

(No Model.)

A. F. ROBBINS.  
WATCHMAKER'S TOOL.

No. 575,535.

Patented Jan. 19, 1897.

Fig. 1.

Fig. 2.

Fig. 3.

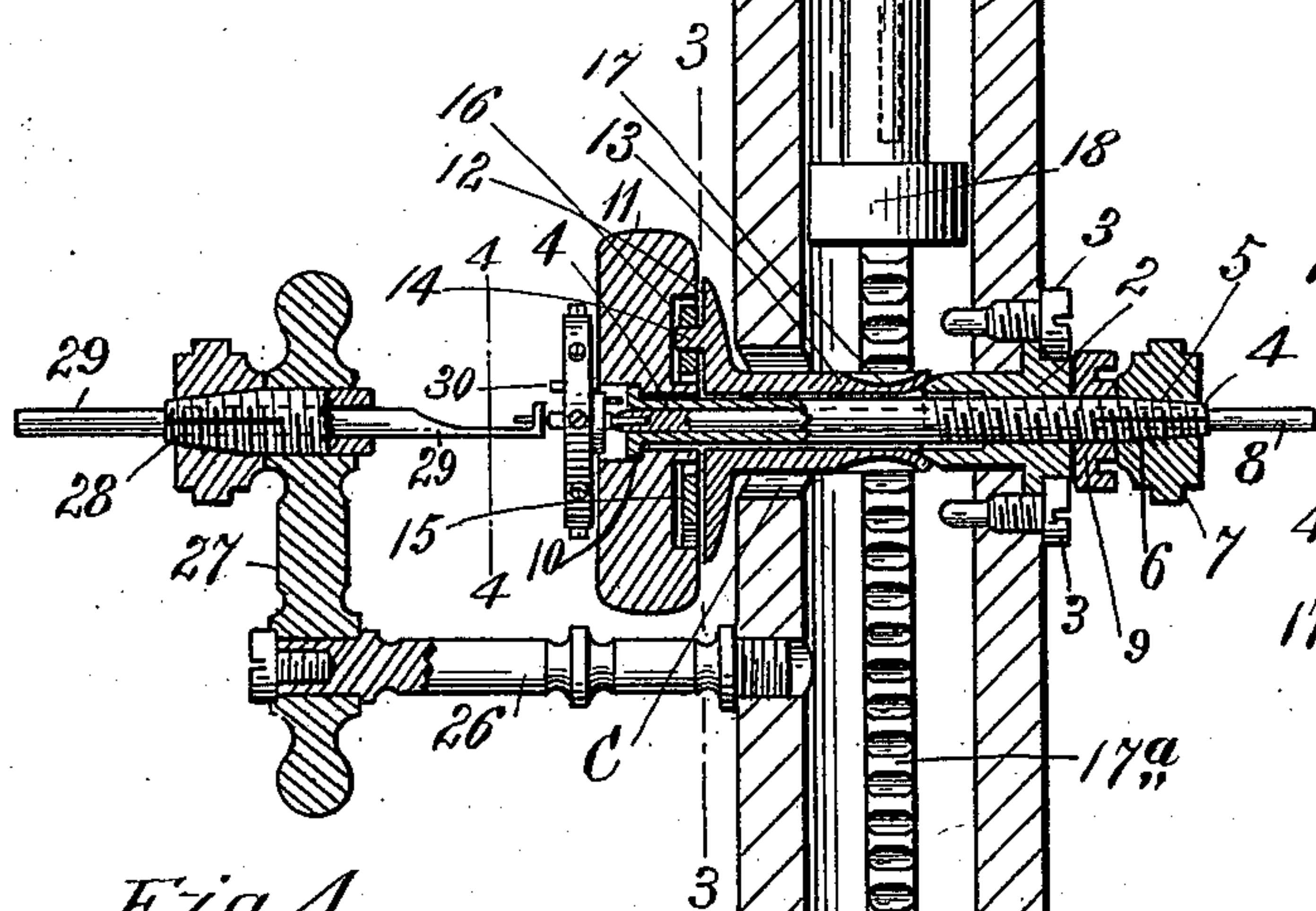
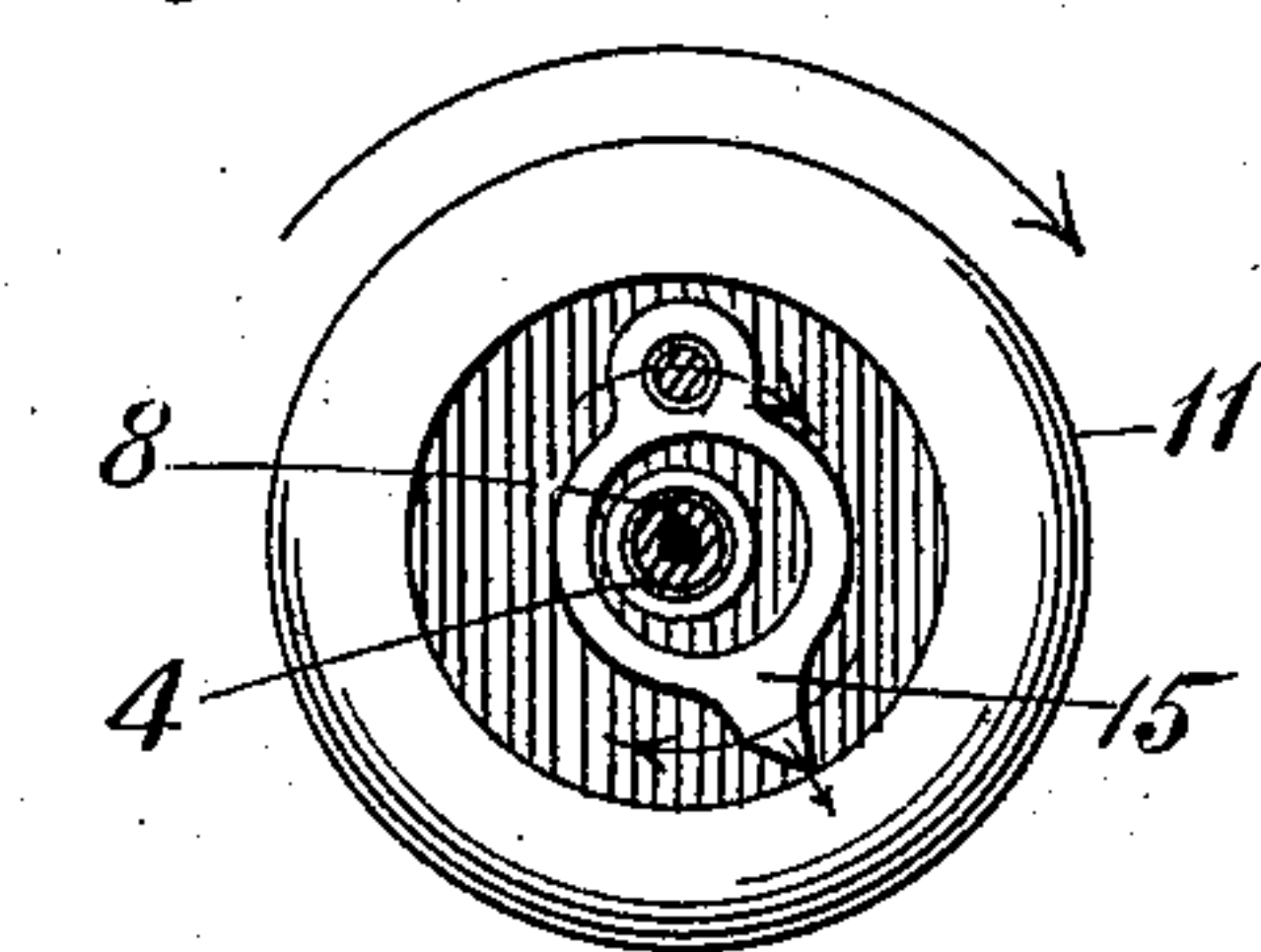
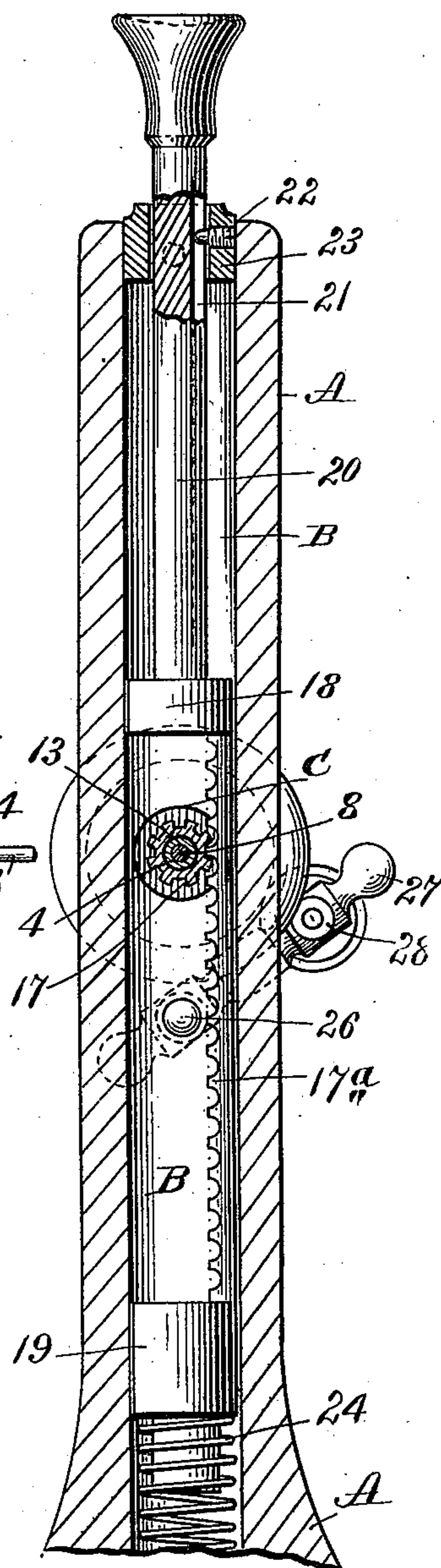
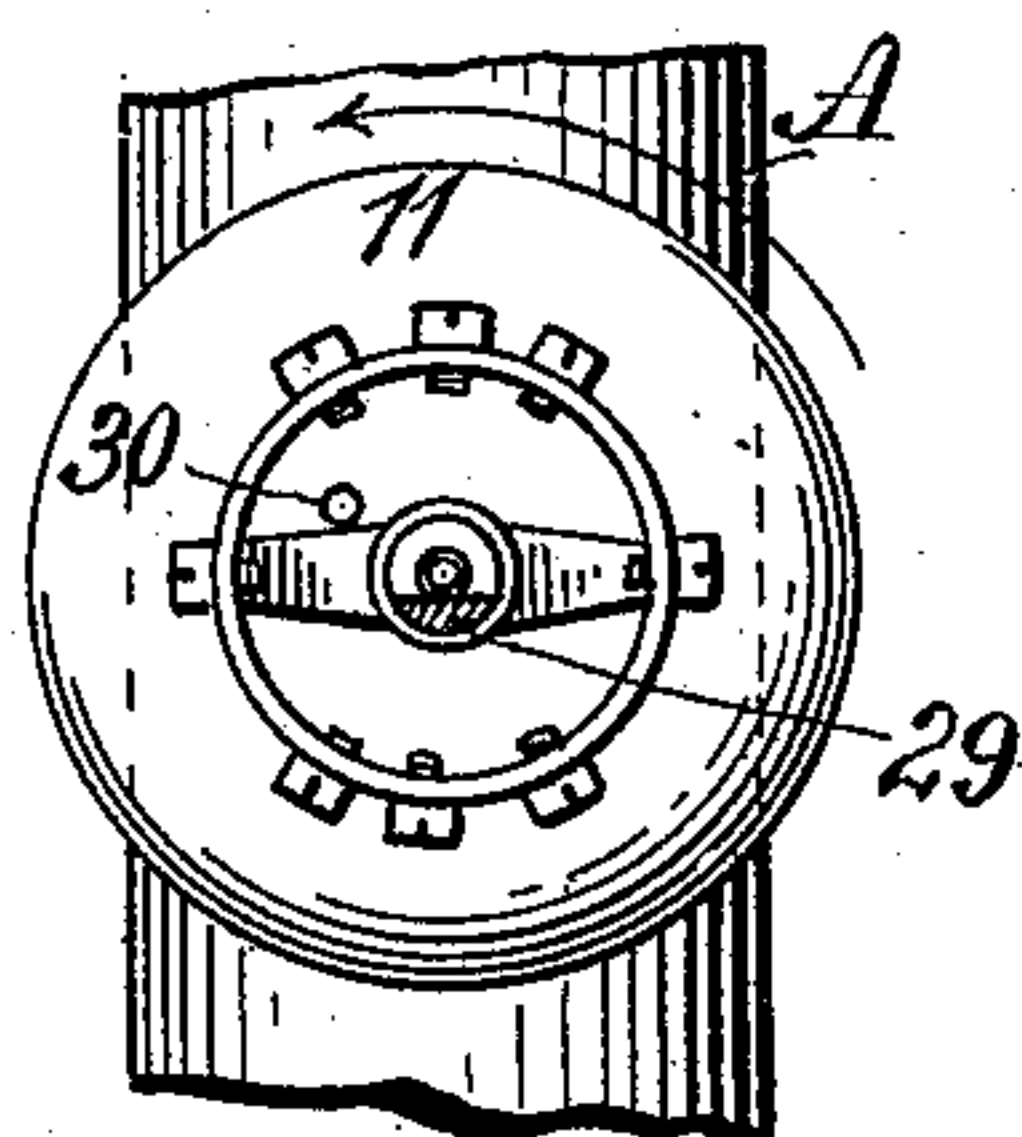


Fig. 4.



Witnesses:

J. W. Garfield  
H. D. Clemons

Inventor,  
Albert F. Robbins,

by *Chapman & Co.*  
Attorneys.



# UNITED STATES PATENT OFFICE.

ALBERT F. ROBBINS, OF ORANGE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO KENDRICK & DAVIS, OF LEBANON, NEW HAMPSHIRE.

## WATCHMAKER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 575,535, dated January 19, 1897.

Application filed June 25, 1896. Serial No. 596,869. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT F. ROBBINS, a citizen of the United States of America, residing at Orange, in the county of Franklin and State of Massachusetts, have invented new and useful Improvements in Watchmakers' Tools, of which the following is a specification.

This invention relates to watchmakers' tools, and more particularly to a machine for truing and burnishing the pivots of balance-wheels of watches or analogous parts of other mechanisms; and the invention consists in the construction and arrangement of the mechanism, as hereinafter set forth and claimed.

In the drawings forming part of this specification, Figure 1 is a sectional elevation of a machine constructed according to my invention. Fig. 2 is a sectional elevation of a portion of the standard of the machine, taken in a plane at right angles to that shown in Fig. 1. Fig. 3 is a view of the inner side of the face-plate, showing the eccentric pawl therein. Fig. 4 is a view of the outer side of the face-plate, a part of the standard of the machine, showing a balance-wheel in position on said face-plate.

In the drawings, A is a standard made of metal and having a broad base thereon, as shown. Said standard is circular in cross-section and is provided with the passage B, running centrally therethrough, perpendicularly. The walls of the standard are perforated transversely at C. Into said perforation in one wall of said standard is inserted the bushing 2, which is secured therein by two screws 3 or in any other suitable manner. Said bushing is screw-threaded interiorly for the reception of a threaded hollow spindle 4, one end 5 of which is tapered and split by sawing, as at 6, and a tapered nut 7 screws onto said tapered and split end, constituting a chuck for holding the rod 8 located within said hollow spindle. A check-nut 9 on said spindle serves to hold the latter in its proper position by being screwed up thereon against the outer end of said bushing 2, between it and said nut 7, all clearly shown in Fig. 1. The end of said hollow spindle opposite the tapered end thereof is provided with an outwardly-turned flange 10.

A face-plate 11, made of sufficient weight to serve as a balance-wheel, is perforated centrally for the reception of said hollow spindle, and the outer end of said perforation counterbored for the reception of said flanged end thereof. Said spindle is held rigidly in a horizontal position by the check-nut thereon, as described, and the said face-plate turns freely thereon. Between the inner side of said face-plate 11 and the inner end of said bushing 2 there is located a pawl-disk 12, having a long sleeve 13 thereon, and the said hollow spindle is so adjusted that the said face-plate and said pawl-disk and sleeve may be freely rotated thereon without binding. A pin 14 projects from the face of the said pawl-disk, on which is hung the eccentric pawl 15, the inner side of the said face-plate having the annular depression 16 therein of about the same depth as the thickness of the said pawl 15, to the end that the two contiguous surfaces of the said face-plate and pawl-disk may lie in close proximity to each other, inclosing said pawl between them.

Motion is imparted to the various rotating parts of the mechanism as follows: On the sleeve 13 of the pawl-disk 12 suitable teeth 17 are cut for engagement with the rack 17<sup>a</sup>, which has a movement vertically in the passage B of the standard. Said rack is secured by each end thereof to cylindrical blocks 18 and 19, near the edge of said blocks, as shown in Fig. 2. Secured centrally to the block 18 is a push-rod 20, having an enlargement on the upper end thereof for the finger of the operator. Said rod 20 has a groove 21 cut therein, with which engages the screw 22 in the bushing 23. Said bushing is secured within the passage B at the top thereof by a set-screw, as shown in Fig. 1, and the said push-rod has a free movement therethrough. Under the block 19, at the lower extremity of the said rack and within the said passage B, is located a spiral spring 24, the upper end of which bears against the underside of the said block and the lower end of which is supported by the shoulder 25 within said vertical passage. The vertical movements of said rack imparted thereto by the operator in one direction cause the rotation of the pawl-disk, the pawl 15 of which engages the edge of the de-



pression 16, as aforesaid, only on the downward movement of the said rack. On the upward movement thereof the pawl moves around in said depression 16 without engagement with the edge thereof. A bracket consisting of the arms 26 and 27 is secured to the standard below the said spindle 4 and vertically in line therewith. Said bracket may be swung to one side, as shown in Fig. 2, for the removal or adjustment of the parts in the standard A. Through the upper end of arm 27, and centrally in line with the spindle 4, a hole is drilled and threaded, into which is screwed a split sleeve 28, tapered on one end, and onto which end a similarly-tapered nut is screwed to clamp the balance-wheel-staff support 29. Said support is made of a piece of suitable round rod with one end thereof milled off to a proper thickness and the end then turned up at right angles to the axis of the rod and a hole drilled through said turned-up end for the reception of the end of the balance-wheel pivot which is to be trued up or burnished, all clearly shown in Figs. 1 and 4. The opposite end of said staff is entered in a suitable hole drilled into the end of the rod 8 within the spindle 4. Said rods 29 and 8 may be reversed, if desired, and 29 be inserted in the hollow spindle and 8 be supported in arm 27. On the outer side of the face-plate is secured a pin 30 for engagement with one of the arms of the balance-wheel of a watch which may be put on the machine for repairs of the staff thereof. (See Fig. 4.) In operating this device the nut is unscrewed from the sleeve 28, and the rod or support 29, thereby loosened, can be withdrawn far enough to permit one end of the balance-wheel staff to be entered into the hole in the end of the rod 8. The rod 29 is then moved toward the free end of the said staff and the latter is passed through the hole made to receive it in the upturned end thereof. The check-nut on 28 is then screwed up and said rod held against any movement. The finger of the operator is then pressed on the top of the push-rod and the latter moved down, revolving the pawl-disk 12 by means of the engagement of rack 17<sup>a</sup> with the teeth 17 on the sleeve 13 of said pawl-disk. The said revolution of the pawl-disk imparts motion to the face-plate 11 by the engagement of the pawl 15 with the edge of the depression 16 in the inner side of said face-plate 11, and by the revolution of said face-plate the balance-wheel is revolved by the engagement of the pin 30 on said face-plate with one of the arms of said wheel, as described. The said rods 8 and 29 support said balance-wheel by the engagement of each end of its staff there-

with, the end of the pivot projecting through the upturned end of the rod 29 being the one to be turned true or burnished, as above described. Upon relieving the said push-rod from the pressure of the finger the spring 24, having been compressed by the downward movement of said push-rod, acts to return said rod vertically to its normal position, imparting movement in an inverse direction to the pawl-disk and its sleeve, the pawl carried by the pawl-disk not engaging with the face-plate when so revolved. During such return movement of the rack and push-rod, caused by the spring 24, the face-plate, owing to its weight, continues to revolve under the impulse given to it by the downward movement of the push-rod, so that while the pawl-disk has a reciprocatory motion on the hollow spindle the face-plate carrying the balance-wheel to be operated upon revolves only in one direction, as above stated.

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

1. The within-described mechanism for turning the staffs of balance-wheels for watches or analogous parts, consisting of a suitable standard, two adjustable members supported therein for revolvably holding a balance-wheel or other work, a hollow spindle within which one of said members is located, a face-plate which has an engagement with said balance-wheel or other work, a revoluble member on said hollow spindle rotated by a vertically-moving member, and means between said revoluble member and said face-plate for rotating the latter in one direction, only, substantially as described.

2. The within-described mechanism for turning the staffs of balance-wheels for watches or analogous parts, consisting of a suitable standard, a rack having a vertically-reciprocating movement therein, a hollow spindle supported in a position at right angles to said rack, a pawl-disk having a long sleeve thereon, on which teeth are provided for engagement with said rack, a pawl on said pawl-disk engaging with a face-plate for rotating the latter in one direction only on said hollow spindle, means for holding the staff of said balance-wheel in line axially with said hollow spindle, and means of engagement between said face-plate and said balance-wheel for rotating the latter, substantially as described.

ALBERT F. ROBBINS.

Witnesses:

ANDREW J. HAMILTON,  
MINNIE R. PITTS.