May 24, 1955 G. W. JACOBY 2,708,763

PAINT ROLLER HAVING POROUS FACING THEREOVER

Filed Aug. 16, 1950

FIG. 1

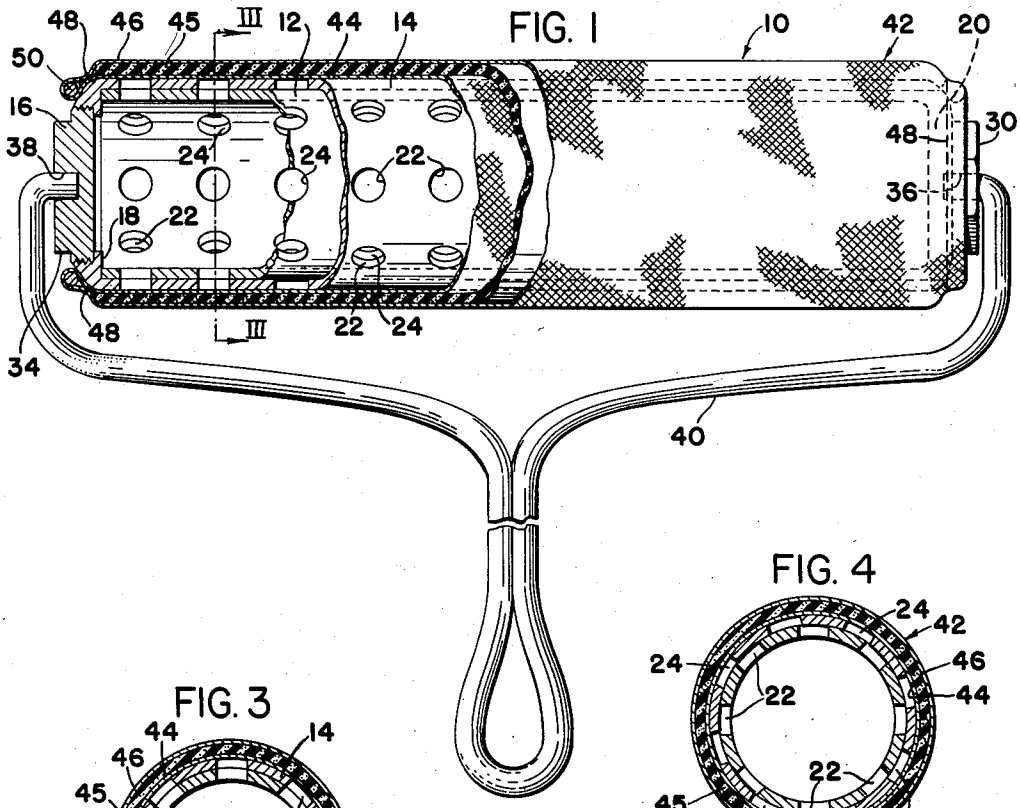


FIG. 4

FIG. 3

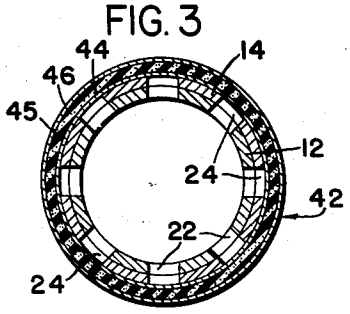


FIG. 2

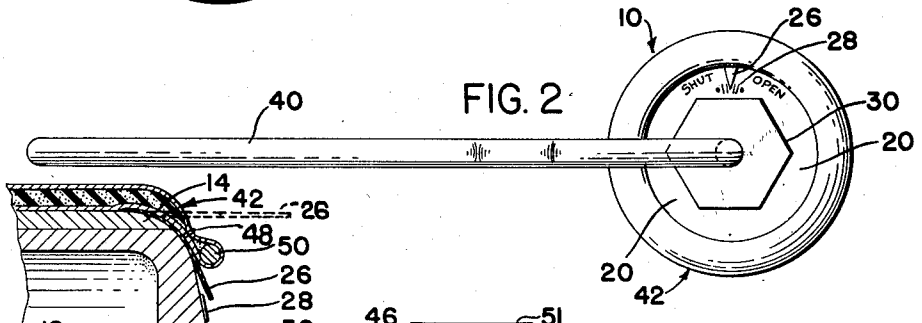


FIG. 5



FIG. 6

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PAINT ROLLER HAVING POROUS FACING THEREOVER

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9 Claims. (Cl. 15—132.5)

My invention relates to improved paint applicators and, more particularly, to fountain type paint rollers.

It has been proposed heretofore to provide roller-type paint applicators, and to make them hollow to receive the paint which seeps out through perforations into a porous covering for the applicator roll. However, known constructions are often complicated and expensive in design, and are open to the objection that they are difficult to fill with paint or to clean after a painting operation. Again, the porous covering associated with the applicator roll is apt to pass the paint either too freely or not freely enough. Attempts to provide adjustable size perforations in the base roller beneath the porous covering have resulted in structures which are difficult to adjust or which are objectionably complicated.

It is the general object of my invention to avoid and overcome the foregoing and other difficulties of and objections to known devices by providing a durable, efficient and inexpensive fountain type roller for use in manually applying paint and the like.

It is a further object of my invention to provide a roller-type paint applicator of the fountain type with an easily adjustable means of controlling the flow rate of the paint being applied, and with a built-in indicating means for pre-setting the rate of flow of the paint onto the applicating surface.

Another object of my invention is to provide a paint roller with a readily installed and removed porous facing providing a smoother and more even distribution of the paint as it is applied.

A further object of my invention is the provision of a paint roller of the fountain type which can be readily filled, or quickly disassembled for cleaning purposes.

The aforesaid objects of my invention, and other objects which will become apparent as the description proceeds, are achieved by providing a paint roller consisting of two cup-like cylinders, one slidably engaged within the other. Perforations in the walls of the cup-like cylinders are so arranged as to fall into selective alignment when the two cylinders are rotated relative to each other. An interchangeable porous sleeve is positioned over the outer cylinder to provide a porous facing. The roll is rotatably supported from the ends by snap-in handle means so it can be rolled across the surface being painted. During the rolling operation, paint stored within the hollow cylinders passes through the perforations and is absorbed by the porous sleeve, from which it is squeezed or flows to adhere to the surface over which the roll is passed.

For a better understanding of my invention, reference should be had to the accompanying drawings, wherein:

Fig. 1 is an elevational view, partly in section, of one embodiment of my invention;

Fig. 2 is an end elevation of the paint roller of Fig. 1 showing the perforation-alignment indicating means on one end of the roll whereby the flow rate of the paint is properly adjusted;

Fig. 3 is a transverse section taken on the line III—III of Fig. 1 and illustrating the perforated holes in the outer and inner cylinders in alignment;

Fig. 4 is a transverse sectional view similar to Fig. 3 but showing the inner cylinder rotated relative to the outer cylinder so that only a small portion of the perforated area is in alignment;

Fig. 5 is an enlarged, fragmentary sectional view showing details of the flow-rate indicator and the porous sleeve securing means; and

Fig. 6 is an enlarged, fragmentary sectional view showing an alternative construction of the porous sleeve.

With specific reference to the form of the invention illustrated in the drawings, the numeral **10** indicates generally a cylindrical paint roller formed of a pair of hollow, cup-shaped cylinders **12** and **14**, one sliding snugly inside the other and having their closed ends opposite to provide a hollow interior adapted to be filled with liquid paint (not shown). The bottom or end of the outer cylinder **14** is formed with a removable plug **16** and is provided with an integral shoulder **18** which serves as a stop against which the edge of the inner cylinder **12** abuts in the assembled position, as shown particularly in Fig. 1. The closed bottom or end of the inner cylinder **12** is indicated by the numeral **20**.

In the outer and inner cylinders are a number of perforations **22** and **24** respectively. These perforations are usually in the form of round holes, and are so positioned in the cylinders that when the inner cylinder **12** is bottomed against shoulder **18**, rotation of the inner cylinder **12** with respect to the outer cylinder **14** results in complete alignment of all perforations. By rotating the inner cylinder **12** relative to the outer cylinder **14**, the area of the holes **22** in alignment with the holes **24** can be varied from the condition of full alignment to the condition of no alignment, in which latter position no paint can pass from within the roll **10** to the outer periphery thereof.

To indicate the relative position of the inner cylinder **12** with respect to the outer cylinder **14**, and thereby to indicate the relative alignment of perforations **22** and **24**, a pointer **26** is secured to the cylinder **14** as shown in Fig. 5. This pointer is made of a thin piece of Celluloid or like material so that it can be bent from its normally straight dotted line position (see Fig. 5) around the end **20** of the inner cylinder when the roll cover is in position as hereinafter described. By making the pointer **26** of flexible material, it will not interfere with the removal of the inner cylinder **12** from within the outer cylinder **14**. Embossed or molded on the end **20** of the inner cylinder is a graduated scale **28** on which the pointer **26** indicates the relative alignment of perforations **22** and **24** between the extreme positions of "open" and "shut." Formed integrally with the end **20** of the cylinder **12** is a gripping means, for example, a hexagonally shaped boss **30**, by means of which the inner cylinder can be gripped either with the fingers or with a wrench to twist the inner cylinder to control the alignment of the perforations **22—24**.

As previously noted, the inside of the inner cylinder **12** serves as a reservoir in which the paint is held when the roller is in use. To facilitate filling this reservoir, a cap **16** removably secured as by threading into the shoulder **18** is provided. Some suitable gripping means, such as a hexagonal boss **34**, is formed integrally with the cap **16** by which the cap can be gripped for easy removal.

To rotatably support the roller **10**, a recess **36** is provided in the axial center of the boss **30**. A similar recess **38** is provided on the axial center of the boss **34**. A spring rod **40**, usually of metal, and bent in the form of a U-shaped bracket and handle spans the roller and has its ends releasably and rotatably engaged in the recesses **36** and **38**. The spring handle **40** thus serves the multipurpose of rotatably supporting the paint roller **10**, and at the same time serves as a handle and a spring clip

to hold the two cup-like cylinders 12 and 14 in their assembled operative positions.

Removably associated with the cylinders 12 and 14 is a porous cover or sleeve 42 which is made up in three layers, an inner layer 44 and an outer layer 46 of lightweight open-mesh fabric, and a layer of special neoprene foam rubber 45 sandwiched in between the two layers of fabric. The foam rubber is of the type having substantially all of its cells interconnected so that paint will flow from the inner to the outer surface thereof and the cell structure is made sufficiently fine so that there is a capillary flow of paint into but not so freely through the rubber as to cause leakage of the paint by dripping from the roll in use. To seal the edges of the porous sleeve against paint flow out of the ends thereof and to hold the layers of fabric to the foam rubber, stitching 48 is provided around the periphery of each end of the sleeve, which closes off the pores of the rubber. A draw cord 50 of non-stretching or of an elastic material is provided along the edge of each end of the sleeve 42 to draw the sleeve in tightly around the ends of the cylinder and secure the sleeve in position.

Even though it is believed the operation of the apparatus will be apparent from the foregoing description, a brief review thereof will now be made for purposes of summary and simplification. In order to fill the roller 10 with paint, the spring handle 40 is first sprung out of the recesses 36 and 38. Then the cap 16 is removed and the fountain roller is filled with paint or the like. The cap 16 is then replaced and the two cup-like cylinders are held securely in operative position by snapping the handle 40 again into place. The inner cylinder 12 is then rotated relative to the outer cylinder 14 until the desired degree of alignment between the perforations in the inner and outer cylinders is indicated by pointer 26 and scale 28, providing the desired rate of flow of paint from within the roller into the porous sleeve 42. It will be understood that for the handling of thin paints and freely flowing stains or the like, the perforations 22—24 are positioned towards their closed positions, and that in the application of thicker paints, the perforations 22—24 are positioned more fully in aligned or open relation. The roll is easily disassembled after use for the purpose of cleaning out any remaining paint by unsnapping and removing the handle, withdrawing the inner cylinder from the outer cylinder, and sliding the porous sleeve 42 off the outer cylinder. Because the sleeve 42 is covered on its inner periphery with the fabric layer 44, the sleeve can readily be slid on or off of the outer cylinder 14 to thereby facilitate assembly or disassembly operations.

The foam rubber layer 45 is normally molded in cylindrical shape. It has been found, particularly if a thin layer of rubber is used, that imperfections in the cellular structure of the foam rubber sometimes exist which result in an increased flow or leakage of paint in the area of the imperfection. To give added protection against such a contingency, the alternative construction illustrated in Fig. 6 is used, which includes an additional layer 50 of neoprene foam rubber overlying the open-mesh fabric layer 46. The effect of any imperfection on the foam rubber layer 45 is adequately controlled by the additional foam rubber layer 51. It is highly improbable that imperfections, if they exist at all, would align themselves in the two layers. When the additional layer 51 of foam rubber is employed, each of the layers 45 and 51 of foam rubber is usually made thinner, as for example, about ⅛ inch thick, than if a single layer of foam rubber is used. When only a single layer of foam rubber is employed, it is normally made between about 3/16 and about 5/16 inch thick.

Preferably the inner and outer cylinders 12 and 14 are formed of light, tough, paint-resistant plastic by a molding operation, although it will be recognized that these cylinders could be made of metal by a deep drawing operation.

While in accord with the patent statutes I have illustrated and described one best known embodiment of my invention in detail, it is to be particularly understood that I am not to be limited thereto or thereby, and that the scope of my invention is defined in the appended claims.

I claim:

1. An applicator for applying paint or the like comprising a hollow perforated outer cylinder, a hollow perforated inner cylinder with a closed outer end, the inner cylinder being adapted to slidably engage the inner surface of said outer cylinder, the cylinders forming a roll, the perforations of said inner cylinder being so constructed and arranged that they can be brought into selective alignment with the perforations of said outer cylinder by relative rotation between the cylinders, means including a calibrated dial on said inner cylinder and an indicator on said outer cylinder for indicating the relative rotary position of the cylinders, a removable cap closing the end of said outer cylinder opposite to the closed end of said inner cylinder, a handle in the form of a spring bracket, one end of which engages the closed end of the inner cylinder at its axial center and the other end engaging the outer cylinder on the axial center of said cap, a porous facing for said outer cylinder including a layer of neoprene foam rubber between two layers of lightweight, open-mesh fabric, stitching around the periphery of said facing at either end of the roll securing said layers of fabric to said foam rubber and sealing the edges of said porous facing, and means securing the ends of said facing over the ends of said roll to hold said facing in place.

2. An applicator for applying paint or the like comprising a hollow perforated outer cylinder, a hollow perforated inner cylinder with a closed outer end, the inner cylinder being adapted to slidably engage the inner surface of said outer cylinder, the cylinders forming a roll, the perforations of said inner cylinder being so constructed and arranged that they can be brought into selective alignment with the perforations of said outer cylinder by relative rotation between the cylinders, means at one end of the cylinders including a calibrated dial and an indicator for indicating the relative rotary position of the cylinders, a removable cap closing the end of said outer cylinder opposite to the closed end of said inner cylinder, a handle in the form of a spring bracket, one end of which engages the closed end of the inner cylinder at its axial center and the other end engaging the outer cylinder on the axial center of said cap, a porous facing for said outer cylinder including a layer of neoprene foam rubber between two layers of lightweight, open-mesh fabric, stitching around the periphery of said facing at either end of the roll securing said layers of fabric to said foam rubber and sealing the edges of said porous facing, and means securing the ends of said facing over the ends of said roll to hold said facing in place, the portions of said facing extending over the ends of said roll lying axially beyond the stitched edge portions of said facing.

3. An applicator for applying paint or the like comprising a hollow perforated outer cylinder, a hollow perforated inner cylinder with a closed outer end, the inner cylinder being adapted to slidably engage the inner surface of said outer cylinder, the cylinders forming a roll, the perforations of said inner cylinder being so constructed and arranged that they can be brought into selective alignment with the perforations of said outer cylinder by relative rotation between the cylinders, means including a calibrated dial on said closed outer end and an indicator on said outer cylinder and extending to said dial for indicating the relative rotary position of the cylinders, means closing the end of said outer cylinder opposite to the closed end of said inner cylinder, a handle in the form of a spring bracket, one end of which engages the closed end of the inner cylinder at its axial center and the other end engaging the means closing

the end of the outer cylinder on its axial center, a porous facing for said outer cylinder including a layer of neoprene foam rubber between two layers of lightweight, open-mesh fabric, stitching around the periphery of said facing at either end of the roll securing said layers of fabric to said foam rubber and sealing the edges of said porous facing, and means securing the ends of said facing over the ends of said roll to hold said facing in place.

4. An applicator for applying paint or the like comprising a hollow perforated outer cylinder, a hollow perforated inner cylinder with a closed outer end, the inner cylinder being adapted to slidably engage the inner surface of said outer cylinder, the cylinders forming a roll, the perforations of said inner cylinder being so constructed and arranged that they can be brought into selective alignment with the perforations of said outer cylinder by relative rotation between the cylinders, means at said closed outer end including a calibrated dial and an indicator for indicating the relative rotary position of the cylinders, means closing the end of said outer cylinder opposite to the closed end of said inner cylinder, a handle in the form of a spring bracket, one end of which engages the closed end of the inner cylinder at its axial center and the other end engaging the means closing the end of the outer cylinder on its axial center, and a porous facing for said outer cylinder including a plurality of layers of foam rubber having two layers of lightweight, open-mesh fabric associated therewith.

5. A rotatable applicator for paint or the like of the fountain type including a hollow cylindrical roller having closed ends adapted to receive and store the paint, said roller comprising thin-walled molded plastic inner and outer cup-shaped members having cylindrical walls, the inner member slidably engaged within said outer member, perforations in the cylindrical walls of said cup-shaped members, the perforations in said outer member being so positioned and arranged relative to perforations in said inner member that they can be moved into or out of various degrees of alignment with each other by rotating said outer member relative to said inner member, means for indicating the relative angular position of said members, a porous sleeve removably surrounding the cylindrical roller and engaging an end of the roller and the indicating means to position the indicating means in operative relation to an end of the roller, means on the sleeve to secure it to the roller, and handle means rotatably supporting the roller and retaining said members against axial movement.

6. A rotatable applicator for paint or the like of the fountain type including a hollow cylindrical roller having closed ends adapted to receive and store the paint, said roller comprising thin-walled molded plastic inner and outer cup-shaped members having cylindrical walls, the inner member slidably engaged within said outer member, means positioning said inner and outer members to retain them against relative axial movement, perforations in the cylindrical walls of said cup-shaped members, the perforations in said outer member being so positioned and arranged relative to perforations in said inner member that they can be moved into or out of various degrees of alignment with each other by rotating said outer member relative to said inner member, a porous sleeve removably surrounding the cylindrical roller, means for indicating the relative angular position of said members, comprising a flexible pointer secured to the outer surface of said outer cup-shaped member and extending beyond the open end thereof, a graduated scale on the closed end of said inner cup-shaped member, an end of the porous sleeve being bent in over the closed end of the inner cup-shaped member, the pointer being brought into and held in operative alignment with said graduated scale for indicating the relative angular position of said outer member relative to said inner member by the bending of the porous sleeve over the closed end of the inner cup-shaped member.

7. An applicator for applying paint or the like comprising a hollow perforated outer cylinder, a hollow perforated inner cylinder with a closed outer end, the inner cylinder being adapted to slidably engage the inner surface of said outer cylinder, the cylinders forming a roll, the perforations of said inner cylinder being so constructed and arranged that they can be brought into selective alignment with the perforations of said outer cylinder by relative rotation between the cylinders, a porous facing for said outer cylinder including a layer of foam rubber between two layers of lightweight, open-mesh fabric, stitching around the periphery of said facing at both ends of the roll securing said layers of fabric to said layer of foam rubber and sealing the edges of said porous facing at both ends of the roll, and means securing the ends of said facing over and extending radially inwardly of the ends of said roll to hold said facing in place, the portions of said facing extending over the ends of said roll lying axially beyond the stitched edge portions of said facing.

8. An applicator for applying paint or the like comprising a hollow perforated outer cylinder, a hollow perforated inner cylinder with a closed outer end, the inner cylinder being adapted to slidably engage the inner surface of said outer cylinder, the cylinders forming a roll, the perforations of said inner cylinder being so constructed and arranged that they can be brought into selective alignment with the perforations of said outer cylinder by relative rotation between the cylinders, a porous facing for said outer cylinder comprising two thin layers of foam rubber and a sheet of fabric positioned on the inner surface of each layer of foam rubber, stitching around the periphery of said facing at both ends of the roll securing said layers of fabric to said layers of foam rubber and sealing the edges of said porous facing at both ends of the roll, and means securing the ends of said facing over and extending radially inwardly of the ends of said roll to hold said facing in place and to retain said cylinders in engagement, the portions of said facing extending over the ends of said roll lying axially beyond the stitched edge portions of said facing.

9. An applicator for applying paint or the like comprising a hollow perforated roll, a porous facing for said roll including a layer of foam rubber between two layers of lightweight, open-mesh fabric, means around the periphery of said facing at both ends of the roll securing said layers of fabric to said foam rubber and sealing the edges of said porous facing at both ends of the roll, and means securing the ends of said facing over and extending radially inwardly of the ends of said roll to hold said facing in place on said roll.

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