No. 868,351. PATENTED OCT. 15, 1907.

F. MAGIDSON.

SHOE POLISHING MACHINE.

APPLICATION FILED APR. 22, 1907.

3 SHEETS—SHEET 1.

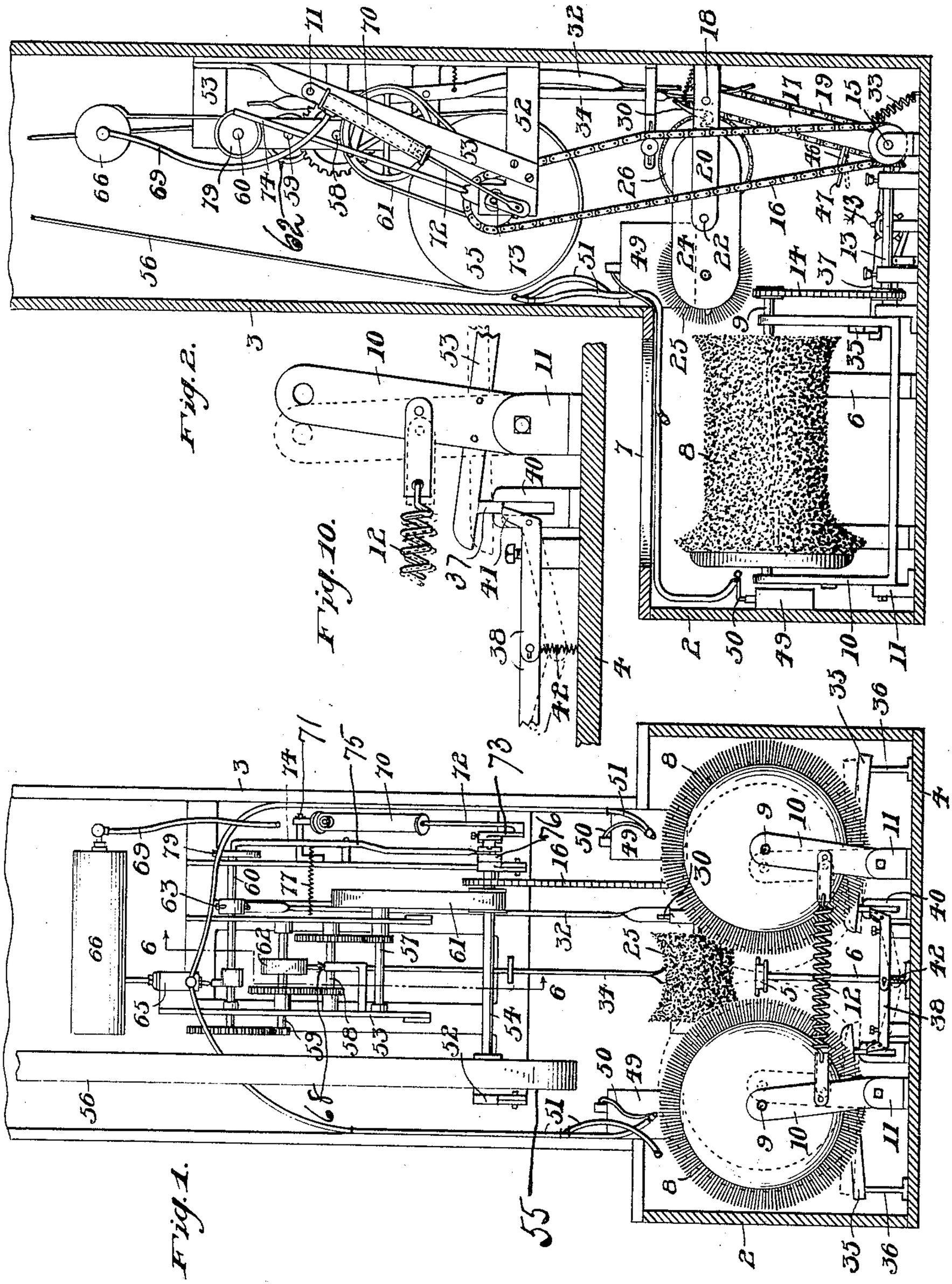

Fig. 2.

Fig. 10.

Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 4.

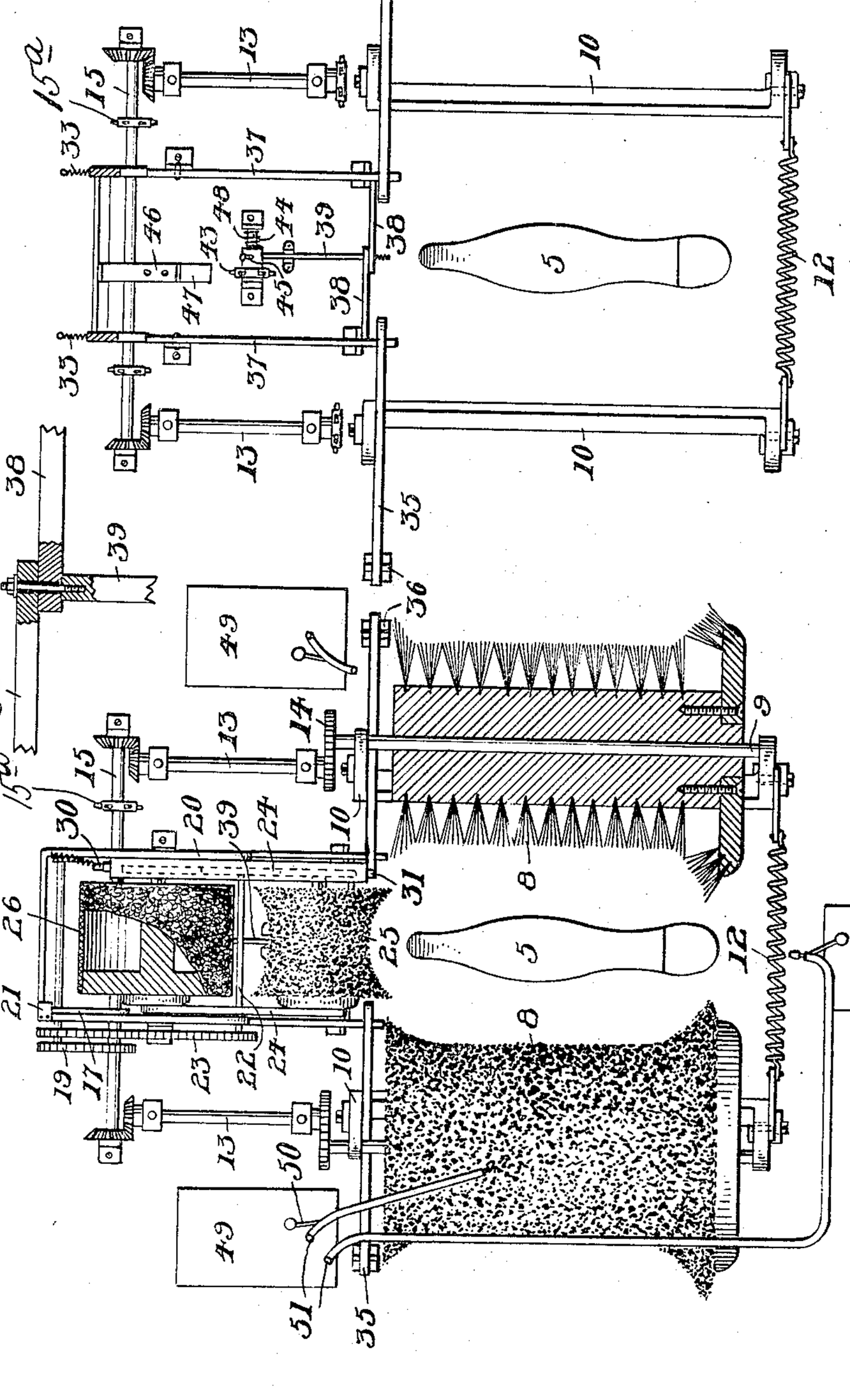

Fig. 1.

Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 8.

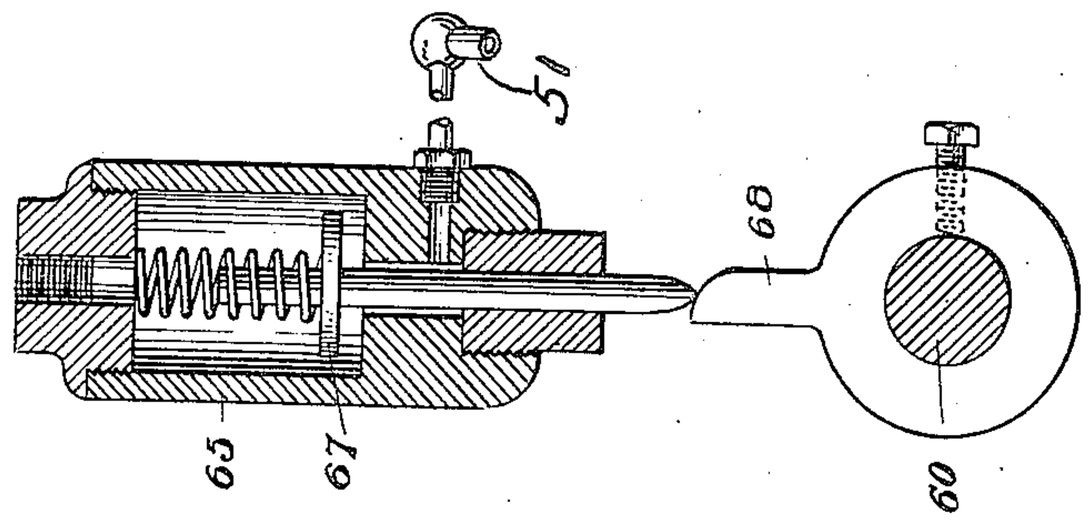


Fig. 7.

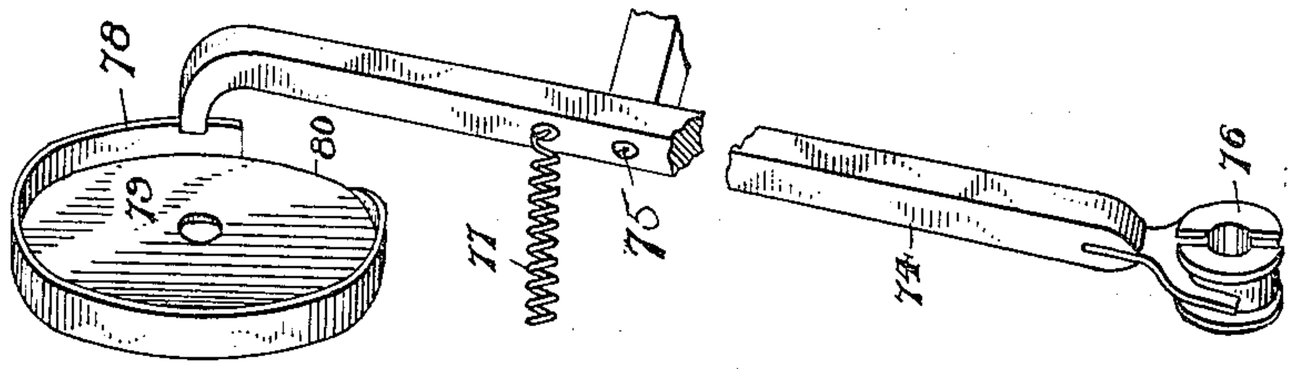


Fig. 6.

Fig. 5.

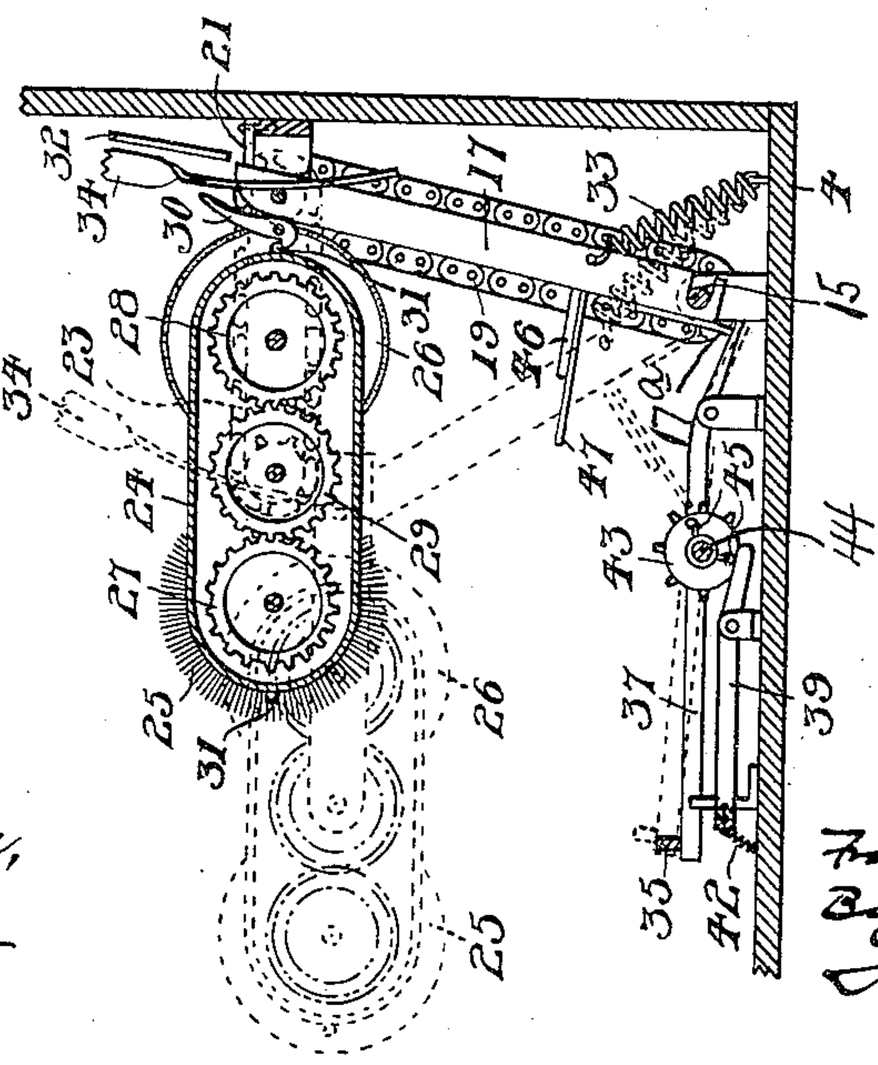
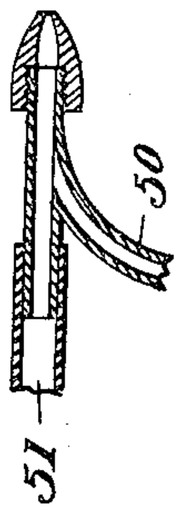


Fig. 9.



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UNITED STATES PATENT OFFICE.

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SHOE-POLISHING MACHINE.

No. 868,351. Specification of Letters Patent. Patented Oct. 15, 1907.

Application filed April 22, 1907. Serial No. 369,451.

To all whom it may concern:

Be it known that I, FRANK MAGIDSON, a resident of Irwin, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Shoe-Polishing Machines, of which the following is a specification.

This invention relates to a shoe polishing machine wherein opposite side brushes are adapted to clean and polish the sides and back of a shoe and front brushes clean and polish the front and toe portion, with means for causing the side brushes to approach and recede from the shoe simultaneously, their movements alternating with the front brushes, so that when the side brushes are active, the front brushes are away from the shoe, and vice versa. A driving or operating mechanism is so arranged as to accomplish these movements, and one purpose of the present invention is to provide improved means for holding all of the brushes in backward position or inoperative during a brief period when the polish-spraying mechanism is brought into play.

In the present embodiment of the invention, the brushes—both side and front—are mounted on swinging carriers, with means operated by the carrier of the front brushes for locking the side brushes in outward position at a time when the front brushes are away from the shoe, leaving the latter clear to receive the polish.

A further purpose of the invention is to provide an improved mounting and driving means for the side brushes. Still a further object is to provide improved air pump operating mechanism by which the pump is actuated during only a portion of the time when the brushes are in operation, this being all that is necessary for supplying the compressed air required for spraying the polish.

In the accompanying drawings, Figure 1 is a front elevation of the machine with the upper front portion of the casing removed and with the lower portion in section, the top of the latter being broken away. Fig. 2 is a side view, the casing being shown in section. Fig. 3 is a top plan view of the brushes and the operating mechanism immediately connected thereto, one of the side brushes being shown in section. Fig. 4 is a view similar to Fig. 3, with the brushes and front brush carrier removed. Fig. 5 is a side elevation of the front brush mechanism, illustrating the movement thereof and the movement of the mechanism for oscillating the front brushes. Fig. 6 is a vertical sectional view, enlarged, of the driving and operating mechanism, taken on line 6—6 of Fig. 1. Fig. 7 is a detail view of the pump clutch operating mechanism. Fig. 8 is a sectional view of the air-controlling valve. Fig. 9 is a detail view of the polish spraying nozzle. Figs. 10 and 11 are detail views of portions of the mechanism for locking the side brushes in inoperative position.

Referring to the drawings, 2 designates the casing of the forwardly projecting base part of the machine, and 3 the upright casing.

4 designates the base of the machine, and 5 the foot-rest within the casing and supported on upright 6 centrally beneath the foot inserting opening 7 in the top of casing part 2.

At opposite sides of the foot rest are side brushes 8, each secured to a shaft 9 journaled in the upper portion of a yoke-shaped carrier 10, mounted to oscillate on bearings 11 secured to base 4. The carriers are connected by a coiled spring 12 which holds them normally turned inward toward each other, with brushes 8 in contact with the shoe resting on support 6. Each of brushes 8 is preferably formed in two connected parts, with the bristles extending differently, as shown in Fig. 3, thus making the brush more effective for operating on the back or heel portion of the shoe.

At the rear of and separate from carriers 10 are horizontal shafts 13, journaled on base 4 in line with bearings 11, with chains 14 connecting sprocket wheels on shafts 13 and the brush shafts. With the brushes oscillating concentrically with their driving mechanism, such movement does not interfere with the rotation of the brushes, the latter being continuous all the while the machine is in operation and regardless of whether the brushes are in inward or outward position. Shafts 13 are geared to transverse base shafts 15 carrying a sprocket wheel 15^a for drive chain 16, extending downward from the train of operating gearing, presently to be described.

The front brush mechanism, which is adapted to move toward and from the front of the shoe, consists of two uprights 17 mounted to oscillate on shaft 15, and at their upper ends carrying transverse shaft 18 connected to shaft 15 by drive chain 19. Mounted at its rear end to oscillate vertically on shaft 18 is frame or carrier 20, which is held from dropping below a substantially horizontal position by stop 21, on the rear edge of the frame engaging one of uprights 17.

Journaled in the forward end of carrier 20 is shaft 22, connected by drive chain 23 with shaft 18. Within carrier 20 and mounted centrally on shaft 22 is the front brush holder which consists of two side members 24, and journaled between these members at one end is the cleaning or bristle brush 25, and at the opposite end the polishing brush or buffer 26, the spindles of these brushes being connected, respectively, by gears 27 and 28 with gear 29 on shaft 22, whereby the brushes both rotate continuously with shaft 22, such rotation not being interrupted by the turning of the brush holder within carrier 20. The tendency of the brush holder is

to rotate with shaft 22, owing to the gear connection therewith, but normally the holder is held from so turning by the pivoted latch 30 engaging one of projections 31 on either end of the brush holder. When it is desired to reverse the position of brushes 25 and 26, latch 30 is released by the forward movement of lever 32, operated in manner presently to be described. The front brush carrier 20 is held normally retracted, as in Fig. 2, by springs 33, and is moved forward against the pull of said springs by depending lever 34, the lever being operated at its upper end, as will presently appear.

Rigidly secured between its ends to each of carriers 10 is a transverse bar 35, the outer ends of which engage stops 36 for limiting the outward tilting movement of the carriers. The inner end of each bar 35 projects over a lever 37, with the rear ends of the levers extending beneath the lower ends of the oscillating carrier-uprights 17, so that when the latter are moved forward by lever 34, the rear ends of levers 37 are depressed and their forward ends raised, thereby raising the inner ends of bars 35 and oscillating carriers 10 outwardly, moving the side brushes away from the shoe. As this operation occurs upon each forward movement of the front brush carrier, it will be seen that the front brushes operate upon the shoe alternately with the side brushes, the latter being moved inward into shoe engaging position in response to the pull of spring 12 as soon as uprights 17 of the front brush carrier recede into the position shown in Fig. 2 and the full line position of Fig. 5.

With the last described mechanism operating uninterruptedly, either the side or the front brushes will always be in shoe-engaging position. It is necessary, however, for all the brushes to be held in outward or disengaged position at the completion of the operation of the machine so that the foot may be withdrawn and the foot-rest left clear for receiving the next shoe to be polished, and as above indicated, it is desirable to have all the brushes in outward position when the liquid polish is being sprayed upon the shoe. As the front brushes are held normally in outward or withdrawn position, it is only necessary to provide means for preventing the side brushes from moving inward. For this purpose I employ two lever-like latches 38 pivotally connected at their inner crossed ends to one end of lever 39. Latches 38 are here shown pivoted to guides 40 of levers 37, with their upturned extremities 41 adapted to turn beneath levers 37, as shown in full lines of Figs. 1 and 10, with the inner ends of bars 35 raised and brush carriers 10 held in outwardly tilted position. Normally, latches 38 are held disengaged from levers 37 by spring 42, as in dotted lines in Figs. 1 and 10, with said levers free to oscillate vertically, as above described. Lever 39 is fulcrumed between its ends with its rear end extending beneath toothed wheel 43 on the short transverse shaft 44. Projecting from the hub of wheel 39 are the two pins 45, adapted to engage and depress the rear end of lever 39 and raise latches 38 into the locking position of Figs. 1 and 10.

Shaft 44 is turned intermittently by an arm 46 projecting from the oscillating carrier-uprights 17, this arm being provided with the flexible spring extension or pawl 47 adapted to engage and turn the toothed wheel 43 as uprights 17 move forward. A spring 48 on shaft 44 exerts sufficient tension to prevent the wheel from turning by momentum, so that its advance is only the actual movement imparted thereto by arm 46. The mechanism is so arranged that at the completion of the polishing operation, one of the pins 45 is in engagement with lever 39, as shown in Fig. 5, with latches 38 in locking position and levers 37 held raised and the side brushes tilted outward. The other pin 45 engages lever 39 and similarly operates the latches for holding the side brushes in inoperative position while the polish is being applied. The spring extension 47 of arm 46 is provided for permitting the arm to recede and disengage toothed wheel 43 without acting on the next adjacent tooth of the wheel, the spring extension yielding on its backward movement, as indicated in dotted lines in Fig. 2.

The liquid polish is preferably contained in receptacles 49 at opposite sides of the casing and at the front. Extending from these containers are polish-conducting tubes 50, and for each of the latter is provided an air tube 51, with the discharge ends of the polish and air tubes connected so that a blast of air under pressure emitted from the air tube will induce a flow of polish and spray the same upon the shoe. As many of these tubes may be provided as may be necessary, and they are extended to such points as to effectively spray the entire lower portion of the shoe, including the rear or heel portion for which a set of tubes is especially extended, as shown in Fig 3. The air supplying and controlling mechanism will be presently described.

I will now describe the mechanism for driving and controlling the brushes. Secured to the rear wall of the casing is the forwardly projecting supporting frame having at its lower end parallel arms 52, and above these arms the upright frame structure 53. Journaled in arms 52 is shaft 54 carrying band wheel 55 to which belt 56 extends from an electric motor or other source of power, not shown. Drive chain 16, extending to base shaft 15, is driven by a sprocket wheel secured to shaft 54. Arranged in frame 53 is a train of gearing consisting of shafts 57, 58, 59 and 60, arranged one above the other and geared together, as shown, with belt 61 connecting shaft 57 with shaft 54. The train of gearing reduces and regulates the speed required for the several operating parts of the mechanism. A cam 62 on shaft 59 oscillates lever 34 which reciprocates the front brush carrier, said lever being fulcrumed adjacent its upper end at 34^a. 64 is a lubricating wiper for the periphery of cam 62. Pins 63 projecting from shaft 60 engage and deflect lever 32 at the proper times for releasing the front brushes so they may reverse their positions, as before described.

Arranged above shaft 60 is the air-valve casing 65 to which are connected the air pipes 51, the upper portion of the casing being in communication with the compressed air reservoir 66. Within casing 65 is the vertically movable spring-closed valve 67 carried on a stem projecting through the lower end of the casing. Secured to shaft 60 in the plane of the valve stem is wiper 68, which at the proper time engages and raises the valve stem, as shown in Fig. 8, opening the valve momentarily for the passage of air which results in spraying the polish in the manner above described.

Air is supplied to reservoir 66 through pipe 69 extending from a pump 70, pivotally supported at its upper end at 71. The piston rod 72 is connected to crank 73 loose on shaft 54. A lever 74 is fulcrumed between its

ends to the frame at 75 and at its lower end embraces the clutch member 76 rotatable with and slidable on shaft 54, with a spring 77 normally holding lever 74 with the clutch out of engagement with crank 73, as shown in Fig. 1. The upper extremity of lever 74 is held in engagement with rim 78 of wheel 79 mounted on shaft 60. With the lever in engagement with this rim and resisting the pull of spring 77, the clutch is disengaged and the pump is not operated, but when the lever encounters the interruption 80 of rim 78 it is oscillated, and while said interruption is passing the lever the pump is in operation, replenishing the supply of air in reservoir 66. It is only necessary to operate the pump during a part of the time the machine is in operation, and of course the same may be made more or less by varying the length of the rim interruption.

The motor for driving the machine, also the means employed for timing its operation are preferably located in the upper portion of casing 2. But as those mechanisms form no part of the present invention, they have not been illustrated.

I claim:—

1. In a shoe polishing machine, the combination of a side brush movable toward and from a shoe, a front brush, a support for the front brush movable toward and from a shoe, means for causing the side brush to engage the shoe alternately with the front brush, means actuated by the front brush support for moving the side brush away from the shoe as the front brush approaches the same, a lock device for holding the side brush in position away from the shoe, and actuating means for the lock device carried by the front brush support.

2. In a shoe polishing machine, the combination of a side brush movable toward and from a shoe, a front brush, a support for the front brush movable toward and from the shoe, means for causing the side brush to engage the shoe alternately with the front brush, and mechanism actuated by the front brush support for holding the side brush disengaged from the shoe.

3. In a shoe polishing machine, the combination of a side brush movable toward and from a shoe, a front brush, a support for the front brush movable toward and from the shoe, means to actuate said support means for causing the side brush to engage the shoe alternately with the front brush, lock mechanism for holding the side brush in disengaged position, a rotary lock-actuating member, and a device carried by the front brush support for turning said actuating member.

4. In a shoe polishing machine, the combination of a front brush, a support therefor movable toward and from a shoe, a toothed wheel, means engaging the teeth thereof to rotate said wheel a side brush movable toward and from the shoe, means for causing the side brushes to engage the shoe alternately with the front brush, and lock mechanism actuated by the toothed wheel for holding the side brush disengaged at the same time the front brush is disengaged.

5. In a shoe polishing machine, the combination of opposite side brushes movable toward and from a shoe, a spring for holding them normally in shoe-engaging position, levers for moving the brushes away from the shoe, latches for locking the levers with the brushes disengaged, a latch-actuating lever, a toothed rotary member for oscillating the latch-actuating lever, a front brush, a support therefor movable toward and from the shoe, and an arm carried by the support for actuating said rotary member.

6. In a shoe polishing machine, the combination of side brushes movable toward and from a shoe, a front brush, a support for the front brush movable toward and from the shoe, lock mechanism operatively connected to the front brush support for holding the side brushes away from the shoe at the same time the front brush is held therefrom, polish spraying mechanism, and means operative when all the brushes are being held away from the shoe for actuating the spraying mechanism.

7. In a shoe polishing machine, the combination of opposite side brush carriers mounted to oscillate on fixed bearings, carrier oscillating means, brushes rotatable in the carriers, shafts separate from the carriers but in line with the bearings upon which the latter oscillate, drive chains connecting the shafts with the brushes, and shaft rotating means.

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

FRANK MAGIDSON.

Witnesses:
F. M. RAINEY,
JAMES O. HOWELL.