

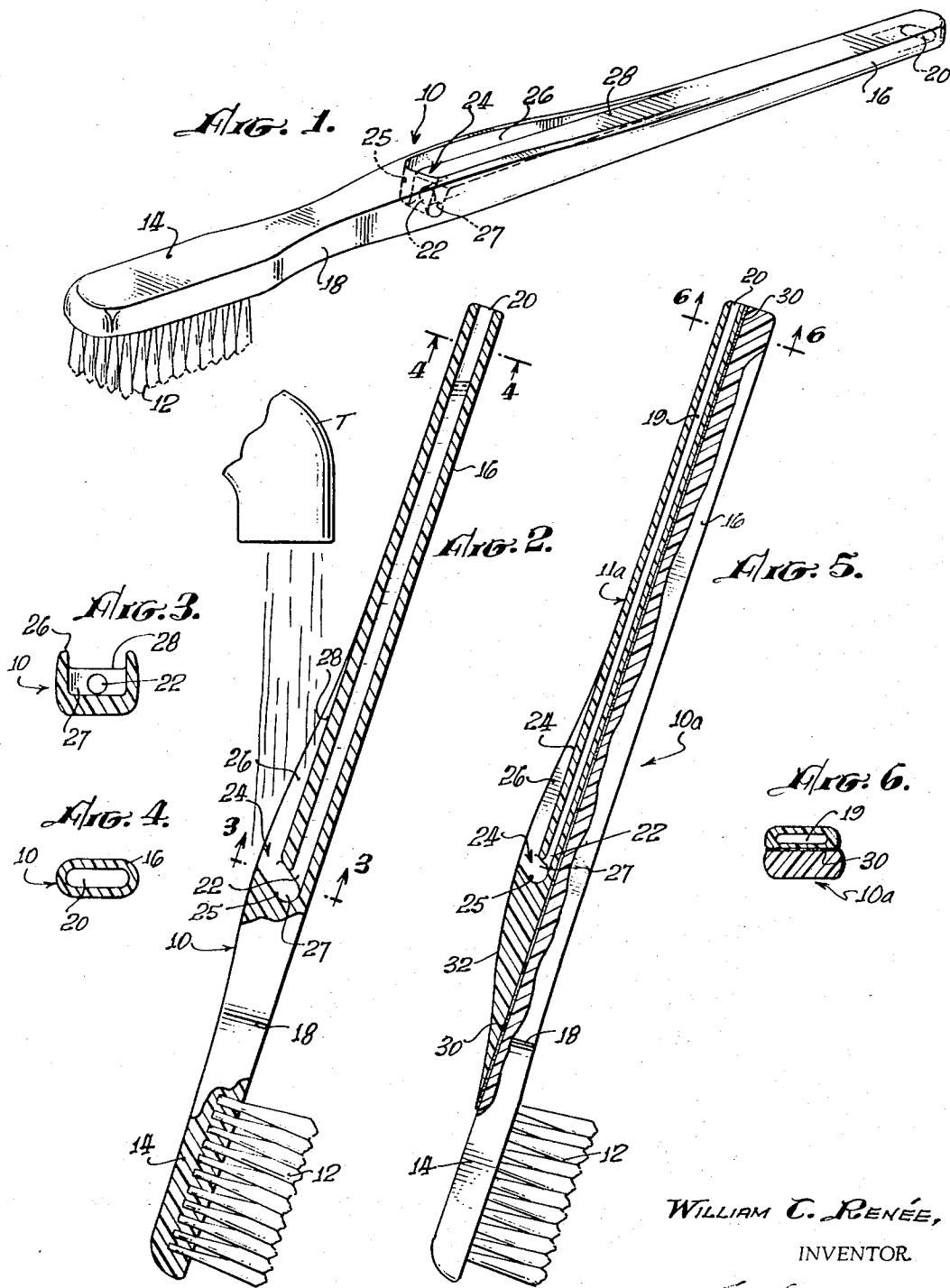
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COMBINATION TOOTHBRUSH AND SIPPING TUBE

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1

2

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COMBINATION TOOTHBRUSH AND SIPPING TUBE

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ABSTRACT OF THE DISCLOSURE

The invention relates to a sipper tube device of the type intended to be held under a flowing stream of water and which is characterized in that it has external vanes on its outer surface for retaining and guiding flowing water to an entry opening or chamber which is connected to the entry end of a longitudinal sipping conduit, the entry opening or chamber being at an acute angle to the sipping conduit so that water directed by the vanes through the entry opening or chamber is given an affirmative head of pressure towards the outlet end of the sipping conduit whereby water may be readily sipped through the conduit by a user when the device is held in a falling stream of water.

The present invention relates to toothbrushes, and more specifically to toothbrushes which include integrally associated sipping means in the handles thereof, whereby the user may derive water from the flow from an ordinary spigot without requiring a separate receptacle for that purpose.

In the proper care of human teeth, it is customary for individuals to brush their teeth, usually several times a day, for the purpose of cleansing and polishing the teeth and for the removal of food particles therefrom. For this purpose, a cleansing material in paste, powder or liquid form is placed upon the bristles of a brush and the teeth and gums are brushed and massaged therewith. Generally, after the brushing with cleansing material, the mouth is rinsed with water to remove the usually soapy material and to remove food particles loosened from the teeth by the brushing procedure. For this purpose, most individuals keep drinking receptacles in the bathroom. This arrangement has certain disadvantages in that expense and litter are involved if disposable receptacles are used and that clutter and/or unsanitary conditions result if non-disposable receptacles are used, since there must be either one for each member of the family or a communal receptacle. In either case, such receptacles are more often rinsed than truly washed between uses and are not replaced as often as they should be so that a general sanitation problem usually exists.

In the past, some efforts have been made to overcome the disadvantages discussed in the preceding paragraph, as by providing sipping devices, either combined with toothbrushes or as separate devices. Such sipping devices have not come into popular use because the sipping function has not been adequately performed when they have been used in an effort to derive water from a running tap. It has generally been true that the flow of water over the inlets of such devices has created a suction tending to cause the user to draw air bubbles and to have difficulty drawing water. Moreover, prior to the present invention, efforts to combine such devices with toothbrushes have suffered from a variety of disadvantages in addition to the difficulty of drawing water as previously discussed. For example, some toothbrush-sipping tube combination arrangements have provided water inlet openings in the area of the brush bristles connected by a passage through the handle to a sipping mouthpiece at or near the end of the handle remote from the brush bristles, and such ar-

rangements are disadvantageous in that water sipped therethrough is subject to including soapy materials and food particles from the bristle-end of the brush. Other types of such toothbrush sipping device combinations have had the disadvantage that the sipping tube inlets have been so placed at the handle end of the brush and of such size as to interfere with the proper gripping of the brush handle by the user. It is also generally true that sipping or drinking arrangements on toothbrush handles, prior to the present invention, have been subject to the disadvantage that the shapes involved have been such that such devices could not be hung in the openings of a conventional toothbrush holder in the normal manner, i.e. by inserting the entire handle through an opening in the holder and supporting the brush by engagement of the bristles with the holder surface which defines the opening.

The toothbrush-sipping tube combinations of the present invention overcome the above-stated disadvantages inherent in the prior art by providing a toothbrush having a sipping tube device longitudinally of the handle thereof, wherein the inlet of the sipping tube is so spaced from the brush bristles as not to be clogged or contaminated by performance of the brushing function so that food or other contaminants cannot enter the sipping tube or become lodged therein; wherein the inlet is of a nature to provide a positive pressure of water in the direction of the mouthpiece when the inlet is placed in a stream of running water; and wherein the arrangement is such that the combination toothbrush and sipping tube may be hung in a conventional toothbrush holder. These and other advantages are provided by the present invention in structure which may be economically fabricated and is particularly adapted to be made by mass production manufacturing techniques.

It is, therefore, an object of the present invention to provide improved toothbrush constructions.

Another object of the present invention is to provide improved toothbrush-sipping tube combinations of the type which permit an individual using a toothbrush to utilize the brush handle as a sipping straw to derive water from a running stream of water for rinsing the mouth in completing a toothbrushing operation.

Still another object of the present invention is to provide improved toothbrush-sipping tube combinations wherein water inlet of the sipping tube device is so positioned that it will not allow ingress of soapy cleansing material, food particles or other contaminants into the fluid passing through the sipping tube.

Yet another object of the present invention is to provide an improved toothbrush-sipping tube combination wherein the stem of the combination, which includes the sipping tube and to which the bristles are attached, may be a unitary and simply and economically molded piece.

A still further object of the present invention is the provision of an improved toothbrush-sipping tube combination wherein the sipping tube is of such construction that a pressure of fluid flow towards the mouthpiece portion thereof is caused when the inlet portion of the device is properly held in a running stream of water.

Yet another object of the present invention is the provision of improved sipping tube means wherein the inlet thereof is of such construction that a pressure of fluid flow towards the mouthpiece portion thereof is caused when the inlet is properly held in a running stream of water.

These and other objects and the advantages attendant thereto will become obvious from the following detailed specification taken in conjunction with the accompanying drawing in which like reference characters designate like parts in the several views and in which;

FIGURE 1 is a perspective view of a combined toothbrush and sipper according to the present invention.

3

FIGURE 2 is a longitudinal central cross-sectional view of the structure shown in FIGURE 1, illustrating the device in a position of use beneath a running stream of water.

FIGURE 3 is a cross-section taken along the line 3—3 of FIGURE 2.

FIGURE 4 is a cross-section taken along the line 4—4 of FIGURE 2.

FIGURE 5 is an elevational view, with parts broken away for clarity of illustration, of a modified form of combined toothbrush and sipping tube according to the present invention.

FIGURE 6 is a cross-sectional view taken along the line 6—6 of FIGURE 5.

Attention is now directed to FIGURES 1 to 4 of the drawing, illustrating a preferred embodiment of a device according to the present invention, and comprising a stem (generally indicated by the reference numeral 10) having bristles 12 attached thereto. The nature, shape, arrangement and manner of attachment of the bristles 12 are not the subject of the present invention and the bristles may be of any type or arrangement and attached in any desired known manner.

The stem 10 comprises a brush portion 14, to which the bristles 12 are attached, and a handle portion 16. The handle portion 16 and brush portion 14 are separated from one another by a narrowed neck portion 18 as is relatively conventional in toothbrush constructions. According to the present invention, the handle 16 is provided with a longitudinal passage 19 extending from an outlet opening 20 at the end of the handle to a point 22 which is substantially short of the neck portion 18 and the bristles 12 as shown in the drawing.

The handle 16 is also provided with an inlet passage 24 which intersects the inner open end 22 of the passage 19. The inlet passage 24 is of relatively greater width than the inner end 22 of the passage 19 in order to provide the largest possible entry into the said passage, and is defined by a wall 25 disposed at an acute angle to the direction of the passage 19, and an inner chamber 27 which is in communication with the inner end 22 of the passage. The inlet passage 24 is externally formed, in part, by a feeding and directing trough formed by the top wall 28 of the relatively thin handle portion 16 and upstanding directing vanes 26, the function of said trough being to direct the falling water into the passage 24. The vanes 26 are in planes with the lateral edges of the stem 10 and are preferably rounded into the stem configuration, as shown in the drawing, for esthetic effect and for ease of use.

The effect of the acute angle relationship of the wall 25 with the passage 19 is to provide a generally reentrant or U-shaped flow path at the inner end of the passage, as shown in the drawing. Thus, liquid entering the inlet 24 may be drawn along a continuous tubular path through the chamber 27 and the passage 19 to the mouthpiece outlet 20 if the inlet 24 is held under a tap T (see FIGURE 2) and suction applied by the mouth of the user at the mouthpiece 20.

An important feature of the present invention is the reentrant or U-shaped nature of the water passage, as previously described, which is effective to provide a positive pressure toward the mouthpiece due to the kinetic energy of the falling flow of water entering the inlet 24 and the effect of such pressure is indicated by the level of water in the passage 19 in FIGURE 2.

Another and related important feature is the provision of the previously described water gathering and guiding wall 28 and vanes 26, on the stem 16, the said wall and vanes serving to gather and guide water to the entry 24 to thereby augment the positive pressure achieved by the U-shaped tubular structure previously described. It should be noted that the gathering and guiding function are accomplished in a manner and within a physical body shape which does not interfere with normal handling of

4

the brush for toothbrushing functions or for hanging in a standard toothbrush holding fixture.

If desired, the passage 19 may be made larger (as by making it oval or of greater circular circumference) at the outlet end 20 than it is at its inner end 22 so that any tendency for clogging by undesired foreign particles is inhibited and the sipping tube 19 maintains a continuous hygienic condition. One example of such a construction is shown in FIGURES 1 to 4, and is best seen by a comparison of FIGURES 3 and 4.

As indicated in the introductory remarks, it is an important feature of the present invention that the inlet opening 24 to the sipping tube passage 19 is not positioned so close to the bristle area as to allow entry of soapy material or food particles into the opening. Similarly, it is also preferable that opening 24 be not too close to the handle portions 16 of the stem 10. Preferably the inlet opening is placed a distance between one-half and one-sixth of the full length of stem 10 from the terminal end of the brush portion thereof, and the precise placement may change in each case, depending on the size of the brush and of the handle, as it may vary in adult and children's sizes.

In use, the toothbrush described hereinabove is utilized to brush the teeth in conventional fashion, with cleansing material used on the bristles to massage the gums and clean the teeth. In this usage it should be noted that the position of entry 24 relative to the passage 19 is such that it does not enter the mouth or interfere with the brushing function and that the walls or vanes 26 serve an added function of giving an improved friction grip. After the brushing and massaging function is completed, the user places the brush in the path of water flowing from a tap T, with the entry 24 in the path of the falling water, as shown in FIGURE 2, and then places the end 20 of the stem 10 in his mouth. The application of very slight suction causes a steady stream of water to be drawn into the mouth of the user for rinsing or drinking purposes.

FIGURE 5 and 6 illustrate another preferred embodiment of the present invention, wherein a standard toothbrush may be utilized and an attachment of an appropriately proportioned sipping tube made thereto to create a combination toothbrush-sipping tube device similar to that previously described. Thus, the stem 10a of a standard toothbrush may have a sipping device 11a attached thereto by any suitable known adhesive 30, which may be a pressure sensitive plastic glue. The sipping device 11a is provided with a forward brushward portion 32 which tapers to a thin portion at its extreme forward end, as shown, in order to provide thickness at the entry 24 and to blend with the surface of the toothbrush. The device of FIGURES 5 and 6 is used, of course, in the same manner as that of FIGURES 1 to 4 and offers the advantage that it makes it possible to convert a standard toothbrush into a combination toothbrush-sipping tube device according to the present invention. For this purpose, the attachment 11a is provided in different lengths to adapt it to use with different size brushes and preserve a proper position of the entry 24 relative to the brush and mouthpiece ends.

From the above it may be seen that the present invention provides improved toothbrush-sipping tube devices which are economical to manufacture and which provide significant advantages in their operativeness, since positive pressures are developed in the sipping devices, and soapy material and other sources of contaminant material are excluded from the sipping tube in the normal use of the device in a falling stream of water.

Obviously many variations in materials used and in size, shape and arrangement of the various parts shown in the purely illustrative examples may be made within the spirit of the foregoing disclosure. Thus, the entry 24 may be on either or any side of the stem 10 or 10a. Also, although illustrated in plastic molded forms in the il-

5

illustrated examples, devices according to the present invention may obviously be made of other materials, such as wood or metal and could be machined, if desired. It should also be noted that the passage 19 could be a plurality of parallel passages rather than a single tubular passage, if desired. It should therefore be understood that the invention is not to be limited by the specific examples illustrated and described herein, but rather by the scope of the appended claims.

What is claimed is:

1. A sipper tube device comprising an elongated stem, said stem having a longitudinal conduit extending from an outlet opening in one end thereof to an inner terminus adjacent the other end thereof, an inlet passage extending from an entry opening in the outer surface of said stem in the vicinity of said terminus, said inlet passage communicating with said longitudinal conduit, said inlet passage being wider than said conduit to provide an enlarged entry opening and a chamber communicating with the inner terminus of said conduit, said inlet passage being defined by a wall which is at an acute angle to said conduit and by said entry opening, the entry opening being adjacent said wall and toward the first mentioned end of the stem relative to said wall, whereby said inlet passage and said chamber provide a generally U-shaped configuration so that a flow of water striking said wall and entering said chamber is given an affirmative pressure into said conduit, said stem being thickened at the said other end thereof so that the inner extremity of the thickened portion provides said wall, the edges of said stem on either side thereof having raised vanes connected to the edges of said wall to provide means for guiding a flow of water into said entry opening.

2. A sipper tube device according to claim 1, wherein said conduit is of gradually increasing cross-sectional area along its length, being of larger area at the outlet opening than at the inner terminus thereof.

3. A sipper tube device comprising an elongated stem, said stem having a longitudinal conduit extending from an outlet opening in one end thereof to an inner terminus adjacent the other end thereof, an inlet passage extending from an entry opening in the outer surface of said stem and connecting with said inner terminus to thereby form a continuous passageway with said conduit, said stem being thickened at the said other end thereof, the inner extremity of the thickened portion providing an end wall of the said inlet passage, the edges of said stem on either side thereof having raised vanes connected to the edges of said wall to provide means for guiding a flow of water into said entry opening.

4. A sipper tube device according to claim 3, wherein said inlet passage is wider than said conduit to provide an enlarged entry opening and chamber communicating with the inner terminus of said conduit.

6

5. A sipper tube device according to claim 3, wherein said end wall of the inlet passage is at an acute angle to said conduit, whereby the entry opening, the inlet passage and the longitudinal conduit provide a generally U-shaped configuration so that a flow of water striking said end wall and entering said inlet passage is given an affirmative pressure into said conduit.

6. A sipper tube device comprising an elongated stem, said stem having a longitudinal conduit extending from an outlet opening in one end thereof to an inner open terminus adjacent the other end thereof, an inlet passage extending from an entry opening in the outer surface of said stem in the vicinity of said terminus, said inlet passage communicating with said terminus, said inlet passage being defined by a wall which is at an acute angle to said conduit and by said entry opening, the entry opening being adjacent said wall and toward the first mentioned end of the stem relative to said wall, whereby said inlet passage and said chamber provide a generally U-shaped configuration so that a flow of water striking said chamber is given an affirmative pressure into said conduit.

7. A sipper tube device comprising an elongated stem, said stem having a longitudinal conduit extending from an outlet opening in one end thereof to an inner open terminus adjacent the other end thereof, an inlet passage extending from an entry opening in the outer surface of said stem in the vicinity of said terminus, said inlet passage communicating with said terminus, said inlet passage being defined by a wall at the side thereof toward the said other end and by said entry opening, said wall extending out from the outer surface of said stem, whereby a flow of water directed along said stem will be diverted by said wall through said inlet passage and to the terminus of said conduit.

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