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(54) Box

(57) A box, in particular a pastry box, comprising a cover lid and a base recipient, said cover lid being removable applied on said base recipient, said cover lid comprising a first side and a second side, said first and second side having a common edge, a border of said coverlid, situated opposite to said common edge, being provided with a strip, said strip being provided with at least one protrusion extending offset from a borderline of said strip, on said protrusion there being applied a cam having a front side extending in a direction substantially parallel to said first side when said strip extends substantially perpendicular with respect to said first side in such a manner as to extend inside said base recipient when said cover lid is mounted on said base recipient, said front side being situated offset from said borderline, said base recipient being provided with a first set of openings applied on a side of said base recipient and dimensioned in such a manner as to enable said protrusion to penetrate through said opening, said front side of each of said cams forming a hinge line (h2) for said cover lid when said protrusions have penetrated through said openings.

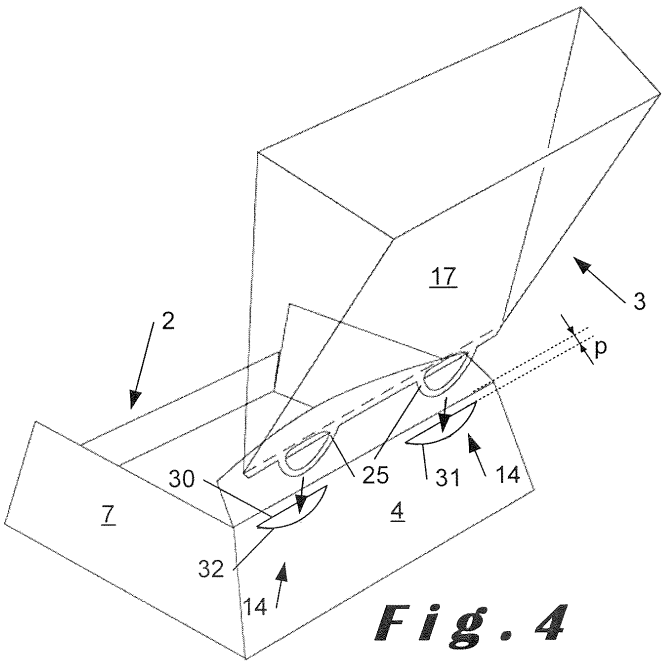

Fig. 4

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Description

[0001] The present invention relates to a box, in particular a pastry box, comprising a cover lid and a base recipient, said coverlid being removable applied on said base recipient, said cover lid comprising a first side provided to form a top plane and a second side provided to form a front plane of said box, said first and second side having a common edge.

[0002] Such a box is well known and commonly used for packing pastries, in particular in supermarkets. The use of a transparent coverlid enables that the consumer sees through the transparent coverlid what kind of pastry the box contains, thereby permitting a hygienic storage of the pastry. Because the coverlid is removably applied on the box recipient, both the coverlid and the base recipient can be separately stored, thereby enabling to save storage space. The commonly used boxes are generally of the "blister type", which signifies that the coverlid and the base recipient are circularly shaped and click into each other over the whole periphery of the box.

[0003] A drawback of the known boxes is that the closing mechanism of the box often implies a cumbersome opening. Moreover, as the closure extends over a generally circular periphery, a hinge movement of the coverlid with respect to the base member is only possible after complete removal of the coverlid.

[0004] It is an object of the invention to provide a box with a transparent cover lid, which can hinge with respect to the base recipient in a reliable manner without affecting the reliability of the box' construction.

[0005] For this purpose a box according to the present invention is characterised in that a border of one of said first or second sides, which border is situated opposite to said common edge, is provided with a strip, which strip extends substantially perpendicular to the side on which it is applied when said cover lid is mounted on said base recipient, said strip being provided with at least one protrusion extending offset from a borderline of said strip, on said protrusion there being applied a cam having a front side extending in a direction substantially parallel to said first side when said strip extends substantially perpendicular with respect to said first side in such a manner as to extend inside said base recipient when said cover lid is mounted on said base recipient, said front side being situated offset from said borderline, said base recipient being provided with a first set of openings dimensioned in such a manner as to enable said protrusion to penetrate through said opening, said front side of each of said cams forming a hinge line for said cover lid when said protrusions have penetrated through said openings. The use of at least one cam and a first set of openings in which the respective cam penetrate, enables to maintain the removable character of the cover lid. Since the cams are applied on protrusions which themselves extend offset the strip applied on a respective side of the cover lid, the openings in the base members can also be applied offset from the edge of the side of the base recipient in which the openings are applied. Due to the fact that a strip extends substantially perpendicular with respect to the border of the side on which it is applied, the strip will, when the cover lid is mounted on the box, extend substantially parallel with that side of the base recipient on which it rests, thereby permitting a suitable interaction between the cover lid and the base recipient. Because the cams have a front side situated offset from the borderline of the strip, the hinge line will be situated on the inside of the base recipient, thereby enabling a hinge movement of the cam inside the base recipient. Since the cam hinges inside the base recipient, the hinging movement will not cause the cam to leave the inside and a reliable hinging movement as well as a reliable connection of the coverlid to the base recipient is obtained.

[0006] A first preferred embodiment of a box according to the invention is characterised in that said strip is hingedly applied on said side of said cover lid and extends along a further hinge line, which further hinge line extends over substantially a whole length of said border. By hingedly applying the strip on the coverlid an easy manufacturing of the first strip becomes possible and the perpendicular extension of the strip with respect to the lid is automatically obtained when applying the coverlid on the base recipient.

[0007] Preferably said strip is applied on said first side and said first set of openings is applied on a back of said base recipient. In such a manner an easy application of the coverlid on the base recipient is obtained.

[0008] A second preferred embodiment of a box according to the invention is characterised in that said protrusion comprises a base plane, said front side of said cam extending substantially perpendicular with respect to said base plane, each of said cams having a back provided with a rounded shape extending downwards from an upper edge of said front side. The rounded shape of the back of the cam enables an easy penetration of the cam into the openings.

[0009] A third preferred embodiment of a box according to the invention is characterised in that said protrusion comprises a peripheral stroke surrounding a basis of said cam. The peripheral stroke reinforces the cam and renders its manufacturing more easy.

[0010] Preferably said first hinge line is formed by cuts segmentwise applied in said material of said coverlid. Cuts can be easily applied in plastic material.

[0011] A fourth preferred embodiment of a box according to the invention is characterised in that said second side comprises a border, situated opposite to said common edge and provided with at least one further protrusion, extending offset from said border, said base recipient being provided with a second set of openings applied on a front side of said base recipient and dimensioned in such a manner as to enable said further protrusion to penetrate through said opening of said second set. A reliable closure of the coverlid with the base recipient is thus obtained.

[0012] Preferably said first side comprises a first and

a second elongated cavity extending each time along a fraction of a lateral border of said first side. The cavities retain in such a manner the lateral sides of the base recipient.

[0013] A fifth preferred embodiment of a box according to the invention is characterised in that said openings of said first set are delimited by an upper side, an underside and lateral sides, each of said lateral sides forming an acute angle with said upper side. The acute angles retain the protrusion inside the opening.

[0014] Preferably said first flap is trapezium shaped. A stacking of the base members is thus possible.

[0015] The invention will now be described in more details with reference to a preferred embodiment illustrated in the annexed drawings. In the drawings:

figure 1 shows an overall view of a box according to the invention;
figure 2 shows a detailed view of a cover lid as a component of a box according to the invention;
figure 3 shows a detailed view of the protrusion provided with a cam;
figure 4 illustrates how the cover lid is to be mounted on the base recipient;
figures 5 to 9 illustrate the hinged movement of the cover lid with respect to the base recipient;
figure 10 illustrates the closure of the box; and
figures 11 and 12 show a detail of the front side of the base recipient.

[0016] In the drawings, a same reference sign has been allocated to a same or analogous element.

[0017] The box 1 illustrated in figure 1 is in particular provided for packing pastries. The invention is however not limited to a pastry box and the box could also be used for other objects such as toys, pens or the like. The box comprises a base recipient 2, preferably made of cardboard and a coverlid 3 preferably made of transparent material, in particular plastic material, such as polyethylene. The advantage of using polyethylene is that it can be thermoformed. The fact that the coverlid is made of transparent material enables to see the stuff stored in the box through the coverlid. Using cardboard for the base recipient enables to give the pastry box its familiar look and the possibility to see the quality of the pastry.

[0018] The base recipient 2 comprises a back 4, which is preferably shaped as a trapezium and wherein the upper border of the back forms the upper border of the trapezium. The trapezium shape enables an easy and space saving stacking of the empty base recipients. The back 4 is hingedly connected to a first flap 8 extending from an upper border of that back. The first flap 8 extends substantially perpendicular to the back when the base recipient is in mounted configuration.

[0019] The base recipient 2 further comprises a bottom side 5 and two lateral sides 6 and 7. The lateral sides are preferably hingedly connected to the back and the bottom side in order to fold up the sides of the base recipient. Folding lines 10 and 11 applied on the lateral sides 6 and 7 contribute also to the folding up of the base recipient. The front end of the lateral sides 6 and 7 have preferably an inclined shape in order to facilitate the closure by the closure lid 3 and enable a lateral look into at least a part of the box. A second flap 9 extends from the bottom side 5 of the base recipient. The second flap extends substantially perpendicular to the bottom side when the box is in mounted configuration. The second flap is preferably trapezium shaped, an upper border of the trapezium forming the upper border of the second flap.

[0020] The back 4 of the base recipient comprises a first set of openings 14 which will be described in more detail hereinafter. Although a single opening could be sufficient for the first set of openings, the first set preferably comprises two openings. The openings are applied by cutting out pieces of cardboard when the base recipient is made of cardboard. A second set of openings 15, 16 is applied on the front side of the base recipient at the transition between the bottom side 5 and the second flap 9.

[0021] The coverlid 3 illustrated in figure 2 comprises a first side 17 provided to form a top plane of the coverlid when mounted on the base recipient. A second side 18 of the coverlid is provided to form a front plane of that coverlid. The first and second side have a common edge 21 connecting them. The coverlid is further provided with lateral sides 19 and 20 linked to the first and second side. The lateral sides are preferably triangularly shaped as this facilitates the manufacturing of the coverlid by thermoformation.

[0022] The second side 18 of the coverlid is preferably trapezium shaped, where the common edge 21 forms the top side of the trapezium. The trapezium shape of this second side also favourably contributes to the manufacturing of the coverlid by thermoformation.

[0023] The first side 17 of the cover lid preferably comprises a first 22 and a second 23 elongated cavity extending each time along a fraction of a lateral border of the first side The elongated cavities form, as if to say, grooves in the top plane of the coverlid and extend inwardly of the base recipient when the coverlid is mounted on the base member. The elongated cavities serve to retain the lateral sides 6 ad 7 of the base recipient when the coverlid is mounted thereon and avoid in such a manner that the lateral sides 6 and 7 collapse and could damage the pastry stored inside the box.

[0024] A border of the first side 17, which is situated opposite to the common edge 21 is provided with a strip 24. The strip is preferably made of the same material as the one of which the coverlid is made. The strip 24 is preferably hingedly applied on the border of the coverlid and the border forms a hinge line (h1). The strip extends over substantially the whole length of the border and has preferably rounded extremities. The hinged connection between the first side 17 and the strip 24 is preferably obtained by applying along the first hinge line h1 segmentwise cuts into the material of which the coverlid is

made. Alternatively the strip 24 could not extend over the whole length of the border and be made by one or more segments.

[0025] Although the hinged connection between the strip 24 and the first side 17 is preferred, a rigid connection could also be envisaged. It is however important that when the coverlid 1 is mounted on the base recipient 2, the strip 24 extends substantially perpendicular with respect to that side of the cover lid on which it is applied. In the preferred embodiment, showed in the figures 1, 2 and 4, the strip is applied on the first side 17 of the coverlid. It could however also be possible to apply the strip 24 on the second side 18 of the coverlid, i. e. on the border 32 of the second side.

[0026] The strip 24 is provided with at least one protrusion 25 extending offset from a borderline of the strip. In figure 2, two protrusions are shown as being the preferred embodiment. However for a box of a smaller dimension, one protrusion is sufficient. The protrusions are preferably made of the same material as the coverlid, what facilitates the manufacturing thereof.

[0027] On the protrusion 25, there is applied a cam 26, which extends downward with respect to the first side 17 when the strip 24 extends in the same plane as the first side. Each cam 26 has a front side 27, as illustrated in figure 3, which front side extends substantially perpendicular with respect to a base plane of the protrusion. Each cam has also a back 28 provided with a rounded shape extending downwards from an upper edge of the front side 27. A peripheral stroke 29 surrounds a basis of the cam.

[0028] The front side 27 of each cam 26 is situated offset over a distance d (1 mm < d < 3 mm) from the borderline of the strip 24. Because the front side is offset from the borderline, this front side forms another hinge line h2 with respect to the coverlid when the protrusions are inserted into the openings 14 (or 15 when the strip is applied on the border 32) at the back (or front) of the base recipient.

[0029] In order to facilitate the insertion of the protrusions 25 into the openings 14 (or 15), each protrusion has an arc shaped profile. Preferably, the peripheral stroke has a width w, $3 \leq w \leq 6$ mm and the cam has a depth situated between 2 and 5 mm.

[0030] As illustrated in figure 4, the openings 14 of the first set of openings are applied and dimensioned in such a manner as to enable the protrusions 25 to penetrate through these openings. The openings are preferably arc shaped and delimited by a linear upper side 30 and an arc shaped under side 31. The upper side 30 extends substantially parallel with the upper side of the back 4 and is applied at a distance p ($3 \leq p \leq 7$ mm) of the latter upper side. The arc shaped part 31 extends downwards in the back of the base recipient. It should be noticed that a same geometry applies to the openings 15 when the strip is applied on the border 32.

[0031] Figure 2 also shows at least one further protrusion 34 applied on a border of the second side 18 of the cover lid, which border is situated opposite to the common edge 21 between first and second side. The further protrusion 34 extends offset from the border of the coverlid and has a configuration similar to the protrusion 25. Of course, the further protrusion 34 could have a different configuration than the one of protrusion 25, but in order to render the manufacturing more easy, all the protrusions have a same configuration. The further protrusions are provided and dimensioned to penetrate into a second set of opening 15 applied on a front side of the base recipient. To this purpose however the further protrusions need to be folded over 180° with respect to border 32. In such a manner, the further protrusion and the second openings form means for locking the coverlid on the base recipient. Of course, the further protrusions and second set of openings are optional and the locking could be realised by using a piece of adhesive tape. Moreover when the strip 24 is applied on the border 32, the further protrusions are applied on the border of the first side 17.

[0032] The application of the coverlid 3 to the base recipient 2 will now be described with reference to the figures 5 to 9. For clarity purpose only the embodiment with the strip 24 applied on the first side 17 will be described. Of course an analogous application applies when the strip is mounted on border 32. In order to apply the coverlid on the base recipient, each of the protrusions 25 is inserted into a respective one of the first set of openings 14. For this purpose, the coverlid is held upright with respect to the back 4 and the peripheral stroke 29 is first entered into the opening 14. Due to its arc shaped profile, the penetration of the protrusion becomes more easy. As the penetration progresses, the rounded shape of the cam will enter the opening. The rounded shape as well as the at least partially arc shaped segment 31 in the underside of the opening and the dimension of the opening enable an easy passage of the cam into the opening. The penetration will stop after that the upper edge of the cam entered into the opening and the front side 27 of the cam is located inside the base recipient. The arc shape of the openings prevents that the protrusion border falls down on the underside of the openings.

[0033] After insertion of the protrusions 25 into the openings 14, the coverlid 3 is rotated anti-clockwise (arrow a1). This will cause the cam 25 to rotate clockwise inside the base member (figure 5; arrow a 2). Indeed, as the front side 27 contacts the opening along the hinge line h2, the latter serves as rotational axis. Due to the fact that the strip 24 extends between the hinge line h1 and the hinge line h2 and that the protrusions are offset the strip and the first side 17, the offset position of the opening does not hinder the rotation of the coverlid since the rotation is realised with respect to hinge line h2.

[0034] The rotation around the hinge line h2 will cause the protrusion to be moved towards the inside of the back 4 of the base member until the base plane of the protrusion contacts this inside (figure 7). This will cause the front side 27 of the cam to extend substantially perpendicular to the back and the hinge line h1 to contact an

upper border of the back. Since the protrusion is now in contact with the back, she can no longer rotate so that further rotation of the coverlid in the direction of arrow a1 will cause the coverlid now to rotate along the hinge line h1 thereby leading to a closure of the box (figures 8 and 9). As can be seen in figure 9, the front side of the cam extends substantially parallel to the first side 17 of the coverlid when the strip 24 extends substantially perpendicular to the first side.

[0035] When the box is provided with the second set of openings 15 and the further protrusions 34, the rotation or hinged movement of the coverlid will cause the further protrusions 34, after having been rotated with respect to border 32 (arrow a2), to face the openings 15 (see figure 10). The continuation of the anti-clockwise rotation of the coverlid will cause the further protrusion 34 to enter its respective opening 15 of the second set and penetrate through this opening until the further protrusion is completely located inside the base recipient. The front side 36 of the further protrusion will then face the inside of the second flap 9, thereby locking the coverlid on that second flap.

[0036] In order to facilitate the penetration of the further protrusion into the opening 15, the latter has an arc shaped profile 35 extending upwards as illustrated in figure 11. As the arc shaped profile is obtained by a cutting applied into the material of the base recipient, a tongue 37 is obtained (see figure 12) that protrudes from the bottom side 5 of the base recipient. Two cuts 38 and 39 are provided along the extremities of the arc shaped profile 38. The cuts permit a resilient movement of this part of the second flap when the further protrusion enters the opening 15 or when the further protrusion is pulled out of the opening for opening the box.

Claims

1. A box, in particular a pastry box, comprising a cover lid and a base recipient, said cover lid being removable applied on said base recipient, said cover lid comprising a first side provided to form a top plane and a second side provided to form a front plane of said box, said first and second side having a common edge, **characterised in that** a border of one of said first or second sides, which border is situated opposite to said common edge, is provided with a strip, which strip extends substantially perpendicular to the side on which it is applied when said cover lid is mounted on said base recipient, said strip being provided with at least one protrusion extending offset from a borderline of said strip, on said protrusion there being applied a cam having a front side extending in a direction substantially parallel to said first side when said strip extends substantially perpendicular with respect to said first side in such a manner as to extend inside said base recipient when said cover lid is mounted on said base recipient, said front side being situated offset from said borderline, said base recipient being provided with a first set of openings dimensioned in such a manner as to enable said protrusion to penetrate through said opening, said front side of each of said cams forming a hinge line for said cover lid when said protrusions have penetrated through said openings.

2. The box as claimed in claim 1, **characterised in that** said strip is hingedly applied on said side of said cover lid and extends along a further hinge line, which further hinge line extends over substantially a whole length of said border.

3. The box as claimed in claim 1 or 2, **characterised in that** said strip is applied on said first side and said first set of openings is applied on a back of said base recipient.

4. The box as claimed in any one of the claims 1 to 3, **characterised in that** said protrusion comprises a base plane, said front side of said cam extending substantially perpendicular with respect to said base plane, each of said cams having a back provided with a rounded shape extending downwards from an upper edge of said front side.

5. The box as claimed in any one of the claims 1 to 4, **characterised in that** said protrusion has an arc shaped profile.

6. The box as claimed in any one of the claims 1 to 5, **characterised in that** said protrusion comprises a peripheral stroke surrounding a basis of said cam.

7. The box as claimed in any one of the claims 1 to 6, **characterised in that** said further hinge line is formed by cuts segmentwise applied in said material of said cover lid.

8. The box as claimed in any one of the claims 1 to 7, **characterised in that** said second side comprises a further border situated opposite to said common edge and provided with at least one further protrusion extending offset from said further border, said base recipient being provided with a second set of openings applied on a front side of said base recipient and dimensioned in such a manner as to enable said further protrusion to penetrate through said opening of said second set.

9. The box as claimed in any one of the claims 1 to 8, **characterised in that** said cover lid comprises lateral sides linked to said first and second side, said lateral sides being triangularly shaped.

10. The box as claimed in claim 9, **characterised in that** said second side is trapezium shaped, said common

edge forming a top side of said trapezium.

11. The box as claimed in any one of the claims 1 to 10, **characterised in that** said first side comprises a first and a second elongated cavity extending each time along a lateral border of said first side.

12. The box as claimed in any one of the claims 1 to 11, **characterised in that** said openings of said first set are arc shaped.

13. The box as claimed in any one of the claims 1 to 12, **characterised in that** said base recipient comprises a first flap extending from an upper border of said back, in such a manner as to contact said first side of said cover lid when mounted on said base recipient.

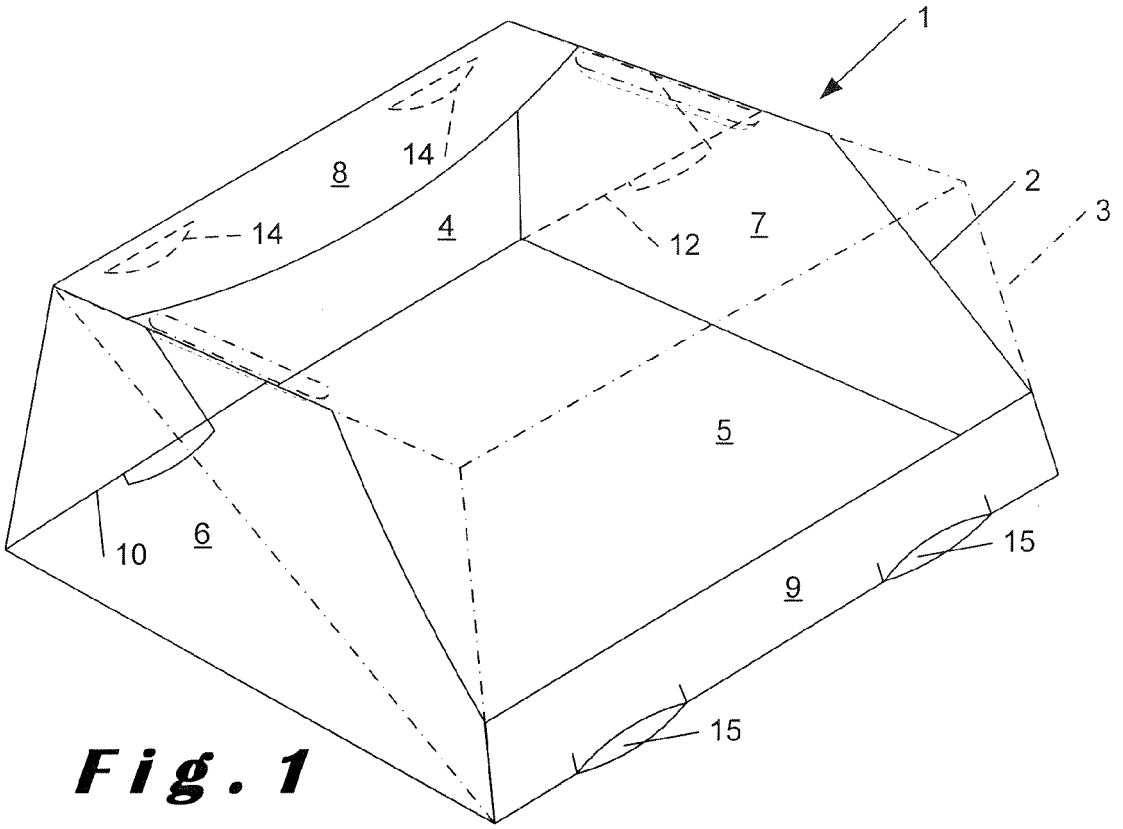
14. The box as claimed in claim 13, **characterised in that** said first flap is trapezium shaped.

15. The box as claimed in any one of the claims 1 to 14, **characterised in that** said base recipient comprises a second flap extending from a base plane of said base recipient in such a manner as to contact said second side of said cover lid when mounted on said base recipient.

16. The box as claimed in claim 15, **characterised in that** said second flap is trapezium shaped.

17. The box as claimed in any one of the claims 1 to 16, **characterised in that** said back is trapezium shaped, an upper border of said back forming the upper border of the trapezium.

18. The box as claimed in any one of the claims 1 to 17, **characterised in that** said cover lid is made of transparent plastic material.


1
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4
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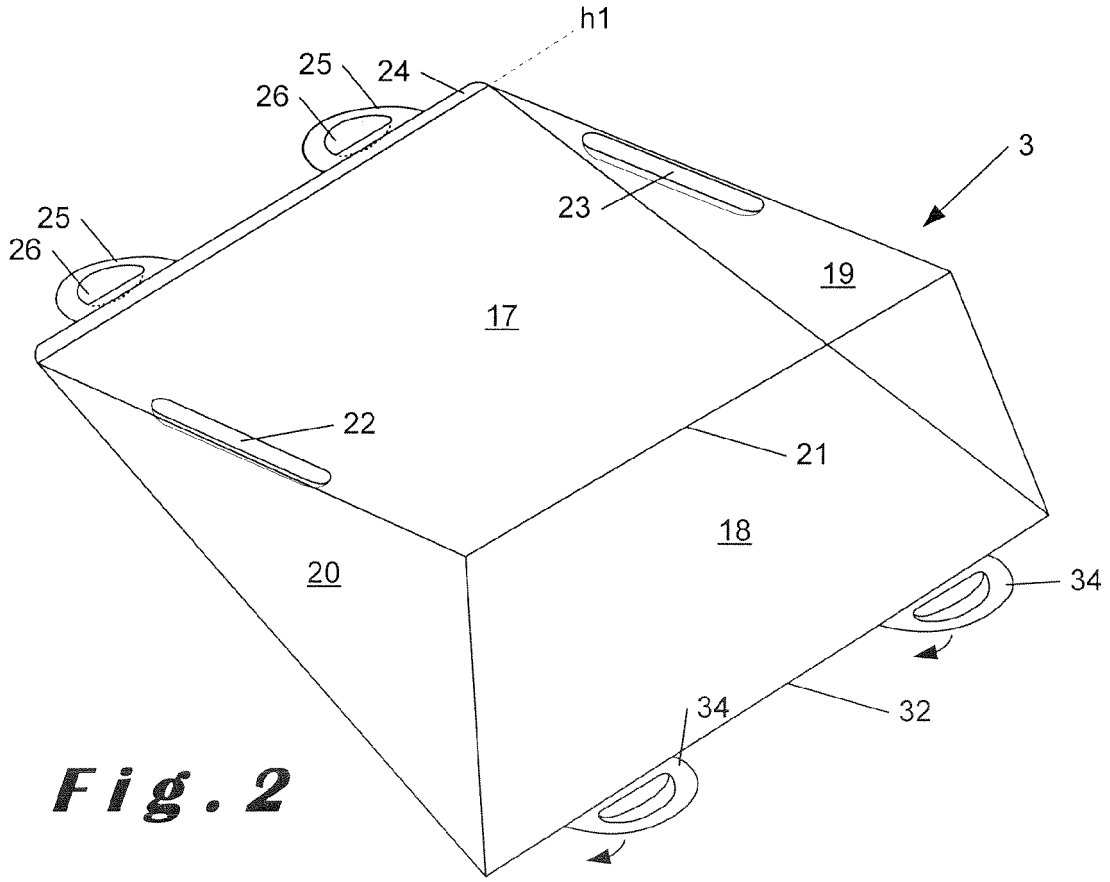
15

Fig. 1


h1
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3
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25
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21
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34
34
32

Fig. 2

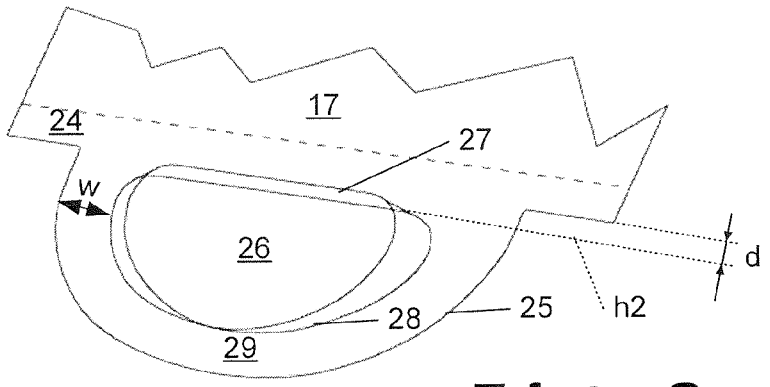

Fig. 3

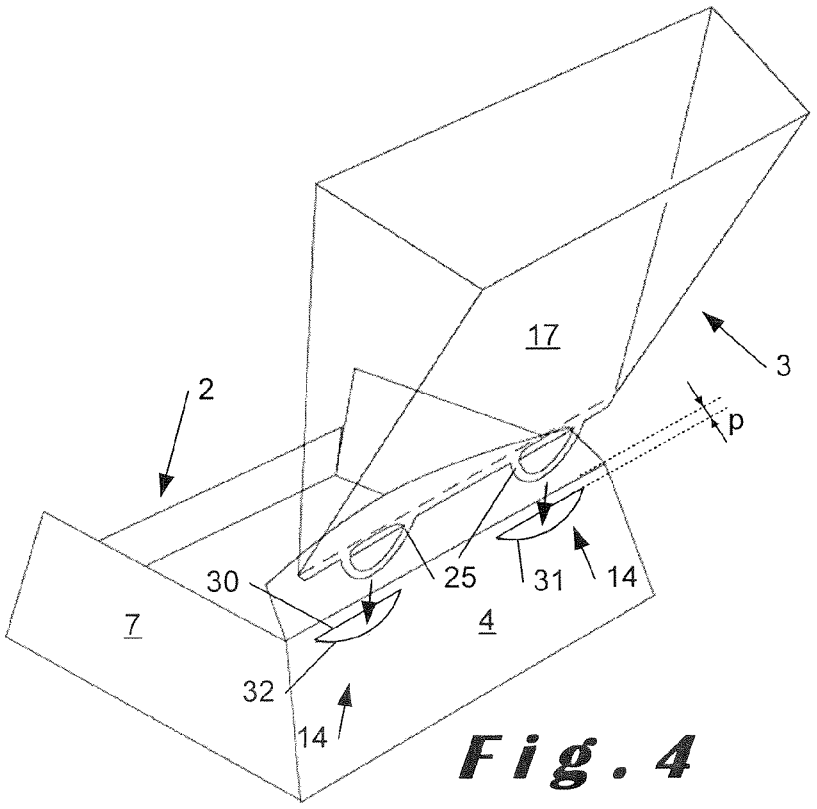

Fig. 4

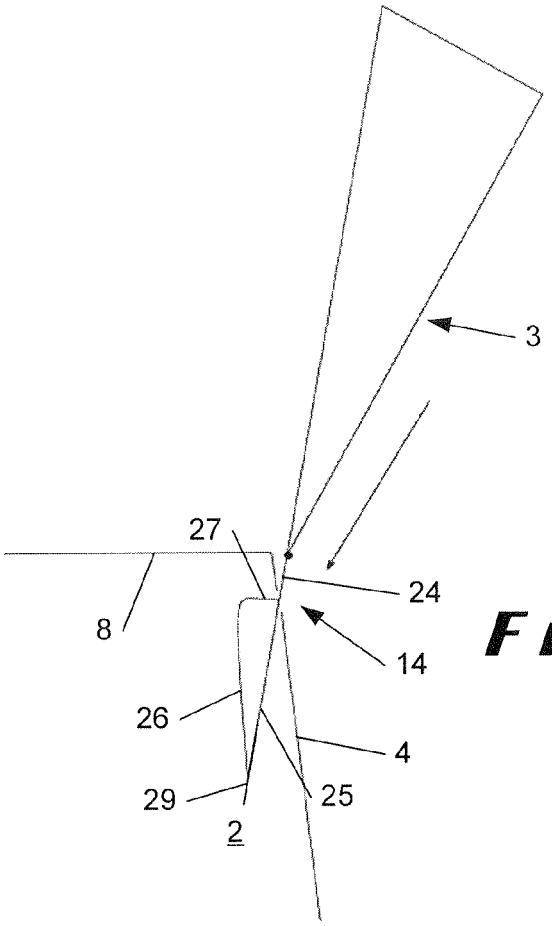

Fig. 5

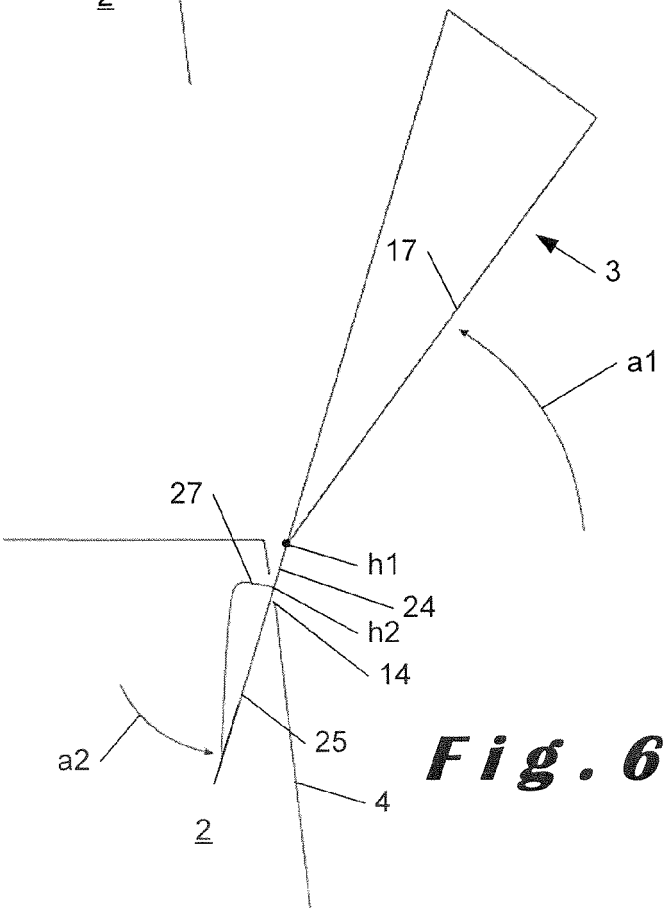

Fig. 6

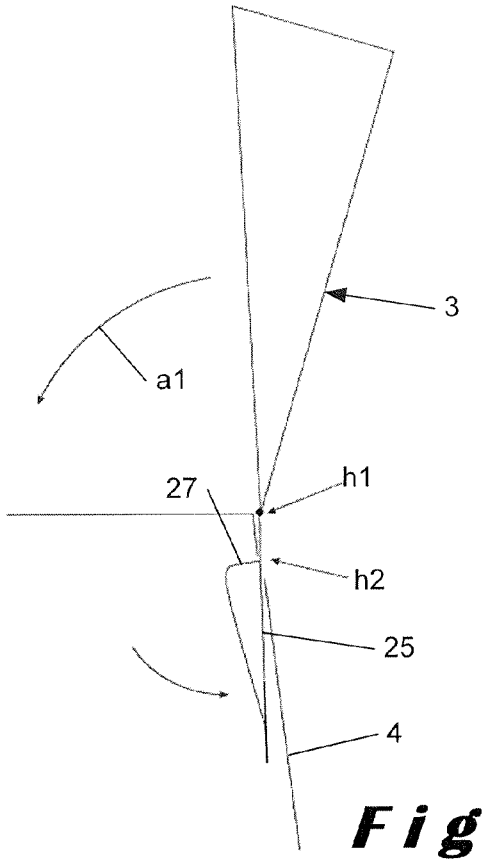

Fig. 7

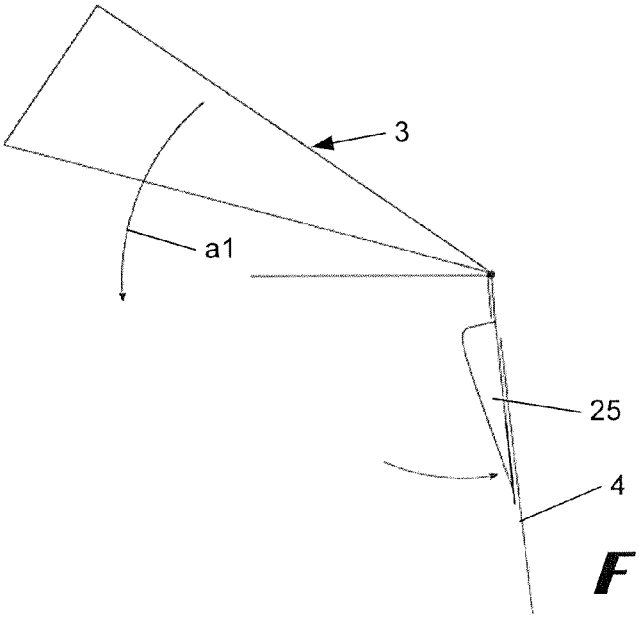

Fig. 8

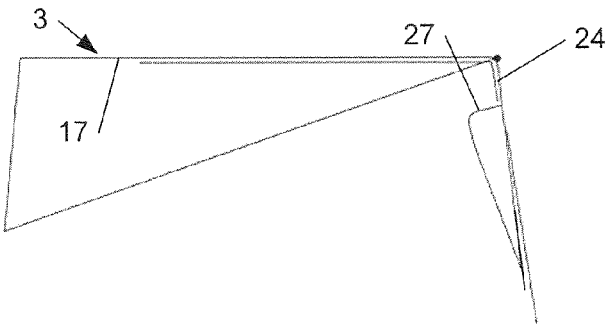

Fig. 9

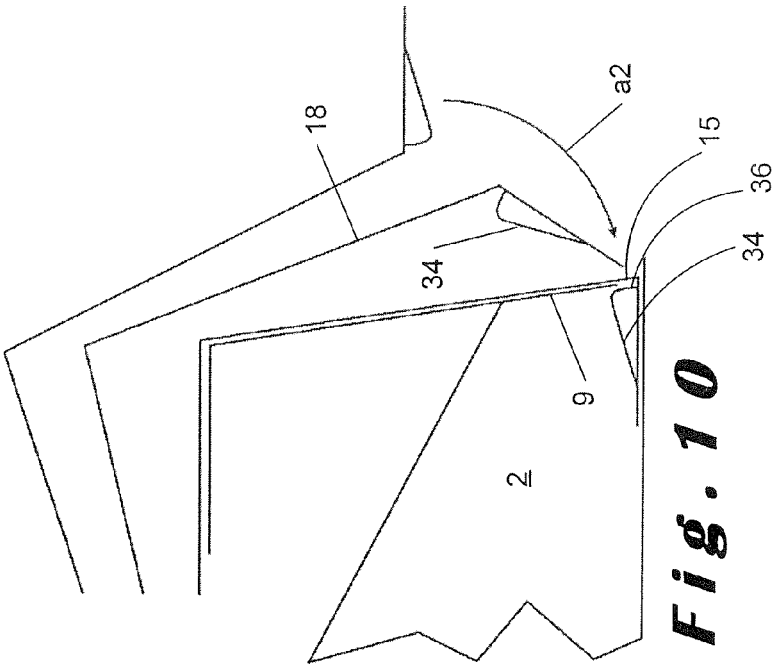

Fig. 10

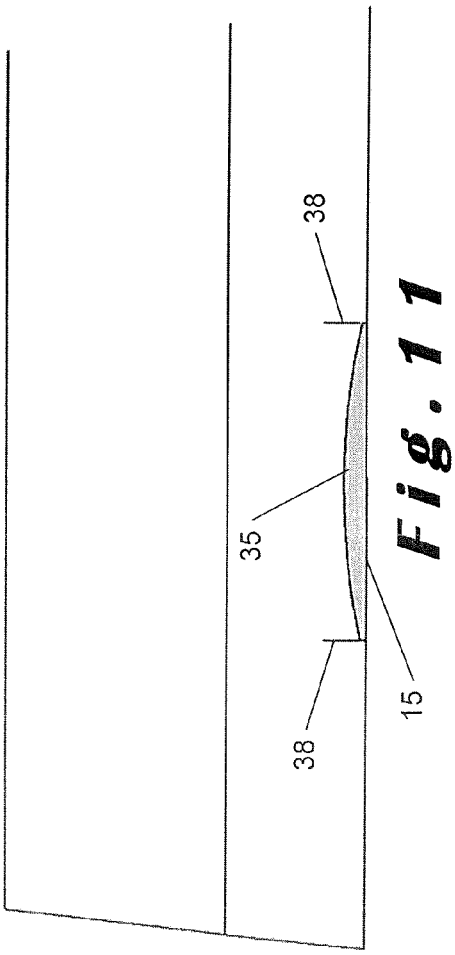

Fig. 11

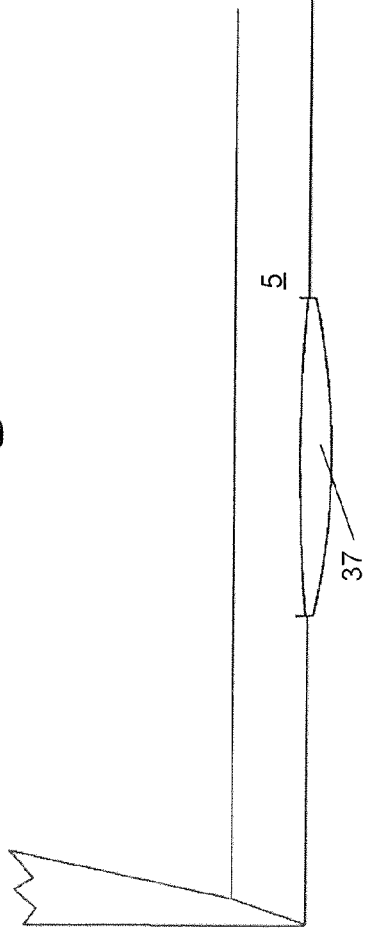

Fig. 12

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 11 1275

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 6 220 507 B1 (GUILLIN FRANCOIS) 24 April 2001 (2001-04-24) * the whole document *	1-18	INV. B65D43/16
A	US 3 809 305 A (PERSSON K,SW) 7 May 1974 (1974-05-07) * the whole document *	1-18	
A	DE 35 17 176 A1 (SPAETH,LOLITA,DIPL.ING) 13 November 1986 (1986-11-13) * the whole document *	1-18	
A	FR 2 663 904 A (SIEMCO; SICOLY; SIEMCO SA) 3 January 1992 (1992-01-03) * the whole document *	1-18	
A	US 5 636 746 A (MCQUEENY ET AL) 10 June 1997 (1997-06-10) * column 2, lines 65-68 - column 3, lines 1-11; figures 1-4 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 September 2006	Visentin, Mauro

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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