Dec. 24, 1957 H. A. HARTZELL 2,817,104

COMBINED LIQUID AND BRUSH HOLDER

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FIG. 1

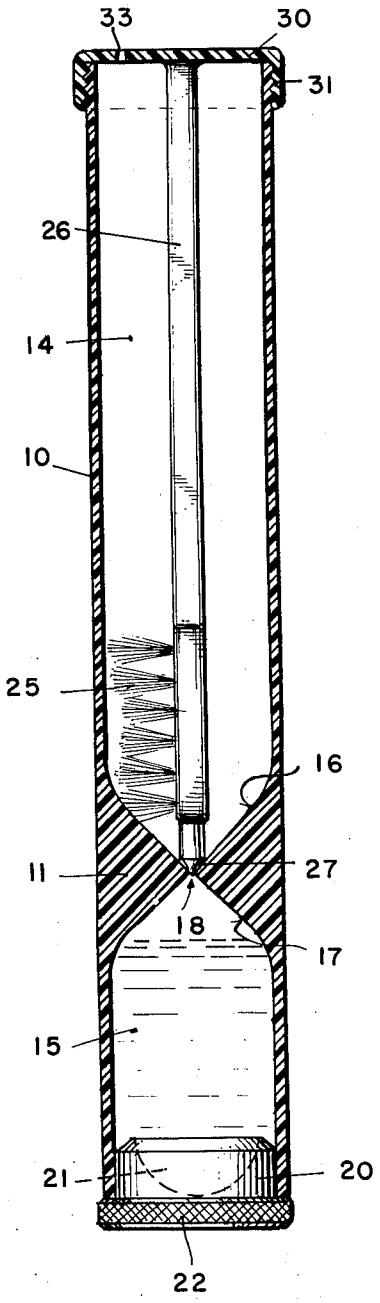
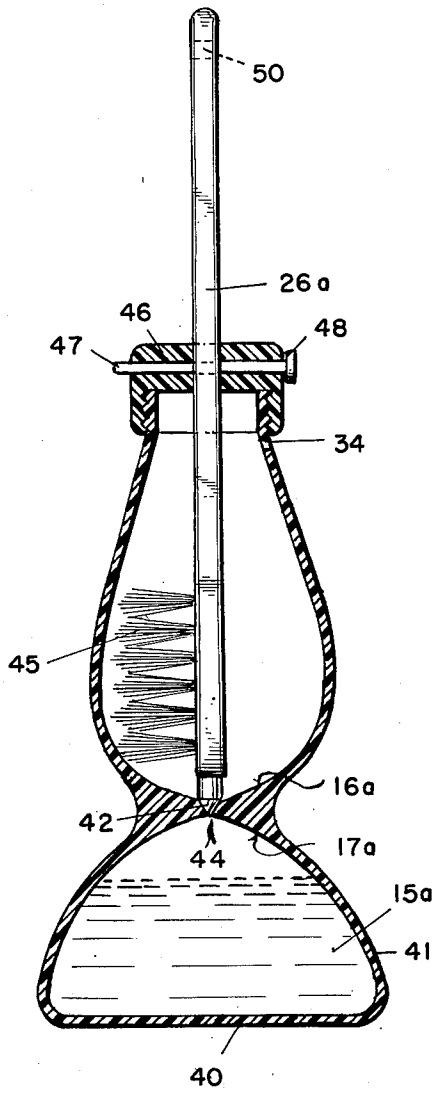


FIG. 2



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COMBINED LIQUID AND BRUSH HOLDER

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7 Claims. (Cl. 15—121.2)

This invention relates to receptacles in which provision is made to hold a quantity of liquid normally sealed from contact with a brush but in which, when the receptacle closure is removed a small quantity of the liquid will flow into the brush chamber to moisten the brush.

The principal object of the invention is to provide a very simple receptacle adaptable to require minimum space and in which the liquid chamber is sealed when the brush and closure are in place but the upper chamber housing the brush is open for escape of the moisture as the brush dries.

A further object of the invention is to provide a minimum size cylindrical receptacle of the type described in which small quantities of tooth cleaning fluid may be conveniently added from time to time.

A further object of the invention is to provide an attractive appearing receptacle in which the toothbrush handle forms a valve for closing the liquid chamber and while firmly attached to the closure in normal position, can be detached while the toothbrush is being used.

In the drawings:

Figure 1 is a central section through a preferred form of my device.

Figure 2 is a similar section through a modification.

In the preferred form of my device the receptacle is a tube **10** of fairly flexible plastic material open at both ends and having a considerably thickened waist or partition **11** dividing the receptacle into an upper chamber **14** and a lower liquid holding chamber **15**. The waist preferably is formed by a curved surface of revolution **16** in the upper chamber and a similar surface **17** in the lower chamber, these surfaces forming centrally a small opening **18**, the surfaces **16** and **17** in cross section forming a right angle at their junction. The bottom of the receptacle may be integral with the side wall as in Figure 2 but I may have the bottom of the receptacle formed by a plastic plug **20** of the type quite common nowadays in medicine bottles with a hollow central portion **21** and a knurled base portion **22**, as in this way I can more conveniently fill the chamber **15** with just enough liquid for a trip and keep the assembly as light in weight as possible.

The upper chamber **14** receives a brush of any kind as, for example, the toothbrush **25** having a handle **26** and a brush head, the bottom of the brush head is made conical as at **27** to form a valve closure which seats firmly at the margin of hole **18** when the upper chamber **14** is closed by screwing the cap or closure **30** on the threads **31** at the upper part of the receptacle. The closure **30** and the stem **26** are preferably integral and a small moisture escape hole **33** is provided either in the cap as shown in Figure 1 or in the side of the receptacle as shown at **34** in Figure 2. The diameter of the valve seat **18** may be quite large but I prefer to have it smaller in diameter than the least dimension of the cross section of the toothbrush handle **26**. A convenient

size is a sixteenth of an inch in diameter for an over-all diameter of an inch and a half.

In the modification shown in Figure 2, the lower liquid chamber **15***a* has a flat bottom **40** integral with the curved side wall **41**. In this modification the angle between the curved surface of revolution **17***a* and **16***a* is acute and therefore I prefer that a conical valve seat **42** be provided matching in angle the cross section apex angle of the end **44** of the toothbrush head.

In Figure 2 the brush is shown as comprising tufts of nylon bristles such as **45**. In order to decrease the over-all length of the receptacle the closure **46** is secured to the handle **26***a* about centrally and while it may be integral with the handle as in Figure 1, it may be secured to the handle by means of a tapered pin **47** having a head **48** for convenient removal of the pin when using the brush. In this modification the toothbrush handle has the usual hole **50** whereby the device may be hung on a hook. In this modification and in the Figure 1 type, when the bottom is integral with the sides, the lower liquid chamber is filled from above, this being readily done as the walls of the receptacle in either modification are quite flexible and soft and the liquid is therefore readily forced into the lower chamber.

In operation, the brush and its handle together with the closure is removed from the receptacle, this act opening communication between the chambers **14** and **15**. Without removing the brush the device is tilted and a small quantity of liquid flows from the chamber **15** to the chamber **14**, well sufficient to moisten the brush the desired amount. As the brush is being used, this liquid flows back into the chamber **15**. When through using the toothbrush, the closure **30** or **46** is fitted to the receptacle either by a friction fit or preferably by threaded engagement and this act seats the valve **27** or **44** on its seat so that the liquid will not escape from the lower chamber **15** even though the device is upside down. Moisture, however, from the brush as it dries readily escapes through the holes **33** or **34**.

What I claim is:

1. The combination with a receptacle having a restricted waist dividing the interior of the receptacle into a liquid chamber and a communicating toothbrush receiving chamber, said waist forming at one side thereof a valve seat to close the liquid chamber, of a toothbrush having a handle at one end and a head at the opposite end, the end of the head distant from the handle being shaped to form a valve closure to engage the valve seat in the waist whereby to open or to close communication between the two chambers, and a receptacle closure movable with said handle member, the distance between the receptacle closure and the valve closure being of a length that the valve is closed when the receptacle closure is in receptacle closing position and the toothbrush is within the receptacle.

2. In combination, an elongated cylindrical receptacle, an annular partition located between the ends, forming a liquid receiving chamber and a communicating chamber, and having a valve seat at the junction of the two chambers, a brush having a handle and a head, the latter having an end forming a closure for said valve seat, and a receptacle closure movable with the handle to close the receptacle with the toothbrush inside as the valve closure moves to close the liquid chamber.

3. The combination of claim 2 in which the annular partition is bounded by a curved surface of revolution in each of the two chambers, meeting in a small hole at the center of the partition and the closure for the valve seat is formed with a surface of revolution having contact with the sides of the hole in the annular partition.

4. The combination of claim 2 in which the receptacle is open at both of its ends and a closure is provided for the liquid chamber for convenient filling of the liquid chamber when the valve is closed.

5. The device of claim 1 in which the receptacle closure is integral with the handle and has a threaded engagement with the receptacle and the receptacle is of flexible plastic and a hole is provided in the brush chamber for the escape of moisture as the brush dries, said valve closure preventing loss of moisture from the liquid chamber as the brush dries.

6. The combination of claim 1 in which the inner and outer surfaces of the receptacle are surfaces of revolution, the waist has a conical valve seat, means are provided for detachably securing the receptacle closure to the toothbrush handle and the bottom of the receptacle is flat and of larger diameter than the maximum diameter of the toothbrush chamber.

7. The combination of claim 1 in which the central opening in the restricted waist is smaller in diameter than the smallest dimension of the cross section of the major portion of the toothbrush handle and is less than one-seventh of the inside diameter of the toothbrush holding chamber.

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