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[Continued on next page]

(54) Title: A TOOTH BRUSH HEAD REMOVAL DEVICE.

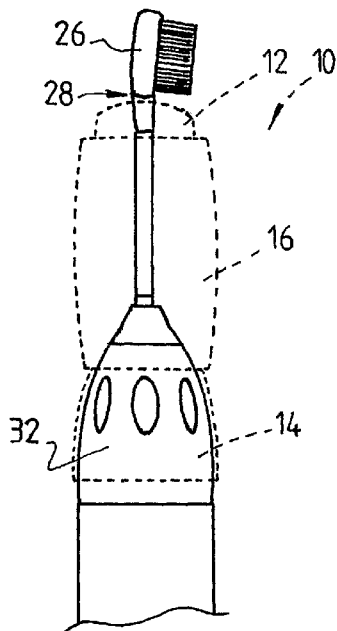


FIG. 7

(57) Abstract: A tooth brush head removal device (10) is provided. The device 10 includes a tooth brush head engaging member (12), a seat member (14) for seating against a body of an electrical- tooth brush and a screw-threaded member (16) positioned operatively between the tooth brush head engaging member (12) and the seat member (14), so as to cause the tooth brush head engaging member (12) to displace relative to the seat member (14) in response to angular displacement of the screw-threaded member (16), as indicated by arrow A. In use, the tooth brush head engaging member (12) is engaged with a tooth brush head of an electrical tooth brush, the seat member (14) is seated against a body of the electrical tooth brush and the screw threaded member (16) is displaced angularly thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush.

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Published:

— with international search report (Art. 21(3))

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

Title:

A tooth brush head removal device.

5 Field of the invention:

The invention relates to a tooth brush head removal device. In particular, the invention relates to a method of removing a tooth brush head from a body of an electrical tooth brush, to a tooth brush head removal device and to a tooth brush head removal
10 device kit.

Background of the invention:

Electrical toothbrushes have become relatively popular in many regions of the
15 world. By using an electrical toothbrush the task of brushing one's teeth is made relatively easy when compared with traditional manual tooth brushes.

It has been found that a tooth brush head of an electrical tooth brush can become worn. It would be advantageous if the tooth brush head of an electrical tooth brush could
20 be replaced when worn, with a fresh, or replacement tooth brush head.

It is an object of the invention to provide a tooth brush head removal device for removing a tooth brush head of an electrical tooth brush so as to enable the tooth brush
25 head to be replaced after having become worn.

Summary of the invention:

According to a first aspect of the invention, there is provided a method of removing a tooth brush head from a body of an electrical tooth brush, the method
30 including:

positioning a tooth brush head removal device operatively between a tooth brush head and a body of an electrical tooth brush; and

screw threadedly adjusting the tooth brush head removal device to cause a length of the tooth brush head removal device to increase, thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush.

Positioning a tooth brush head removal device operatively between a tooth brush head and a body of an electrical tooth brush may include passing the tooth brush head through the tooth brush head removal device.

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Positioning a tooth brush head removal device operatively between a tooth brush head and a body of an electrical tooth brush may include engaging a neck portion of the tooth brush head with a tooth brush head engaging member of the tooth brush head removal device after the tooth brush head has been passed through the tooth brush head removal device.

15

Engaging a neck portion of the tooth brush head with the tooth brush head engaging member of the tooth brush head removal device may include passing the tooth brush head through a generally key hole shaped aperture defined in the tooth brush head engaging member and displacing the tooth brush head removal device laterally relative to the tooth brush head thereby to engage the neck portion of the tooth brush head in a narrow portion of the generally key hole shaped aperture.

20

Screw threadedly adjusting the tooth brush head removal device to cause a length of the tooth brush head removal device to increase, thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush, may include angularly displacing a screw threaded member of the tooth brush head removal device relative to the tooth brush head engaging member.

25

The tooth brush head removal device may include a seat member for seating against a body of an electrical tooth brush, the tooth brush head engaging member and the

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seat member being screw threadedly engaged with the screw threaded member, screw threadedly adjusting the tooth brush head removal device to cause a length of the tooth brush head removal device to increase, thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush, then including causing the tooth brush head engaging member to displace away from the seat member in response to angularly displacing the screw threaded member.

A tooth brush head removal device including:

a tooth brush head engaging member;
a seat member for seating against a body of an electrical tooth brush; and
a screw-threaded member positioned operatively between the tooth brush head engaging member and the seat member, so as to cause the tooth brush head engaging member to displace relative to the seat member in response to angular displacement of the screw-threaded member, such that, in use, the tooth brush head engaging member can be engaged with a tooth brush head of an electrical tooth brush, the seat member can be seated against a body of the electrical tooth brush and the screw threaded member can be displaced angularly thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush.

The tooth brush head removal device may be elongate, the tooth brush head engaging member being positioned at one end, the seat member being positioned at an opposed end.

The screw threaded member may be in the form of a barrel defining an internally screw threaded portion screw threadedly engaged with a screw threaded portion of the tooth brush head engaging member.

The screw threaded member may define another internally screw threaded portion screw threadedly engaged with a screw threaded portion of the seat member.

The tooth brush head engaging member and the seat member may be operatively connected to each other to inhibit angular displacement relative to each other and to permit linear displacement relative to each other.

5 The screw threaded portions of the barrel may be arranged to cause the tooth brush head engaging member and the seat member to displace away from each other when the barrel is displaced angularly in one direction and to displace toward each other when the barrel is displaced angularly in an opposed direction.

10 The tooth brush head engaging member may define an aperture arranged to permit a tooth brush head to be passed there through and to engage a neck portion of the tooth brush head.

The aperture may be generally key-hole shaped.

15

The tooth brush head removal device may define an internal passage and a mouth defined by the seat member to enable the tooth brush head to be passed through the mouth of the seat member, along the passage and through the aperture in the tooth brush head engaging member.

20

According to another aspect of the invention, there is provided a tooth brush head removal device kit including:

a tooth brush head removal device as described above; and
at least one tooth brush head replacement.

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Brief Description of the drawings:

Embodiments of the invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, in which:

30

Figure 1 shows a schematic three dimensional side view of a tooth brush head removal device in accordance with an embodiment of the invention, the tooth brush head removal device being in a retracted condition;

5 Figure 2 shows a schematic three dimensional side view of the tooth brush head removal device shown in Figure 1, the tooth brush head removal device being in an extended condition;

10 Figure 3 shows a schematic three dimensional plan view of the tooth brush head removal device shown in Figure 1;

Figure 4 shows a schematic cross sectional side view of the tooth brush head removal device shown in Figure 1;

15 Figure 5 shows a schematic plan view of a tooth brush head engaging member of the tooth brush head removal device shown in Figure 1, a tooth brush head being passed through a generally key hole shaped aperture in the tooth brush head engaging member;

20 Figure 6 corresponds to Figure 5, and shows the tooth brush head in an engaged position in the key hole shaped aperture;

25 Figure 7 shows a schematic side view of part of an electrical tooth brush, the tooth brush head removal device being positioned on the electrical tooth brush in a position to remove a tooth brush head of the electrical tooth brush; and

Figure 8 shows a schematic plan view of a tooth brush head removal device kit in accordance with an embodiment of the invention.

Detailed Description of preferred embodiments:

Referring to Figures 1 to 4 of the drawings, a tooth brush head removal device, in accordance with an embodiment of the invention, is generally indicated by reference numeral 10.

5 The tooth brush head removal device 10 includes a tooth brush head engaging member 12 and a seat member 14. The seat member 14 is arranged to seat against a body of an electrical tooth brush, as will be described in greater detail below.

10 The tooth brush head removal device 10 further includes a screw-threaded member 16 positioned between the tooth brush head engaging member 12 and the seat member 14. The screw threaded member 16 cooperates with the tooth brush head engaging member 12 and the seat member 14 to cause the tooth brush head engaging member 12 and the seat member 14 to displace axially relative to each other in response to angular displacement of the screw threaded member 16 relative to the tooth brush head
15 engaging member 12 and the seat member 14. In use, the tooth brush head engaging member 12 can be engaged with a tooth brush head of an electrical tooth brush, the seat member 14 can be seated against a body of the electrical tooth brush and the screw threaded member 16 can be displaced angularly thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush.

20

In Figure 1, the tooth brush head removal device 10 is in a retracted condition in which the tooth brush head engaging member 12 is positioned relatively close to the seat member 14. By angularly displacing the screw-threaded member 16, as indicated by arrow A, the tooth brush head engaging member 12 and the seat member 14 are displaced
25 apart, as indicated in Figure 2. By then angularly displacing the screw-threaded member 16 in an opposed direction, as indicated by arrow B, the tooth brush head engaging member 12 and the seat member 14 are displaced toward each other, as indicated in Figure 1.

The tooth brush head removal device 10 is elongate. The tooth brush head engaging member 12 is positioned at one end and the seat member 14 is positioned at an opposed end.

5 As can best be seen in Figure 4 of the drawings, in which like reference numerals have been used to designate similar parts, or features, unless otherwise stated, the screw threaded member 16 is in the form of a barrel defining an internally screw threaded portion 16.1. The internally screw threaded portion 16.1 is screw threadedly engaged with a screw threaded portion 12.1 of the tooth brush head engaging member 12.

10 The screw threaded member 16 defines another internally screw threaded portion 16.2 screw threadedly engaged with a screw threaded portion 14.1 of the seat member 14.

15 The tooth brush head engaging member 12 and the seat member 14 are operatively connected to each other to inhibit angular displacement relative to each other and to permit linear, or axial, displacement relative to each other. To this end, the seat member 14 defines two diametrically opposes protrusions 20 which ride linearly in slots 22 defined by the tooth brush head engaging member 12.

20 The screw threaded portions 16.1, 16.2 of the barrel 16 are arranged to cause the tooth brush head engaging member 12 and the seat member 14 to displace away from each other when the barrel 16 is displaced angularly in one direction and to displace toward each other when the barrel 16 is displaced angularly in an opposed direction, as can best be seen with reference to Figures 1 and 2 of the drawings. Accordingly, one of
25 the screw threaded portions 16.1, 16.2 can define a clockwise screw thread and the other of the screw threaded portions 16.1, 16.2 can then define an anti-clockwise screw thread.

30 As can best be seen with reference to Figures 5 to 7 of the drawings, in which like reference numerals have been used to designate similar parts, or features, unless otherwise stated, the tooth brush head engaging member 12 defines an aperture 24 arranged to permit a tooth brush head 26 to be passed there through and to engage a neck

portion 28 of the tooth brush head 26. Advantageously, the aperture 24 is generally key-hole shaped.

5 The tooth brush head removal device 10 defines an internal passage, as indicated by arrows C and a mouth 30 defined by the seat member 14. The tooth brush head 26 can be passed through the mouth 30 of the seat member 14, along the passage C and through the aperture 24 in the tooth brush head engaging member 12.

10 To engage the neck portion 28 of the tooth brush head 26 with the tooth brush head engaging member 12 the tooth brush head 26 is passed through the aperture 24 and is then displaced laterally relative to tooth brush head engaging member 12 thereby to cause the neck portion 28 of the tooth brush head 26 to be engaged in a narrow portion of the generally key hole shaped aperture 24.

15 In this way, the tooth brush head removal device 10 can be mounted on an electrical tooth brush as indicated in dashed lines in Figure 7. The seat member 14 then seats against a body 32 of the electrical tooth brush. The screw threaded member 16 can then be displaced angularly to cause the tooth brush head engaging member 12 to extend from the seat member 14 thereby to cause the tooth brush head 26 to be removed from the
20 body 32 of the electrical tooth brush.

Conveniently, as can best be seen with reference to Figure 8 of the drawings, a tooth brush head removal device kit, as generally indicated by reference numeral 110, can be provided. The kit 110 can include a tooth brush head removal device 10 and at least
25 one, in this case six, tooth brush head replacements 112. One of the tooth brush head replacements 112 can then be used after the tooth brush head 26 is removed from the body 32 of the electrical tooth brush. In this way, a used and worn tooth brush head of an electrical tooth brush can be removed and replaced with a new tooth brush head. Conveniently, the tooth brush head replacements 112 can be provided in an appropriate
30 container in a manner similar to disposable shaving blades. Instead, a container 114 can

be provided for housing, or containing, the tooth brush head removal device 10 and the tooth brush head replacements 112.

Claims:

1. According to a first aspect of the invention, there is provided a method of removing a tooth brush head from a body of an electrical tooth brush, the method including:
5 positioning a tooth brush head removal device operatively between a tooth brush head and a body of an electrical tooth brush; and
screw threadedly adjusting the tooth brush head removal device to cause a length of the tooth brush head removal device to increase, thereby to cause the
10 tooth brush head to be removed from the body of the electrical tooth brush.
2. The method of removing a tooth brush head from a body of an electrical tooth brush, as claimed in claim 1, in which positioning a tooth brush head removal device operatively between a tooth brush head and a body of an electrical tooth
15 brush includes passing the tooth brush head through the tooth brush head removal device.
3. The method of removing a tooth brush head from a body of an electrical tooth brush, as claimed in claim 2, in which positioning a tooth brush head removal device operatively between a tooth brush head and a body of an electrical tooth
20 brush includes engaging a neck portion of the tooth brush head with a tooth brush head engaging member of the tooth brush head removal device after the tooth brush head has been passed through the tooth brush head removal device.
- 25 4. The method of removing a tooth brush head from a body of an electrical tooth brush, as claimed in claim 3, in which engaging a neck portion of the tooth brush head with the tooth brush head engaging member of the tooth brush head removal device includes passing the tooth brush head through a generally key hole shaped aperture defined in the tooth brush head engaging member and displacing the
30 tooth brush head removal device laterally relative to the tooth brush head thereby

to engage the neck portion of the tooth brush head in a narrow portion of the generally key hole shaped aperture.

5. The method of removing a tooth brush head from a body of an electrical tooth brush, as claimed in claim 4, in which screw threadedly adjusting the tooth brush head removal device to cause a length of the tooth brush head removal device to increase, thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush, includes angularly displacing a screw threaded member of the tooth brush head removal device relative to the tooth brush head engaging member.
6. The method of removing a tooth brush head from a body of an electrical tooth brush, as claimed in claim 5, in which the tooth brush head removal device includes a seat member for seating against a body of an electrical tooth brush, the tooth brush head engaging member and the seat member being screw threadedly engaged with the screw threaded member, screw threadedly adjusting the tooth brush head removal device to cause a length of the tooth brush head removal device to increase, thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush, then including causing the tooth brush head engaging member to displace away from the seat member in response to angularly displacing the screw threaded member.
7. A tooth brush head removal device including:
a tooth brush head engaging member;
a seat member for seating against a body of an electrical tooth brush; and
a screw-threaded member positioned operatively between the tooth brush head engaging member and the seat member, so as to cause the tooth brush head engaging member to displace relative to the seat member in response to angular displacement of the screw-threaded member, such that, in use, the tooth brush head engaging member can be engaged with a tooth brush head of an electrical tooth brush, the seat member can be seated against a body of the electrical tooth

brush and the screw threaded member can be displaced angularly thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush.

8. The tooth brush head removal device as claimed in claim 7, in which the tooth brush head removal device is elongate, the tooth brush head engaging member being positioned at one end, the seat member being positioned at an opposed end.
9. The tooth brush head removal device as claimed in claim 8, in which the screw threaded member is in the form of a barrel defining an internally screw threaded portion screw threadedly engaged with a screw threaded portion of the tooth brush head engaging member.
10. The tooth brush head removal device as claimed in claim 9, in which the screw threaded member defines another internally screw threaded portion screw threadedly engaged with a screw threaded portion of the seat member.
11. The tooth brush head removal device as claimed in claim 10, in which the tooth brush head engaging member and the seat member are operatively connected to each other to inhibit angular displacement relative to each other and to permit linear displacement relative to each other.
12. The tooth brush head removal device as claimed in claim 11, in which the screw threaded portions of the barrel are arranged to cause the tooth brush head engaging member and the seat member to displace away from each other when the barrel is displaced angularly in one direction and to displace toward each other when the barrel is displaced angularly in an opposed direction.
13. The tooth brush head removal device as claimed in any one of claims 7 to 12 inclusive, in which the tooth brush head engaging member defines an aperture arranged to permit a tooth brush head to be passed there through and to engage a neck portion of the tooth brush head.

14. The tooth brush head removal device as claimed in claim 13 in which the aperture is generally key-hole shaped.

5 15. The tooth brush head removal device as claimed in claim 13 or claim 14, in which the tooth brush head removal device defines an internal passage and a mouth defined by the seat member to enable the tooth brush head to be passed through the mouth of the seat member, along the passage and through the aperture in the tooth brush head engaging member.

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16. A tooth brush head removal device kit including:

15 a tooth brush head removal device defining a tooth brush head engaging member, a seat member for seating against a body of an electrical tooth brush, a screw-threaded member positioned operatively between the tooth brush head engaging member and the seat member, so as to cause the tooth brush head engaging member to displace relative to the seat member in response to angular displacement of the screw-threaded member, such that, in use, the tooth brush head engaging member can be engaged with a tooth brush head of an electrical tooth brush, the seat member can be seated against a body of the electrical tooth brush and the screw threaded member can be displaced angularly thereby to cause the tooth brush head to be removed from the body of the electrical tooth brush; and

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at least one tooth brush head replacement for replacing the tooth brush head after having been removed from the body of the electrical tooth brush.

25

17. A method of removing a tooth brush head from a body of an electrical tooth brush, substantially as herein described and illustrated.

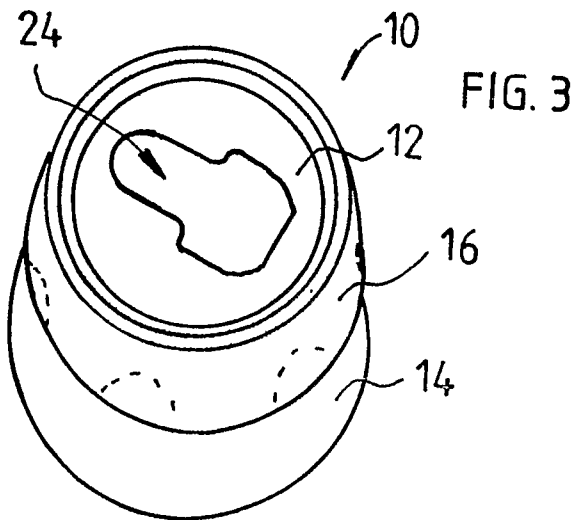
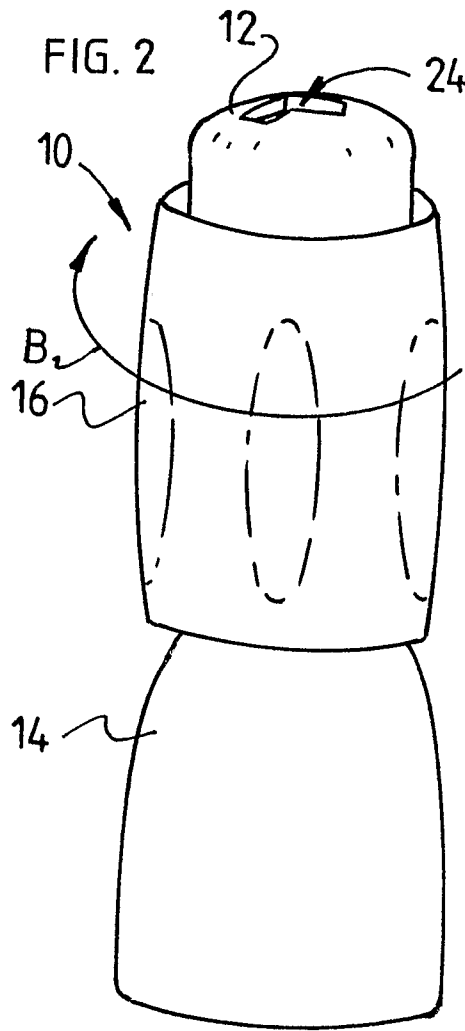
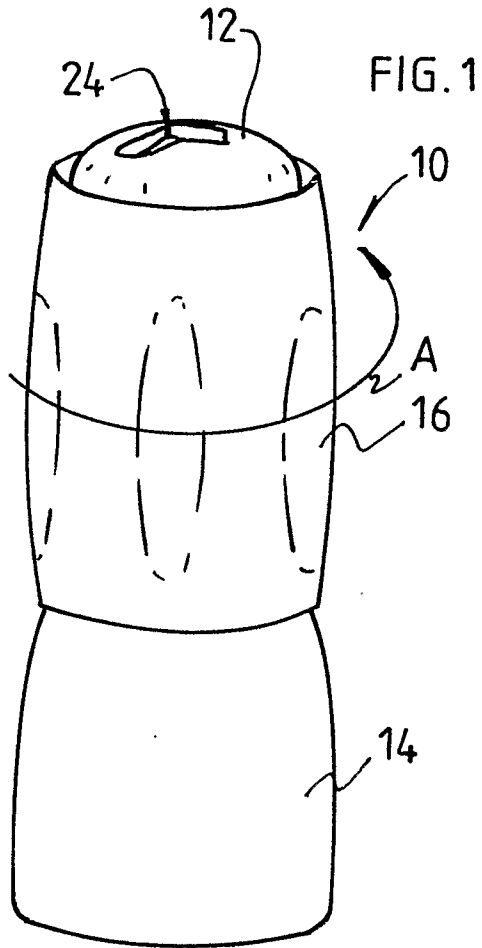
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18. A tooth brush head removal device substantially as herein described and illustrated.

19. A tooth brush head removal device kit substantially as herein described and illustrated.

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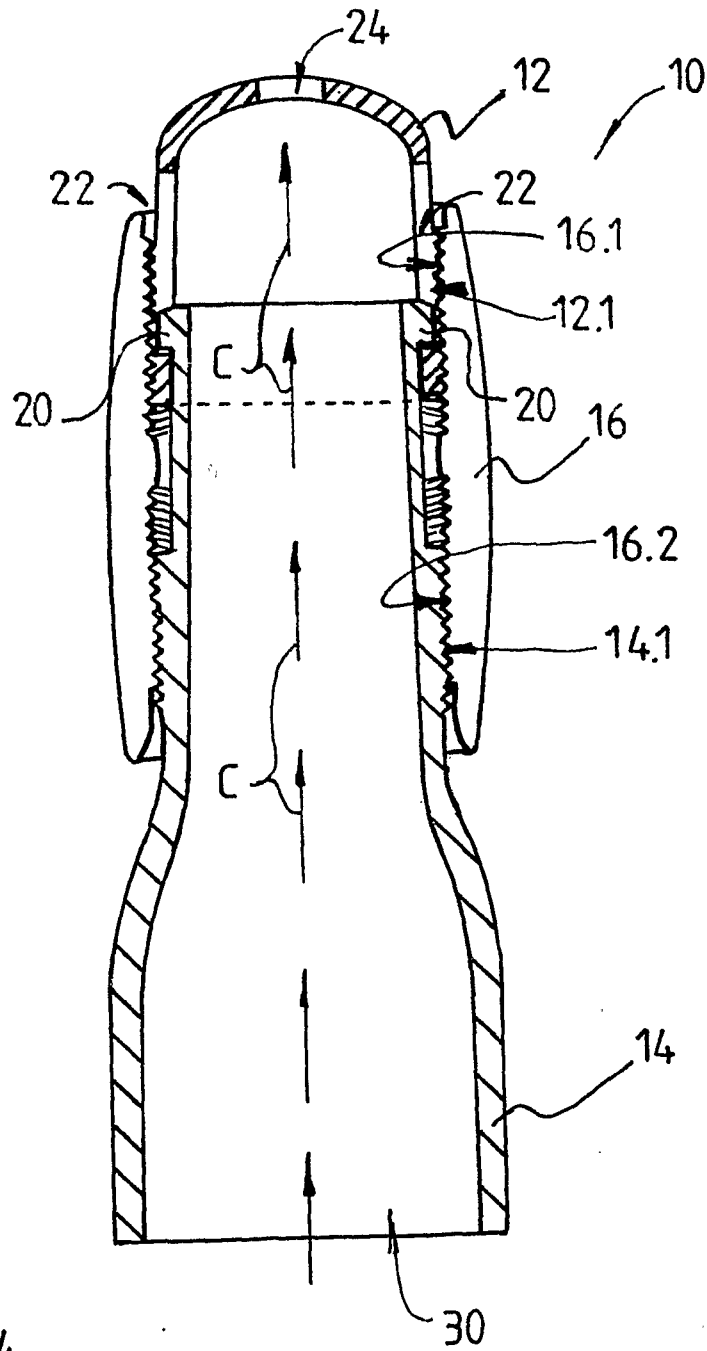


FIG. 4

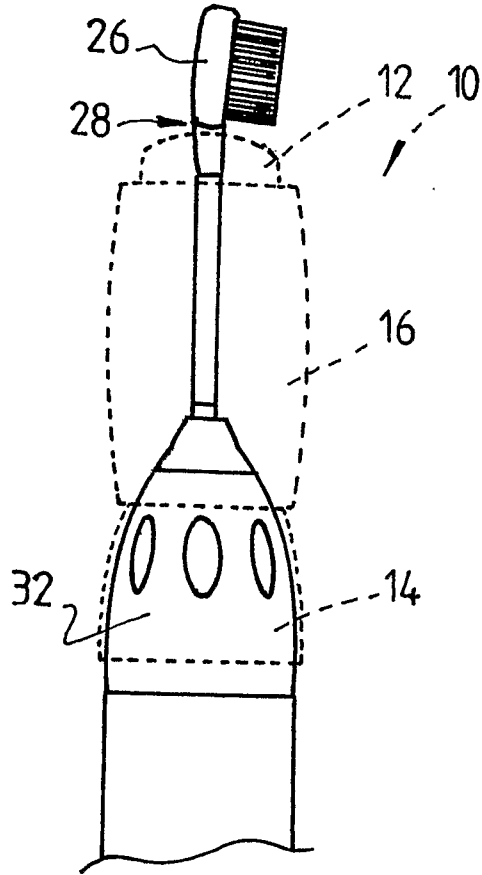


FIG. 7

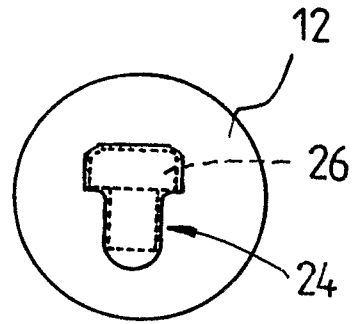


FIG. 5

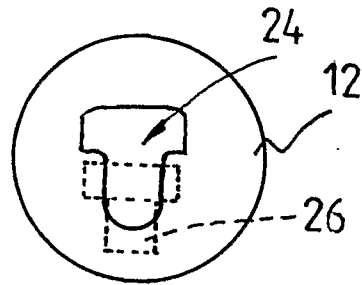
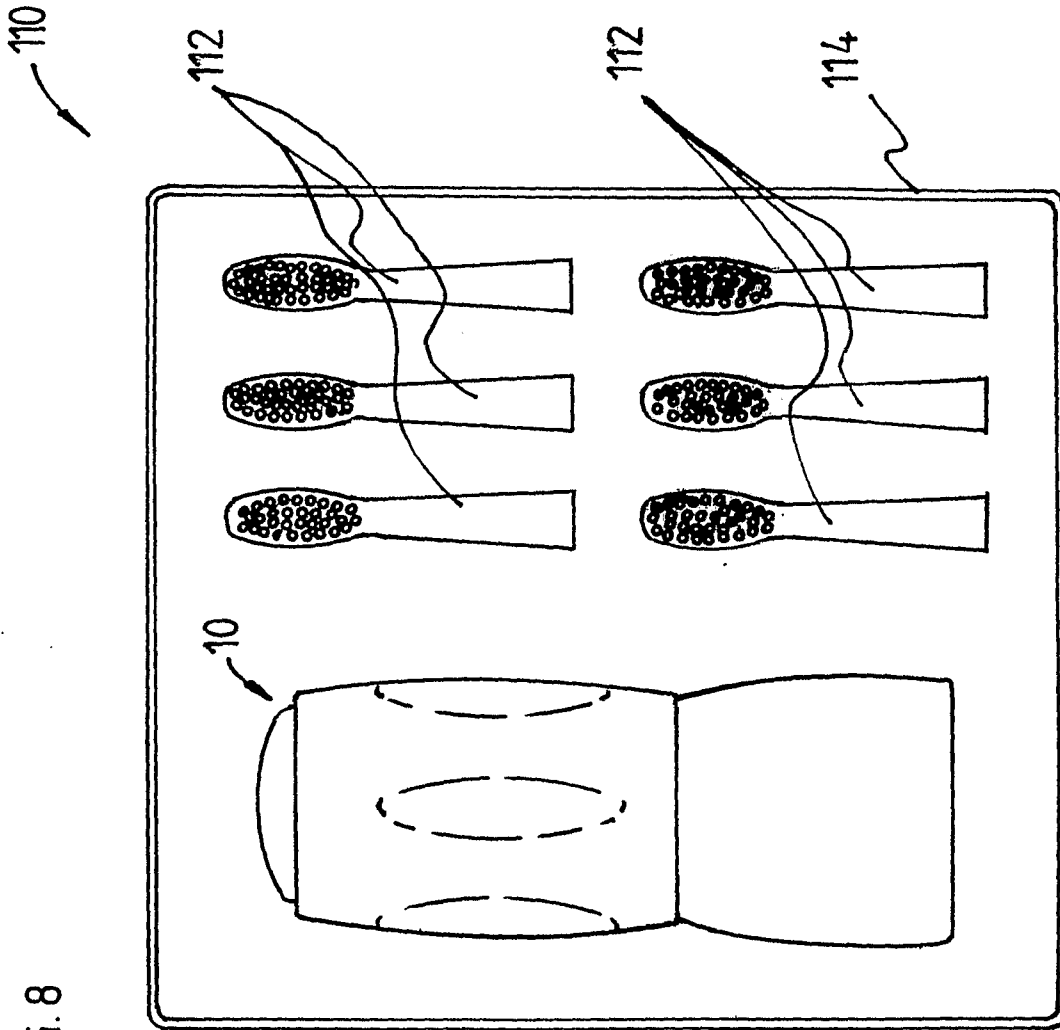


FIG. 6



INTERNATIONAL SEARCH REPORT

International application No PCT/ZA2009/000090

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61C17/22 A46B17/00

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)
 A61C A46B

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)
 EPO-Internal, COMPENDEX, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 2008/014403 A2 (RENAULT GREG [US]) 31 January 2008 (2008-01-31) paragraph [0006] paragraph [0047]; figures 19,20 -----	1-9, 13-16 10-12

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

10 February 2010

Date of mailing of the international search report

18/02/2010

Name and mailing address of the ISA/
 European Patent Office, P.B. 5818 Patentlaan 2
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Authorized officer

 Kunz, Lukas

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 17-19

Claims 17 to 19 are not acceptable under Rule 6.2 a) PCT.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ZA2009/000090

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: 17-19
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/ZA2009/000090

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008014403 A2	31-01-2008	US 2008028587 A1	07-02-2008