



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
09.09.2009 Bulletin 2009/37

(51) Int Cl.:
B65D 57/00 (2006.01)

(21) Application number: **09154415.5**

(22) Date of filing: **05.03.2009**

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

(30) Priority: **07.03.2008 IT RE20080027**

(71) Applicant: **TECNOFORM S.r.l.**
43052 Colorno (Parma) (IT)

(72) Inventors:
• **Gropi, Alessandro**
43052, Colorno (PARMA) (IT)
• **Boschesi, Michele**
43052, Colorno (PARMA) (IT)

(74) Representative: **Corradini, Corrado et al**
Ing. C. Corradini & C. S.r.l.
Via Dante Alighieri 4
42100 Reggio Emilia (IT)

(54) **An element for stacking hollow objects**

(57) The invention relates to an element for stacking hollow objects, such as beakers (30) and like containers, arranged one partially internally of another. The element comprises a tray (10) having such a shape as to be keyable on an external surface of an extreme lower portion of each object located internally of another object, and also comprises a flank (11) which defines a relatively soft spacer that prevents direct contact between the external surface of an internal object of the objects and the internal surface of an external object of the objects.

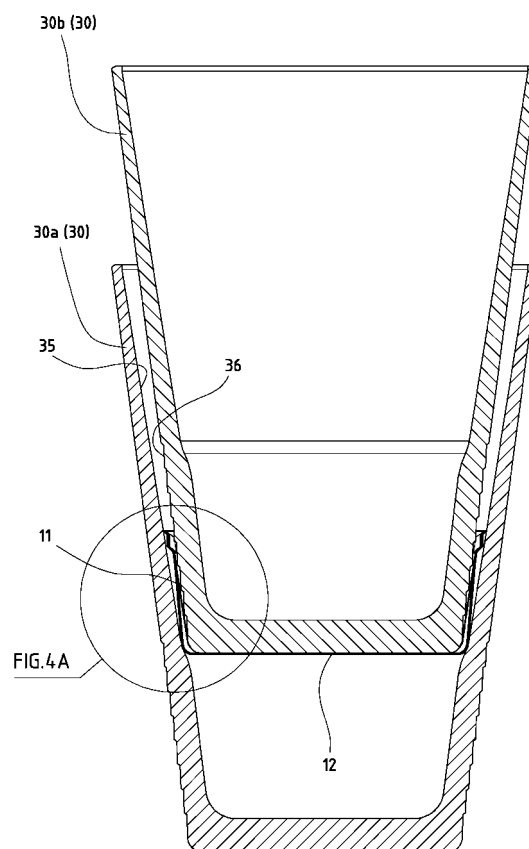


FIG. 4

Description

[0001] The invention relates to an element for reciprocally stacking hollow objects such as beakers and like containers, arranged one partially internally of another.

[0002] In packing such objects for transport, especially beakers made of glass or crystal, it is preferable to avoid stacking them by inserting one partially internally contained inside another, in order to prevent the reciprocal contact between the external surface of one and the internal surface of another from occasioning scratches, micro-incisions or in any case marks which cannot be removed and which can be seen, all of which would compromise the appearance and value thereof. For this reason, it is preferred to pack these objects singly (i.e. not stacked) side-by-side to one another with the consequence that finished packs are much larger in volume than what might be achieved if they were stacked.

[0003] The problem is generally exhibited for many reciprocally stackable objects as described, where the objects are made of hard material which is accompanied by a risk of reciprocal scratching, and is more serious when the object is precious.

[0004] An aim of the present invention is to realise an element which enables reciprocal stacking of the objects while at the same time preventing direct contact between the external surface of the internal object and the internal surface of the external object; and all with a solution that is relatively very simple and economical.

[0005] This and other aims are attained by the invention as it is characterised in the accompanying claims.

[0006] The invention is based on the fact that it comprises a tray having a shape such as to be keyable on the external surface of the extreme lower portion of each object located internally of another object, and having a flank which defines a relatively soft spacer which prevents direct contact between the external surface of the internal object and the internal surface of the external object.

[0007] The invention also comprises a group of objects (at least two) stacked on one another where a tray is interposed between them, the tray having a shape such as to be keyable on the external surface of the extreme lower portion of each object located internally of another object, and having a flank which defines a relatively soft spacer which prevents direct contact between the external surface of the internal object and the internal surface of the external object.

[0008] The invention is now described in detail with the aid of the accompanying figures of the drawings, which illustrate a preferred though not exclusive embodiment thereof.

[0009] Figure 1 is a perspective view of the element of the invention.

[0010] Figure 2 is a lateral view of figure 1.

[0011] Figure 3 is a plan view from above of figure 1.

[0012] Figure 4 is an axial section of two beakers stacked on one another, with the element of figures 1-3

being interposed between them.

[0013] Figure 4A is a large-scale detail of figure 4.

[0014] Figure 5 is a section of the element according to plane V-V of figure 4.

5 **[0015]** Figure 5B is a section of the element according to plane V-V of figure 4, constrained between two beakers during a stacking stage.

[0016] The element illustrated in figures from 1 to 3 is constituted by a tray 10 made of a relatively soft material in contact with the surface of the objects, specifically a material which does not scratch the surface of the objects it is placed between.

[0017] The shape of the tray is such that it can be keyed on the external surface of the extreme lower portion of each object located internally of another object.

10 **[0018]** The tray illustrated in the figures has a lateral flank 11 which is overall truncoconical in shape and a lower base 12 which is generally flat; the shape of the tray is such that it can be snugly keyed on the extreme lower portion of a beaker 30.

[0019] The tray 10 is destined to prevent direct contact between the external surface of the object (beaker 30b) and the internal surface of the external object (beaker 30a).

20 **[0020]** To this end the lateral flank 11 is provided with lateral projections 15 which project radially with respect to the general circumferential development of the transversal section of the whole flank 11, the projections being such as to increase the overall thickness H of the flank itself (see figure 5A).

30 **[0021]** In the illustrated embodiment, the lateral projections 15 define, in a transversal section, a series of concavities, distributed over the whole circumferential development of the flank, having a smaller radius than a radius of the circumference defined by the transversal section of the whole flank.

35 **[0022]** In particular, the projections 15 are located in the lower part of the flank 11 and have, in transversal section, an arched shape which projects radially externalwise with respect to the generally circular profile of the section of the flank. Alternatively the projections 15 can project internalwise.

40 **[0023]** The illustrated projections 15 develop in height over a smaller tract than the height of the flank 11, reducing the scope of the arc up to when it disappears, close to the upper edge 11a of the flank 11.

[0024] In the illustrated embodiment in the figures, projections 16 are also fashioned in the flank in an upper position with respect to the projections 15, in particular the projections 16 are fewer than the projections 15.

50 **[0025]** The material of the flank is preferably stiff and elastic such that the lateral projections can react elastically to the deformation they are subjected to.

[0026] In particular, the tray is made of polystyrene, having a thickness of 0.4 to 0.8 mm.

55 **[0027]** In stacking objects, in particular beakers 30, located one partially internally of another, the tray 15 is keyed on the extreme lower portion of each beaker 30b

located internally of another beaker 30A such as to prevent direct contact between the reciprocally facing surfaces of each pair of stacked beakers, i.e. the internal surface 35 of the external beaker 30a and the external surface 36 of the internal beaker.

[0028] The projections 15 increase the overall thickness of the flank 11 and behave elastically; they deform elastically when they are pressed between two surfaces 35 and 36 (see figure 5B) thus defining a relatively soft spacer i.e. having an elastic behaviour which is soft to the touch.

[0029] The upper projections 16 have a similar function.

[0030] Further, the projections 15 and 16 enable passage of air into the spacer defined by the tray between the surfaces 35 and 36 and prevent creation of a closed zone which would have a "sucker" effect which might be an obstacle to reciprocal detachment of the objects.

[0031] Obviously numerous modifications of a practical-applicational nature might be brought to the invention, without its forsaking the ambit of the inventive idea as claimed herein below.

[0032] In particular, the shape, number and sizes of the projections fashioned on the lateral flank 11 might be varied.

[0033] In particular, the element might have a polygonal section, with the tangential sides to the external surface of the internal beaker and the vertices resting on the internal surface of the external beaker.

[0034] Indeed, the projections can even not be present. In this case the thickness of the material of the flank is preferably greater than mentioned above, said material being intrinsically soft and elastic.

lateral projections define, in transversal section, a series of concavities having a smaller radius than a radius of the circumference defined by the transversal section of the whole flank.

4. The element of claim 2, **characterised in that** a material used to make the flank is such that the lateral projections are destined to react elastically to the deformation they are subjected to.

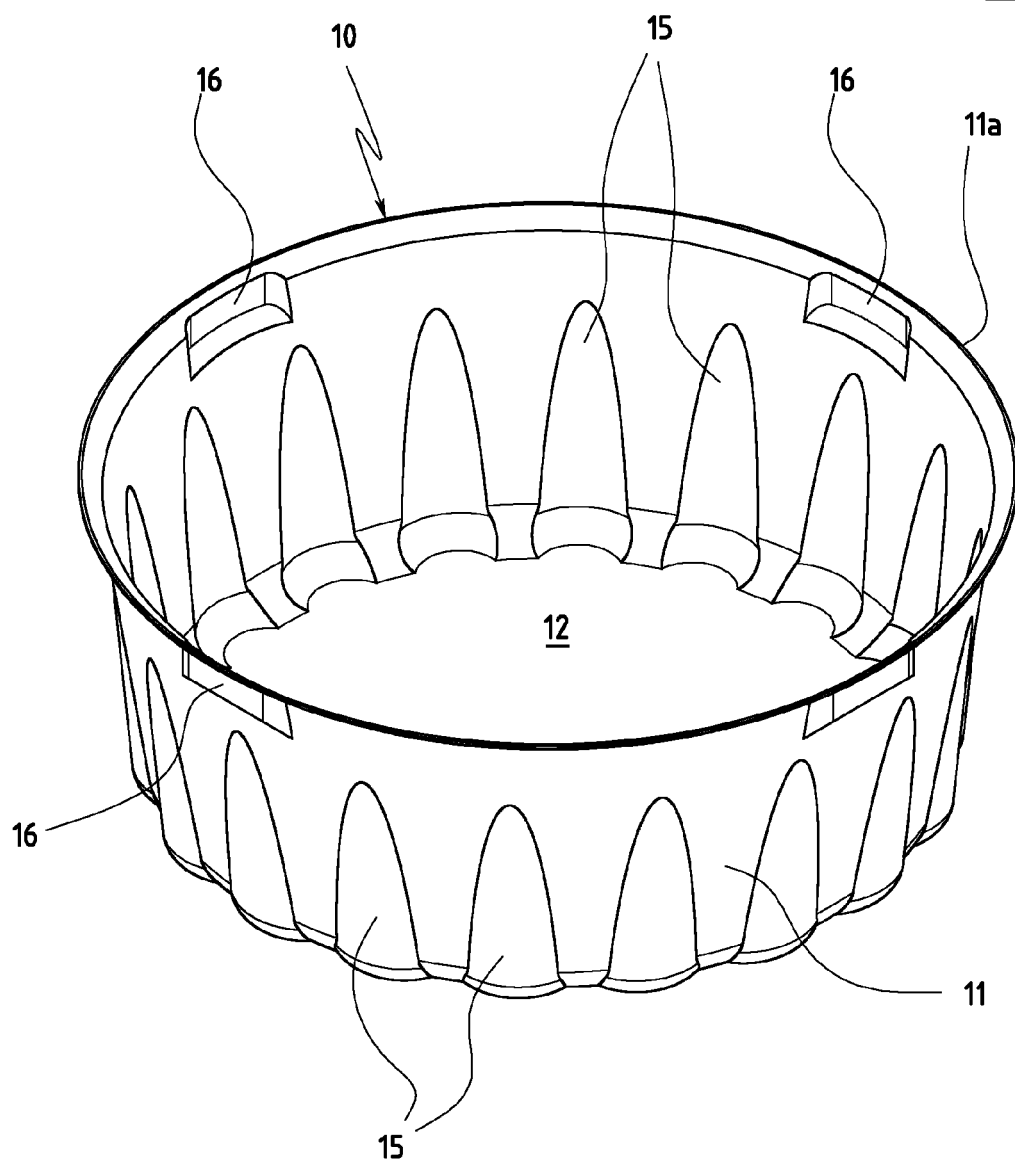
5. The element of claim 1, **characterised in that** the tray is made of polystyrene and has a thickness of between 0.4 mm and 0.8 mm.

6. A group of at least two hollow objects such as beakers and like containers, reciprocally stacked, and arranged one partially internally of another, **characterised in that** a tray is interposed between them, which tray is shaped such as to be keyable on an external surface of an extreme lower portion of each object located internally of another, and having a flank which defines a relatively soft hollow space, which flank is destined to prevent direct contact between an external surface of the internal object and an internal surface of the external object.

Claims

1. An element for reciprocally stacking hollow objects, such as beakers and like containers, arranged one partially internally of another, **characterised in that** it comprises a tray having such a shape as to be keyable on an external surface of an extreme lower portion of each object located internally of another object, and having a flank which defines a relatively soft spacer which prevents direct contact between an external surface of an internal object of the objects and an internal surface of an external object of the objects.
2. The element of claim 1, **characterised in that** the tray comprises a lateral flank which is provided with lateral projections, which lateral projections project radially with respect to an overall circumferential development of a transversal section of the whole flank, the projections being such as to increase an overall thickness of the flank.
3. The element of claim 2, **characterised in that** the

FIG.1



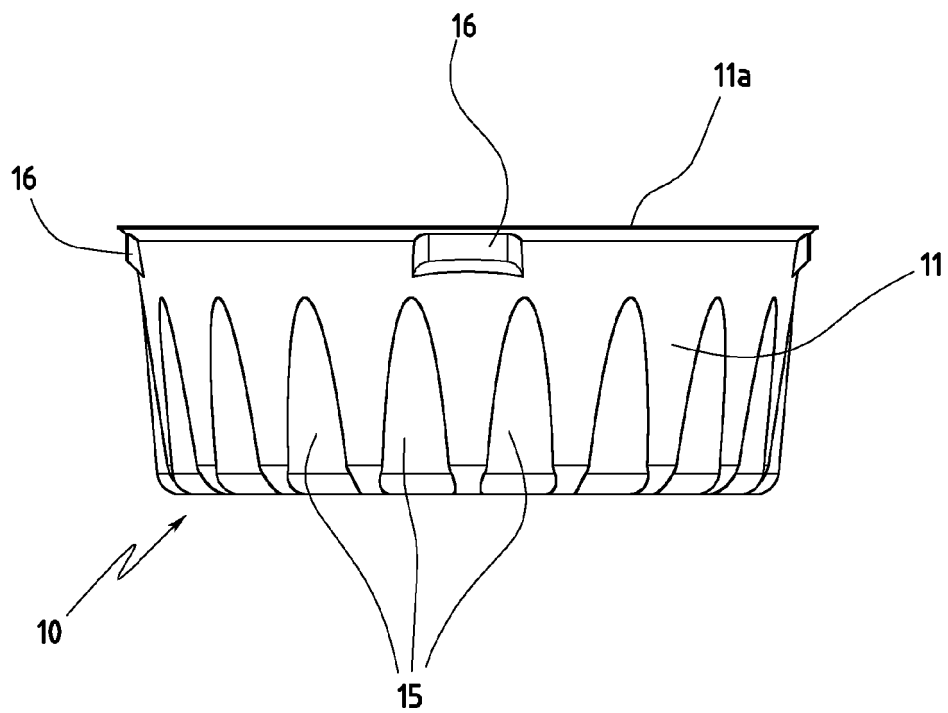


FIG. 2

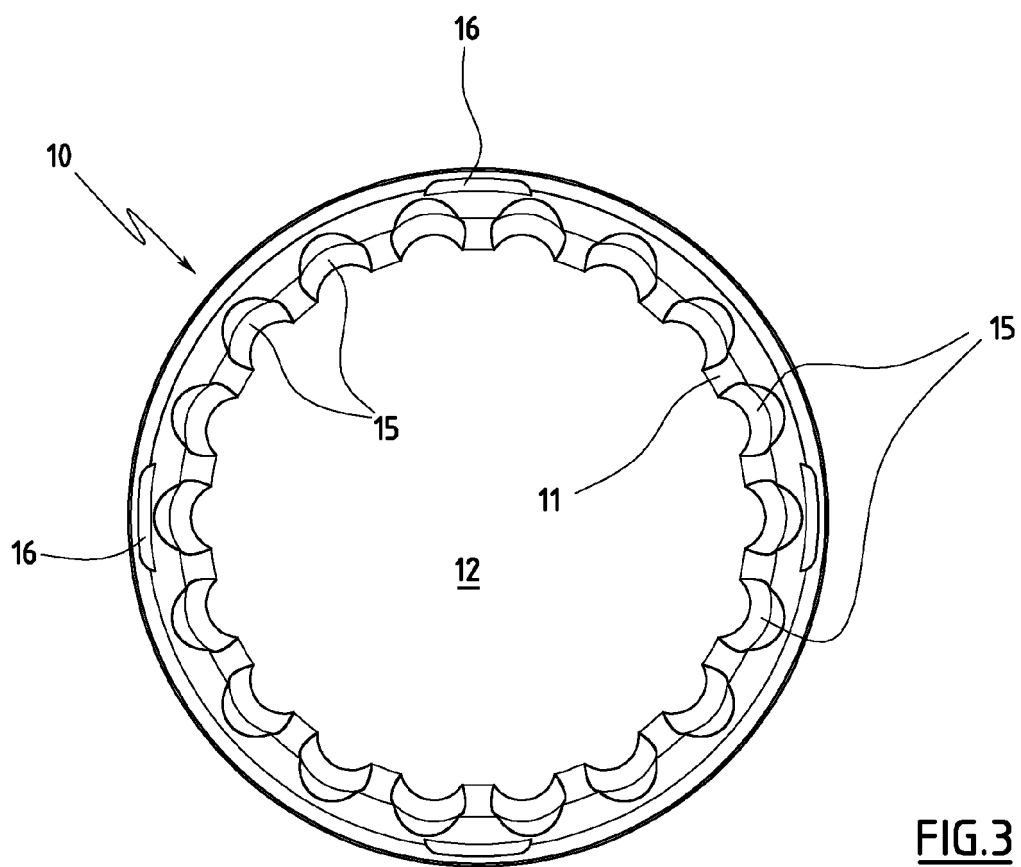
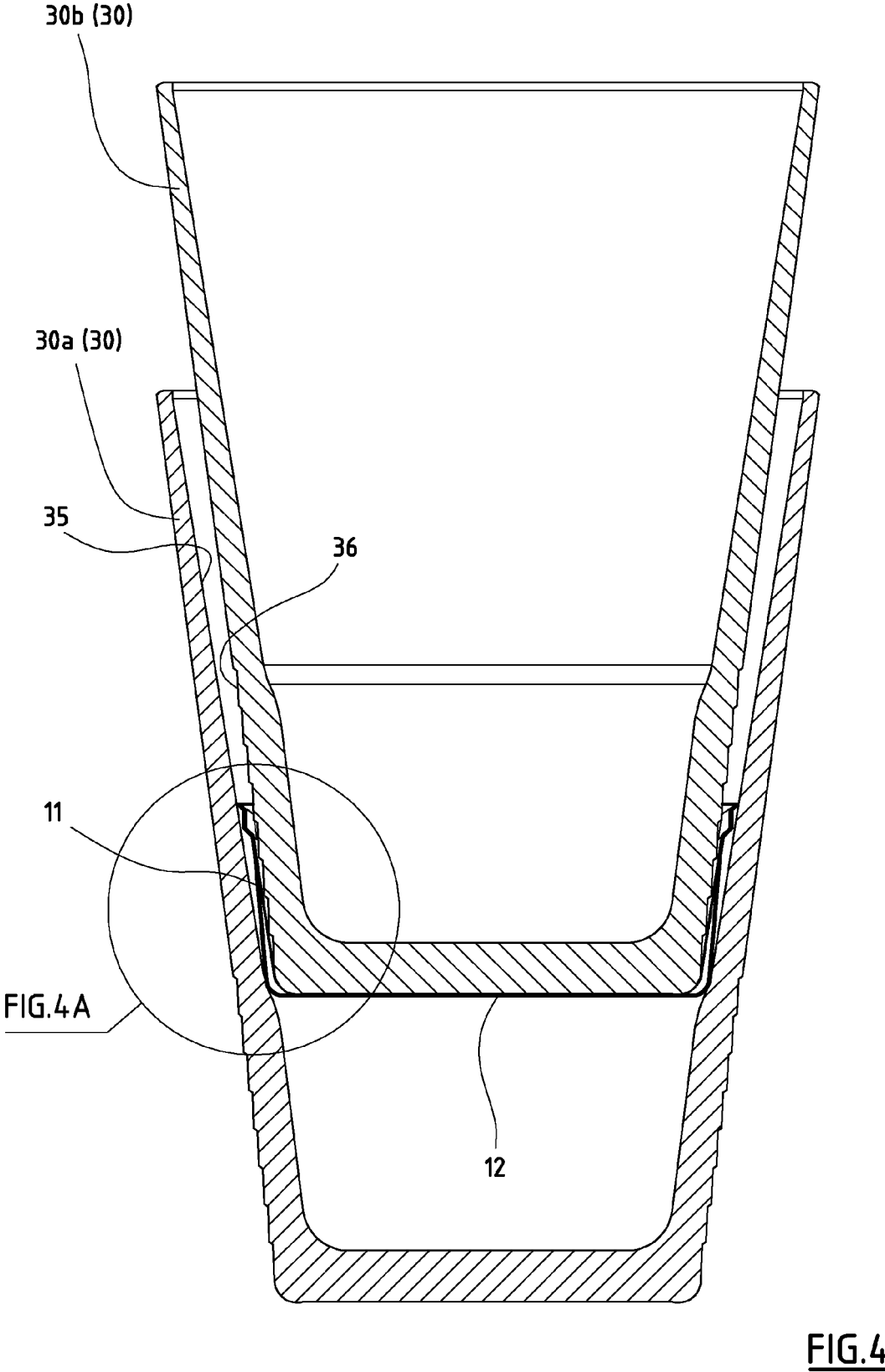


FIG. 3



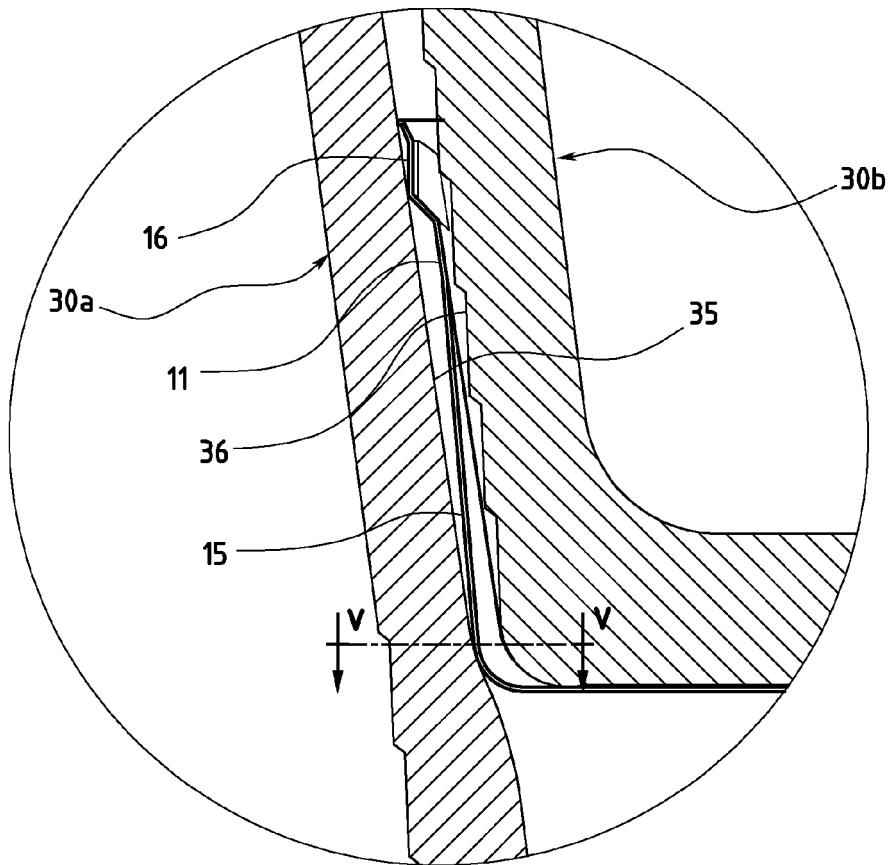


FIG. 4A

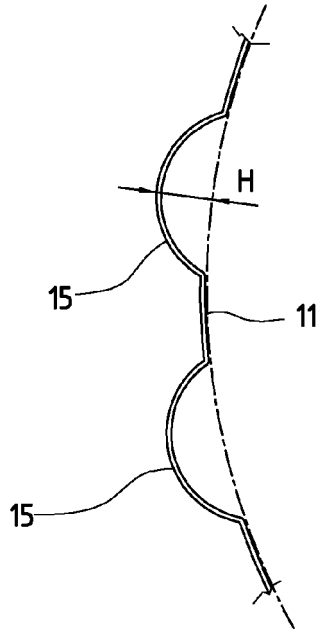


FIG. 5

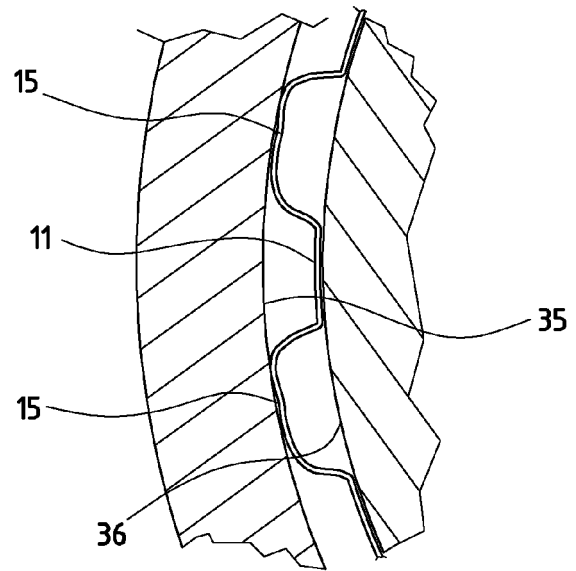


FIG. 5B



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 4415

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	FR 696 062 A (NOUVEAUX ETABISSEMENTS PAQUES) 26 December 1930 (1930-12-26) * page 1, left-hand column, line 16 *	1-6	INV. B65D57/00
X	US 2005/173295 A1 (MURAOKA TAKAHARU [JP]) 11 August 2005 (2005-08-11) * paragraph [0046]; figure 1 *	1,5	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 April 2009	Examiner Sundell, Olli
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

2
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 15 4415

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.

24-04-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 696062	A	26-12-1930	NONE

US 2005173295	A1	11-08-2005	CN 1654277 A 17-08-2005
			JP 2005219795 A 18-08-2005
			KR 20060041780 A 12-05-2006
