

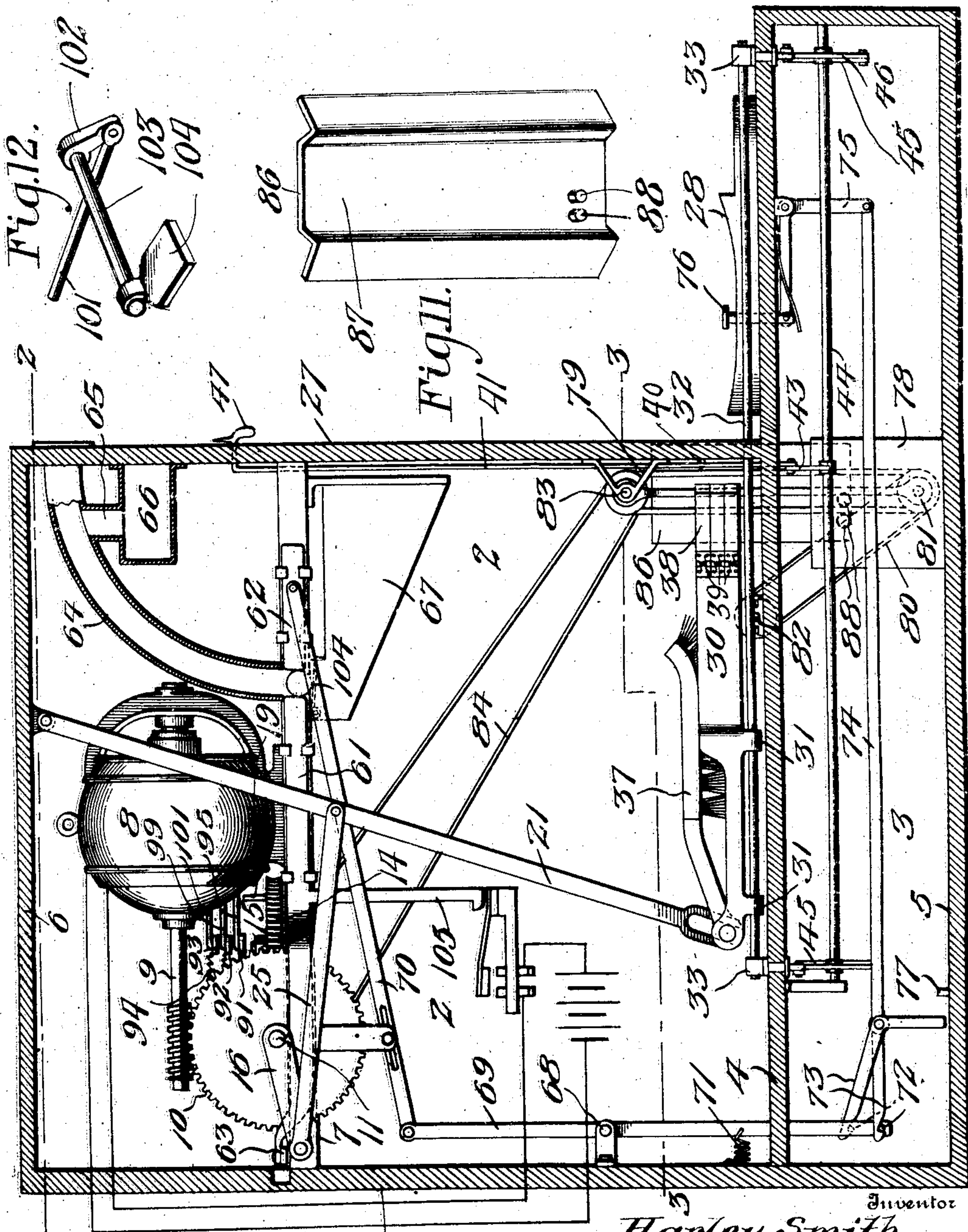
No. 834,766.

PATENTED OCT. 30, 1906.

H. SMITH.
COIN CONTROLLED SHOE POLISHING MACHINE.

APPLICATION FILED NOV. 12, 1904.

4 SHEETS—SHEET 1.



Witnesses

Louis D. Heinrichs
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Fig. 1.

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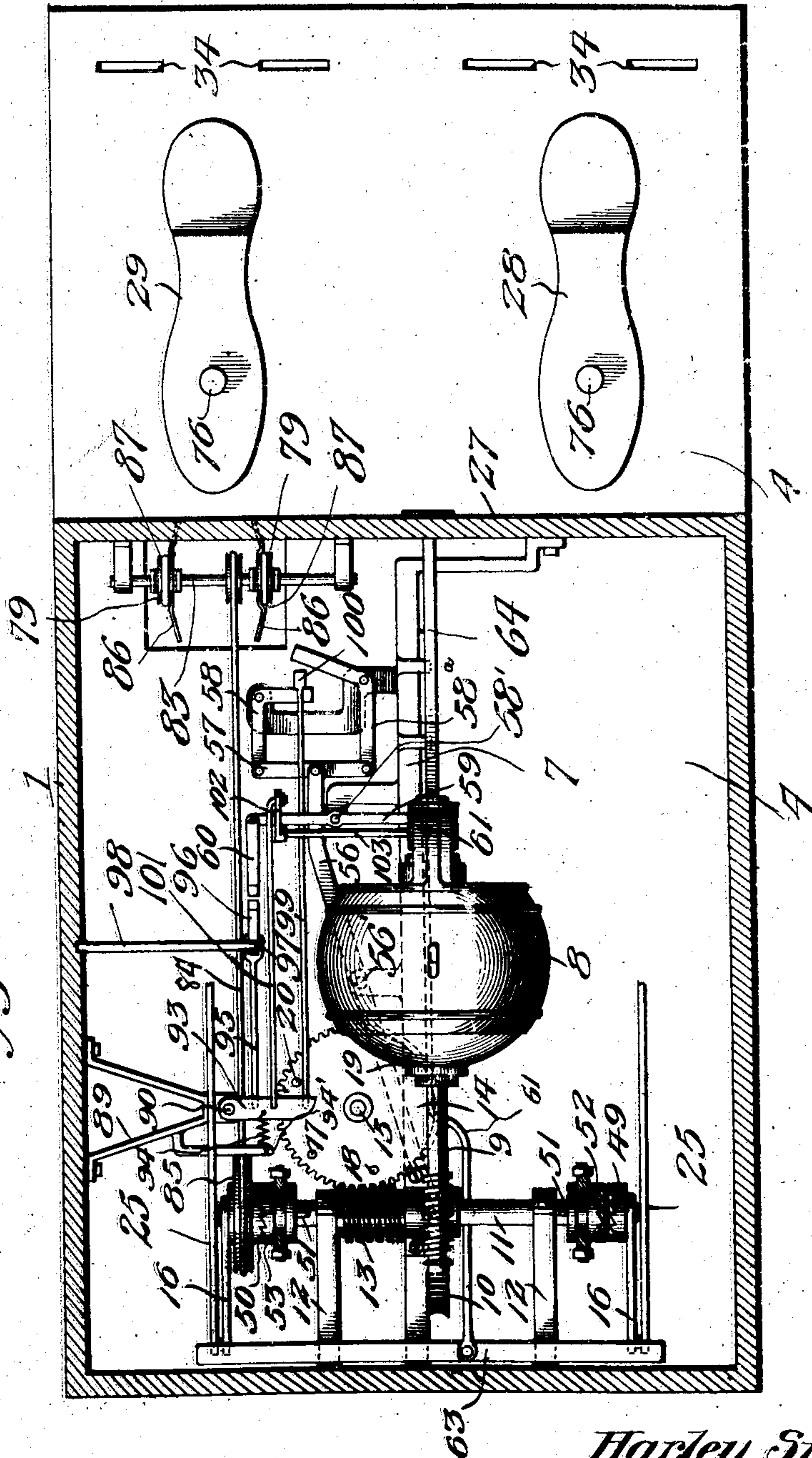
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4 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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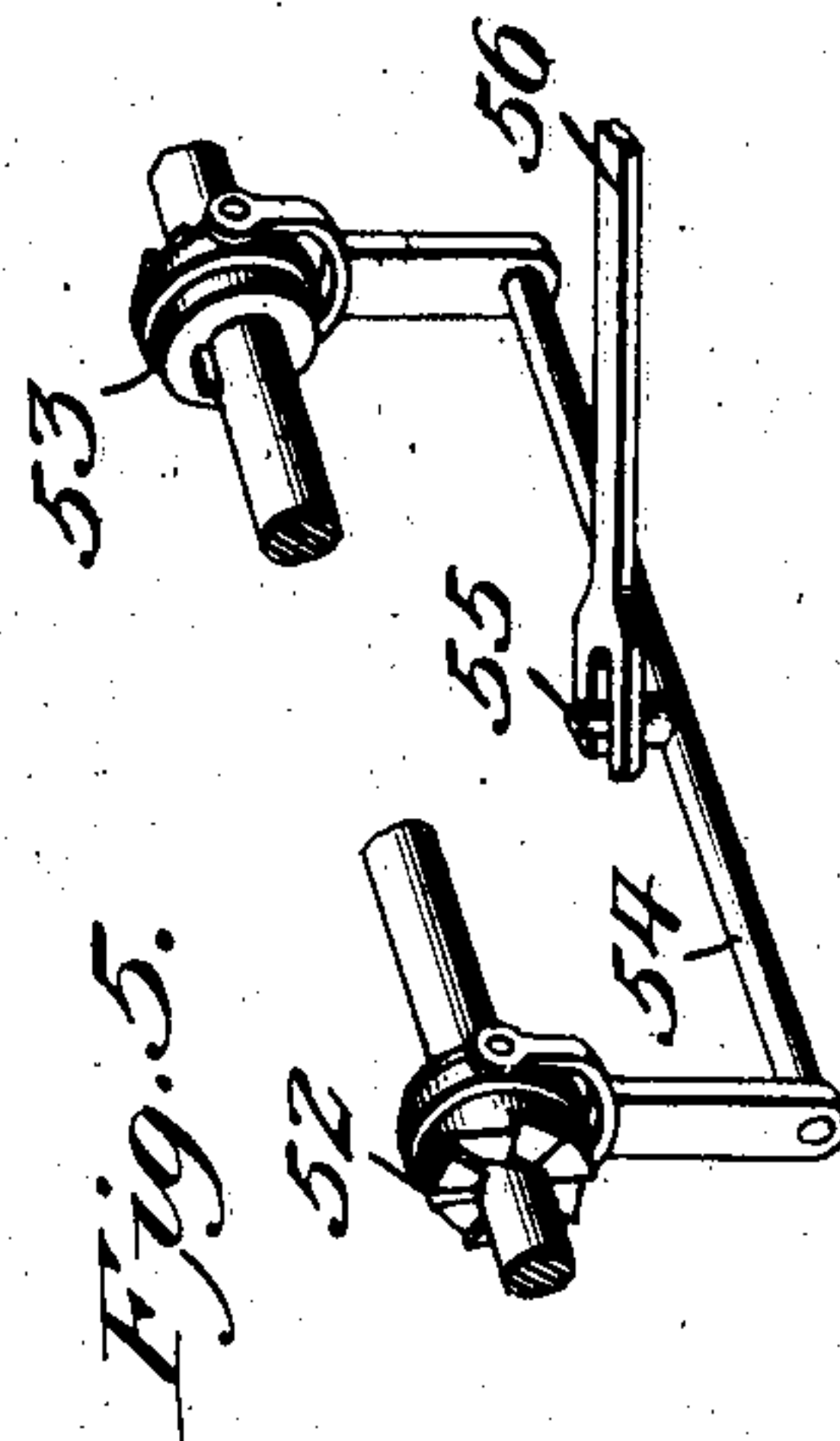
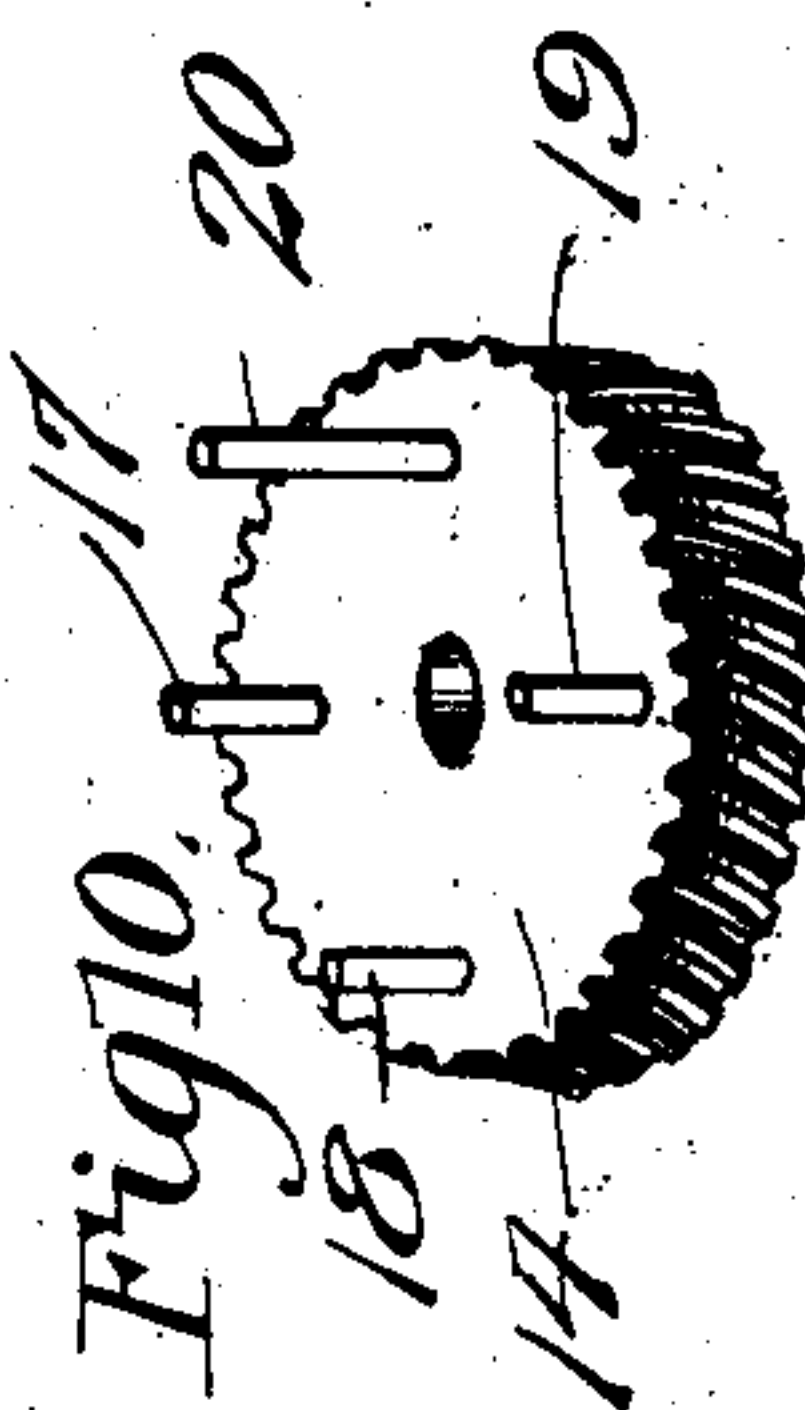
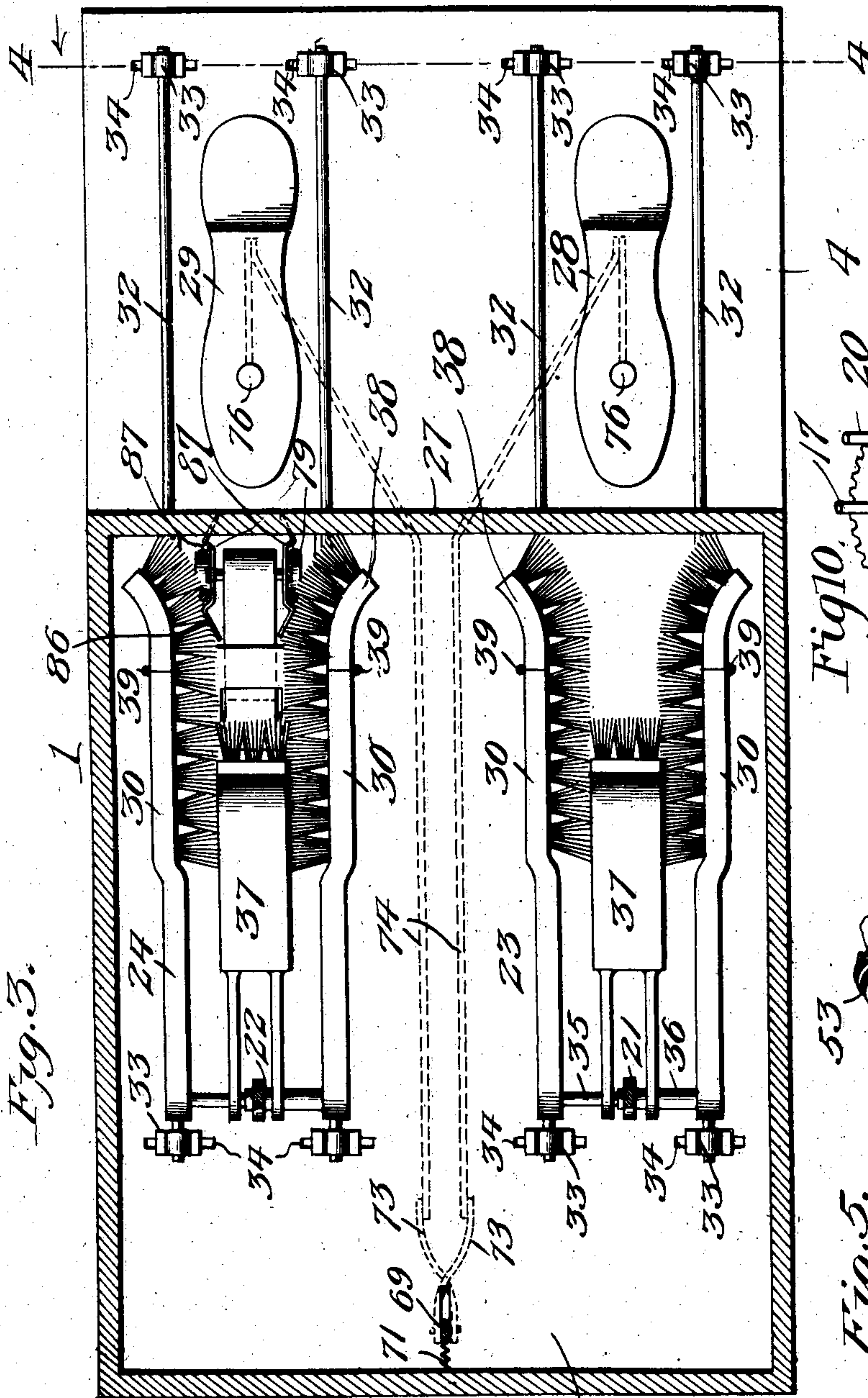
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 4.

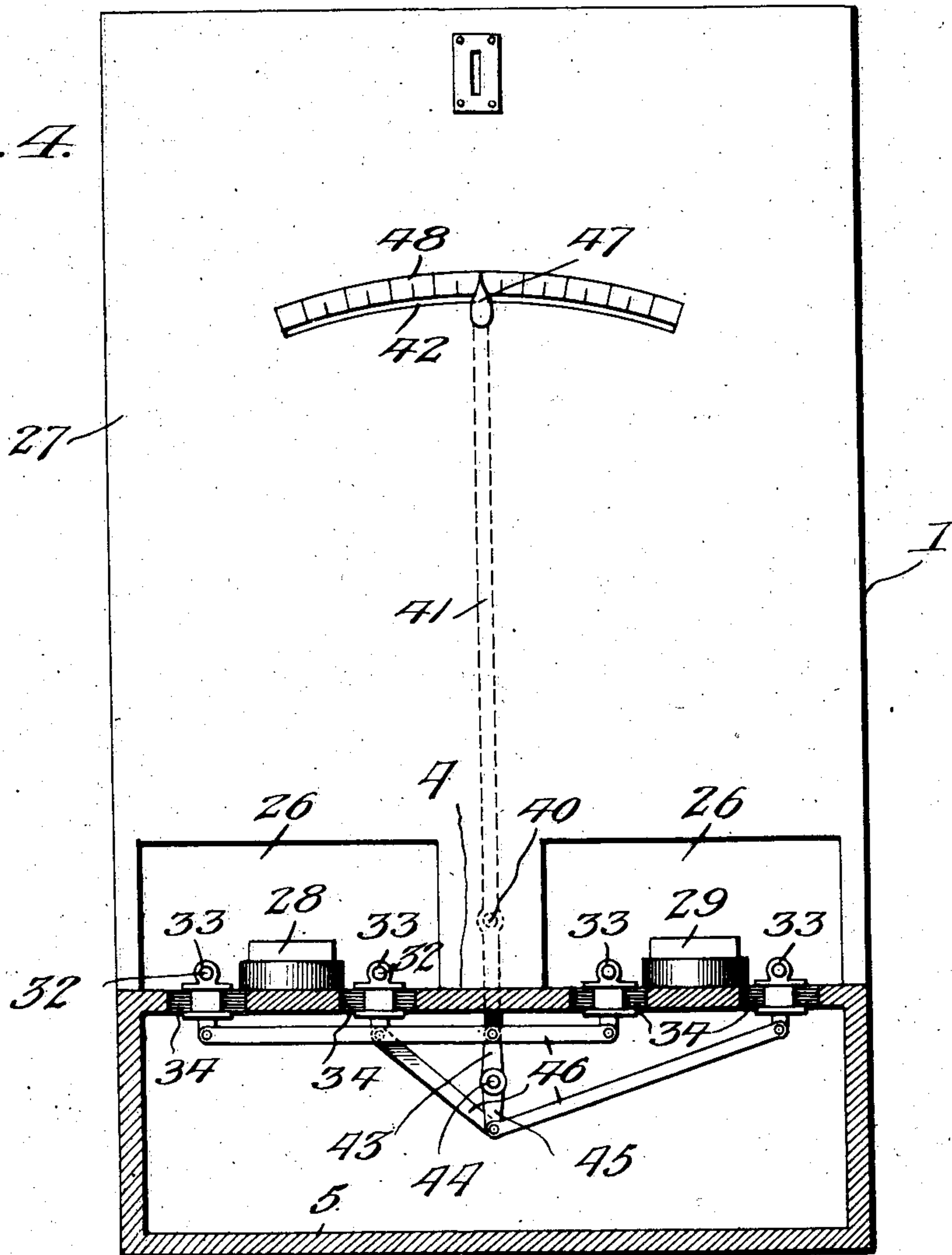


Fig. 6.

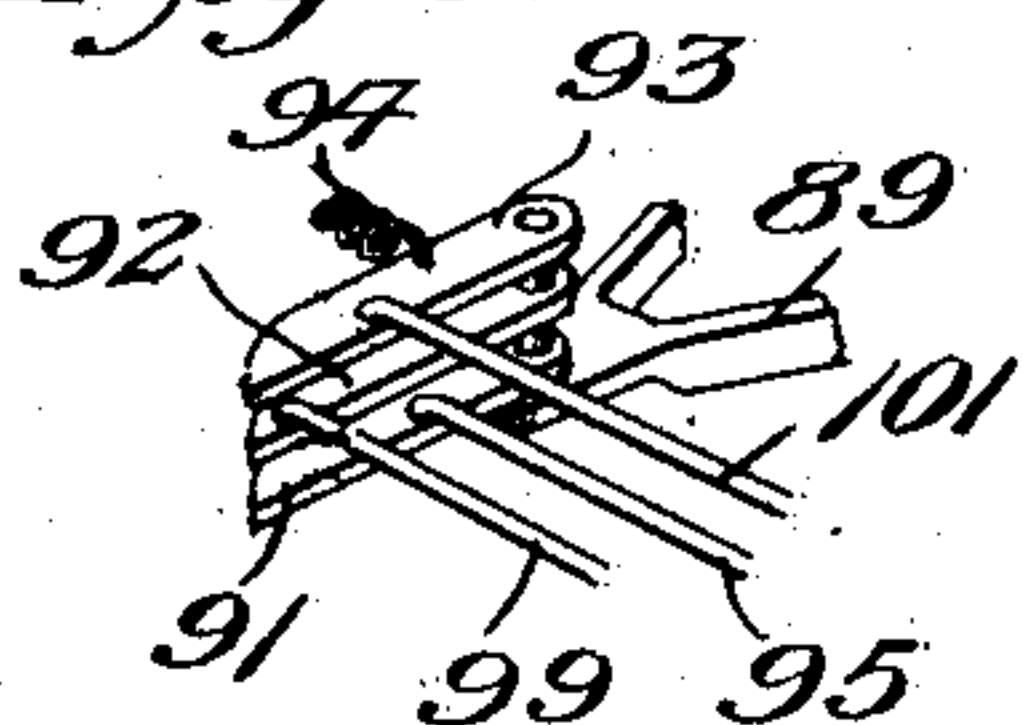


Fig. 7.

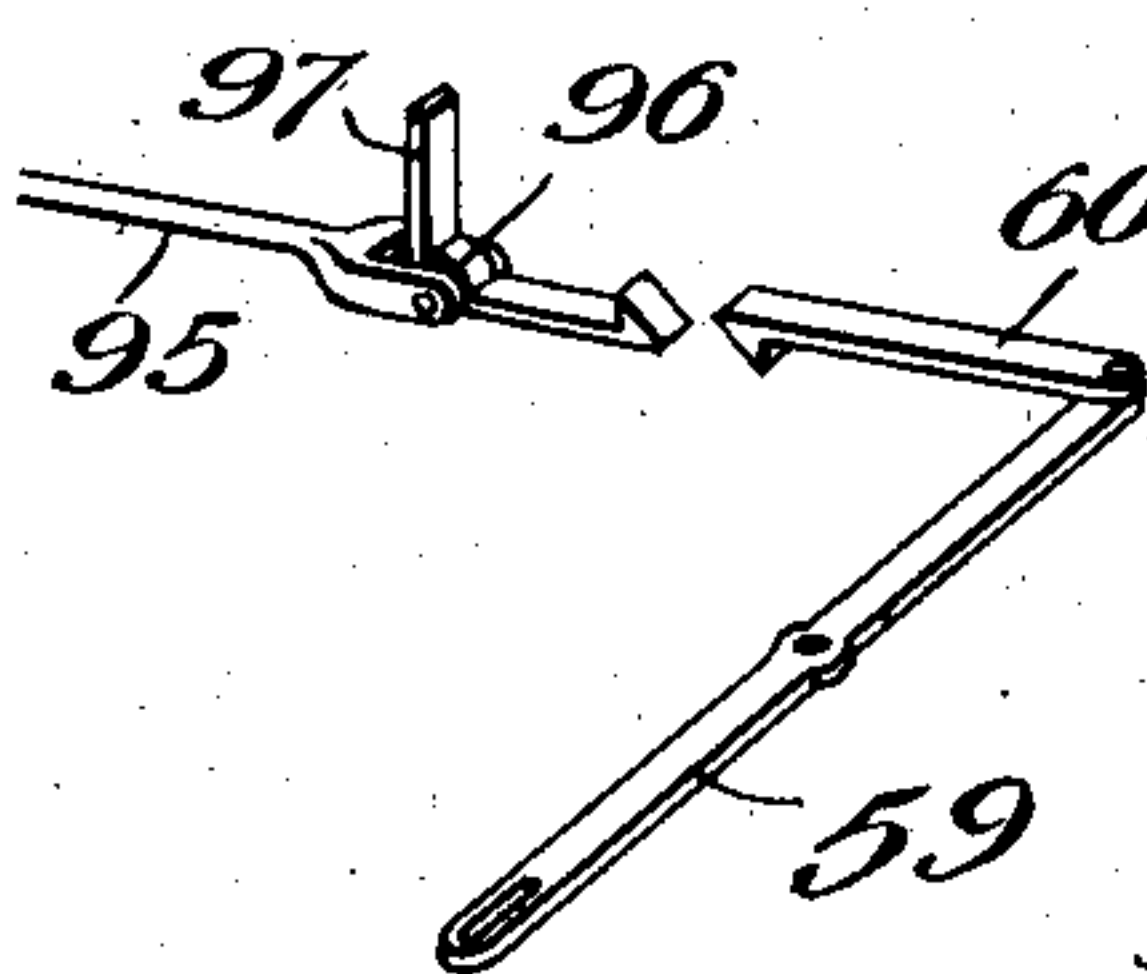


Fig. 8.

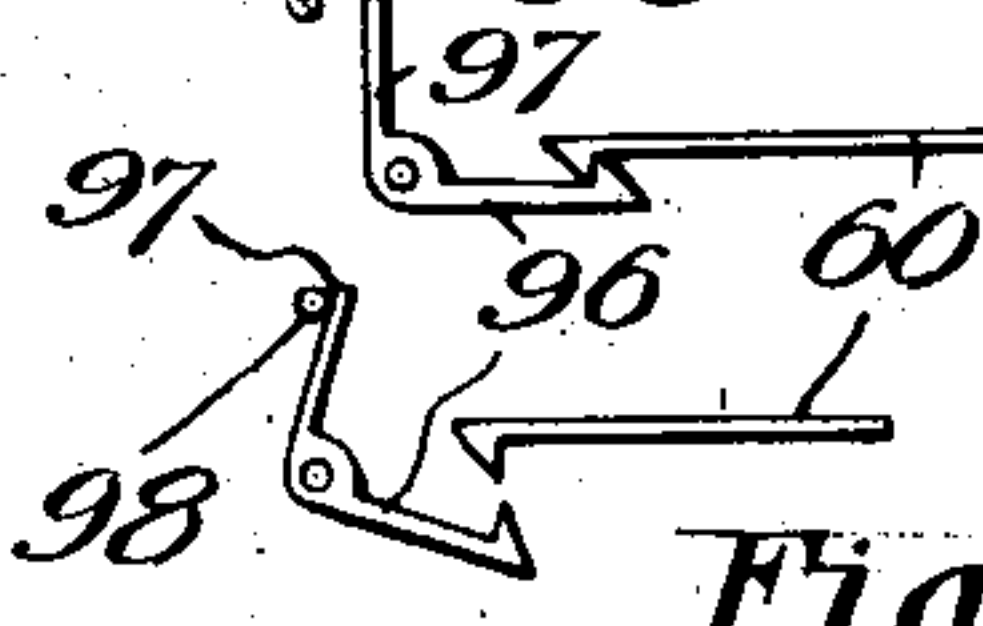


Fig. 9.



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UNITED STATES PATENT OFFICE.

HARLEY SMITH, OF BUFFALO, MISSOURI.

COIN-CONTROLLED SHOE-POLISHING MACHINE.

No. 834,766.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed November 12, 1904. Serial No. 232,505.

To all whom it may concern:

Be it known that I, HARLEY SMITH, a citizen of the United States, residing at Buffalo, in the county of Dallas and State of Missouri, have invented new and useful Improvements in Coin-Controlled Shoe-Polishing Machines, of which the following is a specification.

This invention relates to a shoe-polishing machine, and has for its objects to produce a comparatively simple inexpensive device of this character wherein the operations of applying the blacking to and polishing the shoes will be automatically performed, and one in which the introduction of a coin into the machine will set the operating mechanism and maintain the same in such condition until the completion of the polishing action, whereupon the coin will be released and permitted to enter the coin-receptacle and the machine rendered inoperative until the introduction of a second coin.

A further object of the invention is to provide a mechanism which will be automatically shifted for alternately operating the blacking applying and polishing brushes and one wherein the brushes may be readily and accurately adjusted to conform to the varying sizes of shoes operated upon.

A further object of the invention is to provide a locking mechanism which at the completion of each step of the polishing operation will automatically throw the motor out of operation and simultaneously actuate a breaking mechanism for checking the momentum of the power-shaft to thus instantaneously stop the machine.

A further object is to provide an improved mechanism for feeding the blacking to the blacking-applying brush and one wherein spattering of the blacking will be prevented and the surplus blacking returned to the reservoir.

With these and other objects in view the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of a machine embodying the invention. Fig. 2 is a horizontal section taken on the line 2 2 of Fig. 1 with parts of the mechanism omitted. Fig. 3 is a horizontal section taken on the line 3 3 of Fig. 1. Fig. 4 is a front elevation, partly in section, the section being taken on the line 4 4 of Fig. 3. Fig. 5 is a detail perspective view of the clutch-shifting mechanism.

Fig. 6 is a detail perspective view of the tripping members or levers and adjacent ends of the connecting elements. Fig. 7 is a similar view of the motor-controlling lever and its locking mechanism. Fig. 8 is a detail view in elevation of the locking mechanism, showing the latching member in normal position. Fig. 9 is a similar view showing the latching member tripped. Fig. 10 is a detail perspective view of the horizontal worm-gear. Fig. 11 is a perspective view of one of the shields. Fig. 12 is a detail perspective view of the rock-shaft carrying the valve for operation by the coin.

Referring to the drawings, 1 designates a casing divided into an upper compartment 2 and a lower compartment 3 by means of a horizontal partition or platform 4 appropriately spaced from the bottom 5 of the casing, there being sustained within the compartment 2 beneath and suitably remote from the top 6 of the casing a horizontal supporting-frame 7.

Sustained upon the frame 7 is an electric motor 8, provided with and adapted for driving a worm-shaft 9, in mesh with a worm-gear 10, fixed upon a drive-shaft 11, journaled for rotation in suitable bearings 12 and in turn carrying a worm 13, in mesh with a horizontal worm-gear 14, journaled for rotation upon a vertical shaft or axle 15, there being arranged upon the ends of the shaft 11 crank-arms 16 and upon the worm-gear 14 a series of fixed vertically-uprising pins or abutments 17, 18, 19, and 20, arranged at spaced intervals around and adjacent the periphery of the gear and of varying lengths for a purpose which will hereinafter appear.

Pivoted at their upper ends to the top 6 of the casing is a pair of spaced operating-levers 21 22, of which the lever 21 is pivoted at its lower end to a polishing brush or brushes 23, while the lever 22 is in like manner pivoted at its lower end to blacking-applying brushes 24, these levers being connected, respectively, with the crank-arms 16 by means of links 25, pivotally connected with the crank-arms and with the levers at points between the ends of the latter, whereby when the shaft 11 is rotated the brushes will be reciprocated in a horizontal plane back and forth through openings 26, provided in the front wall 27 of the casing and over suitable foot-rests 28 29, mounted upon the partition 4, which for this purpose projects beyond the front wall of the casing.

The sets of brushes are identical in construction and operation and each includes a pair of spaced side brushes 30, disposed vertically on edge with bristles extending inward and their lower edges slidably engaged, by means of perforated ears 31, with parallel horizontal guide members or rods 32, sustained upon the platform 4 by means of end brackets or supports 33, which latter are movably disposed in guide-openings or slots 34, provided in and extending transversely of the platform, whereby the rods, and consequently the brushes 30, may be adjusted toward and from each other, the rear ends of the brushes being for this purpose connected by means of a rod 35, fixed to one of the brushes and telescoping with a tube 36, fixed to the other, this rod and tube serving as a bearing for the lower end of the operating lever which reciprocates the brushes. Each set of brushes also includes a top brush 37, pivoted for vertical swinging movement upon the connection 35 36 and disposed with its bristles projecting inward between the bristles of the brushes 30, it being noted that the outer or forward ends of all the brushes are curved outwardly to permit free entrance of a shoe between them and that the side brushes 30 are provided at their forward ends each with a series of vertically-superposed spring-sections 38, pivoted, as at 39, to the body of the brush and adapted for independent movement to conform to the irregular surface of the shoe.

Pivoted, as at 40, to the inner face of the front wall 27 of the casing is a lever 41, engaged at its upper end with a segmental guide-slot 42 and pivotally connected at its lower end with a crank-arm 43, fixed upon a rock-shaft 44, journaled beneath the platform 4 and fixedly carrying normally vertical crank arms or heads 45, connected by a system of links 46 with the movable brackets 33, the links being so arranged that when the shaft 44 is rocked in one direction the guides 32 and brushes 30 will be moved toward each other and when the shaft is rocked in the reverse direction said parts will be moved away from each other to thus adjust the brushes for shoes of varying sizes, as heretofore mentioned, there being provided upon the upper end of the lever 41 a pointer 47, designed to travel over a scale 48, arranged on the face of the casing and graduated to indicate shoes of different sizes.

The crank-arms 16 are fixed, respectively, to clutch members or heads 49 50, loosely mounted upon the shaft 11, to which is keyed for longitudinal sliding movement, by means of feathers 51, cooperating clutch members or heads 52 53, adapted for rotation with the shaft and connected for simultaneous movement by means of a yoke 54, having a fixed pin 55 engaged with the rear slotted end of a shifting lever 56, pivoted at 56' between its

ends to a portion of the frame 7 and pivotally connected at its forward end with a link 57, which in turn connects the rear ends of a pair of pivoted bell-crank levers 58 58^a, there being also pivoted at 58' between its ends to the frame and in rear of the levers 58 58^a a motor-controlling lever 59, carrying at one end a catch 60 and connected at its other end with a primary sliding bar or member 61, mounted for reciprocation in suitable bearings upon the frame 7 and in longitudinal alinement with a secondary sliding bar or member 62, also mounted in bearings on the frame, the member 61 being connected at its rear end with a movable brake member or beam 63, adapted for movement into and out of the path of rotation of the crank-arms 16, and the adjacent ends of the bars 61 62 being normally spaced and disposed at opposite sides of the lower end of a coin chute or way 64, projecting at its upper end through the front wall of the casing and communicating adjacent to its upper end, by means of a branch duct 65, with a receptacle 66 and at its lower end with a receptacle 67. Attention is here directed to the fact that the chute 64 is of a size to receive nickels, while the branch duct 65 communicates with the chute 64 by a slot of a size to receive pennies, whereby should the latter coins be introduced into the machine they will pass through the duct 65 into the receptacle 66, while nickels will continue downward through the chute 64 and be received initially between the spaced ends of the bars 61 62 for a purpose which will be more fully hereinafter explained.

Pivoted between its ends, as at 68, to the rear wall of the casing 1 is a lever 69, connected at its upper end, by means of a rigid element or link 70, with the secondary sliding member 62 and adjacent its lower end with the casing 1 by means of a normally contracted spring 71, there being provided upon the lower end of the lever a pair of oppositely-extending engaging portions or fingers 72, adapted for engagement by bell-crank levers 73, pivoted, respectively, upon the rear ends of a pair of horizontal rigid elements or links 74, arranged within the compartment 3 and connected at their forward ends with bell-cranks 75, pivoted, respectively, beneath the shoe-rests 28 29 and carrying at the free ends of their horizontal arms vertically-movable depressible members or treadles 76, projecting upwardly through the foot-rests, it being apparent that when one of the treadles 76 is depressed the lower end of the lever 69 will, through the medium of the bell-cranks 75 and 73 and connecting-link 74, be moved forward against the action of the spring 71, thereby causing said lever through the medium of the link 70 to impart a rearward sliding movement to the bar 62, and that when the lower end of the lever

69 is released, owing to contact of the depending arms of the bell-cranks 73 with a stop or abutment 77, fixed upon the bottom 5 of the casing, the spring 71 will act to return the lever and slide 62 to normal position.

Arranged within the compartment 3 is a receptacle 78, designed to receive liquid blacking, which will be distributed, by means of 10 vertical endless distributing members or belts 79, onto the brushes 30 and by an inclined distributing member or belt 80 to the brush 37 of the set of brushes 24. These belts are arranged for travel upon suitable 15 pulleys on a shaft 81 within the receptacle 78 and on pulleys arranged on shafts 82 83, journaled, respectively, beneath and within the path of movement of brush 37 and above the brushes 30, the shaft 83 being driven to 20 impart motion to all of the distributing-belts by means of a belt 84, arranged for travel on a pulley 85, fixed upon the clutch member or head 50. As the brushes 30 are reciprocated they move in contact with the belts 79, 25 and in order to prevent the blacking from spattering I arrange upon the inner side faces of the belts and extending longitudinally thereof vertical guards or shields 86, composed, preferably, of sheet metal and having 30 grooves or channels 87, in which the belts seat, these channels being adapted to receive and return the surplus blacking to the receptacle, while on the lower ends of the shields 86 are small rollers 88, between which 35 the flights of the belts pass to regulate the quantity of blacking carried upward thereby.

Attached to the casing is a bracket 89, to the outer end of which is pivoted on a vertical pintle 90 a series of three horizontal tripping members or levers 91 92 93, arranged in 40 vertically-spaced relation one above another and engaged individually by springs 94, in turn connected with a part 94' of the bracket 89, these levers being adapted for forward 45 movement against the action of the springs by means of the pins 17 to 20, carried by the gear 14, attention being directed to the fact that the pins 17 and 19 are of equal length and of such height as to act only upon the 50 lowermost lever 91, while the pin 18 is of greater length to act upon the levers 91 and 92, and the pin 20 of such length as to engage and operate all three of the levers. Connected with the lowermost lever 91 is a longitudi- 55 nally-movable rod or element 95, carrying at its outer or forward end a pivoted latch 96, adapted for engagement with the catch 60 on the lever 59 and having an upwardly-projecting arm or portion 97, designed to contact with a suitable stop 98 for tripping the 60 latch to disengage it from the catch, as illustrated in Fig. 9, while the intermediate lever 92 has connected therewith the rear end of a rod or element 99, carrying at its forward end 65 an engaging portion or finger 100, adapted

for engagement with the free arm of either of the bell-crank levers 58, 58*, there being attached to the uppermost lever 93 a rod or link 101, engaged at its forward end with a crank-arm 102, fixed upon one end of a rock- 70 shaft 103, which is fixedly engaged with a flap valve or closure 104, arranged beneath and for normally closing the lower end of the chute 64.

In practice when a coin of proper denomi- 75 nation is entered into the chute 64 it travels downward through the latter and lodges upon the valve 104 between the members 61 62, thus serving to bridge the space between 80 said members and render them in effect continuous. The coin having been deposited, the operator places one foot upon the rest 29, thereby depressing the adjacent treadle 76 and, through the medium of the intermediate connections, moving the member 62 rear- 85 ward, as heretofore explained, this movement of the member 62 serving, through the medium of the coin, to impart a similar movement to the member 61 for actuating the brake 63 to release the crank-arms 16 and 90 simultaneously bringing suitable contacts 105 on the member 61 to position for completing the circuit and starting the motor 8 to drive the shaft 11. At the beginning of the rotation of shaft 11 the clutches 52 and 95 53 are shifted to the right, as illustrated in Fig. 2, whereby motion will be imparted to the blacking-applying mechanism and the polishing mechanism will for the time being be inactive, while at the same time motion 100 will be imparted to the worm-gear 14 from the worm 13 on the shaft. The parts are thus driven for a sufficient length of time to apply the blacking to one shoe and until one of the short pins 17 comes in contact with 105 the lowermost lever 91, thereby moving said lever forward and engaging the latch 96 with the catch 60, whereupon the lever will when released by the pin be returned to normal position through the medium of spring 94, thus 110 actuating the lever 59 for moving the member 61 forwardly to stop the motor and bring the brake 63 into engagement with the crank-arms. The operator thereupon places his other foot upon the rest 29, which action 115 again starts the machine and causes an operation of the blacking-applying mechanism for applying blacking to the other shoe, whereupon the pin 18, of intermediate length, comes into contact with and actuates levers 120 91 and 92, thereby stopping the machine, as heretofore explained, and at the same time engaging the catch 100 at the end of the rod 99 with the lever 58, and when the levers 91 and 92 are released by the pin 18 the lever 58 125 will be actuated for operating lever 56 to shift the clutch mechanism to the left, (see Fig. 2,) thereby throwing the blacking-applying mechanism out of operation and bringing into action the polishing mechanism, it being 130

understood that upon the next operation of the rod 99 through the lever 92 it will act upon the lever 58^a for imparting a reverse shifting movement to the clutch mechanism.

5 The operator now places one foot upon the rest 28, which again operates the sliding members for starting the machine and causing a continuous operation of the polishing-brushes until the second short pin 19 con-
 10 tacts with and actuates the lowermost lever 91 to again stop the machine, as heretofore explained, to permit the operator to place his other foot in position upon the rest 28, there-
 15 by again starting the machine, which continues to run until the second shoe is polished and the longest pin 20 contacts with and ac-
 20 tuates all of the levers 91 92 93. Upon movement of all the levers through the medium of the pin 20 the machine will be
 25 stopped, the clutch members shifted from left to right, and the link 101 actuated for operating the rock-shaft 103 to open the valve 104 and permit the coin to drop into the re-
 30 ceptacle 67, it being apparent that after the coin has dropped the member 62 may be moved, through the medium of the treadles 76 and intermediate connections, without af-
 35 fecting the driving mechanism of the machine.

30 Having thus fully described the invention, what is claimed as new is—

1. In a device of the class described, a blacking-applying element, a polishing ele-
 35 ment, a drive-shaft, operative connections between the drive-shaft and elements for operating the latter independently, a clutch
 40 member for connecting either of the elements with the shaft, and means for automatically shifting the clutch at predetermined inter-
 45 vals to bring the elements alternately into play.

2. In a device of the class described, a pair of brushes, a drive-shaft, operative connec-

tions between the brushes and drive-shaft, a gear-wheel driven by the latter, and means 45 controlled by the gear-wheel for automatically and alternately starting and stopping the brushes at predetermined intervals.

3. In a device of the class described, a pair of brushes, means for operating the same in- 50 cluding a drive-shaft and a shiftable clutch, and means adapted during the operation of the machine for shifting the clutch at prede-
 55 termined intervals to alternately start and stop the brushes.

4. In a device of the class described, a pair of independently-operable brushes, a drive- 60 shaft operatively connected with the brushes, a shiftable clutch arranged upon the shaft, a member driven by the shaft, and means actu-
 65 ated by the member for starting and stopping the machine and for shifting the clutch at predetermined intervals to alternately start and stop the brushes.

5. In a device of the class described, a pair 65 of guide-rods movable transversely toward and from each other, coöperating brushes arranged for travel thereon, link connections between the rods for moving the same simul-
 70 taneously and uniformly, and an operating-lever connected with and for actuating the links to move the guide-rods.

6. In a device of the class described, a movable brush, a reservoir, a belt arranged 75 for travel through the reservoir and within the path of movement of the brush, means for operating the belt, a shield over the latter provided with a channel to return the sur-
 80 plus blacking to the reservoir, and rollers on the shield between which the belt travels.

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

HARLEY SMITH.

Witnesses:

O. H. SCOTT,
 CLYDE SCOTT.