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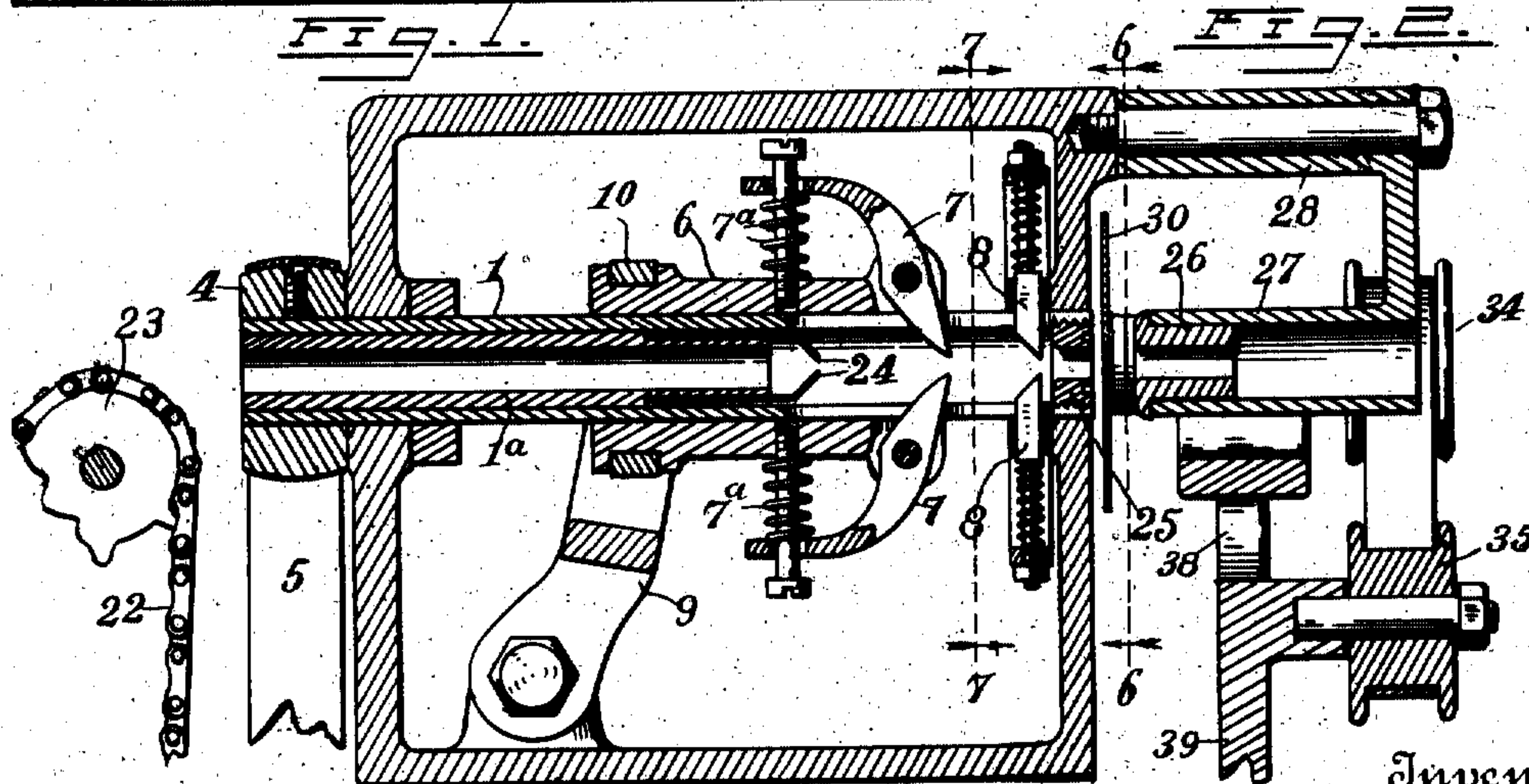
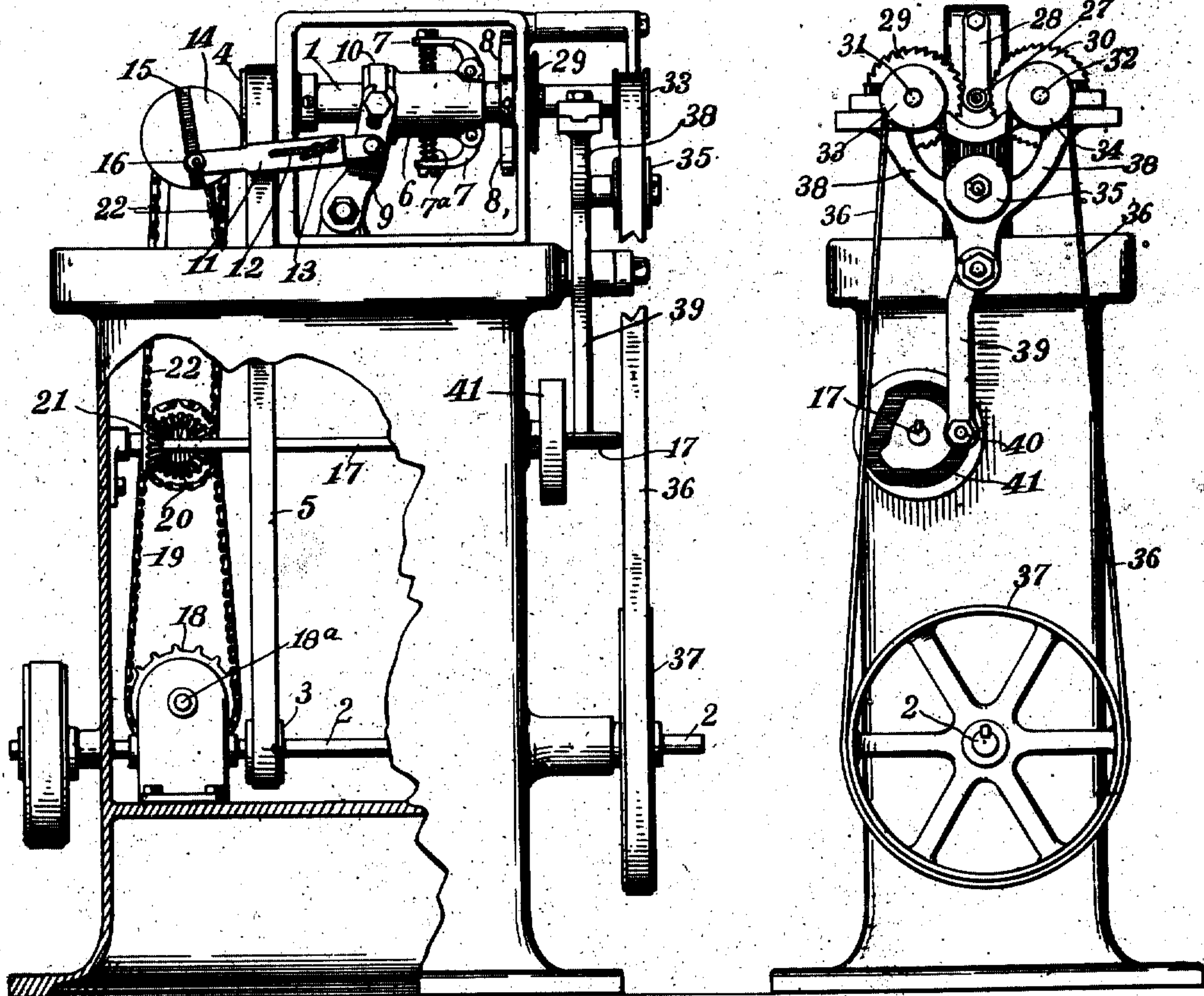
DOWEL CUTTING MACHINE.

APPLICATION FILED NOV. 5, 1910.

Patented May 23, 1911.

2 SHEETS-SHEET 1.

992,845.



Witnesses
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Minnie Thompson.

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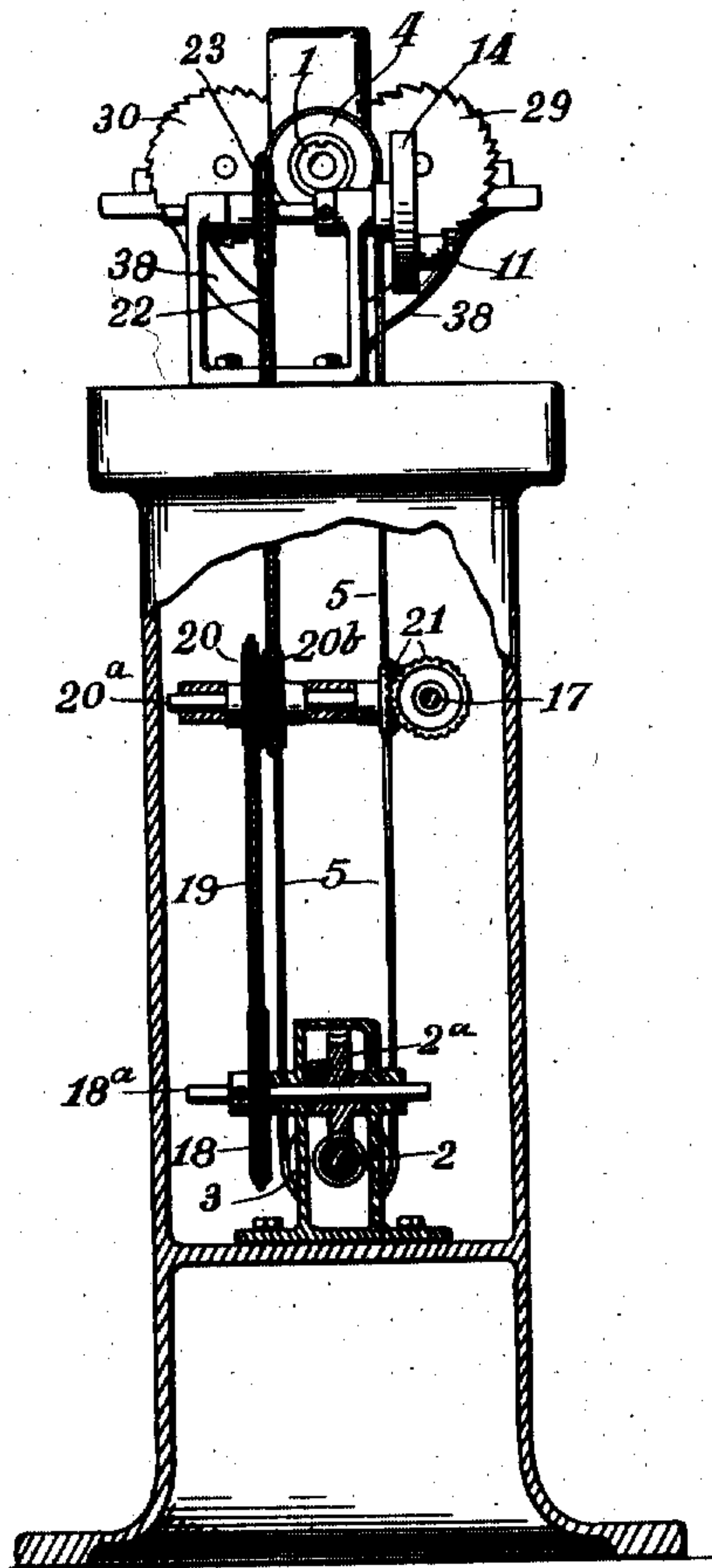


FIG. 5.

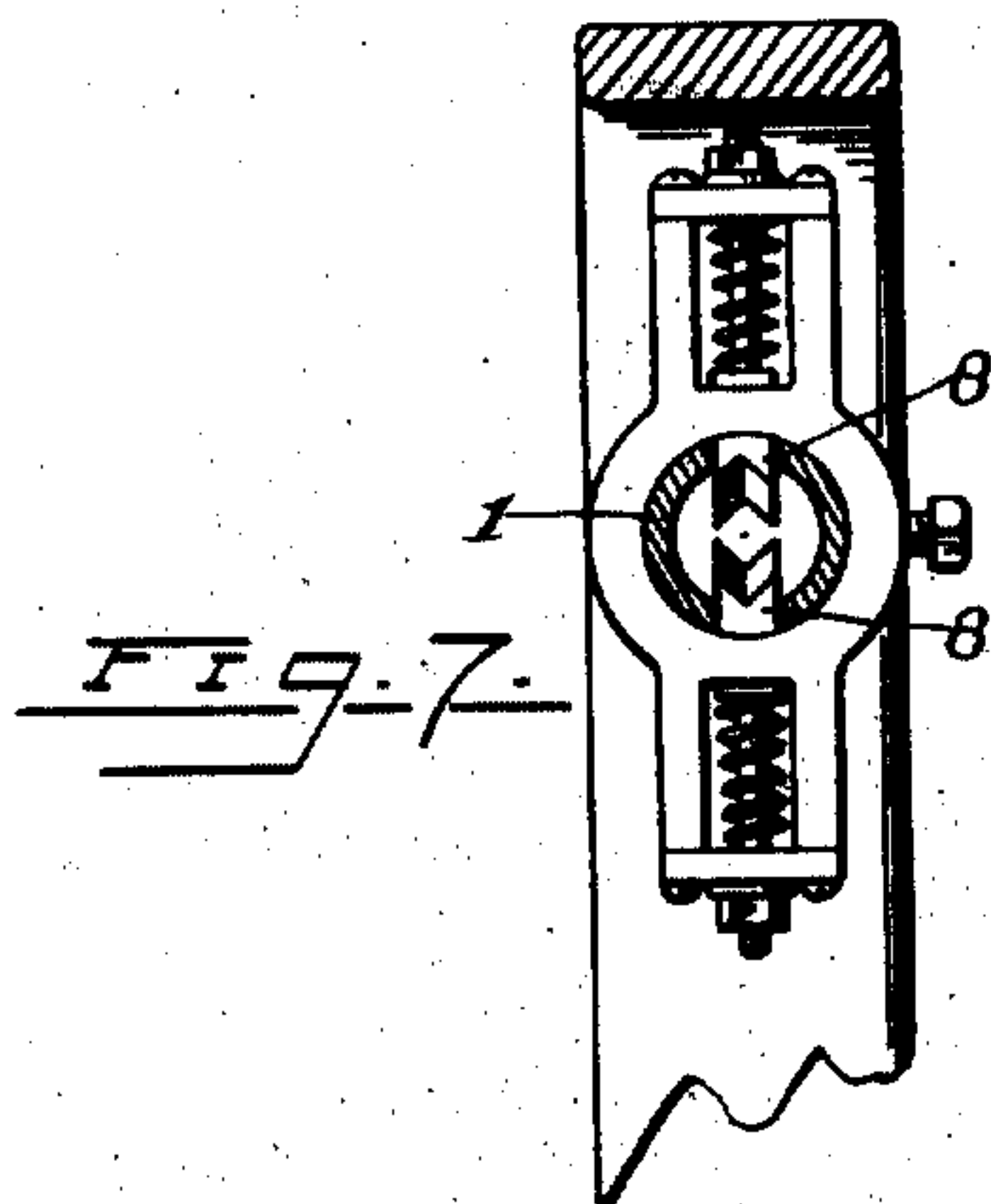


FIG. 7.

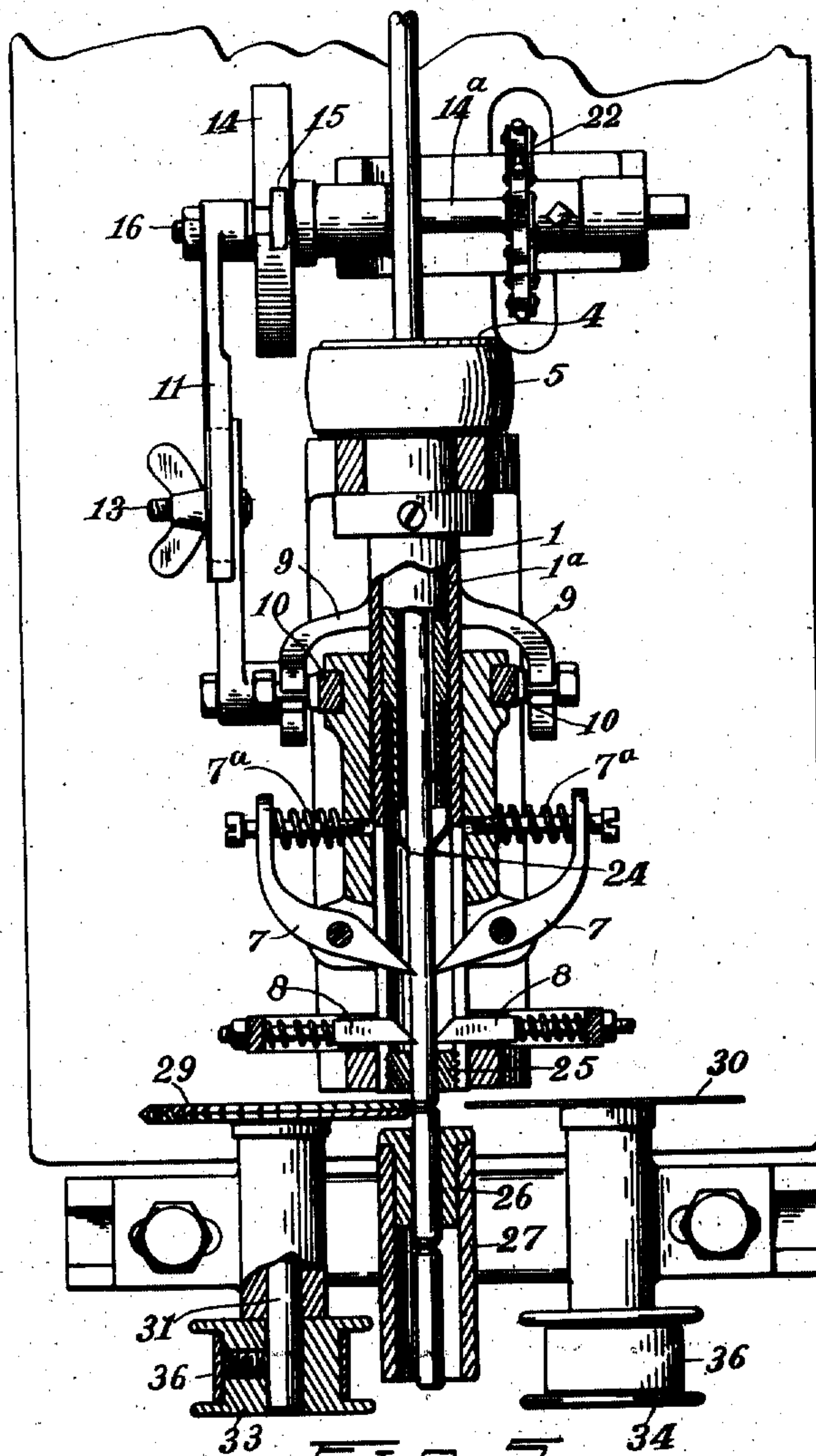


FIG. 5.

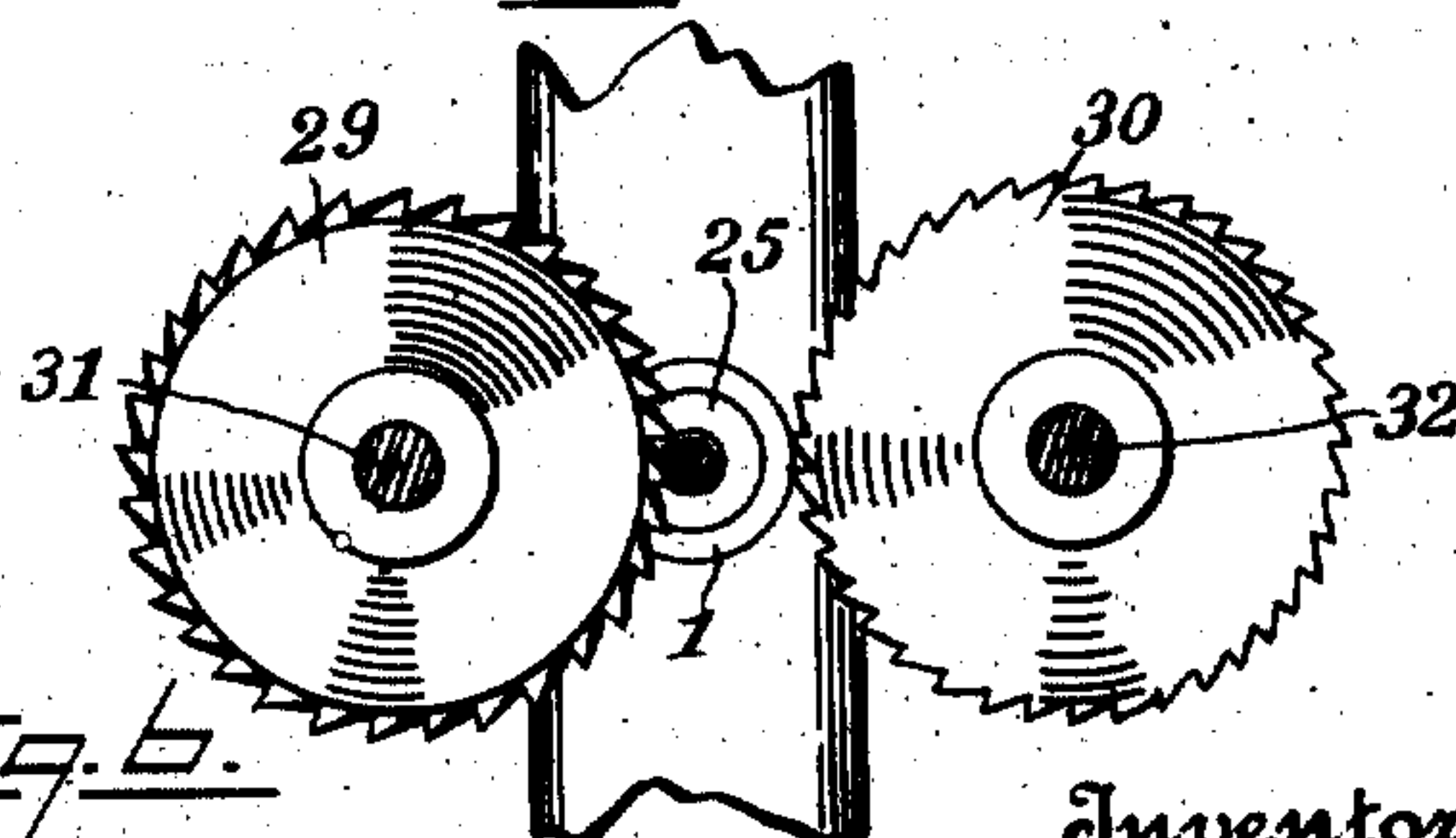


FIG. 6.

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UNITED STATES PATENT OFFICE.

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DOWEL-CUTTING MACHINE.

992,845.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed November 5, 1910. Serial No. 590,898.

To all whom it may concern:

Be it known that we, MICHAEL BROCHU, MARTIN C. VERWYS, and ADRIAN L. H. VERWYS, citizens of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Dowel-Cutting Machines; and we 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.

Our invention relates to improvements in dowel cutting machines, and its object is to provide an automatic device for cutting dowel rods to predetermined lengths and pointing the same and for other analogous purposes, and its object is to provide the same with various new and useful features hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which:

Figure 1 is a front elevation of a machine embodying our invention with portions broken away; Fig. 2 an end elevation of the same; Fig. 3 an end elevation opposite to Fig. 2 with a portion broken away; Fig. 4 a vertical section of the upper part of the machine on an enlarged scale; Fig. 5 a plan view of the same with portions broken away; Fig. 6 an enlarged detail of the cutters shown in elevation; and, Fig. 7 an enlarged detail of the grippers adjacent the cutters.

Like numbers refer to like parts in all of the figures.

1 represents a tubular mandrel.

2 is the driving shaft journaled in the base of the machine connected to the mandrel 1 by pulleys 3 and 4 and a belt 5 whereby the mandrel is rotated at a moderate speed.

6 is a sleeve slidable on the mandrel and having mounted thereon feeding dogs 7 extending through opposing slots in the mandrel to near the axis thereof, and thence at opposite sides of the mandrel and intermediately pivoted thereon, and also provided with springs 7^a to yieldingly force the inner ends of these dogs toward the axis of the

mandrel to securely grip and move the rod forward step by step as the sleeve is reciprocated on the mandrel. To move the sleeve on the mandrel, it is provided with a ring 10 rotative thereon and engaged by a lever 9 pivoted to the frame at one end and reciprocated or oscillated by a connecting rod 11 adjustable for length, being made in two overlapping parts and adjusted by means of a slot 12 in one part and a thumb screw 13 connecting the parts of the rod to each other and adjustable in the slot.

14 is a crank wheel to operate the connecting rod having a transverse T-slot 15 in which is adjustably mounted a crank pin 16 to operate the connecting rod 11. By shifting this pin 16 toward or away from the axis of the wheel, the length of stroke of the sleeve 6 and consequent length of the dowel pin is determined, and by shifting the length of the connecting rod, the feeding dogs 7 can, regardless of their length of stroke, be made to run up close to the holding dogs 8 arranged close to the end of the mandrel to hold short pieces of rod and extending into the mandrel to grip and hold the rod from moving backward.

To adapt the mandrel to different sizes of rods, interchangeable bushings 1^a are provided and the inner end of these bushings are each provided with yieldable grippers 24 positively engaging the rod to prevent backward movement of the same when the feeding dogs move backward on the rod. These bushings are longitudinally adjustable in the mandrel to adjust these grippers to come close to the grippers 7 regardless of the stroke of the latter, thus by adjusting the stroke of the grippers 7 the length of dowel is adjusted, by adjusting the length of the rod 11 the grippers 7 will strike up close to the grippers 8 and by adjusting the bushing the grippers 7 will strike back close to the grippers 24 thus adapting the feed for long or short dowels.

To point the ends of the dowels and to cut the same off from the rod, I provide a rotary cutter 29 and a saw 30 arranged opposite each other at the respective sides of the rod and close to the end of the mandrel.

The cutter 29 has a V-shaped cutting edge which forms a V-groove in the rod, thus suitably pointing the same, and the saw severs the dowel from the end of the rod. This cutter 29 and saw 30 are respectively mounted on arbors 31 and 32 driven by pulleys 33 and 34 and journaled in bearings adjustably mounted on the yoke to adjust the saw and cutter toward the work. These pulleys are engaged by a driving belt 36 extending over the same and beneath an idler 35 mounted on the yoke, said belt being driven by a pulley 37 mounted on the driving shaft 2. To engage the cutter 29 and saw 30 alternately and at proper time with the dowel rod, the yoke is pivoted on the frame to oscillate and alternately engage the cutter and saw with the work and provided with a rigid arm 39 having a stud 40 engaging a suitable groove in a cam wheel 41 mounted on a counter shaft 17 journaled in the frame. This groove holds the yoke in mid-position during about one half of the revolution and oscillates the yoke to first engage the cutter and then to engage the saw during the remainder of the revolution of the cam wheel. This counter shaft is driven by bevel gears 21 on a jack shaft 20^a driven by a sprocket wheel 20 engaged by a chain 19, said chain being driven by a wheel 20 from a jack shaft 18^a operated by worm gearing 2^a connecting it with the driving shaft 2. On the jack shaft 20^a is another sprocket wheel 20^b from which motion is imparted by a chain 22 to the shaft carrying the crank wheel 14 and having a sprocket wheel engaged by said chain. The wheels 20^b and 23 are of the same size, whereby the crank wheels 41 and 14 rotate synchronously, and the cam groove in the wheel 41 is so adjusted that the yoke stands in mid-position with the cutter and saw out of operative position during that part of the revolution of the wheel 14, which causes the sleeve 6 to move forward and feed the rod forward in the machine.

To receive the dowel after it has been cut from the rod and carry it outside the machine, and to steady the end of the rod while being cut a tube 27 is held in line with the mandrel 1 by an arm 28 attached to the frame of the machine and the end of the mandrel and that of the tube 27 adjacent to the cutting tools are provided with removable and interchangeable bushings 25 and 26 of different openings to adapt the same to properly engage and hold rods and dowels of different sizes.

Obviously this machine may be used for various other products. For instance, by omitting the saw, rods can be beaded or otherwise shaped at intervals by a suitable cutter. So also by changing the cutter to form a knob, a handle, a spool, or other anal-

ogous articles and using the saw to cut the same from a continuous rod, various such articles can be made. Such modifications being obvious, need no further illustration. We, therefore, do not desire to be limited to making dowel pins only, but use the dowel pin arrangement of the machine for illustration of its operation.

What we claim is:—

1. A dowel cutting machine, comprising a tubular mandrel having longitudinal slots, means for rotating the mandrel, a sleeve slidable on the mandrel, spring actuated grippers mounted on the sleeve and slidable in the slots, holding grippers in the mandrel, means for reciprocating the sleeve adjustable for length of stroke and also adapted to adjust the feeding grippers longitudinally of the mandrel, a pivoted yoke, a cutter and a saw mounted on the respective arms of the yoke, a rigid arm on the yoke, a cam wheel to oscillate the arm, and means for rotating the cam wheel.

2. A dowel cutting machine, comprising a hollow mandrel having opposing slots, a sleeve slidable on the mandrel, spring actuated grippers mounted on the sleeve and projecting through the slots, a pivoted lever connected to the sleeve, a crank wheel, a radially adjustable crank pin on the wheel, a rod connecting the pin and the lever, means for adjusting the length of the rod.

3. A dowel cutting machine, comprising a hollow mandrel, a sleeve slidable on the mandrel, feeding grippers mounted on the sleeve and reciprocating within the mandrel, stationary holding grippers in the mandrel in front of the feeding grippers, holding grippers in the mandrel at the rear of the feeding grippers, an adjustable bushing in the mandrel carrying the last named grippers, means for rotating the mandrel, and means for reciprocating the sleeve.

4. A dowel cutter, comprising a tubular mandrel, a removable and adjustable bushing therein, spring grippers on the end of the bushing to hold a rod, feeding grippers reciprocable in the mandrel, means for reciprocating the feeding grippers, holding grippers near the end of the mandrel, and a removable bushing in the end of the mandrel.

5. A dowel cutter, comprising a pivoted yoke, arbors mounted on the arms of the yoke, a pulley on each arbor, an idler pulley mounted on the yoke near the pivot thereof, a driving pulley below the yoke, a rigid arm on the yoke, a cam wheel to oscillate the arm, and a belt engaging all of the pulleys.

6. A dowel cutter, comprising a slotted mandrel, a sleeve slidable on the mandrel, feeding grippers on the sleeve and movable in the slots, stationary grippers at one side of the feeding grippers and near the end of

the mandrel, adjustable grippers in the mandrel at the other side of the feeding grippers, a rotative wheel having a radially adjustable crank pin, a rod journaled on the
5 pin at one end and connected to the sleeve at the other end to reciprocate the same, means for adjusting the length of the rod, and means for rotating the sleeve and wheel.

In testimony whereof we affix our signatures in presence of two witnesses.

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