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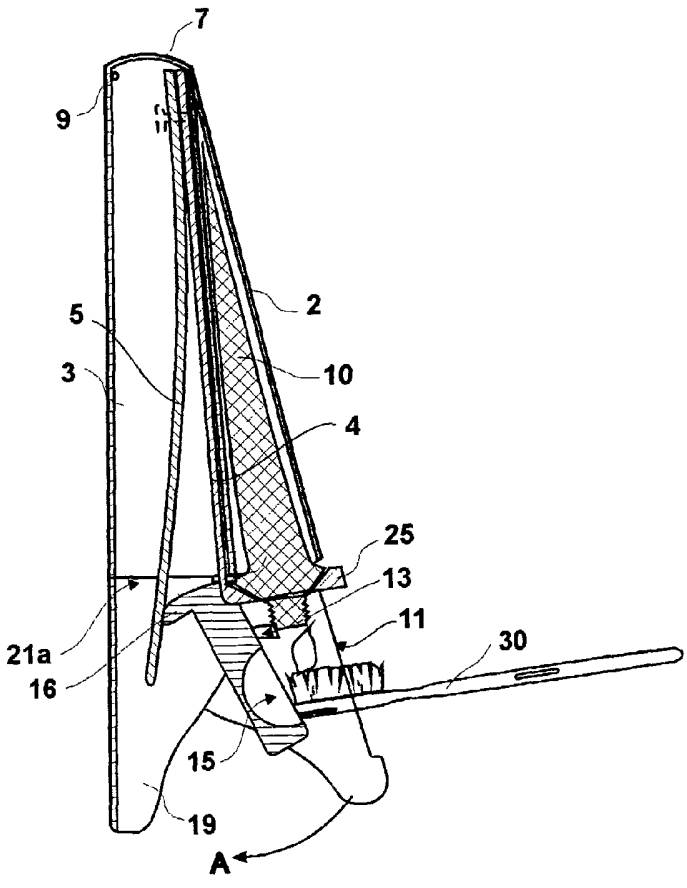
(54) Title: APPARATUS FOR SQUEEZING TUBES



(57) Abstract: The present invention is related to a self-operating apparatus that facilitates taking products like cleansing, health care, food stuff, etc. of high viscosity such as paste/cremes out of their conventional containers. The present apparatus (1) comprises a fixed lower body (3) and a mobile upper body (2) between which is located a tube with cap left opened and placed upside down. The open orifice of the tube (10) is closed by means of a mobile cap (8). As the upper body is pushed forward, the cap opens and the paste comes out of the tube orifice.

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TUBE SQUEEZING APPARATUS

The present invention is related to a self-operating apparatus that facilitates taking products like cleansing, health care, food stuff, etc. of high viscosity such as paste/cremes out of their conventional containers.

In prior art, brushing teeth requires first taking tooth paste tube from its location among many brushes without droping the rest to open tube cap with one hand holding still handle of the brush; while locating the cap in hand to some place or holding the same between teeth, to squeeze tube from its bottom by difficulty; to locate the cap to its former site while endeavouring to keep paste taken out of tube container over the bristles after tooth paste is dispensed. All of these operations take quite lot of a time and further requires a skill. Such difficulties, even if indirectly, bring about stumbling blocks in front of tooth brushing habit. Especially children face hardship in acquisition of such an habit as it requires overcoming many difficulties.

Furthermore, the habit of squeezing tooth paste container exhibits difference which varies from person to person. Failing to squeeze tube properly, omission to close caps or failing to recap the tubes failing to locate tubes to their former places cause especially clash to occur in places of common living. Tubes left in this way open form a pollution to view.

In addition to such difficulty in use, pastes from tubes left open or half closed run out and /or become dry as time passes by. This in neither economical nor hygenical.

Tubes squeezed from their middles or askew make it difficult their contents being taken out especially when tubes come close to their depletion and as a result some amount of paste is reluctantly left unutilized at their bottoms. As paste remaining in tube bottom is wasted this further cause a burden to national and family economy.

Another problem in the prior art is the fact that one comes in touch with tooth paste, especially with the cap of a tube, and that cap falling down to washbasin or to the floor.

Facts mentioned in connection with tooth paste tubes are also valid for all tubes containing high viscosity products such as shaving creams, ointements used in the treatment of skin-related and other diseases.

Various suggestions have been made in the art to offer solution to such problems. For instance, pump operated tubes were offered as an alternate to conventional containers bring no advantage for handling. Moreover, opening tube cap and closing the same and making the tube cap operative when paste in tube turns dry is much harder. Especially children are at a disadvantage as tubes are big for their hands and they have to grapple with tubes when squeezing the same is intended. Furthermore, the gravity center of tubes slips upwards as paste at tube bottom diminishes as a result of usage, in consequence of which the tube increasingly becomes unbalanced.

5,845,813 U.S. patent discloses a product operated by an electric motor. The invention ensures paste being taken out after tooth paste tube is squeezed between a plate and a rotary cylinder. Because of the electric motor, this is a costly product.

5,449,092 and 5,868,282 U.S. patents also disclose setups which are hand-turned and move downward on a grooved guide to squeeze tube and make certain that paste comes out.

In the state of the art, 5,449,742 U.S patent describes a product where paste tube is squeezed between a cylinder pushed downwards on two guides having circular notches by means of a handle capable of being moved upwards and downwards and a plate to let paste in tube to go off. Such guides cause costs to rise.

4,550,982 U.S. Patent, a tube in a housing with inlet facing upwards is squeezed at the bottom by means of a spring to deliver paste. However, it proves itself difficult to

produce such spring-loaded apparatus and their lifetime has shown itself to be too short.

In U.S. patent 4.548,337, an apparatus is disclosed where a push button operated air pump enables increasing pressure in an isolated compartment, as an upshot of which paste squeezed is let off.

In the German patent application 196,03,359, paste located in a cylinder by means of a piston connected to a screwed handle is forced to go out from a hole at the bottom. Discharge of the paste from tube to cylinder is not hygienic.

4,570,829 U.S. Patent discloses a setup operating by means of a complex system of hinges. On the other hand, 5,2711,529 U.S. patent mentions a apparatus which enables squeezing tube by means of a plate pushed forward by a handle.

The object of the present invention is to provide a self-operating apparatus which allows faster opening of tube cap and closing of the same automatically after use.

Another object of the present invention is to realize a non-electrical easy to use apparatus for tube squeezing.

Another object of the invention is to realize an apparatus for squeezing tubes enabling taking out the entire content of the same.

Another object of the invention is to provide an apparatus for squeezing tubes in an hygienic, aesthetical way, with ease of manufacturing, of a simple structure at low-cost.

Apparatus for squeezing tubes developed to realize these objects invention is shown in the drawings attached, where

Figure 1 is an exploded perspective view of a tube squeezing apparatus

Figure 2 is the side view indicating how a new tube is located in an apparatus for squeezing tubes.

Figure 3 is the top view of tube cap.

Figure 4 is the side view of the squeezing tubes apparatus.

Figure 5 is the side view of inner pieces of the tube squeezing apparatus.

Figure 6 is the closs sectional view showing the operation of the tube squeezing apparatus.

Figure 7 is the front view showing various applications of the apparatus tube squeezing apparatus.

All pieces shown on attached drawings are numbered as follows :

1. Apparatus for tube squeezing
2. Upper body
3. Lower body
4. Carrier
5. Spring
6. Plate
7. Hood
8. Cap
9. Pin

10. Tube

11. Window

12. Pushing point

13. Pusher

14. Pin Holder

15. Insert

16. Tail piece

17. Arm

18. Extension means

19. Side member

20. Arm holder

21. Step

22. Screw hole

23. Handle

24. Discharge outlet

25. Scoop

26. Screw

27. Nut

28. Projection

29. Brush holder

30. Brush

Apparatus for tube squeezing (1), which is the subject of this invention, used in taking out high viscosity products such as pastes/crèmes easily comprises a lower body (3) in the form of half-cylinder, a spring (5) located in such lower body, a carrier (4) extending outwards from the inside of the lower body to form a housing to a tube (10) located upside down and with inlet left open, pushed towards the lower body by the spring, a cap (8) attached to the lower body on the condition that it is situated below the carrier with arms outside that lower body, to close the open inlet of the tube by being pushed thereto by means of the spring, an upper body (2) attached from its upper part to the top of the lower body as such to turn around a pin (9), having a form of half cylinder and a window (11) in front to attain to tube inlet, which enables pulling the cap from below of tube inlet by means of pushers (13) located in the inner face when pushed forward and makes certain that paste comes off the tube when this latter is squeezed between itself and the lower body (Figure1).

The lower body (3) consists of a top section in the form of half cylinder widening downwards and of side members (19) in the form a plate extending downwards in parallel with each other from the sides of that top section. Bottom diameter of the body widens downwards so that the front face of the lower body becomes slanted. The tube hinges upon that slanted surface. When passing from cylindirical portion of the lower body to lower section with flat surface, a step (21) takes place inwards, which form the area where the pusher located in the inner surface of the upper body and arms (17) of the cap moved by that pusher are operational. Below the step, in front of plates, there are holders (20) for arms to which the cap will be attached by arms. These holders are in the form of a lateral P letter with head of the letter looking backwards. From one of its tips, these holders open outwards. In this way, the cap (8) is easily removed and mounted for cleaning. In the front of the lower body, a screw holder (22a) is present to enable fixing the spring and the carrier. On both sides of

this holder, there are pin holder (14b) to attach pin around which the upper body turns.

The rear part facing wall of the lower body may be closed with an appropriate plate (6) of suitable form. This plate may be fixed onto wall using screw holes, may be hanged or may be affixed by adhesives.

The top section of the lower body (3) may be closed using a hood (7) to provide a more aesthetical view and to clean the apparatus easily.

The spring is a convex band preferably in vertical plane. It is fixed from inside to the lower body (3) by means of screw holder (22c) located at its tip.

The carrier (4) comprises a handle (23) in the form of a band having a specific elasticity, extending between the side members (19) of the lower body and a scoop (25) extending outwards the side members vertical to that handle. In the middle of this part, there exists a discharge outlet (24) in the form of a truncated cone pointing down. This scoop of discharge outlet corresponds to the neck part of the tubes. The lower diameter of the discharge outlet is sized to allow the insertion of tub orifice. By means of a screw holder (22b) located at its upper part, the carrier may also be fixed from inside to the lower body (3).

The cap (8) comprises an insert (15) preferably in the shape of hemisphere of a size that allows tube orifice extending downwards from discharge outlet on the carrier to seat. One extension means (18) raising vertical to the surface from rear parts of the cap's two side walls and extending by making a curve with vertical downwards from these extension members and arms (17) formed each of a projection extending parallel to these extension means are in Z form. At the rear of the cap, there is a tail piece (16) having a curved face extending downwardly. This tail piece rests on the lower tip of the spring (5). This latter pushes the cap outwards by means of curved face of the tail piece. (Figure 3)

The upper body(2), in turn, is located to be able to rotate around the pin axis (9) from pin holders (14a) placed in the top section of that body. The bottom diametre of the upper body is extended downwards to provide upper body front surface with a slant greater than that provided to the front face of the lower body. In this way, the gap between the upper body and the lower body increases downwards; this gap has the form required for locating a tube upside down. Moreover, as the rear edges of the upper body form with the vertical an angle of 5 to 30 degrees, the upper body does not hit wall when moving.

On the inner side surfaces of the upper body, there are two pushers (13) resting reciprocally onto outwards extending projections of the arms extending outwardly. These pushers may be either in the shape of a small projection or each of them in the form of a lateral strip. In the front of the upper body, there is, a window (11) to take paste from the orifice of the tube by insertion of a brush. Below this window, there is a push point (12) from where the upper body is pushed forward. To ensure that minimum strength is applied for tube squeezing, the said point is preferably located at the lowest tip of the upper body (Figures 4 and 5).

The apparatus for tube squeezing of this invention may be made of wood, or metals, but preferably plastics being cheap and suitable for production in series.

In the apparatus for tube squeezing of the invention a pin in the shape of a single piece cylinder extending from one pin holder to the other (14a) is used. However, two pieces of soldered screws or nails may be used as well.

In another embodiment of the apparatus for tube squeezing of the present invention, one or more holders (29) are present for locating tooth brushes (30) to the sides of the device.

In another embodiment of this invention, to make tooth brushing enjoyable for children various sound and light effects may be added. Beside these, by way of adding animation elements such as brows, eyes, mouth, ears, it is possible to produce an apparatus that look like the (Figures 7a to 7d) popular characters.

For mounting the device for tube squeezing first of all spring and carrier are placed one after the other and fixed from inside by means of screws to lower body. Next to this, the cap is attached to arm holders situated at the lower body side members. The upper body is established onto lower one by a pin passing through this latter. Finally, the hood and the plate are mounted to complete operation. Under such circumstances, the scoop of the carrier pushed forward by spring extends outwards between lower body's side members, and the cap pushed by spring stands below the scoop.

The apparatus for squeezing tubes may be fixed stationary onto walls, on boards, or onto any flat surface at a height close to shoulder of the user by fixing with screws or adhesives.

To locate tubes into apparatus for squeezing tubes, it is sufficient to raise the upper body upwards and to install tube into discharge outlet of the carrier with care to place tube upside down and to set tube orifice into holder present on the cap and finally to lower upper body. (Figure 2)

In the course of using the apparatus for squeezing tubes, first the brush is inserted inside the window and some pressure is applied in the direction "A" from push point onto upper body by the other hand. This latter pressure causes the upper body to turn around the pin. The pressure thus applied is conveyed to the cap by the medium of pushers made operational in the space below the cascade. The cap turning downwardly around its extension members leaves the tube's orifice. With the pushing continued, the carrier bends backwards and paste comes off from the tube which is squeezed between the lower and upper bodies. After the paste is taken on the brush the upper body is set free. As the upper body becomes free, the cap is pushed outwardly by the spring resting on the tail piece. Finally, the cap closes the orifice of the tube (Figure 6).

When required, the cap may be cleaned by removing from the lower body.

By means of the apparatus for squeezing tubes of this invention, the user does not have to look for the tube, does not have to open or close the cap and can easily use the apparatus. This apparatus facilitates handicapped people to reach tooth paste under suitable conditions. Furthermore, the irksome appearance of tooth paste tubes with cap removed and left open, half squeezed, with contents run out are definitely eliminated. Particularly, when furnished with effects such as sound and light and toys, children will love to tooth brush. Furthermore, the apparatus for squeezing tubes is easy and economical to manufacture due to its simple structure.

CLAIMS

1. An apparatus for tube squeezing (1) for easily squeezing high viscosity products such as pastes or crèmes comprising

a lower body (3) in the form of a half-cylinder,

a spring located into said lower body (5),

a carrier (4) extending outwards from the inside of the lower body to form a housing for a tube(10) to be located upside down and with inlet left open, pushed towards the lower body by the spring,

a cap(8) attached to the lower body to be placed below the carrier with arms outside that lower body, to close the open inlet of the tube by being pushed thereto by means of the spring,

an upper body (2) attached from its upper part to the top of the lower body to rotate around a pin (9), having a form of a half cylinder and a window (11) in the front to access the tube inlet which enables pulling the cap from below the tube inlet by means of pushers (13) located in the inner face when pushed forward, and makes certain that paste comes off the tube when this latter is squeezed between itself and the lower body

2. An apparatus for squeezing tubes as described in claim 1 characterized in that said lower body (3) is formed of a top part having in form of a half cylinder extending downwards and of side members in the form of plates extending in parallel with each other downwards from sides of that top part.

3. An apparatus for squeezing tubes as described in claims 1 and 2 characterized in that the front face of the lower body is made slanted by extending downwards bottom diameter.

4. An apparatus for squeezing tubes as described in claims 1 to 3 characterized by its having a lower body comprising a step (21) extending inwards to the area between the cylindrical part to the flat lower part.

5. An apparatus for squeezing tubes as described in claims 1 to 4 characterized by its having a lower body comprising below the above mentioned step (21), in the front edges of plates, arm holders (20) to attach cap arms.

6. An apparatus for squeezing tubes as described in claims 1 to 5 comprising arm holders in the shape of letter P extending lateral with head portion of the letter facing backwards and from one of their tips opening outwards.

7. An apparatus for squeezing tubes as disclosed in claims 1 to 6 characterized by its having a lower body comprising a screw holder (22a) in the top front part for fixing the spring and the carrier.

8. An apparatus for squeezing tubes as disclosed in claims 1 to 7 characterized by its having a lower body comprising each a pin holder (14b) for attaching pin around which upper body (3) rotates on both sides of arm holder.

9. An apparatus for squeezing tubes as disclosed in claims 1 to 8 characterized by its having a lower body comprising a plate (6) of appropriate shape and form closing the rear facing surface onto which it is attached.

10. An apparatus for squeezing tubes as disclosed in claims 1 to 9 characterized by its having a lower body comprising a hood (7) on its top part.

11. An apparatus for squeezing tubes as disclosed in claims 1 to 10 characterized by its having a lower body comprising a spring in the form of a convex band in vertical plane.

12. An apparatus for squeezing tubes as disclosed in claims 1 to 11 characterized by its having a spring comprising a screw holder (22c)for fixing from inside from one of its tips to the lower body.

13. An apparatus for squeezing tubes as disclosed in claims 1 to 12 characterized by its having a handle (23) in the form of a band extending in vertical plane towards the side members (19) of the lower body, a scoop (25) extending outwards the side members vertical to the said handle, a discharge outlet in the shape of truncated cone turned upside down in the middle of the said scoop into which a tube is located.

14. An apparatus for squeezing tubes as disclosed in claims 1 to 13 characterized by its having a carrier whose lower diameter is sized to allow the insertion of a standard tube (10) orifice.

15. An apparatus for squeezing tubes as disclosed in claims 1 to 14 characterized by its having a carrier comprising a screw holder (22b) at its top tip.

16. An apparatus for squeezing tubes as disclosed in claims 1 to 15 characterized by its having a cap(8) comprising a housing to seat the orifice of a tube extending downwards from the discharge outlet at the carrier.

17. An apparatus for squeezing tubes as disclosed in claims 1 to 16 characterized by its having a cap in the form of a hemisphere.

18. An apparatus for squeezing tubes as disclosed in claims 1 to 17 characterized by its having a cap comprising one each extension means (18) extending vertical from rear parts of the two side planes and after extending downwardly from these extension means by a slant with vertical to extend parallel to extension means outwards to form (17) arms in letter Z form projections (28).

19. An apparatus for squeezing tubes as disclosed in claims 1 to 18 characterized by its having a cap comprising at its rear side a tail piece(16) having a curved surface extending downwards.

20. An apparatus for squeezing tubes as disclosed in claims 1 to 19 characterized by its having an upper body located from its top onto the lower body to rotate freely around pin axis (9) of pin holders, having bottom diameter extended downwards to provide the front surface of upper body a slant much larger than one furnished to the lower body's front surface, with rear sides forming an angle to vary between 5 to 30 degrees to vertical.

21. An apparatus for squeezing tubes as disclosed in claims 1 to 20 characterized by its having an upper body comprising two pushers (13) reciprocally located resting on outwards extending projections of arms.

22 An apparatus for squeezing tubes as disclosed in claims 1 to 21 characterized by its having an upper body comprising pushers in the form of projections.

23. An apparatus for squeezing tubes as disclosed in claims 1 to 17 characterized by its having an upper body comprising pushers in the form of lateral strips.

24. An apparatus for squeezing tubes as disclosed in claims 1 to 23 characterized by its having an upper body comprising (11) a window at its front surface to get the tooth paste from tube's orifice by insertion of a brush into it.

25. An apparatus for squeezing tubes as disclosed in claims 1 to 24 characterized by its having an upper body comprising a push button (12) below the window to push forward.

26. An apparatus for squeezing tubes as disclosed in claims 1 to 25 characterized by its having a single-piece pin in the form of a cylinder extending from a pin holder (14a) of the upper body to the other.

27. An apparatus for squeezing tubes as disclosed in claims 1 to 26 characterized by its having two riveted screws or nails fastened to pin holders.

28. An apparatus for squeezing tubes as disclosed in claims 1 to 27 characterized by its having one or more side inserts (29) to locate tooth brushes(30) in them.

29. An apparatus for squeezing tubes as disclosed in claims 1 to 28 comprising various sound and visual effects that operate by pressing the upper body.

30. An apparatus for squeezing tubes as disclosed in claims 1 to 29 comprising animation elements such as eyebrows, eyes, mouths, ears, etc.

31. An apparatus for squeezing tubes as disclosed in claims 1 to 30 made of wood.

32. An apparatus for squeezing tubes as disclosed in claims 1 to 30 made of metal.

33. An apparatus for squeezing tubes as disclosed in claims 1 to 30 made of plastics

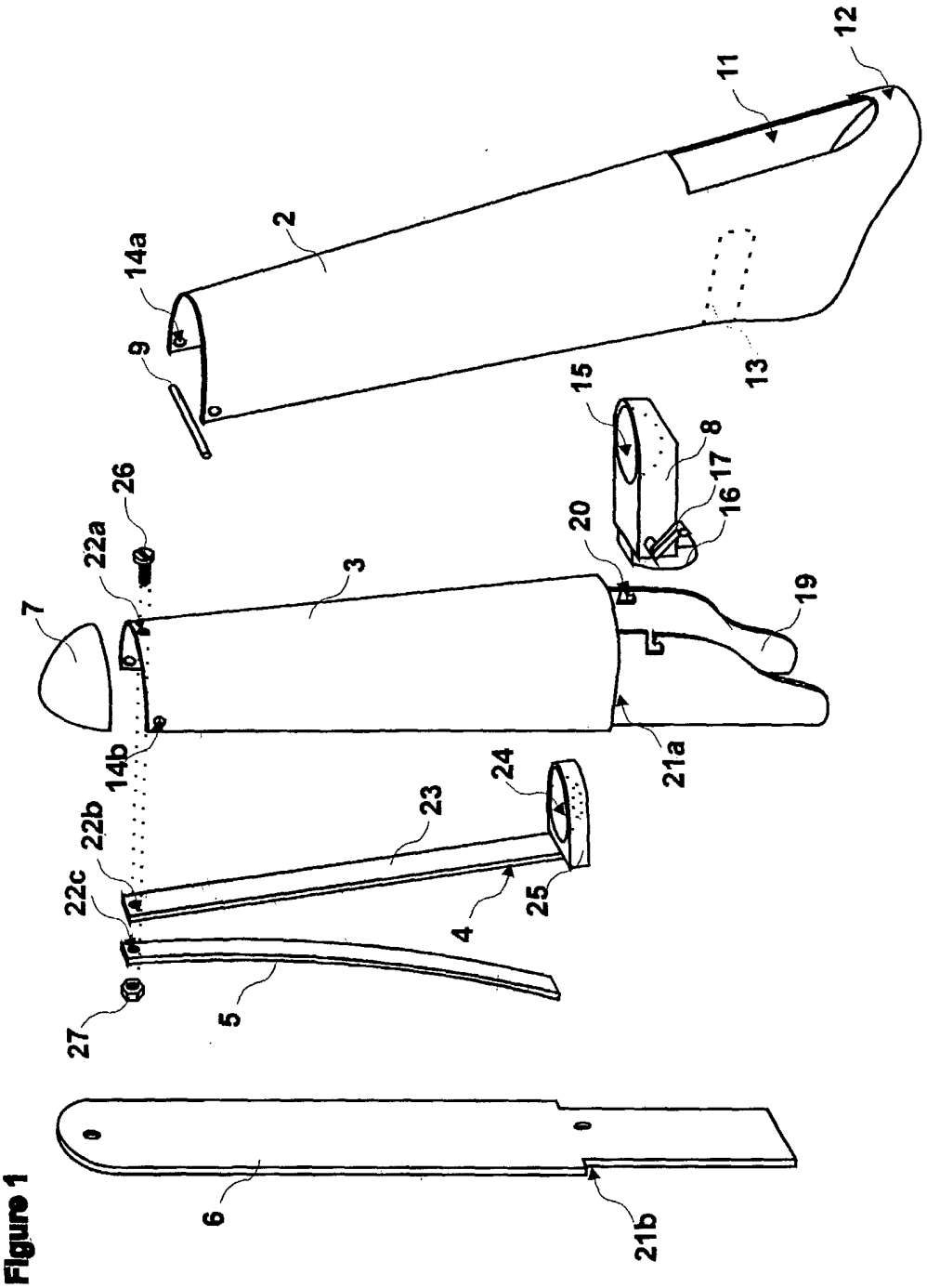
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Figure 1

Figure 2

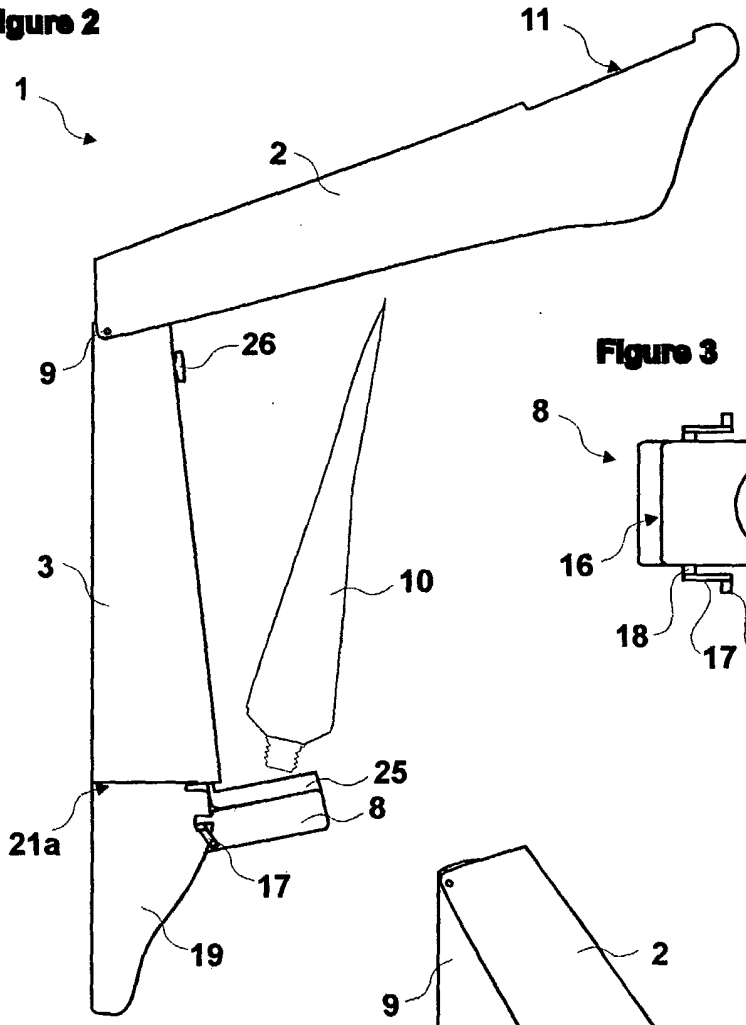
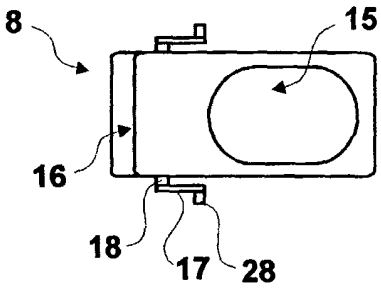


Figure 3



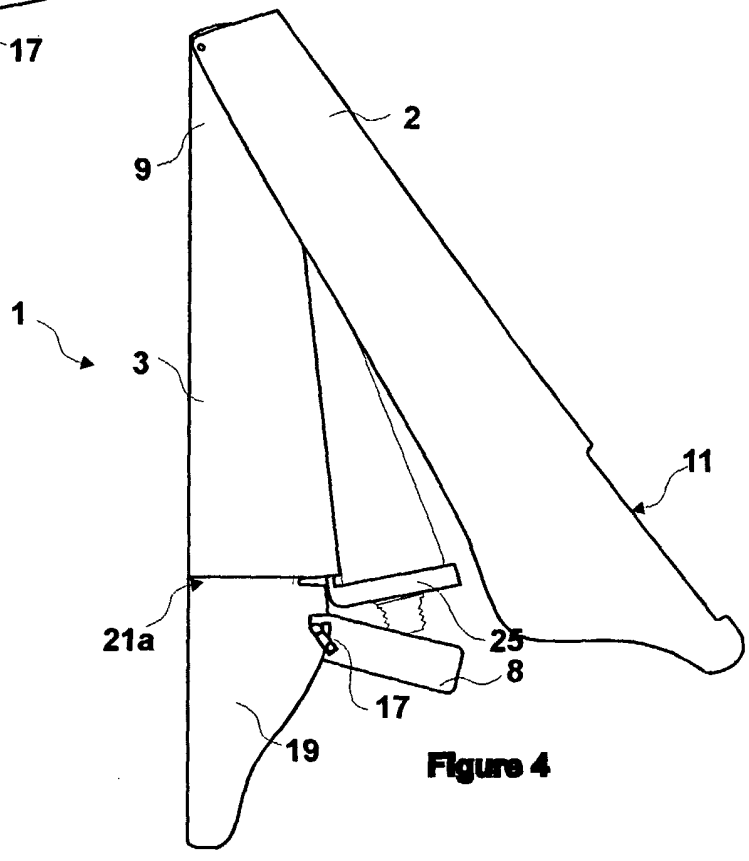
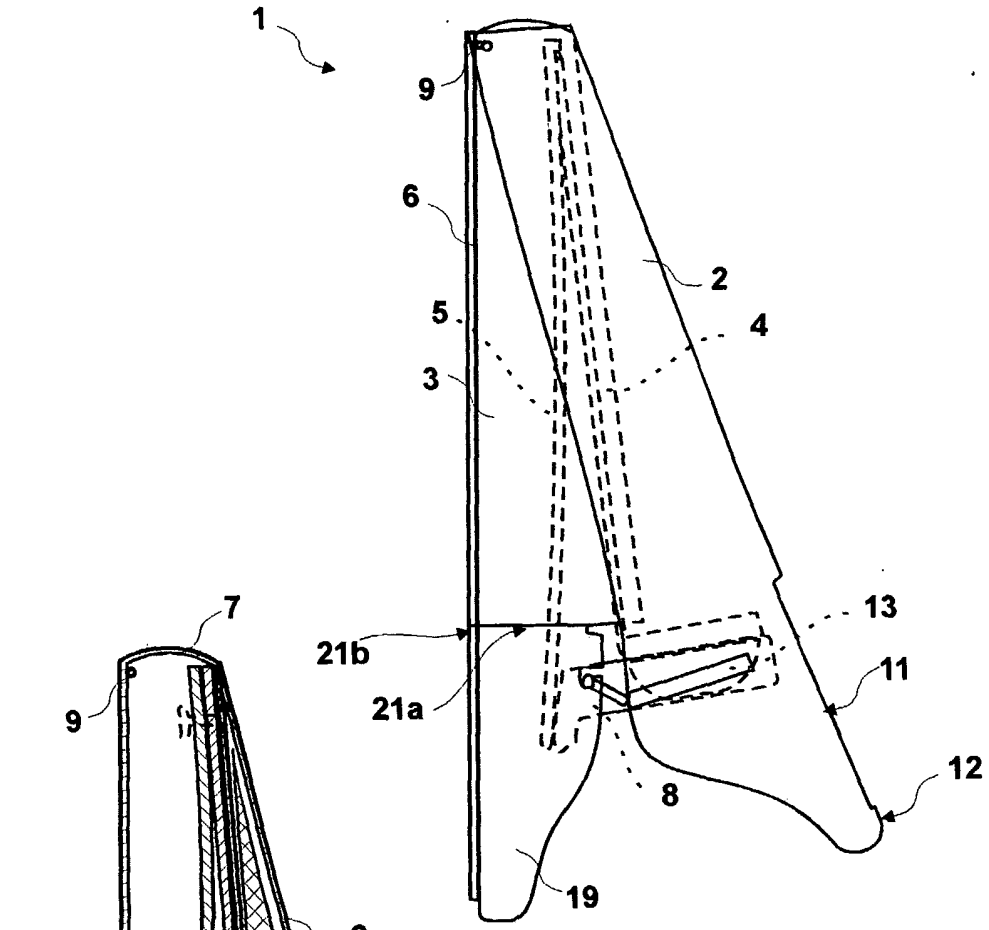


Figure 4

Figure 5



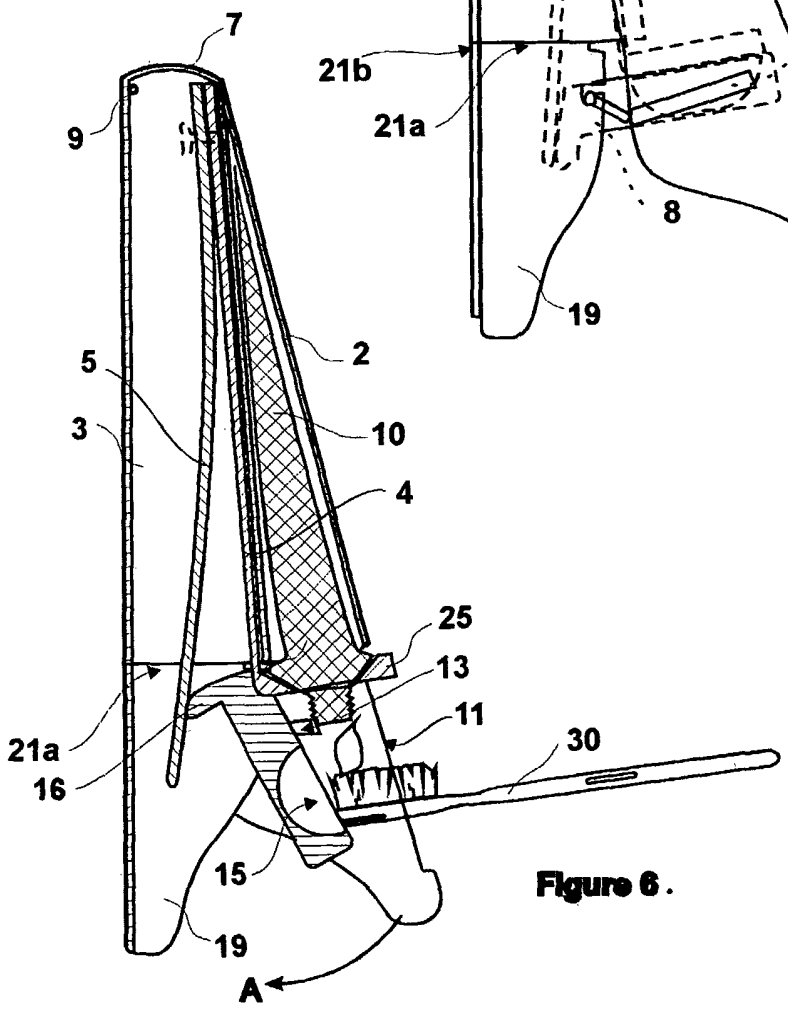


Figure 6.

Figure 7a

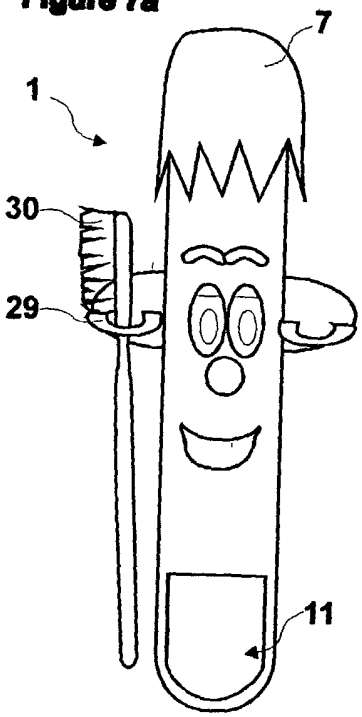
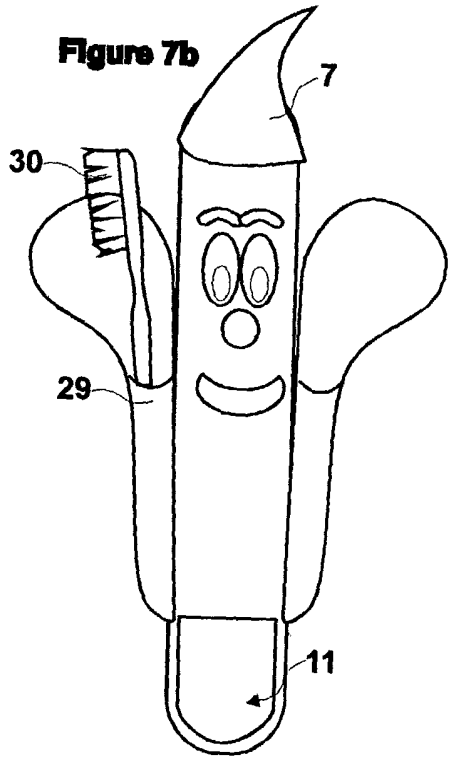


Figure 7b



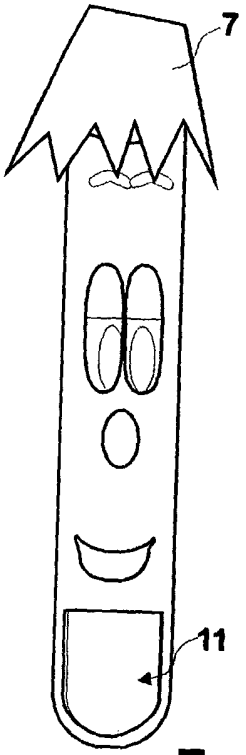


Figure 7c

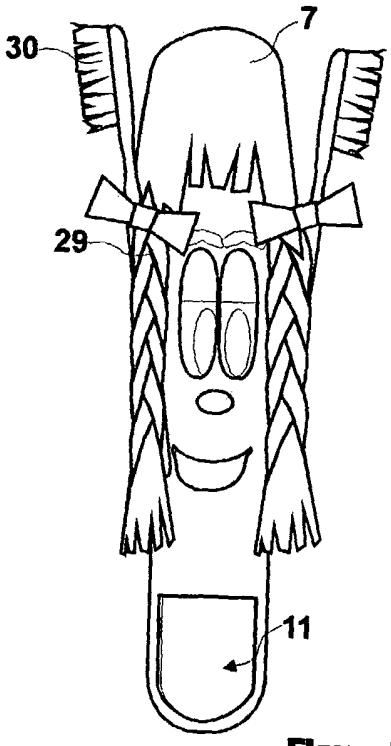


Figure 7d

INTERNATIONAL SEARCH REPORT

In tional Application No
PCT/TR 03/00011

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D35/28

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 B65D A47K

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 79 12 534 U (WOLFBEIS) 2 August 1979 (1979-08-02) page 3, line 13 -page 4, line 16; figures 1-3	1,33
A	DE 34 17 312 A (WILBERT) 14 November 1985 (1985-11-14) page 13, line 11 -page 16, line 10; figures 1,5-7	1
A	GB 578 402 A (CAMPFENS) 27 June 1946 (1946-06-27) the whole document	1
A	FR 2 134 935 A (RAPP) 8 December 1972 (1972-12-08) figures 1-3	1,28,32

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
26 June 2003	03/07/2003

Name and mailing address of the ISA	Authorized officer
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	Martens, L

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Information on patent family members

International Application No
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