

June 15 , 1926.

1,588,735

H. G. HOOPS

SHOE POLISHING MACHINE

Original Filed May 1, 1923 4 Sheets-Sheet 1

Fig. 2.

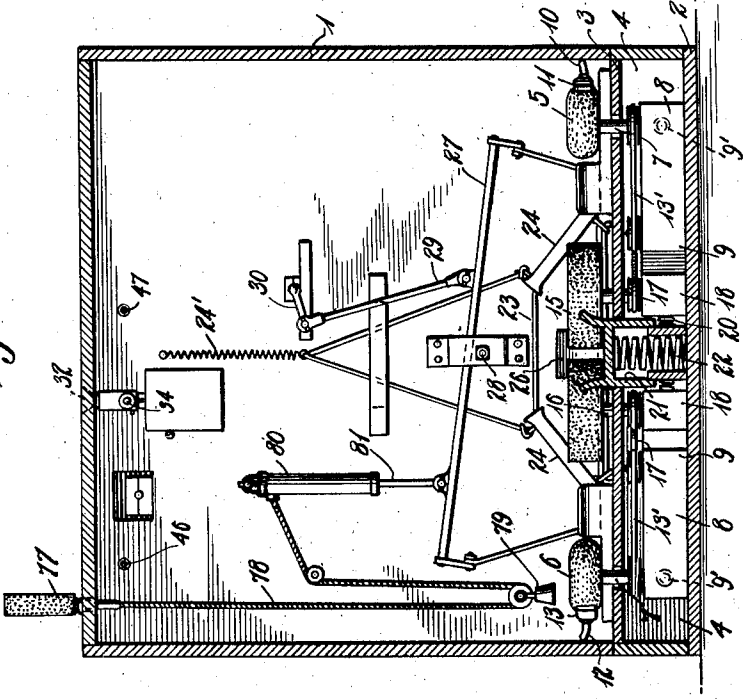
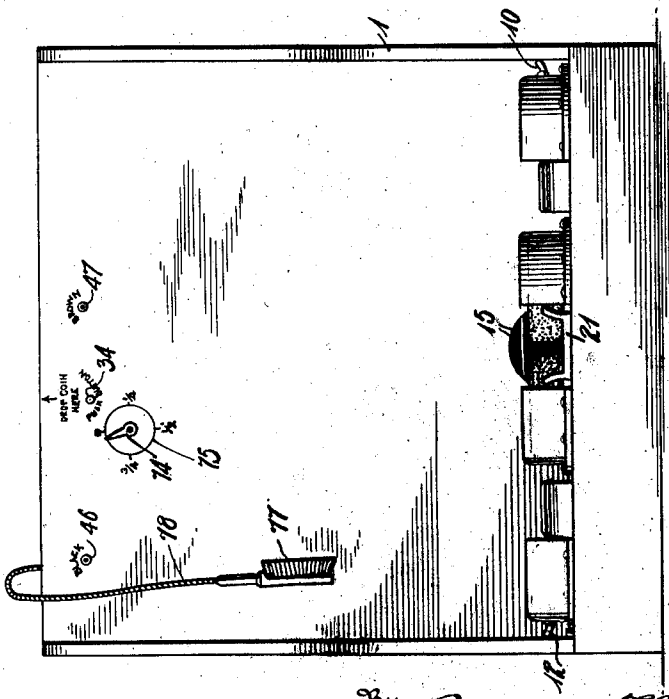


Fig. 1.



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Fig. 4.

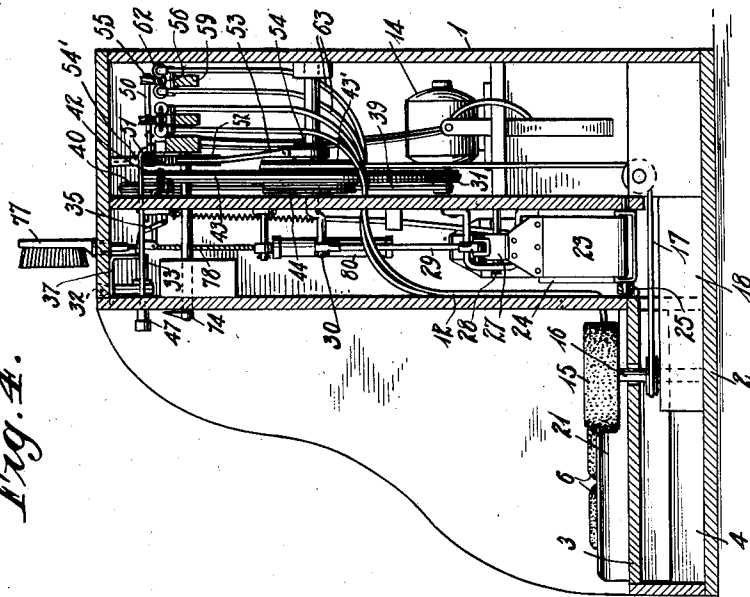
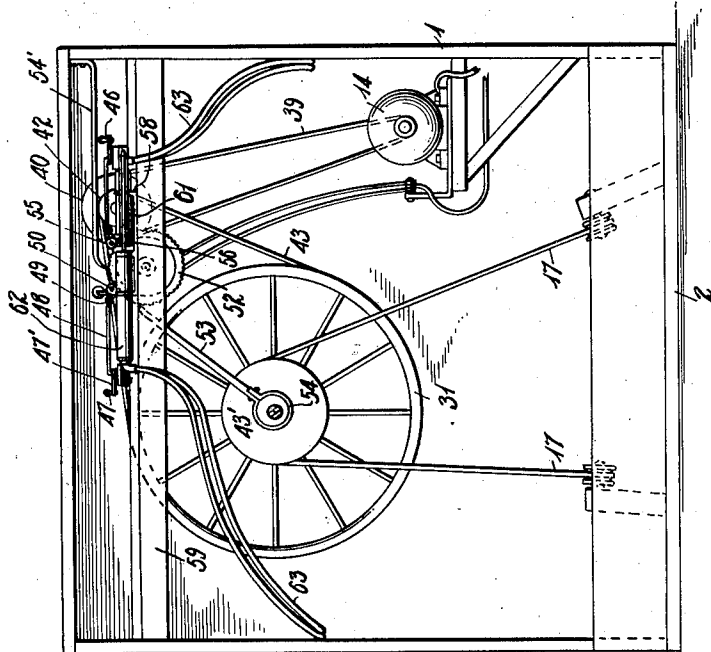


Fig. 3.



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Fig. 5.

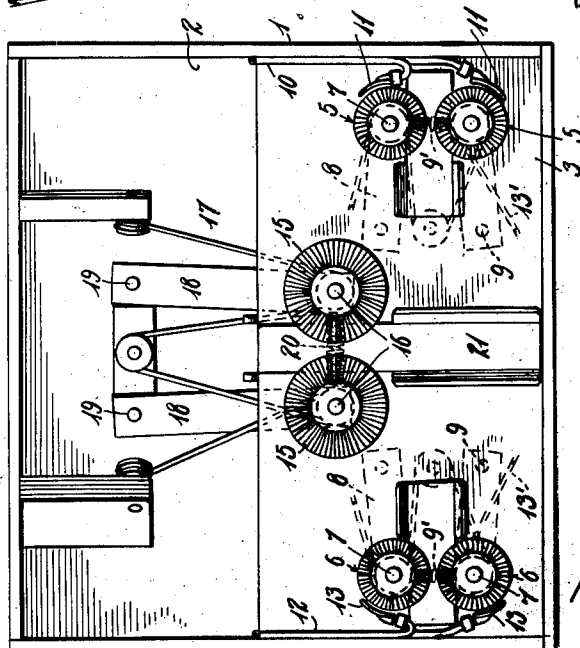


Fig. 6.

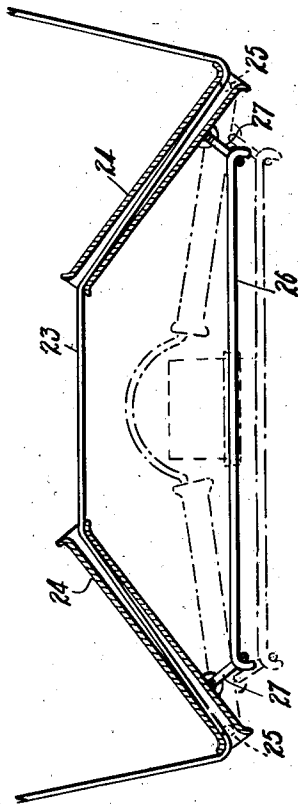
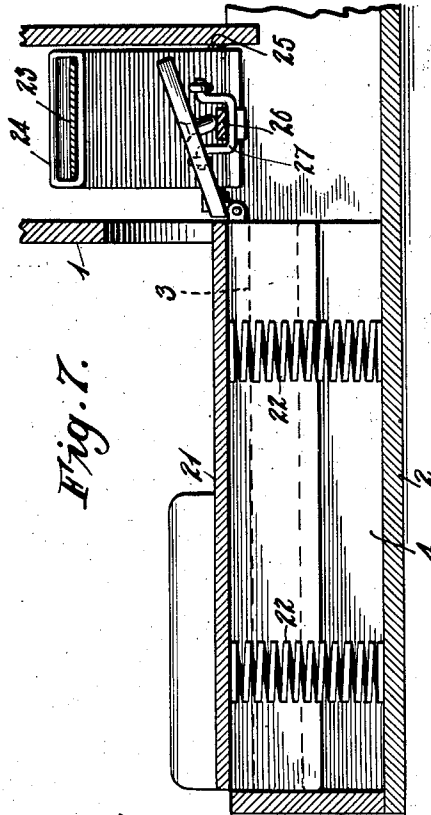


Fig. 7.



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Fig. 8.

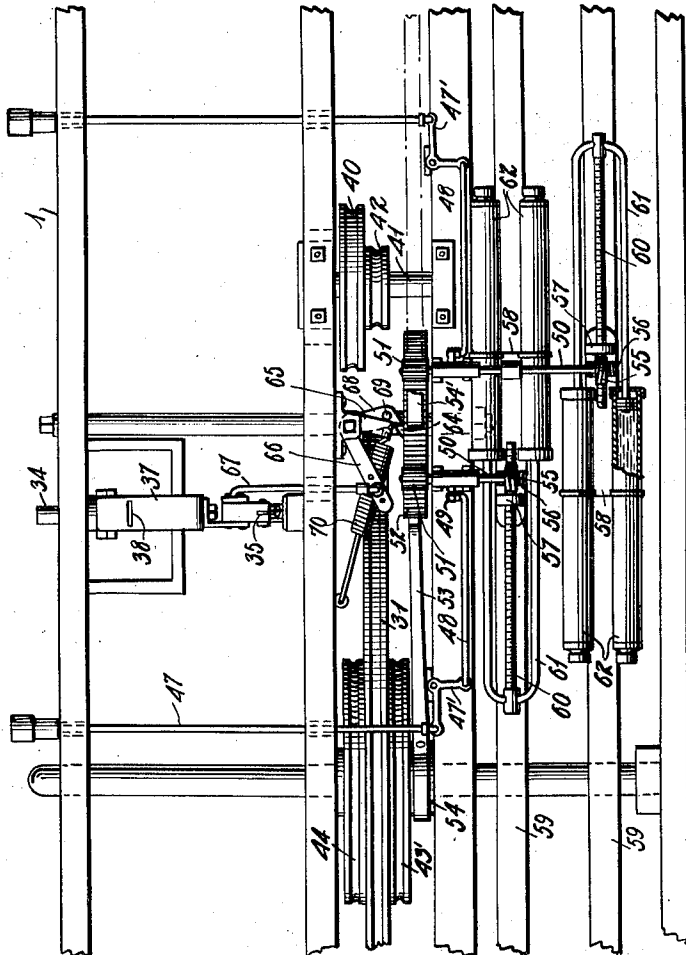


Fig. 10.

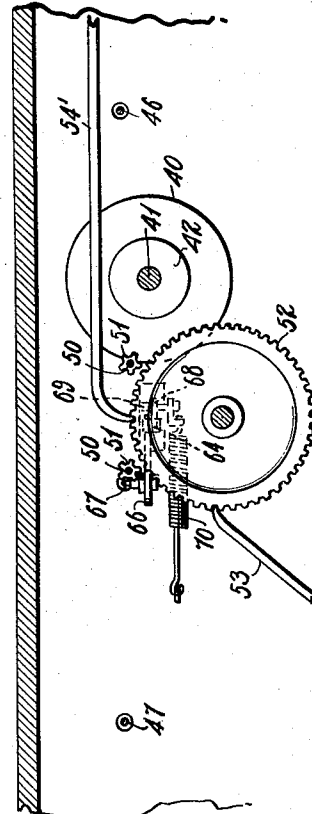
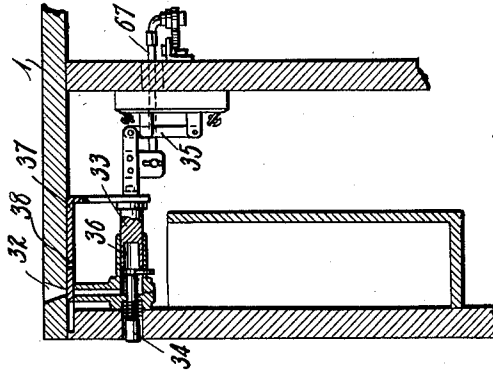


Fig. 9.

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UNITED STATES PATENT OFFICE.

HENRY G. HOOPS, OF FORT MORGAN, COLORADO, ASSIGNOR TO THE MORGAN MANUFACTURING COMPANY, OF FORT MORGAN, COLORADO, A CORPORATION OF COLORADO.

SHOE-POLISHING MACHINE.

Application filed May 1, 1923, Serial No. 635,968. Renewed December 18, 1925.

The invention relates to improvements in a coin controlled shoe polishing machine.

Among the salient objects of the invention are to provide a shoe polishing machine which is substantially noiseless in operation; to provide a machine that eliminates any danger of damage to either the shoe or the foot of the user when in operation; to provide a machine that is provided with improved polishing means in contact with the shoe and simple operating mechanism therefor; to provide improved mechanism for timing the period of operation of the brush and polishing cloth of the machine after the insertion of each coin; to provide a machine having multiple polish supplying means whereby shoes of different color can be polished in the same machine; to provide a polishing machine having associated therewith and operated by the motor for said machine a cleaning brush whereby the user may brush garments while the shoes are being shined; and to provide a machine which is inexpensive to manufacture and so simple in construction that there is little danger of breakage of parts.

The invention further consists of novel features and construction of parts as will be more clearly hereinafter pointed out in the specification and disclosed in the accompanying drawings which form a part of this application.

In the drawings, Figure 1 represents a front elevation.

Figure 2 is a similar view with front plate removed.

Figure 3 is a rear elevation with rear plate removed.

Figure 4 is a vertical longitudinal section.

Figure 5 is a plan view of the base portion showing arrangement of brushes.

Figure 6 is a transverse sectional view through polishing cloth mechanism.

Figure 7 is a longitudinal sectional view through polishing cloth mechanism and resilient foot rest.

Figure 8 is a plan view of timing and feeding mechanism.

Figure 9 is a face view of timing gear and adjacent mechanism; and,

Figure 10 is a vertical sectional view through coin controlled mechanism.

Referring now more particularly to the drawings, wherein like reference characters indicate corresponding parts, the numeral 1 designates the casing of the machine having a lower or base portion 2. The base 2 has overlying the same a false bottom 3 spaced a substantial distance from said base to provide therein the relatively large space 4 adapted to receive operative parts of the mechanism which will be presently described.

Mounted upon the false bottom 3 I provide polishing brushes 5 and 6 arranged in pairs, each brush being mounted upon a spindle 7 suspended upon supports 8, each support being pivoted at one of its ends 9 upon the base 2 of the casing while the forward ends of said supports 8 are drawn toward one another by the tension springs 9', which provide means for always holding the brushes into closed contact with the foot of the user. To each pair of brushes paste is applied, the brushes 5 being supplied through the conduit 10 leading to the paste applying shield 11, while similar conduits 12 lead to the shields 13 for the brushes 6. Two sets of brushes are shown, as one set receives brown paste, while the other set may receive black paste or paste of any other desired color. More than two sets of paste applying brushes may be used if desirable without departing from this invention. In any event, all of said brushes are driven by the driving belts 13 passing therearound and coupled with the main driving motor 14 through intermediate gearing, so that said brushes are rapidly rotated on their spindles 7 when the device is in operation. It will be understood that these brushes merely serve to apply paste or polishing materials to the shoes and do not serve to polish said shoes.

Interposed between the paste applying brushes 5 and 6 I provide a pair of polishing

brushes 15, the same being mounted on spindles 16 passing through slots in the false bottom 3 and driven by flexible belts 17 in a manner to be later described. The spindles 16 are seated on supports 18 pivoted at 19 and urged toward each other by the springs 20 so that when the foot is inserted between the polishing brushes 15 these springs are placed under tension. A resilient foot rest 21 is provided between said springs so that the shoe can be adjusted vertically whereby the brushes contact with all surfaces thereof. Springs 22 support said foot rest 21, the springs being mounted on the base 2.

Positioned rearwardly of the polishing brushes 16, which are operated by means of the belt 17 cooperating with gearing and mechanism driven by said main motor 14, I provide a reciprocating polishing cloth 23, which reciprocates in hollow supports 24. Said supports are pivoted at 25 and are separated at their opposed ends, as clearly shown in Figure 6. A treadle 26 is connected by links 27, which treadle is engaged by the foot after it is passed between the polishing brushes 15, and on being depressed draws the hollow supports 24 downwardly until the polishing cloth 23 is pressed over the surface of the shoe. This cloth 23 is then reciprocated by the operation of the oscillating bar 27 pivoted at 28, and actuated through the medium of the connecting link 29 operated by the crank 30 formed on the axis of the driving wheel 31. This cloth continuously reciprocates during the operation of the device back and forth over the shoe, giving it a high polish. The cloth does not engage the shoe, however, until after the polish has been applied and the shoe then partly shined or polished by the rotating brushes 15 whereupon the final polishing cloth comes into operation. The operating mechanism for said cloth and also for the polish applying brushes 11 and the polishing brushes 15 will now be described in detail.

When the machine is to be used, a coin is inserted in the coin slot 32, Figure 10, and drops down until it engages a switch bar 33. The push button 34 is then reciprocated, the coin forming a coupling between said push button and said switch bar causing the switch bar to move forwardly until the knife switch 35 engages its contacts, permitting the current to pass on to the motor 14. It is to be observed that the switch bar 33 has a socket 36 therein and unless a coin is inserted in the slot the push button merely reciprocates in said socket without actuating the bar. With a coin in the slot, however, the operation is otherwise. A guard 37 formed with a money slot 38 overlies the coin entrance and prevents the insertion of any coins when the switch is closed, thus preventing the

jamming of the coin mechanism. When a coin has thus been inserted and the switch operated the motor 14 is in action, and this motor drives the belt 39, which passes around a pulley 40 mounted on a shaft 41 suspended in the casing, a pulley of reduced size 42 lying adjacent said pulley 40. From this pulley 42 a second belt 43 passes around the enlarged driving wheel 31, the axis of which is journaled in a suitable bearing and formed with the crank extension 30 hereinbefore described. As the motor rotates the driving wheel 31 is likewise rotated and this wheel is formed with a reduced pulley 43' around which the belt 17 passes, which belt is encircled around the spindles of the polishing brushes 15. A similar pulley 44 is provided on the other face of the driving wheel 31 and around this pulley there is passed the belts 13' for the polish applying brushes 5 and 6. It will therefore be seen that as long as the motor is rotating and said motor does continue to rotate after the blade 35 of the switch has been moved into operative contact, it is retained there by reason of the resiliency of said contact and the motor continues to operate, causing the rotation of the brushes 5, 6 and 15, and the oscillation of the polishing cloth 23 until said blade is thrown out of electrical connection with its contact. In normal operations it requires not more than two minutes time to thoroughly apply polish to the shoes, and to polish said shoes and the timing mechanism for cutting off the source of electric supply will be more fully hereinafter described.

It is, of course, necessary to apply the polish to the brushes 5 and 6 and the polish thus applied is controlled by means of the manual levers 46 and 47. A description of one of said levers with the mechanism controlled thereby will suffice for both as said mechanism is of the same construction and is merely duplicated so that either black or brown polish may be applied to the shoes depending upon their color. Assuming that black polish is to be used the lever 46 is pushed inwardly after the coin has been inserted in the slot and the inward movement of said lever operates the bell crank lever 47' pivoted to the frame bar in the casing having one of its arms connected with the link 48, which is in turn pivoted to a movable bracket 49 having a bearing receiving the shaft 50, which shaft at one end carries a gear 51 meshing with a large timing gear 52 driven intermittently by means of the reciprocating pawl 53 encircling the cam 54 mounted on the axis of the main drive wheel 31. Said timing gear 52 is slowly revolved tooth by tooth through the action of the pawl 53 which has a forward tooth engaging the gear and a ratchet 54' serves to prevent a rearward movement of said timing gear. It is therefore obvious that as the motor

rotates and the main driving wheel 31 likewise revolves that the rotation of this wheel causes a reciprocation of the pawl 53 which coacts with the teeth on the timing gear 52 intermittently rotating said gear in one direction. The opposite end of the shaft 50 carries a worm 55, which meshes with a gear 56, the shaft of which is journaled in a bracket 57 carried by a yoke 58 mounted on the frame bar 59 of the machine. The interior of the gear 56 is screw threaded and the threads thereof cooperate with the threads on the rod 60 connected with the yoke 61 in a permanent manner so that as said gear 55 is rotated the yoke 61 is reciprocated moving downwardly into the pump cylinders 62, the pistons on the ends of said yokes discharging from said cylinders the paste through the feeding pipes 63, which pipes lead to the polish applying brushes 5 and 6. It is only when the push buttons or levers 46 or 47 are operated that the shaft 50 is moved forwardly in its pivoted bearing so that its gear 51 engages the timing gear 52 that the pumps are actuated to eject the blacking, it being apparent therefore that the application of the blacking or polish to the shoe is under the manual control of the operator. Two of the polish applying pumps are disclosed, but inasmuch as they are of the same identical construction, like parts are given similar reference characters, it being appreciated, however, that they are subject to independent control by the manipulation of the buttons 46 and 47.

After the insertion of the coin in the slot and the forward movement of the push button 34, the switch blade 35 remains by the resiliency of the contacts in closed relation until said blade is disengaged from its contacts. The parts of the machine are so constructed that ample time is provided for the user to thoroughly polish the shoes and after such period of time has passed, then the switch blade is automatically disengaged from its contact by the operation of the following mechanism. As previously pointed out, during the rotation of the main drive wheel 31 the pawl 53 riding on the cam 54 is reciprocated and each movement of said pawl moves the timing wheel 52 around one tooth. It is prevented from turning rearwardly by the pawl 54. One side of said timing wheel carries a detent 64, which is adapted to engage mechanism to disengage the switch blade from its contact. Said mechanism comprises a bell crank lever 65 pivoted to the side of the frame, one arm 66 of said lever being connected by a link 67 with the lower side of the switch bar 33, while the other end of the lever projects inwardly toward the side of the timing wheel 52. Pivoted at one side of the inwardly extending portion of said bell crank lever is a trip 68 having an upstanding pin 69, which

trip is also connected to a coil spring 70, but normally said spring is under no tension so that the pin 69 of the trip merely engages the inwardly extending arm of the bell crank lever, but has no effect on the switch. As the timing gear 52, however, rotates, but when said gear has rotated a sufficient distance the detent 64 engages the end of the trip 68 moving the same on its pivot away from the inwardly extending arm of the bell crank lever 65 and placing the spring 70 under tension. This movement of the timing wheel 52 continues until the trip flies by the detent and is pulled rearwardly by the springs 70 with substantial force, the pin 69 on said trip at this time engaging the inwardly extending part of the bell crank lever 65 with sufficient force to cause said lever to rock on its pivot forcing the connecting link 67 rearwardly and thereby moving the switch bar 33 so that the switch blade 35 is drawn out of contact with its keeper. The motor 14 is therefore no longer supplied with current and the operation of the machine ceases until a further coin is placed in the coin slot 32.

As an embodiment of the invention, during the operation of the timing gear, I preferably run the shaft of the same through the face of the casing and mount a pointer 74 therein. Said pointer 74 is movable over the dial 75 for showing the position of the timing gear 52 so that when said pointer has traveled one-half way around the dial this is an indication that the shoe has probably been polished and that the shoe on the other foot of the user should be inserted in the machine for polishing. Any other form of connection can be used for accomplishing this end without departing from the invention.

Another feature of the invention constitutes the clothes brush 77 mounted on the end of a flexible hollow cable 78, which cable is normally pulled down into the casing by the weight 79, as shown in Figure 2, and is connected to a pump 80 mounted in the casing, the piston 81 of which is pivoted to the oscillating bar 27 so that when the motor is in operation air is forced through the cable 78 and through orifices in the brush 77 to blow or remove dust and dirt from the coat of the user of the machine. As soon as the brush 77 is released it is returned to the position shown in Figure 2 by the counter weight 79 and of course, as long as the motor is operating air is being forced through the orifices in this brush, but such air is not supplied the moment the motor ceases.

Having thus described the various parts of the apparatus, it is believed that its operation will be clearly apparent, but the operation may be briefly recited as follows:

Assuming that it is desired to use the ma-

chine, the user inserts a coin of a given denomination in the slot 32 and pushes forwardly the push button 34. This moves the switch bar 33 causing the switch blade 35 to be forced into contact with the spring switch and current is imparted to the main motor 14. If black shoes are to be polished the button 46 is pulled outwardly moving the bell crank lever 47', the link 48 and forcing the gear 51 into contact with the timing gear 52 so that the rods 61 are reciprocated forcing the blacking from the pump 62 down through the feed pipes to the polishing brushes 6. It is understood, of course, that the user has placed one of his feet between said brushes 6, and it is also appreciated that said brushes are rotating by reason of the connecting belt travelling around the pulley on the rotating main driving wheel 31. This causes the blacking to be applied to the shoes, one shoe being inserted between the brushes at a time, as it will be understood from the foregoing description that the operation of the main motor drives the shaft 41 through the connecting belt, this shaft in turn driving the main driving wheel 31 through the belt 43, and said wheel 31 in turn through the cam operated pawl 53 engaging the teeth on the timing gear 52, intermittently moves said gear forwardly and during this motion the shaft 50 is, of course driven as its gear 51 has been thrown in contact with the periphery of the timing gear 52 by the shifting of the push button 46. When sufficient polish has been applied then the push button is released and the polish applying pumps become inactive. The knife switch 35, however, is at this time in operative contact with the spring arms of the switch and current is still passing to the motor 14. The user then places one foot between the brushes 15 on the treadle 21, and these brushes are rapidly rotated by the driving belt 13 operated off of the main wheel 31 by the pulley 43', this rotation of the brushes serving to partly polish the shoe. The shoe is moved back and forth between the rotating brushes 15 and then advanced forwardly until the foot rests upon the pivotally connected treadle 26, thus drawing the arms 24 downwardly against the tension of the spring 24' until the polishing cloth or fabric 23 is drawn around the shoe as shown in Figure 6. This cloth 23 is continuously reciprocated by reason of the oscillating bar 27 connected to the ends of the cloth, which bar is pivoted at 28 and is oscillated by the connecting link 29 pivoted to the crank 30 forming an extension of the axle of the main driving wheel 31. During this period the timing gear 52 is intermittently advanced and as it advances the pointer 74 is operated over the dial 75 and when said pointer reaches the position on the dial in-

dicated by the character $\frac{1}{2}$, then the user knows that it is time to begin polishing the other shoe. The other shoe is then inserted between the polish applying daubers or brushes 6, and the push button 46 again operated to cause polish to be applied to the shoe. The shoe is then inserted between the brushes 15 and under the polishing cloth 23 in the manner hereinbefore described. As the timing gear 52 reaches the end of its revolution the detent 64 thereon engages the trip 68 connected with the spring 70 and shifts said trip against the tension of the spring. After a given movement the end of this trip flies off the edge of the detent and is returned rearwardly with great impact by the spring 70 that has been placed under tension. This rearward movement of the trip causes the pin 69 thereon to engage the arm of the bell crank lever 65 moving one arm of this lever outwardly so that the link 67 is shifted, which link is in turn connected to the switch bar 33 and the movement of this bar throws the knife switch 35 outwardly from electrical contact causing the operation of the motor to cease. It is then necessary to insert a new coin to place the machine in operation.

Having thus described my invention, what I claim is:

1. In a shoe polishing machine, the combination with a casing, of polish applying daubers thereon, means for feeding polish to said daubers, polishing brushes, and means for rotating said brushes while in contact with the shoe, a reciprocating polishing cloth adjacent said brushes, means for drawing said cloth down upon the surface of the shoe being polished after passage of the shoe between said polishing brushes, and operating means for reciprocating said cloth.

2. In a shoe polishing machine, the combination with a casing, of polish applying daubers thereon, means for feeding polish to said daubers, polishing brushes, and means for rotating said brushes including a driving wheel, a reciprocating polishing cloth adjacent said brushes, means for drawing said cloth down upon the surface of the shoe being polished after passage of the shoe between said polishing brushes, operating means for reciprocating said cloth, said means comprising an oscillating bar, means for pivoting said bar, said driving wheel having a crank thereon and a link connection between said crank and said bar at one side of its center.

3. In a shoe polishing machine, the combination with a casing, of polish feeding mechanism therein, manually operable means for controlling the operation of said polish feeding mechanism, a driving motor for said feeding mechanism, polishing means within said casing, and connections between said

driving motor and said polishing means to operate the same to polish shoes after the application of the polish.

4. In a shoe polishing machine, the combination with a casing, of polish feeding mechanism therein, manually operable means for controlling the operation of said polish feeding mechanism, a driving motor for said feeding mechanism, polishing means within said casing, and connections between said driving motor and said polishing means to operate the same to polish shoes after the application of the polish, said polish feeding mechanism including a shiftable shaft, a timing gear driven by the motor, gears on said shiftable shaft adapted when one of said gears is thrown into mesh with the timing gear to eject polish from said polish feeding mechanism.

5. In a shoe polishing machine, the combination with a casing, of polish applying daubers thereon, means for feeding polish to said daubers, including a plurality of polish feeding pumps, manually controlled independently operable means for controlling the ejection of polish from either of said pumps, said means including a main driving motor, and shiftable driving connections between said motor and said pumps adapted when moved in an operative position to feed polish from said pumps, polishing means carried by said casing, and operating mechanism therefor driven by said motor.

6. In a shoe polishing machine, the combination with a casing, of polish applying daubers thereon, means for feeding polish to said daubers including a plurality of polish feeding pumps, manually controlled independently operable means for controlling the ejection of polish from either of said pumps, said means including a main driving motor, and shiftable driving connections between said motor and said pumps adapted when moved in an operative position to feed polish from said pumps, polishing means carried by said casing, operating mechanism therefor driven by said motor, said polishing means including a shiftable polishing cloth, and a pivoted arm connected therewith, a driving crank and a link connecting said crank with said arm to reciprocate the cloth during the operation thereof.

7. In a shoe polishing machine, the combination with a casing, of polishing brushes mounted thereon, a polishing cloth carried by said casing, a main driving motor, coin controlled mechanism for said motor including a shiftable switch, means for reciprocating the polishing cloth driven by said motor including a rocking arm connected with the ends of said cloth, a pivoted support for said arm, a driving crank and a link connection between said crank and said arm, a

main drive wheel driven by said motor connected with the crank, and automatically acting means for stopping the motor when the same has run a predetermined time.

8. In a shoe polishing machine, the combination with a casing, of polish applying devices thereon, means for feeding polish to said devices, manually controlled independently operable devices for controlling the ejection of polish to either of said polish applying devices, said means including a main driving motor, shiftable driving connections between said motor and said feeding means, polishing brushes carried by the casing, and driving connections between said motor and said brushes.

9. In a shoe polishing machine, the combination with a casing, of polish applying devices thereon, means for feeding polish to said devices, manually controlled independently operable devices for controlling the ejection of polish to either of said polish applying devices, said means including a main driving motor, shiftable driving connections between said motor and said feeding means, polishing brushes carried by the casing, driving connections between said motor and said brushes, and a polishing cloth operable by said motor and adapted to engage the shoe after passage between said polishing brushes.

10. In a shoe polishing machine, the combination with a casing, of polish applying devices thereon, means for applying polish to said devices including a plurality of polished features, manually controlled independently operable means for controlling the ejection of polish from either of said features to either of said devices, said polish feeding means including a driving motor, and shiftable driving connections between said motor and said feeding means adapted when moved in an operative position to eject polish from said feeding means, polishing brushes carried by said casing, and operating mechanism therefor driven by said motor.

11. In a shoe polishing machine, the combination with a casing, of means for applying polish to shoes inserted in the casing, polishing brushes, means for rotating said brushes while in contact with the shoe, a reciprocating polishing cloth adjacent said brushes, hinged arms for supporting said cloth, a pedal connected with said arms for drawing the cloth down upon a shoe when pressure is applied thereto, and springs for returning said arms upon the release of pressure on said pedal.

12. In a shoe polishing machine, the combination with a casing, of polish applying devices thereon, a reciprocating polishing cloth carried by said casing, pivoted arms for supporting said cloth, a treadle connected to each of said arms and adapted to draw said arms downwardly when pressure is ap-

plied to the treadle to bring the cloth in contact with the shoe, and means for returning said arms upon the release of pressure on said treadle.

- 5 13. In a shoe polishing machine, the combination with a casing, of polish applying devices thereon, a reciprocating polishing cloth carried by said casing, pivoted arms for supporting said cloth, a treadle connect-

ed to each of said arms and adapted to draw 10 said arms downwardly when pressure is applied to the treadle to bring the cloth in contact with the shoe, and means for returning said arms upon the release of pressure on said treadle, said means comprising a 15 spring cooperating with the treadle.

In testimony whereof I affix my signature.

HENRY G. HOOPS.