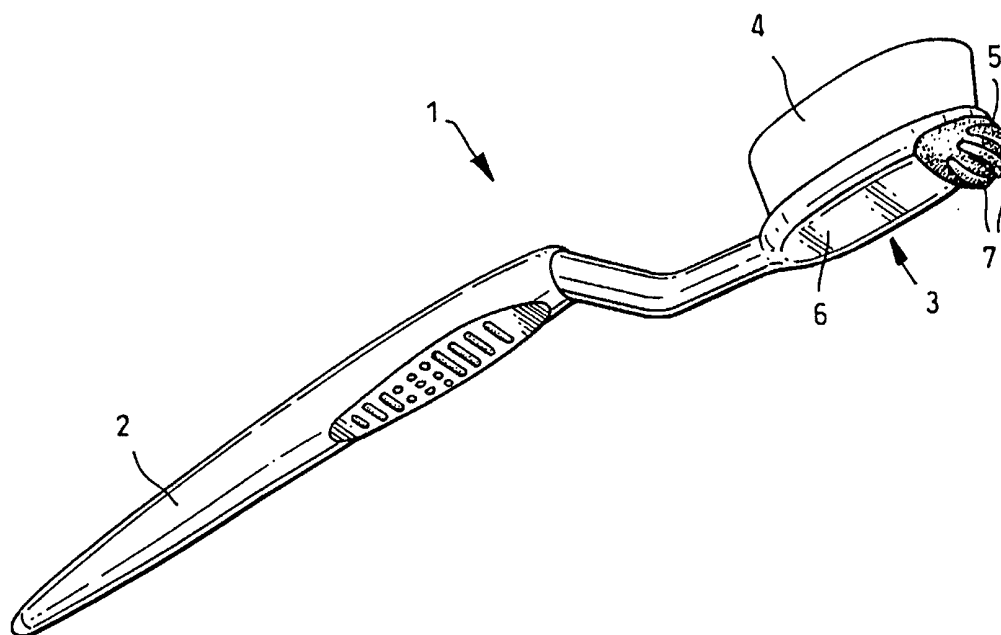




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: TOOTHBRUSH



(57) Abstract

A toothbrush (1) comprises a handle (2) and a head (3) with upstanding bristles (4), characterised in that it comprises a heel (5) which is capable of polishing teeth.

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TOOTHBRUSH

The present invention relates to a brush with a heel for polishing teeth.

5

Brushes which comprise a means for polishing the teeth are known in the art. For example, WO 98/22000 (Asher) which discloses a brush comprising rubber massaging bristles in which are embedded an abrasive material.

10

WO 96/23431 (Gillette Canada) discloses a brush with tufts comprising particles of a polishing agent.

15

US 5 273 425 (Hoagland) describes a pet toothbrush which comprises a tooth surface cleaning means comprising an abrasive structure comprising fibres coated by a non-toxic resinous compound with mineral particles embedded therein.

20

Further disclosures in the prior art describe brushes comprising elastomeric elements. For example, WO 97/20484 (Unilever) describes a brush comprising movable elastomeric regions flanking a central skeleton. The central skeleton, preferably a hard plastic material such as polypropylene, provides the distal region of the head.

25

Despite the brushes available in the prior art there is a need for toothbrushes which have an improved means for polishing the teeth.

30

Accordingly, the present invention provides a toothbrush comprising a handle and a head with bristles upstanding

- 2 -

therefrom, characterised in that it comprises a heel which is capable of polishing teeth. The heel may be located on the handle, e.g. at the end or at least a suitable distance away from the head, or at the end of the head distal to the
5 handle.

For the heel to have a suitable polishing effect it must be shaped so as to allow easy rubbing over the teeth. For example, it should not be so large as to proscribe polishing
10 even the easily accessible incisors without great discomfort. A suitable shape would allow the user to polish the incisors even when these teeth do not together provide an even surface, for example, if the teeth are crooked.

15 While it is not necessary that the polishing heel be comprised of a material different to the remainder of the brush it is necessary for it to be capable of providing a polishing effect. Accordingly it is preferred that the heel is comprised of a rubbery material which is unlikely to
20 damage the teeth during use and is unlikely to cause the user discomfort during regular brushing.

In a particular embodiment the heel comprises a rubbery material which is preferably a thermoplastic elastomer such
25 as TPE. Elastomers suitable in the present invention include any of the elastomers common the art. Such elastomers are disclosed in WO 97/20484 (Unilever) and our co-pending application PCT/EP97/05136 the contents of which are incorporated by reference.

30

- 3 -

In another embodiment the heel may comprise a polishing means. Such a polishing means could be one or more ridges which help to polish the teeth by increasing the friction between the heel and the tooth surface. The polishing means
5 may also be in the form of a micro-contoured surface.

In yet another embodiment the heel may comprise a polishing material. Such polishing materials include abrasives such as those commonly available in the art, e.g. silica.
10

In a further embodiment the heel is replaceable when either worn out or to enable another heel with a different shape to be used. Such a replacement heel may be attached to the brush by way of a complementary attaching means provided on
15 the brush. An example would be a click-fit between a heel replacement part comprising a male portion and a complementary female portion provided on the brush head or handle. A preferred embodiment would provide a slideably engaging means on both the brush head or handle and the
20 replacement part allowing easy replacement fitting.

The brush according to the invention may be made by conventional techniques, for example, by injection moulding. Where the heel section comprises a material different to the
25 material forming the bulk of the head or handle it is envisaged that the heel may also be made by injection moulding techniques. To facilitate manufacture and to reduce costs it is also envisaged that where the heel section comprises a material other than the material forming a
30 majority of the brush and where the material of the heel is also used in another portion of the brush that the heel and

- 4 -

said other region be linked so as to enable a single injection point be used to make both heel and said other region in one step.

- 5 Such a link may be visible or hidden within the main body of the brush head or handle.

In a further aspect to the present invention there is provided a heel portion for a brush which is capable of
10 polishing the teeth. It is envisaged that differently shaped heel portions may be used for different purposes and that a user may wish to swap between one heel and another to achieve different aims. For example, a narrow-faced heel may be useful in cleaning the lower incisors where the teeth are
15 crooked and would prevent a wide-faced heel from polishing the entire surface of the tooth. A broader-faced heel may be more useful for the upper incisors where a larger and generally flatter surface is more often presented.

- 20 It is also envisaged that the brush may comprise more than one polishing heel. For example one heel on the handle and one on the head. Each may provide different polishing capabilities.

25 Where the heel is located on the handle it is preferred that it is located on the end of the handle distal to the head to allow for easy use. However, it is also possible that the heel be located within a cavity in the handle and is revealed on removal of a cover which itself provides the
30 distal portion of the handle. The heel may then be present on either of the two portions.

- 5 -

While the material of the heel is preferably a soft material it is also possible that it is made from a material of similar hardness to the rest of the brush. For example, both the head and the heel may be made of polypropylene. In such an embodiment the heel will preferably comprise an element which provides a polishing capability, e.g. it has an abrasive embedded therein or it comprises polishing means.

The brush according to the invention will now be described with reference to the figures.

Fig. 1 is a perspective view of a brush according to the invention. The figure shows a brush (1) comprising a handle (2) and a head (3) with upstanding bristles (4). The head additionally comprises a polishing heel (5) at the end of the head distal to the handle, the heel (5) additionally comprising polishing means (7). The head is shown to comprise a heel (5) and a remainder portion (6). In particular embodiments, the heel (5) comprises a material which is softer than the material of the remainder of the head (6).

Fig. 1a is a side view of a brush as shown in Fig. 1.

Fig. 2 again shows a brush with a heel at the end of the head distal to the handle.

Fig. 2a is a ventral view of the brush shown in Fig. 2. The heel (5) in this embodiment is narrow to allow for a more controlled polishing of the teeth. For example, the user may

- 6 -

be able to polish a greater portion of a narrow tooth with a heel of this design.

Fig. 2b shows a cross-section along the longitudinal axis of the brush shown in Fig. 2. It is clearly shown that in this embodiment the heel (5) is independent of the remainder of the head (6). This heel may typically be made by injection moulding as is common in the art. In preferred embodiments the junction between the heel and the remainder of the head may be corrugated to provide an increased surface area thereby improving the binding of the heel to the toothbrush head.

Fig. 3 is a side view of a brush according to the invention. In this embodiment the heel (5), which is made of a material different to the remainder of the head (6) is continuous with a region comprising the same material. In this case the heel (5) and neck portion (9) of the brush comprise, e.g. an elastomeric material such as TPE. In this embodiment it is envisaged that the heel (5) and the material in the neck (9) would be made in a single injection moulding step and are, therefore, linked.

Fig. 3a is a ventral view of the brush shown in Fig. 3. Shown is the heel (5) which is continuous with the material in the neck (9). The material in the heel is different to the material in the remainder of the head (6).

Fig. 4 is a side view of a brush according to the invention. The heel (5), which in this embodiment has a sharpened edge (10) for improved polishing, is connected to the material of

- 7 -

the neck (9) by way of a channel (8). Again, it is envisaged that a brush according to this embodiment may be made with a single injection moulding step forming the heel and the material of the neck (9).

5

In an alternative embodiment the channel (8) may be hidden within the body of the remainder of the head (6) while still allowing the heel (5) and the material of the neck (9) to be made with a single injection moulding step.

10

Fig. 5 shows a longitudinal axis cross-section of a brush according to the invention. Shown is a detachable heel (5) which has an attaching portion (12) complementary to a receiving portion (11) of the head (6) allowing the heel (5) to slideably engage the head (6). In this way different heels can be attached to suit the needs of the user.

15

Fig. 5a is a perspective view of the detachable heel and the head.

20

Fig. 6 is a longitudinal axis cross-section of a brush according to the invention. Shown is a replaceable heel (5) which comprises a male member complementary to a female member on the head (6) allowing the heel (5) to be releasably fit, through a click-fit, to the remainder of the head.

25

Fig. 7 is a side view of a brush according to the invention. Shown are head portion (6) and the heel (5) which essentially comprises a series of independent purchasing means.

30

- 8 -

Fig. 7a is a longitudinal axis cross-section of the brush according to Fig.7. Shown is the integral nature of the purchasing allowing for easy manufacture, i.e. they can be made by injection moulding in a single step.

5

Fig. 7b is an end view of the brush head shown in Fig. 7. Shown is the independent nature of the purchasing means which together provide a polishing heel.

10 Fig. 8 is a side view of an alternative embodiment according to the invention. Shown are the head (3) and the handle (2) which has a polishing heel (5) at the end distal to the head (3).

15 Fig. 9 is a side view of a brush according to the invention. Shown is a cavity (15) in a removable handle section (17). The cavity (15) is capable of housing the heel (5) and the heel (5) is mounted on a support (16) which itself is attached to the handle (2).

20

The removable handle section (17) is removably attachable to the handle (2) via common fixing means, e.g. a click-fit.

Fig. 9a is a side view of a brush according to the
25 invention. Shown is a cavity (15) in the handle (2). The cavity (15) is capable of housing the heel (5) and the heel (5) is mounted on a support (16) which itself is attached to a removable handle section (17).

CLAIMS:

1. A toothbrush (1) comprising a handle (2) and a head (3) with upstanding bristles (4), characterised in that it
5 comprises a heel (5) which is capable of polishing teeth.
2. A toothbrush (1) according to claim 1, characterised in that the heel (5) is located at the end of the head distal to the handle.
10
3. A toothbrush (1) according to claim 1, characterised in that the heel (5) is located on the handle.
4. Toothbrush (1) according to any preceding claim,
15 characterised in that the heel (5) is formed of a material which is softer than the material comprising the head.
5. Toothbrush (1) according to any preceding claim, characterised in that the heel (5) comprises a purchasing
20 means (7).
6. Toothbrush (1) according to claim 4, characterised in that the heel (5) comprises rubber.
- 25 7. Toothbrush (1) according to claim 4, characterised in that the heel (5) comprises an elastomer material.
8. Toothbrush (1) according to any preceding claim, characterised in that the heel (5) comprises a polishing
30 material.

- 10 -

9. Toothbrush (1) according to any preceding claim,
characterised in that the heel (5) is removably attachable.

10. A toothbrush (1) according to claim 3, characterised in
5 that the heel (5) is housed within a cavity (15) of the
handle and is revealed on detachment of part of the handle.

11. A heel (5) according to any preceding claim,
characterised in that it is removably attachable to the head
10 (3) or the handle (2) of the brush (1).

Fig.1.

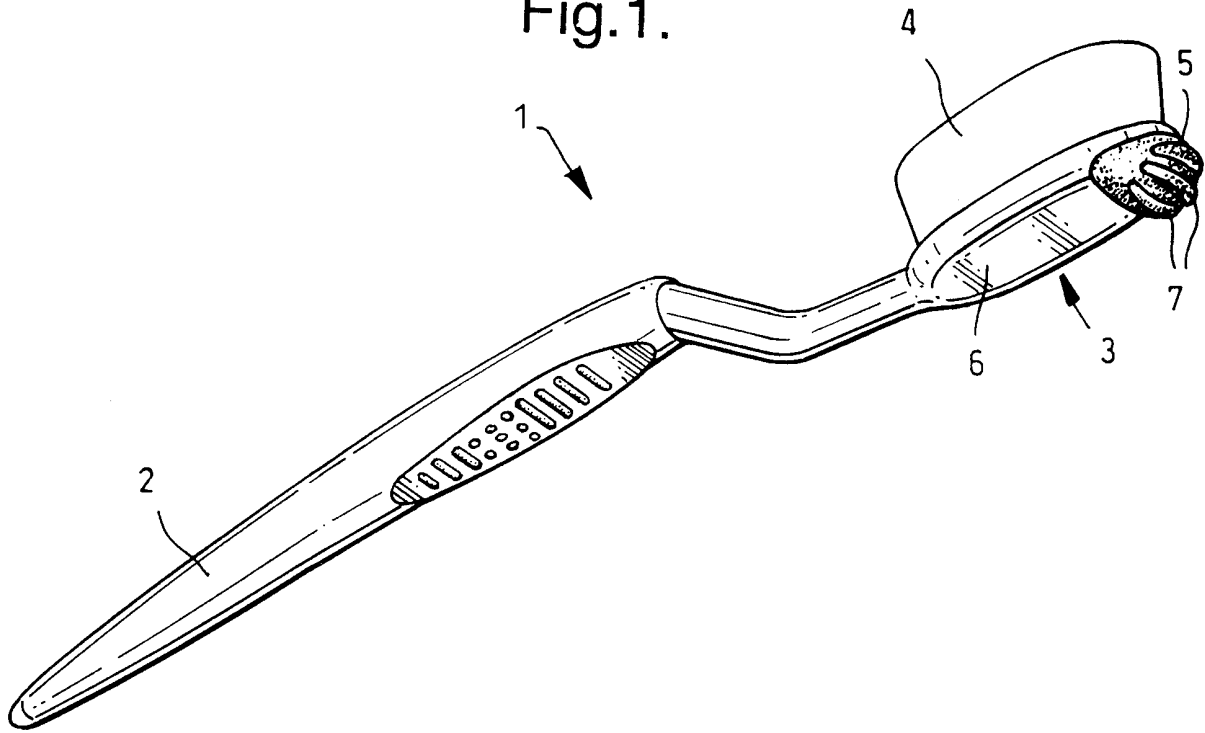


Fig.1a.

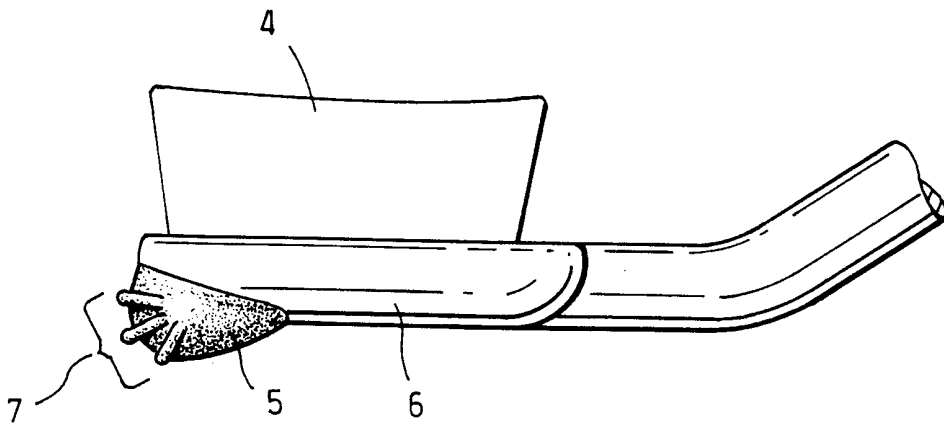


Fig.2.

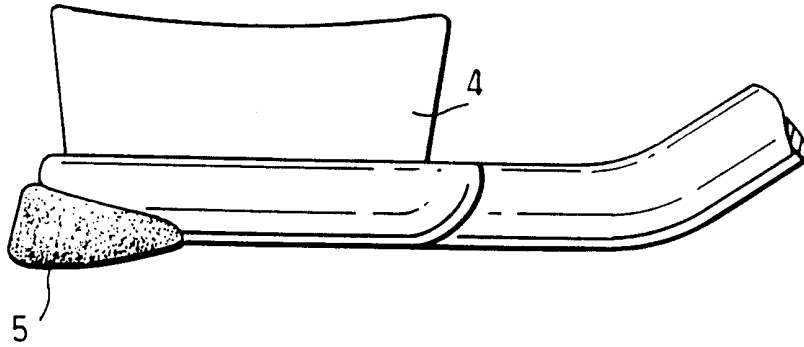


Fig.2 a.

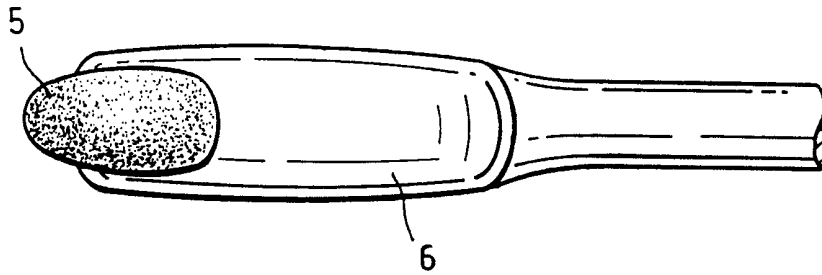


Fig.2 b.

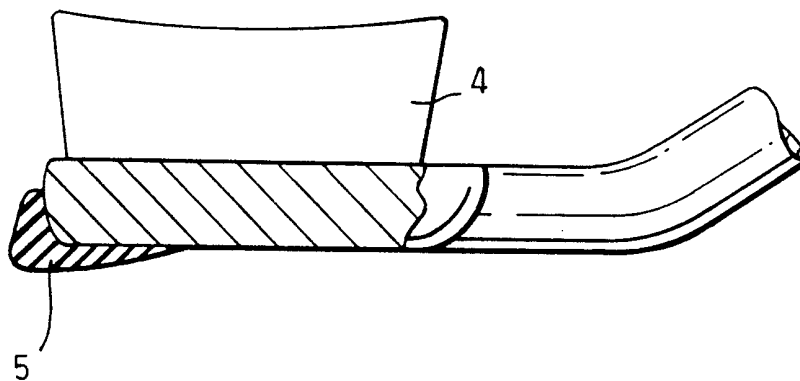


Fig.3.

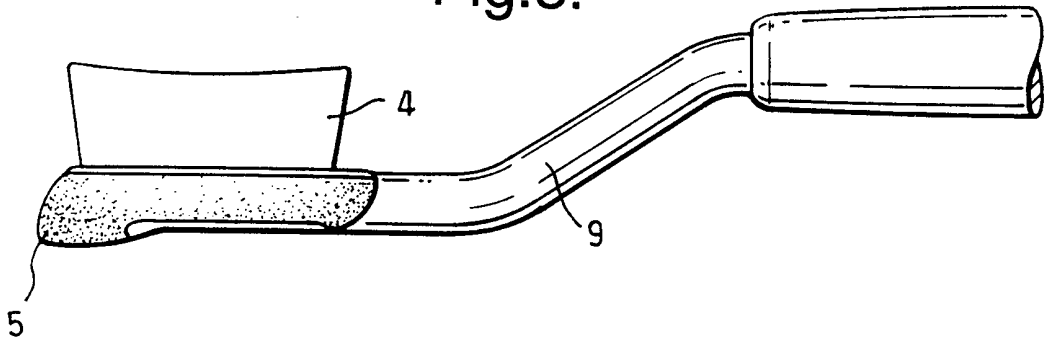


Fig.3a.

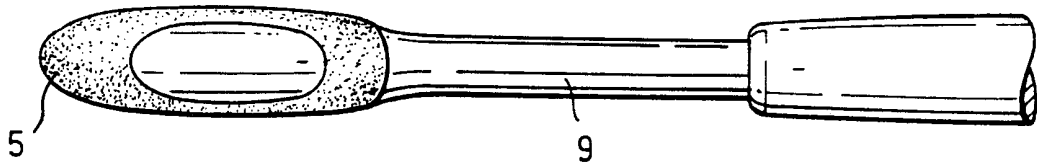


Fig.4.

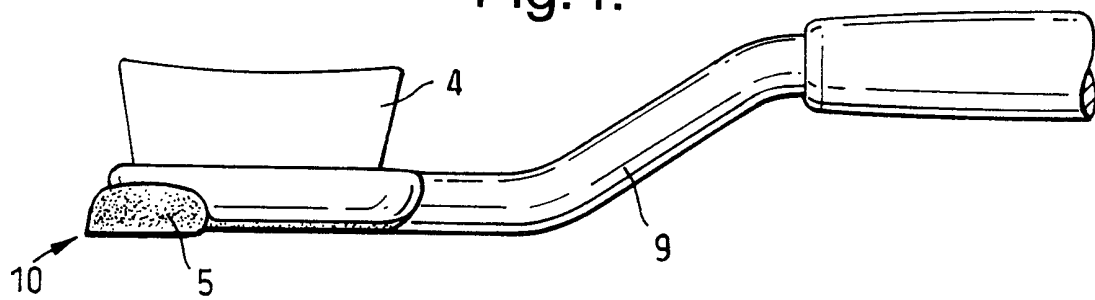


Fig.4a.

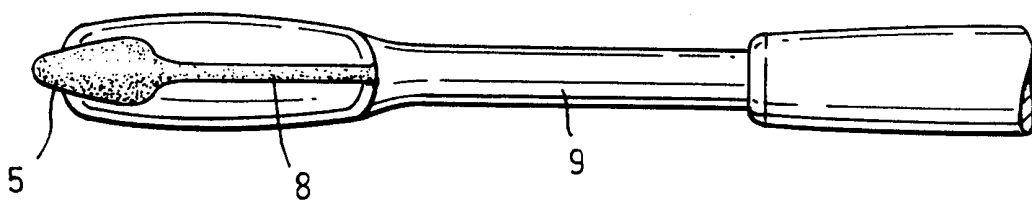


Fig.5.

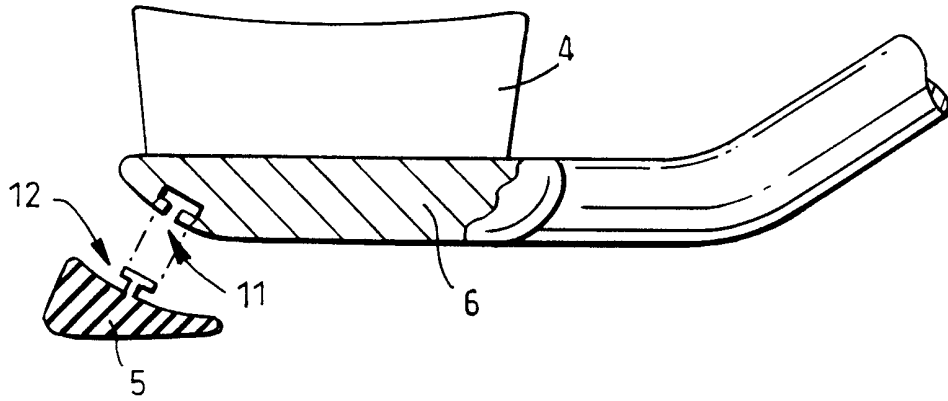


Fig.5 a.

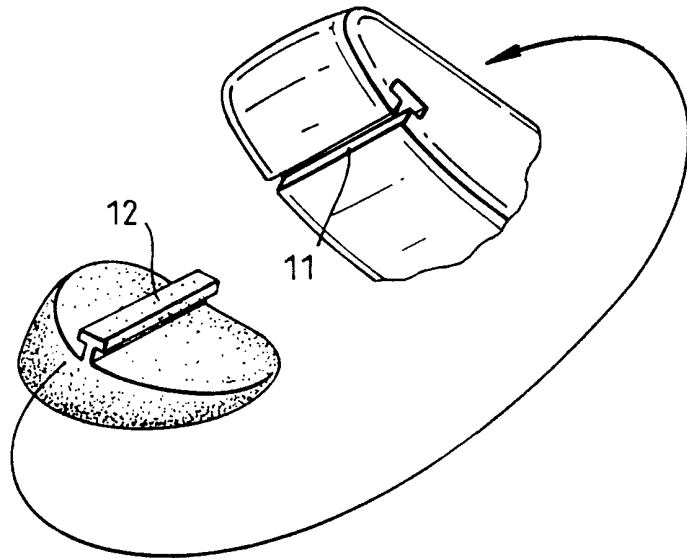


Fig.6.

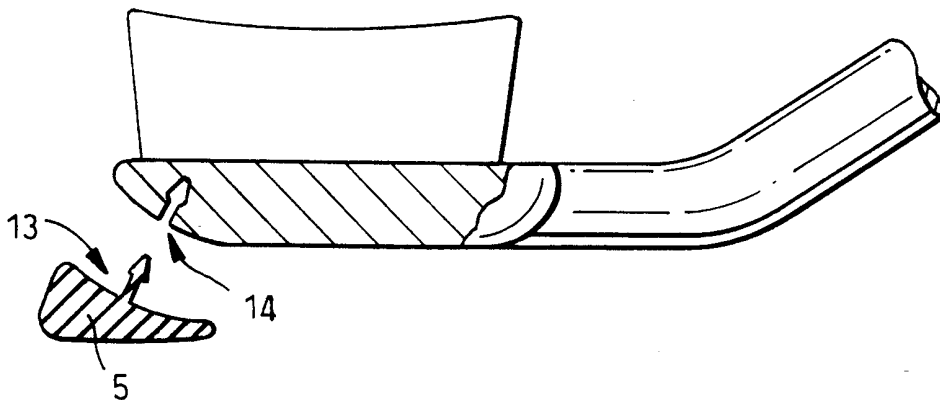


Fig.7.

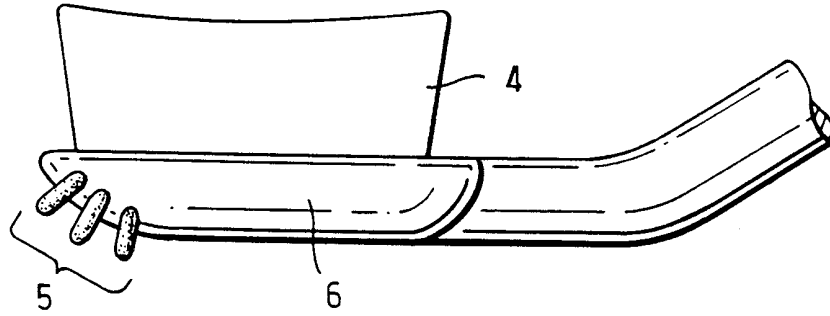


Fig.7 a.

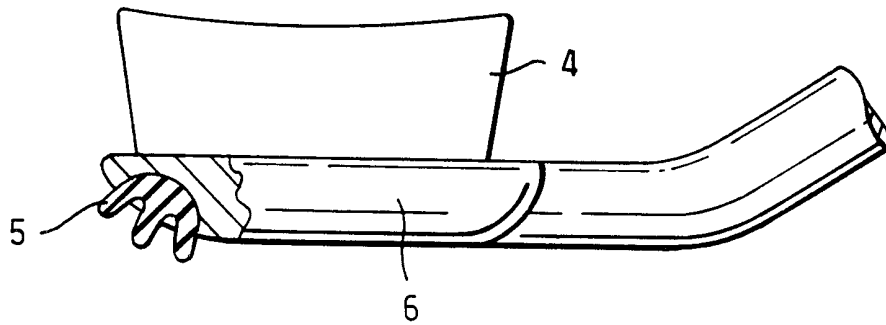


Fig.7 b.

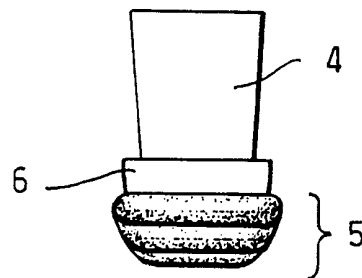


Fig.8.

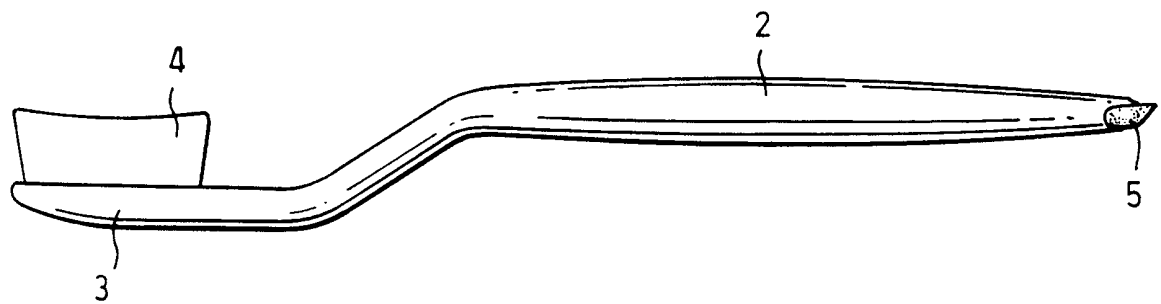


Fig.9.

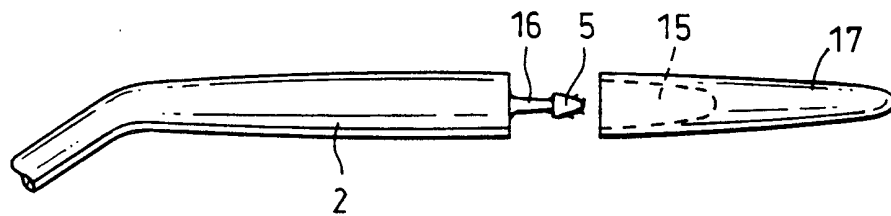
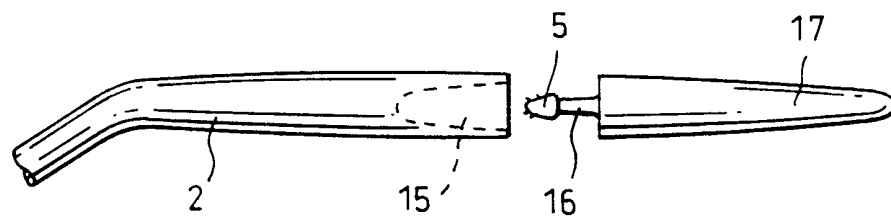


Fig.9 a.



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A46B15/00 A61C17/00				
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) IPC 7 A46B A61C				
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 practical, 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	FR 2 594 307 A (ABBOU GABRIEL) 21 August 1987 (1987-08-21) the whole document ---	1-5, 8, 9, 11		
X	DE 29 30 459 A (KRAFT PAUL) 12 February 1981 (1981-02-12) page 3, line 19 -page 6, line 6; claims 1-4 ---	1, 2, 4-9, 11		
X	US 1 637 738 A (ADONIRAM BIRD COUGH) 2 August 1927 (1927-08-02) the whole document ---	1, 2, 4, 5, 8, 9, 11		
X	GB 481 488 A (ERNST LORENTZ) 11 March 1938 (1938-03-11) the whole document ---	1, 3-6, 9, 11		
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Date of the actual completion of the international search <p style="text-align: center; font-weight: bold;">19 May 2000</p>		Date of mailing of the international search report <p style="text-align: center; font-weight: bold;">29/05/2000</p>		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <p style="text-align: center; font-weight: bold;">Fouquet, M</p>		

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 00/01482

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	US 5 564 148 A (PREVOST SOLANGE ET AL) 15 October 1996 (1996-10-15) column 3, line 1 -column 3, line 60; figures 2,6,7 -----	1,3,5,8, 9,11
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/01482

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