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PLASTIC ROLLER BODY

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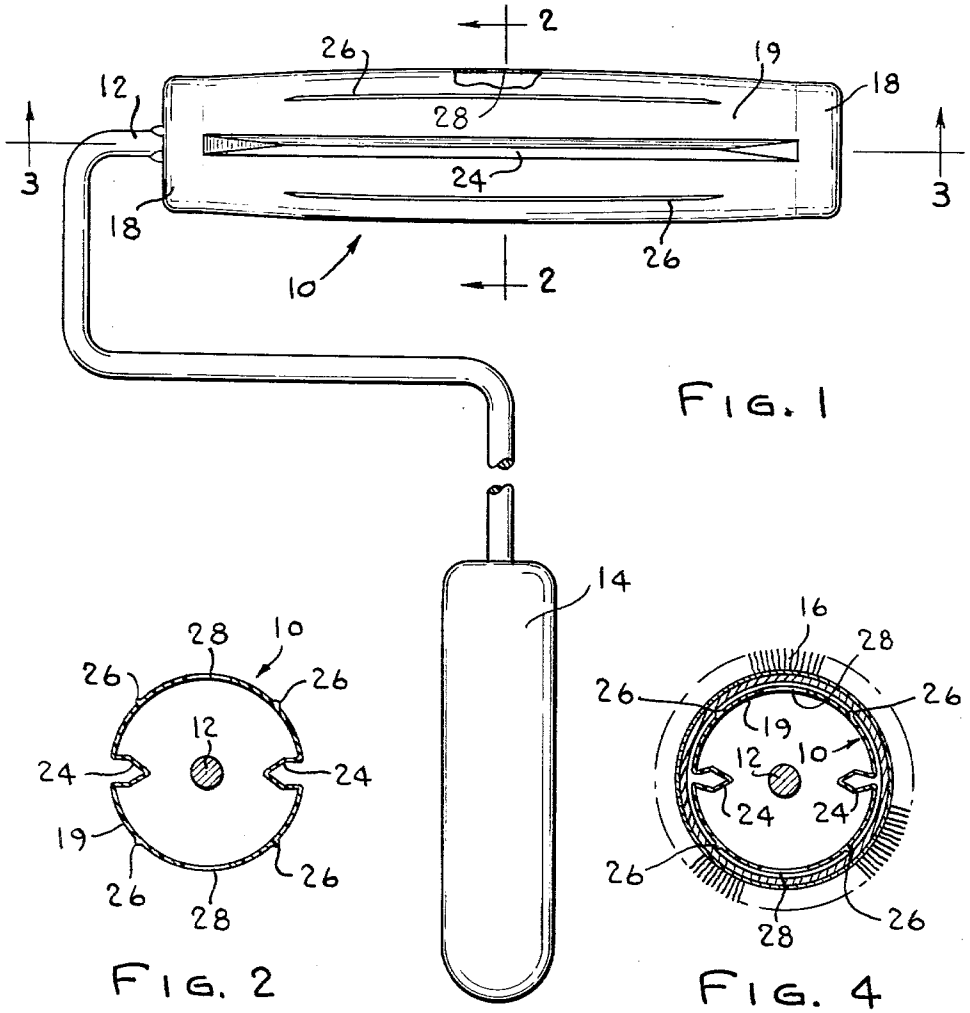


FIG. 1

FIG. 2

FIG. 4

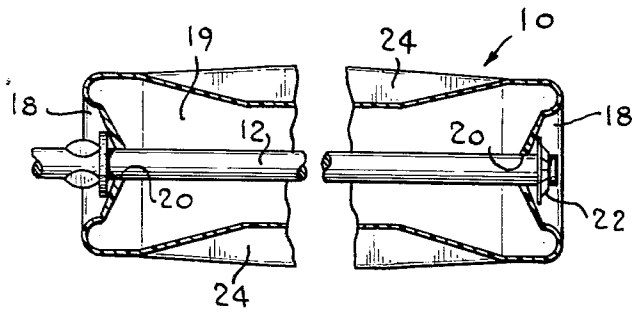


FIG. 3

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PLASTIC ROLLER BODY

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This invention pertains to improvements in rollers of the type generally used in applying paint and the like.

The paint roller has become a well-known and accepted painting tool. It consists of three basic parts: a handle, a roller rotatably mounted on the handle, and an absorbent tubular cover secured to the roller. The cover must be firmly secured to the roller during painting, but it must be secured in such a manner that the cover can be easily and swiftly removed from the roller either to be replaced or to be stored separately. To accomplish this, almost all rollers of the prior art have employed spring means, either incorporated in the roller or in its end caps, to bias the roller side walls outwardly and in frictional engagement with the inside of the cover.

Generally, the success of any paint roller depends upon its ability to properly secure and support the cover, and, of course, upon its cost of manufacture. The latter in turn depends upon the design of the roller.

The principal object of this invention is to provide a roller that will firmly secure the cover, yet will permit its easy removal; and that will lend itself to easy and inexpensive manufacturing methods.

This object is attained by a one-piece plastic roller having end caps and the roller side wall of the same material and integral with each other, and by having the necessary biasing provided by means dependent upon the inherent elasticity of the plastic. Broadly, the biasing means consists of a pleated outwardly tapered tubular portion of the roller which is adapted to be compressed by the cover to a substantially uniform circular shape and in which the pleats contract or deform to create an outward bias which presses the tubular portion in frictional engagement with the inside of the cover. Since the several parts of the roller are of the same material and integral with each other, the entire roller may be manufactured in one operation by blow molding. The cost savings of this type of manufacture become apparent if it is appreciated that rollers of the prior art required one or several subassemblies of either the spring means, end caps, biasing means, or a combination of these before they are ready to be mounted on a roller handle.

The novel features which are considered characteristic of this invention are set forth with particularity in the appended claims. Additional objects and the particular advantages thereof will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawing, in which:

FIG. 1 is a view in side elevation of a roller embodying the present invention, part being broken away and shown in section for clarity of illustration;

FIG. 2 is a sectional view taken on the line 2—2 of FIG. 1;

FIG. 3 is a fragmentary sectional view taken on the line 3—3 of FIG. 1; and

FIG. 4 is a sectional view of the roller as shown in FIG. 2 when it is biased into frictional engagement with the inside surface of a cover.

The essence of this invention resides in the roller 10, which is adapted to be mounted on the axle 12 of a supporting handle 14, and which is designed to removably secure a suitable cover 16.

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The roller is made of resilient plastic material and has two end caps 18—18 of the same material and integral with the tubular side wall 19 of the roller. The end caps taper inwardly towards the center of the roller and have a central aperture 20 which is adapted to receive the axle 12 and rotatably support the roller thereon. The tapered end cap design permits the roller to be secured to the axle 12 by means of a nut 22 or the like, without extending the axle or nut beyond the outer end of the roller. The plastic to metal contact between the axle and the end caps forms a satisfactory bearing which in particular provides very quiet operation and reduces to an unappreciable amount the presence of black streaks in the applied paint which occur with rollers having metal-to-metal bearing contact. It is further of note that in this type of design the bearing means, which in many paint rollers known heretofore have been separate from the end caps and rollers, are also integral with the end caps and roller side wall.

The roller 10 has a closed barrel-type shape having a diameter at its ends slightly smaller than the inside diameter of the cover 16 and a diameter somewhat larger than such inside diameter midway along its longitudinal axis. It also has two accordion type pleats 24—24 running lengthwise on opposite sides of the roller. When the cover 16 is slipped on the roller, the central part of the roller and the accordion pleats are compressed to provide a substantially uniform and round frictional contact between the roller and the inside of the cover.

It is of note that the pleats 24 not only provide the necessary biasing to the roller but also serve as reinforcement members to provide substantial stiffness to the plastic roller in the longitudinal dimension. The roller is also provided with small ribs 26 extending longitudinally, at which points the force exerted by the compressed roller is concentrated to improve the frictional contact between the roller and cover.

The amount of frictional force provided depends, of course, upon the resiliency of the plastic, the amount of taper of the roller, and the size and shape of the pleats. The selection of the particular plastic and the corresponding taper and pleats can be many fold, but it is believed that such design considerations are obvious to one skilled in this art when made in view of this disclosure. However, it should be noted that the pleats as well as the end caps are of substantially equal thickness as the roller side wall, since this feature permits the manufacture of the roller as a unit by the blow molding process and thus at considerably lower manufacturing cost than known heretofore.

The one-piece design also has the additional advantage of having no seams between mating parts, as between end caps and the roller side wall of prior art rollers, into which paint penetrates and from which it is the most cumbersome to remove.

The roller is provided with two solvent drain holes 28, 28 which normally are sealed by the cover 16, but which are provided for the purpose of quickly draining any solvent which might seep in through the bearings if the roller is submerged for a prolonged time in solvent.

Although only one embodiment of the invention is shown and described herein, it will be understood that this application is intended to cover such changes or modifications as come within the spirit of this invention or the scope of the following claims.

We claim:

1. A roller for removably mounting a cover thereon and adapted to be operably attached to a suitable handle comprising in combination, a barrel shaped tubular body

of resilient plastic material having a sidewall which is tapered from a body section intermediate the ends of the body towards both of said ends, said sidewall having longitudinally extending pleat means incorporated in said tubular body, said intermediate body section and said pleat means being adapted to be compressed upon applying a cover to said body, and end cap means integral with said sidewall and adapted to rotatably support the roller on the handle.

2. A roller according to claim **1** wherein said pleat means is a plurality of accordion type pleats which are integral with said sidewall and extend axially inwardly into said tubular body.

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