Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2615462 C 2013/03/12

(11)(21) 2 615 462

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(86) Date de dépôt PCT/PCT Filing Date: 2005/07/21
(87) Date publication PCT/PCT Publication Date: 2007/01/25
(45) Date de délivrance/Issue Date: 2013/03/12
(85) Entrée phase nationale/National Entry: 2008/01/15
(86) N° demande PCT/PCT Application No.: GB 2005/002837
(87) N° publication PCT/PCT Publication No.: 2007/010174

(51) Cl.Int./Int.Cl. *B65D 8/04* (2006.01),
B65D 43/02 (2006.01), *B65D 43/16* (2006.01)

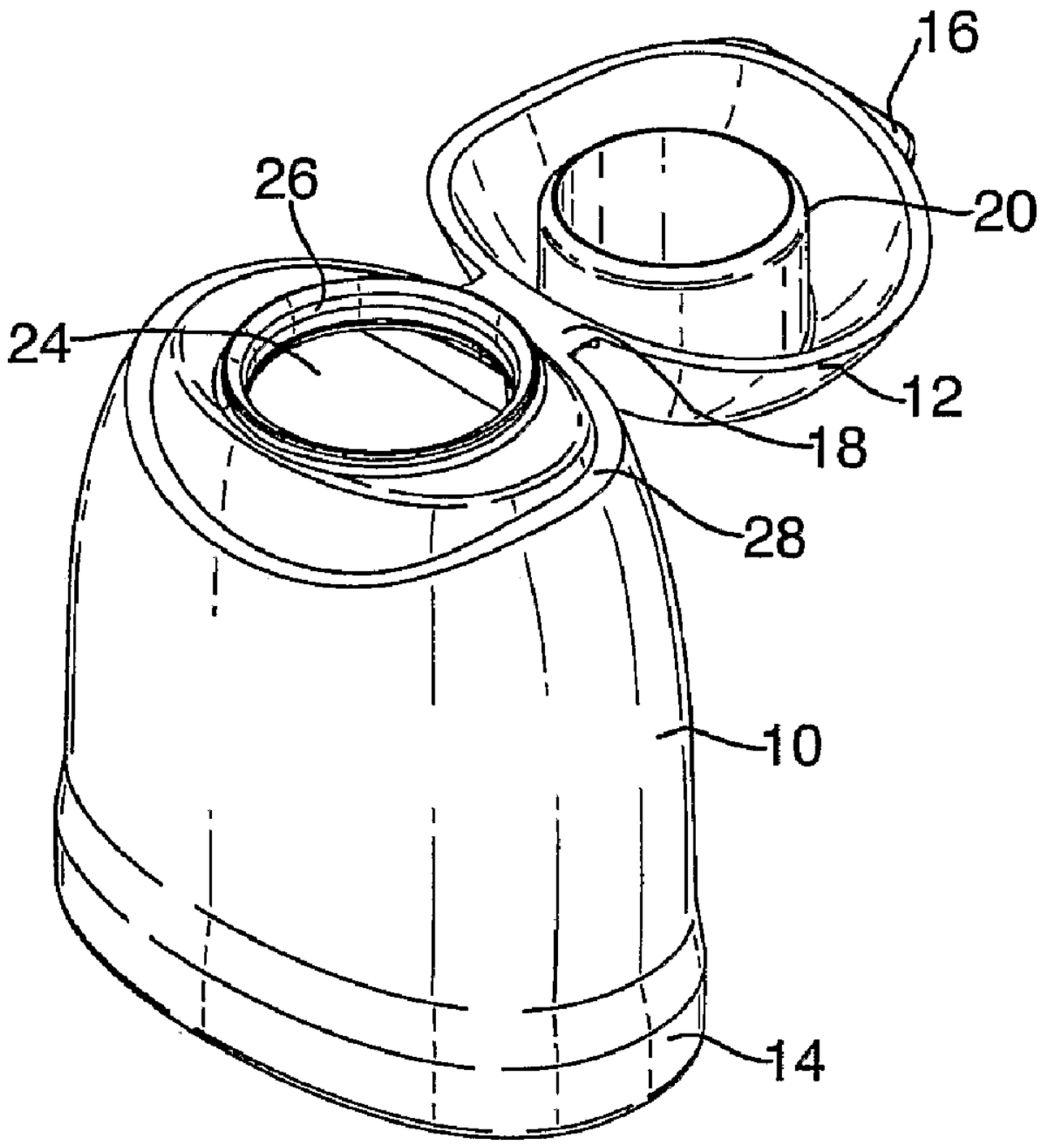
(72) Inventeurs/Inventors:
HOWES, ANDREW, GB;
HUBBARD, STEED, GB;
LAWRENCE, JOHN, GB;
NEWHALL, ANDREW, GB;
PEARSON, MARK, GB

(73) Propriétaire/Owner:
RECKITT BENCKISER HEALTHCARE (UK) LIMITED, GB

(74) Agent: FETHERSTONHAUGH & CO.

(54) Titre : EMBALLAGE DOTE D'UN COUVERCLE ETANCHE ET PROCEDE PERMETTANT DE REMPLIR L'EMBALLAGE

(54) Title: PACKAGING WITH SEALING LID AND METHOD FOR FILLING THE PACKAGE



(57) Abrégé/Abstract:
A packaging for a pharmaceutical product comprising a body portion (10) having an opening (24) for dispensing the pharmatical product; and a lid portion (12) adapted to seal the opening by means of a projection (20) adapted to be received in the opening of the body, wherein the projection is adapted to form a substantially airtight bore seal with the opening.

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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 January 2007 (25.01.2007)

PCT

(10) International Publication Number
WO 2007/010174 A1

(51) International Patent Classification:
B65D 8/04 (2006.01) *B65D 43/16* (2006.01)
B65D 43/02 (2006.01)

(21) International Application Number:
PCT/GB2005/002837

(22) International Filing Date: 21 July 2005 (21.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **RECKITT BENCKISER HEALTHCARE (UK) LIMITED** [GB/GB]; 103-105 Bath Road, Slough, Berkshire SL1 3UH (GB).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **HOWES, Andrew** [GB/GB]; 60 Ashtree Road, New Costeseey, Norwich NR5 0LR (GB). **HUBBARD, Steed** [GB/GB]; 2 Jenner Close, Bungay, Suffolk NR35 1QR (GB). **LAWRENCE, John** [GB/GB]; 21 Minster Road, Oakwood, Derby DE21 2BH (GB). **NEWHALL, Andrew** [GB/GB]; Reckitt Benckiser Healthcare (UK) Limited, Dansom Lane, Hull HU8 7DS (GB). **PEARSON, Mark** [GB/GB]; Reckitt Benckiser Healthcare (UK) Limited, Dansom Lane, Hull HU8 7DS (GB).

(74) Agents: **DICKSON, Elizabeth, Anne** et al.; Legal Department-Patents Group, Reckitt Benckiser plc, Dansom Lane, Hull HU8 7DS (GB).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

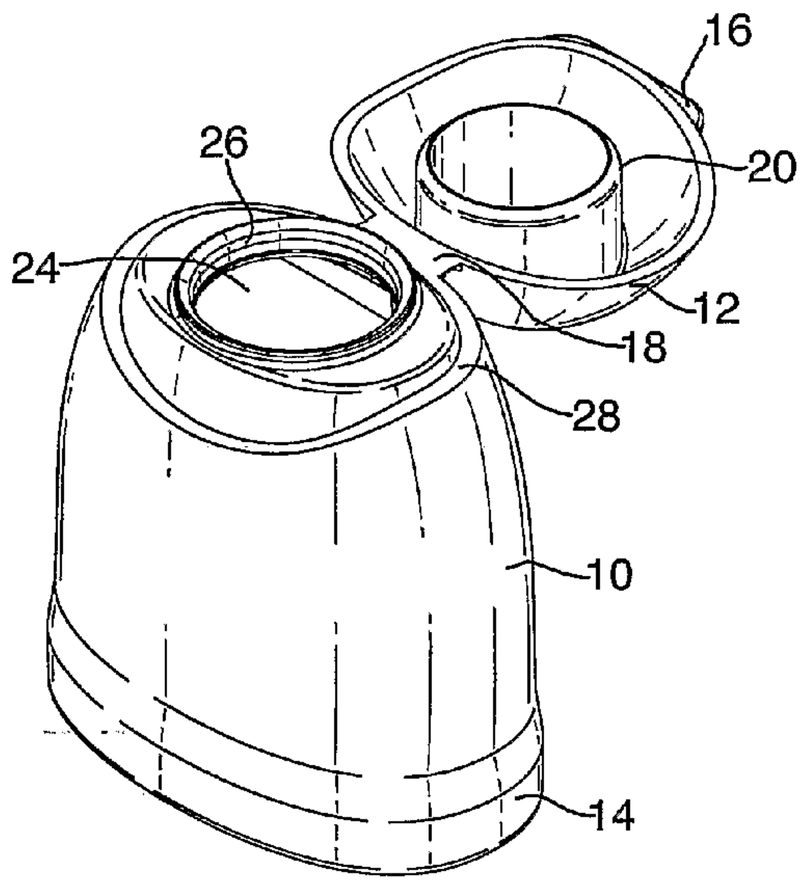
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) **Title:** PACKAGING WITH SEALING LID AND METHOD FOR FILLING THE PACKAGE



(57) **Abstract:** A packaging for a pharmaceutical product comprising a body portion (10) having an opening (24) for dispensing the pharmatical product; and a lid portion (12) adapted to seal the opening by means of a projection (20) adapted to be received in the opening of the body, wherein the projection is adapted to form a substantially airtight bore seal with the opening.

WO 2007/010174 A1

PACKAGING WITH SEALING LID AND METHOD FOR FILLING THE PACKAGE

This invention relates to packaging for a product, in particular, but not limited to, packaging for a pharmaceutical product. The invention also relates to a method of filling a packaging, in particular, but not limited to, a method of filling a packaging for a pharmaceutical product.

Regulations for pharmaceutical products dictate that they must be packaged to provide a watertight and airtight environment for the products.

Prior art packaging for pharmaceutical products includes blister packs in which individual pills are stored in blister type recesses in a plastic packaging having a tray form with a layer of foil or plastic being placed over the individual recesses to provide a seal. Disadvantages arise with this type of packaging in that no re-sealing can be achieved once the foil layer has been pierced to gain access to the tablets. Also, the packaging is fragile, which can lead to undesired opening of individual blister recesses.

Other prior art solutions to the problem of storing pharmaceutical products include the use of so-called tamper-proof screw top bottles, in which downward pressure on a screw top cap is needed to allow a screw thread to engage to allow removal of the cap from the bottle. Disadvantages arise with this type of device, because users find it difficult to operate.

According to a first aspect of the present invention a packaging for a pharmaceutical product comprises a body portion defining a cavity for the pharmaceutical product and a lid portion adapted to seal an opening in the body portion by means of an interengaging projection and aperture pair of respective parts of the lid portion and the body portion.

Preferably, the projection is a projection of the lid portion. Preferably, the aperture is an aperture in the body portion, which aperture is preferably the opening in the body portion. --

The projection and aperture pair preferably form a bore seal.

The projection is preferably tapered, preferably after a tapered end section thereof, preferably by less than approximately 1mm, preferably by between about 0.05mm to 0.2mm.

The aperture is preferably tapered, preferably after a tapered initial section thereof, preferably by less than approximately 1mm, preferably by between about 0.05mm to 0.2mm.

The body portion preferably includes a shoulder section, preferably adapted to receive the lid portion in a closed position and to prevent over-engagement of the projection and aperture pair.

The body portion preferably incorporates a base section, which preferably seals against a main element of the body-section. The base section may be adapted to seal by a bore seal or an interference fit. The base section may be adapted to seal by a combination of a bore seal, a V-seal and/or a protrusion/recess pair of the base section and the main element of the body section. One of the base section and the main element may have inner and outer walls adapted to receive a projection of the other of the base section and the main element. The projection and one of the walls preferably incorporate an interengaging projection and recess pair.

Advantageously the lid section provides a watertight and airtight seal. Advantageously the sealing of the base section against the main element of the body portion provides a watertight and airtight seal. Advantageously, the use of a bore seal, a V-seal and a protrusion/recess pair provides a good seal.

According to another aspect of the present invention there is provided a packaging for a pharmaceutical product to be taken by mouth comprises a body portion defining a cavity for the pharmaceutical product, the body having an opening for dispensing the pharmaceutical product, the packaging also having a lid portion adapted to seal the opening in the body portion by means of a projection of the lid portion adapted to be received in the opening of the body portion, wherein the projection is adapted to form a substantially airtight bore seal with the opening wherein in which the body portion incorporates a base section, which seals against a main element of the body section, in which the base section is adapted to seal by a bore seal, a V-seal and a protrusion/recess pair of the base section and a main element of the body section.

Preferably, the projection is a tubular projection of the lid portion. Preferably, the lid portion incorporates a cover section in addition to the tubular projection. Preferably, the cover section is adapted to bear against the body section after engagement of the projection in the opening in order to prevent over-engagement thereof.

Preferably, the body portion includes a shoulder section, adapted to bear against the cover section when the packaging is in a closed position in order to prevent over-engagement of the projection in the opening.

Preferably, the tubular projection has inner and outer faces and the packaging is adapted such that only the outer face of the tubular projection engages the opening.

Preferably, an area of the opening is greater than approximately 180mm^2, preferably greater than approximately 190 mm^2, preferably greater than approximately 195 mm^2, preferably greater than approximately 200 mm^2, preferably greater than approximately 205 mm^2, preferably greater than approximately 210 mm^2, preferably greater than approximately 215 mm^2, preferably greater than approximately 220 mm^2, preferably greater than approximately 224 mm^2.

Preferably, the opening is substantially circular, preferably, a diameter of the opening is greater than approximately 10mm, preferably greater than approximately 12mm, preferably greater than approximately 14mm, preferably greater than approximately 16mm.

According to another aspect of the present invention, a packaging for a pharmaceutical product to be taken by mouth comprises a body portion defining a cavity for the pharmaceutical product and a lid portion adapted to seal an opening in the body portion, wherein the body portion incorporates a base section that seals against a main element of the body portion by means of a bore seal, a V-seal, and a protrusion/recess pair.

Preferably, the base section seals against the main element by means of an interference fit between the two.

According to another aspect of the present invention there is provided a method of filling a packaging with a pharmaceutical product to be taken by mouth, the method comprising:

sealing a dispensing opening of the packaging with a lid section of the packaging, by means of a projection of the lid portion, wherein the projection forms a substantially airtight bore seal in the opening;

filling the packaging through an open base thereof; and

sealing the open base with a base section to provide a substantially airtight seal in which the base section seals by means of a bore seal, a V-seal, and a protrusion/recess pair.

According to a second aspect of the invention a packaging for a pharmaceutical product comprises a body portion defining a cavity for the pharmaceutical product and a lid portion adapted to seal an opening in the body portion, wherein the body portion incorporates a base section that seals against a main element of the body portion.

The base section may seal against the main element by means of a bore seal. The base section may be adapted to seal by a combination of a bore seal, a V-seal and/or a protrusion/recess pair of the base section and the main element of the body section. One of the base section and the main element may have inner and outer walls adapted to receive a projection of the other of the base section and the main element. The projection and one of the walls preferably incorporate an interengaging protrusion and recess pair.

The base section may seal against the main element by means of an interference fit between the two.

According to a third aspect of the invention a method of filling a packaging with a pharmaceutical product comprises:

sealing a dispensing opening of the packaging with a lid section of the packaging;

filling the packaging through an open base thereof; and sealing the open base with a base section.

The base section may seal by means of a bore seal, a V-seal and/or a protrusion/recess pair of the base section and a main element of the packaging. The base section may seal by means of an interference fit.

Preferably, the lid and the base section provide a watertight and airtight seal.

All of the features described herein may be combined with any of the above aspects in any combination.

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a schematic perspective view of a first embodiment of packaging in an open configuration;

Figure 2 is a schematic perspective view of the packaging in a closed configuration;

Figure 3 is a cross-sectional detailed side view of an engagement between a body section of the packaging and a base section of the packaging;

Figure 4 is a schematic view from above of the base section;

Figure 5 is a schematic cross-sectional side view of the base section;

Figure 6 is a schematic partial cross-sectional side view of an edge section of the base section;

Figure 7 is a schematic side view of the body section without the base section attached;

Figure 8 is a schematic cross-sectional side view of the body section without the base attached;

Figure 9 is a schematic front view of the body section without the base attached;

Figure 10 is a schematic partial cross-sectional side view of a hinge section of the body section;

Figure 11 is a schematic view from above of the packaging in an open configuration;

An embodiment of pharmaceutical packaging is shown in Figures 1 to 11 and takes the form of a flip-top pack that may be operated by a user's thumb. A lid section of the pack provides a watertight and airtight seal with a body section of the pack to allow pharmaceutical grade products to be properly stored therein.

The embodiment shown in Figures 1 to 11 comprises a body section 10 incorporating a lid section 12 and a base section 14. As shown in Figure 2 in a closed configuration, the lid section 12 forms a flush fit with the body section 10. A flange 16 of the lid section 12 provides a protrusion which a user may make use of to push the lid section 12 to an open configuration shown in Figure 1.

The lid section 12 is formed integrally with the body section 10, the two being joined by a flexible link 18, at a long side of the body portion 10.

It will be appreciated that the body section can essentially be any shape required, for example, it may be essentially rectangular in shape.

It has been found that the package may be advantageously sealed to a standard suitable for pharmaceutical grade products by use of a bore seal. According to this embodiment the bore seal is formed by a tapered plug engaging a tapered bore.

The bore seal is formed by a tapered plug section 20 of the lid section 12. The tapered plug section 20 is conical with a very slight taper towards an end of the plug section extending away from the lid section, as shown in Figure 8. The taper is less than 1 mm over the length of the plug section 20, which is approximately 10 mm. At its end the plug section 20 has an initially steep taper of about 45° at the point marked 22 in Figure 8.

The plug section 20 engages a corresponding bore 24 of the body section 10 as shown in Figure 8. The bore has a side wall 26 that is tapered towards a base of the body section 10 by approximately 0.1 mm after an initially sharp taper with an angle of approximately 45° at a mouth of the bore 24.

The narrowest internal diameter of the bore 24 is 16.9 mm, whereas the external diameter of the plug section 20 tapers from 17.14 mm to 17.03 mm. Thus, when the plug section 20 engages the bore 24 compression of the plug section 20 will result, because it has a greater external diameter than the internal diameter of the bore section 24. The compression of the plug section provides the

watertight and airtight seal that is required for the storage of pharmaceutical products in the container.

As can be appreciated from the measurements provided above, the external diameter of the plug section 20 is approximately 0.2 to 0.3 mm greater than the internal diameter of the bore 24, thus allowing for a seal.

The sharp taper of approximately 45° at the end of the plug section 20 and the corresponding initial sharp taper at the entrance to the bore 24 provide means by which the plug section 20 can more easily engage the bore 24. After that the considerably less pronounced taper along the length of the plug section allows for a progressive formation of the seal between the plug section and the bore 24.

The packaging is made of polypropylene, which advantageously allows for some elastic deformation of the plug section 20 as it engages the bore 24 to form the seal.

The body section 10 incorporates a shoulder section 28 in the form of a lip. The shoulder section 28 provides a seat for the lid section 12 in its closed position. Thus, the shoulder section 28 prevents further movement of the lid section 12 towards the body section and so prevents further movement of the plug section 20 into the bore 24.

Also, the engagement of the lid 12 with the shoulder 28 provides the flush fit between the lid section 12 and the body section 10 referred to above.

The base section 14 is secured to the body section 10 by means of a bore seal, a V-seal and a protruding bead 36 and corresponding recess 34. The base section may be attached to the body section by different seal arrangements, such as by means of an interference fit rather than a claw seal. For example, an interference fit may be formed by a channel defined in the base section being adapted to receive the lower region of the walls of the body section of the package. An interference fit is a simpler engagement means compared with a bore seal and a V-seal since it relies only on friction. The channel in the base section engaging the body section may be tapered. In this case the lower region of the walls of the body region may be correspondingly tapered to result in an airtight and watertight fit.

As shown in Figures 3 to 6 an outer periphery of the base section 14 comprises an inner wall 30 and an outer wall 32, forming a channel 40. The inner and outer walls 30/32 form the bore seal with a lower part of the body section 10. The lower part of the body section 10 that seals against the inner wall 30 is broader that the channel 40 and so seals by means of interference. The inner wall 30 has an upward taper having a generally vertical inner face with the taper being on an outer face thereof, to guide the body section 10 into the channel. Also, the base of the inner wall curves inwards at its base to give greater strength. The interference is greater than that of a conventional parallel sided wall arrangement as a result of the curved inner wall 30.

The outer wall 32 of the base section 14 incorporates a recessed ring 34 to receive a protruding bead 36 of a

lower part of the base section 14. The outer wall 32 has a generally vertical outer face and a recessed ring 34 on an inner face thereof.

The base section 14 also includes a protruding flange 38 above the protruding ring 36, as shown in Figure 7.

As mentioned above, the inner and outer walls 30/32 of the base section 14 form the channel 40, into which the lower end of the body section 10 is inserted. At the base of the channel 40 is an inverted V-shaped protrusion 35 (see Figure 3) that forms the V-seal. A lower edge of the body section 10 bears against the V-shaped protrusion to form the seal.

As shown in Figure 3, the protruding bead 36 at the base of the base section 14 is received in the recess 34 in the outer wall 32 of the base section 14. In order to fit the base section 14 to the body section 10 deformation of the inner and/or outer walls 30/32 is required to allow the protruding bead 36 to seat in the recess 34, the latter being annular in shape. Thus, pressure is required to ensure the base section 14 and the body section 10 are properly engaged with one another. Once engagement has been achieved a watertight and airtight seal is provided by the bore seal, the V-seal and the engaging projecting bead and recess. Once the base section 14 has been secured to the body section 10, the projecting flange 38 abuts an upper side of the outer wall 32 to create a smooth outer face where the two parts engage.

In use, the packaging is filled with pharmaceutical products, such as tablets, powders or the like, which may

include indigestion treatments such as Gaviscon (RTM) or cold treatments such as Lemsip (RTM).

The packaging described above is filled in the following way. Before the base section 14 is secured to the body section 10, the body section 10 is inverted with the lid section 12 closed. Thus, a lower part of the body section 10 is uppermost and is open. The pharmaceutical products are then placed in the body section 10, which retains them, given that the lid section 12 is closed. When the body section 10 has been filled with products the base section 14 is secured to the body section as described above to provide a packaging that is both water and airtight, as required by regulations for pharmaceutical products.

The advantageous provision of packaging that has a base section 14 made of a separate element to a combined body 10 and lid section 12 allows production of the body/lid section and filling of the packaging before the base section 14 is secured to the body section.

Advantages of this embodiment results from the realisation that a bore seal could advantageously be used to provide a watertight and airtight seal for a packaging for pharmaceutical products. Advantages also result from the use of a base section 10 that can be secured to seal a body section after filling of the packaging with pharmaceutical products. Both an interference fit or a bore seal have advantages.

All of the features disclosed in this specification (including any accompanying claims, abstract and

drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

29800-50

CLAIMS:

1. A packaging for a pharmaceutical product to be taken by mouth comprises a body portion defining a cavity for the pharmaceutical product, the body having an opening for dispensing the pharmaceutical product, the packaging also having a lid portion adapted to seal the opening in the body portion by means of a projection of the lid portion adapted to be received in the opening of the body portion, wherein the projection is adapted to form a substantially airtight bore seal with the opening wherein in which the body portion incorporates a base section, which seals against a main element of the body section, in which the base section is adapted to seal by a bore seal, a V-seal and a protrusion/recess pair of the base section and a main element of the body section.

2. A packaging as claimed in claim 1, in which the projection is a tubular projection of the lid portion.

3. A packaging as claimed in claim 2, in which the lid portion incorporates a cover section in addition to the tubular projection.

4. A packaging as claimed in claim 3, in which the cover section is adapted to bear against the body section after engagement of the projection in the opening in order to prevent over-engagement thereof.

5. A packaging as claimed in claim 4, in which the body portion includes a shoulder section, adapted to bear against the cover section when the packaging is in a closed position in order to prevent over-engagement of the projection in the opening.

6. A packaging as claimed in any one of claims 2 to 5, in which the tubular projection has inner and outer faces and the packaging is adapted such that only the outer face of the tubular projection engages the opening.

7. A packaging as claimed in claim 1, in which an area of the opening is greater than approximately 200mm^2.

8. A packaging as claimed in claim 1, in which a diameter of the opening is greater than approximately 16mm.

9. A packaging for a pharmaceutical product to be taken by mouth comprises a body portion defining a cavity for the pharmaceutical product and a lid portion adapted to seal an opening in the body portion, wherein the body portion incorporates a base section that seals against a main element of the body portion by means of a bore seal, a V-seal, and a protrusion/recess pair.

10. A packaging as claimed in claim 9, in which the base section seals against the main element by means of an interference fit between the two.

11. A method of filling a packaging with a pharmaceutical product to be taken by mouth comprises:

sealing a dispensing opening of the packaging with a lid section of the packaging, by means of a projection of the lid portion, wherein the projection engages in the opening to form a substantially airtight bore seal;

filling the packaging through an open base thereof; and

sealing the open base with a base section to provide a substantially airtight seal in which the base section seals by means of a bore seal, a V-seal, and a protrusion/recess pair.

Fig.1.

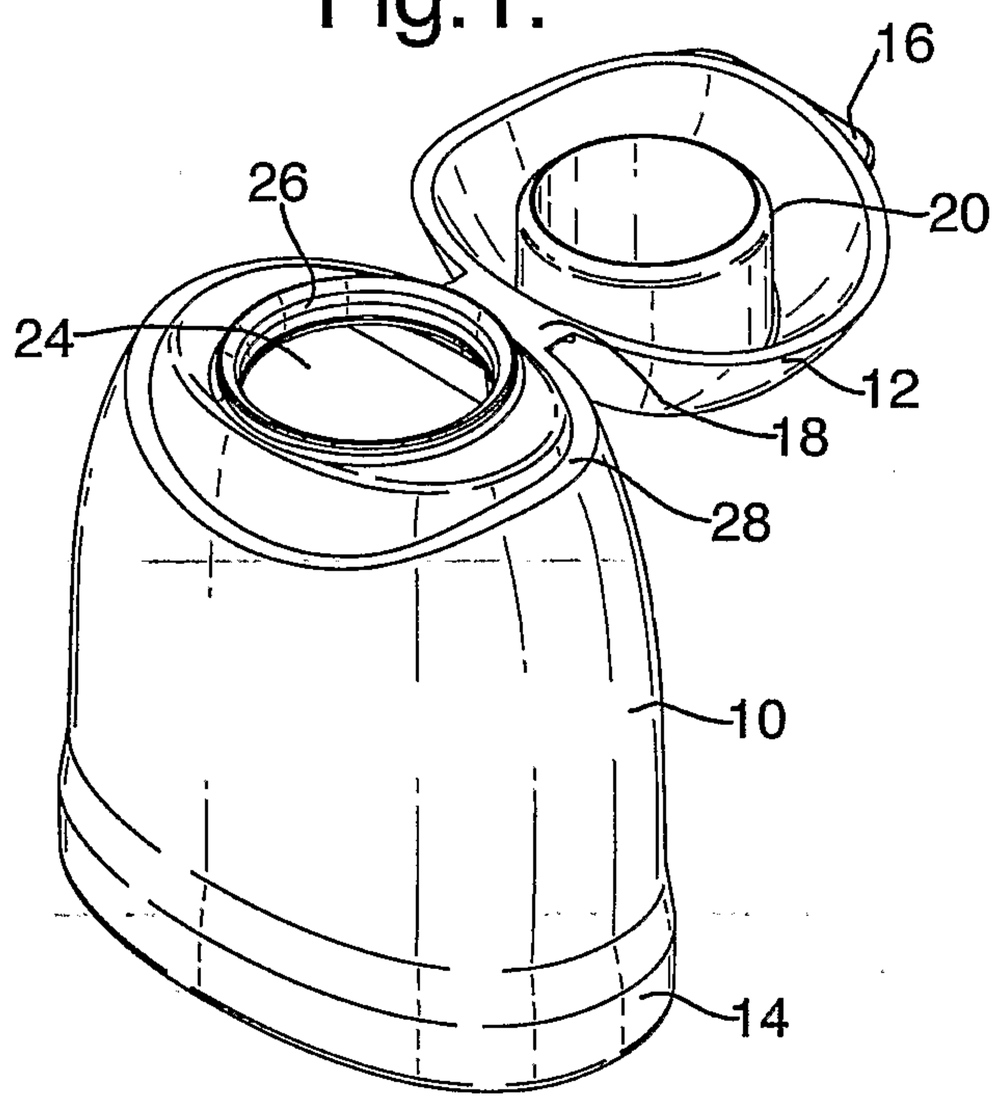


Fig.2.

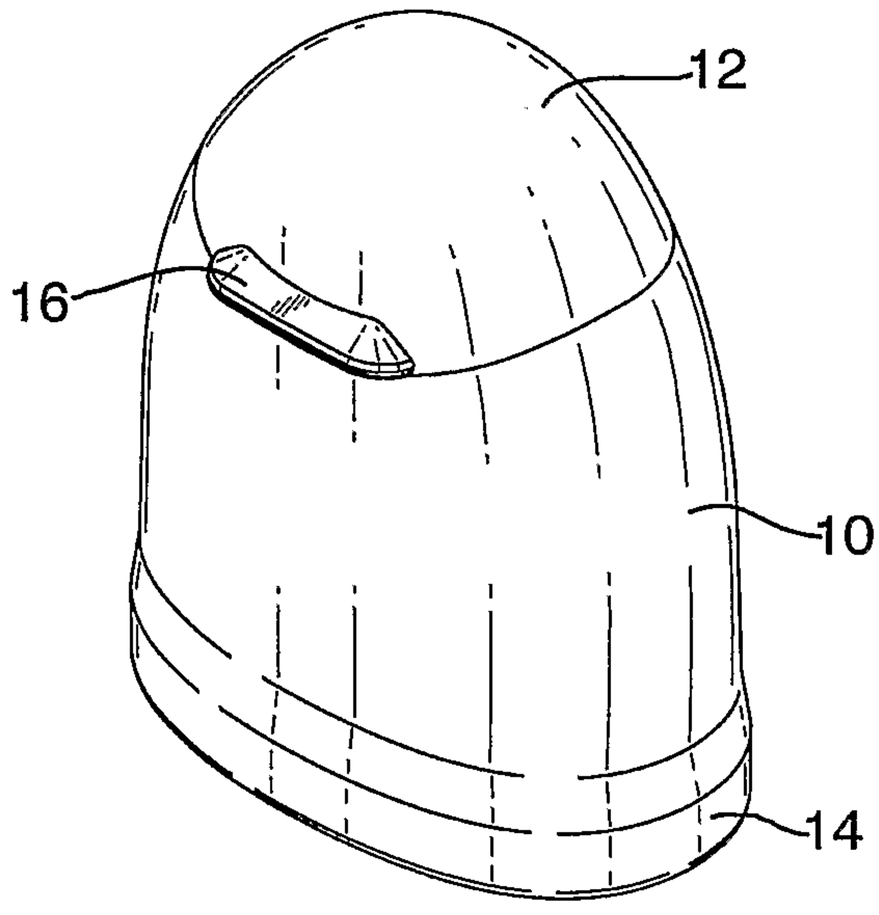


Fig.3.

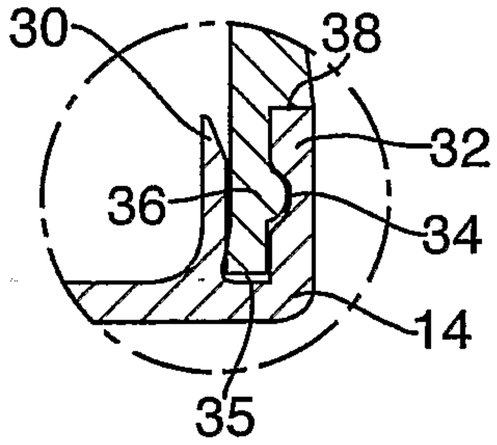


Fig.4.

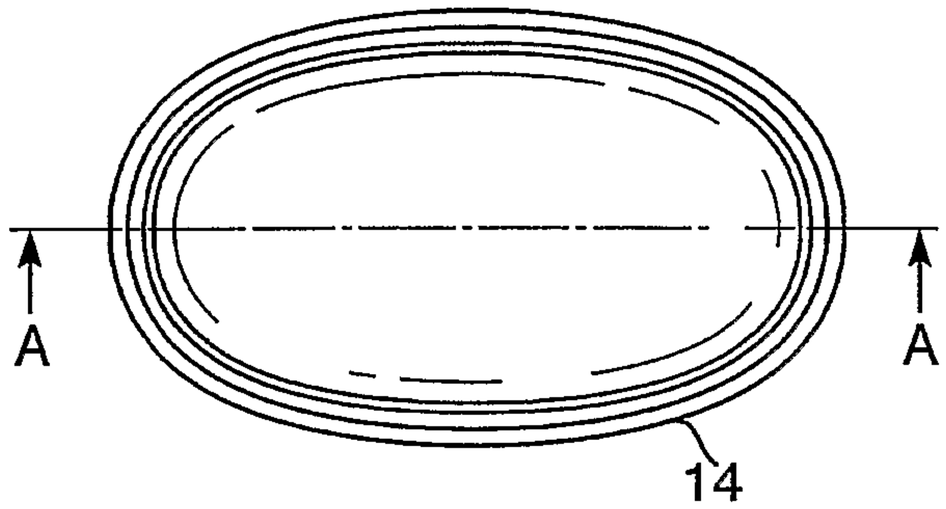


Fig.5.

Section A-A

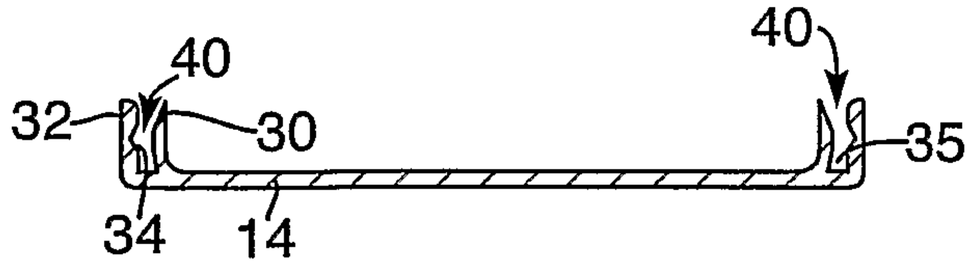


Fig.6.

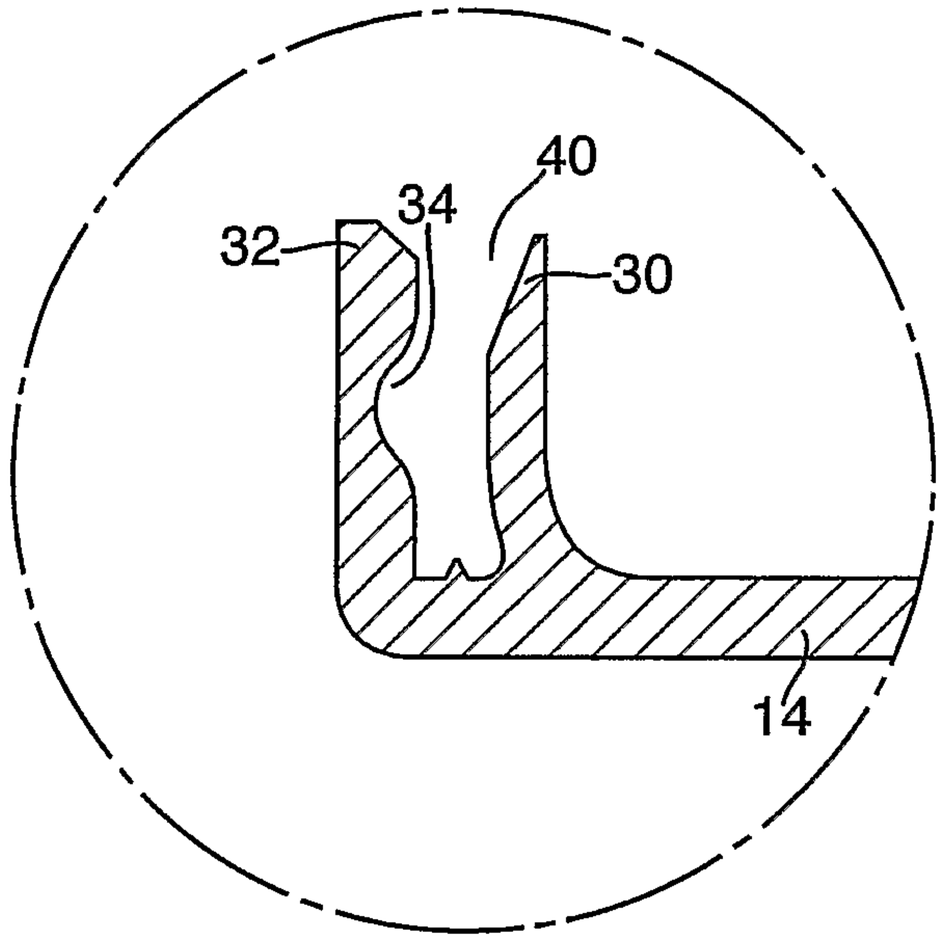


Fig.7.

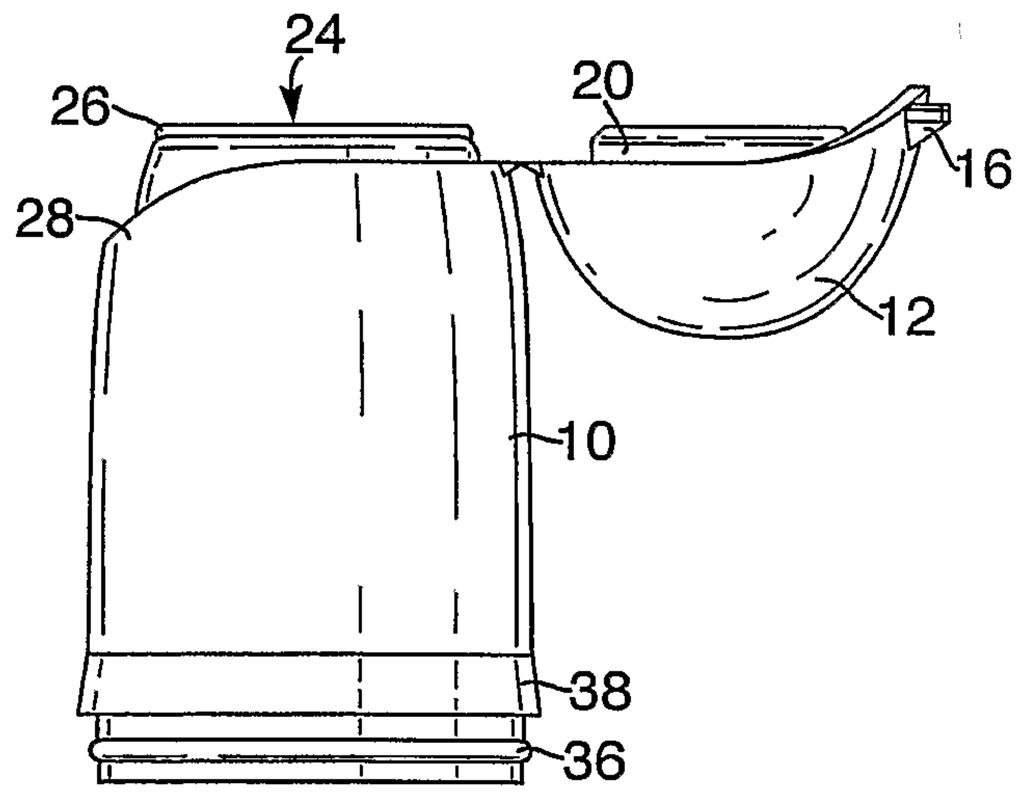


Fig.8.

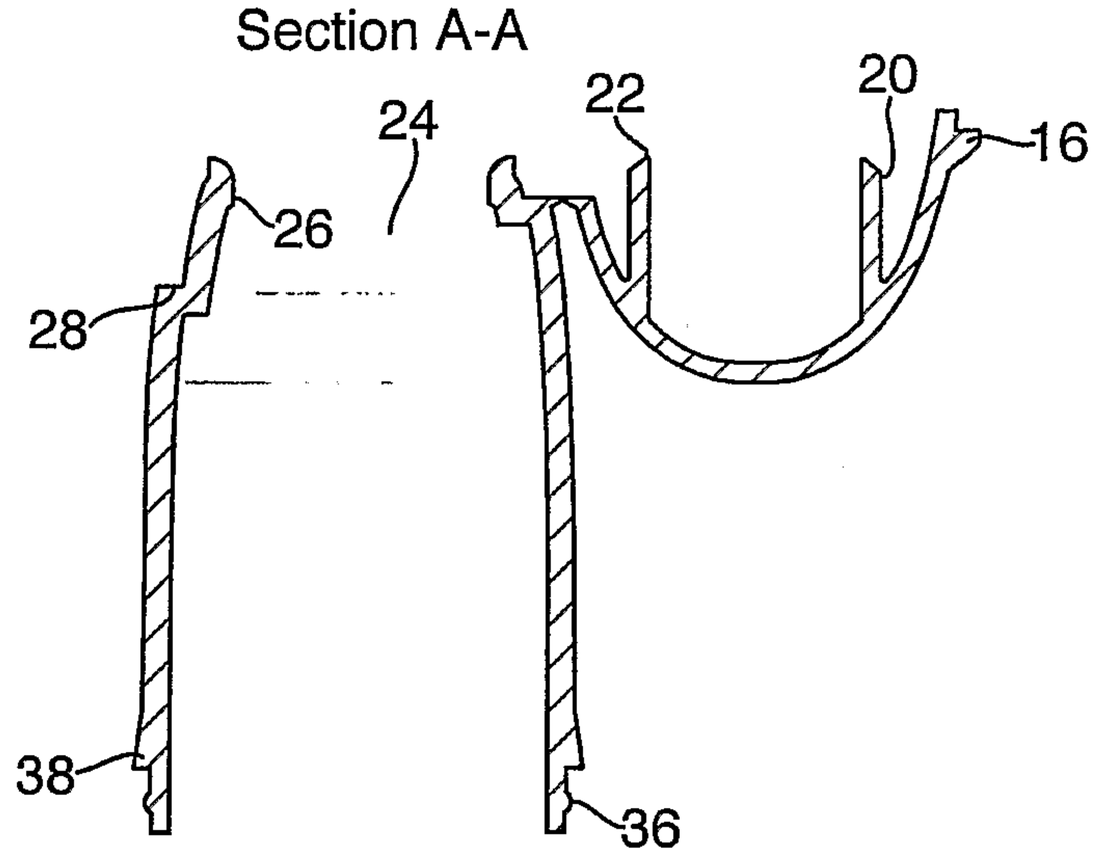


Fig.9.

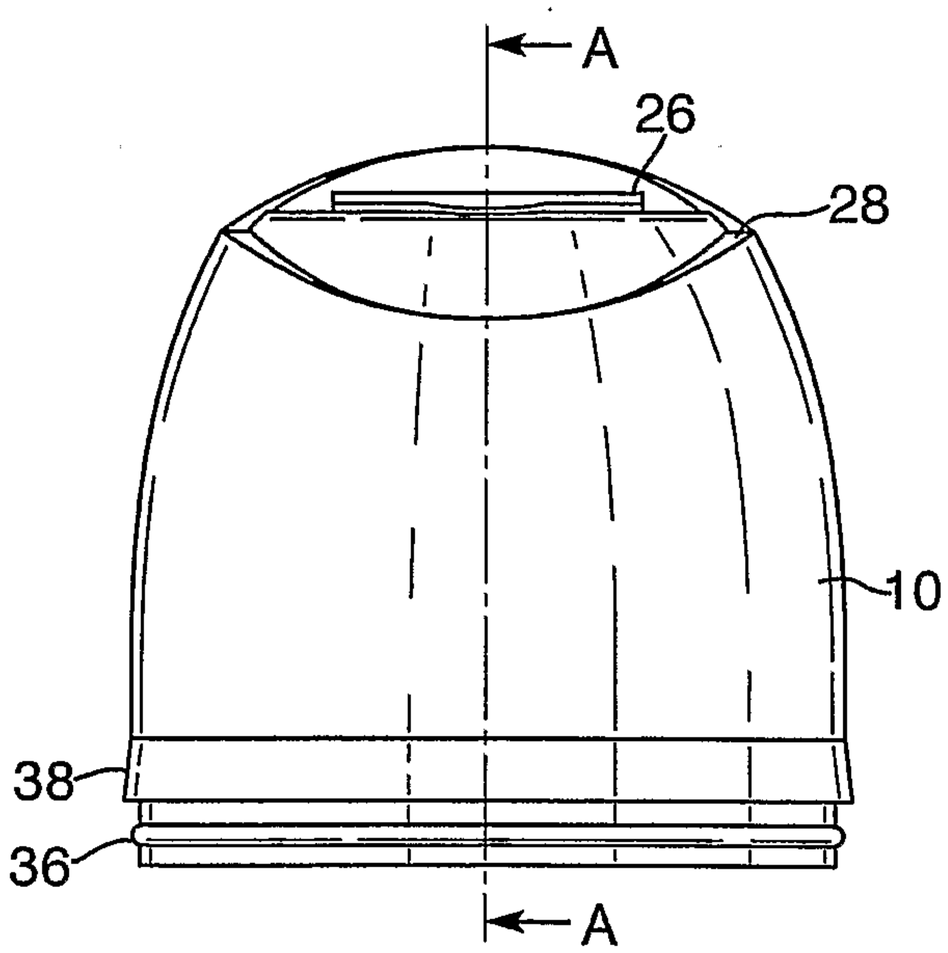


Fig.10.

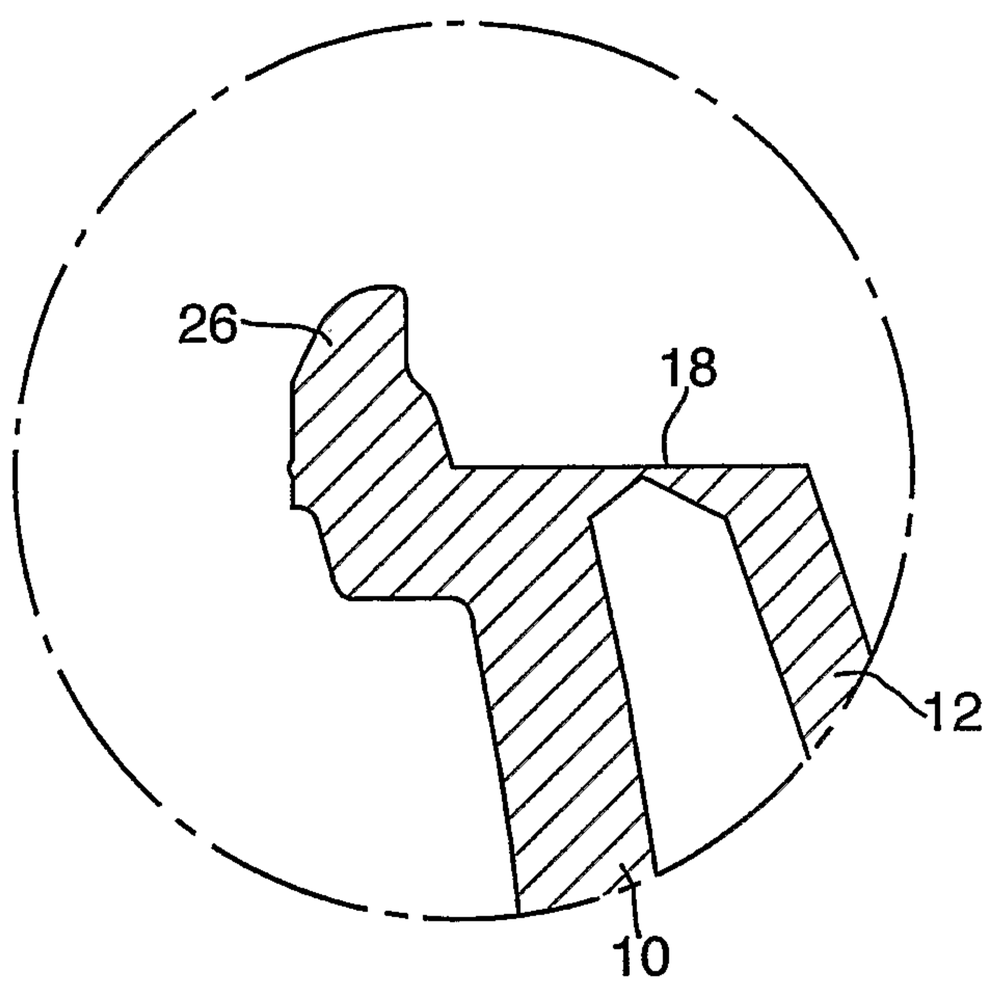
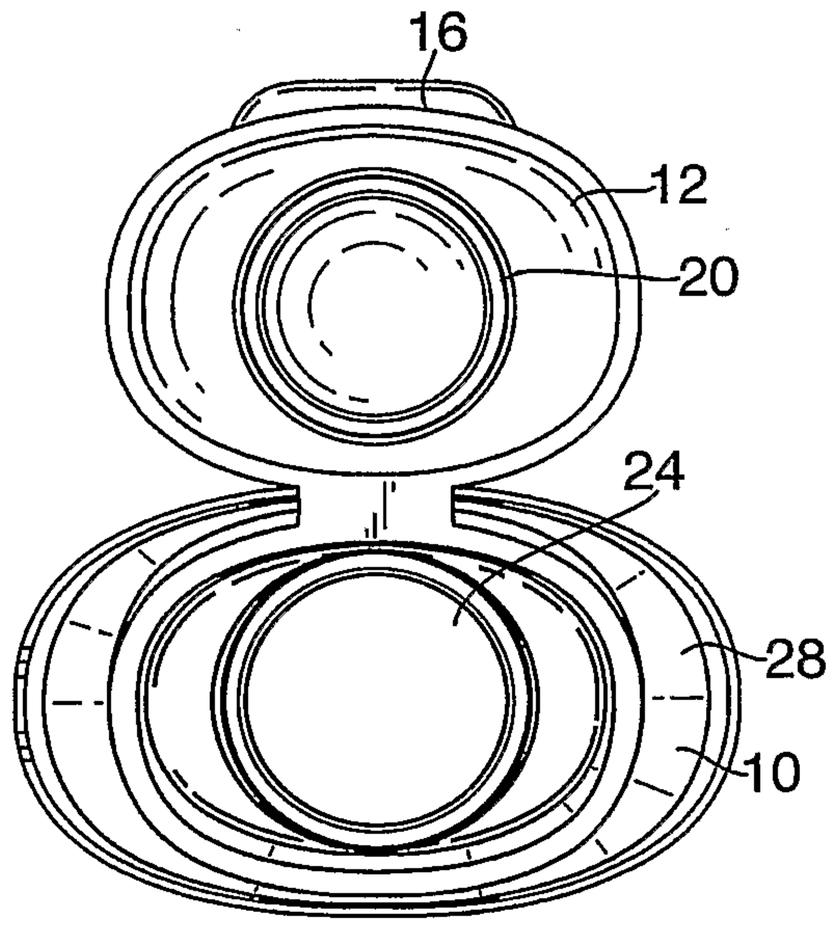
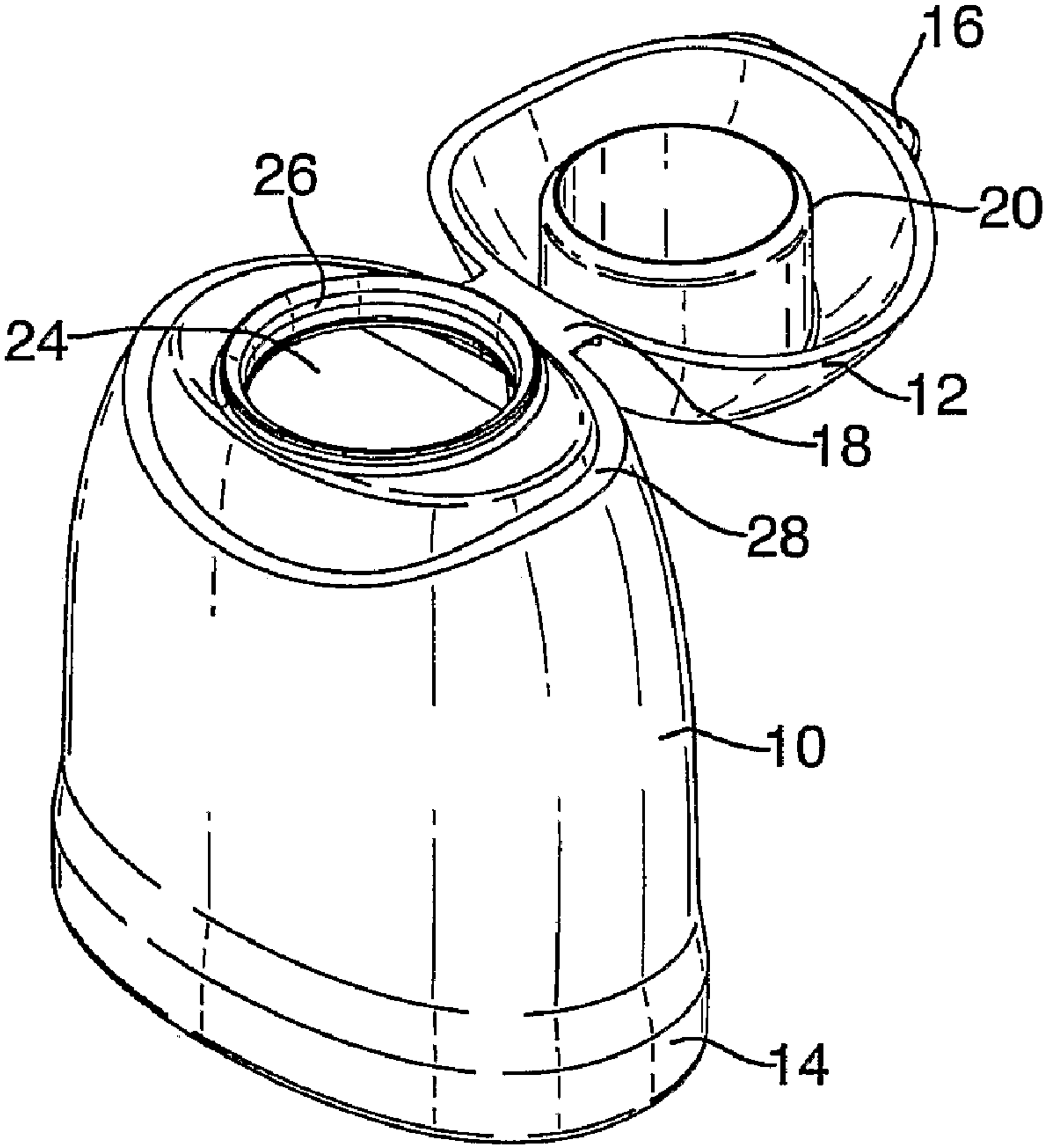


Fig.11.




16
26
20
24
12
18
28
10
14