

[54] APPARATUS FOR CLEANING SHOE SOLES

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[58] Field of Search 15/32, 36, 37, 311

[56] **References Cited**

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[57] **ABSTRACT**

Apparatus for cleaning shoe soles wherein a plurality of cylindrical brushes are mounted in a frame, a crank mechanism being connected to the frame for imparting a reciprocatory movement thereto, a grate being positioned over the brushes in such a manner that the bristles of the brushes extend upwardly through the space between adjacent bars in the grate, and a micro-switch being operatively connected between the grate and the crank mechanism, whereby when a person's foot is placed on the grate, the circuit to the crank mechanism is closed thereby imparting a rapid reciprocatory movement to the frame and associated brushes, to thereby clean the shoe soles of the wearer.

7 Claims, 3 Drawing Figures

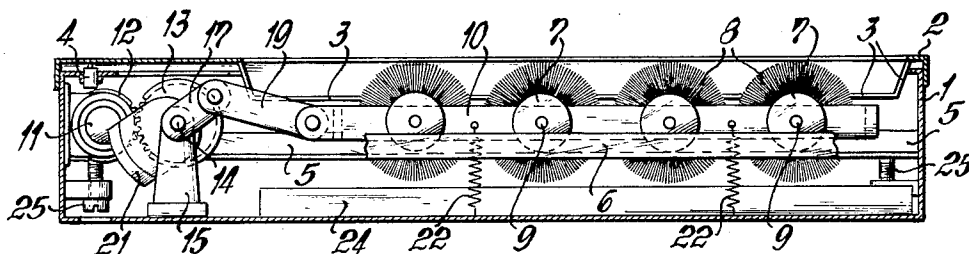


FIG. 1

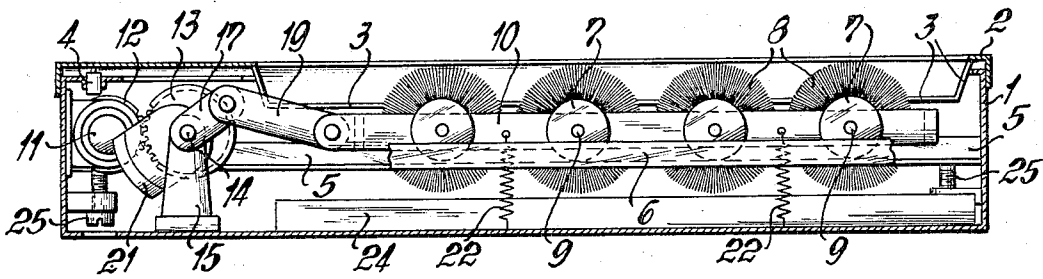


FIG. 2

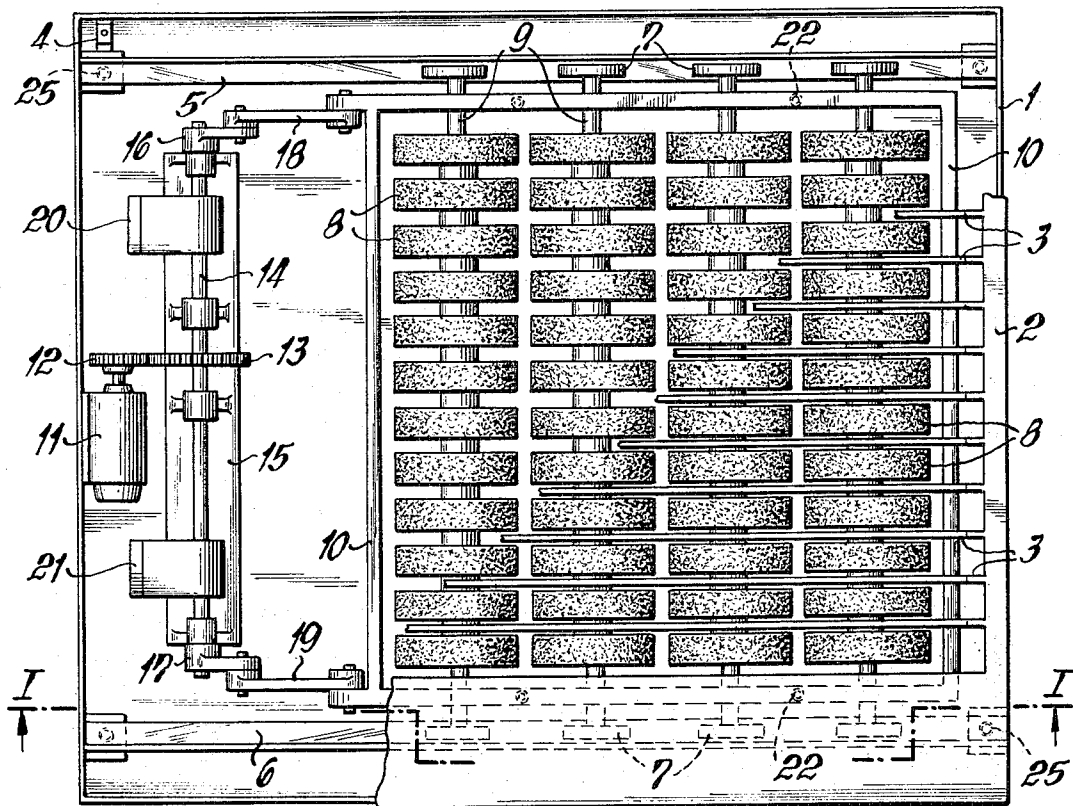
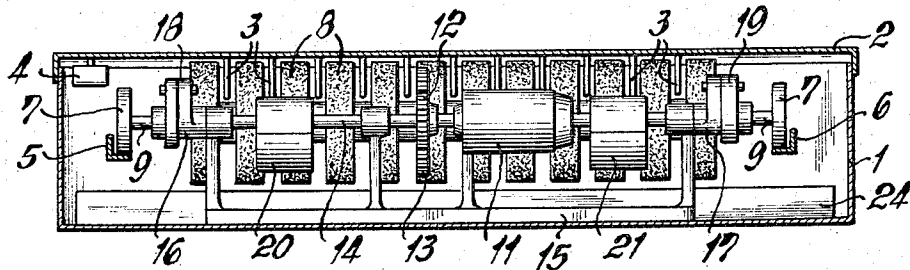


FIG. 3



APPARATUS FOR CLEANING SHOE SOLES

BACKGROUND OF THE INVENTION

Heretofore, shoe sole cleaning apparatus have included bristles secured to a driven endless belt; however, this arrangement has not proven satisfactory since the person's foot placed on the belt tended to be carried by the belt in the same direction as the belt was being driven, resulting in the loss of balance by the person using the cleaning apparatus. To overcome this disadvantage, it has been proposed to employ at least two endless belts with adjacent belts travelling in opposite directions. While this arrangement solved the problem of the person losing his balance during the cleaning of his shoe sole, another problem was found in that the bristles on the endless belts yielded to the resistance of the shoe soles, that is, the bristles acquired a permanent bend in a direction opposite to the direction of travel of the belts whereby the layer of dirt on the shoe sole was merely stroked and not thoroughly removed therefrom.

The shoe sole cleaning apparatus of the present invention has been devised to overcome the above-noted disadvantages experienced in prior shoe sole cleaning apparatus, and comprises, essentially, a plurality of cylindrical brushes mounted in a frame, a crank mechanism being connected to the frame for imparting a reciprocatory movement thereto, a grate being positioned over the brushes in such a manner that the bristles of the brushes extend upwardly through the space between adjacent bars in the grate, and a micro-switch is operatively connected between the grate and the crank mechanism, whereby when a person's foot is placed on the grate, the circuit to the crank mechanism is closed to thereby impart a rapid reciprocatory movement to the frame and associated brushes. By this construction and arrangement, the shoe sole is subjected to a rapid scrubbing action whereby dirt particles are lifted out of the sole. The rapid bending of the bristles from one direction to the other during the reciprocation of the frame prevents the bristles from acquiring a permanent bend in one direction, as noted above with regard to the belt-type sole cleaners, and the rapid reciprocation of the bristles does not cause the foot to follow the direction of travel of the bristles thereby preventing a loss of balance by the wearer of the shoe being cleaned.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the sole cleaning apparatus of the present invention taken along line I—I of FIG. 2;

FIG. 2 is a fragmentary, top plan view of the apparatus shown in FIG. 1; and

FIG. 3 is an end elevational view, partially in section, of the sole cleaning apparatus of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings and more particularly to FIGS. 1 and 2, the apparatus of the present invention for cleaning shoe soles comprises, a shallow box or housing 1 having a lid 2 provided with grate bars 3; compression springs (not shown) support the lid a slight distance above a micro-switch 4 mounted on the upper edge of the housing. Spaced, parallel tracks 5

and 6 extend longitudinally of the housing for supporting a plurality of rollers 7 connected to the free ends of a plurality of cylindrical brushes 8 mounted on axles 9 extending through the sides of a rectangular framework 10, the rollers 7 having a smaller diameter than the cylindrical brushes 8. As an alternative, the tracks 5 and 6 could be formed with teeth meshing with teeth formed on the periphery of the rollers 7 to thereby provide a rack and pinion assembly.

An electric motor 11 is mounted in the housing and drives, via its gear wheel 12, a larger gear 13 secured to a shaft 14 journaled in several bearings mounted on a bearing block 15. The opposite ends of the shaft 14 have cranks 16, 17 secured thereto, the cranks being oriented in the same direction and articulated to the free ends of the framework 10 by connecting rods 18, 19. Counterweights 20, 21 are secured to the shaft 14 to prevent excessive vibrations of the drive mechanism during rapid reciprocation of the framework and associated brushes.

Tension springs 22 are connected between the framework 10 and the bottom wall of the housing to thereby provide a biasing force urging the rollers 7 against the tracks 5 and 6.

A pan 24 is supported on the bottom wall of the housing for receiving dirt deflected from the brushes by stripper bars (not shown).

Setscrews 25 are positioned at each end of the tracks 5 and 6, whereby the height of the brushes 8 relative to the lid 2 may be adjusted so that the level of the bristles may extend sufficiently through the space between adjacent grate bars 3.

In the operation of the shoe sole cleaning apparatus of the present invention, when a person places his foot on the lid 2, the weight of the foot depresses the lid 2 to actuate the micro-switch 4 thereby closing the circuit to energize the electric motor 11. The crank mechanism connected between the motor and the frame 10 causes a rapid reciprocation, in the order of several times per second, of the frame and associated brushes to thereby clean dirt from the sole of the shoe of the wearer. When the foot is removed from the grate, the micro-switch 4 opens the circuit to de-energize the motor.

The terms and expressions which have been employed herein are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. Apparatus for cleaning shoe soles comprising, a housing, a grate mounted on the top of said housing, a plurality of cylindrical brushes positioned within said housing and mounted on axles, the bristles of said brushes extending through the space between adjacent bars in said grate, a framework slidably mounted in said housing, the ends of said axles extending through opposite sides of said framework whereby said brushes are carried by said framework, a roller secured to each end of each axle, track means mounted in said housing for supporting said rollers, and drive means connected to said framework and associated brushes.

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2. Apparatus for cleaning shoe soles according to claim 1, wherein the drive means includes a crank and connecting rod assembly.

3. Apparatus for cleaning shoe soles according to claim 1, wherein the rollers have a smaller diameter than the cylindrical brushes.

4. Apparatus for cleaning shoe soles according to claim 1 wherein spring means are connected between the framework and the housing for biasing the rollers against said track means.

5. Apparatus for cleaning shoe soles according to claim 1, wherein adjustment means are mounted between the housing and the track means whereby the distance of the track means from the grate may be adjusted to thereby vary the level of the brush bristles extending through the space between adjacent bars.

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6. Apparatus for cleaning shoe soles according to claim 1 wherein the drive means comprises an electric motor operatively connected to a shaft, crank means connected to said shaft, and connecting rod means connected between said crank means and said framework, whereby when the drive means is actuated a rapid reciprocatory movement is imparted to the framework and associated brushes.

7. Apparatus for cleaning shoe soles according to claim 6, wherein micro-switch means are mounted in the housing adjacent the grate, said micro-switch means being electrically connected to said electric motor, whereby the weight of a foot placed on the grate biases the grate against the micro-switch means to thereby close the circuit to the electric motor.

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