United States Patent [19]

Demers

[11] **3,707,740**

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[54] CLEANER FOR PAINT ROLLERS

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[52] **U.S. Cl.** ..... **15/236 R**
[51] **Int. Cl.** **B44d 3/00**
[58] **Field of Search** ..15/236 R, 230.11, 260, 104.04, 15/104.92, 230

[56] **References Cited**

UNITED STATES PATENTS

2,961,683	11/1960	Meyer	15/236 R
1,682,571	8/1928	Horan	15/236 R
2,550,487	4/1951	MacLatchie	15/104.04 X

FOREIGN PATENTS OR APPLICATIONS

12,576	1903	Great Britain	15/236 R
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[57] **ABSTRACT**

An apparatus for cleaning paint rollers comprises a relatively thick, solid body having an aperture therethrough, preferably of truncated, conical configuration, for admitting a paint roller for scraping paint therefrom by contact with the bottom, beveled cleaning edge of the aperture. The top portion of the body includes an integral, annular peripheral flange, or bearing surface, serving as a hand grip. In one deep dished, embodiment of the invention, the material is constructed of a sufficiently low modulus material that some pressure exerted on the bearing surface causes the edges of the aperture to be deflected inwardly to aid the cleaning action.

8 Claims, 6 Drawing Figures

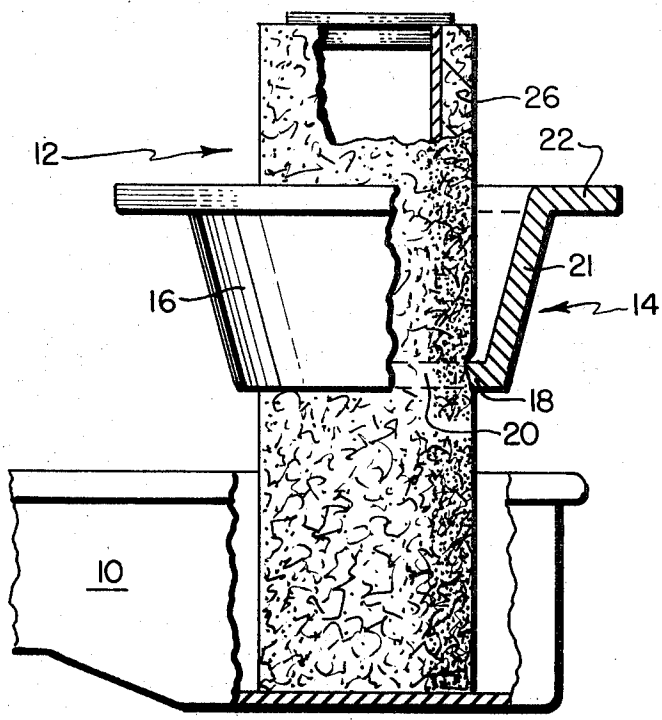


FIG. 1

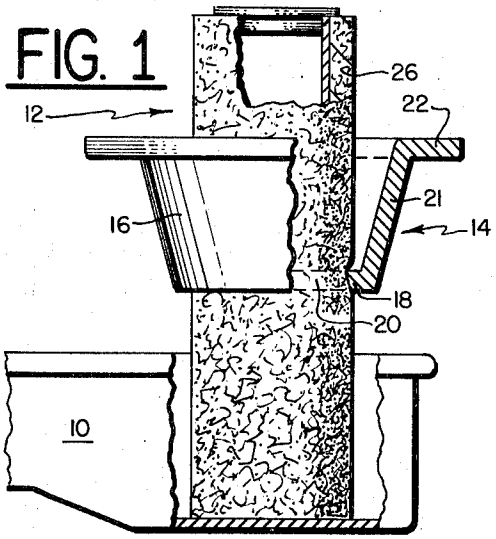
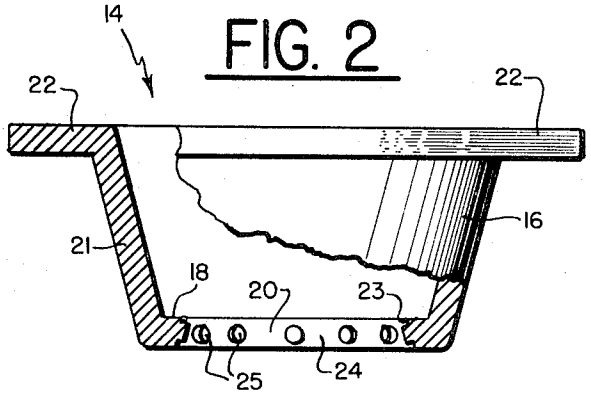


FIG. 2



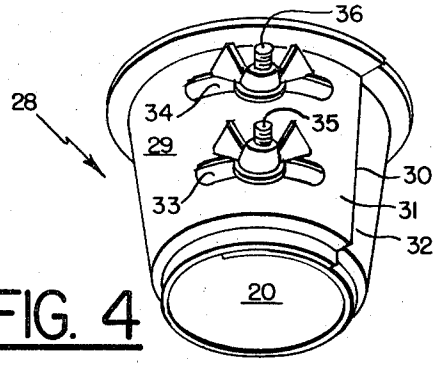


FIG. 4

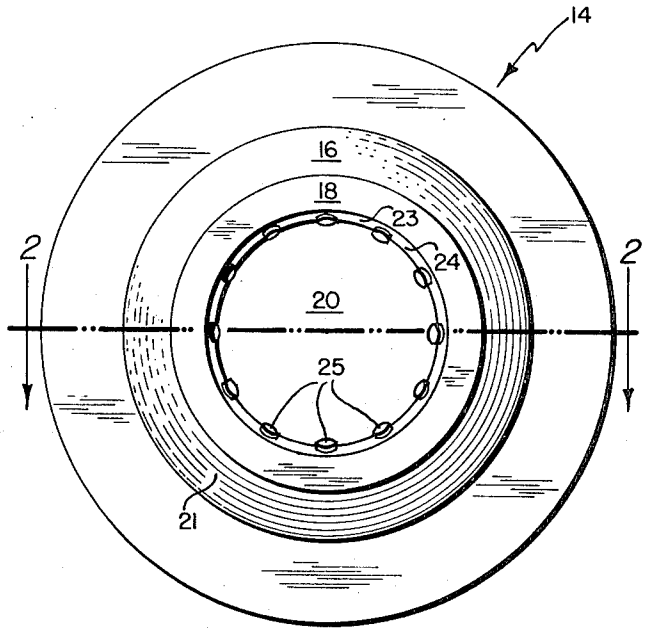


FIG. 3

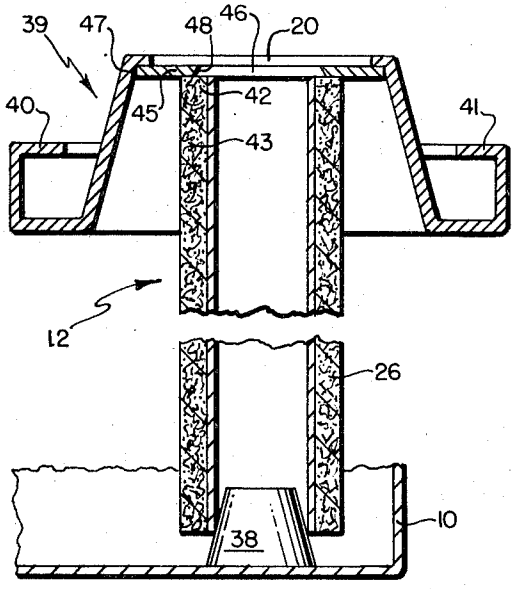


FIG. 5

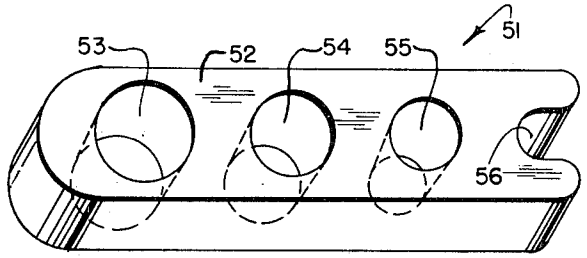


FIG. 6

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CLEANER FOR PAINT ROLLERS

BACKGROUND OF THE INVENTION

There have been a considerable number of efforts made to develop a satisfactory device for cleaning wet paint from paint rollers. These rollers, unless properly cleaned, must be discarded. Not only is the cost of the roller lost, but the cost of the paint left on the roller is also lost. Moreover, there is the not-infrequent problem associated with an inexperienced workman wasting time by attempting to paint with a roller which should have been discarded. Usually, the surface such a workman paints will have to be repainted.

A number of disclosures have been made of devices useful in cleaning paint rollers. These include such tong-like devices as disclosed by Meyer in U.S. Pat. No. 2,961,683 and by Krzanowski in U.S. Pat. No. 2,761,165. Other more complex devices are disclosed by Macaulay in U.S. Pat. No. 2,819,483 and Dalton in U.S. Pat. No. 3,373,456.

A problem faced by all the inventors of paint-roller cleaning devices is achieving an effective means for transferring force exerted during the cleaning into the area of the cleaner near the attachment of the fabric nap to the roller base and to maintain that force during the entire cleaning operation.

This requirement has become especially severe with the advent of thixotropic pain formulations which resist flow until a certain amount of stress is applied to them.

SUMMARY OF THE INVENTION

Therefore, it is an object of the invention to provide an improved paint-roller cleaning apparatus which permits cleaning pressure to be applied equally along each opposite side of the roller axis.

Another object of the invention is to provide a paint-roller cleaning apparatus which facilitates the transmission of force exerted thereon deep into the nap of the paint roller, without permanently damaging the nap.

A further object of the invention is to provide a paint-roller cleaning apparatus which is particularly advantageous when used to clean thixotropic paints from rollers.

Other objects of the invention will be obvious to those skilled in the art on reading the instant application.

The above objects have been substantially achieved by the construction of a paint-roller cleaning apparatus formed in a general dish-shaped configuration, and having a flange for a bearing surface around the top thereof and a relatively deep, preferably tapered sidewall connecting the flange with the bottom of the dish-shaped structure. The bottom of the structure has an aperture for admitting a paint roller thereto. The aperture is so sized that the edge, or rim, thereof provides a snug wiping action when the device is pushed downwardly in relation to the paint-roller by pressure on the flange.

It has been discovered that, when the cleaner of the invention is constructed out of somewhat flexible material, e.g. thin metal sheet, or more advantageously a thermoplastic having a tensile modulus of less than 2 $\times 10^5$ psi as measured by ASTM test method D638, the flexibility of the material has been found to enhance the cleaning action of the apparatus of the invention. This is probably because pressure exerted on the flange is transmitted through the side wall and provides an inward and upward force vector to the cleaning edges of the apparatus. Generally, the side walls of the apparatus should be at least one inch high to take advantage of this construction with the most advantageously used plastics.

The optimum cleaning edge is usually selected with reference to the particular paint-carrying nap on a particular roller and/or the kind of paint to be cleaned from the roller. The edge can be bevelled outwardly or vertically. A particularly advantageous construction is one where the edge is both bevelled and provided with teeth. The teeth-bearing edge can be sawtoothed or it can be equipped with a plurality of relatively blunt teeth. These latter are advantageous in avoiding an excessively harsh mechanical treatment of the fabric nap.

It is possible to modify the apparatus to make it adjustable, i.e., capable of handling paint rollers of various sizes. This can be done in a variety of ways, i.e., disk-like inserts for placing at the bottom of the device or by using an adjustable tightening means as illustrated below.

ILLUSTRATIVE EMBODIMENT OF THE INVENTION

In the drawings:

FIG. 1 is a partially schematic section of apparatus constructed according to the invention and showing its use in cleaning of a paint roller.

FIG. 2 is a section of a particularly advantageous embodiment of the invention.

FIG. 3 is a bottom plan view of the apparatus of FIG. 2.

FIG. 4 is a perspective view, from the bottom of a split adjustable cleaner.

FIG. 5 is a view similar to FIG. 1 of another embodiment, and

FIG. 6 is a perspective view of another embodiment of the invention.

Referring to FIG. 1 there is seen a shallow paint tray **10** with a paint roller **12** mounted therein. A cleaning apparatus **14** according to the invention comprises a generally dish-shaped body **16** having a bottom wall **18** with an aperture **20**, into which roller **12** is snugly admitted. The annular, peripheral flange **22**, extends entirely around the top of the body **16**, of relatively thick solid material, and provides a hand grip, or bearing surface, for transmitting force through the side wall **21** of body **16** and bottom wall **18** to roller **12**.

FIGS. **1**, **2** and **3** illustrate the preferred embodiment of the invention in which the body **16** is deeply dished, with a side wall **21** of about 3 inches in height. The rim **23** of bottom wall **18**, around aperture **20**, is beveled at **24** and preferably provided with a plurality of spaced apart blunt teeth **25**. The bevelled cleaning edge **24** avoids tearing, or ripping, of the nap **26** on roller **12**.

FIG. **4** illustrates one convenient structure for adjusting the diameter of the circular aperture **20**, to fit snugly down to the base of the fibers in the nap **26** of paint rollers of various diameter. The deep walled, peripheral flanged roller cleaner **28**, is similar to apparatus **14**, except that the side wall **29** is split at **30**, overlaps at **31** and **32** and is provided with slots **33** and **34** and wing nut, bolts **35** and **36** for adjustment to any diameter of aperture **20** desired.

In FIG. 5 a paint roller 12 is shown detached from the handle and vertically supported on one end by a truncated, conical element 38 in a paint roller tray 10, or other convenient receptacle. The deep walled, peripherally flanged cleaner 39, corresponds to apparatus 14, except that it is inverted to take advantage of the strength of the deep structure while placing the aperture 20 at the top end of the roll. Suitable hand grip flanges 40 and 41 are provided to permit the cleaner to be pushed downwardly lengthwise of the nap 26 to remove the paint 42 trapped at the base of the nap fibers 43. The aperture 20 is sized for large diameter rollers, and a disk-like insert 45, is detachably mounted within the cleaner, the insert 45 having a smaller aperture 46, which fits snugly on the roll. Insert 45 is one of a set of apertured disks each having an outer periphery 47 fitting within the cleaner 39 and each having an inner periphery 48 defining a different sized aperture such as 46, for different sized rollers.

As shown in FIG. 6 a cleaner 51, may be formed of flat, relatively thick solid sheet material 52, preferably of plastic and of sufficient strength to permit any one of the different sized apertures 53, 54 or 55 to be encircled on a correspondingly sized roller such as 12 and pushed downwardly to remove paint therefrom. The cleaner 51 may also have a grooved end in the form of half a truncated cone as at 56 for scraping a roller. Cleaner 51 may have a peripheral flange as a hand grip or the apertures may form hand grip holes.

It will be understood that the rims of the apertures of all of the embodiments of the invention are preferably tapered, or bevelled downwardly as at 24, and preferably the bevelled rims are provided with spaced blunt teeth such as 25.

While the cleaner 14 of FIGS. 1 and 2, the cleaner 39 of FIG. 5 and the cleaner 51 of FIG. 6 may be formed of relatively thick material such as solid or foam plastic, the cleaner 28 of FIG. 4 is formed of relatively thin, flexible, resilient, distortable material such as plastic or metal sheeting. Downward pressure of the hand grip flange portions of the various cleaner embodiments, tends to cause the rim, or edge, of the roller apertures to be deflected inwardly, thereby aiding the cleaning and squeezing action. A thermoplastic having a tensile modulus of less than 2×10^5 psi as measured by ASTM test method D638 has been found most satisfactory for the cleaner of the invention.

The side walls of the cleaner may range from one inch to three and one half inches in height, but the latter depth is preferred.

WHAT IS CLAIMED IS:

1. A cleaning apparatus for a paint roller said apparatus comprising a one piece body of relatively thick, solid material having an aperture therethrough, said aperture being of predetermined diameter to admit a paint roller and said body having a bottom rim around said aperture with a circular, beveled, cleaning edge for contact with said roller and said body having an outwardly extending, integral peripheral, annular, flange proximate the top thereof, said flange forming a hand grip with a flat planar bearing surface, facilitating manual operation of the cleaning apparatus.

2. Apparatus as defined in claim 1 wherein said body is formed with aperture of truncated, conical configuration, the small open end thereof forming said beveled bottom rim.

3. Apparatus as defined in claim 1 plus a plurality of teeth integrally formed on said body and extending inwardly and downwardly at spaced distances around said beveled cleaning edge.

4. Apparatus as defined in claim 1 wherein said body is unsplit and deep dish shaped with a bottom wall in parallelism with said flat planar bearing surface of said hand grip flange, said bottom wall containing said aperture and said body having said walls of from about 1 inch to 3.5 inches in height.

5. Apparatus as defined in claim 1 wherein said body is deep dish shaped and includes a plurality of apertured disks each detachably fitting within said body and each having an aperture of a different size to admit a roller of predetermined diameter.

6. A cleaner for removing residual paint from the base of the fibers of the nap of a paint roller, said cleaner comprising a one piece, deeply dished body of hollow, truncated conical, configuration, said body having a thick bottom wall at the small end thereof with a circular aperture of predetermined diameter substantially equal to the diameter of said roller and less than the diameter of said small end at the base of said fibers and having an annular flange hand grip extending peripherally around the large end thereof, whereby said cleaner may be advanced along said roller from end to end to clean the same.

7. A cleaner as specified in claim 6 wherein said body is of thin, flexible, resilient sheet material and split longitudinally to form an adjustable split collar, or sleeve.

8. A cleaner as specified in claim 6 wherein said body includes a bottom rim around said aperture which tapers downwardly and outwardly to form a tapered entrance throat for said nap, and said body includes a plurality of spaced, blunt teeth extending around said throat.

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