

No. 616,597.

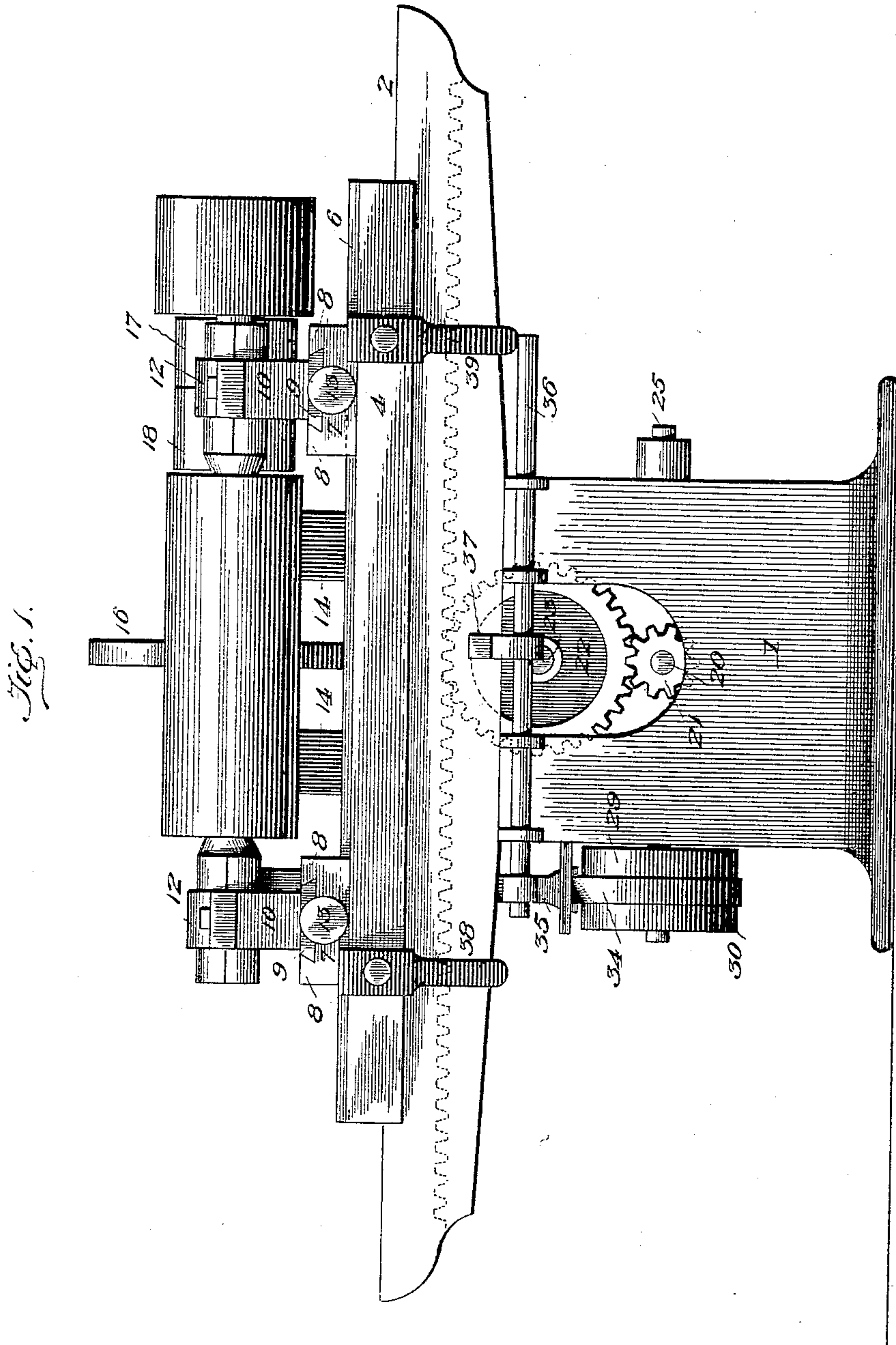
Patented Dec. 27, 1898.

F. W. WRIGHT.
PORTABLE ROLLER GRINDER.

(Application filed July 8, 1897.)

(No Model.)

4 Sheets—Sheet 1.



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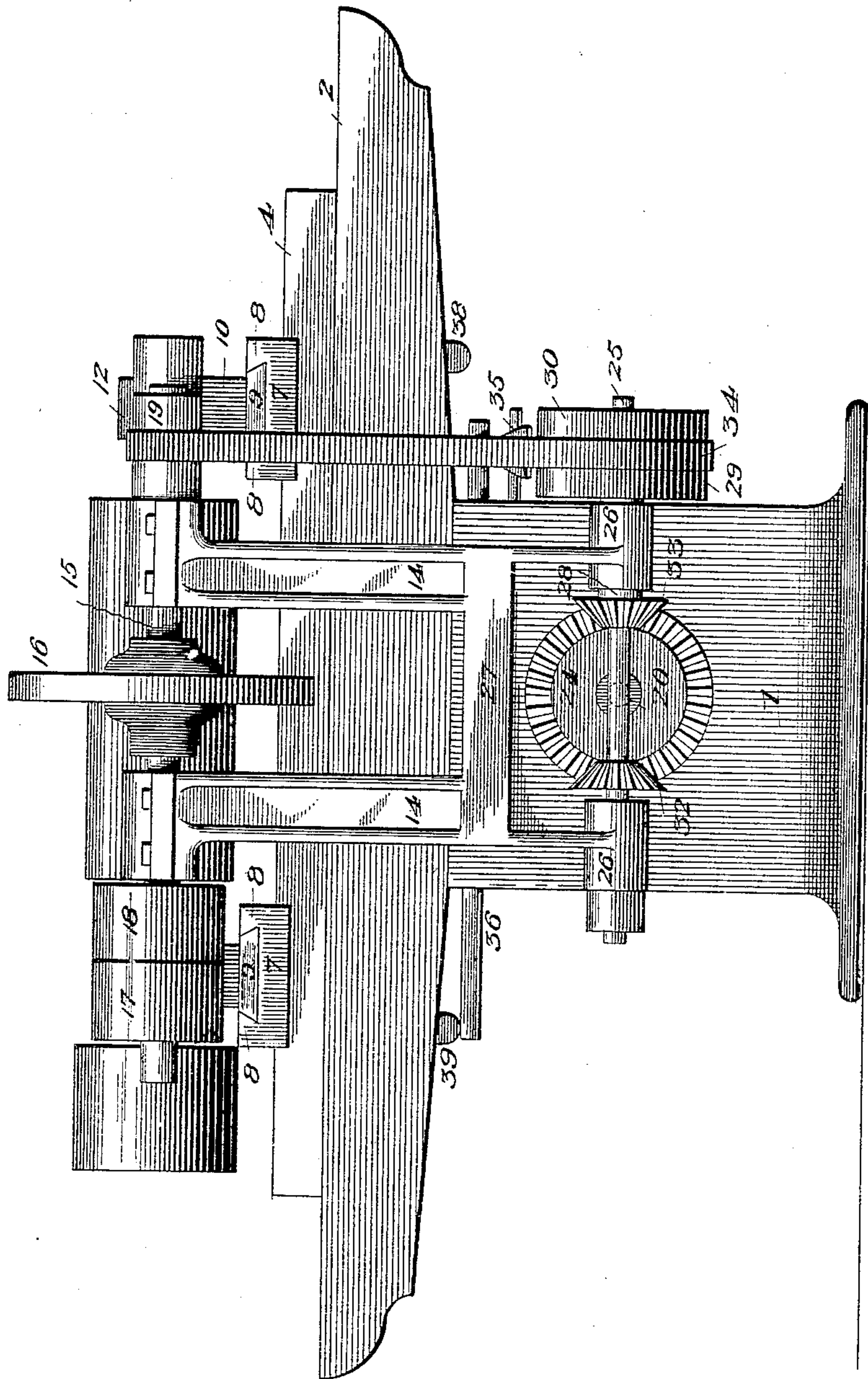
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Fig. 2.



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Fig. 4.

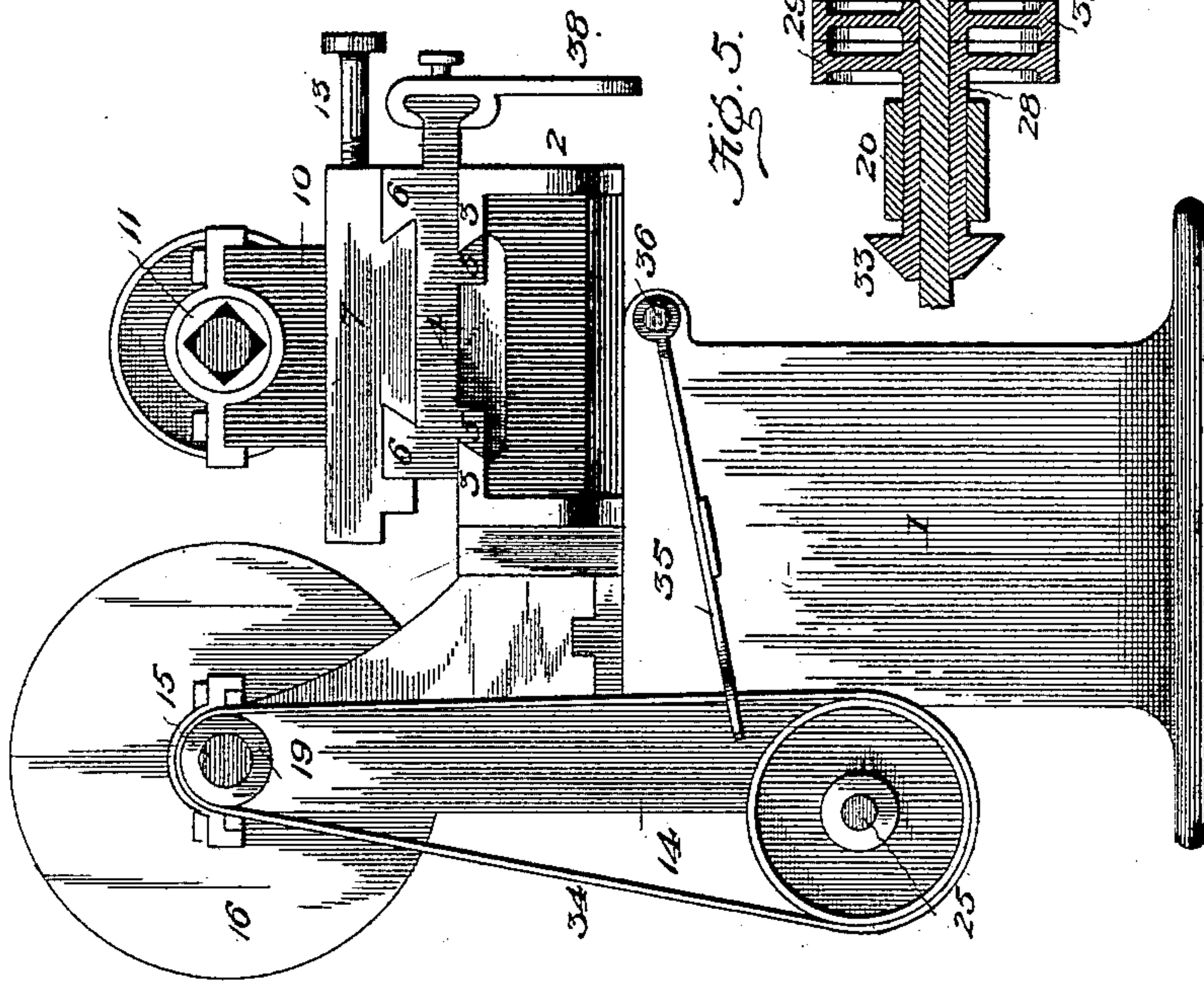
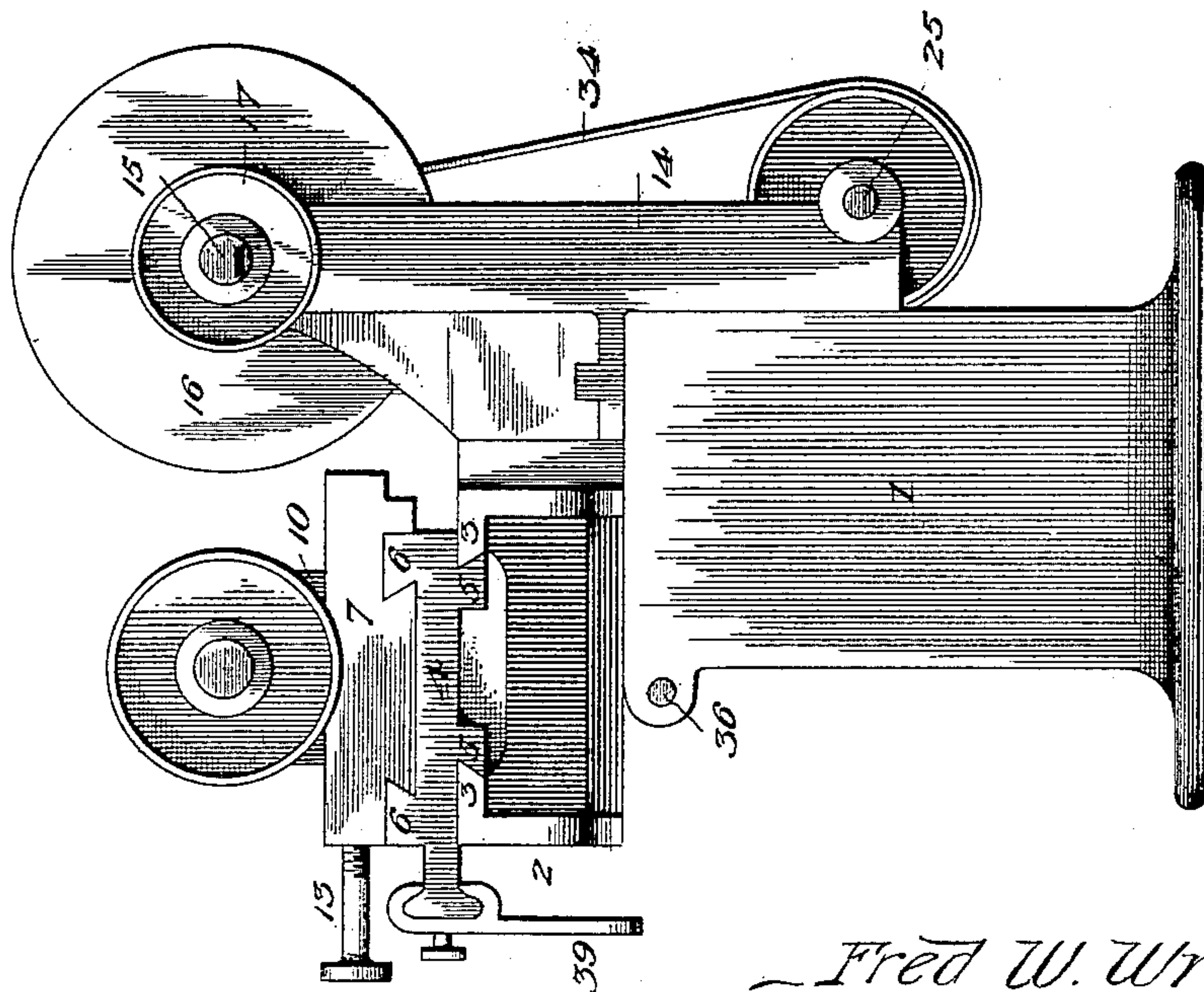


Fig. 5.



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Fig. 6

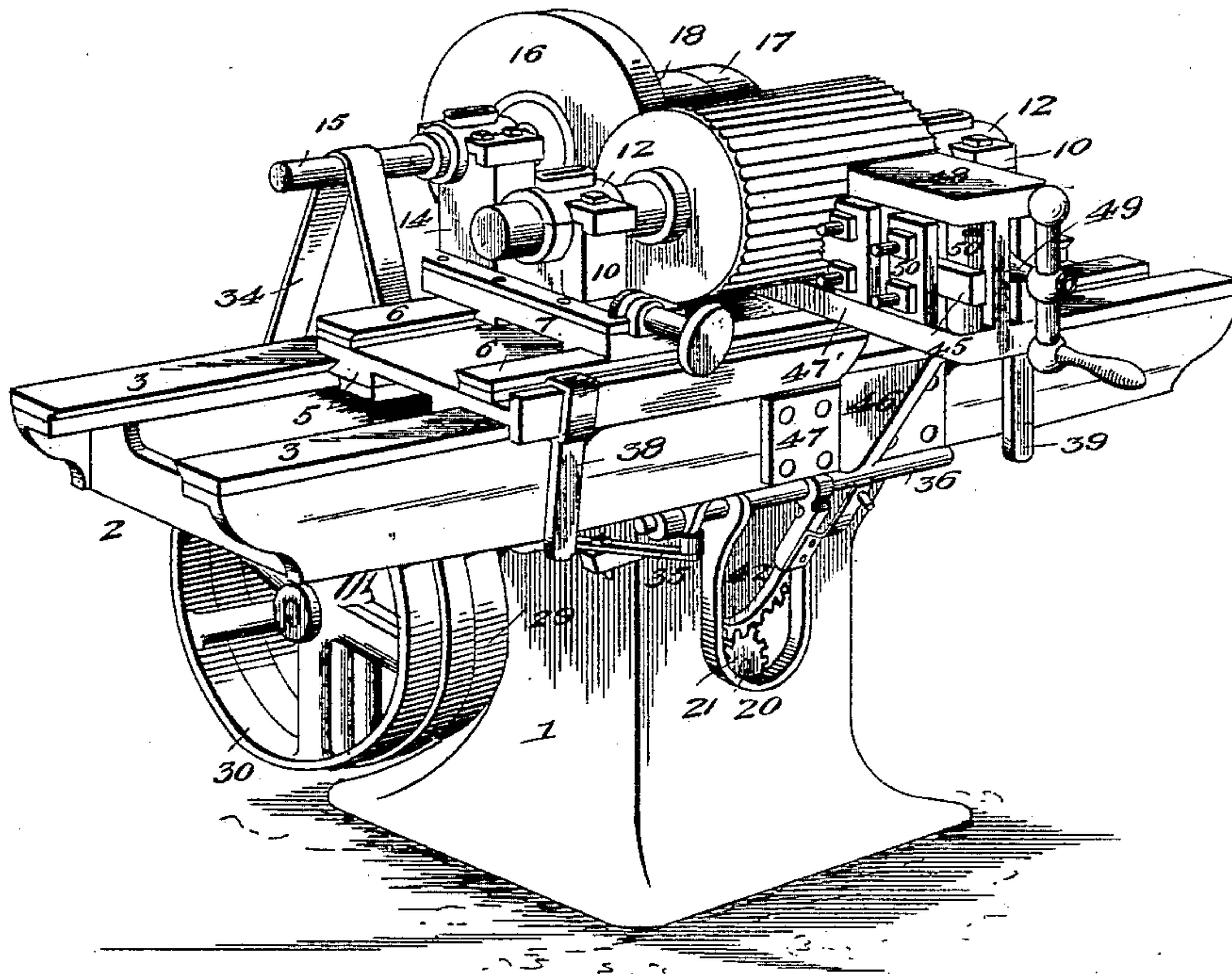
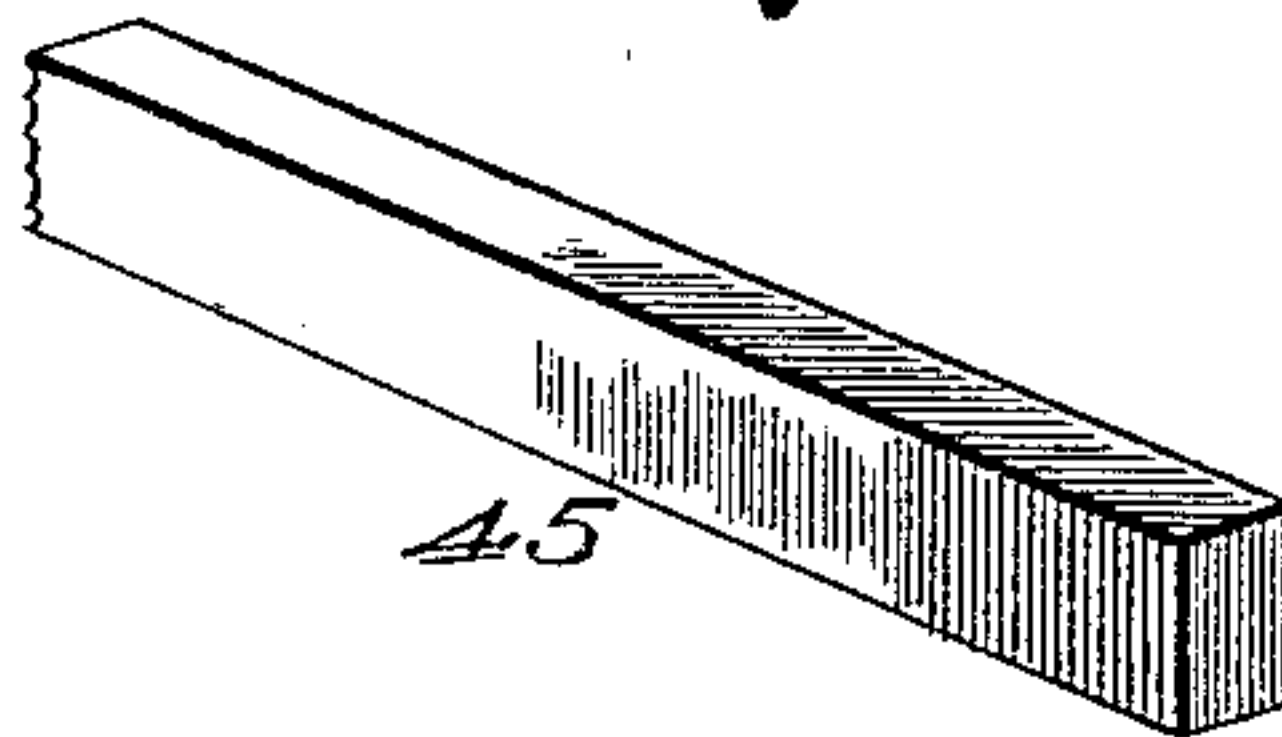


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRED W. WRIGHT, OF REED CITY, MICHIGAN.

PORTABLE ROLLER-GRINDER.

SPECIFICATION forming part of Letters Patent No. 616,597, dated December 27, 1898.

Application filed July 8, 1897. Serial No. 643,902. (No model.)

To all whom it may concern:

Be it known that I, FRED W. WRIGHT, a citizen of the United States, residing at Reed City, in the county of Osceola and State of Michigan, have invented certain new and useful Improvements in Portable Roller-Grinders; 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.

My invention relates to improvements in portable machines for dressing steel rollers such as are used for grinding grain in flour and feed mills or are used in crushing substances in tanneries or elsewhere.

In my present invention a rotary abrading-wheel, of emery or vitreous material, is employed as a medium for giving to a roll a working surface proper to accomplish the end desired, and provision is also made for accommodating rolls which may vary in length and diameter for giving endwise movement to the roll, as well as rotary motion, so that all portions of the surface of the roll will be presented automatically to the revoluble abrading-wheel for automatically arresting the traveling or endwise motion of the work and for automatically reversing the direction of feed of the work, so as to carry it back past the abrading-wheel if necessary.

My machine is of such simple and compact construction that it can be easily installed in a flour or feed mill, and it may readily utilize the power appliances of such mill for its operation.

To the accomplishment of the ends hereinbefore set forth, my invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated a preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a front elevation of a roll-dressing machine constructed in accordance with my invention. Fig. 2 is a rear elevation of the same. Figs. 3 and 4 are end views looking at opposite ends of the machine. Fig. 5 is a detail sectional elevation of a part of the

reversing-gear. Fig. 6 is a perspective view of an attachment for corrugating the surfaces of rolls. Fig. 7 is a detail view of the corrugating-tool.

Like numerals of reference denote corresponding parts in all the figures of the drawings, referring to which—

1 designates the pillar, on which is a horizontal longitudinal bed 2, provided with dovetailed ways 3 3, which are gibbed in place to obviate vibration of the work-carriage. On this horizontal bed is fitted a reciprocating work-carriage 4, provided on its lower side with the ways 5 5, which ride against and contact with the ways 3 3 on the bed to limit the carriage to endwise movement on the work-bed. This carriage is in turn provided on its upper side with the longitudinal dovetail ways 6 6, and the ways on the carriage are also gibbed in place to overcome lateral vibration of the roll-carrying devices which are mounted on said carriage.

To accommodate in the machine rolls which may vary in length and diameter and to enable such rolls of different diameters to be presented properly to the abrading-wheel, I have devised roll-carrying devices which are mounted on the carriage so as to be adjustable thereon both lengthwise and crosswise, while they are movable with the carriage in its endwise movement alongside of the abrading-wheel. The longitudinally-adjustable slides 7 7 are fitted to the ways 6 6 on the carriage, so as to be movable lengthwise on the carriage toward or from each other to accommodate rolls of different length, and said slides are clamped in place when once adjusted to accommodate the roll by any suitable means known to the art. These slides 7 7 are in turn provided with ways 8 8, that lie at right angles to the ways 6 6 on the carriage, and to these transverse ways 8 8 are fitted the transversely-movable slides 9 9, that carry the pillow-blocks 10 10, whereby said slides 9 9 and the pillow-blocks may be adjusted in a plane across the bed and carriage to properly present the roll to the abrading-wheel and to enable rolls of varying diameters to be brought properly to said abrading-wheel. The pillow-blocks 10 carry the journal-bearings 11, which are transversely divided to provide the removable caps 12,

adapted to be bolted in position, and the sections of the journal-bearings are made V-shaped or angular in form to accommodate the different-sized shafts or journals of different rolls. The transversely-movable slides, with the pillow-blocks and the roll therein, may conveniently be adjusted through the agency of the adjusting-screws 13, which are suitably fitted in the slides 7 and work in bearings or nuts in the slides 9.

On the rear side of the machine are provided the uprights or posts 14, which carry journal-bearings for the rotary arbor 15, on which is secured the abrading-wheel 16, made of emery or other appropriate material. This arbor has its ends extended through the bearings, and to one end thereof is attached the fast and loose pulleys 17 18, adapted to be driven by a belt from an overhead shaft or drum, (not shown,) while to the other end of said arbor 15 is applied a pulley 19, that operates to drive the mechanism for giving reciprocating motion to the work-carriage 4.

Through the pillar 1, near its lower part, is arranged a transverse shaft 20, on one end of which is secured a straight spur gear-pinion 21, which meshes with a large spur gear-wheel 22, journaled on a stud or short axle 23 on the pillar 1, said gear 22 meshing with a rack provided on the lower front side of the work-carriage 4, in order to impart endwise movement to said carriage. To the rear end of the transverse shaft 20 is secured a large bevel-gear 24, and across the face of this bevel-gear extends a horizontal shaft 25, one end of which is journaled in one of the two bearings 26 on the hanger 27. In the other bearing 26 of said hanger is journaled a short tubular shaft 28, through which passes the other end of the shaft 25. On the protruding end of the shaft 25 is secured a fast pulley 30, as shown by Fig. 5, and on the tubular shaft is rigidly secured another driving-pulley 29, and between the two fast pulleys on the solid and tubular shafts 25 28 is arranged a loose pulley 31, which is loosely fitted on the shaft 25.

32 33 designate the spur gear-pinions, which impart rotary motion in opposite directions to the bevel-gear 24, according as the driving-belt is on one fast pulley or the other of the two pulleys 29 or 30. These bevel gear-pinions 32 33 are arranged on opposite sides of the center of the bevel-gear 24, and one pinion 32 is rigidly fastened to the solid shaft 25, while the other pinion 33 is fastened to the end of the tubular shaft 28.

The driving-belt 34 passes around the pulley 19 of the abrading-wheel arbor and around one of the three pulleys 29 30 31. With this belt engages the forked end of a shipper-lever 35, fulcrumed to the pillar 1 and connected at its other end to a shipper-rod 36, which is slidably supported in suitable bearings on the bed of the machine. This shipper-rod carries a projection 37, which is arranged in the path of the dogs 38 39, which are adjustably clamped to the work-carriage 4 and

which are arranged on opposite sides of the projection 37, so as to have one or the other strike the projection when the carriage has reached the limit of its endwise travel in one direction or the other.

The operation of my machine may be described as follows: The length and diameter of the roll being known, the slides 7 7 are adjusted according to the length of the roll, the roll is fitted in the bearings of the pillar-blocks 10, the carriage adjusted to present one end of the roll to the abrading-wheel, and the adjustable dogs are clamped to the carriage, so as to have one or the other of the dogs 38 or 39 strike against the projection 37 (see Figs. 1, 3, and 4) to arrest its movement in either direction when the roll shall have passed the abrading-wheel. It should be remarked that one end of the roll-shaft or a trunnion thereof is coupled in a substantial way to a short shaft 40, carried in one of the pillow-blocks 10, and said shaft 40 has a pulley 41, around which passes a belt that runs to an overhead drum. (Not shown.) The roll having been placed on the carriage, the adjusting-screws are turned to move the transverse slides and bring the roll up to the abrading-wheel. The machine is now started by adjusting the belts, one of which drives the work, another drives the abrading-wheel arbor, and the third drives one of the three pulleys to operate the shaft 20, that drives the carriage 4. This carriage moves the roll endwise along and past the revolving abrading-wheel, and at the same time the roll itself is rotated on its axis to present all portions of its surface to the abrading-wheel to be dressed. As the roll clears the abrading-wheel one of the dogs 38 or 39 strikes the projection 37, moves the shipper-rod endwise, turns the lever 35 to shift the belt 34, and thus reverse the direction of rotation of the shaft 20 to impel the carriage and work in the opposite direction.

I have also devised an attachment for use in connection with my roll-surfacing machine by which the cylindrical surface of a roll may be corrugated or grooved. This attachment is shown by Fig. 6 of the drawings, and the tool is represented by the numeral 45. (Shown by Fig. 7.) The attachment has a bracket 46, the face-plate 47 of which is securely bolted in a detachable manner to the bed of the machine, so that the attachment may be applied or removed, according as it is desired to use it or not in treating a roll. This bracket 46 carries a base-plate 47, on which is slidably mounted a head 48, which is arranged to be moved toward or from the work-carriage by an adjusting-screw 49. To this adjustable head is connected the tool-carrier 50 by a hinge 50^a, similar in form to the hinges used on ordinary metal planers, and this hinge occupies a vertical position to enable the tool-carrier to swing in a horizontal plane and to bring the tool into and out of operative relation to the work. The tool 45 has a serrated

or toothed working edge, and the tool is securely and firmly bolted to the carrier.

To use the corrugating attachment, it is applied to one side of the machine-bed on the opposite side to the abrading-wheel, and the roll to be treated is mounted in the reciprocating carriage, to be moved thereby in a straight line, but without rotation, past the corrugated face of the tool clamped in the carrier on the adjustable head. The head may be moved by the screw to bring the tool into operative relation to the roll, and as the latter is carried past the tool in a well-known manner the tool cuts or treats the roll when it moves in one direction, and after the roll has passed its length and the tool has done its work the carrier and tool swing clear and they drop automatically into position as the roll returns to its initial position, so that the tool is in position ready for the next cut.

I am aware that changes and alterations in the form and proportion of parts and in the details of construction of the devices herein shown and described as the preferred embodiment of my invention may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such modifications as fairly fall within the scope of my invention.

No claim is herein made to the corrugating-tool forming an attachment to the machine for use in connection with the traveling feed-carriage and the other operative elements of the machine, as said corrugating attachment forms the subject-matter of a separate application filed by me on May 9, 1898, Serial No. 680,184.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for dressing rolls, the combination with an arbor carrying an abrading-wheel, of a reciprocating carriage having work-holding devices, a shaft geared to said carriage and having a bevel-gear, a tubular shaft having a bevel-gear and a pulley, another shaft passing through said tubular shaft

and also having a pulley and a bevel-gear, a belt, and shipping devices engaging with said belt, as and for the purposes described.

2. In a machine for dressing rolls, the combination of an abrading-wheel shaft having means for driving the same, a traveling carriage having the stops, a transverse shaft geared to said carriage, a tubular shaft having a belt-pulley and geared to the transverse shaft, a counter-shaft also geared to the transverse shaft and having one end extended through the tubular shaft and provided with a belt-pulley, a belt from the abrading-wheel shaft to one or the other of the pulleys on the tubular shaft or the counter-shaft, a shipper-rod with an arm in the path of the adjustable stops, and a shipper-lever, substantially as described.

3. In a roll-grinding machine, the combination with an abrading-wheel shaft, and a reciprocating work-carriage, of the slides, 8, 8, mounted on the work-carriage for movement therewith in its travel parallel to said shaft and also adjustable on the carriage independently of its reciprocating movement, the transversely-adjustable slides, 9, 9, attached to the slides 8, 8, for movement thereon in a direction toward or from the abrading-wheel shaft independently of the adjustment of the slides 8, 8, or the movement of the carriage, a reversible driving mechanism intermediate of the abrading-wheel shaft and the work-carriage, rotary work-holding devices journaled on the transversely-adjustable slides and having power devices for positively rotating the work confined or held in said work-holding devices, and a shipper mechanism independent of the adjustable slides on the carriage and arranged between the work-carriage and the driving mechanism, substantially as described.

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

FRED W. WRIGHT.

Witnesses:

JOHN C. HOLDEN,
LAURA YOUNG.