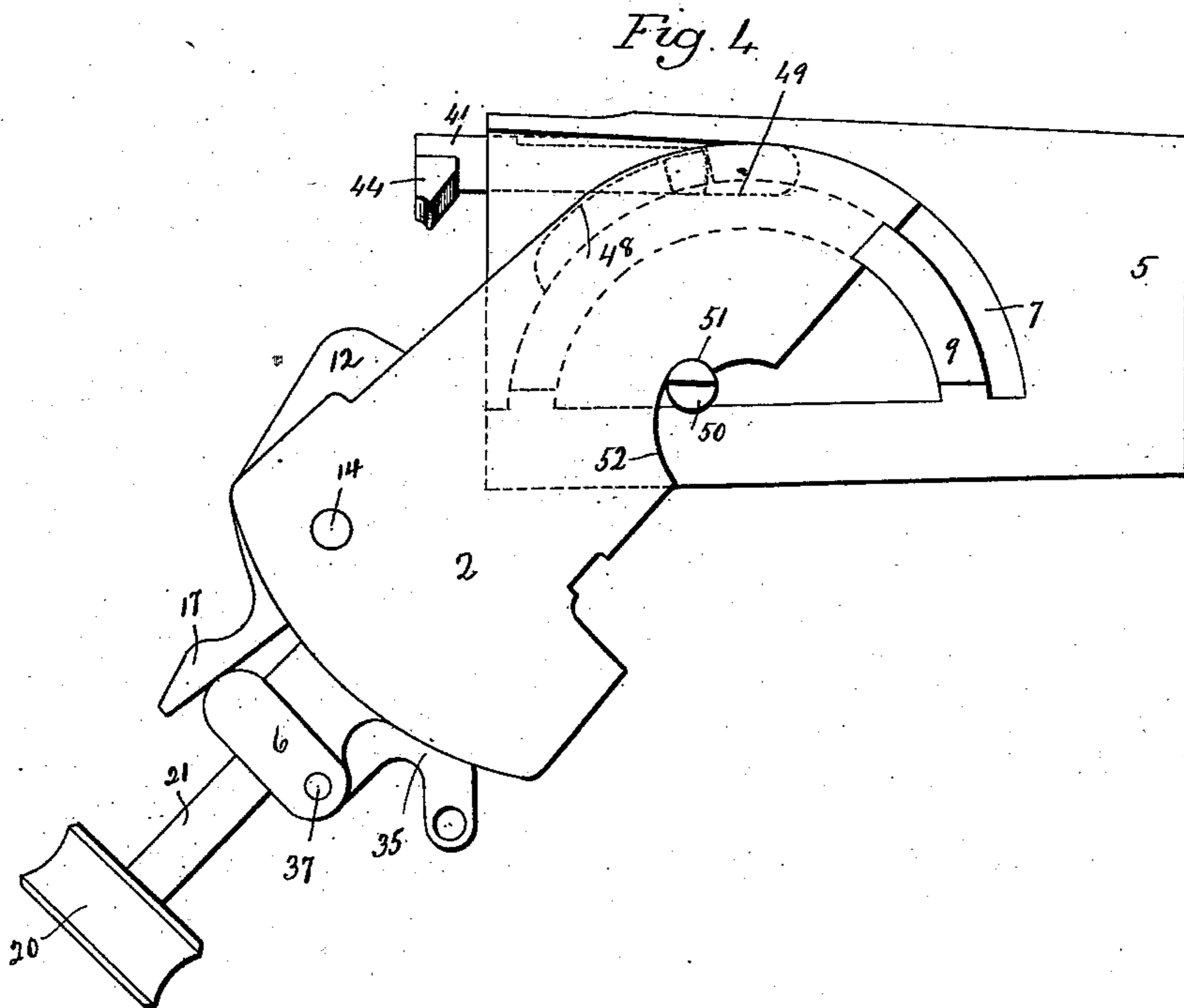
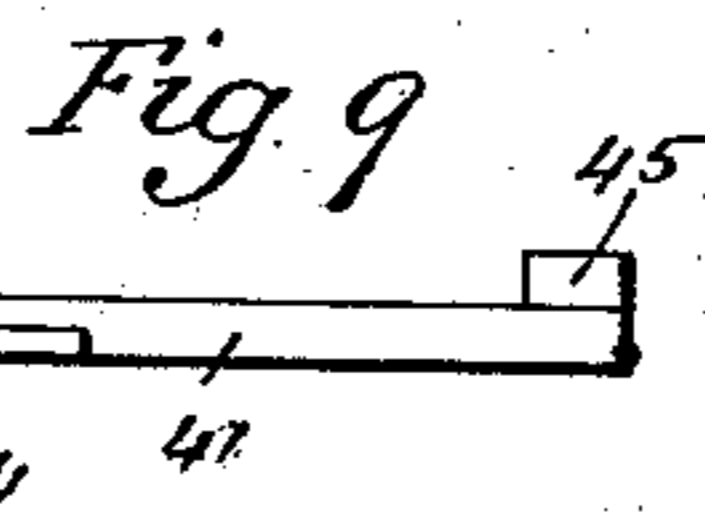


Fig. 10.



Witnesses:
J. H. Humphrey
C. L. Meed.

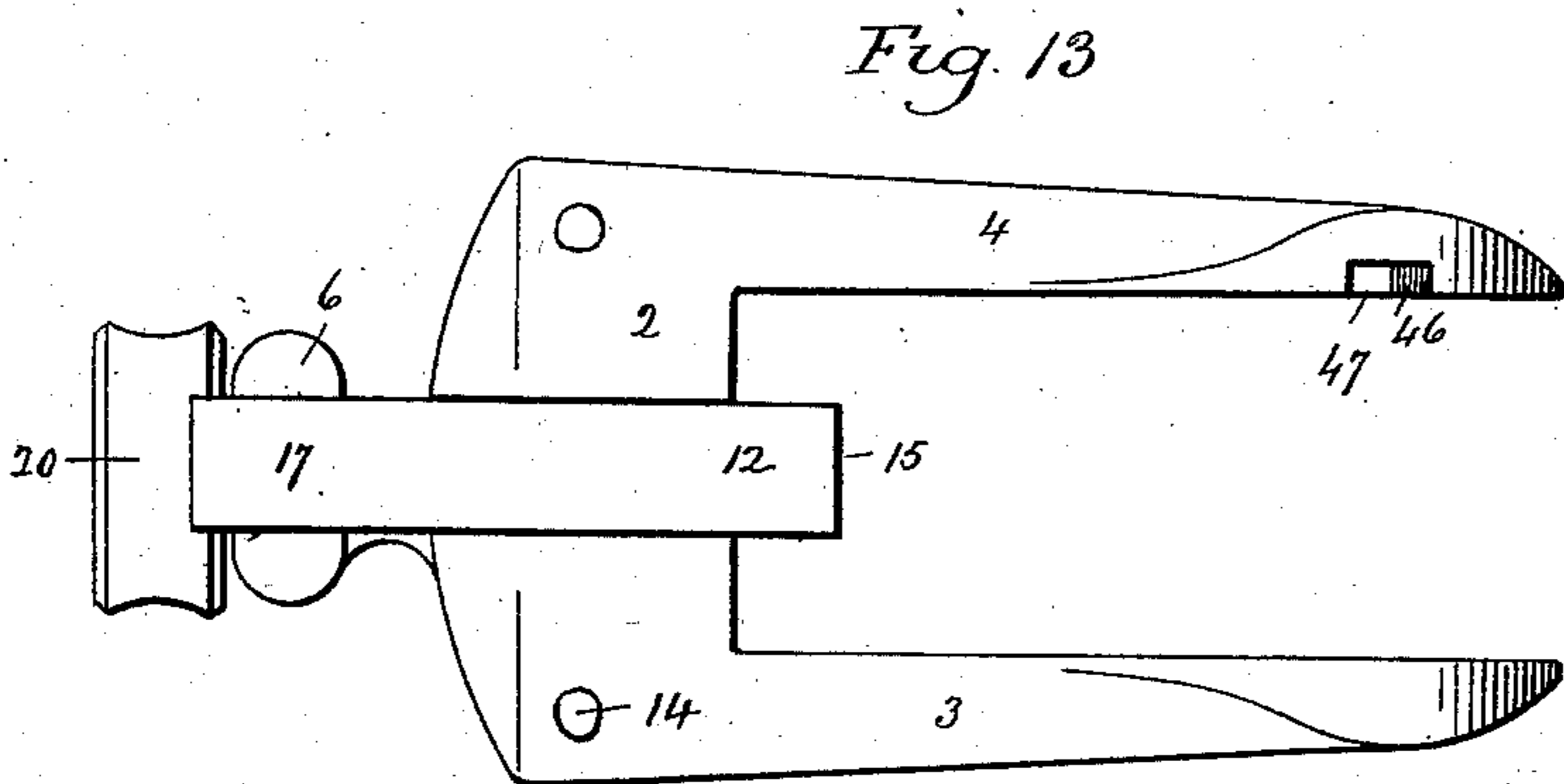
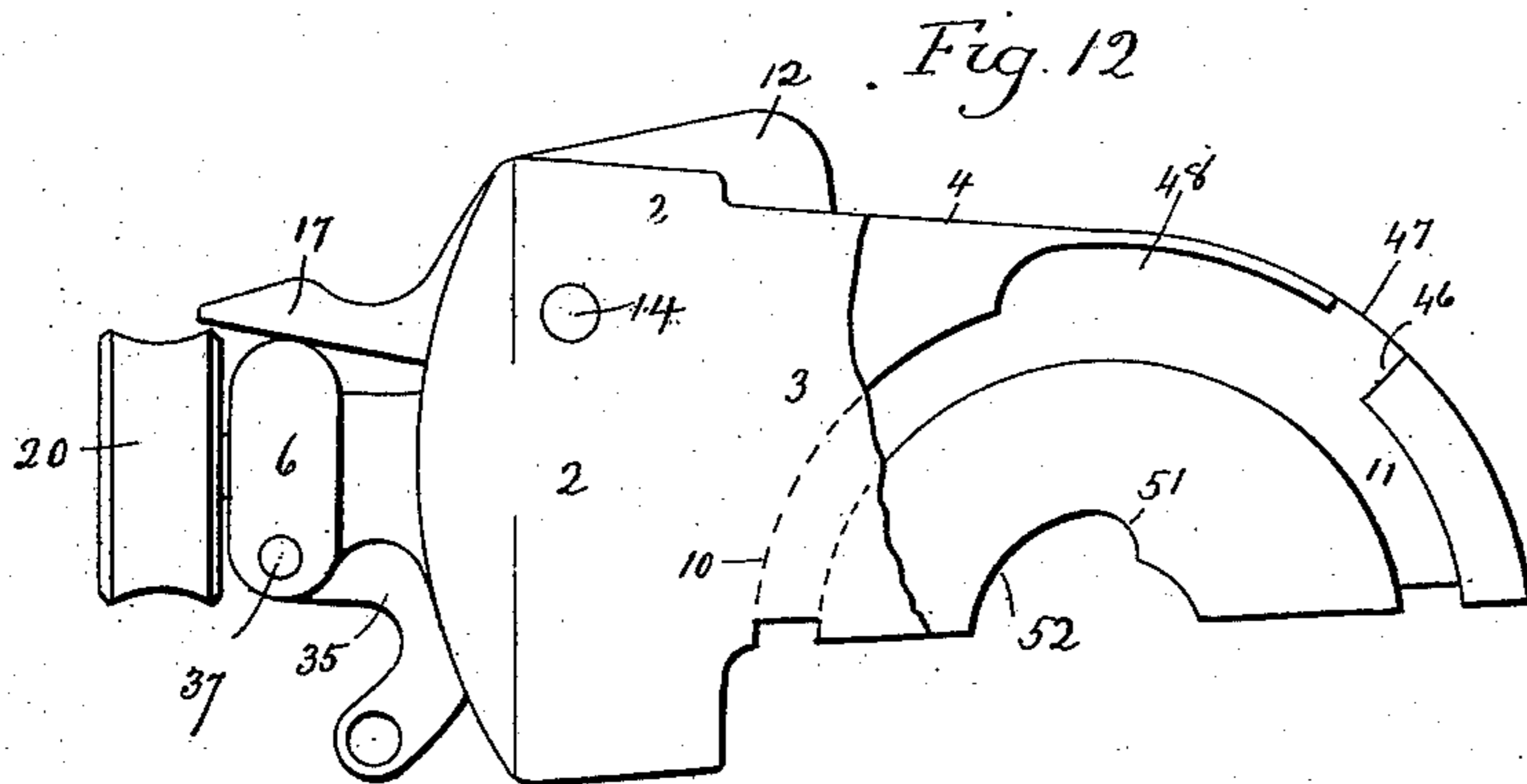
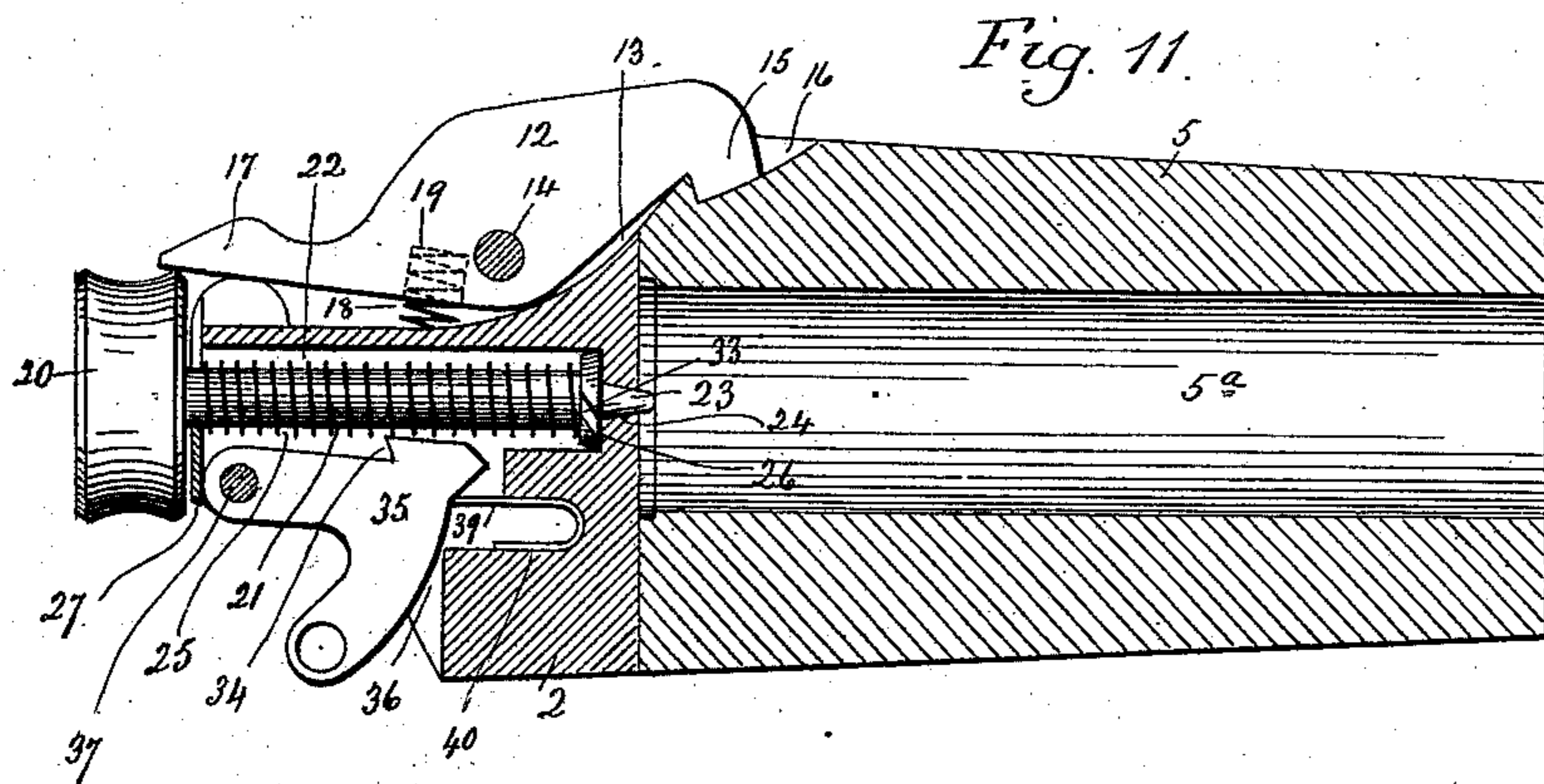
Charles H. Griffith -
Inventor.
By Atty. Seymour & Co.

C. H. GRIFFITH.
BREECH LOADING CANNON.

(Application filed Dec. 26, 1901.)

(No Model.)

4 Sheets—Sheet 3.



Witnessed
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No. 713,874.

Patented Nov. 18, 1902.

C. H. GRIFFITH.
BREECH LOADING CANNON.

(Application filed Dec. 26, 1901.)

(No Model.)

4 Sheets—Sheet 4.

Fig. 14

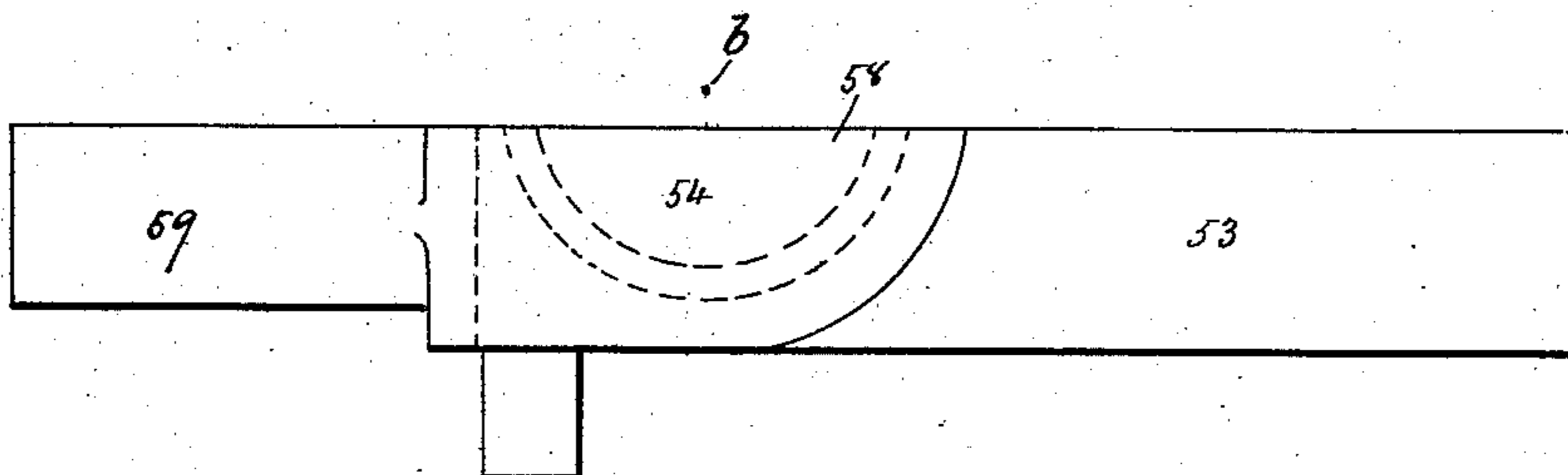


Fig. 15

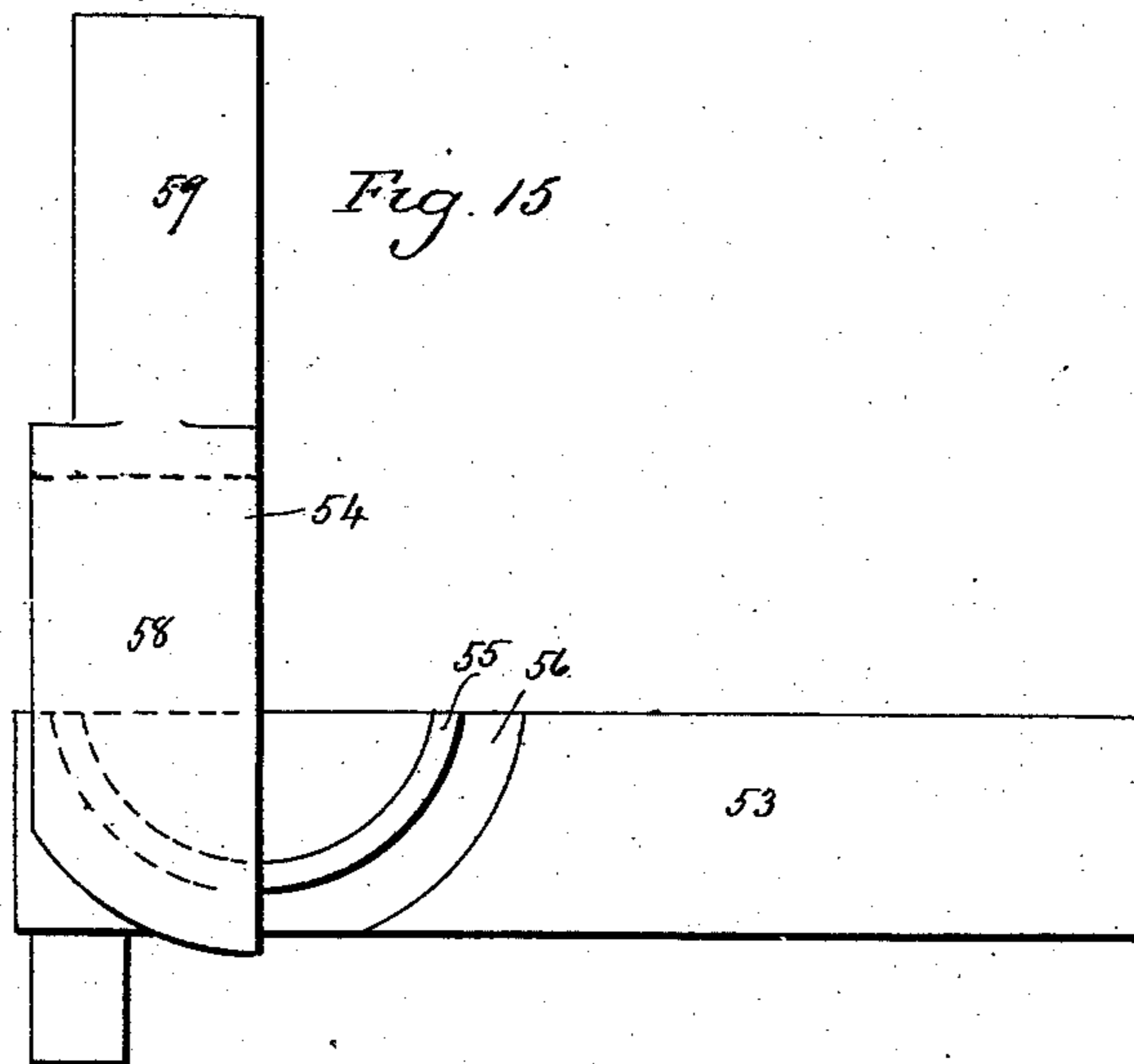
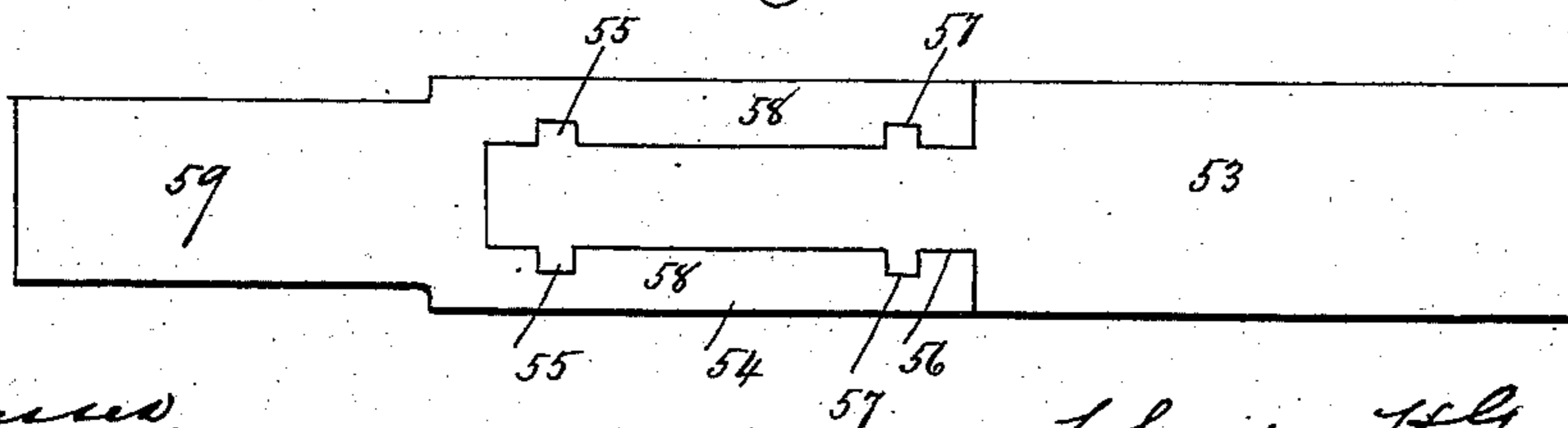


Fig. 16



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UNITED STATES PATENT OFFICE.

CHARLES H. GRIFFITH, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO WINCHESTER REPEATING ARMS CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

BREECH-LOADING CANNON.

SPECIFICATION forming part of Letters Patent No. 713,874, dated November 18, 1902.

Application filed December 26, 1901. Serial No. 87,147. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. GRIFFITH, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Breech-Loading Cannon; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a broken view in side elevation of a cannon constructed in accordance with my invention; Fig. 2, a plan view thereof; Fig. 3, a view thereof in rear elevation with the sliding hammer in section; Fig. 4, a broken view of the gun with its locking-block in its open position, with its hammer in its cocked position, and with its extractor in its rearwardly-projecting position; Fig. 5, a broken view in side elevation showing the breech end of the barrel of the cannon stripped of all of its adjuncts; Fig. 6, a rear end view thereof; Fig. 7, a view corresponding to Fig. 5, but taken from the other side of the barrel of the cannon; Fig. 8, a detached view in side elevation of the extractor; Fig. 9, a plan view thereof; Fig. 10, a view thereof in rear elevation; Fig. 11, a view of the cannon in vertical longitudinal section, showing it closed and fired; Fig. 12, a detached view in side elevation of the locking-block with its right-hand arm broken away to show the slot and clearance-recess formed in its left-hand arm for the extractor; Fig. 13, a detached plan view of the locking-block; Fig. 14, a broken view in side elevation of the barrel of a small arm provided with my improved locking-block, which is shown in its closed position; Fig. 15, a corresponding view showing the locking-block in its open position; Fig. 16, a plan view thereof with the locking-block in its closed position.

My invention relates to an improvement in breech-loading cannon and other breech-loading firing-pieces, the object being to produce a simple, compact, durable, convenient, and effective piece constructed with particular

reference to improving the construction and operation of the locking-block.

With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and particularly recited in the claims. I wish to explain here that although I have shown my invention as applied to a cannon it is also applicable to other breech-loading pieces, such as rifles, shotguns, pistols, &c.

In carrying out my invention as shown in Figs. 1 to 13, inclusive, of the drawings I employ a locking-block comprising a body 2 and two substantially corresponding forwardly-projecting arms 3 and 4, which for convenience I shall hereafter speak of as right and left hand arms of the locking-block. The said body 2 of the locking-block constitutes, in effect, the rear end of the barrel 5 of the cannon and is shaped accordingly, being round in transverse section and provided with a knob 6, while the arms 3 and 4 are formed with convex outer faces to conform to the curvature of the barrel 5. The said knob 6 constitutes an extension of the block and provides for its manual operation. The said arms 3 and 4 are formed with flat inner faces which have bearing upon the vertical inner or bottom walls of recesses 7 and 8, formed in the opposite faces of the breech end of the cannon. The said locking-block turns upon two segmental ribs 9, formed, as shown, integral with the barrel, projecting from the said vertical inner walls of the recesses 7 and 8 thereof, and taking the place of a true pivot, which would have to be located so as to pass somewhere through the block, whereas the center from which the ribs are struck may be situated not only outside of the block, as from about the point *a* on Fig. 1, but even outside any portion of the cannon to obvious advantage. This point, however, must be located either below or above a line passing through the center of the gun-barrel, for the reason that when the point is so located the block will begin to recede from and clear the breech of the firing-piece as soon as it is started in being moved into its open po-

sition. Thus the larger the circle from which the ribs are struck the greater the extent of their bearing-surfaces, and hence the greater their ability to take the shock of recoil, for which, however, other means may be provided, in which case the ribs would act merely as substitutes for pivots. Under my construction, also, the center on which the block turns may be located so as to cause it to clear and cover the breech of the cannon in the minimum of time. The said segmental ribs enter corresponding grooves 10 and 11, formed in the flat inner faces of the arms 3 and 4 of the locking-block. The forward ends of said arms 3 and 4 and the forward ends of the recesses 7 and 8 are, by preference, and, as shown, curved in conformity with the curvature of the said ribs and grooves. These ribs and the grooves may, if desired, be reversed in position, the ribs being located in the arms of the block and the grooves being formed in the barrel. As herein shown, the ribs 9 are semicircular in form, whereby each end of each rib extends upward sufficiently to fall in the line of the thrust of recoil, which is very desirable in arms using heavy charges.

In the piece shown the block swings downward for loading the piece and extracting the spent shell. To hold the block in its elevated or closed position, I employ a latch 12, located in a vertical slot 13, formed in the body 2 and knob 6 of the block and turning upon a pivot 14 mounted therein. The forward end of this latch has a depending nose 15, adapted to enter a notch 16, formed in the extreme rear end of the upper face of the barrel 5. The rear end of the latch terminates in a finger-piece or tail 17, which performs the function of a safety device, as will be explained later on. A spiral spring 18, entered at its upper end into a bore 19, formed in the lower edge of the latch and impinging upon the bottom wall of the slot 13 aforesaid, exerts a constant effort to throw the latch into its locking position, in which it holds the locking-block in its closed position by the entrance of its nose 15 into the notch 16.

The rear end of the finger-piece 17 of the latch coacts with a finger-button 20, grooved circumferentially to enable it to be more readily gripped and mounted upon the rear end of a reciprocating hammer 21, which in this case has the form of a pin or rod. Hammers of this sort are sometimes called "sliding hammers" to distinguish them from pivotal or swinging hammers. The said hammer is located in a circular chamber 22, entering the rear end of the knob 6 and extending nearly to the vertical inner wall of the body 2 of the locking-block, the integral firing-pin 23, located at the extreme forward end of the hammer, extending through a small opening 24, leading out of the center of the forward end of the chamber 22, as clearly shown in Fig. 11. The said hammer is encircled by a spi-

ral hammer or mainspring 25, the forward end of which impinges against an annular cocking shoulder or flange 26, formed integral with the hammer and located at the forward end thereof. The rear end of the said spring impinges against the inner face of a vertically-sliding retaining-plate 27, having beveled edges which take into undercut grooves 28, formed in the side walls of a wide vertical slot 29, located in the "rear face," so to speak, of the knob 6. The upper edge of this plate is formed with a deep notch 30, adapting it to straddle the rear end of the hammer. A screw 31, entering the rear end of the knob 6, takes into a notch 32 in the right-hand edge of the plate and holds the same in place. A groove 33, formed in the cocking-shoulder 26, permits the spring 25 to be passed through it onto the hammer and to be removed in the same way. After the hammer and its spring have been entered into the hammer-chamber 22 the retaining-plate 27 is inserted into its slot 29 between the rear end of the spring and the forward face of the finger-button 20. Then when the button 20 is seized and the hammer retracted the spring will be compressed against the retaining-plate.

The flange 26, before mentioned, engages with a cocking-notch 34, formed in a trigger 35, located in a trigger-slot 36, formed in the lower face of the knob 6 and in the body 2 of the locking-block. The said trigger is hung upon a pivot 37, mounted in the knob, and is formed with a downwardly-projecting arm, to which the lanyard is attached. The trigger is held up in position to engage with the cocking-shoulder 26 of the hammer by means of a U-shaped trigger-spring 39, entered into a recess 40, formed to receive it in the body of the locking-block. When the hammer is retracted against the tension of its spring, the cocking-shoulder 26 enters the cocking-notch 34 of the trigger, which is disengaged from the said shoulder by a sharp twitch upon the lanyard in the usual manner. If at the time of pulling the trigger to release the hammer the latch 12 does not have its nose 15 fully entered into the locking-notch 16, the finger-piece 17 of the latch will stand in the way of the finger-button 20 of the hammer and prevent the same from being thrown forward far enough to fire the cartridge. In this way the finger-piece of the latch coacts with the finger-button of the hammer to perform a safety function.

The extractor 41 of the piece is located in a horizontal groove 42, formed in the vertical wall of the left-hand recess 8, this groove being offset inwardly at its outer end, as at 43, for the reception of the inwardly-extending finger 44 of the extractor, the said finger extending inwardly so as to intersect the bore 5^a of the barrel in position to engage with the rims of the cartridge. The forward end of the extractor is furnished with an operating-lug 45, which projects outwardly and coacts with the forward wall 46 of a transverse slot

47, intersecting the groove 11 in the left-hand arm 4 of the locking-block. To the rear of the slot 47 the inner face of the said arm is cut away to produce a clearance-space 48, which permits the locking-block to swing without engaging the lug 45 and moving the extractor. The upper edge of the left-hand segmental rib 9 is cut away, as at 49, also for the clearance of this lug. In assembling the piece the forward end of the extractor is introduced into the groove 42 in the barrel 5 and the locking-block swung until the slot 47 in the left-hand arm 4 is brought into registration with the lug 45 on the forward end of the extractor, which is then pushed forward to cause the said lug to enter the said slot, after which the block may be swung into its closed position. Just before the locking-block reaches its closed position the inner face of the body 2 of the block engages with the projecting rear end of the extractor and forces the same home. When the locking-block is swung down into its open position, the extractor will not be disturbed, on account of the clearance afforded by the recess 48, until the block is nearly open, when the forward wall 46 of the slot 47 will engage with the lug 45 and push the extractor rearward, during which time it performs its extracting function. The opening movement of the locking-block is limited by means of a stop-screw 50, mounted in the right-hand side of the piece and engaging a stop-shoulder 51, forming a portion of the wall of a notch 52, formed in the lower edge of the right-hand arm 3 of the block.

In Figs. 14 and 16, inclusive, I have illustrated with almost diagrammatic simplicity the application of my improved locking-block to a small arm, the barrel 53 of the arm being provided with a locking-block 54, turning not upon a true pivot, but upon two segmental ribs 55, projecting outwardly from the vertical walls of two recesses 56, formed in the opposite sides of the said barrel into segmental grooves 57, formed in the flat inner faces of the arms 58 of the block 54, which opens upwardly instead of downwardly. The said ribs 55 are struck from about the point *b* on Fig. 14, and therefore from a point entirely outside both the block and the barrel, whereas in case the block swung on a true pivot instead of upon ribs it would have to pass through both the barrel and the block, which would then swing upon a center located within the block and the barrel. The said block 54 is provided with a rearward extension 59, by which it is manually or mechanically operated. The other parts of this gun are not shown, the object of this illustration being merely to show that the block may be applied to small arms as well as to cannon.

In the piece shown and described the locking-block has constituted the breech-closure; but obviously locking-blocks on the same principle might themselves be applied to

breech-closures for locking the same in their closed positions.

In view of the modifications shown and suggested and of others that may obviously be made I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such alterations therein and variations therefrom as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a breech-loading firing-piece, the combination with a locking-block, of two segmental ribs upon which the said block turns instead of upon a pivot, the said ribs being struck from a center on that side of a line passing through the center of the gun-barrel, toward which the block swings to open the gun.

2. In a breech-loading firing-piece, the combination with a locking-block, of two semicircular ribs upon which the said block turns instead of upon a pivot, the said ribs being struck from a center on that side of a line passing through the center of the gun-barrel, toward which the block swings to open the gun, and each end of each rib extending into the line of the thrust of recoil.

3. In a breech-loading firing-piece, the combination with a locking-block provided with a rearwardly-projecting operating extension, of two semicircular ribs upon which the block turns instead of upon a pivot, the said ribs being struck from a center on that side of a line passing through the center of the gun-barrel, toward which the block swings to open the gun, and each end of each rib extending into the line of the thrust of recoil.

4. In a breech-loading firing-piece, the combination with a locking-block comprising a body, two forwardly-extending arms, and a rearwardly-projecting operating extension, of two segmental ribs for the block to turn upon instead of upon a pivot, each end of each of the said ribs being arranged to lie in the line of the thrust of recoil.

5. In a breech-loading firing-piece, the combination with a barrel having the sides of its breech end cut away, of a locking-block comprising a body which closes the breech of the said barrel, and two forwardly-extending arms which enter the cut-away portions of the barrel, and segmental ribs between the said arms and barrel for the block to turn upon, the said ribs being struck from a center lying outside of the block.

6. In a breech-loading firing-piece, the combination with the barrel thereof, of a locking-block forming a breech-closure for the barrel and provided with two forwardly-extending arms and a rearwardly-projecting operating extension, segmental ribs between the arms and the barrel for the block to turn upon instead of upon a pivot, and a sliding extractor

mounted in the barrel and coöperating with one of the said forwardly-projecting arms by which it is forced rearward to perform its extracting function as the block is swung
5 into its open position.

7. In a cannon, the combination with the barrel thereof, of a locking-block comprising a body and two forwardly-extending arms, segmental ribs connecting the arms of the
10 locking-block with the said barrel for the block to turn upon instead of a pivot, a latch mounted in the locking-block and engaging with the barrel for holding the locking-block in its locked position, a hammer mounted in
15 the said block, and a trigger coacting with the said hammer.

8. In a cannon, the combination with the barrel thereof, of a locking-block forming a breech-closure for the said barrel, and com-
20 prising a body and two forwardly-extending arms, segmental ribs connecting the said arms with the barrel for the block to turn upon instead of a pivot, a latch located in a slot in the body of the block and formed with
25 a rearwardly-extending finger-piece, a ham-

mer mounted in the block, a trigger coacting with the hammer, and a finger-button located at the rear end of the hammer and engaging with the said finger-piece to prevent the ham-
mer from reaching its firing position except
30 when the block is in its fully-closed position.

9. In a cannon, the combination with the barrel thereof, of a locking-block comprising a body and two forwardly-extending arms, segmental ribs connecting the said arms with
35 the barrel for the block to turn upon instead of a pivot, and an extractor located in a groove in the barrel and provided at its forward end with an outwardly-projecting lug which coacts with one of the two arms of the
40 block, whereby the extractor is operated by the block as the same is swung into its open and closed positions.

In testimony whereof I have signed this specification in the presence of two subscrib-
45 ing witnesses.

CHARLES H. GRIFFITH.

Witnesses:

DANIEL H. VEADER,
THOMAS C. JOHNSON.