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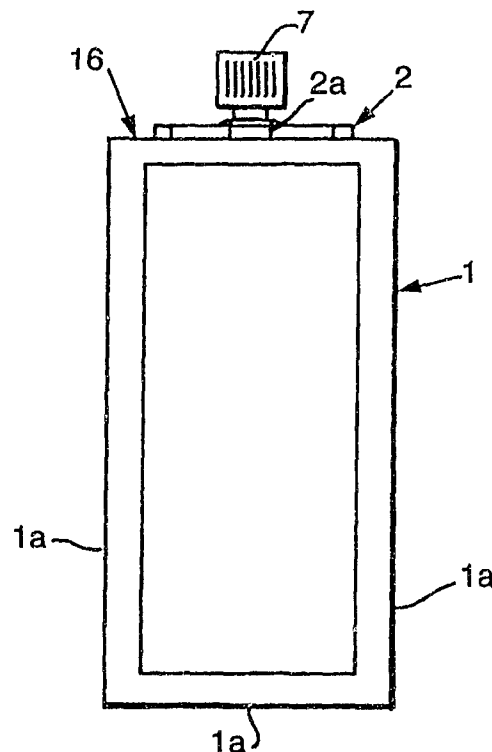
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(51) International Patent Classification ⁶ : B65D 75/58		A1	(11) International Publication Number: WO 98/56685
			(43) International Publication Date: 17 December 1998 (17.12.98)
(21) International Application Number: PCT/EP98/03502		(74) Agent: ROTS, Maria, Johanna, Francisca; Unilever plc, Patent Division, Colworth House, Sharnbrook, Bedford MK44 1LQ (GB).	
(22) International Filing Date: 8 June 1998 (08.06.98)			
(30) Priority Data: 9712075.2 10 June 1997 (10.06.97) GB 9719827.9 17 September 1997 (17.09.97) GB		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
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(54) Title: FLEXIBLE POUCH AND DISPENSING NOZZLE ASSEMBLY

(57) Abstract

A sachet/pouch assembly comprising a sachet/pouch body portion (1) containing liquid/semi-liquid/viscous product and obtained of deformable material, a nozzle assembly (2) secured to the sachet/pouch body portion (1) and comprising a nozzle having an opening for communication with the inside of the body portion and means (7) for opening and closing the nozzle as and when desired.



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FLEXIBLE POUCH AND DISPENSING NOZZLE ASSEMBLY

The present invention relates to an improved sachet/pouch system, and in particular to a reclosable sachet/pouch system which would retain the contents therein under hygienic, microbial contamination free and storage stable condition after every use of the contents therefrom. The sachet/pouch system is of particular use as a toothpaste holder, and has small dimensions and a closure.

It is presently known to provide small packages 1-50gms of liquid/semi viscous products such as toothpaste, shampoos, sauces, ketchup's etc. in the form of pouch/sachets.

Such conventional sachets/pouches are basically obtained of plastic/poylined materials and are sealed from all ends. For use of the contents from such pouches/sachets, the user is required to cut open a portion of the pouch/sachet and thereafter dispense the contents from the opening formed in the pouch/sachets. However, such conventional sachets/pouches do not have any reclosable means, and thus once the pouch/sachet is cut open for application/use the contents have to be either consumed at the first instance, or the remainder of the contents has to be left in unhygienic conditions, exposed to potential microbial contamination.

Moreover, in the absence of any effective reclosing means in such conventional sachets/pouches, lots of the contents are lost unused through the opening, thereby resulting in loss of expensive product formulation contained in the sachet/pouch. Importantly, due to such problems of reclosing of the cut sachet/pouch, it is not convenient to use the conventional pouches/sachets as a carry pack once the sachet/pouch is cut open for its first use.

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Added to the above, cutting and opening of the conventional sachet/pouch often resulted in an improper opening in the sachet/pouch, the opening being either too wide resulting in
5 loss of expensive product formulation, or too narrow causing problems in dispensing the contents therethrough for use.

Existing toothpaste holders currently on the market tend to take the form of a laminate sheet which is shaped into a
10 tubular structure. This process is carried out on large scale and involves reasonably complicated technical procedures. The technicalities and cost involved make it impossible to produce laminate toothpaste holders of small dimensions efficiently, effectively and at low unit cost.
15 Conversely, local manufacture is prohibitive due to the cost of the machinery necessary to manufacture such holders.

An alternative toothpaste holder takes the form of an aluminum tube. Production processes allow aluminum tubes to
20 be made with small dimensions suitable for export to developing and emerging countries. However, such tubes are only possibly suitable for certain types of toothpaste, and are not suitable for toothpastes which tend to harden quickly due to their reactivity with aluminum. In any
25 event, gas release from gel type pastes has been known to occur.

It is thus the basic object of the present invention to provide for an improved sachet/pouch system which would
30 provide for convenient opening and closing of the sachet/pouch for repeated use/application of the contents therein as and when desired, and also to maintain effective, hygienic, contamination free conditions for the product stored therein.

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Another object of the present invention is to provide an improved sachet/pouch system for small size packaging of liquid/semi liquid/viscous products such as dental, hair, skin preparations including toothpastes, shampoos, skin lotions etc. and also for the packaging of sauces, ketchups, purees etc., but in particular for toothpastes, which would retain the properties/characteristics of the products stored therein, even after repeated application/use of the contents therefrom.

A further aim of the invention is to provide a more effective and efficient toothpaste holder which is more suitable for manufacture in, and optionally export to, developing and emerging countries.

Yet a further object of the present invention is to provide for an improved sachet/pouch system which would serve as an effective packaging for making small size packages of say 1-50gms. of liquid/semi liquid/viscous products such as herein described at affordable prices, and which would serve as an effective hygienic contamination free and storage stable carry pack for such products.

Yet a further object of the present invention is to provide an improved sachet/pouch system which would provide for convenient, controlled and user friendly dispensing of the product therefrom for use/application purposes.

Thus according to a first aspect of the present invention, there is provided an improved sachet/pouch system comprising;

a sachet/pouch body portion containing liquid/semi liquid viscous products and obtained of deformable material;

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a nozzle assembly secured to the sachet/pouch body portion and comprising a nozzle having an opening for communicating with the inside of said sachet/pouch body portion and means for opening and closing said opening as and when desired.

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According to a further aspect of the invention, there is provided a reclosable toothpaste holder comprising two laminated metalised sheets, a neck and closure means, wherein edges of the laminated metalised sheets are sealed to form a sachet, the sachet having a neck inserted into, and protruding out of, one end of the sachet, wherein the neck has an aperture defining an opening through which toothpaste can pass from the sachet and wherein the closure mean is detachably fixed at the distal end of the neck so as to close the aperture.

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According to a further aspect of the invention, there is provided a packaged toothpaste composition comprising a toothpaste composition, which may be a silica or chalk based toothpaste composition, packaged in a toothpaste holder or sachet/pouch as described above. Also contemplated is a packaged dental or dentifrice composition which is a liquid, and is packaged in a toothpaste holder or sachet/pouch as described above.

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According to a further aspect of the invention, there is provided a sachet/pouch assembly for holding liquid or viscous compositions such as shampoos, skin creams and lotions, sauces, ketchups and purees.

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In one embodiment of the invention, the closure means can comprise a plug having a cylindrical elongate member, and the aperture is sized to receive the cylindrical elongate member as a friction fit so as to reclose the sachet after use. In such embodiments, the closure means can

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conveniently be molded integrally with the neck portion, providing a sealed unit. However when first use of the holder is made, the closure means is snapped off of the neck portion, the contents dispensed, the closure means inverted, and thereafter the elongate member of the closure portion can close the neck by means of a friction fit.

In a further embodiment of the above disclosed improved sachet/pouch system and or toothpaste holder, the nozzle assembly can be obtained as a single piece, with the means for opening and closing the nozzle opening being provided in the form a flip top cap connected to the nozzle.

Alternatively, the nozzle assembly nozzle can comprise of two pieces comprising of the nozzle and a cap adapted to be releasably secured onto the nozzle to facilitate opening and closing of the nozzle opening. The cap can be releasably secured with respect to the nozzle either by providing cooperating threads on the external of the nozzle and the internal of the cap, or the cap may be adapted to releasable press fit with respect to the nozzle.

This sachet system, for which a convenient use is as a toothpaste holder, is economical and easy to manufacture with readily available equipment. The laminate typically has a thickness in the region of 40-90, preferably 45 microns, this being substantially thinner than the thickness of a standard toothpaste tube, which is typically around 300 microns. Preferably, the laminate material is a polyester such as PET, or is a polyolefin such as polypropylene or polyethylene, but it can be any material that is heat sealable and provides a suitable barrier to oxygen, water and flavour loss. A particularly preferred laminate material comprises 12 micron layer of PET, a 9 micron layer of aluminum, and a 60 micron layer of low density

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polyethylene, though the materials utilized can preferably comprise a 5-15 micron layer of PET, a 5-15 micron layer of aluminium, and a 40-80 micron layer of low density polyethylene.

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However, and depending on the end use of the sachet/pouch system, the sachet/pouch body portion can be obtained of any suitable deformable material such as monolayer and/or multilayer plastic/paper substrate depending upon the contents to be packed and the end use/application required.

10

Advantageously, the edges of the laminated metalised sheets are heat sealed together around their periphery. It is preferred that the sachet/pouch system is one which does not have a gusset. In a preferred embodiment, the two laminated metalised sheets are constituted by a single laminated metalised sheet folded back on itself; it is therefore not sealed along one edge. Hence for example where the sachet/pouch system is a rectangular shape, it is sealed, preferably heat sealed along three edges.

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The nozzle assembly can be obtained of high density polyethylene, low density polyethylene or similar polymeric material. Preferably, the nozzle opening can be provided with a tamper proof seal to evidence its fresh unused condition. At the time of first use of the contents from the sachet/pouch, the seal is punctured to create said nozzle opening which can thereafter be reclosed after every use by the means for opening and closing of the nozzle opening.

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A further advantage the sachet system according to the invention has over standard toothpaste tubes is that, due to

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its production process, it can readily be produced either as single units or in sheets or strings using known techniques, each sachet being detachable from its neighbour. The production equipment is also more readily available, and can
5 be readily adapted as necessary, and there are various ways in which the sachets can be efficiently manufactured, for example by filling each sachet with paste from the neck end prior to inserting the neck of the closure, or by filing the sachet from the end opposite to the closure before heat
10 sealing the edges at that end.

Dentifrices which may be used in packaged compositions of the present invention may comprise optional, conventional ingredients such as pharmaceutically acceptable carriers
15 like starch, sucrose, water or water/alcohol systems etc.. Small amounts of surfactants may also be included, such as anionic, nonionic, cationic and zwitterionic or amphoteric surfactants, typically at levels of 1-2%. They may also preferably comprise particulate abrasive materials such as
20 silicas, aluminas, calcium carbonates, dicalciumphosphates, calcium pyrophosphates, hydroxyapatites, trimetaphosphates, insoluble hexametaphosphates and so on, including agglomerated particulate abrasive materials, usually in amounts between 3 and 60% by weight. A preferred embodiment
25 of packaged composition according to the invention is one in which the dentifrice is not in the form of a gel.

Furthermore, packaged compositions may comprise humectants such as glycerol, sorbitol, propyleneglycol, xylitol,
30 lactitol and so on, usually in amounts ranging from 10-80% by weight.

Binders and thickeners such as sodium carboxymethyl-cellulose, xanthan gum, gum arabic etc. may also be
35 included, as well as synthetic polymers such as

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polyacrylates and carboxyvinyl polymers such as Carbopol7, typically at levels of 0.1-2%.

5 Flavours such as peppermint and spearmint oils may also be included, as well as preservatives, opacifying agents, colouring agents, pH-adjusting agents, sweetening agents and so on, usually at levels of 0.5-3%.

10 Anti-bacterial agents may also be included such as Triclosan, chlorhexidine, copper-, zinc- and stannous salts such as zinc citrate, sodium zinc citrate and stannous pyrophosphate, sanguinarine extract, metronidazole. Further examples of anti-bacterial agents are quaternary ammonium compounds such as cetylpyridinium chloride; bis-guanides
15 such as chlorhexidine digluconate, hexetidine, octenidine, alexidine; halogenated bisphenolic compounds such as 2, 2' methylenebis-(4-chloro-6-bromophenol).

20 Polymeric compounds which can enhance the delivery of active ingredients such as anti-bacterial agents can also be included. Examples of such polymers are copolymers of polyvinylmethylether with maleic anhydride and other similar delivery enhancing polymers, such as those described in DE-A-3,942,643 (Colgate).

25 Furthermore anti-inflammatory agents such as ibuprofen, flurbiprofen, aspirin, indomethacin etc. may also be included.

30 Anti-caries agents such as sodium- and stannous fluoride, aminefluorides, monosodiumfluorophosphate, casein, plaque buffers such as urea, calcium lactate, calcium glycerophosphate, strontium polyacrylates may also be included. Other optional ingredients include vitamins such
35 as vitamin C, and plant extracts. Additional desensitising

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agents such as potassium citrate, potassium chloride, potassium tartrate, potassium bicarbonate, potassium oxalate, potassium nitrate as well as strontium salts may also be included.

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Buffers and salts to buffer the pH and ionic strength of the compositions may also be included. Liposomes and other encapsulates may also be used to improve delivery or stability of active ingredients.

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Furthermore, the packaged oral compositions may comprise anti-calculus agents such as alkalimetal pyrophosphates, hypophosphite-containing polymers, organic phosphonates, phosphocitrates etc.

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In addition, the packaged compositions may comprise functional biomolecules such as bacteriocins, antibodies, enzymes and so on.

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Other optional ingredients that may be included are e.g. bleaching agents such as peroxy compounds e.g. potassium peroxydiphosphate, effervescing systems such as sodium bicarbonate/citric acid systems, colour change systems, and so on.

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The nature of the invention, and its objects and advantages will be further apparent from the ensuing description made with relation to non-limiting exemplary embodiments of the improved sachet/pouch system of the invention as per the accompanying figures.

30

Three forms of toothpaste sachet, each of which is constructed in accordance with the invention, will now be described in detail, by way of example, with reference to the drawings, wherein;

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Figure 1 is a side view of the first form of toothpaste sachet;

- 5 Figure 2 is a side view of the first form of sachet illustrating how a plug is used to reclose the sachet after use;

- 10 Figure 3 is a side view of a second form of toothpaste sachet;

Figure 4 is a schematic illustration of an improved sachet/pouch in accordance with the invention; and

- 15 Figure 5 is an exploded view of the nozzle assembly used in the improved sachet/pouch of Figure 4.

Referring to the drawings, Figure 1 shows a toothpaste holder comprising two rectangular, laminated metallised sheets which are heat-sealed at three of their edges 1a to form a sachet 1. The sachet 1 is filled with toothpaste before a plastic neck 2 is inserted into its open end 1b, which is then sealed around the neck. The neck 2 is formed with a central aperture 2a so as to define an opening in the sachet 1 through which the toothpaste can pass. A plug 3 is detachably fixed to the neck 2, the plug protruding outwards from the sachet 1. The plug 3 comprises a base 4 and a cylindrical elongate member 5 protruding outwards therefrom.

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The diameter of the cylindrical elongate member 5 is slightly less than the diameter of the aperture 2a in the neck 2 of the sachet 1, such that the aperture is able to receive the cylindrical elongate member as a friction fit

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when the plug 3 is turned upside down, as can be seen in Figure 2.

5 The base 4 of the plug 3 is detachable from the neck 2 of the sachet 1 by a simple breaking motion, thus exposing the aperture 2a to allow toothpaste to pass. Once the required amount of toothpaste is passed through the aperture 2a, the sachet 1 can be resealed by inserting the cylindrical elongate member 5 of the plug 3 into the aperture. The
10 cylindrical elongate member 5 has an outwardly-protruding ridge 6 situated at a predetermined distance from its distal end, so as to prevent the cylindrical elongate member from being inserted through the aperture 2a beyond a predetermined length.

15 The toothpaste sachet shown in Figure 3 is a modified version of the sachet Figure 1, so like reference numerals will be used for like parts, and only the modifications will be described in detail. Thus, the main modification is to
20 modify the neck 2 of the embodiment of Figures 1 and 2 to provide a threaded aperture 2'a, and to replace the plug 3 by a screw cap 7.

In each of the embodiments, the laminated sheets preferably
25 are made from a metallised polyesters such as PET, or polyolefins such as polypropylene or polyethylene, with the preferred metal being aluminum. However, other known compounds are also suitable, provided they are capable of being heat sealed to provide a suitable barrier to water and
30 oxygen, and also so as to provide a barrier against flavour loss.

A single laminated metallised sheet, folded back on itself, can constitute the two laminated metallised sheets. In this

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case only two edges 1a will need to be heat sealed before insertion of the neck 2.

5 The dimensions of the rectangular laminated sheets are small so as to keep the cost of production of the toothpaste sachets to a minimum, thereby making the sachets economic for export to developing and emerging countries.

10 In another embodiment, figure 4 shows the rectangular shaped pouch/sachet body portion BP with the nozzle assembly (NA) secured in a leakproof manner to the sachet/pouch body portion. The sachet/pouch body portion (BP) is sealed from all ends as evident from the seal margin (SM) at the sides. The nozzle opening (NO) (Fig.5) communicates with the inside
15 of the pouch/sachet body portion containing the liquid/semi liquid viscous product. Preferably, a seal (S) is provided at the nozzle opening to evidence the tamperproof unused condition of the sachet/pouch system. A cap (C) is provided screwed onto the nozzle to releasably close the nozzle
20 opening.

For the purpose of first use of the contents from the improved sachet/pouch, the cap (C) is first unscrewed from said nozzle and thereafter seal (S) is punctured, and the
25 required quantity of the contents are dispensed by pressing on the deformable body portion of the pouch/sachet. Thereafter, the remainder of the contents of the pouch/sachet are maintained in a hygienic, microbial contamination free storage stable condition by replacing of
30 the cap (C) onto the nozzle. For every subsequent use thereafter, the cap (C) is unscrewed to allow dispensing of the product through the nozzle opening, and thereafter again recapped to close said nozzle opening and retain the contents under hygienic conditions.

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In the instance however that a seal membrane is not provided, cap (C) can be simply released from the nozzle and the contents dispensed through the nozzle opening.

Thereafter, the cap (C) is again screwed onto the nozzle to
5 store the remaining contents under hygienic, storage stable conditions for subsequent uses. Thereafter, for every subsequent use the cap (C) is released from the nozzle, and the nozzle subsequently recapped as detailed above.

10 The sachet/pouch body portion can be rectangular as per the illustrated embodiment discussed in figures 4 and 5, or of any other suitable geometrical shape and configuration. Likewise, the nozzle assembly can also have various shapes and configurations depending upon sachet/pouch get up
15 desired, the contents therein and the end use/application desired.

In each of the embodiments, the laminated sheets preferably are made from metallised polyesters such as PET, or
20 polyolefins such as polypropylene or polyethylene, with the preferred metal being aluminium. However, other known compounds are also suitable, provided they are capable of being heat sealed to provide a suitable barrier to water and oxygen, and also so as to provide a barrier against flavour
25 loss.

It is thus possible by way of the improved sachet/pouch system of the invention to provide for hygienic microbial contamination free storage stable pouch/sachet packaging of
30 liquid semi liquid/viscous products. Importantly, the pouch/sachet system of the invention would provide for controlled dispensing of the product therethrough the nozzle opening, and also provide for convenient closing of the nozzle opening after every use to thereby ensure hygienic

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contamination free storage of the remaining contents of the pouch/sachet until its subsequent use is desired.

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CLAIMS

1. A sachet/pouch assembly comprising a sachet/pouch body portion containing liquid/semi-liquid/viscous product and obtained of deformable material, a nozzle assembly secured to the sachet/pouch body portion and comprising a nozzle having an opening for communication with the inside of the body portion and means for opening and closing the nozzle as and when desired.
2. A reclosable sachet/pouch assembly according to claim 1 which is toothpaste holder comprising two laminated metallised sheets, neck and closure means, wherein edges of the laminated metallised sheets are sealed to form a sachet, the sachet having a neck inserted into, and protruding out of, one end the sachet, wherein the neck has an aperture defining an opening through which toothpaste can pass from the sachet, and wherein the closure means is detachably fixed at the distal end of the neck so as to close the aperture.
3. A holder as claimed in claim 2, wherein the closure means comprises a plug having a cylindrical elongate member, and wherein the aperture is sized to receive the cylindrical elongate member as a friction fit so as to reclose the sachet after use.
4. A holder as claimed in claim 2, wherein the closure means comprises a screw cap which is engagable with a complementary threaded portion of the neck of the sachet.
5. A holder as claimed in any of claims 2 to 4, wherein said edges of the laminated metallised sheets are heat-sealed together.

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- 5 6. A holder as claimed in any one of claims 2 to 5,
wherein the two laminated metallised sheets are
constituted by a single laminated metallised sheet
folded back on itself.
7. A holder as claimed in any of the preceding claims,
wherein the nozzle has a tamper evident seal.
- 10 8. A holder as claimed in any of the preceding claims,
wherein the sachet/pouch is sealed around the
periphery.
- 15 9. A holder as claimed in any of the preceding claims,
wherein the sachet/pouch is gussetless.
- 20 10. A holder as claimed in any of the preceding claims,
wherein the sachet/pouch has a capacity of 1-50 gm of
material.
11. A holder as claimed in any of the preceding claims,
wherein the closure means comprises a flip top cap
attached to the nozzle.
- 25 12. A packaged dentifrice composition comprising a holder
according to any of the preceding claims containing a
dentifrice composition.
- 30 13. A packaged composition according to claim 12, wherein
the composition is silica or chalk based.
14. A packaged composition according to claim 12, wherein
the composition is a liquid.

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15. A packaged composition comprising a holder according to any of the preceding claims containing shampoo, skin cream or lotion, sauce, ketchup or puree, the holder comprising two laminated metal sheets, and neck and closure means, wherein the edges of the laminated metallised sheets are sealed to form a sachet, the sachet having a neck inserted into, and protruding out of, one end of the sachet, wherein the neck has an aperture defining an opening through which the composition can pass from the sachet, and wherein the closure means is detachably fixed at the distal end of the neck so as to close the aperture.

Fig.1.

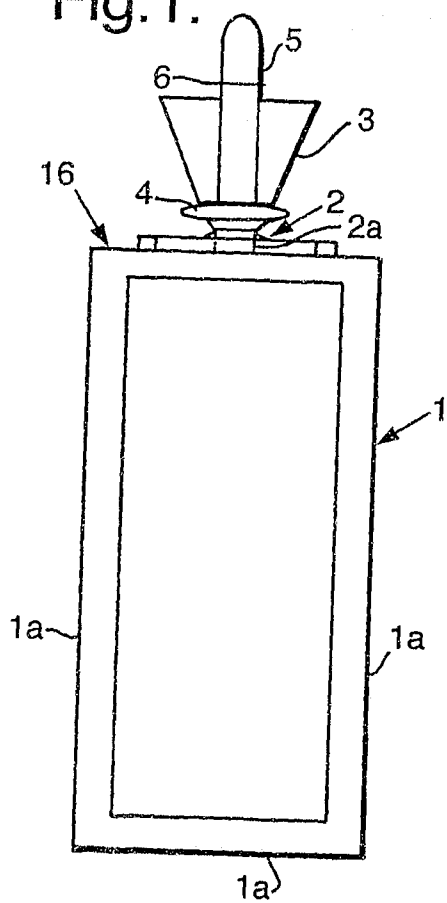


Fig.2.

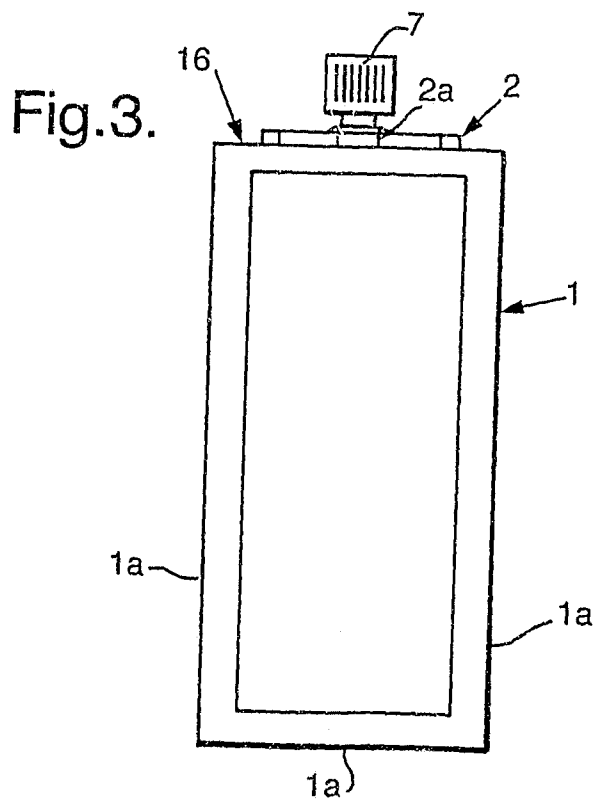
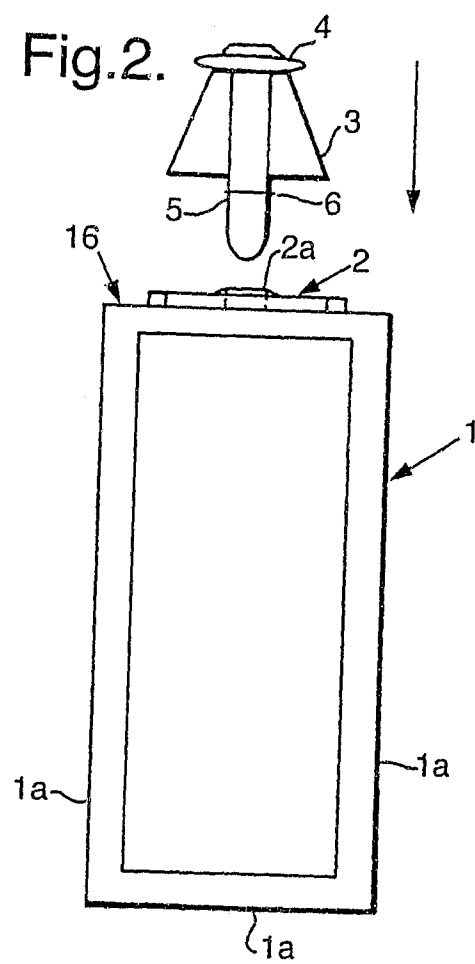


Fig.4.

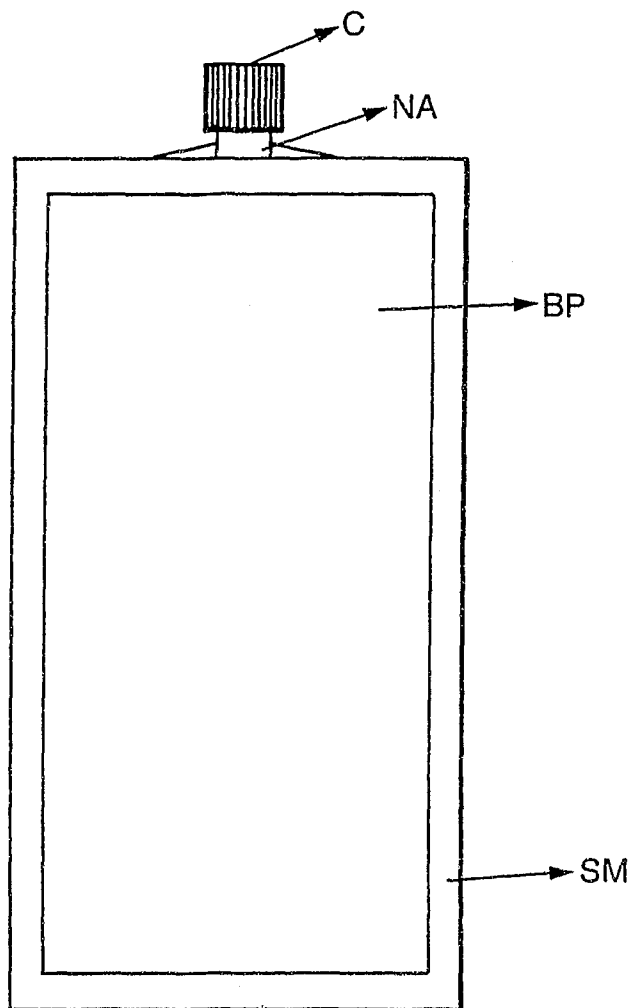
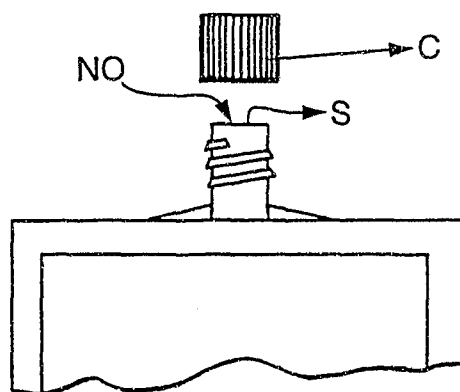


Fig.5.



INTERNATIONAL SEARCH REPORT

Inte. .tional Application No

PCT/EP 98/03502

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D75/58

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 6 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	FR 2 493 268 A (GOGLIO LUIGI) 7 May 1982 see page 2, line 22 - page 3, line 7; figures 1,2	1,7,8 2,5,6,15
A	FR 2 560 521 A (BROSSERIE STE GLE) 6 September 1985 see page 6, line 10 - last line; figures	1,2,10, 12-14
X A	US 5 303 837 A (ADAMS BRIAN M ET AL) 19 April 1994 see column 3, line 47 - column 4, line 52; figures	1,7 2,4,15
X A	US 5 271 519 A (ADAMS BRIAN M ET AL) 21 December 1993 see column 2, line 18 - last line; figures	1,7 2,3,15
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

8 October 1998

Date of mailing of the international search report

16/10/1998

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 98/03502

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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