

No. 896,357.

PATENTED AUG. 18, 1908.

R. S. BROWN.
MACHINE FOR SHARPENING CUTTER TEETH.
APPLICATION FILED JULY 1, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

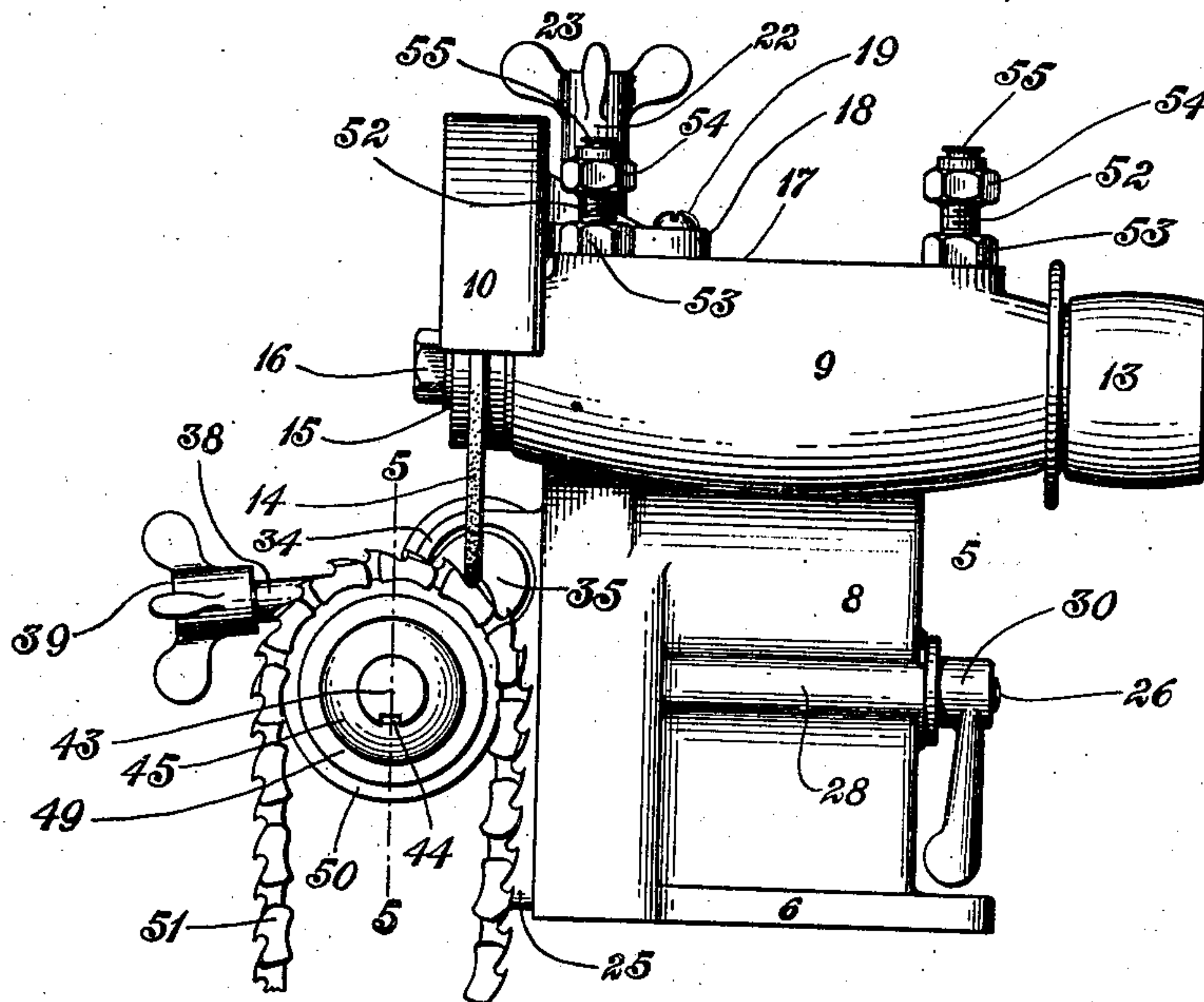
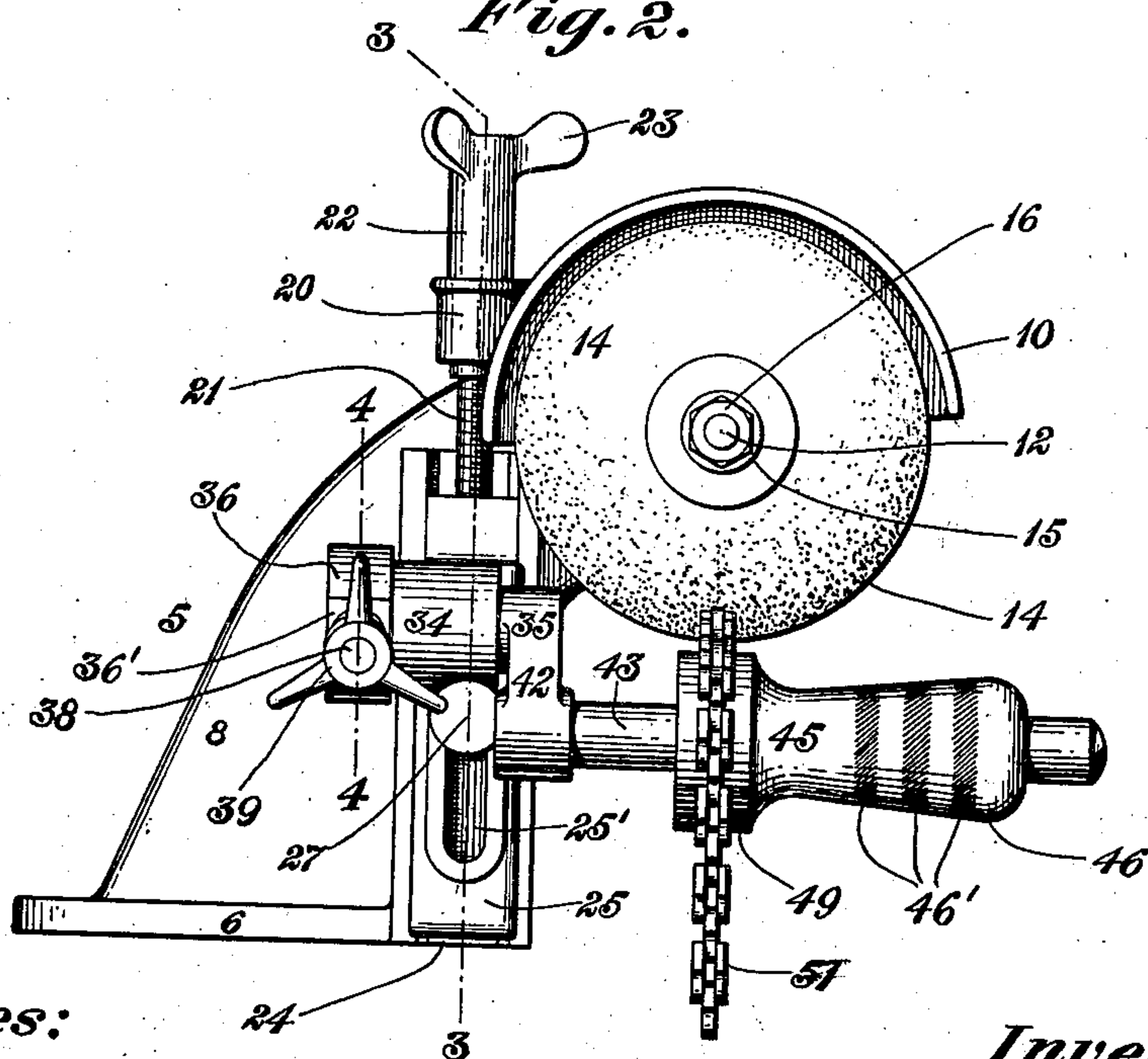


Fig. 2.



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J. E. Blodgett.

Inventor:
Robt. S. Brown
By his Attorney,

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2 SHEETS—SHEET 2.

Fig. 3.

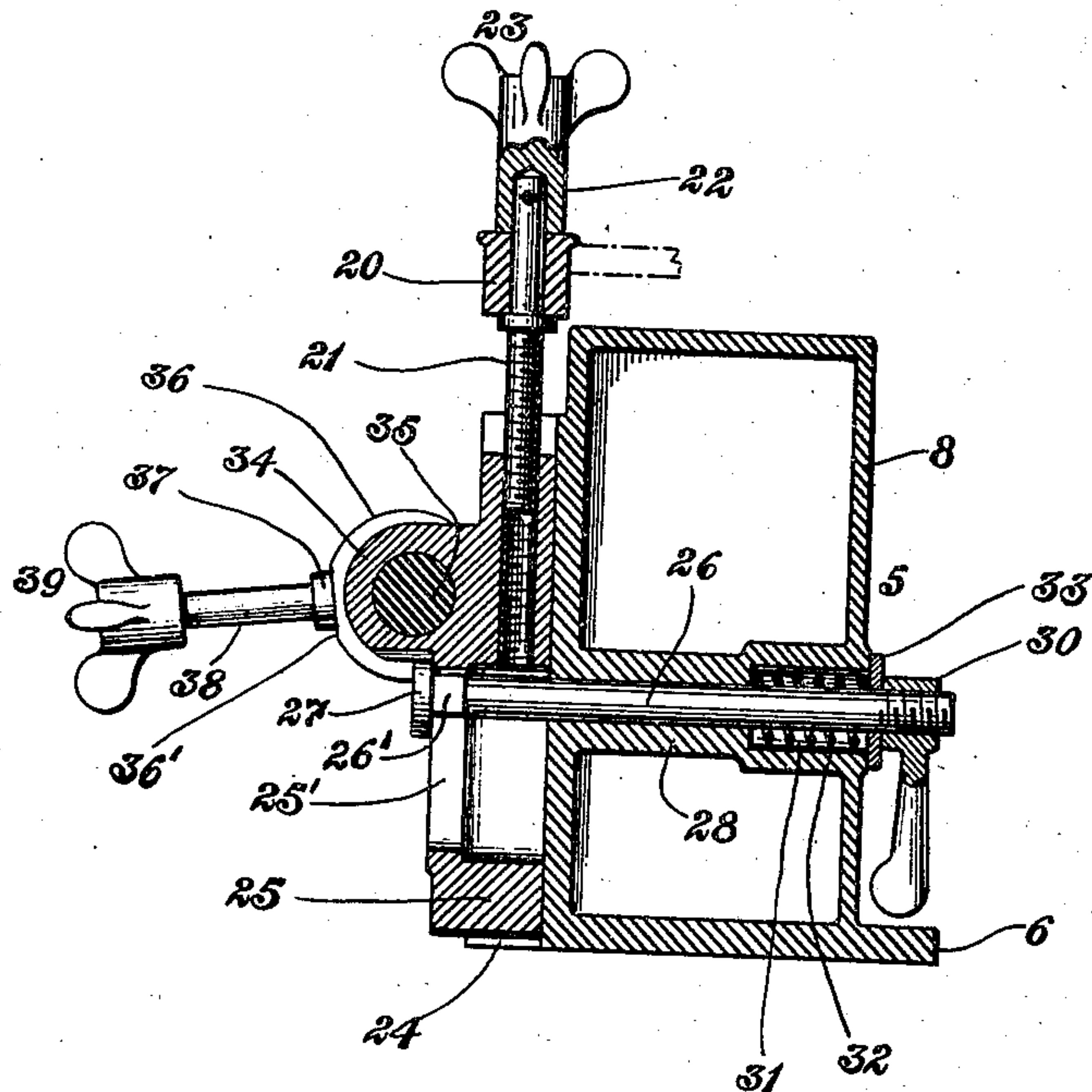


Fig. 4.

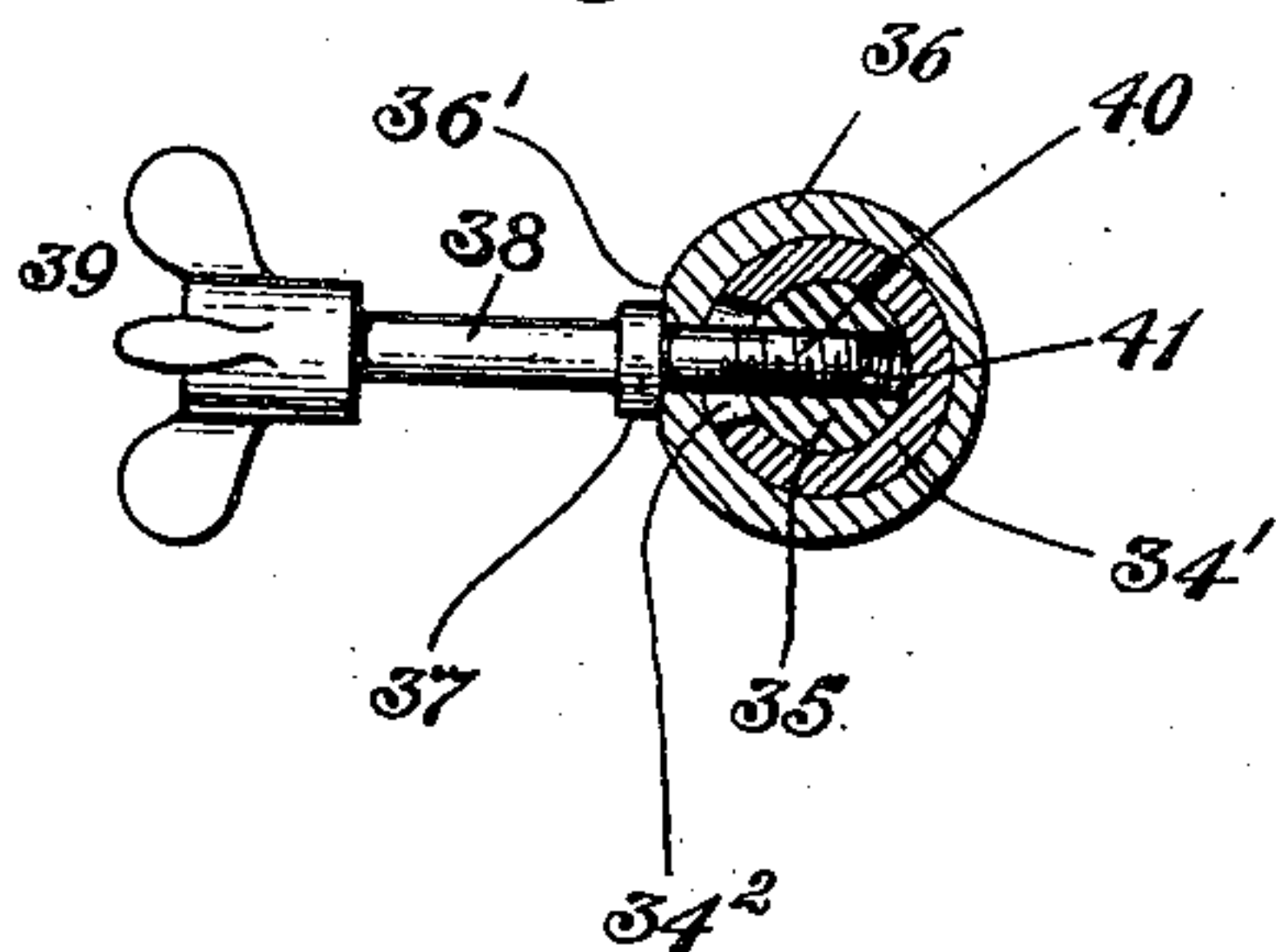
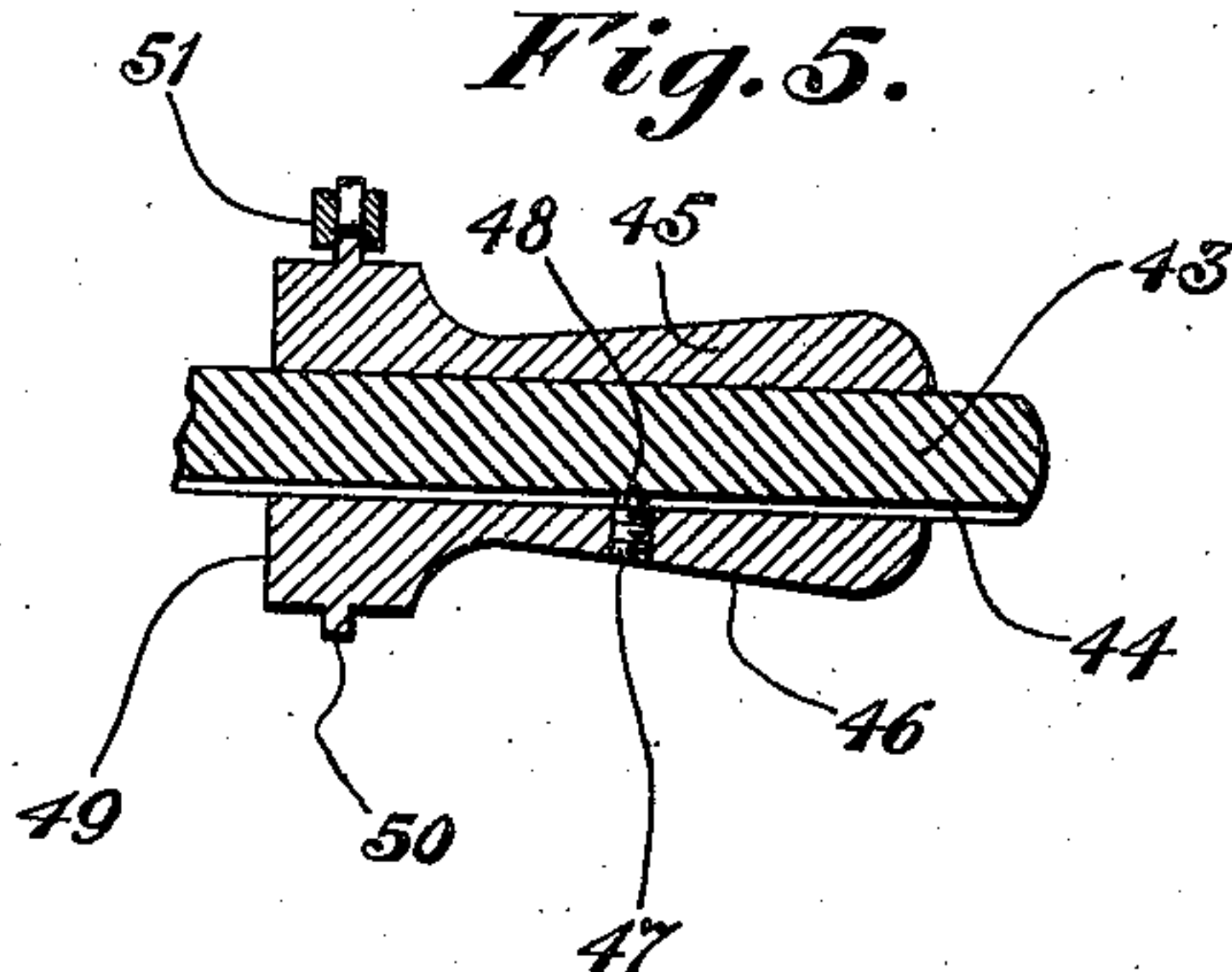


Fig. 5.



Witnesses:

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Inventor:
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UNITED STATES PATENT OFFICE.

ROBERT S. BROWN, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE NEW BRITAIN MACHINE COMPANY, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

MACHINE FOR SHARPENING CUTTER-TEETH.

No. 896,357.

Specification of Letters Patent.

Patented Aug. 18, 1908.

Application filed July 1, 1907. Serial No. 381,646.

To all whom it may concern:

Be it known that I, ROBERT S. BROWN, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Sharpening Cutter-Teeth, of which the following is a specification.

This invention relates to machines for sharpening the teeth of cutters of various kinds, and while shown applied for performing this operation by a grinding or emery-wheel on the teeth of a chain-cutter for mortising-machines, is neither limited to any specific use, nor to any particular character of rotary sharpening device.

Primarily the object of the invention is the provision of an improved machine for sharpening cutter-teeth, and one in which the root or gullet of each tooth may be formed to the desired depth and angle while the cutting-surface of the tooth is undergoing operation.

Other objects of the invention relate to the details of the machine by which improved results may be obtained, as will hereinafter appear.

In the accompanying drawings, Figure 1 is a front elevation of my improved machine; Fig. 2 is a side elevation of said machine; Fig. 3 is a section on line 3—3 of Fig. 2; Fig. 4 is a section on line 4—4 of Fig. 2; and Fig. 5 is a section on line 5—5 of Fig. 1.

Like numerals designate similar parts throughout the several views.

Referring to the drawings, the numeral 5 designates the frame of the machine, said frame being in the shape of a base 6 having rising therefrom a curved standard 8 overhanging the base at its upper end, where it is provided with a tubular boss or bearing 9. A guard or hood 10 projects from the inner end of the top of the machine where a tubular boss or bearing 9 is provided. In the bearing is journaled a shaft 12 having a belt-pulley 13 at one end, and carrying at its other extremity a sharpening-tool 14 the latter being secured to the shaft by the washer 15 and a nut 16. The top is flattened at 17, and the hood has a laterally projecting arm 18, which is secured to the flattened top by screws 19, and said hood and arm are preferably formed integral, although this is immaterial. Projecting from the hood and arm is a tubular boss 20 in which is secured against longitudinal displacement a screw 21

having an enlarged head 22 provided with a finger-grasp or hand-wheel 23. Rigid with one side of the frame is a guideway 24, and in this guideway is snugly fitted a slide 25, slotted at 25' for the reception of a squared portion 26' of a bolt or rod 26, provided with a head 27, overlapping the walls of the slot, said bolt or rod passing through a bearing 28 in the frame of the machine, and being threaded at 29 at its end opposite the head to receive a lever-nut 30.

In a chamber 31 of the bearing is fitted a coiled spring 32, pressing at one end against the inner wall of the chamber, and at its opposite end against a washer 33 surrounding the rod between the lever-nut 30 and the frame of the machine, as illustrated in Fig. 3. This slotted slide is snugly fitted in the guideway 24, and into the upper end of said slide is threaded a screw 21 whereby the slide may be adjusted as desired and thus clamped rigidly in position by the bolt or rod 26. When the lever-nut 30 is loosened the spring 32 expands and tends to force or hold the head 27 of the bolt 26 against the walls of the slot in the slide 25', thus holding the slide against movement except when manipulated by means of the screw 21 operated by the finger-grasp 23.

Projecting from the slide is a tubular boss or bearing 34, in which is journaled a short shaft 35 and upon the reduced end 34' of the bearing is placed a collar 36, flattened at 36' to receive a shoulder 37 on a bolt 38, said bolt carrying at its outer end a hand- or finger-grasp 39, and being threaded at its inner end at 40 to engage with internal threads 41 of the shaft 35, and the bearing 34 being slotted at 34² to permit of a limited rocking-movement of the shaft within said bearing for a purpose hereinafter set forth.

A crank-arm 42 projects from the shaft 35, and at its lower end is provided with a laterally-projecting cylindrical rod 43 having a longitudinal groove 44; and upon this rod is slidably mounted for adjustment in or out, in a line at right angles to the front of the machine, a sleeve 45 having a curved-surface 46 knurled at 46' to afford a convenient hand-grasp. Into and about intermediate the length of the sleeve is threaded a screw 47, having a reduced tip 48 adapted to enter a groove 44 in the rod 43, and thus to prevent said sleeve from rotating on the rod. At its inner end the sleeve is provided with a circu-

lar head 49 having a peripheral rib or collar 50 upon which the cutter-chain 51 is mounted, as illustrated in Figs. 1, 2 and 5,—the construction being such that after one tooth of the chain has been sharpened by the tool 14 the sleeve 45 and the cutter-chain will be slid upon the rod 43 to withdraw the chain from engagement with the sharpening-tool.

Frequently it is desirable to change the angle of the tool being sharpened with relation to the grinding-disk or other tool carried by the shaft 12, and in the present instance this will be readily accomplished by loosening the screw 40 by means of its manipulating device 39, and then swinging by hand the shaft 35 in its bearing 34, 34' until the desired angular relation of the tooth of the cutter-chain is obtained. During this swinging movement the head or collar 36 of course moves with the shaft 35, and after the required adjustment has been made the screw is tightened to lock the parts in position to which they have been adjusted. In this way the root or gullet of the tooth may be ground at any desired angle by the edge of the sharpening cutter-wheel, while the cutting-points or surfaces of said tooth are simultaneously ground by the side of the wheel, thus enabling the achievement of a double result.

Chain-cutters are composed of links, some of which have double teeth, while others have but one tooth, and it will readily be seen that in the construction described either double or single teeth may be sharpened with ease and facility. Bolts 52 are threaded into the top of the overhang on the frame, and these bolts are adjustable in said openings. Jam-nuts 53 lock the bolts in proper position upon the top of the frame, and each bolt is provided with a head 54 in which the usual oil-cups 55 are placed.

In the operation of my invention when a tooth of a chain-cutter is to be ground, the cutter-chain is fitted upon the circular rib or flange 50 of the sleeve 45, and said sleeve is then slid longitudinally inward along the rod 43 until the tooth (either double or single) to be sharpened is in proper position with relation to the sharpening-cutter. To enable the proper position to be accurately determined, so that each tooth may be ground with accuracy and precision, the slide 25 is adjusted in the guideway 24 by means of the screw 21, and when it is desired to change the angular location of the tooth with relation to the sharpening-cutter this may be readily accomplished by loosening the screw 40 by means of its manipulating head 39 and then swinging the shaft 35 in its bearing 34, 34' after which the shaft is set in its proper position by tightening the screw 40 and causing the head 37 thereof to bear against the flattened portion 36' of the collar 36, said collar being loosely mounted on the reduced portion of the bearing. After the desired ad-

justments have been made the shaft 12 is set in motion and the tooth then in position is sharpened and the sleeve is then withdrawn, the cutter-chain is moved around the circular rib 50 to bring another tooth into position, and the sleeve is then returned, and so on until the sharpening-operation of all of the teeth is completed. By providing the spring 32 the head 27 of bolt 26 is held against the slide under yielding pressure when the lever-nut 30 is released, and thereby all danger of dropping of the slide 25 (due to lost-motion) (or other causes) is prevented, and said slide is held snugly in its way.

Changes may be made in the various details of the mechanism without departure from the invention, and various devices may be substituted for those shown and described for accomplishing the feed-movement of the slide and the angular adjustment of the cutter-carrying device mounted on said slide.

From the foregoing description it will be apparent that my machine comprises a work-support and a tool-support, and one of these supports is mounted to swing with respect to the other to vary the angle of presentation of the work to the tool, of whatever character these parts be. In addition to this there is a work-carrier which directly sustains the work and which is bodily-adjustable on the work-support to thereby carry the work into and out of the range of action of the tool.

Having thus described the invention, what I claim is:

1. The combination of a tool-support and a work-support one of which is mounted to swing with respect to the other to vary the angle of presentation of the work to the tool, one of said supports having a projection, and a sleeve slidable longitudinally of said projection, constituting a work-carrier and adapted to suspend a chain.

2. The combination of a tool-support, a swinging work-support, and a sleeve, the work support having means for supporting said sleeve for sliding movement, the sleeve being adapted to suspend a chain and said sliding movement permitting the chain to be brought under the action of the tool or withdrawn therefrom.

3. The combination, with a frame having a guideway, of a slotted slide adjustable in said guideway; a bolt or rod having a head at one end; a spring for causing the head normally to bear against the slide; and means for actuating the bolt to compress the spring, and clamp the head against the slide.

4. The combination of a tool-support, a work-support mounted for swinging movement with respect to the tool-support to vary the angle of presentation of the work to the tool, said work-support having a projection, and a work-carrier slidable on said projection and adapted to suspend a chain.

5. The combination with a frame, a slide

supported by said frame, a bolt extending through the slide and frame and having a head and a nut one of which acts against said slide, a spring for imparting an end thrust to said bolt, and a tool-support and a work-support one of which is sustained by said slide.

6. The combination of a frame, a slide supported by said frame; a bolt supported by the frame, the slide having an elongated slot through which the bolt passes, said bolt having a head and a nut one of which acts against the slide, a spring for imparting an end thrust to said bolt to cause the part thereon which acts against the slide to have a clamping relation thereagainst, an adjusting screw tapped into said slide, and a work-support and a tool-support one of which is carried by said slide for swinging movement.

7. The combination, with a frame having a guideway, of a slide movable in said guideway, and provided with a bearing having a slotted reduced-portion, of a shaft mounted in said guideway, and internally-threaded at one end, said shaft having a projection, of a collar loosely mounted upon said bearing; a screw passing loosely through said collar, and entering the internal thread of the shaft;

means for supporting the device to be sharpened on the projection of the shaft; and means for sharpening the teeth of said device.

8. The combination of a shaft and a shaft-supporting member, the latter having a bearing to support said shaft, a collar loose on said bearing, a clamping-device to engage against the collar and movably connected with said shaft, and said bearing being slotted for the passage and lateral adjustment of said clamping-device, and a tool support and a work-support one of which is connected with said shaft.

9. The combination of a rock shaft, a bearing for said shaft having an elongated slot, a clamping member connected with the shaft and extending through said slot, for clamping the shaft and bearing together, and a work-support and a tool support one of said supports being connected with said rock-shaft.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT S. BROWN.

Witnesses:

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F. E. ANDERSON.