

May 1, 1956

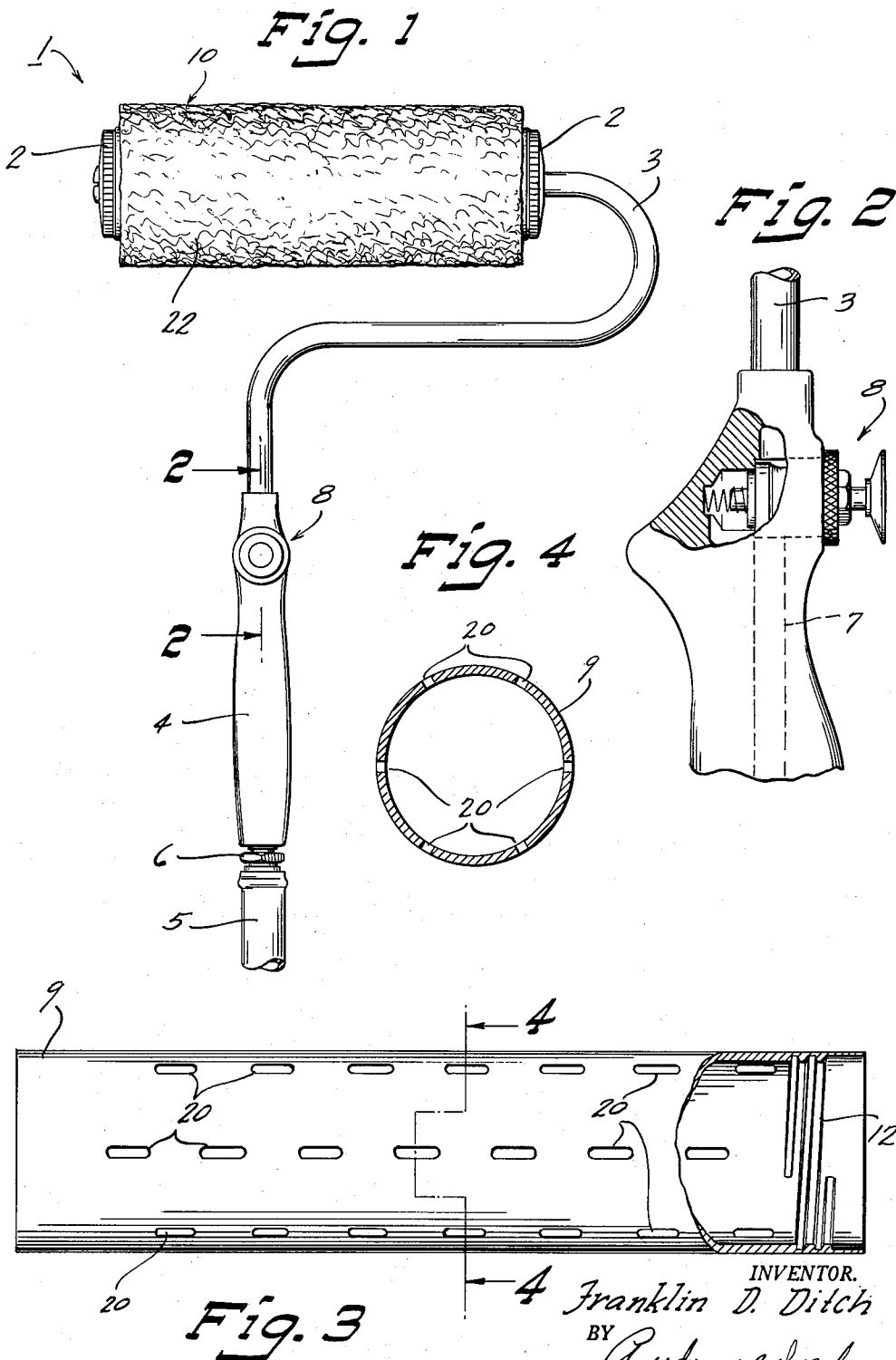
F. D. DITCH

2,743,469

ROLLER-TYPE PAINT APPLICATORS

Filed March 10, 1950

2 Sheets-Sheet 1



May 1, 1956

F. D. DITCH

2,743,469

ROLLER-TYPE PAINT APPLICATORS

Filed March 10, 1950

2 Sheets-Sheet 2

Fig. 5

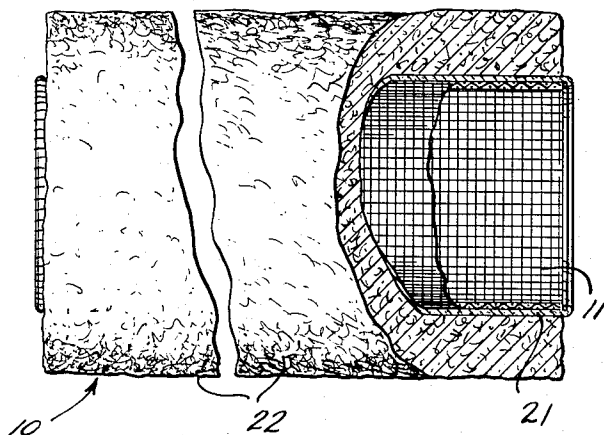


Fig. 6

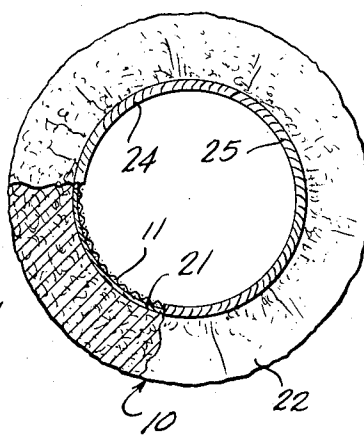


Fig. 7

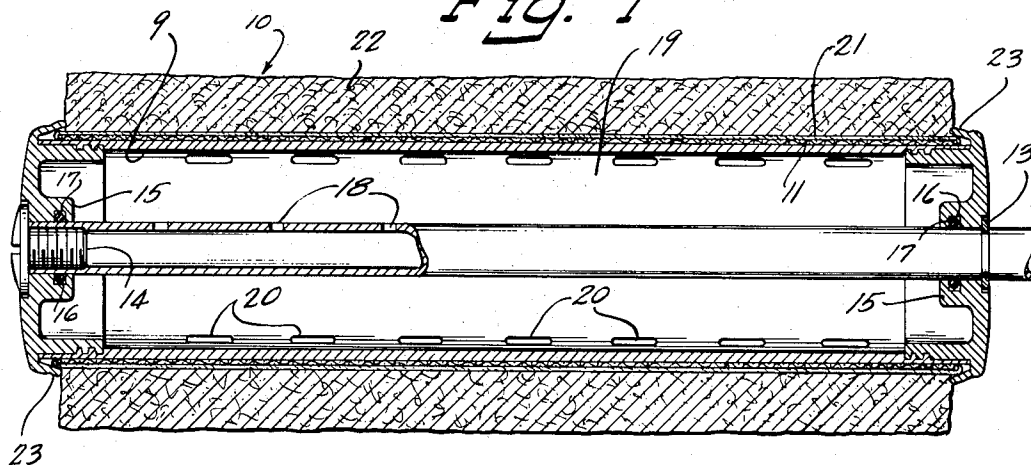
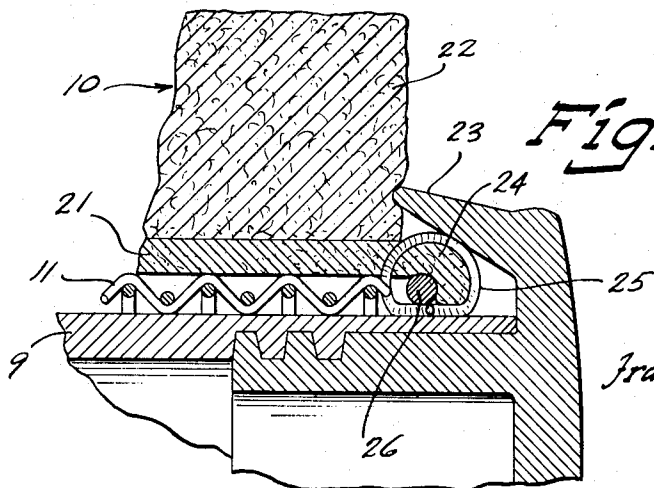


Fig. 8



INVENTOR.
Franklin D. Ditch
BY Andrew & Seale
Attorneys

1

2,743,469

ROLLER-TYPE PAINT APPLICATORS

Franklin D. Ditch, Sheboygan, Wis., assignor to Thomas Industries Inc., a corporation of Delaware

Application March 10, 1950, Serial No. 148,867

9 Claims. (Cl. 15—128)

This invention relates to roller-type paint applicators adapted for feed of the paint from the inside of the roller.

The invention is particularly adapted to be employed in either the controlled pressure feed type of applicator, as will be shown and described, or in the reservoir type of applicator which is provided with means for periodic filling of the roller with the paint to be applied.

A principal object of the invention is to prevent leakage of the paint from the ends of the applicator roller.

A further object is to provide a seal at the ends of the roller which will prevent loss of paint from between the applicator sleeve and its supporting cylinder.

Another object of the invention is to facilitate the assembly and disassembly of the roller and sleeve for cleaning and replacement of the latter.

Another object is to ensure the fluid-tight reassembly of the applicator after cleaning or upon replacement of the applicator sleeve.

Another object is to provide end seals which will not interfere with the free rotation of the roller on its spindle.

Another object is to support the applicator sleeve against collapse so as to be easily mounted on the cylinder with one hand.

These and other objects and advantages of the invention will be more fully set forth in the following description of a preferred embodiment of the invention as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a plan view of reduced size showing the complete applicator;

Fig. 2 is an enlarged side elevational view of part of the handle of the applicator with a portion thereof broken away and sectioned on line 2—2 of Figure 1 to show the valve assembly;

Fig. 3 is a plan view of the roller cylinder with portions thereof at one end broken away and sectioned;

Fig. 4 is a transverse section taken on line 4—4 of Fig. 3 of the roller cylinder only;

Fig. 5 is a plan view of the lambswool sleeve with portions thereof at one end broken away and sectioned;

Fig. 6 is an end elevation of the lambswool sleeve with portions thereof broken away and sectioned to show the construction thereof;

Fig. 7 is a sectional view of the assembled roller; and

Fig. 8 is an enlarged sectional view of the end construction of the applicator sleeve.

The paint applicator, shown in the drawings, comprises the roller 1 having end-closure cap members 2 journally supporting the roller on one end of the hollow tube 3, and the handle 4 rigidly secured to the opposite end of tube 3 for manipulation of the applicator. The tube 3 is curved between roller 1 and handle 4 to dispose the latter at right angles to the roller and generally in a central transverse plane of the roller.

The hose 5 is connected to means, not shown, supplying paint under pressure to the hose fitting 6 at the lower end of handle 4 for delivery of the paint to roller

2

1, as will be described, and application to the surface to be painted.

The conduit 7 in handle 4 is controlled by the valve 8 and connects hose 5 and tube 3. Valve 8 is disposed for manual operations to open and close conduit 7 and provide for control of the delivery of paint to roller 1.

Roller 1 includes the rigid cylinder 9 carried by cap members 2 on tube 3 and the removable lambswool or fabric paint applicator sleeve 10 mounted for reinforcement on the cylindrical screen 11.

Cylinder 9 is provided with the internal threads 12 at each end thereof which receives the threaded body of corresponding cap members 2.

Cylinder 9 and members 2 as a unit are removably secured on tube 3 against the lock ring 13 by the screw 14 fitting internally the threaded end of the tube to close the latter. Tube 3 extends through the hub 15 of each member 2 along the axis of roller 1 and journally supports the same for free rotation of the roller.

The O-rings 16 carried by hub 15 of each member 2 in the annular grooves 17, are disposed to engage tube 3 and provide effective seals between members 2 and the tube to prevent leakage or loss of paint therebetween. Each O-ring 16 is of a size to provide the sealing pressure-engagement between tube 3 and the walls of groove 17 necessary without interfering appreciably with the free rotation of roller 1 on the tube.

Tube 3 is provided with a number of holes 18 which open into the roller chamber 19 formed by members 2 and cylinder 9 and through which the paint is delivered from tube 3 into the chamber. The perforations 20 in cylinder 9 allow the paint to pass by gravity or pressure to the inside of sleeve 10.

According to the invention, screen 11 supporting sleeve 10 serves also to space the porous hide or woven fabric backing 21 of sleeve 10 from the cylinder 9 to allow for distribution of the paint over the inside of backing 21 before the paint passes into the outer wool pile 22 of sleeve 10.

According further to the invention, leakage and loss of paint from between cylinder 9 and the backing 21 of sleeve 10 is effectively prevented by the engagement of the annular flange 23 formed integrally with each member 2 and overlying circumferentially the ends of cylinder 9 and the sleeve to provide an annular recess or groove for receiving and confining the corresponding ends of the sleeve.

The bead 24 at each end of sleeve 10 is formed by the stitching 25 over the preformed wire loops 26 disposed adjacent each end of screen 11. The beads formed by stitching 25 are dimensioned to retain screen 11 within sleeve 10 while being of a sufficiently large internal diameter to permit sleeve 10 to slide over cylinder 9 in the assembly of the roller 1.

In assembling roller 1, sleeve 10 including screen 11 is first placed and centered on cylinder 9. End members 2 are then inserted at each end of cylinder 9 and turned to engage threads 12 drawing the respective members 2 into the cylinder approximately until the ends of cylinder 9 contact members 2 at the base of the respective flanges 23. Flanges 23 are angularly inwardly disposed to engage the beads 24 of sleeve 10 and compress the same tightly against cylinder 9 closing ends of sleeve 10 to any possible escape or leakage of paint either past member 2 from the inside of cylinder 9 or from beneath sleeve 10.

Screen 11 supports sleeve 10 against radial collapse with sufficient rigidity to facilitate sliding the sleeve onto cylinder 9 and against endwise collapse in tightening members 2. Upon assembly of members 2 the complete roller 1 is mounted on tube 3 and secured by screw 14, as described.

The seal provided by the invention does not require shaping the sleeve 10 over the ends of the cylinder, and consequently, the removal of the wet sleeve after use by end-wise withdrawal from cylinder 9 following removal of the outer end cap 2 is not difficult.

The engagement and seal of the ends of the applicator sleeve between the end cap member and cylinder is positively assured by the threaded engagement of the cap member and cylinder.

The O-ring seals are readily removable and can easily be replaced. As constructed of a chemical-resistant synthetic rubber, the O-ring seals will be lubricated by the paint or can be lubricated by external means to allow free rolling and will be serviceable for a considerable period.

The size and spacing of perforations of cylinder 9 may be larger than usual, permitting cylinder 9 to be easily cleaned. The screen 11 spacing the sleeve and the cylinder may be of metal, stiff fabric or any suitable material which is expendable with the sleeve and which can be cleaned therewith.

Various embodiments of the invention may be employed within the scope of the following claims.

I claim:

1. In a roller-type paint applicator including a perforate open-ended cylinder adapted to receive a quantity of paint for application to a surface, a fabric sleeve having a deep outer fibrous pile and mounted on said cylinder to receive the paint from said cylinder, a metallic screen in the form of a cylinder secured within said sleeve and adapted to support the same against collapse to thereby facilitate assembly upon said cylinder and to support the same upon assembly on said cylinder to allow for distribution of the paint over the surface of the sleeve, said fabric sleeve having reinforced substantially rigid annular end portions offset inwardly in longitudinal alignment with said screen to position the screen within the sleeve, and rotatably mounted means closing and supporting said cylinder and sealing the annular end portions of said sleeve thereagainst.

2. A paint roller comprising a perforate open ended cylinder, a cylindrical sleeve adapted to receive paint from said cylinder for application to a surface upon contact and mounted on said cylinder, end members closing said cylinder and having annular flanges angularly surrounding the ends of the cylinder and circumferentially pressing the ends of said sleeve radially inwardly into sealing engagement with said cylinder, and a semi-rigid cylindrical metallic screen lining the inside of said sleeve to support the latter against collapse upon assembly.

3. In a roller-type paint applicator including a perforate open ended cylinder adapted to receive a quantity of paint for application to a surface, a porous sleeve having a deep outer fibrous pile and mounted on said cylinder to receive the paint from said cylinder, a screen in the form of a cylinder secured within said sleeve and adapted to support the same against collapse to thereby facilitate assembly upon said cylinder and to support the same upon assembly on said cylinder to allow for distribution of the paint to the inner surface of the sleeve, and said sleeve including a porous backing member disposed adjacent said screen and provided with enlarged annular end portions offset in longitudinal alignment with said screen, and rotatable means closing and supporting said cylinder and sealing the end portions of said backing member thereagainst.

4. A paint roller comprising a perforate open ended cylinder, a cylindrical sleeve mounted on said cylinder and adapted to receive paint from said cylinder for ap-

plication to a surface upon contact, end members closing said cylinder and each having an annular groove in the inner face thereof for receiving the corresponding end of the cylinder and of the sleeve and circumferentially pressing the ends of said sleeve radially inwardly into sealing engagement with said cylinder, and a semi-rigid cylindrical screen lining the inside of said sleeve to support the latter against collapse prior to and during assembly, said sleeve being adapted to be removed by end-wise withdrawal from the cylinder upon removal of one of said end members and without other or further adjustment or manipulation.

5. In a roller-type paint applicator, a feed supply tube, an open ended perforate cylinder adapted to receive a quantity of paint from said tube for application, an applicator sleeve having a porous backing and mounted on said cylinder, a cylindrical screen mounted on said cylinder intermediate said cylinder and the backing of said applicator sleeve to space the cylinder and the sleeve and assure the proper distribution of paint thereover and further facilitate the handling of said sleeve when removed from the cylinder, said porous backing having its corresponding ends formed into annular beads of substantial cross-section, said beads serving to retain said screen therebetween, and end cap members closing the ends of said cylinder and rotatably mounted on said tube to support the cylinder for rotation thereon, each cap member having an annular flange surrounding the respective end of the cylinder at an angle to engage said beads and press the same tightly against the cylinder to close the space maintained by the screen between the cylinder and the porous backing.

6. The invention of claim 5, wherein the cap members and cylinder are provided with threaded means for the securement of the cap members within the corresponding ends of the cylinder and their relative rotation for such securement moves the flanges of the members toward each other to press the beads against the cylinder and secure the sleeve and screen therebetween.

7. The invention of claim 5 wherein the applicator sleeve is comprised of a pile fabric having a porous fabric backing.

8. The invention of claim 5 wherein the applicator sleeve is comprised of a lambswool having a porous hide backing.

9. The invention of claim 5 wherein the cylindrical screen is of metal.

References Cited in the file of this patent

UNITED STATES PATENTS

508,595	Barrett	Nov. 4, 1893
2,213,491	Fullilove	Sept. 3, 1940
2,281,773	Kollmann	May 5, 1942
2,325,867	Matsakas	Aug. 3, 1943
2,357,763	Pratt	Sept. 5, 1944
2,427,581	Touchett	Sept. 16, 1947
2,445,418	Breckenridge	July 20, 1948
2,478,318	Raub	Aug. 9, 1949
2,509,954	Barnes et al.	May 30, 1950
2,563,049	Liebelt et al.	Aug. 7, 1951
2,584,724	Mattie	Feb. 5, 1952
2,591,530	Findley et al.	Apr. 1, 1952
2,605,488	Bugg	Aug. 8, 1952
2,606,334	Vaden et al.	Aug. 12, 1952

FOREIGN PATENTS

468,400	Great Britain	July 5, 1937
---------	---------------	--------------