TOOTHBRUSH ASSEMBLY EMPLOYING MOISTURE-DRAINING AND VENTILATION APERTURE

Inventor: Sangyong Lee, Rego Park, NY (US)

Correspondence Address:
Mitchell A. Stein, Esq.
STEIN LAW, P.C.
Suite 4
24 Woodbine Avenue
Northport, NY 11768 (US)

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Abstract

A tooth brush head assembly having a substantially rectangular aperture passing therethrough for drainage of fluids associated with use of the toothbrush, and for ventilation by allowing air to pass therethrough, optionally a plurality of bristles that are vertically clustered and mounted but without blockage of the aperture, optionally at least one monofilament intrinsically having two terminal ends wherein said monofilament is looped such that each of said terminal ends of said monofilament itself extend outside the aperture; and optionally a plurality of bristles that are clustered and mounted in an angulation such that the angulation passes across the aperture and is of such size, dimension and location as to synergestically improve drainage and ventilation.
Fig. 6
TOOTHBRUSH ASSEMBLY EMPLOYING MOISTURE-DRAINING AND VENTILATION APERTURE

CONTINUATION INFORMATION

[0001] The instant application is a continuation-in-part of U.S. Ser. No. 11/111,173 filed Apr. 21, 2005, for “Tooth Brush Assemblies Employing Folded Filament Systems,” the contents of which are incorporated by reference and priority date claimed.

FIELD OF THE INVENTION

[0002] The present invention relates to the field of toothbrush assemblies and designs, and more particularly to such designs that provide effective drainage of water and other materials (like toothpaste and debris) that tend to adhere to, and remain behind on the toothbrush, as well as ventilation by air flow, after teeth-cleaning, creating a zone for germ growth, and more particularly to a cleaning assembly for a tooth brush having an aperture and, optionally, a plurality of cleaning heads.

BACKGROUND OF THE INVENTION

[0003] The world of tooth brushes appears quite full with various designs and appearances, from single to multiple heads, and from manual to electrical apparatus. While this world has focused upon the “design” of the handle and overall appearance, little attention has been given to the actual brush itself.

[0004] Additionally, the tooth brush is a location that attracts a world of germs, including bacteria, microbes, and the like, that linger and often grow as the moisture of the toothbrush remains trapped in the design of the tooth brush head. For example, a British study determined that about 100 million germs exist on a single, ordinary toothbrush after use. US Today reports that a toothbrush may be the most serious threat to everyday health. Recognizing these factors, its an object of the instant invention to minimize the proliferation of germs on a tooth brush head by providing a means for drainage of fluids (including water and saliva) and with the same, the drainage of germs and ventilation by air passing therethrough.

[0005] It has been determined herein that wet or moist tooth brushes should be dried and are best if vented efficiently and thoroughly for sanitization. Unfortunately, conventional toothbrushes cannot meet this priority because of its intrinsic design. Typically, no venting is apparent and the bristles attach to a flat back, thereby holding water, saliva and germs without any real ability for venting or drainage.

[0006] Angled bristle tufts and an elaborate opening are shown in U.S. Pat. No. 6,564,416, yet the requirement that the “tufts cross” in order to be effective and that the opening be of an elaborate design teach away from the subject invention as shown hereinbelow. U.S. Pat. No. 6,895,629 shows a double-sided toothbrush. U.S. Pat. No. 5,875,516 shows a stand 1 to support a normal toothbrush to allow gravity for drainage, but places no emphasis on redesigning the tooth brush head. U.S. Pat. No. 6,895,624 shows a cylindrical brush design but no aperture on the head, rather an aperture 18 shown at the base of the handle. U.S. Pat. No. 6,412,137 shows a pressure sensitive brush which is essentially electric in nature, but again does not show an aperture on the head for drainage.

[0007] Thus, it is observable in the art that there is a need for a redesigned tooth brush head that provides drainage, as shown hereinbelow.

[0008] Additionally, heretofore, tooth brushes have used a monofilament. In other words, a single filament, comprised of a nylon or similar material is used because of strength and purity, moisture is not absorbed, the filament does not, by itself, provide a haven for bacterial growth, and softness to hardness can be controlled.

[0009] Softness is dependent upon thickness of the combined monofilaments as a bristle. Generally, the thicker the bristle, the greater the strength, the thinness of the bristle generally makes a softer head.

[0010] Likewise, the monofilaments that comprise the bristle range in size. The smaller the size (combined with the smaller the bristle), the softer the toothbrush head. Reciprocally, the larger the filament (combined with a larger bristle), the stronger the head. Thus, monofilaments generally range in thickness from about 0.012 inches in diameter to about 0.008 in thickness. Even lower monofilaments have been used. For example, Radius® claims a monofilament thickness of about 0.067 inches.

[0011] It is thus an additional object of the instant invention to provide drainage as well as a filament design that enables synergistically enhances drainage as well as teeth cleaning, using a looped series of monofilaments, as shown in greater detail hereinbelow.

SUMMARY OF THE INVENTION

[0012] The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of the disclosure. For a better understanding of the invention, its operating advantages, and specific objects attained by its use, reference should be had to the drawings and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

[0013] The foregoing objects and other objects of the invention are achieved through a tooth brush head assembly having a substantially rectangular aperture passing therethrough for drainage of fluids associated with use of the toothbrush. In this manner, the aperture permits fluids, including water, saliva, bacteria, toothpaste and the like to drain and is of such critical size and dimension as to permit drainage while not interfering with the use of the toothbrush.

[0014] Optionally a plurality of bristles that are vertically clustered and mounted but without blockage of the aperture are provided. These bristles are used to clean the teeth, but do not block the aperture so as to avoid any blockage of drainage.

[0015] Optionally at least one monofilament intrinsically having two terminal ends wherein said monofilament is looped such that each of said terminal ends of said monofilament itself ends outside the aperture is also provided. This design provides synergistic drainage as well as brushing.

[0016] Optionally a plurality of bristles that are clustered and mounted in an angulature such that the angulature passes across the aperture and is of such size, dimension and location as to synergistically improve drainage.
Any one or more of these elements can be combined, with the understanding that the combinations are themselves beneficial to the overall features of providing cleaning, drainage and ventilation associated with the subject invention.

Other features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein similar reference characters denote similar elements through the several views:

FIG. 1 shows a flat top-down view of the top of the head of a tooth brush in accordance with a preferred embodiment of the instant invention showing the inventive drainage slot from the top perspective;

FIG. 2 shows a flat bottom-view of the bottom of the head of a tooth brush in accordance with a preferred embodiment of the instant invention showing the inventive drainage slot from the bottom perspective;

FIG. 3 shows an overall perspective view combining the elements of FIGS. 1 and 2, showing the complete drainage slot in the head of a toothbrush in accordance with a preferred embodiment of the subject invention;

FIG. 4 shows a top-down view of the subject invention, including a plurality of monofilaments grouped in a clustered vertical array, each surrounding the drainage slot, as well as a series of looped filaments also surrounding the drainage slot to enable better teeth cleaning and drainage, in accordance with another embodiment of the subject invention;

FIG. 5 shows one of the plurality of looped filaments as shown in FIG. 4, indicating the use of monofilaments in a looped array design, to be attached to the head of the toothbrush;

FIG. 6 shows an alternative top-down view of the subject invention, including a plurality of monofilaments surrounding the drainage slot but not crossing the same, in combination with vertically mounted clusters of monofilaments, in accordance with another embodiment of the subject invention.

Other aspects of the invention will be clear when the FIGURES are viewed in connection with the specification and other portions set forth herein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In accordance with the subject invention, FIG. 1 shows a perspective view of top-down portion 8 of the head of a toothbrush assembly, having a top portion of handle 6, a head portion 2, and the top portion of a substantially rectangular aperture 4 for drainage. Likewise, FIG. 2 shows a perspective view of the bottom-down portion 10 of the head of a toothbrush assembly, also having a bottom portion of handle 6A, a head portion 2A, and the bottom portion of a substantially rectangular aperture 4A for drainage.

As can be seen in FIG. 3, FIGS. 1 and 2 have been combined such that the portions so identified fit together for a complete assembly of the toothbrush head. As can be seen, 4 and 4A together create a substantially rectangular aperture that passes through the head of the toothbrush in a manner that permits drainage.

FIG. 4 shows a top-down view of the subject invention, in this instance having a series of vertically clustered monofilaments 12 for brushing teeth. In unique combination, also provided are monofilaments 14 which, as shown in greater detail in FIG. 5, are curvilinear 16 in design with attachment 18A and 18B for attachment to the head of the toothbrush, ganged to surround the aperture 4 for assisting not just in tooth cleaning but also synergistically in providing drainage.

FIG. 6 shows an alternative design wherein monofilament clusters 12 also include angularly positioned clusters 20 which do not cross. As is observable, in this manner fluids are almost forced to drain through aperture 4 in this design.

Thus, as can be seen, the novel toothbrush head designs set forth herein include a narrow rectangularly shaped opening through the toothbrush head to enable drainage. This opening is urged as a vent to prompt bristles to quickly and thoroughly drain and dry and vent moisture and wetness. The opening also assisting in ventilating the bristles by permitting air to enter from the back of the toothbrush head. Likewise, there is less incidence of fusing of toothpaste when the brush is wetted after use, as the aperture will permit water to pass therethrough and remove such fusing from occurring.

It should be appreciated that inasmuch as the aperture is narrow, bristles are not placed in that region. To compensate for missing bristles, angled bristles are provided, as in FIG. 6, as well as folded filament bristles about the gap, as shown in FIGS. 4 and 5.

In terms of the size of the aperture, it is functional. The aperture is of such size so that surface tension from the intermolecular forces of attraction in a liquid are minimized and drainage can occur.

While there have been shown, described and pointed out fundamental novel features of the invention as applied to preferred embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

I claim:

1. A toothbrush head assembly having a substantially rectangular aperture passing therethrough of substantial size sufficient to provide for drainage of fluids and air ventilation associated with use of the toothbrush.

2. The toothbrush head assembly of claim 1, further comprising a plurality of bristles that are vertically clustered and mounted but without blockage of the aperture.
3. The tooth brush head assembly of claim 1, further comprising:
   (a) at least one monofilament intrinsically having two terminal ends; and
   (b) said monofilament is looped such that each of said terminal ends of said monofilament itself ends outside the aperture.
4. The tooth brush head assembly of claim 1, further comprising a plurality of bristles that are vertically clustered and mounted but without blockage of the aperture, and further comprising:
   (a) at least one monofilament intrinsically having two terminal ends; and
   (b) said monofilament is looped such that each of said terminal ends of said monofilament itself ends outside the aperture.
5. The tooth brush head assembly of claim 1, further comprising a plurality of bristles that are clustered and mounted in an angulature such that the angulature passes across the aperture and is of such size, dimension and location as to synergetically improve drainage and ventilation.
6. A tooth brush head assembly having:
   (a) a substantially rectangular aperture passing therethrough of substantial size sufficient for drainage of fluids and air ventilation associated with use of the toothbrush;
   (b) a plurality of bristles that are vertically clustered and mounted but without blockage of the aperture;
   (c) at least one monofilament intrinsically having two terminal ends wherein said monofilament is looped such that each of said terminal ends of said monofilament itself ends outside the aperture; and
   (d) a plurality of bristles that are clustered and mounted in an angulature such that the angulature passes across the aperture and is of such size, dimension and location as to synergetically improve drainage and ventilation.

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