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(72) Inventors:
• **GHIOTTO, Luciano**
36043 CAMISANO VICENTINO (VI) (IT)
• **STEFANI, Walter**
36020 CASTEGNERO (VI) (IT)

(74) Representative: **Bonini, Ercole**
Studio Bonini Srl
Corso Fogazzaro, 8
36100 Vicenza (IT)

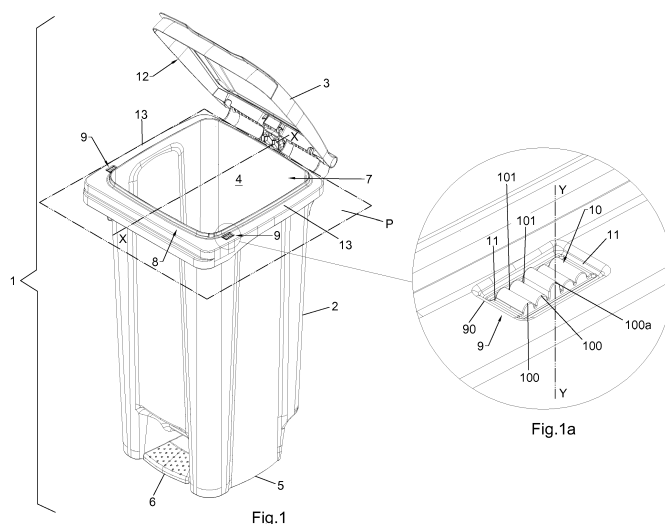
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(71) Applicant: **Stefanplast S.P.A.**
36020 Villagenzerla di Castegnaro (VI) (IT)

(54) **WASTE CONTAINER**

(57) Waste container (1) comprising a containment body (2) in which there is obtained a containment compartment (4) for collecting waste, the containment body (2) being delimited by a surface (5) for resting against the ground and by a loading mouth (7) in communication with the containment compartment (4) for introducing waste into the latter, and a lid (3) hinged to the containment body (2), the containment body (2) being delimited, in proximity of the loading mouth (7), by a perimeter edge (8). In the perimeter edge (8) there are obtained one or more windows (9), traversed by a bridge element (10) elastically deformable and connected to at least one portion of the edge (90) of the window (9). The bridge ele-

ment (10) is suitable to take in a first configuration in which the lid (3) is lifted with respect to the perimeter edge (8) of the containment body (2) a position in which the bridge element (10) is projecting with respect to a plane (P) containing the exposed surface (13) of the perimeter edge (8), and with respect to the window (9), and in a second configuration in which the lid (3), with respect to the first configuration, is in a closed position with respect to the perimeter edge (8) without completely reaching the plane (P), in which the bridge element (10) is collapsed inside the window (9) except for the central part thereof.



Description

[0001] The present invention regards a waste container of the type comprising a containment body and a lid hinged thereto.

[0002] Various types of waste containers of different dimensions which are particularly used for the sorted collection of dry and wet waste, are known.

[0003] Regarding the aforementioned containers, the problem related to acoustic pollution that occurs upon closing the lid on the containment body of the container is well known.

[0004] The certification of a product according to the UNI EN 840-1 standard includes - among others - an acoustic test (according to the 2000/14/CE directive).

[0005] One of the situations in which the noise emitted by the product - measured in decibels - is carried out is the lid closing step during the final impact of the lid on the containment body.

[0006] The emission of a targeted report on the acoustic tests or the awarding of the UNI EN 840-1 certificate by any certifying body entails the obligation by the manufacturer to indicate the value of the noise emitted by the product by engraving the special symbol referring to the data in decibels, with the aim of revealing the level of emitted acoustic pollution to the owner or users.

[0007] Regarding this, the patent document EP 1 584 576 A1 describes a device that absorbs the noise in the waste container lids.

[0008] Such device is arranged on the lid of the aforementioned containers and consists in a strip of material moulded together with the lid. The strip is obtained arc-shaped and it has the convexity thereof oriented towards the body of the container.

[0009] The drawback of this solution lies in that the complete moulding of the lid is complex to perform and - furthermore - when the lid of the container is closed, the arc-shaped strip tends to bend on the perimeter edge of the containment body upon the impact of the lid on the latter.

[0010] Another solution to the noise problem is described in patent document EP 0 774 424 A1. Such patent application describes a waste container comprising a containment body and a lid hinged to the latter.

[0011] Patent document DE 20204062 U1 describes a waste container in which the edge of the container which receives the lid has a rubber damper provided with a threading.

[0012] The hinges exert a mechanical friction action when the lid is closed on the containment body.

[0013] Furthermore, the upper perimeter edge of the containment body is provided with a plurality of rubber elements, spaced from each other and projecting from the aforementioned perimeter edge. Such rubber elements serve as elements for damping the impact of the lid on the containment body.

[0014] However, this solution reveals the drawback according to which the aforementioned damping elements,

given that they project from the upper perimeter edge of the containment body, do not collapse completely upon closing the lid and thus do not perform their function of damping the impact of the lid fully.

[0015] The present invention has the object of overcoming these drawbacks.

[0016] In particular, an object of the present invention is to provide a waste container that is capable of lowering the intensity of the noise caused by the closure of the lid to actively contribute towards reducing acoustic pollution.

[0017] A further object of the present invention is to provide a waste container that is provided with one or more elements for damping noise when closing the lid, which allow closing the lid with or without locking devices in any case.

[0018] The aforementioned objects are attained by the present invention regarding a waste container according to the main claim.

[0019] Further detailed characteristics of the present invention are outlined in the dependent claims.

[0020] Advantageously, the waste container according to the invention provides for that in the perimeter edge surrounding the loading mouth of the containment body there is obtained, integrally or by adding elements, at least one window traversed by a bridge element that is elastically deformable and preferably made of the same material as the containment body or by different materials co-injected into the product. Such bridge element elastically absorbs the impact of the lid during the closing step on the containment body.

[0021] According to a preferred embodiment, in the perimeter edge there are obtained two mutually symmetrical windows, each of which is traversed by a bridge element.

[0022] Still advantageously, the bridge element belonging to the waste container according to the invention, is compressed, it deforms and tends to collapse completely into the window it belongs to upon impact, so that the lid reaches the ideal closing height generating the least noise possible.

[0023] The aforementioned objects and advantages shall be more apparent from the description of a preferred embodiment of the invention, outlined hereinafter by way of non-limiting example, with reference to the attached drawings, wherein:

- fig. 1 represents an axonometric view of a waste container according to the invention;
- fig. 1a represents an enlarged view of a detail of fig. 1;
- fig. 2 represents an axonometric view of a detail of fig. 1 with the lid lifted;
- fig. 3 represents an axonometric view of the detail of fig. 2 with the lid closed;
- fig. 4 represents a lateral view of a detail of the container of fig. 1 in closing step;
- fig. 5 represents a lateral view of the detail of fig. 4 with the lid closed.

[0024] With reference to fig. 1, it shows a waste container, indicated in its entirety with **1**, comprising a containment body **2** and a lid **3** hinged thereto.

[0025] In the containment body **2** there is obtained a containment compartment **4** for collecting waste.

[0026] The containment body **2** of the container **1** is delimited - at one end - by a surface **5** for resting against the ground. At the base of the container **1** there is a pedal **6** for the mechanical lifting of the lid **3**.

[0027] Still with reference to fig. 1, at the opposite end of the resting surface **5** there is observed the presence of a loading mouth **7** which serves for loading waste into the container **1**.

[0028] The containment body **2** of the container **1** is delimited, in proximity of the loading mouth **7**, by a perimeter edge **8** which surrounds the loading mouth **7** entirely.

[0029] According to the present invention and with reference to figs. 1-3, in the perimeter edge **8** there are obtained two windows **9** spaced from each other and symmetrical with respect to an axis **X** of the perimeter edge **8**.

[0030] Still according to the present invention and with reference to the detail of fig. 1a, each window **9** is substantially quadrangular-shaped and it is traversed by a bridge element **10** made of elastically deformable material and connected to two ends **11** of the edge **90** of the window **9**, while the other two mutually opposite ends of the bridge element **10** are detached from the window **9**.

[0031] With reference to figs. 3-4, each bridge element **10** is suitable to take a first configuration, in which it projects from a plane **P** which contains the exposed surface **13** of the perimeter edge **8**, and a second configuration in which the bridge element **10** is comprised in the perimeter edge **8**.

[0032] According to a preferred and non-exclusive embodiment, such bridge element **10** is made, through localised variation of the thickness in some areas, using the same material with which the containment body **2** is made.

[0033] As observable in figs. 1a-5, the bridge element **10** consists of a plurality of reliefs **100**, lowered and of the same height, except for the central relief **100a** which has a height slightly greater than the other reliefs; such reliefs are wave-shaped starting from each of the ends **11**. Basically, the profile of the bridge element **10** is symmetrical with respect to an axis **Y** orthogonal to the plane identified by the window **9** (see fig. 1a).

[0034] The plane **P** to which the perimeter edge **8** of the containment body **2** belongs is also the plane to which each window **9** belongs.

[0035] In the embodiment described herein there are present two windows; however, in a variant embodiment not shown in the figures, the number of windows can also be different, for example a single window at the front part of the perimeter edge or even three or more windows spaced from each other.

[0036] In fig. 1a it should be observed that, between

any two of the reliefs adjacent to each other, there is present a groove **101**; thus, the profile of the bridge element **10** provides for the presence of a plurality of reliefs **100** and a plurality of grooves **101** such that each relief **100** is preceded and followed by a groove **101** and vice versa.

[0037] The result of such conformation is that the bridge element **10** of the window **9** has a substantially sinusoidal-shaped profile with a relief **100a**, having a greater height than that of the other reliefs **100**, which is in a central position and which is symmetrical with respect to the aforementioned axis **Y**.

[0038] However, according to alternative embodiments not represented herein, the reliefs could also have an increasing height starting from the ends towards the centre.

[0039] Advantageously, as observable in figs. 2-5, the substantially sinusoidal-shaped profile of the bridge element **10** facilitates the collapsing thereof into the window **9** which receives it when the edge **12** (visible in fig. 1) of the lid **3** is at contact with the perimeter edge **8**. Same case obviously applies also to the other window **9**.

[0040] Being elastically deformable, the bridge element **10**, as observable in fig. 5, when the lid **3** comes into contact with the perimeter edge **8** of the containment body **2**, it takes a second configuration in which it is collapsed into the perimeter edge **8**. All this will be illustrated further in detail hereinafter.

[0041] Operatively and with reference to all the figures, the waste container according to the invention operates as follows.

[0042] When the user lifts the lid **3**, manually or by means of a pedal **6**, in order to fill the containment compartment **2** with waste, the bridge element **10** is in the first configuration, visible in figs. 2-3, where the bridge element **10** is projecting with respect to the exposed surface **13** which is contained in the plane **P**. Basically, the bridge element **10** is in a first inoperative configuration.

[0043] Once through with filling the container **1** with waste, manually or using the pedal **6** the user lowers the lid **3**, or lets it drop by gravity, until the edge **12** thereof comes to contact with the bridge element **10**.

[0044] At this point, the bridge element **10** starts bending towards the central part at the level of the relief **100a** having the greater height and deforming collapsing inwards so that the mass thereof progressively recedes into the overall dimension of the window **9**. It should be observed that only the relief **100a**, having a greater height as compared to the other reliefs **100**, deforms while the other reliefs **100** do not deform.

[0045] At the end, as observable in fig. 5, the edge **12** of the lid **3**, with respect to the first inoperative configuration, is in a second operative configuration in which it is in a very closed position with respect to the perimeter edge **8** without entirely reaching the plane **P** and the bridge element **10** is collapsed into the window **9** except for the relief **100a** which projects from the perimeter edge **8**.

[0046] The relief 100a of the bridge element 10 basically supports the edge 12 of the lid 3 preventing it from abutting against the perimeter edge 8 and thus keeping it slightly lifted by the latter.

[0047] At the end, in the aforementioned second operative configuration, the bridge element 10 is collapsed into the respective window 9 except for the central part thereof, represented by the relief 100a arranged centrally in the bridge element 10 and which, actually due to the fact that it has a greater height than the other reliefs thereof, serves as an element for supporting the lid 3.

[0048] The bridge element 10 advantageously serves as a damping element in that it absorbs the kinetic energy with which the lid 3 drops on the perimeter edge 8 and thus reduces the impact energy with which the lid 3 impacts against the containment body 2.

[0049] Basically, the bridge element 10 serves as a damping element which, by absorbing the kinetic energy of the lid 3, also reduces the sound impact and thus the intensity of the noise which would be generated by the impact of the lid 3 against the perimeter edge 8.

[0050] As a matter of fact, the contact between the lid 3 and the perimeter edge 8 of the containment body 2 only occurs on the relief 100a, when the kinetic energy of the lid 3 is almost null by then.

[0051] Still advantageously, each bridge element 10 forms a single body with the perimeter edge 8 of the container 1, and it is thus obtained by means of a single moulding alongside the entire container 1. According to other embodiments not illustrated herein, the windows 9 can be one or more than one, and they can be connected even to the perimeter edge 8 only at some points, so as to manage the bending of the bridge element 10 in a controlled manner.

[0052] According to further embodiments not illustrated in the figures, it is also possible that the windows 9 can be arranged close to each other and that there be an interruption line between them. For example, there can be a variant embodiment in which there are four windows arranged close to each other two by two and in which there are two interruption lines, each of which extends between two adjacent windows.

[0053] Still advantageously, it was observed that, using the container according to the invention, the impact reduces at lower noise levels with respect to the models of waste containers already available in the market and without the anti-noise system.

[0054] In the light of the above, it is clear that the waste container according to the invention attains the pre-set objects.

[0055] Preferably but not necessarily, the waste container according to the invention is used for 120-litre containers, but it also applies to containers of different sizes.

[0056] Furthermore, the waste container according to the invention is particularly indicated for use in outdoor public spaces, like the streets.

[0057] In the execution step, the waste container according to the invention can be subjected to modifications

which, though not described herein, shall be all deemed protected by the present patent should they fall within the scope of protection of the claims that follow.

Claims

1. Waste container (1) comprising:

- a containment body (2) in which there is obtained a containment compartment (4) for collecting waste, said containment body (2) being delimited - at one end - by a surface (5) for resting against the ground and having - at the opposite end with respect to said resting surface (5) - a loading mouth (7), placed in communication with said containment compartment (4), for introducing waste into the latter;
- a lid (3) hinged to said containment body, said containment body (2) being delimited, in proximity of said loading mouth (7), by a perimeter edge (8),

characterised in that in said perimeter edge (8) there is obtained at least one window (9), said at least one window being traversed by a bridge element (10) elastically deformable and connected to at least one portion of the edge (90) of said at least one window (9), said bridge element (10) being suitable to take:

- a first configuration in which said lid (3) is lifted with respect to said perimeter edge (8) of said containment body (2) and in which said bridge element (10) is projecting with respect to a plane (P), containing the exposed surface (13) of said perimeter edge (8), and with respect to said at least one window (9);
- a second configuration in which said lid (3), with respect to said first configuration, is in a closed position with respect to said perimeter edge (8) without completely reaching said plane (P), and in which said bridge element (10) is collapsed into said at least one window (9) except for the central part thereof.

- ### 2. Waste container (1) according to claim 1, **characterised in that** said bridge element (10) of said at least one window (9) is formed by a plurality of reliefs (100) spaced from each other and having the same height, wherein, at said central part, there is present a relief (100a) having a height greater than the other reliefs (100) and being symmetric with respect to an axis (Y) substantially orthogonal to the plane (P) identified by said at least one window (9).
- ### 3. Waste container (1) according to claim 1, **characterised in that** said bridge element (10) of said at

least one window (9) is formed by a plurality of reliefs (100) spaced from each other and having an increasing height with respect to the base plane (P) of said at least one window (9), starting from two ends (11) of said at least one window (9) towards the centre of the latter. 5

4. Waste container (1) according to any one of the preceding claims, **characterised in that** said at least one window (9) is substantially quadrangular and **in that** said bridge element (10) extends starting from two ends (11) of the edge (90) of said window (9) towards the centre of the same window (9). 10
5. Waste container (1) according to any one of the preceding claims, **characterised in that** said bridge element (10) has a groove (101) between any two adjacent reliefs (100, 100a) of said plurality of reliefs. 15
6. Waste container (1) according to any one of the preceding claims, **characterised in that** said bridge element (10) has a substantially sinusoidal-shaped profile. 20
7. Waste container (1) according to any one of the preceding claims, **characterised in that** it has two windows (9) mutually spaced from each other and symmetrical with respect to an axis (X) of said perimeter edge (8), each of said windows (9) being provided with said bridge element (10). 25
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8. Waste container (1) according to any one of the preceding claims, **characterised in that** the material with which said bridge element (10) is made is the same material with which said containment body (2) is made. 35
9. Waste container (1) according to any one of the preceding claims, **characterised in that** said bridge element (10) forms a single body with said perimeter edge (8). 40

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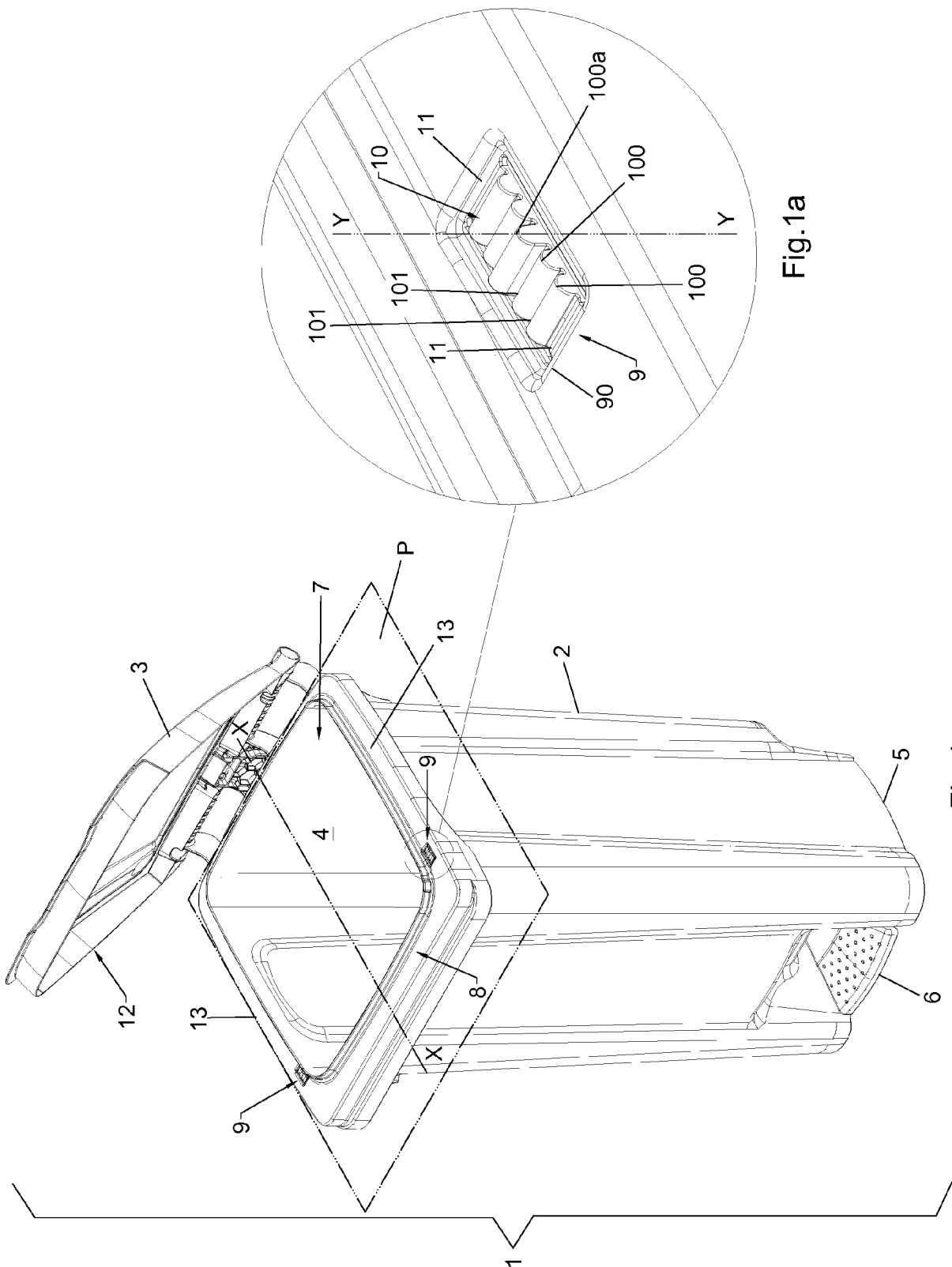


Fig.1a

Fig.1

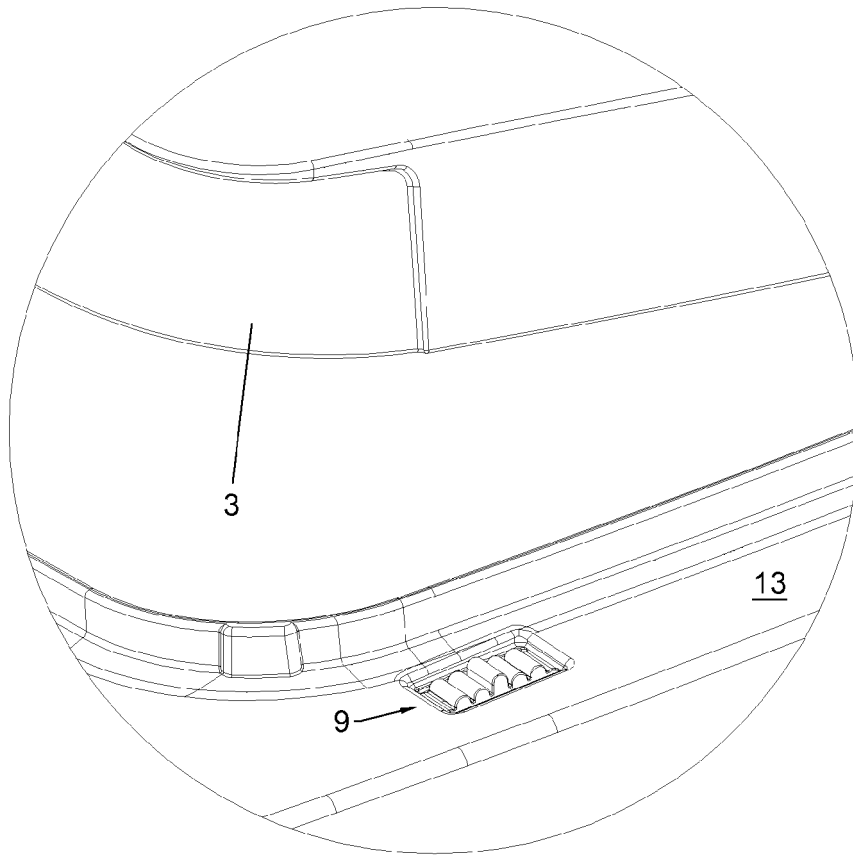


Fig.2

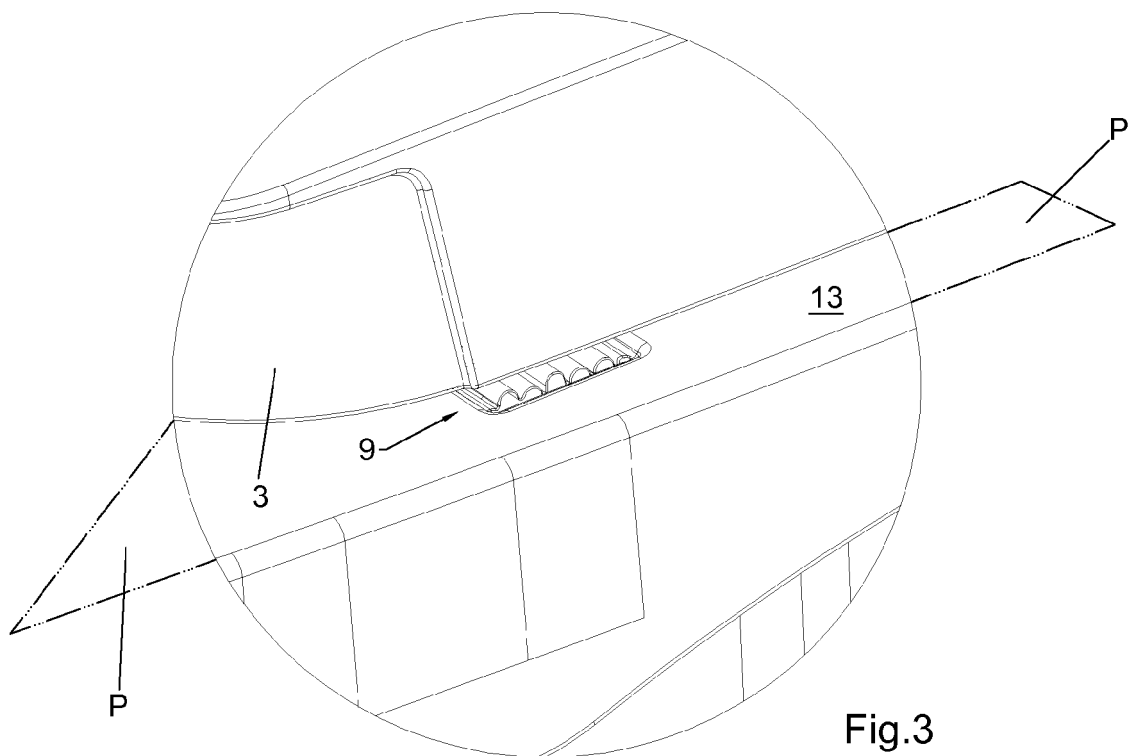


Fig.3

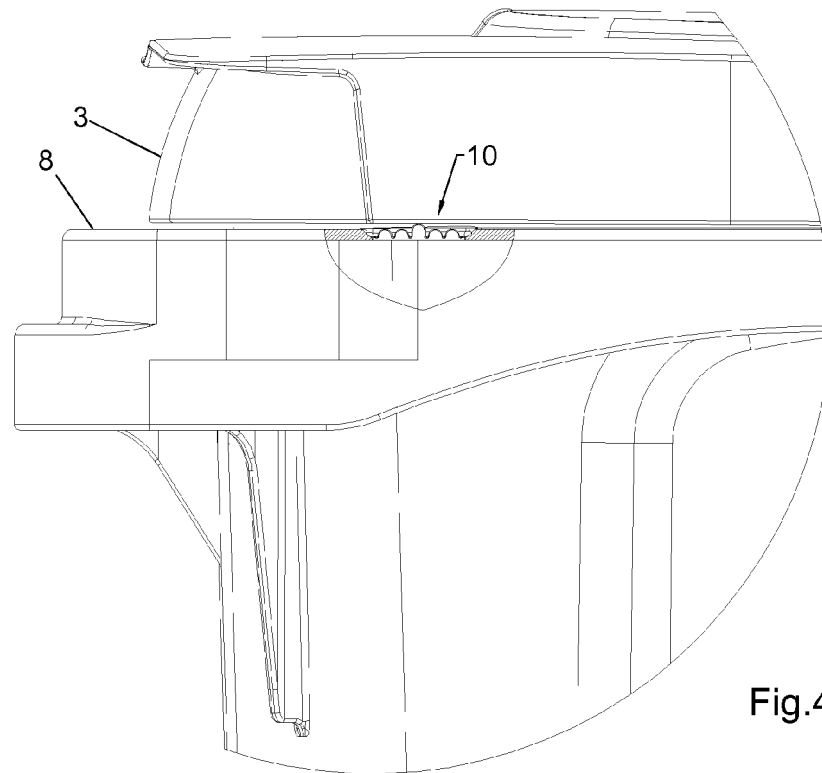


Fig.4

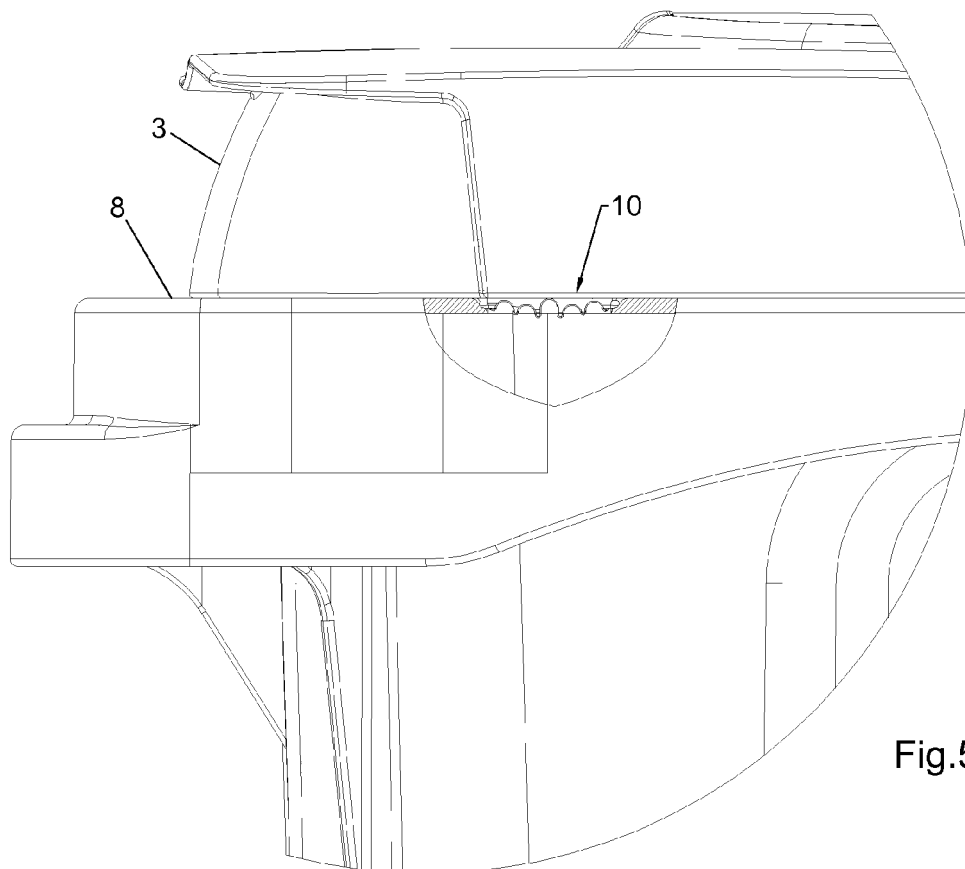


Fig.5



EUROPEAN SEARCH REPORT

Application Number
EP 18 17 8612

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A,D	EP 1 584 576 A1 (CONTENUR ESPANA, S.L.) 12 October 2005 (2005-10-12) * abstract; figure 1 *	1	
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 August 2018	Examiner Smolders, Rob
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 18 17 8612

5 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
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16-08-2018

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