



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|  |   |    |  |
|--|---|----|--|
| (51) International Patent Classification <sup>7</sup> :<br><br>B65D  |   | A2 | (11) International Publication Number: <b>WO 00/06456</b><br><br>(43) International Publication Date: 10 February 2000 (10.02.00)  |
| (21) International Application Number:   | PCT/EP99/05346  |    |  |
| (22) International Filing Date:  | 26 July 1999 (26.07.99)   |    |  |
| (30) Priority Data:  | 09/123,296 28 July 1998 (28.07.98)<br>09/293,729 16 April 1999 (16.04.99) | US |  |
| <p>(71) <b>Applicant (for AE AU BB CA CY GB GD GH GM IE IL KE LC LK LS MN MW NZ SD SG SL SZ TT UG ZA ZW only):</b> UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4 4BQ (GB).</p> <p>(71) <b>Applicant (for all designated States except AE AU BB CA CY GB GD GH GM IE IL IN KE LC LK LS MN MW NZ SD SG SL SZ TT UG ZA ZW):</b> UNILEVER N.V. [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).</p> <p>(71) <b>Applicant (for IN only):</b> HINDUSTAN LEVER LIMITED [IN/IN]; Hindustan Lever House, 165/166 Backbay Reclamation, Mumbai 400 020, Maharashtra (IN).</p> |   |    | <p>(72) <b>Inventors:</b> MARKEY, Kevin, Joseph; 20330 Wetherby Court, Brookfield, WI 53045 (US). GONDA, Frank, Edward; Unilever Home &amp; Personal Care USA, 33 Benedict Place, Greenwich, CT 06830 (US). TURBETT, James, Lynn; Unilever Home &amp; Personal Care USA, 40 Merritt Boulevard, Trumbull, CT 06611 (US). LAUBACH, David, Scott; Apartment 93, 105 East 15th Street, New York, NY 10003-2137 (US). RAINES, Dean; Chesebrough Ponds, USA, John Street, Clinton, CT 06413 (US).</p> <p>(74) <b>Agent:</b> ROTHSCHILD, Maria, Johanna, Francisca; Unilever plc, Patent Dept., Colworth House, Sharnbrook, Bedford MK44 1LQ (GB).</p> <p>(81) <b>Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, 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, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, 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, GW, ML, MR, NE, SN, TD, TG).</p> |
| <b>Published</b><br><i>Without international search report and to be republished upon receipt of that report.</i>  |   |    |  |

(54) Title: CONTAINER AND CLOSURE

(57) Abstract

A container comprising a first and a second product chamber, each chamber comprising a distal wall and a proximal wall, the chambers being adhered to each other at the first and second chamber proximal walls, the first and second chamber distal walls being sufficiently flexible to permit product dispensing by application of manual pressure thereto, the chambers being similarly shaped so that the chambers could be disposed back to back along the proximal walls in a front view such that the distal wall of the first chamber will essentially obscure the second chamber and the distal wall of the second chamber will essentially obscure the first chamber, the chambers being adhered along the proximal walls in the container in an offset such that the first chamber does not obscure the second chamber from any direction and the second chamber does not obscure the first chamber from any direction.

***FOR THE PURPOSES OF INFORMATION ONLY***

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

|    |                          |    |                                       |    |   |    |                          |
|----|--------------------------|----|---------------------------------------|----|---|----|--------------------------|
| AL | Albania                  | ES | Spain                                 | LS | Lesotho                                   | SI | Slovenia                 |
| AM | Armenia                  | FI | Finland                               | LT | Lithuania                                 | SK | Slovakia                 |
| AT | Austria                  | FR | France                                | LU | Luxembourg                                | SN | Senegal                  |
| AU | Australia                | GA | Gabon                                 | LV | Latvia                                    | SZ | Swaziland                |
| AZ | Azerbaijan               | GB | United Kingdom                        | MC | Monaco                                    | TD | Chad                     |
| BA | Bosnia and Herzegovina   | GE | Georgia                               | MD | Republic of Moldova                       | TG | Togo                     |
| BB | Barbados                 | GH | Ghana                                 | MG | Madagascar                                | TJ | Tajikistan               |
| BE | Belgium                  | GN | Guinea                                | MK | The former Yugoslav Republic of Macedonia | TM | Turkmenistan             |
| BF | Burkina Faso             | GR | Greece                                | ML | Mali                                      | TR | Turkey                   |
| BG | Bulgaria                 | HU | Hungary                               | MN | Mongolia                                  | TT | Trinidad and Tobago      |
| BJ | Benin                    | IE | Ireland                               | MR | Mauritania                                | UA | Ukraine                  |
| BR | Brazil                   | IL | Israel                                | MW | Malawi                                    | UG | Uganda                   |
| BY | Belarus                  | IS | Iceland                               | MX | Mexico                                    | US | United States of America |
| CA | Canada                   | IT | Italy                                 | NE | Niger                                     | UZ | Uzbekistan               |
| CF | Central African Republic | JP | Japan                                 | NL | Netherlands                               | VN | Viet Nam                 |
| CG | Congo                    | KE | Kenya                                 | NO | Norway                                    | YU | Yugoslavia               |
| CH | Switzerland              | KG | Kyrgyzstan                            | NZ | New Zealand                               | ZW | Zimbabwe                 |
| CI | Côte d'Ivoire            | KP | Democratic People's Republic of Korea | PL | Poland                                    |    |                          |
| CM | Cameroon                 | KR | Republic of Korea                     | PT | Portugal                                  |    |                          |
| CN | China                    | KZ | Kazakhstan                            | RO | Romania                                   |    |                          |
| CU | Cuba                     | LC | Saint Lucia                           | RU | Russian Federation                        |    |                          |
| CZ | Czech Republic           | LI | Liechtenstein                         | SD | Sudan                                     |    |                          |
| DE | Germany                  | LK | Sri Lanka                             | SE | Sweden                                    |    |                          |
| DK | Denmark                  | LR | Liberia                               | SG | Singapore                                 |    |                          |
| EE | Estonia                  |    |                                       |    |   |    |                          |

- 1 -

CONTAINER AND CLOSURE

It is often desirable in consumer and other products to keep  
5 separate two or more components of the composition until  
actual use. Examples of compositions wherein this may be  
desirable include personal washing compositions wherein  
cleansing and moisturizing compositions are kept separate  
prior to application on the skin by the consumer. A patent  
10 disclosing such a personal washing composition is Chambers  
et al., U.S. Patent No. 5,612,307. Other examples include  
laundry products wherein it is desirable to keep separate  
enzyme and bleach, and dental products wherein it may be  
necessary to isolate peroxide from bicarbonate prior to use  
15 of the product. Another application for such containers is  
to house shampoo in one compartment and conditioner in  
another.

Numerous patents disclosing dual containers of one sort or  
20 another and/or closures have been published. These include  
Usen et al., U.S. Patent No. 5,628,429, Hatakeyama et al.,  
U.S. Patent No. 5,615,803, Blette, U.S. Patent No.  
5,386,928, Iaia et al., U.S. Patent No. 5,318,203, Douglas  
et al., U.S. Patent No. 5,316,159, O'Meara, U.S. Patent No.  
25 5,269,441, O'Meara, U.S. Patent No. 5,244,120, Reil et al.,  
U.S. Patent No. 5,158,209, De Laforcade, U.S. Patent No.  
5,152,432, Stokes et al., U.S. Patent No. 5,137,178,  
Ratcliff, U.S. Patent No. 5,052,590, Pearson et al., U.S.  
Patent No. 4,974,756, Gentile US Patent No. 5,392,947,  
30 Mueller US Patent No. 5,964,539, Gentile US Patent No.  
5,252,312, Gentile US Patent No. 5,289,949, Gentile US  
Patent No. 5,289,950, Abfier et al. US Patent No. Des.

- 2 -

353,326, Wickham US Patent No. 5,489,046, Walravens US Patent No. Des. 329,984 and Meurer et al., U.S. Patent No. 3,269,389.

- 5 Despite the various dual containers disclosed in the literature, a dual container, especially for consumer products, which is simple and acceptable to consumers has been elusive.
- 10 A problem which is particularly encountered in the manufacture of dual containers is that of adhering effectively the containers to each other. Hot melt adhesives are a preferred type of adhesive, since they often achieve the best and immediate bonding of the polyolefin material. While hot melt adhesives have the above 15 advantageous characteristics, problems can be encountered with dual containers secured together by a hot melt adhesive, particularly when the containers are subjected to a wide range of temperatures and dynamics during shipping, 20 storage, retail display and use by the consumer.

The invention in its broadest sense is directed to a simple, economical, efficient container for dispensing two products kept separate prior to application, for example, surfactant 25 and skin benefit agent. In one aspect, the invention relates to a container comprising two chambers, each having a proximal wall and a distal wall. The chambers are adhered to each other at the proximal wall.

- 30 In a particularly preferred embodiment, the invention is directed to a dual container having separately fabricated

container chambers which is capable of maintaining its integrity, notwithstanding large variations in temperature. In accordance with this aspect of the invention, the chambers are adhered to each other with at least two 5 different adhesives, preferably two different hot melts. The different adhesives are selected to as to provide maximum adherence at different temperatures, so that the chambers will remain adhered together when experiencing distribution forces over a wide temperature range.

10

For example, in a certain preferred embodiment of the invention a stiffer cohesive hot melt, which is more dimensionally stable is placed near the neck and near the bottom of the container. This type of hot melt performs 15 better at higher temperatures and keeps the container assembly in proper alignment. A softer pressure sensitive hot melt may be used in the middle and at the very bottom of the container assembly. The softer hot melt is very tacky and so works well at lower, rather than higher temperatures. 20 At higher temperatures it can become unduly soft and spread. A softer hot melt has a good impact resistance.

In this embodiment, by using two hot melts, advantage can be taken of their different and complementary advantageous 25 features. This is particularly advantageous since the containers can be subjected to a variety of forces under a variety of conditions, eg temperature extremes, after manufacture. Thus, by selecting the adhesive in accordance with the invention the containers will be able to endure a 30 given applied force at both temperature extremes (high and low) whereas with a single type adhesive it might only have

- 4 -

been able successfully to withstand the stress had it occurred at one of the temperature extremes, eg low temperature.

5 In the case of hot melt, preferably one of the hot melts employed is one which is classified as a pressure sensitive hot melt, which is pliable at room temperature and more impact resistant. It provides superior lower temperature bonding at from -18°C to 4.4°C (0°F to 40°F). A second hot  
10 melt preferably is a conventional cohesive hot melt, which is firmer and which provides superior, firmer bonding at temperatures of 21.1°C to 48.9°C (70°F to 120°F).

In a further embodiment, the invention relates to a method  
15 for securing together two chambers of a dual chamber container using the two adhesives described above. Indeed, while the invention is described and is particularly applicable to securing together two chambers of a dual chamber container, it may find applicability in other  
20 circumstances wherein it is desired to use adhesive to adhere together two objects, particularly where it is desirable to keep the objects secured notwithstanding the possibility of exposure to a wide variety of temperatures. Thus the invention relates to the method of securing such  
25 objects, and to the objects secured using the two adhesives.

This aspect of the invention is particularly useful for securing two separate thermoplastic chambers. Adhering the chambers with, for example, two separate hot melt adhesives  
30 results in a much stronger bond over a wider temperature range than can be achieved with a single hot melt adhesive.

The invention in its broadest sense finds particular application for dispensing two products kept separate prior to application, for example, surfactant and skin benefit agent. Such a container may comprise two chambers, each having a proximal wall and a distal wall. The chambers are preferably adhered to each other at the proximal wall, in accordance with the present invention.

10 Although the chambers are essentially identical when viewed from their respective distal walls, they are adhered to each other at an offset so that from any view, both chambers can be seen. This is advantageous in that it permits the consumers to recognize that two separate chambers, and 15 therefore, components, are used notwithstanding the fact that a unitary container is presented. Preferably, the chambers include in their proximal walls complementary raised and recessed portions, eg. protuberances and depressions, which assist the alignment of the chambers in 20 an offset. Likewise, the chambers may be provided with generally longitudinally extending ridges or wedges, which facilitate joining of the chambers in an offset orientation.

Advantageously, the chambers of the present container are 25 made of a material which permits the distal walls to be relatively flexible so as to permit a consumer to dispense the product merely by exerting pressure with one hand. A particularly preferred material is medium density polyethylene. In fact, preferably both chambers are made of 30 medium density polyethylene, although softer materials may also be used. In one preferred embodiment, the ridge

disposed on the proximal wall extends in a generally vertical orientation. Preferably aspects of the proximal walls medial to the ridge will be relatively flat, except for raised and recessed portions desirable to align the 5 chambers, in order to permit the chambers to fit readily together. The chambers are preferably adhered together with an adhesive, preferably a chemical adhesive.

An especially preferred alignment scheme comprises a 10 generally vertically extending secondary ridge and a complementary generally vertically extending trough on each of the proximal walls. Adhesives used will generally be disposed outside any protuberances or depressions.

15 Each chamber preferably includes a product exit opening. The product exit openings preferably lead to a closure, which constitutes a further aspect of the invention.

The closure may preferably comprise a peripheral flange and 20 a wall extending transversely of the flange and including at least two product egress openings. Product egress channels on the underside of the transverse wall may lead to the product egress openings. Preferably the product egress channels are in communication with and are snugly received 25 within the product exit apertures of the chambers so that exiting product is directed from the chambers through the product egress channels to the respective product egress opening.

30 Preferably attached to the closure base, for example by a hinge, is a closure cover. The closure cover may include

- 7 -

one or more plugs to assure that product does not escape through the product egress openings when the closure cover is closed.

- 5 In accordance with a particularly advantageous aspect of the invention, both the closure base transverse wall and the closure cover include one or more drainage openings. The drainage openings are not in communication with the product exit openings of the chambers, but instead serve to permit  
10 drainage of any liquid which may otherwise be present in the closure, given that the closure will receive the exteriors of the chambers, but not in a liquid tight arrangement. For instance, shower water can travel between the chambers and into the closure exterior to the product egress channels and  
15 the product exit apertures.

The cover of the closure preferably provides a relatively large surface area so that, if so desired, the container can be conveniently left to stand on the closure. This is  
20 particularly advantageous in the event that the components in the different chambers are consumed at different rates. By resting the container on its closure, the fluids in the various chambers will be caused by gravity to flow toward the closure and will then be positioned for use immediately  
25 upon opening of the container. Medium density polyethylene is particularly preferred as the material from which the chambers are fabricated, in that it is believed that it promotes even distribution of the product from the two chambers.

To promote stability when the container rests on its closure, the ratio of the area of the top surface of the closure to the cross sectional area of the container measured at its widest point is preferably high, especially 5 0.4 or above. Preferably the range is from 0.4 to 0.9, especially from 0.5 to 0.7. Providing a broad cap surface generally helps give the bottle better support.

For even dispensing, it is preferred that the viscosities of 10 the liquids in each chamber be as close as possible to the other.

For a more complete understanding of the above and other features and advantages of the invention, reference should 15 be made to the following detailed description of preferred embodiments, which demonstrate the invention by way of example only, with reference to the accompanying drawings, in which:

- 20 Fig. 1 is front elevational view of the container in accordance with the invention;  
Fig. 2 is a front elevational view of the container according to the invention with the closure removed;  
Fig. 3 is a side elevational view of the container according 25 to the invention with the closure removed;  
Fig. 4 is an elevational view of the proximal walls of the two chambers of the invention;  
Fig. 5 is a top view of the closure according to the invention with the cover in the open position;  
30 Fig. 6 is a bottom plan view of the closure of the present invention;

- 9 -

Fig. 7 is a top plan view of the closure of the invention with the cover closed;

Fig. 8 is a top plan view of a closure of the invention with the cover open; and

5 Fig. 9 is an elevational view of the proximal walls of the chambers of the container of the invention similar to Fig. 4 except that protuberances and depressions are omitted and a pattern of application of adhesive is added.

10 With reference to the drawings, container 10 comprises closure 12 and two chambers, 14 and 14'. Closure 12 includes base 18 and cover 20.

15 As especially seen in Figs. 1, 2 and 4, although chambers 14 and 14' have transverse profiles and front plan views which are identical or essentially identical, they are disposed at an offset to each other so that from any view, even the front elevational view of Figs. 1 and 4, both chambers can be seen. Thus, the fact that two separate chambers comprise 20 the container can be readily ascertained by the consumer and the fact that two separate components are included can be readily deduced. The fact that two identical chambers may be used is advantageous, particularly in that manufacturing effort and costs can be minimized since only one chamber 25 design, mold, etc. need be used.

Chambers 14, 14' comprise proximal walls 30, 30' (see especially Fig. 4) at which the chambers are joined. Proximal walls 30 and 30' include ridges or wedges 36, 36' 30 which extend generally vertically along one side of each of the proximal walls. These ridges assist in positioning the

- 10 -

chambers so that they are offset. For instance, when the container is assembled so that proximal walls 30, 30' face and touch each other (see, especially, Fig. 3), ridges 36 and 36', respectively, are disposed laterally to rounded 5 side edges 15', 15 (respectively) of side walls 52', 52 and serve to retain the side edges medially to the respective ridges. In addition, proximal wall 30 preferably includes raised areas and recesses such as vertically extending trough 33. Proximal wall 30' likewise preferably includes 10 secondary ridge 32 and trough 33. Ridges 32, 32' receive troughs 33, 33' when the chambers are joined back to back along the proximal walls.

It will be appreciated that the ridges and troughs may of 15 course be of a variety of shapes so long as they are complementary. For instance, male/female pin/hole arrangements could be used. The troughs and ridges or other recesses and protuberances are disposed on the proximal walls in positions such that the chambers 14, 14' will be 20 offset as seen in Fig. 1.

Much of the region of proximal walls 30, 30' medial to ridges 36, 36', other than ridges 32, 32' and troughs 33, 33' is flat, or relatively so, in order to permit the chambers to adhere well to each other.

25 Opposite proximal walls 14, 14' are distal walls 40, 40'. These are the walls to which the consumer will apply pressure in dispensing the product and need not be as flat as the proximal walls. That is, they may be somewhat 30 rounded. Distal walls 40, 40' are made of a flexible material which permits the consumer to apply pressure by

- 11 -

merely moving his or her fingers together while holding the container in one hand. Preferably the distal walls, and indeed preferably each of the entire chambers, are made of medium density polyethylene. Especially preferred is 5 polyethylene having a density of from about 0.926 to about 0.94 g/cc. It is believed that such densities of polyethylene promote uniform dispensing of product from both of the chambers simultaneously. Uniform dispensing of product is also promoted by ensuring that the viscosities of 10 the products in the chambers are identical, or as close to each other as possible.

Chambers 14, 14' also include bottom walls 50, 50', a first shoulder 54, 54', a second shoulder 56, 56' and a finish 58, 15 58' leading to product exit opening 60, 60'.

Base 18 of closure 12 includes product egress openings 60, 62 and drainage apertures 64, 66. Cover 20 includes cover drainage openings 68, 70, plugs 72, 74 and inner flange 78. 20 Plugs 72, 74 are accommodated within half moon flanges 82, 84 to help seal the container when the cover is in the closed position. Likewise flange 78 surrounds the two half moon flanges 82, 84 to keep the product from exiting the container when the container is closed.

25 Depending from the underside 90 of closure 18 are product egress channels 92, 94, which lead respectively to product egress openings 60, 62 in chambers 14, 14'. The channels serve to direct product from chamber finishes 58, 58' to 30 product egress openings 62, 60, without permitting any extraneous liquid, e.g., shower water, to enter the product

- 12 -

streams. Extraneous liquid travels through drainage openings 64, 66 in base 18 and through product drainage openings 68, 70 in cover 20 when the cover is closed. Extraneous shower water and other liquid are best avoided  
5 for aesthetic and hygienic reasons.

The closure is preferably a flip top type closure wherein the base 18 and the cover 20 are connected by hinge 110 which is of the flip top type. Preferably the closure is  
10 injection molded and is made of polypropylene.

The chambers are filled through the product exit openings 60, 62 in the chambers prior to snap fitting the closure onto shoulders 56, 56'. The product egress openings 60, 62 are disposed in wall 112, which extends transversely of base  
15 flange 114.

In accordance with a preferred embodiment illustrated in Figure 8, closure base 120 includes a longitudinal or major  
20 axis 122 and a minor or transverse axis 124. Advantageously, product egress openings 130, 132 are substantially disposed on opposite sides of both axes. This permits the user better to distinguish the dual product streams.

25 The dual chamber or "tottle" arrangement of the present invention provides positioning, alignment and proportioning for proper consumer ergonomics and dispensing, as compared to side to side positioning. The orientation and proportioning also allows a front and back label area for  
30 retail merchandising.

- 13 -

- As seen in Fig. 9, adhesive will generally be applied to proximal walls 230, 230' of chambers 214, 214'. As will be appreciated by those of ordinary skill, adhesive may be applied in various patterns. Typically, adhesive will be
- 5 placed in locations on the proximal walls other than the mating locations of the complimentary recesses and protuberances described above, although in appropriate cases adhesive may be placed in recesses or on protuberances. In Fig. 9, recesses and protuberances are omitted for clarity.
- 10 The container design, with the closure on the egress end, and even with the use of the proximal wall mating locations, makes the container assembly somewhat more subject to shock and cleavage stresses, particularly for sizes larger than 227g (8oz).
- 15
- In accordance with the invention, dual container 300 defined by chambers 214 and 214' includes at least two types of hot melt for adhering the chambers together. Chamber 214 includes dots of hot melt 310. Hot melt 310 is a pliable pressure sensitive hot melt (such as Henkel Euromat 362) which is softer and more impact resistance. It is used for the bottom of the chamber, particularly toward the very bottom, to keep the chambers from breaking apart upon impact. The pliable pressure sensitive hot melts perform
- 20
- 25 better in lower temperature conditions of from -18°C to 4.4°C (0°F-40°F). The cured bond of the softer hot melt is soft and very tacky; a broken bond can be adhered back together like chewing gum on a hot pavement.
- 30 Chamber 214', on the other hand, includes adhesive dots 312 which comprise a firmer cohesive hot melt such as National

- 14 -

hot melt Instance Lok™ 34-2787, which is a firmer hot melt and which has high temperature dimensional stability. This hot melt is more dimensionally stable and is used particularly to keep the chamber necks in proper alignment.

5 Firmer hot melts in accordance with the invention have better adhesion and impact resistance from 21.1°C to 48.9°C (70°F to 120°F).

Examples of other firm hot melt adhesives which can be  
10 employed include National Starch Instant Lok 34-2787, National Starch Instant Lok 70-3769, and Findley 795-334. With the firm, more cohesive hot melt, once the bond is broken it cannot be reattached. The cured bond resembles  
15 wax. The firmer cohesive hot melt is placed as close as possible to the container necks. This keeps the containers in proper alignment for capping. The pliable pressure sensitive hot melt is positioned more towards the closed container ends for best resistance to stock and cleavage stresses, especially at lower temperatures. Both hot melts  
20 are interdispersed in the middle.

Although hot melt is the preferred adhesive, it is believed that other adhesives may be used as well. Alternatively, a combination of hot melt and non-hot melt adhesives may be  
25 used, for instance, one hot melt adhesive and one non-hot melt adhesive. In accordance with the present invention, the two different adhesives used should afford maximal protection at different temperatures, so that the dual container can maintain its integrity over a range of  
30 temperature conditions and applied forces.

- 15 -

While the invention has been described with respect to adhering two specific chambers of a dual container together, the invention may be used to adhere together other chambers of other dual containers, especially where the materials are 5 thermoplastic. Moreover, the invention may be used to adhere together other objects, again particularly thermoplastic objects, especially where it is desired to ensure that the object will remain secured together exposure to a range of temperatures.

10

Preferably the container of the invention is used to receive a liquid personal wash cleaning formulation which includes a surfactant. Desirably the cleaning formulation also includes a skin conditioning and moisturizing ingredient.

15 Preferably one chamber contains a surfactant composition and the other chamber includes a moisturizing composition. The surfactant should be a relatively mild surfactant suitable for washing human skin and may be, e.g., an anionic, amphoteric, cationic or nonionic surfactant. It is 20 preferred that the surfactant is a foaming surfactant.

Among the mild surfactants which may be used are cocamidopropyl betaine, and sodium lauroamphoacetate, sodium cocoyl isethionate. Among other surfactants which may be used are soap and sodium laureth sulfate.

25

Preferably surfactants are employed such that the surfactant, if used alone, or the surfactant mixture is milder than would be soap itself as measured by the zein solubilization test (soap yields 80% zein solubilized).

30 Preferably the zein solubilization is less than 60%.

- 16 -

Among suitable anionic co-actives are the alkyl ether sulfates, acyl isethionates, alkyl ether sulfonates, sarcosinates, sulfosuccinates, taurates and combinations thereof. Among suitable amphoteric co-actives may be 5 included alkylbetaines, amidopropyl betaines, amidopropyl sultaines and combinations thereof.

Alkyl ether sulfates used in the present invention may be of the general formula  $R-(OCH_2CH_2)_nOSO_3-M^+$  wherein R ranges 10 from C<sub>8</sub>-C<sub>20</sub> alkyl, preferably C<sub>12</sub>-C<sub>15</sub> alkyl, n is an integer from 1 to 40, preferably from 2 to 9, optimally about 3, and M<sup>+</sup> is a sodium, potassium, ammonium or triethanolammonium cation.

15 Typical commercial co-actives of this variety are listed in the Table below:

| Trademark       | Chemical Name             | Physical Form | Manufacturer |
|-----------------|---------------------------|---------------|--------------|
| Steol CS 330    | Sodium Laureth Sulfate    | Liquid        | Stepan       |
| Standopol ES-3  | Sodium Laureth Sulfate    | Liquid        | Henkel       |
| Alkasurf ES-60  | Sodium Laureth Sulfate    | Paste         | Alkaril      |
| Cycloryl TD     | TEA Laureth Sulfate       | Paste         | Cyclo        |
| Standapol 125-E | Sodium Laureth-12 Sulfate | Liquid        | Henkel       |
| Cedepal TD407MF | Sodium Trideceth Sulfate  | Paste         | Miranol      |
| Standopol EA-2  | Ammonium Laureth Sulfate  | Liquid        | Henkel       |

Alkyl ether sulfonates may also be employed in the present invention. Illustrative of this category is a commercial 5 product known as Avenel S-150 commonly referred to as a sodium C<sub>12</sub>-C<sub>15</sub> Pareth-15 sulfonate.

Another co-active type suitable for use in the present invention is that of the sulfosuccinates. This category is 10 best represented by the monoalkyl sulfosuccinates having the formula RO<sub>2</sub>CCH<sub>2</sub>CH(SO<sub>3</sub>-Na<sup>+</sup>)COO-M<sup>+</sup>; and amido-MEA sulfosuccinates of the formula: RCONHCH<sub>2</sub>CH<sub>2</sub>O<sub>2</sub>CCH<sub>2</sub>CH(SO<sub>3</sub>-M<sup>+</sup>)COO--M<sup>+</sup>; wherein R ranges from C<sub>8</sub>-C<sub>20</sub> alkyl, preferably C<sub>12</sub>-C<sub>15</sub> alkyl and M<sup>+</sup> is a sodium, potassium, ammonium or triethanolammonium cation. 15 Typical commercial products representative of these co-actives are those listed in the Table below:

| Trademark                | Chemical Name                              | Physical Form | Manufacturer |
|--------------------------|--|---------------|--------------|
| Emcol 4400-1             | Disodium Lauryl Sulfosuccinate             | Solid         | Witco        |
| Witco C5690              | Disodium Cocoamido MEA Sulfosuccinate      | Liquid        | Witco        |
| McIntyre Mackanate CM40F | Disodium Cocoamido MEA Sulfosuccinate      | Liquid        | McIntyre     |
| Schercopol CMSNa         | Disodium Cocoamido MEA Sulfosuccinate      | Liquid        | Scher        |
| Emcol 4100M              | Disodium Myristamido MEA Sulfosuccinate    | Paste         | Witco        |
| Schercopol               | Disodium Oleamido MEA                      | Liquid        | Scher        |
| Varsulf S13333           | Disodium Racionoleamido MEA Sulfosuccinate | Solid         | Scherex      |

Sarcosinates may also be useful in the present invention as a  
5 co-active. This category is indicated by the general formula  
RCON(CH<sub>3</sub>)CH<sub>2</sub>CO<sub>2</sub>-M<sup>+</sup>, wherein R ranges from C<sub>8</sub>-C<sub>20</sub> alkyl,  
preferably C<sub>12</sub>-C<sub>15</sub> alkyl and M<sup>+</sup> is a sodium, potassium  
ammonium or triethanolammonium cation. Typical commercial  
products representative of these co-actives are those listed  
10 in the Table below:

- 19 -

| Trademark       | Chemical Name              | Physical Form | Manufacturer |
|-----------------|----------------------------|---------------|--------------|
| Hamposyl L-95   | Sodium Lauroyl Sarcosinate | Solid         | W. R. Grace  |
| Hamposyl TOC-30 | TEA Cocoyl/Sarcosinate     | Liquid        | W. R. Grace  |

Taurates may also be employed in the present invention as co-actives. These materials are generally identified by the 5 formula  $RCONR'CH_2CH_2SO_3-M^+$ , wherein R ranges from C<sub>8</sub>-C<sub>20</sub> alkyl, preferably C<sub>12</sub>-C<sub>15</sub> alkyl, R' ranges from C<sub>1</sub>-C<sub>4</sub> alkyl, and M<sup>+</sup> is a sodium, potassium, ammonium or triethanolammonium cation. Typical commercial products representative of these co-actives are those listed in the 10 Table below:

| Trademark    | Chemical Name                | Physical Form | Manufacturer |
|--------------|------------------------------|---------------|--------------|
| Igepon TC 42 | Sodium Methyl Cocoyl Taurate | Paste         | GAF          |
| Igepon T-77  | Sodium Methyl Oleoyl Taurate | Paste         | GAF          |

Within the category of amphoteric there are several general categories most suitable for the present invention. These 15 include amphoteric of the formula  $RCONH(CH_2)_2N(CH_2COONa)CH_2CH_2OH$ , alkylbetaines of the formula  $RN^+(CH_3)_2CH_2CO_2-M^+$ , amidopropyl betaines of the formula  $RCONHCH_2CH_2CH_2N^+(CH_3)_2CH_2CO_2-M^+$ , and amidopropyl

- 20 -

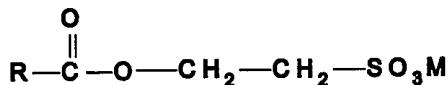
sultaines of the formula  $RCONHCH_2CH_2N^+(CH_3)_2CH_2SO_3^-M^+$  wherein R ranges from C<sub>8</sub>-C<sub>20</sub> alkyl, preferably C<sub>12</sub>-C<sub>15</sub> alkyl, and M<sup>+</sup> is a sodium, potassium, ammonium or triethanolammonium cation. Typical commercial products representative of these 5 co-actives are found in the Table below:

| Trademark        | Chemical Name                  | Physical Form | Manufacturer |
|------------------|--------------------------------|---------------|--------------|
| Tegobetaine F    | Cocamidopropyl Betaine         | Liquid        | Goldschmidt  |
| Lonzaine C       | Cocamidopropyl Betaine         | Liquid        | Lonza        |
| Lonzaine CS      | Cocamidopropyl Hydroxysultaine | Liquid        | Lonza        |
| Lonzaine 12C     | Coco-Betaine                   | Liquid        | Lonza        |
| Schercotaine MAB | Myristamidopropyl Betaine      | Liquid        | Lonza        |
| Velvetex OLB-50  | Oleyl Betaine                  | Paste         | Henkel       |
| MacKen HPL 28    | Sodium Lauroamphoacetate       | Liquid        | McIntyre     |

Within the broad category of liquid actives, the most effective are the alkyl sulfates, alkyl ether sulfates, 10 alkyl ether sulfonates, sulfosuccinates, amidopropyl betaines and amphoacetates.

Another possible surfactant is an acyl isethionate having the formula

15



in which R denotes a linear or branched alkyl group and M denotes an alkali metal or alkaline earth metal or an amine.

5

Another surfactant which may be used are the monoalkyl or dialkylphosphate surfactants.

Another mild surfactant which may be used, preferably used  
10 as primary surfactant in combination with other surfactants  
noted above, is sodium coco glyceryl ether sulfonate. While  
desirable to use because of its mildness properties, this  
coco AGS alone does not provide optimum lather creaminess.  
A sodium 90/10 coconut/tallow alkyl AGS distribution is  
15 preferred for creaminess. Salts other than the sodium salt  
such as TEA-, ammonium, and K-AGS and chain length  
distributions other than 90/10 coconut/tallow are usable at  
moderate levels. Also, some soap may be added to improve  
lather volume and speed of lathering. Certain secondary co-  
20 surfactants used in combination with AGS can also provide a  
creamier and more stable lather. These secondary  
surfactants should also be intrinsically mild. One  
secondary surfactant that has been found to be especially  
desirable is sodium lauroyl sarcosinate (trade name Hamposyl  
25 L, made by Hampshire Chemical).

The amphoteric betaines, amfoacetates and sultaines noted  
above can be used as the sole surfactant, but are more  
preferred as a co-surfactant. Nonionics generally should  
30 not be used as the sole surfactant in this product if high

foaming is desirable; however, they can be incorporated as a co-surfactant.

Nonionic and cationic surfactants which may be used include any one of those described in U.S. Patent No. 3,761,418 to 5 Parran, Jr., hereby incorporated by reference into the present application. Also included are the aldobionamides as taught in U.S. Patent No. 5,389,279 to Au et al; and the polyhydroxy fatty acid amides as taught in U.S. Patent No. 5,312,934 to Letton, both of which are incorporated by 10 reference into the present application.

Soaps can be also be used. Preferably, soaps are used at levels of from about 1 to 10 wt % and at higher levels preferably where the surfactant mixture is milder than soap.

15 The soaps may be added neat or made in situ via adding a base, e. g., NaOH; to convert free fatty acids. Preferably, soaps are only be used as cosurfactants to the extent that the surfactant system is milder than soap alone.

20 A preferred surfactant active system comprises an anionic (e.g., ammonium lauryl ether sulfate) at 1 to 15% by weight of the total composition and an amphoteric at 0.5 to 15% by weight of the total composition.

25 Preferably the surfactant or surfactant system is used in a liquid cleansing formulation having, for example, from about 10% to about 99% water.

30 The compositions of the invention preferably comprise anionic surfactants which are not nitrogen-containing anionic surfactants.

Moisturizers may include oils, cationic, and certain nonionic and anionic surfactants. Among the moisturizers which may be used are glycerine mono, di and tri-esters, 5 vegetable oil, epidermal and sebaceous hydrocarbons such as lanolin, squalene, cholesterol and derivatives such as esters, mineral oil, silicone gum and silicone oil. One such moisturizer is the dimethicone emulsion sold as Dow Q2-1656, which is a 50% silicone emulsion. Other polyols which 10 may be used include, but are not limited to glycerol, propylene glycol and polyethylene glycol. The moisturizer may be water-soluble or oil-soluble. In the latter case the overall composition may be an emulsion.

15 Other ingredients such as thickeners like ammonium sulfate and opacifiers such as mica/titanium dioxide may be used. Water, of course, may also be included.

The surfactant is preferably present at a level of from 2 to 20 50 wt.% of the total composition (ie. Including both chambers), especially from 5 to 25 wt.% of the cleansing composition. The moisturizing agent is preferably present at from 0.5 to 35 wt.%, especially from 2 to 20 wt.% of the total composition.

25 Further additional ingredients which may be employed include preservatives, pH adjusting agents such as citric acid and sodium hydroxide, perfumes, dyes, suspending agents such as magnesium/aluminum silicate, and sequestering agents such as 30 EDTA.

- 24 -

The compositions held in the container can be applied to the skin by hand or by use of a personal washing implement such as a sponge, a loofah, a polymeric netted mesh pouf, etc.

5    Example 1

The following formulations are held within the two chambers of the container illustrated in Figs. 1-9. The chambers are made of medium density polyethylene and the closure is made 10 of polypropylene.

Surfactant Chamber

| Full Chemical Name or CTFA Name       | % Active Level in Formulation |
|---------------------------------------|-------------------------------|
| Sodium Laureth Sulphate               | 9.0                           |
| Sodium Lauroamphoacetate              | 13.5                          |
| Sunflower Seed Oil                    | 5.0                           |
| Glycerol                              | 2.0                           |
| Guar Hydroxypropyl trimonium Chloride | 0.5                           |
| Lauric acid                           | 2.7                           |
| Perfume                               | 1.0                           |
| Opacifier                             | 0.1                           |
| PEG 80 Sorbiton Monolaurate           | 2.0                           |
| DMDM Hydantoin                        | 0.20                          |
| Sequestrant                           | 0.04                          |
| Citric Acid                           | 1.7                           |
| Water                                 | 62.06                         |

- 25 -

Benefit Chamber

| Full Chemical Name or CTFA Name       | % Active Level in Formulation |
|---------------------------------------|-------------------------------|
| Sodium Laureth Sulphate               | 4                             |
| Sodium Lauroamphoacetate              | 6                             |
| Sunflower Seed Oil                    | 30.0                          |
| Lanolin Alcohols + Cholesterol        | 3.33                          |
| Petrolatum                            | 2.5                           |
| Glycerol                              | 9.00                          |
| Guar Hydroxypropyl trimonium Chloride | 1.0                           |
| Lauric Acid                           | 2.55                          |
| Perfume                               | 1.0                           |
| PEG 20 Sorbiton Monolaurate           | 4.0                           |
| DMDM Hydantoin                        | 0.20                          |
| Sequestrant                           | 0.04                          |
| Colorant                              | 0.00061                       |
| Citric Acid                           | 0.7                           |
| Water                                 | 25.93                         |

Two chambers of the container illustrated in Figs. 1-8 are  
5 adhered together using two dots of a pliable pressure  
sensitive (such as Henkel Euromelt 362) hot melt, (one  
toward the center and one toward the bottom approximately as  
shown in Fig. 9) and three dots of a firmer cohesive hot  
melt such as National hot melt 34-2787 (two at the top and  
10 one toward the bottom approximately as shown in Fig. 9).  
The chambers of the dual container enjoy good integrity  
remaining adhered together throughout a wide range of  
temperature conditions. The dual container also enjoys good  
impact resistance throughout a wide range of conditions.

- 26 -

The chambers are made of medium density polyethylene and the closure is made of polypropylene.

It should be understood of course that the specific forms of  
5 the invention herein illustrated and described are intended  
to be representative only as certain changes may be made  
therein without departing from the clear teachings of the  
disclosure. Accordingly, reference should be made to the  
following appended claims in determining the full scope of  
10 the invention.

**CLAIMS:**

1. A container comprising a first and a second product chamber, each chamber comprising a distal wall and a proximal wall, the chambers being adhered to each other at the first and second chamber proximal walls, the first and second chamber distal walls being sufficiently flexible to permit product dispensing by application of manual pressure thereto, the chambers being similarly shaped so that the chambers could be disposed back to back along the proximal walls in a front view such that the distal wall of the first chamber will essentially obscure the second chamber and the distal wall of the second chamber will essentially obscure the first chamber, the chambers being adhered along the proximal walls in the container in an offset such that the first chamber does not obscure the second chamber from any direction and the second chamber does not obscure the first chamber from any direction.
- 20 2. The container of claim 1 wherein the first and second chambers are comprised of medium density polyethylene.
3. The container of claim 1 or claim 2 wherein the first and second chamber proximal walls each include at least one raised area and at least one recess, the first chamber raised area being received within the second chamber recess and the second chamber raised area being received within the first chamber recess, the raised area and recess being arranged to provide for the chamber offset.

4. The container of any of the preceding claims wherein the first and second chamber proximal walls comprise primary alignment ridges extending parallel to the product egress channels, the primary alignment ridges being arranged to  
5 provide for the chamber offset.

5. The container of claim 4 wherein the first and second chamber proximal walls planar aspects medial to the primary ridge.

10

6. The container according to any of the preceding claims further comprising a closure snap fit onto the first and second chambers.

15

7. The container according to any of the preceding claims wherein the first chamber comprises a surfactant and the second chamber comprises a skin benefit agent.

20

8. The container according to claim 7 wherein the skin benefit agent includes a moisturizer.

9. The container according to any of the preceding claims wherein the first chamber comprises a surfactant and the second chamber comprises a skin benefit agent.

25

10. The container of any of the preceding claims wherein the raised area is a generally vertically extending secondary ridge and the recess is a generally vertically extending trough.

30

11. The container of claim 10 wherein the raised area comprises a secondary generally vertically extending ridge.

12. The container according to any of the preceding claims 5 wherein the skin benefit agent chamber further comprises a surfactant.

13. The container according to any of the preceding claims wherein the composition in the two chambers have different 10 colors.

14. A container according to any of the preceding claims comprising a closure which comprises a closure base having peripheral flange and a wall extending transversely of the 15 flange, the wall including at least two product egress openings and at least one closure base drainage opening.

15. The container according to claim 14 further comprising a cover adapted to prevent egress of fluid through the 20 product egress openings and to permit drainage through the drainage opening and out of the closure.

16. The container according to claim 14 or claim 15 wherein the at least one product drainage opening is disposed 25 laterally to the product egress openings in the transversely extending wall.

17. The container according to any of claims 14-16 wherein the wall includes a major axis extending from a first end 30 thereof to an opposite end and a minor axis perpendicular thereto extending from a second end thereof to an opposite

- 30 -

end wherein the distance from the first end along the major axis to the opposite end is at least 1.5 times the distance from the second end along the minor axis to the opposite end.

5

18. The container according to any of claims 14-17 wherein at least one of the product egress openings is offset from minor axis.

10 19. The container according to any of claims 14-18 further comprising a first product egress channel in communication with the first product egress opening, a second product egress channel in communication with the second product egress opening, the at least one product drainage apertures 15 being disposed outside of the first and second product egress channels.

20. The container of claims 14-19 with at least a first and a second product chamber to form a container, wherein the 20 first product chamber includes a first product exit opening and the second product chamber includes a second product exit opening, the first and second product exit openings are in communication with the first and second product egress channels and are not in communication with the at least one 25 drainage opening.

21. A container according to any of the preceding claims, wherein the first chamber is adhered to the second chamber with at least two different adhering agents.

30

- 31 -

22. A container according to claim 21 wherein at least one of the adhering agents is a hot melt.

23. A container according to any of the preceding claims 5 wherein the container is made of a thermoplastic material.

24. A container according to any of the preceding claims wherein at least adhering agents are hot melts.

10 25. A container according to any of the preceding claims having a closure suitable for resting on its closure, the ratio of the area of the top surface of the closure to the cross sectional area of the container measured at its widest point being 0.4 or above.

15 26. A method for adhering at least two separate objects together into a combined object to maintain the integrity of the combined object over a range of temperatures comprising adhering the separate objects together with at least two 20 different adhering agents.

27. A combined object formed from at least two separate objects together wherein the separate objects are adhered together by at least two separate objects together wherein 25 the separate objects are adhered together by at least two different adhering agents.

28. A combined object according to claim 27 wherein the at least two different adhering agents comprise at least one 30 pressure sensitive hot melt and one coherent hot melt.

- 32 -

29. A closure which comprises a closure base having peripheral flange and a wall extending transversely of the flange, the wall including at least two product egress openings and at least one closure base drainage opening.

1/4

Fig.1.

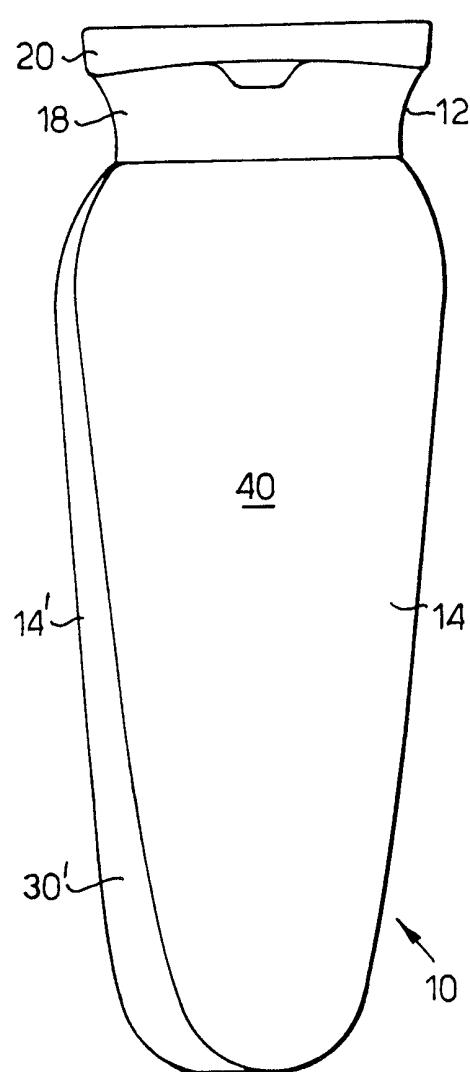
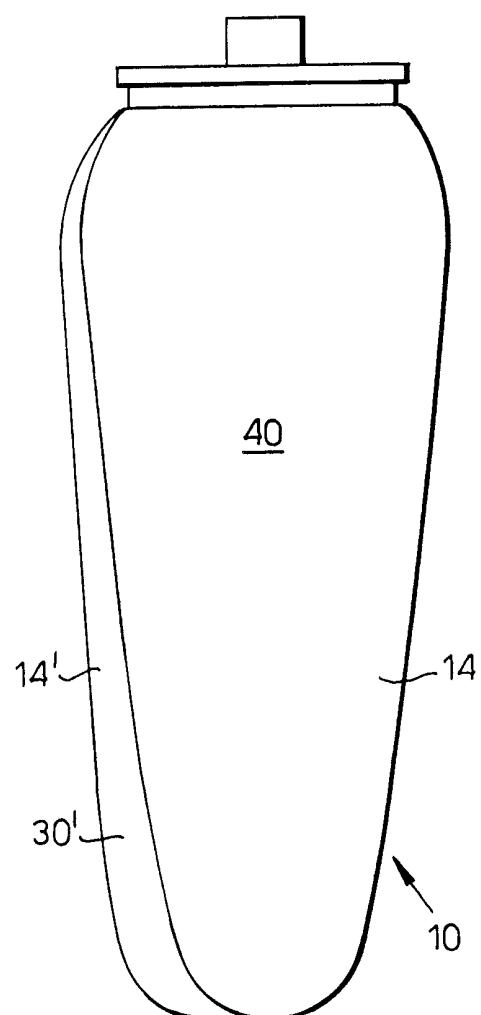


Fig.2.



2/4

Fig.3.

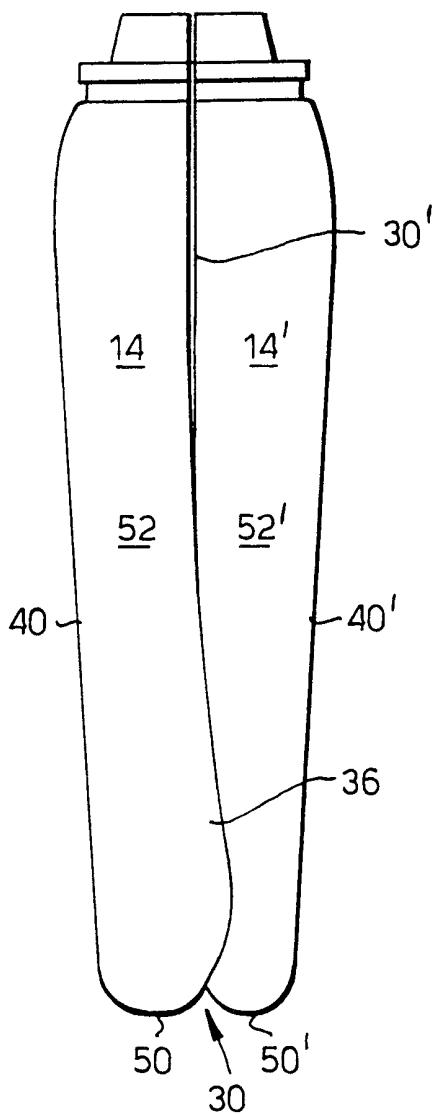


Fig.5.

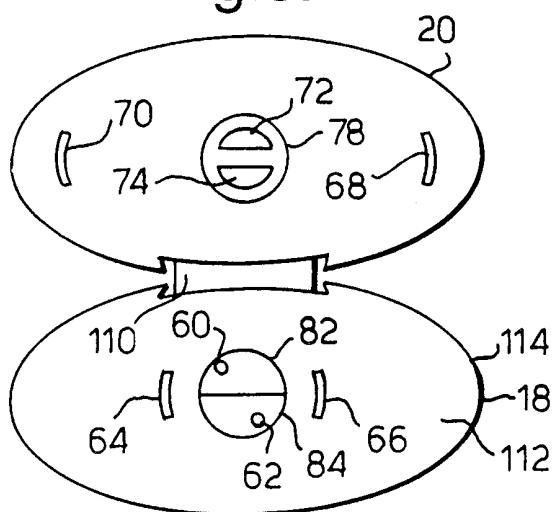


Fig.6.

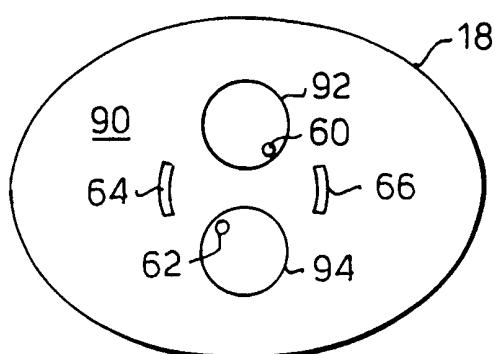


Fig.8.

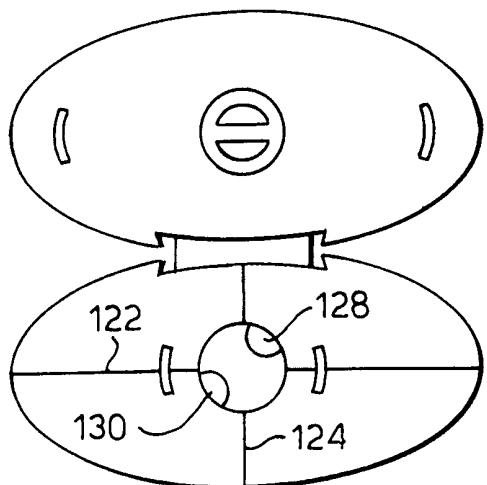
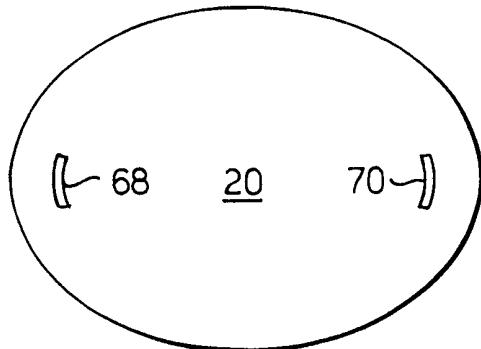
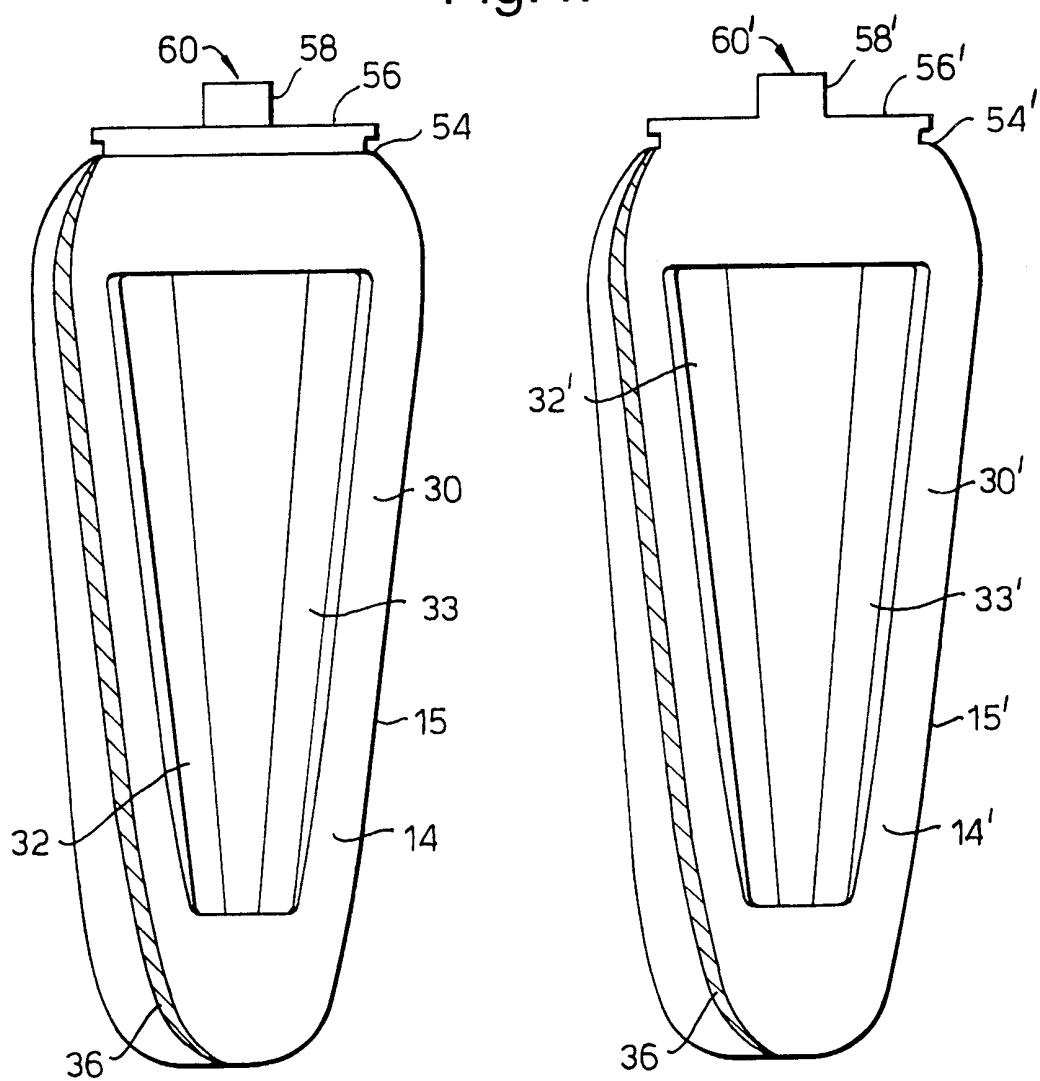


Fig.7.



3/4

Fig.4.



4/4

Fig.9.

