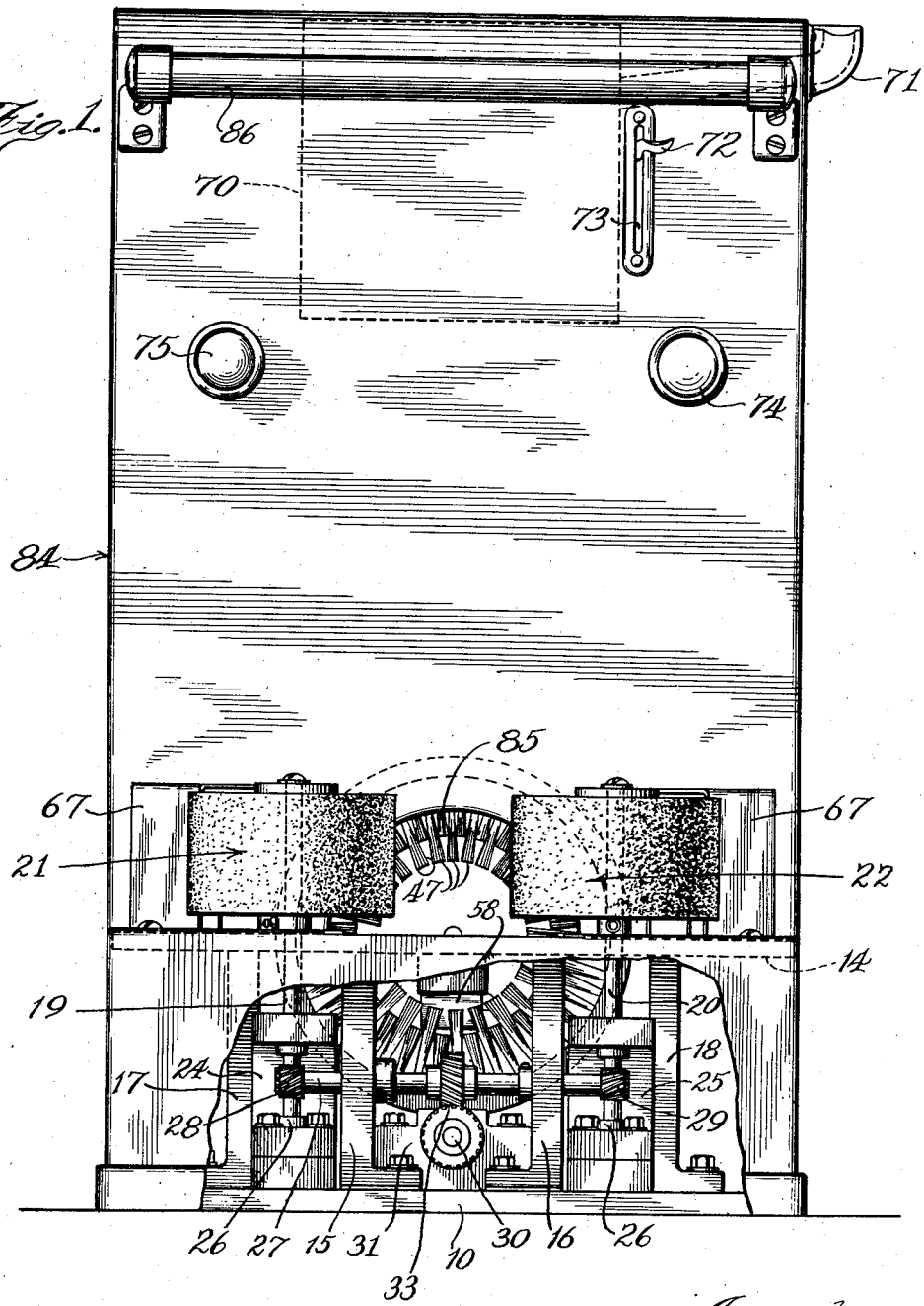
Dec. 15, 1931. E. C. KENNY ET AL 1,836,924

SHOE SHINING MACHINE

Filed Aug. 16, 1930 3 Sheets-Sheet 1

Fig. 1.



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SHOE SHINING MACHINE

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Fig. 2.

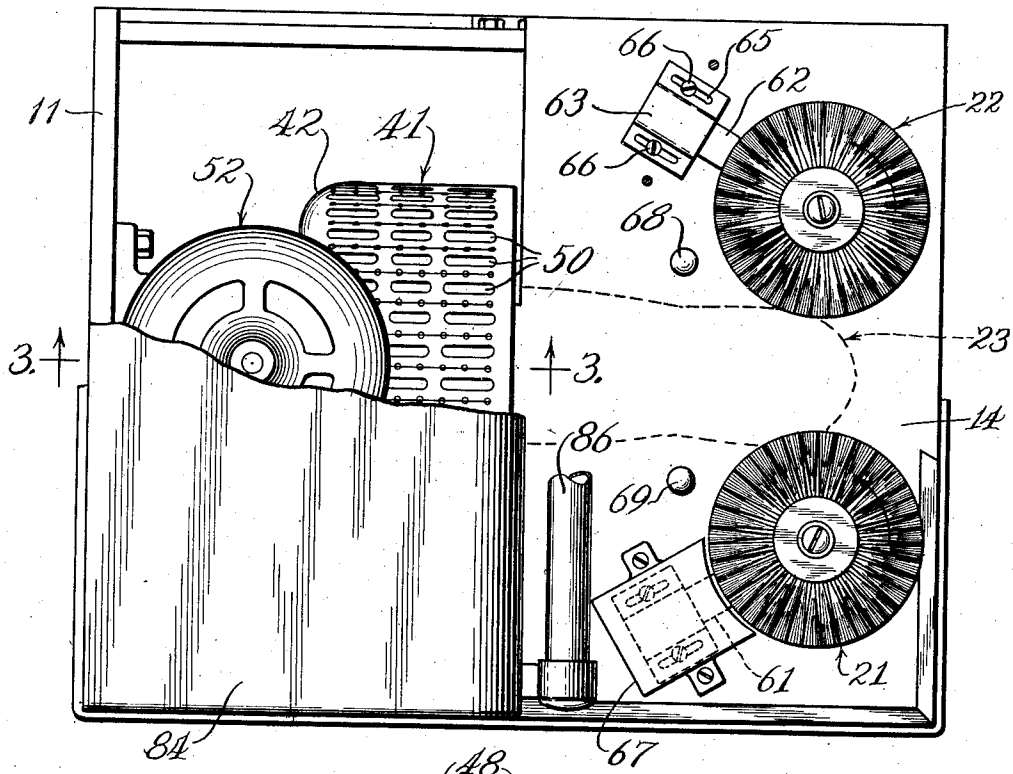
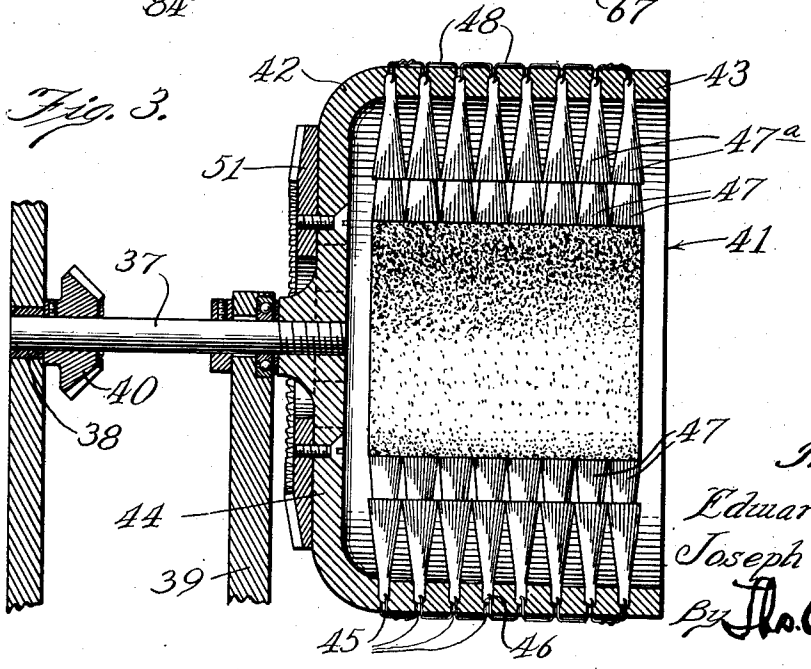


Fig. 3.



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Fig. 4.

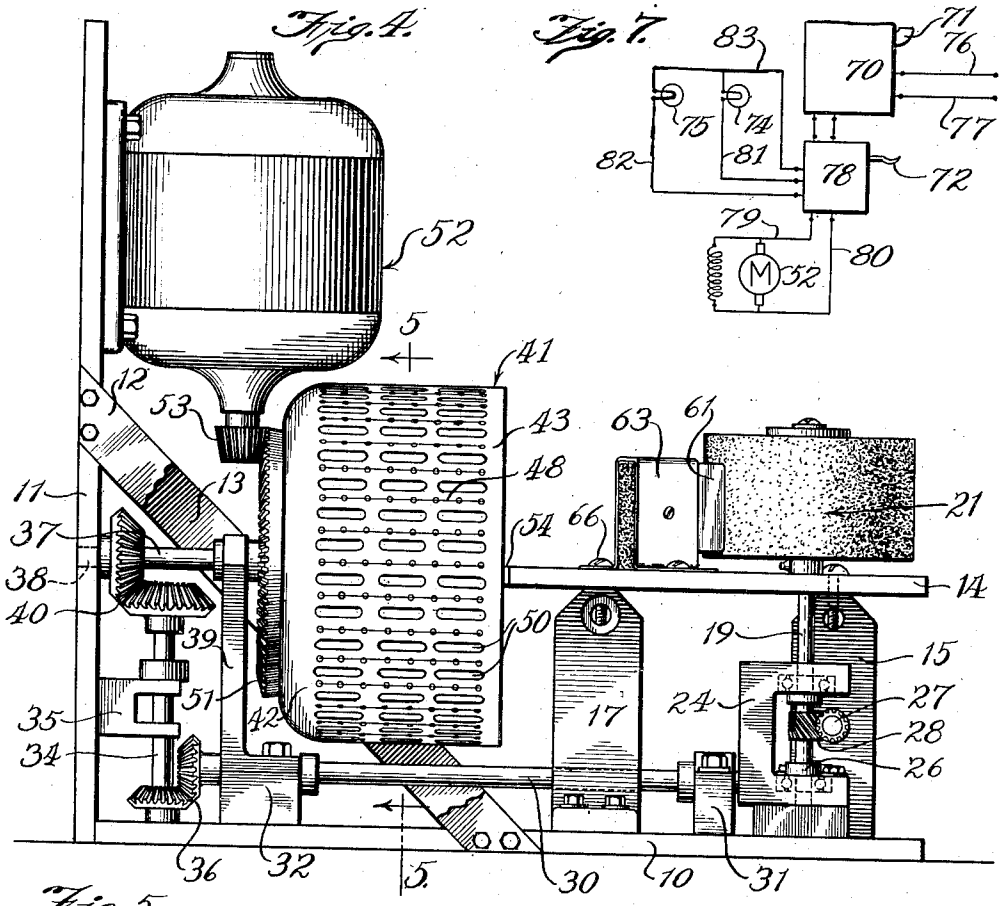


Fig. 7.

Fig. 5.

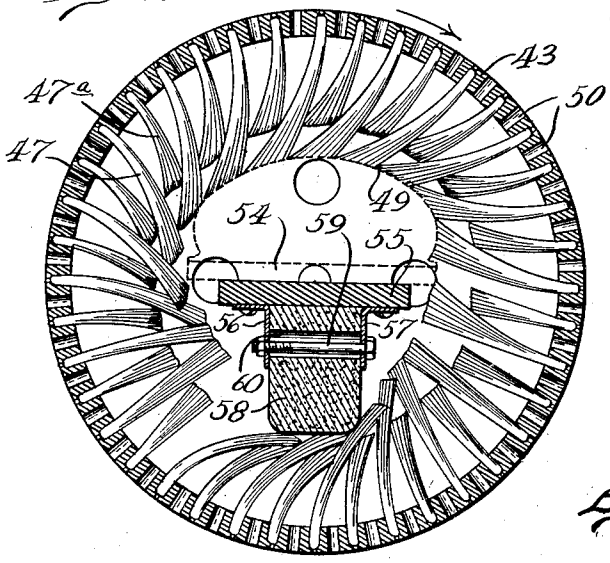
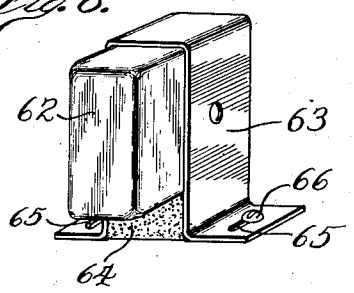


Fig. 6.



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UNITED STATES PATENT OFFICE

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SHOE SHINING MACHINE

Application filed August 16, 1930. Serial No. 475,828.

The present invention relates to improvements in machines for shining shoes and the like. The machine herein disclosed is of such a construction that the polishing operation may be applied to all exposed portions of the shoe, suitable provisions being made for reaching the surfaces to be polished.

A feature of the invention relates to the combination of a cylindrical toe brush and other rotary polishing brushes, mounted for rotation on vertical axes and suitably positioned for operation on the side and rear portions of the shoe when the toe and front portions are inserted into the cylindrical toe brush. These supplementary brushes are located at a proper spacing to provide the polishing operation on shoes of ordinary size, and by swinging or pivoting the shoe back and forth while the toe portion is inserted into the cylindrical brush a satisfactory and complete polishing operation may be performed on all of the sides and heel portions of the shoe. In this connection there are provided suitable stops for limiting the sidewise swing of the shoe so as to avoid the creation of an excessive amount of wedging action in the cylindrical brushes.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawings:

Figure 1 shows a front elevation of a machine embodying the features of the present invention, a portion of the casing being broken away so as to show the interior construction and also the arrangement of certain of the driving gears;

Figure 2 shows a plan view corresponding to Figure 1, a portion of the housing being broken away so as to show certain of the mechanisms underneath;

Figure 3 shows a longitudinal section through the rotary brush and mounting therefor, the same being shown on enlarged scale as compared to Figures 1 and 2;

Figure 4 shows a vertical elevation of the machine with the housings, including the coin and time control mechanisms, removed;

Figure 5 shows a cross section on the line 5—5 of Figure 4, looking in the direction of the arrows and on enlarged scale;

Figure 6 shows a perspective view of one of the wax blocks, together with the housing therefor, the same being on enlarged scale; and

Figure 7 shows a wiring diagram in outline of a set of electric circuits for controlling the machine.

Referring first to Figures 1, 2, and 4, in particular, the principal operating parts are mounted upon a frame which includes a horizontal base plate 10, and a vertical back plate 11, connected to the base plate and reinforced in such connection by a pair of angle bars 12 and 13.

Located at a convenient height above the base plate 10 and for the convenient accommodation of the foot of the user, is a horizontal plate or sill 14. The same is preferably carried by and connected to the base plate 10 by front brackets 15 and 16 and rear brackets 17 and 18.

In the front portion of the machine, there are the vertical shafts 19 and 20 upon the upper ends of which are mounted the brushes 21 and 22, respectively. These brushes are for polishing the side and heel portions of the shoe; and as will be evident particularly from Figures 1 and 2, the shafts 19 and 20 and brushes 21 and 22 are set at a proper spacing to accommodate between them the side and heel portions of a shoe shown in outline 23 in Figure 2. It will be understood that the bristles of these brushes 21 and 22 are sufficiently flexible to deflect sufficiently according to the width of the shoe which is set between them and thus accommodate themselves to shoes of different sizes.

The lower portions of the shafts or spindles 19 and 20 for these brushes are journaled in U shaped brackets 24 and 25, so as to provide ample support for them. If desired, collars such as 26 may be placed on these shafts, the same acting in the nature of step bearings to support them in a vertical direction.

There is a horizontally extending drive shaft 27, journaled in the brackets 15 and 16

immediately in advance of the shafts 19 and 20. The ends of this shaft 27 are drivingly connected to the shafts 19 and 20 respectively. For this purpose there are provided the pairs of companion helical gears 28 and 29 respectively. In the particular construction illustrated, these helical gears are so related that both of the brushes 21 and 22 rotate in a counter clockwise direction as shown by the arrows in Figure 2, the result being that the tendency of one brush to force the shoe forward is resisted by the tendency of the other brush to force the shoe backward, assuming that the shoe stands in the central position. In some cases it may be desirable to provide gearing arrangements in which the brushes rotate in opposite directions, one of them clockwise and the other counter-clockwise, since by this arrangement the polishing operations on the two sides of the shoe will simultaneously proceed either towards the toe or towards the heel of the shoe as the case may be.

There is a longitudinally extending drive shaft 30 in the lower portion of the machine. The front portion of this shaft 30 is journaled in a bracket 31 and the rear portion is journaled in a bracket 32. The front end of the shaft 30 is drivingly connected to the central portion of the shaft 27 by the companion helical gears 33. Located in the rear portion of the machine is a vertical drive shaft 34, the same being journaled in a bracket 35 which is secured to the back plate 11. Bevel gears 36 connect the lower end of the shaft 34 with the rear end of the shaft 30. There is a horizontal drive shaft 37 in the rear portion of the machine, the same being journaled in the rear wall 11 at the point 38 and being also journaled in an upward extension 39 of the bracket 32 already referred to. Bevel gears 40 connect the upper end of the shaft 34 with the rear end of the shaft 37.

There is a horizontally placed cylindrical brush designated in its entirety by the numeral 41. This brush has inwardly extending bristles for operation on the toe and side portions of the shoe. The details of this brush are best illustrated in Figures 3 and 5 but the construction of this brush is also well shown in Figures 2 and 4. The brush includes a cup shaped cylindrical member of aluminum or the like 42 having the cylindrical flange 43 and the rear end wall 44. The cylindrical flange 43 is provided with rows of holes or perforations 45 which extend through said flange; and the inner ends of said perforations are counter bored or enlarged in size so as to establish the inwardly facing shoulders 46, the outer ends of the holes being reduced in size. The bunches or pencils of bristles 47 are set into the holes up to the positions of the shoulders 46, and said bristles are retained in place by wires such as 48 looped through the small portions of the holes and through the bristles so as to draw and retain the pencils of bristles in place. Reference to Figures 3 and 5 in particular shows that alternate rows of bristles such as 47*a* are shorter than the bristles of the intermediate rows 47. The consequence is that when the toe portion 49 of the shoe (see Figure 5) is set into place within the cylindrical brush, the inner ends of the longer bristles will come into polishing contact with the surface of the shoe and due to the rotation of the cylindrical brush in the direction of the arrow in Figure 5, said longer bristles 47 will be drawn and wiped across the surface of the shoe itself. This will deflect said bristles laterally so that they will come into contact with the intermediate shorter bristles, which shorter bristles will then exert a substantial lateral support against the pencils of longer bristles and thus hold them better to their work.

The cylindrical portion 43 of the cylindrical brush is also provided with intermediate slotted openings 50 located between the rows of bristles. These slotted openings permit dust, mud, and other foreign matter to be discharged to the outside of the rotary brush so that said material will not accumulate excessively within the cylindrical brush.

The rear end wall 44 of the cylindrical brush is threaded upon the front end of the shaft 37 as clearly shown in Figure 3. The direction of this thread should of course be such that it will tend to tighten up under service. There is a ring bevel gear 51 secured to the back face of the end wall 44 of the cylindrical brush. A driving motor 52 is secured to the front face of the back wall 11, and the lower end of the motor shaft carries a bevel pinion 53 which meshes with the ring gear 51 to drive the same. Manifestly therefore, the operation of the motor is communicated directly to the cylindrical brush 41, thence to the shaft 37, thence to the shaft 34, thence to the shaft 30, thence to the shaft 27, and thence to the shafts 19 and 20 and the two brushes 21 and 22.

The platform 14 is provided with a narrow extension 54 which reaches into the central portion of the cylindrical brush and serves to support the toe portion of the shoe without material interference with the movement of the bristles during the operation.

There is also a bracket plate 55 secured to the bottom face of the extension 54. Said bracket plate 55 carries the downwardly extending angles 56 and 57 between which is located the wax block 58 for waxing the inner ends of the longer bristles of the cylindrical brush. This wax block 58 is secured to the angle brackets 56 and 57 by means of a cross pin 59. Examination of Figure 5 in particular will show the fact that as the cylindrical brush rotates in the direction of the arrow,

the longer bristles are caused to wipe across the lower end of the wax block 58 and the ends of the said bristles are thus waxed and pass beyond the block 58 and around the platform extension 54 and then into contact with the surface of the toe portion 49 of the shoe. As the wax block 58 wears away, it may be lowered from time to time by loosening the bolt or pin 59 and setting the block 58 lower down, the block 58 being provided with a slotted opening 60 for this purpose.

Adjacent to the brushes 21 and 22 are the waxing blocks 61 and 62 respectively. Each of these is mounted within a U shaped bracket 63 (see Fig. 6), a block of rubber or the like 64 being placed directly below the wax block itself so as to keep it firmly pressed against the U shaped clip. The lower ends of the arms of this clip 63 are flared out and slotted as shown at 65 in Figures 2 and 6, and screws 66 extend through these slots into the base plate 14. By loosening these screws the positions of the clips and wax blocks may be adjusted from time to time in order to maintain proper contact with the bristles of the brushes 21 and 22.

Suitable sheet metal housings 67 may be set over the blocks 61 and 62 and their supporting clips so as to give the machine a more finished appearance. These housings and all of the wax blocks and clips are set in such positions as not to interfere with the freedom of insertion and movement of the shoe which is being polished.

Suitable pins or studs 68 and 69 may be provided in the platform 14 so as to limit the sidewise or lateral movements of the shoe during the polishing operation. In this connection, it will be understood that the toe of the shoe is inserted into the cylindrical brush substantially after the manner indicated in the dotted lines of Figure 2. This brings the heel portion 23 between the brushes 21 and 22. It may be desirable and a natural movement to swing the foot slightly back and forth, pivoting on the toe portion thereof, and in some cases moving the foot slightly in and out of the cylindrical brush; and such back and forth swinging or pivoting movements would result in creating an excessive wedging action if the cylindrical brush is carried too far, and the stop pins 68 and 69 serve to prevent excessive movements of this kind.

These lateral movements of the shoe, combined with a slight in and out movement of the toe portion in the cylindrical brush, also serve to insure a proper polishing of all portions of the heel and sides of the shoe.

Referring particularly to Figure 1, the structure disclosed herein includes a coin control mechanism designated in its entirety by the numeral 70 which is provided with the customary coin receiving slot element 71 into which a nickel or coin of other suitable denomination is placed. When the coin has been introduced, it enters the coin control device. There is also another mechanism including a downwardly movable finger 72 working within the slot 73, and upon depressing this finger 72 the full extent, the coin is released and the circuit is closed for commencement of motor operation. The device including the finger 72 is a time switch element. Upon fully depressing the finger 72 and releasing, the said finger moves up slowly and when fully raised the circuit is again opened and the supply of current to the motor is discontinued. Devices of this type are well known in the art and are used, for example, in connection with electric toasters and the like.

In order to give the indication to the user of the lapse of time, we have provided two lamp elements 74 and 75 preferably located at the sides of the housing and corresponding to the right and left foot, respectively. These lamps are illuminated in succession, one lamp burning for one-half the total motor operation and the other lamp burning for the other one-half of such operation. In this way the user is given a visible indication as to the proper time to change and insert the other shoe into the machine for polishing.

In Figure 7, we have shown diagrammatically a set of mechanisms and circuits embodying the above features. In said figure, the incoming or supply circuit wires are shown at 76 and 77. They enter the coin control device 70 and pass thence into the time control device 78 which is provided with the finger piece 72 already referred to. From the device 78 there is a circuit shown at 79 and 80 which supplies current to the electric motor 52 only so long as the lever 72 is depressed. The lamps 74 and 75 are connected into the time control device 78 by the wires 81 and 82 respectively, together with the common return wire 83. As the finger 72 moves up with the lapse of time, the two lamps 74 and 75 are lighted in succession.

In some cases the devices 70 and 78 will be built into a single or unitary structure, but the principle of operation has been set forth herein; and devices of this type are well known and understood in the art of coin control and time control devices.

In order to give the machine a pleasing and attractive completed appearance, we have illustrated the cabinet 84 which can be set down over the machine's main operative parts, but said cabinet is so constructed as to leave the platform 14 exposed, and also to leave the brushes 21 and 22 exposed and accessible to the user. In like manner the cabinet is provided with an opening 85 in alignment with the cylindrical brush, and through which opening the foot is inserted in order to bring the toe into the cylindrical brush.

Also, in some cases, it will be desirable to place a horizontal hand rail or the like 86 across the upper front portion of the cabinet so as to provide a convenient hand piece for the use of the user.

In operation, the foot is placed on the platform with the toe portion of the shoe introduced into the cylindrical brush. The shoe is introduced far enough to bring the extreme front end of the shoe close to the closed end of the cylindrical brush, but without actual contact therewith. This operation brings the heel portion of the shoe between the brushes 21 and 22 substantially as indicated by the dotted lines 23 in Figure 2. Then, by swinging the shoe back and forth from side to side, while retaining the toe portion within the cylindrical brush, the heel portion of the shoe may be polished first on one side and then on the other, compressing the bristles of the brushes 21 and 22 to some extent, and it is thus possible to cause the polishing operation to reach substantially to the very back of the heel portion of the shoe. During this operation the toe portion is being polished also, first on one side and then on the other; and in order to limit the sidewise movements of the heel portion it is desirable to provide the stops 68 and 69 as shown on Figure 2.

While we have herein shown and described only a single embodiment of the features of our present invention, still we do not intend to limit ourselves thereto except as we may do so in the claims.

We claim:

1. In a machine of the class described, the combination of a platform support for the toe and heel of a shoe to be polished, the toe portion of said platform support being of restricted width, a cylindrical brush member mounted for rotation on a horizontal axis about said toe supporting portion, said cylindrical brush being provided with inwardly projecting bristles for polishing engagement with the toe portions of the shoe, rotary brushes mounted for rotation above the sides of the heel supporting portion of said platform, said heel brushes being mounted for rotation on vertical axes located substantially in lateral alignment with the heel of a shoe to be polished and separated from each other a suitable distance for accommodation of the heel and side portions of the shoe between said brushes, suitable stops on the platform in position to limit lateral movement of the heel portion of the shoe during the polishing operation, together with means for simultaneously driving the cylindrical brush and the heel brushes, substantially as described.

2. In a machine of the class described, the combination of a platform support for the toe and heel of a shoe to be polished, the toe portion of said platform support being of restricted width, a cylindrical brush member mounted for rotation on a horizontal axis about said toe supporting portion, said cylindrical brush being provided with inwardly projecting bristles for polishing engagement with the toe portions of the shoe, rotary brushes mounted for rotation above the sides of the heel supporting portion of said platform, said heel brushes being mounted for rotation on vertical axes located substantially in lateral alignment with the heel of a shoe to be polished and separated from each other a suitable distance for accommodation of the heel and side portions of the shoe between said brushes, together with means for simultaneously driving the cylindrical brush and the heel brushes, substantially as described.

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