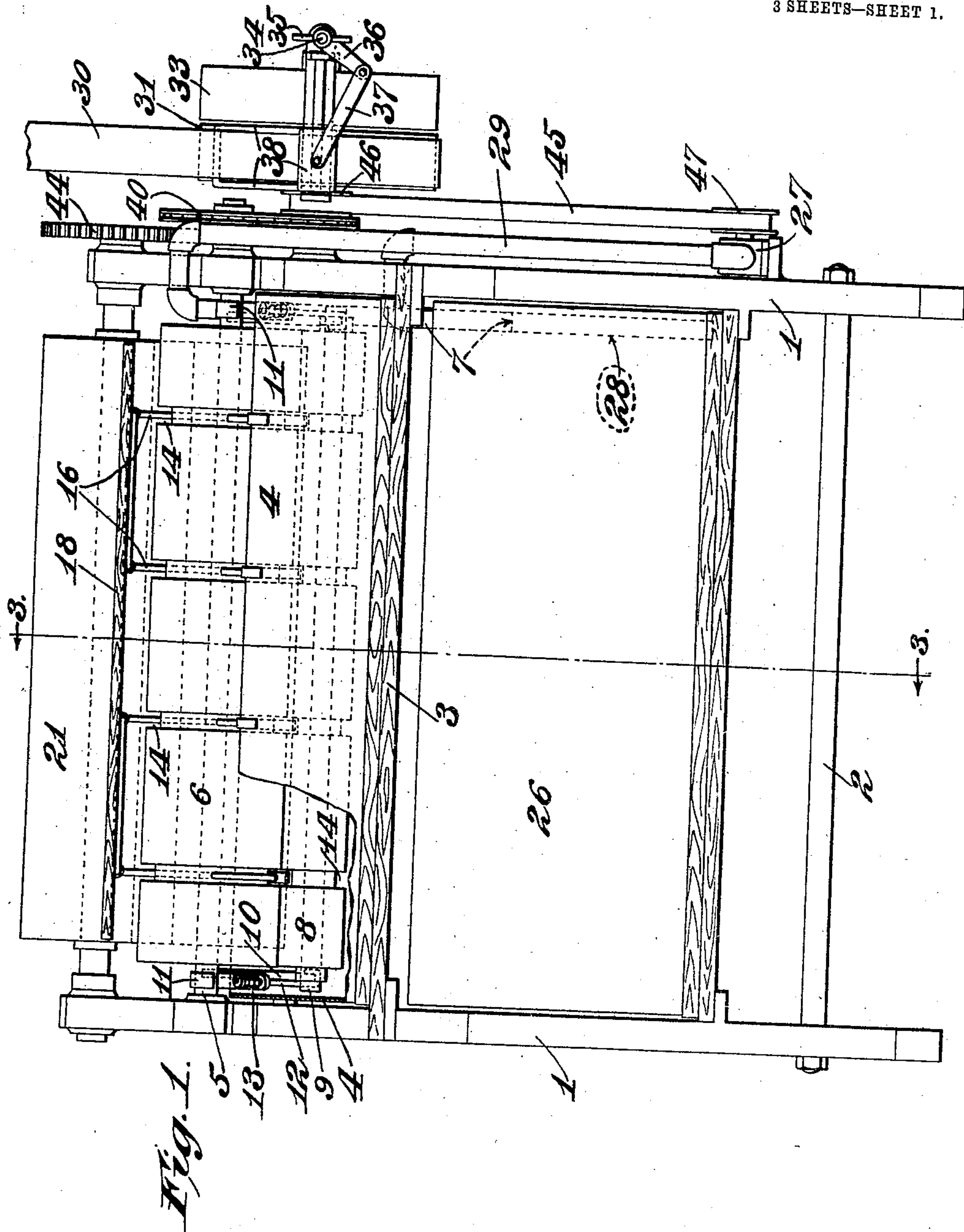


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MACHINE FOR OILING PAPER.  
APPLICATION FILED AUG. 31, 1906.

920,529.

Patented May 4, 1909.  
3 SHEETS—SHEET 1.



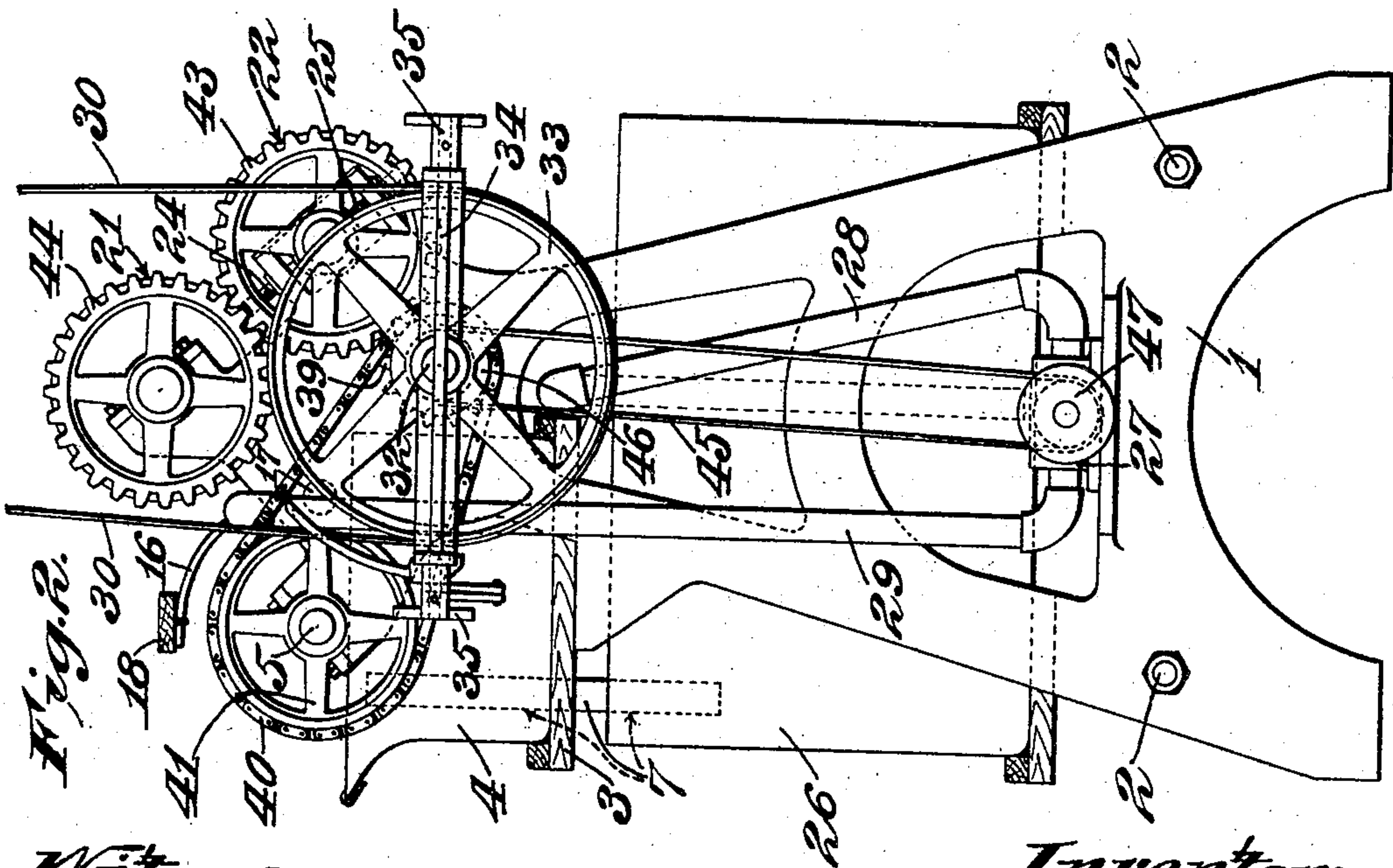
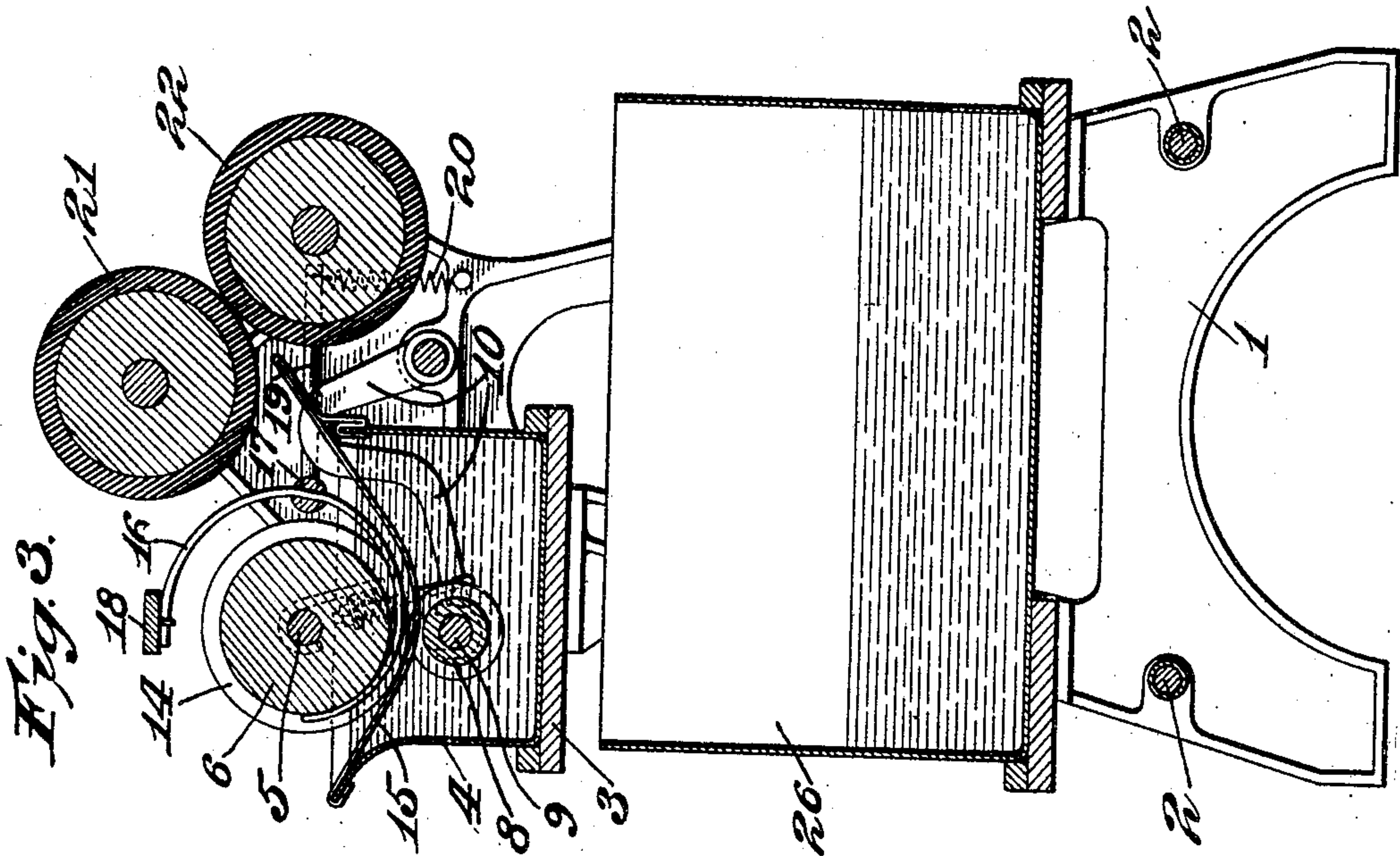
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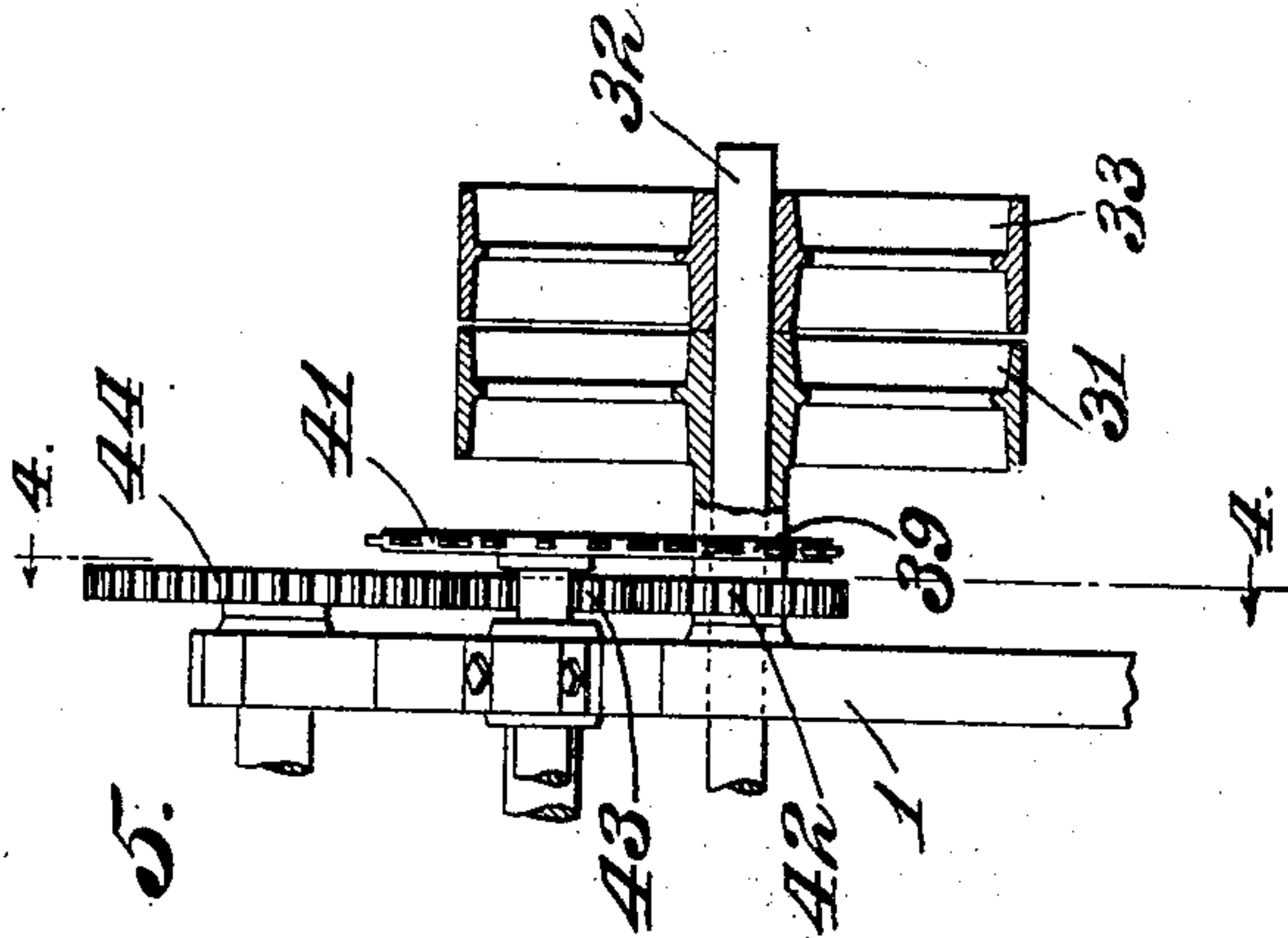


Fig. 5.

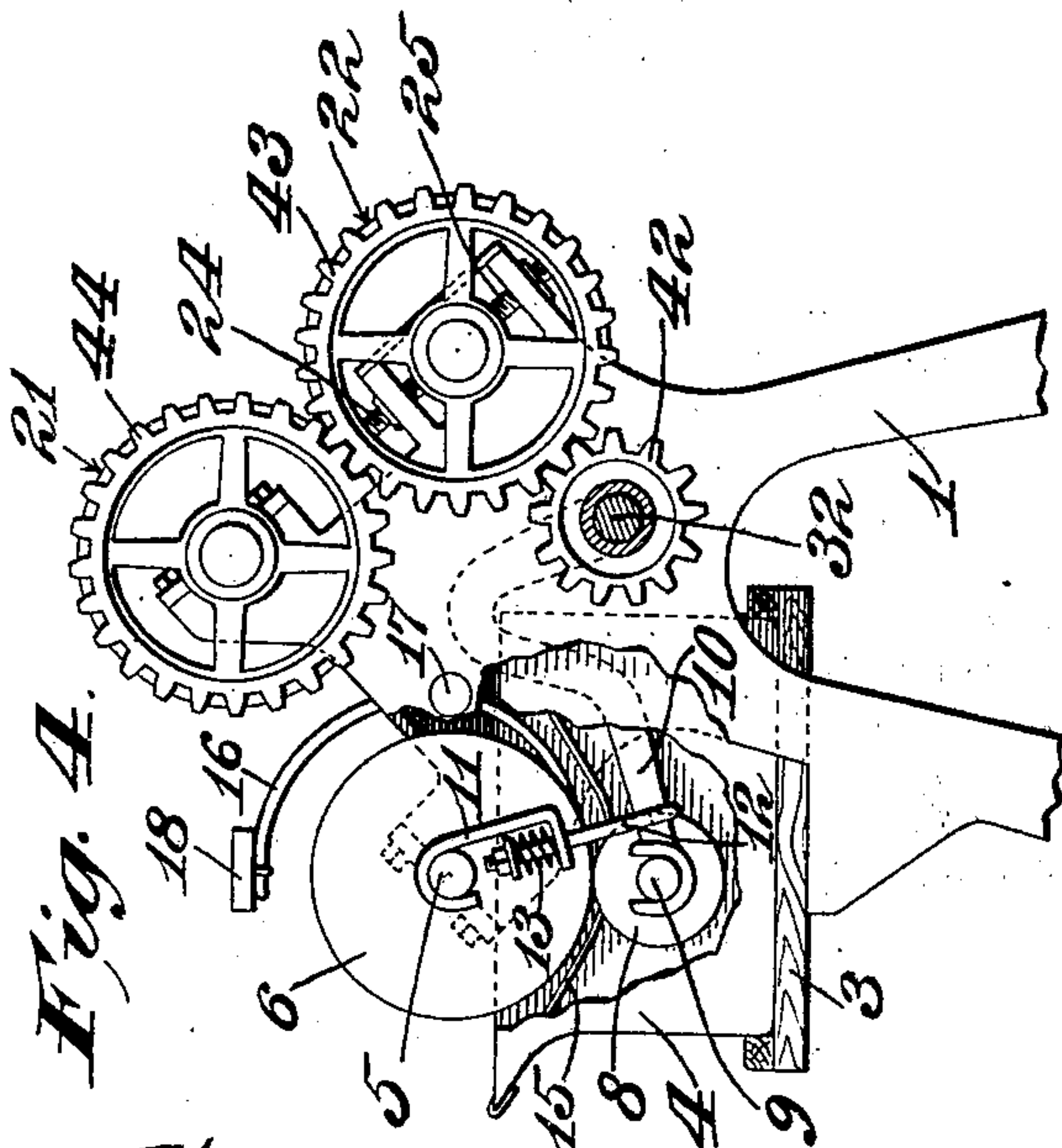


Fig. 4.

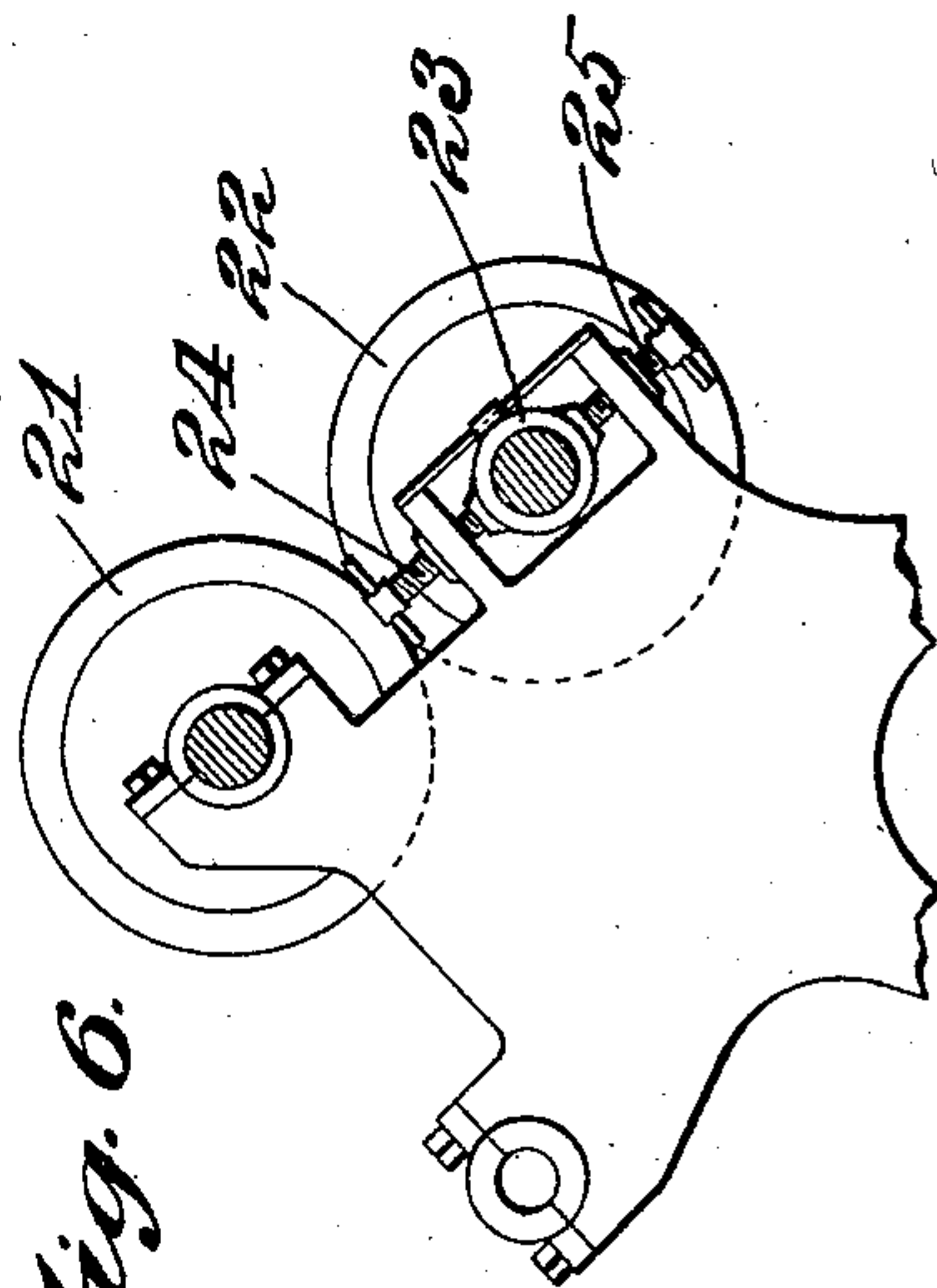


Fig. 6.

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# UNITED STATES PATENT OFFICE.

ANDREW J. BRADLEY, OF NEW YORK, N. Y.

## MACHINE FOR OILING PAPER.

No. 920,529.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed August 31, 1906. Serial No. 332,746.

*To all whom it may concern:*

Be it known that I, ANDREW J. BRADLEY, a citizen of the United States, and a resident of the city of New York, county of New York, and State of New York, have invented a new and useful Improvement in Machines for Oiling Paper, of which the following is a specification.

My invention relates to the oiling of paper and has for its principal objects to expedite the work of oiling paper; to secure uniformity in the product, to avoid waste and otherwise to economize labor and material.

It consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawing which forms part of this specification and wherein like symbols refer to like parts wherever they occur, Figure 1 is a front elevation of a machine embodying my invention with a part of the oil tank broken away; Fig. 2 is an end elevation thereof; and, Fig. 3 is a vertical cross section on the line 3—3 of Fig. 1; Fig. 4 is a vertical cross section on the line 4—4 of Fig. 5 showing the upper portion of the mechanism; Fig. 5 is a detail view of the power transmission train; and, Fig. 6 is a detail elevation illustrating the means for adjusting the finishing rolls.

The main frame of my machine comprises end frames 1 secured by rods 2 or other suitable means. In the upper portion of the frame is a shelf or table 3 upon which rests an oil tank 4. Journaled in the framework above this oil tank is a shaft 5 adapted to be driven from any suitable source of power, and upon said shaft is mounted a wooden roll 6. The oil tank 4 is provided with an overflow pipe 7 and the roll 6 is made short enough and of proper diameter to extend into the tank some distance below the top of said overflow pipe. Inside of said oil tank and beneath the feed roll 6 is a second wooden roll 8 from whose ends projects a shaft 9. The ends of the projecting shaft are journaled in the ends of the lever arms 10 provided therefor at the ends of the tank. These lever arms are bent upwardly to clear the side of the oil tank and thence downwardly, their ends being pivotally mounted on the framework at substantially the same elevation as the axis of the roll 8. The roll 8 is held upwardly against the main feed roll 6 by means of a tension link. In the construction illustrated, the tension link con-

sists of two members, the upper one 11 of which has a looped portion adapted at one end to hook over the shaft of the roll 6 and having its opposite end provided with a laterally arranged eye. The other member 12 has a loop at one end adapted to hook under the lever arm and its free end is screw-threaded and extended through the eye in said first mentioned member. A helical spring 13 surrounds said threaded end and bears against the eye portion of the first mentioned member and against a nut which works on the threaded end of said last mentioned member. By varying the position of the nut, the spring is more or less compressed and the pressure of the roll 8 against the roll 6 may be adjusted at pleasure.

Both the upper and lower feed rolls have circumferential grooves 14 therein adapted to accommodate the guides for the paper without interfering with the rolls. The lower guides 15 are a series of rods which are hooked over the upper front edge of the tank and thence inclined downwardly between the feed rolls and thence upwardly beyond the rear side of the oil tank close to the meeting point of the finishing rolls hereinafter mentioned and thence are doubled back and looped over said rear edge of the oil tank. The upper guide comprises a series of curved rods 16 which are mounted on a rock shaft 17 at the rear of the feed roll 6. These rods curve downwardly under the upper feed roll and extend through the circumferential groove therein and terminate in an upturned portion. From the rock shaft the rods curve upwardly and have a fender plate or guard 18 mounted thereon above the main feed roll 6. Extending laterally through the rock shaft is an arm 19 whose end is connected by a tension spring 20 to a portion of the framework, whereby the spring tends to hold the upper guide rods upwardly against the under side of the main feed roll. When it is desired to lower the fender-plate or guard, it is only necessary to press downwardly thereon.

Journaled in the rear portion of the framework are a pair of finishing rolls 21, 22 which are preferably made of steel covered with a coating of some composition that is not deleteriously affected by oil. In order to provide for the adjustment of the finishing rolls relative to each other, one of said rolls 22 is journaled in a journal box 23 which is slidably mounted in the main frame. Adjust-



ing screws 24, 25 extending through holes provided therefor in the main frame on opposite sides of said bearing box constitute a convenient means for accurately adjusting the position of said roll 22.

Mounted on a suitable platform or table provided therefor in the lower portion of the main frame is a large drip tank 26 of sufficient size to catch any oil that may drip from the paper sheets or the rolls. The overflow pipe from the oil tank opens into this drip tank. Located in the lower portion of the framework is a pump 27 whose suction pipe 28 opens into the drip tank near the bottom thereof, preferably without perforating said tank. The delivery pipe 29 of said pump in like manner opens into the oil tank in the upper portion of said framework.

The moving parts of the machine may be actuated from any suitable source of energy. In the construction shown in the drawings, a belt 30 is arranged to fit over a fixed pulley 31 on the main driving shaft 32 of the machine, which is provided with an idle pulley 33 and any suitable means for shifting the belt from one pulley to the other. In the construction shown the belt shifter comprises a transversely arranged rock shaft 34 whose ends are provided with handles 35 for manipulating the same, which handles are located in position for convenient manipulation by the operator either at the front or at the rear of said machine. An arm 36 of the rock shaft is connected by a link 37 to the yoke 38 which straddles the belt. By this arrangement the turning of the rock shaft causes the belt to shift from one pulley to the other. Upon the driving shaft is a sprocket wheel 39 which engages a sprocket chain 40 which in turn engages a sprocket wheel 41 provided therefor on the shaft of the main feed roll 6. On account of the pressure of the secondary feed roll against the main feed roll, the secondary feed roll is actuated thereby.

Mounted upon the main shaft is a gear or pinion 42 which meshes with a gear wheel 43 provided therefor on one of the finishing rolls 22, and this last named gear 43 in turn meshes with a like gear 44 on the other finishing roll 21 of the pair. The gearing should be so designed that the finishing rolls and the feed rolls should have the same circumferential velocity.

The pump is preferably actuated by means of a belt 45 which passes over pulleys 46, 47 provided therefor upon the driving shaft and the pump shaft, respectively.

In operation, a large volume of oil is placed in the drip tank and the oil tank is filled with oil to a predetermined level, which level may be varied by varying the elevation of the upper end of the overflow pipe. The operator at the front of the machine then feeds the sheets of paper or paper board one by one by

advancing the edge of the sheet downwardly along the lower guides until the front edge of the sheet is gripped by the feed rolls. In this forward movement, the sheet passes between the upper and the lower guides and is moved forwardly by the feed rolls. The respective guides act as strippers to prevent the paper from adhering to either of the rolls, and guide the paper directly into the finishing rolls. In the first portion of this operation, the paper is entirely submerged in the oil, while in the latter part of the operation, the finishing rolls squeeze out all surplus oil and secure a thorough and uniform distribution of the oil throughout the paper. In case it is desired to repeat the finishing operation alone, the fender or guard plate is depressed and the sheets are fed over it into the finishing rolls. By these operations, great rapidity of operation and uniformity of product can be attained, and the process avoids most of the waste heretofore incidental to the manufacture of oiled paper board.

Obviously, my device is capable of considerable modification within the scope of my invention, and therefore I do not wish to be limited to the specific construction shown and described.

What I claim as my invention and desire to secure by Letters Patent is:

1. A machine for oiling paper comprising an oil tank, a feed roll having grooves therein and adapted to be submerged in said tank, a second feed roll coöperating with said first mentioned feed roll, and means for guiding paper sheets between said rolls and above the surface of the oil, said means comprising rods extending continuously from the upper front edge of said tank downwardly through the grooves in the lower roll and thence upwardly over the rear edge of said tank.
2. A machine for oiling paper comprising an oil tank, a wooden feed roll inside of said tank and journaled in a pivotally mounted frame, a second feed roll coöperating therewith and having means for actuating it, and tension hooks for holding said first mentioned roll upwardly against said second roll.
3. A machine for oiling paper comprising an oil tank, a wooden feed roll inside of said tank and journaled in a pivotally mounted frame, a second feed roll coöperating therewith and having means for actuating it, and tension hooks for holding said first mentioned roll upwardly against said second roll.
4. A machine for oiling paper comprising an oil tank, a lower feed roll arranged to be submerged therein, an upper feed roll coöperating therewith, both rolls having circumferential grooves, and means for guiding paper sheets between said rolls, said means comprising stationary rods arranged transversely in said grooves.
5. A machine for oiling paper comprising an oil tank, an upper feed roll and means for



actuating it, a lower feed roll located inside of said tank and having circumferential grooves, and stationary guide rods extending through said grooves on the upper side of said lower roll.

6. A machine for oiling paper comprising a tank, a feed roll arranged to be submerged therein, a second feed roll cooperating therewith, a pair of finishing rolls above said tank and means for guiding paper through said feed rolls and to said finishing rolls, said means comprising stationary transversely arranged rods extending through grooves in the lower feed roll.

7. A machine for oiling paper comprising a tank, a feed roll arranged to be submerged therein, a second feed roll cooperating therewith, a pair of finishing rolls above said tank and means for guiding paper through said feed rolls and to said finishing rolls, said means comprising rods whose ends are adapted to be fastened to the sides of said oil tank and whose intermediate portions incline downwardly through grooves in the lower feed roll and upwardly to a point near the meeting surfaces of the finishing rolls.

8. A machine for oiling paper comprising an oil tank having an overflow pipe therein, a wooden feed roll inside of said oil tank and a second wooden feed roll cooperating therewith, a pair of finishing rolls above said tank, means for guiding paper sheets through said feed rolls and to said finishing rolls, and a drip tank under said oil tank and said finishing rolls.

9. A machine for oiling paper comprising an oil tank having an overflow pipe therein, a feed roll inside of said oil tank and a second feed roll cooperating therewith, a pair of finishing rolls above said tank, means for guiding paper sheets of short length through said feed rolls and to said finishing rolls and a

drip tank under said oil tank and said finishing rolls, and a pump arranged to pump oil from said drip tank into said oil tank.

10. A machine for oiling paper comprising an oil tank having an overflow pipe therein, a feed roll inside of said oil tank and a second feed roll cooperating therewith, a pair of finishing rolls above said tank, means for adjusting said finishing rolls relative to each other, means for guiding papersheets of short lengths through said feed rolls and to said finishing rolls, a drip tank under said oil tank and said finishing rolls, and a pump arranged to pump oil from said drip tank into said oil tank.

11. A machine for oiling paper comprising an oil tank, a feed roll inside thereof, a second feed roll cooperating with said first mentioned feed roll and means for guiding the paper sheets between said rolls and above the surface of the oil in said tank, said means comprising transversely arranged rods extending continuously through grooves in the lower roll, and a second set of rods extending transversely through the grooves in the upper roll.

12. A machine for oiling paper comprising an oil tank, a feed roll inside thereof, a second feed roll and means for guiding the paper sheets between said rolls and above the surface of the oil in said tank, said means comprising transversely arranged rods extending through grooves in the lower roll, and a second set of curved rods arranged tangentially in grooves in the upper roll and mounted on a rock shaft located back of said upper roll.

Signed at New York, New York, this 30 day of August, 1906.

ANDREW J. BRADLEY.

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