April 28, 1953 C. H. BARNES ET AL 2,636,252

PAINT ROLLER COVER

Filed Oct. 26, 1948

FIG. 1.

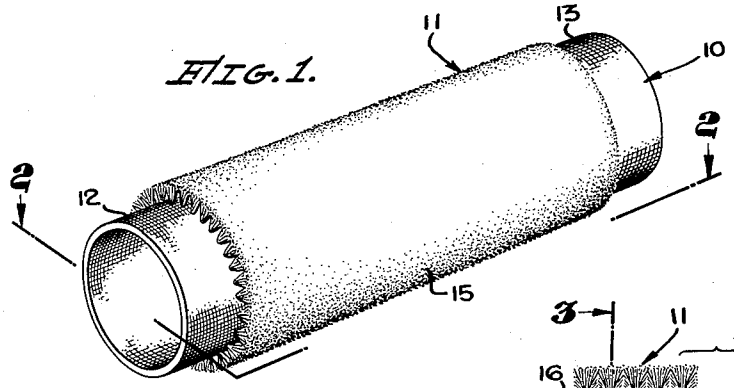
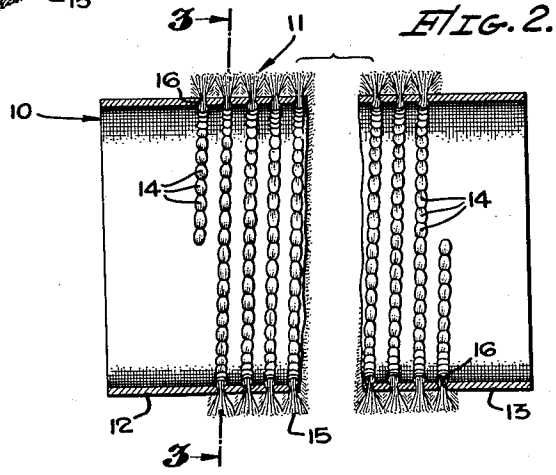


FIG. 2.



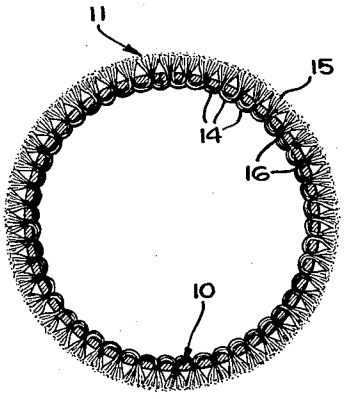


FIG. 3.

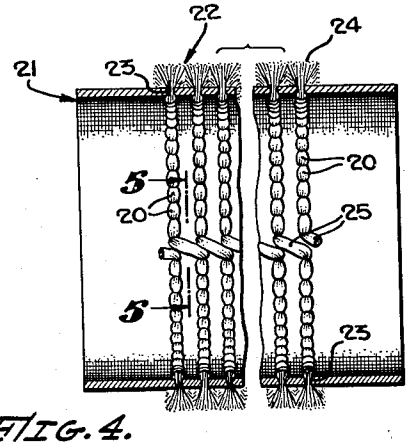


FIG. 4.

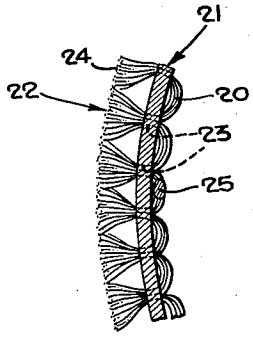


FIG. 5.

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PAINT ROLLER COVER

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Application October 26, 1948, Serial No. 56,627

8 Claims. (Cl. 29—120)

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This invention relates to painting apparatus and is particularly directed to improvements in covers for roller type paint applicators and for paint stipplers.

This invention relates to improvements over the paint roller covers shown in our copending application for "Paint Apparatus," filed March 22, 1948, bearing Serial No. 16,274, and in the copending application of Alfred H. Barnes et al., filed February 11, 1946, bearing Serial No. 646,774, now Patent No. 2,509,954.

Paint roller covers of conventional form commonly are manufactured as a flat fabric or sheepskin which may be perforated or combination of fabrics and then joined along a seam or butt joint to form a cylidrical roller cover. The seam is highly objectionable because it interferes with uniform application of paint or of stipple effect to the work surface. Furthermore, seams are subject to rupture in service. The double thickness of fabric at the seam marks the painted surface when the roller is rolled upon it because of the additional thickness, as well as the variation in porosity through the double thickness as contrasted to the porosity of a single thickness. Accordingly, an important object of the present invention is to provide a cover for a paint roller which comprises a fibrous pile encircling a cylindrical tube, the cover having substantially uniform porosity at all points on its circumference.

A related object is to provide a paint roller cover or the like which comprises a fibrous pile encircling a seamless cylindrical tube.

Another object is to provide an article of this type in which the pile is formed of a plurality of helically spaced loops of fibrous yarn passing through a cylindrical porous tube, each of the loops being cut externally of the tube to form the pile.

Another object is to provide a paint roller cover comprising a seamless fabric tube having a fibrous chenille-like pile formed by a plurality of helically spaced loops of fibrous yarn, each of the loops being cut exteriorly of the tube to form the pile.

Other objects and advantages will appear hereinafter.

In the drawings:

Figure 1 is a perspective view showing a preferred embodiment of our invention.

Figure 2 is a sectional view partly broken away taken substantially on the lines 2—2 as shown in Figure 1.

Figure 3 is a transverse sectional view taken on the line of the helix as shown in Figure 2.

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Figure 4 shows a modified form of our invention.

Figure 5 is a partial sectional view taken substantially on the lines 5—5 as shown in Figure 4.

Referring to the drawings, the base tube 10 may be formed of a porous synthetic material or of a fabric such as, for example, canvas, and it is preferably constructed without any longitudinal or other seam. The lack of seams promotes uniform porosity at all points on its circumference which is essential to uniform flow of paint outwardly from the roller (not shown) through the roller cover.

A pile 11 encircles the tube 10 and forms a uniform mat-like surface which is soft to the touch and of uniform thickness and density. This pile 11 does not extend completely to the ends of the base tube 10, but on the contrary, blank spaces 12 and 13 are left at each end of the base tube, and these spaces are without any pile whatever. These blank ends of the tube are used for anchoring the tube on the paint roller which the cover assembly encloses. As shown in our copending application, Serial No. 16,274, referred to above, the blank ends of the roller cover are turned back within a rim formed at the end of the roller and held in place by means of a rubber or other ring.

A conventional roller cover may be manufactured by forming a chenille pile on a flat strip of canvas by conventional methods and then bringing the two longitudinal edges of the flat strip together to provide a cylinder with the edges overlapping to form a seam. Even though very carefully constructed such seamed roller covers are more costly, structurally weaker, and inferior to seamless ones as constructed in accordance with our invention, because the variation in thickness of the cover at the seam and the variation in porosity at the seam adversely affect the uniformity of action when the covered roller is rolled along a painted surface.

A preferred form of mechanism for manufacturing rollers of the type embodying our invention is shown in our copending application, Serial No. 56,628, filed of even date herewith, now Patent No. 2,600,955. As clearly shown in Figures 2 and 3, the pile generally designated 11 is formed of a plurality of loops 14 of yarn helically disposed about the wall of the base tube 10. The loops 14 are cut exteriorly of the tube 10 and the free ends of the yarn of each loop spread or frayed to form a substantially continuous cylindrical pile surface 15. The loops are not cut on the inside of the tube but extend continuously

between adjacent perforations 16. The yarn forming each loop passes through each perforation 16 together with the yarn from an adjacent loop. The resilient nature of the base tube 10, together with the natural resilience of the yarn forming the loops 14, provides sufficient resistance against disassembly of the loops 14 from the base 10. This resistance against disassembly of the loops may be increased by applying steam into the inside of the tube in order to shrink the yarn and set the fibers more tightly. Furthermore, under service conditions the cylindrical pile surface 15 rolls against a work surface, and there is no substantial force applied which tends to pull the individual loops 14 from their position as clearly shown in Figure 3. The loops 14 are each independently mounted on the base tube 10 in the sense that they are not tied, stitched, or overlapped with respect to the neighboring stitches. The loops as thus independently positioned are admirably suited for carrying paint outwardly through the porous wall of the tube 10 and into position where the frayed ends of the loops forming the pile surface 15 may apply it evenly and uniformly to the work surface.

The form of the invention shown in Figures 2 and 3 shows the individual loops 14 in helical relationship. Thus, the loops are positioned on a continuous helical line on the base tube 10 with the distance between successive perforations 16 around the tube substantially equal to the spacing between adjacent turns of the helix. In this way the mat surface 15 of the pile 11 is of uniform character both longitudinally and substantially circumferentially, i. e. in a direction around the tube. Such an arrangement of the loops after the manner of a continuous helix is readily produced by the apparatus shown in our copending application last referred to. Such apparatus is also capable of producing the form of paint roller cover illustrated in the modification shown in Figures 4 and 5 of the drawings. In this case the individual loops 20 do not follow a helical line but extend annularly around the base tube 21. The ends of the individual loops 20 are cut exteriorly of the tube 21 to provide a cylindrical pile surface 22 and the loops 20 pass through perforations 23 in the same manner as that described in connection with Figures 2 and 3. The pile 24 formed by the outwardly extending frayed ends of the loops is substantially identical in texture and appearance, the principal distinction being that the rows of loops are circularly positioned rather than helically arranged. As shown in Figure 4, cross-over loops 25 join adjacent cylindrical rows of loops 20. While these cross-over loops 25 are shown extending axially of the tube 21, it may be desirable to stagger them around the circumference of the tube to avoid any axial line of nonuniformity which might adversely affect the application of paint to the work surface.

The mat surface provided by the exterior frayed ends of the individual loops in either type of the article as shown is substantially the same to the touch and very similar in visual appearance. In either case the pile may be likened to chenille cloth.

While the circumferential and longitudinal spacing between adjacent ends of loops is shown and described as being substantially of the same dimensions, it may be desirable for producing special painting effects to vary one of these dimensions with respect to the other. Furthermore, a double, triple, etc. helix may be used instead of the single helix as shown in Figure 2.

Having fully described our invention, it is to be understood that we do not wish to be limited to the details herein set forth, but our invention is of the full scope of the appended claims.

We claim:

1. As a new article of manufacture, a paint roller cover which comprises a porous seamless and circumferentially endless tube formed of canvas having a uniform fibrous pile formed by a plurality of uniformly spaced loops of fibrous yarn extending through the wall of the tube, each of the loops being free ended and having their free ends projecting exteriorly of the tube to form the pile.

2. As a new article of manufacture, a paint roller cover which comprises a porous continuous fabric tube formed of canvas having a uniform fibrous pile formed by a plurality of uniformly spaced and helically positioned loops of fibrous yarn, each of the loops extending through the wall of the tube and being free ended with the free ends projecting exteriorly of the tube to form the pile.

3. As a new article of manufacture, a paint roller cover which comprises a continuous canvas tube having a uniform pile formed by a plurality of helically arranged loops of wool yarn, each of the loops extending through the wall of the tube and being free ended with the free ends projecting exteriorly of the tube to form the pile, said helically arranged loops commencing inwardly of one end of the tube and terminating inwardly of the other end thereof so as to leave free portions at the two ends of the tube.

4. As a new article of manufacture, a paint roller cover which comprises a seamless and circumferentially endless fabric tube formed of canvas of substantially uniform porosity and having a uniform fibrous pile formed by a plurality of loops of fibrous yarn spaced uniformly both in a direction around the tube and longitudinally of the tube, each of the loops extending through the wall of the tube and being free ended with the free ends projecting exteriorly thereof so that the free ends form the pile.

5. As a new article of manufacture, a paint roller cover which comprises a seamless and circumferentially endless fabric tube formed of canvas having a uniform fibrous pile formed by a plurality of uniformly spaced and helically positioned loops of fibrous yarn, each of the loops extending through the wall of the tube and being free ended with the free ends projecting exteriorly thereof so that the free ends form the pile.

6. A paint roller cover comprising a seamless, substantially non-stretchable and circumferentially endless fabric tube of substantially uniform porosity and having a uniform fibrous pile formed by a plurality of parallel series of substantially circumferentially arranged loops of fibrous yarn, each of the loops extending through the wall of the tube and being free ended with the free ends extending exteriorly thereof, whereby the porosity of the article is substantially uniform at all points to facilitate uniform application of paint.

7. A paint roller cover comprising a seamless and circumferentially endless canvas tube having a continuous fibrous pile formed by a plurality of circularly arranged circumferentially and

longitudinally spaced loops of wool yarn, each of the loops being free ended with the free ends projecting from the outer face of the tube so that the free ends form the pile, said pile-forming loops being disposed intermediate the ends of the tube so as to leave a free portion of the tube at each end thereof.

8. A paint roller cover comprising a seamless and circumferentially endless canvas tube having a continuous fibrous pile formed by a plurality of uniformly spaced helically positioned loops of wool yarn, said loops being disposed in a plurality of closely arranged turns which progress longitudinally of the tube, each of the loops extending through the wall of the tube and being free ended with the free ends projecting exteriorly of the tube so that the free ends form a chenille pile.

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