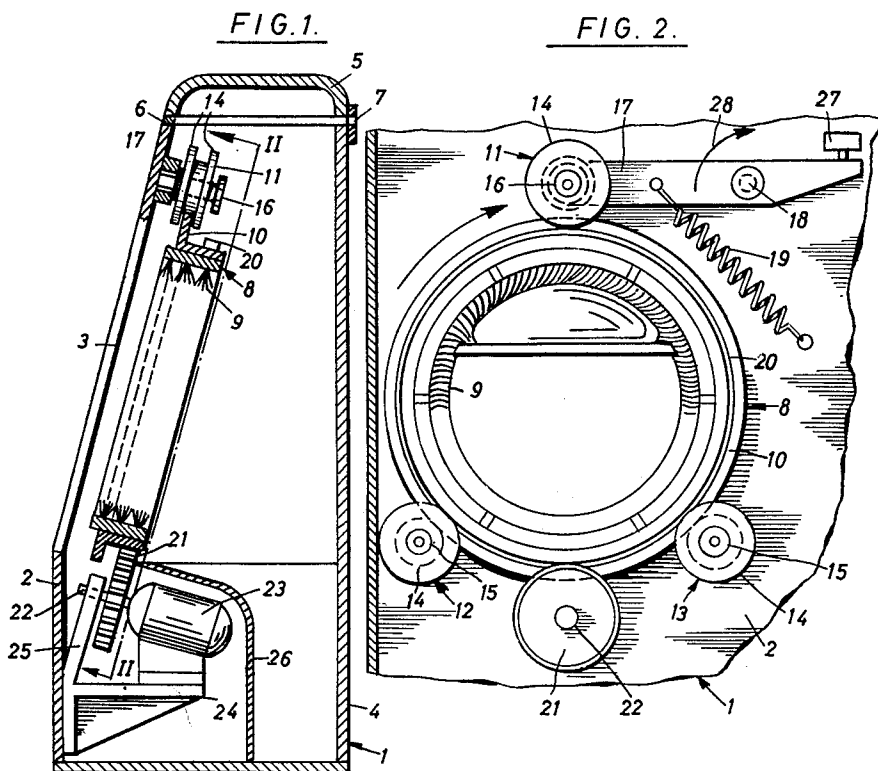


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MACHINE FOR CLEANING SHOES

Filed Aug. 26, 1963

2 Sheets-Sheet 1



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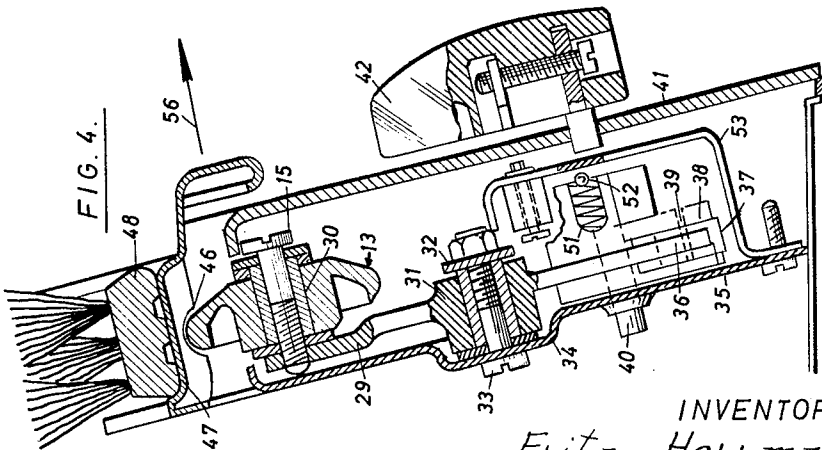
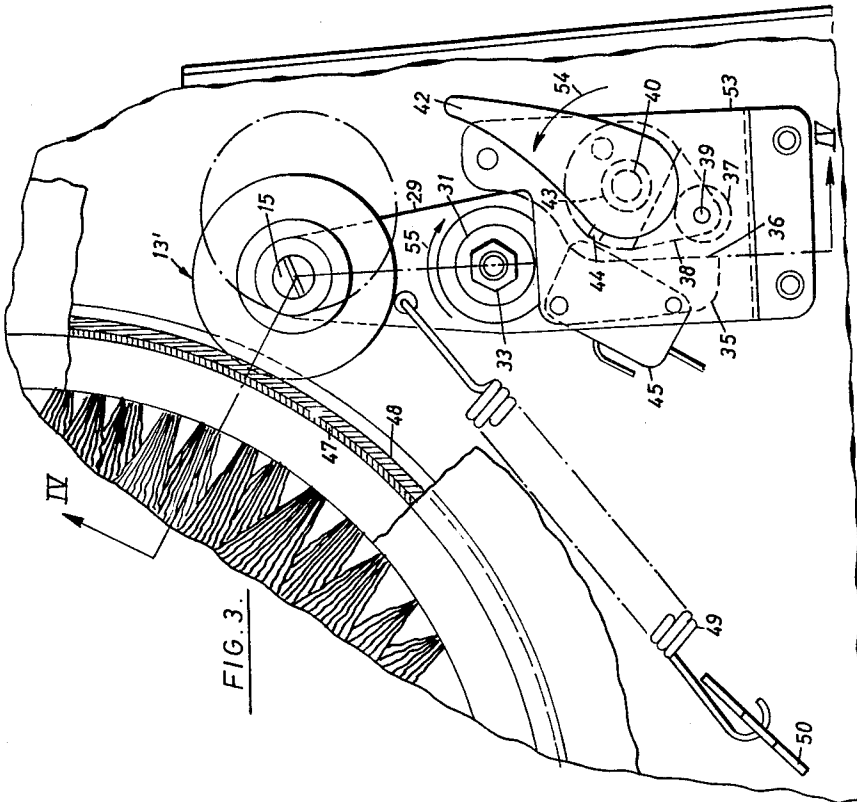
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MACHINE FOR CLEANING SHOES

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This invention relates to a machine for cleaning shoes with at least one motor-driven ring rotatably mounted in a housing, and carrying cleaning elements arranged in a crown on its internal periphery.

It is desirable to provide shoe cleaning machines with a series of rings having different cleaning elements for use with the different conventional shoe dyes. However, it is not in practice possible to provide a shoe-cleaning machine with a large number of powered rings for reasons of economy and space. Consequently, a shoe-cleaning machine must be limited to a few such rings at most, with a possibility of exchanging one or more rings if required. This interchange must be such, that it can be effected as quickly as possible and in a simple manner. An object of the present invention is to satisfy these requirements.

According to the invention, there is provided a shoe-cleaning machine comprising a housing, a ring rotatably mounted in an opening of the housing, and provided with internal cleaning elements arranged in a crown, a roller for rotating the ring, and at least three peripherally distributed rollers arranged to guide the ring externally, at least one of the guide rollers being removable from its guiding position, so that the ring can be disengaged from the guide rollers.

In the accompanying drawings which show two embodiments of the invention:

FIG. 1 shows a first embodiment in vertical median section;

FIG. 2 is a transversal section along the line II-II of FIG. 1;

FIG. 3 shows a second embodiment on an enlarged scale and in partly exploded view;

FIG. 4 is a section along the line IV-IV of FIG. 3.

The shoe-cleaning machine illustrated comprises a housing 1, with a front wall 2 which has a circular opening 3 on an upper, upwardly receding portion. The housing 1 has a back wall 4 and is closed at the top by a lid 5. The lid 5 can be swung upwards on hinges 7 on the back wall 4, an intervening packing element 6 being also provided. The lid 5 can be maintained in the closed position by means of a lock (not shown) on the opposite side.

A ring 8 is arranged in the housing immediately behind the opening 3. The ring is coaxial to the opening and in parallel to the oblique portion of the front wall 2. The ring is rotatable about its axis. The internal periphery of the ring 8 is provided with a crown of cleaning elements 9 for cleaning shoes and has a flange 10 on the outside. The flange 10 is engaged by three rollers 11, 12, 13, arranged in a triangle, in such a manner, that they rotate the ring 8 about its axis and secure it against radial displacement in all directions. The rollers 11, 12 and 13 are provided with flanges 14, between which the flange 10 of the ring is secured against axial displacements with a slight play.

The two lower rollers 12, 13 are mounted for rotation in bearings 15 in the front wall 2 and the upper roller 11 is rotatably mounted in bearings 16 at one end of a two-armed lever 17. This lever 17 is parallel to the oblique upper portion of the front wall and is thus also parallel to the ring 8 and is pivotally mounted on the front wall by means of a pivot pin 18. The lever 17 is under the load of a traction spring 19, which is anchored to the

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front wall 2 of the housing and tends to maintain the lever in the position shown in FIG. 2, in which position roller 11 is in contact with flange 10, thereby maintaining ring 8 in contact with rollers 12 and 13.

The ring 8 has an external toothed rim 20, which is engaged by a toothed wheel 21 in the lower part of the housing. The toothed wheel 21 is seated on the shaft 22 of an electric motor 23, which is mounted on a bracket 24 fastened to the front wall of the housing and has an upward-extending arm 25 for the seating of the shaft 22. The motor 23 is covered by a shield element 26 which catches dust brushed off from the shoes by the elements 9. The dust can then be drawn off by a fan if required.

A switch element 27 is located in the power circuit of the motor 23, and so operates with the free end of the lever 17 in such a manner that it starts the motor when the lever is in the position illustrated, and switches off the motor when the switch is in any other position. The lever 17 can be pivoted from the position shown in the direction of arrow 28 to such an extent that the roller 11 releases the ring 8 to permit removal from rollers 12, 13. To replace the ring 8 by another it is therefore only necessary to open the housing by lifting the lid 5 upwards and to raise lever 17 by hand to stop the drive of the ring. When the ring is stopped it can be lifted out manually from rollers 12, 13, to be lifted in axial direction towards the gear wall 4 of the housing away from the range of rollers and removed upwards from the housing. The new ring can then be inserted in reverse sequence into the rollers 12, 13, aligned and held in the position for rotation by release of the lever 17 under loading of the spring 19, whereby the switch element 27 is put in the "on" position at the end of the pivotal movement of the lever. The lid 5 is then closed and locked and the cleaning process is started with the new ring.

Instead of, or in addition to, the switch element 27 another switch element may be arranged within the housing, to be actuated by lid 5, by means of which the drive is switched on in the closed position of the lid and interrupted in any other position.

The switch element 27 may also co-operate with a coupling arranged in the motor gearing instead of switching on and off the power as illustrated in the drawing. The arrangement is such, that the coupling is engaged, when the lever 17 is in the operative position but is disengaged in any other position of the lever. The use of a switch element actuated by lid 5 is also advantageous in this case, so that the motor is switched on only when the lid of the housing is closed. The coupling actuated by the switch element 27 in this case is switched on and off when the drive is at rest, and the wear on it is correspondingly smaller.

A frictional contact drive can also be provided for ring 8 instead of a toothed wheel drive. Such a drive reduces the cost of the apparatus and ensures a noiseless operation. In this case, the ring is expediently formed of a rubber-elastic material and, instead of having the flange 10, is provided with a central annular groove into which flange-less rollers can engage. In this case, the ring may be driven by one of the rollers.

The ring 8 may be guided by rollers arranged otherwise than triangularly, for example by rollers arranged in a square. In this case the lever 17 must, if required, be provided with more than one roller or must be coupled with the mobile supports of further rollers in such a manner, that when the lever is pivoted out of its guiding position, all rollers coupled with it are also dislodged from their guiding position.

In the embodiment illustrated in FIGS. 3 and 4 the lower roller 13' is, instead of the upper roller 11 rotatably mounted at one end of the two-armed lever 29 by means of a bolt 15, with an intervening bearing bush 30. The

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shaft of the bolt is screwed into a threaded bore of the lever 29 and clamps a bush 30 in position. The central part of the lever 29 has a boss 31 running on a bearing bush 32, which is attached to a partition wall portion 34 of the housing by means of a threaded bolt 33.

The free arm 35 of the lever 29 is off set as shown in FIG. 3 and has a surface 36 which is located in the plane defined by the axis of bolts 15 and 33. A small roller 37 co-operates with the surface 36, and is mounted for rotation about an axis 39 on the free end of a steering cam 38. The cam 38 is seated at one end of a shaft 40 which extends outwardly through an aperture of the front wall 41 of the housing and is provided with a hand-grip 42. The cam 38 is also provided with a lug 43 which co-operates with a button 44 of the motor switch 45. The motor (not here shown), advantageously drives the other lower roller 12, which is otherwise identical with roller 13' and like the latter is in engagement with an annular groove 46 of a rubber ring 48 seated on the brush rim 47. A traction spring 49 is attached to the lever 29, is anchored to a projection 50 of the housing, and tends to maintain the roller 13' in engagement with the rubber ring 48.

The motor is shut down when the parts are in the position shown in the drawing and the hand-grip 42 is secured, in the position shown, by a ball spring lock, the ball 52 and the spring 51 of which are guided in a bore of the cam 38, the ball 52 engaging in a corresponding notch of a yoke 53 fast with the housing.

To switch on the motor, the hand-grip 42 is pivoted in the direction of the arrow 54 so that lug 43 engages the button 44, presses it and holds it in this position. In this terminal position, the cam 38 is secured by the ball spring lock, the ball 52 of which snaps into a corresponding notch of the yoke 53.

The motor is shut off by pivoting the hand-grip back into the rest position illustrated.

For removing the brush ring, the hand-grip 42 is pivoted in the direction opposite to that of the arrow 54 until the ball 52 again snaps into a corresponding notch. The cam 38 which participates in this pivoting movement moves on the surface 36 of the lever 29 together with the small roller 37 and pivots these in the direction of the arrow 55. Roller 13' is therefore guided out of the groove 46 and passes into the terminal position indicated by composite lines in FIG. 3, where it is at such a distance from the rubber ring 48, that the brush ring, together with rim 47 and rubber ring 48, can be pulled off the two other rollers and can be removed from the housing in the direction of the arrow 56. Another brush ring can be set in its place in reverse sequence of operations, to be brought automatically into its operating position by the pivoting back of the grip 42, under loading of the spring 49. It has been found, that the insertion of the ring through the aperture of the housing is facilitated by the obliqueness of the upper portion of the front wall. It suffices to insert the ring with its groove 46 into the two lower rollers and then to push it so far into the housing that its rim comes into contact with the upper roller. The grip being then swung into the operating position, the ring tilts automatically into its guide position on starting of the motor, under the influence of the torque exerted on it by its own weight, about the support axis formed by the two lower rollers. Moreover, the obliqueness of the upper portion of the front wall has the additional advantage that the dust and dirt falling out during shoe-cleaning falls from the ring brush into the interior of the housing.

What is claimed is:

1. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening, internal cleaning elements arranged in a crown and mounted on the internal periphery of said ring, a motor for rotating said ring, means for guiding said ring externally and consisting of at least three peripherally dis-

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tributed guide rollers and means for moving at least one of said rollers from its guiding position whereby said ring can be disengaged from said guide rollers.

2. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening, internal cleaning elements arranged in a crown and mounted on the internal periphery of said ring, a motor for rotating said ring, means for guiding said ring externally and consisting of at least three peripherally distributed guide rollers, a lever on which one of said rollers is mounted and pivot means on said lever to allow movement of said lever from a position in which the roller thereon guides said ring to a position in which said ring can be disengaged from said guide rollers.

3. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening, internal cleaning elements arranged in a crown and mounted on the internal periphery of said ring, a motor for rotating said ring, means for guiding said ring externally and consisting of at least three peripherally distributed guide rollers, a lever on which one of said rollers is mounted, pivot means on said lever to allow movement of said lever from a first position in which the roller thereon guides said ring to a second position in which said ring can be disengaged from said guide rollers, and a spring for biasing said lever to said first position.

4. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening, internal cleaning elements arranged in a crown and mounted on the internal periphery of said ring, a motor for rotating said ring, means for guiding said ring externally and consisting of at least three peripherally distributed guide rollers, a lever on which one of said rollers is mounted, pivot means on said lever to allow movement of said lever from a first position in which the roller thereon guides said ring to a second position in which said ring can be disengaged from said guide rollers, a spring for biasing said lever to said first position and a switch element which starts said motor when said lever is in the said first position and stops said motor when said lever is not in said first position.

5. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening, which is of sufficient size to permit the said ring to be removed and reinserted therethrough, internal cleaning elements arranged in a crown and mounted on the internal periphery of said ring, a motor for rotating said ring, means for guiding said ring externally and consisting of at least three peripherally distributed guide rollers, a lever on which one of said rollers is mounted, pivot means on said lever to allow movement of said lever from a first position in which the roller thereon guides said ring to a second position in which said ring can be disengaged from said guide rollers, a spring for biasing said lever to said first position and a switch element which starts said motor when said lever is in said first position and stops said motor when said lever is not in said first position.

6. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening and having an annular central external groove, internal cleaning elements arranged in the form of a crown and mounted on the internal periphery of said ring, means for guiding said ring externally consisting of at least three peripherally distributed guide rollers engaging said external groove on said ring, a motor for driving said ring and means for moving at least one of said rollers out of engagement with said external groove whereby said ring can be disengaged from said guide rollers.

7. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said opening and having an annular central external groove, internal cleaning elements arranged in the form of a crown and mounted on the internal periphery of said ring, means for guiding said ring externally consisting of

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a driving roller and at least two peripherally distributed guide rollers engaging said external groove on said ring, a motor for driving said driving roller and means for moving at least one of said rollers out of engagement with said external groove whereby said ring can be disengaged from said guide rollers.

8. A shoe cleaning machine comprising a housing including a front wall, at least part of which recedes upwardly and has an opening therein, a ring parallel with said part of the front wall rotatably mounted in said opening having an annular central external groove, internal cleaning elements arranged in the form of a crown and mounted on the internal periphery of said ring, means for guiding said ring externally consisting of a driving roller and at least two peripherally distributed guide rollers engaging said external groove on said ring, a motor for driving said driving roller and means for moving at least one of said rollers out of engagement with said external groove whereby said ring can be disengaged from said guide rollers.

9. A shoe cleaning machine comprising a housing having an opening therein, a ring rotatably mounted in said

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opening, internal cleaning elements arranged in a crown and mounted on the internal periphery of said ring, a motor for rotating said ring, means for guiding said ring externally and consisting of at least three peripherally distributed guide rollers, a lever on which one of said rollers is mounted, pivot means on said lever to allow movement of said lever from a first position in which the roller thereon guides said ring to a second position in which said ring can be disengaged from said guide rollers, and a spring for biasing said lever to said first position and an operating handle movable from a median at rest position in which the machine is at rest to a first terminal position in which the motor operates to drive said ring or to a second terminal position in which said lever is moved to its second position.

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