Jan. 18, 1955 G. W. JOHNSON 2,699,889

DISPENSING TOOTHBRUSH

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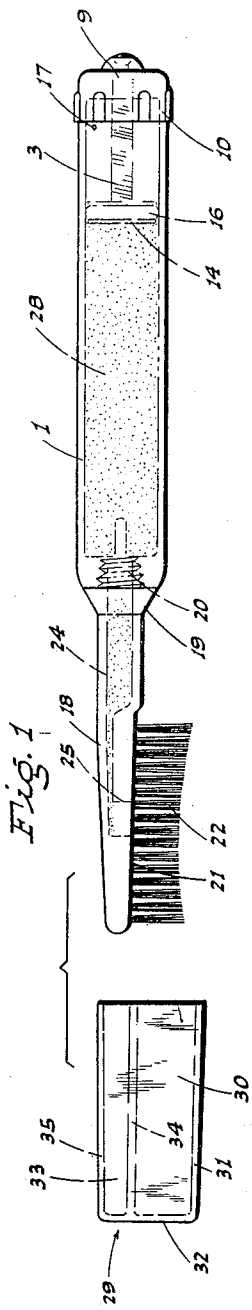

Fig. 1

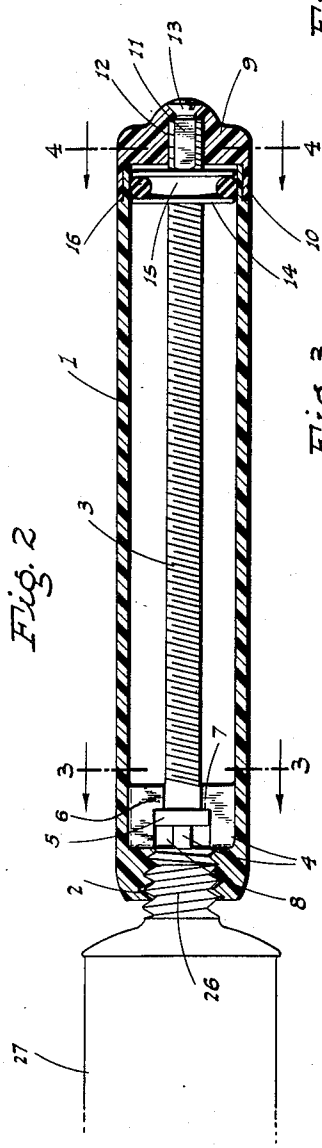

Fig. 2

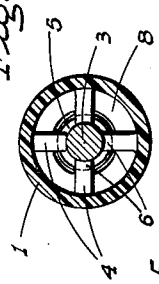

Fig. 3

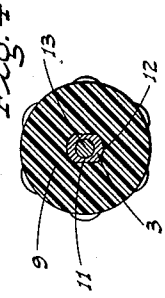

Fig. 4

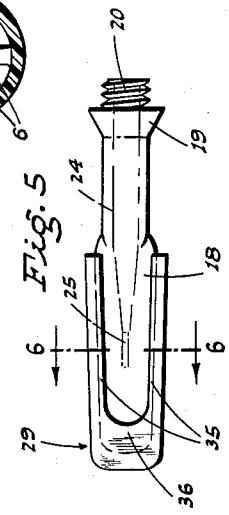

Fig. 5

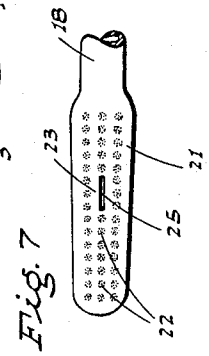

Fig. 7

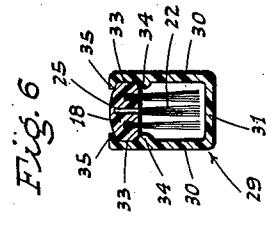

Fig. 6

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DISPENSING TOOTHBRUSH

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1 Claim. (Cl. 222—390)

The present invention is directed to, and it is a major object to provide, a dispensing tooth brush of novel construction and convenient use; the tooth brush including an elongated tubular barrel for the reception of tooth paste, and a knob actuated screw shaft which advances a piston in the barrel to feed the tooth paste therefrom into the bristles of a head mounted in connection with and projecting forwardly from said barrel.

Another important object of this invention is to provide a novel structural arrangement for rotatably mounting the screw shaft in the barrel, and for connecting the actuating knob in fixed relation to said shaft at the rear end of the barrel.

An additional object of the invention is to provide a dispensing tooth brush wherein the bristle supporting head is detachably secured to the barrel by a neck on the rear end of said head threaded into a tapped bore in the forward end of the barrel, said bore being tapered whereby—upon detachment of the bristle supporting head—the neck of any standard collapsible tooth paste tube may be threaded into said bore even though there may be slight variation in neck diameter.

A further object of the invention is to provide the bristle supporting head with bristle tufts and a tooth paste discharge slit in an arrangement whereby it is possible to readily flush or wash the bristles clean after use, and without leaving any excess tooth paste adjacent said discharge slit.

A still further object of the invention is to provide the dispensing tooth brush with an effective and convenient-to-use removable cap for the bristle supporting head; such cap, when in place on the head, protecting the bristles, yet permitting of adequate ventilation thereof so that they may dry and not become soggy.

It is also an object of the invention to provide a tooth brush designed for ease and economy of manufacture.

Still another object of the invention is to provide a practical and reliable dispensing tooth brush, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawings:

Fig. 1 is a side elevation of the improved dispensing tooth brush, with the cap shown detached.

Fig. 2 is an enlarged longitudinal section of the tooth brush with the bristle supporting head detached and a collapsible tooth paste tube attached for the purpose of filling the barrel with tooth paste.

Fig. 3 is a cross section on line 3—3 of Fig. 2.

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

Fig. 5 is a bottom plan view of the bristle supporting head detached from the barrel, but with the cap in place on said head.

Fig. 6 is a cross section on line 6—6 of Fig. 5.

Fig. 7 is a fragmentary top plan view of the bristle supporting head showing particularly the longitudinal, tooth paste discharging slit.

Referring now more particularly to the characters of reference on the drawings, the improved dispensing tooth brush comprises an elongated tubular barrel 1 initially open at its rear end, and formed at the forward end with a tapered threaded bore 2.

The spider is in the form of axially extending circumferentially spaced and relatively narrow ribs which extend radially in from the barrel wall over and in guiding relation to an enlarged head 5 formed on the adjacent end of the shaft and which is well spaced from the outlet bore 2. The ribs terminate in radially inwardly projecting fingers 6 which engage the shaft in centralizing relation as shown in Fig. 3 and provide shoulders 7 bearing against the inner face of the head 5. The spider ribs thus leave slots 8 along the barrel past the spider and head 6 so that the paste can flow to or from the outlet with a minimum of resistance.

The thickness of the radial head 6 is much less than the depth of the recess 5 whereby slots 8 communicate with the recess 5 from within the barrel 1; this arrangement being for the purpose of permitting tooth paste to flow from within the barrel and through such recess 5 in a forward direction.

The rear end of the barrel 1 is closed by a finger knob 9 having a skirt 10 which laps a corresponding portion of the barrel. At its rear end the screw shaft 3 is flattened on opposite sides, as at 11, and such flat-sided end portion of the shaft seats in matching relation in a socket 12 in the knob 9.

A headed holding screw 13 extends through the knob 9 and is threaded into the adjacent end portion of the screw shaft 3. With this arrangement the finger knob 9 is held in place on the barrel but is turnable whereby to rotate the screw shaft 3 in one direction or the other.

A piston 14 is threaded on the screw shaft 3; such piston including—at its periphery—a concave groove 15 having a sealing ring 16 engaged therein; such ring being circular in cross section, projecting from the groove 15 and having wiping contact with the inner wall of the barrel 1. The sealing ring 16 is of resilient material such as rubber, or a synthetic material such as "neoprene."

When the piston 14 is fully retracted in the barrel 1, it lies rearwardly of a bleed opening 17 through the barrel adjacent the finger knob 9.

The numeral 18 indicates an elongated bristle supporting head having, rearwardly of a shoulder 19, an axially projecting threaded neck 20, and such neck is normally threaded into the bore 2, with the shoulder 19 in flush engagement against the forward end of the barrel 1, as in Fig. 1. The head 18 includes a face 21 from which a plurality of rows of bristle tufts 22 project, except that in the center row—intermediate the ends thereof—certain of such tufts are omitted to provide a pocket 23.

A longitudinal passage 24 is formed in the bristle supporting head 18; such passage opening at its rear end through the neck 20, and at its forward end communicating with a longitudinal slit 25 which opens to the face 21 in the pocket 23. The longitudinal slit 25 is extremely narrow, and its purpose is to discharge tooth paste into the pocket 23.

When the above described dispensing tooth brush is to be used, the finger knob 9 is rotated in a direction to cause the piston 14 to fully retract, exposing the bleed opening 17. With the bristle supporting head 18 detached, the neck 26 of a standard collapsible tooth paste tube 27 is threaded into the tapered threaded bore 2 of the barrel 1; such tube 27 then being squeezed to cause a quantity of tooth paste to deliver through the slots 8 into the barrel 1. The air in the barrel displaced by the tooth paste escapes through the bleed opening 17.

After the barrel 1 is filled with tooth paste, the collapsible tube 27 is detached and the bristle supporting head 18 replaced.

Preparatory to tooth brushing, the finger knob 9 is turned in a direction to advance the piston 14 a relatively short distance, pushing the tooth paste 28 in the barrel 1 forwardly, with the result that a quantity of such paste advances through the slots 8 and along the longitudinal passage 24 in the bristle supporting head 18. This causes a corresponding quantity of the tooth paste to discharge from the slit 25 into the pocket 23 surrounded by the bristle tufts 22.

The teeth are then cleaned with the tooth brush in the usual manner, and after the tooth brushing operation is completed, the bristles can be readily washed clean, without any tendency of accumulated tooth paste to remain attached at the line of the slit 25. This is for the reason

that the slit **25** is extremely narrow, and further the pocket **23** provides an opening through which wash-water can gain direct access to the slit **25**.

After the tooth brush has been used, the bristle supporting head **18** is frictionally engaged in a sheath-like cap, indicated generally at **29**. The cap **29** is elongated, but substantially rectangular in cross section, being open at the rear end and for a major portion of the bottom thereof. The cap **29** includes sides **30** and a top **31** which extend full length rearwardly from a closed outer end **32**.

Adjacent the open bottom thereof the sheath-like cap **29** is formed, on its inner faces, with opposed longitudinal channels **33** defined along the inner edge by longitudinal ribs **34**, and defined along the outer edge by longitudinal flanges **35**, which flanges merge adjacent but short of the front of the cap, as at **36**.

The sides **30** of the cap, and consequently the channels **33**, have slight convergence from the rear to the front of said cap, and the related portion of the bristle supporting head **18** is correspondingly tapered. Thus, when the bristle supporting head **18** is projected in the cap **29** and seated at opposite side edges in corresponding channels **33**, there is matching frictional engagement, which friction is enhanced by virtue of the fact that the sides **30** have a certain amount of spring. The cap **29** is dimensioned in cross section so that when said cap is engaged on the bristle supporting head **18**, the bristles extend into the cavity **37** of the cap in clearance to the sides **30** and top **31**, as clearly shown in Fig. 6.

The invention provides a very handy, practical, and reliable dispensing tooth brush; the same being easy to fill and convenient to manipulate. The removable cap maintains the bristles clean and sanitary, while permitting of adequate drying, when the tooth brush is not in use.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

In a dispensing tooth brush which includes a tubular barrel for tooth paste, means forming an outlet at one end of said barrel, said outlet extending through the wall of the barrel, said tubular barrel having a longitudinal axis, means forming a spider and thrust bearing connected to said barrel and extending inwardly of said outlet, said last named means comprising ribs circumferentially spaced with respect to said longitudinal axis and having portions extending parallel to said longitudinal axis, said ribs each having a radially extending portion projecting inwardly from the axially parallel extending portions thereof, said axially parallel extending portions of said ribs forming a recess therebetween and said radially extending portions forming a bearing within said recess, said ribs forming slots therebetween communicating with said outlet and the interior of said barrel, a screw shaft extending axially in the barrel, a piston threaded on the shaft for travel along the barrel upon rotation of the shaft, a finger knob secured to the shaft at one end of the barrel opposite said outlet and forming a closure for said end of the barrel, said shaft having an enlarged head on the end opposite the knob, said head being spaced from said outlet and being received in said recess and seated on said bearing formed by said radially extending portions.

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