March 12, 1968 C. H. MacFARLAND 3,372,976

FLOOR WAXER

Filed Aug. 12, 1965 2 Sheets-Sheet 1

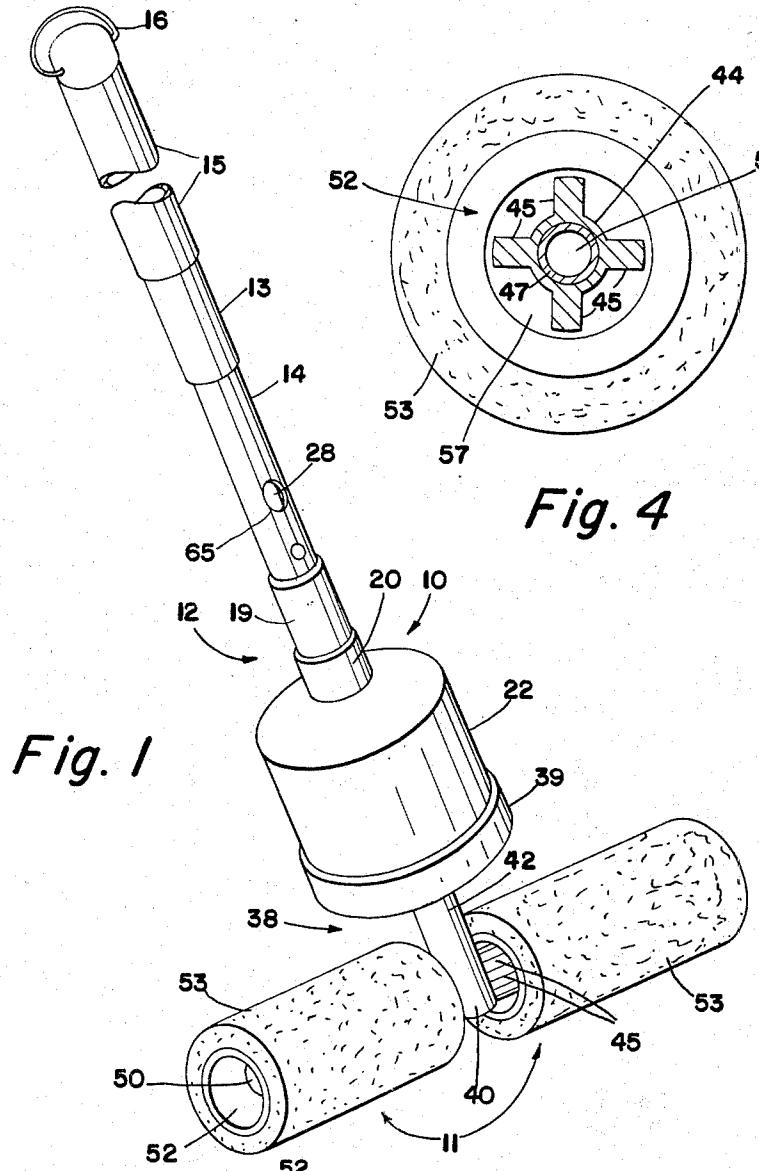


Fig. 1

Fig. 4

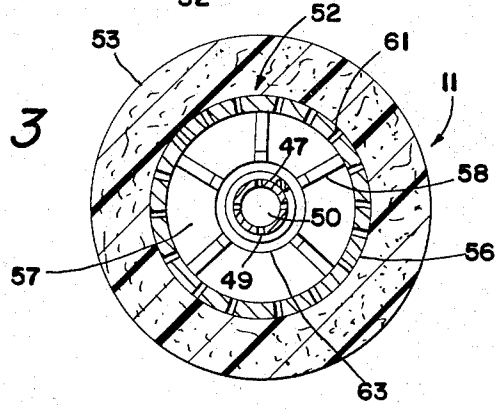


Fig. 3

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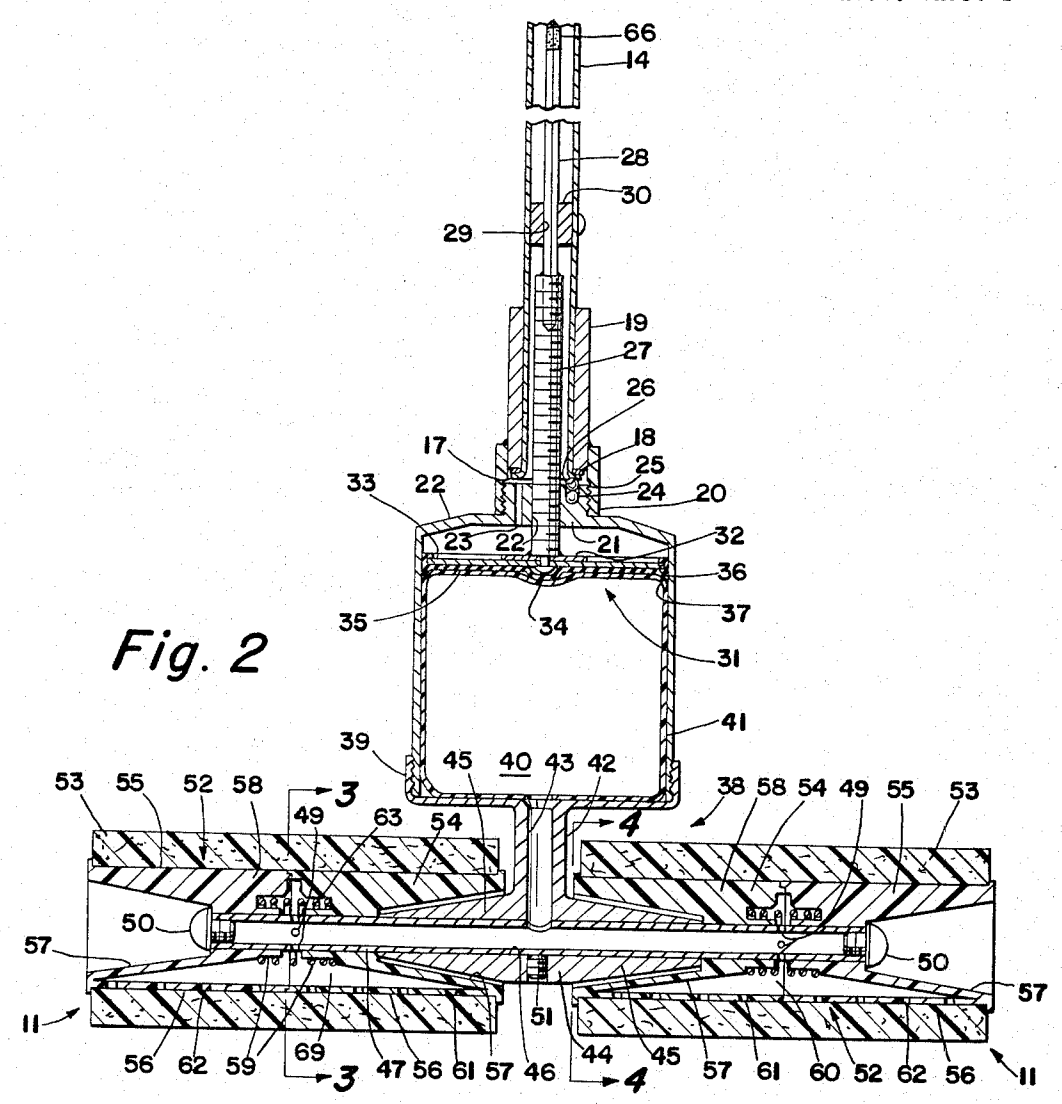


Fig. 2

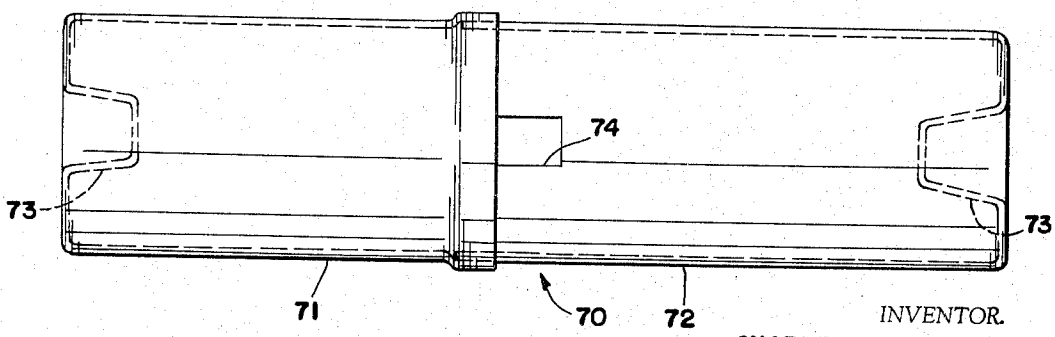


Fig. 5

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FLOOR WAXER

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ABSTRACT OF THE DISCLOSURE

A roller applicator for applying wax to a floor having a pair of hollow wax applying rollers supported on a non-rotating hollow axle, a combined handle and wax storage container mounted above the rollers, and a supply tube from the wax storage container to the hollow axle, through the hollow axle and into the chamber defined by each hollow roller.

This invention relates to a device for applying paste wax to a floor and, more particularly, to a roller applicator having combined handle and wax storing and feeding means for delivering paste wax to the roller applicator.

The invention contemplates the provision of porous cylindrical hollow-cored floor-contacting wax-applying roller means which are supported on non-rotating hollow axle means that extend axially in said roller means. The invention further contemplates a combined handle and wax storing and feeding means above the roller means and passage means which extend from the handle and wax storing and feeding means through the axle means to the roller means for conveying wax thereto. The roller means according to this invention comprise a pair of rollers on opposite sides of the combined handle and wax storing and feeding means.

The floor waxer according to this invention has a compact and rigid construction which permits the uniform application of pressure to the wax applying rollers and the consequent uniform application of wax to the floor. There is provided a novel sealing means between the non-rotating hollow axle and the wax applying roller means to provide for rotation of the wax applying roller means and to prevent the leakage of wax between the rotating and non-rotating members.

The invention further contemplates a refill signal which indicates the need for supplying more wax to the wax storing portion of the handle and the provision of indicating means for the incremental expression of stored wax to the roller means.

In the drawings:

FIGURE 1 is a perspective view of a device embodying the invention;

FIGURE 2 is a longitudinal cross-sectional view of the device shown in FIGURE 1;

FIGURE 3 is a cross-sectional view, the plane of the section being indicated by the line 3—3 in FIGURE 2;

FIGURE 4 is a cross-sectional view, the plane of the section being indicated by the line 4—4 in FIGURE 2; and

FIGURE 5 is an elevational view of a storage cover which encloses the rollers when the device is not in use.

Referring now to the drawings, a device **10** for applying wax to a floor is illustrated. The device **10** includes a pair of porous cylindrical hollow-cored floor-contacting wax applying roller means **11**. The device further includes a combined handle and wax storing and feeding means **12** above said roller means **11**.

The feeding means **12** include a hollow handle which includes an upper section **13** telescoped over and in tight frictional engagement with a lower section **14**. The upper

section **13** may be provided with a plastic handle grip **15** and a ring hanger **16**.

The lower handle section **14** has a lower end portion **17** which is flared radially outwardly. A spring washer **18** is provided on the flange formed by the outwardly flared portion **17**. A bushing **19** surrounds the lower end of the handle section **14** but permits the handle section **14** to rotate within its bore. A sleeve **20** is fixed to the bushing **19** and has a projecting open end which is threaded onto a protruding neck portion **21** of a pressure cylinder **22**. The neck portion **21** has a threaded axial bore **22** and a vent opening **23** drilled therethrough. A recess **24** is drilled into the neck portion **21** and steel balls **25** are provided in the recess **24**. The upper ball **25** engages a dished portion **26** on the lower face of the flared end **17** of the handle portion **14**. The spring washer **18** biases the flared end of the handle portion **14** against the upper ball **25** so that upon rotation of the handle section **14** the upper ball **25** will ride along the face of the flared portion **17** and engage the dished portion **26**. Thus, for a purpose that will hereinafter become apparent, the upper ball **25** engages the dished portion **26** each time the handle is rotated so that a click is felt and heard by the person rotating the handle.

There is provided a threaded feed rod **27** which is threadedly received in the axial bore **22** and which has a guide rod or locator **28** and projecting from one of its ends. The guide rod **28** has a square cross-section and is slidably received in a square passage **29** provided in a guide block **30**. The guide block **30** is pinned to the handle section **14** and permits axial movement of the guide rod **28** within the handle section **14** but prevents relative rotation of the members.

The other end of the feed rod **27** is fixed to a piston assembly **31**. The piston assembly **31** includes a piston rod washer **32** which is brazed to the rod **27**, a piston **33** which is fixed to the end of the feed rod **27** by the screw **34**, and a piston seal ring **35** which is mounted on the piston **33**. The piston seal ring **35** is molded from a stiffly flexible plastic material such as neoprene and has an annular groove **36** which engages the periphery of the piston **33**. The periphery of the piston seal ring **35** forms a tight seal with the inner surface of the pressure cylinder **22** and has a lower annular face **27** which is sloped downwardly to form a wedge with the inner sidewall of the pressure cylinder **22**.

The lower end of the pressure cylinder **22** is closed by an axle joint assembly **38**. The member **38** has an upper cup portion **39** which is threaded unto the lower end of the pressure cylinder **22**. A wax reservoir **40** is formed by the cup portion **39**, the sidewalls of the pressure cylinder **22**, and the piston assembly **31**. With the piston assembly in the retracted position illustrated and with the axle joint assembly **38** unscrewed from the pressure cylinder, paste wax is charged into the reservoir **40**. Preferably the paste wax is supplied as a measured charge of wax encased in a flexible container such as a polyethylene bag **41**. Before the cup portion **39** of the axle joint assembly **38** is screwed unto the pressure cylinder **22**, the exposed end of the bag **41** is cut.

The axle joint assembly **38** further includes a central distributing tube **42** having a passageway **43** therein which communicates with the reservoir **40**. The lower end of the member **38** is provided with a transverse sleeve **44** comprising conically tapered bosses **45** each of which acts under load as a cantilever beam having a relatively heavy cross-section at its inboard or fixed end and a lighter cross-section at its outboard or free end. The sleeve **44** has a bore **46** which carries a hollow axle **47**. The hollow axle **47** is provided with a central opening **48** which communicates with the passageway **43**. Outlet passages **49** are provided near each end of the axle **47** and the ends

of the axle are closed by axle screws 50. The axle 47 is held tightly in place within the transverse sleeve 44 by a set screw 51.

The roller means 11 are mounted for rotation on each projecting end of the axle 47. Each roller means 11 comprise a distributing spool assembly 52 and a hollow roller applicator tube 53 slipped over each spool assembly 52.

Each spool assembly 52 comprises an inboard portion 54 and an outboard portion 55. A rim of each inboard portion 54 telescopes over a cooperating rim of each outboard portion 55 to form the assembly 52. Each inboard portion 54 and each outboard portion 55 comprises a cylindrical perforated outer wall 56, conically tapered end wall 57, connecting webs or ribs 58, and a cylindrical hub portion 59. The tapered ribs 58 act as cantilever beams having relatively heavy cross-sections at their hub ends and lighter cross-sections at their outer free ends. The tapered bosses 45 of the member 38 nest within and complement the tapered ribs 58 of the inboard portions 54 of the spool assemblies 52, in a compact yet sturdy arrangement. A plurality of wax distributing chambers 60 are defined by the outer wall 56, the end walls 57, the connecting webs or ribs 58, and the hub portion 59. Wax enters the chambers 60 from the axle 47 through the apertures 49 and then between the hub portion 59 of each inboard portion 54 and each outboard portion 55. The wax flows from the chamber 60 through a plurality of perforations 61 provided in each inboard spool 54 and a plurality of perforations 62 provided in each outboard spool 55.

Since each spool 52 is intended to rotate on the axle shaft 47, a slight clearance is provided between the shaft and each spool. Therefore, wax tends to flow along the interface between these members and provides lubrication between the axle 47 and each spool 52. In order to establish a seal at the ends of this interface and provide an adequate bearing surface, the inboard and outboard portions 54 and 55 are respectively biased against the ends of the transverse sleeve 44 and the face of the screw 50 by a compression spring 63. This arrangement results in an adequate bearing seal between each spool and the axle assembly so that close manufacturing tolerances are not required. Moreover, as the wax pressure in each chamber 60 is increased, the seal becomes tighter.

It should be noted that the spools 52 are mounted for independent rotation on the stationary axle shaft. This facilitates turning the waxer as the wax is applied to the floor.

Each roller applicator tube 53 may comprise a porous material which is deformable upon the application of pressure but which returns to its initial shape when the pressure is no longer applied. A suitable material for each tube 53 is an open cell polyurethane foam having a density of from 5 to 6 pounds per cubic foot after reticulation and having about 45 pores per inch. This material permits the wax to be radially transmitted from the apertures 61 and at 62. Since the wax flow through each tube 53 is substantially radial, the wax does not tend to form beads at the ends of each roller assembly 11. If desired, however, a plastic sealant may be applied to the ends of each tube 53.

In order to apply wax to a surface, the reservoir 40 is charged with a paste wax in the manner previously indicated. The handle 14 is then turned until the wax appears on the surface of each roller applicator tube 53. When it appears that insufficient wax is being transmitted to the surface being waxed, the operator turns the handle until a click is heard or felt. The piston assembly 31 is thereby caused to exert a pressure on the wax which causes the wax to flow from each tube 53 uniformly and over a substantially long period of time because of the viscous nature of paste wax. The port 23 insures that a vacuum is not produced behind the piston assembly 31 as the piston assembly is advanced.

When the piston assembly 31 is advanced to the bottom of the reservoir 40 and the wax is substantially depleted, means are provided to indicate this fact. An opening 65 (FIG. 1) is provided in the handle portion 14 so that the end 66 of the feed rod 28 may be observed when the piston assembly 31 has been fully advanced. To facilitate visual observation of the end of the feed rod, the end 66 may be colored.

There is provided a cover 70 to seal the roller assembly 11 when the floor waxer is not in use. The cover assembly 70 includes telescoping cylindrical cups 71 and 72. Each cup has an indented end 73 which telescopes into the end of each roller assembly 11 to space the cover from the tubes 53 so that the tubes will not be flattened. The cup 72 is telescoped into the cup 71 and a bayonet type connection is provided between the tube 71 and 72. The end of the tube 72 is provided with a notch 74 which receives the distributing tube 42 of the member 38.

The invention is not restricted to the slavish imitation of each and every one of the details described above, which have been set forth merely by way of example with the intent of most clearly disclosing the teachings of the invention. Obviously, devices may be provided which change, eliminate, or add certain specific details without departing from the invention.

What is claimed is:

1. A device for applying paste wax to a floor comprising porous cylindrical hollow-cored floor-contacting wax-applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feeding means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a single pair of rollers on opposite sides of said combined handle and wax storing and feeding means, said axle means extending transversely from said handle as cantilever beams, said beams having portions which taper from relatively heavy cross sections near said handle to lighter cross sections, said roller means having portions surrounding said tapered beam portions.

2. A device for applying paste wax to a floor comprising porous cylindrical hollow cored floor-contacting wax-applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feeding means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a single pair of rollers mounted for independent rotation on opposite sides of said combined handle and wax storing and feeding means, said axle means extending transversely from said handle as cantilever beams, said beams having portions which taper from relatively heavy cross sections near said handle to lighter cross sections, said roller means having portions surrounding said tapered beam portions.

3. A device for applying paste wax to a floor comprising porous cylindrical hollow-cored floor-contacting wax-applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feeding means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a pair of rollers on opposite sides of said combined handle and wax storing and feeding means, and a pair of storage covers having the shape of cups removably positioned each over one end of said pair of rollers, with the mouths of said cups in contact to close off and cover said roller means.

4. A device for applying paste wax to a floor comprising porous cylindrical hollow-cored floor-contacting wax-

applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feeding means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a single pair of rollers on opposite sides of said combined handle and wax storing and feeding means, said axle means extending transversely from said handle as cantilever beams, means defining a wax distributing chamber for each roller means rotatably mounted on said hollow axle, each wax distributing chamber having an end portion, means providing fluid communication between said hollow axle and said wax distributing chamber, means defining fluid communication between said wax distributing chamber and its wax applying roller means, means to seal the interface between the axle and the end portion of each distributing chamber, said end portion of each chamber being movable with respect to the remainder of each wax distributing chamber, said sealing means including means biasing the end portion of the wax distributing chamber against portions of said axle.

5. A device for applying paste wax to a floor comprising porous cylindrical hollow-cored floor-contacting wax-applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feeding means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a single pair of rollers on opposite sides of said combined handle and wax storing and feeding means, said axle means extending transversely from said handle as cantilever beams, means defining a wax distributing chamber for each roller means rotatably mounted on said hollow axle, each wax distributing chamber having an end portion, means providing fluid communication between said hollow axle and said wax distributing chamber, means defining fluid communication between said wax distributing chamber and its wax applying roller means, means to seal the interface between the axle and the end portion of each distributing chamber, said end portion of each chamber being movable with respect to the remainder of each wax distributing chamber, said sealing means including means biasing the end portion of the wax distributing chamber against portions of said axle, and said sealing means further including means responsive to the pressure of the wax in the wax distributing chamber to effect said seal in response to the application of pressure to said wax.

6. A device for applying paste wax to a floor comprising porous cylindrical hollow-cored floor-contacting wax-applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feed means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a pair of rollers on opposite sides of said combined handle and wax storing and feeding means, said axle means extending transversely from said handle as cantilever beams, said beams having portions which taper from relatively heavy cross-sections near said handle to lighter cross-sections, said roller means having portions surrounding said tapered beam portions, said surrounding portions being tapered inversely with respect to the surrounded tapered portions on said beams.

7. A device for applying paste wax to a floor comprising porous cylindrical hollow-cored floor-contacting wax-applying roller means, said roller means being supported on non-rotating hollow axle means that extend axially in said roller means, combined handle and wax storing and feed means above said roller means, passage means extending from said combined handle and wax storing and feeding means through said axle means to said roller means for conveying wax thereto, said roller means comprising a pair of rollers on opposite sides of said combined handle and wax storing and feeding means, said axle means extending transversely fromsaid handle as cantilever beams, said beams having portions which taper from relatively heavy cross-sections near said handle to lighter cross sections said roller means having portions surrounding said tapered beam portions.

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