May 11, 1943. F. SALINGER 2,318,635

FOUNTAIN TOOTHBRUSH

Filed Dec. 19, 1940

Fig. 1

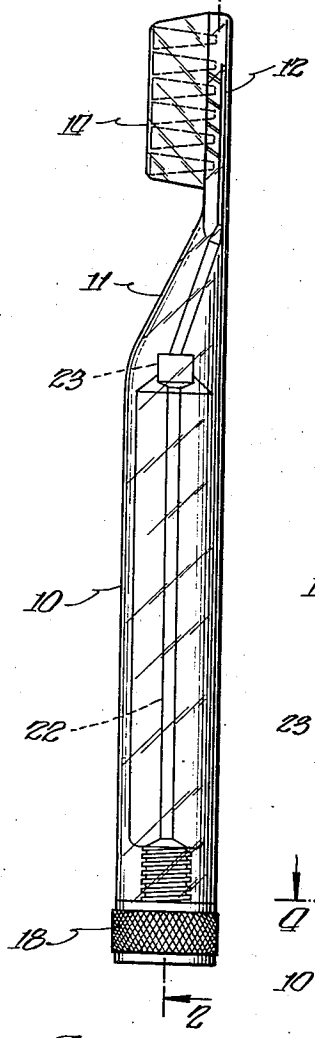


Fig. 2

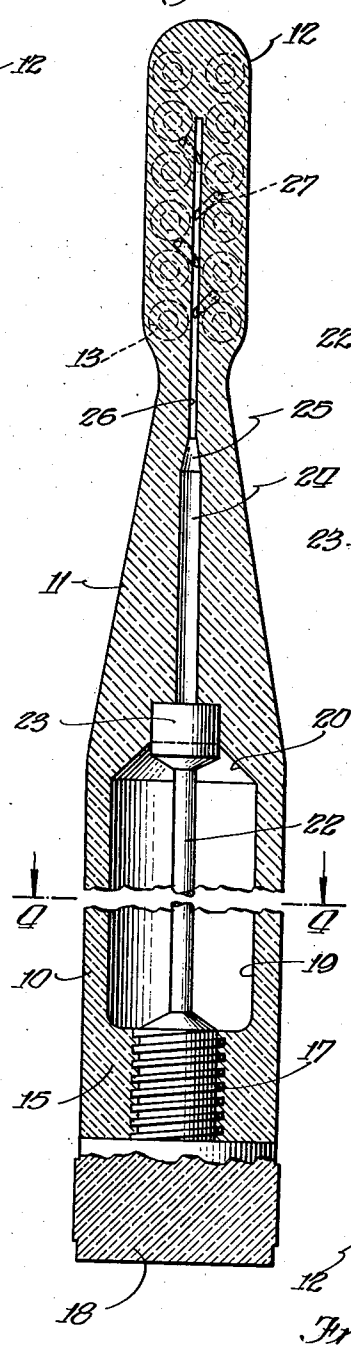


Fig. 3

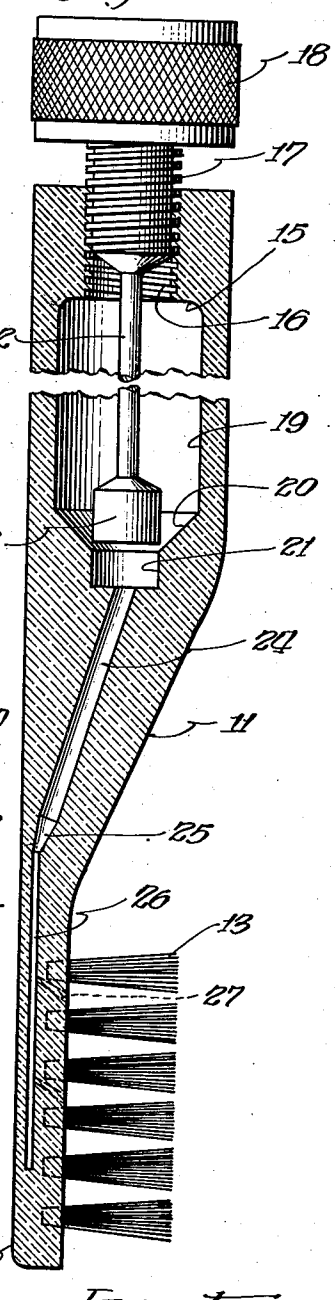
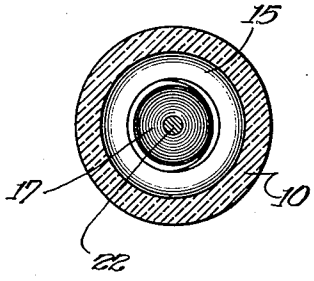


Fig. 4



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FOUNTAIN TOOTHBRUSH

Fred Salinger, Chicago, Ill.

Application December 19, 1940, Serial No. 370,864

1 Claim. (Cl. 15—137)

My invention relates to fountain tooth brushes, and more particularly to the type designed to store and dispense a liquid dentifrice, and one object of my invention is to design a brush of this kind in which the feed of the material is positive.

Another object of the invention is to provide a complete shut-off in order to enable the brush to be carried or stored in any position without risk of leakage.

Another object of the invention is to construct the brush with passages so designed as to prevent leakage of any material beyond the zone of the shut-off.

An additional object of the invention is to design the same with a measuring factor, whereby to feed a desired amount of material and no more.

An important object of the invention is to construct the brush on lines of simplicity, compactness, and good appearance.

With the above objects in view and any others which may suggest themselves from the description to follow, a better understanding of the invention may be had by reference to the accompanying drawing, in which—

Fig. 1 is a side elevation of the improved brush;

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1, partly broken away;

Fig. 3 is a longitudinal cross-section of the brush in inverted position and broken away; and

Fig. 4 is a section on the line 4—4 of Fig. 2.

While liquid dentifrices are considered popular, more or less difficulty is had, or particular care is required to apply them to the tooth brush, so that in this respect they have a disadvantage. However, such a dentifrice dispensed in a fountain tooth brush would seem to have decided merits, and it has therefore been my intention to so design a fountain tooth brush that it may form an efficient means for the storage and use of a liquid dentifrice.

In accordance with the foregoing, 10 denotes the handle of a typical tooth brush so enlarged as to form a barrel or container for a liquid dentifrice. The forward end of the barrel is tapered as indicated at 11 to form the brush head 12, which is of standard design, having the usual set of bristle tufts 13 and being adapted to receive a suitable sanitary cover 14 for the same. As indicated, the tooth brush is made of a transparent material, such as Lucite or a similar plastic, this making for sanitation and the visibility of the barrel contents.

The rear end of the barrel is preferably made thicker on the inside as indicated at 15 and formed with a tapped inlet passage 16 into which a screw-plug 17 is insertible as indicated, the screw-plug having an external knob 18.

The chamber 19 within the barrel 10 tapers at its forward end as indicated at 20 to terminate with a cup 21; and the screw-plug 17 is extended with a long axial stem 22 which terminates at its forward end with a plunger 23, the latter being of a diameter to smoothly fit the cup 21.

The tapered or neck portion 11 of the barrel contains a passage 24 leading from the bottom of the cup 21 to a point in the zone of the brush head 12. There, the passage 24 is constricted as indicated at 25 to continue with a fine longitudinal duct 26 which extends between the bases of the bristle tufts 13. Outlets 27 to the surface of the brush head extend from the duct 26, such outlets opening between the bristle tufts and being flared toward the exterior.

When the tooth brush is to be filled with the dentifrice, it is inverted as in Fig. 3 and the screw-plunger fully withdrawn. The liquid is then poured until the greater portion of the chamber 19 is filled, at which point the plunger is re-inserted and screwed down until it seats in the cup 21, forming a shut-off for the liquid in the chamber. At this time, it may be assumed that the passage 24 contains a filling of the liquid, and that some liquid may be present in the duct 26. However, when the plunger is in the shut-off position, there will be no leakage of the liquid below the same, first because the capillary nature of the duct 26 will prevent it from releasing any liquid, and second because the plunger 23 forms a vacuum head against the flow of liquid from it.

The tooth brush as prepared in the above manner may be carried or stored in any position until its use is required. At such time, it may be placed in the inverted position of Fig. 3 and the plunger retracted to the extent shown, this action allowing the cup 21 to fill with a measured quantity of liquid. The advance of the plunger will feed only this quantity forward into the passage 24 and duct 26, forcing a corresponding amount of liquid out into the bristle zone. As liquid dentifrices are usually of a colloidal or fairly thick consistency, the liquid in the bristle zone will not run off, but will mix with water already in such zone or applied thereto in order to produce the resulting lather.

It is probable that, after the tooth brush has been treated as just described, a residue of the liquid will remain in the passage 24 and duct 26 until the next time the brush is used. As a tooth brush so constituted may be in storage or out of use for a few days or weeks, the question

presents itself whether the dentifrice in the passage **24** and the duct **26** will not dry out or so congeal as to impede or block the feed when the tooth brush is again used. The answer to this question is in the negative, first because the diameter of the passage **24** is so large and the passage is so far removed from the atmosphere that the liquid therein will remain normal or congeal only along the walls of the passage, so that a feed by the plunger **23** will surely force the liquid through the passage **24**. On the other hand, it might be assumed that the liquid in the fine duct **26** could congeal and block the duct. However, two factors against this tendency become apparent. One is that the flaring outlets **27** from the duct received a considerable quantity of water when the brush was washed to dilute what dentifrice liquid remained in the duct **26**; and the second factor is that with only a partial filling of the dentifrice liquid in the duct while some water is present or when it has dried out, little resistance will be encountered in the duct by the liquid positively fed from the passage **24**, so that this liquid will penetrate through the duct and soften or liquefy any residue which may have become congealed in the duct.

It will be evident from the above description that a fountain tooth brush is had which combines all the advantages desired in an article of this character. Thus, with the body of the brush and also the plunger unit all made from the same transparent or translucent plastic, the brush may be maintained in a highly sanitary condition and the quantity of dentifrice determined at all times. The cup **21** fixes the amount of liquid fed in accordance with prescribed laboratory dictates, although a user who wishes a greater amount of dentifrice fed to the brush head may operate the feed twice or more. Further, it is apparent that the combination of the measuring cup, transmission passage and delivery duct is peculiarly constituted to procure a positive feed which is protected against blocking tendencies while forming a simple and effective retainer for residue dentifrice liquid in the neck and head portions of the brush, so that the brush has a positive feed and clog-proof and leak-proof factors. Finally, it is evident that the cavities in the novel brush are direct and continuous, so that the brush may be quickly and thoroughly flushed when the plunger unit is removed to insure its cleanliness at all times.

While I have described the invention along specific lines, various minor changes and refinements may be made without departing from its principle, and I desire to consider all such changes and refinements as coming within the scope and spirit of the appended claim.

I claim:

In a fountain tooth brush having a hollow handle containing a dentifrice reservoir and a delivery duct to the brush head, a tapped and relatively wide inlet passage in the rear end of the handle, a cup-shaped reduction of the front end of the reservoir communicating with said delivery duct, and a control for said reservoir comprising a screw shank threaded in said passage, an external finger knob for said screw shank, a relatively-thin rod integral with and extending forwardly from the screw shank into the reservoir space, and a head carried by the forward end of the rod and adapted to seat in said reduction as a shut-off for said duct when the knob is turned to advance the screw shank, the unscrewing of the screw shank from said rear end enabling said control to be removed as a unit and afford a spacious filler opening into the reservoir by way of said passage.

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