

(No Model.)

3 Sheets—Sheet 1.

O. M. GRIMES.

MACHINE FOR GRINDING AND POLISHING RIFLE BARRELS.

No. 406,643.

Patented July 9, 1889.

Fig. 1.

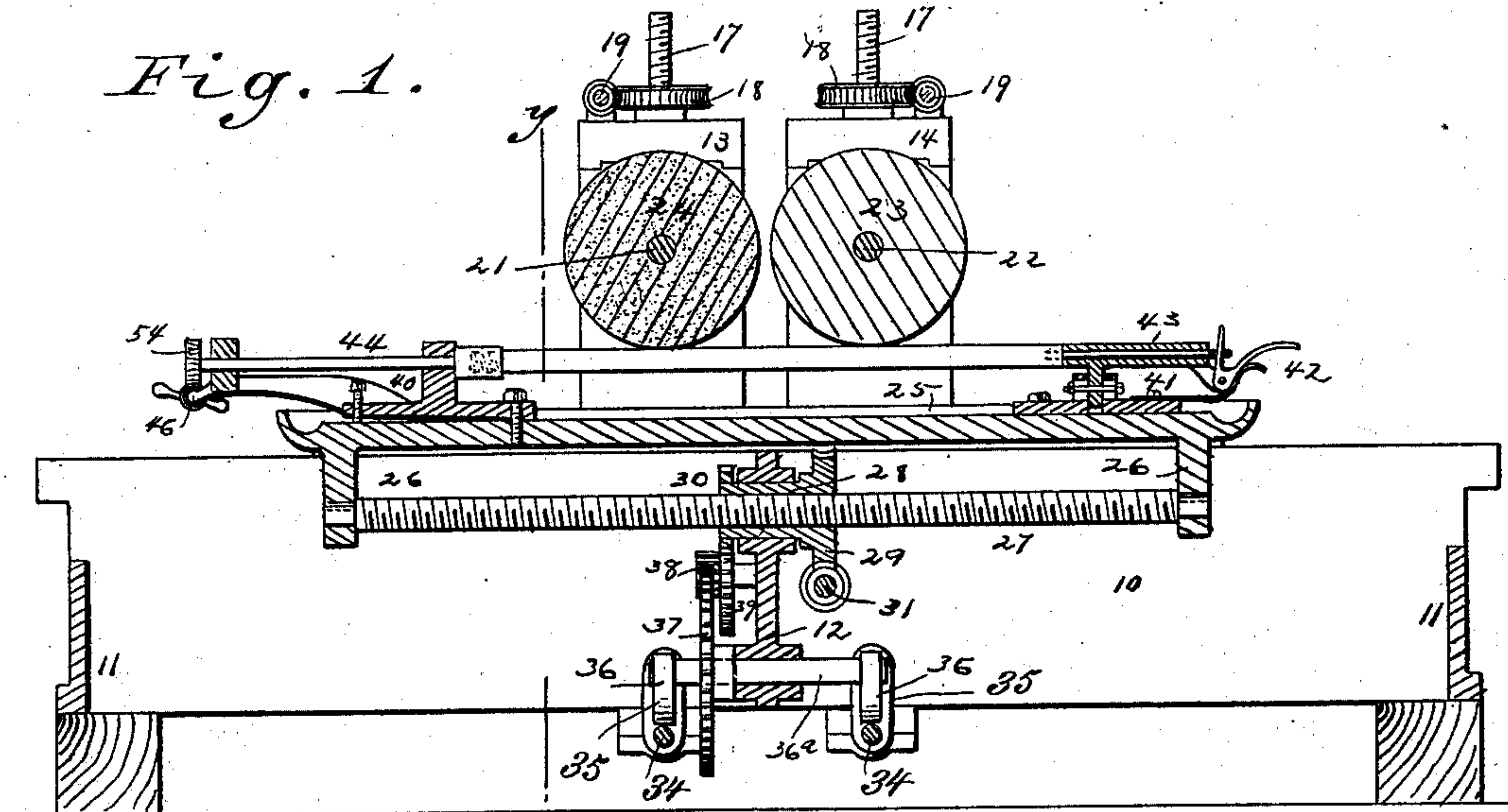
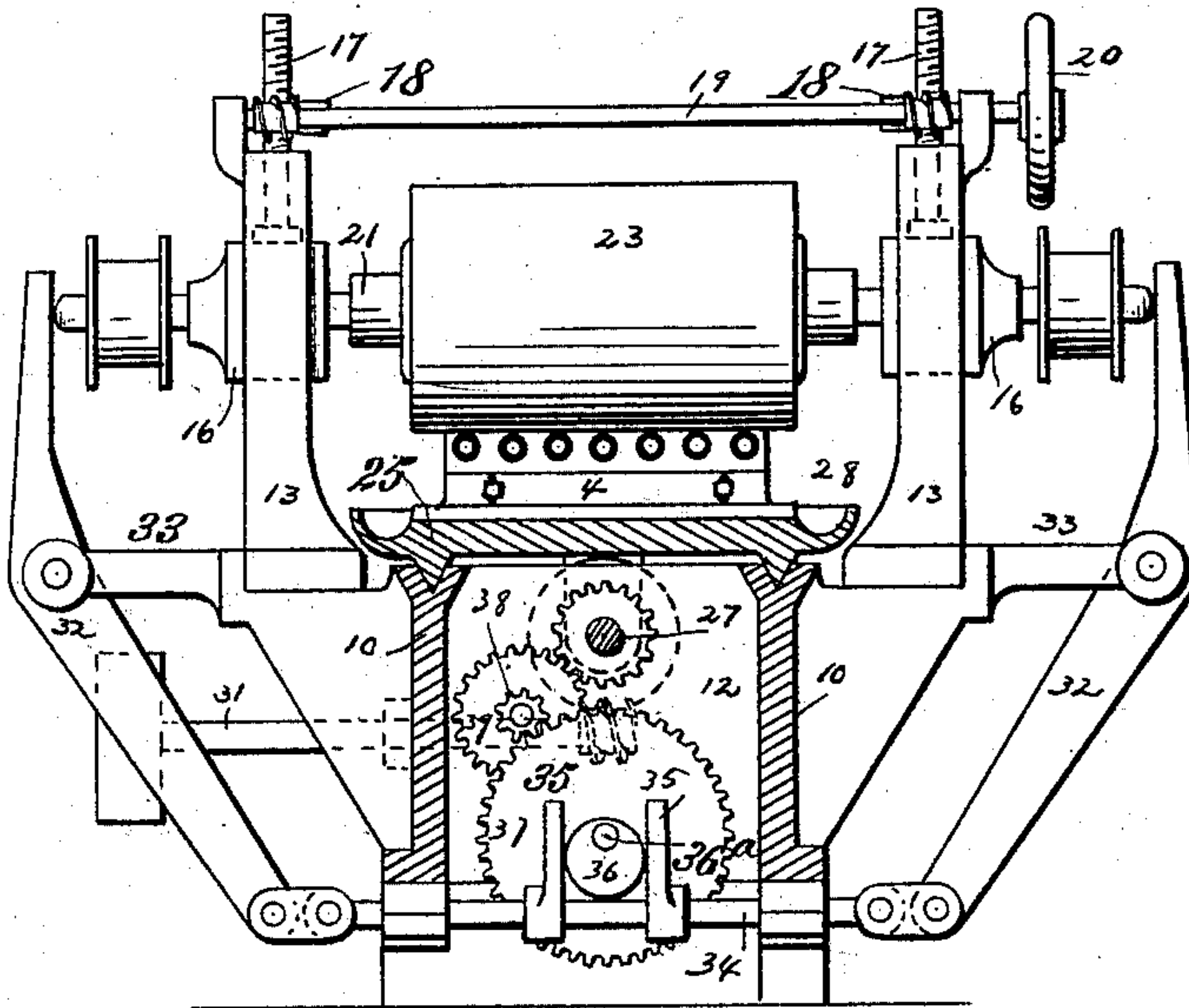


Fig. 2.



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Fig. 3.

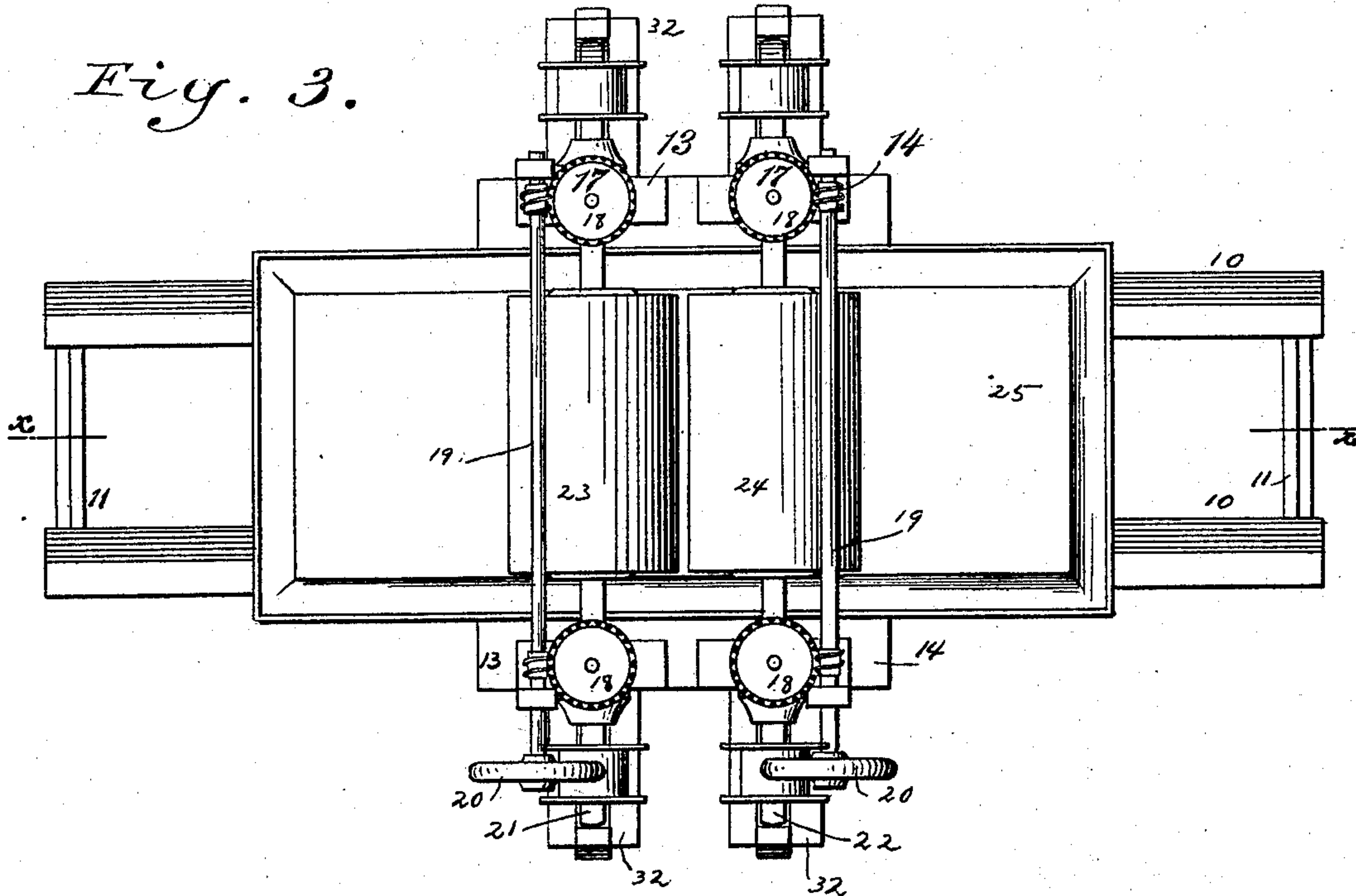
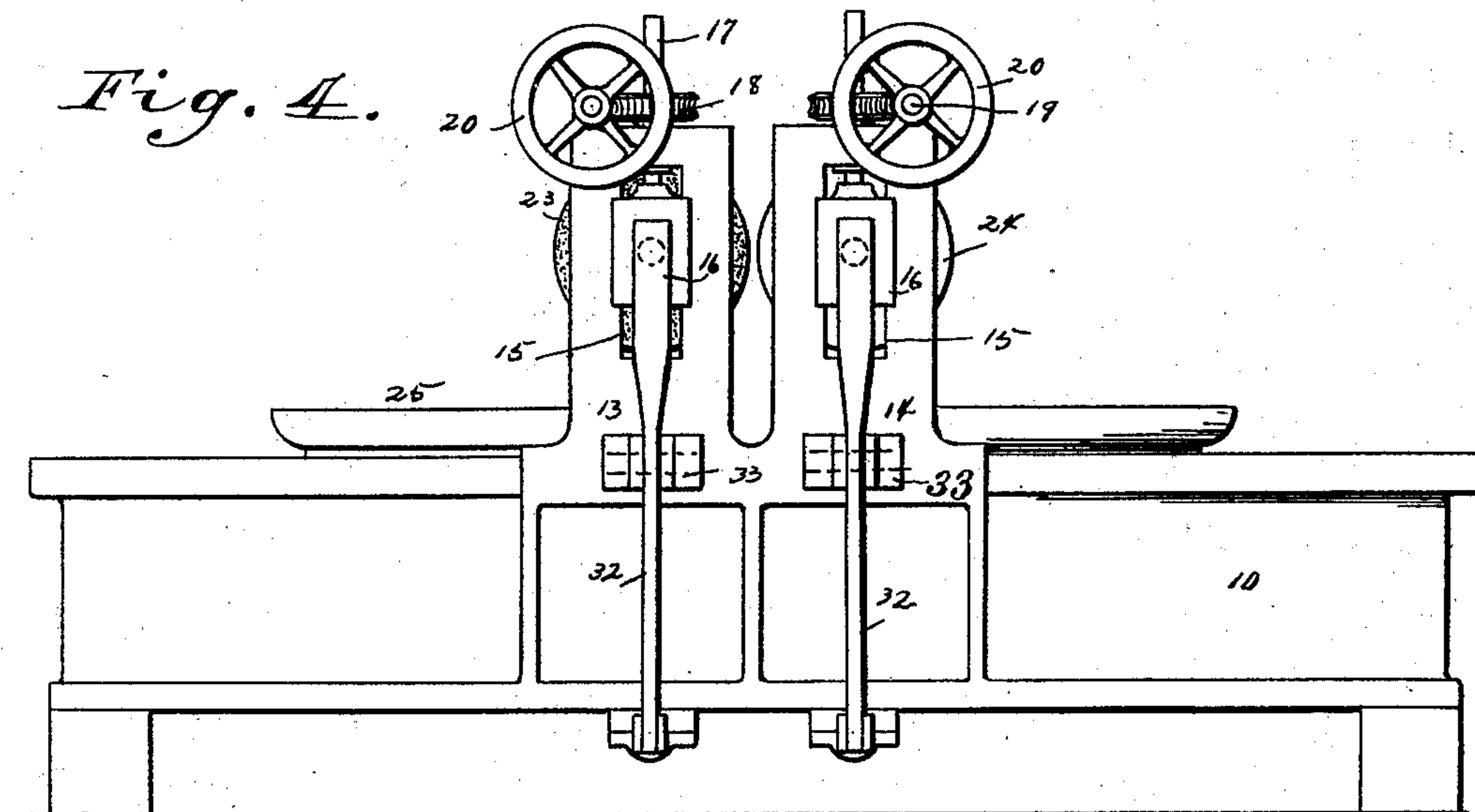


Fig. 4.



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Fig. 5.

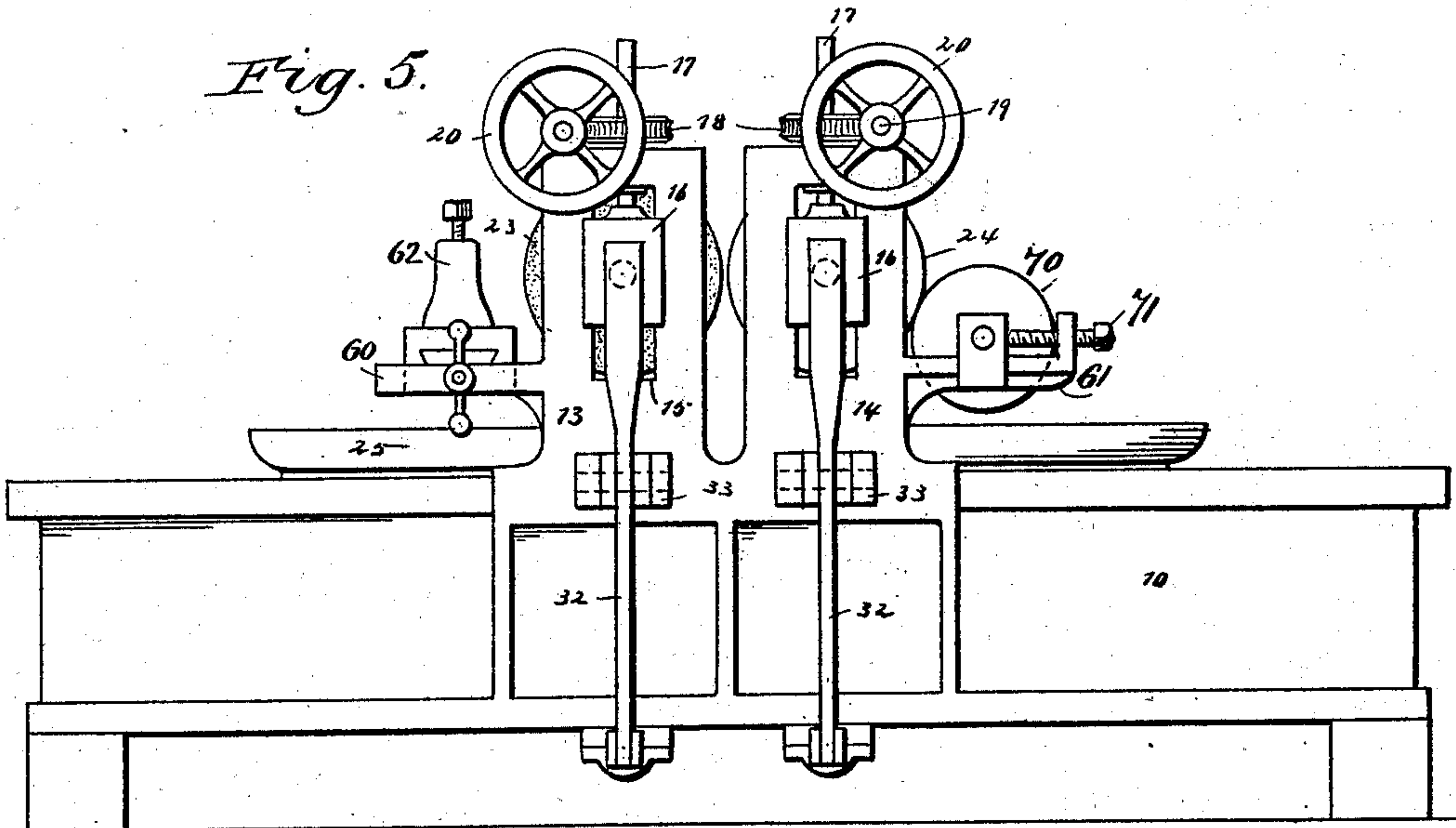
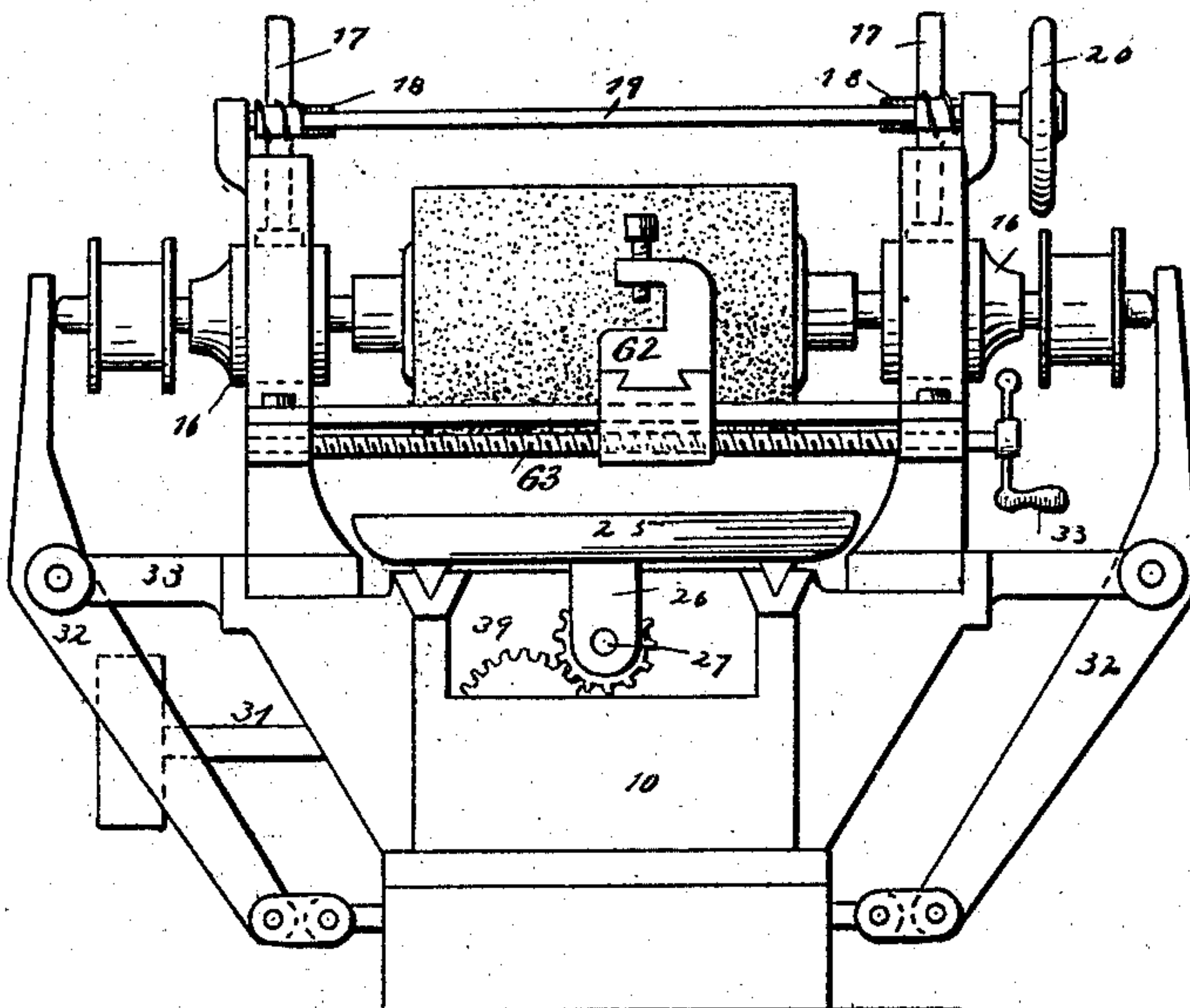


Fig. 6.



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UNITED STATES PATENT OFFICE.

ORLANDO M. GRIMES, OF NEW HAVEN, CONNECTICUT.

MACHINE FOR GRINDING AND POLISHING RIFLE-BARRELS.

SPECIFICATION forming part of Letters Patent No. 406,643, dated July 9, 1889.

Application filed August 23, 1888. Serial No. 283,553. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO M. GRIMES, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and Improved Machine for Grinding and Polishing Rifle-Barrels, of which the following is a full, clear, and exact description.

My invention relates to an improvement in machines for grinding and polishing rifle-barrels, and has for its object to provide a means of obtaining the greatest possible results with the least amount of hand labor, and to provide a machine of simple, durable, and economical construction.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal vertical section through the machine, on line *x x* of Fig. 3, and Fig. 2 is a transverse vertical section on line *y y* of Fig. 1. Fig. 3 is a plan view, and Fig. 4 is a side elevation. Fig. 5 is a side elevation of the machine with the tool-holder and pressure-roller applied, and Fig. 6 is an end elevation.

In carrying out the invention the frame consists, ordinarily, of two parallel side pieces 10, provided with a longitudinal channel in the upper edge, as best shown in Fig. 2. The side pieces are united at the ends by suitable transverse braces 11 and at the center by a vertical pillar 12.

From the outer face of the side pieces, at each side of the center, standards 13 and 14 are upwardly projected, each being provided with a longitudinal opening 15, in which openings boxes 16 are held, rendered vertically adjustable by an attached threaded rod 17, a worm-wheel 18 upon the said rod, and a worm-shaft 19, journaled transversely of the machine, upon the upper ends of the standards. The worm-shaft is preferably manipulated by a hand-wheel 20.

In the boxes of the several transversely-aligning standards shafts 21 and 22 are respectively journaled, the ends whereof ex-

tend beyond the boxes. Each shaft is provided with a pulley at or near the outer end and a roller rigidly attached thereto between the standards, a solid emery-roller 24 being secured upon the shaft 21 and a leather buff-roller 23 upon the shaft 22, as best shown in Fig. 1. Below the rollers 23 and 24 a table 25 is held to slide in the grooves produced in the side pieces of the frame, and from the under face of the table, at or near the extremities, lugs 26 are projected, adapted to receive the reduced ends of a longitudinal feed-screw 27. The feed-screw passes through an interiorly-threaded hub 28, held to revolve in the frame-pillar 12, which hub is provided with a worm-wheel 29, integral with one end, and a spur-wheel 30 at the opposite end. The hub is rotated through the medium of a worm-shaft 31, having secured thereto a suitable driving-pulley, as best shown in Fig. 2.

The drive-shaft 31 and its connections are purposed to accomplish two objects—namely, to laterally feed the table 25 and also to laterally reciprocate the roller-shafts while the same are revolving, in order to insure a uniform wear of the said rollers. The latter object is attained by pivoting rocking levers 32 near their centers to studs 33, horizontally extended from the frame, the upper ends of said rocking levers engaging the extremities of the roller-shafts, the lower ends being connected by a link with shafts 34 and journaled in the lower portion of the frame, one shaft at each side of the pillar 12.

Each shaft 34 is provided with attached spaced fingers 35, adapted for engagement with cams 36, carried by a short longitudinal shaft 36^a, journaled in the said pillar 12, and upon the latter shaft a gear-wheel 37 is keyed, meshing with a pinion 38, integral with a spur-wheel 39, studded to pillar 12, the latter wheel meshing with the spur-wheel of the hub 28, as best shown in Figs. 1 and 2.

The gearing above described is so proportioned as to produce one revolution of the cam to about ten or twelve inches forward travel of the table.

Any desired number of barrels are held upon the table beneath the rollers by means of a head-stock 40 and tail-stock 41, secured to the table as shown in Fig. 1, the head-

stock being vertically adjustable at one side only and the tail-stock laterally and vertically adjustable.

The tail-stock is provided with a spring-actuated trigger 42, carrying a spindle 43, adapted to enter one end of the barrel, the other end of the barrel being held to rotate by an attached key 44, journaled in the head-stock, provided with a worm-wheel 45. The several keys are operated from one hand worm-shaft 46.

I desire it to be distinctly understood that, while specific constructions have been described, other equivalent constructions may be employed without departing from the spirit of the invention, and that any approved form of head and tail stock may be substituted for that shown.

In practice I propose to attach a bracket-arm 60 and 61 (see Figs. 5 and 6) to the standards 13 and 14, respectively, to receive a diamond-carrying tool 62, for turning the emery-roller and a pressure-roller to assist in recoating the buff-roller. The tool-holder 62 is fed transversely by means of the feed-screw 63, while the roller is adjusted toward the emery-roller by means of screws 71.

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

1. The combination, with the frame having opposite front and rear standards, parallel transverse shafts journaled in said standards, a buffing-roller on one shaft and a grinding-roller on the other, and pulleys on said shafts, of upward-extending levers pivoted between their ends to the opposite sides of the frame and engaging at their upper ends the opposite ends of both roller-shafts, a transverse shaft connecting the lower ends of each pair of levers, and a longitudinally-extending shaft having cams for operating said two connecting-shafts, substantially as set forth.

2. The combination, with the frame and the transverse roller journaled thereon, of a longitudinally-reciprocating table under the

roller, and a head and a tail stock mounted on the said table and provided, respectively, with a longitudinally-extending aligned key and spindle, substantially as set forth.

3. The combination, with the reciprocating table, of a head-stock provided with a series of longitudinally-extending parallel keys, a transverse shaft geared to the outer ends of said keys for rotating them, and a series of parallel longitudinally-sliding spindles mounted in the tail-stock in alignment with said keys, substantially as set forth.

4. The combination, with the frame, the rollers, the levers 32, one for each roller, engaging at their upper ends the ends of the roller-shafts, the transverse shafts 34 34, connecting the lower ends of said levers and provided with vertical fingers 35, the longitudinally-extending shaft 36^a, having cams 36 36 between said fingers, and a gear-wheel 37, of the longitudinally-reciprocating table having a feed-screw 27, a rotary internally-threaded hub 28, through which the said screw passes, a drive-shaft geared to said hub, and a pinion 30 on the hub, a pinion 39, driven by the pinion 30, and a smaller pinion 38, connected with pinion 39 and meshing into gear-wheel 37, substantially as set forth.

5. In a machine for grinding and polishing rifle-barrels, the combination, with slotted standards, vertically-adjustable boxes held in said standards, rotary roller-carrying shafts journaled in said boxes capable of lateral movement, and a sliding table below said shafts, of levers engaging the ends of the roller-shafts, finger-carrying shafts linked to said levers, a cam in frictional contact with the fingers, a feed-bar attached to the table, and a drive-shaft and gearing, substantially as shown and described, connecting the drive-shaft with the cam-shaft and table-feed, as and for the purpose specified.

ORLANDO M. GRIMES.

Witnesses:

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