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(72) Inventor: **Obradors Giro, Domingo**
08024 Barcelona (ES)

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(74) Representative: **Del Campo Castel, Domingo**
Puerto Rico, 8-B-1.o-B
28016 Madrid (ES)

(71) Applicant: **Obradors Giro, Domingo**
08024 Barcelona (ES)

(54) TOOTH BRUSH WITH INCORPORATED TOOTH PASTE RESERVOIR

(57) Toothbrush with incorporated toothpaste reservoir, comprised of a conventional toothbrush provided with bristles at one of its extremities, having a handle slightly smaller in size than conventional handles, and having in the internal area of the brush a channel which communicates the emerging extremity with the lower area of the bristles, a reservoir of toothpaste being joined to the extremity of the toothbrush, said reservoir being actuated in order to extract the toothpaste towards the lower zone of the bristles by means of a lateral flange which is situated in the lower part of said reservoir, a threaded mechanism collaborating with the external surface of the reservoir, or by means of an impulse pump acting in the vertical rising direction.

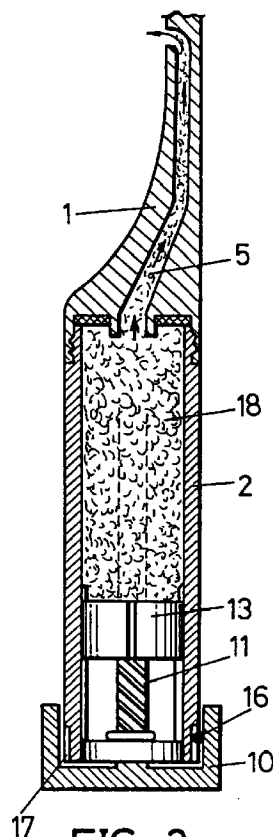


FIG.-3

EP 0 746 993 A1

Description

BACKGROUND OF THE INVENTION

The present specification refers to a toothbrush with incorporated toothpaste reservoir, the evident purpose of which is to act on the one hand, as a conventional brush, in accordance with the bristles incorporated in one of its extremities, while, on the other hand, it has, in its own body, a reservoir in which there is the - sufficient amount of toothpaste for performing its appropriate and positive task.

FIELD OF THE INVENTION

This invention has an application in the industry dedicated to the manufacture of brushes, specially hygienic brushes for dental purposes.

RELATED ART

At the present time, the dental hygiene is accomplished by - means of a variety of brushes having different shapes and sizes, some of them being static and others mechanically and electrically splitted in order to facilitate the tooth friction, and an adequate amount of toothpaste is deposited on their bristles for achieving a complete tooth cleaning.

Said toothpaste is sold in a separate tube, which every time it is to be used, has to be opened and said toothpaste to be placed on the brush, this operation generating the fact that the interior of said tube containing the toothpaste comes constantly into contact with the exterior, and, besides, since it is habitually used by several persons, it is very feasible that the own tube converts to a bearer of germs infecting other components of the family unity, by utilizing, as contagion via, the toothpaste tube in question which is used by all the family members, without knowing these, at any moment, the potential risk they run.

An obvious solution to these problems would be to rely on a toothbrush, to be exclusively and personally used, capable of generating, starting from its own application and through a very simplified motion, an appropriate amount of toothpaste on the bristle area, the toothbrush having a reservoir containing toothpaste, to be used by no ther person or family member other than its owner, by placing an external identification of the own mouth hygiene element.

Nevertheless, until now, nothing is known, on the part of the applicant, about the existence of a toothbrush fitted with the characteristics pointed out as suitable, that is to say, having incorporated a toothpaste reservoir allowing its contain to be reliably extracted from it.

SUMMARY OF THE INVENTION

The toothbrush with incorporated toothpaste reser-

voir, as proposed by the invention, constitutes, per se, an evident solution to the present problems concerning this matter, since, starting from it, the possible contagions that the utilization of a common tube use could generate is avoided.

In a most definite way, the toothbrush with incorporated toothpaste reservoir, which is the object of the invention, is constituted as a toothbrush incorporating a reservoir containing inside the toothpaste which is necessary for being used, on the basis of which, since it is a personal use toothbrush, said toothpaste will be used only by one user, which solves, in a specific way, the hygienic - problems of germ transfer, or any other risk element caused with - the traditional toothbrushes.

Besides, due to the fact that the toothbrush handle has been converted to a toothpaste carrying tube, it adopts a configuration markedly more comfortable to be grasped by the user's hand, so improving, in a substantial manner, its utilization.

To attain this purpose, the brush has a upper part consisting of the own brush carrier element, with an internal channel connecting the lower area of the bristles with the junction zone between said brush and the reservoir, the latter being, also, the constituent which carries the element impelling the toothpaste.

The reservoir incorporating the impelling element will be expended apart from the brush, fitted with a lid, and the paste is protected inside by means of a membrane, so that, when desiring to carried out the connection by turning, meshing or similar, with - the brush, the assembly of the object of the invention will be configured, the protecting membrane piercing the brush extremity, and the paste contained in the reservoir will come then into contact with the brush area, once both parts are mounted and coupled.

The element impelling the toothpaste contained in the own body of the reservoir, is configured, in a first embodiment, by an external crown located at the lower part of same, to which is internally joined a shaft fitted with a spiral thread, around which a threaded piston is located, with external channels thru which vertical projections are inserted, shaped in the inner part of the reservoir.

As a result of the above mentioned general configuration, when the external flange is turned, the central shaft is compelled to turn with it, and as the piston is outwardly fixed, it will not turn, but simply it will vertically rise, and the piston will push the toothpaste towards the interior of the tube connecting it with the base of the bristles, thru which an amount of toothpaste, adequately controlled by the user, will be expelled, this amount being the necessary one for achieving its habitual mouth cleaning operation, and all this with a toothpaste of own use and perfectly separated from the exterior during the time prior to its utilization.

In a second embodiment, the element impelling the toothpaste, included in the own body of the reservoir, is fitted, at its lower part, with a diameter which is markedly wider, being punctually narrowed by means of a

upper and lower perimetric flange, which is fitted, in turn, with both vertical channels having countersunk ends, around which a second hollow tube is located, which is anchored under pressure thru the effect of the mentioned extreme projections of the inner tube, said
 5 external tube presenting, at its inner part, an upward helical groove, while inside the inner tube, a piston can rise, from the sides of which both projecting stubs emerge passing through the through hole of the inner tube, and resting on the helical groove of the external tube.
 10

Owing to the above mentioned configuration, on imparting a turn to the lower part of the central tube, and retaining the external tube with the hands, the piston rises impelled by the external tube propeller, and verti-
 15 cally guided by the inner tube channel, as a result of which, when placing a reservoir full of toothpaste, the upward travel of the piston compeles it to rise and the determined amount by the user is inserted into the tube communicating with the lower part of the brush bristles, the amount necessary to clean the mouth being depos-
 20 ited on these bristles.

In a third embodiment, and according to the fact that the reservoir containing the toothpaste will be expended apart from the brush, the elemento impelling the toothpaste is configured as a small pneumatic con-
 25 ventional pump, either of membrane or of ball, the tubing of which, which prolongs upwardly, has a sharpened end for facilitating the rupture of the membrane protecting the toothpaste, while said pump is joined, at its upper part, to the tubing exhibited by the brush itself by means of a spring system, permitting the air to enter when desired, in order to impel the required amount of
 30 toothpaste up to the brush bristles, in order to perform again the habitual mouth cleaning operation, all this by using a toothpaste of own utilization and being perfectly separated from the outside during all utilization time.
 35

Optionally, and in a fourth embodiment, having recourse to the object protected by the third embodi-
 40 ment of the invention, the toothbrush incorporated in the extremity of the body of the reservoir containing the toothpaste can be replaced by a similar acting element in the interior of which a shaving cream is incorporated instead of the toothpaste, placing at the upper extremity of this element a razor of interchangeable blades, fitted
 45 with a through perforation or channeling carrying the necessary amount of shaving cream up to the user's face, in order to perform a complete shaving, the cream being obtained from the reservoir incorporated inside the handle, which contains shaving cream instead of toothpaste.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to complement this description and aid to a better understanding of the characteristics of the inven-
 55 tion, the appended drawings, which are a part of this specification, show, by way of illustrative and non-limiting example, the following figures:

Figure 1 is a perspective view of the toothbrush with incorporated toothpaste reservoir, which is the object of the invention, showing apart the two fun-
 damental elements composing it, in a side view, showing the brush body in section, and illustrating the channel through which the toothpaste flows up to the bristle area.

Figure 2 is a sectional side elevational view of the reservoir containing the toothpaste, to be coupled to the bristle carrier part or head.

Figure 3 is a sectional elevational view of the assembly formed by the elements shown in the pre-
 ceding figures, coupled one other.

Figure 4 is a side elevational view, duly sectioned, of the object of the invention, configured in a sec-
 ond embodiment.

Figure 5 is an exploded view in elevational section of the reservoir of the second embodiment shown in Fig. 4, fitted with a lid, and in an arranged disposi-
 tion prior to be utilized.

Figure 6 is an elevation sectional view of the assembly of the object corresponding to the second embodiment, fully mounted.

Figure 7 is a partially sectioned elevational view of the object of the invention in a third embodiment, shown separately the two fundamental elements constituting it.

Figure 8 shows an elevational view of the object of the invention, illustrated in Fig. 7.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

From these figures, it can be seen that the tooth-
 brush with incorporated toothpaste reservoir is config-
 ured in a first embodiment starting from a brush (1) in the strict sense, having a reservoir (2).

The brush (1) is provided with appropriate bristles (3), like those conventionally used in any brush, in order to clean the - user's teeth, having a short handle fitted, at its lower part, with a thread (4), configured by a zone having a helical threading or recess, to be fixed to the reservoir (2), while from said union area a hollow tube (5) emerges, communicating the lower part of the bristles (3) with the reservoir (2), the lower part of said tube having a projection (6) having a pointed periphery, the purpose of which is to pierce a membrane (7) in the tube (2), and, at the same time, to close it when not used.

In relation to the reservoir (2), it should be pointed out that prior to its use, it is fitted with a lid (9), threaded to the upper mouth (8), while at its lower part there is the

reservoir tube (10), which, at its lower part, has an emergence configured like a shaft (11) and having a helical thread (12) around which a - threaded piston (13) is located, and having recesses (14) in correspondence with projections (15), which in a number not less - than two, are located in the reservoir (2) along its entire inner surface.

Once the toothbrush assembly has been mounted, it is configured such as shown in Fig. 3, wherein it can be seen the system or application thereof.

Consequently, when desiring to brush one's teeth, it will suffice to act on the flange (10), imparting a controlled turning motion, with the aid of grooves (17), at the lower part of the reservoir (2), these grooves being coincidental with a resilient projection (16) of the flange (10), this turning motion causing also a rotation of the shaft (11) carrying the helical thread (12), owing to which, said thread will tend to move, turning and rising the piston (13), but from these motions the piston (13) only will be capable of performing that of rising, or in upward vertical sense, being impeded by the complementary function of the channels (14) and the projections (15), owing to which, the piston will rise and compress the toothpaste (18) contained in the reservoir (2), rising through the tubing (5) until appearing and being deposited on the bristles (3) of the toothbrush (1), after which, the toothbrush will be ready to perform its function and with the suitable quantity of toothpaste.

According to Figs. 4, 5 and 6, corresponding to the second embodiment of the invention, the toothbrush with incorporated toothpaste reservoir is constituted by a brush in the strict sense (21), and a reservoir (22), it being convenient to point out here that the brush (21) has the typical bristles (23) found in any brush for said purpose, and a lengthened handle, which is internally hollow and fitted, at its lower part, with an element (24), the function of which is to provide an anchorage at the external part (36) of the reservoir (22), and to this end this reservoir (22) has a supplementary element (26), while the interior of the upper body of the brush is fitted with a tube (27) communicating the lower part of the bristles (23) with the upper area of the handle extension surrounding the reservoir, its emerging lower extremity (28) having a pointed periphery the function of which is to pierce a membrane (29) located in the reservoir (22), closing this when not used.

As regards the reservoir (22), this has, when not used, a lid (30), having also a hollow central cylinder (31) which extends inside another wider cylinder (32), the cylindrical tube (31) having both vertical symmetrical channels on its entire surface, with their extremities (33) being laterally countersunk, as well as two projecting flanges (34) and (35), located at the extremities.

Surrounding the cylinder, there is a second external cylinder (36) fitted, at its front part, with an upward helical channel (37), and some projections acting as extreme insertions (38) which, on placing said tube (36) around the tube (31), interlock it in the flanges (34) and (35), with possibility of their turning one other.

On the other side, there is a piston (39) within the inner tube (31), which is fitted with projecting symmetrical stubs (40), passing through the channels (32) and resting on a helical channel (37).

Once the assembly of the toothbrush configuring the second embodiment has been completed, it presents a configuration such as shown in Fig. 6.

It should be pointed out that when it is desired to carry out a tooth brushing operation, it will be sufficient to act on the lower section (32) of the reservoir (22), by pressing, at the same time, the external part of the hollow cylindrical portion of the part (21), which, due to the effect of the retaining element (24) and (25), will solidly join to the external tube of the reservoir (36).

Due to the dual turning action on the channels (32) and the retention on the tube (21), the piston (40) will be forced to rise owing to the fact that the helical channel (37) of the tube (36) on which the stubs (40) of the piston (39) rest, impels the latter to perform an upward movement, converting this movement to a linear one, due to the fact that said stubs slide within the vertical channel (32) located in the inner tube (31).

Since the reservoir assembly over the piston (39) is full of toothpaste (41), said paste will rise, due to the mentioned movement, until entering the tube (27), and will arrive at the bristle base of the brush in the quantity wanted, and the brush will be ready to be used.

In the third embodiment shown in Figs. 7 and 8, it can be seen that the brush (51) and the reservoir (52) are separated each other, and specifically the reservoir (52) has, at its upper part, a thread (53) facilitating its union with the pneumatic pump (54), acting as an impulsion element and being located at the inner part of the body (51).

The function of said thread (53) is to act, firstly, as a fastening element of the lid, and to protect the membrane (55) prior to the utilization of the reservoir (52).

As regards the upper body of the brush (51), it should be noted that, like in the previous cases, it has bristles (56) which are conventionally used for performing tooth cleaning, having a lengthened handle (57) fitted, at its upper part (58), having a solid configuration, with a tubing (59), which, emerging from the lower part of the bristles (56), extends until the upper part of the cavity (60), which will act as a housing for the pneumatic pump (54) and the reservoir (52), which in use position will be threaded by the area (53) to the mentioned pneumatic pump, fitted with a inner thread (61), so configured.

As regards the impulse device (54) or pump, it is fitted with a lower tubing (62), which will be inserted into the reservoir (52) and will remain inside the toothpaste (63), after passing through the membrane (65), for which it will present its pointed tip (64), while through the closing device of the pump (65), this latter, which can be of a conventional type, both of membrane, ball, or any other type, will facilitate or avoid the passing of the toothpaste.

Obviously, and according to the pump performance,

the passing of the toothpaste from the lower tubing to the upper tubing (66) will be facilitated or impeded by using a spring pressed between said ball valve (68) and the base of the piston (69), on pressing the reservoir (2), so forcing the external upper part of the pump (65) 5 upwards, but not that upper and inner of the plunger (69) towards the tubing (66) and (59).

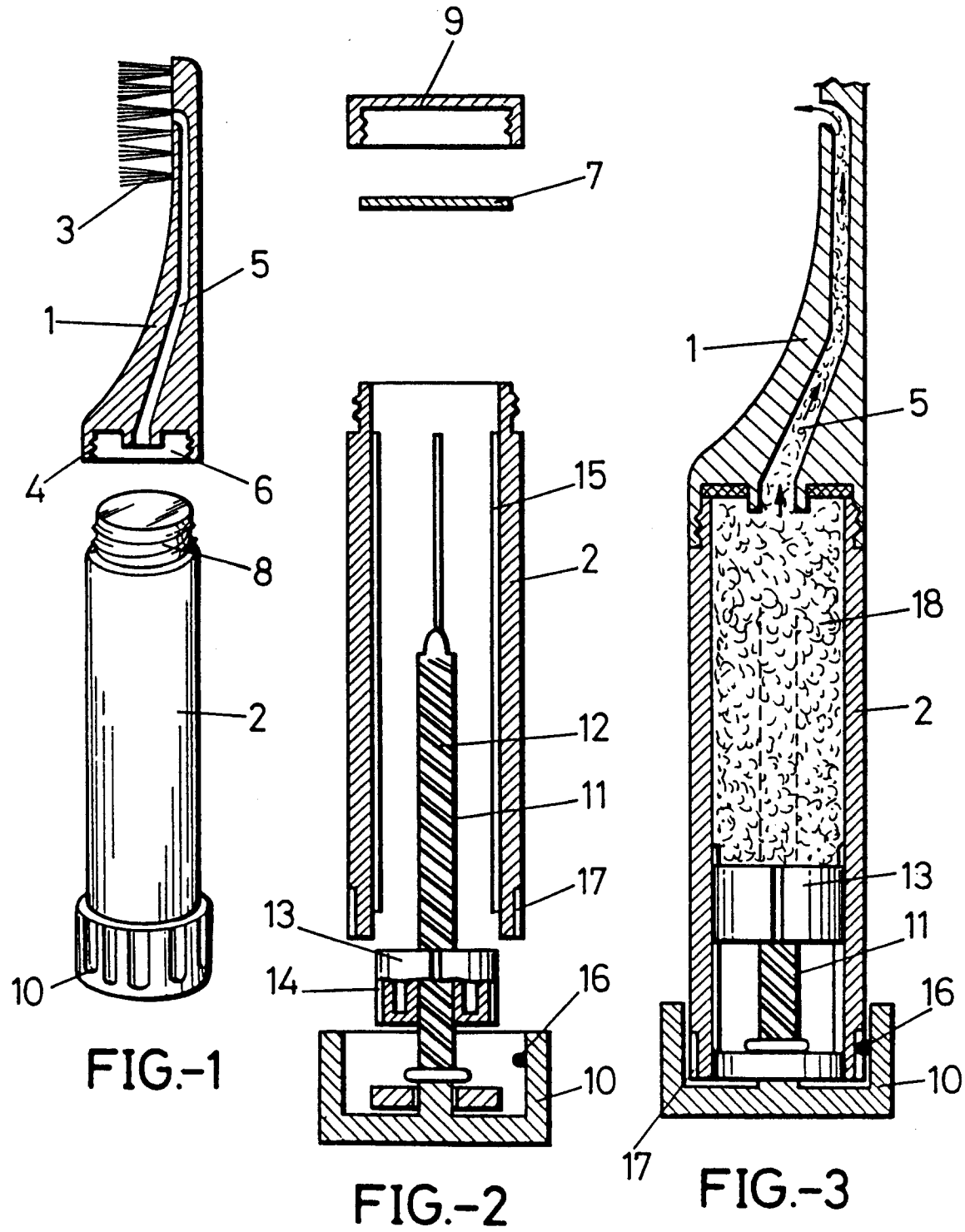
Once the assembly of the toothbrush, object of this third embodiment, has been completed, it shows a physical configuration such as that illustrated in Fig. 8. 10

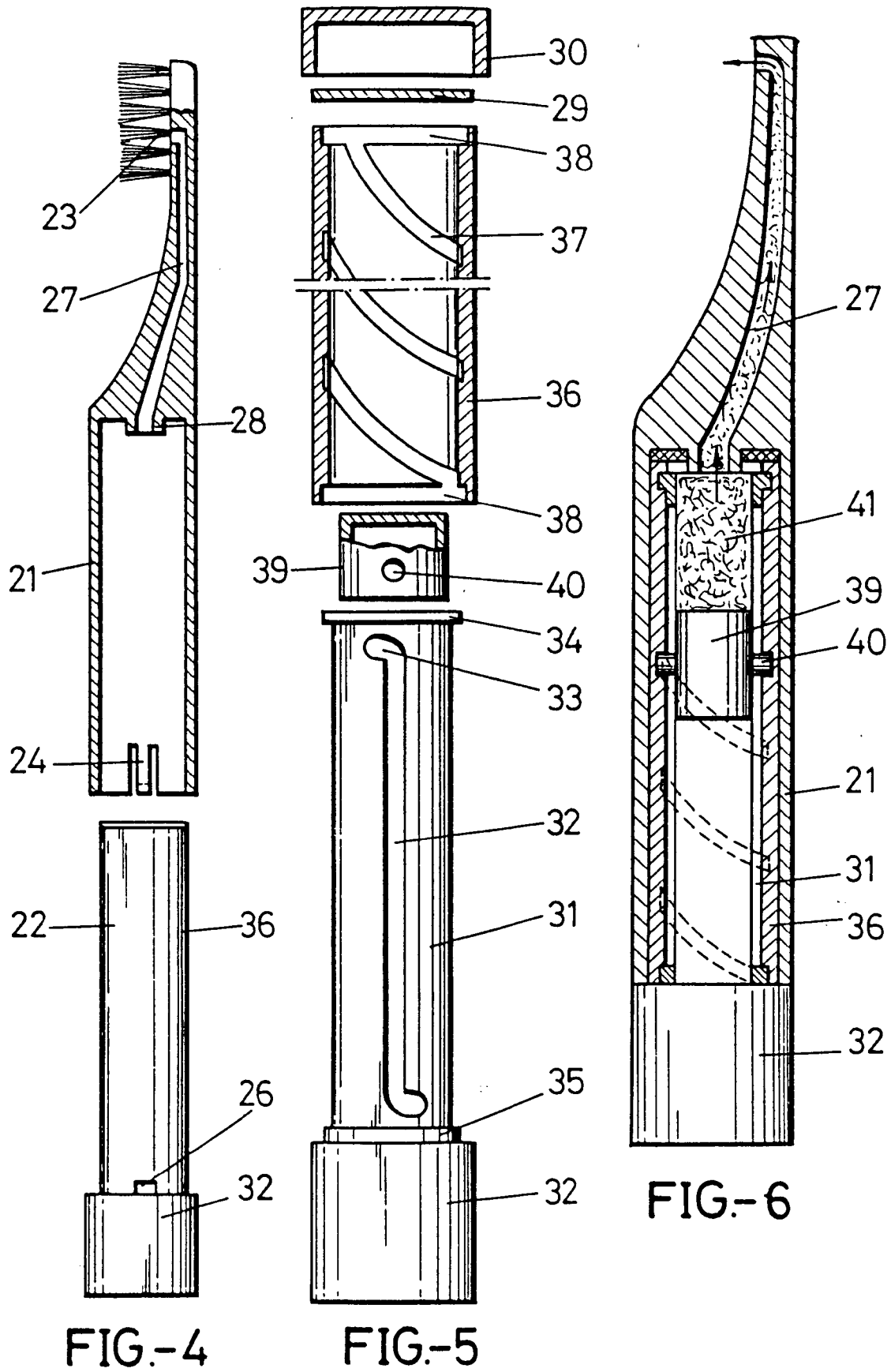
In short, when it is desired to carry out a tooth cleaning operation, the first step will be to mount the brush assembly. To this end, it is necessary to remove the lid closing the reservoir (52), when not used for the first time, and then to insert the reservoir (52) into the 15 extension (57) of the body (51), so that the tubing (62) will rest on the membrane (55), and due to its pointed extremity (64), it will pierce the membrane, so making easy the insertion of said tube into the reservoir, and its contact with the toothpaste (63), continuing the inser- 20 tion of the reservoir till its extremity comes into contact with the pneumatic pump side (54), and at that moment, the extremity (53) of the reservoir will thread in the thread (61) located at the pump for this purpose at said point, and the assembly will be ready to be used. 25

Once the assembly has been so prepared, it will be sufficient to push upwards the reservoir (52) to press the spring for allowing the air to enter inside the pump, which will remain open due to - this operation, so allow- 30 ing the toothpaste (63) to emerge until - the required quantity of same will be deposited on the bristles - (56) of the brush, in order to carry out the brushing operation.

Claims 35

1. A toothbrush with incorporated toothpaste, of the compound in its upper part for a body which adopt the form of a typical brush, but it is fitted, at its internal part, with a tubing, which emerging from the 40 base of the bristles extends till the lower hollow portion thereof, in touch with a reservoir containing toothpaste, inside it the toothpaste is incorporated, characterized in that the reservoir has pneumatic pump fixed by a threaded zone, the lower tubing of 45 the pump itself being located inside the reservoir, the pump being set in motion by means of an upward vertical impulse, so allowing the toothpaste to rise up to the brush bristles, and the pump having a upper cylindrical extension through which 50 joins to the lower part of the tubing through which the paste flows, located in the brush body and related to a spring so that when the reservoir is pushed, the spring compresses and drives the pump device, allowing the toothpaste to arrive at 55 the brush.





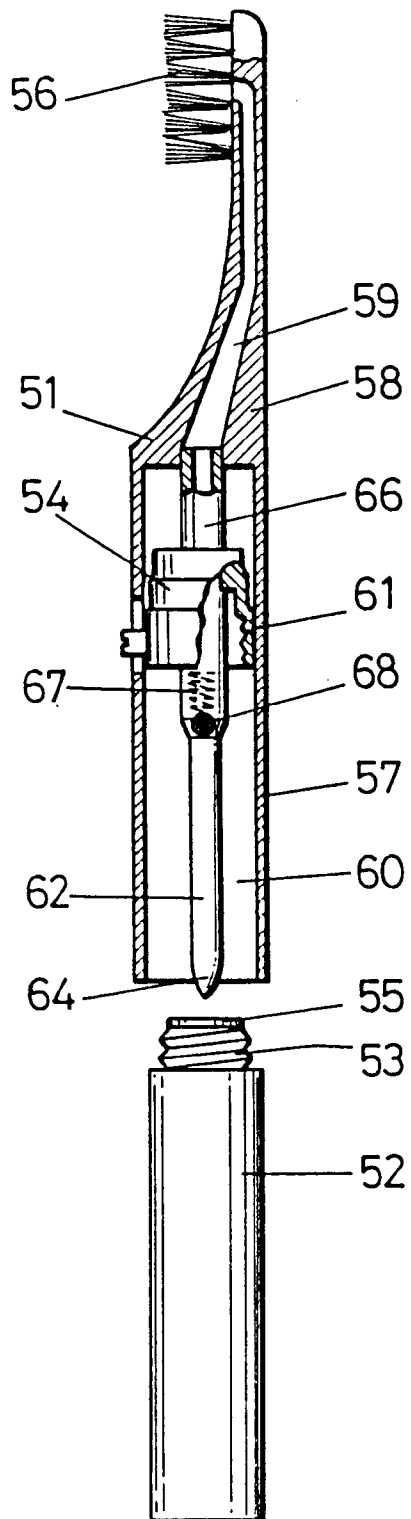


FIG.-7

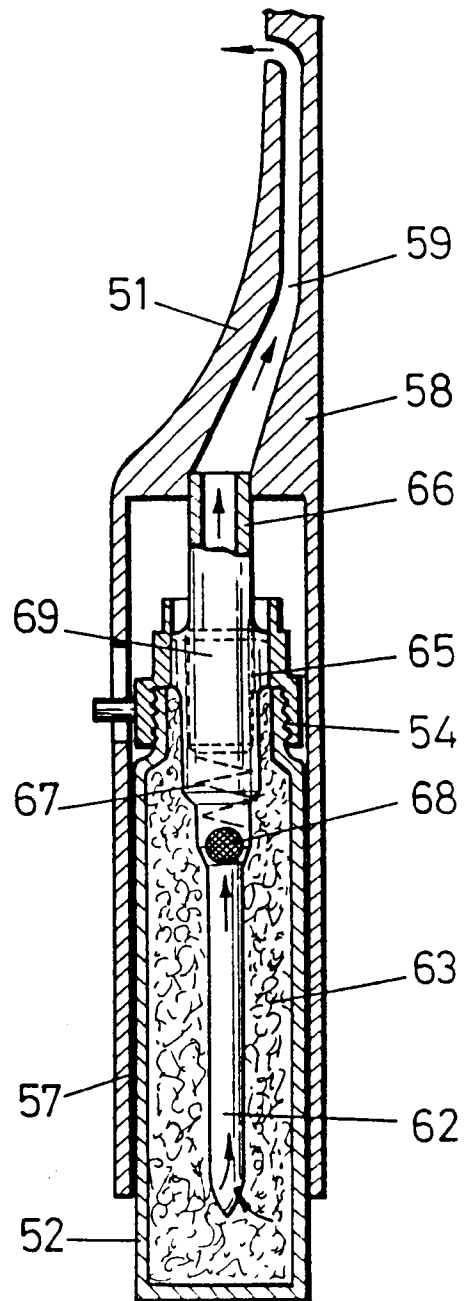


FIG.-8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 95/00108

A. CLASSIFICATION OF SUBJECT MATTER		
Int.Cl. ⁶ : A46B 11/00		
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)		
Int.Cl. ⁶ : A46B 11/00, A46B 11/02, A46B 11/04		
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)		
CIBEPAT, US MPSEARCH, EPODOC, PATENT ABSTRACTS OF JAPAN		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9303648 A (ENGLISH PHILIP; SZPAK ANTHONY (US) 04.03.93 page 9, lines 9-34; figures 1-15	1
X	US 5026191 A (AKLY CESAR) 25.06.91 Column 1, lines 23-28; column 2, lines 6-10; figures 1-5	1
Y	GB 2172796 A (JACKSON COLIN STANLEY; JACKSON CAROLYNE SUSAN) 01.10.86, all the document	1-3
Y	US 4155663 A (CERQUOZZI JOHN H.) 22.05.79 Column 1, lines 29-35; figures 1-3	1-3
A	US 4269207 A (KONRAD CZESLAW ET AL) 26.05.81 Column 2, lines 34 - column 3, line 68; figures 1-3	1
A	DE 3514600 A (OTMATO AG) 14.08.86 figures	1,3
A	FR 2592287 A (BENICHOU JACQUES) 03.07.87 figures	1,3
☐ 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		Date of mailing of the international search report
31 January 1996 (31.01.96)		05 February 1996 (05.02.96)
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Facsimile No.		Telephone No.

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