

No. 638,450.

Patented Dec. 5, 1899.

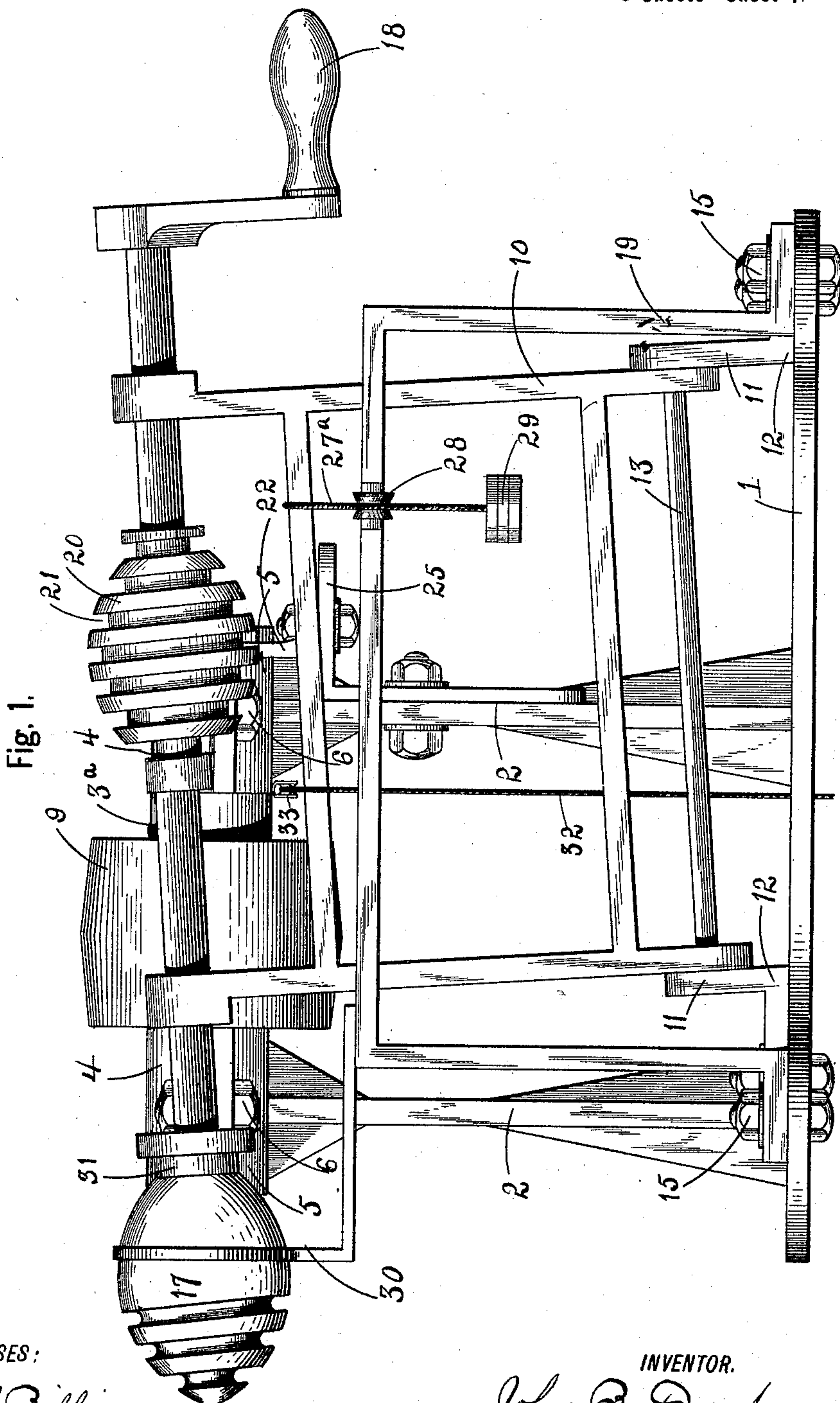
J. B. DURST.

MACHINE FOR CUTTING GROOVES IN ARTICLES.

(Application filed July 17, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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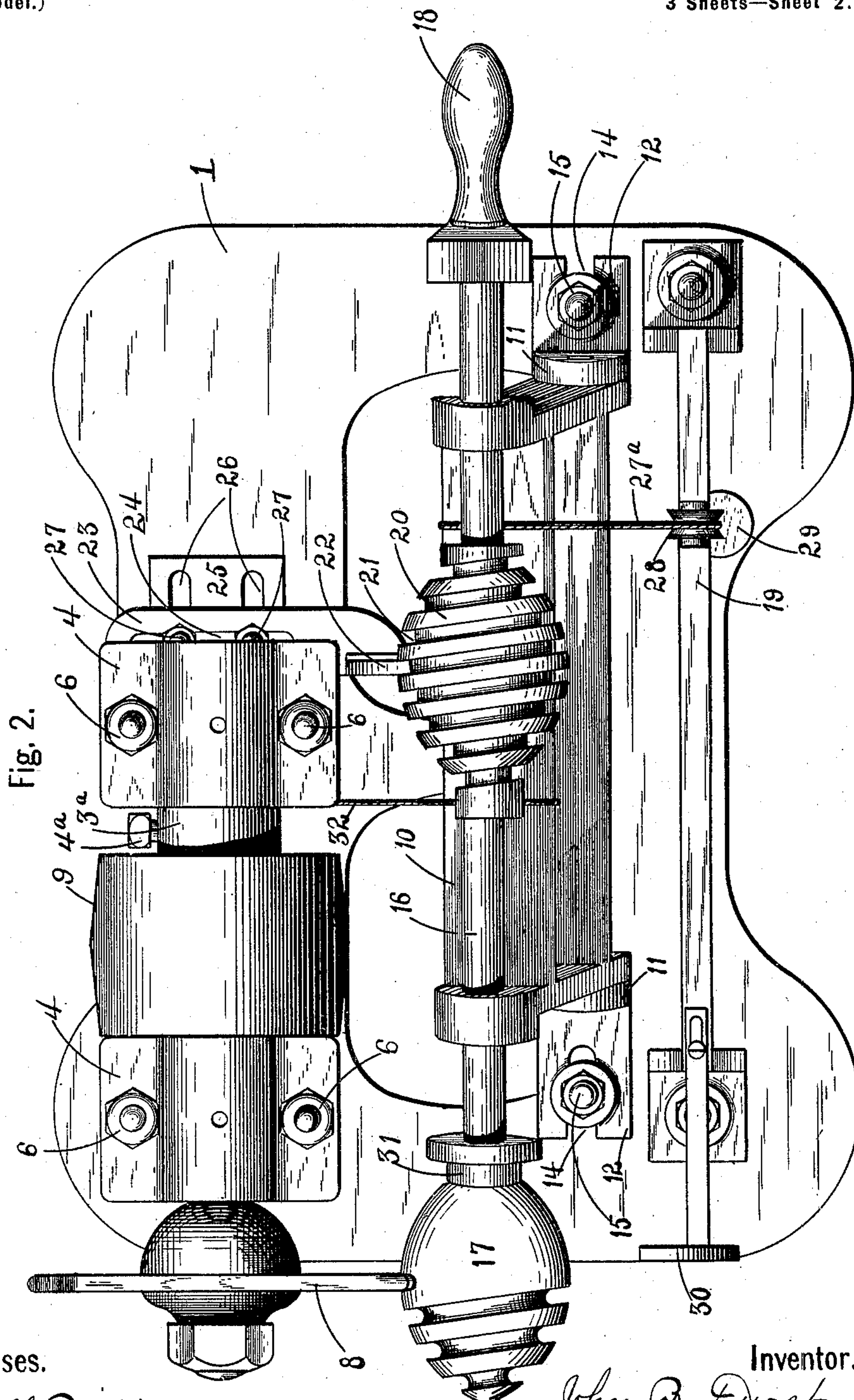
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(Application filed July 17, 1899.)

(No Model.)

3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

Fig. 3.

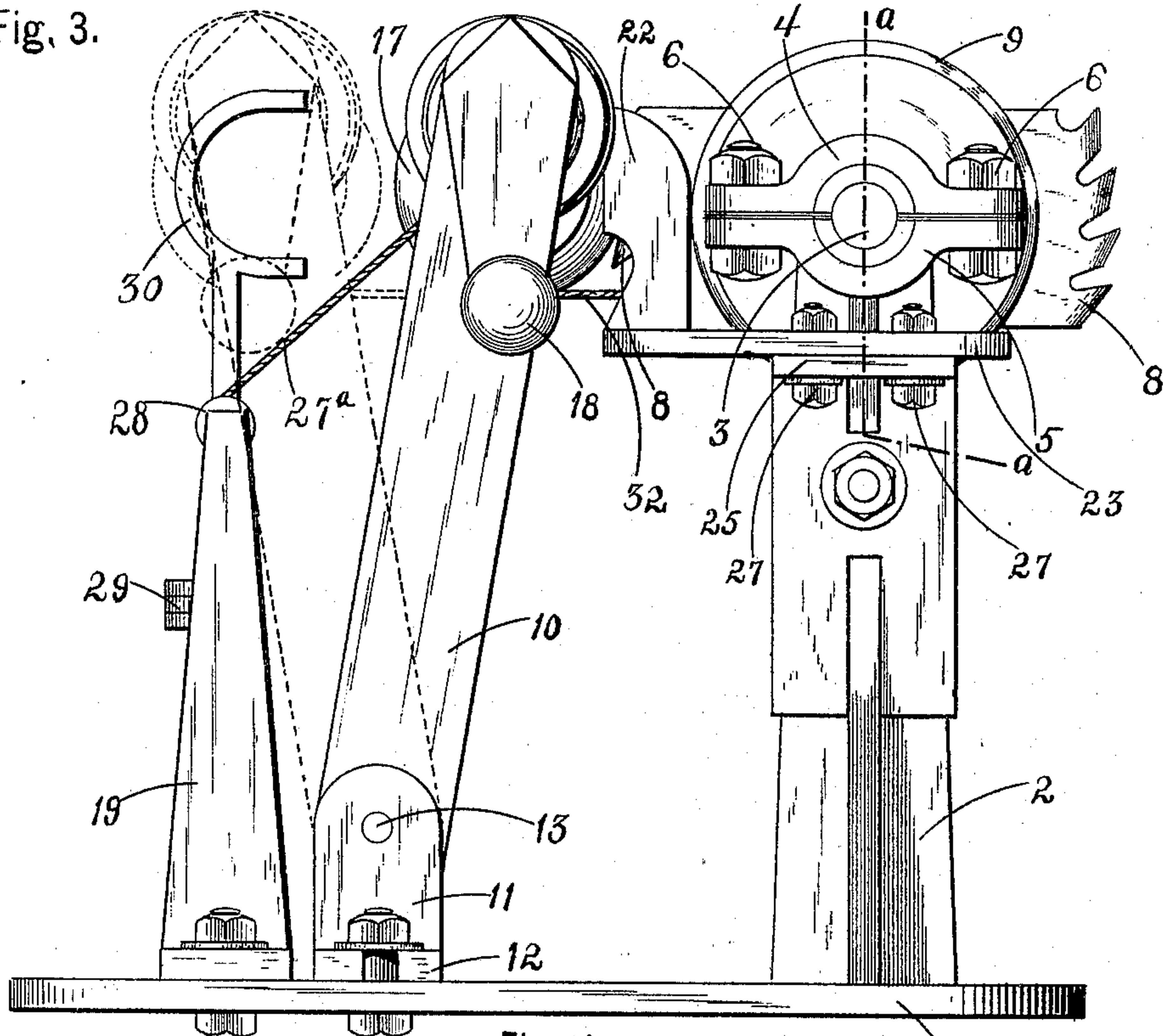


Fig. 4.

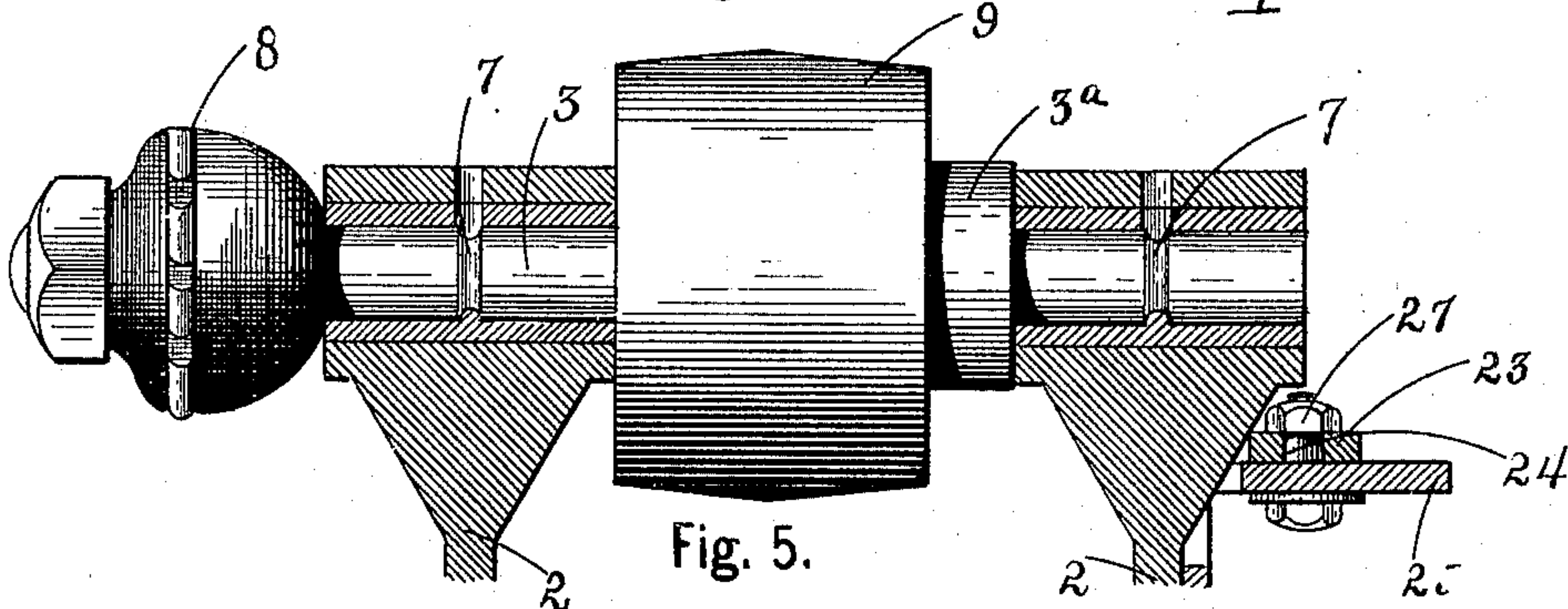
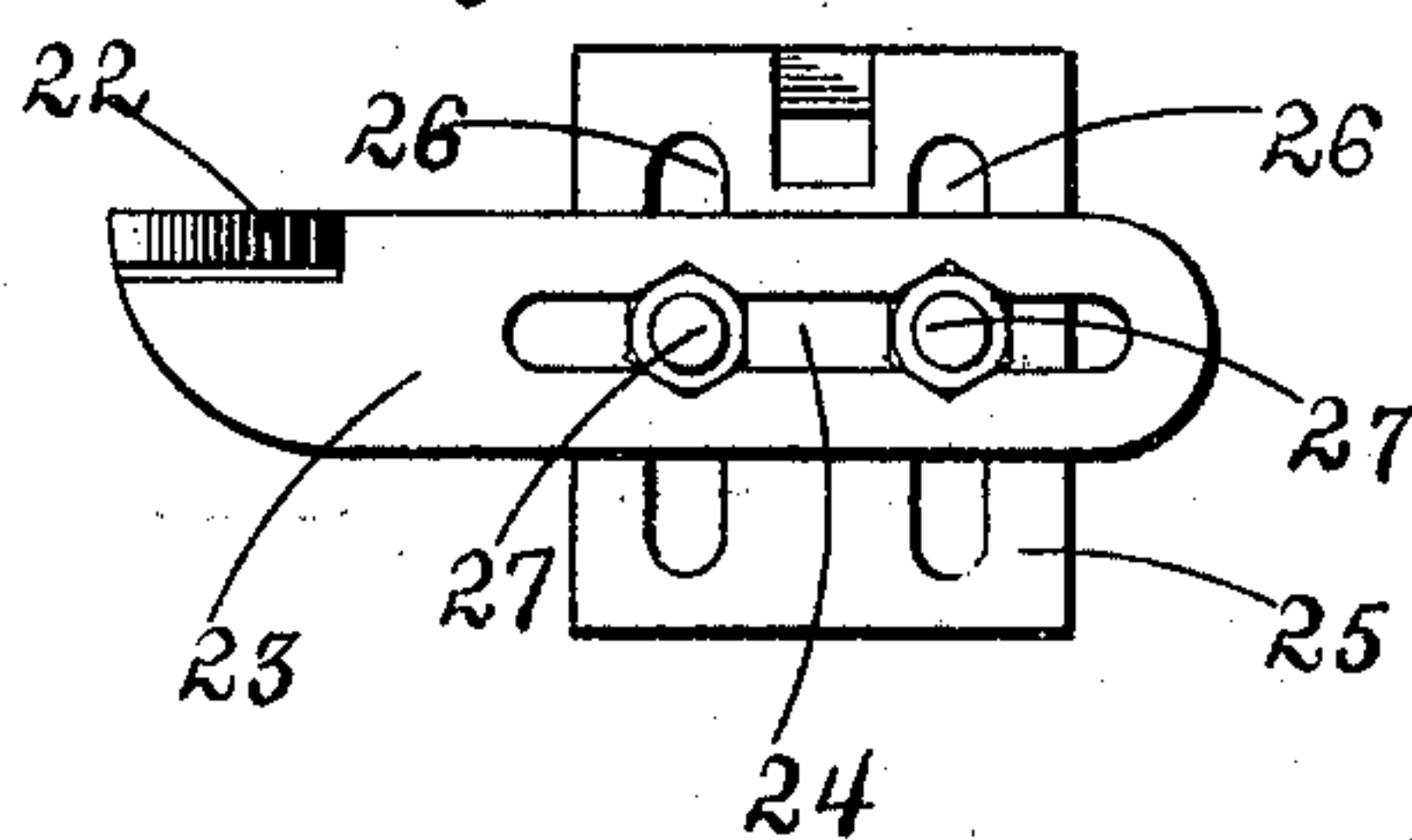


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN B. DURST, OF BUFFALO, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO REBECCA L. FAIRCHILD, OF SAME PLACE, AND FRANK WOOD, OF BOSTON, MASSACHUSETTS.

MACHINE FOR CUTTING GROOVES IN ARTICLES.

SPECIFICATION forming part of Letters Patent No. 638,450, dated December 5, 1899.

Application filed July 17, 1899. Serial No. 724,146. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. DURST, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have
5 invented certain new and useful Improvements in Machines for Cutting Grooves in Articles, of which the following is a specification.

My invention relates to an improved machine for grooving irregularly-formed articles; and the object of the invention is to provide a simple, cheap, and easily-operated machine of this character, all of which will be
10 fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved machine. Fig. 2 is a top plan view of the same. Fig. 3 is an end elevation of the
20 machine. Fig. 4 is a longitudinal section on or about line *a a*, Fig. 3. Fig. 5 is an enlarged detached top plan view of the guiding-blade and a portion of its supporting-plate, illustrating its slotted adjustment.

25 In referring to the drawings in detail like numerals designate like parts.

The base 1 of the machine is preferably formed of cast-iron and has two vertical standards 2, upon the upper ends of which a
30 shaft 3 is mounted in journal-boxes, the upper portions 4 of which are removably secured to the lower portions 5 by the bolts 6 to permit of the easy detachment of the shaft. The shaft is preferably provided with peripheral grooves 7 within the journal-boxes to prevent longitudinal movement or displacement.
35 (See Fig. 4.)

A saw or similar grooving or cutting device 8 is mounted at one end of the shaft 3, and a
40 pulley 9, adapted to be connected by belting to a source of power, is preferably mounted on the shaft between the journal-boxes.

A frame 10 is pivoted at its lower ends to the vertically-extending portions 11 of angular plates 12 by the pivotal pin 13. These angular plates 12 are provided with slots 14, and
45 bolts 15 pass through said slots and the base to adjustably secure the plates thereto.

A shaft 16 is journaled in the upper portion
50 of the frame, so as to have a longitudinal move-

ment therein, and extends sufficiently beyond the frame at one end (denoted by the numeral 31 in Figs. 1 and 2) to be inserted into the opening in the end of the article 17 to be
55 grooved. The opposite end of the shaft 16 is provided with an operating-handle 18 for turning or rotating it.

A support 19 is rigidly mounted upon the base and serves to limit the pivotal movement of the frame 10 away from the grooving mechanism.
60

A form 20 of substantially the curved shape as the article to be grooved is mounted upon the shaft 16 and is provided with a spiral
65 groove 21 of substantially the same lead as the groove it is desired to cut in the article.

An upright guiding-block 22, having a lower longitudinal portion 23, provided with a longitudinal slot 24, is mounted upon a horizontal
70 plate 25, extending from one of the standards 2.

To provide means for adjusting the blade transversely and longitudinally, the plate 25 is provided with a slot or slots 26, and a bolt or bolts 27 are passed through the slot 24 in the
75 horizontal portion 23 and the slot or slots 26 in the plate to secure the guiding-blade to the plate, the slot or slots 26 in the plate 25 being preferably arranged at substantially right angles to the slot 24 in the portion 23, substantially as shown in Fig. 5. The upper end
80 of the guiding-blade is adapted to be inserted in the groove 21 in the form substantially as shown in Fig. 2, when the pivotal frame 10 is held in operative proximity to the grooving
85 mechanism.

Means are employed to normally maintain the pivotal frame against the support 19 and the mechanism supported by said frame normally out of operative proximity with respect
90 to the grooving mechanism, and preferably consists in attaching a rope 27^a or similar flexible cord at one end to the pivotal frame, passing it over a pulley 28 upon the support and suspending a weight 29 from the opposite end.
95

An attachment for automatically removing the grooved articles from the end of the shaft upon the forward movement is preferably in the form of a forked extension 30, secured to
100

the support 19, the branches of which are adapted to project over or straddle the article when the pivotal frame is in its normal position and to strike against the sides of the same to remove it from the end of the shaft when the shaft is drawn longitudinally forward.

To arrange the mechanism so that the saw or grooving device is substantially in alignment with the lead of the groove cut upon the article, the shaft 16 is not mounted in a horizontal position, but inclines slightly downward from the handle 18 to the end 31, (see Fig. 1,) thereby supporting the article slightly tilted from a horizontal position.

The operation of this machine is as follows: An article 17 of suitable shape being placed upon the end 31 of the shaft 16, the opposite end of said shaft is drawn out longitudinally to bring the beginning of the groove 21 upon the form 20 opposite the guiding-blade. The pivotal frame is now moved toward the grooving mechanism by the operator, thereby entering the upper end of the guiding-blade into the groove and bringing the article 17 into cutting proximity to the saw or grooving device. The shaft 3 being rotated at a high rate of speed, the operating-handle 18 is turned, rotating the shaft 16 and moving the shaft longitudinally in the pivotal frame by means of the screw movement of the spirally-grooved form under the influence of the guiding-blade and causing the saw to cut a spiral groove upon the surface of the article 17 corresponding to the groove 21 upon the form 20. The groove upon the form is of substantially the same depth at all points, and as the cutting of the groove upon the article proceeds the edge of the guiding-blade pressing against the bottom of the groove upon the form and the operator pressing the pivotal frame moves the pivotal frame from or toward the grooving mechanism, and to allow the grooving device to cut a groove of corresponding depth in the curved surface of the article. Pressure upon the pivotal frame is now released, allowing the weight 29 to draw said frame against the support 19. The shaft 16 is drawn longitudinally forward, bringing the mechanism into position to again groove an article and automatically removing the grooved article from the end of said shaft by means of the forked extension 30, as before described. An ungrooved article is now placed upon the end of the shaft and the operation above described is repeated.

From the above it will be seen that my improved machine comprises grooving mechanism and a frame adapted to be moved toward or from said grooving mechanism and supporting a longitudinally movable and rotatable shaft having a form of substantially the contour of the article to be grooved, provided with a spiral groove, and means for guiding said shaft and frame to cut substantially spiral upon the article.

To enable the operator to bring the frame

10 into operating proximity to the grooving or cutting device without using his hands, a rope 32 can be attached at one end to the frame, passed over a pulley 33, and attached at its opposite end to a foot-treadle. (Not shown in the drawings.)

The pulley 9 is preferably provided with a reduced portion 3^a, through which a bolt 4^a is passed to secure it to the shaft to afford means for removing the pulley from or adjusting it upon the shaft.

I claim as my invention—

1. A machine for spirally grooving irregularly-formed articles, comprising a base, a shaft journaled in said base, a grooving device at one end of said shaft, a support pivoted to the base and having a movement toward or from the shaft and grooving device, a second shaft journaled in the support and having a rotating and longitudinal movement therein, a form similar in contour to the article mounted upon said second shaft and having a spiral groove and a guiding device extending into said groove and controlling the longitudinal movement of the shaft, as set forth.

2. A machine for grooving irregularly-formed articles, comprising a base, upright standards, a shaft journaled in said standards, a grooving device mounted upon said shaft, a frame pivoted to the base and having a movement toward or from the shaft and grooving device, a shaft mounted in said frame and having a rotating and longitudinal movement therein, and adapted to support an article in proximity to the grooving device, a spirally-grooved form of substantially the contour of the articles to be grooved mounted upon the shaft, and a guiding device extending into the spiral groove of the form, as set forth.

3. A machine for spirally grooving irregularly-formed articles, comprising a base, a shaft journaled in said base, a grooving device mounted upon said shaft, a frame pivoted to the base and having a movement toward or from the grooving mechanism, a shaft mounted in said frame having a rotating and longitudinal movement therein, and having a handle at one end and the other end protruding sufficiently to seat in an article and support said article in proximity to the grooving device, a spirally-grooved form of substantially the contour of the articles to be grooved mounted upon the shaft, a guiding device extending into the spiral groove of the form and means for adjusting said guiding device, as set forth.

4. A machine for spirally grooving irregularly-formed articles, comprising a base, a shaft journaled in said base, a grooving device mounted upon said shaft, a frame pivoted to the base and having a movement toward or from the grooving mechanism, a shaft mounted in said frame having a rotating and longitudinal movement therein, and having a handle at one end and the other protruding

sufficiently to seat in an article and support said article in proximity to the grooving device, said shaft inclining slightly downward from its handle so that the grooving device is substantially in alinement with the lead of the groove cut upon the article, a spirally-grooved form of substantially the contour of the articles to be grooved mounted upon the shaft, a guiding device extending into the spiral groove of the form and means for adjusting said guiding device, as set forth.

5. A machine for spirally grooving irregularly-formed articles, comprising a base, a shaft journaled in said base, a grooving device mounted upon said shaft, a frame pivoted to the base and having a movement toward or from the grooving mechanism, a shaft mounted in said frame having a rotating and longitudinal movement therein, and having a handle at one end and the other end protruding sufficiently to seat in an article and support said article in proximity to the grooving device, a spirally-grooved form of substantially the contour of the articles to be grooved mounted upon the shaft, a guiding device extending into the spiral groove of the form and means for adjusting said guiding device transversely and longitudinally, as set forth.

6. A machine for spirally grooving irregularly-formed articles, comprising a base, grooving mechanism mounted upon said base, a frame pivoted to the base and having a movement toward or from the grooving mechanism, a shaft mounted in said frame having a rotating and longitudinal movement therein, and adapted to support an article in proximity to the cutting mechanism, a spirally-grooved form of substantially the contour of the article to be grooved mounted upon the shaft, a guiding device having a horizontal lower portion provided with a slot, a horizontal plate supported above the base and having slots, and a bolt or bolts passing through the slot in the horizontal portion and the slots in the plate for adjustably securing the guiding device to the plate, as set forth.

7. A machine for spirally grooving irregularly-formed articles, comprising a base, grooving mechanism mounted upon said base, a frame pivoted to the base and having a movement toward or from the grooving mechanism, a shaft mounted in said frame having a rotating and longitudinal movement therein, and adapted to support an article in proximity to the cutting mechanism, a spirally-grooved form of substantially the contour of the article to be grooved mounted upon the shaft, a guiding device having a horizontal lower portion, a horizontal plate supported above said base and means for adjustably securing the guiding device to the plate, as set forth.

8. A machine for spirally grooving irregularly-formed articles, comprising a base, a shaft journaled in said base, a grooving de-

vice mounted upon said shaft, a frame pivoted to the base and having a movement toward or from the grooving mechanism, a shaft journaled in said frame so as to incline slightly downward having a rotating and longitudinal movement therein, and adapted to support an article slightly tilted from a horizontal position and in proximity to the cutting mechanism, a spirally-grooved form of substantially the contour of the article to be grooved mounted upon the shaft, and a guiding device supported from the base and having a blade fitting the groove of the form, as set forth.

9. A machine for spirally grooving irregular articles, comprising a base having upright standards, grooving mechanism mounted on said standards, an upwardly-extending frame pivoted to the base, a shaft rotatably mounted in said frame and having a longitudinal range of movement and adapted to support an article in proximity to the grooving mechanism, means for longitudinally moving said shaft, a guiding device supported from one of said standards and controlling the pivotal movement of the frame to spirally groove the article, said guiding device having transverse and longitudinal adjustment, as set forth.

10. In a machine for grooving irregular articles, the combination with a supporting base, of a grooving mechanism mounted thereon, an upright support extending from said base, a frame pivoted at its lower ends to the base between the grooving mechanism and the support and having means for supporting an article to be grooved, means for normally maintaining said frame against the support and from operative proximity to the grooving mechanism and for automatically returning said frame to its normal position upon the release of pressure holding it against the grooved mechanism and a forked device at one end of said support adapted to straddle the article and remove it from its support on the frame, as set forth.

11. In a machine for grooving irregular articles, the combination with a supporting base, of a grooving mechanism mounted thereon, an upright support extending from said base, a frame pivoted at its lower end to the base and having means for supporting an article to be grooved and a rope attached at one end to the frame, passed over a pulley on the support and having a weight at its opposite end for maintaining said frame against the support and from operative proximity to the grooving mechanism and for automatically returning said frame to its normal position upon the release of pressure holding it against the grooving mechanism, and a forked device attached to said support and adapted to straddle the article and remove it from its support on the frame, as set forth.

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Witnesses:

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