



(11) **EP 1 910 175 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**08.09.2010 Bulletin 2010/36**

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

(21) Application number: **05761536.1**

(86) International application number:  
**PCT/GB2005/002837**

(22) Date of filing: **21.07.2005**

(87) International publication number:  
**WO 2007/010174 (25.01.2007 Gazette 2007/04)**

(54) **Packaging with sealing lid and method for filling the package.**

VERPACKUNG MIT VERSCHLUSSDECKEL UND VERFAHREN ZUM FÜLLEN DER VERPACKUNG  
EMBALLAGE DOTÉ D UN COUVERCLE ÉTANCHE ET PROCÉDÉ PERMETTANT DE REMPLIR L  
EMBALLAGE

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI  
SK TR**

(43) Date of publication of application:  
**16.04.2008 Bulletin 2008/16**

(73) Proprietor: **Reckitt Benckiser Healthcare (UK)  
Limited  
Slough, Berkshire SL1 3UH (GB)**

(72) Inventors:  
• **HOWES, Andrew  
New Costeseey,  
Norwich NR5 0LR (GB)**  
• **HUBBARD, Steed  
Bungay,  
Suffolk NR35 1QR (GB)**

- **LAWRENCE, John  
Oakwood,  
Derby DE21 2BH (GB)**
- **NEWHALL, A.,  
Reckitt Benckiser Healthcare (UK) Ltd  
Hull HU8 7DS (GB)**
- **PEARSON, M.,  
Reckitt Benckiser Healthcare (UK) Ltd  
Hull HU8 7DS (GB)**

(74) Representative: **O'Brien, Niall James et al  
Reckitt Benckiser  
Corporate Services Limited  
Legal Department - Patents Group  
Dansom Lane  
Hull  
HU8 7DS (GB)**

(56) References cited:  
**WO-A-99/37190 GB-A- 1 353 360**  
**GB-A- 2 132 978 US-A- 3 857 509**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

**EP 1 910 175 B1**

## Description

**[0001]** This invention relates to packaging for a product according to the preamble of claim 1, in particular 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.

**[0002]** Regulations for pharmaceutical products dictate that they must be packaged to provide a watertight and airtight environment for the products.

**[0003]** 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.

**[0004]** 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.

**[0005]** US 6 220 435 discloses a dispersing canister comprising all technical features of the preamble of claim 1, which includes a receptacle base, and a lid threaded thereto for dispersing presaturated wiper sheets for use in various industrial and manufacturing situations.

**[0006]** It is an object of the present invention to address the above mentioned disadvantages.

**[0007]** According to a first 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, 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. The body portion incorporates a base section, which seals against a main element of the body section. 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.

**[0008]** 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.

**[0009]** 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.

**[0010]** Preferably, an area of the opening is greater than approximately 180mm<sup>2</sup>, preferably greater than approximately 190 mm<sup>2</sup>, preferably greater than approximately 195 mm<sup>2</sup>, preferably greater than approximately 200 mm<sup>2</sup>, preferably greater than approximately 205 mm<sup>2</sup>, preferably greater than approximately 210 mm<sup>2</sup>, preferably greater than approximately 215 mm<sup>2</sup>, preferably greater than approximately 220 mm<sup>2</sup>, preferably greater than approximately 224 mm<sup>2</sup>.

**[0011]** 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.

**[0012]** 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.

**[0013]** Preferably, the base section seals against the main element by means of an interference fit between the two.

**[0014]** 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 thereon; 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.

**[0015]** All of the features described herein may be combined with any of the above aspects in any combination.

**[0016]** 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;

**[0017]** 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. '

**[0018]** 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.

**[0019]** 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.

**[0020]** It will be appreciated that the body section can essentially be any shape required, for example, it may be essentially rectangular in shape.

**[0021]** 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.

**[0022]** 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.

**[0023]** 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.

**[0024]** 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.

**[0025]** 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.

**[0026]** 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.

**[0027]** 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.

**[0028]** 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.

**[0029]** 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.

**[0030]** 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 than 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.

**[0031]** 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.

**[0032]** The base section 14 also includes a protruding flange 38 above the protruding ring 36, as shown in Figure 7.

**[0033]** 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.

**[0034]** 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.

**[0035]** 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).

**[0036]** 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 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.

**[0037]** 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.

**[0038]** 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.

**[0039]** The invention is not restricted to the details of the foregoing embodiment(s).

## Claims

1. A packaging for a pharmaceutical product to be taken by mouth comprises a body portion (10) defining a cavity for the pharmaceutical product, the body having an opening (24) for dispensing the pharmaceutical product, the packaging also having a lid portion (12) adapted to seal the opening in the body portion by means of a projection (20) 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, **characterised in that** the body portion incorporates a base section (14), 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 the 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 (28), 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 any preceding claim, in which an area of the opening is greater than approximately 200mm<sup>2</sup>.
8. A packaging as claimed in any preceding claim, in which a diameter of the opening is greater than approximately 16mm.
9. A packaging as claimed in any preceding claim, in which the base section seals against the main element by means of an interference fit between the two.
10. 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.

#### Patentansprüche

1. Verpackung für ein Arzneimittel zur mündlichen Einnahme, umfassend einen Körperabschnitt (10), der einen Hohlraum für das Arzneimittel definiert, wobei der Körper eine Öffnung (24) aufweist, um das Arzneimittel auszugeben, wobei die Verpackung auch einen Deckelabschnitt (12) umfasst, der dazu geeignet ist, um die Öffnung in dem Körperabschnitt mittels eines Vorsprungs (20) des Deckelabschnitts, der dazu geeignet ist, um in der Öffnung des Körperabschnitts aufgenommen zu werden, abzudichten, wobei der Vorsprung dazu geeignet ist, um eine im Wesentlichen luftdichte Bohrungsdichtung mit der Öffnung zu bilden, **dadurch gekennzeichnet, dass** der Körperabschnitt einen Bodenabschnitt (14) umfasst, der an einem Hauptelement des Körperabschnitts abdichtet, wobei der Bodenabschnitt dazu geeignet ist, um durch eine Bohrungsdichtung, eine V-förmige Dichtung und ein Vorsprung/Ausnehmungs-Paar des Bodenabschnitts und des Hauptelements des Körperabschnitts abzudichten.
2. Verpackung nach Anspruch 1, wobei der Vorsprung

ein röhrenförmiger Vorsprung des Deckelabschnitts ist.

3. Verpackung nach Anspruch 2, wobei der Deckelabschnitt einen Abdeckabschnitt zusätzlich zu dem röhrenförmigen Vorsprung umfasst.
4. Verpackung nach Anspruch 3, wobei der Abdeckabschnitt dazu geeignet ist, um nach dem Eingreifen des Vorsprungs in die Öffnung an dem Körperabschnitt anzuliegen, um ein übermäßiges Eingreifen desselben zu verhindern.
5. Verpackung nach Anspruch 4, wobei der Körperabschnitt einen Schulterabschnitt (28) umfasst, der dazu geeignet ist, um an dem Abdeckabschnitt anzuliegen, wenn die Verpackung sich in einer geschlossenen Position befindet, um einen übermäßigen Eingriff des Vorsprungs in die Öffnung zu verhindern.
6. Verpackung nach einem der Ansprüche 2 bis 5, wobei der röhrenförmige Vorsprung Innen- und Außen-seiten aufweist und die Verpackung derart angepasst ist, dass nur die Außenseite des röhrenförmigen Vorsprungs in die Öffnung eingreift.
7. Verpackung nach einem der vorhergehenden Ansprüche, wobei eine Fläche der Öffnung größer als ungefähr 200 mm<sup>2</sup> ist.
8. Verpackung nach einem der vorhergehenden Ansprüche, wobei ein Durchmesser der Öffnung größer als ungefähr 16 mm ist.
9. Verpackung nach einem der vorhergehenden Ansprüche, wobei der Bodenabschnitt an dem Hauptelement mittels einer Presspassung dazwischen abdichtet.
10. Verfahren zum Füllen einer Verpackung mit einem Arzneimittel zur mündlichen Einnahme, umfassend folgende Schritte:

Abdichten einer Ausgabeöffnung der Verpackung durch einen Deckelabschnitt der Verpackung, mittels eines Vorsprungs des Deckelabschnitts, wobei der Vorsprung in die Öffnung eingreift, um eine im Wesentlichen luftdichte Bohrungsdichtung zu bilden;  
 Füllen der Verpackung durch einen offenen Boden derselben; und  
 Abdichten des offenen Bodens mit einem Bodenabschnitt, um eine im Wesentlichen luftdichte Dichtung bereitzustellen, wobei der Bodenabschnitt mittels einer Bohrungsdichtung, einer V-förmigen Dichtung und eines Vorsprung/Ausnehmungs-Paars abdichtet.

## Revendications

1. Emballage pour un produit pharmaceutique à prendre par voie orale, comprenant une portion de corps (10) définissant une cavité pour le produit pharmaceutique, le corps ayant une ouverture (24) pour distribuer le produit pharmaceutique, l'emballage comportant également une portion de couvercle (12) adaptée pour assurer l'étanchéité de l'ouverture dans la portion de corps au moyen d'une saillie (20) de la portion de couvercle adaptée pour être reçue dans l'ouverture de la portion de corps, dans lequel la saillie est adaptée pour former un joint d'orifice substantiellement étanche à l'air avec l'ouverture, **caractérisé en ce que** la portion de corps intègre une section de base (14) qui assure l'étanchéité par rapport à un élément principal de la section de corps, dans lequel la section de base est adaptée pour assurer l'étanchéité par un joint d'orifice, un joint en V et une paire saillie/enfoncement de la section de base et de l'élément principal de la section de corps. 5
2. Emballage selon la revendication 1, dans lequel la saillie est une saillie tubulaire de la portion de couvercle. 10
3. Emballage selon la revendication 2, dans lequel la portion de couvercle intègre une section de recouvrement en plus de la saillie tubulaire. 15
4. Emballage selon la revendication 3, dans lequel la section de recouvrement est adaptée pour porter sur la section de corps après mise en prise de la saillie dans l'ouverture afin d'empêcher sa mise en prise excessive. 20
5. Emballage selon la revendication 4, dans lequel la portion de corps comprend une section d'épaulement (28) adaptée pour porter sur la section de recouvrement lorsque l'emballage se trouve dans une position fermée afin d'empêcher une mise en prise excessive de la saillie dans l'ouverture. 25
6. Emballage selon l'une quelconque des revendications 2 à 5, dans lequel la saillie tubulaire présente des faces intérieure et extérieure et l'emballage est adapté de sorte que seule la face extérieure de la saillie tubulaire vienne en prise avec l'ouverture. 30
7. Emballage selon l'une quelconque des revendications précédentes, dans lequel une superficie de l'ouverture est supérieure à environ 200 mm<sup>2</sup>. 35
8. Emballage selon l'une quelconque des revendications précédentes, dans lequel un diamètre de l'ouverture est supérieur à environ 16 mm. 40
9. Emballage selon l'une quelconque des revendica- 45

tions précédentes, dans lequel la section de base assure l'étanchéité par rapport à l'élément principal au moyen d'un ajustement avec serrage entre les deux.

10. Procédé de remplissage d'un emballage avec un produit pharmaceutique à prendre par voie orale, comprenant les étapes consistant à :

assurer l'étanchéité d'une ouverture de distribution de l'emballage par une section de couvercle de l'emballage, au moyen d'une saillie de la portion de couvercle, dans lequel la saillie vient en prise avec l'ouverture pour former un joint d'orifice substantiellement étanche à l'air ; remplir l'emballage à travers une base ouverte de celui-ci ; et assurer l'étanchéité de la base ouverte avec une section de base pour fournir un joint substantiellement étanche à l'air dans lequel la section de base assure l'étanchéité au moyen d'un joint d'orifice, d'un joint en V et d'une paire saillie/enfoncement.

Fig.1.

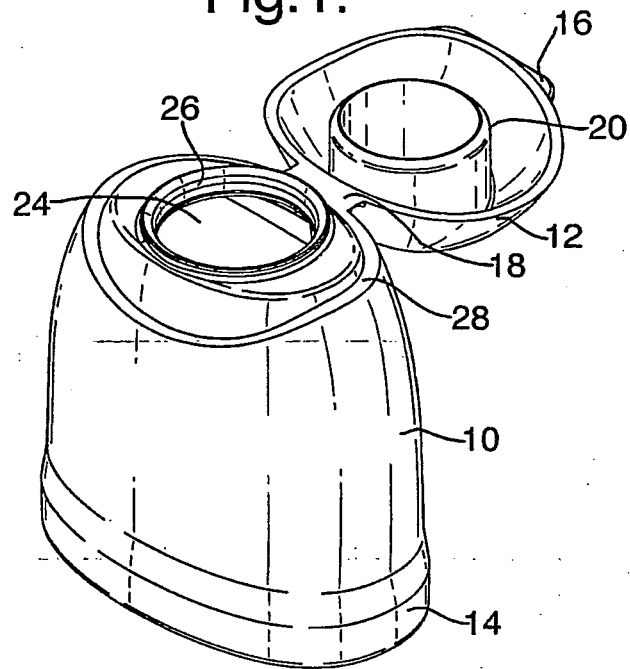


Fig.2.

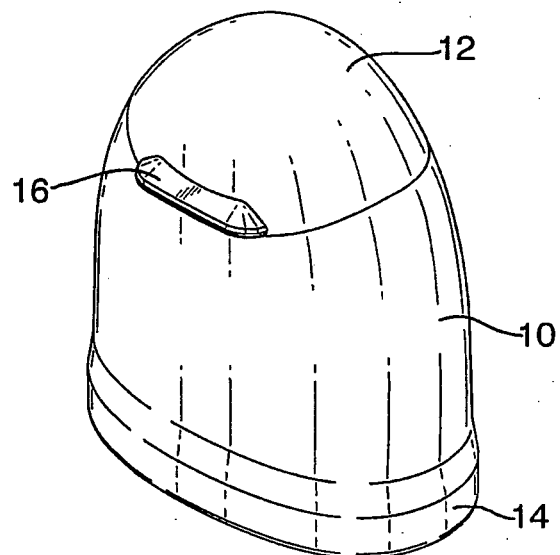


Fig.3.

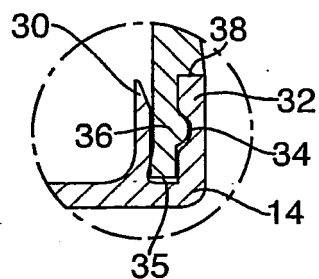


Fig.4.

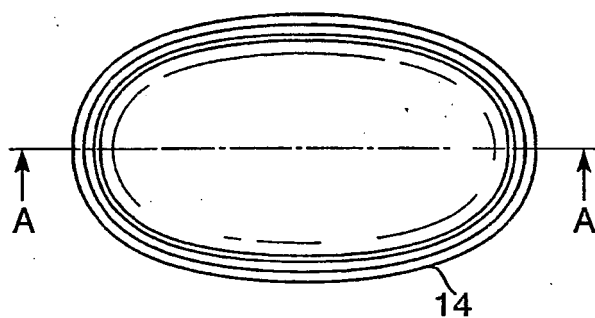


Fig.5.

Section A-A

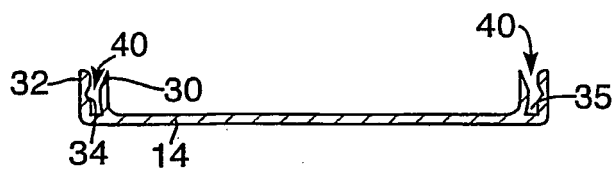


Fig.6.

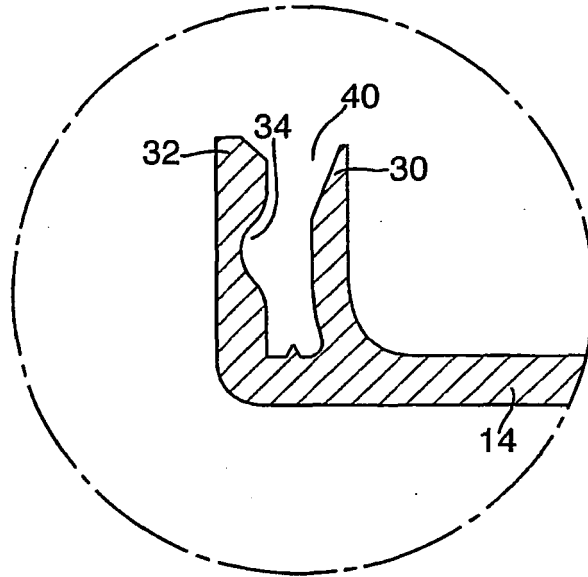


Fig.7.

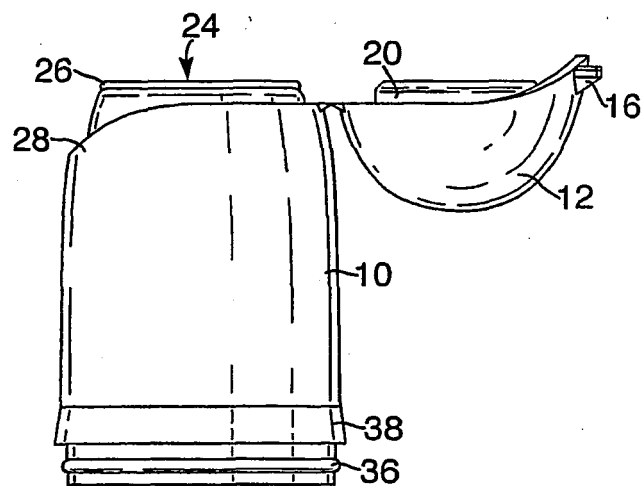


Fig.8.

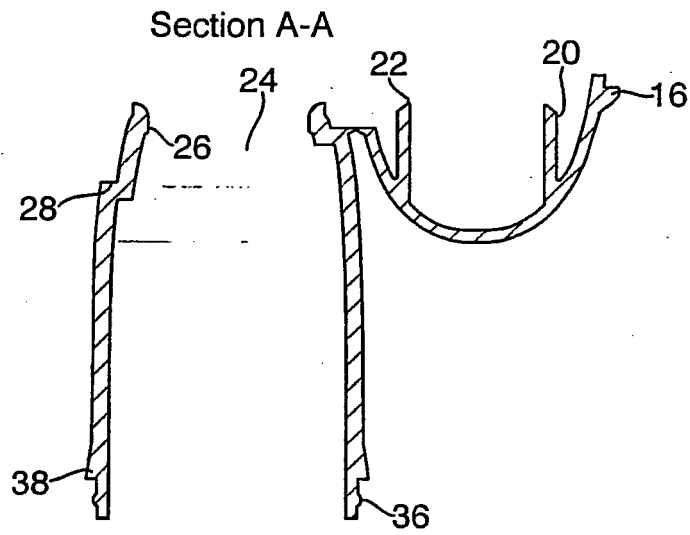


Fig.9.

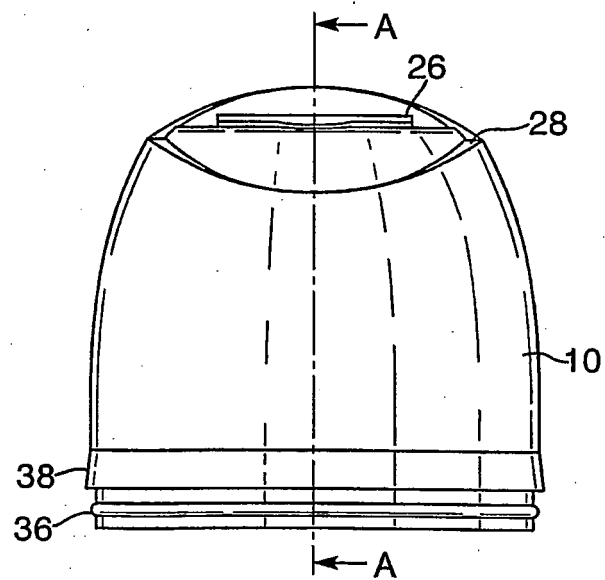


Fig.10.

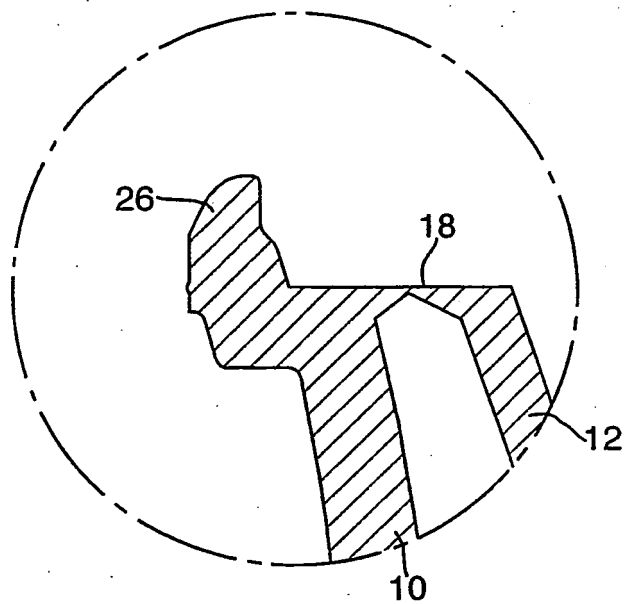
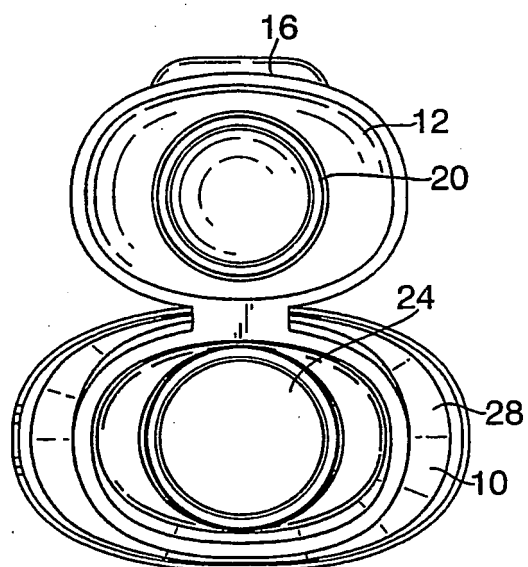


Fig.11.



**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- US 6220435 B [0005]