

No. 666,174.

Patented Jan. 15, 1901.

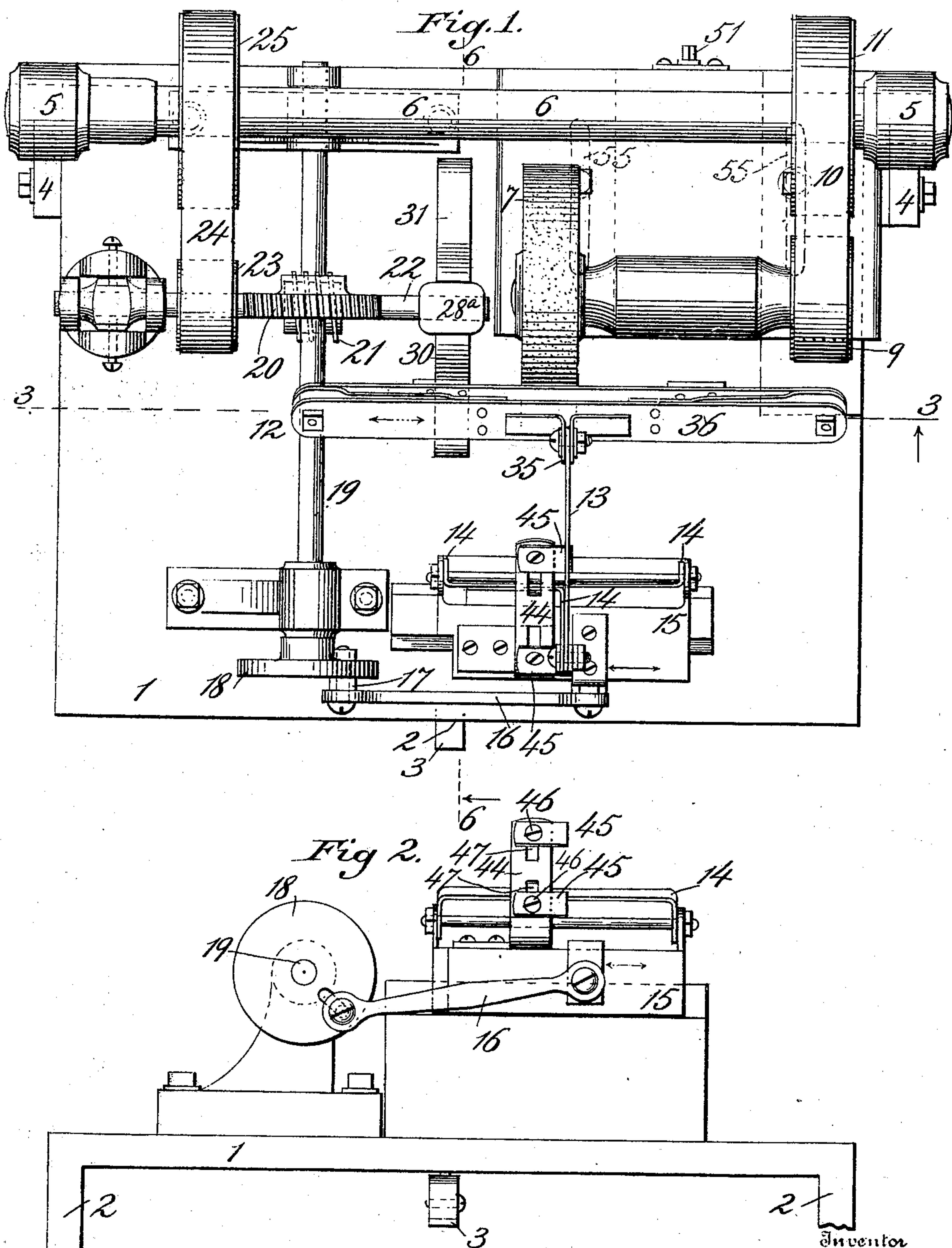
H. A. AXTELL.

WHITENING OR FINISHING MACHINE.

(No Model.)

(Application filed May 12, 1900.)

3 Sheets—Sheet 1.



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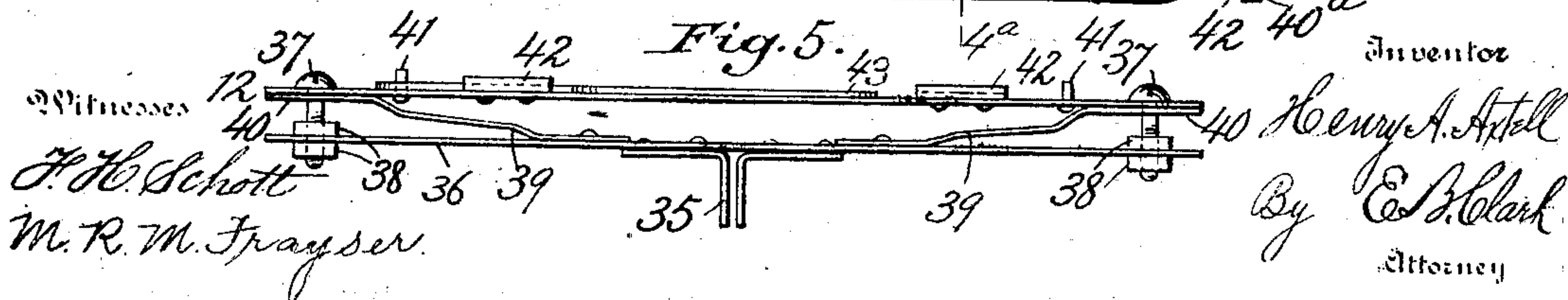
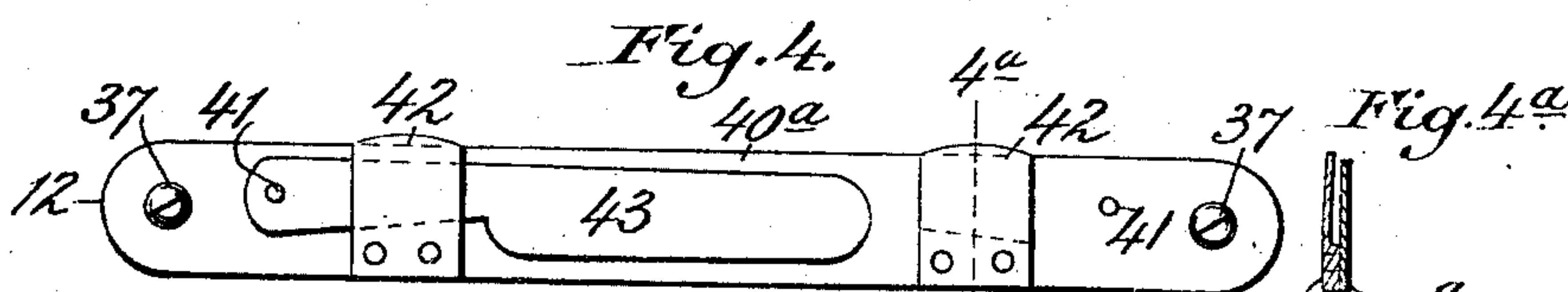
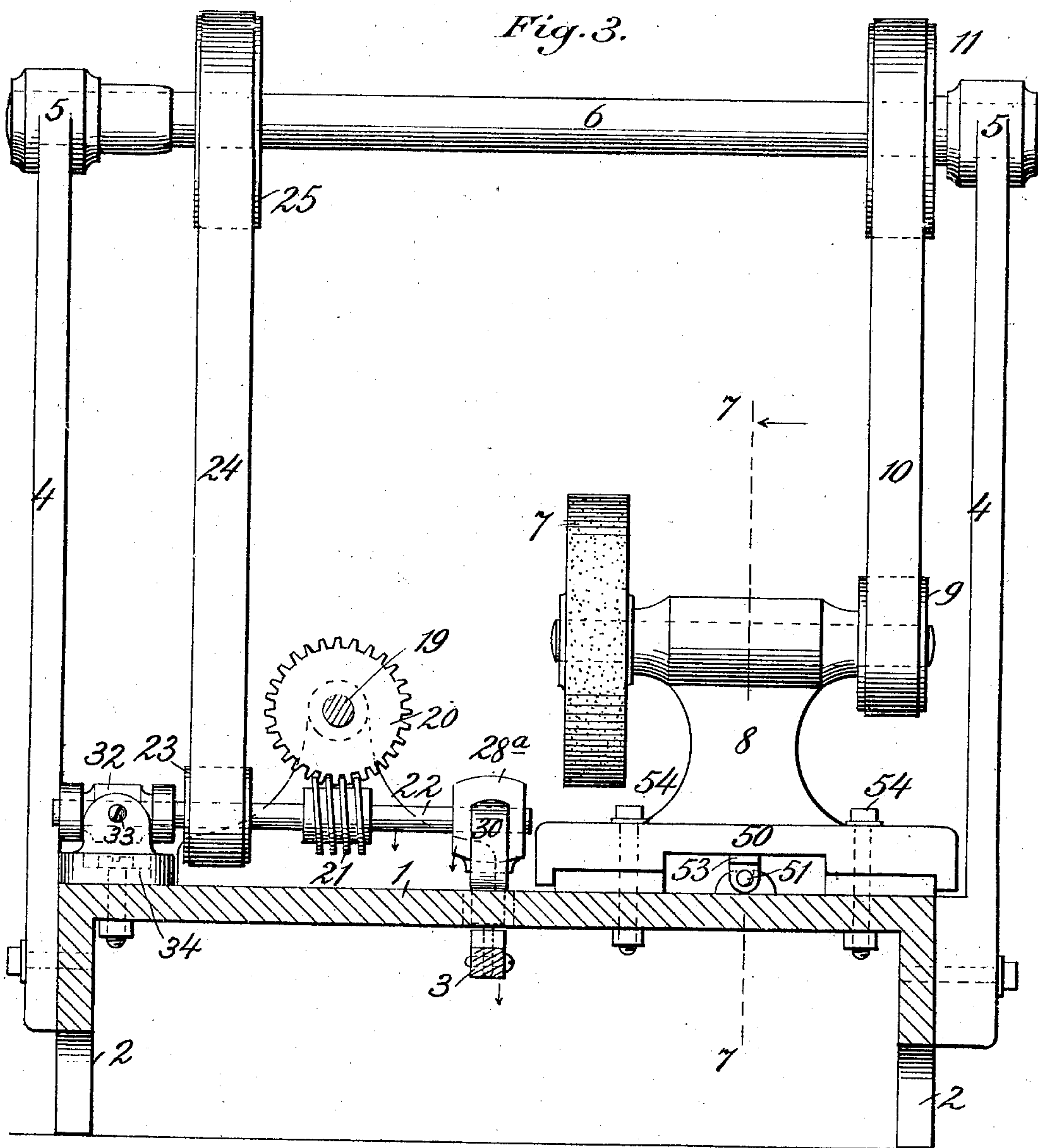
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3 Sheets--Sheet 2.



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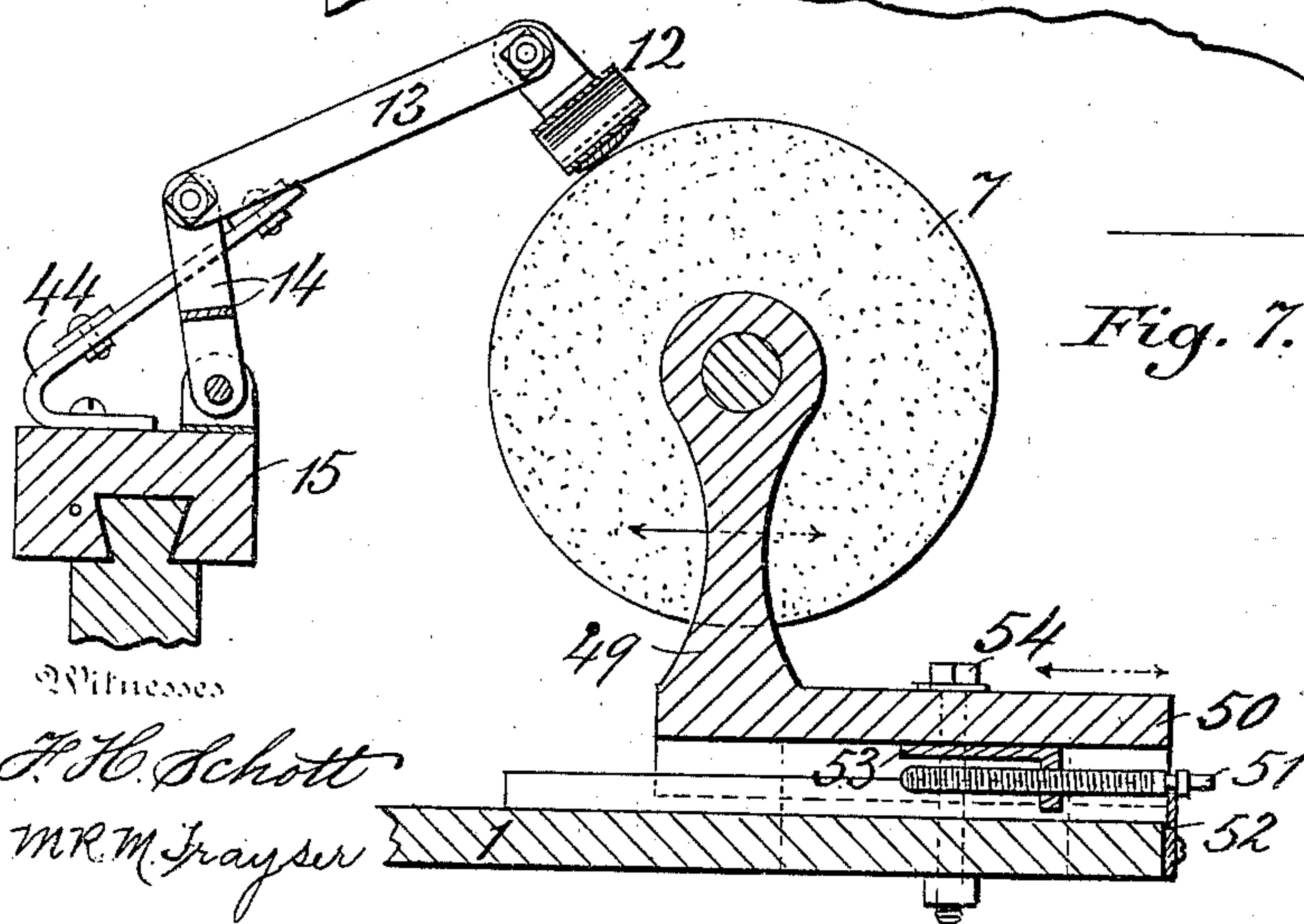
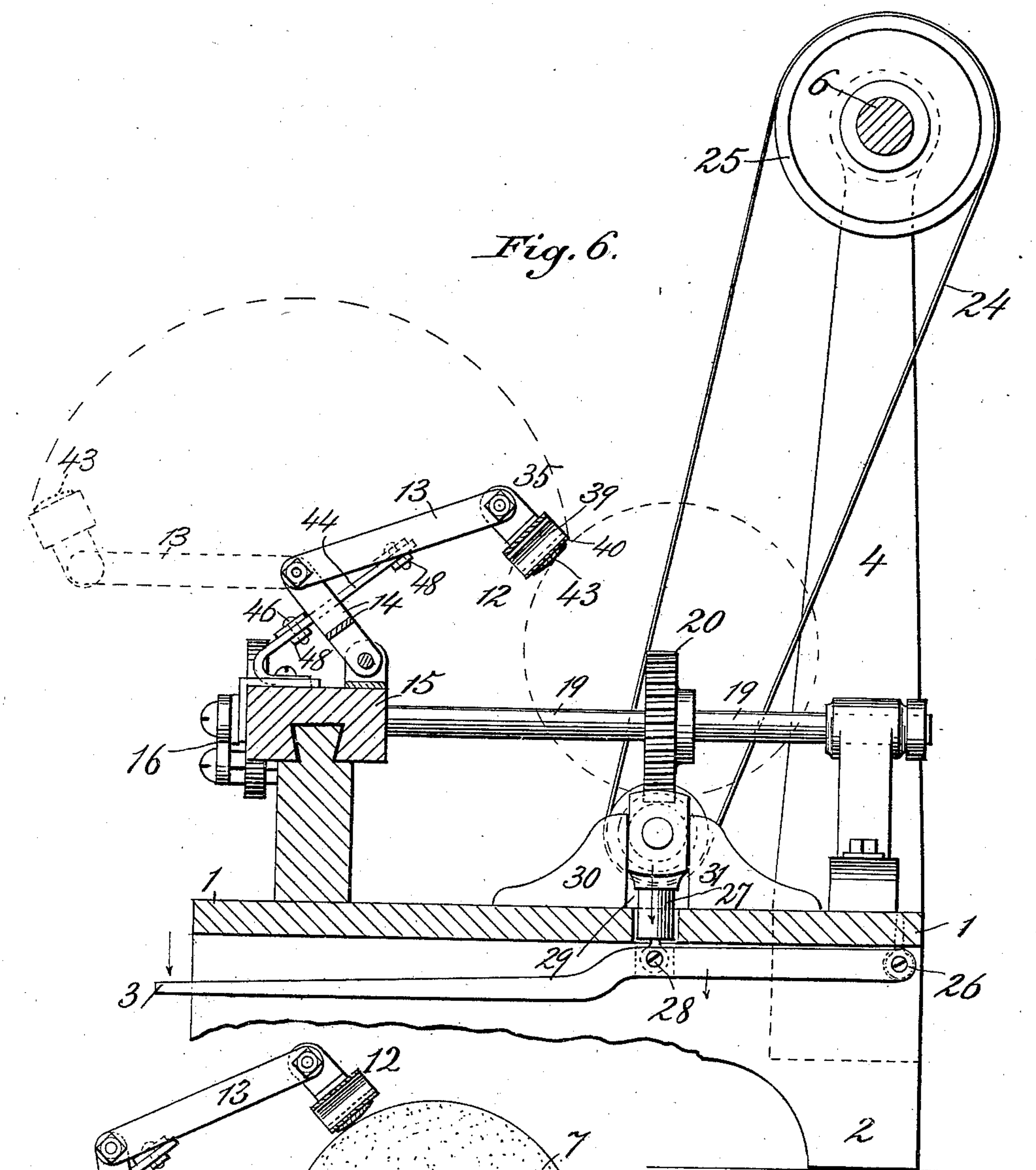
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3 Sheets—Sheet 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY A. AXTELL, OF SHELBURNE FALLS, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO F. H. OAKMAN, OF SAME PLACE.

WHITENING OR FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,174, dated January 15, 1901.

Application filed May 12, 1900. Serial No. 16,408. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. AXTELL, a citizen of the United States, residing at Shelburne Falls, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Whitening or Finishing Machines; 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.

This invention relates to grinding and finishing machines, but more particularly to the kind specially adapted to the purpose of whitening or fine-finishing of knife-blades after the first grinding.

The objects of my invention are to provide a knife-blade holder in connection with mechanism for rotating an emery or other suitable grinding or finishing wheel, whereby a part of the movements of said holder are imparted by the attendant, while the other movements are performed by the machine itself; to provide means of special construction for holding the blade while being operated upon; means for affording a spring-pressure to the blade-holder; means for limiting one class of the holder's reciprocatory movements; means for allowing the complete withdrawal of the blade-holding device from the finishing-wheel, and, finally, means for adjusting the finishing-wheel with relation to the reciprocating blade-holder.

The objects of my invention are attained by the various constructions and combinations of parts particularly described in connection with the accompanying drawings.

The invention consists in the constructions and combinations described and shown, and embodied in the claims.

Figure 1 is a top plan view of the machine. Fig. 2 is a front elevation of part of the machine. Fig. 3 is a view in elevation taken on the line 3 3 of Fig. 1, the blade-holder not being shown. Fig. 4 is a working-face view of the knife-blade holder, with a blade held thereby. Fig. 4^a is a cross-section thereof on line 4 4 of Fig. 4. Fig. 5 a top view of the holder. Fig. 6 is a sectional view in elevation taken on the line 6 6 in Fig. 1, the carrier-block and the blade-holder being near their

extreme limit of movement to the left and the finishing-wheel not being shown at all, but its relative location to the carrier and the holder being indicated by dotted lines. Fig. 55 7 is a sectional view taken on the line 7 7 of Fig. 3, showing a blade-holder, the finishing-wheel, and the means for adjusting the platform and standard carrying said wheel.

Like reference-numerals are used to designate like parts throughout the specification and drawings.

The platform 1, resting on legs 2, supports the operating mechanism, with the single exception of the tripping-lever 3, beneath the platform. Standards 4, one at each side of the rear of the platform, have journal-bearings 5 at their upper ends for the power-shaft 6, to which latter may be provided a band-pulley or other suitable means for direct connection with and operation by a motor. An emery-wheel 7 is affixed to one end of a shaft or journal passing through a bearing in the standard 8 and having a pulley 9 fixed thereto, the latter being connected by belt 10 to the pulley 11 on the driving-shaft 6.

A blade-holder 12 is connected by jointed arms 13 and 14 to a reciprocating carrier-block 15, which latter is operated by a connecting-rod 16 and a wrist-pin 17 of the crank or disk wheel 18 on the shaft 19. Said shaft 19 has a worm-gear 20 secured thereto, which is operated by the worm 21 on the shaft 22, which latter is operated by the pulley 23, connected by the band 24 to the pulley 25 on the power-shaft 6.

The worm 21 (see Figs. 5 and 6) is held in engagement with the worm-wheel 20 by the strain of the belt 24 on pulley 23; but it may be disengaged from said wheel by the attendant at will simply through pressing his foot on the front end of lever 3, the latter being pivoted at 26 underneath and near the rear of the platform 1 and having a connecting-rod 27, pivoted at 28 and extending up through an opening in the platform 1 to the journal-bearing block 28^a, which is free to slide up and down in a way 29, between the guide-pieces 30 and 31, the other shaft-bearing 32 at the other end being of the rocking order, pivoted at 33 to the bolted standard-block 34, thus allowing the inner end of the shaft 22

limited movements up and down. The worm mechanism when in gear is designed to impart lateral reciprocations to the blade-holder 12, while the attendant by his hands is giving movements at right angles thereto to effect the desired rounding action of the emery-wheel on the blade in finishing the same. The frame part of said blade-holder is composed of a short attaching-arm 35, the back plate 36, and the headed bolts 37 and their securing-nuts 38. The work or face plate 40^a is secured in the frame by means of the headed bolts passing loosely through holes in its ends, and it is held forward, so as to have a yielding action by means of a spring or springs interposed between it and the back plate. One spring may answer, it being secured by rivets on the inside of the back plate and having its ends bent away to rest against the rear side of the work-plate, or two or more springs may be used, the object being to get uniform spring-pressure on the work-plate. Other forms of springs may be used, such as coiled springs or rubber springs.

In Fig. 5 I have shown two springs 39, each having an end riveted to the back plate 36, the other ends 40 being provided with holes through which loosely pass the bolts 37, the said ends bearing and being free to slide on the rear side end parts of the work or face plate. This work or face plate has its work-face provided with pins 41 and clips 42 for securing the blade in position for grinding and finishing. The knife-blade 43 is secured on one pin and beneath its adjacent clip and is ground and finished on one side and is then taken out, reversed, and secured by means of the other pin and clip and then ground and finished on its other side. The clips are in cross-section, as shown in Fig. 4^a, and are riveted to the face of the work-plate and serve somewhat in the nature of a spring-clip in holding the blades securely in place against the rotary surface action of the emery-wheel in its work of grinding and finishing the blade.

My invention in respect to the blade-holding device is not confined to the details herein described and shown; but it is important to have evenly yielding and pressing means to keep the blade in suitable relation to the grinding-surface of the emery-wheel, whereby the blade shall be pressed by gently-yielding yet uniform pressure in order to secure the best practical results, and hence equivalent means to such as I have shown and described may be used without departing from the principle of construction.

To the rear of the back plate 36 an elbow-arm support comprised of the arms 13 and 14 connects with the lugs 35, and being also pivoted to the carrier-block 15 the blade-holder 12 is caused to partake of all of the reciprocatory movements of said carrier. The forward and backward movements of the blade-holder at right angles to the reciprocatory movements of the carrier are produced

through the manipulation of the attendant and are caused to be limited by certain adjustments of parts made to define the extent of throw of the arm 14. A leaning standard 44 is secured to the top of the carrier-block 15, (see Figs. 6 and 7,) and on it are secured two adjustable blocks 45 by screw-threaded and headed bolts 46 passing through them and through slots 47 and having nuts 48 to tighten and hold said bolts for clamping the blocks in any desired position.

The carrier-block 15 is provided with a dovetail notch to inclose and slide upon the dovetail tenon 49 in the usual manner and as shown in several figures. The emery-wheel 7 is supported by its shaft or journal in journal-bearings in the standards 8, carried by a sliding superstructure platform 50, which may be adjusted forward or backward by a threaded bolt 51, the recess of the shoulder therein shown being occupied by a suitable bracket 52, attached to the rear of the platform 1, and the screw-threaded portion working in a screw-threaded nut formed in the bracket 53, secured to the under side of sliding platform 50. Headed screw-threaded bolts 54 pass through holes in the sliding platform 50 and through slots 55 in the main platform 1 for reliably securing the sliding platform 50 in any ascertained position thought to be the most desirable, particularly in taking up wear of the emery-wheel occasioned by considerable use or in case of substituting emery-wheels varying in diameter. Said forward and backward movements of the sliding platform can ordinarily be made without materially altering the tension of the belt 10, operating on the pulley 9, giving rotation through its shaft to the emery-wheel. The attendant operator uses his hands for controlling the pressure of the holder and its held blade upon the emery-wheel and also in manipulating the same, reciprocating it at times along the surface of the wheel in the line of its rotation in a manner similar to that ordinarily practiced by mechanics in grinding tools on grindstones and imparting such slightly-rolling or oscillatory movements to the holder as may be required for insuring the slight convexity of the sides of blades often desired. The lateral reciprocations, however, are mechanically imparted to the holder and blade in the meanwhile by means of the carrier-block, to which the holder is pivoted, excepting when the operator presses down by his toe the trip-lever 3 and throws the work-gear mechanism out of gear. When one side of a blade is suitably finished, it is withdrawn, reversed, and suitably attached beneath the other clip and finished, and for facilitating this operation of making reversals or removals or replacements of blades the holder may be turned away from the emery-wheel, as shown by dotted lines in Fig. 6, the full lines in that figure, as well as in Figs. 1, and 7, showing the holder, with blade in working position, bearing against the emery-wheel.

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

1. In a grinding and finishing machine, a blade-holder having a jointed arm allowing it free reciprocatory movement at right angles to the axis of the grinding or finishing wheel, and adjustable means for limiting said reciprocatory movements substantially as and for the purpose described.

2. In a finishing-machine, a blade-holder having a pivoted arm connected therewith, a reciprocating carrier, said arm having an elbow-jointed connection with said carrier for allowing the blade-holder a rocking movement in the line of the rotary surface travel of the finishing-wheel, and adjustable means for limiting the movements of said connecting part, in combination with the finishing-wheel, substantially as and for the purpose described.

3. In a finishing-machine, a blade-holder joined to an arm provided with an elbow-joint and an arm extending from the latter to a jointed connection forming a movable base-support, adjustable stops or blocks for limiting the movements of said arm in combination with a finishing-wheel, substantially as and for the purpose described.

4. A blade-holder 12, arms 13 and 14, and carrier-block 15, in combination with finishing-wheel 7 and mechanism for operating the same, substantially as and for the purpose described.

5. A blade-holder having its work face-plate held on rods passing loosely through its ends and a spring backing and a supporting-frame, substantially as and for the purpose described.

6. A blade-holder having its work face-plate provided with holes through which rods pass loosely, a spring or springs, affording a

supporting-bearing on the rear of said face-plate and a back plate secured to said rods and said spring or springs, substantially as and for the purpose described.

7. A blade-holder having its work face-plate supported and guided therein and a spring backing supported in said holder, in combination with a grinding or finishing wheel, substantially as and for the purpose described.

8. A blade-holder having its work face-plate sustained loosely at its ends for allowing forward or backward movement, a spring or springs having loosely-sliding ends bearing against said plate with its or their other ends attached to a back plate, in combination with a grinding or finishing wheel, substantially as and for the purpose described.

9. A grinding or finishing wheel secured on an adjustable platform, gearing connections with a power-shaft admitting freedom of platform adjustments to the required degree, in combination with a reciprocating blade-holder and means for operating the latter, substantially as and for the purpose described.

10. A grinding or finishing wheel and means for operating the same from a power-shaft, a reciprocating carrier-block and means for operating the same from said power-shaft and for disengaging and throwing said carrier out of gear, in combination with a blade-holder secured to the carrier-block, the holder having means whereby reciprocations may be imparted thereto, at right angles to those given by the carrier-block, substantially as and for the purpose described.

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

HENRY A. AXTELL.

Witnesses:

C. W. HAWKS,
F. H. OAKMAN,