June 20, 1961 D. J. PANFIL 2,988,769

LIQUID COATING APPLICATOR

Filed Aug. 22, 1960 3 Sheets-Sheet 1

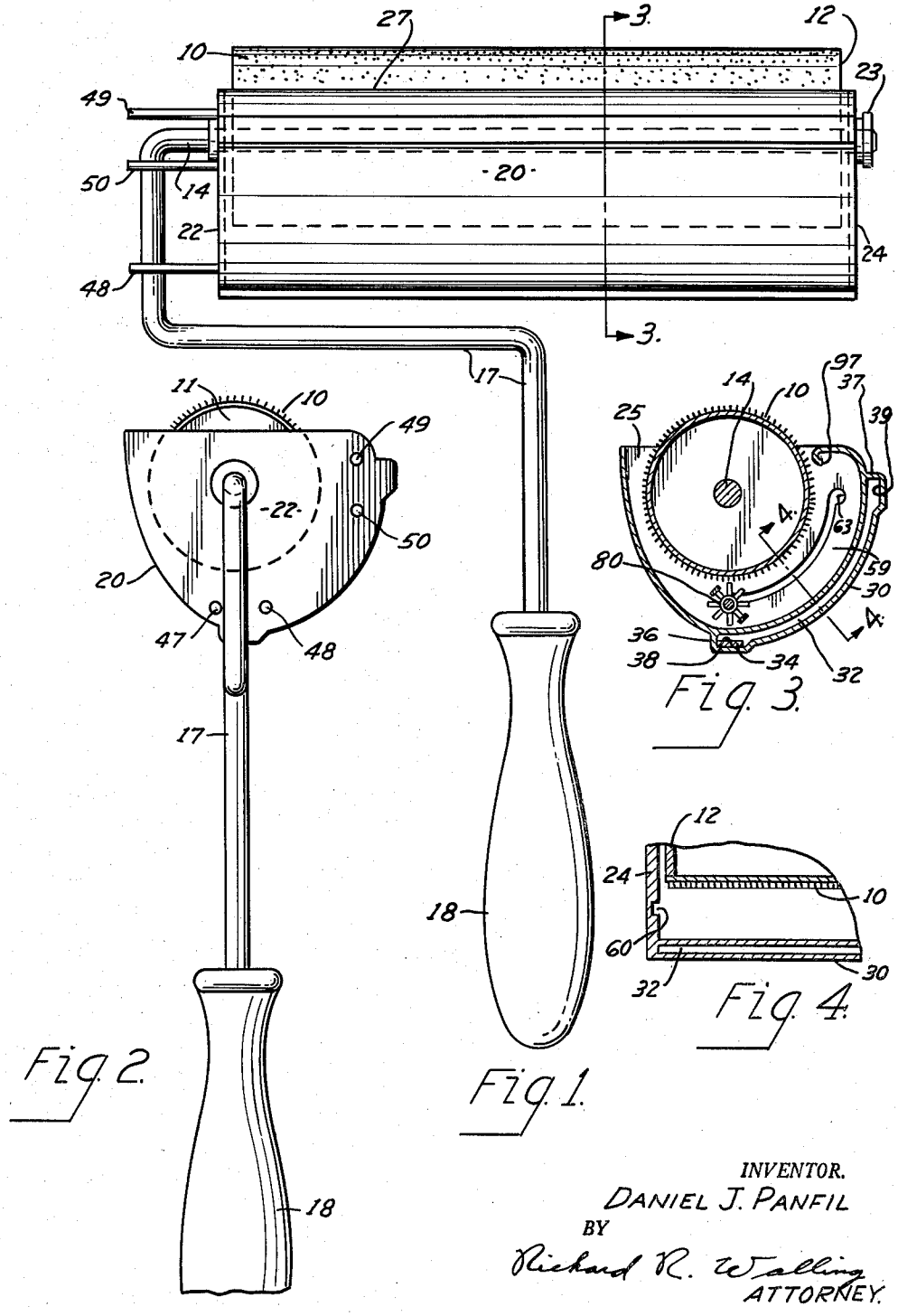


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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LIQUID COATING APPLICATOR

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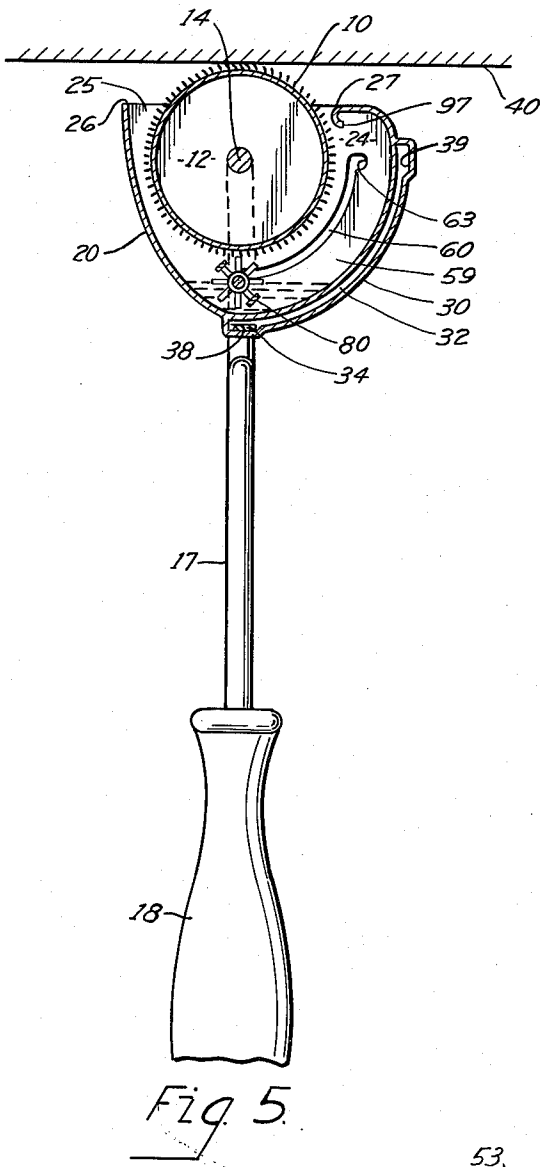


Fig. 5.

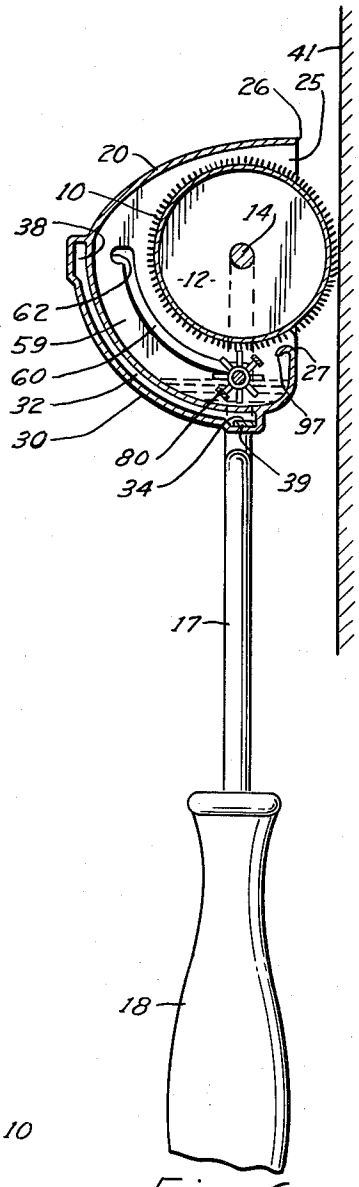


Fig. 6.

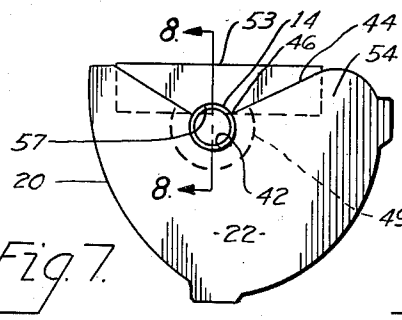


Fig. 7.

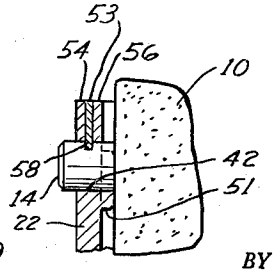


Fig. 8.

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Fig. 9

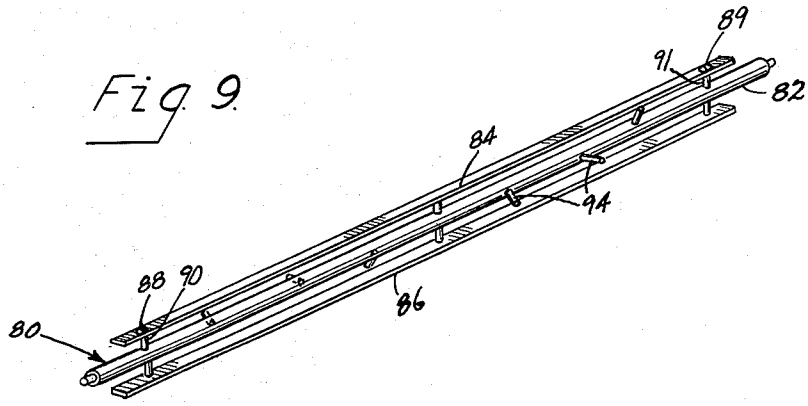
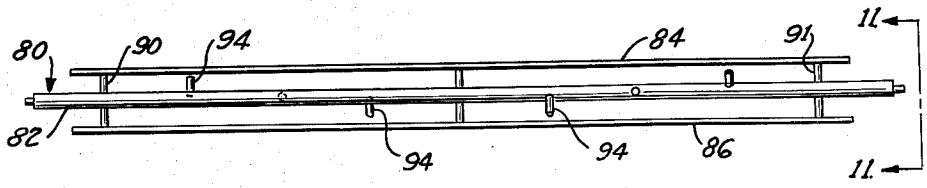


Fig. 10



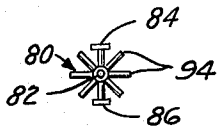


Fig. 11.

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LIQUID COATING APPLICATOR

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20 Claims. (Cl. 15—522)

This invention relates to a liquid coating applicator and more particularly to a paint applying roller for painting walls and ceilings, such roller being substantially encased in an open-sided tank which forms a self-contained splash shield and/or reservoir for the paint.

Although paint rollers provide a rapid and effective means for applying paint to walls and ceilings, their use entails certain disadvantages such as the inadvertent splattering and dripping of the paint from the roller onto the operator. Additionally, it is necessary to stoop or reach down for a fresh supply of paint at very frequent intervals.

It is an object of the present invention to provide a paint roller wherein dripping and splattering of the paint from the roller, while painting walls and ceilings, is prevented, regardless of the speed of the painting stroke.

A further object of the invention is to provide a paint roller for painting walls and ceilings having a self-contained paint reservoir rendering it unnecessary to stoop down for a fresh supply of paint at frequent intervals.

A further object of the invention is to provide a paint roller having a combination self-contained reservoir and splash shield that is adjustable such that the same may be correctly positioned with respect to the surface to be painted to prevent paint from spilling therefrom and whereby the roller will always be partially extending out of the reservoir in operative painting position.

A further object of the invention is to provide a paint roller of the aforedescribed type that is simple in construction, inexpensive to manufacture and highly effective in operation.

Briefly, the foregoing objects are accomplished by the provision of a paint roller substantially encased in an elongated open-sided tank, with a portion of the roller extending through the open side of the tank. The tank and roller are each rotatably mounted on the paint roller shaft which extends longitudinally through the roller and the tank, whereby such tank and roller may be longitudinally rotated independently of the other about the shaft.

The tank has an enclosed circumferential passageway disposed on the outer longitudinal surface thereof with a shiftable weight slidably disposed in such passageway and displaceable to any one of a plurality of preselected positions therein. The action is such that when the weight is disposed in one position in the enclosed passageway, the tank is maintained by gravity in a vertical position whereby a portion of the roller extends horizontally from the tank in position for painting a vertical wall. When the weight is disposed in another position within the passageway, the tank is maintained by gravity in a horizontal position whereby a portion of the roller extends upwardly out of the top of the tank in position for painting a ceiling.

The tank thus far described functions as a shield to prevent the splattering and dripping of paint and, in such use, the roller may be filled with paint from a conventional paint pan or tray in the usual manner.

If thick, high-viscosity paints are used which may tend to slow up the action of the weight in retaining the tank in proper painting position, an auxiliary tank retaining means may be employed in the form of pin stops inserted in an end of the tank so as to abut the adjacent roller handle and thereby retain the tank in a predetermined position with respect to the surface to be painted.

The tank has an enlarged internal cavity on a lower

side of the tank extending longitudinally thereof forming a reservoir for receiving liquid paint. Disposed substantially within the cavity is a removable paint-pickup spinner operatively contacting the main roller and adapted to pick up paint from the cavity and transfer it to the main roller. The roller, in turn, carries such paint to a surface to be painted exteriorly of the tank as the roller is moved over such surface. The paint-pickup spinner contains detachable paddle means whereby only a predetermined limited amount of paint may be picked up from the tank reservoir thereby controlling the amount of paint transferred to the roller.

With this construction, not only is it unnecessary to stoop down at frequent intervals for a fresh supply of paint, but, inadvertent dripping and splattering of paint on the operator is prevented.

Other objects and advantages of the invention will become apparent from the following description taken in conjunction with the drawings wherein:

FIG. 1 is a front elevational view of a conventional paint roller equipped with a splash shield and reservoir tank combination constructed in accordance with one form of the invention;

FIG. 2 is a left side elevational view of the roller shown in FIG. 1;

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 1 and showing a modification of the invention;

FIG. 4 is a partial sectional view taken along the line 4—4 of FIG. 3;

FIG. 5 is a side elevational sectional view of the roller shown in FIG. 3, with the tank and roller portion being shown in section, and showing the roller in position for painting a ceiling;

FIG. 6 is a view similar to FIG. 5, but showing the tank and roller in position for painting a vertical wall;

FIG. 7 is a side elevational view of the tank shown in FIG. 1 and showing a further modification thereof;

FIG. 8 is an enlarged partial sectional view taken along the line 8—8 of FIG. 7;

FIG. 9 is a perspective view of the paint pickup spinner shown in FIG. 3;

FIG. 10 is a front elevational view of the paint pickup spinner shown in FIG. 9; and

FIG. 11 is an end view of the paint pickup spinner shown in FIG. 9.

Although the invention is shown and described herein with reference to paint rollers, it will be understood that it may be used on any type of liquid coating applicator having a liquid applying roller.

Referring to the drawings, there is shown a liquid coating applicator in the form of a conventional, axially-elongated, hollow, cylindrical, paint roller **10** of the type covered by a felted or padded section of soft woven or knitted textile material or the like, over which the paint is spread and, in turn, transferred to a surface to be painted. Disposed at each end of the roller **10** are the end discs or sections **11** and **12**, respectively, rotatably mounted on the mounting means or shaft **14**, such shaft extending longitudinally through the interior of the roller. The shaft **14** is extended and shaped at one of its ends to provide a handle portion **17** terminating in a handle **18**.

Substantially encasing the roller **10** is an elongated, open-sided tank **20**, with the peripheral wall of the tank in radially spaced relation to the peripheral wall of the roller, such tank functioning as a splash shield and/or paint reservoir for the roller as will be hereinafter described. Disposed at each end of the tank **20** are the tank end sections **22** and **24** rotatably mounted on the shaft exteriorly of the roller end sections **11** and **12**, respectively, such that the tank is longitudinally journaled on the shaft exteriorly of the roller and may be rotated there-

on independently of the roller. Thus, the tank **20** and the roller **10** are each independently, rotatably mounted on a common longitudinal axis, namely the longitudinal axis of the shaft **14**. Also, with this construction, the mounting means or shaft **14** may be rotated about its longitudinal axis independently of the tank and roller. The tank **20** and the roller **10** may be retained in operative rotative position on the shaft **14** by any suitable means such as, for example, the detachable slip nut **23** secured on the free end of the shaft as shown in FIG. 1.

As best shown in FIG. 5, the top side of the tank has an opening **25** formed therein as substantially defined by the spaced tank top edges **26** and **27**, such opening being large enough to admit the roller **10** longitudinally therethrough. In the perferred form, the tank **20** encases at least half of the roller, with a sufficient portion of the roller extending through the opening **25** to permit the roller to effectively apply paint to a wall or ceiling.

To maintain the tank **20** in proper rotative position relative to the shaft **14** for painting walls or ceilings, a shiftable weight means is provided, one form of which will now be described. Disposed on the outer surface of the longitudinal wall of the tank **20** is a second outer wall **30** (FIG. 3) forming an enclosed passageway **32** which, in the preferred form, extends circumferentially around the tank a distance at least equal to one-fourth of the circumference of the tank and extends longitudinally the entire length of the tank. A suitable shiftable weight means such as the elongated bar **34** is slidably disposed in the passageway for circumferential movement from one end **36** to the other end **37** therein. At each of such ends, suitable stops in the form of the depressions or longitudinal grooves **38** and **39** are formed in the outer wall of the passageway for receiving the bar **34** therein. The bar **34** may be arc-shaped in transverse section to facilitate its movement through the arc-shaped passageway **32**.

In operation, the bar **34** is selectively moved through the passageway **32** simply by rotating the tank **20** to the proper position on the shaft **14**. When the bar **34** is moved to the stop **38**, as shown in FIG. 5, the weight of such bar maintains the tank **20** by gravity in an upright or horizontal position whereby the tank opening **25** faces upwardly such that the roller **10**, which protrudes partially through such opening, is in position for painting the ceiling **40**. When the bar **34** is moved to the stop **39**, as shown in FIG. 6, the weight of the bar maintains the tank by gravity in a vertical position, whereby the opening **25** faces sideways and the roller, partially protruding therefrom, is in position for painting the vertical wall **41**.

With the aforedescribed construction, the tank remains in proper position with respect to the surface to be painted regardless of the operating position of the handle. In FIG. 5, for example, with the weight **34** disposed in the stop **38**, the tank remains horizontal for all of the positions in which the handle **17** may be disposed. In FIG. 6, with the weight **34** disposed in the stop **39**, the tank remains in a vertical position for all of the positions, in which the handle may be disposed, and regardless of the length of the painting stroke.

Although only the two stops **38** and **39** are shown and described, it will be understood that any number of stops may be provided in the passageway **32** to maintain the tank in proper position for painting surfaces disposed at any angle to the vertical. Additionally, the passageway **32** may extend circumferentially around the tank a distance more than one-fourth the circumference of the tank, such lengthened passageway having a plurality of like stops therein. Also, the passageway **32** need not extend longitudinally the entire length of the tank **20**.

In addition to the above-described embodiment, the invention contemplates the use of any type of shiftable weight means disposed in or on the tank. For example, a suitable weight may be simply hung on the outer surface of the tank in a preselected position thereon. Or the tank may be made of a ferrous metal and suitable magnetic weights may be placed thereon in preselected positions. In fact, numerous modifications of the shiftable weight principle may be employed to maintain the tank **20** in any one of a plurality of predetermined positions with respect to the longitudinal axis of the shaft **14**.

Thick high-viscosity paints may tend to slow up the action of the weight **34** such that the tank may not quickly respond to the force of the weight in maintaining the tank in proper painting position with respect to the surface to be painted. In such event, the pin stops **47**, **48**, **49** and **50** which extend outwardly in parallel relation from the tank end **22** may be employed to maintain the tank in proper position. Pins **47** and **48** straddle the handle portion **17** and maintain the tank in position for painting a ceiling as shown in FIG. 2, while pins **49** and **50** straddle the handle portion **17** to maintain the tank in position for painting a vertical wall. The tank may be moved from one position between one set of pins to the other position between the other set of pins by removing the tank from the shaft **14**.

Each of the tank end sections **22** and **24** may be formed of a semi-resilient material and constructed to rotatably receive newly manufactured or existing conventional paint rollers. Since such end sections are similar in structure, a description of one will suffice for a description of both. Referring to FIG. 7, there is shown the tank left end section **22** having a transverse aperture **42** with an outwardly expanding slot **44** leading from the aperture to the open side of the tank. The aperture **42** and slot **44** meet at a junction point **46** having a width slightly less than the diameter of the shaft **14**. With this construction, the shaft of any conventional roller may be inserted into the slot **44** and thence into the aperture **42** and rotatably retained therein. To reduce rotational friction, and to provide for longer wear, a bearing liner of keyhole configuration in transverse section may be inserted into the aperture **42** for receiving the shaft **14**. An annular bearing offset portion **51** may be formed around the aperture **42** on the inner side of the wall **22** which functions as a friction reducing bearing to facilitate rotation of the roller **10**.

To securely retain the shaft **14** within the aperture **42**, a keeper bar **53** (FIG. 7) may be positioned over the shaft **14**. To accommodate the keeper **53**, the tank end section **22** may be formed of the spaced walls **54** and **56** (FIG. 8), with the keeper bar **53** being held therebetween with a tight fit as shown. The keeper bar **53** may have a semi-circular notch **57** (FIG. 7) formed on the lower edge thereof to fit into a coacting semi-circumferential groove **58** (FIG. 8) in the adjacent end of the shaft.

The invention thus far described contemplates the function of the tank **20** as a splash shield whereby inadvertent dripping and splattering of paint on the operator is prevented by the tank. Such tank may function also as reservoir for the paint in a manner now to be described.

Referring to FIG. 3, it will be noted that the tank **20** is partially elliptical in transverse configuration, the lower right quadrant thereof being formed into an enlarged cavity defining a bulbous well or reservoir **59** for receiving liquid paint therewithin. Such elliptical configuration also includes the shiftable weight means for retaining the tank in proper position for painting walls or ceilings, the shiftable weight and the weight of the paint being additive. The reservoir **59** extends circumferentially around the tank a distance at least equal to one-fourth the circumference of the tank and, in the preferred form, extends longitudinally the entire length of the tank.

It has been found that if the roller **10** directly contacts the paint in reservoir **59** the roller usually picks up an excessive amount of paint. Accordingly an elongated paint pickup spinner **80** is provided and is longitudinally disposed within the reservoir in contact with the roller and functions to pick up a limited amount of paint from the reservoir and apply or feed such paint to the roller as the spinner is rotated about its longitudinal axis.

The spinner **80** is rotatably mounted in longitudinal semi-annular grooves formed in the inner surfaces of the tank end sections **22** and **24**, such grooves now to be described. Since the inner surfaces of the tank end sections are similar in structure, a description of one will suffice for a description of both. Referring to FIGS. 5 and 6, the inner surface of the tank end section **24** contains an elongated, semi-annular, circumferentially extending groove **60** formed therewithin. Suitable stops are provided at each end of the groove in the form of the depressions or notches **62** and **63** for rotatably receiving the respective end of the spinner **80**. In operation, the spinner may be selectively moved along the groove **60** to either of the notches **62** or **63** depending on whether a wall or ceiling is to be painted. When painting a ceiling, for example, the spinner **80** is disposed in the notch **62** as shown in FIG. 5, and when painting a vertical wall, the spinner is disposed in the notch **63** as shown in FIG. 6. Although only the two stops or notches **62** and **63** are shown and described, it will be understood that the groove **60** may be extended and may have any number of such stops to position the spinner **80** in preselected positions for painting surfaces disposed at any angle to the vertical.

The paint pickup spinner **80** includes a main shaft **82** having detachable paint pickup paddles **84** and **86** longitudinally mounted thereon in spaced relation to the shaft, such paddles functioning to pick up paint from the reservoir and apply the same at intervals to the roller **10** as the spinner is rotated. Although two paddles are shown and described, it will be understood that the spinner **80** may have any suitable number of paddles thereon depending on the amount of paint that is to be picked up and transferred from the reservoir to the roller **10**. In fact, for paints of certain viscosities, just one paddle has been found to be sufficient.

The paddles may be detachably secured to the shaft **82** by any suitable means. The paddle **84**, for example, is secured to the shaft by the screws **88** and **89** (FIG. 9) which pass through the respective collets **90** and **91**, such collets functioning to space the paddle radially from the shaft.

The shaft **82** contains a plurality of outwardly extend, ing, radial pegs **94** which are spaced longitudinally along the shaft in the form of a progressive spiral. The construction is such that at least one paddle or peg is always in contact with the roller **10**. Thus, rotation of the roller **10** effects rotation of the spinner **80**. Accordingly, the spinner **80**, in effect, functions in the manner of a pump to supply paint to the roller.

With the above construction, the most effective level of the paint in the reservoir is at, or immediately below, the longitudinal axis of the spinner **80** as shown in FIGS. 5 and 6.

With exceptionally thick paints, it may be desirable to gear the spinner **80** directly to the roller **10** to assure continuous, uninterrupted rotation of the spinner. This may be effected by a pair of meshed spur gears, with one gear being disposed on the spinner shaft **82** and the other gear being disposed on the roller shaft **14**.

Additionally, the spinner **80** functions also to keep the paint in the reservoir thoroughly mixed during operation of the roller.

The aforedescribed detachable paddle construction of the spinner **80**, effects a means for controlling the amount of exposed surface area contained in the longitudinal wall of the spinner whereby the amount of paint transferred from the tank reservoir to the roller is controlled in accordance with the amount of such surface area exposed to the paint and roller.

Referring to FIG. 6, it will be noted that the tank edges **26** and **27** are spaced sufficiently from the adjacent wall **41** so as to avoid touching the same during operation of the roller, even though the tank may tilt somewhat from its vertical wall-painting position. This is effected by offsetting or cutting back the edge **26** from the wall a predetermined amount, as the edge **27** cannot be cut back or the paint would spill over such edge when the roller is in position for painting walls.

The edge **27** has an inturned flange **97** for retaining the paint within the tank **20** when the same is in wall-painting position.

The terms and expressions which have been employed 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 or described, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. A liquid coating applicator comprising an axially elongated cylindrical liquid-applying roller, an elongated tank encasing at least one-half of said roller with its peripheral wall in radially spaced relation to the periphery of the roller, mounting means rotatably supporting said tank and roller on a common longitudinal axis so that each is rotatable about such common longitudinal axis independently of the other, and weight means for substantially maintaining the tank by gravity in any one of a plurality of preselected rotated positions relative to said longitudinal axis when the roller and the mounting means are each rotated independently about said longitudinal axis.

2. A liquid coating applicator comprising a paint-applying roller having end sections and having a shaft extending longitudinally through the interior of the roller and journalled to the end sections, said shaft having a handle extending radially from at least one end thereof, an elongated semi-annular tank having an open side and encasing at least one-half of said roller and with a portion of the roller extending through said open side the peripheral wall of the tank being spaced radially from the peripheral wall of the roller, said tank having end sections rotatably affixed to said shaft exteriorly of and adjacent the ends of the roller whereby the tank may rotate on the shaft independently of the rotation of the roller thereon, and shiftable weight means movably disposed on the exterior of the tank for maintaining the tank by gravity in any one of a plurality of preselected rotated positions relative to the longitudinal axis of the shaft when the shaft is rotated.

3. The structure of claim 2 wherein said means is a shiftable weight displaceably secured to the outer longitudinal surface of the tank and movable to any one of a plurality of preselected circumferential positions thereon.

4. The structure of claim 2 wherein said tank has an enclosed circumferential passageway disposed on the outer longitudinal surface thereof and said means is a shiftable weight movably disposed in said passageway and displaceable to any one of a plurality of positions therein.

5. The structure of claim 4 wherein said enclosed passageway has a plurality of depressions formed in the inner surface of the outer peripheral wall of the passageway, such depressions forming stops for receiving the weight respectively therein, whereby the tank may be retained in any one of said plurality of preselected rotated positions.

6. The structure of claim 4 wherein said passageway extends longitudinally of the tank from a point adjacent one end of the tank to a point adjacent the other end of the tank and extends circumferentially around the tank a distance at least equal to one-fourth the circumference of the tank and said weight is an elongated metallic bar slidably and longitudinally disposed in said passageway for preselected peripheral displacement to any one of a plurality of circumferential positions therein.

7. The structure of claim 6 wherein said passageway has a longitudinal groove formed in the outer peripheral wall of the pasageway at each circumferential end there-

of, such grooves forming stops for receiving the bar therein, respectively, whereby the tank may be retained in preselected rotated positions.

8. The structure of claim 6 wherein the bar has an arc-shaped configuration in transverse section conforming with the annular transverse configuration of the passageway to facilitate displacement of the bar through the passageway.

9. The structure of claim 2 wherein the roller end sections are formed of a semi-resilient material and have transverse apertures therein for rotatably receiving the shaft, each of said roller end sections having an outwardly expanding slot leading from the aperture to said open side of the tank, said aperture and slot meeting at a junction point having a width slightly less than the diameter of the shaft, whereby the shaft may be inserted into the slot and thence into the aperture and rotatably retained therein.

10. The structure of claim 9 wherein a keeper bar is disposed on each of said roller end sections transversely of the shaft and above and immediately adjacent said junction point to retain the shaft in rotatable position in the adjacent aperture.

11. The structure of claim 10 wherein each of said roller end sections comprises a pair of spaced walls and said keeper bar is positioned in the space between the roller end section walls with a tight fitting engagement.

12. The structure of claim 10 wherein said keper bar has a semi-circular notch formed in the edge thereof adjacent the shaft, and said shaft has a circumferential groove formed around its periphery opposite said notch for receiving the notched portion of the keeper bar in fluid-tight engagement to retain liquids in the tank.

13. The structure of claim 2 wherein at least some of the edges of said open side have inturned flanges for retaining liquid within the tank.

14. The structure of claim 2 wherein the longitudinal and vertical edges of said open side of the tank are spaced to define an opening large enough to admit the roller longitudinally therethrough and the roller is rotatably positioned within the tank to permit a predetermined portion of the roller to extend through the opening to contact an associated wall to be painted, such longitudinal edges being spaced substantially from such associated wall during operation of the applicator to prevent such edges from contacting the wall if the tank is tilted a substantial amount from its vertical wall-painting position.

15. The structure of claim 2 wherein the lower portion of the tank has an enlarged internal cavity defining a well on a lower side of the tank and in direct communication with the interior of the tank to enlarge the liquid-holding capacity thereof.

16. The structure of claim 15 wherein said well is bulbous in transverse configuration and extends longitudinally along substantially the length of the tank, such well in coaction with the tank effecting a substantially elliptical configuration of the tank in transverse section.

17. The structure of claim 15 wherein said shiftable weight means and said well are disposed substantially in a common lower transverse quadrant of the tank, whereby such weight means and the weight of any associated liquid in the well coact to retain the tank in any one of such plurality of preselected rotated positions.

18. A liquid coating applicator comprising an axially elongated cylindrical liquid applying roller, an elongated tank having end sections and encasing at least one-half of said roller with its peripheral wall in radially spaced relation to the periphery of the roller, said tank containing a predetermined amount of liquid paint, mounting means rotatably supporting said tank and roller on a common longitudinal axis so that each is rotatable about such common longitudinal axis independently of the other, and a paint pickup spinner longitudinally journalled in said end sections of the tank in operative rotational contact with the roller and in contact with the paint for transferring the paint from the tank to the roller when the spinner is rotated by the roller, said spinner having means for controlling the amount of exposed surface area contained in the longitudinal wall of the spinner whereby the amount of paint transferred from the tank to the roller is controlled in accordance with the amount of such surface area exposed to the paint and roller.

19. The structure of claim 18 wherein said spinner comprises an elongated shaft longitudinally journalled in the end sections of the tank and having elongated blades longitudinally disposed on the shaft in spaced circumferential relation to the shaft, each of said blades being engageable with the roller and the paint and being selectively detachable from the shaft to control the amount of surface area exposed on the longitudinal wall of the spinner and thereby control the amount of paint transferred from the tank to the roller.

20. The structure of claim 19 wherein said spinner is rotatably disposed in elongated grooves formed in the end sections of the tank, said grooves having stops formed therein for receiving the spinner in any one of a plurality of rotative positions when the tank is disposed at respective angles for painting a wall, ceiling or surface angled to the vertical as required.

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