

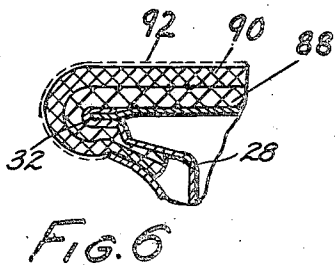
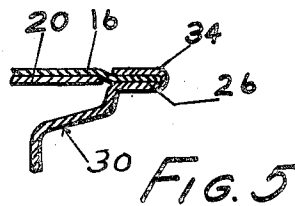
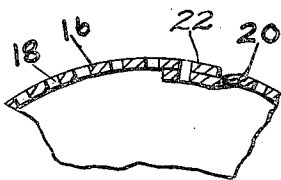
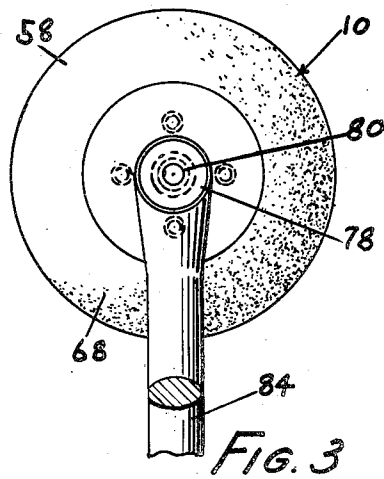
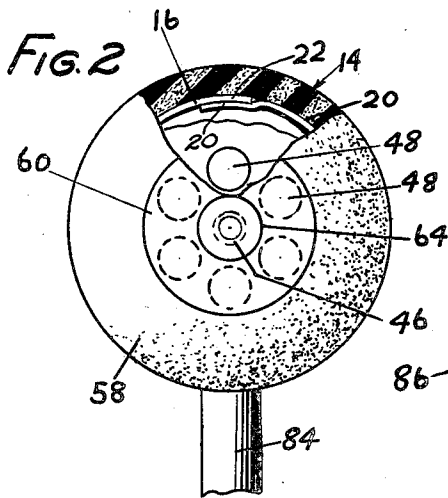
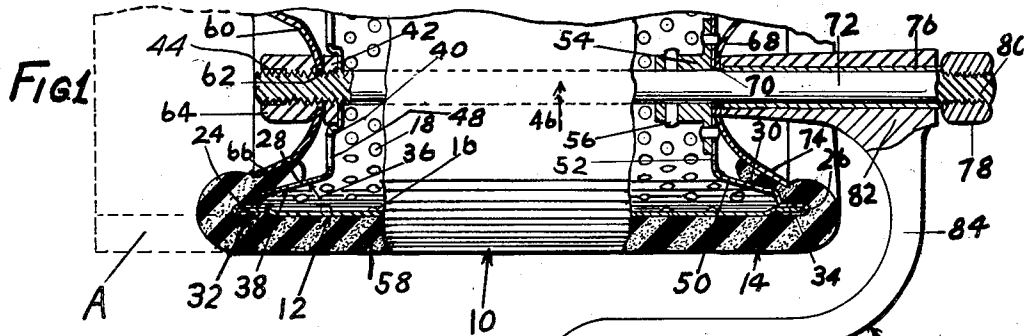
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J. P. FINDLEY ET AL

2,591,530

ROLLER PAINT APPLYING DEVICE

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ROLLER PAINT APPLYING DEVICE

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This invention relates to coating or paint applying devices and more particularly to a roller type applicator of novel construction.

Broadly the invention comprehends the provision of a paint applicator of the roller type having a reservoir centrally thereof for holding a supply of paint to be applied through an appropriate cover stretched over the roller, wherein the cover is positively effectively maintained on the roller and the roller is of a simple strong construction permitting of ease in refilling the reservoir, and dismantling and cleaning the roller.

An object of the invention is the provision of a roller paint applicator of simple and economical construction.

Another object of the invention is the provision of a coating liquid containing roller paint applicator having means incorporated therein for positively holding a paint applying cover on the roller.

Another object of the invention is the provision of a reservoir type roller paint applicator having a paint applying cover stretched over the roller, said cover being fixedly held relative to the roller centrally of the roller by means permitting of ease for filling the reservoir or for removing the cover.

A further object of the invention is the provision of a roller type coating device having reservoir means therein comprising a roller consisting of a hollow perforated cylinder formed of sheet stock material curved to circular shape with overlapped ends and held upon the opposite ends by end plates, one of which is imperforate and the other of which has openings therein through which coating liquid is poured to be received centrally of the cylinder.

A yet further object of the invention is the provision of a reservoir type of roller paint applicator comprising a roller member, a supporting member for the roller permitting of the rotative manipulation thereof over surfaces to be painted and a paint applying cover stretched over the outer periphery of the roller member, said roller including a perforated hollow cylinder of sheet stock or the like held in circular form by end plates forming a reservoir therein for the reception of paint and cup means associated with the roller at the opposite ends thereof for holding the cover in place and for sealing paint filler openings provided in one of the roller end plates.

Other objects and advantages will appear from the description taken in connection with the drawing wherein:

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Fig. 1 is a side elevation of a paint applicator partially in section;

Fig. 2 is an end elevation of Fig. 1 as viewed from the left side; partially in section;

Fig. 3 is an end elevation of Fig. 1 as viewed from the right side, partially in section;

Fig. 4 is an enlarged fragmentary cross sectional view of the hollow cylinder element of the paint applicator;

Fig. 5 is an enlarged fragmentary cross sectional view of the cylinder element end plate construction of the paint applicator; and

Fig. 6 is a fragmentary, cross-sectional view of a modified form of paint applicator cover arrangement.

The presently devised reservoir type of roller coating applicator is for the purpose of providing an effective yet durable and economical structure. This applicator comprises basically three members, a roller, a supporting member therefor and a coating applier cover arranged on the roller in resilient fitting relation. The roller includes a hollow perforated cylinder formed of sheet stock material rolled back on itself and joined in overlapping relation to form an outer smooth circular surface and end plates having tongue and groove relation with cylinder for holding same together. The end plates together with the overlapped construction of the cylinder affords a sturdy structure capable of maintaining its normal form with extended use. One of the end plates has openings therein providing means through which a liquid coating can be poured to be received in the reservoir formed by the cylinder and end plates. The supporting member includes a shaft keyed to one of the end plates having a bearing supported handle member relatively rotatable to the roller arranged thereon. The cover member which may be any of several different materials is for most purposes made of foam rubber for use with water paints and woven fabric of varying weaves for oil paints, sleeve shaped, adapted to fit snugly over the outer periphery of the cylinder with the perforations of the cylinder in communication with the inner periphery of the sleeve cover. The cover is preferably made of an axial length greater than that of the cylinder so as to normally permit of the extension of the end portions thereof beyond the ends of the cylinder. The ends of the sleeve cover extending beyond the cylinder are inward axially disposed and secured thereon against the end plates by cup shaped members fitted on the supporting shaft and held thereon by knurled nuts threaded on the ends of the shaft, said nuts

maintaining the roller applicator in complete assembly. The cup member, on the end adjacent the end plate having the filler openings therein, affords a positive seal inhibiting the passage of liquid past the end of the shaft and can be easily removed at will without dismantling the remainder of the applicator and thus permit of refilling the liquid reservoir as needs dictate.

In the case of using the applicator for oil paints and the like, two or more fabric covers of woven design are used, one arranged on the other, each of varying degree of weave depending on the viscosity of the paint and the degree of smoothness of coating desired.

The roller, because of its hollow cylinder and end plate construction, can be dismantled completely permitting of ease in the thorough cleaning thereof whereby any encrusted paint can be effectively removed from the inner wall of the cylinder and end plates thereby affording the use of the roller with any color or viscosity of liquid desired without fear of contamination from one period of use to another.

Referring to the drawings for more specific details of the invention 10 represents a coating or paint applying device comprising a roller 12, a roller supporting member 13, and a paint applicator cover 14.

The roller 12 forming the basic element of the applicator 10 comprises a hollow cylinder 16 having a plurality of radial perforations 18 therethrough of predetermined size arranged throughout the circumferential wall of the cylinder. The cylinder 16 is formed from a metallic sheet rolled back on itself and is provided with a flange 20 offset to the plane of the sheet material from which the cylinder is formed so as to be joinable with end 22 thereof to provide a smooth roller joint at its outer periphery. The opposite ends 24 and 26 of the cylinder are reduced concentrically in size to the main body of the cylinder the purpose of which will hereinafter appear.

The cylinder 16 is held in assembly by end plates 28 and 30 respectively, end plate 28 including an annular grooved flange 32 adapted to receive end 24 of the cylinder thereon such that the external periphery of the flange 32 will coincide with the outer circumference of the cylinder and present a substantially straight unbroken surface. The end plate 30 similarly to end plate 28 includes an annular grooved flange 34 adapted to receive the end 26 of the cylinder, end plates 28 and 30 operating conjointly to maintain the sheet construction of the cylinder in circular form and afford end strengthening and supporting means therefor in the use thereof. The end plate portion 36 having an inwardly inclined wall 38 and a radially directed wall 40 having a nut member 42 near its axis threadingly received on a threaded portion 44 of a shaft 46 passing axially through the cylinder. The wall 40 has a plurality of circumferentially spaced openings 48 therethrough, through which a coating liquid or paint is to be poured for receipt within the central confines or reservoir of the cylinder.

The end plate 30 in addition to the annular flange 34 includes a central portion having an inclined wall 50 and a radially directed wall 52 having a hub member 54 fixedly secured thereto. The hub member 54 has a central opening receiving the shaft 46 therethrough and is securely keyed to the shaft by a pin 56 extending through the hub and the shaft. The hub in relation to

the shaft and end plate 30 together with the end plate 28 threaded to the shaft constitute a rigid roller structure effective to withstand a high radial pressure in the use thereof without fear of collapse.

The roller 12 is adapted to receive therein in firm fitting relation any number of different types of covers through which the coating liquid received by the cylinder is to permeate for application to any surface requiring coating. As illustrated by Fig. 1 the cover is in the form of a foam rubber sleeve 53 slipped in resilient fitting relation over the outer circumference of the cylinder. The sleeve in its normal state is made of an axial length adapted to extend as shown by dotted lines A beyond the end of end plate 28. The same provision for extension beyond end plate 30 is also made.

The axial extensions of sleeve 53 beyond the end plates 28 and 30 respectively are bent back on themselves in an inward axial manner so as to be received against the outer surfaces of the inclined walls 38 and 50 of the respective end plates 28 and 30.

The end of sleeve 53 associated with end plate 28 is secured in inwardly turned manner by a cup member 60 having a central opening 62 through which the threaded portion 44 of shaft 46 is extended and secured thereon in assembled relation by a knurled nut 64 threaded in the end of threaded portion 44 of shaft 46. The annular top lip 66 of the cup 60 bears against the end of sleeve 53 and holds it firmly against the wall 38 of end plate 28 so as to securely hold the cover on the roller and at the same time provide an effective seal inhibiting the passage of liquid from the cylinder through the end thereof past the cup 60. The nut 64 is adapted to be threaded snugly against the bottom of the cup near the opening therethrough in keeping with the amount of tension required by the cup to hold the cover firmly on the roller.

A cup 68 is provided with a central opening 70 therethrough for the reception of an extension 72 of shaft 46 oppositely disposed from the threaded portion of 44 of the shaft. The cup 68 similarly to cup 60 has an annular lip flange 74 adapted to bear on the opposite end of sleeve 53 from that end held by cup 60 to hold it securely on the roller.

The cup 68 is held in position having its lip 74 bear against one end of sleeve 53 by a sleeve bearing 76 slipped over the extension 72 of the shaft, said bearing in turn being impinged against the inner bottom of the cup 68 near the central opening 70 therethrough by a knurled nut 78 threaded upon an end threaded portion 80 of extension 72.

Prior to the securing of the cup 68 and bearing 76 in place the handle or supporting member 13 for the roller is assembled thereon.

The supporting member 13 comprises a cylindrical hub section 82 having a bore therethrough of a size slightly greater than the outer diameter of bearing 76 and an axial length slightly less than the length of the bearing, an extension 84 projecting perpendicularly therefrom and which extension is in turn curved at a point beyond the outer circumference of the roller and extends in an inward parallel relation to the axis of the roller for a predetermined distance and terminates in a direction lying perpendicular to the axis of the roller and hub 82 adapted to be received in securely fixed relation in a hand gripping member 86, said member 86 lying in a plane substantially at or near the center of gravity of

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the roller providing for ease in the proper manipulation of the paint applicator.

By providing the hub 82 with a bore having a larger diameter than the outer diameter of bearing 76 and an axial length less than the axial length of the bearing 76, the roller can be rotated freely relative to the hub 82 and member 86 whereas at the same time the cup 68 can be snugly exerted against the end of sleeve 58 associated therewith and the bearing 76 secured stationary relative to the shaft 46.

Fig. 4 illustrates clearly the joined end construction of the cylinder wherein the flange 20 is fitted to the other end of the sheet material so as to provide a strengthened cylinder structure without any appreciable break in the continuity of the outer circular surface of the cylinder.

Fig. 5 illustrates clearly the cylinder and end plate interrelated structure wherein the reduced portion of the cylinder ends 24 and 26 are respectively received in the annular flanged portions 32 and 34 of the end plates 28 and 30. The flange 20 at its opposite ends as disclosed by Fig. 5 is cut back a predetermined distance so as to only provide a single thickness material received in the grooves of the flanges 32 and 34.

Fig. 6 is directed at the provision of a modified cover structure from that of Fig. 1, comprising a double or triple layer of material as choice might dictate in the use of oil or like coating liquids. Whereas Fig. 1 illustrates a foam rubber cover primarily adaptable to use with water paints and the like, Fig. 6 provides covers made from knitted materials wherein cover 88 of a looser knit than cover 90 is first placed on the cylinder and cover 90 slipped thereon. In this manner cover 90 provides for a higher degree of smoothness than sleeve 88. If a yet smoother finish is desired a cover 92 of fine material can be slipped over both the sleeves 88 and 90. The cover 92 could, if desired, be an old silk stocking or the like. The covers 88, 90 and 92 as illustrated can each be securely held upon the cylinder and relative to one another by the construction of cup end plate shown by Figs. 1 through 3. The use of a positive holding means for the covers is practically imperative if an effective use of a coat applicator of this type is utilized.

In the initial assembly of device 10 the sheet stock from which cylinder 16 is made is rolled into a circular form with end 22 received by flange 20 in over-lapping relation. While the cylinder 16 is maintained in circular form the end plates 28 and 30 are fitted thereover in tongue and groove relation, shaft 46 which is fixed to end plate 30 being received in threaded relation by nut member 42. The threading of end plate upon threaded portion 44 of shaft 46 forces the end plates into close fitting relation on the cylinder thereby affording a strong unit.

The cover member 58 or any other type of cover or covers are slipped over the cylinder in snug fitting relation thereon with the end extremities thereof extending axially therebeyond.

The cup members 60 and 68 are then independently passed over the opposite ends of the shaft, cup 68 being placed on first with the end of the cover 58 turned inwardly against the outer surface of end plate 30 and with the inner side of the cup impinging thereagainst the end of the cover to hold in firmly therebetween. The sleeve bearing 76 is next placed on the extension 72 of shaft 48 with the hub section 82 of member 13 mounted telescopically thereon and the

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knurled nut 78 threaded on the end portion 80 of shaft 48 for holding the cup 68, bearing 76 and member 13 in assembled relation.

The device 10 is then held on end with the openings 48 facing upward through which a coating liquid is poured into the reservoir in the cylinder.

The cup 60 is then axially moved to assembled relation with the end of cover 58 adjacent end plate 28 turned axially inwardly against end plate 28 similarly to the end thereof adjacent end plate 30 and the cup 60 is threadingly clamped against the end of the cover with the nut 64 holding the cover in sealed relation adjacent the end plate effective with the other cup 60 to hold the cover firmly on the cylinder and inhibit seepage of liquid from the cylinder.

The device 10 after complete assembly and with a liquid within the cylinder is ready for use such that upon a slight impinging rolling action of the cover on a surface to be coated the liquid permeates through the surface of the cover and is evenly distributed over the surface being coated. The liquid will only flow through the cover when pressure is applied thereto effective to cause a sort of pumping action effective to draw the liquid from the interior to the exterior exposed surface of the cover 58.

While this invention has been illustrated and defined with specific relation to a coating or paint applying device its application to other devices of similar use will be obvious to those skilled in the art and accordingly it is to be limited only to the extent of the appended claims.

We claim:

1. A paint applying device comprising a roller including a hollow perforated cylinder member formed of sheet material curved to a circular form with the ends in overlapping fitted relation, a pair of end plates fitted in tongue grooved relation upon the ends of the cylinder and a shaft keyed to one end plate and threadingly secured to the other plate, one of said plates having filler means therethrough communicating with a reservoir formed centrally of the cylinder, a handle rotatably mounted on an extension of the shaft, a pair of cup shaped members axially spaced from one another secured relative to the shaft adjacent the respective end plates, and a cover member fitted on the outer periphery of the roller, the ends of said cover member being inwardly clamped between the cup shaped members and outer surfaces of the end plates.

2. A paint applying device comprising a roller including a hollow perforated cylinder member, a pair of end plates fitted in tongue grooved relation upon the ends of the cylinder and a shaft keyed to one end plate and threadingly secured to the other plate, one of said plates having filler means therethrough communicating with a reservoir formed centrally of the cylinder, a sleeve bearing received upon one end of the shaft axially disposed outwardly of the cylinder, a handle having a hub section receiving the sleeve bearing therein, a cover member on the outer periphery of the cylinder having free ends normally extending axially beyond the axial ends of the cylinder, a pair of cup members supported on the opposite ends of the shaft adjacent the oppositely disposed end plates clamping the free ends of the cover therebetween, and nut means threadingly secured upon the ends of the shaft for holding the cup members firmly against the free ends of the cover and for securing the sleeve bearing and handle for relative

rotation and slight axial movement to one another.

3. A paint applicator comprising a hollow cylindrical roller having a plurality of radial perforations in its circumferential surface, a closed end and a filler opening in its other end communicating with a reservoir formed centrally of the roller, said reservoir also communicating with the radial perforations, a shaft fixedly secured to the roller, a cover member of interconnected cellular construction fitted upon the outer periphery of the roller having its axial ends overhanging the opposite ends of the roller, a cup member fitted on one end of the shaft adjacent the closed end of the roller clamping the free end of the cover adjacent said end of the cylinder in inwardly radially and axially turned relation to the roller, a sleeve bearing slipped on the end of the shaft adjacent the cup member, a handle member rotatably mounted on the bearing, a nut member threaded on the end of the shaft having the bearing thereon for holding the cup, sleeve bearing and handle in assembled relation, another cup member slipped over the other end of the shaft adjacent the filler opening of the roller clamping the free end of the cover adjacent said end of the roller similarly to the clamping arrangement on the closed end of the roller and a nut threaded on the end of the shaft adjacent the filler opening for holding the cup member against the ends of the cover disposed between said cup member and the filler opening end of the roller effective to inhibit the leakage of paint past the end of the shaft adjacent thereto.

4. A paint applicator roller member comprising a hollow cylinder having a plurality of spaced radial perforations in its circumferential surface and a pair of open ends, a pair of end closure plates, one for each end of the cylinder, each having an outer peripheral annular flange bearing against one end of the cylinder, one of the plates having filler opening means therein, means for clamping the cylinder and end plates as an assembly with the cylinder between the end plates, a cover arranged on the outer periphery of the cylinder, means extending along the axis of the roller outwardly axially of the end plates, a pair of members one arranged at each end of the cylinder on the axial extensions clamping the free ends of the cover upon the respective end plates, means securing one of the clamping members in axial tensioned relation against one end of the cover associated therewith, an outboard bearing mounted on one of the axial extensions having axial bearing relation to the second cover clamping member, a handle rotatively mounted on the bearing, and means secured to the end of the axial extension upon which the bearing is mounted axially tensioning the bearing against the second clamping member and simultaneously limiting the axial movement of the handle on the bearing.

5. A paint applying device comprising, a roller including a hollow perforated cylinder member open at both ends, a pair of circular end plates, one closing each end of the cylinder member and one of said plates having a filler opening therein, means for supporting the cylinder and end plates for rotation, comprising a shaft fixed to the assembly of cylinder and end plates and having one end projecting axially beyond one end of said assembly, a pair of cup-shaped members on said shaft at opposite ends of the cylinder member outwardly of said end plates arranged

to cooperate with said assembly to clamp a cover thereto, a bearing telescopically mounted on said projecting end of the shaft and bearing axially on one of said cup-shaped members, a handle journaled on said bearing, and means secured to said projecting end of the shaft fixedly securing said bearing thereon and also limiting axial movement of the handle on the bearing.

6. A paint applicator comprising, a hollow and radially perforated cylindrical member, a shaft extending centrally through said cylindrical member in fixed relation thereto, one end of said shaft being disposed within the confines of one end of the cylindrical member, the other end of said shaft extending axially outwardly beyond the other end of the cylindrical member, a plate member on said shaft adjacent the said other end of the cylindrical member, a perforated dish-shaped member on said shaft adjacent said one end of the cylindrical member and within the confines thereof, an imperforate and dish-shaped closure member on said shaft axially outwardly of said perforated dish-shaped member with the dish-shaped portion thereof located within the confines of said one end of said cylindrical member, and a handle journaled on said other and outwardly extending end of said shaft, one of said dish-shaped members and said plate member, having peripheral portions adjacent the respective ends of said cylindrical member, and so related thereto as to operate to engage and hold axial extremities of a flexible cover in fixed relation to the respective ends of said cylindrical member.

7. A claim according to claim 6 wherein means is affixed to the end extremity of the end of the shaft extending axially beyond one end of the cylindrical member for restraining the handle from axial movement off of the end of the shaft upon which it is journaled.

8. A claim according to claim 7 wherein a bearing sleeve is secured on the end of the shaft extending beyond one end of the cylindrical member axially intermediate the plate member adjacent said end of the cylindrical member and the means affixed to the shaft on one extremity thereof and telescopically within the journaled portion of the handle.

9. A claim according to claim 6 wherein the cylindrical member has an end plate adjacent the plate adjacent the end of the cylindrical member having the end of the shaft extending axially therebeyond.

10. A claim according to claim 6 wherein a sleeve is fitted on a peripheral surface of the cylindrical member with the opposite extremities thereof clamped upon the ends of the cylindrical member by the dish-shaped members at one end of the cylinder and the plate member at the other end of the cylinder.

11. A claim according to claim 6 wherein the plate member is dish-shaped with the dish portion thereof disposed axially within the end extremity of the cylindrical member which it is adjacent to.

12. A claim according to claim 9 wherein the plate member and end plate adjacent thereto are both dish-shaped with the dish portions thereof extending axially within the end confines of the cylindrical member to which they are adjacent.

13. A paint applying device comprising, a hollow paint-pervious cylindrical member open at both ends, a shaft extending axially through said cylindrical member in fixed relation thereto

and having a portion projecting beyond only one end thereof, an imperforate closure member on said shaft adjacent said one end of said cylindrical member and having a peripheral portion removably engaging said one end to centralize said shaft in said one end of said cylindrical member and close the end thereof, a perforated member on said shaft adjacent the other end of said cylindrical member and having a peripheral portion removably engaging said other end to centralize said shaft therein, an imperforate closure removably mounted on said shaft outwardly of said perforated member and arranged to cooperate therewith to seal said other end of said cylindrical member, and a handle journaled on said projecting portion of said shaft, said perforated member and said imperforate closure being positioned substantially within the said other end of said cylinder.

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