United States Patent [19]

Wright et al.

[11] **3,897,797**

[45] **Aug. 5, 1975**

[54] **APPLICATOR ROLLER CLEANER HAVING ADJUSTABLE SPRAY HEADER**

[75] Inventors: **Orrin Marshall Wright**, Fullerton; **Gordon G. Jarosek**, Westminster; **Willis E. Swanson**, Granada Hills, all of Calif.

[73] Assignee: **Optiwatch Enterprises**, Fullerton, Calif.

[22] Filed: **Nov. 26, 1973**

[21] Appl. No.: **418,893**

[52] **U.S. Cl.** **134/113**; 134/138; 134/155

[51] **Int. Cl.** **B08b 3/02**

[58] **Field of Search** 4/290; 34/58; 68/213; 15/38; 134/138, 139, 143, 149, 153, 155, 175, 113

[56] **References Cited**

UNITED STATES PATENTS

2,831,488	4/1958	Anderson	134/138
3,075,534	1/1963	Habostad	134/149 X
3,126,899	3/1964	Caywood	134/138
3,472,251	10/1969	Parker	134/138
3,688,785	9/1972	Stevens	134/138
3,702,013	11/1972	Gebert	4/288
3,732,593	5/1973	Habostad	134/138 X

Primary Examiner—Daniel Blum
Attorney, Agent, or Firm—Robert E. Strauss

[57] **ABSTRACT**

There is disclosed a paint applicator roller cleaner which comprises a tubular housing with a base to support the housing in an upright position and having a through opening to permit free drainage therefrom, a lid supporting a spray header assembly that removably engages the upper end of the housing in a sealing relationship, a spray header in the form of an elongated tube bearing a plurality of longitudinally aligned apertures, pivotably mounted in a through aperture in the lid and extending co-extensively within the housing. The undersurface of the lid also bears a radial groove for removably gripping the handle of an applicator, whereby the roller of a paint applicator can be supported in a vertical position within the housing. Supplementary bracket means are provided on the handle of the applicator to engage about the sidewall of the housing. The spray header is pivotal about its axis to permit variation of the angle of impingement of water jets from its aligned apertures against the roller whereby the rotational speed of the roller can be tuned to the optimum values for cleaning and for drying.

10 Claims, 6 Drawing Figures

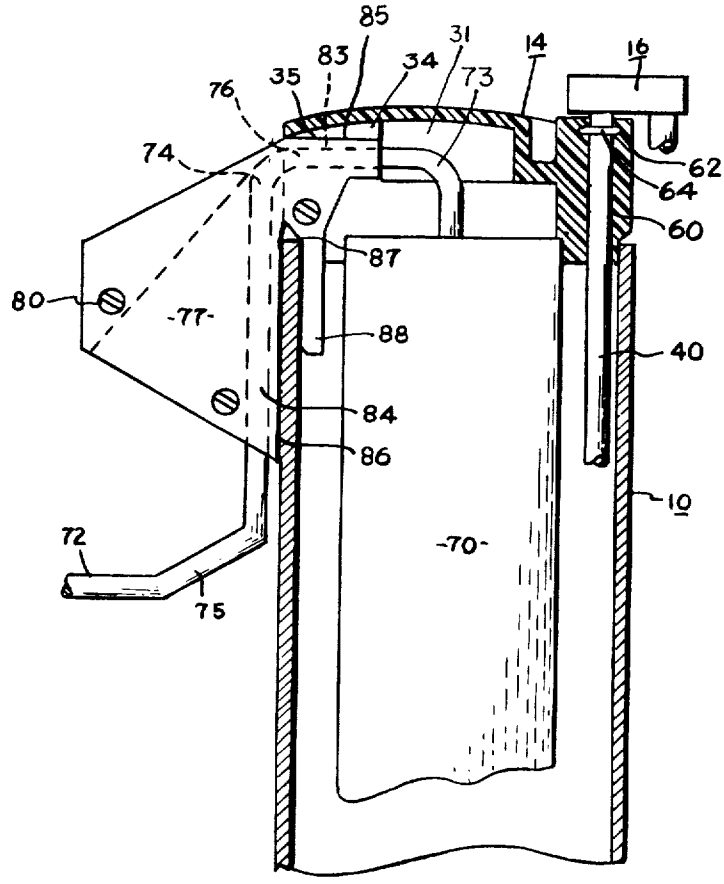


Figure 1

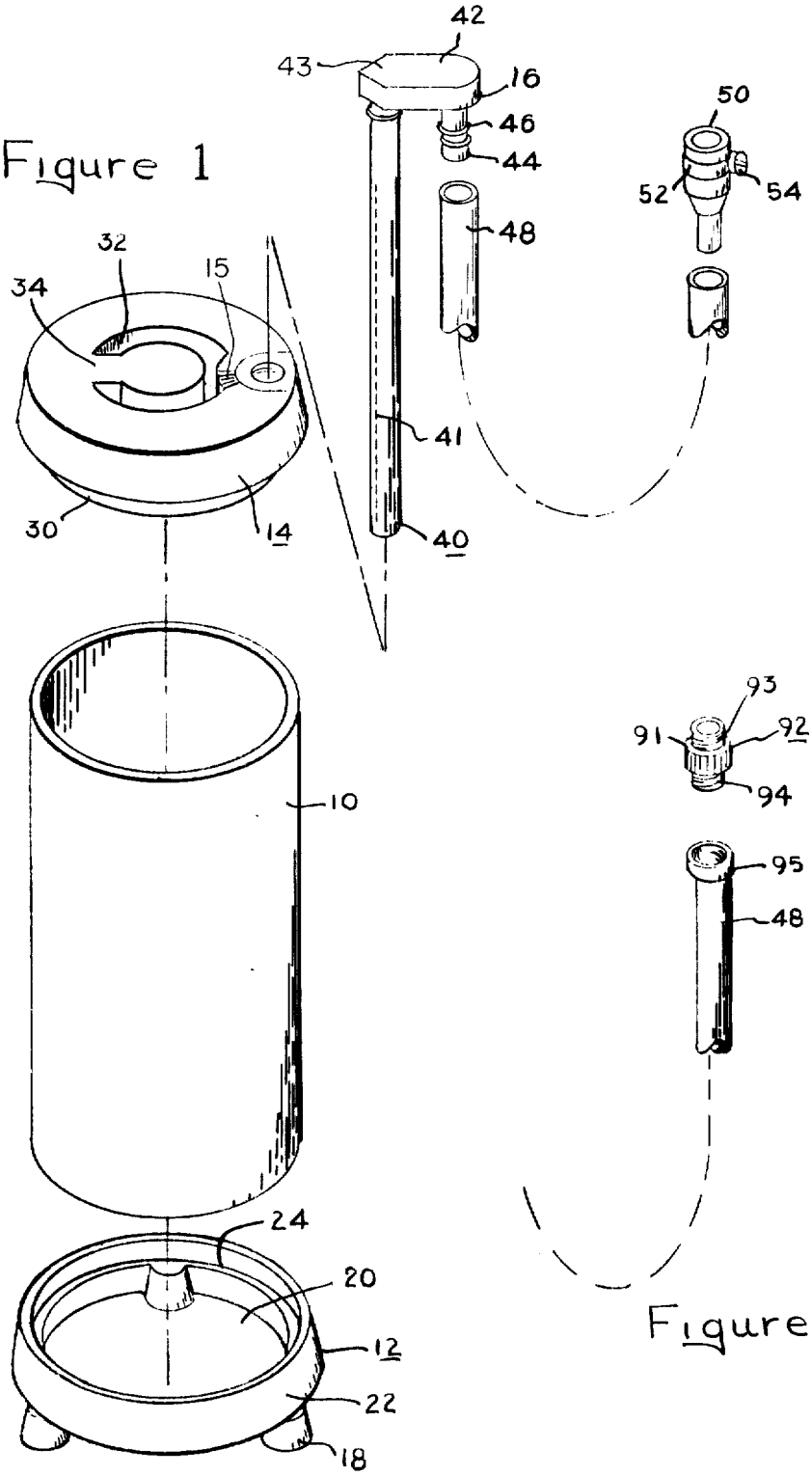


Figure 4

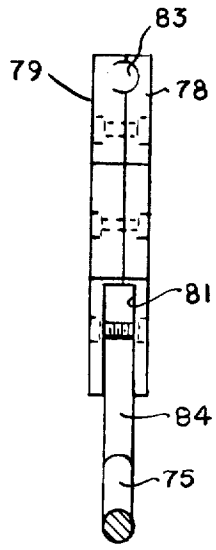


Figure 3

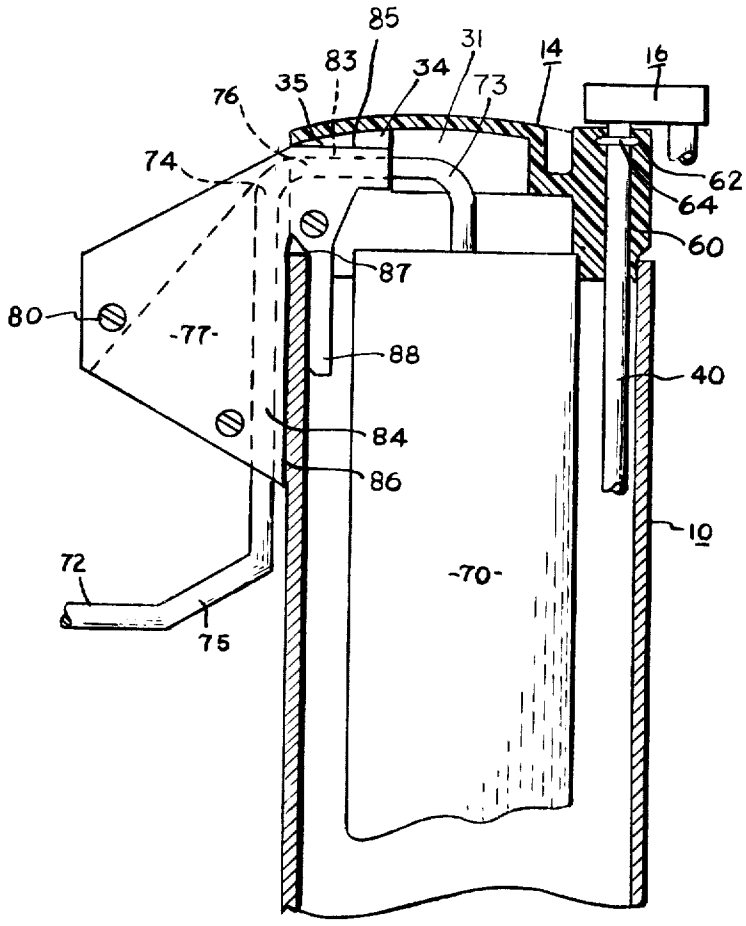


Figure 2

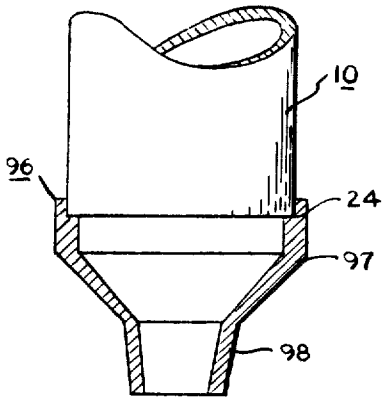


Figure 5

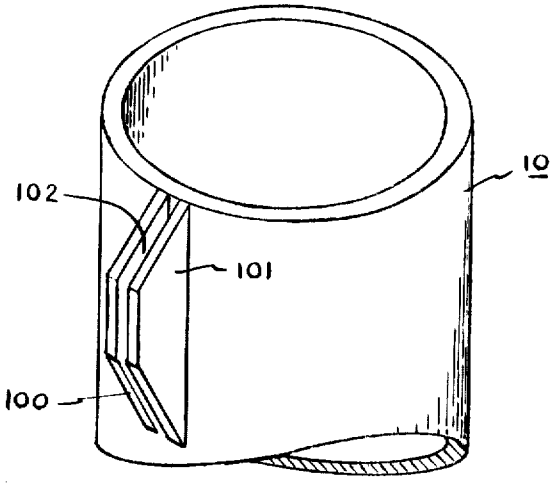


Figure 6

APPLICATOR ROLLER CLEANER HAVING ADJUSTABLE SPRAY HEADER

BACKGROUND OF THE INVENTION

This invention relates to a cleaner for rollers of paint applicators and the like and, in particular, relates to a cleaner in which a spinning movement is imparted to the roller.

The widespread acceptance of water based paints is largely the result of the facile cleaning of brushes and rollers with water. Nevertheless, a fair amount of time is still required for adequate cleaning of these implements. A mechanical cleaner that would facilitate the task of cleaning these implements, particularly the rollers of paint applicators would be very useful.

There have been an unusually large number of patents which have been granted on inventions in mechanical cleaners for paint application rollers. None of the cleaners which have been marketed have met with wide consumer acceptance, thereby indicating the hidden or unobvious complexities of a seemingly simple device. Prior attempts to provide mechanical cleaners have used water driven turbines, cranks and electric motors to spin the roller during its cleaning. One common approach has been to direct water spray tangentially against the roller, causing it to spin on the applicator handle or on a separate mandrel. These approaches have been as simple as a nozzle to attach to a garden hose to complex vessels capable of holding a plurality of spinning rollers.

The failings of the prior attempts, as attested by the absence of any widely accepted cleaning device, have resulted from various inadequacies of the devices which are either overly complex for useful operation or are too simple to function properly.

A successful mechanical cleaner must be simple to use and, obviously, must not create a greater clean up problem than the task of manually cleaning a roller. The cleaner should be usable in the household and require no special tools or equipment and should be sufficiently simple in design to permit inexpensive manufacture. The cleaner should be capable of complete cleaning of a roller in a short time and, preferably, should produce a clean roller which is sufficiently dry to be free of any subsequent dripping or draining of water or other solvent. It is also desirable that the cleaner operate without the constant attention of the operator and without the need to manually hold the roller in position during the cleaning and drying of the roller. The cleaner of this invention achieves all the aforementioned objectives in a manner not achieved by the various prior devices.

BRIEF STATEMENT OF THE INVENTION

The mechanical cleaner for rollers of paint applicators and the like which constitutes this invention comprises a tubular housing having a base to support it in an upright position with a through opening in its bottom to permit unimpeded drainage of liquid therefrom, a lid removably secured in a sealing relationship to the upper end of the housing, a spray header assembly of a spray tube extending from a header through the lid and co-extensively with the housing and having a plurality of spray apertures in longitudinal alignment, means carried by one of the lid and housing for pivotally supporting the spray header and roller support means comprising clamping means on the undersurface

of the lid whereby the bail or handle of the roller applicator, or a bracket attached thereto, can be rigidly engaged to support a roller in a substantially coaxial position within the housing. The cleaner is preferably used in combination with roller applicator bracket means which can be fixedly secured to the bail or handle of the applicator and which bears clamping means whereby the applicator handle can be engaged to the housing and secured against vibration.

In preferred embodiments, the lid bears indicia that are cooperative with the spray header assembly to register the angles of impingement of the water spray from the header by indicating the angular orientation of the longitudinal row of apertures of the spray tube to the roller. Preferably, the base of the device bears a plurality of support legs which, in the most preferred embodiment, have surface gripping means in the form of suction cups on their undersurface.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described by reference to the drawings, of which;

FIG. **1** is an exploded view of the components of the cleaner;

FIG. **2** is a sectional elevational view of the top of the unit showing a paint applicator in place with the adaptor bracket;

FIG. **3** is an edge view of the mounting bracket;

FIG. **4** is a view of an alternative water faucet fitting;

FIG. **6** illustrates alternative bracket means carried on the cleaner housing.

DESCRIPTION OF PREFERRED EMBODIMENTS

The cleaner is shown in FIG. **1** as comprising a generally tubular housing **10**, a base **12**, a lid **14** and a spray header assembly **16**. The housing **10** is shown as a cylindrical tube which, preferably, bears no slots or slits, thereby permitting simple sealing of the base and lid thereto. The housing should have a diameter from about 5 to about 7 inches, preferably **6** inches, which is sufficient to accommodate most rollers which are from 2.25 to about 4.25 inches in diameter. The height of the housing can be from 12 to about 14 inches, sufficient to accommodate most rollers which are from 3 to about 11 inches in length.

Preferably, the cleaner has a base to support it on a drain surface and the base can be of the form shown at **12** with a plurality of feet **18** spaced about its periphery to support the base and associated housing in a generally upright position. The base has a through opening **20** to permit unimpeded drainage of liquids therefrom and supports the roller above the drain surface a sufficient distance, e.g., about 1 to 3.5 inches, so that water doesn't back up and immerse the roller end and stop it from spinning. As shown, the base is formed by a ring **22** having an annular shoulder **24** to form a seat in which the housing is secured by a press fit, cement, solvent welding and the like.

The legs **18** comprise generally frustum apendages on the lower edge of ring **22**. In the most preferred embodiment, the undersurface of legs **18** are concave and the legs are formed of a flexible and resilient material, such as natural or synthetic rubber or other flexible polymers which, preferably, are elastic. This construction provides gripping means in the form of suction cups on the undersurface of the legs **18** to permit the

removable securing of the cleaner to a smooth surface such as the inside bottom of a sink and the like.

The upper end of housing **10** is open and receives lid **14** in a removable and sealing engagement thereto. The lid is preferably molded of a flexible material such as natural or synthetic rubber or other flexible polymers such as polyolefins, vinyl polymers and the like and has housing sealing means in the form of annular lip **30** about its undersurface that snugly engages the upper end of housing **10** in a friction fit. The lid **14** can be a solid plug, however, it preferably is of a relieved core construction with an arcuate groove **32** in its upper surface. This groove reduces the bulk and mass of the lid and also provides a structure which is more readily flexed during its attachment to and removal from housing **10.** The arcuate groove is discontinuous, as shown, to provide a radial rib **34** between the edge and center portions of the lid.

The spray header assembly **16** comprises an elongated spray tube **40** that is closed at its lower end and fixedly secured at its upper or outboard end in a bore in the undersurface of header **42.** Header **42** bears means for attachment of a pressured liquid supply means such as tubular boss **44** which can have surface corrugations **46** to provide gripping means to secure the end of hose **48.** The latter bears, at its opposite end, a conventional faucet adaptor **50** having clamping means such as hose band clamp **52** with a screw tightener **54.** Header **42** has an internal passageway to open communication with tubular boss **44** and tube **40** to permit pressured liquid flow therebetween.

Spray tube **40** bears a plurality of apertures **41** aligned in a longitudinal row along its length. While these apertures can be circular, elliptical, square, etc., they are preferably in the form of closely spaced rectangular slits or slots to form a plurality of flat jets of liquid spray when pressured liquid is supplied to the header.

The spray header assembly is mounted in the cleaner coextensively within the housing **10** by means permitting its pivotal movement on the axis of tube **40.** The mounting means can be carried by either the lid **14** of housing **10.** The preferred means is shown as a through aperture **60** in a peripheral region of lid **14.** The tube **40** is axially aligned and secured by annular groove **62** in the sidewall of aperture **60** which cooperates with circular shoulder **64** on tube **40.**

Indicia **15** are preferably provided on lid **14** which are cooperative with indexing means of header **42** to serve as reference points that indicate the angular orientation of apertures **41.** Such indicia, which are not essential but preferred only, can be embossed letters with a 0 index and numbers 1 through 5 to each side thereof in the surface of lid **14** about aperture **60.** For ease of illustration, the indicia are shown as a series of lines. The index means of header **42** comprises the pointed end **43** which is in vertical alignment with the longitudinal row of apertures **41.** The letter O would register the alignment of the jet spray directly between the center of tube **40** and the roller. The numbers 1 through 5 to either side thereof would register included angles between the centers of the tube and roller, which increase in numerical progression.

The pivotal movement capability of the spray header tube **40** permits setting of the optimum angle of spray impingement against a roller for the desired action. The spray can thereby by set to impinge against the roller for maximum penetration with a minimum of roller rotation during the initial phase of cleaning and then set for maximum rotational speed at the end of the cleaning so that the roller will continue to spin and dry after the liquid supply is shut off. Since the device will accommodate rollers of varied diameter, the actual value selected for each of these phases of cleaning will vary slightly for varied roller diameter.

The shape and construction of lid **14** and its associated spray header assembly **16** will be apparent from FIG. **2.** The lid **14** has a relieved undersurface with a central cavity **31** and a radial rib **34** which bears a radial groove **35.** Bore **60** is shown to one side of lid **14** with spray tube **40** extending therethrough and with circular shoulder **64** seated in groove **62.**

FIG. **2** illustrates a typical applicator and supported roller assembly in position in the cleaner. The roller **70** is shown in a generally coaxial position within housing **10.** The bail **72** of a conventional applicator extends from the upper end of its mandrel on which the roller, in the form of a fabric mat sleeve is mounted. The bail **72** of the illustrated applicator has two 90 degree bends **73** and **74** to form a generally U-shape at one end of the roller and another bend **75** near the middle of the roller.

The bight **76** between bends **73** and **74** is retained by radical groove **35** in the undersurface of lid **14.** A bracket **77** is also used. This bracket is in the form of two plates **78** and **79** which are secured together in a face to face assembly by fastening means such as screw fasteners **80.** The plates are also shown in FIG. **3** and have arcuate grooves to define a through bore **83** along their joined top edge and contiguous, recessed inside surface to form a slot **81** therebetween which extends from an angle of about 45 to about 90 degrees to bore **83.** Bore **83** surrounds bight **76** of the applicator bail while slot **81** accommodates leg **84** of the U-shaped bail. Preferably, the inside surfaces of slot **81** are serrated or roughened to improve their gripping of the applicator bail. Some applicators have leg **84** extending at about 45 degrees from bight **76** and the slot **81** of bracket **77** will also accommodate these applicators. The bracket **77** is, therefore, adaptable to substantially all the applicators which are presently available.

The bracket **77** serves as a structural interface between the applicator and cleaner. Since it is universally adaptable to most applicators, a reliable and precise structural interface is thereby provided. The bracket is affixed to the applicator bail and is designed of a shape and placed at a location on the applicator as to not interfere with normal use of the applicator. Once attached, the bracket can be left on an applicator as a permanent attachment or, if desired, can be removed and secured to other applicators as they are placed in service.

Bracket **77** has an upstanding upper edge **85** which fits snugly in radial groove **35** of lid **14** when the latter is seated onto housing **10.** The inboard edge **86** of bracket **77** bears a slot **87** and the resultant finger **88** can be truncated as shown. Slot **87** is of sufficient width to permit it to be placed over the upper edge of housing **10** in a snug engagement thereto, thereby creating, with upper edge **85,** applicator gripping means along vertical and horizontal lines in the plane of bracket **77.** Optionally, the outboard portions of the upper and lower edges of bracket **77** can be chamfered, as shown, to delete excess material.

Various alternative elements can be employed in the construction of the cleaner. FIG. **4** illustrates a conventional faucet fitting **90** having a body **91** with one end bearing an adapter having male threads **93** to fit a faucet and the opposite end having male hose threads **94** to fit a conventional hose coupling **95** shown on hose **48.** With faucets having only external male threads, adapter **92** can be removed and body **91** can be threaded directly onto the faucet.

FIG. **5** illustrates an alternative base. In this embodiment, the lower end of housing **10** fits into a shoulder **24** on a hollow, conical base **96.** The upper conical portion **97** of the base tapers inwardly gradually to an intermediate diameter to join a smaller conical member **98.** The latter should have a diameter sufficient to permit it to be inserted into a conventional disposal inlet or sink drain which is usually about 3.375 inches internal diameter. In this embodiment, the cleaner can be placed directly into the drain or disposal inlet and supported thereon.

FIG. **6** illustrates an alternative bracket means which is carried on the housing **10.** In this embodiment, the upper end of the housing bears two outstanding bracket wings **100** and **101.** The wings are substantially parallel and closely spaced to define a slot **102** therebetween in which the bail of an applicator can be placed. The inner surface of these wings can be serrated or roughened or can bear a pliable material such as rubber to enhance gripping of the applicator bail.

The housing **10** can be formed of a stiff or rigid material such as metal or rigid plastics, e.g., polystyrene, polyvinyl chloride, Nylon, polyethylene, polypropylene, Teflon, etc. The housing can be formed from sheet material or can be molded or extruded. The base **12** can be formed of similar material, preferably, however, it is molded of a slightly flexible material such as rubber of rubbery polymers, particularly when feet **18** with suction cup undersurfaces are used. The use of flexible material for the base is also preferred to dampen the vibrations which are generated during use of the cleaner. As previously mentioned, lid **14** should be of a flexible material such as rubber or resilient plastics to permit it to be flexed during its placement over the bight **76** or bracket edge **85** and the open upper end of housing **10.** Tube **40** and header **42** can be of metal or of a rigid plastic while hose **48** is, of course, of a flexible construction.

The use of the cleaner should be fairly apparent from its construction. The bracket **77** is fixedly secured to the bail of the applicator as a permanent fixture. When a roller is to be cleaned, the applicator is placed with slot **87** over the wall of housing **10** and lid **14** with its associated spray header assembly **16** is inserted into the housing. The applicator position is adjusted so that groove **35** engages over the upstanding edge **85** of bracket **77** and lip **30** is seated into the housing **10.** The adapted is connected to a suitable source of pressured solvent. This can be a household water faucet for water-base paints or glues. It could also be a source of a paint solvent under pressure for oil-base paints. The usual application, however, will be for cleaning rollers of water-base paints and glues.

The cleaner is positioned at a draining station, typically in a household sink. It can be placed directly over the drain and the legs **18** can be pressed against the drain surface to secure the cleaner against tipping or movement across the surface. The water faucet is then opened and the index **43** of the spray header is turned to the 0 position.

The maximum cleaning and rinsing action can be achieved when the water spray impinges only slightly to one side of the centerline of the roller. The water spray is directed to impinge initially against the roller surface to achieve maximum penetration of the mat of the roller. The setting for this action can be between 0 and 3, depending, chiefly, on the roller diameter. The amount that the impingement departs from the centerline of the roller should be sufficient to rotate the roller slowly in the housing, e.g., at speeds up to about 100 revolutions per minute, so that the entire surface is exposed to the cleaning jet of liquid. High rotational speed which would expel liquid from the roller is avoided in this initial phase of the cleaning since maximum penetration of the mat is necessary for complete cleaning. Typically, the included angle between the jet direction and a straight line between the centers of tube **40** and a roller suspended in housing **10** for maximum penetration is from about 10 to about 30°.

After the cleaning liquid has thoroughly penetrated and wet the roller mat and flushed the soluble material therefrom, the roller can be spun dry. Generally, the washing period requires from 3 to about 6 minutes with typical household water pressures. The slow rotational speed for washing does not adequately dry most rollers. Accordingly, the included angle of impingement of the liquid jet is increased so that the jet strikes the roller in a direction approaching a tangent to the roller. With most rollers, this will be an angle from about 20° to about 50° and is registered on the cleaner by the indicia of 2 to 5. The liquid jet is permitted to strike the roller for a period sufficient for the roller to reach maximum rotational speed, a condition that can be easily observed by listening to the pitch of the hum generated by the spinning roller. Generally the time interval for this is from 5 to about 10 seconds. Thereupon the supply of liquid is shut off, e.g., the water faucet is closed, and the roller is permitted to spin under its inertia until it stops. When the liquid supply is shut off, it should be turned off abruptly rather than slowly to avoid slowing of the roller. When the roller is removed, it will be found to be free of any dripping and, with most rollers, dry to the touch.

The capability of pivoting the spray header to either side of the 0 index also permits more complete washing of rollers. In the preferred use of the cleaning device, the direction of spray impingement is completely reversed at least once during the cleaning cycle. This is performed by washing the roller as previously mentioned and imparting thereto a moderate to high rotational speed, for example, in a clockwise direction. The water spray is then reversed by pivoting the header tube assembly from its clockwise impingement angle to an opposite or counterclockwise impingement. The roller will slowly decrease spinning, stop and then reverse its direction of rotation. The angle of impingement of the spray can, as before, be adjusted to impart a fast spin to the roller and the liquid supply can then be shut off to permit the roller to spin dry. It has been found that the reversal of spray direction can remove residual paint which is not normally removed. Usually only one spray reversal is necessary to clean a roller thoroughly, however, with some rollers having thick mats or containing material which is difficult to remove, several or more reversals can be made.

The invention has been described with reference to the presently preferred embodiments which are illustrated in the drawings. It is not intended that the specific illustration of such preferred embodiments be construed as unduly limiting of the invention which is intended to be defined by the means and steps, and their obvious equivalents, set forth in the following claims.

We claim:

1. A device for cleaning of a roller applicator and the like which comprises:

a. a generally upright and open-ended tubular housing;

b. a supporting base member secured to the lower end thereof to support said lower end over a drain station and provide substantially unimpeded liquid drainage from said housing;

c. a lid with means for its removable attachment to the upper end of said housing in a sealing relationship thereto;

d. roller applicator bail engagement means carried on the undersurface of said lid to removably engage and secure the bight of the bail of a single roller applicator in a position with the roller of said applicator being supported in a vertical and substantially coaxial position within said housing;

e. bracket means carried by one of said housing and said roller applicator bail to removably engage and secure said bail to said housing;

f. a liquid spray header comprising an elongated tubular member closed at one end and bearing a longitudinal row of apertures;

g. means to supply a pressured source of liquid to the open end of said tubular member;

h. through aperture means carried by said lid in which said tubular member is mounted coextensively within and to one side of said tubular housing with freedom of pivotal movement of said tubular member about its longitudinal axis in a fixedly adjustable manner whereby the angle of impingement of liquid spray from said apertures onto said roller can be varied;

i. indicia carried on said lid and cooperative index means carried by said tubular member to indicate angular orientation of said aperture to said roller to provide selection between positions of maximum spray penetration for roller cleaning and maximum roller rotation for roller drying.

2. The cleaning device of claim 1 wherein said means to supply a pressured source of liquid comprises flexible hose means bearing clamping means for removable attachment of said hose means to a household faucet.

3. The cleaning device of claim 1 wherein said bracket means comprises a pair of bracket plates secured in a face to face assembly about the bail of an applicator and bearing along their joined inboard edge, slot means removably engagable with the open, upper end of said housing.

4. The cleaning device of claim 3 wherein said plates have arcuate grooves to define a bore along their assembled top edge which bore surrounds a portion of the bight of said applicator bail and recessed inside surfaces to define a contiguous slot extending therefrom at an angle between about 45 to 90 degrees which slot surrounds the leg of said applicator bail extending from the bight to the handle of said applicator.

5. The cleaning device of claim 4 wherein the top edge of said assembly of bracket plates is removably engaged in groove means on the underside of said lid.

6. The cleaning device of claim 1 wherein said bracket means comprises a pair of substantially parallel and closely spaced wings extending radially outwardly from an upper portion of said housing to define an upright slot therebetween for gripping of the leg of said applicator which extends from the bight of said applicator to the handle thereof.

7. The cleaning device of claim 1 wherein said base member bears a plurality of legs for the support of said member above a supporting drain surface.

8. The cleaning device of claim 7 wherein said legs are of flexible material and bear concave undersurfaces to provide suction cup means for the fixed attachment of said base to a drain surface.

9. The cleaning device of claim 1 wherein said base member comprises an upright hollow conical member having a lower end of a dimension permitting its removable insertion into a household sink drain.

10. The cleaning device of claim 1 wherein said aperture bears a peripheral groove with cooperative annular shoulder means on said tubular member to engage said groove when said tubular member is seated in said lid.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,897,797 Dated August 5, 1975

Inventor(s) Orrin Marshall Wright, Gordon G. Jarosek and Willis E. Swanson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Specification, Column 2, line 29, after FIG. 4, insert --FIG. 5 illustrates an alternative cleaner hose; and--.

Signed and Sealed this

fourth Day of November 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks