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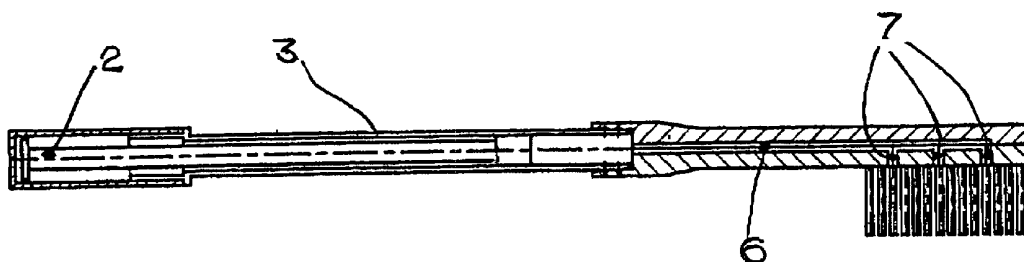
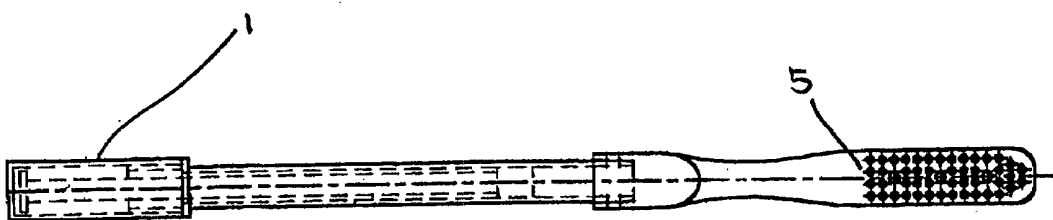
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(54) Title: DISPOSEABLE TOOTHBRUSH WITH INBUILT TOOTHPASTE RESERVOIR



(57) Abstract: A toothbrush assembly, comprising a tubular handle portion (3) to comprise a reservoir for the containment of toothpaste (4), an outwardly extending plunger (2), a brush head portion (5) housing a central conduit (6) and smaller outlet conduits (7), such that depressing the plunger (2) conveys toothpaste (4) through the central conduit (6) and outlet conduits (7) at the base of the bristles. A removable cap (1) slidably mounted on the handle portion (3), prevents unintentional depression of the plunger (2).



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### **Disposable Toothbrush with In-built Toothpaste Reservoir**

Presently available toothbrush designs with in-built toothpaste reservoirs, have been based upon a host of ways to activate a piston inside the toothbrush handle, to extrude the contained toothpaste at the brush head.

Little effort has been concentrated upon how evenly, the extruded toothpaste is presented within the bristle area, prior to use.

The present invention, addresses this problem through the utilisation of a common conduit within the brush head, which branches into three shorter conduits, which serve as separate points of emergence to assist in more even dispersion of the extruded toothpaste, throughout the bristle area.

Further to this, the present invention relates to a toothbrush that has toothpaste, stored in an in-built reservoir, (formed by a hollowed section within the handle of the toothbrush) and a means of transferring that stored toothpaste, where it may be used at the head of the toothbrush.

The transferral of toothpaste from this reservoir within the handle, is conducted by means of a plunger assembly, mounted within this handle/reservoir and behind the stored area of toothpaste. By depressing the plunger inwardly towards the 'head' of the toothbrush, toothpaste is conveyed from the reservoir through a network of conduits, to exit points, located within the head of the toothbrush, adjacent to the base of the cleaning bristles. Moistening of this area, with water now makes the toothbrush ready for use.

The present invention will be better understood with reference to the attached drawing, "Drawing 1 of 1", where Figure 1 is a Plan View of the present invention, with hidden outlines depicted and Figure 2 is a Sectional Front Elevation of the present invention.

With reference to figure 1 and/or Figure 2 of Drawing 1 of 1, cap 1 is fitted to handle/reservoir 3 to protect plunger 2 from unintentional depression.

Handle/reservoir 3 is 'snap fitted' into head and bristle assembly 5.

Toothpaste 4 is contained ahead of plunger 2, in handle/reservoir 3, ready to be transferred to head and bristle assembly 5, (via conduits 6) through depression of plunger 2.

Upon such depression of plunger 2, toothpaste conveyed through channel 6, emerges at three exit points 7 at the base of the bristle components of head and bristle assembly 5.

Wetting of the emerged toothpaste and the bristle components of head and bristle assembly 5, renders the present invention, ready for use.

In the present invention, head and bristle assembly 5, is comprised of two matching components, so that the system of conduits may be produced, as described above. These matching components are 'snap-fitted' together by virtue of special projections and corresponding indentations (not visible in Fig. 1 or Fig. 2) that are moulded into each of these matching components. However, in some circumstances, particularly with contained toothpaste of very high viscosity it may become evident that stronger joining methods for these components of head and bristle assembly 5, will need to be employed.

In such a circumstance, these two components of head and bristle assembly 5 may be joined by virtue of automated welding methods (such as high frequency (and ultra high frequency) welding) as commonly used, to join moulded plastic components.

Similarly, should these two components of head and bristle assembly 5 be moulded in plastic types that are conducive to joining by adhesive methods, then such methods may also be employed for joining.

The claims, defining the invention are as follows :-

1. A toothbrush assembly, comprising a tubular handle portion to comprise a reservoir for the containment of toothpaste.
2. A toothbrush assembly, as in claim 1, comprising an outwardly extending plunger and ahead of this, an amount of toothpaste, thus enabling the plunger when depressed, to convey the toothpaste into the forwardly located brush head.
3. A toothbrush assembly, as in claims 1 and 2, comprising a brush head portion, housing a central common conduit, ending in three smaller conduits, to comprise three exit points for the toothpaste at the base of the brush head bristles.
4. A toothbrush assembly as in claims 1, 2 and 3, comprising a brush head, where a two piece construction permits precise manufacturing of the network of conduits, upon the joining of the two brush head pieces, through adhesion or welding techniques.
5. A toothbrush assembly as in claims 1, 2, 3 and 4 where a removeable cap portion, is slideably mounted to the plunger end of the handle, to prevent unintentional depression of the plunger.

Modifications and variations, as would be obvious to a skilled addressee, are deemed to be within the scope of the present invention.

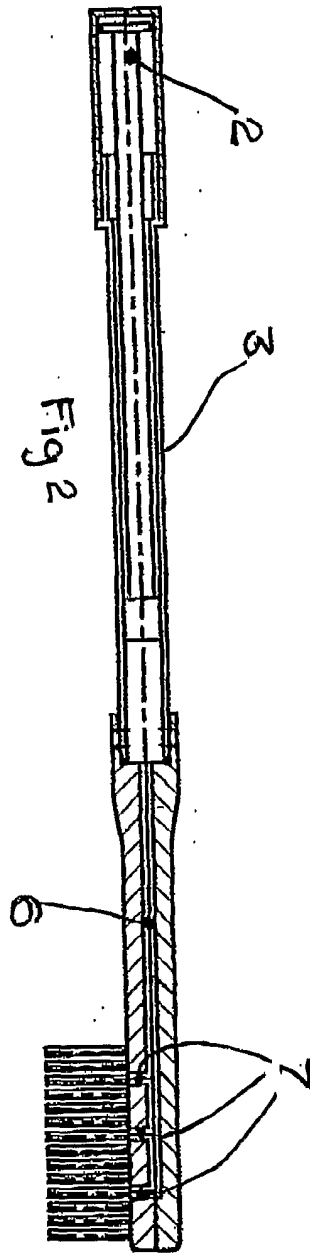
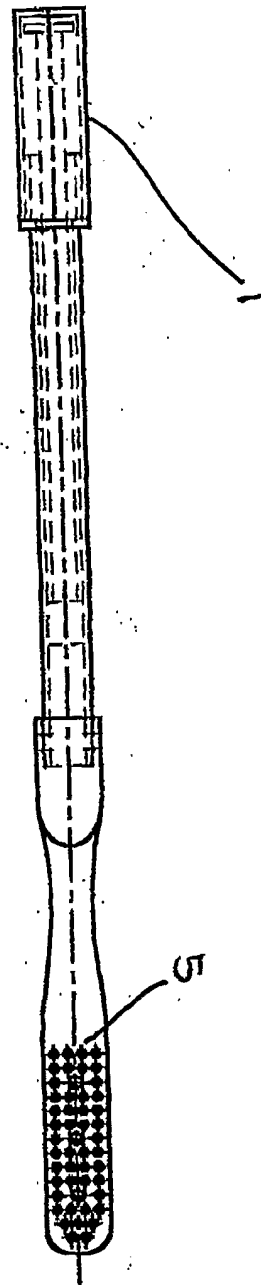


Fig 1



## INTERNATIONAL SEARCH REPORT

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
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According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) Refer Electronic data base consulted below		
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) DWPI tooth+, teeth, dental, plunger, piston, manufactur+, construct+, assembl+		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 19828557 A1 (KLUSMANN) 30 December 1999 Whole document	1 to 3, 5
X	EP 1038469 A2 (HCARE INTERNATIONAL) 27 September 2000 Column 2, lines 1 to 54 and figures	1 to 3
X	GB 2346547 A (FERNANDEZ) 16 August 2000 Whole document	1, 3
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* "A" "E" "L" "O" "P"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier application or patent but published on or after the international filing date 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) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	"T" "X" "Y" "&" 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 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 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
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CA 2254550 A1 (EDISBURY) 20 May 2000 Page 4, line 1 to Page 6, line 14 and figures	1, 3
X	US 6056466 A (JOHNSON et al) 2 May 2000 Column 4, line 4 to Column 5, line 35 and Figures 1 and 2	1, 3
X	GB 2338891 A (CHENG) 12 January 2000 Page 3, line 22 to Page 7, line 9 and Figure 4	1, 3
X	WO 99/63857 A1 (RABATIC MIŠO) 16 December 1999 Figure 2	1, 3
X	DE 19833108 A1 (SCHOENHERR) 18 February 1999 Figures	1, 3
X	GB 2326820 A (BATESON) 6 January 1999 Whole document	1, 3
X	US 5908257 A (MARTIN) 1 June 1999 Whole document	1, 3
X	US 5927887 A (La FLOWER) 27 July 1999 Column 4, line 9 to Column 5, line 49 and figures	1, 3



**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
**PCT/AU01/00282**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
DE	19828557	NONE	
EP	1038469	NONE	
GB	2346547	NONE	
US	6056466	NONE	
GB	2338891	NONE	
WO	99/63857	AU	93621/98
DE	19833108	NONE	
GB	2326820	NONE	
US	5908257	NONE	
US	5927887	EP	856419
		JP	10157381
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