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(54) Lid for containers with rounded rim

(57) A lid (1) for containers with enlarged and rounded upper rim comprising a disk-like element (2) which is surrounded by a coupling rim (3) provided by a an inner rim (10) that is joined to an outer rim (11) by means of an upper rim (12), a cavity (13) is defined between said inner rim (10) and said outer rim (11) and is engageable on the rim (6) of the container, the lid comprising, on said outer rim (11), recesses (20, 60) toward said cavity (13) that affect at least portions of the circular extension of the outer rim (11); the recesses (20, 60) have, in cross-section on a diametrical plane, a substantially trapezoidal shape in which the upper inclined portion can engage against the rim (6) of the container.

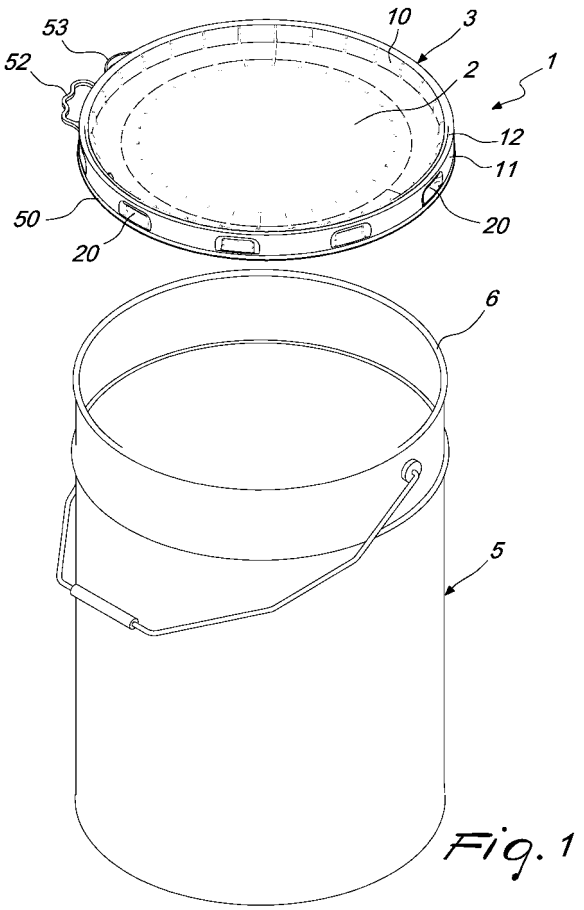

Fig. 1

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Description

[0001] The present invention refers to a lid for containers with an enlarged and rounded upper rim.

[0002] Nowadays in many industrial fields containers are used that are made of metal and which have an enlarged and rounded upper rim which, in practice, is obtained by turning down the rim.

[0003] With these known containers it is currently necessary to use lids made of metal, such as tinplate or the like, that peripherally have a plurality of tabs that are flanged externally and are bent over with plastic deformation around the enlarged and rounded rim of the container so as to achieve the seal.

[0004] To open the lid it is necessary to deform each individual tab and, subsequently, in order to close the lid again, it is necessary to perform the reverse operation, re-deforming the individual tabs so as to achieve the connection with the container body.

[0005] Clearly, this way of operating is particularly time consuming and therefore unpopular with users, because a relatively long time is required for the operations to open and close the lid.

[0006] The aim of the present invention is to solve the above problem by providing a lid for containers with an enlarged and rounded upper rim that can be made of plastic material and which can, when necessary, be rapidly coupled to, and easily removed from, the container body by snap-action.

[0007] Within this aim, an object of the present invention is to provide a lid that can offer a guarantee seal that does not permit the lid to be removed without also removing elements that make it evident that the lid has been opened.

[0008] Another object of the present invention is to provide a lid that can offer the highest guarantees of seal and which is particularly versatile, so as to be usable not only with metal containers, but also with containers made of plastic material that have an equivalent shape.

[0009] Another object of the present invention is to provide a lid for containers with an enlarged and rounded upper rim that, thanks to its features, is capable of offering the highest guarantees of reliability and security in use and which, moreover, is also competitive from a merely economical standpoint.

[0010] This aim, as well as these and other objects which will become better apparent hereinafter, are achieved by a lid for containers with an enlarged and rounded upper rim, comprising a disk-like element which is surrounded by a coupling rim provided by an inner rim that is joined to an outer rim by means of an upper rim, a cavity being formed between such inner rim and such outer rim and being engageable on the rim of the container, **characterized in that** it comprises, on such outer rim, recesses toward such cavity that affect at least portions of the circular extension of such outer rim, such recesses having, in cross-section on a diametrical plane, a substantially trapezoidal shape in which the upper inclined portion can engage against the rim of the container.

[0011] Further characteristics and advantages of the present invention will become better apparent from the description of a preferred, but not exclusive, embodiment of a lid for containers with an enlarged and rounded upper rim, illustrated by way of a non-limiting example in the accompanying drawings wherein:

Figure 1 is a schematic perspective view of the lid according to the invention, separated from a container;
Figure 2 is a bottom perspective view of the lid;
Figure 3 is a plan view of the lid, from above;
Figure 4 is a sectional view taken along the line IV-IV of Figure 3;
Figure 5 is a front elevation view of the lid applied to the container;
Figure 6 is an enlarged sectional view taken along the line IV-IV, with the lid applied to the container;
Figure 7 is an enlarged sectional view of the lid removed from the container;
Figure 8 is a sectional view of the lid taken along the line VIII-VIII of Figure 3;
Figure 9 is a perspective view of the reinforcement protrusions between the recesses;
Figure 10 is a perspective view of a different embodiment of the lid according to the invention, applied to a container;
Figure 11 is an exploded view of the lid of Figure 9, with the locking strap removed;
Figure 12 is, in cross-section on a diametrical plane, the lid of Figure 10 applied to the container;
Figure 13 is a sectional view of the lid removed from the container.

[0012] With reference to the figures, the lid for containers with an enlarged and rounded upper rim, according to the invention, generally indicated with the reference numeral 1, comprises a disk-like element 2 with a conventional shape, which is made of plastic material and is surrounded by a coupling rim 3 with which the lid 1 is applied to a container 5, usually made of metal, and which has, at its opening, an enlarged and rounded upper rim 6 which is obtained, usually, by turning down the metal band used to make the container.

[0013] The coupling rim 3 is constituted by an inner rim 10 which extends peripherally to the disk-like element 2 and which is substantially perpendicular to the plane defined by the disk-like element 2.

[0014] The inner rim 10 is joined to an outer rim 11 by means of an upper rim 12 that extends circumferentially, in such a way as to create a cavity 13 inside which can be inserted the edge of the container which is generally indicated with the reference numeral 6.

[0015] According to what is shown in the figures from 1 to 9, on the outer rim there are recesses 20 toward the inside of the cavity 13, which, advantageously, have, in

cross-section on a diametrical plane, a substantially trapezoidal shape in which the upper inclined portion 21 can engage against the rim 6 of the container to provide the coupling. The rounding of the rim 6 enables the coupling between the rim 6 and the inclined portion 21 to optimise the seal because it creates a seal thrust.

[0016] Moreover, the recesses 20 have a lower inclined portion 22 that achieve the forced coupling of the lid 1 on the container 5.

[0017] As is better shown in figures 8 and 9, between the recesses 20 there are stiffening portions 30 that have a cross-section along a diametrical plane which is substantially triangular with a blunted point. Such portions 30 join the flanking recesses and they have, in a radial direction, a lower height than the height, in the radial direction, of the inner portion of the recesses 20.

[0018] To guarantee the seal of the lid 1 on the container body, there is an inner lip 40, which is positioned on the portion of the inner rim proximate to the connection with the disk-like element, and moreover there is a circular tooth 41 that is arranged in a central portion of the axial extension of the inner rim. Both the lip 40 and the tooth 41 engage in a seal with the inner surface of the container.

[0019] Moreover, on the inner surface of the upper rim 12, there is an annular gasket 42 that can be made of expanded material and which provides a seal directly against the rim 6 of the container.

[0020] The lid 1 can be provided with security elements that make it evident that such lid has been opened and which, advantageously, consist of a containment ring 50 that is connected by means of a weakening line 51 to the lower free rim of the outer rim.

[0021] The containment ring 50, at one of its ends, is provided with a grip element 52 that enables its tearing and is positioned in proximity to an opening loop 53 that connects to the outer rim, so as to function as an element that allows the user to exert the necessary traction to open the lid, once the containment ring has been removed.

[0022] The opening loop 53, as shown in figure 5, is connected to the end of the containment ring 50 with weakened portions 56 that can easily be broken at the time of removing the containment ring 50 but which, in the initial conformation, form a continuity for the containment ring 50 that prevents the elastic deformation of the outer rim of the lid which allows the lid to be opened by pulling the rim 6 past the recesses 20.

[0023] It should also be noted that the recesses 20, in a radial direction, extend toward the inside of the cavity for a portion that is greater than half of the width in the radial direction of such cavity.

[0024] With this arrangement a security element for the lid is provided that does not permit its opening, except by performing the removal of the containment ring, in such a way that it is evident that the lid has been opened.

[0025] According to what is shown in the figures from 10 to 13, the lid 1 has, on the outer rim, still indicated with 11, an annular lip 58 that simply functions as a containment element for the lid which is provided for its entire circumferential extension with a circular recess 60 that also has a trapezoidal shape with an upper inclined portion 61 that engages against the rim of the container, as in the solution illustrated previously.

[0026] To implement the security means, on the outer face of the circular recess 60 there is a containment strap 70 that is fastened onto the outer surface of the recess, thus preventing its elastic deformation, which would allow the lid to be opened.

[0027] In order to open the lid it is necessary to cut the containment strap 70, thereby making it possible to achieve the elastic deformation of the circular recess, which can be pulled over the enlarged and rounded rim at the upper end of the container.

[0028] From the foregoing it can be seen how the invention achieves the aim and objects, and in particular, attention is drawn to the fact that a lid is provided, made of plastic material, that enables the closing of containers that have an enlarged and rounded rim and that, usually, are made of metal but which, obviously, could be made of any other material.

[0029] The lid is provided with recesses that can be distributed for discrete portions or optionally on all of the circular extension, and which define a reference plane that, by engaging with the enlarged and rounded rim, creates a component for fastening the lid onto the container, thereby guaranteeing optimal sealing characteristics.

[0030] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0031] Moreover, all the details may be substituted by other, technically equivalent elements.

[0032] In practice the materials employed, provided they are compatible with the specific use, as well as the dimensions and the contingent shapes, may be any according to requirements.

[0033] The disclosures in Italian Patent Application No. MI2009A001239 from which this application claims priority are incorporated herein by reference.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A lid (1) for containers with an enlarged and rounded upper rim, comprising a disk-like element (2) which is surrounded by a coupling rim (3) provided by an inner rim (10) that is joined to an outer rim (11) by means of an upper rim (12), a cavity (13) being de-

fined between said inner rim (10) and said outer rim (11) and being engageable on the rim (6) of the container (5), **characterized in that** it comprises, on said outer rim (11), recesses (20, 60) toward said cavity (13) that affect at least portions of the circular extension of said outer rim (11), said recesses (20, 60) having, in cross-section on a diametrical plane, a substantially trapezoidal shape in which the upper inclined portion (21, 61) can engage against said rim (6) of the container (5).

2. The lid according to the claim 1, **characterized in that** said recesses (20) have, in cross-section on a diametrical plane, a lower inclined portion (22) for mating on said container (5).

3. The lid according to claim 1, **characterized in that** it comprises stiffening portions (30) that are extended along circular portions and join said recesses (20) on the face of said outer rim (11) that is directed toward said cavity (13).

4. The lid according to one or more of the preceding claims, **characterized in that** said stiffening portions (30) have, in a radial direction, a lower height than the height, in the radial direction, of said recesses (20) that are directed toward said cavity and have, in a radial direction, a width that is greater than half the width of said cavity (13).

5. The lid according to one or more of the preceding claims, **characterized in that** it comprises at said inner rim (10), in the region for connection to said disk-like element (2), an inner lip (40), which forms a seal on the inner surface of said container (5).

6. The lid according to one or more of the preceding claims, **characterized in that** it comprises a circular tooth (41) that is arranged in a central portion of the axial extension of said inner rim (10).

7. The lid according to one or more of the preceding claims, **characterized in that** it comprises an annular gasket (42) that is arranged on the bottom of said cavity (13) and can engage said rim (6) of the container (5).

8. The lid according to one or more of the preceding claims, **characterized in that** it comprises security elements constituted by a containment ring (50) that is connected, by means of a weakening line (51), to the lower free rim of said outer rim (11), said containment ring (50) having, at one of its ends, a grip element (52) for tearing.

9. The lid according to one or more of the preceding claims, **characterized in that** it comprises an opening loop (53), which is connected to said outer rim (11) and is joined to the ends of said containment ring (50) by means of weakened portions (56) that can be broken by tearing.

10. The lid according to one or more of the preceding claims, **characterized in that** said recesses are constituted by a circular recess (60) that affects the entire circumferential extension of said coupling rim (3), security elements being arrangeable in said circular recess (60), which has a trapezoidal shape along a diametrical plane, said security elements being constituted by a containment strap (70) that is fastened onto the outer surface of said circular recess (60).

11. A container, **characterized in that** it comprises a lid according to one or more of the preceding claims.

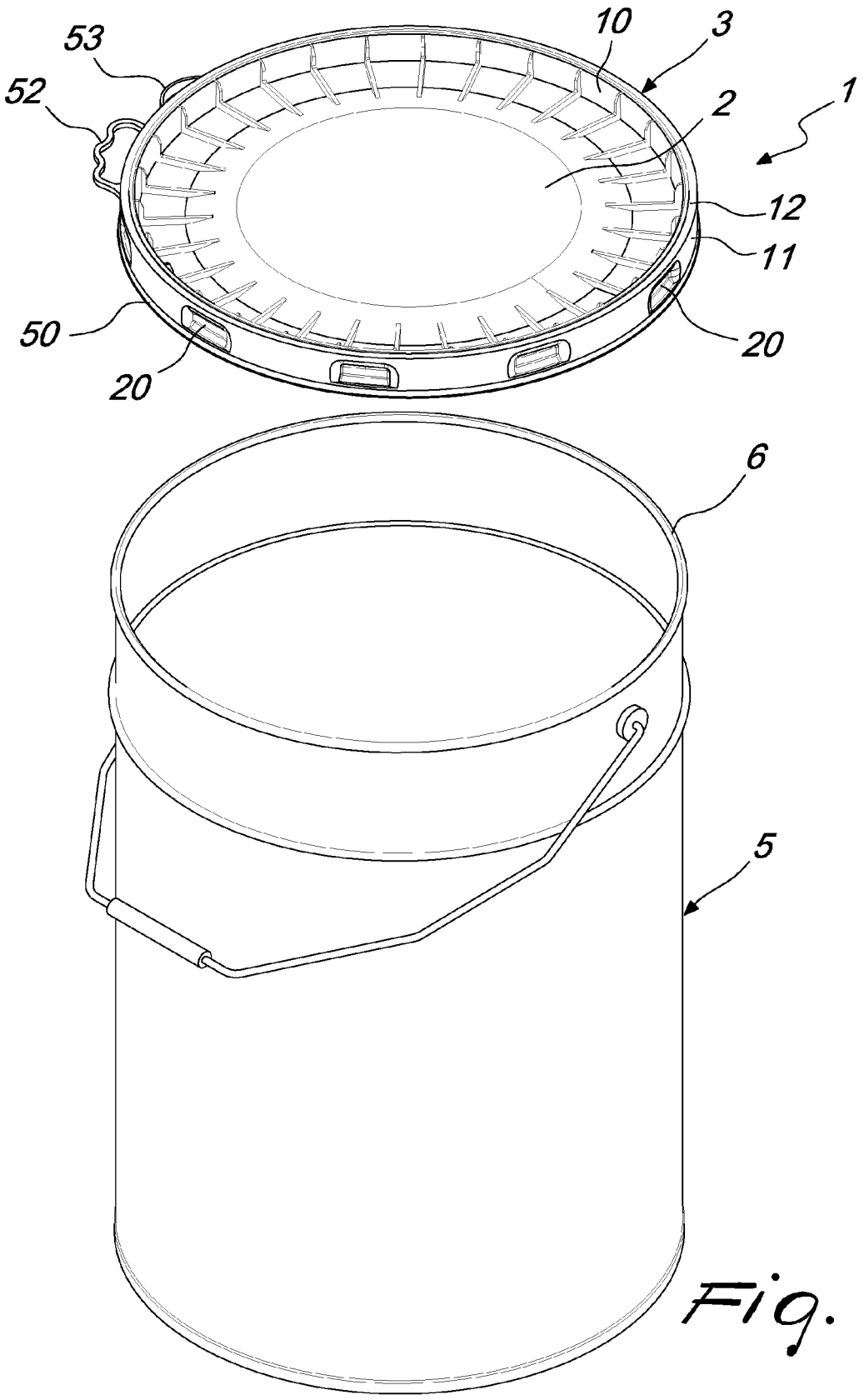

Fig. 1

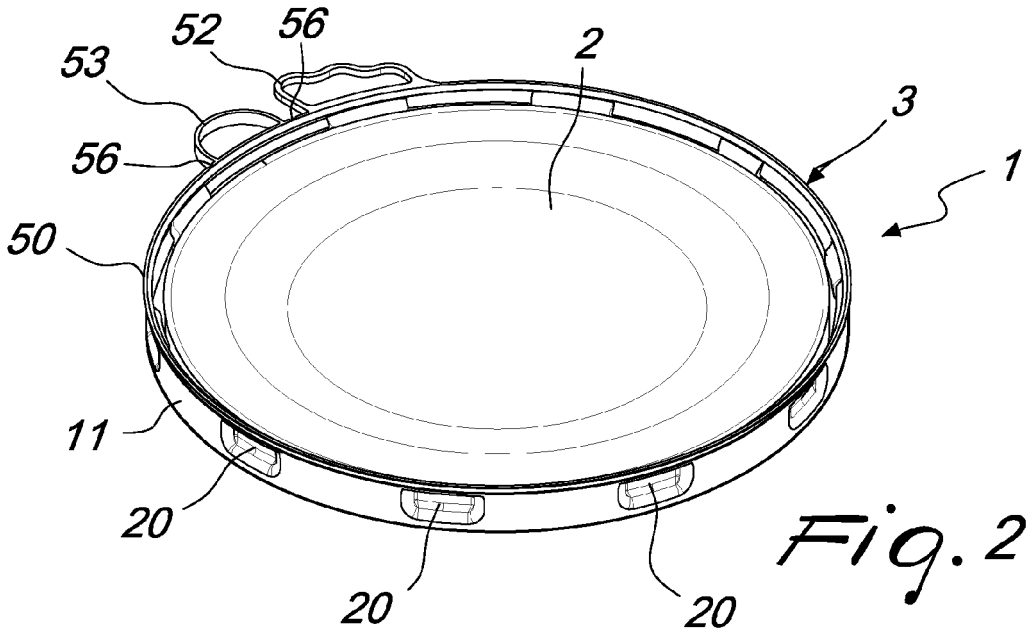
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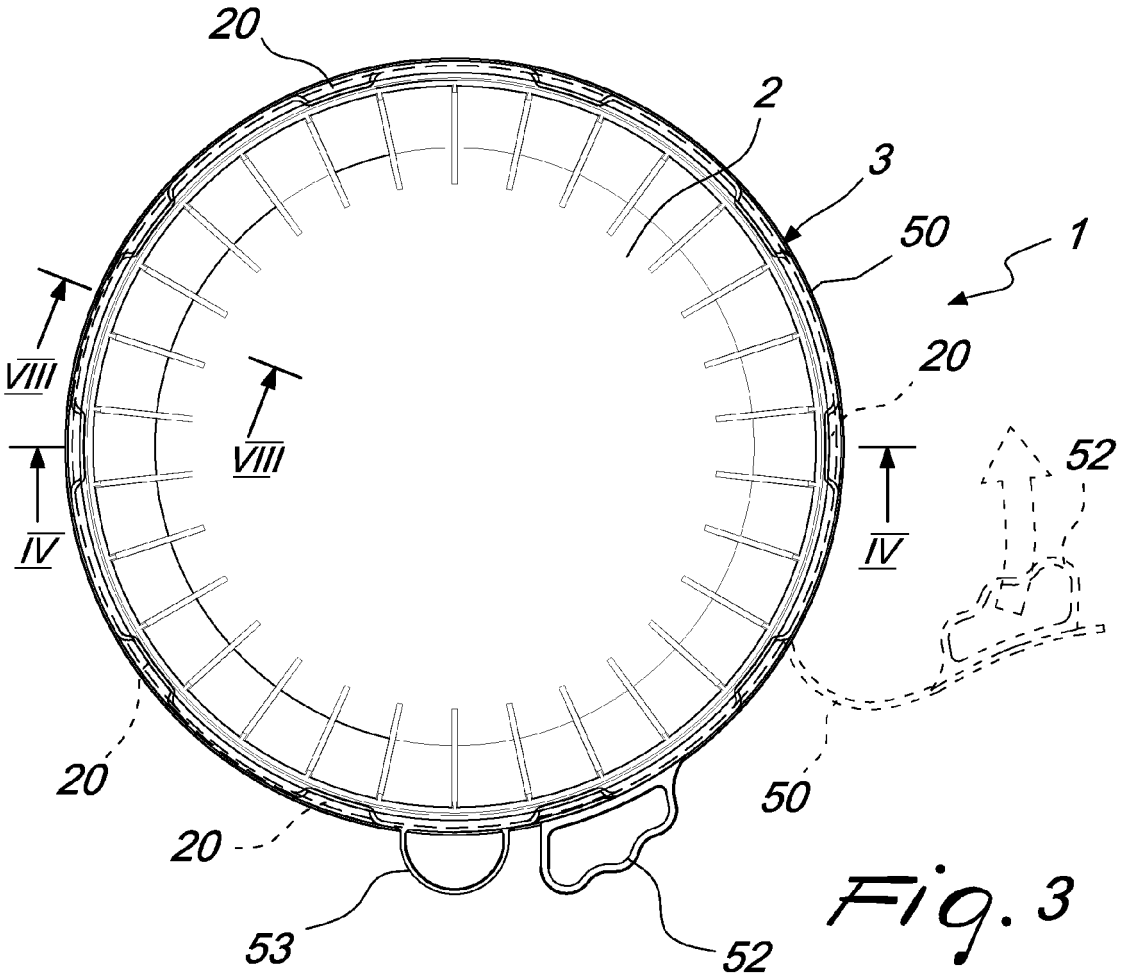
Fig. 2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VIII
VIII
IV
IV
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53
52
50

Fig. 3

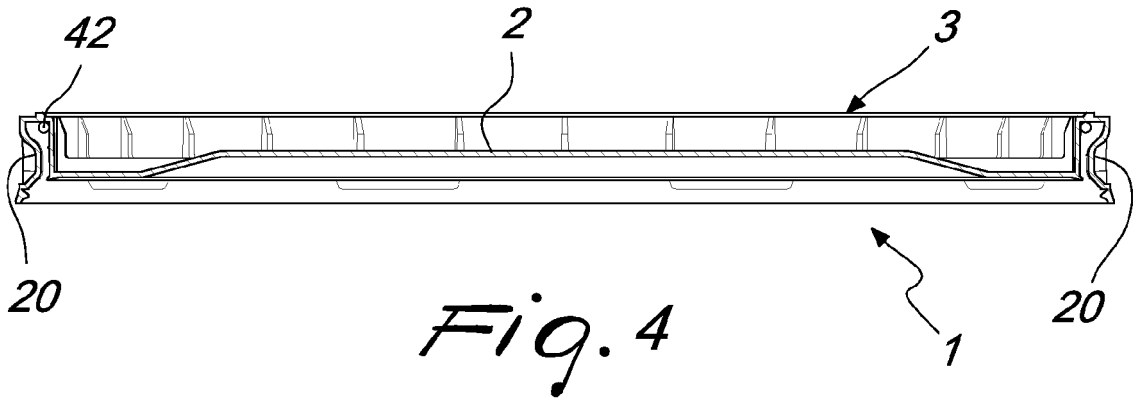

Fig. 4

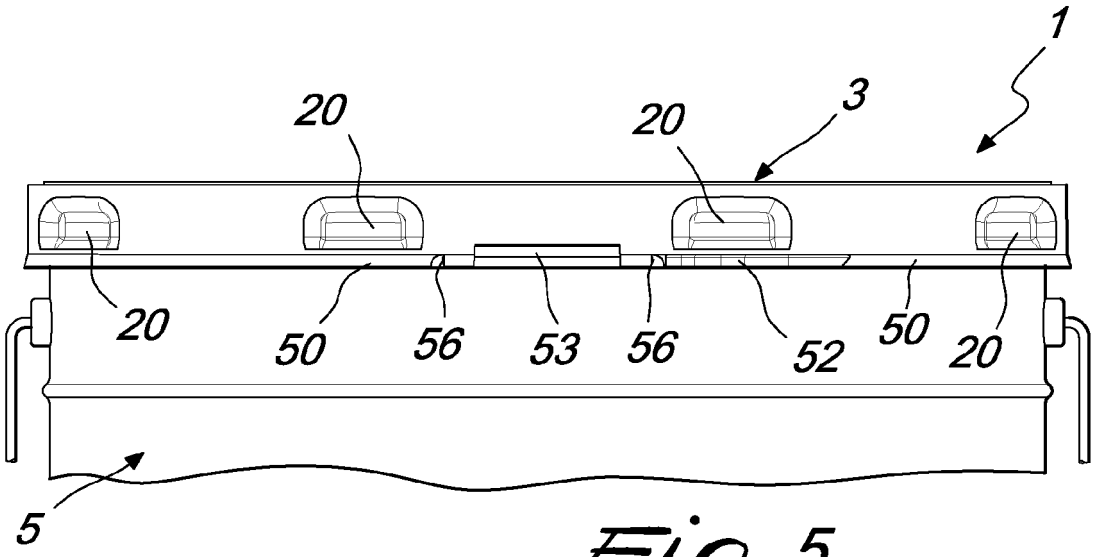

Fig. 5

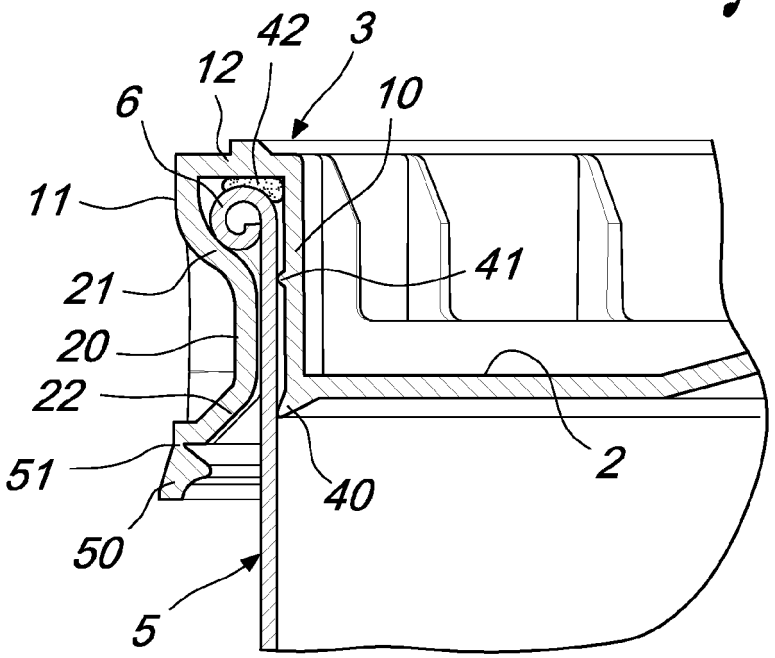

Fig. 6

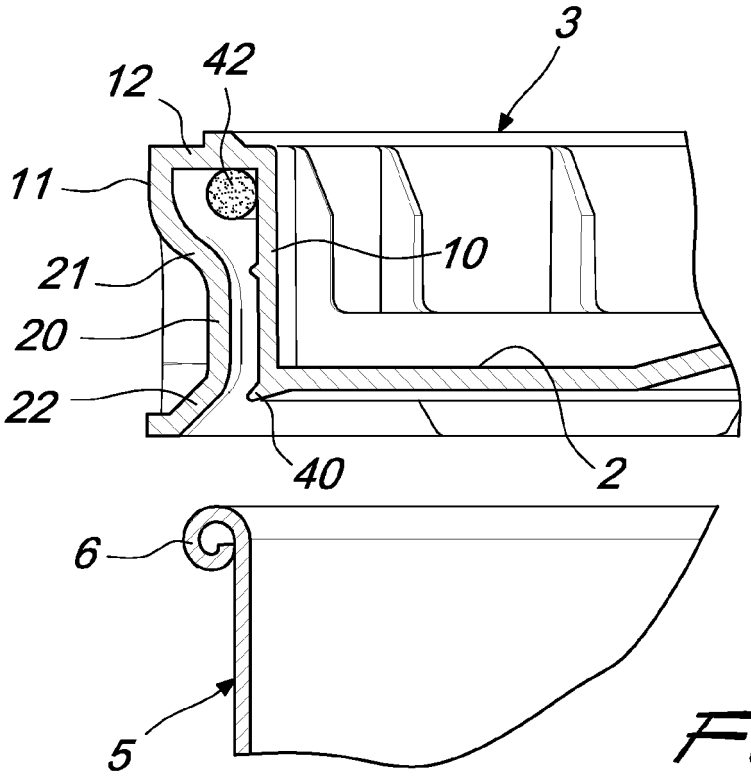

Fig. 7

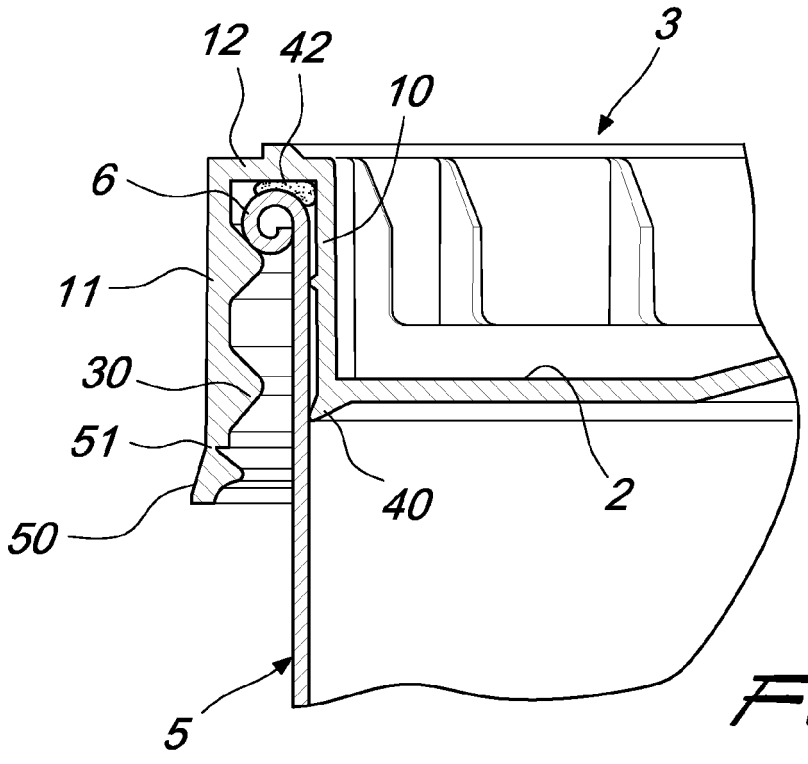

Fig. 8

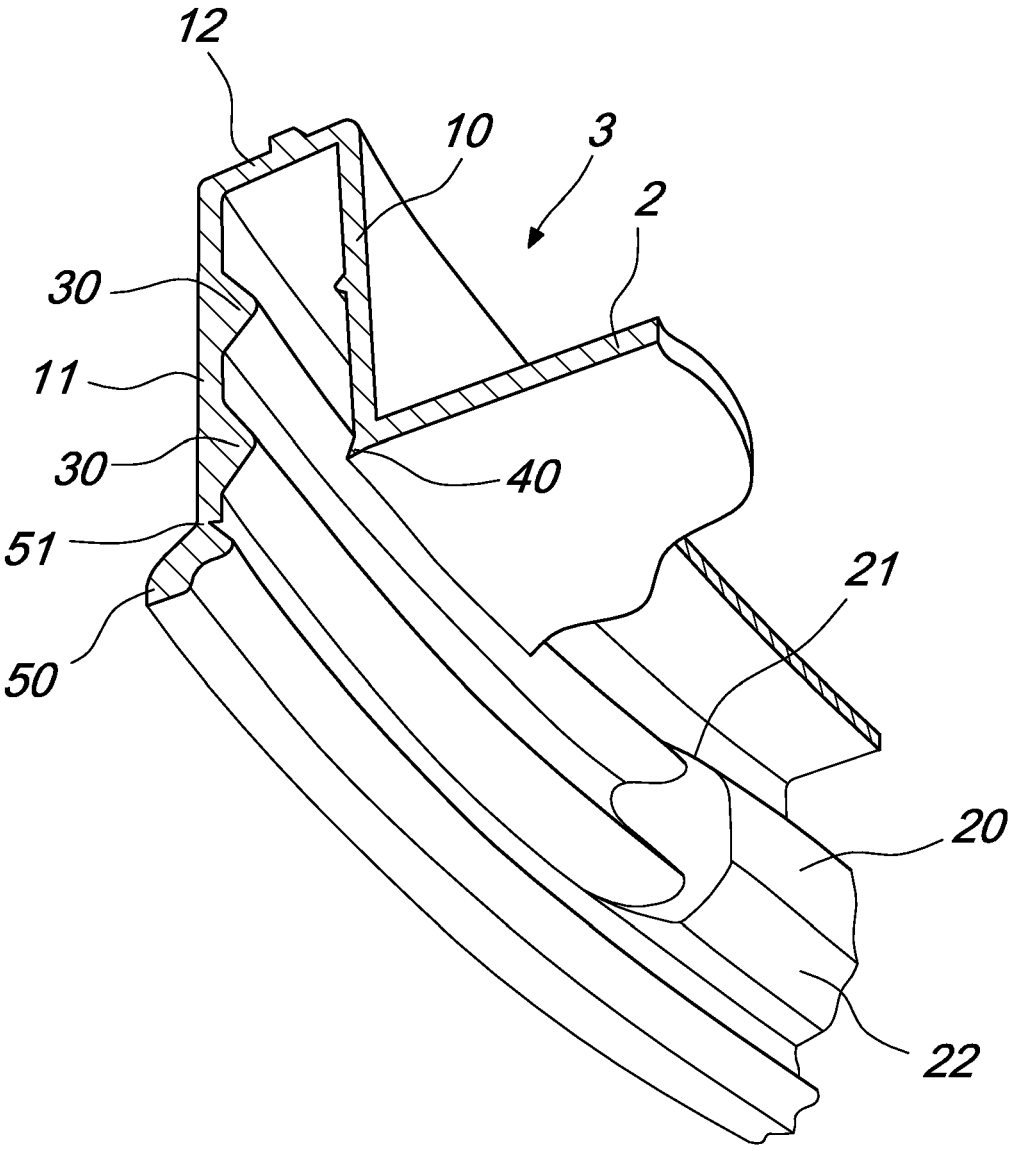

Fig. 9

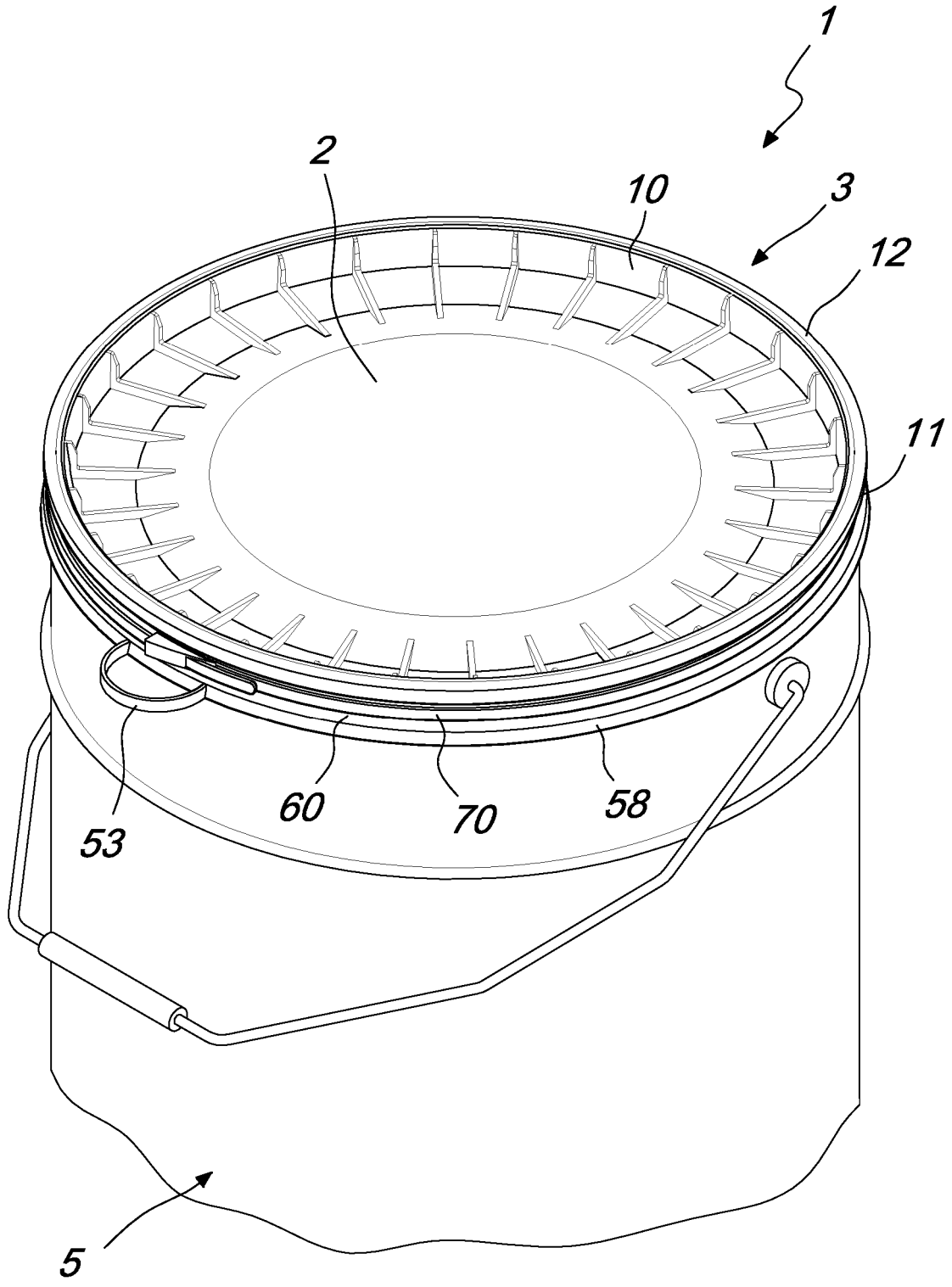

Fig. 10

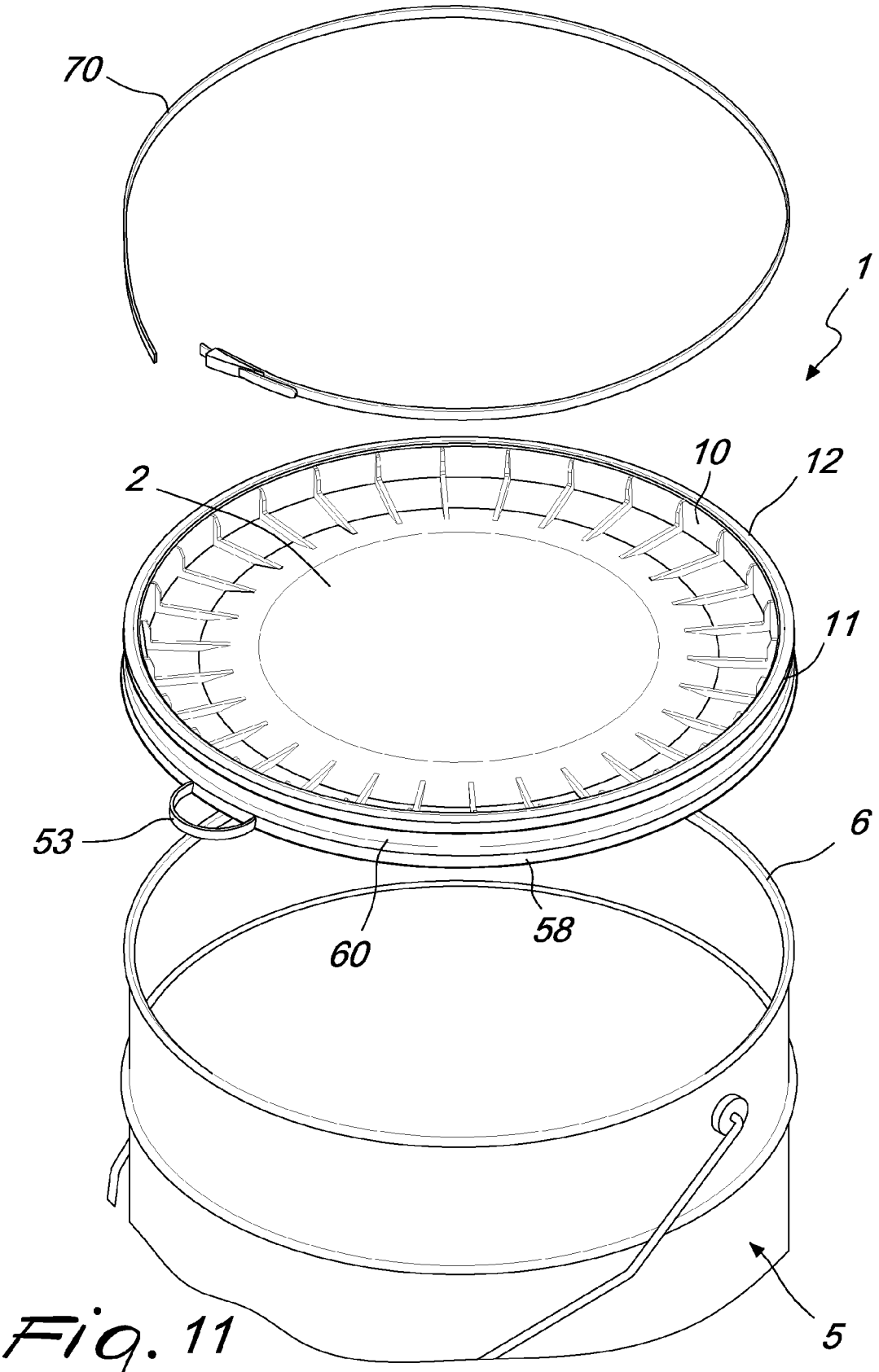

Fig. 11

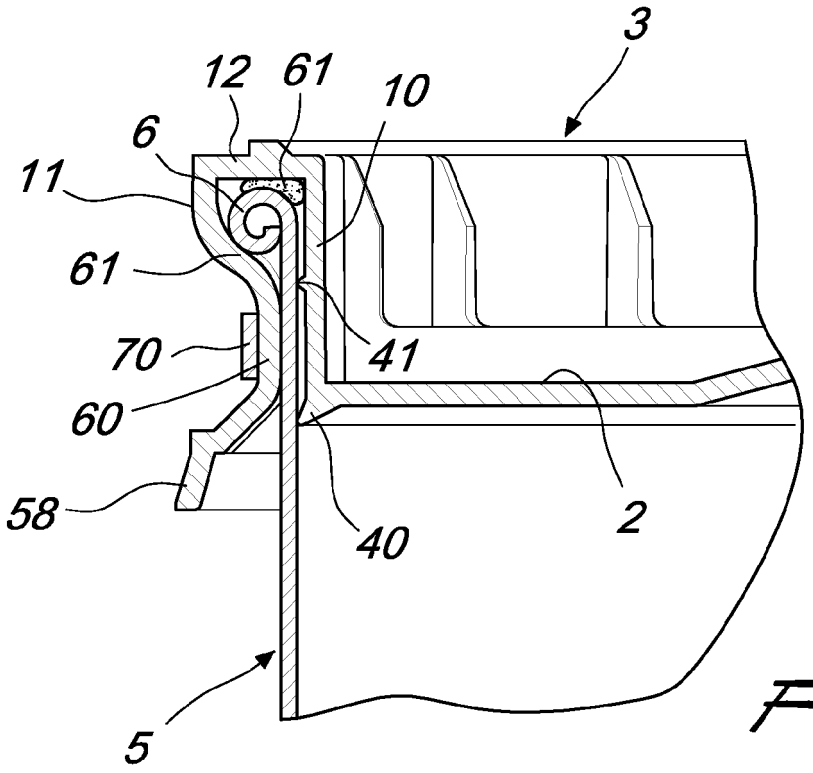

Fig. 12

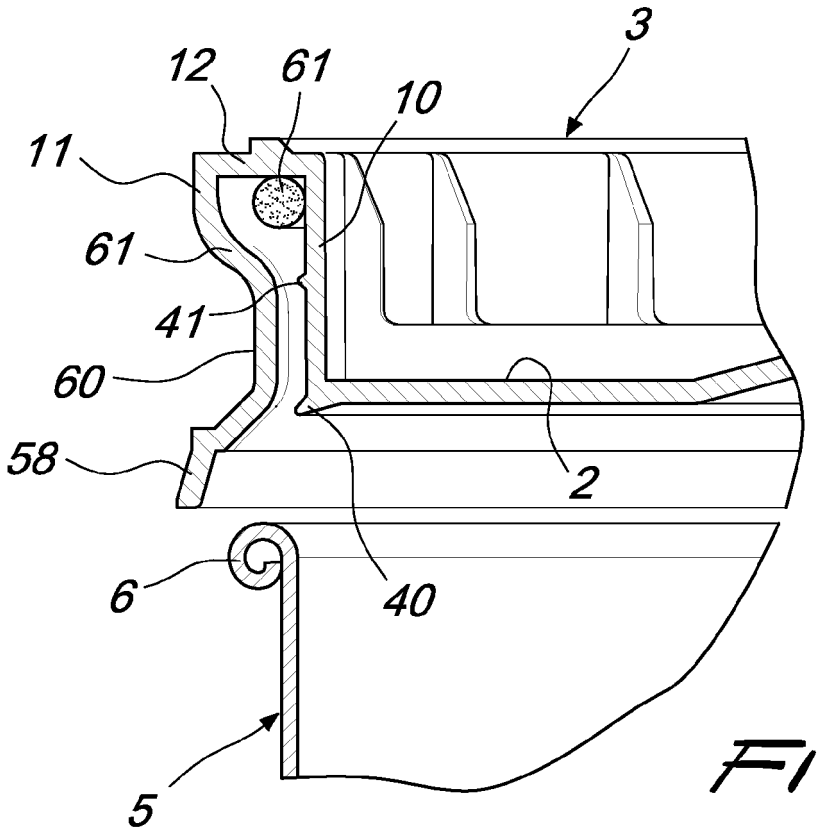

Fig. 13

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EUROPEAN SEARCH REPORT

Application Number
EP 10 16 8177

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 Y	US 2008/017651 A1 (WALKER THOMAS B [US] ET AL) 24 January 2008 (2008-01-24) * paragraph [0086]; figures 24-26 *	1-4 5-9	INV. B65D43/06
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Y	US 5 046 632 A (BORDNER PAUL G [US]) 10 September 1991 (1991-09-10) * column 7, line 13 - line 14; figure 6 *	7	
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A	WO 2005/009856 A (BRASILATA EMBALAGENS METALICAS [BR]; ALVARES ANTONIO CARLOS TEIXEIR [B) 3 February 2005 (2005-02-03) * figures 1-3 *	9	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
The Hague	23 July 2010	Sundell, Olli

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

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EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 10 16 8177

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-9 (completely); 11 (partially)

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 10 16 8177

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-9(completely); 11(partially)

A lid with several trapezoidal snap recesses

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2. claim: 10(completely); 11(partially)

A lid with a single trapezoidal snap groove for accommodating a containment strap

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 16 8177

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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23-07-2010

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

REFERENCES CITED IN THE DESCRIPTION

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