

[54] FOUNTAIN BRUSH

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[51] Int. Cl.: A46b 11/04

[58] Field of Search: 401/101, 264, 272-274, 401/259, 205

[56] References Cited

UNITED STATES PATENTS

818,666 4/1906 Caddell et al. 401/274

1,137,959	5/1915	Farnam.....	401/274 X
3,087,463	4/1963	Kahn et al.	401/274 X
3,144,676	8/1964	La Mura	401/101
3,159,863	12/1964	La Mura	401/101

Primary Examiner—Lawrence Charles
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[57] ABSTRACT

A brush for painting small objects having a reservoir of lacquer in the handle. The brush is permanently held in the handle and emerges when the cover is removed and the handle turned upside down. The handle contains a ball valve and a brush support which regulate the flow of lacquer to the brush and prevent dripping.

4 Claims, 5 Drawing Figures

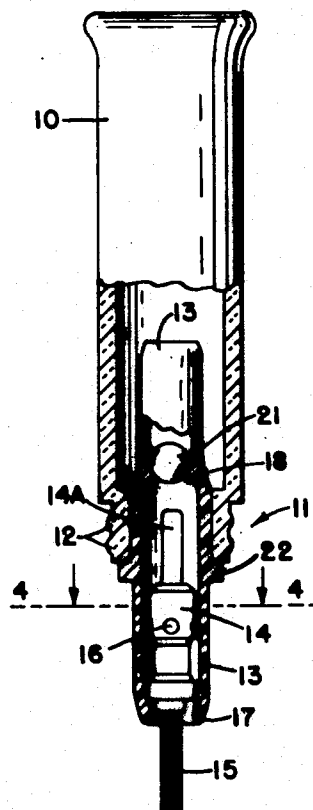


FIG. 1

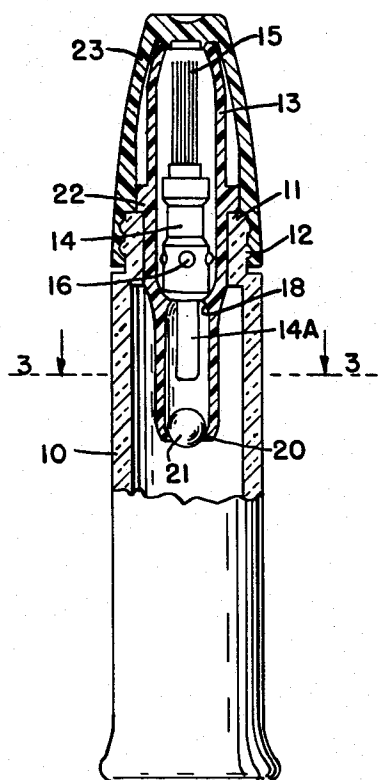


FIG. 2

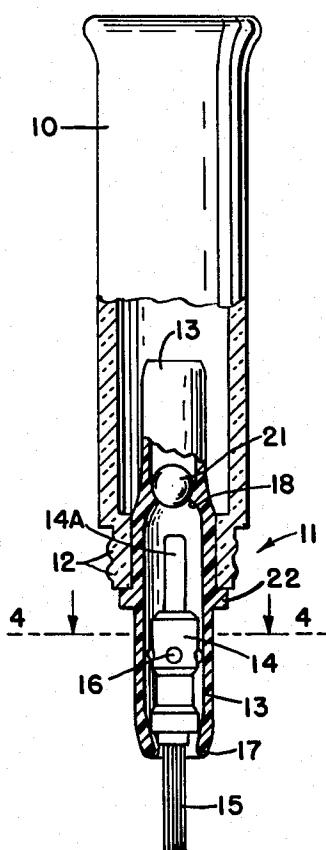


FIG. 3

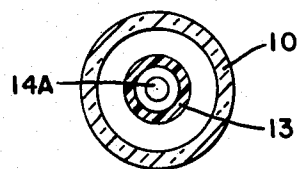


FIG. 4

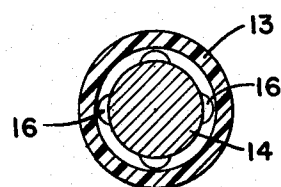
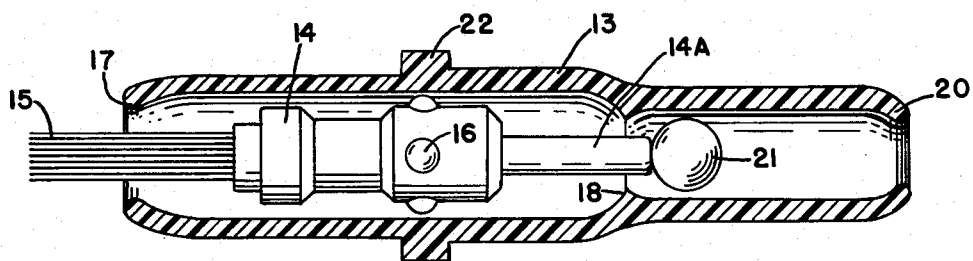


FIG. 5



FOUNTAIN BRUSH

CROSS REFERENCE TO RELATED PATENTS

Similar fountain brushes have been described and claimed in U.S. Pat. Nos. 3,144,676, issued Aug. 18, 1964, and 3,159,863, issued Dec. 8, 1964.

BACKGROUND OF THE INVENTION

Prior fountain brushes have been somewhat deficient in their control of the lacquer or paint supplied to the brush. In some cases too much lacquer is released to the brush and dripping results. The present invention rectifies this defect by positioning a ball valve in close proximity to the end of the brush support so that a limited supply is available to the brush. If this supply is used up by prolonged brushing, the operator then depresses the brush, opens the ball valve and permits the lacquer to flow from the main reservoir into the brush support chamber.

One of the features of the invention is the pumping action provided by the cylindrical brush support in the brush housing. A small depression of the brush pumps lacquer from the housing to the brush.

Another feature of the invention is the larger pumping action provided by the ball valve which sends a larger amount of lacquer into the brush support housing when the brush is depressed a larger distance to open the ball valve.

SUMMARY

The fountain brush comprises a cylindrical container which acts as a reservoir for the storage of a liquid such as lacquer, paint, or ink. A piston chamber is secured to the upper end of the container and houses a movable brush support having a brush which can be moved exterior of the container when the container is inverted. A first annular constriction at the upper end of the chamber retains the brush support within the chamber. A ball valve is mounted in the chamber intermediate its two ends for limiting the movement of the brush support and includes a second annular constriction and a spherical ball, movable within the lower part of the chamber. A third constriction in the chamber retains the ball in the chamber and prevents the ball from moving into the lower portion of the cylindrical container.

Additional details of the invention will be disclosed in the following description, taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 is a side view of the fountain brush, partly in section, showing the container in its upright position, with the brush withdrawn and a cylindrical cap closing the brush opening.

FIG. 2 is a side view of the fountain brush similar to FIG. 1 but with the cap removed, the container inverted, and the brush extended for spreading the liquid.

FIG. 3 is a cross sectional view of the device shown in FIG. 1 and is taken along line 3—3 of that figure.

FIG. 4 is a cross sectional view, to a larger scale, of the device shown in FIG. 2 and is taken along line 4—4 of that figure.

FIG. 5 is a cross sectional view of the piston chamber, to a larger scale, and showing the brush retracted by a distance sufficient to open the ball valve.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the figures, a cylindrical container 10, made of glass or plastic, acts as a reservoir for a liquid to be brushed onto small objects. The liquid may be lacquer for painting finger nails, paint for touching up artistic objects, or ink for written messages. The top of the container 10 is formed with a neck 11 having helical threads 12 on its outer surface. A plastic piston chamber 13 is positioned in the neck and contains a movable brush support 14. The piston chamber 13 is made of a deformable plastic such as polyethylene so that the brush support 14 can be forced into its hollow portion when the device is assembled. The brush support holds a brush 15 at one end and is formed with a rod-like extension 14A at its other end. The intermediate portion of the brush support 14 has a diameter which is appreciably less than the inside diameter of the piston chamber 13 so that the liquid in the chamber can flow past it. A plurality of small projections 16 are formed on the outer surface of the support 14 to keep the support in alignment.

The piston chamber 13 is formed with a first annular constriction 17 at the upper end of the chamber for retaining the brush support 14 in the chamber when the container is inverted. A second constriction 18 forms part of the ball valve and also retains the brush support 14 in the position shown in FIG. 1 when the device rests in its upright position. A third constriction 20 is formed in the chamber to retain a metal ball 21 in the position shown in FIG. 1. An annular ridge 22 is formed on the outside of the piston chamber 13 for limiting against the top of the container neck 11 when the components are assembled.

A cap 23, shown only in FIG. 1, is placed over the exposed end of the piston chamber when the device is not in use. The cap 23 prevents evaporation from the reservoir and keeps the brush 15 from drying out. The cap is formed with internal threads which mesh with threads 12 on the container neck 11.

When the device is to be operated, the cap 23 is unscrewed from container 10 and the fountain brush is inverted. The brush support 14 moves to the open end of the piston chamber 13 and the brush 15 protrudes, making it available for a brushing action. When the liquid held by the brush is used up, an additional supply is obtained by pressing the end of the brush on a substrate and the lower portion of the brush support is moved away from the first constriction, thereby permitting liquid from the piston chamber to moisten the brush. When the liquid in the piston chamber is exhausted, the brush is depressed an additional amount, causing the extension 14A to move against the ball 21 and open the ball valve, thereby permitting liquid from the main reservoir to move into the piston chamber.

From the above description of the operation, it is obvious that the fountain brush can be held with one hand for an entire painting operation. There is no need for repeated dipping the brush into the container. The ball valve gives the operator control of the liquid supply and eliminates dripping. After use, the container is turned right side up, the brush moves into the piston chamber and the cap 23 can be screwed into place, sealing the contents. After the first use there will always be some liquid in the piston container, held by the ball in the position shown in FIG. 1. For this reason the device can

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generally be used as soon as the cap is removed and the brush extended.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A fountain brush comprising: a cylindrical container closed at its lower end and defining an internal reservoir for the storage of liquids, a piston chamber secured to the upper end of the container and housing a movable brush support therein, said piston chamber formed with an opening at its upper end which permits the passage of a brush connected to the upper end of said brush support, a first annular constriction in said opening which retains the support within the chamber and forms a first valve which is opened as soon as the brush is depressed, a second valve intermediate the ends of said chamber for limiting the flow of liquid from the reservoir to the piston chamber when the cylindrical container is inverted, said second valve includ-

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ing a second annular constriction of the piston chamber and a spherical ball independently movable within the chamber, and a cylindrical extension axially mounted on the brush support for dislodging the ball to open the second valve when the container is in the inverted position and the brush is depressed a predetermined distance after opening the first valve.

2. A fountain brush as claimed in claim 1 wherein said piston chamber is formed with a third annular constriction at the lower end of the chamber for retaining the ball within the chamber when the cylindrical container is in its upright position.

3. A fountain brush as claimed in claim 1 wherein the piston chamber is made of deformable material such as polyethylene.

4. A fountain brush as claimed in claim 1 wherein the cylindrical container is formed with a threaded neck for the attachment of a closure cap.

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