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(54) **CONTAINER AND CLOSURE COMBINATIONS**

BEHÄLTER- UND VERSCHLUSSKOMBINATIONEN

COMBINAISONS DE RÉCIPIENT ET SYSTÈME DE FERMETURE

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Description

[0001] The present invention relates to containers and closures suitable for providing visually improved combinations thereof. The present invention also relates to the provision of an opening mechanism for such container and closure combinations.

[0002] US 3,982,651 discloses a molded container and cap, having curved rims. The cap has a skirt with a bead cooperating with a groove in the container.

OBJECTS OF THE INVENTION

[0003] It is an object of the invention to provide containers and closures therefore suitable for visually improved combinations. Particularly, it is an object of the invention to provide container and closure combinations, the outside surfaces of which are being substantially flush with each other when the parts are combined.

[0004] It is another object of the invention to provide container and closure combinations with opening mechanisms having improved visual appearance as well as facilitating easy opening, i.e. parting of the closure from the container.

[0005] It is yet another object of the invention to provide container and closure combinations comprised by identical parts thereby improving cost efficiency.

[0006] These and several other objects of the invention will become apparent from the following description. The above listing of objects is thus not to be considered exhaustive nor limiting to the scope of the invention.

SUMMARY OF THE INVENTION

[0007] Thus, the above described objects and several other objects are intended to be obtained by the invention by providing a container and closure combination according to claim 1.

[0008] In an embodiment, the connecting portion is a neck portion on one of the parts surrounding a substantially circular opening, the neck portion made integral with, and having an outer dimension smaller than the outer dimension of the wall portion, to provide a recess sized to substantially accommodate the wall portion of the other part, said neck portion varying in height along the periphery of the part, and the wall portion of the other part varying correspondingly in height along its periphery, wherein said combination is adapted to achieve a substantially flush outer surface of the container and the closure when combined.

[0009] In another embodiment, the connecting portion is an intermediate element surrounding a substantially circular opening.

[0010] In yet another embodiment, the intermediate element may be a ring-shaped member that may engage with one or both of the container and closure parts, e.g. by an interference fit.

[0011] In yet another embodiment, the intermediate element may be a circular cup-shaped member. By cup-shaped is meant a member having a bottom part and a sidewall part having an extension in a direction substantially perpendicular to the plane of the bottom part and preferably made integral with the bottom part. The cup-shaped member may engage with one or both of the container and closure parts, e.g. by an interference fit.

[0012] The cup-shaped member may in embodiments be arranged with the bottom part thereof closest to the closure part of the combination. In embodiments, the cup-shaped member may be provided with one or more cut-throughs, or openings, in the bottom part. The openings may be re-closable and/or provided with an opening and/or locking mechanism.

[0013] The cup-shaped member may in embodiments comprise one or more additional surface planes parallel to the bottom part and situated in spaced apart positions along the extent of the sidewall part so as to provide the cup-shaped member with one or more internal compartments between the parallel surface planes. Such additional surface planes may also comprise cut-throughs or openings as already described with regard to the bottom part. Such an additional surface plane may also form a "top" part and thereby the element in practice defines a cylinder shape that may hold a product inside such as, but not limited to, food, nutritions, candy, tobacco, medicine or toys to which a user has access by one or more cut-throughs or openings.

[0014] In these embodiments of the ring- and the cup-shaped member, the outer peripheral dimension, or the outer diameter, of the member, may preferably, but not exclusively, be of such value that the outer peripheral surface may engage in an interference fit with an inner, peripheral surface of the wall and/or the neck portion on one or both of the container and closure parts. The parts can thereby be connected more or less by simple sliding or press-fit into to each other.

[0015] In other embodiments, one or more areas on the peripheral outer surface of the intermediate element may be provided with one or more protrusions adapted to engage in an interference fit with an inner, peripheral surface of the wall and/or the neck portion on one or both of the container and closure parts. Such protrusions may provide an even better or firmer attachment (interference fit) between the element and the parts, and/or provide a particular and distinct "closing-feeling" or "closing-sound" to the user, e.g. in order to indicate or assure to the user that the combination is correctly and adequately re-closed (or opened) when the combination is put together or separated. However, the interference fit may also be provided by other suitable means enabling friction between the parts.

[0016] In yet other embodiments, the protrusions on the peripheral outer surface of the intermediate element adapted to engage with the closure part of the combination are substantially drop-shaped.

[0017] In other embodiments the radial extent of such one or more drop-shaped protrusions, with respect to the

peripheral outer surface of the intermediate element, increases with the width of the drop-shaped protrusion, or at least substantially increases therewith. The increase of the radial extension of the drop-shaped protrusion may be of a linear or non-linear character and may be different from protrusion to protrusion. By providing the drop-shaped protrusions with such radial extending, the user may preferably find it particularly easy to "click" on the closure part of the container, as the wall and/or neck portion of the closure part will be guided into place in its correct closing, or resting, position on the intermediate element and the container part, and thus fit the combination together in the intended manner.

[0018] In embodiments wherein the container part is attached to the intermediate element by means of one or more protrusions on the outer peripheral surface of the element, such protrusions may comprise any suitable size and/or shape. Preferably, however, the protrusions may be provided such that their lateral extent is larger than their vertical extent on the peripheral outer surface of the element.

[0019] In another embodiment, the peripheral outer surface of the intermediate element further comprises a circumventing collar following the height variation of the neck and/or wall portion(s). The circumventing collar is preferably so adapted that its outer edge will be flush with the container and closure parts when the combination is closed. The circumventing collar may be a single, continuous protrusion or it may be provided as two or more separate protrusions provided end to end with each other. The circumventing collar may be provided with one or more colours, e.g. if desired to clearly differentiate the collar from the container and closure parts. The circumventing collar may be provided such that it is wholly or partly visible to the user, even when the combination is closed. However, it may also be covered by the wall and/or neck portion(s) of either one or both of the container and closure parts. The collar on the intermediate part aids in maintaining the correct positioning and secure attachment of the container and closure parts of the combination to the intermediate element. Particularly, but not exclusively, in the situation where the combination is to be opened the collar will prevent unintended movement of the container part when the container and closure parts are turned or twisted in opposite directions for opening.

[0020] The intermediate element may further comprise means for engaging with internal or external elements such as, but not limited to, means that allow the combination to be presented visually attractive to a user (buyer) e.g. as one or more eyes, or eyelets, suitable for hanging the combination onto a shelf in a shop. Such means may preferably, but not exclusively, be made integral with the intermediate element. In the embodiment wherein the intermediate element comprises a circumventing collar the means may be arranged in connection with the visible (outer) surface of the collar thereby extending perpendicularly from the wall portions of the container and closure parts. The means may further be detachably or removably arranged so that the user may have the option to remove such means once they are purchased. Many other applications of such means are imaginable; the means can be provided on the inside of the intermediate element e.g. as a cutting edge for opening a plastic packaging around a product sold in the combination. The means can be so arranged that they are activated and/or engaged once the user twists open the combination.

[0021] The material of the intermediate element may preferably, but not exclusively, comprise a light weight metal or metal alloy, such as aluminium, or it may preferably comprise, but not be limited to, paper and/or cardboard and/or rubber and/or wood and/or leather and/or silicone and/or plastic (polymer), such as PP, PA, PMMA, PC, PELD, PEHD, PET or elastomers or polymers or rubber or any combination thereof. If a plastic (polymer) is used the intermediate element may preferably be injection or blow moulded.

[0022] The intermediate element may be replaceable by a new or another intermediate element e.g. if the intermediate element holds one of the products indicated above. Thus, a user may keep the container and closure part of the combination and then only need to replace the intermediate element (re-fill) whenever needed. In order to aid in the possible removal and/or replacing and/or stabilizing of the intermediate element in the relevant part, it may be provided with relevant means on or in its surfaces.

[0023] The protrusions on the intermediate element and on the container and closure parts may preferably be of the same kind of material as the respective parts and/or intermediate element, or may alternatively comprise another material and may further be fastened separately by any conventional method.

[0024] These embodiments are particularly, but not exclusively, advantageous for obtaining a container and closure combination for which the outside surfaces may be substantially flush with each other when the container and closure are combined as well as obtaining a combination wherein a customized course of the abutting surfaces of the container and the closure with or without the collar on the intermediate element may be provided. Combinations provided with an intermediate element may be particularly beneficial with regard to production costs as the element may be used to combine two identical container and closure parts, the one then constituting the container part together with the intermediate element and the other being the closure part.

[0025] Furthermore, the base portion of the container as well as the closure may preferably, but not exclusively, be concave or convex for achieving a further visual detail and/or for achieving a combination with an appealing touch for the user, e.g. when holding the closed combination between the thumb and the index finger of one hand.

[0026] In an embodiment, the height variation of said neck and/or wall portions of the combination is so adapt-

ed that the parts are complementary to each other when the container and closure parts are combined.

[0027] This embodiment is particularly, but not exclusively, advantageous for obtaining a container and closure combination for which the outside surfaces may be substantially flush with each other when the container and closure are combined and further for obtaining a tight fit between the parts.

[0028] In another embodiment, the height variation of the above described portions of the combination describes a curve. This means that both the wall and/or neck portion(s) of the closure and container parts and/or the collar on the intermediate element may vary in height along said curve.

[0029] In yet another embodiment the curve described by the height variation is a sinusoid.

[0030] These embodiments are particularly, but not exclusively, advantageous for obtaining a container and closure combination for which the parting of the closure from the container may be easily performed. A counter-directed turning of a container and a closure having portions varying in height along a sinusoid, provides a combination that requires only little manual effort for turning the two parts in different directions in relation to each other for opening of the combination, while still providing a tight fit between the parts when they are combined.

[0031] In further embodiments, the wall portions and/or the neck portion is/are provided with an inwardly curled portion. The inwardly curled portion may preferably, but not exclusively, be adapted to engage with the engagement means on the peripheral, outer surface of the intermediate element. Particularly, in embodiments wherein the engagement means are drop-shaped protrusions, a user may find it easy to "click" on the closure part to the intermediate element as the inwardly curled portion advantageously slides over the radially extending drop-shaped protrusion until the inwardly curled portion engages therewith in an interference fit ("snap-fit").

[0032] This is particularly, but not exclusively, advantageous for obtaining a smooth and even surface of the wall portions and/or the neck portion for the achievement of a tight and easy fit between the parts. However, if relevant, the curled portion may in stead curl outwards from the periphery of the container or closure part.

[0033] In a still further embodiment, the wall and/or the neck portions or the inwardly curled portion thereof comprises engagement means.

[0034] In an embodiment, the means for engaging may comprise threading means.

[0035] In embodiments, the threading means may comprise one or more threads distributed along the outer periphery of said wall and/or neck portion(s) of the container part and/or distributed along the inner periphery of said wall and/or neck portion(s) of the closure part.

[0036] In embodiments, the threading means may comprise threads having a pitch of 5-10 mm.

[0037] In another embodiment, the means for engaging may comprise two or more protrusions distributed along the outer periphery of said wall and/or neck portion(s) of the container part and/or distributed along the inner periphery of said wall and/or neck portion(s) of the closure part.

[0038] The threading means and/or the two or more protrusions may be provided on either the container part or on the closure part or on both parts. However, the engaging means on either of the parts may alternatively to the embodiments described above also or in stead comprise a bayonet-type engagement, a snap-fit engagement or other similar and well-known types of engagements.

[0039] These embodiments are particularly, but not exclusively, advantageous for obtaining intuitive and simple types of engagements while still providing a firm, even and tight fit when combined, while still requiring only little manual effort for turning the two parts in different directions in relation to each other for opening of the combination.

[0040] In a further embodiment, a transition between the wall portion and the neck portion of the container has a radius of curvature of less than 2 mm.

[0041] This is particularly, but not exclusively, advantageous for obtaining a very sharp transition, which enables the closure to abut an outer edge of the transition with a very limited gap between the container and closure parts.

[0042] In a further embodiment the container and closure combination further comprises a sealing arranged between the container and closure.

[0043] This is particularly, but not exclusively, advantageous for obtaining a combination providing a substantially leek-proof and/or odour-proof fit.

[0044] According to the invention different materials may be used for the different parts of container and closure combinations. These may preferably, but not exclusively, be so adapted that the different parts are easily separable from each other if/when the combination parts are to be disposed of. This is particularly, but not exclusively, suitable for assuring an easy sorting of the materials for subsequent recycling purposes. This may be environmentally advantageous, especially when the combination is intended as a disposable packaging, e.g. if used for food stuffs or other perishable goods.

BRIEF DESCRIPTION OF THE FIGURES

[0045] The container and closure combinations according to the invention will now be described in more detail with regard to the accompanying figures. The figures show examples of implementing the present invention and are not to be construed as limiting to other possible embodiments falling within the scope of the attached claim set.

Figure la is a schematic side view of a container and closure combination wherein the wall portions of the container and the closure parts vary in height along

their peripheries. Figure 1b is a perspective side view of the same. Figure 1c is another perspective view of the combination.

Figure 2a is an enlarged perspective side view of the combination of figure 1 in a separated/opened state.

Figure 2b is a schematic side view of a combination comprising an intermediate element.

Figure 3a is a side view of the intermediate element of the combination in the form of a cup-shaped member. Figure 3b is a top view thereof. Figure 3c is another side of the cup-shaped member. Figure 3d is a perspective view of the cup-shaped member of figures 3a-3c.

Figure 4 is an exploded, schematic side view of a combination according to the invention in the embodiment using the cup-shaped member also shown in figures 3a-3d as an intermediate element. As can be seen, the container and closure parts of the combination may in this embodiment be identical or substantially identical parts.

DETAILED DESCRIPTION OF THE INVENTION

[0046] Figures 1a-1c and figures 2a-2b show a container and closure combination generally indicated 1. The combination comprises a container part 3 and a closure part 2. In figures 1a-1c the combination is in a combined or "closed" state. In figures 2a-2b the combination is in a separated or "opened" state.

[0047] As illustrated in figure 2a, the container part 3 comprises a base portion (the "bottom", not indicated), a wall portion 4 and a connecting portion 5 in the form of a neck portion 5a. The outer dimension of the neck portion 5a is smaller than the outer dimension of the wall portion 4 of the container part whereby a recess for accommodating the wall portion 6 of the closure part is provided. The wall portion 4 of the container part 3 and the wall portion 6 of the closure part 2 both vary in height along their respective peripheries as is shown in the figure. In figures 1a-1c it can be seen how the wall portions 4 and 6 are complementary to each other when the parts 2 and 3 are combined/closed.

[0048] In figures 1a-1c and figure 2a the height variation of the wall portions 4 and 6 describes a sinusoid curve, but the variation may of course follow any type of curve. In the embodiment wherein the variation follows a sinusoid curve it is particularly easy and intuitive to separate/open the combination 1 by a simple twist of the two parts 2 and 3 in opposite directions, while the combination is still safely closed with a tight fit when the parts are combined. Apart from providing a simple opening of the combination the embodiment further provides an aesthetically improved container and closure combination.

[0049] In the embodiment of figures 1a-1c and figure 2a the neck portion 5a and the wall portion 6 are both provided with an inwardly curled portion 7 and 8 respectively, particularly for making the neck portion 5a and the wall portion 6 engage along a smooth edge thereby also ascertaining a tight fit between the parts.

[0050] Embodiments can also comprise engagement means such as protrusions or threads for providing a mating engagement between the parts 2 and 3, however these are not shown in figures 1a-1c or 2a. The engagement means can be provided on the outer side of the neck portion 5a of the container and on the inner side of the wall portion 6 of the closure. In an embodiment the combination is kept "closed" as a result of friction forces between the neck portion 5a and the wall portion 6.

[0051] The transition 9 between the wall portion 4 and the neck portion 5 is provided with a radius of curvature of less than 2mm, such as less than 1mm.

[0052] As illustrated in figure 2b, the combination 1 may alternatively comprise two identical parts 2 and 3 both having a base portion (the "bottom", not indicated) and a wall portion 4. Also shown is a connecting portion 5 in the form of an intermediate element comprised by a ring-shaped member 5b. The outer dimension of the ring-shaped member 5b is smaller than the outer dimension of the wall portions 4 of the combination parts 2 and 3. The wall portions 4 of the combination parts 2 and 3 vary in height along their respective peripheries as is shown in the figure. In the figure it can be seen how the wall portions 4 can be complementary to each other when the parts 2 and 3 are combined/closed. In this embodiment the combination is combined by attaching the two parts 2 and 3 to the ring-shaped member 5b e.g. by an interference fit. In the figure, an example of protrusions 5c on the periphery of the ring-shaped member for providing interference fit in terms of friction between the parts 2 and 3 and 5b, is illustrated. The protrusions 5c are shown to be of dissimilar shape and/or size and/or type so as to facilitate a possible difference in the force required to open the parts 2 and 3, respectively. Other types of friction or engagement means between the parts may of course be used in order to provide a custom fit combination.

[0053] In figure 2b, the height variation of the wall portions 4 of the identical parts 2 and 3 describes a sinusoid curve, but the variation may of course follow any type of curve. In the embodiment wherein the variation follows a sinusoid curve it is particularly easy and intuitive to separate/open the combination 1 by a simple twist of the two parts 2 and 3 in opposite directions, while the combination is still safely closed with a tight fit when the parts are combined. Apart from providing a simple opening of the combination the embodiment further provides an aesthetically improved container and closure combination.

[0054] In the embodiment illustrated in figure 2b the wall portions 4 are both provided with an inwardly curled portion 7 and 8 respectively, particularly for making them engage along a smooth edge thereby also ascertaining a tight fit between the parts when combined.

[0055] Figure 3a is a first side view of the connecting portion 5 in the form of a cup-shaped member 5c of the combination according to an embodiment of the invention. The cup-shaped member 5c is shown with engagement means in the form of protrusions 11 for engaging with a "container" part 3 as shown in figure 2b.

[0056] As the parts 2 and 3 of figure 2b are identical and are intended to be attached to the intermediate element 5c, the container part of the combination according to the embodiments including an intermediate element 5b, 5c can be understood as being constituted by the intermediate element and a part 2,3.

[0057] The cup-shaped member 5c is also illustrated with drop-shaped protrusions 12 for engaging with a closure part 2 of the combination. Further shown is a circumventing collar 13 with surfaces 13a and 13b (best seen in figures 3b-3d) building an abutting surface the wall and/or neck portions of the parts 2,3, particularly for an inwardly curled portion thereof.

[0058] Figure 3c is another side view of the cup-shaped member 5c basically showing the same features as figure 3a, but taken from another position along the periphery of the member and intended to illustrate the height variation of the collar 13. In figures 3c and 3d it is also possible to see one or more means for aiding in the possible releasing of the member 5c from the part 3 in the form of cuts 14a (figure 3c) and means for stabilizing the member 5c in the part 3 in the form of supporting feet or fins 14b.

[0059] Figure 4 shows (in exploded view) very schematically how a combination may be comprised from a cup-shaped member 5c onto which a container 3 and a closure 2 part can be attached, preferably by clicking the parts onto the member by letting the inwardly curled portion 15 of the closure engage with the drop-shaped protrusions 12, and by letting the inwardly curled portion 16 of the container part 3 engage with the protrusions 11. The inwardly curled portions 15,16 can then engage with the surfaces 13a and 13b respectively, of the circumventing collar 13.

[0060] Although the present invention has been described in connection with the specified embodiments, it is not intended to be limited to the specific form set forth herein. Rather, the scope of the present invention is limited only by the accompanying claims. In the claims, the term "comprising" does not exclude the presence of other elements or steps. Additionally, although individual features may be included in different claims, these may possibly be advantageously combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. In addition, singular references do not exclude a plurality. Thus, references to "a", "an", "first", "second" etc. do not preclude a plurality. As such, this detailed description of various alternative embodiments should not be construed to limit the scope or the breadth of the present invention as set forth in the appended claims. Furthermore, reference signs in the claims shall also not be construed as limiting the scope.

Claims

1. A container and closure combination (1) comprising

- a container part (3);
- a closure part (2); and
- a connecting portion (5) for connecting said parts (2, 3),

the container part (3) comprising a base portion and a wall portion (4),
the closure part (2) comprising a base portion and a wall portion (4, 6),
said connecting portion (5) surrounding a substantially circular opening, and
having an outer dimension smaller than the outer dimension of the wall portions (4, 6) of the parts (2, 3) to provide a recess sized to substantially accommodate said wall portions (4, 6),
the wall portions (4, 6) of the container part (3) and the closure part (2) varying in height along their peripheries, the height variation of said wall portions being so adapted that the parts are complementary to each other when combined,
said container and closure combination (1) being adapted to achieve a substantially flush outer surface of the container (3) and the closure (2) when combined, **characterized in that** an inwardly curled portion (8, 15) is provided along an edge of the wall portion (4, 6) of the closure part (2); and **in that** one or more areas on a peripheral outer surface of the connecting portion (5) is provided with one or more protrusions (12) adapted to engage in an interference fit with said inwardly curled portion of the wall portion (4, 6) of the closure (2).

2. A combination according to claim 1, wherein the one or more protrusions (12) adapted to engage with the closure part of the combination is/are substantially drop-shaped.

3. A combination according to claim 2, wherein the radial extent of said one or more drop-shaped protrusions (12), with respect to the peripheral outer surface of the intermediate element, increases with the width of the drop-shaped protrusion.

4. A combination according to any one of claims 1-3, wherein said protrusions are distributed along and spaced apart in a direction parallel to the outer periphery of said connecting portion (5).

5. A combination according to any one of claims 1-4, wherein the connecting portion (5) is a neck portion on one of the parts (2, 3) surrounding a substantially

circular opening, the neck portion made integral with the wall portion (4).

6. A combination according to any one of claims 1-4, wherein the connecting portion (5) is an intermediate element surrounding a substantially circular opening.

7. A combination according to claim 6, wherein the intermediate element is a ring-shaped member (5b).

8. A combination according to claim 6, wherein the intermediate element is a circular cup-shaped member (5c).

9. A combination according to any one of claims 5-8, wherein the peripheral outer surface of the intermediate element further comprises a circumventing collar (13) following the height variation of the neck and/or wall portion(s).

10. A combination according to any one of claims 6-9, wherein the container part (3) comprises an inwardly curled portion (7, 16) is provided along an edge of the wall portion (4).

11. A combination according to claim 10, wherein the intermediate element (5, 5b, 5c) is provided with one or more protrusions (11) adapted to engage in an interference fit with said inwardly curled portion of the wall portion (4) of the container part (3).

12. A combination according to claim 11, wherein said one or more protrusions (11) are provided such that their lateral extent is larger than their vertical extent on the peripheral outer surface of the element.

13. A combination according to any one of claims 1-12, wherein the height variation describes a curve.

14. A combination according to claim 13, wherein the described curve is a sinusoid.

Patentansprüche

1. Behälter- und Verschlusskombination (1), umfassend

- ein Behälterteil (3);
- ein Verschlussteil (2) und
- ein Verbindungsteil (5) zum Verbinden der beiden Teile (2, 3),

wobei das Behälterteil (3) einen Bodenabschnitt und einen Wandabschnitt (4) umfasst,
wobei das Verschlussteil (2) einen Bodenabschnitt und einen Wandabschnitt (4, 6) umfasst,
wobei das Verbindungsteil (5) eine im Wesentlichen kreisförmige Öffnung umgibt und einen Außendurchmesser aufweist, der kleiner ist als der Außendurchmesser der Wandabschnitte (4, 6) der Teile (2, 3), um eine Vertiefung bereitzustellen, die im Wesentlichen zur Aufnahme der Wandabschnitte (4, 6) bemessen ist,
wobei die Wandabschnitte (4, 6) des Behälterteils (3) und des Verschlussteils (2) entlang ihrer Umkreise unterschiedliche Höhen aufweisen, wobei die Höhenänderung der Wandabschnitte derart vorgesehen ist, dass die Teile beim Zusammenfügen zueinander komplementär sind,
wobei die Behälter- und Verschlusskombination (1) beschaffen ist, beim Zusammenfügen eine im Wesentlichen glatte Außenfläche des Behälters (3) und des Verschlusses (2) zu erreichen, **dadurch gekennzeichnet, dass** entlang einer Kante des Wandabschnitts (4, 6) des Verschlussteils (2) ein nach innen gerollter Abschnitt (8, 15) vorgesehen ist und dass eine oder mehrere Flächen an einer peripheren Außenfläche des Verbindungsteils (5) ein oder mehrere Vorsprünge (12) aufweisen, die zum Eingriff mit dem nach innen gerollten Abschnitt des Wandabschnitts (4, 6) des Verschlusses (2) in Presspassung vorgesehen sind.

2. Kombination nach Anspruch 1, wobei der eine oder die mehreren Vorsprünge (12), die zum Eingriff mit dem Verschlussteil der Kombination beschaffen sind, im Wesentlichen tropfenförmig ist/sind.

3. Kombination nach Anspruch 2, wobei die radiale Ausdehnung des einen oder der mehreren tropfenförmigen Vorsprünge (12) in Bezug auf die periphere Außenfläche des Zwischenelements mit der Breite des tropfenförmigen Vorsprungs zunimmt.

4. Kombination nach einem der Ansprüche 1-3, wobei die Vorsprünge in einer Richtung parallel zum Außenumkreis des Verbindungsteils (5) angeordnet und voneinander beabstandet sind.

5. Kombination nach einem der Ansprüche 1-4, wobei das Verbindungsteil (5) ein Halsabschnitt eines der Teile (2, 3) ist, die eine im Wesentlichen kreisförmige Öffnung umgeben, wobei der Halsabschnitt einstükkig mit dem Wandabschnitt (4) ausgebildet ist

6. Kombination nach einem der Ansprüche 1-4, wobei das Verbindungsteil (5) ein Zwischenelement ist, das eine im Wesentlichen kreisförmige Öffnung umgibt.

7. Kombination nach Anspruch 6, wobei das Zwischenelement ein ringförmiges Element (5b) ist.

8. Kombination nach Anspruch 6, wobei das Zwischen-

element ein kreisförmigschalenförmiges Element (5c) ist.

9. Kombination nach einem der Ansprüche 5-8, wobei die periphere Außenfläche des Zwischenelements weiterhin einen Umkreiskragen (13) umfasst, der der Höhenänderung des Halses und/oder des Wandabschnitts bzw. der Wandabschnitte folgt.

10. Kombination nach einem der Ansprüche 6-9, wobei das Behälterteil (3) einen nach innen gerollten Abschnitt (7, 16) umfasst, der entlang einer Kante des Wandabschnitts (4) vorgesehen ist.

11. Kombination nach Anspruch 10, wobei das Zwischenelement (5, 5b, 5c) mit einem oder mehreren Vorsprünge (11) versehen ist, die zum Eingriff mit dem nach innen gerollten Abschnitt des Wandabschnitts (4) des Behälterteils (2) in Presspassung vorgesehen sind.

12. Kombination nach Anspruch 11, wobei eine oder mehrere Vorsprünge (11) derart vorgesehen sind, dass ihre laterale Ausdehnung an der peripheren Außenfläche des Elements größer ist als ihre vertikale Ausdehnung.

13. Kombination nach einem der Ansprüche 1-12, wobei die Höhenänderung eine Kurve beschreibt.

14. Kombination nach Anspruch 13, wobei die beschriebene Kurve sinusförmig ist.

Revendications

1. Combinaison d'un récipient et d'une fermeture (1) comprenant

- une pièce récipient (3) ;
- une pièce de fermeture (2) ; et
- une partie de raccordement (5) pour raccorder lesdites pièces (2, 3),

la pièce récipient (3) comprenant une partie de base et une partie paroi (4),
la pièce de fermeture (2) comprenant une partie de base et une partie paroi (4, 6),
ladite partie de raccordement (5) entourant une ouverture essentiellement circulaire, et présentant une dimension extérieure inférieure à la dimension extérieure des parties paroi (4, 6) des pièces (2, 3) afin de former un évidement dimensionné pour recevoir essentiellement lesdites parties paroi (4, 6),
les parties paroi (4, 6) de la pièce récipient (3) et de la pièce de fermeture (2) variant en hauteur le long de leur périphérie, la variation de hauteur desdites parties paroi étant adaptée pour que les pièces soient complémentaires l'une de l'autre lorsqu'elles sont combinées,
ladite combinaison d'un récipient et d'une fermeture (1) étant adaptée pour que la surface extérieure du récipient (3) et de la fermeture (2), lorsqu'ils sont combinés, soit essentiellement au même niveau, **caractérisée en ce qu'**une partie incurvée vers l'intérieur (8, 15) se trouve le long d'un bord de la partie paroi (4, 6) de la pièce de fermeture (2) ; et **en ce qu'**une ou plusieurs zones d'une surface extérieure périphérique de la partie de raccordement (5) sont munies d'une ou plusieurs protubérances (12) adaptées pour s'engager par ajustement avec serrage dans ladite partie incurvée vers l'intérieur de la partie paroi (4, 6) de la fermeture (2).

2. Combinaison selon la revendication 1, dans laquelle les une ou plusieurs protubérances (12) adaptées pour s'engager dans la pièce de fermeture de la combinaison est/sont essentiellement en forme de goutte.

3. Combinaison selon la revendication 2, dans laquelle l'étendue radiale desdites une ou plusieurs protubérances (12) en forme de goutte, par rapport à la surface extérieure périphérique de l'élément intermédiaire, augmente avec la largeur de la protubérance en forme de goutte.

4. Combinaison selon l'une quelconque des revendications 1 à 3, dans laquelle lesdites protubérances sont réparties le long de, et espacées les unes des autres dans une direction parallèle à, la périphérie extérieure de ladite partie de raccordement (5).

5. Combinaison selon l'une quelconque des revendications 1 à 4, dans laquelle la partie de raccordement (5) est une partie étranglée de l'une des pièces (2, 3) entourant une ouverture essentiellement circulaire, la partie étranglée étant intégrée à la partie paroi (4).

6. Combinaison selon l'une quelconque des revendications 1 à 4, dans laquelle la partie de raccordement (5) est un élément intermédiaire entourant une ouverture essentiellement circulaire.

7. Combinaison selon la revendication 6, dans laquelle l'élément intermédiaire est un élément en forme d'anneau (5b).

8. Combinaison selon la revendication 6, dans laquelle l'élément intermédiaire est un élément en forme de cuvette circulaire (5c).

9. Combinaison selon l'une quelconque des revendications 5 à 8, dans laquelle la surface extérieure périphérique de l'élément intermédiaire comprend

également un collier d'encerclement (13) qui suit la variation de hauteur de l'étranglement et/ou de la (des) partie(s) paroi.

10. Combinaison selon l'une quelconque des revendications 6 à 9, dans laquelle la pièce récipient (3) comprend une partie incurvée vers l'intérieur (7, 16) située le long d'un bord de la partie paroi (4).

11. Combinaison selon la revendication 10, dans laquelle l'élément intermédiaire (5, 5b, 5c) est muni d'une ou plusieurs protubérances (11) adaptées pour s'engager par ajustement avec serrage dans ladite partie incurvée vers l'intérieur de la partie paroi (4) de la pièce récipient (3).

12. Combinaison selon la revendication 11, dans laquelle lesdites une ou plusieurs protubérances (11) sont telles que leur étendue latérale est supérieure à leur étendue verticale sur la surface extérieure périphérique de l'élément.

13. Combinaison selon l'une quelconque des revendications 1 à 12, dans laquelle la variation de hauteur décrit une courbe.

14. Combinaison selon la revendication 13, dans laquelle la courbe décrite est une sinusoïde.

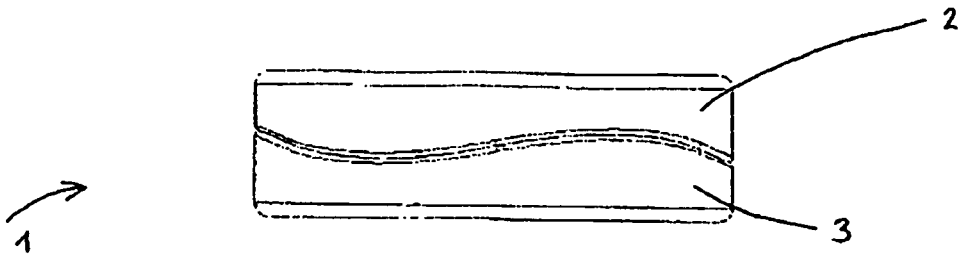

Fig. 1a

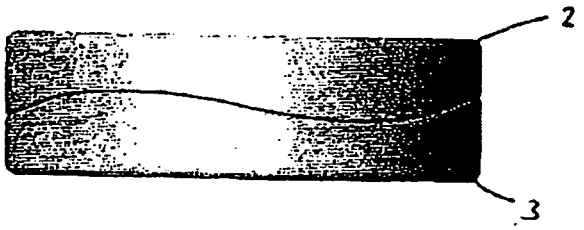

Fig. 1b

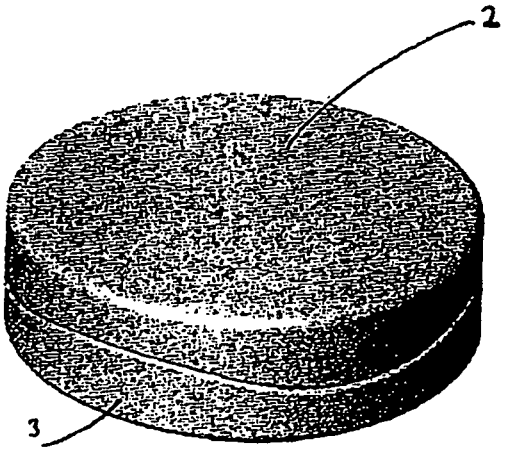

Fig. 1c

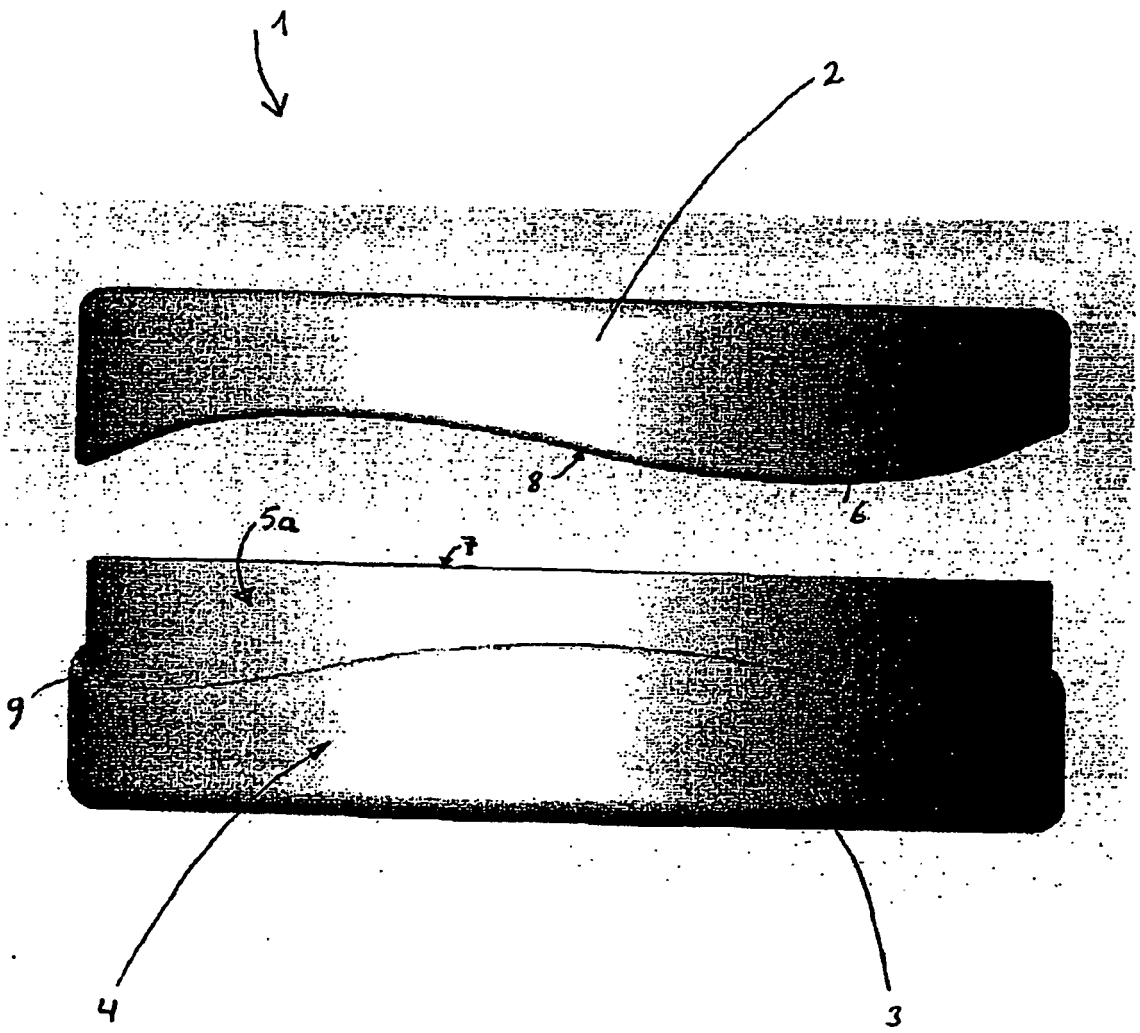

Fig. 2a

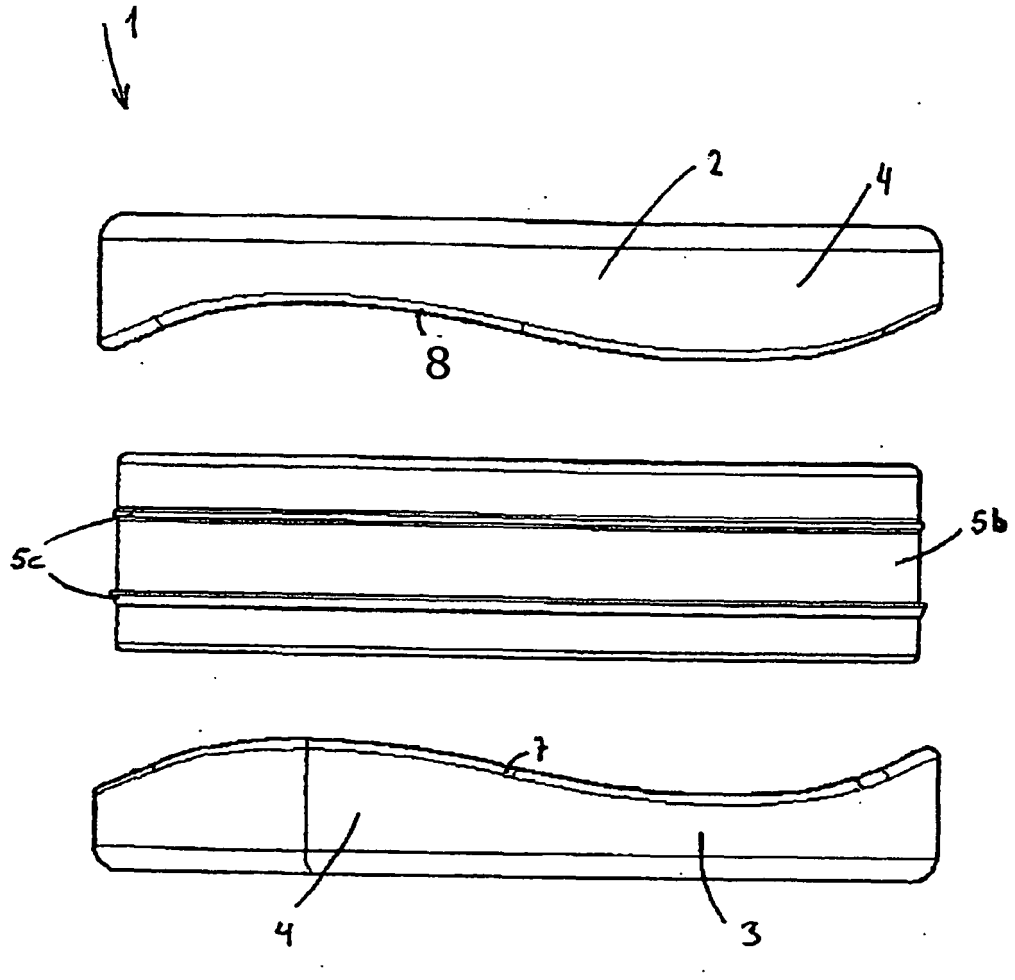

Fig. 2b

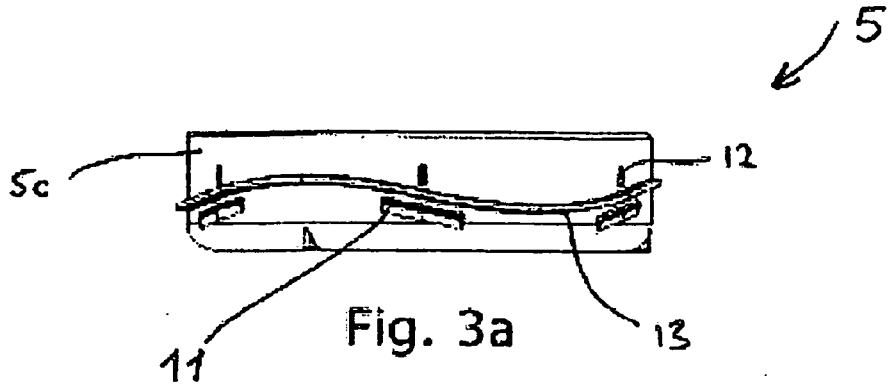

Fig. 3a

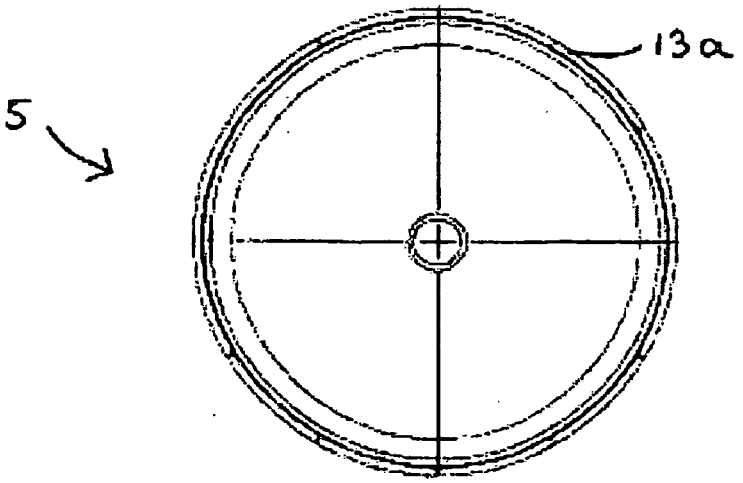

Fig. 3b

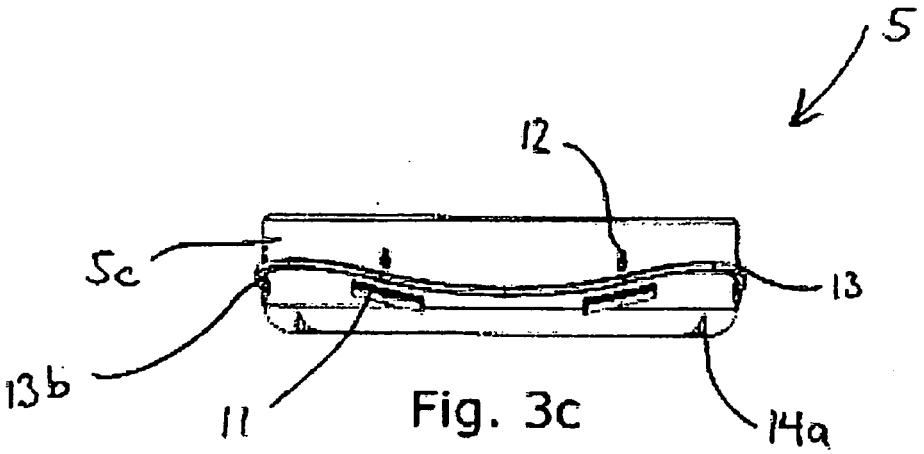

Fig. 3c

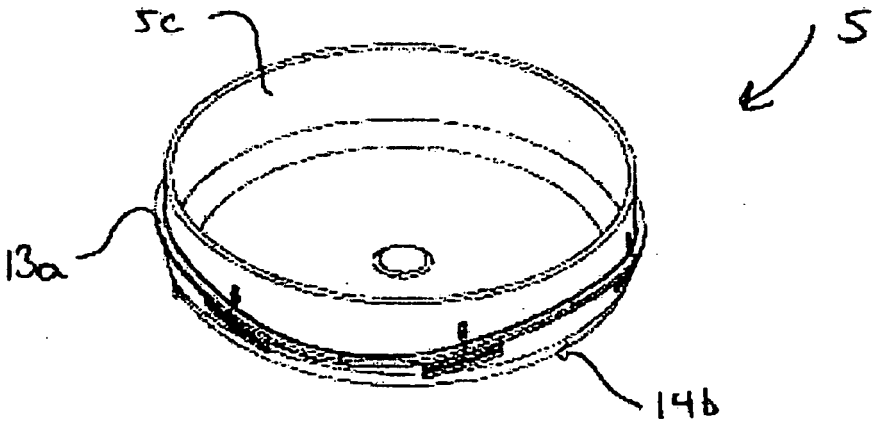

Fig. 3d

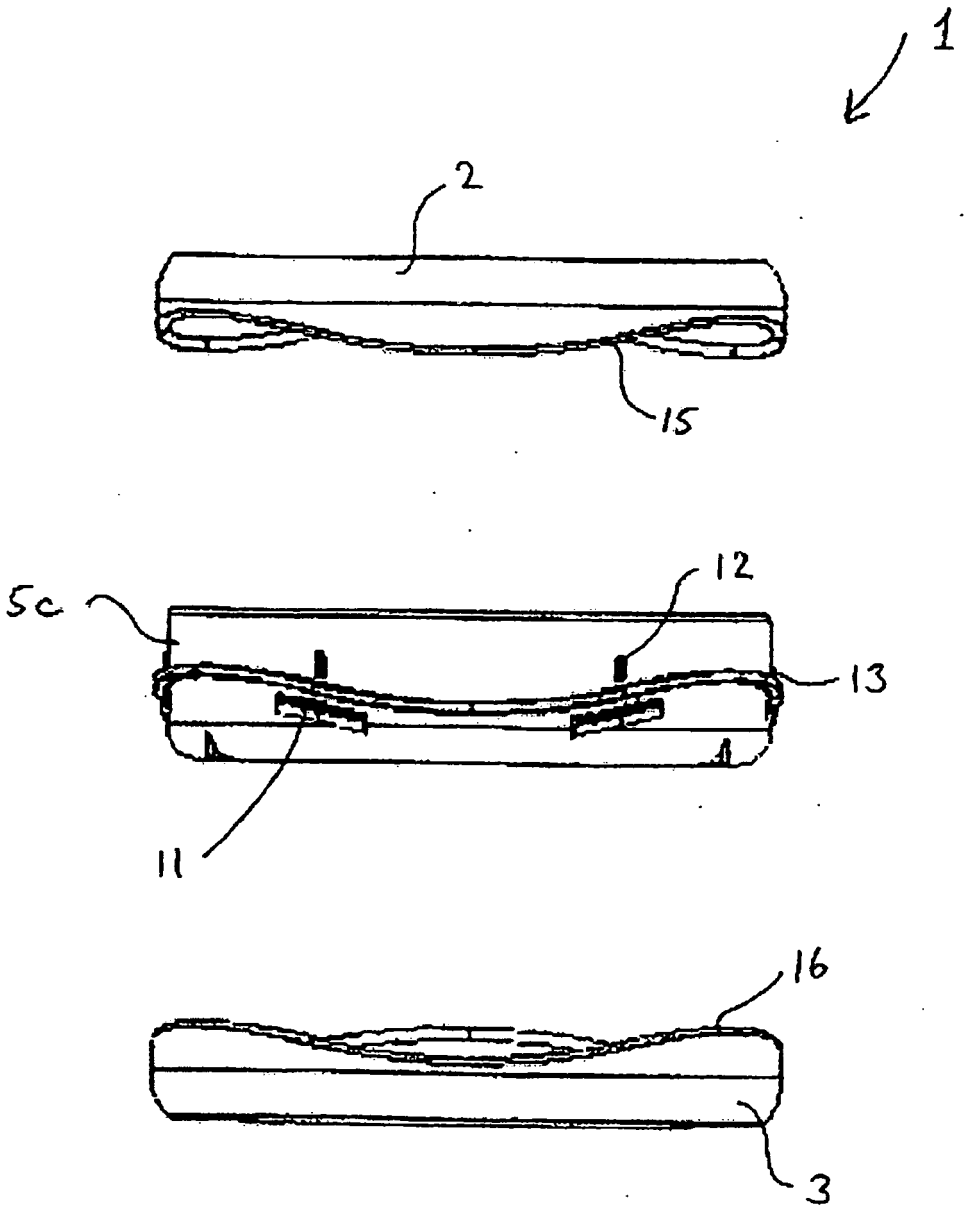

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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