

(No Model.)

7 Sheets—Sheet 1.

H. SCHNEIDER.

BREECH MECHANISM FOR QUICK FIRING GUNS.

No. 561,444.

Patented June 2, 1896.

FIG. 1.

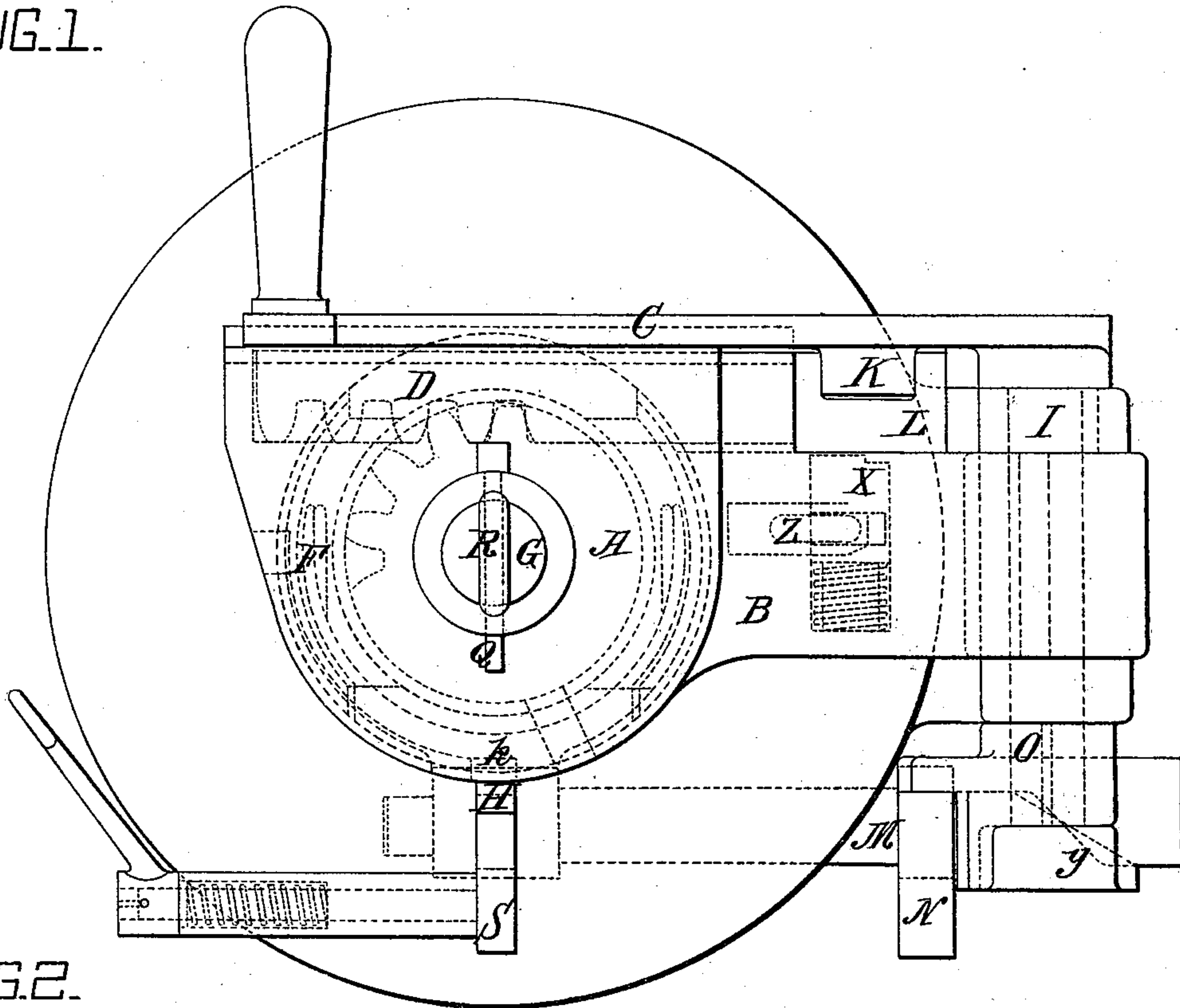
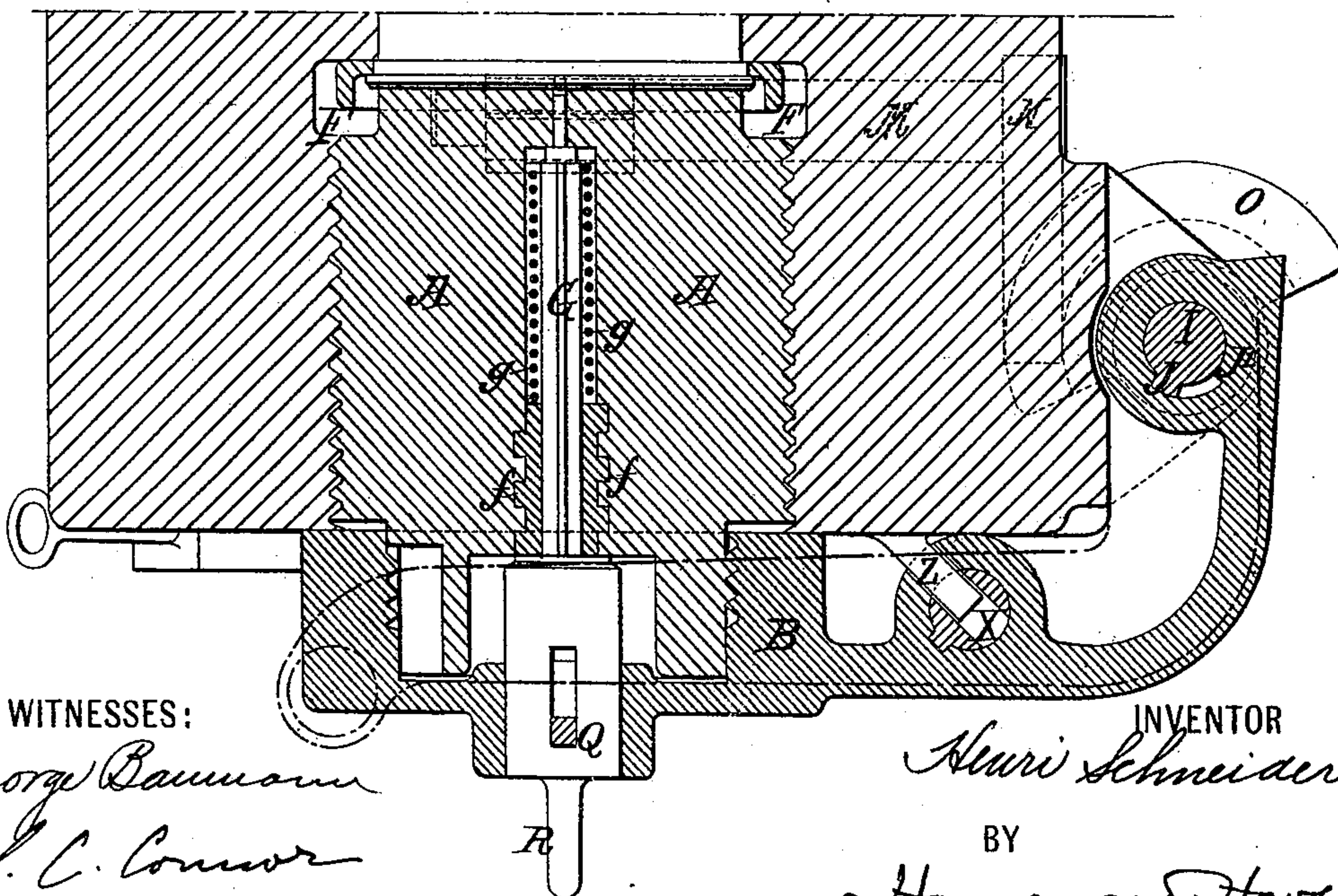


FIG. 2.



WITNESSES:

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(No Model.)

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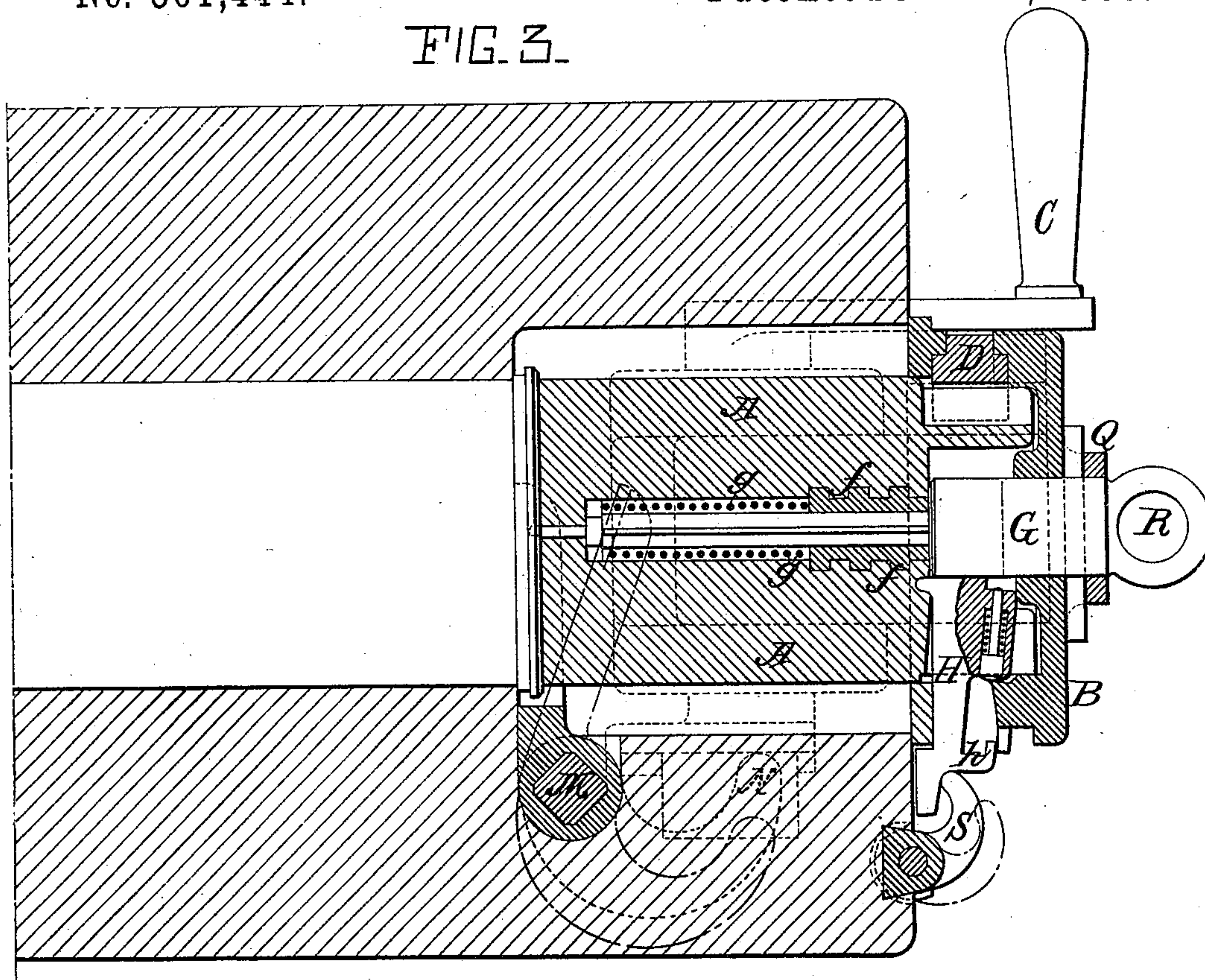
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FIG. 3.



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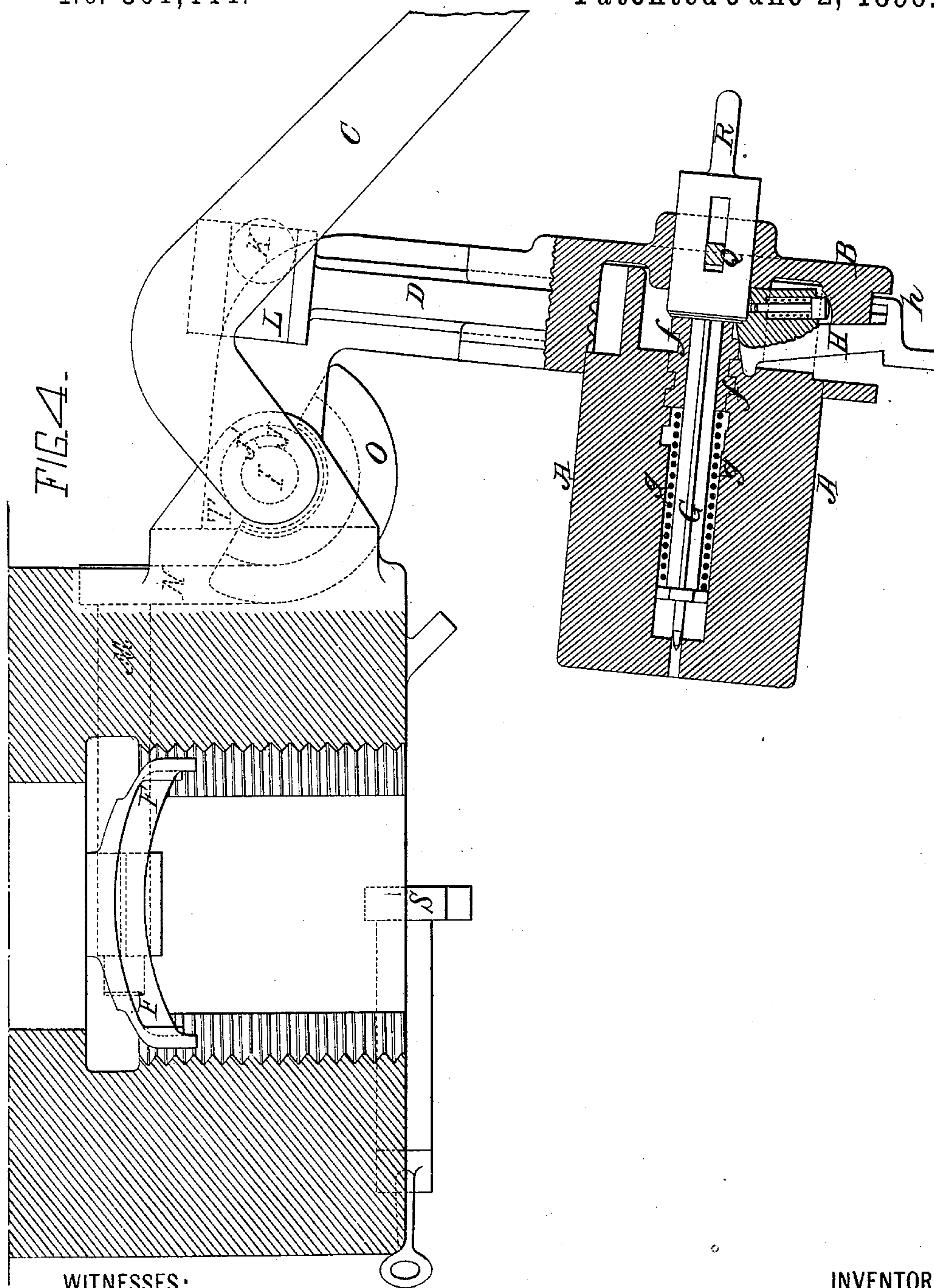
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Fig. 5.

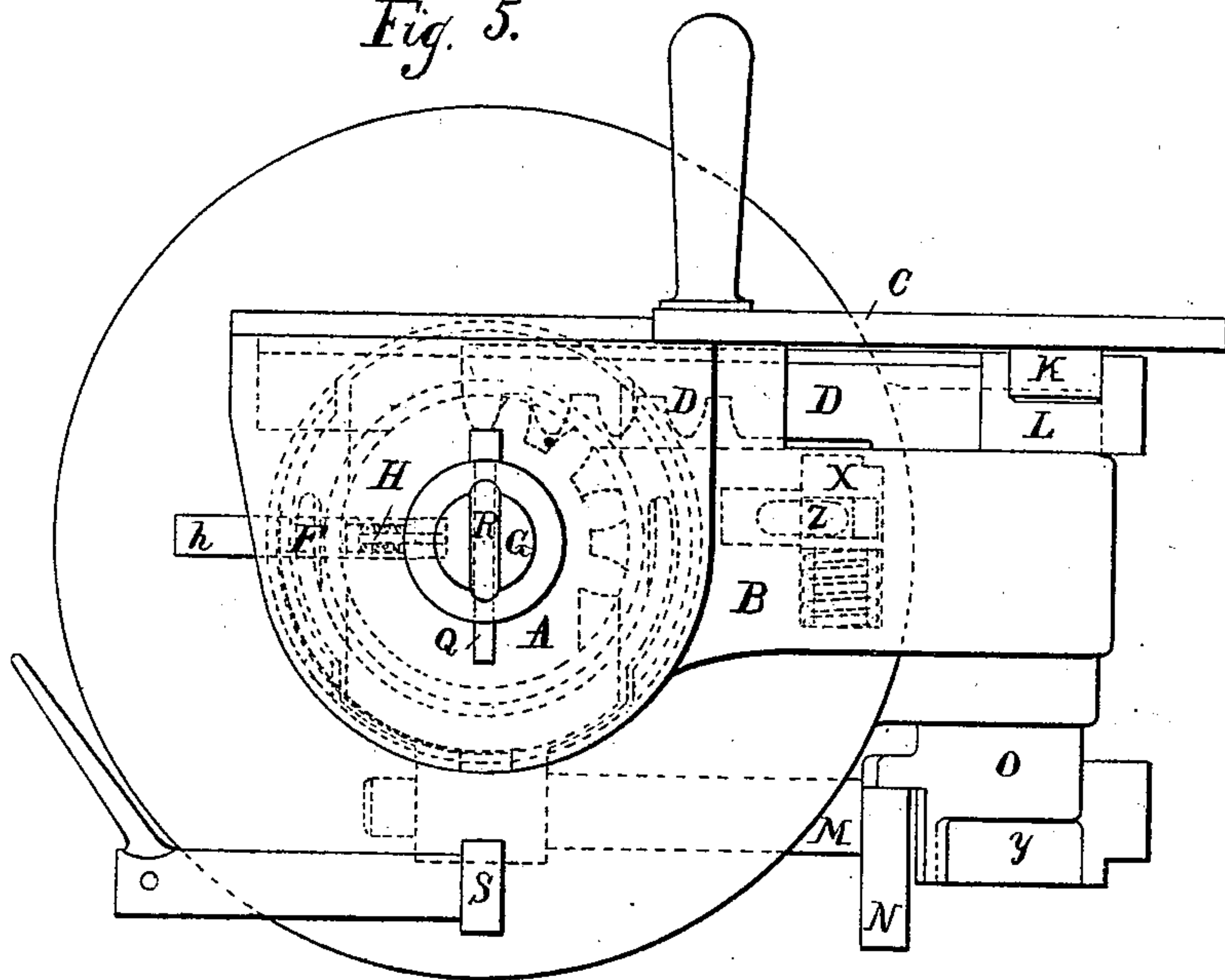
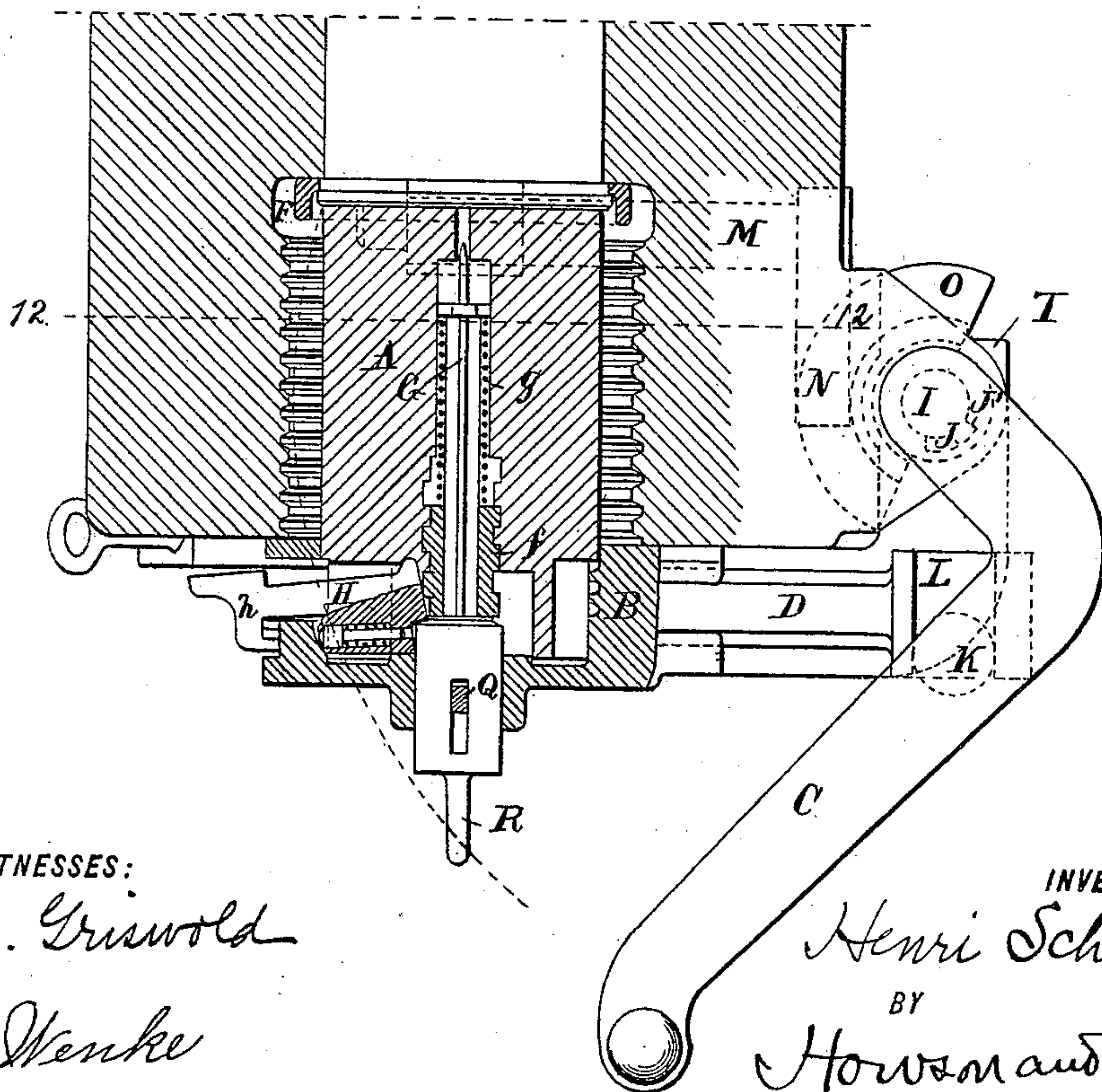


Fig. 6.



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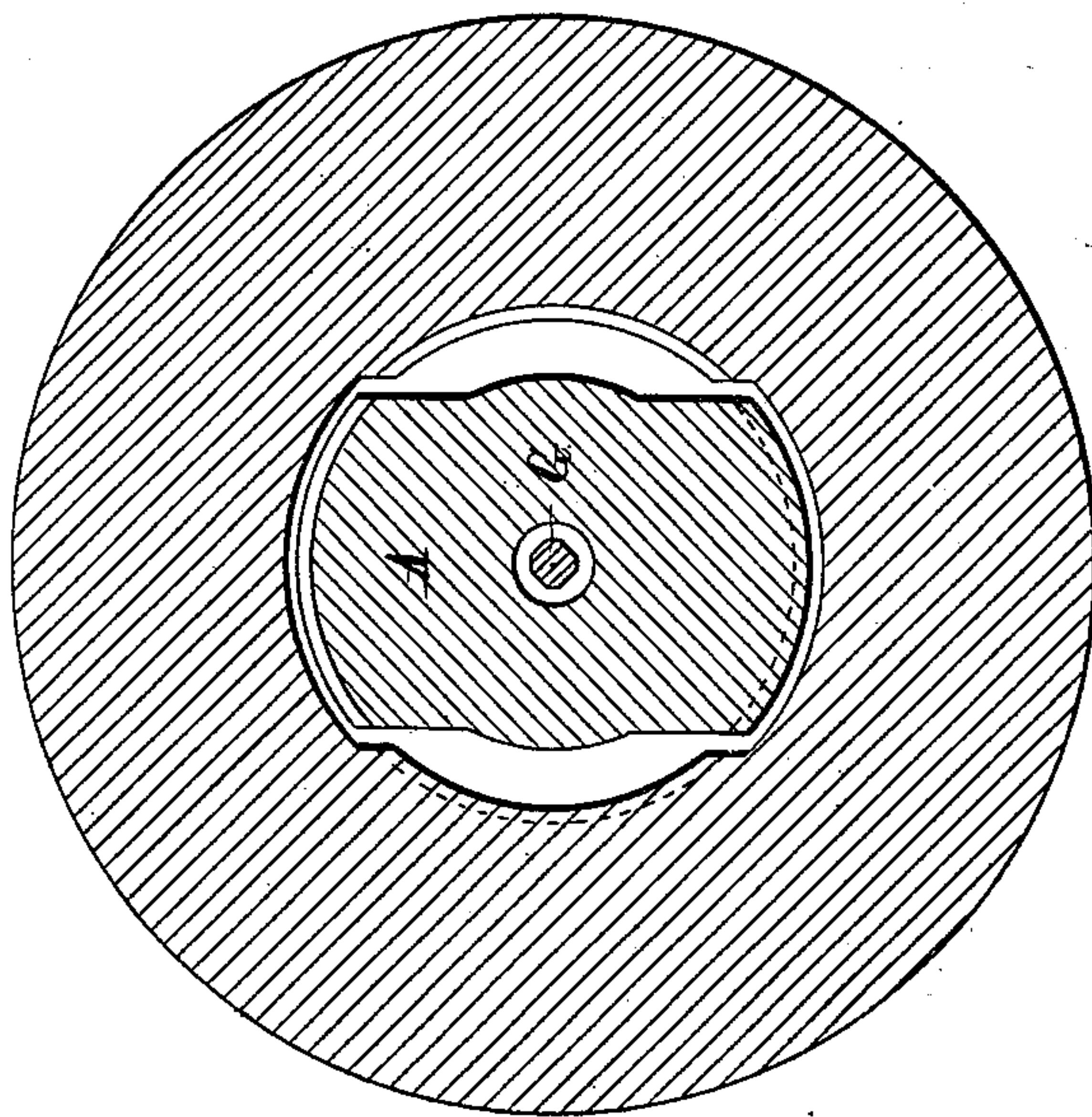
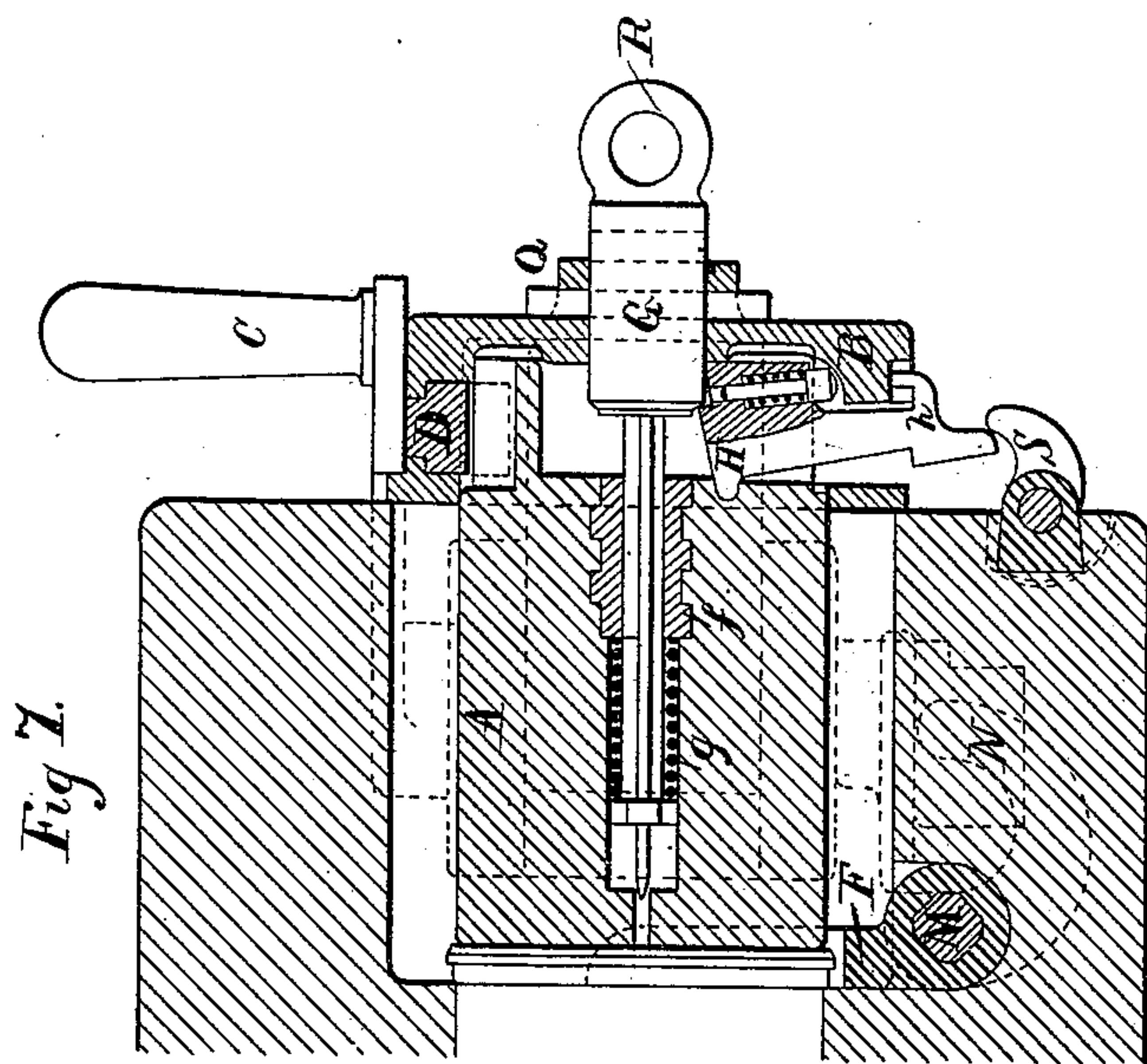
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Fig. 8.

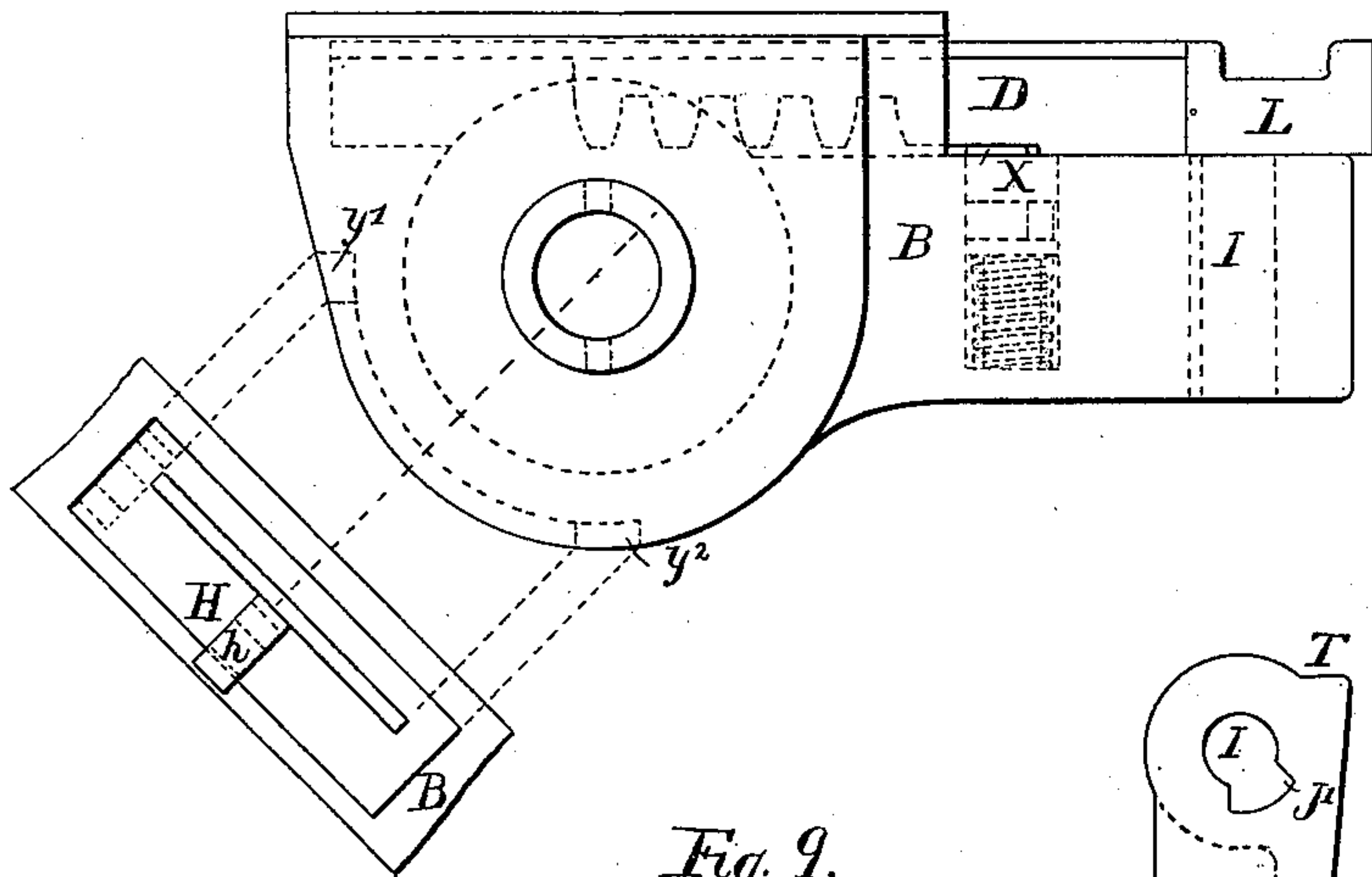


Fig. 9.

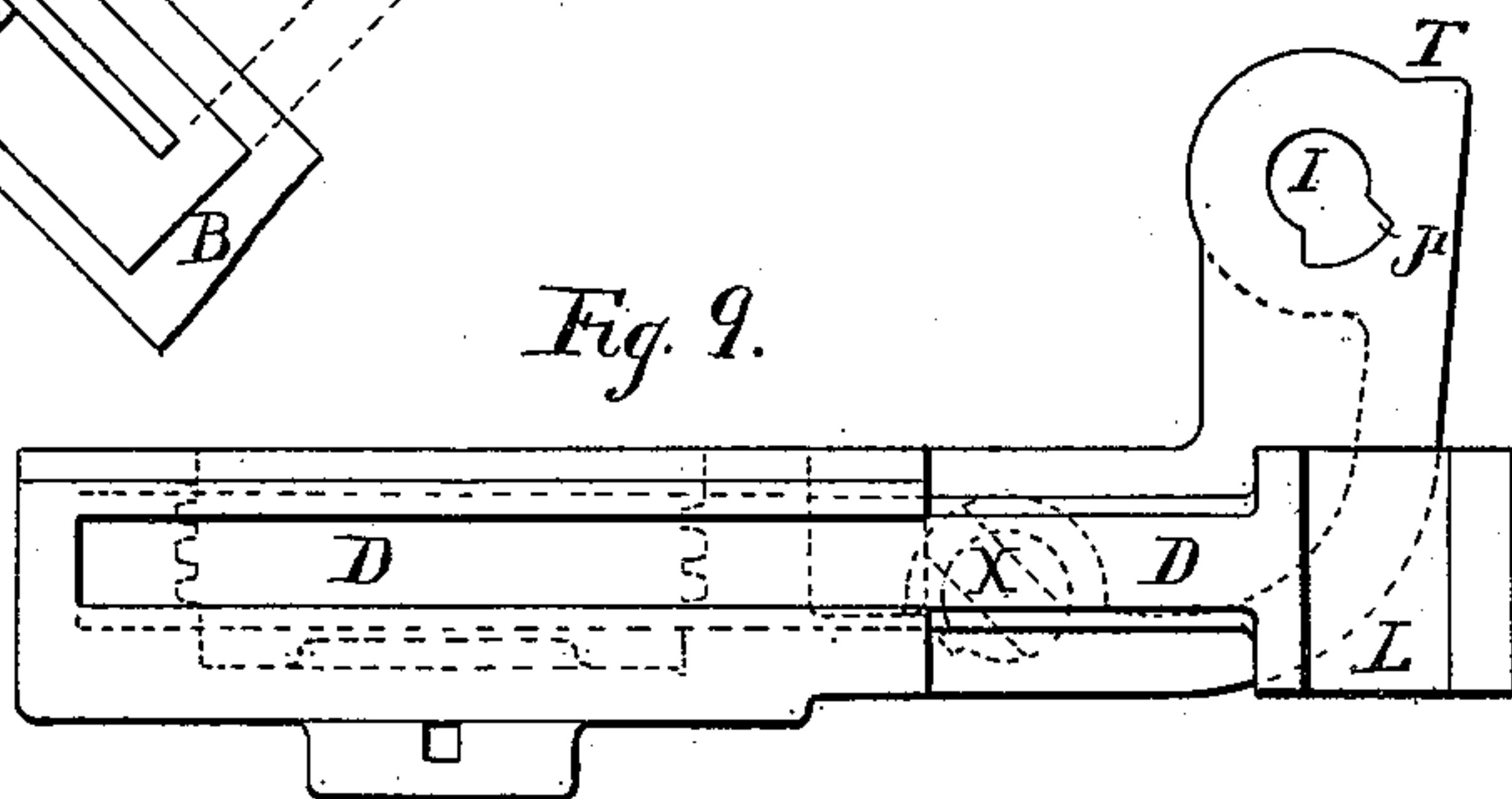


Fig. 10.

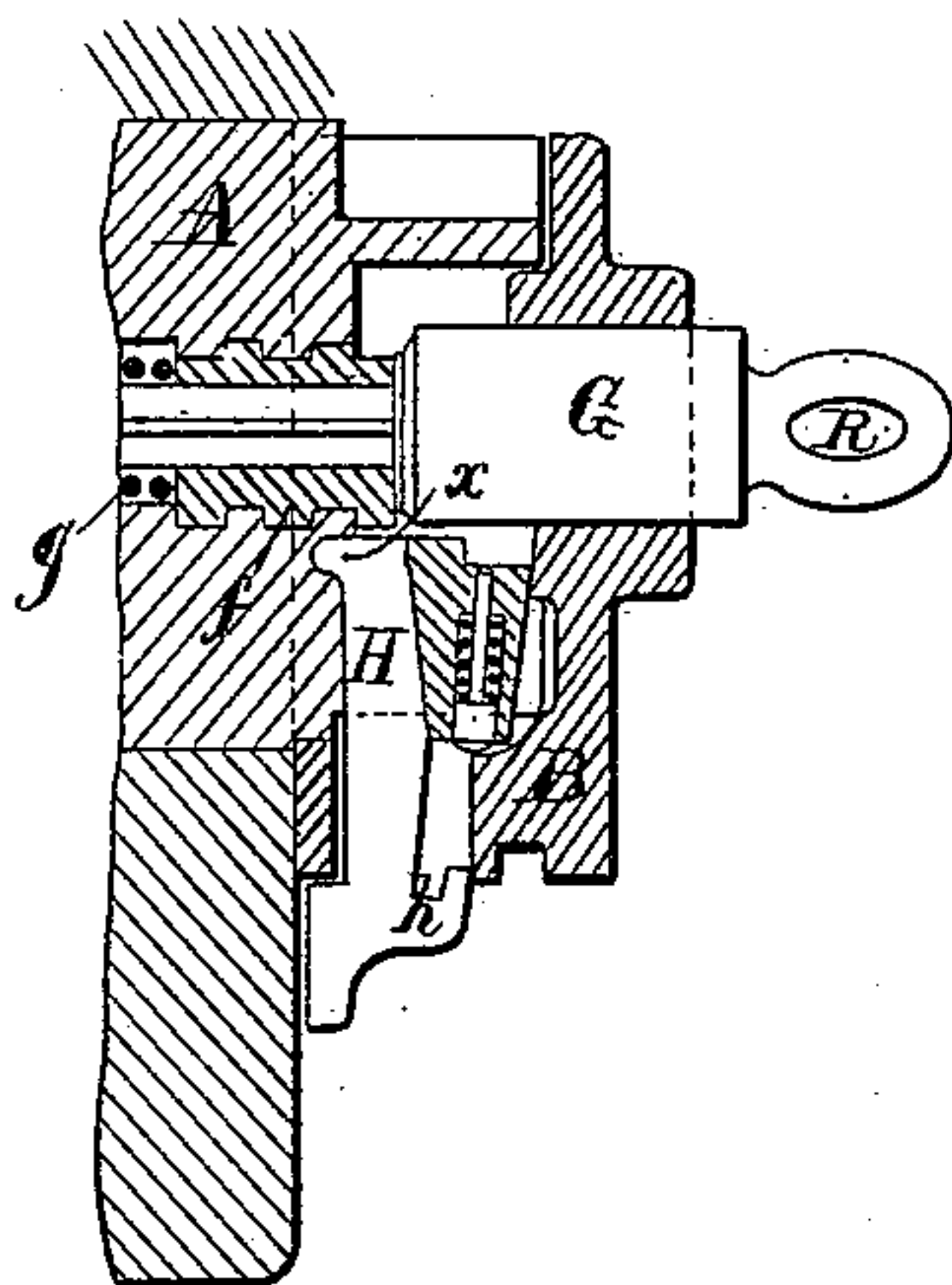
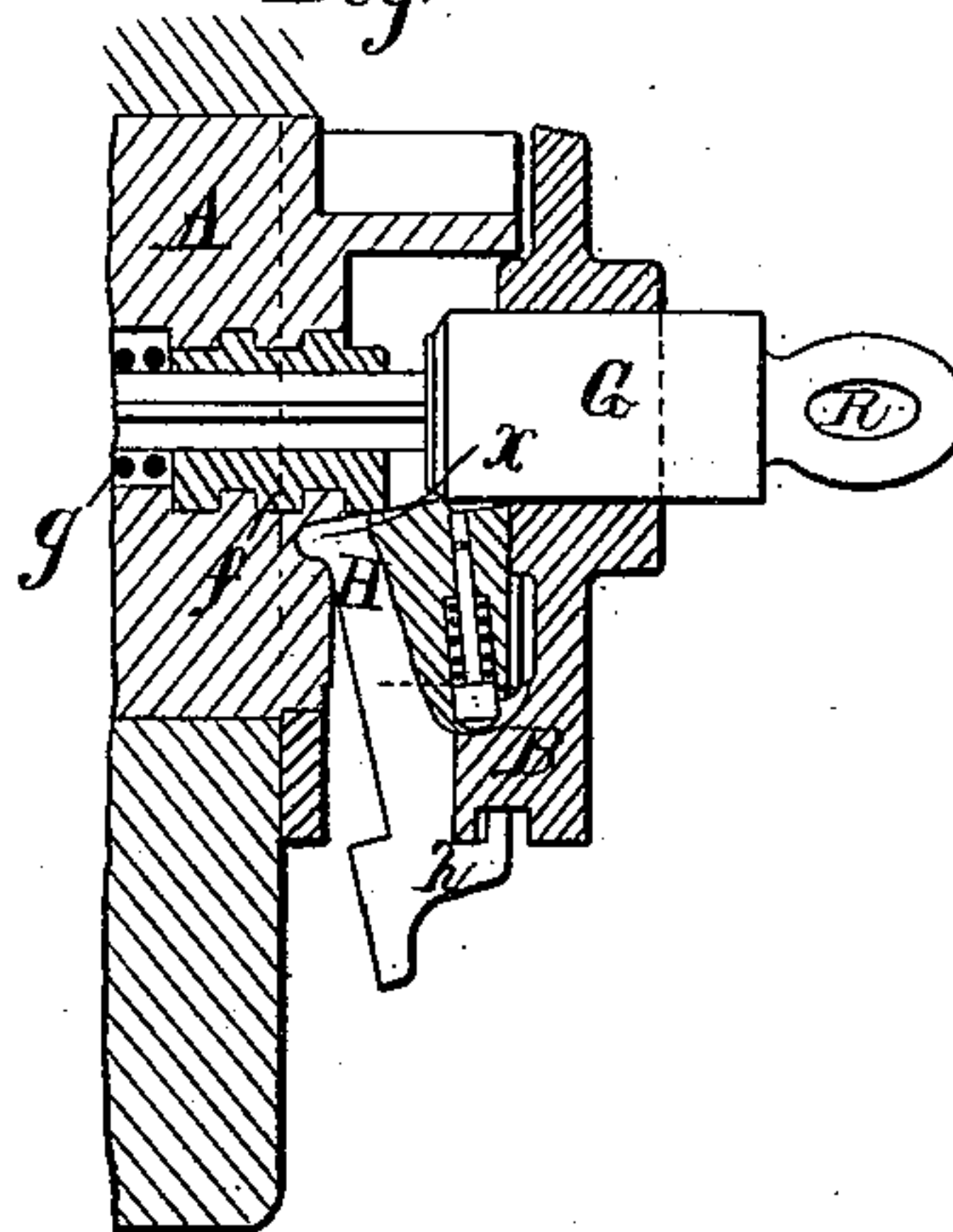


Fig. 11.



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Fig. 14,

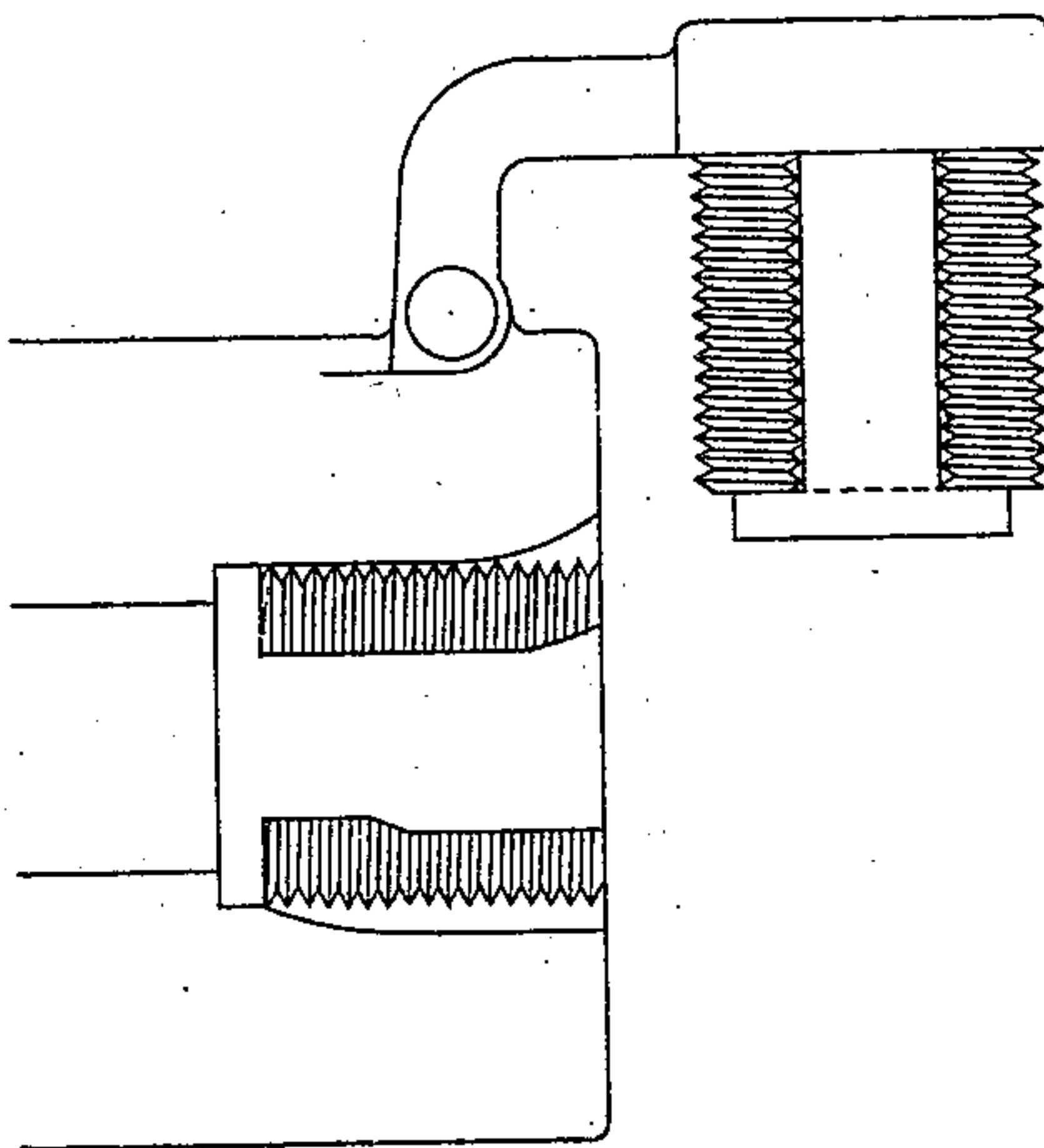


Fig. 13,

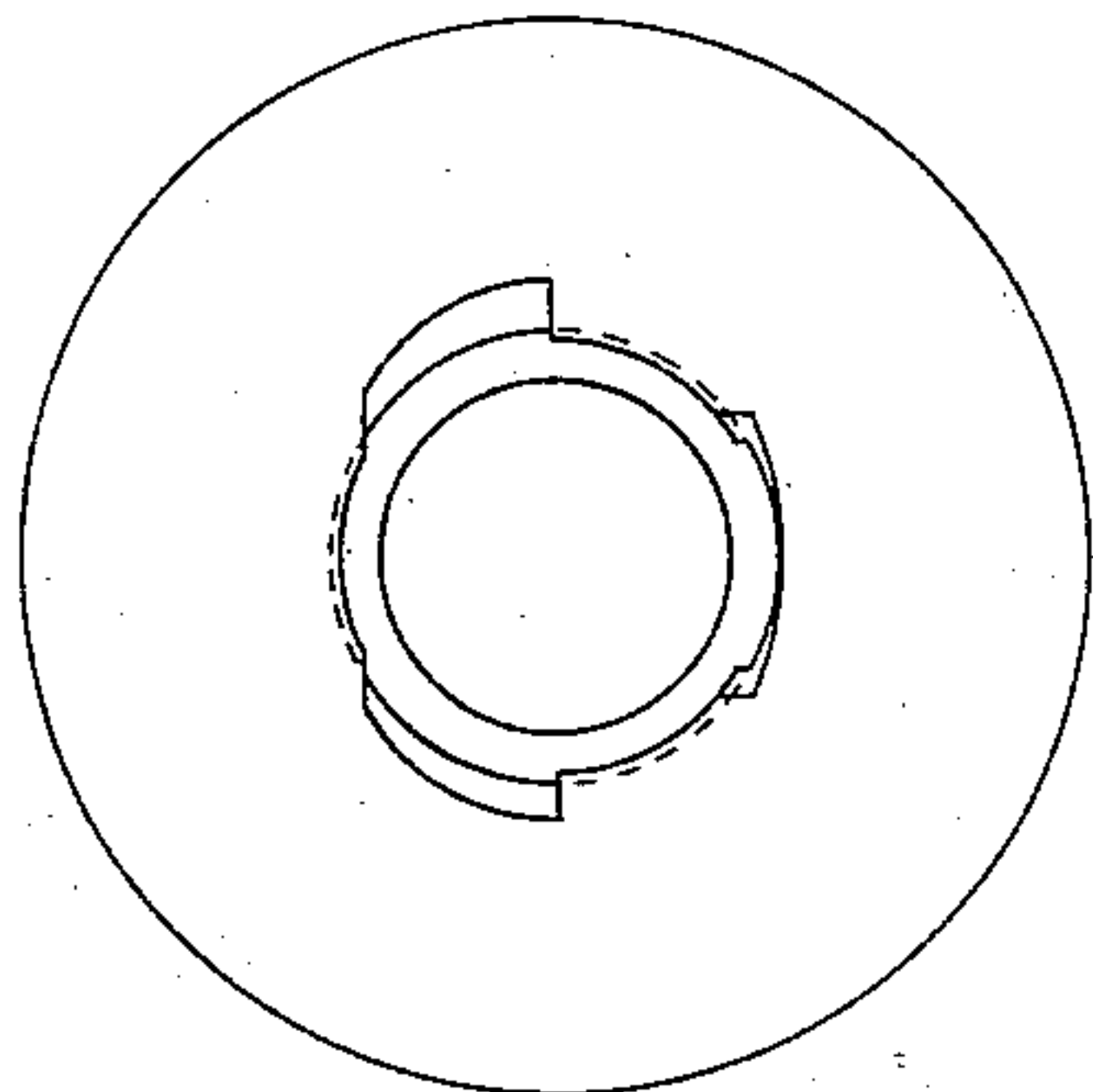


Fig. 16,

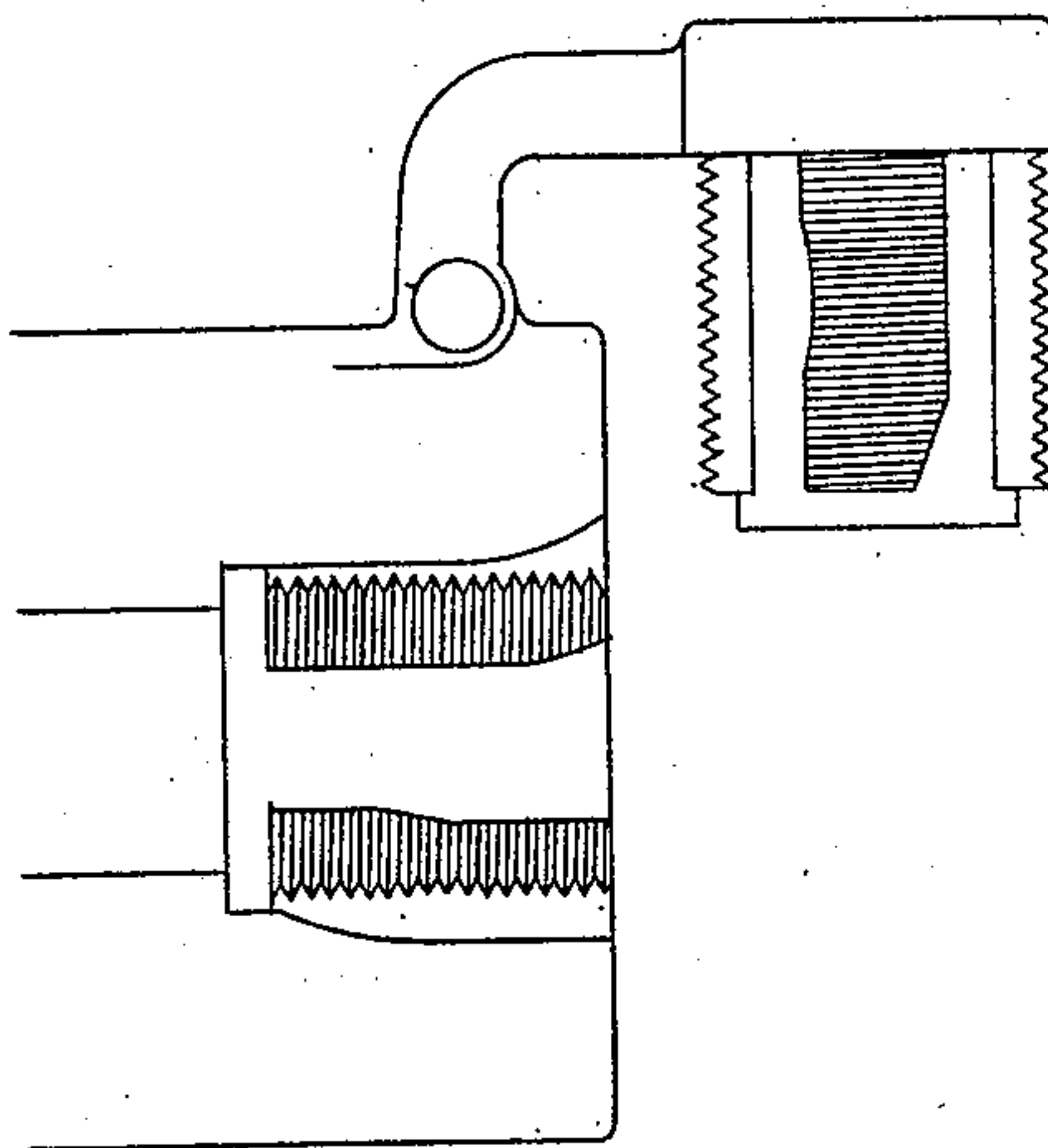
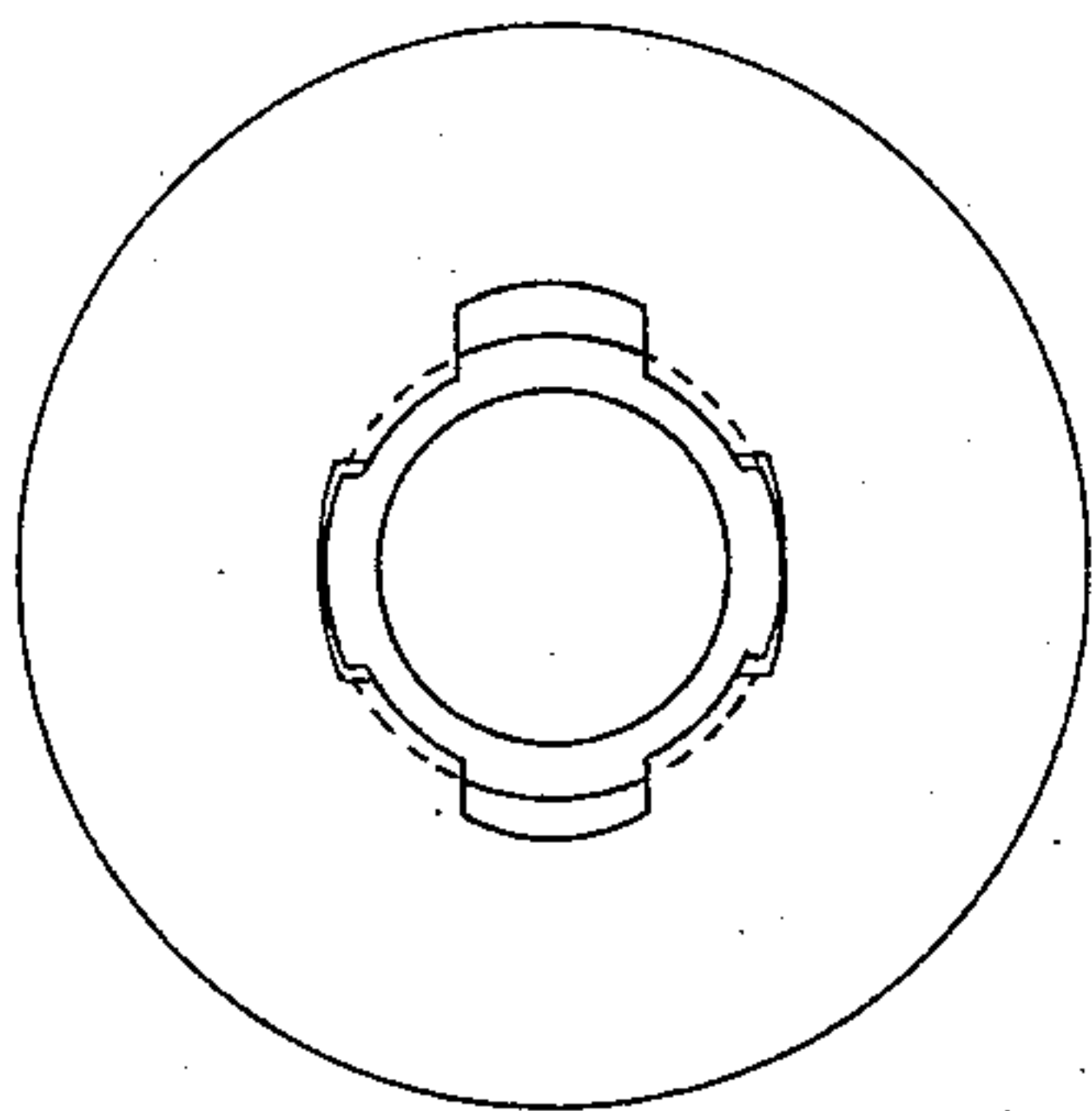


Fig. 15,



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRI SCHNEIDER, OF PARIS, FRANCE, ASSIGNOR TO SCHNEIDER & CO.,
OF CREUZOT, FRANCE.

BREECH MECHANISM FOR QUICK-FIRING GUNS.

SPECIFICATION forming part of Letters Patent No. 561,444, dated June 2, 1896.

Application filed April 24, 1895. Serial No. 546,987. (No model.)

To all whom it may concern:

Be it known that I, HENRI SCHNEIDER, a citizen of the Republic of France, residing in Paris, France, have invented certain Improvements in the Breech Mechanism of Quick-Firing Guns, of which the following is a specification.

This invention relates to improvements which I have made in the breech mechanism of quick-firing guns. These improvements apply to closing devices, and have for their objects, first, to increase the speed in which the opening and closing of the breech may be effected; second, to reduce the number of pieces composing the mechanism, and, third, to permit of the quick dismounting of the said mechanism without the aid of any tools.

In the accompanying drawings, Figure 1 is a rear view, Fig. 2 a horizontal section, and Fig. 3 a longitudinal section, of the closing mechanism, the breech-block being in its closed position and the firing or striking device uncocked. Fig. 4 is a horizontal section showing the breech open. Figs. 5 and 6 are views similar to Figs. 1 and 2, but showing the breech-block when it has made the quarter-turn and is in the position in which it is capable of being withdrawn. Fig. 7 is a view similar to Fig. 3, but showing the firing-pin cocked. Figs. 8 and 9 show different views of the carrier. Fig. 10 is a detail showing the firing-pin disengaged or uncocked, and Fig. 11 shows the same engaged and cocked. Fig. 12 is a section taken through the line 12-12 of Fig. 6. Figs. 13 and 14 are diagrammatic views showing a breech and breech-block having the sections of the screw-thread formed in sixths, and Figs. 15 and 16 are similar views having the sections of the screw-threads formed in eighths.

In the drawings, Figs. 5 to 12 have been drawn to a smaller scale than Figs. 1 to 4.

The mechanism includes the breech-block A, the carrier B, the hand-operated lever C, the rack D and its bolt, the extractor F and its driving-shaft, the spring-striker G, and finally the spring-tumbler H.

All the firing parts are hidden and protected by the carrier B.

The screw-tappet breech-block is carried

by the carrier B, being constantly screwed therein by a screw of the same pitch as that in the breech-chamber of the gun. The screw-threads, both on the breech-block and in the breech-chamber, are broken or interrupted through two quarters of the circumference, above and below the horizontal axis of the gun, so that the disengaging is produced by imparting a quarter-turn to the said block. The forms and dimensions of the sectors which are tapped and of those which are recessed are such as to dispense with the need of drawing the block backward for removing it from the gun. When once released, the block is drawn back by the turning carrier.

The hand-lever C turns on a hinge-pin I, on which is formed the rib J for engaging the carrier in the angular movement of the lever. The stud K of this lever engages in the groove L of the rack, which latter takes into teeth provided on the rear of the breech-block.

The extractor F consists of a forked part, the two arms of which constitute extracting-claws, which catch in front in the rim of the cartridge-case at the height of the axis of the gun. The swinging back of this fork causes the detachment and then the expulsion of the cartridge-case. For securing this result the said axle M of the extractor terminates in a lever-button N, on which is caused to bear at the right time the incline y of a cylindrical part O, formed in one with the hinge-pin I.

In the center of the breech-block is the striking apparatus, composed of a striking-pin G, a coiled spring g , and a hollow screw-piece f , which slides without turning on the said striking-pin. The breech-block forms the hollow screw of this screw f , whose thread is very extended. A key Q, passing through both the carrier and the striking-pin, prevents the latter from turning, so that during the releasing of the breech-block the hollow screwed piece f is displaced rearwardly and causes the striking-pin to recede a suitable distance. At the end of the movement (see Fig. 6) the tumbler H is caused by its spring to engage under the sear-notch of the striking-pin, and so prevents it falling back. The heel h on the tumbler engages in a circular groove open at each end $y^2 y'$ in the carrier,

Fig. 8, so that the tumbler can only be caused to oscillate for liberating the striking-pin when the breech-block is completely closed.

At the moment of closing in the releasing movement of the breech-block the hollow tapped piece *f* resumes its forward position and compresses the spring of the striker-pin, this last being still retained by the tumbler. (See Fig. 7.)

A ring R permits of recocking the striking device in case of misfire without the necessity of reworking the breech-block.

A detent S, a ring-lever, and operating-cord complete the apparatus for firing.

Operation.

The opening and closing of the breech-block is effected by a single movement of the operating-lever in a horizontal plane parallel to the main axis of the gun, the hand describing around one center an arc of a circle more or less large.

Opening the breech.—Suppose the charge has been fired. The breech is opened by sharply turning the hand-lever from left to right. The stud K of the said lever engages in the rack and so effects the releasing of the breech-block, which latter in turning around causes the striker-pin to recede, but without compressing its spring. At the end of the rotary movement the tumbler engages under the sear-notch of the striking-pin, and so holds it in a cocked position. As the releasing of the block is accomplished the rib J of the hinge-pin comes against the side J' of the carrier and engages it in its continued movement of rotation until it is carried against the gun by the heel T. The breech is then completely opened. When the releasing of the breech is accomplished and the carrier commences its rotation, the bolt X, thrust by its spring, engages in the rack and renders the screw-bolt immovable in the carrier, and when the block is almost out of the gun the ramp *y* of the cylindrical part O of the lever-axle bears on the end of the operating-shaft of the extractor, the latter sharply oscillates, detaches and projects rearwardly the empty cartridge-case. All the parts comprising the firing mechanism now occupy the respective positions shown in Fig. 4.

Closing the breech.—To close the breech the hand-lever is sharply turned from right to left. The lever first engages the whole mechanism in its rotation, since its stud K is engaged in the rack and the latter is rendered immovable in the carrier by means of its bolt; but when the carrier meets the face of the breech of the gun the finger Z, fixed to the gun, causes the bolt of the rack to descend, and this latter being set free, but still moved by the lever, produces the engaging of the breech-block. In this movement the hollow tapped piece *f* compresses the spring of the striker, and the striking apparatus is thus found to be cocked. (See Fig. 7.) The closing of the breech-block drives the fresh car-

tridge into the breech-chamber, the rim of the cartridge-case driving before it the extractor-claws. The gun is then fired by pulling on the detent with the cord. In case of misfire the striker is cocked afresh by drawing it back by means of the ring, which is formed at the rear thereof.

The closing device may be provided with a small safety-block, operating by inertia, if required, for preventing the immediate opening of the breech in the case of the gun hanging fire.

The drawings and the description show the sections of the screw-threads in the breech-chamber and breech-block of the gun as formed in fours; but in certain cases—for instance, in large guns—it will be found advantageous to adopt the sections as sixths, as shown in Figs. 13 and 14, or as eighths, as shown in Figs. 15 and 16. In either case all the rest of the parts are the same and operate the same, except that the releasing-rack moves only a sixth or an eighth of the development of the screw instead of a quarter, as before described.

Having thus described the object of my invention and the means of putting it into practice, I reserve for myself to vary at will the means for forming the section of the screw-block and of the breech of the gun, the amount and angular direction of movement of the operating-lever, the forms and dimensions of the different parts, as well as the nature of the materials which compose them.

I claim as my invention—

1. In quick-firing guns, the combination of a breech and a cylindrical breech-block each provided with broken screw-threads, a hinged carrier for the breech-block, a hinge-pin for the carrier, provided with an operating-lever, the said pin adapted to engage rigidly with the carrier during a part of its rotation, with a releasing-rack actuated directly from the operating-lever, the whole adapted to open and close the breech by means of a single rotary movement of the lever around a single center, as set forth.

2. In quick-firing guns, the combination of a breech and breech-block each provided with broken screw-threads, the breech-block being also provided with teeth, a hinged carrier provided with a spring-bolt, a hinge-pin for the carrier provided with an operating-lever and with a rib adapted to engage the carrier during a part of its rotation, with a releasing-rack actuated directly by the operating-lever, and engaging with the teeth on the breech-block, the said spring-bolt adapted to engage with the releasing-rack as the breech-block commences to be withdrawn, all substantially as and for the purposes set forth.

3. In quick-firing guns, the combination of a breech and breech-block, a hinged carrier for the breech-block, a hinge-pin for the carrier provided with an operating-lever and with an inclined part, with an extractor comprising an oscillating fork whose arms engage the

rim of the cartridge, and having an axle of oscillation provided with a lever adapted to engage with the said inclined part of the hinge-pin, all substantially as and for the purpose
5 set forth.

4. In quick-firing guns, the combination of a breech and breech-block each provided with interrupted screw-threads, the said breech-block being also provided with an internal
10 screw of extended thread, with a striking-pin, adapted to move longitudinally but not to rotate, a coiled spring, a hollow screw-piece *f*

working in the internal screw in the breech-block, and adapted to slide on but not to turn on the striking-pin, and a detent H, all substantially as and for the purpose set forth. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRI SCHNEIDER.

Witnesses:

CHARLES LAUREAU,
HIPPOLYTE OLIVER.