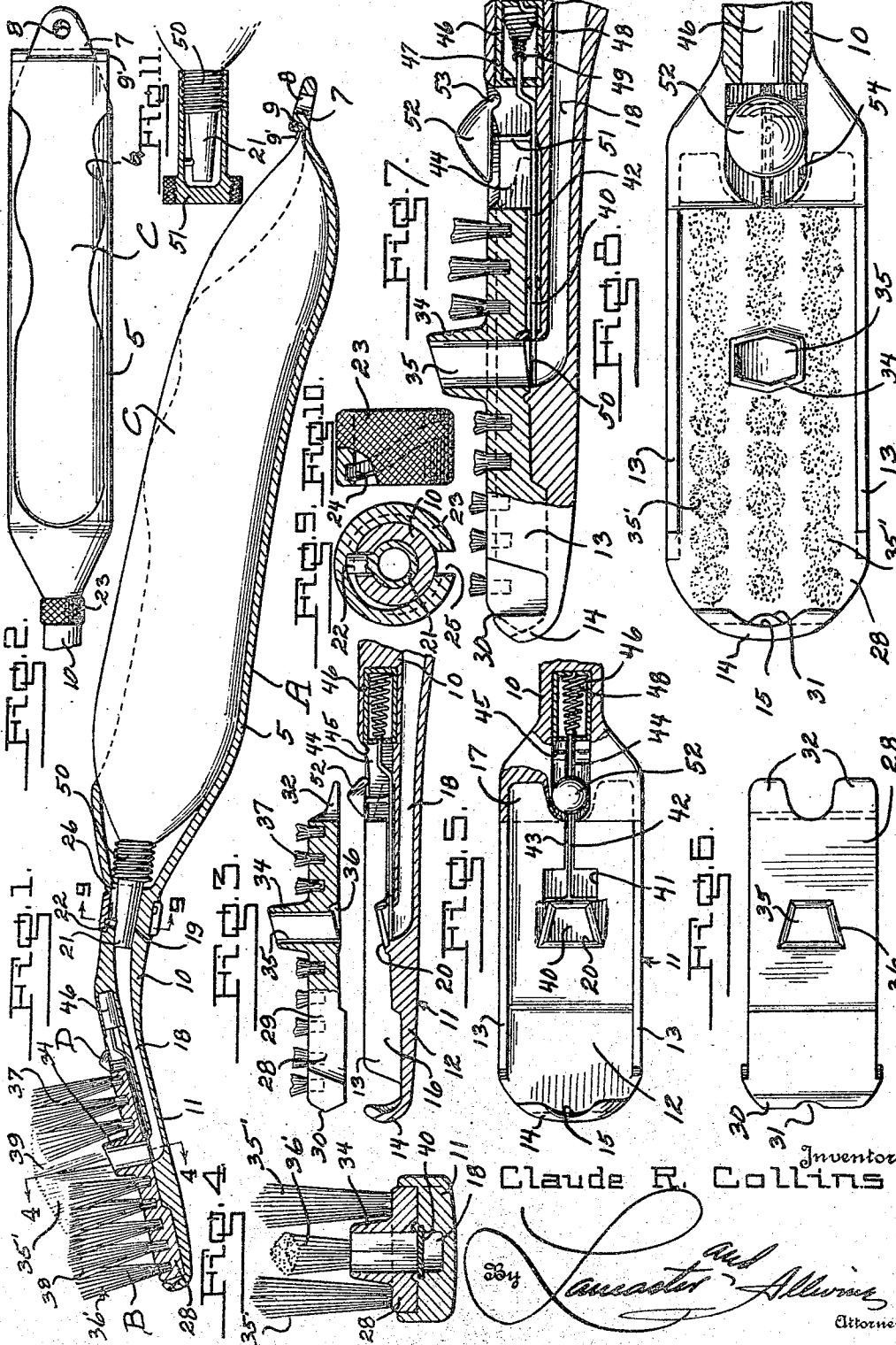


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FOUNTAIN TOOTHBRUSH

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FOUNTAIN TOOTHBRUSH.

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The present invention relates to tooth brushes and the primary object of the invention is to provide a novel type of fountain tooth brush embodying features whereby a dentifrice carried by the brush may be fed directly to the bristles.

A further object of the invention is to provide a fountain tooth brush embodying a supporting frame for renewably receiving dentifrice containers of novel construction embodying an arrangement whereby the containers may be secured in the supporting frame in a position for allowing the dentifrice to be delivered through a closed passage to the bristles of the brush head.

A further object of the invention is to provide an improved fountain tooth brush embodying a novel type of control means whereby any desired quantity of the dentifrice may be fed directly to the bristles.

A further object of the invention is to provide a fountain tooth brush embodying a hollow, slotted handle for receiving a specifically formed collapsible dentifrice container in a manner whereby the container may be readily compressed for feeding the dentifrice to the bristles of the brush.

A still further object of the invention is to provide a fountain tooth brush embodying a removable brush head adapted to be snapped into position upon its carrier member and having an opening provided in the base thereof registering with the outlet end of a channel or duct through which the dentifrice is to be conveyed to the bristles of the brush head.

A still further object of the invention resides in the provision of an improved type of brush head having the bristles thereof so arranged as to provide a channel like end formation for the bristles for allowing proper distribution of the dentifrice being fed to the bristles without liability of the dentifrice falling from the bristles.

Other objects and advantages of the invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification and in which drawing:

Figure 1 is a central longitudinal section through an improved type of fountain tooth brush constructed in accordance with this invention.

Figure 2 is a fragmentary bottom plan view

of the handle portion for the improved brush.

Figure 3 is an enlarged fragmentary longitudinal section through the forward end of the supporting frame and brush head showing the brush head removed from the supporting frame, and the valve control means for controlling the flow of dentifrice to the brush head.

Figure 4 is a transverse section on line 4-4 of Figure 1.

Figure 5 is a fragmentary plan view of the inner side of the forward end of the supporting frame and showing the valve means in a closed position as illustrated in Figure 3.

Figure 6 is a plan view of the inner side of the base plate of the brush head.

Figure 7 is a fragmentary longitudinal section showing the brush head in position and the valve means in an open position for allowing the dentifrice to be fed to the bristles of the brush head.

Figure 8 is a plan view looking at the brush head from the outer side, showing the brush head in position within the supporting frame and the location of the outlet way provided in the base of the brush head.

Figure 9 is an enlarged transverse section on line 9-9 of Figure 1 and showing the locking ring for fastening the dentifrice container within the supporting frame.

Figure 10 is a view part in side elevation and part in section of the locking ring and showing the internal spiral groove for forcing the nozzle of the dentifrice container into position within the way leading to the brush head.

Figure 11 is a fragmentary view showing the special formation of the nozzle of the dentifrice container and showing a cap as applied thereto for closing the containers while being vended.

Referring to the drawing in detail, and wherein similar reference characters designate corresponding parts throughout the several views, the letter A designates generally a supporting frame of novel formation, B a brush head of novel construction for detachable connection with the frame A, C a dentifrice container from which the dentifrice may be fed to the brush head B, and D means for controlling the flow of dentifrice to the brush head.

Referring first to the supporting frame A and which may either be formed from metal or a moulded composition such as celluloid

or the like, the same embodies a hollow handle portion 5 which is preferably curved longitudinally and provided in one side with a longitudinally extending slot 6 which preferably extends throughout the greater portion of the length of the handle and may have irregularly formed edges as illustrated in Figure 2 for better circumferential gripping of the container C and also providing a better hand grip during use of the brush. The rear end of the handle portion 5 is tapered off at opposite sides as shown in Figure 2 and flattened as at 7, and which flattened portion may be provided with an aperture 8 for allowing the tooth brush to be hung on a suitable support. The inner edge of the flattened portion 7 is provided with an inwardly opening L shaped locking groove 9 for a purpose to be subsequently explained. Extending from the forward reduced end of the handle portion 5 is a neck or shank portion 10, and formed at the forward end of the neck 10 is a substantially flat brush head seat 11 preferably arranged with its longitudinal axis in angular relation to the longitudinal axis of the handle portion 5.

This brush head seat 11 may be of any preferred shape, and in the example illustrated embodies a rectangular shaped seat portion 12 provided with longitudinal side flanges 13 which preferably terminate short of the outer end of the seat portion as illustrated in Figures 3 and 5, and a yieldable hook shaped end flange 14 provided at its free edge with a notch 15. These side and end flanges 13 and 14 respectively form an elongated socket 16, and provided at the inner end of the socket and spaced to opposite sides of the longitudinal center of the brush head seat, are recesses or pockets 17 which co-act with the yieldable end flange 14 for removably retaining the brush head B within the socket 16.

Extending through the neck 10 from the hollow handle 5 and into the seat portion 12 to a point substantially midway of its ends, is a way or duct 18 which serves for conveying the dentifrice to the brush head B. This way 18 at its opening into the hollow handle 5 is tapered as at 19, while the outer end of the way terminates in a marginally ribbed outlet port 20 opening into the socket 16. This marginally ribbed outlet port 20 is preferably inclined upwardly and rearwardly as clearly illustrated in Figure 3.

The dentifrice container C is provided with a conical shaped nozzle 21 which is adapted to be inserted in the tapering end portion 19 of the way 18 when the container is disposed within the hollow handle 5 through the longitudinally formed slot 6. Carried by the tapering nozzle 21 and projecting radially therefrom at a point intermediate the ends of the nozzle, is a pin or lug 22 which is adapted to coact with the split rotatable locking ring 23 for forcing the conical shaped

nozzle 21 into binding surface contact with the tapering way portion 19 for preventing escape of the dentifrice at the connection of the nozzle 21 with the neck portion 10. This locking ring 23 is revolubly mounted in a circumferentially extending groove provided adjacent the rear end of the neck portion 10 for preventing longitudinal movement of the ring along the neck portion, and has provided at its internal surface a spirally extending groove 24 which opens at the split portion 25 of the ring as illustrated in Figures 1 and 9. When locking the nozzle 21 within the way 18, the pin 22 is guided through the longitudinal slot 26 in Figure 1 between the spaced terminal portions of the ring and brought into alignment with the ends of the spiral groove 24 and whereupon by rotating the ring 23 the pin 22 is moved inwardly along the slot 26 for drawing the tapered nozzle 21 into firm contact with the walls of the tapering way portion 19. Thus it will be seen that the ring 23 and pin 22 serve for drawing the discharge end of the container into leak proof engagement within the way 18. The transversely extending locking groove 9 which is provided at the inner edge of the flattened end portion of the handle 5, is intended to receive the flange of an L shaped sealing strip or clamp 9' serving to close the rear end of the container C. This sealing strip 9' when connected in the groove 9 serves for preventing circumferential movement of the container within the handle portion and also retains the container in an extended position within the hollow handle. This anchoring means for the rear end of the container also serves for preventing twisting strain upon the pin 22. By so having the side edges of the rear portion of the handle 5 tapered off as in Figure 2, it will be seen that the ends of the sealing strip 9' will project to each side of the flattened handle portion 7 in a manner whereby the container may be easily withdrawn when empty, by merely gripping the projecting portions of the sealing strip.

Referring now to the improved and novel type of removable brush head B, the same embodies a base plate 28 of substantially flat elongated formation preferably having straight side walls 29 and a medially bulged end wall 30 provided with a centrally disposed notch 31. Projecting from the inner end of the base plate 28 are triangular shaped projections 32 which when the brush head is inserted into the socket 16 are adapted to project one into each of the recesses 17 provided at the inner end of the brush head seat. Formed on the base plate 28 at a point intermediate the end thereof and projecting from the outer face of the plate at the longitudinal center of the plate, is a dentifrice jet 34 having a way 35 opening at the inner face of the base plate, and encircling the inner end

of the outlet way 35 is a marginally extending channel or groove 36 into which the marginally extending ribs of the outlet port 20 project when the base plate is in position within the socket 16 and in which position the outlet way 35 will align with the outlet port 20 of the way 18. This marginally extending groove 36 and ribs of the outlet port 20 form a leak proof joint between the ways 18 and 35. It may here be well to state that the outlet port 20 and outlet way 35 are preferably of polygonal shape in cross section for leading the dentifrice to the bristles in ribbon like formation. The brush head may readily be inserted into the socket 16 by first placing the projections 32 in the recesses 17 and then pressing the outer angularly formed end 30 into position inwardly of the hook shaped end flange 14 of the brush head seat and in which position the brush head is rigidly but releasably held with the outlet way 35 aligning with the outlet port 20 as illustrated in Figure 7. When desiring to remove the brush head, a pointed instrument may be inserted into the aligning notches 15 and 31 and by a slight prying action the outer end of the base plate may readily be sprung free of the hook shaped flange 14.

Referring now to the specific arrangement of the tufts of bristles carried by the base plate 28, the same are arranged in rows longitudinally of the base plate and in the example shown are arranged to provide outer longitudinal rows 35' and an inner or medial row of bristles 36'; the medial longitudinal row of bristles embodying inner and outer sets of bristles 37 and 38 respectively. The outer rows of bristles 35' are of greater length at the intermediate portions of the rows and grow shorter toward each end of the rows as illustrated in Figure 1, with the bristles of greatest length disposed in transverse alignment with the outlet way 35. The outer set of bristles 38 of the medial row of bristles 36' are of greater length at the outer end of the base plate and grow shorter toward the dentifrice jet 34 as clearly illustrated in Figure 1 with the bristles adjacent the jet or less length than the bristles 35' arranged at each side of the inner end of the set of bristles 38. The inner set of bristles 37 are also shorter than the bristles 35' adjacent the jet 34, and which particular end formation of the rows of bristles 35' and 36' will form a longitudinally extending channel 39 into which the dentifrice when being ejected through the outlet way 35 passes and is held against accidental dropping from the bristles by the longer bristles of the outer rows 35'. By arranging the medial row of bristles 36' in longitudinal alignment with the projecting jet 34, a suitable opening is provided between the inner and outer sets of bristles 37 and 38 for allowing the dentifrice to readily pass through the bristles to the longitudinal channel 39 formed by the

particular arrangement of the end formation of the bristles.

Referring now to the control means D for control of the dentifrice from the container C to the bristles 36', the same embodies a spring pressed slide valve of novel construction and which valve means serves for shutting off communication between the way 18 and outlet way 35 provided in the base plate 28. The control means D embodies a valve plate 40 which is slidably mounted in a shallow recess 41 provided in the seat portion 12 to the rear of the marginally ribbed outlet port 20, and connected with the rear edge of the plate 40 is a valve rod or stem 42 extending in a shallow slot 43 provided in the seat portion 12 of the rear of the recess 41. Provided at the forward end of the stem portion 10 at its juncture with the brush head seat 11, is an outwardly opening slot 44 which extends in longitudinal alignment with the slot 43, and which slot 44 is provided adjacent its rear end and to each side of the slot with keeper lugs 45. Mounted in the forward portion of the neck or shank 10 at the rear end of the slot 44, is a spring housing or casing 46 having an opening 47 at its outer end aligning with the slot 44 and into which opening the rear outwardly offset end of the valve stem slidably fits. Mounted within the casing 46 is an expansion coil spring 48 having a socket like fixture 49 carried by its forward end and into which socket the rear end of the valve stem 42 fits in a manner as illustrated in Figure 7. This spring 48 acts for normally urging the valve plate 40 to a closing position over the outlet port 20 at the forward end of the way 18. It will be observed that by so having the marginally ribbed outlet port 20 extend upwardly and rearwardly at an incline, that a suitable guideway as at 50 in Figure 7 is provided for the valve plate 40.

Carried by the valve stem 42 and projecting outwardly through the slot 44, is an arm 51 and mounted at the outer end of the arm 51 is a suitable button or head 52 having a lip 53 provided at its inner end for engaging behind the keeper lugs 45 for releasably retaining the slide valve in an open position as illustrated in Figure 7. The button or head 52 is preferably mounted in a shallow pocket 54 which extends longitudinally of and to each side of the outer end of the slot 44.

It is preferred that the spring housing 46 together with its spring 48 be positioned in place during moulding of the supporting frame A, and when assembling the unitary structure including the valve plate 40, stem 42, arm 51 and button 52, the rear offset end of the stem 42 is first inserted through the opening 47 with its end seating in the socket 49 and moved rearwardly a sufficient distance for allowing the forward edge of the valve plate 40 to be positioned in the recess 41 in alignment with the rear open end of the valve

guide 50. By having the slots 43 and 44 aligning and communicating with one another will allow for the valve stem to be readily inserted into an operative position within the slot.

5 The valve assembly is of course placed in position with the brush head removed from the brush head seat 11.

In use of the improved fountain tooth brush, the operator merely places his thumb upon the button 52 and slides the same rearwardly until the lip 53 engages behind the lugs 45 and in which position the valve plate 40 is slid rearwardly opening the port 18 to the port 35. The operator then releases the grip upon the button 52 and by pressing with his thumb upon the container C at the slot 6, the dentifrice will be forced through the way 18, and outlet way 35 into the channel 39 formed by the bristles of the brush head.

20 After a sufficient quantity of dentifrice had been delivered to the brush head, the operator frees the button from the keeper lugs 45 and allows the spring 48 to move the valve plate forwardly for cutting off communication between the ways 18 and 35.

It will of course be apparent that the brush head B may be provided with bristles having end formations differing from that as set forth, but it is preferred that the end formation of the bristles be so formed as to provide a longitudinally extending channel at the outer ends of the bristles for receiving the dentifrice being ejected through the outlet way 35.

35 Referring particularly to Figure 11, and wherein is illustrated the specific nozzle construction of the containers in which a special dentifrice is to be vended, it will be observed that a threaded portion 50 is formed at the juncture of the nozzle 21 and the body portion of the container for threaded reception of a closure cap 51. This closure cap 51 aside from serving as means for retaining the nozzle 21 in a sanitary condition, also serves to protect the protruding locking pin 22 from being broken during transporting and vending of the dentifrice containers. With a novelly constructed container as shown, it will be seen that refills of dentifrice containers for application into the hollow handle portion 5 of the holder must necessarily be of a construction as illustrated for proper positioning in the handle.

From the foregoing description it will be apparent that an improved and novel type of fountain tooth brush has been provided embodying a supporting frame of novel construction for removably receiving dentifrice containers, with means for effectively locking the container in position so that a leak proof joint is provided between the outlet of the container and a way leading to the brush head of the device, a valve control means for the dentifrice embodying novel features of as-

sembly whereby the control means may be readily and easily associated with the supporting frame, and a novel type of removable brush head having the bristles thereof so arranged as to provide a channel shaped receiving space for the dentifrice being fed to the bristles from the container.

Changes in the shape, size, and arrangement of parts may be made to the specific form of the invention herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. In a fountain tooth brush a hollow handle having a shank portion at one end thereof for supporting a brush head, said shank having a passageway therethrough forming communication between the handle and brush head and provided at its end adjacent the handle with a tapering portion, a dentifrice container having a tapering nozzle fitting in the tapering way portion and provided with a laterally extending lug, and a split locking ring encircling the shank at the tapering way portion and having an internal spirally formed groove engageable with said lug for drawing the nozzle into firm contact with the tapering way portion.
2. In a fountain tooth brush including a handle and a shank portion, a brush head seat carried by the forward end of the shank portion embodying a seat portion having side flanges and a yieldable hook shaped end flange providing an elongated socket, recesses provided in the wall at the inner end of the socket, and a brush head embodying a base plate having beveled shaped projections at its inner end for fitting in said recesses and having a medially bulged end wall to be snapped into position inwardly of the hook shaped end flange.
3. In a fountain tooth brush including a handle and a shank portion, a brush head seat carried by the forward end of the shank portion and provided with a socket, said shank portion being provided with a dentifrice way having a marginally ribbed outlet port opening in said socket, valve means for closing said outlet port, and a brush head including a base plate removably fitting in said socket and provided with an outlet way having a groove encircling its inner end for receiving the marginal ribs of said outlet port.
4. In a fountain tooth brush including a shank portion and a brush head seat having a communicating way extending therethrough, a valve plate movable in a recess in the brush head seat for opening and closing of said way, a spring mounted in a housing in the shank portion, a valve stem connected with the valve plate and having its rear end engageable with said spring whereby the valve plate is normally urged to a closing position over said

way, an operating button connected with the valve stem between said spring and valve plate, and releasable means for retaining the valve plate out of closing relation with said
5 way.

5. In a fountain tooth brush, a brush head seat embodying a seat portion and side and end retaining flanges, a shank portion extending from one end of the seat portion and provided with a dentifrice way terminating in an outlet port opening in the seat portion, said seat and shank portion having aligning outwardly opening slots, a valve rod mounted in said aligning slot for longitudinal movement
10 therein, a valve plate carried by the forward end of the rod for closing said outlet port, spring means acting upon the rear end of the valve rod for normally urging the valve plate to a closed position over the outlet port, a button
15 connected with the valve rod at the slot in the shank portion, a projection provided at the inner side of the button and releasably engageable with lugs provided in the shank portion for retaining the valve plate in an
20 open position, and a brush head removably mounted between the flanges of the brush

head seat and having an outlet way aligning with the outlet port of the dentifrice way.

6. In a fountain tooth brush, a hollow longitudinally slotted handle having a shank
30 projecting from one end thereof having the pasageway therethrough forming communication between a handle and the bristles of the brush head, said hollow handle at its rear end having an L-shaped locking groove extend-
35 ing transversely of the handle, a container for dentifrice removably fitting in the hollow handle with its outlet nozzle opening into said pasageway, and being closed at its rear end
40 by an L-shaped sealing strip for engaging in said locking groove, and locking means carried by said shank portion and engageable
45 with said nozzle for drawing the nozzle into binding engagement with said pasageway.

7. In a dentifrice container for fountain
45 tooth brushes, the combination of a collapsible body, and a tapering discharge nozzle carried by one end of the body and provided intermediate its end with a laterally projecting locking pin.

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