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

(11) **EP 2 743 199 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.06.2014 Bulletin 2014/25

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

(21) Application number: **14151105.5**

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

(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**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
09771428.1 / 2 367 729

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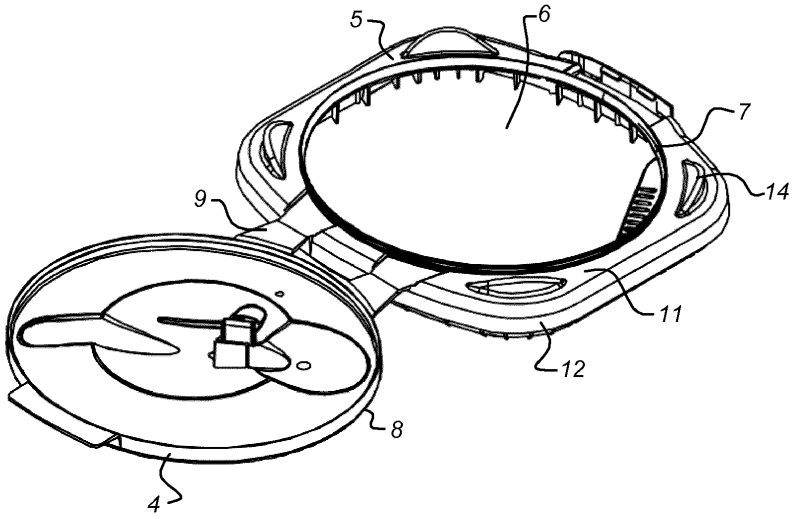
Remarks:
This application was filed on 14-01-2014 as a divisional application to the application mentioned under INID code 62.

(54) **Lid part for a container**

(57) The invention relates to a lid part (2) for a container, said lid part 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 connection portion comprising an access opening (6) and a circumferential first flange (7) surrounding said access opening (6), said lid (4) comprising a circumferential lid flange (8) extending towards said connection portion (5), perimeters of said lid flange (8) and of first flange (7) mutually adapted to allow said lid (4) to close in a sealing manner on said first flange (7) of said connection portion (5), and an area of said access opening (6) is at least about 50 cm^2. The connection portion (5) comprises stacking cams, said cams being provided at positions around the first flange (7).

Fig 2



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Description

Background

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

[0002] W02007/142522 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] W02008/034172 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. 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.

[0006] 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.

[0007] 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.

[0008] US6761279 discloses a package for viscous foodstuff 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

[0009] The invention aims to provide a lid part for a container which is easy to open and close in daily use.

[0010] Another object 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.

[0011] Another object of the invention is to provide a lid part which allows a container which produces minimal amount of waste.

[0012] According to a first aspect of the invention this is realized with a lid part for a container, said lid part substantially made from a thermoplastic material and comprising a connection portion for connection to a rim of a container part and a lid which is pivotably connected to said connection portion,
said connection portion comprising an access opening and a circumferential first flange surrounding said access opening,
said lid comprising a circumferential lid flange extending towards said connection portion,
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,
and an area of said access opening is at least about 50 cm2.

[0013] In one embodiment the present invention related 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 re-

trieved 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 scooped 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 wast. 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 W02005075314 and W02007142522 of applicant. For jurisdictions in which this is meaningful, these documents are incorporated by reference as if fully set forth in this document.

[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.

[0022] 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. In an embodiment, 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, 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.

[0023] 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.

[0024] Further, in a embodiment 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

[0025] 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.

[0026] 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.

[0027] 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 an embodiment, the area of the access opening is at least about 75 cm^2.

[0028] In an embodiment, 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, sufficient 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.

[0029] In an embodiment of the invention, said first flange bounds said access opening. This can further increase rigidity to the lid part.

[0030] In an embodiment, said first flange fans or flares out away from said access opening, thus increasing a perimeter of said first flange.

[0031] 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.

[0032] 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 provided a good sealing, but remained easy enough to open.

[0033] 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 allow 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.

[0034] 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.

[0035] In an embodiment, 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.

[0036] 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

[0037] 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.

[0038] In an embodiment, said the thickness of said first flange in view of its thermoplastic material is selected to provide a stiff flange.

[0039] 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 elastic, rubbery material. This may be produced in a co-moulding process.

[0040] 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.

[0041] In an embodiment, 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.

[0042] 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.

[0043] 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 prevents loads on the lid, and forces from the side direction.

[0044] The invention further relates to a container assembly comprising a container part with a circumferential wall and a bottom wall, and a lid part comprising a connection portion for connection to a rim of said circumferential wall and a lid which is pivotably connected to said connection portion, said connection portion comprising an upper wall provided with an access opening which can be sealed with said lid, and 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.

[0045] In an alternative, the invention aims to improve the closure of a container assembly.

[0046] According to that aspect of the invention, this is realized with a container assembly comprising a container part with a circumferential wall and a bottom wall, and a lid part comprising a connection portion for connection to a rim of said circumferential wall and a lid which is pivotably connected to said connection portion, said connection portion comprising an upper wall provided with an access opening which can be sealed with said lid, and 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.

[0047] The invention furthermore provides a lid part for a container assembly, said lid part comprising a connection portion for connection to a rim of a container part and a lid which is pivotably connected to said connection portion, said 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.

[0048] The inventions describe all relate to improving the closure of a container. In fact, they all relate to improving the reliability of this closure. In this invention, 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.

[0049] 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.

[0050] 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.

[0051] 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.

[0052] 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.

[0053] 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.

[0054] 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.

[0055] The various aspects discussed in this patent can be combined in order to provide additional advantages. Several aspects described in this description, shown in the drawings or described in the claims may form part of a divisional application.

Additional Clauses Defining the Invention

[0056] The invention may also be alternatively defined based on the wording of the following clauses, which define:

1. A lid part for a container, said lid part substantially made from a thermoplastic material and comprising a connection portion for connection to a rim of a container part and a lid which is pivotably connected to said connection portion,
said connection portion comprising an access opening and a circumferential first flange surrounding said access opening,
said lid comprising a circumferential lid flange extending towards said connection portion,
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,
and an area of said access opening is at least about 50 cm2.

2. The lid part according to clause 1, wherein 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.

3. The lid part according to clause 1 or 2, wherein said area is at least about 75 cm2.

4. The lid part according to any one of the preceding clauses, wherein said area is less than about 200 cm2.

5. The lid part according to any one of the preceding clauses, wherein said first flange bounds said access opening.

6. The lid part according to any one of the preceding clauses, wherein said first flange fans or flares out away from said access opening, thus increasing a perimeter of said first flange.

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

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

9. The lid part according to any one of the preceding clauses, wherein said access opening is substantially round or substantially elliptic.

10. The lid part according to any one of the preceding clauses, wherein an area of said access opening is at least 50 % of the area of the connection portion.

11. The lid part according to any one of the preceding clauses, wherein an inner diameter of the access opening is about 9-13 cm, in an embodiment a diameter of the connection portion is about 10-13 cm.

12. The lid part according to any one of the preceding clauses, wherein 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.

13. The lid part according to any one of the preceding clauses, wherein the thickness of said first flange in view of its thermoplastic material is selected to provide a stiff flange.

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

15. The lid part according to any one of the preceding clauses, wherein said lid is of a thermoplastic material having an elasticity such that it allows hermetic sealing of said lid on said flange of said connection portion via said lid flange and said first flange.

16. The lid part according to any one of the preceding clauses, wherein 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.

17. The lid part according to any one of the preceding clauses, wherein said connection portion comprises a circumferential rim which has a circumferential groove for receiving said rim of said container part.

18. The lid part according to any one of the preceding clauses, wherein said connection portion comprises stacking cams.

19. The lid part according to the previous clause, wherein a circumscribed area of said circumferential rim is larger than the area of the access opening.

20. The lid part according to any one of the preceding clauses, wherein 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 smaller 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 larger 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 said first flange surrounding said lid flange.

21. A container comprising the lid part of the preced-

ing clauses 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.

Description of the Drawings

[0057] 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

[0058] 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.

[0059] 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.

[0060] 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.

[0061] 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.

[0062] 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.

[0063] 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.

[0064] 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 practice, for instance 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 cooperating 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.

[0065] 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.

[0066] 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.

[0067] 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.

[0068] 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.

[0069] 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 fact, 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.

[0070] 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.

[0071] The positioning of the stacking provisions 14 on the connection portion is such that a container assembly stacked on top 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.

[0072] 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.

[0073] 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.

Claims

1. A lid part for a container, said lid part substantially made from a thermoplastic material and comprising a connection portion for connection to a rim of a container part and a lid which is pivotably connected to said connection portion,
said connection portion comprising a substantially round or substantially elliptic access opening and a circumferential first flange surrounding said access opening, said lid comprising a circumferential lid flange extending towards said connection portion,
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,
and an area of said access opening is at least about 50 cm^2, wherein said connection portion comprises stacking cams, said cams being provided at positions around the first flange.

2. The lid part according to claim 1, wherein 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, said perimeters of said lid flange and of said 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.

3. The lid part according to any one of the preceding claims, wherein said first flange bounds said access opening.

4. The lid part according to any one of the preceding claims, wherein said first flange fans or flares out away from said access opening, thus increasing a perimeter of said first flange.

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

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

7. The lid part according to any one of the preceding claims, wherein 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.

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

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

10. 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 on said flange of said connection portion via said lid flange and said first flange.

11. The lid part according to any one of the preceding claims, wherein 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.

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

13. The lid part according to the previous claim, wherein a circumscribed area of said circumferential rim is larger than the area of the access opening.

14. The lid part according to any one of the preceding claims, wherein 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 smaller 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 larger 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 said first flange surrounding said lid flange.

15. 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.

Fig 1

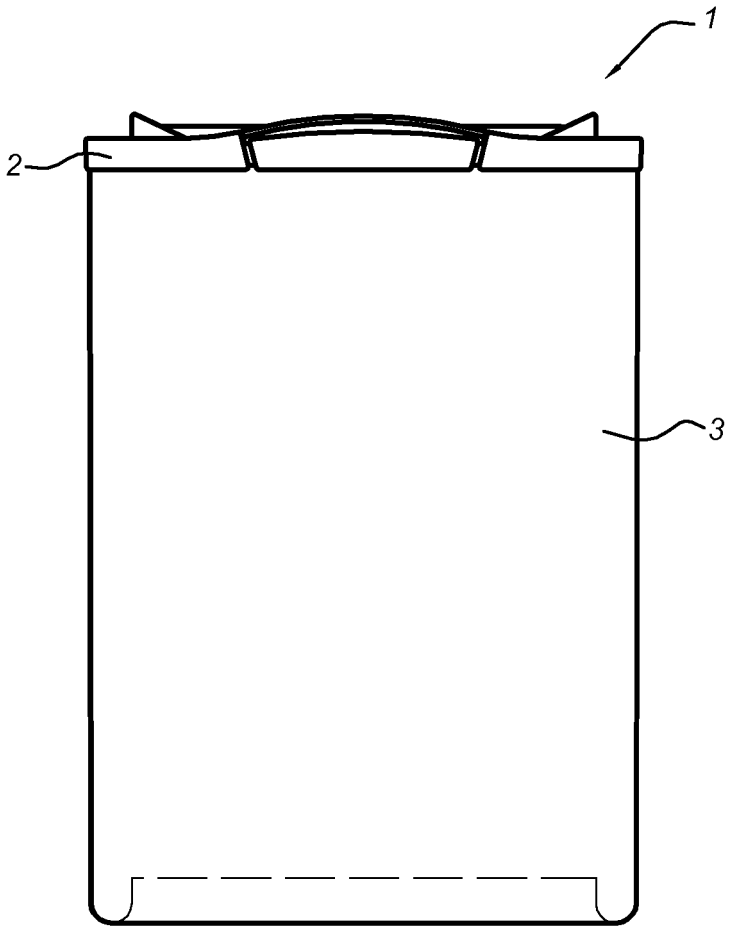


Fig 2

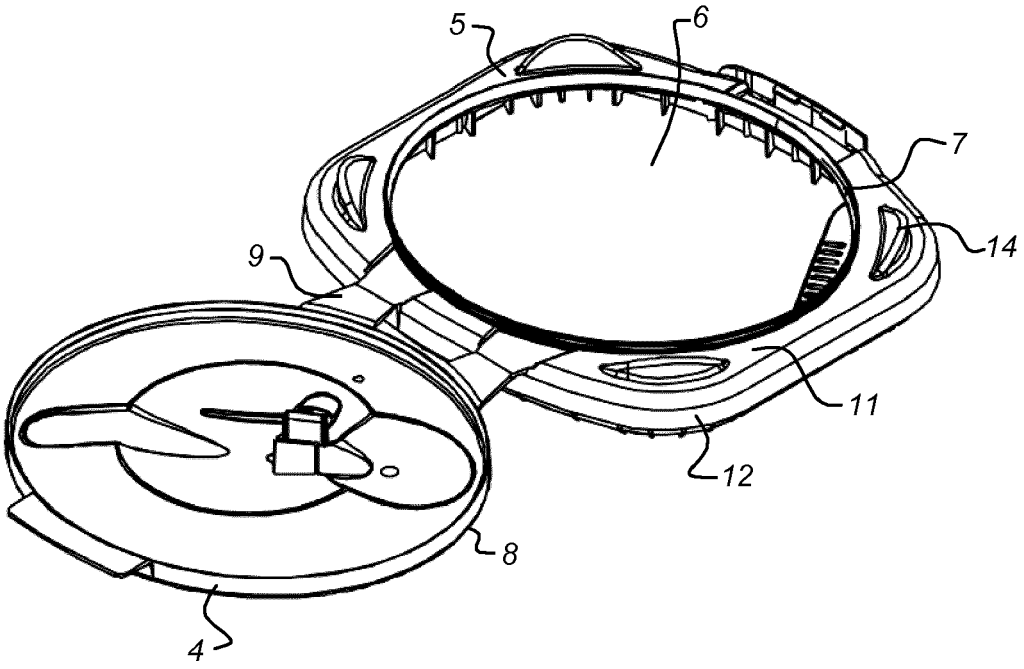


Fig 3

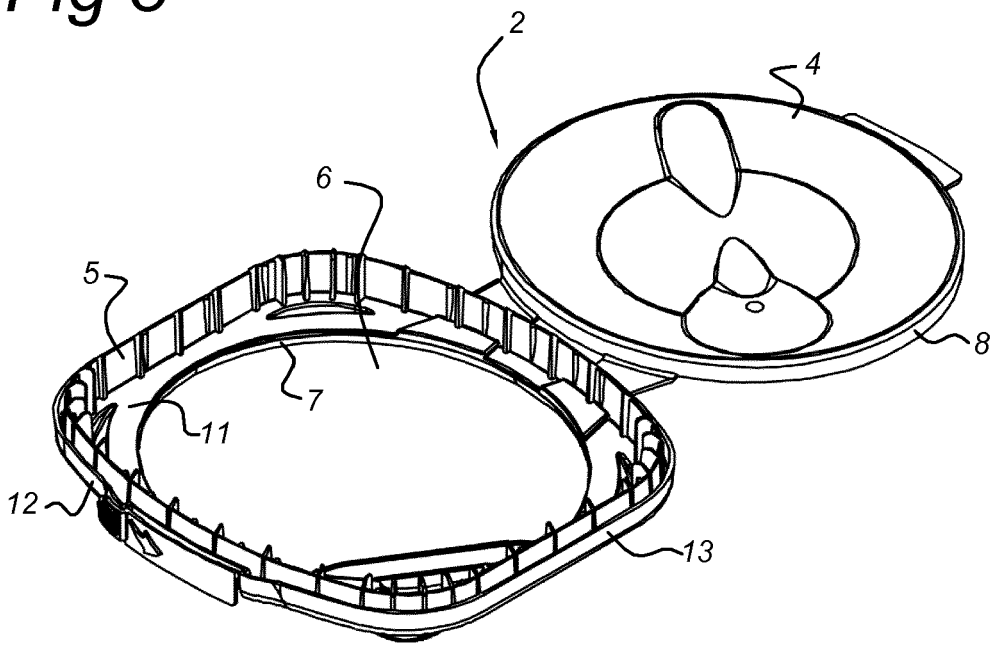


Fig 4

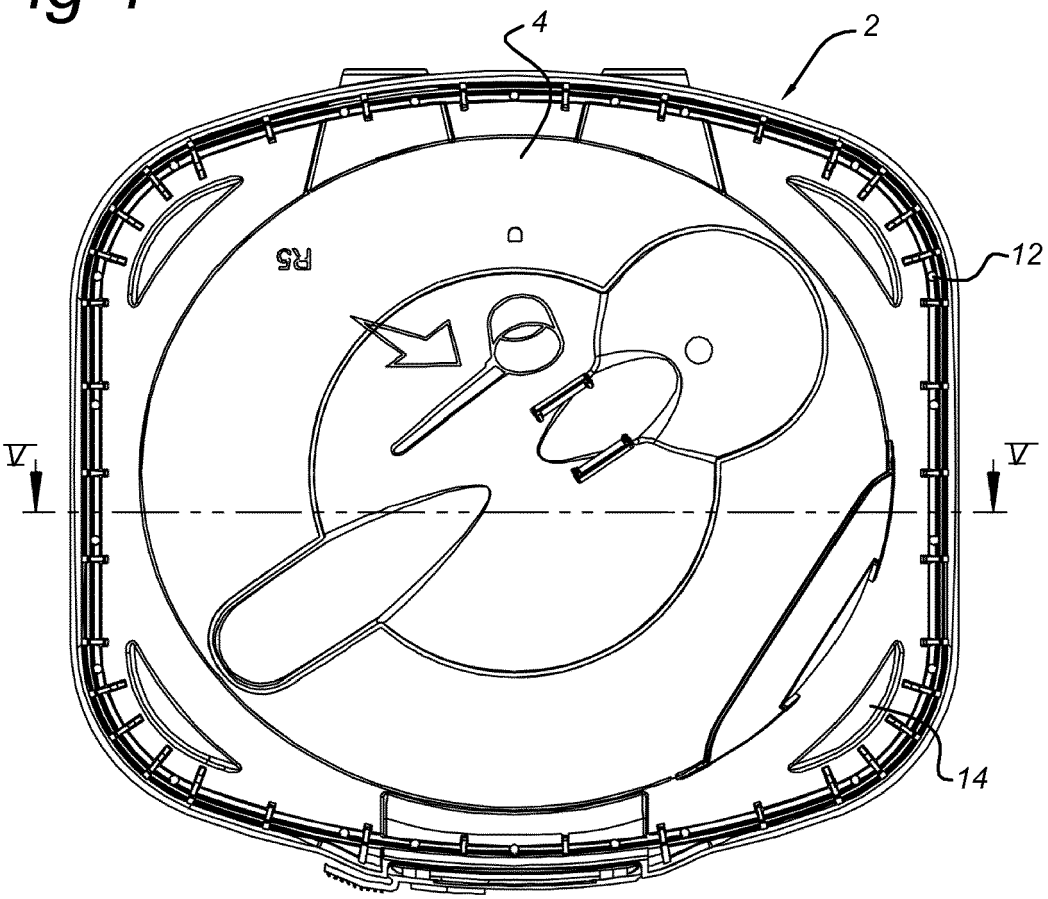


Fig 5

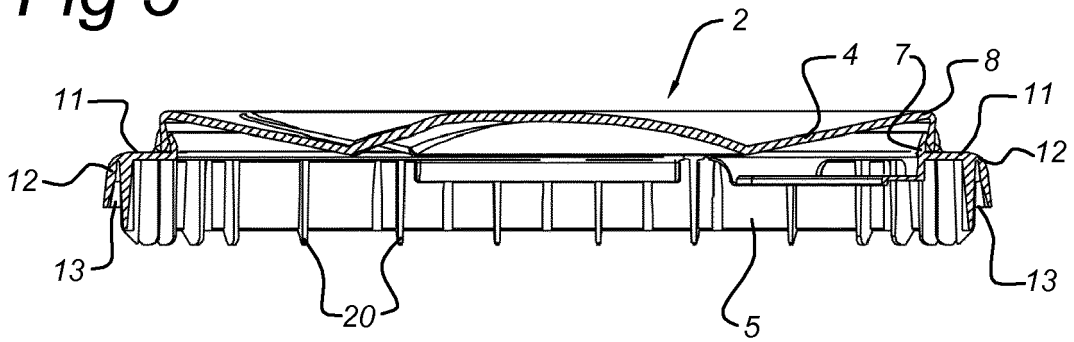


Fig 6

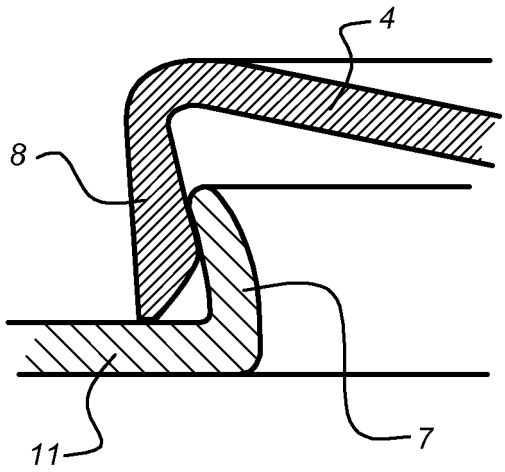
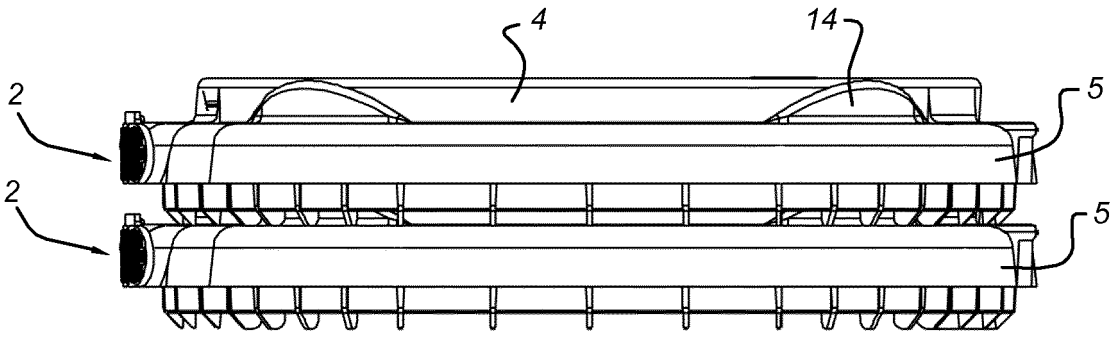


Fig 7



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EUROPEAN SEARCH REPORT

Application Number
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The Hague	9 May 2014	Vigilante, Marco

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