

No. 685,365.

Patented Oct. 29, 1901.

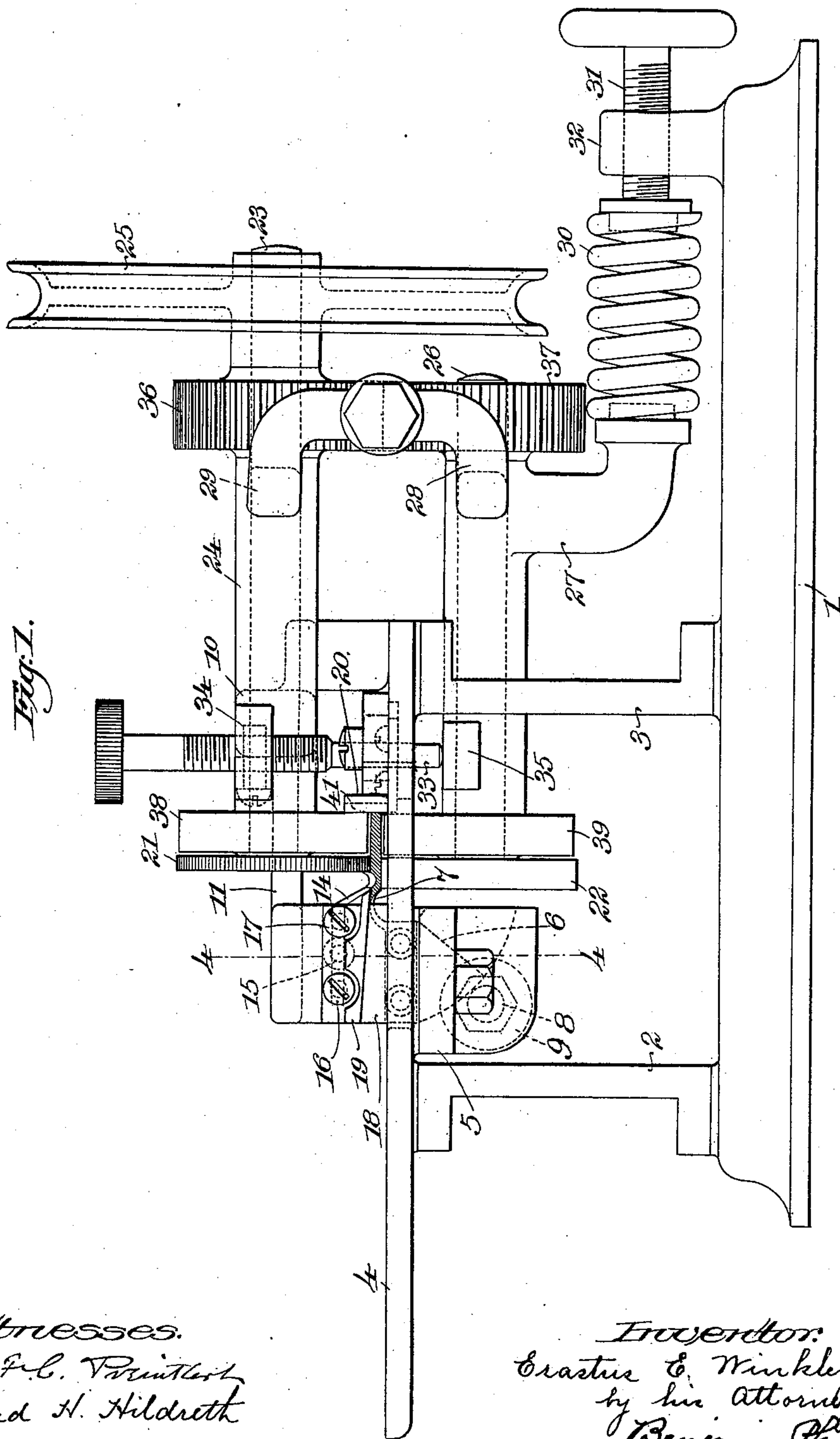
E. E. WINKLEY.

WELT GROOVING AND BEVELING MACHINE.

(Application filed Jan. 17, 1961.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses.
John F. C. Printz
Alfred H. Hildreth

Inventor:
Erastus C. Winkley
by his Attorney
Benjamin Phillips

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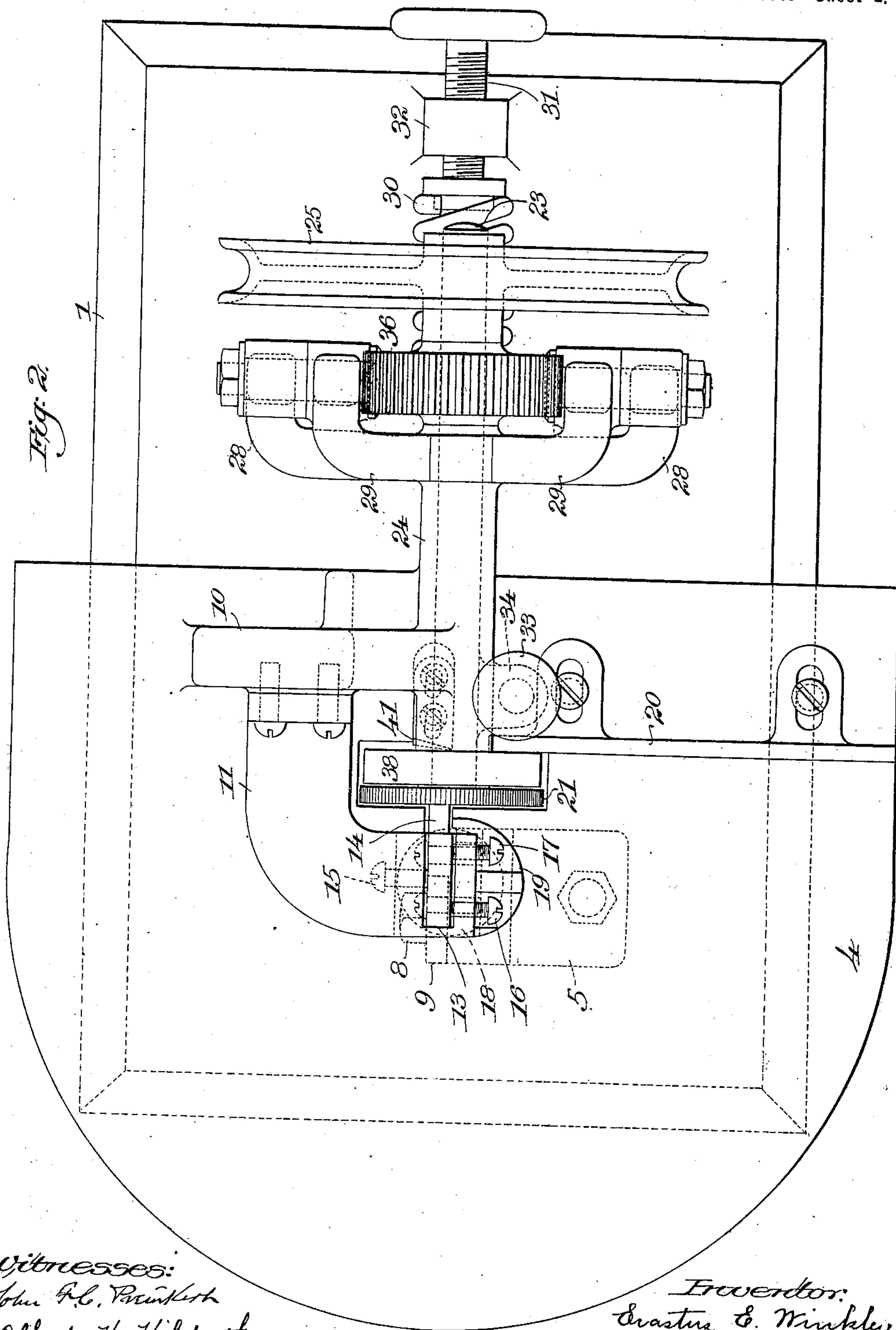
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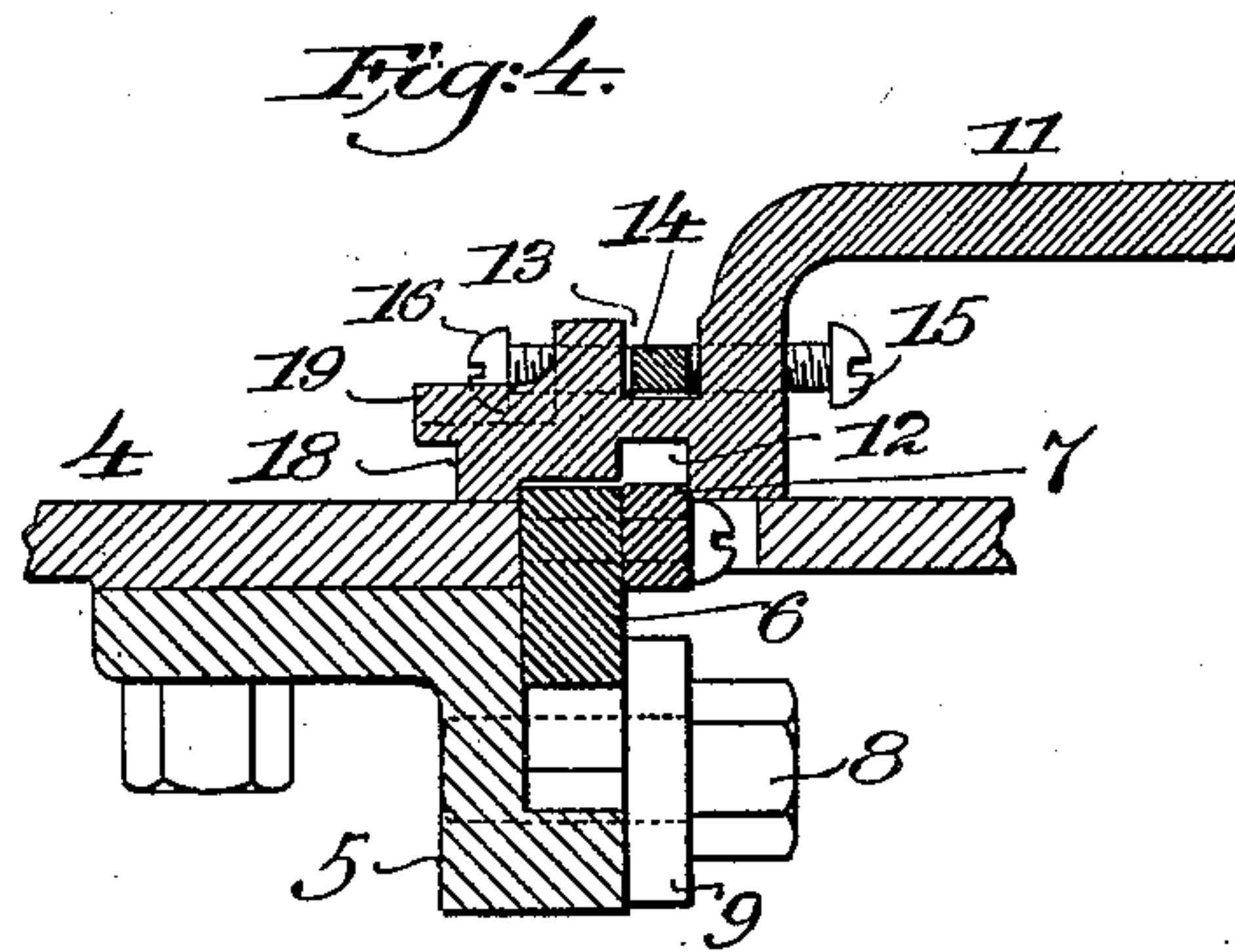
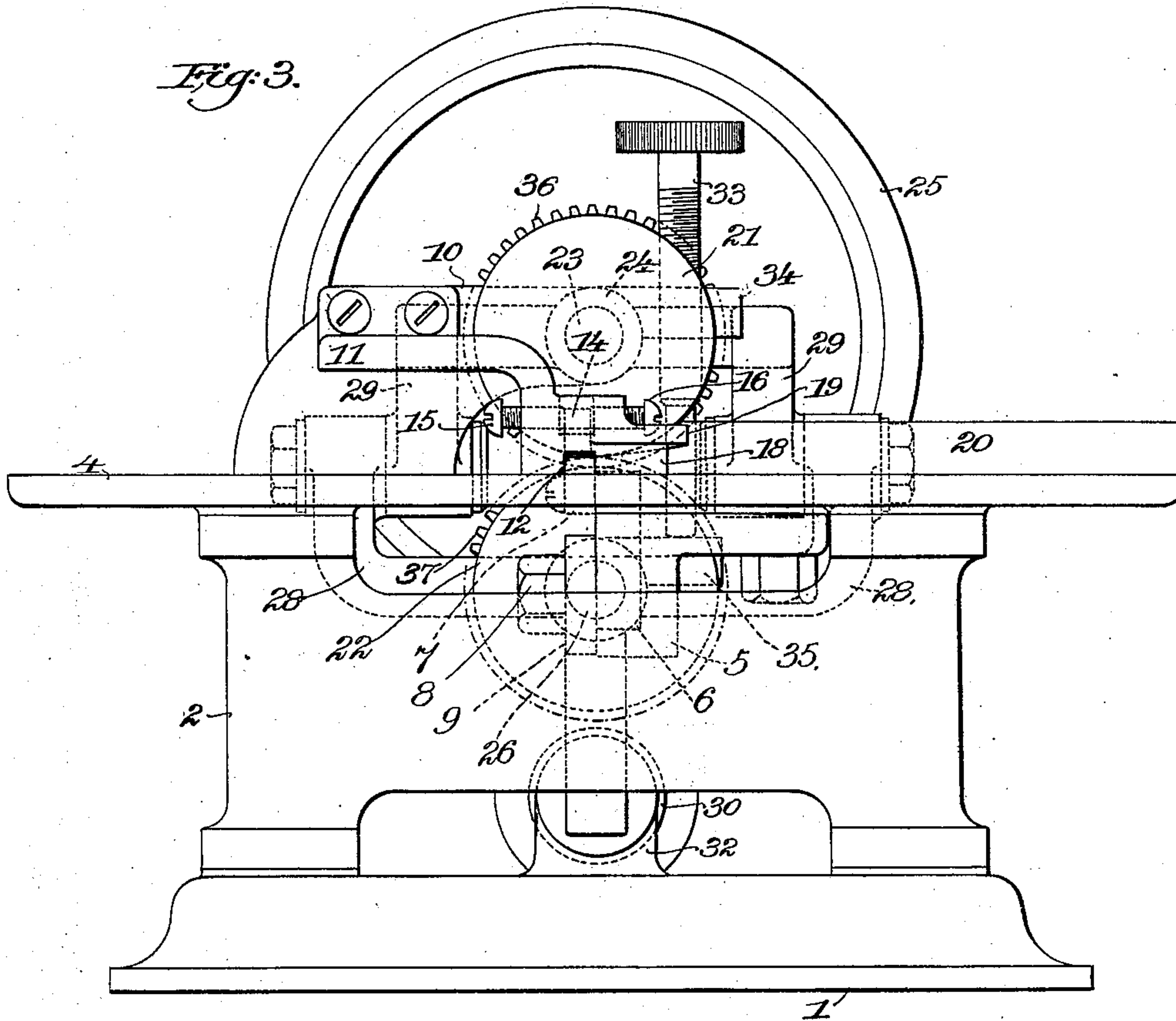
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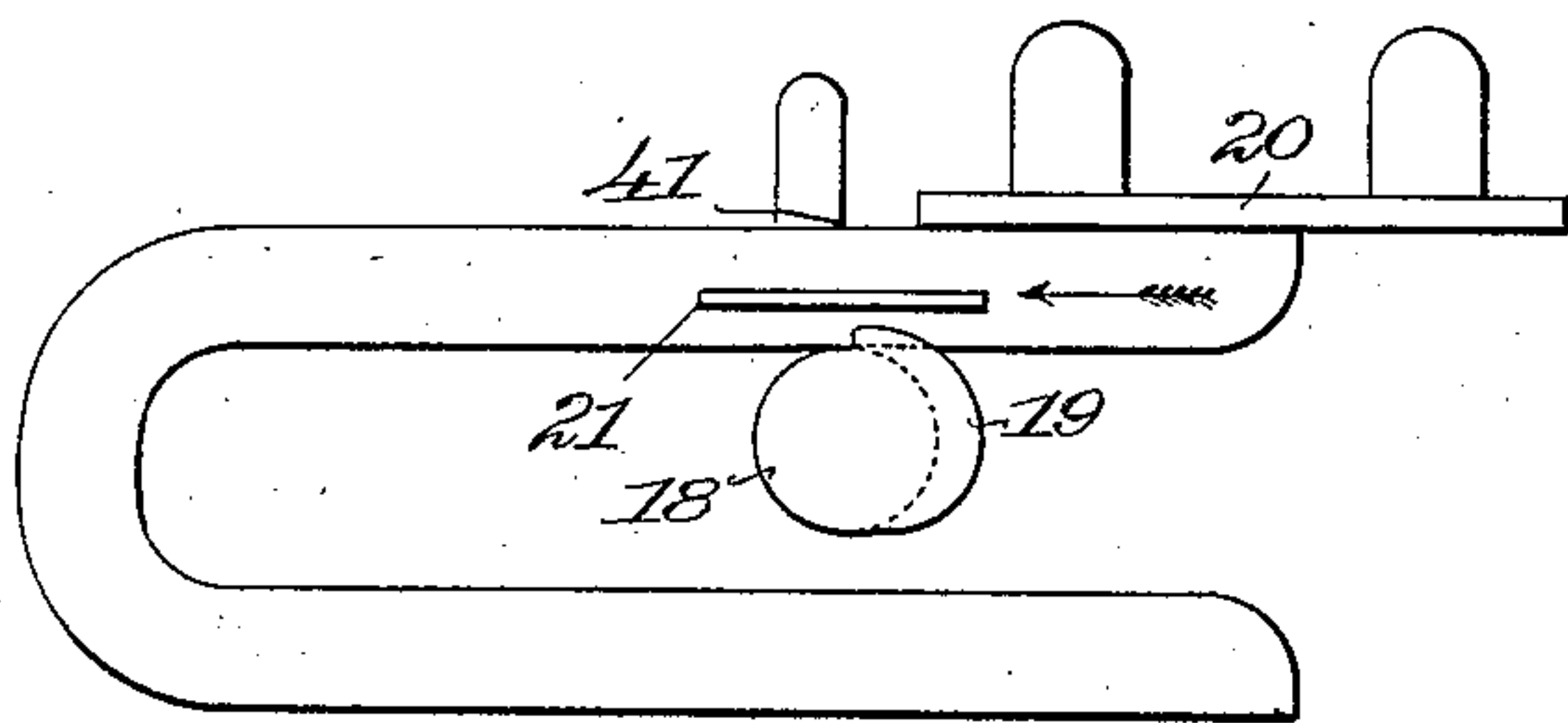
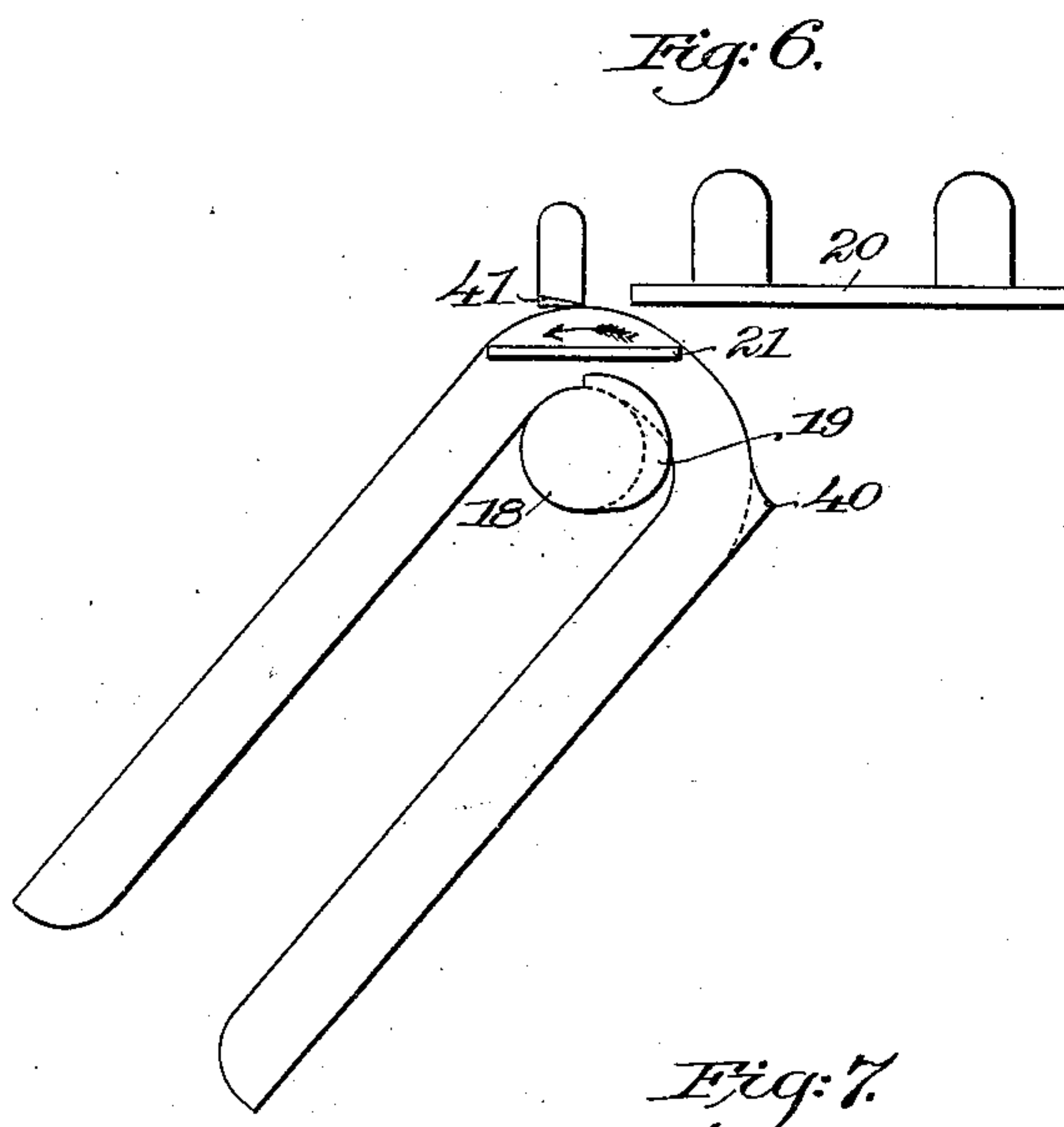
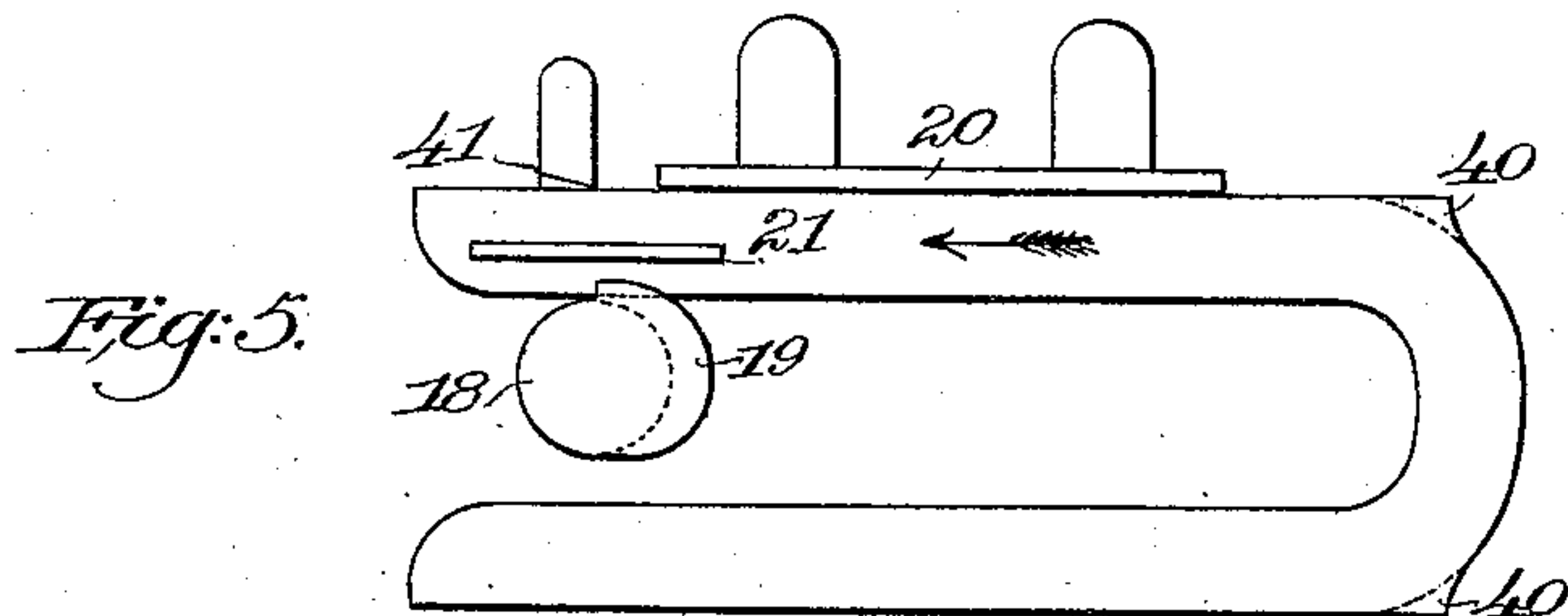
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(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

WELT GROOVING AND BEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,365, dated October 29, 1901.

Application filed January 17, 1901. Serial No. 43,593. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Welt Grooving and Beveling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to welt grooving and beveling machines.

In the manufacture of welted boots and shoes the welts have usually been supplied in the form of long strips, from which the welts are severed in the proper lengths after being sewed to the upper and insole. These strips are provided with a groove upon the side which is beneath in the completed shoe to receive the stitches of the insole and with a beveled edge to fit against the shoe-upper. Several machines for grooving and beveling these welt-strips have been produced. On account of the difficulty of beating out the welt at the toe of the shoe to cause it to lie in the plane of the insole and the further difficulty of sewing around the toe with the usual form of welt-machine it has been proposed to provide a welt of substantially a U shape formed by cutting or molding the leather in any suitable manner. It is necessary that such a welt should be grooved and beveled, as are the welt-strips above referred to. None of the machines for grooving and beveling welt-strips can be used to groove and bevel a U-shaped welt, nor has any machine, so far as I am advised, ever been provided which is capable of performing this work.

The object of my invention is to provide a machine for grooving and beveling a U-shaped welt; and with this object in view my invention consists in a machine provided with grooving and beveling knives or either of them and means for feeding and turning a U-shaped welt to properly present the same to the knives.

My invention also consists in the devices and combinations of devices hereinafter described and claimed.

While I consider myself the first to provide

a welt grooving and beveling machine with means for feeding and turning a U-shaped welt to properly present the same to the grooving and beveling knives and any suitable means for performing these functions to be within the purview of my invention, I prefer to use the means illustrated in the drawings accompanying this application and hereinafter specifically described, which constitute a simple and efficient construction for performing these functions and embody my invention in the best form at present known to me. These means include a guide arranged to engage the inner edge of the welt and feeding mechanism arranged to feed the welt and turn it about the guide.

In the drawings accompanying this application, which illustrate a preferred form of my invention, Figure 1 is a view in side elevation of a machine embodying the same. Fig. 2 is a plan view of said machine. Fig. 3 is a front end view. Fig. 4 is a detail sectional view on the line 4 4, Fig. 1; and Figs. 5, 6, and 7 are diagrammatic views illustrating the manner in which the welt is fed and turned to properly present the welt to the grooving and beveling knives.

Referring to the drawings, in which like characters of reference indicate like parts, 1 designates the base of the machine, from which rise two standards 2 and 3, on the upper ends of which is secured the work-supporting table 4. To the lower side of the table (see more particularly Figs. 1 and 4) is secured an L-shaped block 5. The vertical face of this block is provided with an arc-shaped slot which receives a segmental block 6, to which the shank of the welt-beveling knife 7 is secured by screws. The block 6 and grooving-knife 7 extend through an opening in the table 4, the cutting edge of the knife being slightly above the plane of the table. The edge of the slot in the block 5 is curved in the arc of a circle the center of which is at the cutting edge of the knife, whereby an adjustment of the knife-carrying block 6 in the slot changes the angle of inclination of the cutting edge of the knife, and consequently the angle of the bevel produced on the welt, without raising or lowering the knife. The block 6 is held in adjust-

ed position by means of a bolt 8, screwing into the block 5, the flange 9 of the bolt bearing against the faces of the blocks 5 and 6.

To the side of an overhanging arm 10, rising from the table 4, is secured a bracket 11, the outer end of which extends downward into the plane of the table 4, directly above the knife-carrying block 6. The under surface of the outer end of the bracket 11 is provided with a slot 12 to provide room for the beveling-knife 7 to extend above the plane of the table 4 into a position to act on the edge of the welt. The upper surface of the outer end of the bracket 11 is also provided with a slot 13, in which is received the shank of the grooving-knife 14. The grooving-knife extends downwardly from the shank, so that its cutting edge is in position to cut a groove in the surface of the welt near the edge acted upon by the beveling-knife 7. The shank of the grooving-knife is received loosely in the slot 13 and is held securely therein by means of three screws 15, 16, and 17, the screw 15 engaging one side of the shank about midway of its length and the screws 16 and 17 engaging the other side of the shank at its ends. By this construction the grooving-knife can be adjusted transversely of the welt to vary the distance of the groove from the beveled edge and can be adjusted longitudinally of the welt to bring the cutting edge of the knife in line, transversely to the welt, with the cutting edge of the beveling-knife 7 and the point of contact of the feeding-rolls. The advantage of having the cutting edges of the knives and the contact-point of the feeding-rolls in a line transversely of the welt will be explained hereinafter. The lower portion of the outer end of the bracket 11 is circular in cross-section to form a guide 18. Above the guide an inclined projecting flange 19 is arranged, the form of which is clearly shown in Figs. 1 and 2. This flange serves to guide the inner edge of the welt and prevent its rising under the action of the beveling-knife. To the table 4 is adjustably secured a guide 20, which is arranged to engage the outer edge of the welt.

For feeding the welt feeding-rolls 21 and 22 are provided, the upper of which bears against the welt at one side of the grooving-knife 14 and the lower of which bears against the under side of the welt beneath the roll 21 and also beneath the grooving-knife 14 to form a support to hold the welt against the action of the grooving-knife. The roll 21 is secured to the end of the shaft 23, journaled in a bearing 24, formed integral with the overhanging arm 10. To the shaft 23 is secured a belt-pulley 25, by means of which the shaft 23 is driven from any suitable source. The roll 22 is secured to one end of a shaft 26, journaled in a bearing formed in a frame 27. The frame 27 is provided with outwardly and upwardly extending arms 28, the upper ends of which are pivotally connected with arms 29, extending outwardly and downwardly

from the bearing 24. As a means for swinging the frame 27 upon its pivots and forcing the roll 22 into contact with the welt a coiled spring 30 is provided, which is interposed between an arm extending downwardly from the frame 27 and the flanged end of an adjusting-screw 31, screwing through a projection 32 on the base of the machine. In order to limit the upward movement of the frame 27 under the tension of spring 30, an adjustable stop 33 is provided, consisting of a screw-threaded rod screwing through a lug 34, projecting from the side of the bearing 24 and having its lower end in the path of a lug 35 on the side of the frame 27. A positive movement of rotation is given to the roll 22 from the shaft 23 by means of intermeshing gears 36 and 37, secured to the shafts 23 and 26, respectively.

In order to prevent buckling of the welt in being turned about the guide 18, as will be hereinafter described, presser-rolls 38 and 39 are provided, loosely mounted to rotate upon the shafts 23 and 26 at the side of the feeding-rolls 21 and 22. The rolls 38 and 39 have no positive means of rotation and press but lightly, if at all, on the welt, and consequently in no way act to prevent the welt from being turned about the guide 18.

In Figs. 5, 6, and 7 is indicated, diagrammatically, the manner in which the U-shaped welt is fed and turned in being presented to the action of the grooving and beveling knives. The welt shown in these figures is substantially of the shape of the actual welt, although the dimensions are not necessarily accurate. In cutting out a welt of the shape shown in Figs. 5, 6, and 7 it is convenient to leave projections 40 on the outer edge of the welt. In completing the welt for use these projections must be trimmed off, and I have accordingly provided the machine shown in the drawings with an edge-trimming knife 41, the shank of which is adjustably secured by means of screws passing through slots in the shank in an opening in the table 4, the cutting edge of the knife being in line with the guide 20.

The operation of the mechanism above described will be clearly understood from an inspection of Figs. 5, 6, and 7. From these figures and from Figs. 1 and 2 it will be seen that the point of contact of the guide with the inner edge of the welt, the cutting edges of the grooving and beveling knives, the points of contact of the feeding-rolls, and the cutting edge of knife 41 are in line transversely to the welt. During the first portion of the grooving and beveling operation the welt is in the position shown in Fig. 5 and is fed forward in the direction indicated by the arrow, the outer edge of the welt bearing against the guide 20 and the inner edge against the guide 18. When the curved portion of the welt is reached, the continued forward movement of the welt in a straight line will be prevented by the guide 18, and there-

upon the feeding-rolls will act to turn the welt around the guide 18 in the manner indicated in Fig. 6, the movement being in a curve to which the line extending transversely of the welt in which the edges of the knives and the points of contact of the feeding-rolls are located is normal. The knives and the feeding-rolls therefore have no tendency to prevent the welt being turned about the guide 18. The welt is turned about the guide 18 until the curved portion of the welt has been fed past the guide, when the outer edge of the welt will again engage the guide 20 and the welt will assume the position shown in Fig. 7 and be fed forward in a straight line in the direction indicated by the arrow.

It will be understood that although I have referred to the welt as being of U shape I do not intend to limit my invention to devices adapted to act upon a strictly U-shaped welt. The welt may be of any shape which adapts it to conform to the toe portion of the shoe in substantially the same manner as a strictly U-shaped welt, and where in the claims I use the expression "U-shaped welt" I intend to cover any welt of a shape which adapts it to be readily applied to the toe portion of a shoe. It will also be understood that if it is desired to perform either the beveling or the grooving operation separately the beveling or grooving knife may be omitted, and my invention is not limited to a construction in which both these knives are present. It will also be understood that my invention may be embodied in many different constructions and is not limited to the specific embodiment illustrated in the drawings.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. A welt grooving and beveling machine, having, in combination a knife arranged to act on the inner edge of a U-shaped welt and means for feeding and turning a U-shaped welt to properly present the same to the knife, substantially as described.

2. A welt grooving and beveling machine, having, in combination, a grooving-knife, a beveling-knife arranged to act on the inner edge of a U-shaped welt, and means for feeding and turning a U-shaped welt to properly present the same to the knives, substantially as described.

3. A welt grooving and beveling machine, having, in combination, a grooving-knife, a beveling-knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, and a guide arranged to engage the edge of the welt and cooperate with the feeding mechanism to turn the welt, substantially as described.

4. A welt grooving and beveling machine, having, in combination, a grooving-knife, a beveling-knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, a guide arranged to engage the edge of the welt and cooperate with the feeding mechanism to turn the welt, and means to prevent buckling of the welt, substantially as described.

5. A welt-beveling machine, having, in combination, a grooving-knife, a beveling-knife arranged to act on the inner edge of a U-shaped welt, feed-rolls, and a guide arranged to engage the edge of a U-shaped welt and cooperate with the feed-rolls to turn the welt, the points of contact of the knives, guide and rolls with the welt being in a line extending transversely to the welt, substantially as described.

6. A welt grooving and beveling machine, having, in combination, a grooving-knife, a beveling-knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, a guide arranged to engage the inner edge of the welt and cooperate with the feeding mechanism to turn the welt about the guide, and a guide arranged to engage the outer edge of the welt, substantially as described.

7. A welt-beveling machine, having, in combination, a grooving-knife, a beveling-knife arranged to act on the inner edge of a U-shaped welt, feed-rolls and pressure-rolls, and a guide arranged to engage the edge of a U-shaped welt and cooperate with the feed-rolls to turn the welt, the points of contact of the knives guide and rolls with the welt being in a line extending transversely to the welt, substantially as described.

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

ERASTUS E. WINKLEY.

Witnesses:

BENJAMIN PHILLIPS,
ALFRED H. HILDRETH.