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(54) Toothbrush with gum cushions on the sides of the head

(57) The invention includes a toothbrush head having an end proximal a toothbrush handle, an end distal to the toothbrush handle, a dorsal surface for holding at least one toothbrush bristle, a ventral surface opposite the dorsal surface, first and second sides disposed between the dorsal and ventral surfaces of the toothbrush head, and a plurality of gum cushions disposed on each of the sides of the toothbrush head, where the height of the respective gum cushions tapers from the proximal end of the toothbrush head to the distal end of the toothbrush head.

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Description

Field of the Invention

[0001] This patent relates to a toothbrush head that is comfortable to use and that provides the user of the toothbrush with an indication of when the user may be brushing with excess pressure.

Background of the Invention

[0002] A toothbrush sold under the Tradename Mentadent White & Clean has a handle that includes a base, an offset, a straight neck, and an angled toothbrush head. A toothbrush also is known which includes a base, a thumb grip portion, an offset, a neck and a head, where the offset and neck are angled with respect to the longitudinal axis of the base. However, such brushes do not indicate to the consumer when one may be using excessive force during brushing. There is a continuing need for a toothbrush handle that is more comfortable during use, that optionally provides improved access to back teeth, and that serves to indicate when one may wish to brush softer. The present invention provides such a benefit.

Summary of the Invention

[0003] The invention includes a toothbrush head having an end proximal a toothbrush handle, an end distal to the toothbrush handle, a dorsal surface for holding at least one toothbrush bristle, a ventral surface opposite the dorsal surface, first and second sides disposed between the dorsal and ventral surfaces of the toothbrush head, and a plurality of gum cushions disposed on each of the sides of the toothbrush head, where the height of the respective gum cushions tapers from the proximal end of the toothbrush head to the distal end of the toothbrush head.

Brief Description of the Drawings

[0004] FIG. 1 is a top plan view of a toothbrush according to the present invention.

[0005] FIG. 2 is a side view of the toothbrush of FIG. 1.

[0006] FIG. 3 is a plan view of the bottom side of the toothbrush of FIG. 1..

[0007] FIG. 4 is a front view of the toothbrush of FIG. 1 taken along the longitudinal axis of the base portion of the toothbrush.

[0008] FIG. 5 is a rear view of the toothbrush of FIG. 1 taken along the longitudinal axis of the base portion of the toothbrush.

[0009] FIG. 6 is a cross-section through the base portion of the toothbrush at A-A.

[0010] FIG 7 is an elevated side view of a toothbrush head according to the present invention.

Detailed Description of the Ivention

[0011] As is seen in Figures 1-6, where like numbers refer to like elements, in one embodiment, a toothbrush **20** of the present invention has a base portion **1,** having a dorsal surface **15,** a ventral surface **16** and longitudinal axis **b** bisecting base portion **1.** Base portion 1 is ovoid and is sized to fit comfortably in the palm of a consumer's hand. As used herein, ovoid means a two-dimensional figure where the cross-section of the figure is generally rounded and includes ovoidal shapes having one or both of the top and bottom surfaces flattened of the figures flattened, as seen in Figure **6.** Base portion **1** tapers towards a brush head **6** of the present invention to form a waist **2.** A grip portion **7** is adjacent waist **2** and terminates at a shoulder **3.** An offset **4** is disposed between shoulder **3** and a neck **5,** which is adjacent to toothbrush head **6.** Toothbrush head **6** has a dorsal surface **13** that is continuous with dorsal surface **15** of the toothbrush. Grip portion **7** and waist **2** are concave with respect to dorsal suface **15** of the toothbrush. Offset **4** is designed to provide improved access to back teeth. The angle **c'** of the longitudinal axis **c** bisecting offset **4,** with respect to longitudinal axis **b** bisecting base portion **1,** may range from about 10 to about 45 degrees, or about 20 to about 30 degrees, for example 24 degrees. The angle **a**' of the longitudinal axis **a** bisecting toothbrush neck **5,** with respect to the longitudinal axis **b** of base portion **1,** may range from about 5 to about 15 degrees, or from about 10 to about 15 degrees, for example 12 degrees. Toothbrush head **6** is sized for maximum cleaning and comfort during use. Ventral surface **16** of base portion **1** and the point where offset **4** and neck **5** meet may be flatened to prevent the toothbrush from rolling when placed on a flat surface, e.g. a counter top. In addition, dorsal surface **15** of base portion **1** may be flattened to provide a more comfortable grip in the hand, provided that the general ovoidal configuration, as defined herein above, is maintained.

[0012] Toothbrush head **6** of the present invention comprises dorsal surface **13** for containing at least one bristle, a ventral surface **14** opposite dorsal surface **13,** and first **17** and second **18** sides disposed between dorsal **13** and ventral **14** surfaces. Each of the first and second sides comprise an equal number of gum cushions **8** attached thereto. Gum cushions **8** located on either side may be of the same configuration and size, although embodiments where slight differences in configuration and size are included within the scope of the invention. The gum cushions may be made from any soft and flexible material, for example thermoset or thermoplastic elastomers, such as silicone, ethylene propylene diene monomer, styrene copolymers, or rubber. The gum cushions are designed to serve as an indicator of when a consumer is brushing with too much force, which may lead to discomfort or damage to the gums. In this case, the consumer feels the cushions contacting their gums and knows that they should brush with less force. The number

of cushions will depend on the size of the toothbrush head. In a full size toothbrush head, for example one used by adults, the number of gum cushions on each side of the brush head may range from 2 to 5, for example 3. In a compact toothbrush head, for example one used by children or adults with smaller jaws, the number of gum cushions on each side may range from 1 to 3, for example 2. The gum cushions may be separate one from the other, or they may be molded in an integral configuration providing multilobal cushions on both sides of the brush head.

[0013] The gum cushions are sized to function as indicators of brushing pressure, or force. The height of the gum cusions should be less than the height of the bristles so that the cushion is not in contact with the gums while appropriate brushing pressure is being applied. Thus, the height of the cushions relative to the height of the bristles is such that contact with the gums by the cushions may be made at the appropriate pressure, thus indicating that the force being applied is sufficient, while still exposing the teeth to a sufficient bristle area to provide for cleaning of teeth. For instance, the height of the cushions from the dorsal surface of the brush head may range from about 3 to about 9 mm, for example 5, or 7, or 8 mm. In one embodiment as shown in FIG **7,** the toothbrush head contains 3 gum cushions on each side of the brush head that taper in height from the end **21** of the toothbrush head that is proximal to the base portion of the toothbrush to the end **22** of the toothbrush head that is distal to the base of the handle. In this embodiment, the height of the gum cushion **23** proximal to the base portion of the toothbrush handle may be about 8 mm, the height of the middle gum cushion **24** may be about 6.5 mm, and the height of the gum cushion **25** distal to the base portion may be about 5 mm. In order to enable better access to the back teeth, there is a gap **9** between gum cushion **25** and distal end **22** of the toothbrush head. The size of the gap may range from about 5 mm to about 9 mm, for example about 6.5 mm, or about 7.5 mm.

[0014] While the embodiments discussed above and exemplified in the figures utilize the toothbrush head containing gum cushions in combination with toothbrush handles comprising angled offset and neck portions, other embodiments of the invention may utilized the inventive toothbrush heads with toothbrush handles that do not include angled offset and/or neck portions.

[0015] The toothbrush may be made of plastics such as, but not limited to, cellulose acetate propionate, nylon, polyethylene, polypropylene, polycarbonate, and poly (ethylene terephthalate). The plastic is heated above its melting point and injected into a toothbrush cavity in a toothbrush mold.

[0016] The toothbrush may be finished by conventional techniques to add bristles to the head of the toothbrush. The bristles may be stapled into the head of the toothbrush or fused onto the head of the toothbrush. The handle of the toothbrush may be overmolded with materials such as thermoplastic or thermoset elastomers, such as silicone, ethylene propylene diene monomer, styrene copolymers, or rubber. The overmolding process may be carried out in the original toothbrush mold. Alternatively, the toothbrush may be transferred to a separate mold for the overmolding process. The overmolding may be thicker in the thumb grip portion to provide increased comfort during use. Different elastomeric materials may be overmolded in different regions of the toothbrush handle to provide a different feel or different functions.

[0017] The toothbrush head contains toothbrush bristles for cleaning the teeth. The toothbrush bristles may be made from any conventional toothbrush bristle material such as nylon, polyamides, polyesters, polybutylene terephthalate, polypropylene, acetal resins, fluoropolymers, polyacrylates, and polysulfones. The toothbrush bristles may be structured, flocked or coated on their surface area. The toothbrush bristles may contain additives such as, but not limited to abrasives and polishing agents; anti-cavity agents such as sodium fluoride; antimicrobial agents, and combinations thereof. The toothbrush bristles may be angled. For example, as seen in FIG. **7,** the toothbrush bristles that make up the heel tuft **10,** may be at an angle of less than 90 degrees, for example from about 75 to about 85 degrees, or about 83 degrees, towards the base of the toothbrush handle and the toothbrush bristles that make up the toe tuft **11,** may be at an angle of less than 90 degrees, for example from about 75 to about 85 degrees, or about 83 degrees, towards the distal end of the toothbrush head. The center portion of the toothbrush head may contain rows of toothbrush bristles in pairs of tufts **12** that are angled towards each other along the longitudinal direction of the toothbrush head. The angle of these toothbrush bristle tufts may also be about 83 degrees. The top of each tuft may be trimmed in the same direction as the tuft, optionally at the same angle as the angle of the tuft, forming angled peaks.

[0018] Several examples are set forth below to further illustrate the nature certain embodiments of the invention and the manner of carrying it out. However, the invention should not be considered as being limited to the details thereof.

Examples

Example 1 - Toothbrush Handle

[0019] The toothbrush handle shown in FIG. 1 and FIG. 2 may be made from an injection molding machine from polypropylene. Ethylene propylene diene monomer was overmolded on the handle and the toothbrush head to form a thumb grip and gum cushions. Consumers found the toothbrush handle to be comfortable to use and liked the aesthetics of the toothbrush handle.

Example 2 - Toothbrush Head

[0020] The toothbrush head of the toothbrush handle of Example 1 was filled with nylon toothbrush bristles in

the pattern shown in FIG. 1 and FIG. 2. The angle of the toe tuft and the heel tuft was 83 degrees. The angle of the pairs of bristle tufts in the longitudinal direction of the toothbrush head was 83 degrees. The ends of the toothbrush bristles were trimmed to form peaks. The outer toothbrush bristles were tapered bristles. Consumers liked the aesthetics of the toothbrush head.

Claims

1. A toothbrush head, comprising:

an end proximal a toothbrush handle,
an end distal to the toothbrush handle,
a dorsal surface for holding at least one toothbrush bristle,
a ventral surface opposite the dorsal surface,
first and second sides disposed between the dorsal and ventral surfaces of the toothbrush head, and
a plurality of gum cushions disposed on each of the first and second sides of the toothbrush head, wherein the height of the respective gum cushions tapers from the proximal end of the toothbrush head to the distal end of the toothbrush head.

2. The toothbrush head according to claim 1, wherein the toothbrush head comprises 3 gum cushions on each of the first and second sides.

3. The toothbrush head according to claim 2, wherein the height of the gum cushion are about 8 mm, about 6.5 mm, and about 5 mm, respectively.

4. The toothbrush head according to claim 3, wherein the toothbrush head further comprises a toe tuft at an angle of less than 90 degrees towards the distal end of the toothbrush head.

5. The toothbrush head according to claim 4, further comprising a heel tuft at an angle of less than 90 degrees towards the proximal end of the toothbrush head.

6. The toothbrush head according to claim 1, further comprising pairs of toothbrush bristle tufts angled towards each other along the longitudinal direction of the toothbrush head at an angle of 83 degrees.

7. The toothbrush head according to claim 6, wherein the toothbrush bristles are trimmed at the same angle to form angled peaks.

8. The toothbrush head according to claim 3, wherein the toothbrush head further comprises a toe tuft at an angle of about 83 degrees towards the distal end of the toothbrush head.

9. The toothbrush head according to claim 8, further comprising a heel tuft at an angle of about 83 degrees towards the proximal end of the toothbrush head.

FIG. 1

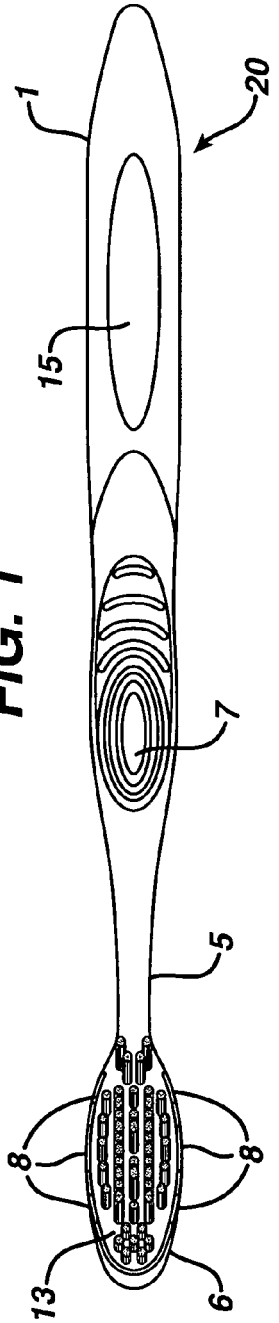


FIG. 2

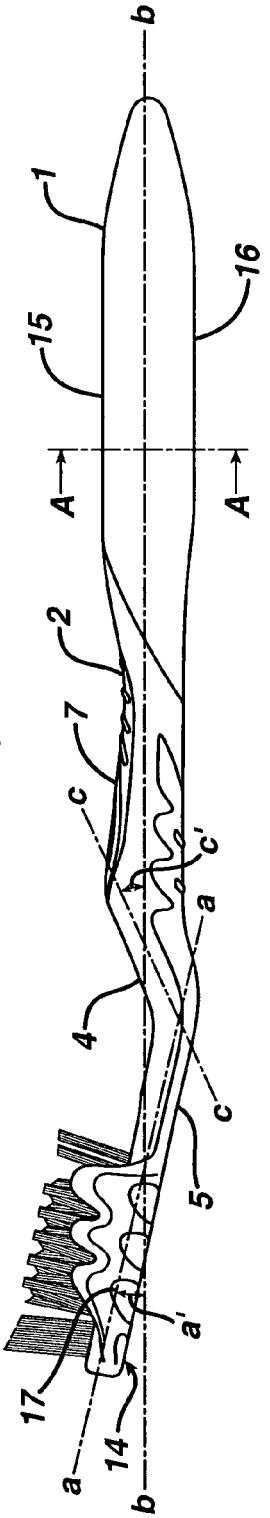


FIG. 3

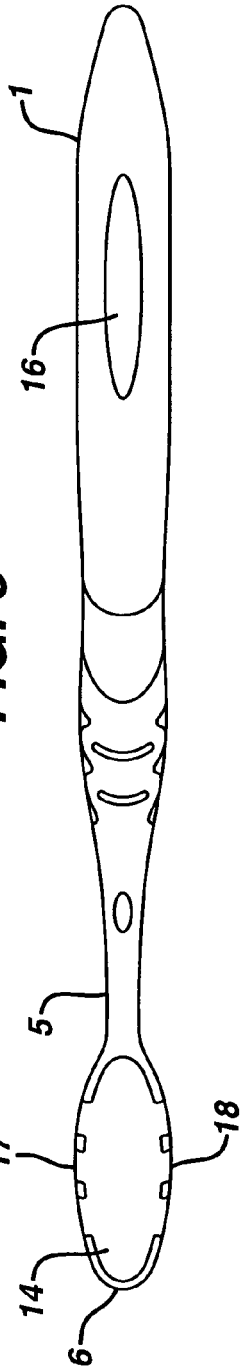


FIG. 4

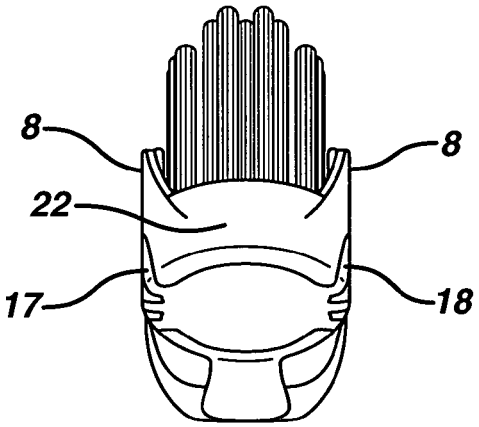


FIG. 5

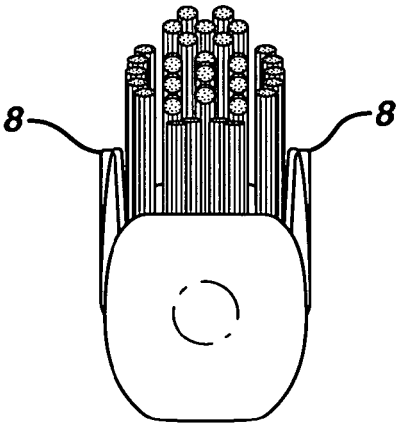


FIG. 6

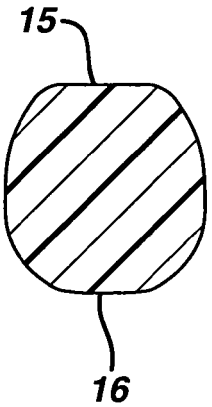
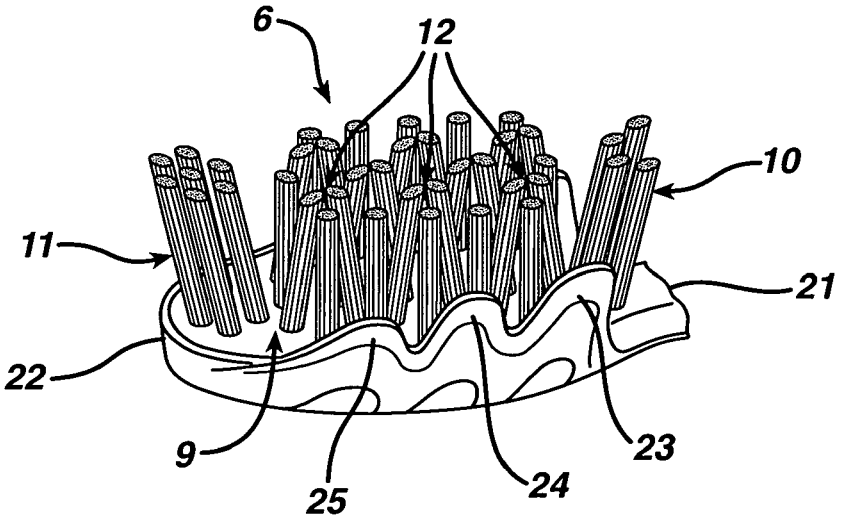


FIG. 7



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Application Number
EP 07 25 2287

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A46B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	30 August 2007	Nicolás, Carlos

CATEGORY OF CITED DOCUMENTS

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