

No. 763,642.

PATENTED JUNE 28, 1904.

F. L. SMITH.  
MACHINE FOR FACING VALVES OR OTHER LIKE PURPOSES.

APPLICATION FILED APR. 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

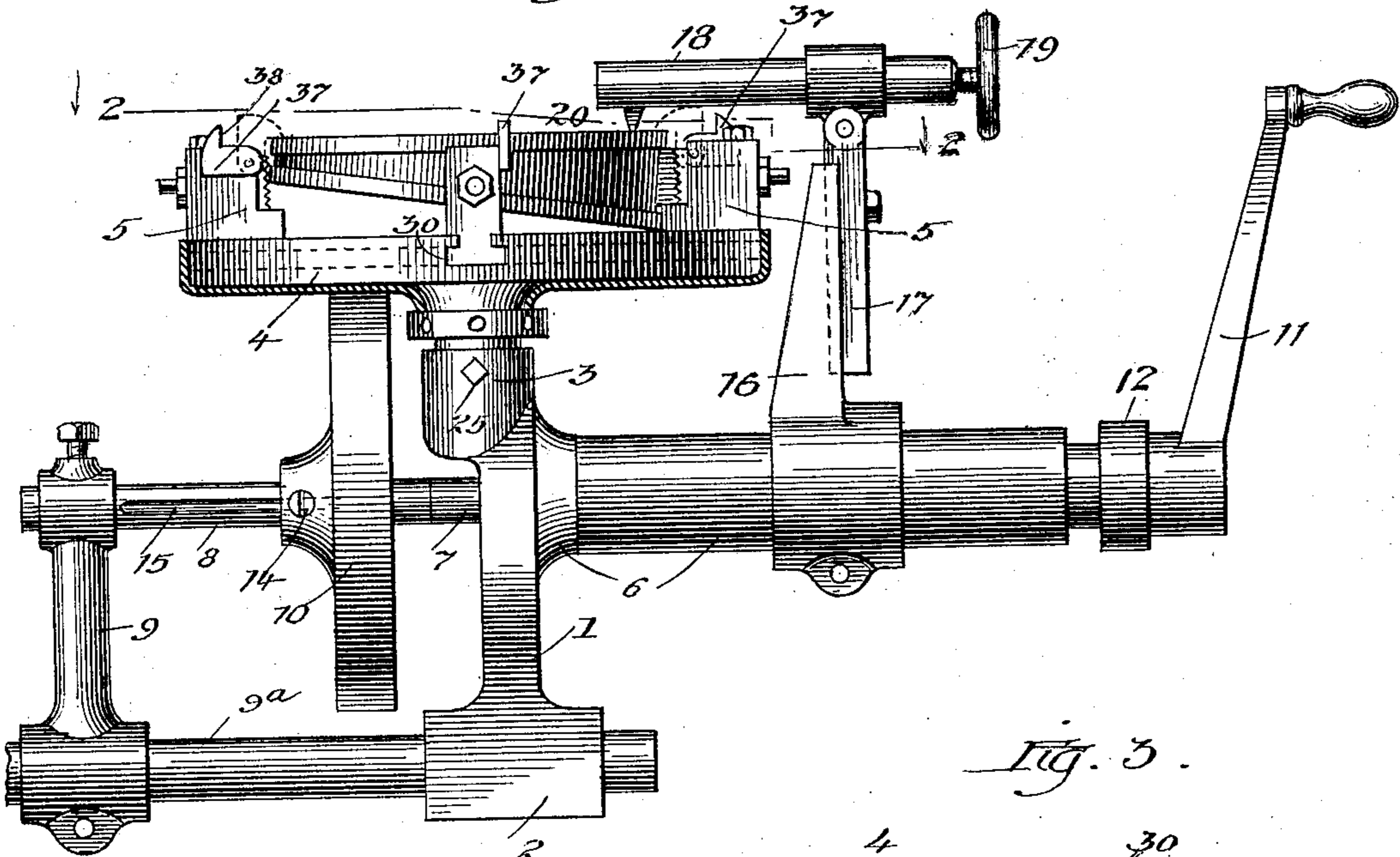


Fig. 2.

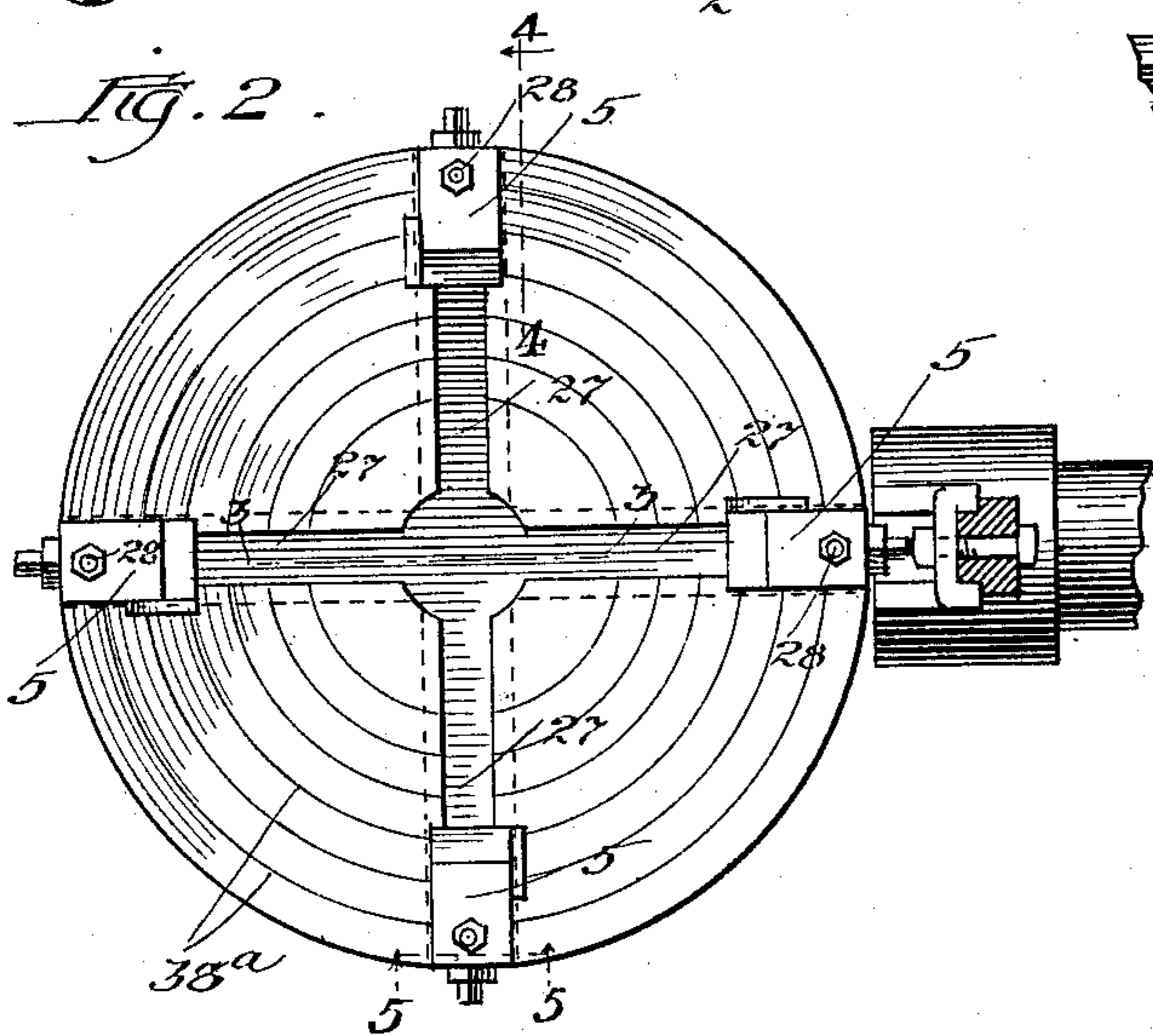
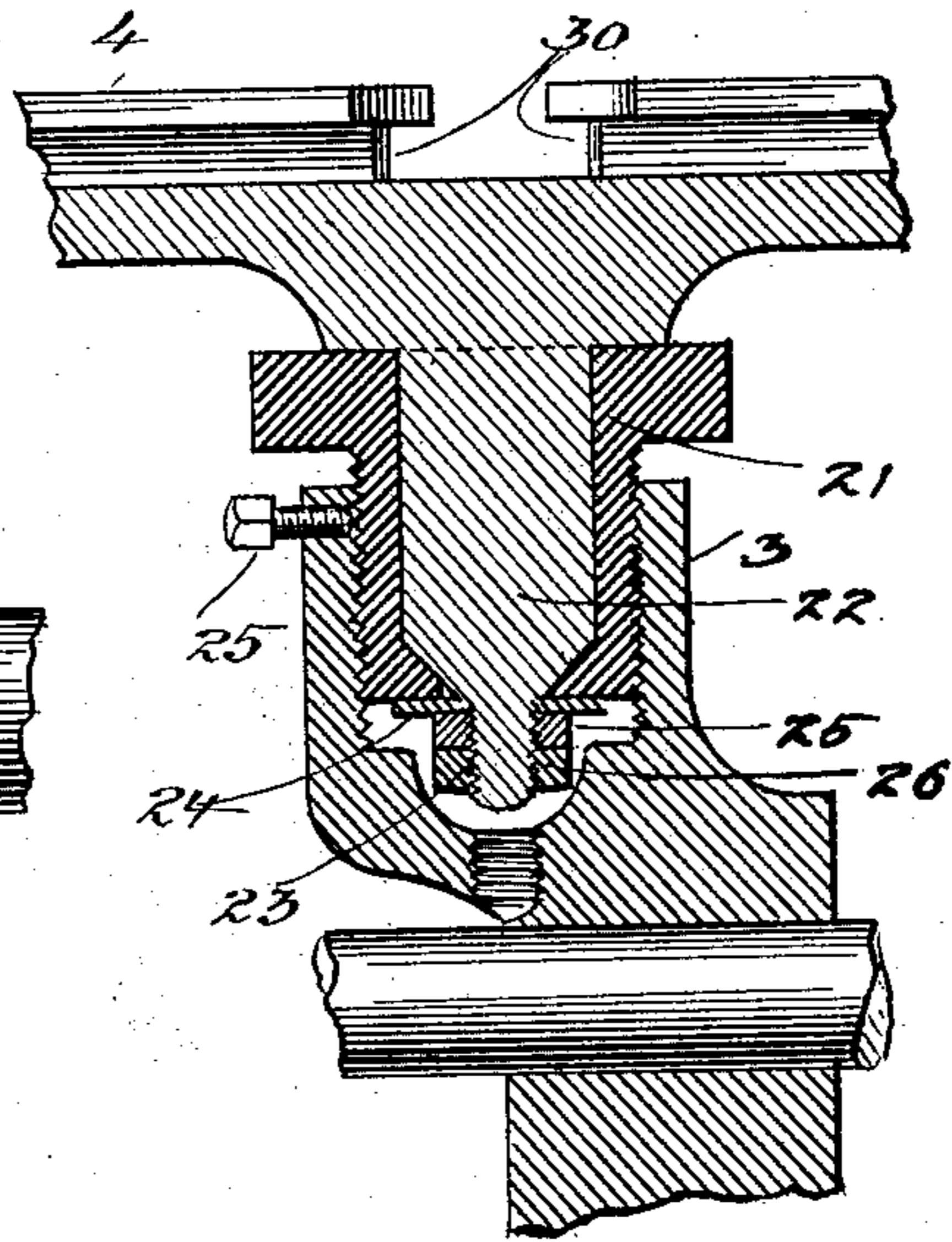


Fig. 3.



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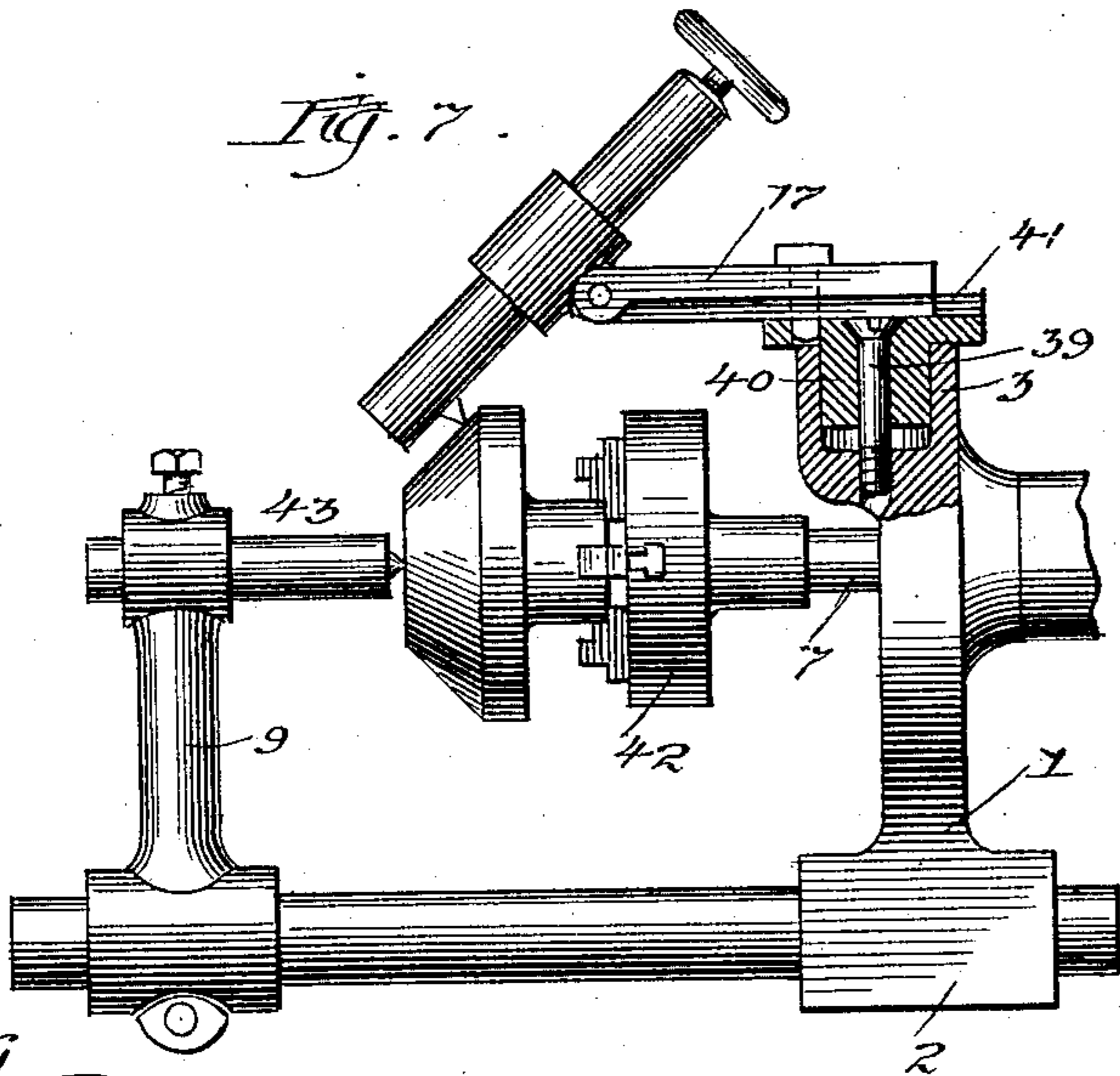
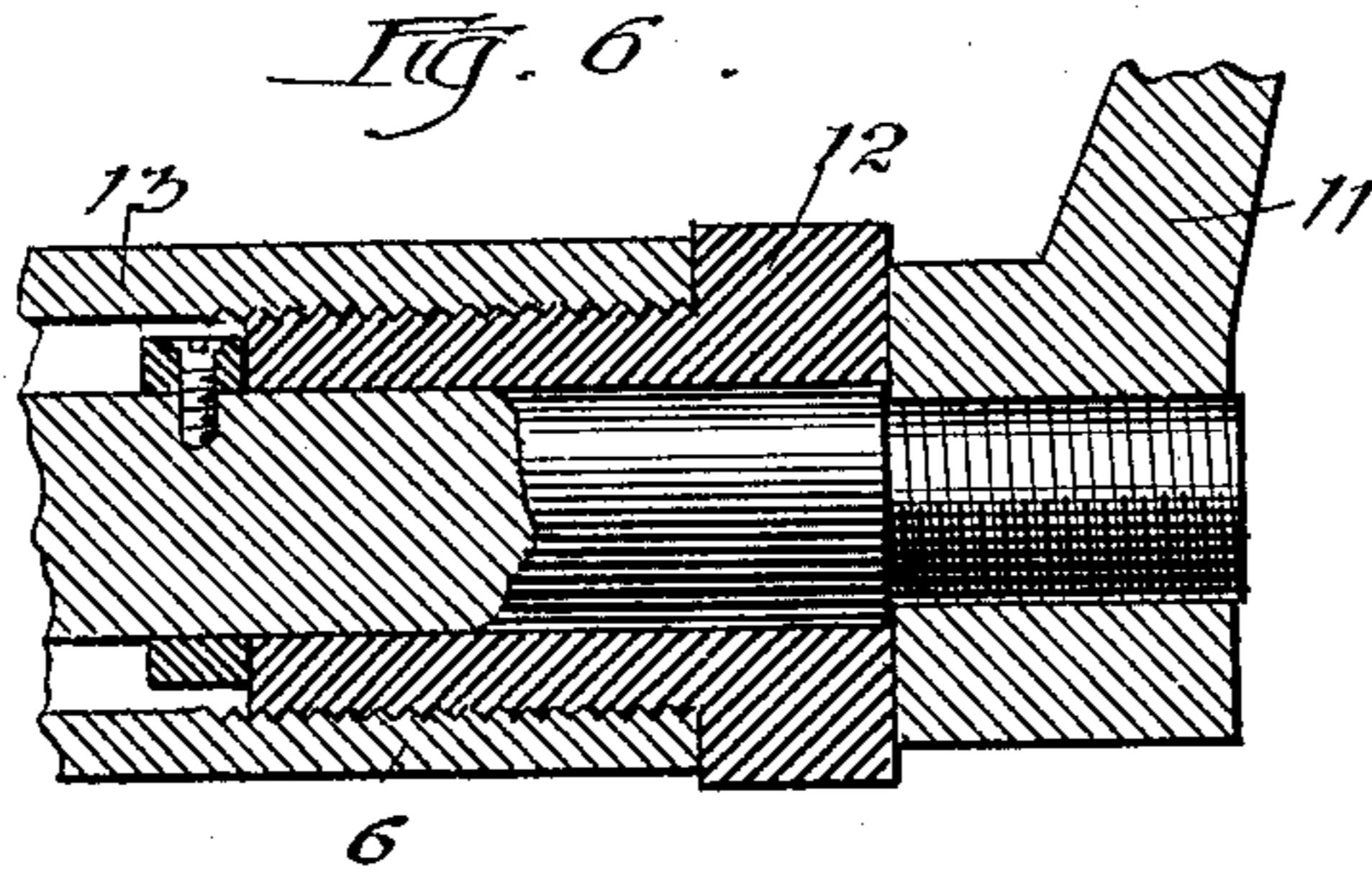
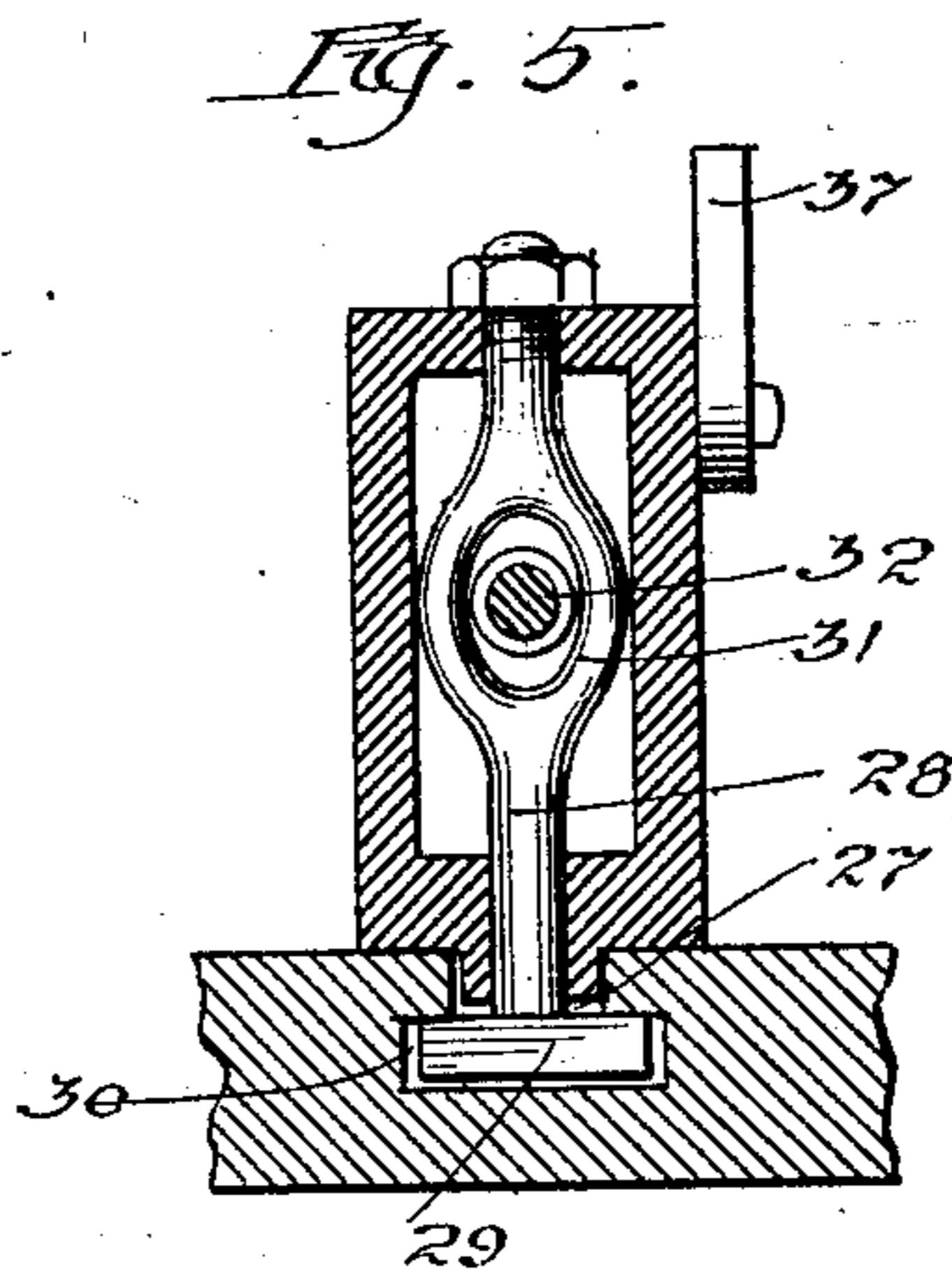
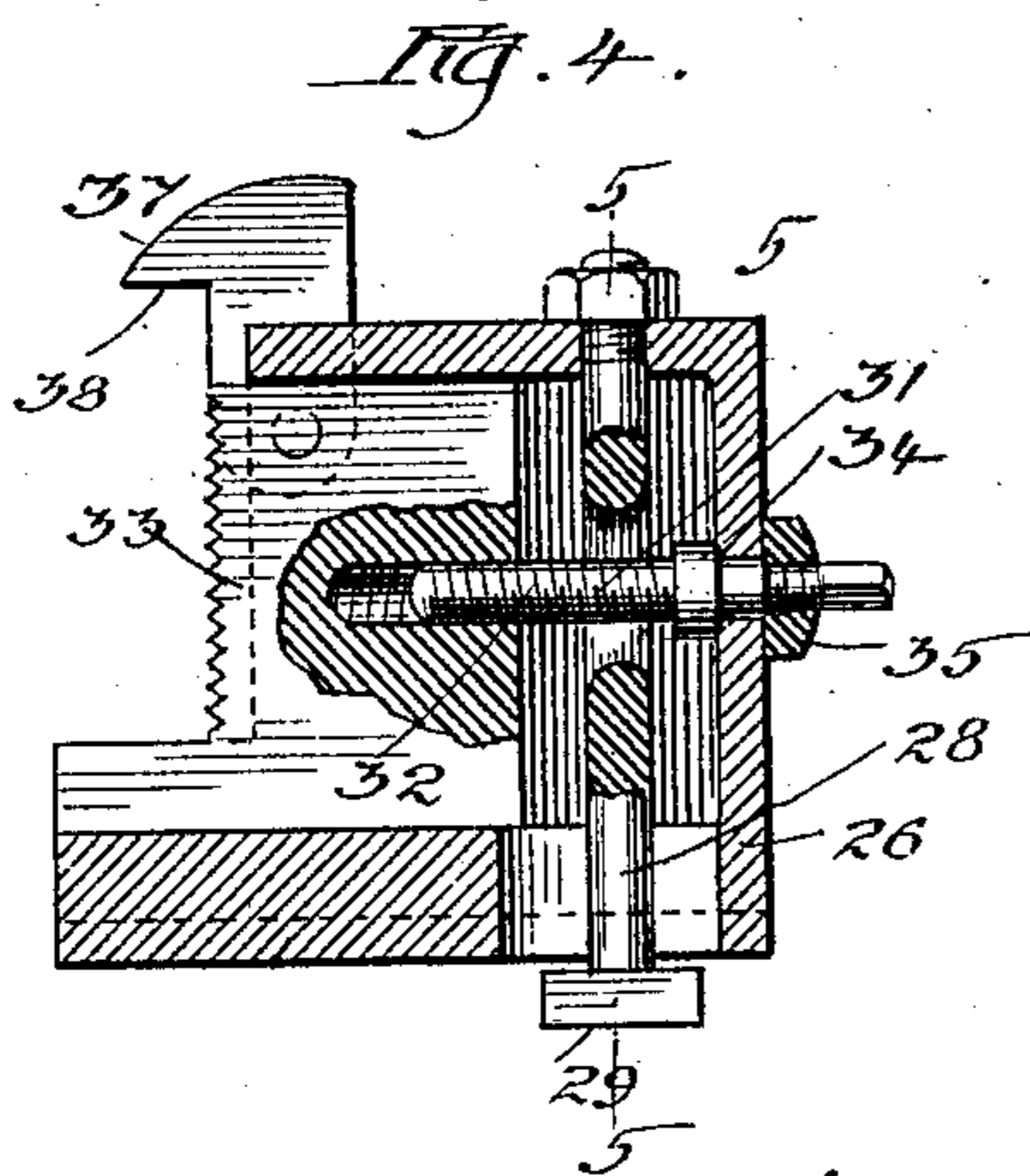
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# UNITED STATES PATENT OFFICE.

FRANK L. SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO  
ALVA C. RICKSECKER, OF CHICAGO, ILLINOIS.

## MACHINE FOR FACING VALVES OR OTHER LIKE PURPOSES.

SPECIFICATION forming part of Letters Patent No. 763,642, dated June 28, 1904.

Application filed April 13, 1903. Serial No. 152,344. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK L. SMITH, a citizen of the United States, residing at No. 5733 Union avenue, in the city of Chicago, in the  
5 county of Cook and State of Illinois, have invented new and useful Improvements in Machines for Facing Valves or other Like Purposes, of which the following is a specification, reference being had to the accompanying  
10 drawings, forming a part thereof.

This invention is designed to provide an improved machine adapted for truing or facing up valves or valve-disks for both flat and globe valves and for doing other work of similar  
15 mechanical nature.

It consists in the features of construction which are set out in the claims.

In the drawings, Figure 1 is a side elevation of my improved machine adjusted for facing  
20 up a gate-valve or other device requiring a flat annular face. Fig. 2 is a plan view of the rotary table and adjacent parts, the tool-holder stem being cut away and shown in horizontal cross-section at the plane of the securing-bolt.  
25 Fig. 3 is a detail section at the line 3 3 on Fig. 2. Fig. 4 is a detail section of the gripping-jaw at the line 4 4 on Fig. 2. Fig. 5 is a similar detail section at the line 5 5 on Fig. 2. Fig. 6 is a detail axial section of the operating-  
30 shaft bearing. Fig. 7 is a partly-sectional side elevation of the machine as assembled for dressing or truing up a globe-valve or other device requiring a cylindrical or conical face, the bearing of the tool-holder being shown in  
35 vertical section, corresponding section shown in Fig. 3.

My machine comprises a base-frame or bracket 1, which is preferably adapted to be clamped in a bench-vise and has for that purpose a rectangular foot 2. This frame comprises an upright post 3, in which for the purpose of dressing off gate-valves or other devices having like flat annular faces there is mounted so as to rotate about a vertical axis  
40 a circular table 4, provided with gripping-jaws 5 5 5 5, hereinafter described, for holding the work. In a horizontal arm 6 of the base-frame there is journaled a shaft 7, which extends

past the end of the spindle or shaft of the table 4 under the same and is adapted to have  
50 secured to it an extension 8, which is journaled in a bracket-arm 9, adjustably secured on the horizontal arm 9<sup>a</sup> of the base-frame, said extension having feathered on it, so as to be adjustable longitudinally with respect to it,  
55 but rotating therewith, a friction-pulley 10, which operates frictionally against the under side of the table 4 to rotate the latter when the shaft is rotated, for which purpose the shaft is provided with a crank-handle 11. The  
60 shaft is stopped against endwise movement in its bearings by having the outer bearing 12 formed as a bushing adapted to be screwed into the end of the horizontal arm 6, said bushing being lodged on the shaft before it is in-  
65 serted and stopped between a collar 13 and the hub of the crank 11. The friction-pulley 10 is adjustable by sliding on the extension 8 of the shaft 7 and is retained non-rotatably with respect thereto and secured in adjusted po-  
70 sition by means of the set-screw 14, which takes into a longitudinal groove 15 on the said extension, and it will be understood that by changing the position of the friction-pulley on the shaft the speed of rotation of the table  
75 derivable from a given speed of rotation of the crank may be varied according to the demands of the work.

On the horizontal arm 6 there is clamped rigidly, with capacity for adjustment thereon,  
80 a vertical bracket 16, adapted for holding a tool-carrier, with its supports suitable for carrying a tool to overhang the table and operate upon the work which may be mounted thereon as the table rotates. Such tool-car-  
85 rier and supports I have shown in a familiar exterior form of such device, the particular construction of the same being no part of the present invention. It should comprise, as illustrated, a bracket-piece 17, adapted to be  
90 secured with range of vertical adjustment on the bracket-arm 16, as by bolt taking through a slot in the bracket-piece into the web of the bracket-arm, as illustrated, and pivotally mounted on this bracket-piece the tool-holder  
95 sleeve or barrel 18, in which the tool-stem

and tool are mounted, with the usual means for advancing the tool longitudinally with respect to the sleeve by rotation of the handle 19 at the rear upper end of the sleeve.

5 The tool-point is shown at 20, and interiorly this device may be constructed in any familiar manner adapted to accomplish the movements indicated.

The specific construction of the pivotal connection of the table with the upright post of the base-frame, which is illustrated in the drawings, is that a bushing-sleeve 21 is formed with a cylindrical bearing terminating in a tapering seat at the lower end for 15 the spindle 22 of the table, which is correspondingly shaped and which has a threaded terminal 23 extending out through the lower end of the sleeve and there receiving a washer or wearing-plate 24, and a stop-nut 25 and 20 lock-nut 26 below the wearing-plate, by which the wearing-plate may be set up against the lower end of the bushing-sleeve, so as to permit easy rotation of the spindle in the sleeve without endwise play. The bearing-sleeve thus mounted on the spindle is then 25 screwed down into the upper end of the post, which is apertured and threaded for the purpose, and when properly adjusted is secured against displacement by a set-screw 25.

30 The specific construction of the gripping-jaws of the rotary table 4 requires description. They comprise a principal block 26, having at the lower end a rib entering one of the radial slots 27 in the table, to which they are 35 adapted to be bound by a bolt 28, having a rectangular head 29 adapted to engage in the undercut channels 30 of the table. The block is interiorly chambered to permit the bolt to pass up through it and emerge at the upper end, 40 where it is provided with a nut for locking it. Intermediate the ends the bolt is rifted and spread to form an elongated eye 31, through which the jaw-adjusting bolt 32 extends. The block is apertured from the inner side 45 to accommodate the gripping-jaw 33, adapted to be entered from that side. The jaw-adjusting bolt 32 is designed to be entered from the same side through said cavity and protruded at the back, being stopped by a shoulder 34 and exteriorly provided with a stop-nut 35, screwed up to a shoulder on the bolt, 50 so that it is substantially journaled and stopped against endwise movement in the block. The jaw 36, having its forward face serrated for engagement with the work, has a threaded aperture leading in from the back toward said face to receive the adjusting-bolt by which the jaw is drawn into its cavity and forced 55 out to engage the work as required. To one side of the jaw there is pivoted a gage-hook 37, adapted to be thrown up to a position at which its under face 38 stands in a plane at right angles to the axis of the table. In this position it overhangs the space between the

four jaws in which the work is to be located 65 and within which is to stand the annular face which is to be dressed. In mounting the work on the table the several jaws will be drawn back sufficiently to admit the work between them, and the latter will then be centered on 70 the table—i. e., located with the center of the annular face to be dressed coincident with the axis of the table. For this purpose the table is ruled with concentric circles, as seen at 38, so that advantage may be taken of the 75 circumferential outline of the work to locate the same. The jaws being now brought up into contact with the work on all sides, the latter is lifted or blocked up until it touches the under faces of all four of the gage-hooks, and 80 in that position the jaws are tightened to grip it, thus holding it not only centrally, as originally placed, but with its annular face which is to be dressed located at a plane at right angles to the axis of rotation, so that when the 85 table rotates the tool being adjusted to proper position will preserve the true plane in refining the surface.

When this machine is to be employed for dressing globe-valves or other forms having 90 cylindrical, conical, or spherical surfaces, the table is removed from the post of the base-frame, and in the position occupied by the bushing-sleeve 21 there is secured by screwing into the post and fastening with the set-nut and with the central bolt 39 a block 40, 95 having a channel 41, adapted to afford lodgment and guidance for the bracket-piece 17, which is mounted and secured therein, so that the tool-holder may be adjusted to overhang 100 the axis of the shaft 7. The extension 8 being detached, a chuck 42, of any usual construction, is mounted in lieu thereof in the end of the shaft 7, and in the bearing of the 105 removed shaft in the bracket 9 there may be mounted a center-point 43. The valve to be dressed being held in the chuck, and, if necessary, centered by the center-point, is rotated directly by rotation of the shaft 7, while the 110 tool-holder, adjusted to carry the tool in the direction of taper of the valve, guides the tool, which may be advanced for refacing the valve.

I claim—

1. In a machine for the purpose indicated, in combination with a standard or base-frame, a 115 horizontal table rotatably mounted on the standard; a horizontal shaft and a friction-wheel thereon bearing on the under side of the table for rotating the latter, and a tool-holder adjustably mounted on the standard overhang- 120 ing the table.

2. In a machine for the purpose indicated, in combination with a base-frame or standard, a table pivoted at its center on the standard for 125 rotation; a tool-holder adjustably mounted on the standard extending at one side of the table; a shaft extending transversely with respect to the pivotal axis of the table at the

other side of the latter, and a friction-pulley thereon bearing against the table for rotating it, such pulley being adjustable longitudinally with respect to the shaft to vary the distance from the table-axis at which it acts thereon.

3. In a machine for the purpose indicated, a frame having a shaft-bearing and a socket at right angles thereto; a shaft in said bearing; a bracket-arm extending in the general direction of the axis of the socket adapted for supporting a tool-holder at a point more remote from the shaft-bearing than the end of the socket, in combination with a rotatable table removably mounted in the socket; a friction-pulley adjustable longitudinally on the shaft and impinging against the table for rotating it, and a tool-holder removably mounted on the bracket.

4. In a machine for the purpose indicated, a frame having a shaft-bearing and a shaft therein; a socket at right angles thereto, and a bracket-arm extending from the shaft-bearing in the general direction of the socket, in combination with a rotatable work-holder detachably mounted in the socket; a friction-pulley adjustable longitudinally on the shaft and impinging against the rotatable work-holder for rotating it; a tool-holder comprising two parts angularly adjustable to each other, one detachably supported on the bracket-arm, and the other adapted for carrying the tool.

5. In a machine for the purpose indicated, a frame having a shaft-bearing and a shaft therein; a socket at right angles, a chuck mounted on said shaft beyond the bearing, and a tool-holder mounted in said socket comprising a block which constitutes the immediate means of mounting the tool-holder in the socket, and two parts angularly adjustable to each other, means for longitudinally adjusting one of said parts on the block, the other part being adapted for carrying the tool.

6. In a machine for the purpose indicated, a frame having a shaft-bearing and a socket at right angles thereto; a shaft in said bearing and a bracket-arm extending in the general direction of the axis of the socket adapted for supporting a tool-holder at a point more remote from the shaft-bearing than the end of the socket, and a tool-holder so mounted on said bracket, in combination with a bearing-sleeve inserted in the socket and made rigid therewith; a work-holder having a spindle by which it is rotatably mounted in the sleeve, the spindle being provided with a threaded terminal which penetrates the sleeve, and a check-nut on said threaded terminal beyond the sleeve to retain the spindle against longitudinal displacement, and a wheel mounted on

the shaft operatively engaged with the work-holder for rotating the same.

7. In a machine for the purpose indicated, in combination with a base-frame or standard; a horizontal shaft journaled therein; a horizontal table having a spindle journaled vertically in said frame; a tool-holder overhanging such table, and a vertical bracket mounted on the bearing of the horizontal shaft for adjustably carrying the tool-holder; jaws adjustable radially on the table, having each a gage-hook adapted to be set overhanging the table, and having their gage-faces all in the same plane at right angles to the table-axis; means for securing the jaws in adjusted position with respect to the center of the table, and means for securing the work between them, the gage-hooks being adapted to be turned back out of the circle of the jaws when thus engaged.

8. In a machine for the purpose indicated, in combination with a rotatable table for carrying the work; an adjustable tool-holder overhanging such table; independently-adjustable jaws for holding the work on the table and gages on the jaws respectively, having their under edges in the same horizontal plane at right angles to the table-axis, such gages being adapted to be displaced to clear the tool-holder in the rotation of the table.

9. In a machine for the purpose indicated, a frame having a horizontal shaft-bearing; a socket at right angles to such bearing, and a bracket-arm for supporting a tool-holder in a position higher than the socket.

10. In a machine for the purpose indicated, a frame having a shaft-bearing and a socket at right angles thereto, and a bracket-arm extending in the general direction of the axis of the socket adapted for supporting a tool-holder at a point more remote from the shaft-bearing than the end of the socket.

11. In a machine for the purpose indicated, a frame having a shaft-bearing; a socket at right angles thereto, and a bracket-arm extending from the shaft-bearing in the general direction of the socket, in combination with a tool-holder comprising two parts angularly adjustable to each other, one adapted to be longitudinally adjusted on the bracket-arm and the other adapted for carrying the tool.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 31st day of March, A. D. 1903.

FRANK L. SMITH.

In presence of—

CHAS. S. BURTON,  
FRED. G. FISCHER.