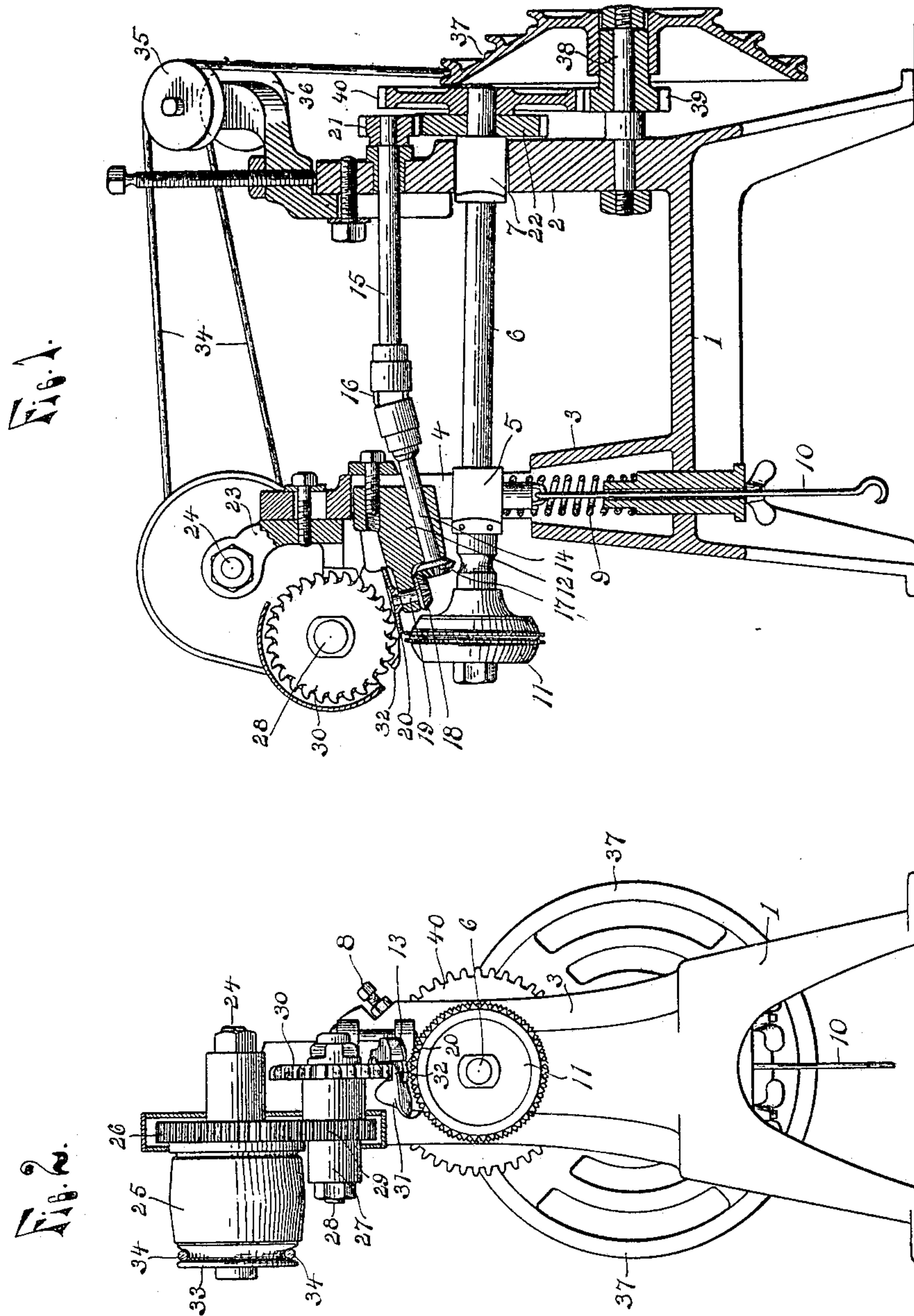


No. 818,774.

PATENTED APR. 24, 1906.

R. MITCHELL.
LIP TURNING MACHINE.
APPLICATION FILED APR. 29, 1905.

2 SHEETS—SHEET 1.



WITNESSES.

Lewis E. Standers
Thos. S. Longstaff.

INVENTOR.

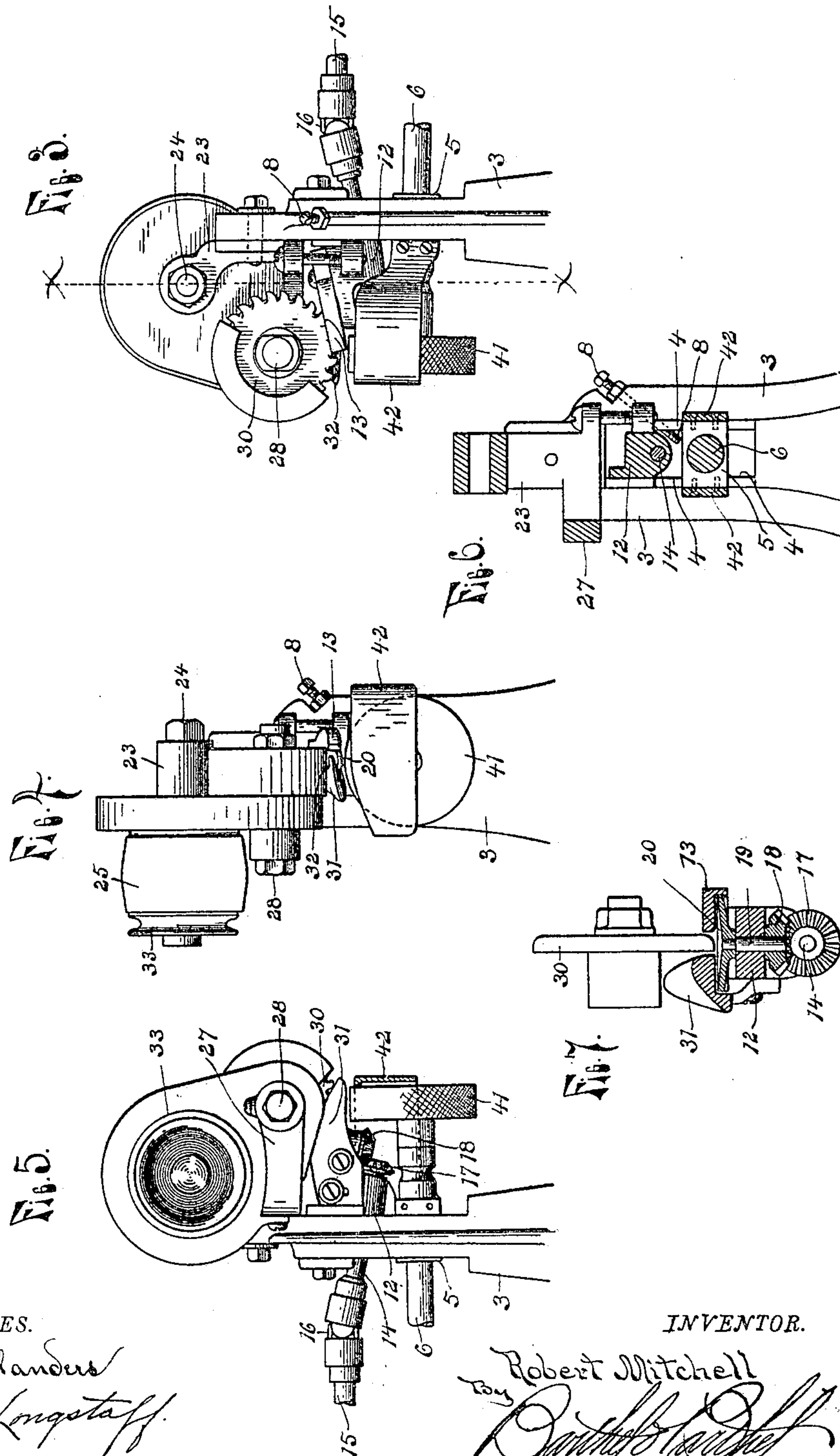
Robert Mitchell
By *Robert Mitchell*
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UNITED STATES PATENT OFFICE.

ROBERT MITCHELL, OF DETROIT, MICHIGAN.

LIP-TURNING MACHINE.

No. 818,774.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed April 29, 1905. Serial No. 258,017.

To all whom it may concern:

Be it known that I, ROBERT MITCHELL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Lip-Turning Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in that class of shoemaking-machines known in the art as "lip-turners;" and the object of the invention is to provide adequate means for feeding the shoe-sole past the lip lifting, turning, and setting devices and firmly holding the same during the operation of said devices and also to provide a feed-wheel and supporting-table suitable for use upon "welt-work," where the stock is thin and flexible.

15 A further object of the invention is to provide a direct drive for the wiper-wheel to prevent slipping and to provide certain other new and useful features, all as hereinafter more fully described, reference being had to the accompanying drawings, in which—

20 Figure 1 is a longitudinal vertical section of a device embodying the invention; Fig. 2, a front end elevation of the same with the gear-casing in section. Fig. 3 is a side elevation of a portion of the machine, showing the supporting-table and feed-wheel for welt-work in place. Fig. 4 is a front elevation of Fig. 3; Fig. 5, an elevation of the side opposite to that shown in Fig. 3 and showing the supporting-table in section; Fig. 6, a section on the line *x x* of Fig. 3, and Fig. 7 a detail showing a section through the axis of the upper feed-disk.

30 1 is the base portion of the frame of the machine; 2, a vertical standard or post at the rear end of the base, and 3 a similar standard at the forward end thereof, provided with vertical ways 4 for the bearing-block 5, in which the shaft 6 is journaled near one end, the opposite end of said shaft being supported in a similar block 7, loosely held in an opening in the rear standard 2. The block 5 is vertically movable on its ways to raise and lower the front end of said shaft, a stop-screw 8, extending downward through a screw-threaded opening in the standard, being provided to determine the height to which said block may be moved on its ways by a suitable coiled spring 9, engaging its lower side. A rod 10, attached to the lower side of said block and operated in any con-

venient manner, as by a treadle, (not shown,) is provided to move the block downward against the action of said spring and lower the front end of the shaft, to which is secured to turn therewith a feed-wheel 11, provided with peripheral teeth to engage the under side of the sole being operated upon and feed the same forward.

A tool-supporting block 12 is adjustably secured between the upper ends of the ways 4 and forms a seat for the plow or lip-raising tool 13, which is adjustably secured to its upper side and also forms a bearing for a short shaft 14, extending rearwardly and upwardly at an angle to the axis of the shaft 6 and connected at its rear end to a shaft 15, from which it receives motion by means of a universal joint 16, said shaft 15 being mounted in a suitable bearing in the rear standard 2 of the frame. To the forward end of the short shaft 14 is secured a small bevel-gear 17, which engages a similar gear 18 on the lower end of a pin 19, mounted in a bearing in the block 12, and extending upward at right angles to the axis of the shaft 14, said pin being provided at its upper end with a small feed-disk 20, secured thereto to turn therewith and provided with teeth or a roughened lower peripheral surface to run within the channeled portion of sole to assist in feeding the same forward.

The feed-disk 20 and feed-wheel 11 are so arranged that the forward edge of said disk extends over and close to the peripheral teeth of the wheel, and when a sole is to be operated upon it is inserted between the disk and wheel and is firmly clamped between by the action of the spring 9, which forces the bearing for the shaft upon which the wheel is secured upward. The disk is set at an angle to the axis of the shaft 6 so that it will engage the horizontal extending surface of the sole at but one point in its periphery, and on the rear end of shaft 15 is secured a pinion 21, in engagement with a gear 22 on shaft 6, so that the feed wheel and disk will be turned at the proper relative speeds to each feed the sole at the same rate of speed as the other.

Adjustably secured to the upper end of the standard 3 is a bracket 23, provided with a bearing in which is fixed a stationary shaft 24, extending in a horizontal plane at right angles to the shaft 6, and on this shaft is loosely mounted a belt-pulley 25 and a gear-wheel 26, secured to said pulley to turn therewith. An outwardly-extending arm 27 on

the bracket below the bearing for the fixed shaft is formed with a bearing for a second fixed shaft 28, upon which is loosely mounted a gear 29, in mesh with the gear 26 and the wiper-wheel 30, secured to said gear 29 to turn therewith, the wiper-wheel extending at right angles to the path of the lip on the sole to be turned and provided with peripheral teeth to engage said lip. The lower edge of the wiper-wheel revolves close to one side of the plow 13 and as close to the upper surface of the feed-disk as possible, and adjustably secured to the tool-carrying block, by means of screws extending through slotted openings, is a presser-foot 31, extending close to the side of the wiper-wheel opposite that at which the plow lies, and is provided with a finger 32, extending across the forward edge of the wheel, so that in turning the lip at the toe of a very pointed sole the foot will not run out of engagement with the lip. As shown in Fig. 7, the lower sides of the plow and presser-foot are recessed to receive the feed-disk, thus bringing the point of contact of the disk, plow, wiper-wheel, and presser-foot with the lip close together and greatly aiding in the operation of the machine.

Integral with the pulley 25 is a pulley 33 for the round belt or cable 34, which passes over the idlers 35 and 36, journaled on an adjustable bracket on the standard 2 of the frame, and thence around a pulley 37, journaled upon a stud-bolt 38 on the said standard to transmit motion from the main driving-pulley 25 to the shaft 6, through a pinion 39, attached to the pulley 37 and in mesh with a gear 40 on the rear end of said shaft 6. The pulley 37 is provided with three contact-faces of different diameters, so that the speed of the feed disk and wheel may be varied by shifting the cable from one to another of said faces. By gearing the wiper-wheel directly to the main driving-pulley, which is driven by a wide belt, the continual rotation of the said wheel is insured, and as the parts are geared to transmit motion from a small pinion to a large gear proper driving power is obtained, the arrangement of driving mechanism thus insuring the uninterrupted operation of all parts regardless of the strain put upon them.

The feed-wheel 11 (shown in Figs. 1 and 2) is provided with peripheral teeth for engaging and feeding the sole forward; but such a wheel may be used only upon "McKay" or similar work, where the marking or roughening of the under surface of the sole will do no harm. Upon welt or similar work, where the sole is comparatively thin and it is desirable to have a perfectly smooth under surface on account of being worn next to the foot, a feed-wheel 41 (shown in Figs. 3, 4, and 5) is provided, which has a milled or otherwise slightly-roughened surface and which may be secured to the end of the shaft

6 in the same manner as the wheel 11. In McKay work the soles are quite thick, and therefore the teeth upon the feed-wheel are more necessary to insure the feeding forward of the sole, and no support other than the wheel is required, as the sole is quite stiff and the tools work close together adjacent to the point at which the wheel engages the sole; but in welt-work the soles are thin and flexible, thus necessitating means for supporting the sole in a horizontal position as it passes between the feed wheel and disk. To so support the work, a table 42 (shown in Figs. 3, 4, and 5) is secured to the outer end of the bearing-block 5 by screws passing through openings in the side flanges of said table, with the upper edge of the feed-wheel slightly projecting through an opening in the top of the table. Said table is thus supported in a fixed relation to the feed-wheel and moves with it as the same is lowered to insert the sole between it and the lip-raising tool or plow.

On welt-work the machine is used on the insole only. Thus if the insole is marred by means of the pointed feed-wheel 11 the shoe when finished would be unwearable. Hence the reason of a broad under-feed with slightly-roughened surface. On McKay work the outsole is operated upon. The part of sole on which feed-wheel 11 is in contact is cemented to the insole on the finished shoe, thus any marring of the sole does not injure or cause any distress to the wearer.

Having thus fully described my invention, what I claim is—

1. In a lip-turning machine, in combination with means for raising and turning the lip, of a horizontally-extending shaft adapted to be moved vertically at one end, a feed-wheel secured upon the vertically-movable end of the shaft, a feed-disk supported adjacent to the feed-wheel with one edge extending over the peripheral contact-surface of the wheel, a spring to raise the movable end of the shaft and clamp the work between the feed wheel and disk, and means for turning the disk and wheel at such relative speeds that the work will be fed by each at the same speed.

2. In a lip-turning machine, in combination with means for raising the lip, of a feed-wheel adapted to engage the under side of the horizontally-extending work, a feed-disk having a contact-face at the periphery of its lower side and journaled to revolve with said face in a plane extending at an inclination to the horizontal plane of the upper surface of the work, means for turning the disk and wheel at relative speeds, and a wiper-wheel revolving in a vertical plane above the point of contact of the disk with the work and at right angles to the path of the lip to engage and turn the same.

3. In a lip-turning machine, the combination with a vertically-movable feed-wheel

adapted to engage the lower side of the work, a wiper-wheel to engage the lip in a vertical plane above the contact-point of the feed-wheel with the work and revolving in a plane at right angles to the path of the lip, and a plow at one side of the wiper-wheel to raise the lip; of a feed-disk journaled to be revolved with its lower face in contact with the upper side of the work in the vertical plane of the point of contact of the feed-wheel with the work and the wiper-wheel with the lip and means for revolving said disk.

4. In a lip-turning machine, the combination with a feed-wheel adapted to engage the lower side of the work, a wiper-wheel revolved in a plane at right angles to the lip and adapted to engage the same and a plow adjacent to one side of the wiper-wheel to raise the lip; of a presser-foot adjacent to the opposite side of the wiper-wheel, and a finger on said foot extending across the forward side of the wiper-wheel.

5. In a lip-turning machine, the combination with a vertically-movable feed-wheel to engage the lower side of the work, of a wiper-wheel revolving in a vertical plane at right angles to the path of the lip to engage and turn the same, a plow supported at one side of the wiper-wheel and having a recess in its lower side, a presser-foot supported at the opposite side of the wiper-wheel and having a recess in its lower side, a feed-disk journaled within the recesses of the plow and presser-foot to revolve in a horizontally-extending plane with its forward edge between the wiper-wheel and feed-wheel to engage the upper surface of the work, and means for revolving said disk.

6. In a lip-turning machine, the combination with a supporting-frame, a horizontally-extending shaft mounted in bearings on said frame and adapted to be moved vertically at one end, and a feed-wheel on the vertically-movable end of said shaft; of a short shaft mounted in a bearing on the frame and extending rearwardly and upwardly at an inclination to the axis of the horizontally-extending shaft, a horizontal shaft mounted on the frame, a universal joint connecting the last-named shaft with the short shaft, a pinion on the said last-named shaft, a gear on the horizontally-extending shaft in mesh with the said pinion, a bevel-gear on the forward end of the inclined short shaft, a revoluble pin mounted in a bearing and extending at right angles to the said short shaft, a bevel-gear on the lower end of the pin in engagement with the other gear, a feed-disk on the upper end of said pin with its edge extending over the feed-wheel in contact with the upper side of the work, a wiper-wheel above the disk revoluble in a vertical plane at right angles to the path of the lip to be turned thereby, a plow supported at one side of the wiper-wheel over the disk and a presser-

foot supported at the opposite side of the wiper-wheel above the disk.

7. In a lip-turning machine, the combination with lip raising and turning means, of a feed-wheel revoluble in a vertical plane, vertically-movable means for supporting the wheel, and a work-supporting table supported by and movable with said supporting means.

8. In a lip-turning machine, the combination with lip raising and turning means, of a horizontally-extending shaft, a vertically-movable bearing for said shaft, a feed-wheel secured to the end of said shaft to revolve in a vertical plane beneath the lip raising and turning means, a work-supporting table having an opening in its top through which the upper contact edge of the wheel projects, and side flanges on the table secured to the said vertically-movable bearing for the shaft.

9. In a lip-turning machine, the combination with the supporting-frame, of a vertically-movable feed-wheel supported on the frame and adapted to engage the lower side of the work, a plow adjustably secured to the frame above said wheel, a presser-foot secured to the frame at a short distance from said plow, a fixed shaft mounted in a bearing on the frame, a pulley loosely mounted on said shaft, a gear on the shaft to turn with the pulley, a second fixed shaft mounted in a bearing on the frame and extending parallel with the first shaft, a gear on the last-named shaft in mesh with the other gear, a wiper-wheel on the last-named shaft to turn with the gear on said shaft and revolving in a vertical plane between the plow and presser-foot at right angles to the path of the lip to be turned, and means for transmitting motion from said pulley to turn the feed-wheel.

10. In a lip-turning machine, the combination with the supporting-frame having vertical standards at each end, of a vertical guideway on the forward standard of the frame, a bearing-block movable in said way, a bearing-block loosely mounted in an opening in the rear standard, a shaft journaled in said blocks, a feed-wheel secured to the forward end of said shaft and revolving in a vertical plane, a supporting-block secured to the forward standard and provided with bearings a short shaft in one of said bearings, a pin in the other bearing on the block and extending at right angles to the short shaft, bevel-gears on the adjacent ends of said short shaft and pin, a feed-disk on the upper end of said pin with its edge extending over the feed-wheel to engage the upper surface of the work, a shaft mounted in a bearing on the rear standard, a universal joint connecting said shaft with the short shaft, a pinion on the rear end of said last-named shaft, a gear engaging said pinion and secured to the shaft upon which the feed-wheel is mounted, a bracket adjustably secured to the forward standard and provided

with parallel bearings, fixed shafts in said bearings, pulleys on one of said fixed shafts free to turn thereon, a gear secured to one of said pulleys, a gear on the other shaft engaging said gear, a wiper-wheel secured to the last-named gear and revolving in a vertical plane with its lower side adjacent to and vertically above the feed-disk, a plow at one side of the wiper-wheel adjustably secured to the supporting-block and provided with a recess for the feed-wheel, a presser-foot adjustably secured to the supporting-block at the opposite side of the wiper-wheel and provided with a recess for the feed-disk, a large pulley mount-

ed on the frame, gears for transmitting motion from said pulley to the shaft upon which the feed-wheel is mounted, idlers journaled on the frame, and a cable engaging one of the pulleys on the fixed shaft and passing over the idlers into engagement with the large pulley.

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

ROBERT MITCHELL.

Witnesses:

THOS. G. LONGSTAFF,

OTTO F. BARTHEL.