

No. 859,336.

PATENTED JULY 9, 1907.

J. RIDDELL.

DOUBLE ACTING TOOL FOR PLANERS AND SHAPERS.

APPLICATION FILED DEC. 3, 1902.

28 SHEETS—SHEET 1.

Fig. 1.

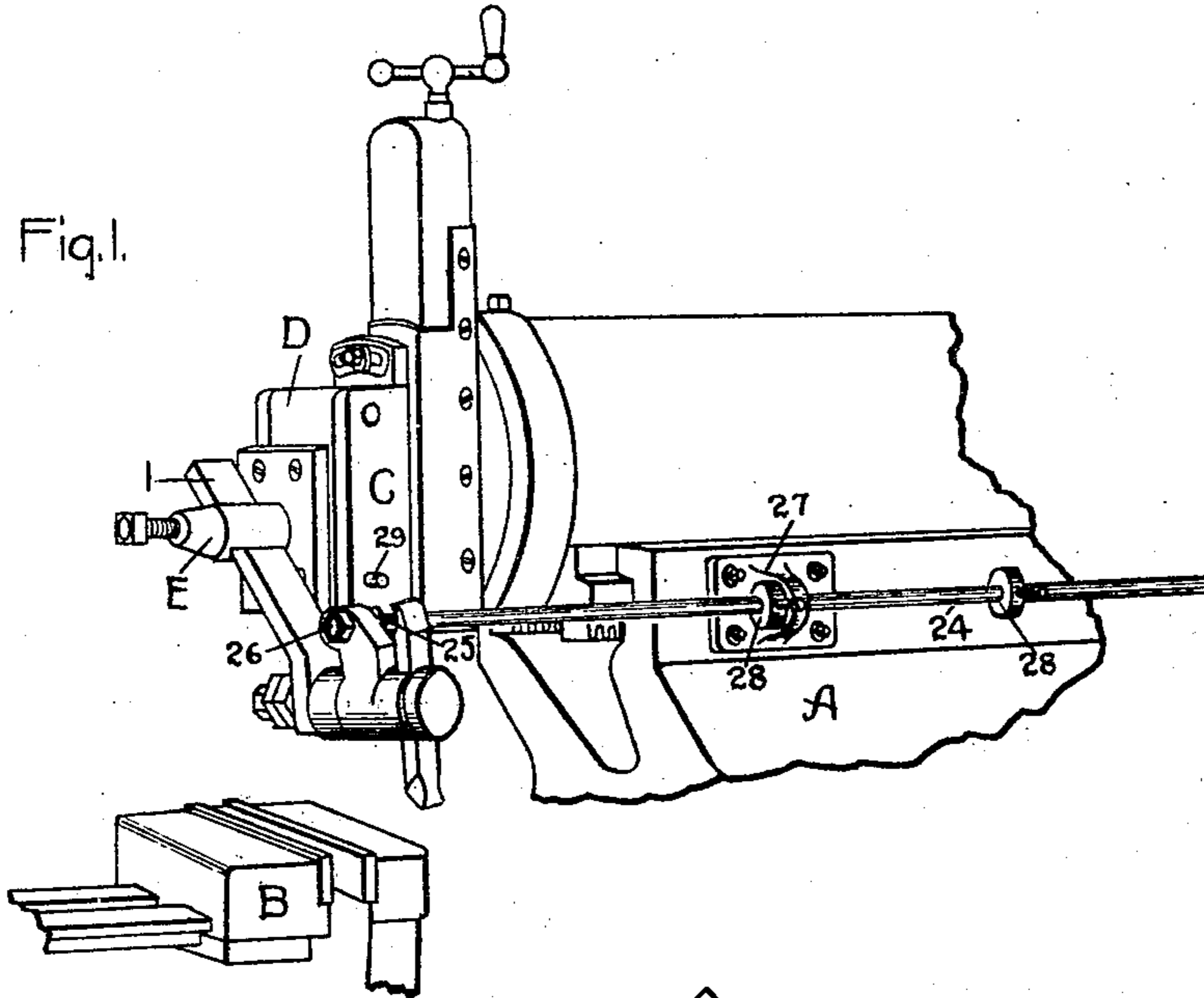


Fig. 2.

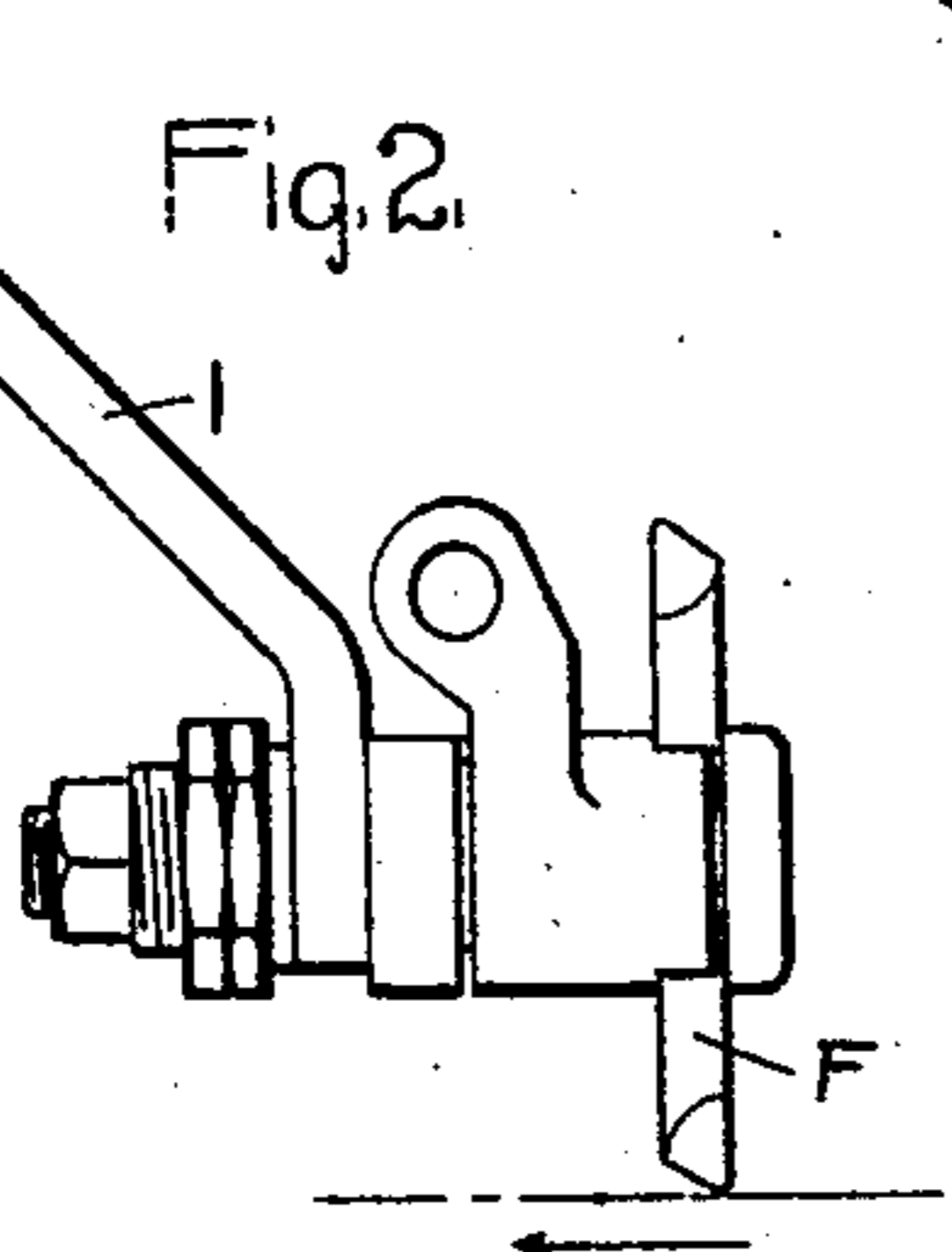


Fig. 3.

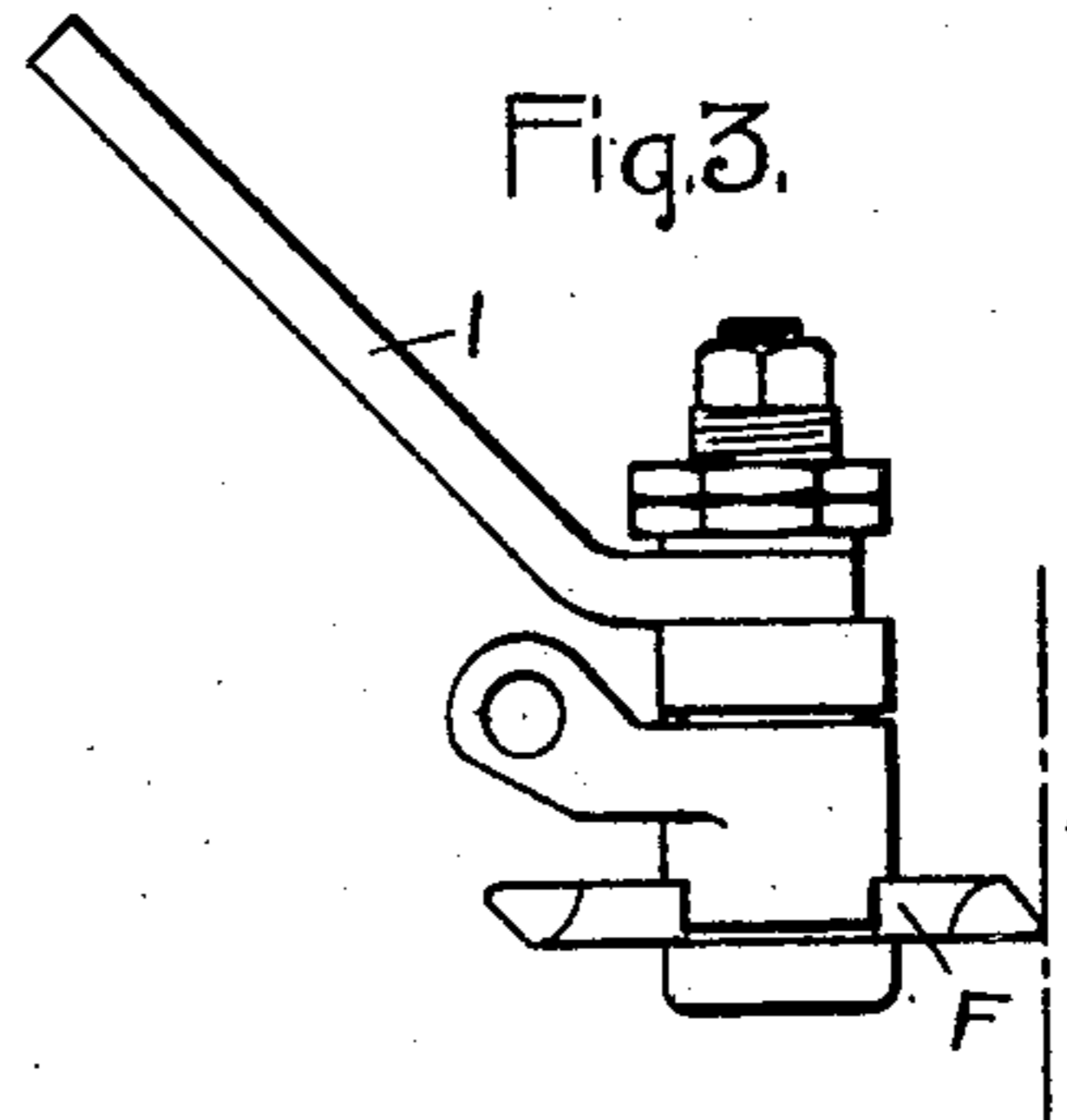


Fig. 4.

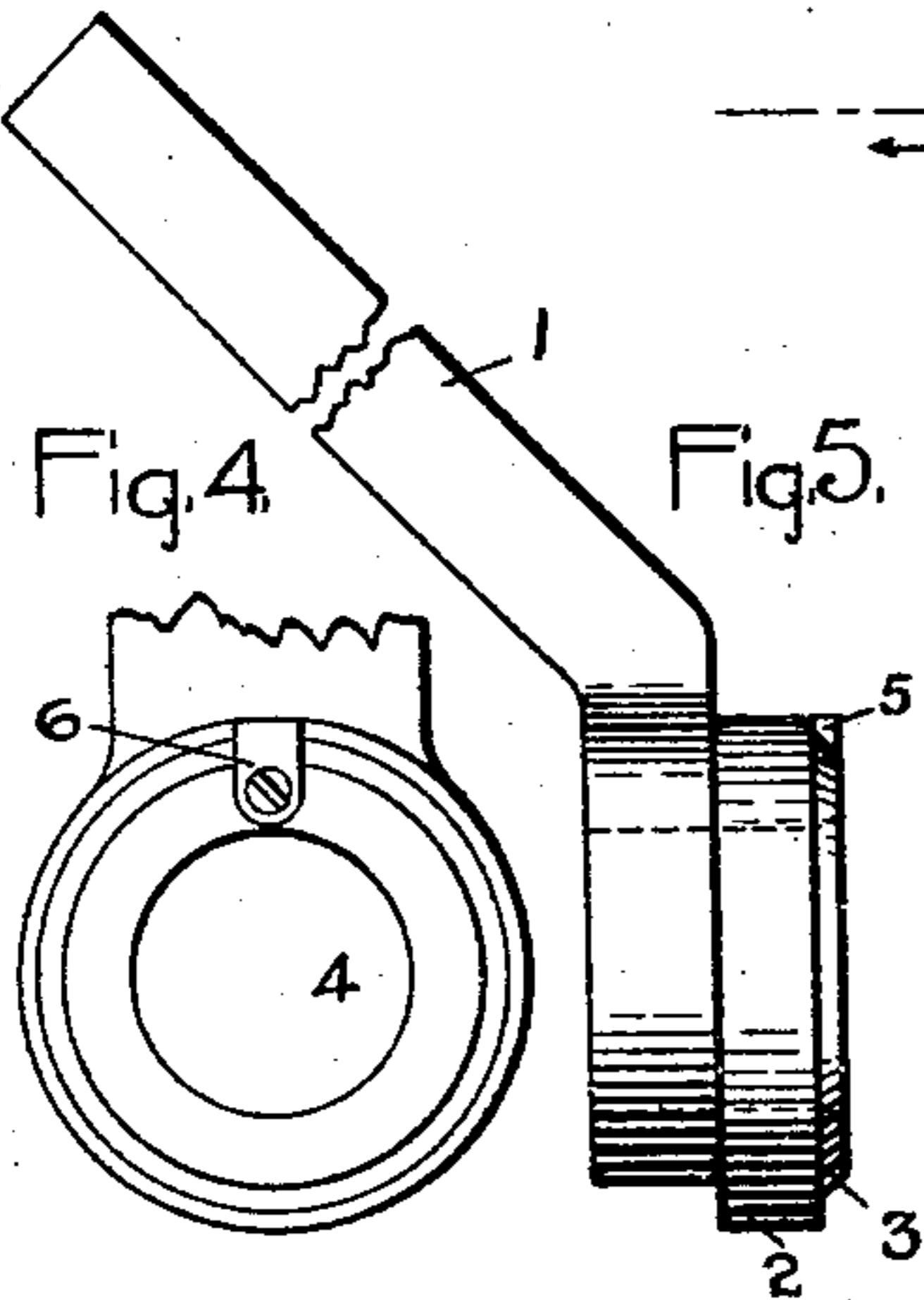


Fig. 5.

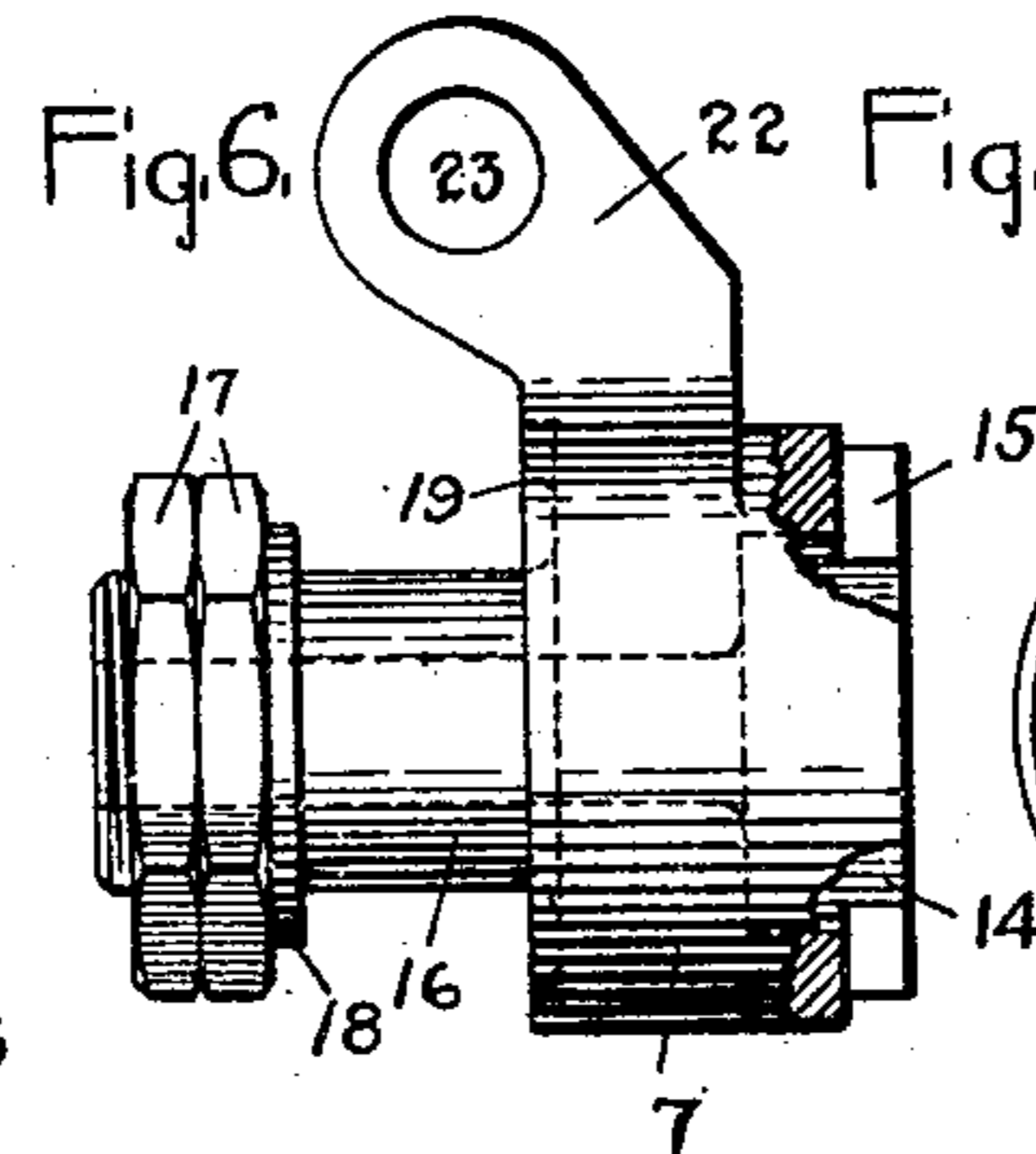


Fig. 6.

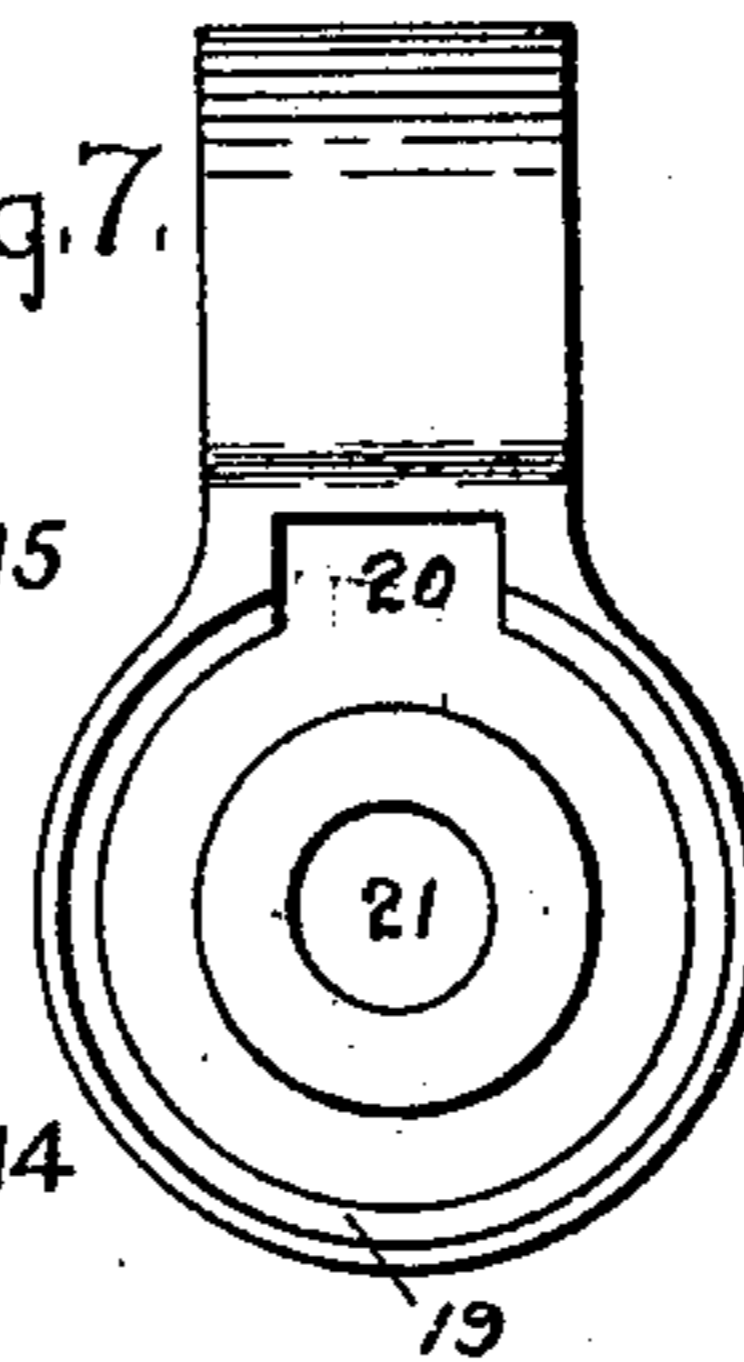
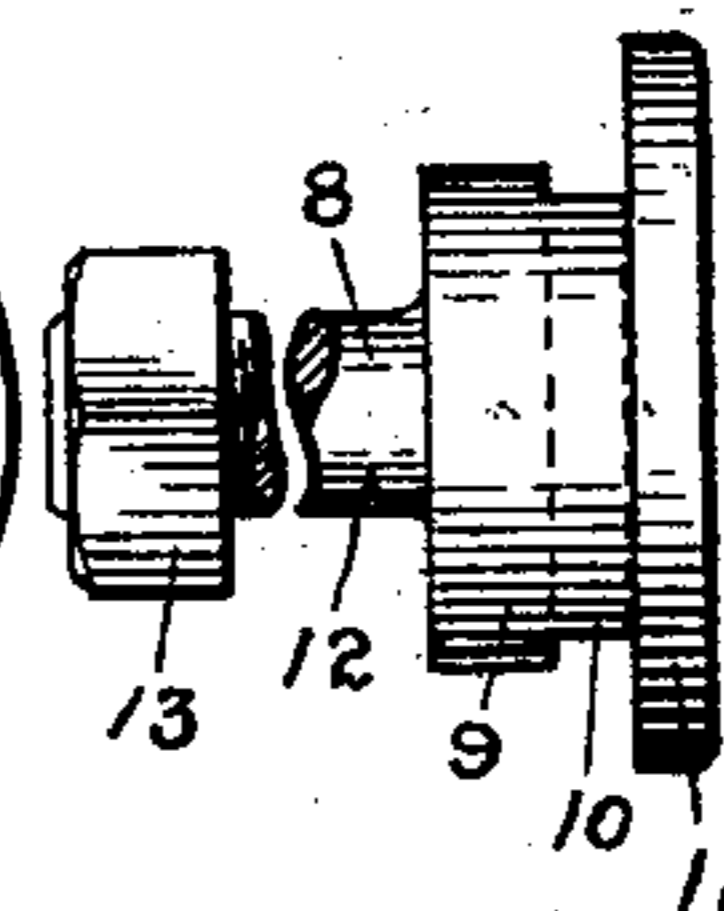


Fig. 7.

Fig. 8.



WITNESSES:

Wm. H. Chapman
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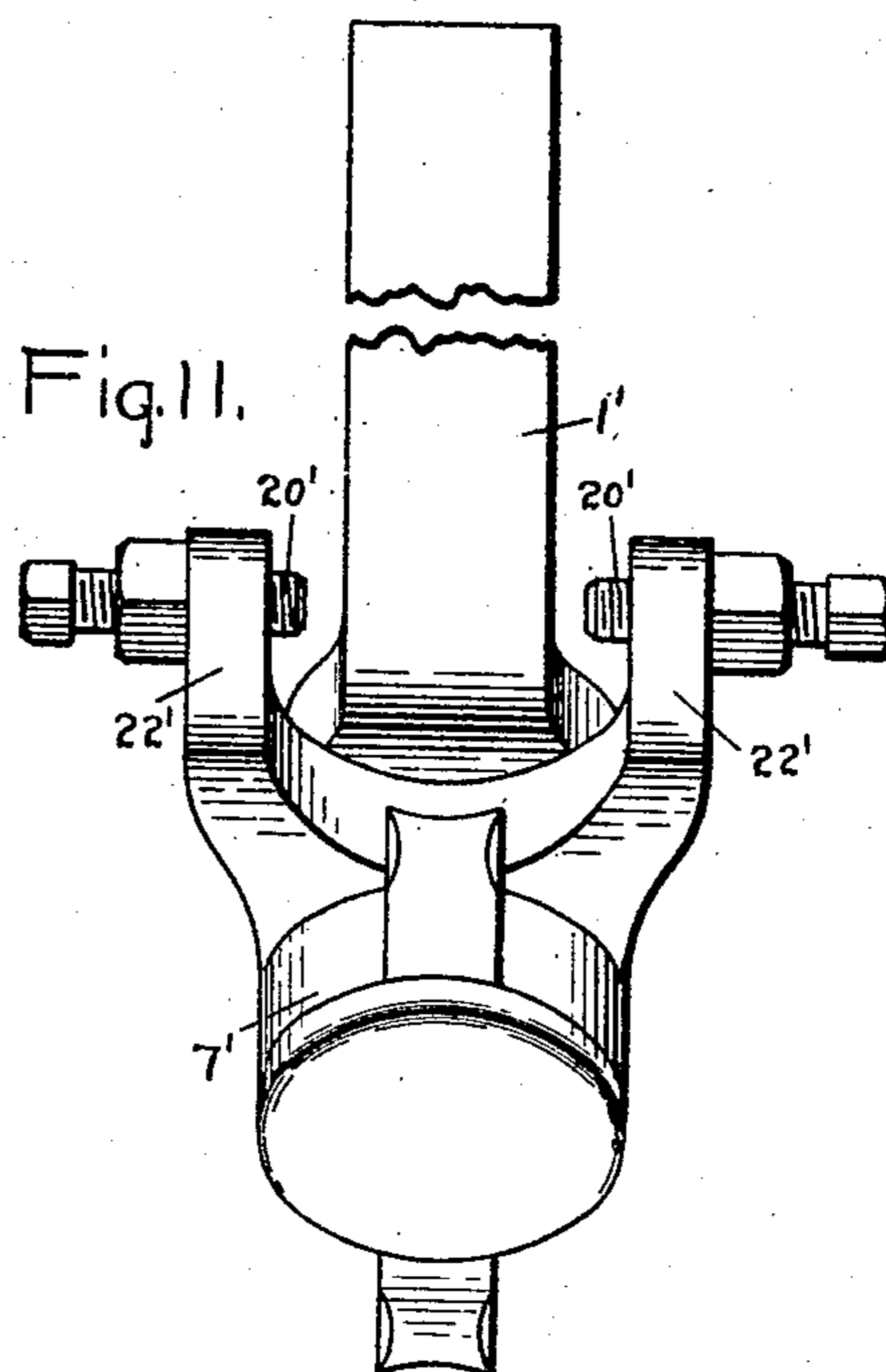
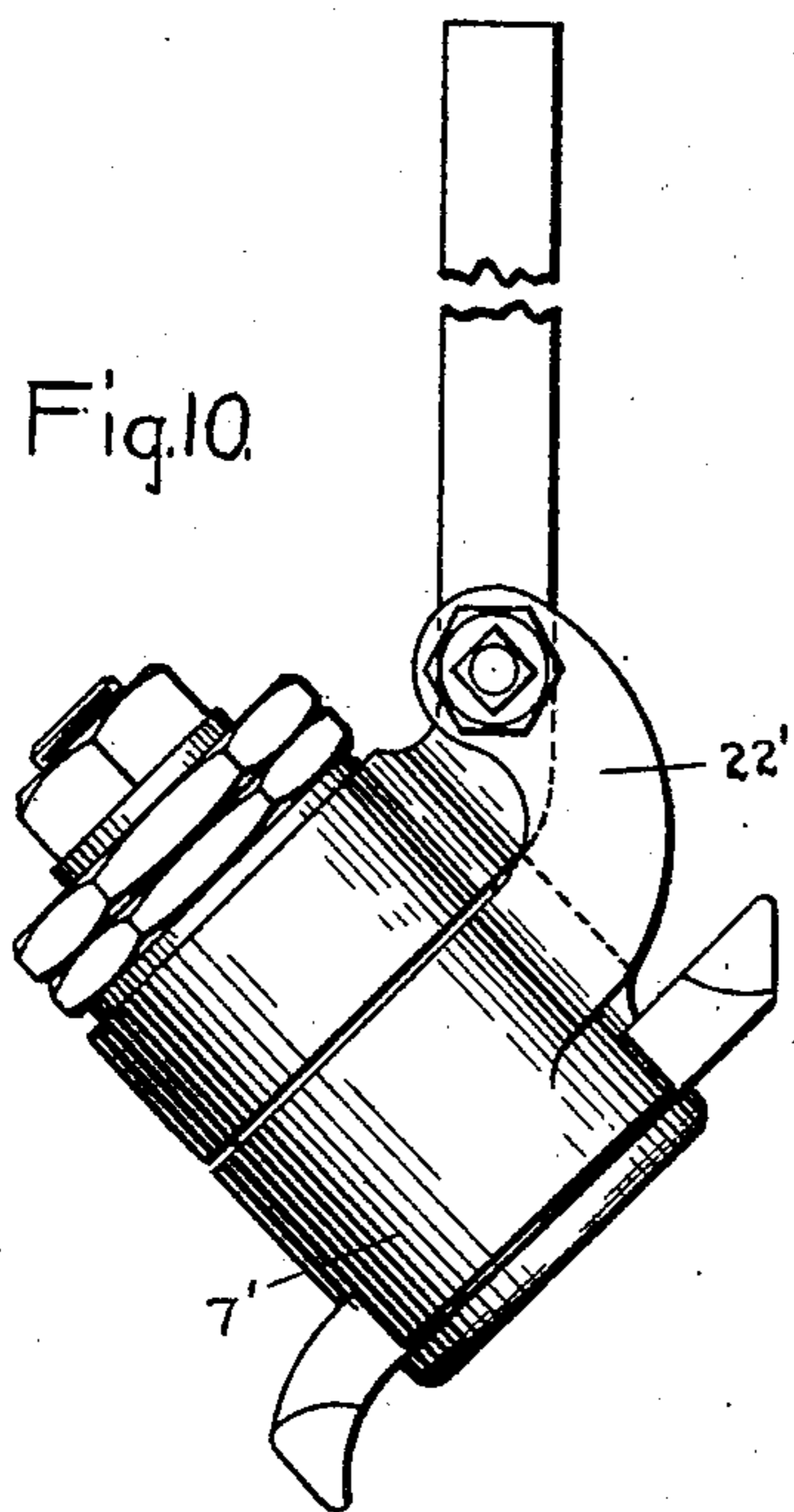
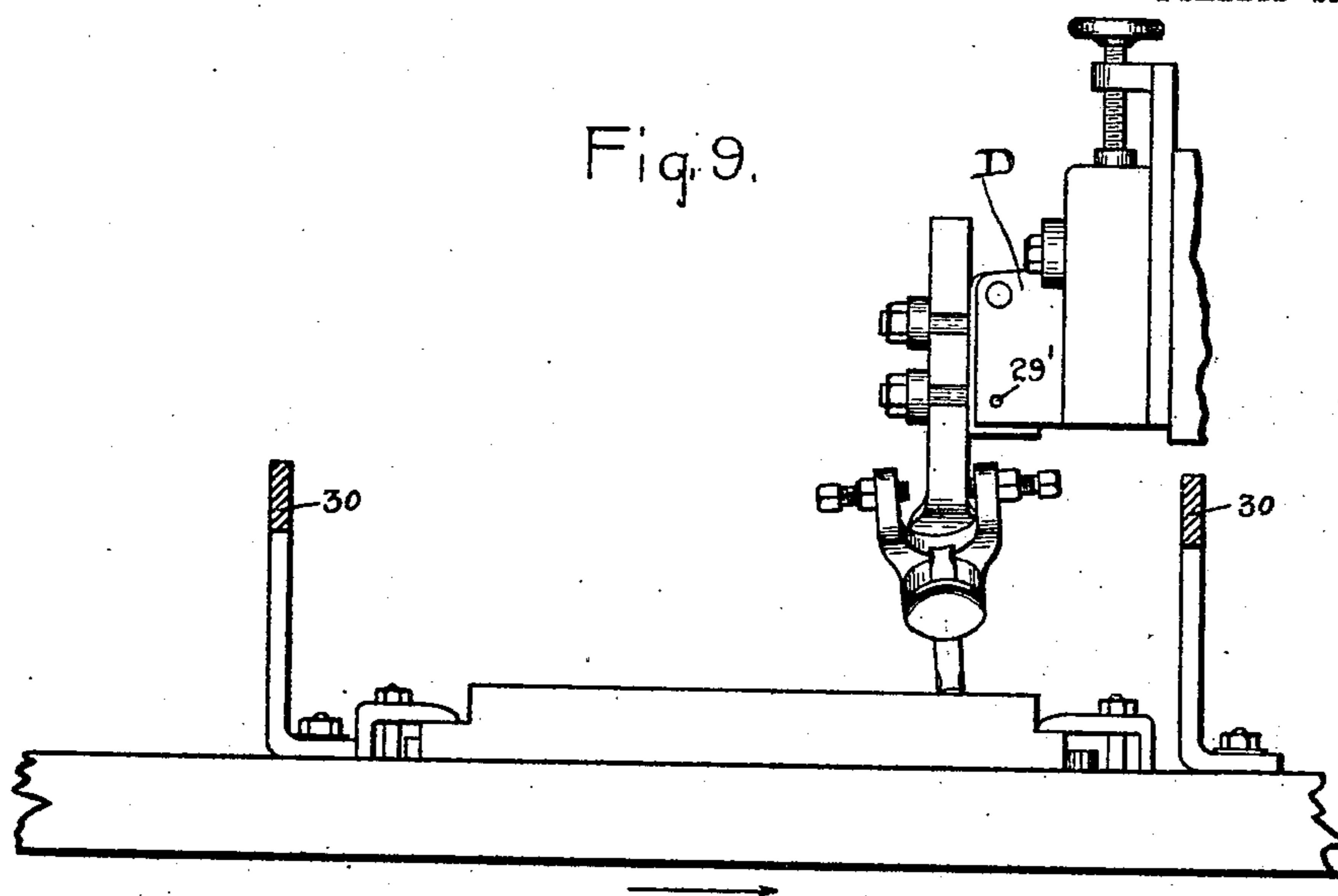
John Riddell.
by *Allen B. Davis*
Att'y.

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DOUBLE ACTING TOOL FOR PLANERS AND SHAPERS.
APPLICATION FILED DEC. 3, 1902.

2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN RIDDELL, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY,
A CORPORATION OF NEW YORK.

DOUBLE-ACTING TOOL FOR PLANERS AND SHAPERS.

No. 859,336.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed December 3, 1902. Serial No. 133,685.

To all whom it may concern:

Be it known that I, JOHN RIDDELL, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Double-Acting Tools for Planers and Shapers, of which the following is a specification.

My invention relates to double-acting tools for metal-working machinery, such as planers, shapers, etc., and has for its object to provide a simple double-acting tool which may be readily connected to or disconnected from the ordinary forms of planers and shapers.

Double-acting tools, or tools which cut upon both the forward and the return strokes, are used only for roughing out purposes, and must accordingly be replaced by a single-acting tool to finish each set-up of work and be reinserted again for each new set-up, and on account of the difficulty and the time consumed in making these changes in devices of this kind, as heretofore constructed, they have been used but rarely upon the larger planers and practically never upon small planers and shapers.

My invention consists of a tool-holder provided with a shank adapted to be held in operative position by the ordinary tool post of a planer or shaper head, the only changes required to adapt the ordinary planer or shaper for use thereof consisting in the provision of an attachment for reversing the position of the tool and a catch to hold the apron from outward movement upon the back stroke.

The device is inexpensively applied to any planer or shaper, and is adapted to be connected and disconnected with the same facility as the ordinary tool.

The invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, in which

Figure 1 is a view in perspective of the head of an ordinary shaper with one form of my invention applied thereto; Fig. 2 is a side elevation of the tool holder in position for horizontal feed; Fig. 3 is a similar view with the holder in position for vertical feed; Figs. 4, 5, 6, 7 and 8 are detail views of the tool-holder; Fig. 9 is a side elevation of a planer bed and tool head with a modified form of tool-holder applied thereto; and Figs. 10 and 11 are a side and end elevation respectively of a modified form of tool-holder.

As shown in the drawing, A is the stationary bed of a shaper, B is the work-holder, and C is the head provided with an apron D and tool post E, all of which are of ordinary and well known construction. The tool-holder shown in the drawing has a plain rectangular bar shank 1 bent near one end at about an angle of 45 degrees and provided at one side with a ring projection 2 with a frusto-conical bearing 3 on its outer face, and

jection is a cylindrical aperture 4 forming a bearing for the spindle of the tool clamp. A shouldered projection or stop 5 is formed at one point in the conical bearing 3 by cutting a recess in the face of the ring projection 2 and inserting a short bar 6, which is held in place by a counter-sunk screw.

The tool clamp, as shown in Figs. 1 to 8 consists of a rocking member 7 and a clamping bolt 8. The clamping bolt 8 has a cylindrical head 9 provided with a rectangular aperture 10 at right angles to its axis for the reception of an ordinary two-edged tool F, and has its outer end 11 enlarged to substantially the same diameter as the ring projection 2, and on the inner end of the head is an axial rod 12 provided at its free end with a nut 13.

The rocking member 7 of the tool clamp is cylindrical and of substantially the same diameter as the ring projection 2. The front end is provided with a cylindrical chamber 14 for the reception of the inner end of the head 9 of the clamping bolt and with a transverse slot 15 for the reception of the tool F, but of slightly less depth than the thickness of the tool to permit of a clamping action thereon between the bottom of said slot 15 and the outer end 11 of the clamping bolt. The rear end of the member 7 is provided with a spindle 16 adapted to fit the bearing in the end of the shank 1 and carries lock-nuts 17 and a washer 18 at its free end. The rear end of the member 7 is provided with a frusto-conical bearing surface 19 adapted to fit the corresponding bearing surface 3 on the ring projection 2, and at one point in the surface 19 a stop-recess 20 is provided of somewhat greater width than the width of the stop projection 5 on the ring projection 2, so that a slight oscillatory movement of the tool clamp relative to the supporting shank 1 is permitted at the end of each stroke. An axial aperture 21 extends throughout the oscillating member 7 for the passage of the rod 12 of the clamping bolt 8, the rear end of the spindle 16 serving as a seat for the nut 13. Projecting from one side of the member 7 is a rocker arm 22 with an aperture 23 in its end for the reception of an end of the means for shifting the position of the tool at each reciprocation of the shaper head.

The tool-shifting means consists of a rod 24 having a shoulder 25 near the end which passes through the aperture 23 and a nut 26 at the end so that a loose connection is provided between the rod and the tool-holder. The rod 24 is supported in a lug 27 secured to some stationary part of the shaper, and on the rod are two adjustable stop-rings 28 adapted to be clamped in fixed positions by set screws.

In order to hold the apron D from outward movement I bore a hole through the side of the box and a short distance into the apron, and insert a steel wire pin 29.

When it is desired to remove the double-acting tool-holder and insert an ordinary tool for finishing purposes, the bolt in the tool post E is loosened in the usual manner and the nut 26 removed from the end of rod 24, 5 when the tool-holder is free to be taken out in the same manner that the ordinary tool is removed. By withdrawing pin 29 the shaper is put in condition to receive and operate the ordinary tool. It is to be noted that the only additional operations necessary in disconnect- 10 ing or connecting my double-acting tool-holder over the ordinary operations are the removal or replacing of nut 26, and the withdrawal or insertion of pin 29. The lug 27 might be provided with a slot to permit the rod 24 to be lifted out with the tool-holder instead of re- 15 moving nut 26 if desired. The tool-clamp might be provided with two transverse apertures in the place of aperture 10, and two oppositely arranged single-edged tools used instead of the two-edged tool.

In the modification of the tool-holder shown in Figs. 20 9 and 11 the rocking member 7' is provided with two arms 22' which are spaced apart and bent backward so as to stand on opposite sides of the shank 1', and in the end of each arm is provided an adjustable stop 20' consisting of a bolt and lock nut adapted to engage the side 25 of the shank 1' and thereby limit the oscillation of the rocking head 7'. As shown in Fig. 9, when the tool-holder is used in connection with a planer the tool-apron D is held from outward movement by a pin 29', and two stop projections 30, which extend transversely 30 of the planer bed and are connected thereto, engage the opposite sides of the rocking member of the tool at the

end of the respective reciprocations of the planer bed and reverse its position corresponding to the direction of travel. These stops 30 will be located at opposite ends of the work and will not interfere with the ordi- 35 nary tool, and accordingly will not require to be removed and replaced for each set-up.

What I claim as new, and desire to secure by Letters Patent of the United States, is,—

1. The combination of a shank bent at one end and pro- 40 vided at one side with a ring projection, an oscillating clamping member journaled in the bent end of the shank and bearing against the ring projection, means for limiting the oscillations of the said clamping member, and a clamp- 45 ing bolt extending through said member.

2. The combination of a shank adapted to be received and held by the tool-post of a planer or shaper, an oscillat- 50 ing tool-clamping member journaled in said shank and provided with spaced arms adapted to engage said shank and limit the oscillations of said clamping member.

3. The combination of a shank adapted to be received and held by the tool-post of a planer or shaper, an oscillat- 55 ing tool-clamping member journaled in said shank and provided with spaced arms, and means for adjusting the extent of oscillations of said member.

4. The combination of a shank adapted to be received and held by the tool-post of a planer or shaper, a should- 60 ered rocking member journaled in said shank, and a clamping member provided with a transverse aperture and an axial rod extending through said rocking member and fitted with a nut at its rear end.

In witness whereof I have hereunto set my hand this 1st day of December, 1902.

JOHN RIDDELL.

Witnesses:

EDWARD WILLIAMS, JR.,
HELEN ORFORD.