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<p>(21) International Application Number: PCT/US99/04587</p> <p>(22) International Filing Date: 3 March 1999 (03.03.99)</p> <p>(30) Priority Data: 09/036,379 6 March 1998 (06.03.98) US</p> <p>(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 09/036,379 (CON) Filed on 6 March 1998 (06.03.98)</p> <p>(71) Applicant (for all designated States except US): GILLETTE CANADA INC. [CA/CA]; 16700 Trans Canada, Kirkland, Quebec H9H 4Y8 (CA).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): BEALS, Donna [US/US]; 840 Talasman Drive, Sunnyvale, CA 94087 (US). YOSHIMOTO, Max [US/US]; 1621 18th Street, San Francisco, CA 94107 (US). SALAZAR, Jeffrey, Allen [US/US]; 421 Oxford Way, Belmont, CA 94002 (US). BREDALL, William, A. [US/US]; 257 Marvilla Circle, Pacifica, CA 94044 (US). MASTERMAN, Thomas, Craig [US/US]; 121 Cityhomes Lane, Foster City, CA 94404 (US).</p>	<p>(74) Agents: GALLOWAY, Peter, D.; Ladas & Parry, 26 West 61st Street, New York, NY 10023 (US) et al.</p> <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>	
<p>(54) Title: FLEXIBLE TIP TOOTHBRUSH HANDLE</p>		
<p>(57) Abstract</p> <p>A toothbrush (10) comprising a handle member (12) affixed to a flexible extension (15) which is grippable by the user so that the flexible end is in contact with the heel of the palm of the user to flex when force is applied by the user to the head (13) of the toothbrush (10). Rubberized inserts (16, 18) are also provided on the handle (12) of the toothbrush (10) to provide improved gripping surfaces for the fingers and palm of the user.</p>		

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FLEXIBLE TIP TOOTHBRUSH HANDLE

Invention relates to toothbrushes and, in particular, to toothbrushes having an ergonomically designed handle.

There is an ongoing endeavor in the art to design toothbrushes which are more effective, easier to use, or more comfortable. An example is Patent No. 4,672,706 which discloses a handle of rectangular cross section twisted about its longitudinal axis to fit into the palm of a person's hand. However, the handle is essentially straight and made of a hard material.

In PCT application WO 96/21400, published January 10, 1995, there is disclosed a toothbrush having a curved end which is separately rotatable with respect to the portion of the handle accommodating the brush.

The present invention provides an improved toothbrush having a handle which is advantageous in providing good comfort to the palm of the hand when applying force at the end of the toothbrush.

In one aspect, the invention features a toothbrush comprising a handle member and a head member fixed to the proximal end of the handle member. The handle member is rigid at the proximal end that terminates with a head member comprising flexible bristles. The handle member is grippable by the user so that the flexible distal end in contact with the heel of the palm of the user may flex when force is applied by the user to the head member. The distal end is made of a flexible material, such as rubber, so that it will flex when pressure is applied. The flexible distal end is also easily gripped when made of a rubber material.

In another aspect, there are inserts on the handle member which are also made of a rubber material to facilitate the gripping of the handle between the thumb and index finger. Thus, the important areas of contact of the hand with the brush, which comprise the thumb, index finger and heel of the palm, are all in contact with a corresponding rubber portion on the brush handle member.

Other features and advantages of the invention will be apparent from the description of the preferred embodiment with reference to the accompanying drawings.

FIG. 1 is a perspective view of an embodiment of a toothbrush of the invention.

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FIG. 2 is a partial cross-sectional view of an embodiment of a toothbrush of the invention showing, in silhouette, the hand of the user.

Referring to FIG. 1, a toothbrush (10) includes a plastic body having a handle (12) and a head (13) to which is attached a bristle portion (14).

5 The body of the toothbrush is formed by conventional methods well known in the art. The handle is shaped to be grasped by a hand. The configuration of the head (13) may vary and may be rectangular, oval, diamond shaped, or any other suitable shape, with bristles which are trimmed flat, serrated, V-shaped, convex, or any other desired tooth geometry as is well known in the art. The
10 portion of the handle (12) adjacent to the head (13) forms a neck of smaller circumferential dimension than the remainder of the handle. The shape and size of the handle (12) and head (13) may vary and the axes of the handle and head may be on the same or different plane. The distal end of the handle is affixed to a flexible
15 portion (15) extending beyond the distal end and made of a rubberized material to assist in the gripping of the toothbrush. The flexible portion is oval in cross-section for added comfort and security for gripping. There is also a rubberized insert (16) located approximately at the mid-point of the handle, which is also made of a
20 rubberized material and is intended to accommodate the index finger of the holder. On the opposite side of the handle from the insert (16), there is a rubberized portion
(17) which is an extension of the rubberized distal end (15). The portion (17) is intended to accommodate the thumb of the user when gripping the toothbrush.

Referring to FIG. 2, there is shown a partial cross-section of the toothbrush (10) being held, in silhouette, by a user. The handle (12) is shown to accommodate the bristle portion (14) at its proximal end. At the distal end, it forms
25 a core surrounded by the flexible portion (15). The handle (12), however, either does not extend all the way to the tip of the flexible portion (15) as a core or has a core that is thin enough to be flexible in one or more directions. The rubberized surface of the distal end (15) extends toward the mid-point of the handle to form
30 inserts (17) and (18) which are flush with the surface of the handle (12). This forms areas of contact within the palm of the hand for a more secure grip. The insert (16) is also shown which is placed approximately mid-point on the handle (12) and in a location where it can accommodate either the thumb or index finger of

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the holder, depending on which way the bristles (14) are pointed. The rubberized, flexible portions 15, 16, 17 and 18 are preferably a thermoplastic elastomer (TPE). A typical useful elastomer is kraton rubber (a hydrogenated or unhydrogenated oil-filled block copolymer of styrene and butadiene or isoprene having a shore A
5 hardness in the range of about 5 to about 95. Other suitable materials include injection or reactive injection molded foams, rubber vulcanates and silicone vulcanates.

An advantage of the present invention is that when by gripping the hand 12 and/or by applying force at the head (13) against the interior of the oral
10 cavity, an opposite force is applied at the distal end (15) of the toothbrush against the heel of the hand of the user. The flexible distal end not only eases the pressure of an otherwise hard surface against the hand but also flexes to accommodate the curvature of the heel of the hand. Accordingly, the toothbrush is ergonomically comfortable to the user.

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C L A I M S

1. A toothbrush comprising a handle member having proximal and distal ends, and a head member affixed to said proximal end;
said head member comprising a brush and elongated neck portion
5 connecting said brush to said proximal end of said handle member;
said handle member being rigid from said proximal end to said distal end;
said distal end being affixed to a flexible handle extension whereby
said handle member and handle extension are grippable by the user so that
10 flexible handle extension is in contact with the heel of the palm of the user to flex
when force is applied by the user to the handle member.
2. The toothbrush according to claim 1, further comprising gripping inserts on said handle member made of flexible rubberized material to assist in the gripping by the user.
- 15 3. The toothbrush according to claim 1, wherein said flexible handle extension extends beyond the distal end of said handle member.
4. The toothbrush according to claim 1, wherein said handle extension has an oval cross-section.
5. The toothbrush according to claim 1, wherein said handle member is
20 of a greater circumferential dimension than said neck portion.
6. A toothbrush according to claim 1, wherein said distal end receives grippable inserts extending from the handle extension.
7. A toothbrush according to claim 1, wherein said flexible handle extension comprises a material having a shore A hardness in the range of about 5 to
25 about 95.
8. A toothbrush according to claim 2, wherein said gripping inserts comprise a material having a shore A hardness in the range of about 5 to about 95.
9. A toothbrush according to claim 7 or 8, wherein said material comprises a thermoplastic elastomer.
- 30 10. A toothbrush according to claim 7 or 8, wherein said material comprises an injection molded foam, reactive injection molded foam, rubber vulcanate, or silicone vulcanate.

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11. A method of using a toothbrush comprising a handle member having proximal and distal ends, and a head member affixed to said proximal end;

said head member comprising a brush and elongated neck portion connecting said brush to said proximal end of said handle member;

5 extension, comprising the steps of gripping in one hand said handle member and handle extension so that said flexible handle extension is in contact with the heel of the palm of said hand;

contacting said brush against the teeth or gums such that said flexible handle extension flexes when force is applied on said handle member.

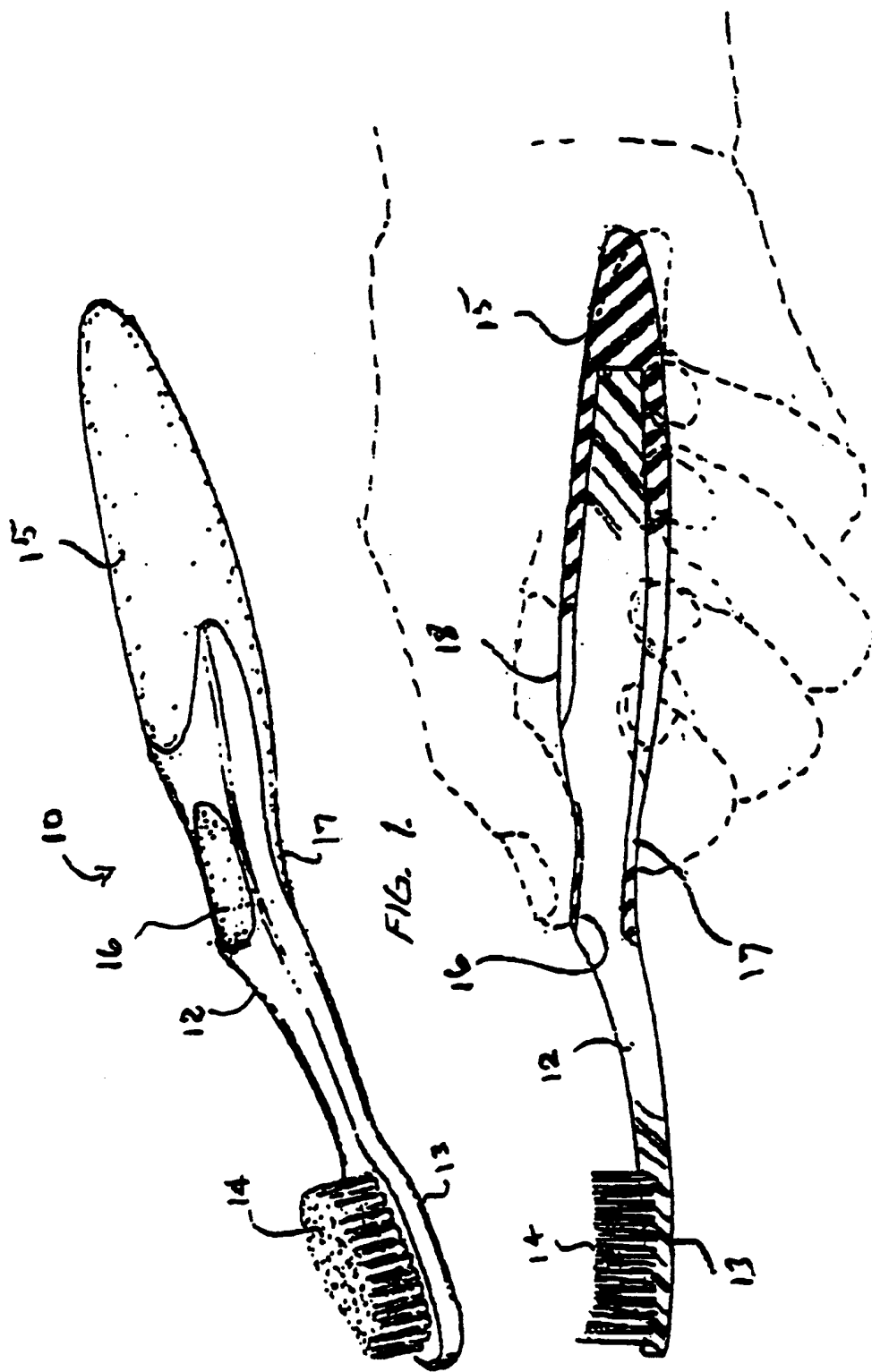


FIG. 2.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/04587

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A46B 5/02; A46B 9/04
US CL :433/216; 15/167.1, 143.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 433/216; 15/167.1, 143.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,283,808 A (BEEBE) 18 August 1981, see entire document.	1,3
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Y		4,7,9-11
Y	US 5,630,244 A (CHANG) 20 May 1997, see entire document.	1,2,5-9

Further documents are listed in the continuation of Box C.

See patent family annex.

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