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(54) **MULTI-PURPOSE ADJUSTABLE TOOTHBRUSH**

Related U.S. Application Data

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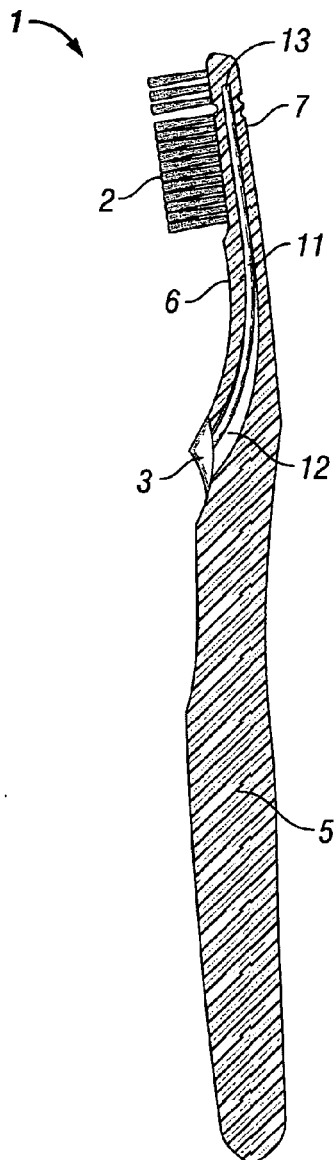
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(57) **ABSTRACT**

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A multi-purpose adjustable toothbrush featuring a mechanism for selectively controlling whether the toothbrush and toothbrush head will be used in a rigid or flexible state.



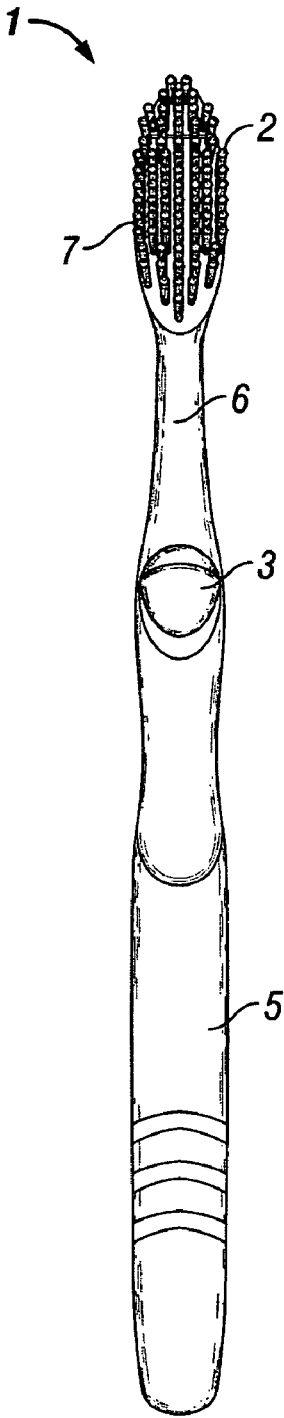


FIG. 1

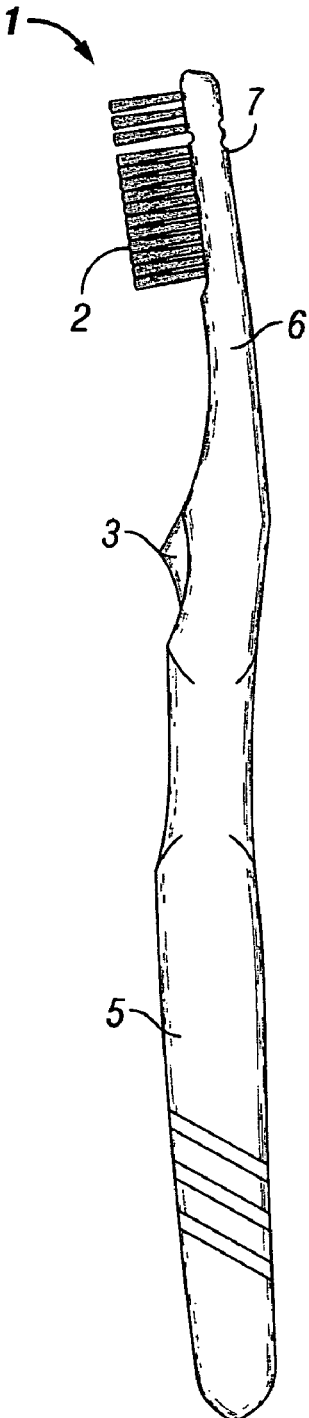


FIG. 2

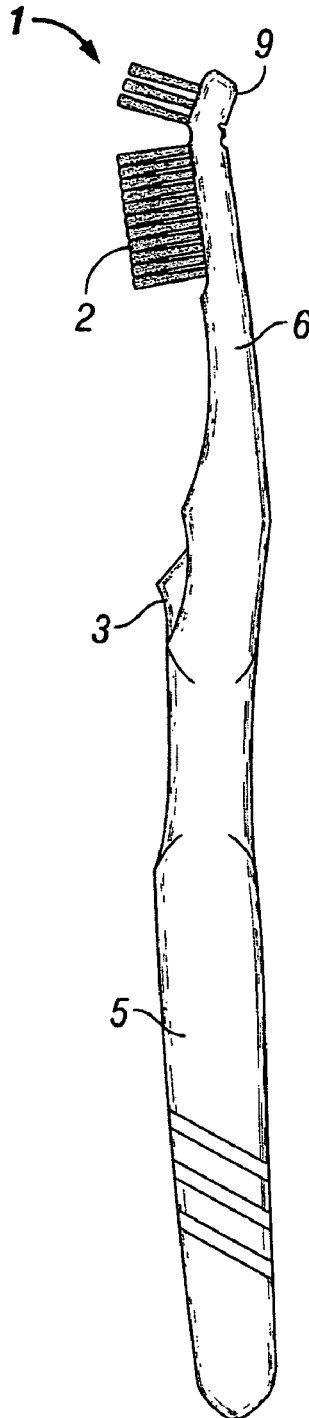


FIG. 3

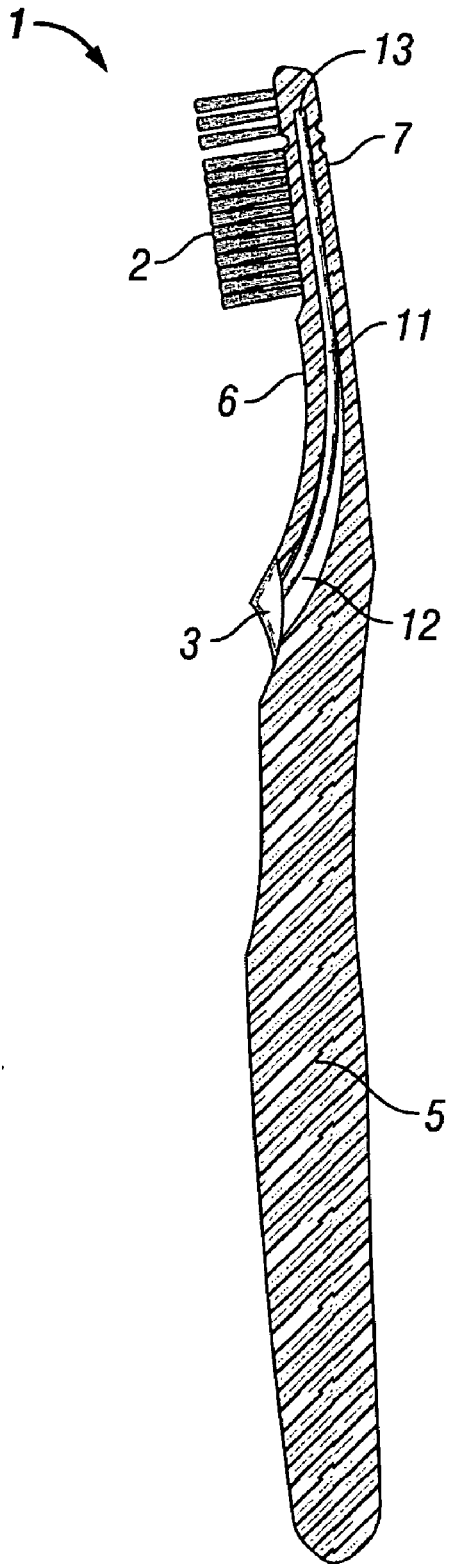


FIG. 4

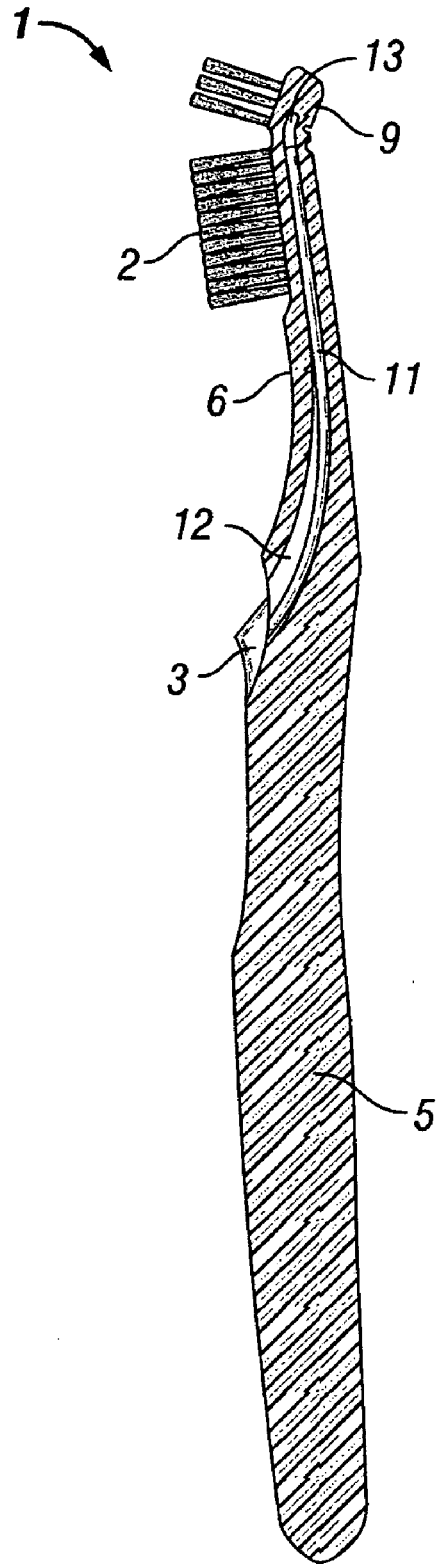


FIG. 5

MULTI-PURPOSE ADJUSTABLE TOOTHBRUSH**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims priority from provisional patent application No. 60/617,596.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

BACKGROUND OF THE INVENTION

[0003] 1. Field of Invention

[0004] This application claims priority from provisional patent application No. 60/617,596. The present invention relates to the field of toothbrushes.

[0005] 2. Description of Prior Art

[0006] There are a variety of toothbrushes on the market. In the realm of toothbrushes, the consuming public is constantly looking for a product that gives the user multiple choices for the methodology of cleaning his or her teeth. For example, for medical reasons or for reasons of simple preference, there are a variety of bristle strengths, namely, soft, medium, and firm. Some users prefer rotating mechanized toothbrushes, while others prefer a vibrating bristle, and still others prefer a hand-held manual model. Some individuals prefer a flexible hand-held toothbrush and others may prefer a rigid model. U.S. Pat. No. 5,898,967 to Wu (1999) discloses a toothbrush with a flexible head by virtue of an embedded leaf-spring in a toothbrush. It is generally accepted that a flexible head feature may be beneficial on a toothbrush, for purposes of reaching multiple tooth surfaces within the mouth and because a flexible toothbrush allows for soft tension on a gumline. U.S. Pat. No. RE38,521 to Halm (2004) features a toothbrush with a highly flexible toothbrush head member featuring elastomeric grooves between linked segments of the toothbrush head. Similar patents for toothbrushes include U.S. Pat. No. 6,708,364 to Huber (2004) (flexible head design disclosed); U.S. Pat. No. 6,219,874 to Gelder (2001) (flexible bristle-bearing head); U.S. Pat. No. 2,438,268 to Bressler (1946) (flexible head toothbrush). The Reach® brand toothbrushes have also capitalized on toothbrushes featuring angled heads, as found in U.S. Pat. No. 4,829,621 to Phenegar (1989) which has a thermoplastic elastomeric deformable neck.

[0007] While the above referenced patents demonstrate that flexible head toothbrushes are beneficial, it is also desirable at times to have a toothbrush with a firm disposition, particularly where a deep, aggressive brush and maximal leverage are desired. Sometimes, a rigid toothbrush and head work best for maximal plaque removal. Although numerous improvements have been made in the toothbrush industry, none effectively solve the problem addressed by the present invention.

[0008] The present invention offers an alternative to the consuming public—a toothbrush featuring choices for the user between a flexible and firm toothbrush.

SUMMARY OF THE INVENTION

[0009] Accordingly, it is the objective of the present invention to provide an adjustable toothbrush that features either a flexible or rigid position depending on user preference.

[0010] It is a further object of the present invention to provide a toothbrush head that will be readily adjustable between varying flexible and rigid positions.

[0011] It is a further object of the present invention to provide a toothbrush that will be readily adjustable by means of a selectively positionable rod disposed within an internal passageway of the toothbrush.

[0012] It is a further object of the present invention to provide a toothbrush that will be readily adjustable by means of a selectively positionable sleeve or support member disposed on the exterior of the toothbrush.

[0013] It is a further object of the present invention to provide a toothbrush featuring a polishing feature on the backside of the toothbrush head.

[0014] It is still a further object of the present invention to provide a toothbrush that is relatively inexpensive and yet durable.

[0015] Other objectives of the invention will become apparent to those skilled in the art once the invention has been shown and described.

BRIEF DESCRIPTION OF THE DRAWING

[0016] The manner in which these objectives and other desirable characteristics can be obtained is explained in the following description and attached drawings in which:

[0017] **FIG. 1** is a top perspective view of the underside of the multi-purpose adjustable toothbrush.

[0018] **FIG. 2** is a side perspective view of the multi-purpose adjustable toothbrush in rigid form.

[0019] **FIG. 3** is a side perspective view of the multi-purpose adjustable toothbrush in flexible form.

[0020] **FIG. 4** is a side cross-sectional view of the multi-purpose adjustable toothbrush in rigid form, wherein a thumb mount, internal passageway, and rod are depicted.

[0021] **FIG. 5** is a side cross-sectional view of the multi-purpose adjustable toothbrush in flexible form, wherein a thumb mount, internal passageway, and rod are depicted.

[0022] It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

DETAILED DESCRIPTION OF THE INVENTION

[0023] Although specific embodiments of the invention will now be described, it should be understood that these embodiments are examples only and merely illustrate a small number of the many possible specific embodiments that can represent application of the principles of the invention. Various changes and modifications obvious to one skilled in the art, to which the present invention pertains, are deemed to be within the spirit, scope and contemplation of the present invention as further defined in the claims.

[0024] **FIG. 1** is a top perspective view of the underside of the multi-purpose adjustable toothbrush 1. Specifically featured are a handle 5, neck 6, the head 7 (one side featuring

a bristle base), and the bristles 2 that are found on most toothbrushes. These components may be fashioned from materials that are known in the art. Also shown is a thumb mount 3, presented in a preferable forward position, as it would preferably appear when the toothbrush 1 is fixed in a rigid position. The thumb mount 3 is selectively positionable by the user to control whether toothbrush 1 and the head 7 are in a flexible or rigid state. Thumb mount 3 may be formed from a variety of materials, including hard or soft rubbers or plastics and may be located preferably along the length of the handle 5 or on the neck 6 for ease of use. As further described herein, the thumb mount 3 is fixedly connected to a proximal portion of a rod 11 disposed within an internal passageway 12 of the toothbrush 1 (see FIG. 4-5). A change in position of the thumb mount 3 causes a corresponding change in the position of the rod 11, which ultimately effects the rigid or flexible state of toothbrush 1. The term "thumb" is not intended to limit operation of the mechanism by a thumb, however, merely describes a preferable digit employed to operate the mechanism acting on the rod 11.

[0025] FIG. 2 is a side perspective view of the multi-purpose adjustable toothbrush in rigid form. FIG. 2 shows the thumb mount 3 in a forward position and the corresponding preferable position of toothbrush 1 and head 7 in a rigid state, which the user may prefer when maximal leverage and strength are needed during brushing.

[0026] FIG. 3 is also a side perspective view of the multi-purpose adjustable toothbrush 1, however, in a flexible form. The thumb mount 3 is in a downward position, which is a preferable position to allow head 7 to bend by and through a head flexor 9 portion of the head 7. Sometimes it is desirable when brushing one's teeth to use a flexible toothbrush-such flexibility permitting better access to recesses, rearward teeth, or otherwise hard-to-reach surfaces. As further described in FIGS. 4-5, this flexibility is accomplished according to user preferences when action on thumb mount 3 works to cause rod 11 within internal passageway 11 to retract from the head 7 portion of the toothbrush 1, allowing head 7 to react to brushing in a flexible manner. The flexible action may be confined to a tip of head 7 by and through a head flexor 9, or the rod 11 may also retract to permit flexible action of the entire head 7 of the toothbrush 1. It should be noted that this inventive feature will work with toothbrushes featuring an angled "neck" portion leading toward the head 7 or with toothbrushes featuring contoured handles 5.

[0027] FIG. 4 is a side cross-sectional view of the multi-purpose adjustable toothbrush 1 in rigid form, wherein the thumb mount 3, internal passageway 12, and rod 11 are depicted. This view shows a preferable embodiment wherein the rod 11 is pushed all the way forward into distal passageway 13, thereby providing a rigid structure for head 7. Thumb mount 3 is fixedly connected to a proximal portion of rod 11, which rod 11 then moves forward or backward within internal passageway 12, according to the user's preference for flexibility or rigidity. Internal passageway 12 is preferably formed by injection molding, thermoform, or other molding processes, however, by any means of forming the internal passageway 12, the principal feature of said internal passageway 12 is to provide a rigid and defined channel by and through which rod 11 may pass to regulate the flexibility or rigidity of the toothbrush 1. Internal pas-

sageway 12 extends through and within the toothbrush 1, preferably through head 7, neck 6, and it may extend through handle 5, until such point as it preferably opens to meet thumb mount 3. The internal passageway 12 is of a length preferably in the range of 2 to 10 centimeters in length. The rod 11 is preferably formed from rigid plastics or metals, as its principal function is to provide rigidity when engaged. Toothbrush 1 and its components are preferably formed from materials or combinations of materials commonly known in the art of toothbrush manufacture, including but not limited to rigid plastics (polyethylenes, high density polyethylenes, polypropylenes, polyamides, elastomers, polyvinylchloride, etc.), as well as more flexible plastics, rubbers, synthetic rubbers, and elastomeric materials commonly used on handle grips to enhance flexibility on the toothbrush 1 and head 7.

[0028] FIG. 5 is a side cross-sectional view of the multi-purpose adjustable toothbrush 1 in flexible form. The thumb mount 3 and rod 11 are shown retracted within internal passageway 12, so that distal passageway 13 is empty, and where the rod 11 is not in a position to provide rigidity to the head 7. In other words, without rod 11 present in the distal portion of passageway 12, the toothbrush 1 is free to respond as it otherwise might. A head flexor 9 is shown, which would preferably feature an elastomeric construction material to permit bending and flexibility of the toothbrush head at the toothbrush end (end opposite handle 5). The inventor contemplates that rod 11 could preferably be withdrawn to varying degrees and in varying increments to permit varying flexibility along the entire length of head 7, as well as neck 6. The flexibility of head 7 when rod 11 is not engaged depends solely on the construction of the head member—a variety of preferable designs and flexibilities are disclosed in the prior art. In this patent the term "thumb mount" is used to describe a preferable position for a mechanism to control movement of the rod 11 within internal passageway 12, however, the use of the term "thumb" is not intended to be limiting of the mechanism, but merely descriptive of a preferable digit likely to be used to activate the mechanism. The thumb mount 3 could be used with an index finger, or an elbow, so long as the action is accomplished.

[0029] Although not shown in FIGS. 1-5, an embodiment of multi-purpose adjustable toothbrush 1 is contemplated that selectively accomplishes flexibility or rigidity of toothbrush 1 without an internal passageway 12 or rod 11, but rather by use of a sleeve or rigid support member slidably fixed to the back of toothbrush 1 (along head 7, or head 7 and neck 6 opposite the bristle side), and wherein the toothbrusher uses his or her hands to slide the sleeve to a forward position favoring rigidity or backward to allow flexibility. Also, the inventor contemplates an embodiment of the present of the present invention where a polishing surface is on the backside of head 7, said polishing surface formed from synthetic rubber, textured or elastomeric plastic.

[0030] It is understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above. While certain novel features of this invention have been shown and described, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its

operation can be made by those skilled in the art without departing in any way from the spirit of the invention.

I claim:

1. A multi-purpose adjustable toothbrush comprising:
 - (a) a handle, a neck, bristles and a head;
 - (b) an internal passageway disposed within said toothbrush;
 - (c) a rod within said internal passageway selectively positionable by the user; and,
 - (d) whereby changing positions of the rod allows for selected flexibility or rigidity of said toothbrush.
2. The multi-purpose adjustable toothbrush of claim 1 further comprising a thumb mount fixedly connected to a proximal end of said rod, whereby force on said thumb mount causes action on said rod.
3. The multiple purpose adjustable toothbrush of claim 1 wherein said internal passageway is in the range of 2 to 10 centimeters in length.
4. The multiple purpose adjustable toothbrush of claim 1 wherein changing positions of the rod allows for selected flexibility or rigidity of said toothbrush head.
5. The multi-purpose adjustable toothbrush of claim 1 further comprising a head flexor, whereby the tip of said head is flexible or rigid depending on rod position.
6. The multi-purpose adjustable toothbrush of claim 1 further comprising rubber grips on said handle.
7. The multi-purpose adjustable toothbrush of claim 1 further comprising a polishing surface on said head, opposite the side where bristles are featured.
8. A multi-purpose adjustable toothbrush comprising:
 - (a) a handle, a neck, bristles and a head;
 - (b) a rigid support member slidably fixed to the back of said toothbrush, said support member slidably movable between a forward position and backward position;
 - (c) whereby changing positions of said support member allows the user to opt for flexibility or rigidity of said toothbrush.
9. The multi-purpose adjustable toothbrush of claim 8 further comprising a head flexor.
10. The multi-purpose adjustable toothbrush of claim 8 further comprising rubber grips on said handle.
11. The multi-purpose adjustable toothbrush of claim 8 further comprising a polishing surface on said head, opposite the side where bristles are featured.

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