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

(11) **EP 2 617 659 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.07.2013 Bulletin 2013/30

(51) Int Cl.:
B65D 65/46 *(2006.01)* ***B65D 81/32*** *(2006.01)*
B65D 75/32 *(2006.01)* ***C11D 17/04*** *(2006.01)*

(21) Application number: **12000317.3**

(22) Date of filing: **19.01.2012**

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **Lakma Strefa Sp.z o o.**
43-254 Warszowice k/Zor (PL)

(72) Inventor: **Zietek, Józef**
43-385 Jasienica (PL)

(74) Representative: **Zurhorst, Stefan et al**
Menzelstraße 40
70192 Stuttgart (DE)

(54) **Cleaning agent product**

(57) The invention relates to a cleaning agent product. The cleaning agent product comprises a water soluble pouch (10) having a first chamber (1) and a second chamber (2) being separated from the first chamber (1). The first chamber (1) and the second chamber (2) are each filled with a cleaning agent (3, 4). The pouch (10) is made of a water soluble base foil (5) and of a water soluble lid foil (6) being tightly connected to each other. The base foil (5) is deep drawn in a plastically deforming manner to form the first chamber (1) and the second chamber (2). The first chamber (1) comprises a first base area (A_1), the second chamber (2) a second base area (A_2) and the entire cleaning agent product a third base area (A_3). The first base area (A_1) of the first chamber (1) comprises a concave section (7) on its side facing the second chamber (2). The second base area (A_2) of the second chamber (2) comprises a convex section (8) on its side facing the first chamber (1). The convex section (8) of the second chamber (2) extends into the concave section (7) of the first chamber (1). The third base area (A_3) of the cleaning agent product is at least approximately circular shaped.

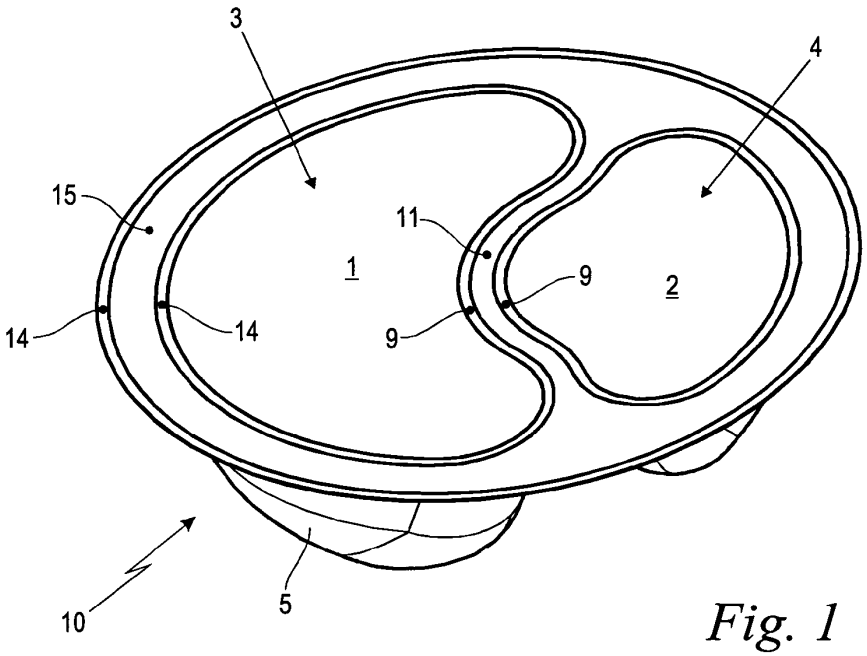

Fig. 1

EP 2 617 659 A1

Description

[0001] The invention relates to a cleaning agent product comprising a water soluble pouch.

[0002] Cleaning agents for laundry, dish washing, floor cleaning and the like are used in private households in a liquid or solid state form. Such agents are provided in bottles for liquids or in boxes for powders, which allows a free and unrestricted dosing by the user. Besides this, that packaging cost is low. However, many consumers feel uncomfortable when having to find themselves the right dosing, and there is some risk of a wrong dosing applied. In addition, the liquid or powder tends to spill during handling, which requires additional cleaning work.

[0003] In order to overcome said drawbacks, packaged dosing units were developed and found a good acceptance by the users, wherein pressed powder tablets are individually packaged in small single plastic foil sachets or pouches. Upon tearing up the plastic foil, the pressed powder tablet could be taken out by the user and inserted into the clothes washer or dish washing machine without caring about the required dose. However, tearing up the foil sachet is quite often not easy, especially when having wet hands. In addition, the plastic sachets require a solid state filling and are not practical for liquid cleaning agents in single unit doses. The opened sachets need to be disposed of, which is regarded as uncomfortable, and which adds to environmental burden.

[0004] As a further development, cleaning agent products comprising a water soluble pouch became more and more popular. The water soluble pouch is filled with single unit doses of the required cleaning agents and can be inserted into the machine without opening the pouch. During the washing process and upon contact with water, the pouch dissolves and sets the cleaning agents free. The handling of such pouches is very comfortable. Without the need of opening the pouch, the manufacturer is not limited to solid state tablet fillings, but is free to provide a powder or even a liquid filling. Pouches each having two or more separate chambers can be produced in order to separate different agents until they are released into the washing water. In specific, multi chamber pouches allow the use of both a powder and a liquid filling within a single unit.

[0005] However, a powder or liquid filling does not have any own form stability. In order to obtain a more or less rigid product for easy handling, the form stability has to be created by the pouch itself. The problem of form stability is even worse with multi chamber pouches, since the elastic divisional sealing strip between two adjacent chambers acts as a hinge, which tends to make the product flexible to an undesired extent.

[0006] A multi chamber pouch made of injection moulded water soluble material has been proposed in the past, wherein the injection moulding process leads to quite high wall thicknesses. These wall thicknesses add to form stability even in the area of the divisional sealing strip. However, the injection moulding process is cost intensive and requires a costly amount of water soluble material to produce the pouch.

[0007] As an alternative, multi chamber pouches are known made of water soluble, deep drawn foil. Due to the low foil thickness and the easy deep drawing process, the cost contribution of the pouch to the entire product is quite low. However, the comparable thin foil is flexible especially with respect to bending. Therefore, a multi chamber pouch in a double layer configuration has been proposed. One chamber is stacked over one or two other chambers, which leads to a mechanically robust and nearly non bending flexible product. The stacked configuration requires three layers of foil, at least two of them being deep drawn in a plastically deforming manner to form the different chambers, while the third foil as an intermediate foil separates them. The deep drawing process of at least two foils is cost intensive, while the need for three foil layers in terms of required material adds to the total product costs significantly as well.

[0008] The object of the present invention is to provide a multi chamber cleaning agent product comprising a water soluble pouch with improved structural form stability and reduced material and production effort.

[0009] This object is solved by the cleaning agent product according to claim 1.

[0010] According to the invention a cleaning agent product is proposed, comprising a water soluble pouch having a first chamber and a second chamber being separated from the first chamber, wherein the first chamber and the second chamber are each filled with a cleaning agent, wherein the pouch is made of a water soluble base foil and of a water soluble lid foil being tightly connected to each other, wherein the base foil is deep drawn in a plastically deforming manner to form the first chamber and the second chamber, wherein the first chamber comprises a first base area, the second chamber a second base area and the entire cleaning agent product a third base area, wherein the first base area of the first chamber comprises a concave section on its side facing the second chamber, wherein the second base area of the second chamber comprises a convex section on its side facing the first chamber, wherein the convex section of the second chamber extends into the concave section of the first chamber, and wherein the third base area of the cleaning agent product is at least approximately circular shaped.

[0011] The pouch is made of two layers of foil only, which reduces manufacturing cost and effort. The thin foil is flexible especially with respect to bending. However, the convex base area section extending into the concave base area section leads to a separating strip between both chamber base areas without a straight line. The missing straight line form of the separating strip produces a bending stiffness of the whole product, although the separating strip taken alone does not have any technically relevant bending stiffness by itself. The circular base area of the whole product maximizes the mass concentration of the filling with minimum required foil mate-

rial. The mass concentration in conjunction with the increased bending stiffness leads to a product with high structural form stability, which therefore can easily be handled by the user.

[0012] In a preferred embodiment, between the first chamber and the second chamber a separating strip is present having a mean strip width. The convex section of the second chamber extends into the concave section of the second chamber by a first extension width related to the mean strip width. The first extension width is at least approximately equal to or greater than the mean strip width. In a further preferred embodiment, between the first chamber and the second chamber a separating strip is present providing along the separating strip a sealed joint with a mean seal width to tightly connect the lid foil to the base foil. The convex section of the second chamber extends into the concave section of the second chamber by a second extension width related to the mean seal width. The second extension width has at least the double value, in particular at least the triple value of the mean seal width.

[0013] Both definitions of the minimum required extension width of the convex section into the concave section are based on different points of view: For manufacturing reasons, the separating strip width must be greater than the seal width. During manufacturing, the separating strip width is relevant for the geometric determination of the chambers base areas. Based on this point of view, the first of the a.m. definitions relates the minimum required extension to the separating strip width. After manufacturing, the internal pressure of the filled cleaning agents inflates the chambers to an extent, that both chambers are separated from each other by the width of the sealed joint. Based on this point of view, the second of the a.m. definitions relates the minimum required extension to the seal width. Both definitions, in sum or as an alternative, provide a minimum required extension width of the convex section into the concave section, which leads to the desired form stability.

[0014] In a preferred embodiment, the separating strip and/or the sealed joint have at least along the major part of their length a constant strip width and/or a constant seal width respectively. Said constant width leads to a constant width between adjacent chamber walls. Upon an applied flexing load, adjacent chamber walls of both chambers will be pressed together across a great area, thereby significantly supporting each other against a resulting deflection, which adds to the desired form stability.

[0015] In a preferred embodiment, the first chamber has a first depth and the second chamber a second depth. The smaller one of the two depths is greater than the mean strip width at least by the factor of three, and in particular is at least approximately greater that the mean strip width by the factor of four. In a further preferred embodiment, the first chamber has a first depth and the second chamber has a second depth. The smaller one of the two depths is greater than the mean seal width at least by the factor of six, and in particular is at least approximately greater that the mean seal width by the factor of eight. Again, as above with the required extension width of the convex section into the concave section, two different definitions of the same requirement are provided, one of which based on the mean strip width, and the other based on the mean seal width. In both cases, the minimum required chamber depth, in conjunction with said width, leaves only a negligible flexion deformation, until adjacent chamber walls of both chambers are be pressed together in order to prevent any further deflection.

[0016] In a preferred embodiment, the first chamber and/or the second chamber have at least at their side facing the respective other chamber a wall section with a draft angle being $\leq 7°$ and in particular being at least approximately 5°. Although for manufacturing reasons greater draft angles could be of interest, said preferred draft angles add to the effect, that only a minimum of product deflection leads to the sought pressing together of adjacent chamber walls in order to prevent or at least minimize bending deflection of the whole product.

[0017] In a preferred embodiment, the second base area of the second chamber has aside to its convex section at least one and in particular two mirror symmetrically disposed concave sections adjacent to at least one and in particular two mirror symmetrically disposed convex sections of the first base area. The convex and adjacent concave sections are wedged together, which adds to the sought structural form stability.

[0018] In a preferred embodiment, the quotient of the first base area and the second base area is in a range from 1,4, inclusive, to 2,4, inclusive, preferably in a range from 1,7, inclusive, to 2,1, inclusive, and is in particular at least approximately 1,9. In a further preferred embodiment, the first chamber has a first volume and the second chamber has a second volume. The quotient of the first volume and the second volume is in a range from 1,8, inclusive, to 2,8, inclusive, preferably in a range from 2,1, inclusive, to 2,5, inclusive, and is in particular at least approximately 2,3. Upon keeping said relations, the user may grab the product at any one of its filled chambers without the risk, that the remaining chamber is too big and heavy to cause a product deflection beyond a desired limit.

[0019] In a preferred embodiment, the base foil only and not the lid foil is deep drawn to form the first chamber and the second chamber. Thereby, the major part of the camber volume is provided by the base foil with a significant chamber depth to one side only. This adds to the effect that upon flexion load adjacent chamber walls are pressed together in order to prevent or at least minimize bending deflection of the whole product. In addition, arrangements for deep drawing one foil only have to be provided, which reduces machine and manufacturing costs. The unformed lid foil does not have to meet special forming requirements and can therefore be chosen by less restrictive requirements.

[0020] In a preferred embodiment, the base foil and/or

the lid foil have a thickness being in a range from 50 μm, inclusive, to 100 μm, inclusive, preferably in a range from 60 μm, inclusive, to 90 μm, inclusive, and being in particular at least approximately 76 μm. Although the foil thickness in said ranges is quite small and does not provide technically relevant bending stiffness, the completed product itself has a sufficient form stability and fulfils all requirements with respect to tightness both for powder and liquid fillings.

[0021] A preferred embodiment is hereafter described as an example of the invention by reference to the drawing. It is shown in

Fig. 1 a perspective top view of an inventive cleaning agent product having two separate chambers;

Fig. 2 a perspective bottom view of the cleaning agent product according to Fig. 1 with further details of the two separate chambers;

Fig. 3 a top view of the cleaning agent product according to Fig. 1, 2 with geometric details of the chamber base areas and the separating strip;

Fig. 4 the top view of Fig. 3 with further geometric details of the chamber base areas and the separating strip;

Fig. 5 a side view of the cleaning agent product according to Fig. 1 to 4 with details of the deep drawn base foil;

Fig. 6 a cross sectional view of the cleaning agent product according to Fig. 5 with details of the chamber walls.

[0022] Fig. 1 shows a perspective top view of an example embodiment of an inventive cleaning agent product. The cleaning agent product comprises a water soluble pouch 10, which is made of a water soluble base foil 5 and a water soluble lid foil 6, the latter one being shown in Fig. 6. The cleaning agent product has a generally circular shape. Within its circular shape, the base foil 5 is deep drawn under influence of increased temperature and vacuum to form a first chamber 1 and a second chamber 2. The first chamber 1 and the second chamber 2 are separated from each other by a curved separating strip 9. In addition, both the first chamber 1 and the second chamber 2 are surrounded by a flat circular arc shaped flange 14, to which the flat separating strip 9 is connected. The flange 14 comprises with distance to its edges a circular arc shaped sealed joint 15, while the separating strip 9 comprises with distance to its edges along its length a sealed joint 11. The sealed joint 11 and the sealed joint 15 are interconnected to each other. Along their course the base foil 5 and the lid foil 6 (Fig. 6) are sealed together in a liquid- and powder-tight manner. Thereby, two tightly closed and separated chambers 1, 2 are formed.

[0023] The first chamber 1 is filled with a first cleaning agent 3, while the second chamber 2 is filled with a second cleaning agent 4, wherein the separating strip 9 and the sealed joints 11, 14 prevent the two cleaning agents 3, 4 to prematurely get in contact to each other and to mix up. The cleaning agents 3, 4 can be identical or different. In particular, they can be in a powder or liquid form. In the shown preferred embodiment, the first cleaning agent 3 is powder, while the second cleaning agent 4 is liquid. However, any other suitable and desired combination of the cleaning agents 3, 4 may be chosen.

[0024] The volume of the chambers 1, 2 and formulation of the cleaning agents 3, 4 are chosen and adapted to each other, that the entire cleaning agent product provides an amount of cleaning agents 3, 4 for one single unit dose application. Dependent on the type of the cleaning agents 3, 4, the inventive cleaning agent product may be used for laundry washing or dish washing in particular in a respective machine, for floor cleaning or any other cleaning application, where cleaning water comes into effect. Upon contact of the cleaning agent product with the cleaning water, the water soluble pouch 10 dissolves and sets the cleaning agents 3, 4 free in order to provide the correct, desired and readily usable mixture of water and cleaning agents 3, 4.

[0025] Fig. 2 shows a perspective bottom view of the cleaning agent product according to Fig. 1. From both Figs. 1 and 2 it can be seen, that the first chamber 1 is approximately kidney-shaped, while the second chamber 2 matches the convex side of the first chamber 1 kidney-shape, while leaving the separating strip 9 in between, and while maintaining the surrounding flange 14 with an approximately constant width.

[0026] Fig. 3 shows a top view of the cleaning agent product according to Figs. 1 and 2 in a production state, when the base foil 5 is already deep drawn to form the first chamber 1 and the second chamber 2, however without being filled. In this production state the separating strip 9 has a mean strip width b_s. The mean strip width b_s may vary along the course of the separating strip 9. In the preferred embodiment as shown in Fig. 3, the separating strip 9 has at least along the major part of its length a constant strip width b_s.

[0027] The first chamber 1 has a first base area A_1, while the second chamber 2 has a second base area A_2. The entire cleaning agent product has a circular shaped third base area A_3, which is delimited by the very outer, circular shaped edge of the flange 14. Besides said circular shaped third base area A_3 of the entire cleaning agent product, both the first base area A_1 of the first chamber 1 and the second base area A_2 of the second chamber 2 are mirror-symmetrically shaped and disposed with respect to a mirror axis, which is marked by a line V-V.

[0028] On said symmetry line the first base area A_1 of the fist chamber 1 comprises a concave section 7 on its side facing the second base area A_2 of the second cham-

ber 2, while the second base area A_2 of the second chamber 2 comprises on said symmetry line a convex section 8 on its side facing the first base area A_1 of the first chamber 1. The convex section 8 extends into the concave section in an overlapping manner by a first extension width b_{t1} related and measured to the separating strip 9 with its mean strip width b_s. In the opposite direction, the first base area A_1 of the first chamber 1 has at least one and in particular - as shown - two mirror-symmetrically disposed convex sections 12 aside to the concave section 7, a tangent on which serves as a base line to measure the first extension width b_{t1}. In addition, the second base area A_2 of the second chamber 2 has aside to its convex section 8 at least one and in particular - as shown - two mirror symmetrically disposed concave sections 13 adjacent to said convex sections 12 of the first base area A_1.

[0029] The first extension width b_{t1} is at least approximately equal to and preferably greater than the mean strip width b_s. The quotient of the first base area A_1 and the second base area A_2 is in particular in a range from 1,4, inclusive, to 2,4, inclusive, and preferably in a range from 1,7, inclusive, to 2,1, inclusive. In the shown preferred embodiment, said quotient is at least approximately 1,9.

[0030] Fig. 4 shows a top view of the cleaning agent product according to Fig. 3, wherein the first chamber 1 is filled with the first cleaning agent 3, and the second chamber 2 is filled with the second cleaning agent 4. In addition, the base foil 5 is sealed by the lid foil 6 as shown in Fig. 6. This and the internal pressure of the cleaning agents 3, 4 leads to an elastic deformation of the base foil 5 to such an extent, that the two chambers 1, 2 are not anymore separated by the separating strip 9 with its strip width b_s as shown in Fig. 3. Due to the elastic deformation this separation is reduced to the sealed joint 11 of the separating strip 9, having a seal width b_u, which is more narrow than the strip width b_s of the non deformed separating strip 9 according to Fig. 3. In said filled state according to Fig. 4 the concave sections 7, 13 and the convex sections 8, 12 are identified in the same manner as along with Fig. 3. The sealed joint 11 may have a varying mean seal width b_u and has in the shown preferred embodiment at least along the major part of its length a constant seal width b_u. Related to said seal width b_u and to the convex sections 12, the convex section 8 of the second base area A_2 of the second chamber 2 extends in the concave section 7 of the first base area A_1 of the first chamber 1 by a second extension width b_{t2}. The second extension width $_{bt2}$ has at least the double value and in particular - as shown in Fig. 4 - at least the triple value of the mean seal width b_u. All other values as the first and second base areas A_1, A_2 and their relationships to each other may be analogously derived as done along with the unfilled state according to Fig. 3.

[0031] The outer diameter of the cleaning agent product or its respective base area A_3 is in particular in a range from 55,0 mm, inclusive, to 75,0 mm, inclusive, and preferably in a range from 60,0 mm, inclusive, to 70,0 mm, inclusive. In the shown preferred embodiment, said outer diameter is at least approximately 64,5 mm. Both the seal width of the outer sealed joint 15 and the strip width b_s are in particular in a range from 3,0 mm, inclusive, to 5,0 mm, inclusive, and preferably in a range from 3,5 mm, inclusive, to 4,5 mm, inclusive. In the shown preferred embodiment, said seal width and said strip width b_s are at least approximately 4,0 mm. The outer sealed joint 15 has a radial distance to the outer circumferential contour of cleaning agent product or its respective base area A_3 of at least approximately 1,0 mm. The seal width b_s is in particular in a range from 1,4 mm, inclusive, to 2,6 mm, inclusive, and preferably in a range from 1,7 mm, inclusive, to 2,3 mm, inclusive. In the shown preferred embodiment, said seal width b_s is at least approximately 2,0 mm.

[0032] Fig. 5 shows a side view of the cleaning agent product 10 according of Figs. 1 to 4 with details of the deep drawn base foil 5. It can be seen, that the surrounding side walls of the two chambers 1, 2 are deep drawn with respect to the flange 14 and the perpendicular line thereto with a draft angle α preferably being $\leq 7°$, and being in the shown preferred embodiment at least approximately 5°.

[0033] Fig. 6 shows a cross sectional view of the cleaning agent product 10 according to Fig. 5 along the cross section line V-V of Figs. 3 and 4. Only the base foil 5 is deep drawn to form the first chamber 1 and the second chamber 2. The lid foil 6, which is sealed closely onto the base foil 5 on the flange 14 and on the separating strip 9 in a non-intermittent way along the sealed joints 11, 15 (Fig. 1) is not deep drawn or plastically deformed in any other way. The shown upward deflection of the lid foil 6 is an elastic deflection due to the internal pressure of the third cleaning agent 3 and the second cleaning agent 4. With respect to the flange 14 and the coplanar separating strip 9, the first chamber 1 is deep drawn to a first chamber depth t_1, while the second chamber 2 is deep drawn to a second chamber depth t_2. In the shown preferred embodiment, the first chamber depth t_1 is at least approximately 18,7 mm, while the second chamber depth t_2 is at least approximately 15,7 mm. The base areas A_1, A_2, the related chamber depth t_1, t_2 and the cross sectional shape of the chambers 1, 2 lead to a first volume V_1 of the first chamber 1 and to a second volume V_2 of the second chamber 2. In the shown preferred embodiment, the first volume V_1 is at least approximately 17,61 ml, while the second volume V_2 is at least approximately 7,72 ml. In addition it can be seen, that besides the outer walls according to Fig. 5 the chamber walls of the two chambers 1, 2 facing each other in the area of the separating strip 9 are deep drawn with a draft angle $\alpha \leq 7°$ and in particular - as shown - being at least approximately 5°.

[0034] The quotient of the first volume V_1 and the second volume V_2 is preferably in a range from 1,8, inclusive, to 2,8, inclusive, and in particular in a range from 2,1, inclusive, to 2.5, inclusive. In the shown preferred em-

bodiment said ratio is at least approximately 2,3. The smaller one of the two depths t_1, t_2, which is in the shown embodiment the second chamber depth t_2 is greater than the mean strip width b_s (Fig. 3) at least by the factor of 3 and in particular a least approximately greater than the mean strip width b_s by the factor of 4. In addition, it is greater than the mean seal width b_u (Fig. 4) at least by the factor of 6, and in particular at least approximately greater than the mean seal width b_u by the factor of 8.

[0035] The base foil 5 and/or the lid foil 6, in the shown embodiment both the base foil 5 and the lid foil 6 have a thickness being preferably in a range from 50 μm, inclusive, to 100 μm, inclusive, and in particular in a range from 60 μm, inclusive, to 90 μm, inclusive. In the shown preferred embodiment, said thickness is at least approximately 76 μm, which applies for both the base foil 5 and the lid foil 6. However, deviating foil thicknesses may be chosen. The lid foil 6 may also have a different, in particular a smaller thickness compared to the thickness of the base foil 5.

[0036] Due to the a.m. geometric limitations the entire inventive cleaning agent product has a strong geometric form stability despite the small foil thicknesses and the elastic separating strip 9 between the two chambers 1, 2. The cleaning agent product is easy to manufacture with low machine and material cost, and can be easily handled by the user.

Claims

1. Cleaning agent product, comprising a water soluble pouch (10) having a first chamber (1) and a second chamber (2) being separated from the first chamber (1), wherein the first chamber (1) and the second chamber (2) are each filled with a cleaning agent (3, 4), wherein the pouch (10) is made of a water soluble base foil (5) and of a water soluble lid foil (6) being tightly connected to each other, wherein the base foil (5) is deep drawn in a plastically deforming manner to form the first chamber (1) and the second chamber (2), wherein the first chamber (1) comprises a first base area (A_1), the second chamber (2) a second base area (A_2) and the entire cleaning agent product a third base area (A_3), wherein the first base area (A_1) of the first chamber (1) comprises a concave section (7) on its side facing the second chamber (2), wherein the second base area (A_2) of the second chamber (2) comprises a convex section (8) on its side facing the first chamber (1), wherein the convex section (8) of the second chamber (2) extends into the concave section (7) of the first chamber (1), and wherein the third base area (A_3) of the cleaning agent product is at least approximately circular shaped.

2. Cleaning agent product according to claim 1, **characterized in that** between the first chamber (1) and the second chamber (2) a separating strip (9) is present having a mean strip width (b_s), that the convex section (8) of the second chamber (2) extends into the concave section (7) of the second chamber (2) by a first extension width (b_{t1}) related to the mean strip width (b_s), and that the first extension width (b_{t1}) is at least approximately equal to or greater than the mean strip width (b_s).

3. Cleaning agent product according to claim 1 or 2, **characterized in that** between the first chamber (1) and the second chamber (2) a separating strip (9) is present providing along the separating strip (9) a sealed joint (11) with a mean seal width (b_u) to tightly connect the lid foil (6) to the base foil (5), that the convex section (8) of the second chamber (2) extends into the concave section (7) of the second chamber (2) by a second extension width (b_{t2}) related to the mean seal width (b_u), and that the second extension width (b_{t2}) has at least the double value, in particular at least the triple value of the mean seal width (b_u).

4. Cleaning agent product according to claim 2 or 3, **characterized in that** the separating strip (9) and/or the sealed joint (11) have at least along the major part of their length a constant strip width (b_s) and/or a constant seal width (b_u) respectively.

5. Cleaning agent product according to one of claims 2 to 4, **characterized in that** the first chamber (1) has a first depth (t_1), that the second chamber (2) has a second depth (t_2), and that the smaller one of the two depths (t_1, t_2) is greater than the mean strip width (b_s) at least by the factor of three, and in particular is at least approximately greater that the mean strip width (b_s) by the factor of four.

6. Cleaning agent product according to one of claims 3 to 5, **characterized in that** the first chamber (1) has a first depth (t_1), that the second chamber (2) has a second depth (t_2), and that the smaller one of the two depths (t_1, t_2) is greater than the mean seal width (b_u) at least by the factor of six, and in particular is at least approximately greater that the mean seal width (b_u) by the factor of eight.

7. Cleaning agent product according to one of claims 1 to 6, **characterized in that** the first chamber (1) and/or the second chamber (2) have at least at their side facing the respective other chamber (2, 1) a wall section with a draft angle (α) being $\leq 7°$ and in particular being at least approximately 5°.

8. Cleaning agent product according to one of claims

1 to 7,
characterized in that the second base area (A_2) of the second chamber (2) has aside to its convex section (8) at least one and in particular two mirror symmetrically disposed concave sections (13) adjacent to at least one and in particular two mirror symmetrically disposed convex sections (12) of the first base area (A_1).

9. Cleaning agent product according to one of claims 1 to 8,
characterized in that the quotient of the first base area (A_1) and the second base area (A_2) is in a range from 1,4, inclusive, to 2,4, inclusive, preferably in a range from 1,7, inclusive, to 2,1, inclusive, and is in particular at least approximately 1,9.

10. Cleaning agent product according to one of claims 1 to 9,
characterized in that the first chamber (1) has a first volume (V_1), that the second chamber has a second volume (V_2), and that the quotient of the first volume (V_1) and the second volume (V_2) is in a range from 1,8, inclusive, to 2,8, inclusive, preferably in a range from 2,1, inclusive, to 2,5, inclusive, and is in particular at least approximately 2,3.

11. Cleaning agent product according to one of claims 1 to 10,
characterized in that the base foil (5) only and not the lid foil (6) is deep drawn to form the first chamber (1) and the second chamber (2).

12. Cleaning agent product according to one of claims 1 to 11,
characterized in that the base foil (5) and/or the lid foil (6) have a thickness being in a range from 50 μm, inclusive, to 100 μm, inclusive, preferably in a range from 60 μm, inclusive, to 90 μm, inclusive, and being in particular at least approximately 76 μm.

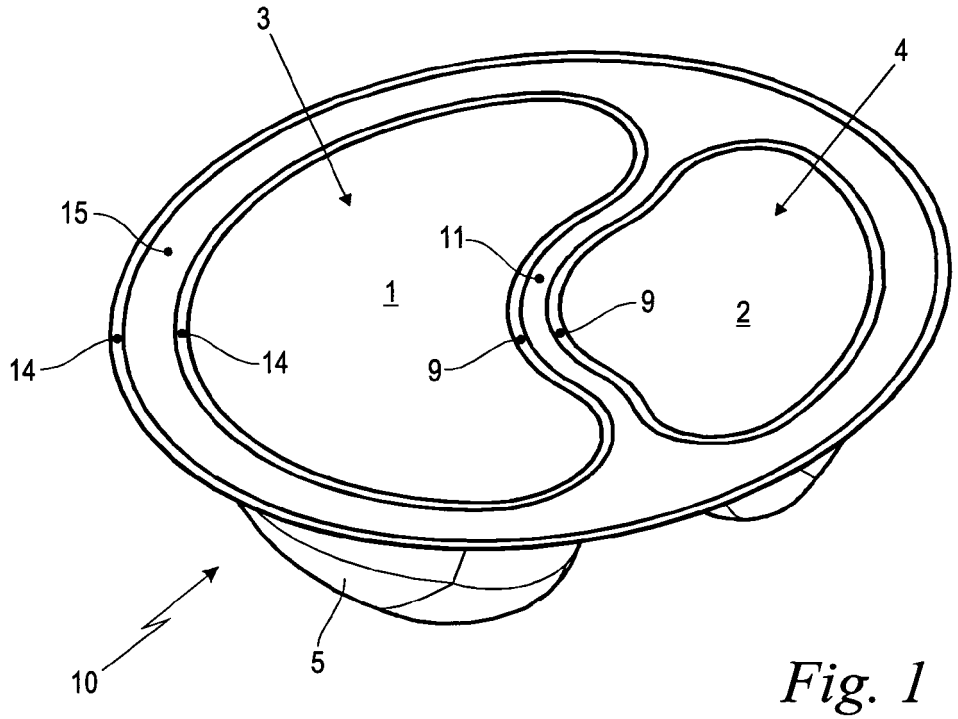

Fig. 1

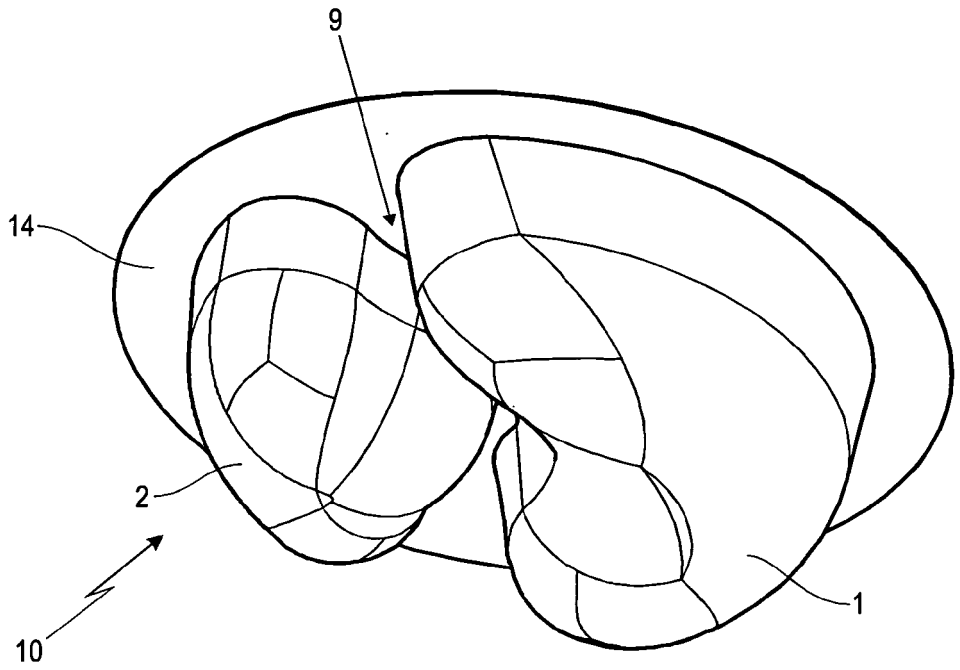

Fig. 2

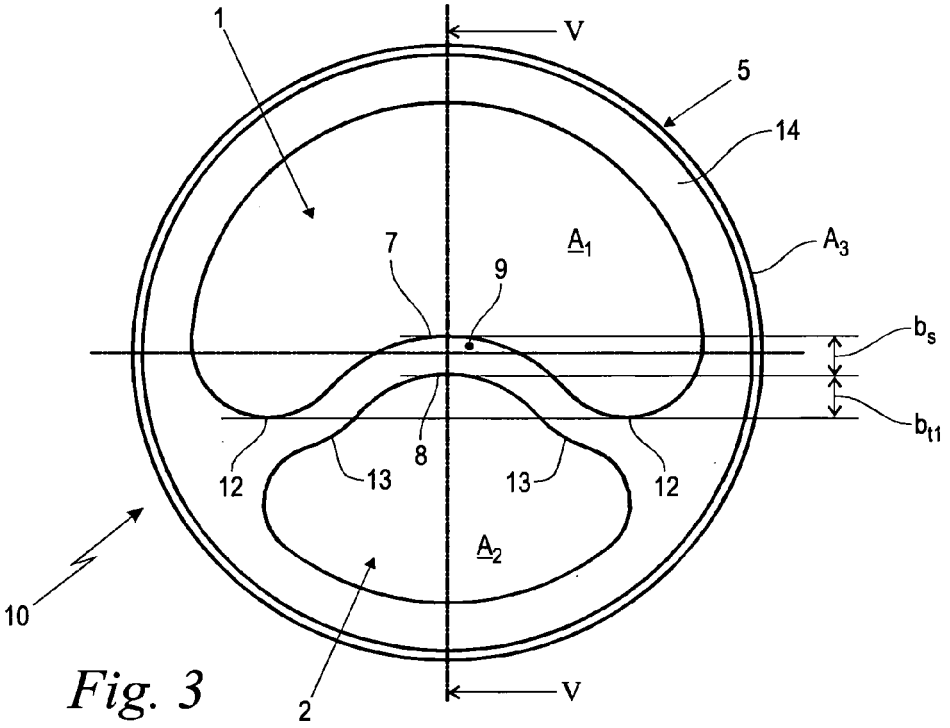
1
V
5
14
A3
A1
7
9
bs
bt1
8
12
13
13
12
A2
10
2
V

Fig. 3

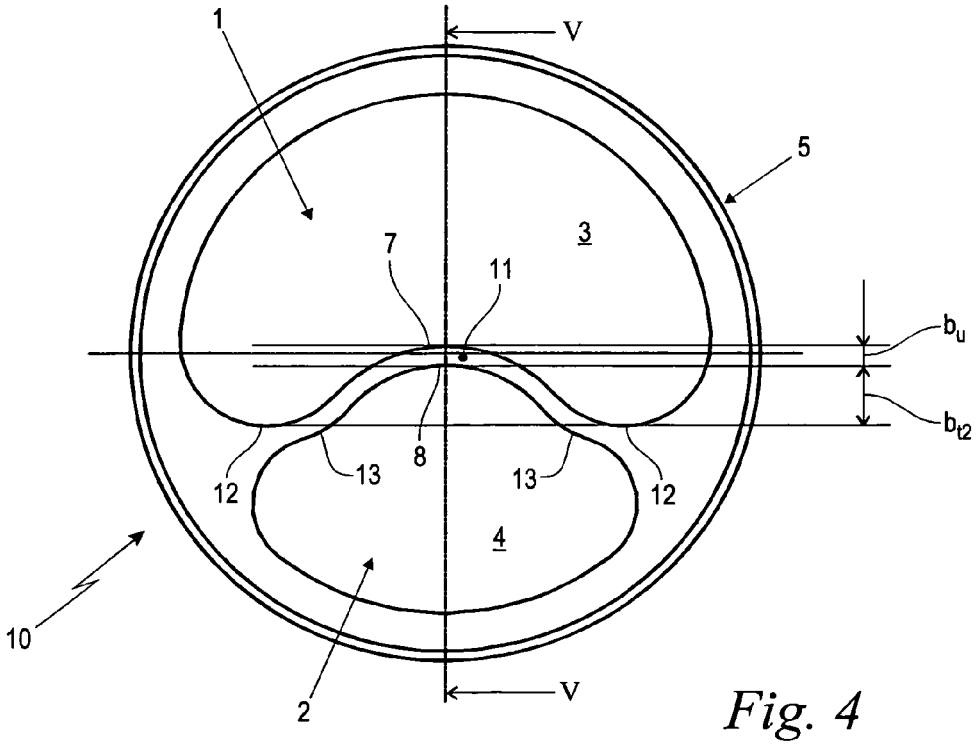
1
V
5
3
7
11
bu
bt2
8
12
13
13
12
4
10
2
V

Fig. 4

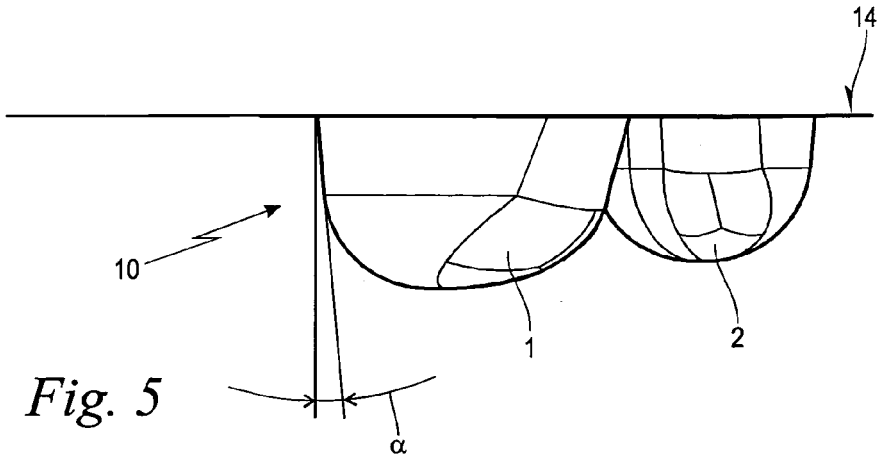

Fig. 5

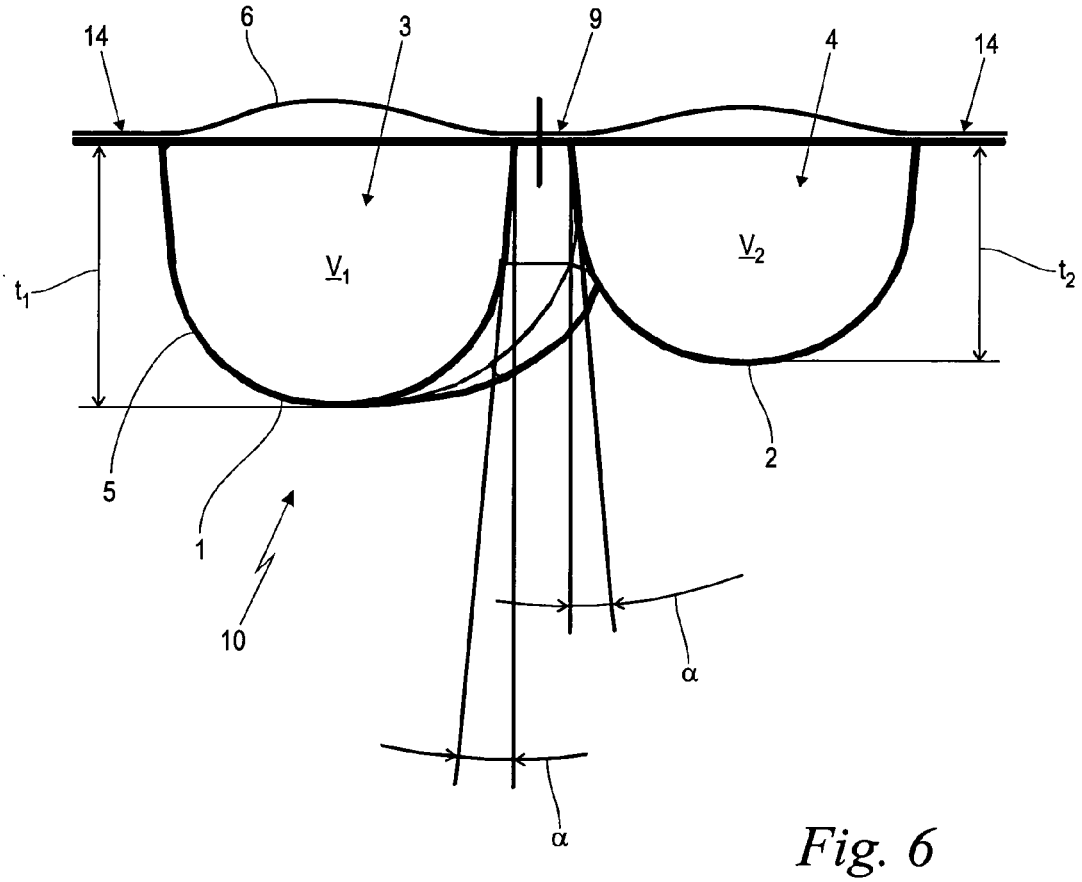

Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 12 00 0317

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 375 637 A1 (UNILEVER NV [NL]; UNILEVER PLC [GB]) 2 January 2004 (2004-01-02) * paragraphs [0001], [0011], [0013], [0016] - [0025], [0031], [0060]; figures 1b, 1c *	1-12	INV. B65D65/46 B65D81/32 B65D75/32 C11D17/04
A	US 2007/157572 A1 (OEHMS DIANA [DE] ET AL) 12 July 2007 (2007-07-12) * abstract; figures 1-2 * * paragraphs [0018] - [0026], [0127] - [0129] *	1	
A	WO 2008/087414 A1 (RECKITT BENCKISER NV [NL]; RECKITT BENCKISER UK LTD [GB]; MOREUX FREDE) 24 July 2008 (2008-07-24) * abstract; claims; figures *	1	
A	EP 1 647 494 A2 (RECKITT BENCKISER UK LTD [GB]) 19 April 2006 (2006-04-19) * abstract; claims; figures 2-4 *	1	TECHNICAL FIELDS SEARCHED (IPC)
A	WO 03/029102 A1 (UNILEVER PLC [GB]; UNILEVER NV [NL]; LEVER HINDUSTAN LTD [IN]) 10 April 2003 (2003-04-10) * abstract; figure 3 *	1	B65D C11D

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 June 2012	Serrano Galarraga, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 00 0317

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-06-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1375637 A1	02-01-2004	NONE	
US 2007157572 A1	12-07-2007	AU 2004299332 A1	30-06-2005
		BR PI0417152 A	31-07-2007
		CA 2549764 A1	30-06-2005
		CN 1894132 A	10-01-2007
		EP 1694563 A1	30-08-2006
		GB 2419864 A	10-05-2006
		US 2007157572 A1	12-07-2007
		WO 2005058700 A1	30-06-2005
		ZA 200604099 A	31-10-2007
WO 2008087414 A1	24-07-2008	AT 501951 T	15-04-2011
		EP 2117954 A1	18-11-2009
		ES 2361701 T3	21-06-2011
		US 2010101612 A1	29-04-2010
		WO 2008087414 A1	24-07-2008
EP 1647494 A2	19-04-2006	EP 1447343 A2	18-08-2004
		EP 1457431 A2	15-09-2004
		EP 1647494 A2	19-04-2006
		EP 2266889 A2	29-12-2010
		US 2009008820 A1	08-01-2009
WO 03029102 A1	10-04-2003	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82