Aug. 14, 1962 P. COUNTS 3,048,867

SHOE CLEANER

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Fig. 1

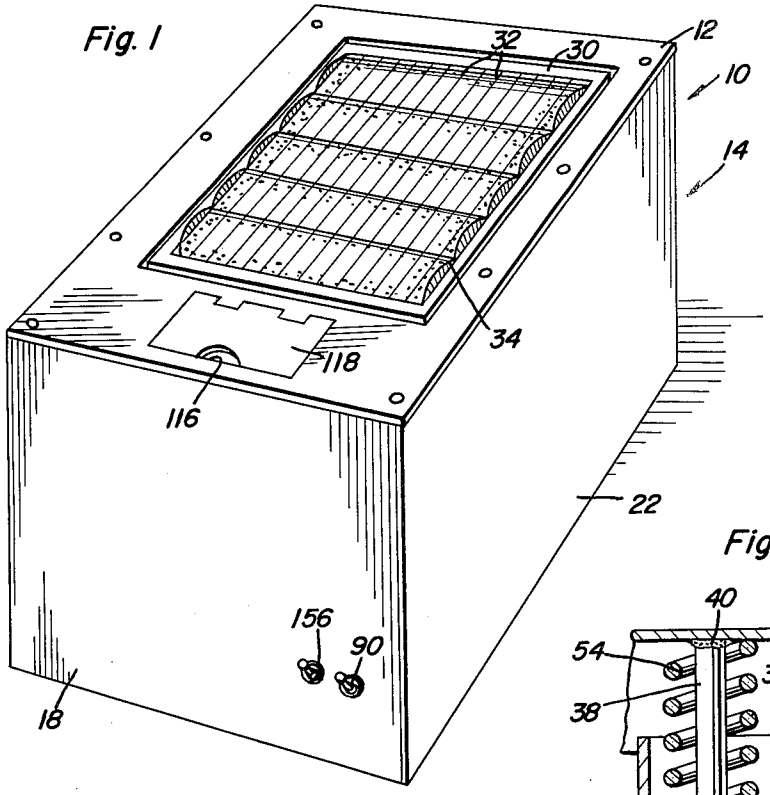


Fig. 6

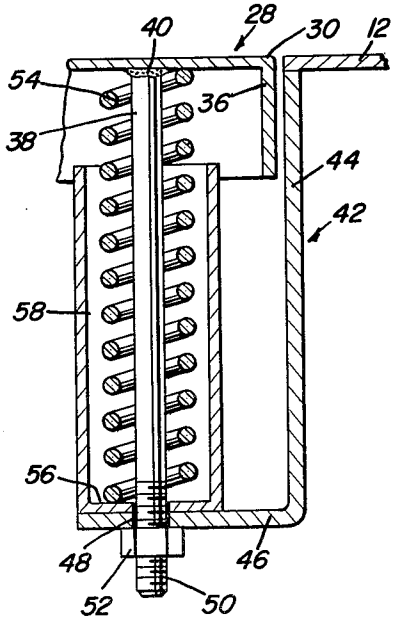
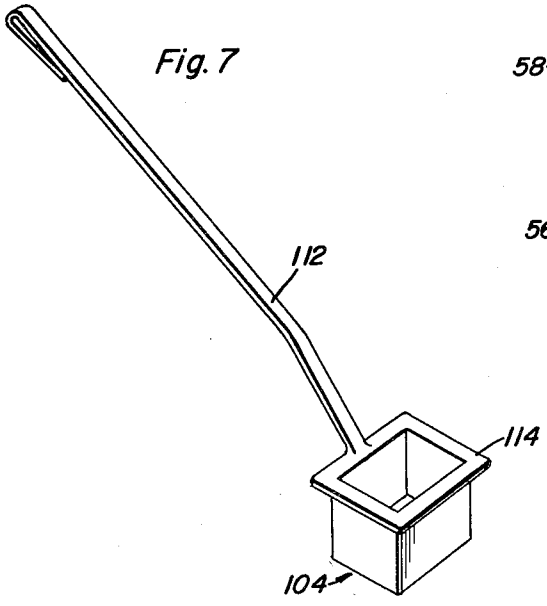


Fig. 7



Paul Counts

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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SHOE CLEANER

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Fig. 2

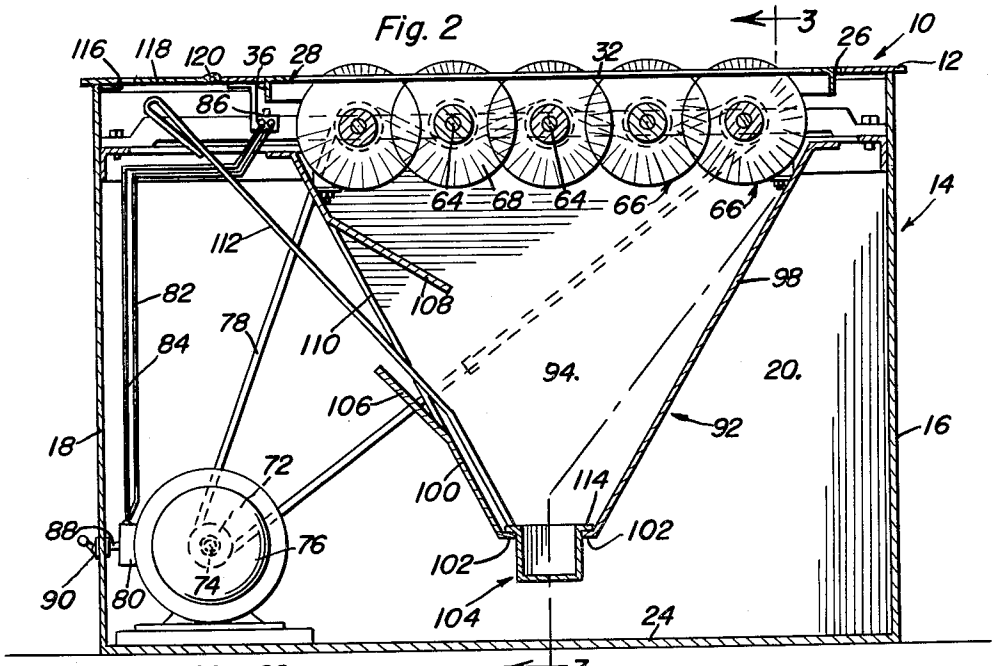
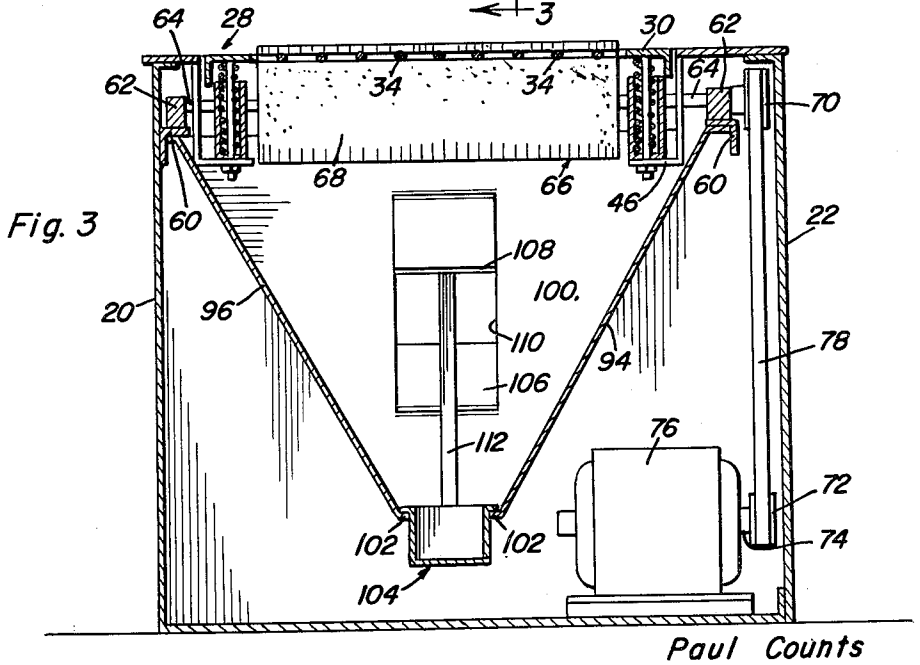


Fig. 3



Paul Counts
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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SHOE CLEANER

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Fig. 4

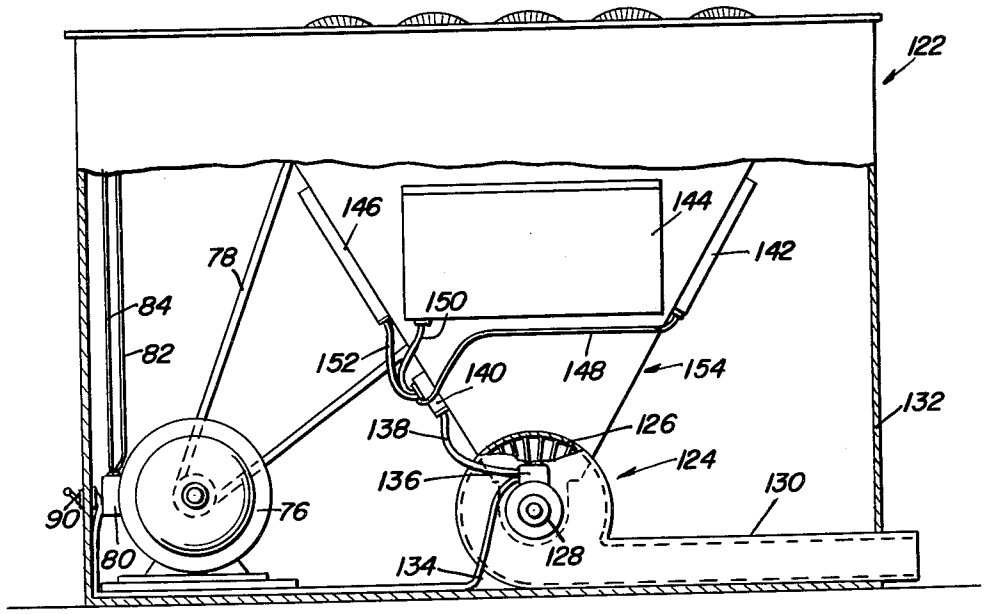
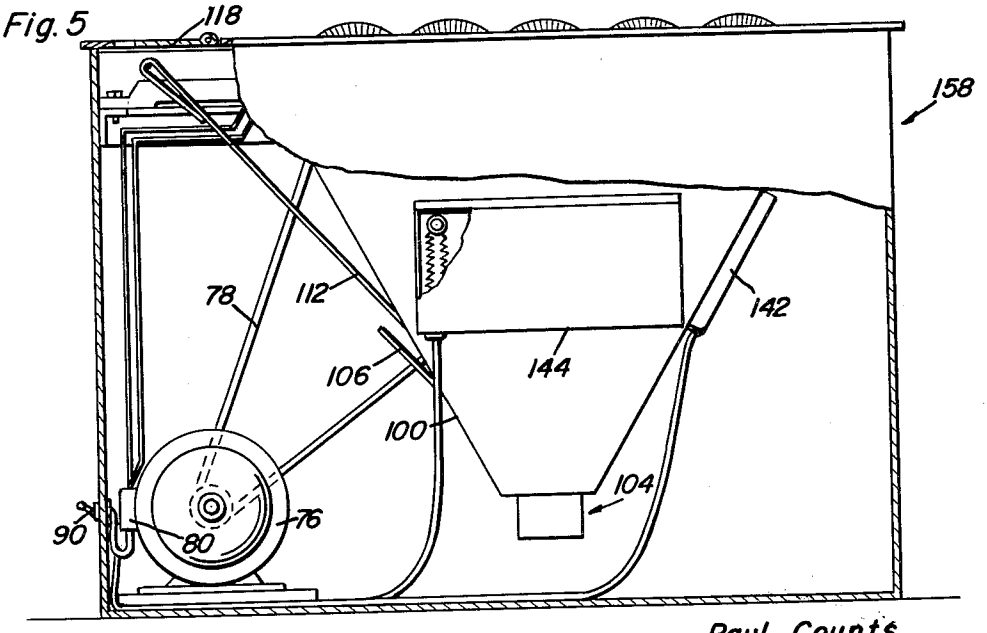


Fig. 5



Paul Counts
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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SHOE CLEANER

Paul Counts, R.F.D. 4, Box 62, Jonesboro, Ark.

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8 Claims. (Cl. 15—36)

This invention relates to a novel and useful shoe cleaner and more specifically to a shoe cleaner assembly which is adapted to be recessed within a section of flooring with the upper surfaces thereof substantially planar with the upper surfaces of the flooring.

The shoe cleaner is designed to take its place in the modern type of living of today and the future and for use in both public and private life. It is constructed in a manner whereby its initial cost of manufacture and maintenance cost will be maintained at a minimum and its installation in at least public places will result in savings in cleaning maintenance that will more than offset the cost of the shoe cleaner. It will hereinafter be readily apparent that the shoe cleaner can be made in any size to suit the present demand and that the portions of the shoe cleaner which are visible may readily be designed to provide a pleasing appearance.

The main object of this invention is to provide a shoe cleaner which will be completely automatic in operation and be highly effective in removing dirt and other foreign material from the soles of shoes worn by persons walking over the shoe cleaner.

A further object of this invention, in accordance with the immediately preceding object, is to provide a plurality of brush rollers each equipped with brush bristles which when disposed immediately beneath a grillwork with the upper end of the bristles carried by the upper portions of the rollers projecting through the grillwork and rotated will be highly efficient in removing foreign material from the undersurfaces of shoe soles positioned on the grillwork.

A further object of this invention is to provide a means for resiliently mounting the grillwork of the shoe cleaner for limited vertical movement whereby a motor means for the brush rollers may be actuated by a switch engageable by the grill work as it is depressed when a predetermined amount of weight is placed thereon.

Still another object of this invention is to provide the shoe cleaner with receptacle means for collecting foreign material removed from shoes and means for mounting the receptacle means immediately beneath the brush rollers whereby the receptacle will collect substantially all of the foreign material removed by the shoe cleaner.

A still further object of this invention, in accordance with the immediately preceding object, is to provide the receptacle means disposed beneath the brush rollers with suitable heating elements in good heat exchange relation with the interior of the receptacle means and the undersurface of the frill whereby snow and ice clinging to the soles of shoes positioned on the grill may be melted.

A final object to be specifically enumerated herein is to provide a shoe cleaner which will conform to conventional forms of manufacture, be of simple construction and automatic in operation so as to provide a device that would be economically feasible, long-lasting and capable of operating only when necessary.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the shoe cleaner;

FIGURE 2 is a longitudinal vertical sectional view of the shoe cleaner on somewhat of an enlarged scale

taken substantially upon a plane passing through the longitudinal center line of the shoe cleaner;

FIGURE 3 is a transverse vertical sectional view taken substantially upon the plane indicated by section line 3—3 of FIGURE 2;

FIGURE 4 is a side elevational view of the shoe cleaner with parts thereof being broken away and shown in section showing a modified form of shoe cleaner construction utilizing a vacuum for discharging the foreign material removed by the brush assembly of the shoe cleaner and heating elements for melting snow and ice from the shoes positioned on the grillwork of the shoe cleaner;

FIGURE 5 is a side elevational view similar to that of FIGURE 4 but of a shoe cleaner not provided with the vacuum means;

FIGURE 6 is a fragmentary enlarged vertical sectional view showing the manner in which the grillwork of the shoe cleaner is resiliently mounted for limited vertical movement; and

FIGURE 7 is a perspective view of the removable portion of the receptacle used in connection with the forms of the invention illustrated through FIGURES 1 through 3 and FIGURE 5.

Referring now more specifically to the drawings the numeral **10** generally designates the shoe cleaner comprising the instant invention which includes a mounting plate **12** comprising a top wall for a housing generally referred to by the reference numeral **14** including opposite end walls **16** and **18**, opposite side walls **20** and **22** and a bottom wall **24**. An opening **26** is formed in the mounting plate and a grillwork generally referred to by the reference numeral **28** is disposed in the opening and includes a generally rectangular framework **30** including a plurality of parallel longitudinal grill elements **32** which are interconnected by means of a plurality of longitudinally spaced and transversely extending parallel grill elements **34**.

With attention now directed more particularly to FIGURE 6 of the drawings it will be noted that the framework **30** includes a depending peripheral flange **36** which extends about the outer peripheral edges of the frame **30**. The frame **30** includes a plurality of depending guide rods **38** which are secured at their upper ends to the frame **30** in any convenient manner such as by welding **40**. The mounting plate **12** includes a plurality of opposite side and end L-shaped mounting flanges generally designated by the reference numeral **42** which each have the upper end of their vertical leg **44** secured to the undersurface of the mounting plate **12** adjacent the edge of the opening **26** formed therein. The horizontal leg **46** of each bracket **42** is provided with at least one bore **48** through which the lower threaded end portion **50** of a guide rod **38** is slidably disposed. A stop member in the form of a nut **52** is threadely engaged with the portion of the guide rod **38** extending below the horizontal flange **46** and a compression spring **54** is disposed about the guide rod **38** and has its opposite end in frictional engagement with the undersurface of the frame **30** and the confronting surface of the apertured end wall **56** of the sleeve **58**. The remote surface of the end wall **56** is in surface to surface contacting relation with the upper surface of the horizontal flange **46** and the upper end of the sleeve **58** comprises a stop for limiting downward vertical movement of the grillwork **28**. The coil springs **54** normally resiliently urge the grillwork **28** toward its upper limit position defined by the nut **52** and thus it will be seen that the grillwork **28** may be urged downwardly against the coil springs **54** upon the placement of a given amount of weight on the grillwork **28**.

The housing **14** includes a pair of longitudinally extending support angle brackets **60** which each has secured thereto a plurality of bearing journals **62**. Each bearing

journal 62 on one of the angle members 60 is aligned with a corresponding journal 62 on the other angle member 60. Aligned pairs of bearing journals 62 rotatably journal the opposite end portions of a plurality of roller shafts 64 which each have mounted thereon between their opposite ends a brush roller member generally referred to by the reference numeral 66 including a plurality of radially extending brush bristles 68.

The brush rollers 66 are disposed between adjacent transverse grill elements 34 and the upper ends of the bristles 68 thereon project above the grillwork 28 between adjacent transverse grill elements 34 as can best be seen in FIGURES 1 and 2.

The end of each roller shaft 64 is provided with a pulley 70 in alignment with the drive pulley 72 carried by the output shaft 74 of a conventional form of electric motor 76 and an endless flexible belt 78 is utilized to drivingly connect the drive pulley 72 with the pulleys 70 on the roller shaft 64. Attention is directed to FIGURE 2 of the drawings wherein it will be noted that the endless flexible member 78 is engaged with the pulleys 70 in a manner whereby adjacent brush rollers 66 are rotated in opposite directions.

With attention now directed to FIGURES 1 and 2 of the drawings it will be noted that the motor 76 includes a junction box 80 and that a pair of conductors 82 and 84 extend from the junction box 80 to a pressure switch 86 mounted beneath and for engagement by the lower edge of a portion of one of the peripheral flanges 36 of the frame 30. The junction box is connected to a suitable source of electricity by means of suitable conductors (not shown) and the pressure sensitive switch 86 is disposed in the electrical circuit for the electric motor 76 and is normally open. The placement of a predetermined amount of weight on the grillwork 28 will urge the latter downwardly against the tension of the coil springs 54 and engage the pressure sensitive switch 86 to close the circuit to the electric motor 76. Also interposed in the electric circuit to the electric motor 76 by means of conductor 88 is a toggle switch 90 whereby the electrical circuit of the electric motor 76 may be opened upon actuation of the toggle switch 90.

Receptacle means in the form of a receptacle housing generally referred to by the reference numeral 92 and including a pair of downwardly convergent side walls 94 and 96 and interconnected by means of a pair of downwardly convergent end walls 98 and 100. The lower edges of each of the walls 94—100 terminate in inwardly directed support flanges 102 by which a removable receptacle 104 is supported in the lower end of the housing 92. The wall 100 has a plurality of laterally struck portions 106 and 108 defining an opening 110 through which the receptacle 104 may be removed by means of elongated handle 112 secured at its lower end to the outturned upper lift 114 of the receptacle 104. The mounting plate 12 is provided with an access opening 116 having a closure therefor hinged as at 120. The hinged closure 118 may be opened in order to remove the handle 112 and the receptacle 104 from the housing 114. In this manner, the foreign material removed from shoes by means of the roller brushes 66 may be periodically removed from within the housing 92.

With attention now directed more particularly to FIGURES 4 and 5 of the drawings there will be seen two modifications of the shoe cleaner 10 which are identical in substantially all respects as the previously described shoe cleaner 10. The shoe cleaner illustrated in FIGURE 4 is generally referred to by the reference numeral 122 and instead of being provided with the receptacle 104 at the lower end of the housing 92, the shoe cleaner 122 is provided with a vacuum assembly 124 having a blower member 126 disposed therein and driven by a suitable electric motor 128. The vacuum 124 is provided with an outlet conduit 130 extending through the end wall 132 of the shoe cleaner 122 and may be communicated with any desirable container for receiving foreign material removed thereby. The electric motor 128 is provided with a suitable conductor 134 connected to the junction box 80 whereby the motor 128 may also be actuated by a pressure sensitive switch (not shown) connected to the conductors 82 and 84.

The electric motor 128 is also provided with a junction box 136 from which a conductor 138 extends and is connected to a third junction box 140. A plurality of electrical heating assemblies 142, 144 and 146 are provided with conductors 148, 150 and 152 respectively and are secured to selected walls of the housing 154. The conductors 148, 150 and 152 are each connected to the conductor 138 within the junction box 140 and a suitable toggle switch 156, see FIGURE 1, is disposed in the electrical conduit 134 whereby the toggle switch 156 may be utilized to render the vacuum means 124 and the electrical heating elements 142, 144 and 146 inoperative. It is of course to be understood that the heating elements 142, 144 and 146 could alone be operatively connected to the toggle switch 156 whereby the toggle switch 90 would then be operatively connected to the electric motor for driving the rollers brushes of the shoe cleaner 122 and the vacuum 124 of the shoe cleaner 122. In this manner, the electrical heating elements could be disconnected during the warmer months.

With attention now directed to FIGURE 5 of the drawings there will be seen a still further modificaction of the shoe cleaner generally referred to by the reference numeral 158 which combines the removable receptacle feature 104 of the shoe cleaner 10 with two of the heating elements 142 and 144 of the shoe cleaner 122. The shoe cleaner 158 also includes the wall 100 of the housing 92 which is provided with the laterally deflected portions 106 and 108 whereby the receptacle 104 may be removed by means of the handle 112 through the hinged closure 118 which is also provided in the shoe cleaner 158.

Thus, it may be seen that the shoe cleaners 10, 122 and 158 are similar in many respects with the shoe cleaner 158 differing from the shoe cleaner 10 only in the addition of the heater elements 142 and 144 together with the suitable controls therefor. The shoe cleaner 122 differs from the shoe cleaner 158 by the provision of an additional heater element and the vacuum 124 and the control therefor.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A shoe cleaner comprising a mounting plate, said plate having an opening formed therein, a grillwork, means mounting said grillwork in said opening, a roller brush assembly including at least one roller journaled for rotation about a longitudinal axis and having bristles thereon, means mounting said roller brush assembly beneath said grillwork with the ends of the bristles on the upper surface of said roller projecting through open areas of said grillwork, and motor means drivingly connected to said roller, receptacle means including a lower end, means supporting said receptacle means beneath said roller brush assembly for catching foreign material removed from footwear by the bristles on said brushes, said receptacle means including an opening formed in its lower end, a receptacle, means about said opening for removably supporting said receptacle therein, said receptacle means including a plurality of upstanding side walls, an opening formed in one of said side walls, an elongated handle secured to said receptacle and extending upwardly through said side wall opening and to a point spaced slightly below said mounting plate, an access opening having a removable closure

therefor formed in said mounting plate closely adjacent the upper end of said handle whereby said receptacle may be removed from said cleaner through said wall and access openings for emptying.

2. The combination of claim 1 wherein said grillwork includes a plurality of parallel members extending substantially at right angles to the axis of rotation of said roller.

3. The combination of claim 2 wherein said roller assembly includes a plurality of laterally spaced rollers, said parallel members being interconnected by means of transverse members disposed between adjacent rollers.

4. The combination of claim 3 wherein said mounting means includes means for resiliently mounting said grillwork for limited vertical movement.

5. The combination of claim 4 wherein said motor means includes control means for starting said motor means in response to a predetermined amount of weight being placed on the upper surfaces of said grillwork.

6. The combination of claim 8 wherein said motor means includes control means for starting said motor means in response to a predetermined amount of weight being placed on the upper surfaces of said grillwork, said grillwork including a plurality of parallel members extending substantially at right angles to the axis of rotation of said roller, said roller assembly including a plurality of laterally spaced rollers, said parallel members being interconnected by means of transverse members disposed between adjacent rollers, said mounting means including means for resiliently mounting said grillwork for limited vertical movement relative to said roller brush assembly.

7. The combination of claim 6 wherein said receptacle means includes at least one heating unit in good heat transfer relation with the interior of said receptacle means, said control means also including means for effecting actuation of said heating unit in response to said predetermined amount of weight being placed on said grillwork.

8. A shoe cleaner comprising a grillwork, a brush assembly supported beneath said grillwork and including bristles projecting upwardly through open areas of said grillwork, receptacle means including a lower end, means supporting said receptacle means beneath said brush assembly for catching foreign material removed from footwear by the bristles on said brush assembly, said receptacle means including an opening formed in its lower end a receptacle, means about said opening for removably supporting said receptacle therein, said receptacle means including a plurality of upstanding side walls, an opening formed in one of said side walls, an elongated handle secured to said receptacle and extending upwardly through said side wall opening and to a point spaced slightly below the medial plane of said grillwork wherein access to said handle may be readily achieved and said receptacle may be removed from said cleaner through said opening formed in said one of said side walls for emptying.

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