Our invention relates to mechanical means for brushing and dusting and polishing shoes while worn upon the feet and has for its objects, first, to provide movable members adapted to contact with the shoe; second, to provide means actuated by foot pressure for moving the aforesaid movable members in such manner as to cleanse and polish the shoe; third, to provide resilient means adapted to actuate the aforesaid movable members in reverse direction when foot pressure is discontinued; and, fourth, to provide locking and unlocking means, which may be coin-controlled, adapted to render the mechanism operative or inoperative.

We attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a partly sectional side elevation of the mechanism as constructed without the locking device or coin controllable features; Figure 2 is a plan section taken on the line 2—2 of Figure 1; Figure 3 is similar to Figure 1 but with the parts in different position; Figure 4 is a fragmentary detail plan section of Figure 1; Figure 5 is a side elevation of the entire machine, in reduced scale, as constructed with the locking device and adapted to be coin controlled; Figure 6 is a front elevation of the same; Figure 7 is a fragmentary detail showing the locking device in operative position; Figure 8 is the same but with the locking device inoperative and showing the shoe in position to commence the polishing process; Figure 9 is an enlarged detail view of the locking and measuring mechanism; Figure 10 is a section taken on the line 10—10 of Figure 9; and Figure 11 is a detail view of the locking wheel proper and its engaging detent.

Similar numerals refer to similar parts throughout the several views.

A casing 15 may be provided with a drawer 16 and with projections 17 having openings 18 therethrough whereby the casing 15 may be secured to a floor by means of screws or bolts. The casing 15 is provided with channels or slideways 19 wherein projections 20, integral with a telescopic inner casing 21, are slideable, their function being to guide the inner casing 21 as it telescopes within the casing 15.

Standards 22 are secured to the casing 15 and are provided with circular openings 23. Shafts 24 of substantially similar diameter to the openings 23 are adapted to telescope within the openings 23 and have spiral grooves 25 cut therein. Pins 26 pass through the standards 22 and engage in the spiral grooves 25 in such manner that rotary motion is imparted to the shafts 24 as they telescope within the openings 23. Spiral springs 27 surround the standards 22 and shafts 24 and bear against the casing 15 and inner casing 21, normally urging the shafts 24 upwardly and resisting their telescoping within the openings 23. Collars 28 secured upon the shafts 24, above and below openings 29 in the inner casing 21 through which the shafts 24 pass, secure the shafts 24 to the inner casing 21 for longitudinal movement therewith while permitting free rotation of the shafts 24.

One of the shafts 24 is supplied with a keyway 30 for a portion of its length and has splined thereon a bevel gear wheel 31. The other shaft 24 has secured thereon a sprocket wheel 32. Another sprocket wheel 33 is mounted for free rotation upon a stub shaft 34 secured to and projecting from the inner casing 21. A sprocket chain 35 engages with the sprocket wheels 32 and 33 and is adapted to be driven by the sprocket wheel 32. Pins 36, which may be integral with or secured to the links of the sprocket chain 35, project upwardly from the chain 35 and carry a flexible band 37 having secured therein and projecting therefrom bristles 38. Four idler sprocket wheels 39 are each mounted for free rotation upon stub shafts 40 secured in and projecting from the inner casing 21, serving to guide the sprocket chain 35 and retain it in the desired position.

A foot plate 41 is held normally in position slightly above the top of the flexible band 37 by means of spiral springs 42 which are retained in position by pins 43 secured to the foot plate 41 and projecting downwardly therefrom and by pins 44 secured to the inner casing 21 and projecting upwardly therefrom, the springs 42 surrounding the pins 43 and 44. The pins 43 are somewhat larger in diameter than the pins 44 and are provided with openings therein in which the pins 44 are adapted to telescope. A bracket 45 is secured to the foot plate 41 and projects downwardly through an opening 46 in the inner casing 21 below which it is twice bent at right angles so that a portion 47 thereof projects upwardly through an opening 48 in the inner casing 21 and has journeled therein a shaft 49 carrying a bevel
pinion 50 which engages with the bevel gear wheel 31. An extension 51 is secured to the bracket 45 to support the bevel gear wheel 31, the shaft 24 passing through a circular opening in the extension 51. A collar 52 is secured upon the shaft 24 in light contact with and below the extension 51. The shaft 49 carries bristles secured thereto or therein to form a conically shaped brush 53 capable of rotary motion.

In operation, the person desiring his shoes to be polished places his foot upon the foot plate 41, pushing the toe of the shoe forwardly under the brush 53 and then presses downwardly with his foot. As the springs 42 are somewhat weaker than the springs 27, the foot plate 41 will move down until the hollow pins 43 telescope over the pins 44 and contact with the inner casing 21 before the inner casing 21 will begin to be moved downwardly. Thus, the foot plate 41 is moved down to a position where the bristles 38 surround the whole lower portion of the shoe, contacting therewith, before any rotary motion is given to the shafts 24 and, hence, before there is any actuation of the brushes. As the bracket 45 is secured to the foot plate 41, and as the brush 53 is carried by that bracket, the brush 53 retains its position relative to the shoe throughout the downward movement of the foot plate 41.

When the pins 43 have moved downwardly into contact with the inner casing 21, against the resistance of the springs 42, further foot pressure forces the whole inner casing 21 downwardly against the resistance of the springs 27 causing the shafts 24 to telescope within the standards 22 and, through the engagement of the pins 26 with the spiral grooves 25, to rotate. Rotation of the shaft 24 carrying the sprocket wheel 32 causes the sprocket chain 35 to rotate the idler sprocket wheel 33 and draws the bristles 38 brushing along the surface of the shoe with which they contact. At the same time, rotation of the other shaft 24 rotates the bevel gear wheel 31 which in turn rotates the bevel pinion 50, shaft 49 and conical brush 53 to polish that portion of the shoe toe not reached by the bristles 38.

When the inner casing 21 has been pressed down to its greatest extent, or as far as the user cares to press it, the foot pressure is relaxed and the springs 27 are allowed to force the inner casing 21 upwardly, the action of all the moving parts being reversed during the upward travel of the inner casing 21. The operation may be repeated as many times as required to effect the desired degree of polish.

When our invention is constructed to be controlled by coins, as illustrated in Figures 5 to 11 inclusive, the casing 15 has an upwardly projecting portion 54 provided with a coin slot 55 and a return-coin cup 56. An instruction or other placard 57 may be held in a frame 58. Since the coin weighing and testing mechanism to be used in connection with this form of our invention may be of any of the well-known existing types, and since this forms no part of our present invention, it is neither illustrated or described. We confine ourselves to showing how the weight of a coin may be utilized to unlock our mechanism and render it available for limited use. Indeed, this locking and unlocking mechanism may be actuated by other than coin means, as, for instance, by a key.

The inner casing 21 is, in this form, extended upwardly to nearly the upper end of the casing portion 54, telescoping therein. A rod 59 extends upwardly through this extension of the inner casing 21 and is suitably connected to the coin mechanism in such manner that the weight of the tested coin will force the rod 59 downwardly. The rod 59 is hingeably secured at its lower end to a lever 60 which is pivoted at 61 upon a bracket 62 secured to the inner casing 21 and is provided with a bent detent end 64 normally held in locking engagement with one of four openings 65 in the periphery of a disk 66 secured upon a shaft 67 journaled in the inner casing 21 by means of a flat spring 68 having one end secured to the inner casing 21 and bearing against the lever 60. A ratchet wheel 69 is also secured upon the shaft 67 and a settler spring 70 bears against the periphery thereof to prevent overthrow and insure proper positioning of the ratchet wheel 69 at all times. The spring 70 has one of its ends secured to the inner casing 21.

The foot plate 41 is provided with a recess 71 and a plate 72 so hinged at 73 therein as to be capable of lying flat within the recess 71. A flat spring 74 is secured at one end within a deeper recess within the recess 71 and bears against the hinged plate 72, normally urging the plate 72 to the position illustrated in Figures 7, 9, and 10, thus obstructing the entry of a shoe toe under the brush 53. A detent 75 is pivoted at 76 upon one edge of the plate 72 and is held against movement in one direction by a stop 77 projecting from the plate 72. The detent 75 normally engages a tooth of the ratchet wheel 69 and is thus locked in its obstructing position.

In operation, when the rod 59 is pressed downwardly, whether by the weight of a coin or other cause, the lever 60 is tilted, withdrawing the detent end 64 from the opening 65 in the disk 66, thus allowing the shoe toe to force the hinged plate 72 down into the recess 71 and to enter under the brush 53. As the hinged plate 72 is swung downward, the detent 75 carries the ratchet wheel 69 forward one tooth and this rotates...
the shaft 67 enough to turn the disk 66 so that the detent end 64 of the lever 60 would rest upon the periphery of the disk 66 midway between two of the four openings 65 therein. Hence, when the user has finished polishing one shoe by pressing down with his foot the inner casing 21, as heretofore described, as many times as he may see fit, he may remove that shoe and, while the hinged plate 72 will spring back to its normal position under urge of the spring 74, it will not lock in that position and may be readily pressed down again by the other shoe. However, when the second shoe is removed the plate 72 will become locked in its normal position because, as the plate 72 is pressed down the second time, the detent 75 carries the ratchet wheel 69 forward another tooth and rotates the shaft 67 sufficiently to bring one of the openings 65 in the disk 66 into position to be engaged by the detent end 64 of the lever 60. The machine can not then be used again until the rod 59 is pressed down again.

Having described our invention, we claim:

1. In shoe polishing mechanism, the combination of a flexible belt provided with a continuous polishing surface and adapted to encircle a shoe with the said polishing surface in contact therewith, a conically shaped rotary brush adapted to contact with the shoe, and spirally threaded means actuated by foot-power for causing travel of said belt and rotation of said brush.

2. In shoe polishing mechanism, the combination of flexible belt and conically shaped brush polishing members, shafts adapted to drive said polishing members, spiral threads carried by said shafts, members engaging in said spiral threads and adapted to convert longitudinal movements of said shafts into rotary motion thereof, and means adapting said shafts for longitudinal movements.

3. In shoe polishing mechanism, the combination of an endless flexible belt having a continuous polishing surface adapted to encircle a shoe in polishing contact therewith, a conically shaped rotary brush adapted to polish the top portion of the toe of said shoe, spirally threaded shafts adapted to be moved longitudinally in one direction by foot-power and in the opposite direction by resilient means and adapted to actuate said belt and said brush, and means acting with the threads of said shafts and adapted to impart rotary motion thereto.

4. In shoe polishing mechanism, the combination of a rotary flexible belt having a continuous polishing surface and adapted to encircle a shoe, a foot-plate normally held above said polishing surface by resilient means and adapted to be pressed down and to be encircled by said belt, a shaft adapted to be moved longitudinally by said foot-plate, and spiral threads carried by said shaft and adapted to engage with coacting members to impart rotary motion to said shaft when said foot-plate is depressed.

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