

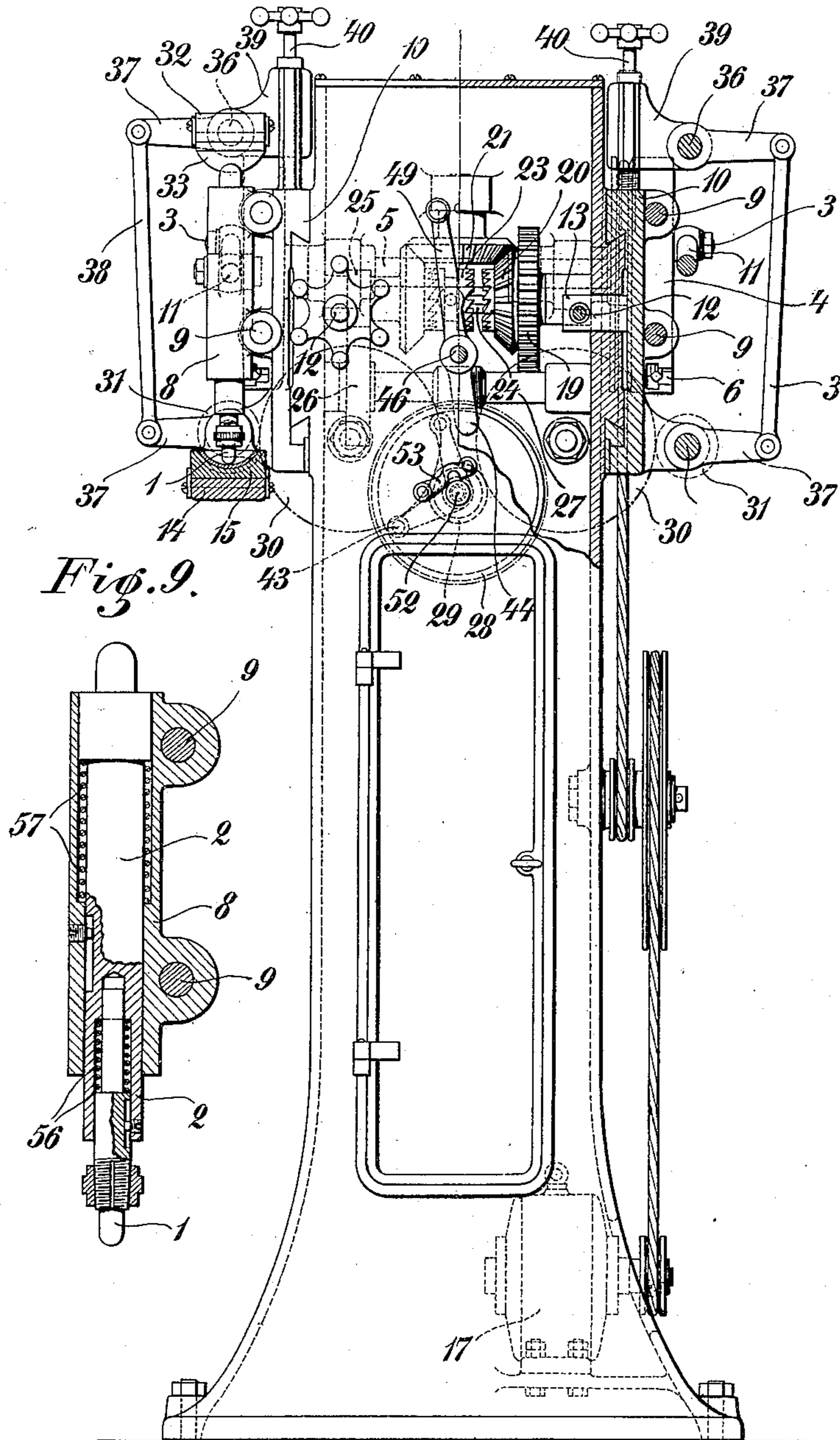
J. REETZ.
POLISHING MACHINE.
APPLICATION FILED SEPT. 19, 1907.

917,149.

Patented Apr. 6, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
H. R. Schuch.
August Miner

Inventor
Johann Reetz
by his attorney
Dankert & Besser

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3 SHEETS—SHEET 2.

Fig. 2.

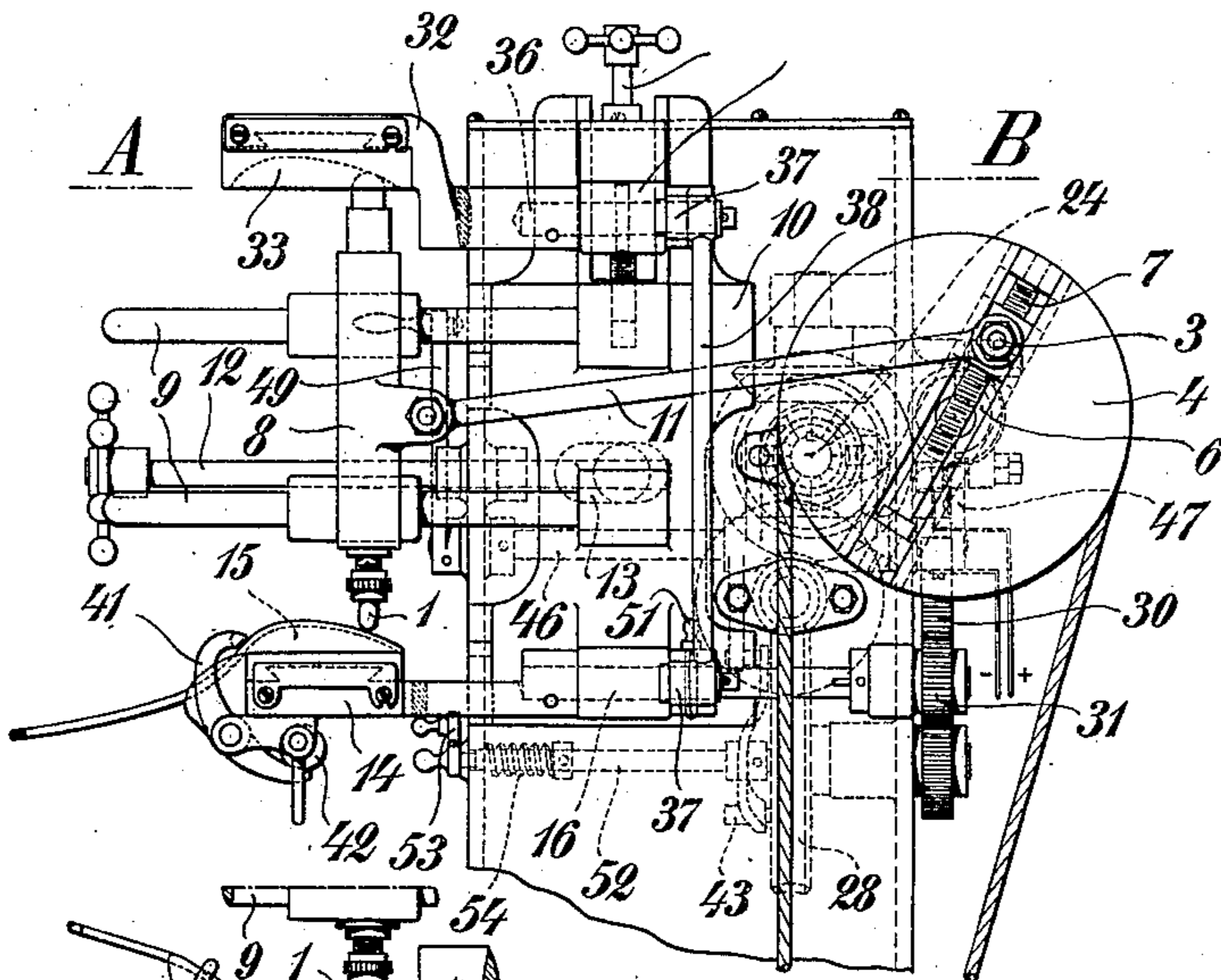


Fig. 4.

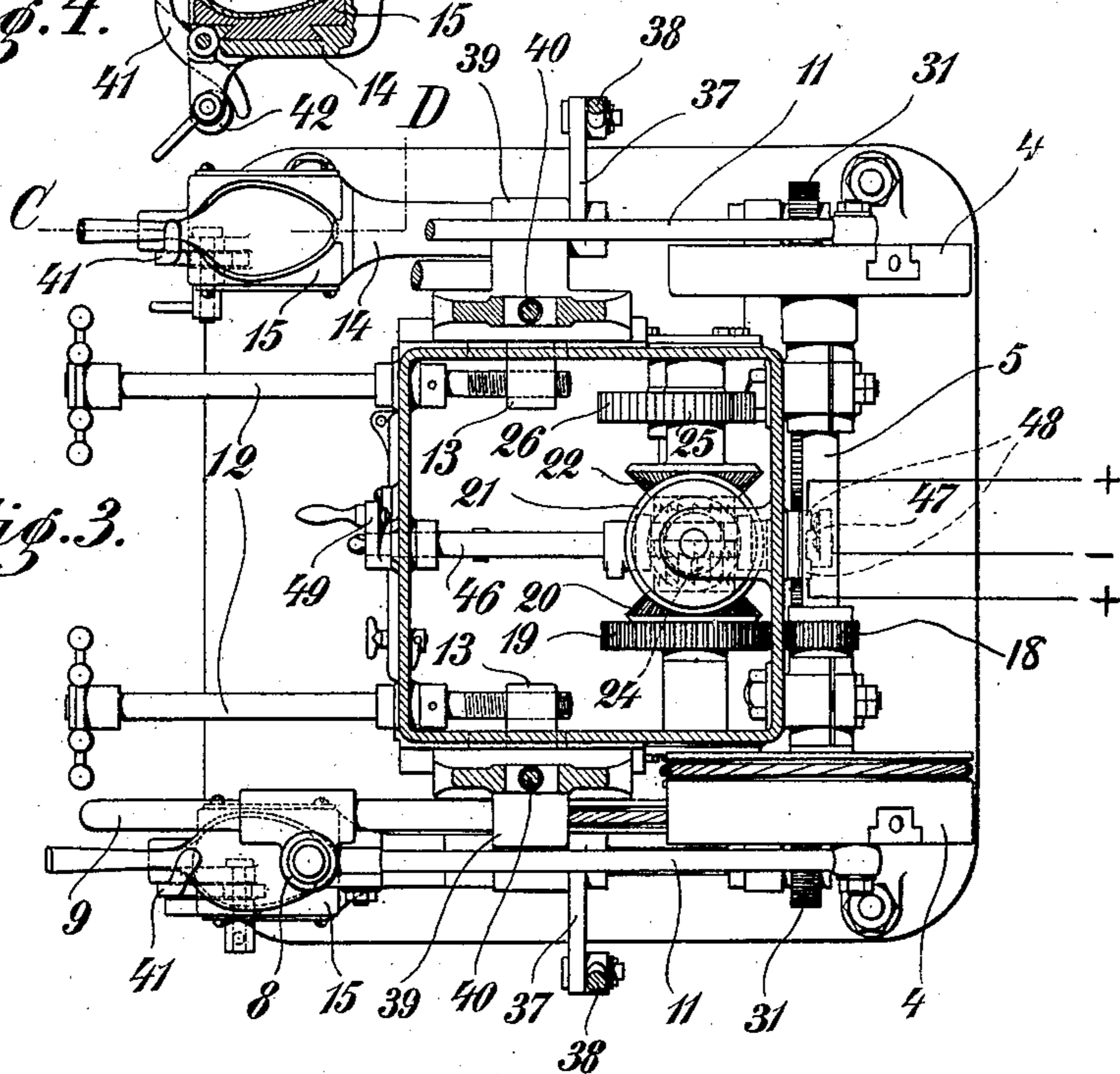


Fig. 3.

Witnesses:
H. R. Schulz.
August. Miner

Inventor:
Johann Reetz
by his attorney
Frank. B. Breen

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3 SHEETS—SHEET 3.

Fig. 5.

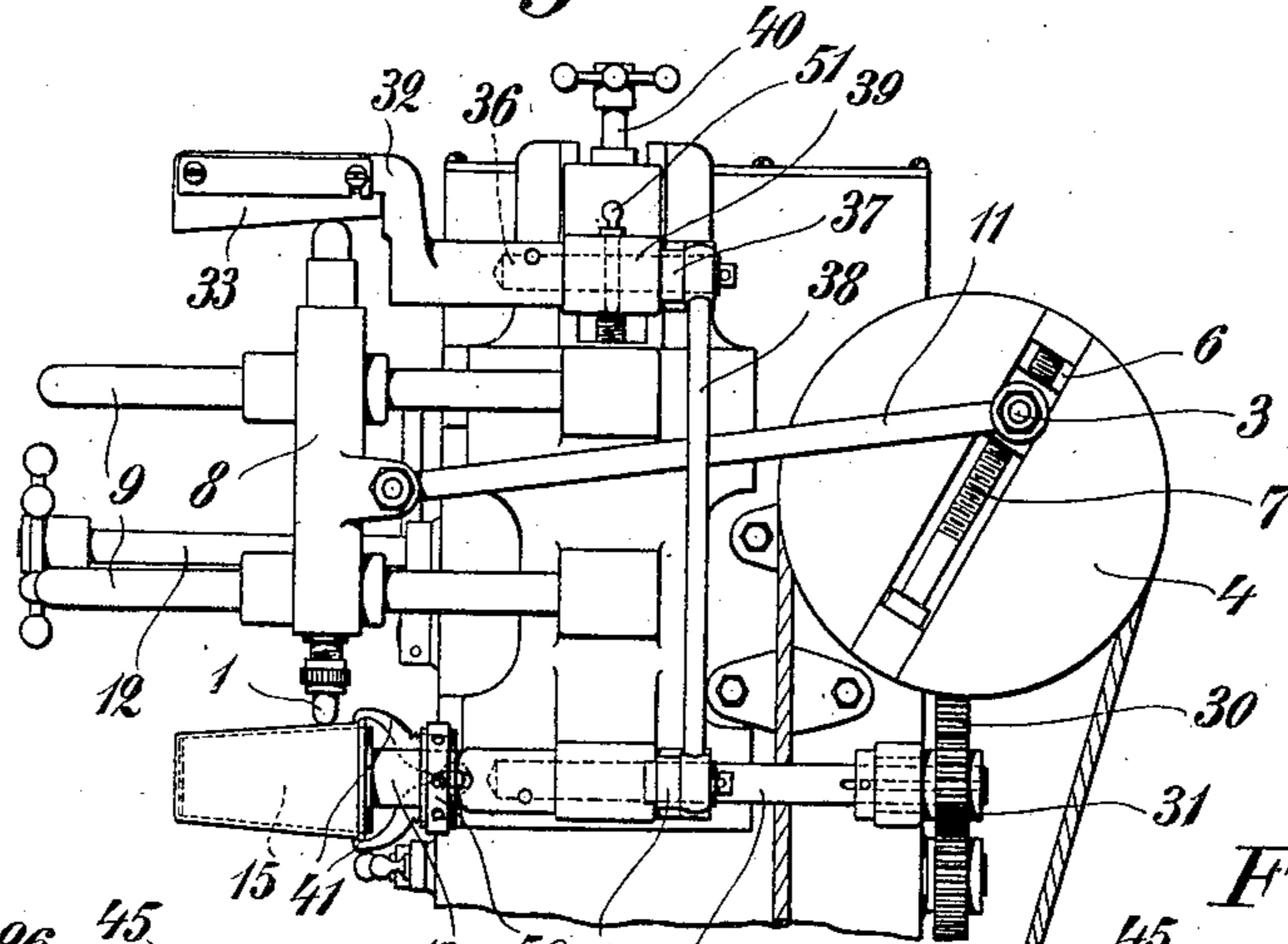


Fig. 6.

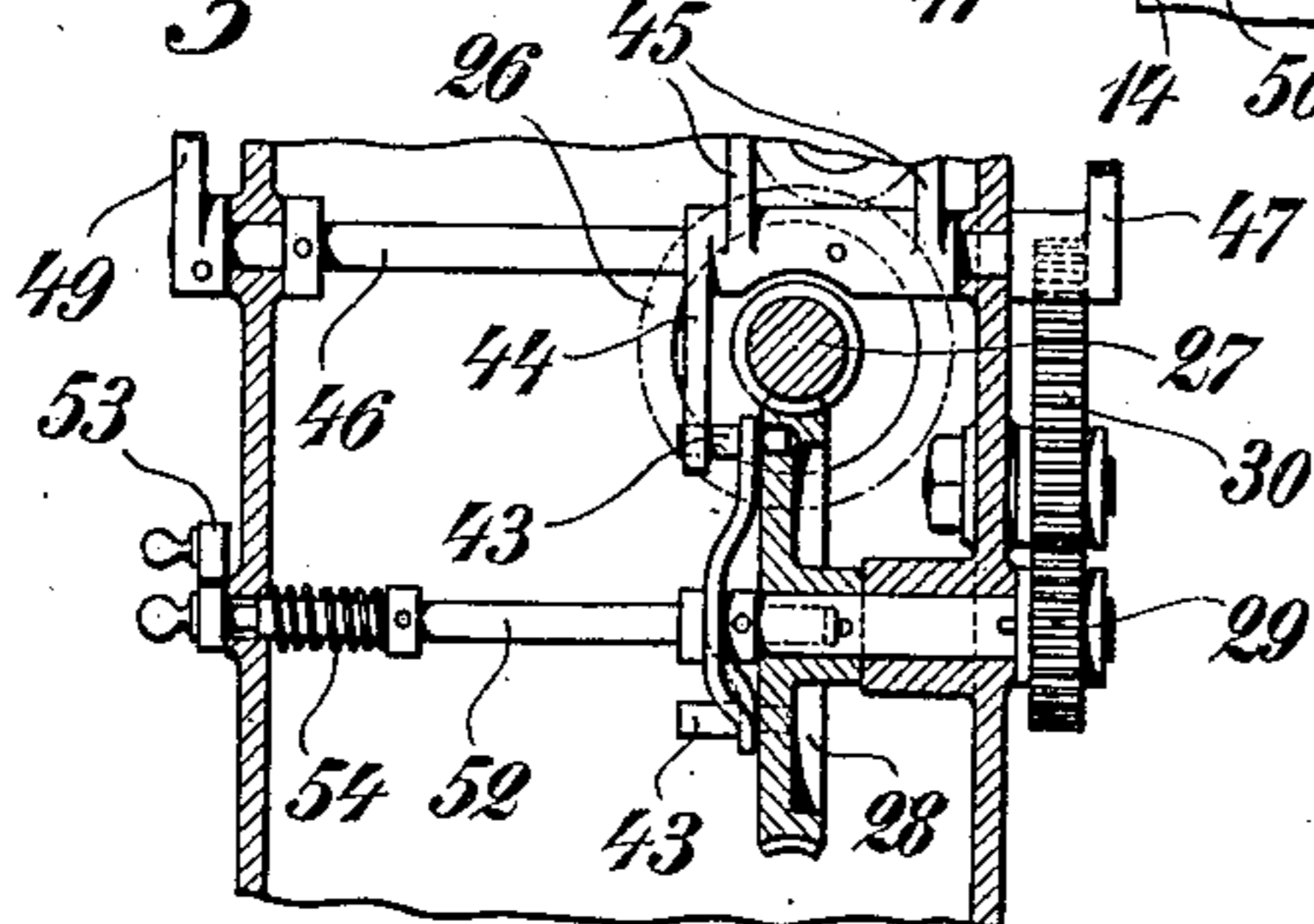


Fig. 7.

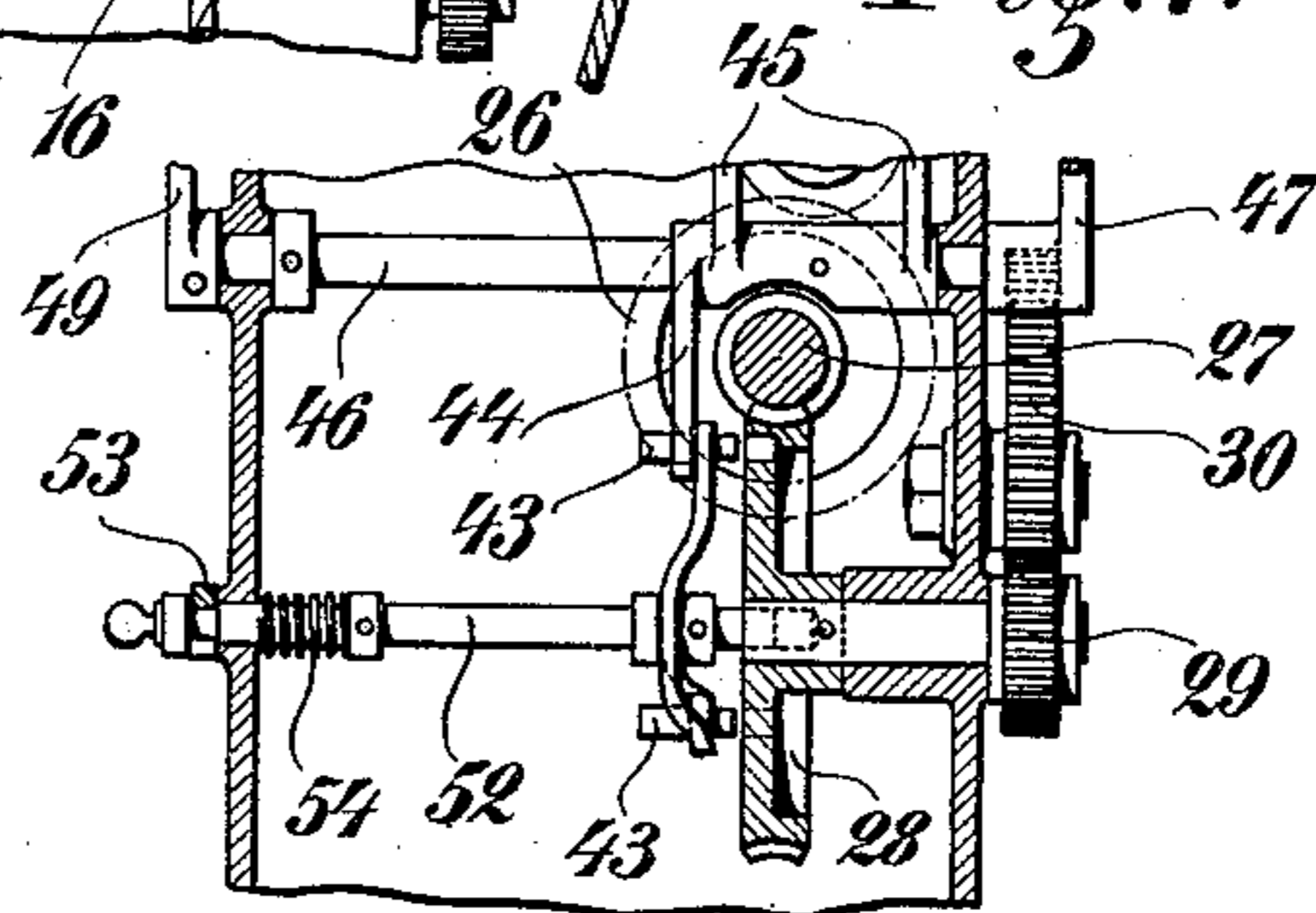
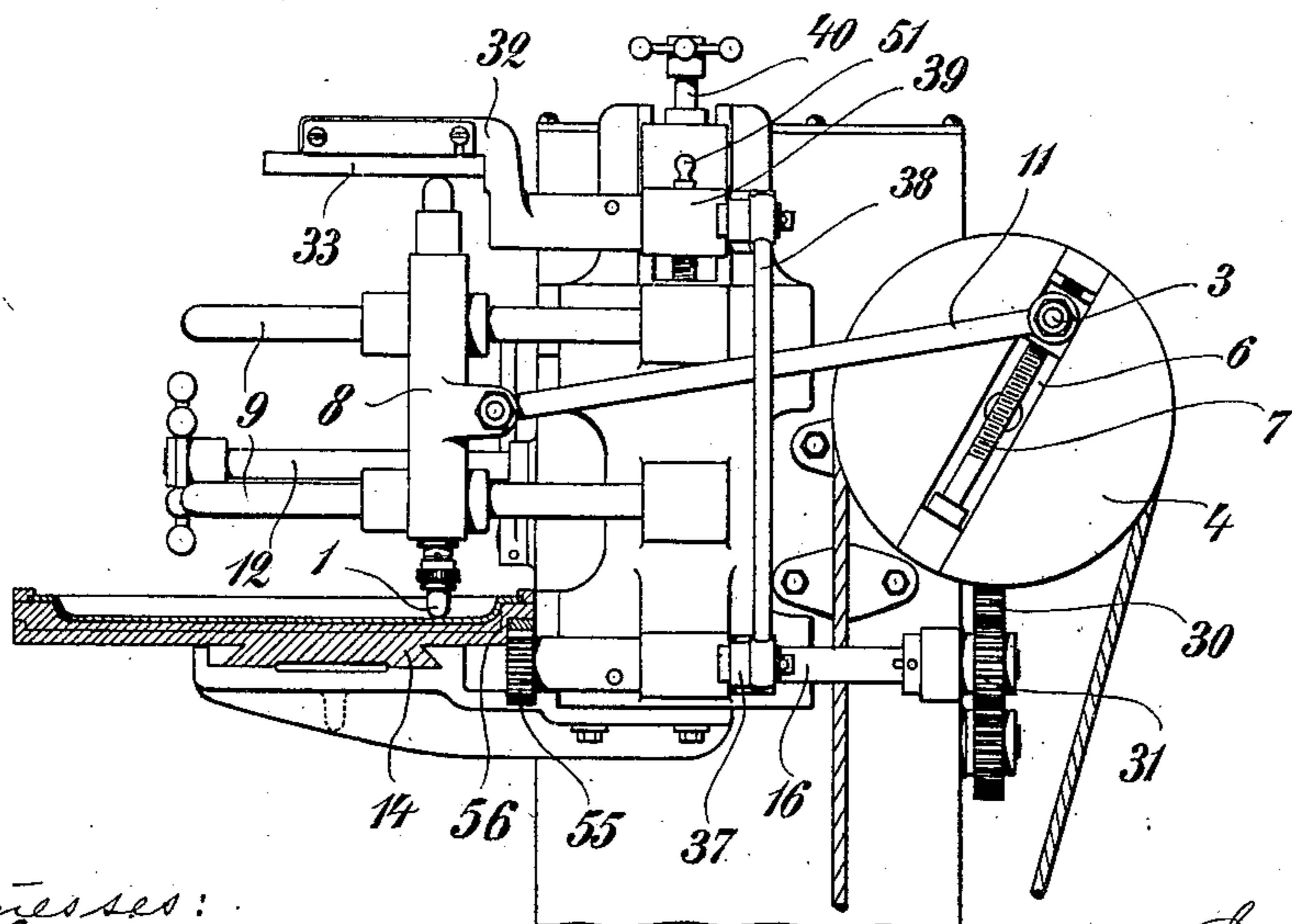


Fig. 8.



Witnesses:
H. R. Schuy.
August Miner.

Inventor:
Johann Reetz
by his attorney
Frank E. Friesen

UNITED STATES PATENT OFFICE.

JOHANN REETZ, OF DUSSELDORF, GERMANY.

POLISHING-MACHINE.

No. 917,149.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed September 19, 1907. Serial No. 393,614.

To all whom it may concern:

Be it known that I, JOHANN REETZ, a citizen of Germany, residing at Dusseldorf, Germany, have invented new and useful Improvements in Polishing-Machines, of which the following is a specification.

This invention relates to a machine for polishing silver or other metal ware by means of a polishing tool provided with interchangeable parts, so that it may be used on articles of different configurations.

In the accompanying drawings: Figure 1 is a front view, partly in section, of my improved polishing machine; Fig. 2 a side view, partly broken away, thereof; Fig. 3 a plan; Fig. 4 a detail of the work-holder and cooperating parts; Fig. 5 a side view of a modification of the machine; Fig. 6 a detail of the worm-wheel and cooperating parts; Fig. 7 a similar view, showing the parts in different positions; Fig. 8 a side view, partly in section, of a further modification, and Fig. 9 a detail of the polishing tool.

A resilient polishing tool 1 is adapted to be reciprocated horizontally over the surface of the work-piece while the latter receives simultaneously a gradual forward or oscillating motion according to its shape. Tool 1 assumes always a substantial perpendicular position to the work-piece and remains at a uniform distance therefrom, so that an even polish is imparted to the latter. As shown, two polishing tools 1 are employed, by means of which two spoons or other work-pieces may be polished simultaneously, one being polished at its front, while the other is polished at its back.

On the power-shaft 5, which receives its movement from an electro-motor 17, are mounted a pair of disks 4 having radial grooves 6 that receive crank-pins 3 adjustable within the grooves by set screws 7. Pins 3 are connected by rods 11, with housings or sliders 8 carrying tools 1, and guided on rods 9 of slides 10. By the means described, a longitudinal reciprocating movement is imparted to tools 1. Slides 10 carry the work-holders 14 and are provided with nuts 13 engaged by spindles 12, so that by turning the latter, the work-holders may be set to correspond to the movement of tools 1.

For polishing spoons and similar articles, the work-holders 14 are rotatably supported on slide 10, (Figs. 1-4). For this purpose holders 14 are provided with shafts 16 slidable in the hubs of toothed wheels 31 that

receive rotary motion in manner hereinafter described. Shafts 16 are so secured to holders 14, that upon the rotation of the latter, the work-piece is so set that tools 1 extend vertically to the surface to be polished. Shaft 16 of each work-holder 14 receives motion from power-shaft 5 by a toothed wheel 18 fast on said shaft and engaging a toothed wheel 19, loosely mounted on a counter-shaft 24. To wheel 19 is secured a beveled gear wheel 20 which, by beveled gear wheel 21, transmits movement to a beveled gear wheel 22 also loosely mounted on shaft 24. Wheels 20 and 22 are adapted to be coupled to shaft 24 by means of a coupling 23 slidably mounted on said shaft and adapted to engage respectively the serrated hub of wheels 20 or 22. By coupling either of the wheels 20 and 22 to shaft 24, rotation in one or the other direction will thus be imparted to the shaft. Upon shaft 24 is fixed a gear wheel 25 meshing into a gear wheel 26 fast on a worm-shaft 27. The latter is engaged by a worm-wheel 28 which, through gear wheels 29, 30 transmits motion to wheel 31 and consequently to shaft 16 of work-holder 14.

During the rotation or transverse movement of the work-piece, polishing tools 1 are longitudinally reciprocated, as hereinabove described. The stroke of tools 1 may be regulated by adjusting crank-pins 3 in grooves 6 of disks 4. In order to cause tools 1 to uniformly act upon the work-piece, slides 10 are provided with pattern-holders 32 mounted on axles 36. Pattern-holders 32 are provided with levers 37 which, by links 38, are connected to levers 37 of work-holders 14, so that pattern-holders 32 participate in the rotary movement of work-holders 14. Holders 32 carry, at their lower side, pattern-plates 33, the surface of which corresponds accurately to that of the work-piece, so that tools 1 are held with a uniform pressure against the latter. Each axle 36 is journaled in a bearing 39 slidably mounted in slide 10 and adjustable by screw 40. By manipulating the latter, the pressure of the polishing tool upon the work-piece may be regulated.

Work-holders 14 are provided with properly shaped supports 15 that form a bearing for the spoon and part of the handle. The spoon is held in position while being polished by means of a clamping lever 41 pivoted to the work-holder and engaged by an eccentric 42. Supports 15 and pattern-plates 33 are

secured to their respective holders in such a way that they may be readily exchanged.

To arrest the work-holder after a spoon has been polished, worm-wheel 28 is provided with stops 43 adapted to engage a shipping-lever 44, which, by means of fork 45, is connected to coupling 23. Simultaneously with the arrest of the work-holders, polishing tools 1 are arrested by cutting off the electric current for electro-motor 17. For this purpose shaft 46, to which lever 44 is secured, carries the relatively fixed contact-lever 47, connected to one pole of the source of electricity and adapted to engage contacts 48 connected to the other pole of said source. When one of the stops 43 engages lever 44, the latter is swung into its central position to disengage coupling 23 from wheels 20 and 22. Simultaneously with the movement of shipping-lever 44, contact-lever 47 has become disengaged from contacts 48, so that the machine comes to a stand-still.

I prefer to so operate the machine that the spoons are first polished on their back, (Figs. 1 and 4), and that then the machine is automatically arrested as above described. The spoon thus partly polished is now transferred to the second work-holder 14 to receive its face polish, (Fig. 2), while another unpolished spoon is secured to the first work-holder. The machine is now re-started by turning hand-lever 49 of shaft 46. As lever 44 rests against one of the stops 43 before hand-lever 49 is operated, the latter can only be turned in one direction, i. e., away from said stop. In this way coupling 23 engages that wheel 20 or 22, which had remained idle during the previous operation of the machine, so that a proper return motion of the holders 14, 32 is insured.

For polishing cups, (Fig. 5), a work-holder 14 is used which is provided with a support 15 to which the cup is held by tongs 41 engaged by a conical nut 50. Work-holders 14 receive a rotary motion, while pattern-holders 32 remain stationary during the polishing operation. For disconnecting holder 32 from holder 14, bolt 51 which was previously used for securing lower lever 37 to shaft 16, is withdrawn and inserted into corresponding holes of bearing 39 and axle 36 to arrest the latter. To maintain coupling 23 in engagement with that one of the wheels 20, 22, to which it has been coupled, for continuously rotating the work-piece, stops 43 are with-

drawn from worm-wheel 28, so that they will not influence shipping-lever 44. For this purpose, stops 43 are carried by an axially displaceable shaft 52 which may be held in its retracted position by a suitable latch 53, (Fig. 7). Upon withdrawing this latch, spring 54 causes the reengagement of stops 43 with worm-wheel 28 to impart to the work-holder a rocking motion when desired.

For polishing work-pieces with a plain surface, (Fig. 8), pattern-holders 32 are arrested, as above described, and the pattern-plate 33 is made to correspond to the surface desired. The work-piece is secured to a laterally slidable table provided with a rack 56 engaged by a toothed wheel 55 secured to shaft 16.

The polishing tool is preferably guided in a perforated spindle 2, (Fig. 9), and is depressed by a spring 56. A second spring 57 interposed between the head of spindle 2 and a shoulder of housing 8, tends to hold the spindle in permanent engagement with pattern-plate 33.

I claim:

1. In a machine of the character described, a pattern, a work-holder opposite thereto, means for clamping a work-piece to the work-holder, a resilient polishing tool intermediate pattern and work-piece, means for reciprocating the polishing tool, means for uniformly oscillating said pattern and work-holder, a coupling operatively connected to said oscillating means, and means controlled by the last-named means for opening the coupling at each reversal of oscillation, substantially as specified.

2. In a machine of the character described, a pattern, a work-holder arranged opposite thereto, means for clamping a work-piece to the work-holder, a resilient polishing tool intermediate pattern and work-piece, a power shaft, means actuated thereby for reciprocating the polishing tool, a worm, a coupling operatively connecting the worm to the power shaft, a worm wheel engaging said worm, means operated by the worm wheel for uniformly oscillating said pattern and work-holder, and means controlled by the worm wheel for opening the coupling, substantially as specified.

Signed by me at Berlin, Germany this 9th day of September 1907.

JOHANN REETZ.

Witnesses:

WOLDEMAR HAUPT,
WILLIAM MAYNER.