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METHOD OF MAKING A PAINT ROLLER COVER

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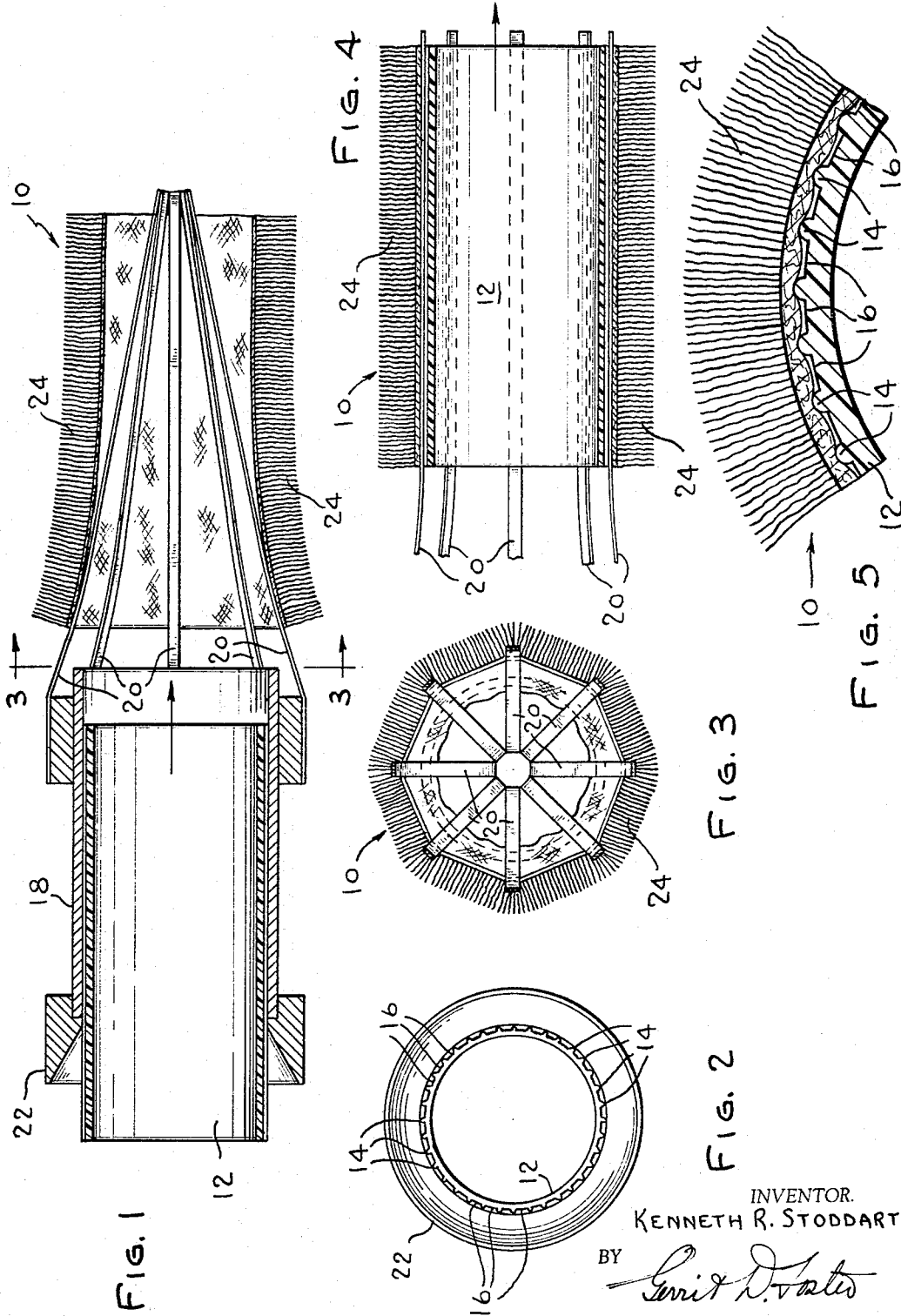


FIG. 1

FIG. 4

FIG. 3

FIG. 2

FIG. 5

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METHOD OF MAKING A PAINT ROLLER COVER
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This invention pertains to improved paint roller covers and to the method of their manufacture.

The paint roller cover, hereafter referred to as the "cover," is comprised of a cylindrical hollow core which has a lambskin or fabric pad bonded to its outside surface. The cover is adapted to be secured to a paint roller in the well known manner.

The known methods used in the manufacture of the covers is to helically wind a strip of fabric onto the core which has been previously coated with adhesive, or to slide a tubular sleeve onto the coated core. In both methods it has been very difficult to maintain uniformly a good bond between the cover and the sleeve, because in the application of the sleeve to the adhesive covered core, the motion of the sleeve material has tended to wipe off the adhesive coating in some areas and cause the accumulation of excessive adhesive in others. The nonuniformity of bonding is more prevalent when the tubular sleeve is slid over the cover; however, the helical winding method also causes a sufficient number of defectively bonded rollers to present a serious problem.

The principal object of this invention is to provide a method of manufacturing paint roller covers which will provide a consistently uniform and proper amount of adhesive between the core and the sleeve and thus will cause a better bond between the two parts.

This object is attained by a method of applying the pad to the adhesive covered core in which the sliding motion of the pad during such application will not tend to wipe off or otherwise disturb the adhesive. This is attained by corrugating the outside surface of the core to provide a plurality of adhesive reservoirs. When the pad is applied to the core, it only engages the ridges of the surface leaving the adhesive in the grooves undisturbed. Within a short time after the assembly, the pad shrinks in diameter and substantially fills in the areas between the ridges. Due to this shrinkage, the bonded surface area is substantially increased over comparable diameter cores used heretofore.

Thus, another object of this invention is to increase the surface area of bond between the core and the pad.

Other objects and advantages of this invention will be pointed out in or be apparent from the specification and claim as will obvious modifications of the single embodiment shown in the drawings, in which:

FIG. 1 represents a cross sectional view of the core and pad prior to their assembly and of the apparatus used in their assembly;

FIG. 2 represents an end view thereof from the left in FIG. 1;

FIG. 3 represents a view taken on line 3-3 of FIG. 1.

FIG. 4 represents a cross sectional view of the core and pad after the pad has been applied to the core and a fragmentary view of the apparatus used in their assembly; and

FIG. 5 represents an enlarged fragmentary cross sectional view of the cover.

Referring to the drawings in detail, FIGS. 1-4 illustrate the apparatus employed in the method for assembly and bonding of tubular lambskin or fabric pad 10 onto a corrugated core 12 pursuant to my invention.

The outside surface of the core is provided with a plurality of longitudinally extending ridges 14 defining

grooves 16 therebetween. The core has to be of a material sufficiently strong to retain its shape during painting as well as to withstand the frequent application to and removal from the paint roller and the cleaning 5 connected therewith. Fibre board and extruded plastic have been generally used as core material. The latter material is particularly adaptable for use with this invention, since the longitudinally corrugated core can be easily extruded in the well known manner.

The novel method in essence consists of applying adhesive to the corrugated outside surface of the core and then advancing the core through a cylinder 18 which engages the ridges 14 to provide a slidable fit between the adhesive coated core and the inside surface of the cylinder. 15 As the core is advanced through the cylinder the excess adhesive is wiped off leaving the grooves 16 filled. The excess adhesive may be collected and reused.

The previously prepared tubular lambskin or fabric pad 10 is pulled over resilient rods 20, which are arranged to form a generally cone shaped open form which has approximately the same diameter at its base as the core. As the coated and wiped core emerges from the cylinder 18, it springs the resilient rods 20 apart thereby facilitating entry of the core into the pad with a minimum amount of stretching. 25

After the entire length of the core has been covered by the pad, as shown in FIG. 4, both are stripped off the rods 20 by moving them simultaneously in the direction as indicated by the arrow. The rods are of a width greater than the width of the grooves 16 so that during the advancement of the core into the cone and during the stripping, the rods only engage the ridges 14 and do not disturb or wipe off the adhesive contained in the grooves 16. 30

The adhesive may be applied to the outside of the core prior to its travel through the cylinder 18 either by a roll coater, by spraying, by external immersion, or, as preferred in the illustrated embodiment, by passing the core through a coating ring 22 located at the entrance 40 into the cylinder 18.

Within a short period of time after the core and pad are stripped off the rods 20, the pad shrinks in diameter causing its inside surface to deform partly filling the grooves and increasing the total contact area between the core and pad by virtue of contacting a portion of the sides of the ridges 14. This shrinkage also helps to squeeze a portion of the adhesive contained in the grooves between the tops of ridges 14 and the pad thereby providing a satisfactory and uniform bond between the core and pad. 45

It is of note that the above described method not only provides an easy and inexpensive method of attaining consistently uniform adhesive coverage and bond between the core and pad, but also increases the total contact area between the core and the pad and thereby greatly increases the strength of the bond therebetween. 55

It might appear that the heretofore mentioned deformation of the inside surface of the pad might deform the pad sufficiently to result in non-uniform application of paint or to otherwise hamper its application; however, it has been found that the outside surface does not deform materially, if at all, and that the cushioning provided by the nap 24 of the pad completely eliminates any effect of the grooves and ridges upon the paint application. 60

Although this invention has been described and illustrated in reference to a paint roller and the method of making the same, it should be understood that the term "paint roller" is intended to include similar devices which employ a rigid core and a soft absorbent pad bonded thereto intended for application of a liquid substance onto a surface. 70

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Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

I claim:

1. A method of making a paint roller cover comprising the steps of; coating the grooved outside surface of a core with adhesive, passing the core through a cylinder which engages the core and removes excess adhesive while leaving the adhesive in the grooved portions substantially undisturbed, engaging the inside surface of a tubular pad by a plurality of rods which extend longitudinally in respect to said tubular pad and are arranged at one end of said pad in substantially circular relationship, advancing said core after it has passed through said cylinder into said one end thereby positioning said rods between said core and pad, simultaneously stripping said core and pad off said rods after said core has been fully inserted in said pad, and permitting the adhesive to dry thereby bonding said pad to said grooved outside surface.

2. A method according to claim 1 wherein said grooved outside surface comprises a plurality of longitudinally extending ridges defining grooves therebetween, and wherein said rods are wider than said grooves thus engaging only said ridges while said core is advanced into said pad and while said pad and core are simultaneously

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stripped off said rods, thereby leaving the adhesive in said grooves substantially undisturbed during said two steps.

3. A method according to claim 2 wherein said rods are resilient and are secured at one end thereof in spaced relationship to one end of said cylinder, the other end of said rods converging to facilitate ready mounting of said pad on said rods, said core engaging said rods as it leaves said cylinder and is advanced into said pad and spreading said converging rods apart.

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