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ROLLER PAINT APPLICATOR

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Fig. 1.

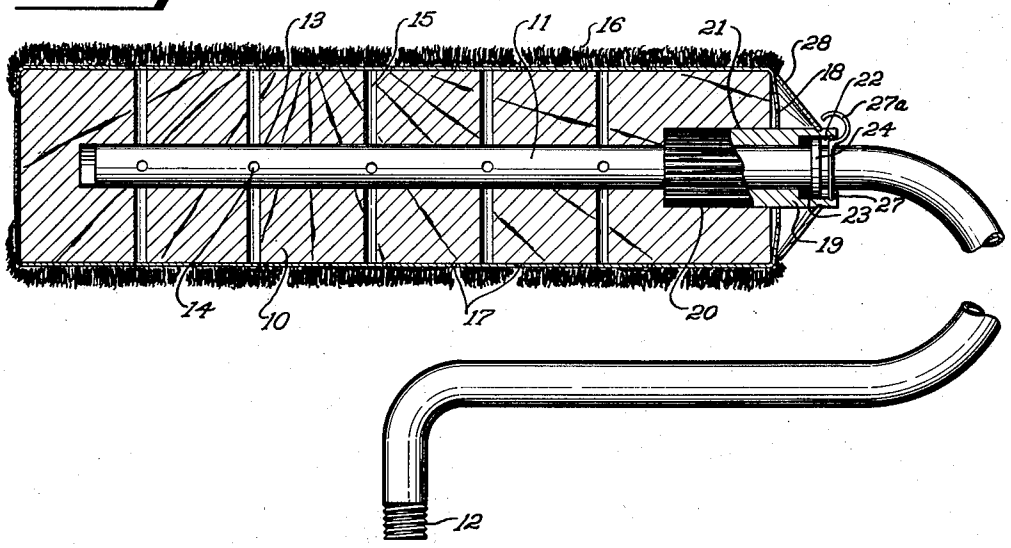


Fig. 2.

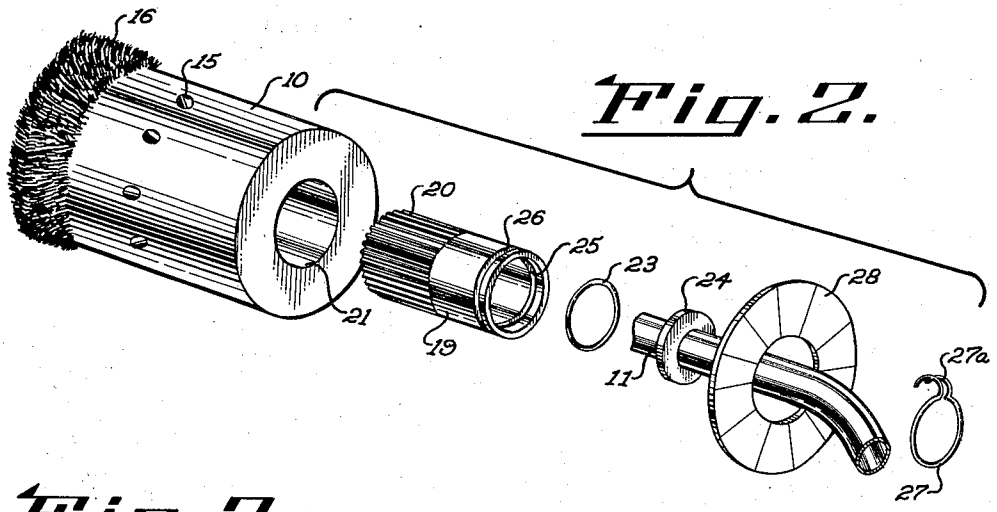
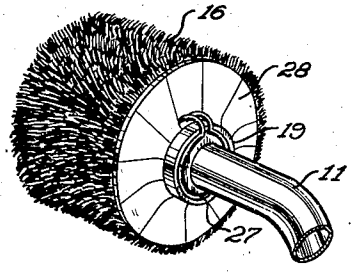


Fig. 3.



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ROLLER PAINT APPLICATOR

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12 Claims. (Cl. 15—128)

This invention relates generally to paint applicator rollers, and particularly to improvements in such applicators of the type in which the paint is fed through a tube connectible to a pressurized paint source, and on the straight terminal of which the roller is mounted for rotation.

The invention may be further characterized as relating to the specific type of applicator in which the feed tube is received within the axial bore of a thick walled roller which is closed at one end and contains within its other end a bearing sleeve which serves in association with the later described parts, the various functions of journalling the roller for rotation on the tube, releasably retaining the bearing and roller assembly thereon, and mounting a retaining annulus which holds in place the paint-permeable cover carried by the roller. As will presently appear, in this type of applicator the roller body contains radial passages registerable with apertures in the feed tube, to pass the paint outwardly for delivery to a working surface through a cover made of sheep wool or similar material. Insofar as the paint source is concerned the invention contemplates connection of the roller and feed tube assembly with any suitable means, such as a pump or pressurized paint-containing vessel, for controllably feeding paint through the tube to the roller.

The invention has for its general object the provision of an improved roller paint applicator reduced in its structure to such simplicity as to render the applicator especially suitable for the individual or home owners use, the simplicity and arrangement of the parts being such that the two can be made available at relatively low cost and used and maintained without difficulty by any individual user.

Structurally, the invention contemplates a simplified roller applicator assembly employing preferably a low cost, simply formed roller journalled on the feed tube by a simple bearing and journal fitting consisting essentially of a sleeve press-fitted into one end of the roller and containing a simple form of locking ring by which the roller is releasably held to the feed tube. As will appear, the bearing sleeve is also adapted for accommodation of a seal ring which prevents paint leakage out through the sleeve, and which also is removably retained by the parts held in place by the locking ring.

The further feature and object of the parts and of the invention has to do with an improved and simplified means for holding in place the roller cover. In accordance with the invention, the gathered end of the cover at the bearing end of the roller is held in place by an annulus normally in the form of a washer, and which by reason of its forced fit over the sleeve and the flexibility of the material of which the annulus is made, is deformable into a frusto-conical condition in which the annulus is caused to exert a sustained thrust against the gathered cover. By forming the lock ring in the manner later described, the ring is adapted to serve the further function of preventing accidental removal of the cover retaining annulus.

All the various features and objects of the invention, as well as the details of an illustrative embodiment, will be understood more fully from the following description of the accompanying drawing, in which:

Fig. 1 is a fragmentary view showing the feed tube and roller assembly in longitudinal section;

Fig. 2 is a fragmentary exploded view showing the distended parts in perspective; and

Fig. 3 is a fragmentary perspective view of the journalled end of the roller.

As illustrated, the applicator comprises a solid thick wall roller **10**, made preferably of wood, containing an axial, closed end bore which receives the straight end of the paint feed tube **11**, the latter having a threaded terminal **12** which may be connected to a pump, pressure vessel or other pressurized paint source. The roller bore wall **13** preferably has only such slight clearance say in the order of ten-thousandths of an inch, about the feed tube **11**, as will accommodate that degree of swelling of the wood that occurs as a result of its absorption of the paint solvent. Thus the tube and roller have close surface contact so that the paint discharged through the spaced apertures **14** in the roller is delivered under pressure through the registering radial roller passages **15** to the outer surface of the roller. The latter carries the usual type of sheep wool or similar cover **16** which may contain perforations **17**, one end of the cover being gathered together at **18** about the bearing end of the roller.

The tube **11** is journalled within a metallic bearing sleeve **19**, the inner end of which is knurled at **20** and has a tight press fit within the roller counterbore **21**. The outer projecting end of the sleeve is counterbored at **22** to receive at the end of the counterbore an appropriate seal, preferably in the form of an O-ring **23**, which is positioned at the inside of and with small clearance from flange **24** on the feed tube. Outwardly beyond the flange, the sleeve has an annular groove **25** for reception of the locking ring, and externally the sleeve is annularly grooved at **26** to receive the latter described cover retaining annulus.

In the assembled condition of the parts, the feed tube flange **24** is received in the bearing sleeve **19** at the inside of the groove **25**, and is held against removal by a split lock ring **27**, see Fig. 2, the ends of which project for accessibility out of the sleeve and preferably are turned about the end thereof toward the roller as shown in Fig. 1.

The gathered end **18** of the cover is held against the roller by a resiliently flexible annulus **28** which initially may have the form of a washer as illustrated in Fig. 2, the internal diameter of which is smaller than the outside diameter of the sleeve **19**. I have successfully used as the annulus material flexible rubber and cork compositions. Upon being forced onto the sleeve **19**, the annulus by reason of its smaller inside diameter is deformed to the frusto-conical shape appearing in Fig. 1, the then outer end of the annulus being seated and confined within groove **26**, and the inner edge of the annulus being pressed against the roller cover to hold it in place. While its reception within groove **26** ordinarily will prevent accidental removal of the retaining annulus, such removal to the point of slipping off onto the tube **11**, it is prevented by the projecting ends **27***a* of the lock ring.

In order to disassemble the parts for cleaning after use of the roller, it is only necessary to release the lock ring **27** by squeezing together its projecting ends, and to slide the roller off the free end of the tube. The O-ring **23** then becomes accessible for inspection, cleaning or replacement, and the annulus **28** may be slipped off the bearing sleeve to release the cover **16** for removal

from the roller. Obviously the parts may be reassembled with equal simplicity.

I claim:

1. A paint applicator comprising a feed handle tube, a wooden thick wall roller having an axial bore wall containing and directly engaging said tube, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a one piece relatively short metal bearing sleeve about the tube and having a tightly pressed fit within a counterbore in one end of the roller, all of said apertures being located inwardly of the roller beyond said sleeve, the bore of said sleeve corresponding in diameter to the roller bore and forming a continuation thereof, a seal between said tube and the bearing sleeve and contained in a counterbore in the sleeve, and means in said last mentioned counterbore for releasably holding the tube against withdrawal from the roller.

2. A paint applicator comprising a feed handle tube, a wooden thick wall roller having an axial bore wall containing and directly engaging said tube, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a one piece relatively short metal bearing sleeve about the tube having a knurled surface engaged by a tightly pressed fit within a counterbore in one end of the roller, all of said apertures being located inwardly of the roller beyond said sleeve, the bore of said sleeve corresponding in diameter to the roller bore and forming a continuation thereof, a seal between said tube and the bearing sleeve and contained in a counterbore in the sleeve, and means in said last mentioned counterbore for releasably holding the tube against withdrawal from the roller.

3. A paint applicator comprising a feed handle tube, a wooden thick wall roller having an axial bore wall containing and directly engaging said tube, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a one piece relatively short metal bearing sleeve about the tube and having a tightly pressed fit within a counterbore in one end of the roller, all of said apertures being located inwardly of the roller beyond said sleeve, the bore of said sleeve corresponding in diameter to the roller bore and forming a continuation thereof, a seal between said tube and the bearing sleeve, and contained in a counterbore in the sleeve, and means in said last mentioned counterbore for releasably holding the tube against withdrawal from the roller, there being only slight clearance between said tube and the roller bore wall sufficient to accommodate normal swelling of the roller under conditions of use.

4. A paint applicator comprising a feed handle tube, a wooden thick wall roller having an axial bore containing said tube, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a metal bearing sleeve about the tube and having a tightly pressed fit within a counterbore in one end of the roller, a seal between said tube and the bearing sleeve and a split resilient lock ring seated within said sleeve and bearing against the outer side of a flange on said tube, portions of said lock ring projecting out of the sleeve for accessibility to withdraw the ring and tube from the roller and sleeve.

5. A paint applicator comprising a feed handle tube, a wooden thick wall roller having an axial bore containing said tube, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a metal bearing sleeve about the tube and having a tightly pressed fit within a counterbore in one end of the roller, a seal ring normally confined within the sleeve about the tube between the end of a counterbore in the sleeve and a flange on the tube, and a split resilient lock ring seated within an annular groove in said sleeve counterbore beyond said seal ring and flange and bearing against the outer side of said flange.

6. A paint applicator comprising a feed handle tube, a wooden thick wall roller having an axial bore containing said tube, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a metal bearing sleeve about the tube and having a tightly pressed fit within a counterbore in one end of the roller, a seal ring normally confined within the sleeve about the tube between the end of a counterbore in the sleeve and a flange on the tube, and a split resilient lock ring seated within an annular groove in said sleeve beyond said seal ring and flange, terminal portions of said lock ring projecting out of the sleeve for accessibility to withdraw the ring and tube from the roller and sleeve.

7. A paint applicator comprising a feed handle tube, a thick wall roller having an axial bore into which said tube extends from beyond one end of the roller, said roller and tube containing apertures through which paint flows from the tube to the surface of the roller, a metal bearing sleeve about the tube and received within a counterbore in said end of the roller and projecting beyond the roller, a paint-permeable cover about the roller and having a free end adapted to be gathered about said end of the roller, an annulus carried by said sleeve and bearing against the gathered end of the cover to hold it in place, a split resilient lock ring seated within an annular groove in said sleeve and releasably bearing against the outer side of a flange on said tube to hold the roller on the tube, terminal portions of said lock ring projecting out of and radially beyond the surface of said sleeve, said ring being removable to free said annulus for removal from the sleeve and to free the tube for removal from the roller.

8. An applicator as defined by claim 7, in which said annulus has the form of a flexible washer having a bore diameter smaller than the external diameter of said sleeve, the annulus being deformable into frusto-conical shape in being forced over the sleeve to bear at the large diameter of the annulus against said cover.

9. An applicator as defined by claim 7, in which said sleeve has a counterbore containing about the tube a seal ring at the inside of said flange.

10. An applicator as defined by claim 7, in which said roller is made of wood and the bearing sleeve has a knurled end press fitted into a counterbore in the roller.

11. An applicator as defined by claim 7, in which the terminals of said locking ring curve about the ends of the bearing sleeve toward said annulus.

12. An applicator as defined by claim 7, in which the roller is made of wood, said tube extending near a closed end of the roller, there being only small clearance between the apertured surface of the tube and the wall of the roller bore containing the tube sufficient to accommodate swelling of the wood.

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