March 28, 1933. R. J. JOSEPH 1,902,859

FOUNTAIN TOOTHBRUSH

Filed March 25, 1931

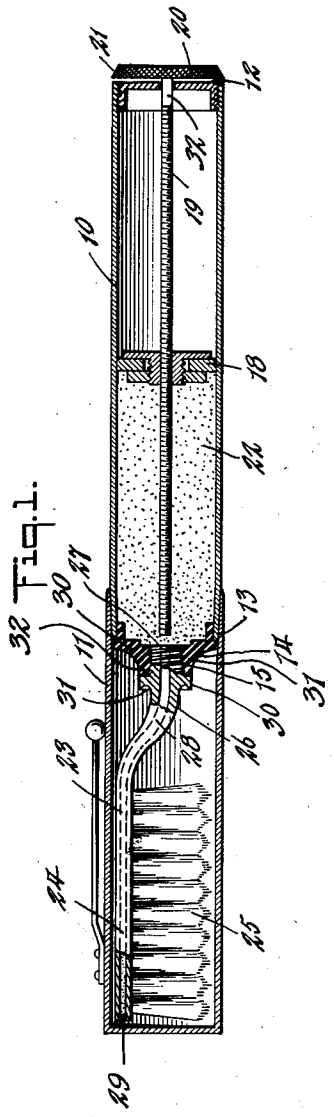


Fig. 1.

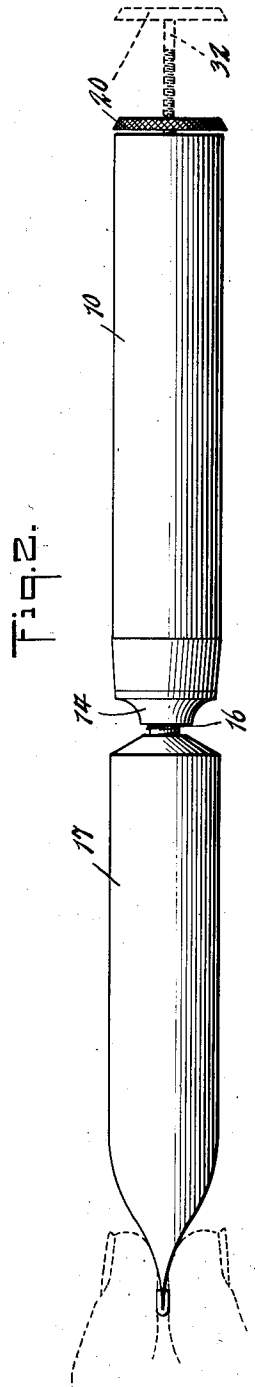


Fig. 2.

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# UNITED STATES PATENT OFFICE

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## FOUNTAIN TOOTHBRUSH

Application filed March 25, 1931. Serial No. 525,071.

The invention relates in general to a fountain brush of general application, and specifically relates to a fountain tooth brush of small pocket size and in the form of the invention herein disclosed designed to simulate when closed a fountain pen.

The primary object of the invention is to provide a simple form of brush of the type outlined which can be maintained in a sanitary condition; which will be neat in appearance; formed of a minimum number of component parts; capable of being assembled with minimum labor charges and in general, to provide a form of tooth brush which, while featuring smallness in all its dimensions, is designed to provide maximum capacity in the amount of tooth paste which it can contain.

Another object of the invention is to provide an adjustable measuring device for regulating the amount of paste discharged on to the brush at each actuation of the ejecting means.

Another object of the invention is to provide a form of fountain tooth brush, the container of which tooth brush can be directly attached the usual collapsible paste tubes in which tooth paste is commonly sold, and the disclosure features means for insuring a tight screw fit between the container herein featured with any such paste tube, even though the threads on the tube do not correspond to the threads on the container.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawing and in part will be more fully set forth in the following particular description of one form of mechanism embodying the invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawing:

Fig. 1 is a view in axial section, showing a preferred embodiment of the invention, and

Fig. 2 is a view in side elevation of the container shown in Fig. 1 with the closure and brush removed and a collapsible paste tube inserted in position to fill the container.

In the drawing and referring particularly to Fig. 1, there is disclosed a construction which resembles a fountain pen and includes a combined container and handle 10, telescoping one end of which is a cap closure 11. The container 10 is of cylindrical form; is opened at its rear end and this end is closed by means of a screw cap 12, the removal of which permits access to the ejecting mechanism contained in the device. Closing the opposite end 13 is a nozzle 14 provided centrally thereof with a threaded opening 15. The nozzle 14 is formed of hard rubber or equivalent hard material capable of distorting the threads on the neck 16 of a paste tube or receptacle 17, when threaded into the same, as suggested in Fig. 2. The nozzle includes a base portion 30 fitted in the end of the cylinder 10. A boss 31 projects outwardly from the center of the base portion and terminates in an outer flat face 32. Forming part of a paste ejecting mechanism is a plunger 18 fitted in the container, preferably of the distendable type and arranged so that it will have a sliding but non-rotating frictionally tight fit against the inner wall of the container. This plunger acts as a relatively fixed nut through which is threaded a combined thrust rod and feed screw 19, one end of which projects loosely through the cap 12 and has secured thereto a feed finger disk 20 having a knurled edge to facilitate rotation of the feed screw 19.

Demountably positioned at the nozzle end of the container 10 is a brush 23. This brush includes a back 24 to which are secured a set of bristles 25. Projecting longitudinally from the back 24 is an extension constituting a tubular shank 26, the free end of which is threaded, as shown at 27, for a tight screw fit in the opening 15. A small paste conducting passageway 28 extends through the shank and back and terminates at the extreme end of the brush in a discharge vent 29.

It is a feature of this disclosure that the paste 22 is discharged adjacent to the bristles but not directly on the bristles and that

the discharge vent 29 is exposed so as to be readily cleaned. The shank 28 is formed somewhat S-shaped, so as to permit the utilization of the entire diametrical dimension of the closure 11 and at the same time to permit the threaded end 27 of the shank to be inserted into the centrally disposed opening 15. By this construction, it is possible to provide a bristle arrangement of a size corresponding approximately to the size of bristle sets in conventional types of tooth brushes, and at the same time to contain the bristles and associated back within the axially projected outlines of the relatively small diametered container 10.

In order to prevent drip from the bristles flowing back on to the handle, it is suggested that a drip cup 30 be secured to the shank 28 and positioned between the set of bristles 25 and the threaded end of the shank. Preferably this drip cup snugly engages the face 32 defining the outer end of the nozzle 14 and is provided on its advance side with an annular channel or groove 31 for receiving drip from the bristles. It is obviously within the scope of the disclosure to position the drip cup on the nozzle preferably by forming it as an integral part of the nozzle, or it may be a detachable element loosely inserted on to the shank or nozzle.

It is possible by means of the device disclosed to pre-measure accurately the amount of paste which is to be discharged out of the vent 29 at each actuation of the ejecting mechanism. For this purpose, it is herein suggested that the outer end of screw rod 19 be left free of threads as indicated by the blank space 32. The length of this unthreaded portion may be fixed by the manufacturers to indicate by the appearance of the threaded portion the minimum amount of paste necessary for each use of the brush, leaving it to the individual user to determine by experiment whether this prescribed amount should be increased or decreased to meet particular requirements. It is obviously within the scope of the disclosure to place line markings on the blank space to indicate varying amount of paste to be ejected.

In operation and desiring to charge the container with a fresh supply of paste, the brush is unscrewed from its engagement with the nozzle and any of the usual collapsible paste tubes now on the market for vending tooth paste is threaded into the opening 15. The threads in the opening 15 have been designed so as to accommodate the greatest number of types of threads now in use on the paste tubes. However, the threads on different makes of tooth paste are of approximate uniformity, and as the neck 16 on these tubes are usually made of some relatively soft metal, usually a lead composition, it is possible in screwing the neck into the hard threaded opening 15, to cause the threads at 15 to act as a die and distort or form new threads on the neck 16, in either case insuring a paste tight fit between any such tube 17 and the container 10. Crushing the tube 17 will eject its contents through the coupled connection at 15—16 causing the paste to act on plunger 18 to force the same along the length of the container 10 towards the closing cap 12, and projecting the screw 19 out beyond the cap, incidentally displacing air back of the plunger, as indicated in the dotted line position of the screw shown in Fig. 2. By rotating disk, 20, the screw 19 is then threaded down through the nut forming plunger 18 until the disk 20 is in engagement with the outer face of cap 12, leaving the plunger adjacent to the cap 12.

After the container is filled, the filling tube is unscrewed, the brush is replaced and the article is ready for use. After use, any surplus material which may be adhering at the discharge vent 29 may be wiped or washed off and the closure 11 inserted in its position enclosing the brush and the article as a whole may be positioned in the pocket or bag of the user.

In the subsequent use of the device, and assuming the parts to be in the position shown in Fig. 1, the operator will rotate the disk 20 in the direction to cause the disk 20 to move away from the cap 12 as indicated in this figure.

As the disk retreats, the unthreaded portion 32 of the screw becomes exposed. This action will be continued to that point of retreat of the disk where the screw threads begin to show or to that point which experience indicates will provide the requisite amount of paste for each actuation of the ejecting means.

Thumb pressure is then placed on the exposed end of the disk 20 to force the same back towards its initial position, engaging the outer face of the cap 12. This action will overcome the frictional resistance of the plunger in its engagement with the wall of the container and cause the plunger to advance towards the opening 15 for a distance controlled by the screwed retreat of the feed screw above indicated. The plunger will act on the body of paste 22 forcing the same through the outlet opening 15, through the passageway 28 out through the discharge vent 29.

I claim:

1. A fountain tooth brush comprising a cylindrical container having an open end through which its contents may be removed, a nozzle at the other end provided centrally thereof with a threaded opening, a plunger having a sliding but non-rotatable tight fit in the container, ejecting means for advancing the plunger towards the nozzle, a brush having a back provided with a set of bristles and having an S-shaped shank hav-

ing a threaded end demountably screwed into the nozzle, said back and shank provided with a passageway extending therethrough in substantially the same general direction and terminating in a straight discharge vent parallel to the length of the back and opening therefrom at the extreme end of the brush beyond the bristles, a manually actuated finger disk for advancing the ejecting rod and thus cause the plunger to advance the contents of the container out through the discharge vent.

2. A fountain brush comprising a cylindrical container having one end closed and the other end open for its entire internal diameter, a hard rubber nozzle fitted into said open end for closing the same and provided with an axially extending opening internally threaded and adapted to have the cap engaging end of a collapsible receptacle screwed into the same incidental to charging the container and acting as a thread forming die on said cap, and a brush provided with a tubular shank having an externally threaded cylindrical end adapted to be screwed into said opening when the filling receptacle is removed, and a plunger in the container adapted to be moved in a direction away from the opening to permit the charging of the container from the receptacle through the nozzle and manually actuated means for advancing the plunger towards the opening to eject the contents of the container through the nozzle and through the tubular shank of the brush.

3. In a fountain brush, the combination of a container having an outlet opening at one end, and a closure at the other end, a plunger slidably and non-rotatably mounted in the container for ejecting its contents through the outlet opening, a screw threaded through the plunger and having an end projecting freely through the closure and otherwise independent of the same, and provided at its projecting end with a pressure head by means of which the screw and plunger are axially and non-rotatively advanced towards the opening in its ejecting movement by pressing on the head axially of the screw and by means of which the screw may be rotated idly and without effect on the plunger and closure to space the pressure head from the adjacent closure and of the container and thus indicate by the distance of the head from the closure the permissible advance of the screw and plunger in their straight line ejecting movement.

4. A fountain tooth brush, provided with a container for the tooth paste, a brush supplied from the container, manually actuated unilaterally movable means for advancing the paste from the container to the brush, said means including an adjustable measuring device operable from and vsible from the exterior of the container for presetting the amount of paste advanced on each actuation of said means.

5. A fountain brush provided with a container having a combined intake and discharge opening at one end, means for ejecting the contents of the container through said opening, said means including a plunger fitted on the container and free to retreat from the opening under pressure of the contents when forced into the container through said opening and manually actuated means for forcing the plunger towards the opening in the act of ejecting the contents from the container and said means including a plunger rod in screw threaded engagement with the plunger for controlling and regulating the subsequent permissible advance of the plunger and movable axially and non-rotataby in the container to eject an amount of its contents prefixed by the rotative setting of the rod in the plunger.

6. A fountain brush including a container, a plunger movable axially therein for ejecting its contents, a manually actuated control and screw and nut connection between the control and plunger adapted to be present to control the permissible advance of the plunger and thus regulate the amount ejected from the container on each actuation of the control and said manually actuated control being otherwise free of any part of the container and operable with a straight line thrust movement axially on the plunger to eject the contents.

7. A fountain brush including a container closed at one end, manually actuated means extending freely through said closed end for ejecting the contents of the container, said means including a variable measuring device visible from the exterior of the closed container for regulating the ejecting movement of said means at each actuation of the same.

8. In a device of the class described, the combination of a container having a discharge end and having its other end closed, a plunger in said container for ejecting its contents through the discharge end, a screw in threaded engagement with the plunger and passing loosely through the closed end and free of engagement therewith, and provided on its outer end with a feed finger disk adapted to be rotated to advance the screw through the plunger and adapted to receive axially applied pressure to advance the plunger with a sliding and non-rotating movement through the container.

Signed at New York city, in the county of New York and State of New York this 9th day of March, A. D. 1931.

RUDOLPH JULIUS JOSEPH.