(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 367 729 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
15.01.2014 Bulletin 2014/03

(21) Application number: **09771428.1**

(22) Date of filing: **15.12.2009**

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

(86) International application number:
PCT/NL2009/050766

(87) International publication number:
WO 2010/071424 (24.06.2010 Gazette 2010/25)

(54) LID PART FOR A CONTAINER

DECKELTEIL EINES BEHÄLTERS

ENSEMBLE COUVERCLE DESTINÉ À UN RÉCIPIENT

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **15.12.2008 PCT/NL2008/050800**

(43) Date of publication of application:
28.09.2011 Bulletin 2011/39

(73) Proprietor: **N.V. Nutricia**
2712 HM Zoetermeer (NL)

(72) Inventors:
- **DOLS, Merijn**
  NL-2512 EX Den Haag (NL)
- **STEVENS, John Boyet**
  Mason
  Ohio 45040 (US)

(74) Representative: **Nederlandsch Octrooibureau**
P.O. Box 29720
2502 LS The Hague (NL)

(56) References cited:
EP-A- 0 955 247
US-A- 4 284 200
US-A1- 2005 087 543
US-B1- 6 761 279
WO-A-03/002416
US-A- 5 657 894
US-A1- 2006 156 811

EP 2 367 729 B1

Printed by Jouve, 75001 PARIS (FR)

Description

Background

[0001] The present invention relates to a lid part for a container.

[0002] WO2007/142522 from the current applicant discloses a such a lid part. In the container assembly disclosed in that application, a container part has a circumferential wall which can be made substantially from cardboard coated with a material for sealing the circumferential wall from the contents of the container, and a lid part attached to a rim of the container part. Applicant uses the container for baby food powder milk. The lid part has a connection portion and a lid which is hingedly or pivotably coupled to the connection portion. The lid rests on the connection portion. The closing of the lid on the connection portion can be improved.

[0003] WO2008/034172 discloses a resealable flexible container lid with pivotable second portion. The second portion closes around a rim surrounding an opening of the container. The disclosure calls it "hoop tension". The rim forms an integrally formed part of the container wall. The second portion should pivot around, or flip up with respect to, a first portion connected to the lid. This may require an almost rubbery behaviour. This construction puts a burden on the lid, in particular when frequent opening and closing is required whilst maintaining a good sealing. Furthermore, the lid is not coupled to a further part via a hinge.

[0004] EP-1.625.948 discloses a packaging for liquid paint which has a plastic wall with an integrally formed peripheral flange. It has a plastic lid having a wall with groove for receiving the flange and an inward circumferential ledge locking under said peripheral flange, providing a snap-action. The lid is not pivotably connected to the rest of the packaging.

[0005] JP-2004-001815 discloses a plastic container having a separate lid. The disclosed embodiments have several interlocking rims and circumferential projections and corresponding recesses which make these lids too cumbersome to open in daily use.

[0006] JP-2006-282199 discloses a container for powdered milk, for instance. The container has a separate lid. This lid has a second, circumferential, skirt attached to the outer wall of the container and a first, circumferential, skirt connected to the lid. A circumferential, removable, band connects the first and second skirt. The first skirt has an inward projection hooking behind a circumferential projection part on the outside of the container wall.

[0007] US-6.889.867 discloses a plastic container which comprises a lid with a closing flap for sealingly closing the container for preventing moisture loss, i.e. moisture leaving the container. The lid is placed over the rest of the container and rotated resulting in mating threads. Sealing of the lid on the rest of the container is achieved using a ridge. The lid further has a relatively small, circular dispensing port having a wall with slots through which cleaning wipes can pass and leave the container. The dispensing port has a circumferential wall for sealingly receiving a circumferential wall of the closing flap. The lid is designed to keep moisture inside the container. To that end, the opening is round and is kept as small as possible.

[0008] US4284200 discloses a child-resistant dispensing closing. The lid has a rim and the opening is surrounded by a rim. Both rims have an extending lip such the lid snaps the opening surrounding rim. The lid has an ear which is closely spaced to a fulcrum such that a pry-means is needed to pry off the lid, thus providing a child-resistant closure.

[0009] US6761279 discloses a package for viscous foodstuff, according to the preamble of claim 1. The package has a container and a closure fitting onto the container. The closure as a base and a lid. The base has specific provisions for cooperating with provisions on the container for attaching the base to the container in such a way that the rim of the container is left free for sealing a seal membrane on the rim. The attachment provisions make this package relatively complex. Furthermore, the sealing of the lid may be improved. Furthermore, stacking these packages may jeopardize the sealing of the lid.

Summary of the Invention

[0010] The invention aims to provide a lid part for a container which is easy to open and close in daily use, according to claim 1.

[0011] An advantage of the invention is to provide a lid part which provides a good, preferably hermetic, sealing of a container, preferably also after frequent daily use.

[0012] Another advantage of the invention is to provide a lid part which allows a container which produces minimal amount of waste.

[0013] The present invention relates to a packaging for powdered infant nutrition. In such packaging, it is important that foreign objects do not enter into the packaging and contaminate the powder. On the other hand the packaging needs to be opened repetitively.

[0014] Powdered baby milk formula is normally retrieved from the container using a metering spoon. The metering spoon is often included in the packaging. Hence, to be able to properly retrieve powder from the container, the access opening should be as large as possible.

[0015] All these demands seem to be difficult to bring together in one single container. For example, the easiest way of providing a good sealing of the contents, however, is to make the access opening as small as possible. Additionally, a better sealing is usually achieve with (semi-) permanent closure means.

[0016] The lid part of the invention, however, makes it possible. The present invention provides a lid part for a container with an access opening that is sufficiently big so that the contents (e.g. powder) can be scoped out of

the container, while having a sealing which effectively reduces entrance of foreign objects. It was surprisingly found that the present lid part with a big access opening could be repetitively closed while maintaining a good sealing.

[0017] The lid part of the current invention provides a good sealing which prevents foreign objects from getting into a container which it covers. And yet, the lid of the lid parts needs to be opened and closed frequently more times a day, and provide a good sealing after frequent use. Preferably, the sealing is achieved in an easy way. In fact, it was found that in an embodiment, about 2 - 5 N for opening force would be acceptable. For closing force, in an embodiment a force of about 6 - 15 N would be acceptable.

[0018] As the container it covers needs to be disposable, it preferably is cheap to produce in large quantities and provide minimal waste. Furthermore, it would be beneficial if the lid part is easy to handle in production as well as in production of a complete container. Additionally, a good sealing is particularly desired if the content of the packaging is hygroscopic. A better closure will reduce the exchange of air (with high water content) between inside and outside the packaging, thereby reducing the formation of lumps in hygroscopic material, e.g. baby milk powder. Hence, the present invention is particularly useful for storage of baby milk powder in an environment with a tropical climate.

[0019] The lid part of the invention can be used for containers with for instance a cardboard wall, but is not limited to such a use. Usually, such a cardboard wall is covered or coated with one or more sealing layers for sealing contents of the container from environmental influences. An example of such a packaging is disclosed in WO2005075314 and WO2007142522 of applicant.

[0020] The lid part is particularly suited is use with a container for storing powder. In fact, it is well suited for storing hygroscopic powder, in particular food products like baby milk. The manual opening and closure preferably requires a very limited effort and/or strength. Preferably, the lid can be opened manually with one hand. This is particularly relevant for packaging of baby milk powder, as the mother preferably is able to open and close the pack while carrying the baby.

[0021] In order to avoid a hand coming into intense contact with the contents, the lid is preferably provided with clamping provisions for clamping and holding the metering spoon of scoop. This further limits the choice of dimensions.

The dimensions of the stem of such a spoon are therefore limited. On the other hand, this may also limit the dimensions of the packaging container. The stem of the spoon in an embodiment is long enough to enable a person to reach the bottom of the container.

Said circumferential first flange has a first perimeter near said connection portion and a second perimeter near the rim of said flange at an end of said flange away from said connection portion, said second perimeter of circumferential first flange is larger than its first perimeter, and said lid has a first internal perimeter near said lid and a second internal perimeter near the rim of said lid flange, said second, internal perimeter of said lid is smaller than said first perimeter near the rim of said lid flange, said perimeters of said lid flange and of first flange mutually adapted to allow said lid to close in a sealing manner on said first flange of said connection portion with its lid flange surrounding said first flange. This allows easy closing and opening, especially for a daily use. Furthermore, by sealing the lid flange around the first flange, it is easier to free the lid part after moulding.

[0022] The first flange on the connection portion together with the lid flange in an embodiment provide a snap locking seal. The corresponding lid flange (seal bead on the lid) thus interlocks with the other, first flange such that proper seal interference. This seal interference can provide suitable seal pressure to prevent moist air from entering or exiting the container or it may be implemented so as to guarantee a maximum gap small enough to prevent the entry of foreign objects in the container. These features also allow for providing seal performance using conventional engineering plastics and may help to avoid additional cost of bi-injected elastomeric materials.

[0023] Further, the flange and lid flange, which may also be referred to as chimney and snap bead features, respectively, could be interchanged to affect the same mechanism and/or two "chimney" features could be used instead. Note that the chimney feature may have similar curvature on the inside and outside wall, which allows it to be injection moulded such that the feature can be stripped from the mould without special floating cores and therefore allows for faster cooling, lower cycle time and therefore lower cost. Further the arrangement of these seal features allows for a robust snap seal performance for relatively large diameter apertures

[0024] Further, the arrangement of the flanges or snap seal features can be tuned to allow for sufficient seal performance, suitable opening force and suitable closing force. Also, the retention provided by the snap-seal prevents the lid from opening partially or fully or appearing to be partially open when the package is disturbed by external forces.

The specific curvature, angle and undercut geometry of the flanges (chimney and seal bead features) and their assembled interference can be tuned to vary the seal pressure, opening and closing force as may be required.

[0025] In an embodiment, the area of the access opening is at least about 60 cm^2. This allows an even better access of a hand. In a further embodiment, the area of the access opening is at least about 75 cm^2.

[0026] Preferably, the area of the access opening is less than about 250 cm^2. Thus, it is possible to provide an easy access for an adult hand, and still allow the lid to be closed sealingly in a simple action. In an embodiment, the area of the access opening is less than about 200 cm^2. These upper and lower limits provide a good trade off between easy access for a human hand, suffi-

cient stiffness, a good closure, and the possibility of providing a scoop or spoon which can be held in the lid and reach the bottom of a container assembly.

[0027] In an embodiment of the invention said first flange bounds said access opening. This can further increase rigidity to the lid part.

[0028] Alternatively, said first flange fans or flares out away from said access opening, thus increasing a perimeter of said first flange.

[0029] In an embodiment, said circumferential first flange circumferentially at its outer periphery thickens near or at said rim of said first flange. Alternatively, or additionally, the inner periphery of the lid flange thickens near or at said rim.

[0030] In an embodiment, said second internal perimeter of said lid flange is about 2-7 % smaller than said first perimeter of said connection portion. Especially when made from a thermoplastic material, it was found that this provide a good sealing, but remained easy enough to open.

[0031] In an embodiment, said access opening is substantially round or substantially elliptic. This will in most cases provide a moisture-tight sealing. In some applications, even a rectangular opening with rounded corners might be acceptable with respect to degree of sealing. These shapes allows a good sealing. In order to provide a moisture proof sealing for hygroscopic powders, it is preferred if large (in view of the dimensions discussed) straight parts are avoided in the access opening or first flange and the lid.

[0032] In an embodiment, an area of said access opening is at least 50 % of the area of the connection portion. This allows enough room to allow a hand to pass with a scoop to retrieve the contents. On the other hand, it allows proper sealing, and allows a suitable scoop or spoon to be clamped inside the lid.

[0033] Alternatively, an area of said access opening is about 60-70 % of the area of the connection portion. This seems to be a proper trade off.

[0034] In an embodiment, an inner diameter of the access opening is at least 9-13 cm. In an embodiment a diameter of the connection portion is at least 10-13 cm. These dimensions provide good sealing and sufficient contents of the container

[0035] In an embodiment, said lid flange is of a thermoplastic material allowing its perimeters to expand when placing said lid on said first flange, and wherein said first and second perimeter of said lid flange, if said lid is not closing said opening, is smaller than the perimeters of said first flange.

[0036] In an embodiment, said the thickness of said first flange in view of its thermoplastic material is selected to provide a stiff flange.

[0037] In an embodiment, said lid part is made of a thermoplastic polymer selected from the group consisting of polyethylene (PE) and polypropylene (PP). These materials are easy to obtain and to process. Furthermore, these materials provide a amount of flexibility and elasticity which allows a good sealing and daily use. If desired, some of the parts of the lid part may be from a more elastic, rubbery material in a co-moulding process. A lid flange closing around the first flange may for instance be moulded from a more elastic polymer material, which material as such is known in the art. Alternatively, an end part of the lid flange can be made from a more ellastic, rubbery material. This may be produced in a co-moulding process.

[0038] In an embodiment, said lid is of a thermoplastic material having a elasticity such that it allows hermetic sealing of said lid on said connection portion via said lid flange on said first flange.

[0039] Alternatively, said connection portion comprises a wall provided with said access opening, and said first flange extends from said wall, said wall and said lid when closing said access opening provide closure for a top of said container part.

[0040] In an embodiment, said connection portion comprises a circumferential rim which has a circumferential groove for receiving said rim of said container part. In an embodiment, a circumscribed area of said circumferential rim is larger than the area of the access opening.

[0041] In an embodiment, said connection portion comprises stacking cams. In a further embodiment, said stacking cams are provided at positions around the first flange. These cams allow stacking of lid parts during production of the containers, and also allow containers to be stacked. The position of the cams prevent loads on the lid, and forces from the side direction.

[0042] The invention further relates to a container assembly comprising a container part with a circumferential wall and a bottom wall, and a lid part according to claims 1 - 18.

[0043] The invention as presently claimed serves to improve the closure of such a container assembly. According to an aspect of the invention, said connection portion is provided with stacking provisions which enclose said access opening and which are complementary with stacking provisions at the bottom of said container part.

[0044] According to an embodiment, the invention furthermore provides a lid part for a container assembly, said lid part comprising a connection portion comprising a circumferential U-shaped rim for receiving an upper edge of a side wall of a container part, wherein an inner wall of said U-shaped rim comprises reinforcement ribs extending beyond the legs of said U-shaped rim, and said connection portion comprising a circumferential abutment surface bordering an upper surface of said lid part, said reinforcement ribs and said abutment surface mutually positioned such that when said lid part is stacked on a second said lid part, extending lower ends of said reinforcement ribs rest on said circumferential abutment surface of said second lid part while keeping the legs of said U-shaped rim of said lid part free from said circumferential abutment surface of said second said lid part.

[0045] The inventions described all relate to improving

the closure of a container. In fact, they all relate to improving the reliability of this closure. In certain embodiments, stacking provisions are provided in such a way that they enclose the lid when it seals the access opening. The stacking provisions on the connection portion are thus arranged around the access opening. In this way, when container assemblies are stacked on top of one another, they do not load the lid with forces which may compromise the sealing. As the containers are often used for milk powder for babies and infants, for instance, it is very important that the container assembly is sealed and remains sealed.

[0046] In an embodiment, said stacking provisions on said connection portion comprise cams. These cams can be produced in an easy way, for instance as extended wall parts. Alternatively, one or more rims may be provided around the access opening. Such rims are positioned in such a way that they allow opening and access to the lid for opening and closing.

[0047] In an embodiment, said cams are positioned at corners of a rectangle which encloses said lid when sealing said access opening. In positioning the stacking provisions on the connection part in this way, rotation-free stacking can be made possible.

[0048] In an embodiment, the height of said cams is at least the height of said lid when sealing said access opening. In fact, when the stacking provisions on the connection part are at least as high as the lid, they prevent the bottom of a next container assembly stacked on top of this container assembly from even touching the lid.

[0049] In an embodiment, said connection portion comprises a circumferential rim for receiving an upper edge of a side wall of said container part in a groove, the inner perimeter of said rim being complementary to the perimeter enclosing said stacking provisions of said lid part for providing complementary stacking means for stacking a series of lid parts. Thus, the stacking provisions on the connection part have a function during production, i.e. keeping lid parts stacked and positioned, and afterwards in keeping container assemblies securely stacked without loading the lids.

[0050] In an embodiment of the lid with U-shaped rim, said abutment surface is connected to said U-shaped rim and defines an access opening which is closed by said lid. The invention further relates to a container comprising the lid part as described above, and a container part, wherein said container part comprises a bottom and connected to said bottom a circumferential container wall ending in a rim for receiving said lid part.

[0051] The various aspects discussed in this patent can be combined in order to provide additional advantages.

Description of the Drawings

[0052] The invention will be further elucidated referring to an embodiment of a lid part and a container assembly using this lid part shown in the attached drawings, showing in:

Fig. 1 use of the lid part on a container assembly;
Fig. 2 a perspective top view on a lid part with open lid;
Fig. 3 a perspective view of figure 2 from below;
Fig. 4 a bottom view of a lid part with closed lid;
Fig. 5 a cross section as indicated in figure 4;
Fig. 6 a detail of a cross section of the lid flange, and
Fig. 7 stacked lid parts.

Detailed Description of Embodiments

[0053] In figure 1, a container assembly 1 with a lid part 2 of the invention is presented. The container has a container part 3. The container part 3 can be made of cardboard, coated with a synthetic coating layer known in the art for making it suitable for containing food or liquids. The container part can also be made of plastic or metal. Preferably, it is used for holding food or liquids. In an embodiment, the container part 3 can have a synthetic coating layer on its inner surface, and a sealing foil of sealing membrane is attached below the rim or edge of the container part 3, in an embodiment about 1-3 cm below the edge. The sealing foil can be attached to the inner surface of the container part 3, for instance through heat sealing. Thus, some space can be provided between the lid and the seal for storing for instance a measuring scoop or spoon.

[0054] Lid part 2 is further elaborated in figures 2 and 3, showing a 3D view of the lid part 2 with opened lid 4 from above (figure 2) and from below (figure 3). Lid part 2 comprises a connection portion 5, a (living) hinge 9 and a lid 4. Lid 4 is thus pivotably connected to connection portion 5. Connection portion 5 defines an access opening 6. In this embodiment, a first flange 7 bounds the access opening 6. Lid 4 is provided with a lid flange 8 which fits on the first flange 7 to close off access opening 6 and to hermetically seal a container assembly 1. In this embodiment, the access opening is almost elliptic. The access opening 6 can also be round. Alternatively, it can be rectangular with rounded corners. Important in all there embodiments, however, is that the lid flange 8 fits around the flange 7 to hermetically seal the access opening 6.

[0055] Connection portion 5 further comprises a wall 11 which is provided with said access opening 6. On the wall 11, cam elements 14 are provided. The use of such cams 14 as such also explained in W02007142522 of the current applicant. These cams 14 provide part of stacking means for stacking lid parts in production. Furthermore, these cams 14 provide part of stacking means for stacking complete container assemblies for instance in stores. In this embodiment, the cams 14 are provided on the connection portion 5. An advantage of this is that the lid 4 is not loaded. Thus, the quality of closure is can not be compromised. Yet, the height of the lid 4 in closed position is equal or substantially equal to the height of

the cams 14. Thus, when container assemblies are stacked, the load of the containers will keep the lids pressed close, while preventing loads from other directions.

[0056] Connection portion 5 is further provided with a circumferential rim 12, which may be called a U-shaped rim. It has a groove 13 to receive an upper edge of the side wall of the container part 3. Fixation of the connection portion 5 to the container wall can be effected through any means known in the art. In an embodiment, a hot melt adhesive is provided in the groove 13.

[0057] Figure 4 shows a view bottom up, of a lid part 2 with closed lid. In this drawing, a cross section is indicated. This cross section is further shown in figure 5. This cross section shows more clearly how lid flange 8 of lid 4 closes on flange 7 of the connection portion 5. In figure 7, this is shown in more detail.

[0058] Figure 5 also shows the connection portion rim 12 more clearly. In the view of figure 5, reinforcement ribs 20 indicated which provide additional rigidity to rim 12.

[0059] Figure 6 shows a detail of the lid flange 8 closing on the flange 7 of the container part 5. Lid flange 8 fits clampingly around flange 7 of connection portion 5. In the situation of figure 7, where the lid is closed on the connection part 5, the perimeter 23 at the edge 15 of flange 7 is identical to the (internal) perimeter of lid flange 8 at position 22. At position 16, the lid flange 8 is thickened. Flange 7 flares out. It is shaped in such a way that its outer circumferential surface fits against the inner circumferential surface of the lid flange 8. The lid flange 8 is made from a thermoplastic material. This allows some degree of elasticity. Especially, here the lid flange has a thickness in view of the elasticity of the used thermoplastic material. The lid flange 8 fits somewhat elastically around the relatively stiff flange 7. In order to close the lid and to make it easy to do this frequently, the lower end of lid flange 8 has a bevelled off edge. This makes it easy to flip the edge of lid flange 8 over the edge of flange 7. When not fitted on flange 7, the lid and in particular the lid flange 8 is dimensioned such that the smallest internal perimeter of lid flange is smaller than the smallest (circumscribing or outer) perimeter of the flange 7. Preferably, the outer perimeter of flange 7 at the edge 15 is larger than the inner perimeter of lid flange 8 at position 22. In this way, the lid 4 cannot flip off spontaneously. In an embodiment, the flange 7 flares out. The shape of the lid flange follows this shape or follows it when stretched a little. The lid flange 8 is stretched a little to elastically fit around flange 7. This makes a hermetic sealing possible. In the embodiment shown in the drawings, the smallest diameter of the flange 7 is 101.89 mm, the largest diameter is 112.65 mm. In an embodiment, the thermoplastic material is polypropylene (PP). In this case, the inner diameters of the lid are for instance 101.36 mm and 112.12 mm. The outer diameters are for instance 104.0 mm and 114.8 mm. For this material, the thinnest part of lid flange 8, D1, can be about 0.7-0.8 mm and the thickest part D2 is about 1.1-1.2 mm. The height of the lid flange is about 3.9-4.5 mm, and the height of a corresponding flange 7 is about 2.9-3.1 mm. In practice, the diameter of the lid flange will be about 3-7 % smaller than the corresponding diameter of the flange 7. In practice, the lid flange 8 will taper inwardly a little, with an angle of about 2-5 degrees. Due to its elasticity, the lid flange 8 when closed around the first flange 7, will stretch a little and the lid flange 8 will taper no longer, and fits closely around the first flange 7. In the drawing, the co-operating tapered shapes of the lid flange 8 and the flange 7 pull the lid onto the outer surface of wall 11 of the connection portion in order to provide an additional seal of the edge of the lid flange 8 and the wall surface 11.

[0060] In order to provide the lid flange 8 with a certain amount of elasticity while on the same time provide a connection portion and in particular its flange 7 with sufficient rigidity, and to allow the lid part to be made cheap and in large quantities, in an embodiment the lid part is made from thermoplastic material. In particular, it is made of polyethylene (PE) or polypropylene (PP). The material in an embodiment is supple and elastic enough to allow the lid flange 8 to be stretched around the flange 7. Thus, an hermetic seal is possible.

[0061] In an embodiment, the volume of a container having the lid part is about 0.5-2 litre. This volume is determined by depth, width and height of the container. In order to be able to provide a metering scoop having a length long enough to reach the bottom of the container inside the container, one of dimensions of the diagonal cross section or the width or depth is preferably in the same order of magnitude as the height of the container. Furthermore, it is preferred if the scoop can be clamped to the inside of the lid. In practise, the container may have a depth of about 9-13 cm, a width of about 11-16 cm, and a height of about 10-18 cm. The scoop or spoon will have a total length of about 9-11 cm. The access opening will thus need to have a largest diameter of at least about 9-11 cm, depending on the total length of the spoon or scoop used. The area of the access opening 6 will be at least about 50 % of the cross section area of the container fitted with the lid part. An upper limit which can be attained will be about 85 %. In the example presented, this number will be about 60-70%. This will allow the lid to be large enough, both in area as well as in maximum diameter. At the same time, it will leave enough room for allowing the stacking cams 14 on the connection portion 5.

[0062] A big access opening is preferred for easy entrance with a scoop. Furthermore, for hygiene reasons when offering a filled container to the public in a store, the scoop can be provided clamped in clamps provided in the inside of the lid or between the lid and the product seal which is additionally provided in the container below the lid (i.e., in the space provided between lid and product seal). In an embodiment, the lid has at least minimal dimensions so as to fit the scoop.

[0063] For easy opening, said lid 4 comprises an opening lip 21, here attached to the rim of lid flange 8. The

opening lip 21 is at its edge blocked by tamper evident strip 22. This strip 22 has cams gripping the edge of opening lip 21. The strip 22 is attached to the connection portion 5 via thin bridges of material. These bridges should be thin enough to break if the opening lip 21 passes the cams of strip 22.

[0064] Figure 7 shows two stacked lid parts 2, 2'. The cams 14 on the connections portion 5 provide a secure stacking for defining the position of the lid parts in producing container assemblies, while preventing loading the lid 4. Here, the stacking cams are provided on wall 11. In fact, as is already indicated in figure 1, a first use of cams 14 is to provided one part of stacking means which work together with complementary stacking provisions at the lower part of the container part, in particular in the bottom. This allows secure stacking of several containers in top of one another. Furthermore, as the stacking provisions on the lid part are provided on the connection portion around the lid (in closed position), when stacking container assemblies provided with the lid parts, the closure of the lid is not compromised. In the embodiment shown, the stacking provisions on the lid part extend a little above the lid in order to further secure closure or in order to not compromise closure.

[0065] A second use of the stacking provisions on the lid part is possible if the positioning of these stacking provisions is adapted to the dimension of the connection portion. Thus, the effect and use of stacking lid parts described above is realized.

[0066] The positioning of the stacking provisions 14 on the connection portion is such that a container assembly stacked on to of the lid part cannot rotate. I.e., it cannot rotate about an axis normal to the access opening. To that end, the cams 14 are in this embodiment provided at corners of a (virtual) rectangle. The complementary stacking provisions at the bottom of the container part provide abutment at sides of the rectangle against the stacking provisions 14 on the lid part 2.

[0067] In this embodiment, the stacking provisions on the container part are provided by a circumferential rim at the bottom of the container part as indicated in figure 1.

[0068] It will also be clear that the above description and drawings are included to illustrate some embodiments of the invention, and not to limit the scope of protection. Starting from this disclosure, many more embodiments will be evident to a skilled person which are within the scope of protection of this invention and which are obvious combinations of prior art techniques and the disclosure of this patent, as limited by the appended claims.

Claims

1. A lid part for a container for powdered infant nutrition, said lid part (2) substantially made from a thermoplastic material and comprising a connection portion (5) for connection to a rim of a container part and a lid (4) which is pivotably connected to said connection portion (5) said lid (4) having a central portion and a circumferential lid flange (8) extending from said central portion (2), said connection portion (5) comprising a wall (11) provided with an access opening (6) of a size sufficient to allow a hand to pass with a scoop to retrieve the content, an area of said access opening being at least 50 cm^2, and a circumferential first flange (7) surrounding said access opening (6) and extending away from said wall (11), said circumferential first flange (7) has a first external perimeter near said wall (11) and a second external perimeter near the rim of said first flange (7), such that said first flange (7) tapers outwards from said wall (11),
characterised in that, said lid flange (8) having a first internal perimeter near said central portion (2) and a second internal perimeter near the rim of said lid flange (8), said second, internal perimeter of said lid is smaller than said first perimeter near the rim of said lid flange (8), such that said lid flange (8) tapers inwards from said central portion (2),
whereby perimeters of said lid flange (8) and of the first flange (7) are mutually adapted to allow said lid (4) to close in a sealing manner on said first flange (7) of said connection portion (5) such that the co-operating tapered shapes of the lid flange (8) and of the first flange (7) pull the lid (4) onto the wall (11) of the connection portion (5) whereby an additional seal is provided between the edge of the lid flange (8) and the surface of the wall (11) surrounding the first flange (7).

2. The lid part according to claim 1, wherein said area is at least about 75 cm^2.

3. The lid part according to any one of the preceding claims, wherein said area is less than about 200 cm^2.

4. The lid part according to any one of the preceding claims, wherein said first flange (7) bounds said access opening (6).

5. The lid part according to any one of the preceding claims, wherein the lid flange (8) comprises a bevelled off inside edge at its rim.

6. The lid part according to any one of the preceding claims, wherein said circumferential first flange (7) circumferentially at its outer periphery thickens near or at said rim of said first flange (7).

7. The lid part according to any one of the preceding claims, wherein said second internal perimeter of said lid flange (8) is about 2-7 % smaller than said first external perimeter of said first flange (7).

8. The lid part according to any one of the preceding claims, wherein said access opening (6) is substan-

tially round or substantially elliptic.

9. The lid part according to any one of the preceding claims, wherein an area of said access opening (6) is at least 50 % of the area of the connection portion.

10. The lid part according to any one of the preceding claims, wherein an inner diameter of the access opening (6) is about 9-13 cm, and a diameter of the connection portion (5) is about 10-13 cm.

11. The lid part according to anyone of the preceding claims, wherein said lid flange (8) is of a thermoplastic material allowing its perimeters to expand when placing said lid (4) on said first flange (7), and wherein said first and second perimeter of said lid flange, if said lid is not closing said opening, is smaller than the perimeters of said first flange.

12. The lid part according to any one of the preceding claims, wherein the thickness of said first flange (7) in view of its thermoplastic material is selected to provide a stiff flange.

13. The lid part according to any one of the preceding claims, wherein said lid part (4) is made of a thermoplastic polymer selected from the group consisting of polyethylene (PE) and polypropylene (PP).

14. The lid part according to any one of the preceding claims, wherein said lid is of a thermoplastic material having an elasticity such that it allows hermetic sealing of said lid (4) on said connection portion (5) via said lid flange (8) and said first flange (7).

15. The lid part according to any one of the preceding claims, wherein the lid part (2) is formed by injection moulding such that the lid (4) is pivotably connected to the connection portion (5) by a living hinge (9).

16. The lid part according to any one of the preceding claims, wherein said connection portion (5) comprises a circumferential rim (12) which has a circumferential groove (13) for receiving said rim of said container part.

17. The lid part according to any one of the preceding claims, wherein said connection portion (5) comprises stacking cams (14).

18. The lid part according to the previous claim, wherein a circumscribed area of said circumferential rim (12) is larger than the area of the access opening (6).

19. A container comprising the lid part of the preceding claims and a container part, wherein said container part comprises a bottom and connected to said bottom a circumferential container wall ending in a rim for receiving said lid part.

Patentansprüche

1. Deckelteil für ein Behältnis für gepulverte Säuglingsnahrung, wobei das Deckelteil (2) im Wesentlichen aus einem thermoplastischen Material gemacht ist und einen Verbindungsabschnitt (5) zur Verbindung mit einem Rand eines Behältnisteils und einen Dekkel (4), der schwenkbar mit dem Verbindungsabschnitt (5) verbunden ist, aufweist, wobei der Deckel (4) einen Mittelabschnitt und einen umlaufenden Deckelflansch (8) aufweist, der sich von dem Mittelabschnitt (2) erstreckt, wobei der Verbindungsabschnitt (5) eine Wand (11) aufweist, die mit einer Zugriffsöffnung (6) mit einer Größe versehen ist, die ausreichend ist, von einer Hand mit einem Löffel passiert zu werden, um den Inhalt herauszuholen, wobei die Fläche der Zugriffsöffnung wenigstens 50 cm^2 beträgt und wobei ein umlaufender erster Flansch (7) die Zugriffsöffnung (6) umgibt und sich von der Wand (11) weg erstreckt, wobei der umlaufende erste Flansch (7) einen ersten Außenumfang nahe der Wand (11) und einen zweiten Außenumfang nahe des Randes des ersten Flansches (7) hat, so dass sich der erste Flansch (7) von der Wand (11) nach außen neigt,
dadurch gekennzeichnet, dass der Deckelflansch (8) einen ersten Innenumfang nahe des Mittelabschnitts (2) und einen zweiten Innenumfang nahe des Randes des Deckelflansches (8) hat, wobei der zweite Innenumfang des Deckels kleiner ist als der erste Umfang nahe des Randes des Deckelflansches (8), so dass sich der Dekkelflansch (8) von dem Mittelabschnitt (2) nach innen neigt, wobei Umfänge des Deckelflansches (8) und des ersten Flansches (7) gegenseitig angepasst sind, dem Deckel (4) zu erlauben, sich in einer abgedichteten Weise auf dem ersten Flansch (7) des Verbindungsabschnitts (5) zu schließen, so dass die zusammenwirkenden geneigten Formen des Deckelflansches (8) und des ersten Flansches (7) den Deckel (4) auf die Wand (11) des Verbindungsabschnitts (5) ziehen, wodurch eine zusätzliche Dichtung zwischen der Kante des Deckelflansches (8) und der Oberfläche der Wand, die den ersten Flansch (7) umgibt, bereitgestellt wird.

2. Deckelteil nach Anspruch 1, wobei die Fläche wenigstens etwa 75 cm^2 beträgt.

3. Deckelteil nach einem der vorgehenden Ansprüche, wobei die Fläche weniger als etwa 200 cm^2 beträgt.

4. Deckelteil nach einem der vorgehenden Ansprüche, wobei der erste Flansch (7) die Zugriffsöffnung (6) begrenzt.

5. Deckelteil nach einem der vorgehenden Ansprüche, wobei der Deckelflansch (8) eine abgeschrägte Innenkante an seinem Rand aufweist.

6. Deckelteil nach einem der vorgehenden Ansprüche, wobei der umlaufende erste Flansch (7) sich bei seinem äußeren Randbereich in der Nähe von oder bei dem Rand des ersten Flansches (7) umlaufend verdickt.

7. Deckelteil nach einem der vorgehenden Ansprüche, wobei der zweite Innenumfang des Deckelflansches (8) etwa 2 - 7 % kleiner ist als der erste Außenumfang des ersten Flansches (7).

8. Deckelteil nach einem der vorgehenden Ansprüche, wobei die Zugriffsöffnung (6) im Wesentlichen rund oder im Wesentlichen elliptisch ist.

9. Deckelteil nach einem der vorgehenden Ansprüche, wobei eine Fläche der Zugriffsöffnung (6) wenigstens 50 % der Fläche des Verbindungsabschnitts beträgt.

10. Deckelteil nach einem der vorgehenden Ansprüche, wobei ein Innendurchmesser der Zugriffsöffnung (6) etwa 9 - 13 cm beträgt und ein Durchmesser des Verbindungsabschnitts (5) etwa 10 - 13 cm beträgt.

11. Deckelteil nach einem der vorgehenden Ansprüche, wobei der Deckelflansch (8) aus einem thermoplastischen Material ist, der es seinen Umfängen erlaubt zu expandieren, wenn der Deckel (4) auf dem ersten Flansch (7) platziert wird, und wobei der erste und zweite Umfang des Deckelflansches, wenn der Deckel die Öffnung nicht verschließt, kleiner sind als die Umfänge des ersten Flansches.

12. Deckelteil nach einem der vorgehenden Ansprüche, wobei die Dicke des ersten Flansches (7) angesichts seines thermoplastischen Materials gewählt wird, um einen steifen Flansch bereitzustellen.

13. Deckelteil nach einem der vorgehenden Ansprüche, wobei das Deckelteil (4) aus einem thermoplastischen Polymer gemacht ist, das aus der Gruppe bestehend aus Polyethylen (PE) und Polypropylen (PP) ausgewählt wird.

14. Deckelteil nach einem der vorgehenden Ansprüche, wobei der Deckel aus einem thermoplastischen Material ist, das eine derartige Elastizität hat, die ein hermetisches Abdichten des Deckels (4) auf dem Verbindungsabschnitt (5) über den Deckelflansch (8) und den ersten Flansch (7) erlaubt.

15. Deckelteil nach einem der vorgehenden Ansprüche, wobei das Deckelteil (2) durch Spritzgießen geformt ist, so dass der Deckel (4) durch ein flexibles Gelenk (9) schwenkbar mit dem Verbindungsabschnitt (5) verbunden ist.

16. Deckelteil nach einem der vorgehenden Ansprüche, wobei der Verbindungsabschnitt (5) einen umlaufenden Rand (12) aufweist, der eine umlaufende Nut (13) zur Aufnahme des Randes des Behältnisteils hat.

17. Deckelteil nach einem der vorgehenden Ansprüche, wobei der Verbindungsabschnitt (5) Stapelnocken (14) aufweist.

18. Deckelteil nach einem der vorgehenden Ansprüche, wobei ein von dem umlaufenden Rand (12) umschriebener Bereich größer als der Bereich der Zugriffsöffnung (6) ist.

19. Behältnis aufweisend das Deckelteil der vorgehenden Ansprüche und ein Behältnisteil, wobei das Behältnisteil einen Boden und mit dem Boden verbunden eine umlaufende Behältniswand, die in einem Rand zur Aufnahme des Deckelteils endet, aufweist.

Revendications

1. Ensemble couvercle pour un récipient pour produit alimentaire en poudre pour bébé, ledit ensemble couvercle (2) étant sensiblement réalisé à partir d'un matériau thermoplastique et comprenant une partie de raccordement (5) pour le raccordement à un bord d'un ensemble récipient et un couvercle (4) qui est raccordé de manière pivotante à ladite partie de raccordement (5), ledit couvercle (4) ayant une partie centrale et un rebord de couvercle circonférentiel (8) s'étendant à partir de ladite partie centrale (2), ladite partie de raccordement (5) comprenant une paroi (11) prévue avec une ouverture d'accès (6) d'une taille suffisante pour permettre le passage d'une main avec une cuillère pour récupérer le contenu, une surface de ladite ouverture d'accès étant d'au moins 50 cm^2, et un premier rebord circonférentiel (7) entourant ladite ouverture d'accès (6) et s'étendant à distance de ladite paroi (11), ledit premier rebord circonférentiel (7) a un premier périmètre externe à proximité de ladite paroi (11) et un second périmètre externe à proximité du bord dudit premier rebord (7), de sorte que ledit premier rebord (7) se rétrécit progressivement vers l'extérieur à partir de ladite paroi (11),
caractérisé en ce que, ledit rebord de couvercle (8) ayant un premier périmètre interne à proximité de ladite partie centrale (2) et un second périmètre interne à proximité du bord dudit rebord de couvercle (8), ledit second périmètre interne dudit couvercle est inférieur audit premier périmètre à proximité du

bord dudit rebord de couvercle (8), de sorte que ledit rebord de couvercle (8) se rétrécit progressivement vers l'intérieur à partir de ladite partie centrale (2), moyennant quoi les périmètres dudit rebord de couvercle (8) et dudit premier rebord (7) sont mutuellement adaptés pour permettre audit couvercle (4) de se fermer d'une manière étanche sur ledit premier rebord (7) de ladite partie de raccordement (5) de sorte que les formes de coopération progressivement rétrécies du rebord de couvercle (8) et du premier rebord (7) tirent le couvercle (4) sur la paroi (11) de la partie de raccordement (5), moyennant quoi un joint d'étanchéité supplémentaire est prévu entre le bord du rebord de couvercle (8) et la surface de la paroi (11) entourant le premier rebord (7).

2. Ensemble couvercle selon la revendication 1, dans lequel ladite surface est d'au moins environ 75 cm^2.

3. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ladite surface est inférieure à environ 200 cm^2.

4. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ledit premier rebord (7) délimite ladite ouverture d'accès (6).

5. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel le rebord de couvercle (8) comprend un bord interne biseauté au niveau de son bord.

6. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ledit premier rebord circonférentiel (7) au niveau de sa périphérie externe, s'épaissit de manière circonférentielle à proximité de ou au niveau dudit bord dudit premier rebord (7).

7. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ledit second périmètre interne dudit rebord de couvercle (8) est environ 2-7% plus petit que le premier périmètre externe dudit premier rebord (7).

8. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ladite ouverture d'accès (6) est sensiblement ronde ou sensiblement elliptique.

9. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel une surface de ladite ouverture d'accès (6) représente au moins 50% de la surface de la partie de raccordement.

10. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel un diamètre interne de l'ouverture d'accès (6) est d'environ 9-13 cm, et un diamètre de la partie de raccordement (5) est d'environ 10-13 cm.

11. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ledit rebord de couvercle (8) est réalisé avec un matériau thermoplastique permettant à ses périmètres de s'expanser lorsque l'on place ledit couvercle (4) sur ledit premier rebord (7), et dans lequel lesdits premier et second périmètres dudit rebord de couvercle, si ledit couvercle ne ferme pas ladite ouverture, sont inférieurs aux périmètres dudit premier rebord.

12. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel l'épaisseur dudit premier rebord (7) par rapport à son matériau thermoplastique, est choisie pour fournir un rebord rigide.

13. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ledit ensemble couvercle (4) est réalisé avec un polymère thermoplastique choisi dans le groupe comprenant le polyéthylène (PE) et le polypropylène (PP).

14. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ledit couvercle est réalisé avec un matériau thermoplastique ayant une élasticité de sorte qu'elle permet la fermeture hermétique dudit couvercle (4) sur ladite partie de raccordement (5) via ledit rebord de couvercle (8) et ledit premier rebord (7).

15. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel l'ensemble couvercle (2) est formé par moulage par injection de sorte que le couvercle (4) est raccordé de manière pivotante à la partie de raccordement (5) par une charnière active (9).

16. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ladite partie de raccordement (5) comprend un bord circonférentiel (12) qui a une rainure circonférentielle (13) pour recevoir ledit bord dudit ensemble récipient.

17. Ensemble couvercle selon l'une quelconque des revendications précédentes, dans lequel ladite partie de raccordement (5) comprend des cames d'empilement (14).

18. Ensemble couvercle selon la revendication précédente, dans lequel une surface circonscrite dudit bord circonférentiel (12) est supérieure à la surface de l'ouverture d'accès (6).

19. Récipient comprenant l'ensemble couvercle selon les revendications précédentes et un ensemble ré-

cipient, dans lequel ledit ensemble récipient comprend un fond et raccordée audit fond, une paroi de récipient circonférentielle se terminant par un bord pour recevoir ledit ensemble couvercle.

Fig 1

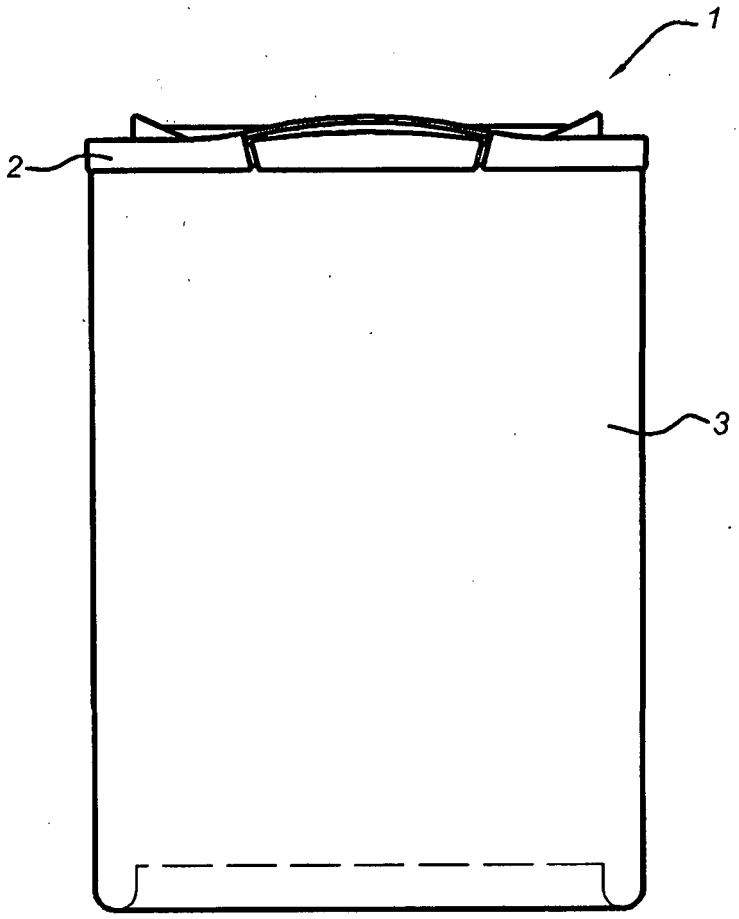


Fig 2

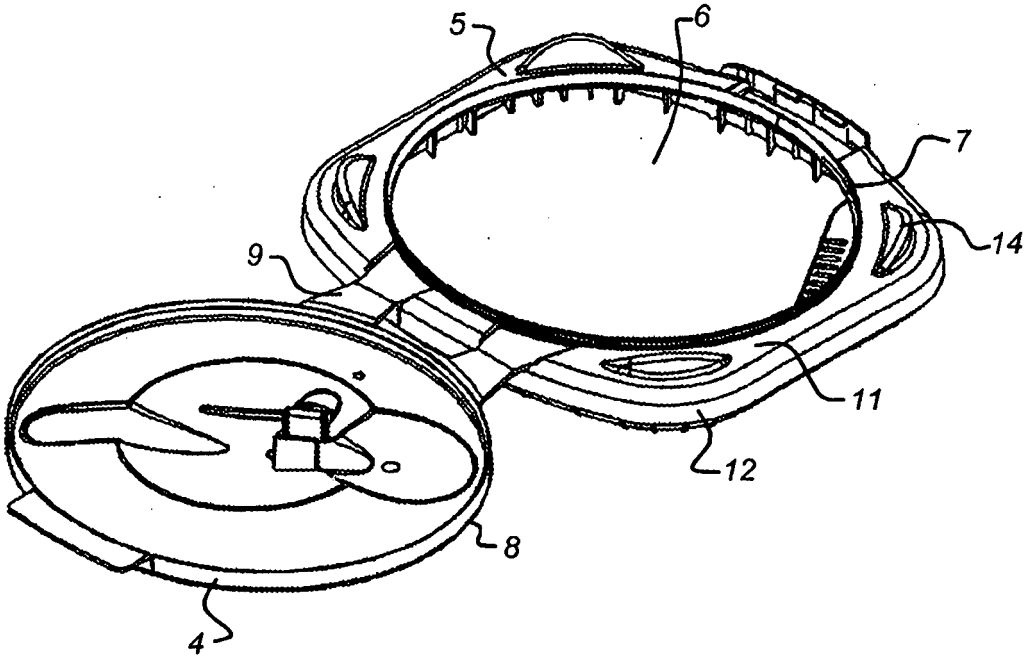


Fig 3

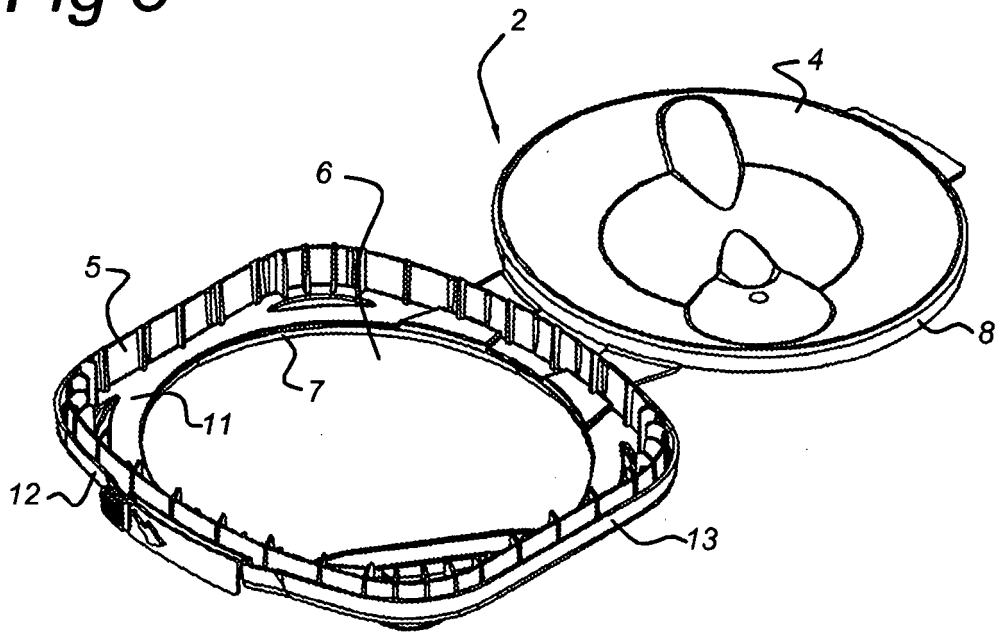


Fig 4

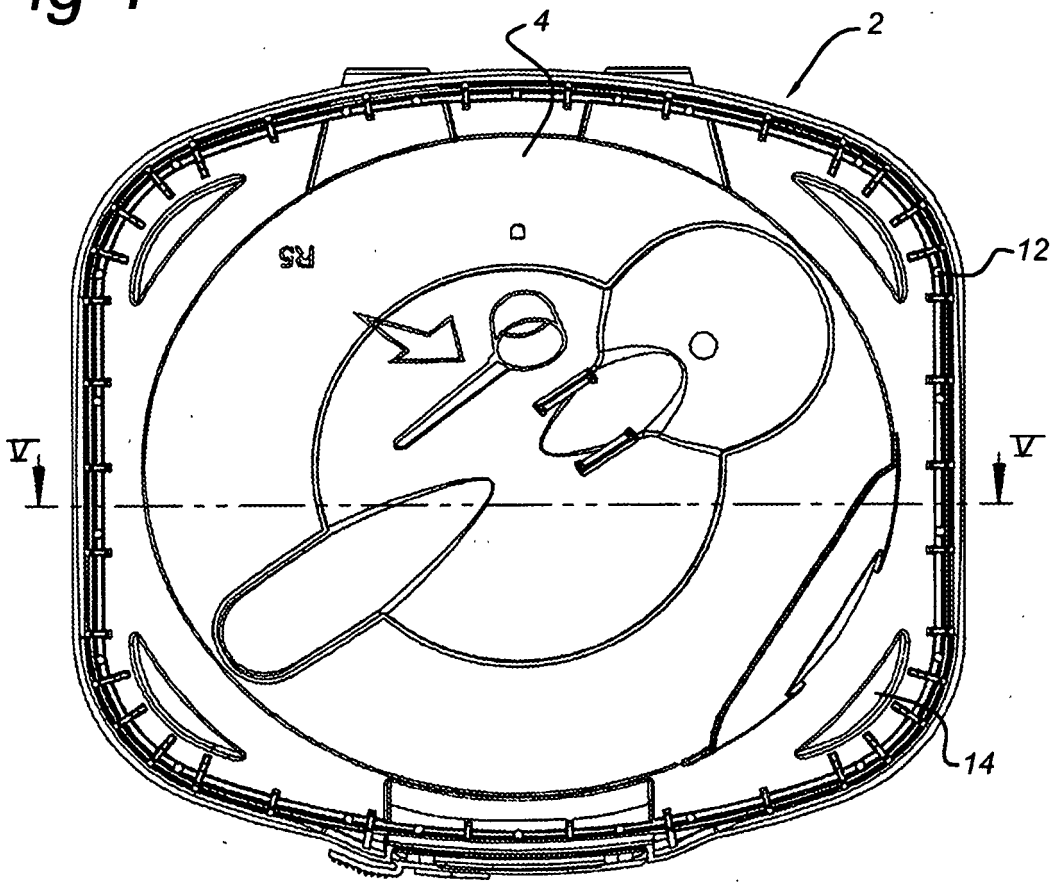


Fig 5

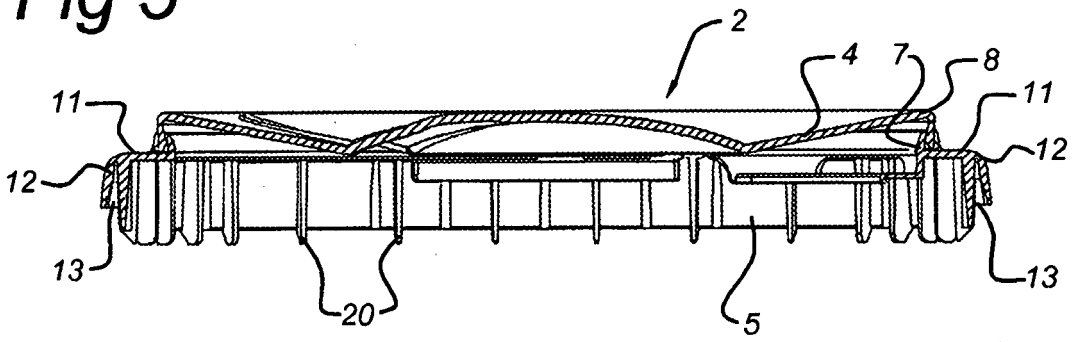


Fig 6

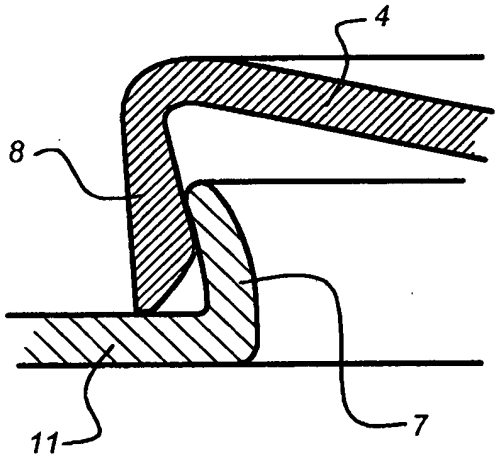
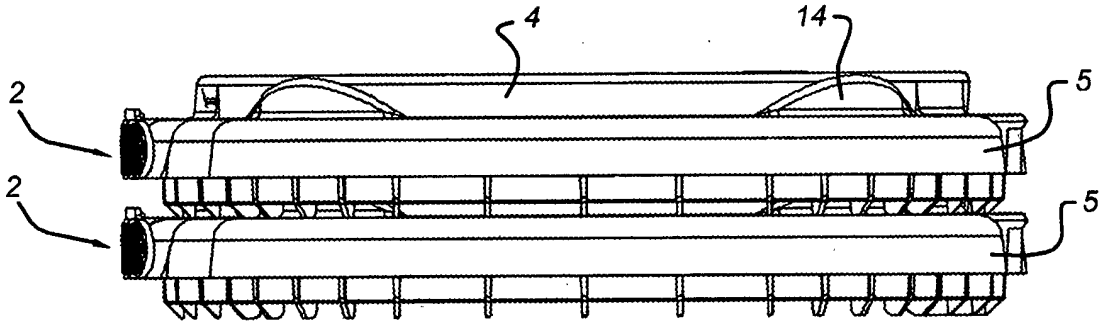


Fig 7



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

- WO 2007142522 A **[0002] [0019] [0055]**
- WO 2008034172 A **[0003]**
- EP 1625948 A **[0004]**
- JP 2004001815 A **[0005]**
- JP 2006282199 A **[0006]**
- US 6889867 B **[0007]**
- US 4284200 A **[0008]**
- US 6761279 B **[0009]**
- WO 2005075314 A **[0019]**