



EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.05.2019 Bulletin 2019/18

(51) Int Cl.:
B65D 43/02 (2006.01)

(21) Application number: **18202228.5**

(22) Date of filing: **24.10.2018**

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
 Designated Extension States:
BA ME
 Designated Validation States:
KH MA MD TN

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(30) Priority: **24.10.2017 PT 2017110366**

(54) **RECIPIENT WITH AN IMPROVED MECHANISM FOR SEALING, CLOSING AND OPENING**

(57) The present invention relates to modifications introduced in the mechanism for sealing, and subsequent opening and closing of recipients, more specifically to food recipients consisting of a container (C) and respective lid (T). The lid (T) consists of: tamper-evident band (T.1), opening tab (T.2), fitting fillets of the lid (T.3), inner skirt (T.4) and outer skirt (T.5). The container (C) consists of: bottom ring (C.1), upper ring (C.2) and fitting fillets in the container (C.3). This mechanism allows the initial closure and respective sealing of the recipient to be effected by pressure, being subsequently opened and closed by rotation of the lid (T).

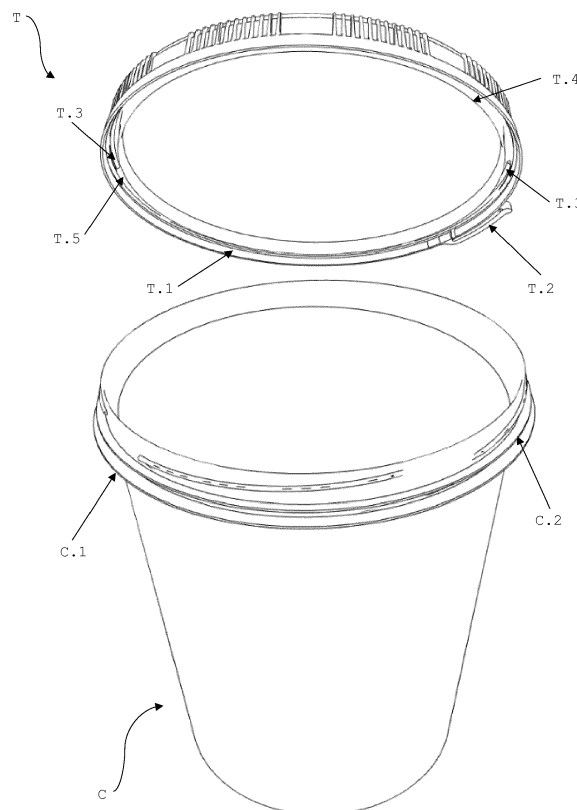


Fig. 2

Description

Scope of the Invention

[0001] The present invention refers to food recipients, more specifically to food recipients consisting of a container and its lid, more concretely to changes introduced in the mechanism for making the sealing, and subsequent opening and closing of recipients.

Background of the Invention

[0002] A number of attachable container and lid equipment's are known in the art, especially concerning the storage, display and transport of both solid and liquid foods. With the introduction of pre-made food and self-service stores, the need to pack, display and transport packed-food in perfect conditions of inviolability has become evident.

[0003] There are numerous documents which refer to more or less complex methods of container tampering, but which in practice are summarized in three basic methods.

[0004] Basically, most of these devices have a tamper-evident band attached to the lead, and that through a docking or screw system, it prevents the lead from being removed without the band being tampered with.

[0005] The document BR PI 1001220-6 (A2) presents one of the most common types of packaging, particularly for packaging of soups or yogurts. In this type of packages, as can be observed in figure 12, after the tab (AD) is broken, the cap (2) can be pulled out to be withdrawn.

[0006] In document US 3837518 (A), and whose principle operating can be observed in figure 13, the tamper-evident band is removed by inserting a finger into the tab (30), then pulling the tamper-evident band (27) which breaks the connection points (29) between the band and the cap.

[0007] A system similar to this is referenced in US 20040045926 (A1), and whose operating principle can be observed in figure 14, being perhaps one of the systems most publicized, since it is the system normally used in water bottles, in which connecting points (8) between the cap and the tamper-evident band are broken by applying extra force when the lid is turned for the first time.

[0008] In the case of the principle referred to in BR PI 1001220-6, the equipment filling the containers is equipped with a pylon system to engage the lid in the container. In the case of the principle referred to in US 3837518 and US 20040045926, the equipment filling the containers is equipped with a rotation system that enables the lid to be coupled to the container.

Advantages of the Invention

[0009] The great advantage that the equipment described in the invention presents is to conjugate the systems described above.

[0010] On the one hand, it allows the closure of the recipients to be executed by a pressure system which engages the lid in the container, which in turn simplifies the filling chain, and on the other hand allows the lid to be removed and subsequently repositioned in the container by rotation, which allows to stabilize the contents of the recipient.

[0011] This procedure is especially advantageous in recipients containing soups or the like, where splashes are often encountered when pulling the lid to separate it from the container.

[0012] Another advantage is that the recipient is reusable and easy to use.

Brief description of the drawings

[0013] These and other features can be readily understood from the accompanying drawings, which are to be considered as mere examples and not in any way restrictive of the scope of the invention. In the drawings, and for illustrative purposes, the measurements of some of the elements may be exaggerated and not drawn to scale. Absolute dimensions and relative dimensions do not correspond to the actual ratios for carrying out the invention.

Figure 1 shows a top perspective view of the equipment of the invention.

Figure 2 shows a perspective exploded view of the equipment of the invention.

In figure 3 it is possible to see a top perspective view of the lid of the equipment of the invention.

Figure 4 shows a top view of the cap of the equipment of the invention.

Figure 5 shows a bottom view of the lid of the equipment of the invention.

Figure 6 shows a side cross-sectional view of the lid.

Figure 7 shows a perspective view of a side cut of the lid.

Figure 8 shows a perspective view of a side cut of the cap without the inner skirt.

Figure 9 shows a bottom perspective view of the cap without the inner skirt.

In figure 10 it can be seen in a side view of the container of the equipment of the invention.

Figure 11 shows a side cross-sectional view of the container.

Figure 12 shows the various steps for opening the equipment described in BR PI 1001220-6.

Figure 13 shows how the opening of the locking system referred to in US 3837518 is executed.

Figure 14 shows the locking system described in US 20040045926.

[0014] In Figures 1 to 11 it is possible to observe the various components that make up the equipment:

T - Lid

- T.1 - Tamper-evident band
- T.2 - Opening tab
- T.3 - Fitting fillets of the lid
- T.4 - Inner skirt
- T.5 - Outer skirt

C - Container

- C.1 - Bottom ring
- C.2 - Top ring
- C.3 - Fitting fillets in the container

Detailed description of the Invention

[0015] In the present detailed description of the invention, various specific details are presented in order to provide a complete understanding of the invention. However, it is the understanding of any specialist in this field that these details should be viewed as preferred embodiments and not limiting the present invention.

[0016] By "substantially cylindrical", "substantially circular", "substantially annular", "substantially rectilinear" shapes, are understood as preferred forms for carrying out the invention and it may function in other forms.

[0017] By positions "substantially parallel", "substantially perpendicular", "substantially oblique", are understood as preferred positions for the realization of the invention and it may function with other positions.

[0018] The present invention relates to modifications introduced in the mechanism for sealing, and subsequent opening and closing of recipients, more specifically food recipients consisting of a container (C) and respective lid (T).

[0019] With reference to the figures the recipients of the invention is constituted by a lid (T) and a container (C) for storage, exhibition and transport of food products.

[0020] The lid (T) of substantially circular shape has an outer skirt (T.5) along its entire circumference, at a position substantially perpendicular to the base and having a substantially annular shape. A tamper-evident band (T.1) with a substantially annular shape and a radius identical to that of the outer skirt (T.5) is attached to the outer skirt (T.5). Preferably, the tamper-evident band (T.1) is attached to the outer skirt (T.5) by a zone of thinner thick-

ness, so as to be easily removable when desired. The tamper-evident band (T.1) has an opening tab (T.2) that extends outwardly so that it can be gripped by a person wishing to remove the tamper-evident band (T.1) from the outer skirt (T.5), thus having access to the contents of the container (C).

[0021] The inner face of the outer skirt (T.5) has fitting fillets of the lid (T.3) which, together with the fitting fillets in the container (C.3) allow that, after removal of the tamper-evident band (T.1) the recipient is closed and opened by rotating the lid (T) in the container (C).

[0022] The fitting fillets of the lid (T.3), located on the inner face of the outer skirt (T.5), are substantially rectilinear in shape and are in a position substantially oblique to the wall where they are embedded.

[0023] In a position substantially parallel to the outer skirt (T.5), having a substantially annular shape and having a radius less than the radius of the outer skirt (T.5), an inner skirt (T.4) which together with the outer skirt (T.5) delimit a space in which the top of the container (C) engages.

[0024] The lower part of the inner skirt (T.4) has a smaller diameter than the upper part of the inner skirt (T.4). This difference in diameters, lower at the bottom and higher at the top, makes the space between the inner skirt (T.4) and the outer skirt (T.5) larger at the bottom, facilitates the pointing of the lid (T) in the closure process of the recipient either by pressure or by rotation of the lid (T), making it faster and more accurate.

[0025] The tightness of the recipient is ensured by the fact that, being the diameter of the upper part of the inner skirt (T.4) greater than the diameter of the lower part of the inner skirt (T.4), the space between the inner skirt (T.4) and the outer skirt (T.5) is smaller at the top than at the bottom, thus allowing contact between the collar of the lid (T) and the inner skirt (T.4) to be promoted.

[0026] If the diameter of the inner skirt (T.4) were equal throughout its height, it would be impossible to fit the lid (T) in the container (C) and at the same time guarantee the tightness.

[0027] The container (C) has a substantially cylindrical shape, has immediately below the upper collar at least two fitting fillets in the container (C.3), which in conjunction with the fitting fillets of the lid (T.3) allow the initial closure and sealing of the recipient to be effected by pressure, and may subsequently be opened and closed by rotating the lid (T) in the container (C).

[0028] The fitting fillets in the container (C.3) have a substantially rectilinear shape, are in a position substantially oblique to the wall where they are embedded, have a length substantially identical to the length of the fitting fillets of the lid (T.3) and in equal number to the number of fitting fillets of the lid (T.3).

[0029] This geometry of the fitting fillets (T.3) (C.3) allows the initial engagement between the lid (T) and the container (C) to be effected by pressure, these fitting fillets (T.3) (C.3) subsequently functioning as fillets of a thread, allowing rotation of the lid (T) on the container

(C) for opening and closing the recipient.

[0030] Immediately below the fitting fillets in the container (C.3), a substantially annular top ring (C.2), positioned substantially perpendicular to the outer wall of the container (C) and bypassing the entire container (C), prevents that the lid (T) can be removed without the tamper-evident band (T.1) being tamped, by preventing the tamper-evident band (T.1) from being moved vertically, due to the fact that it is engaged in the coupling region between the outer skirt (T.5) and the tamper-evident band (T.1).

[0031] Below the top ring (C.2) a substantially annular bottom ring (C.1), positioned substantially perpendicular to the outer wall of the container (C) and bypassing the entire container (C), prevents the lid (T) can be removed without the tamper-evident band (T.1) being tamped, by preventing an object from being placed between the tamper-evident band (T.1) and the container (C), which in any way allows removal of the lid (T), since the tamper-evident band (T.1) is substantially against the bottom ring (C.1).

[0032] The fact that the engagement between the lid (T) and the container (C) is obtained by fitting between the fitting fillets of the lid (T.3) and the fitting fillets in the container (C.3), and not by a traditional threaded system, allows the engagement between the lid (T) and the container (C) to be effected by pressure exerted on the lid (T). Thus, for the recipient to be closed, it is not necessary for the filling line of the recipients to be fitted with equipment which rotates the lids, provided that it is equipped with an apparatus which presses the lid (T) on the container (C) with the consequent saving of financial resources and time.

Claims

1. A recipient with an improved mechanism for sealing, closing and opening comprising a lid (T) and a container (C), the lid (T) has an outer skirt (T.5) along its entire circumference in a position substantially perpendicular to the base and with a substantially annular shape, to which is attached a tamper-evident band (T.1) of substantially annular shape and with a radius identical to that of the outer skirt (T.5), the container (C) has a shape substantially cylindrical, **characterized in that** the inner face of the outer skirt (T.5) has at least two fitting fillets of the lid (T.3) which are substantially rectilinear in shape in a position substantially oblique to the wall where they are embedded, the container (C) has at least two fitting fillets in the container (C.3) which are substantially rectilinear in shape and are in a position substantially oblique to the stop from which they are embedded, have a length substantially identical to the length of the fitting fillets of the lid (T.3) and in equal number to the number of the fitting fillets of the lid (T.3) .

2. Recipient according to the preceding claim, wherein the tamper-evident band (T.1) is attached to the outer skirt (T.5) by a zone of thinner thickness.
3. Recipient according to the preceding claims, wherein the removal of the tamper-evident band (T.1) from the outer skirt (T.5) is effected through the opening tab (T.2) which extends outwardly from the tamper-evident band (T.1).
4. Recipient according to the preceding claims, wherein the lid (T) has an inner skirt (T.4) in a position substantially parallel to the outer skirt (T.5), having a substantially annular shape and a radius less than the radius of the outer skirt (T.5), which together with the outer skirt (T.5) delimit a space in which the top of the container (C) engages.
5. Recipient according to the preceding claims, wherein the container (C) has a top ring (C.2) of substantially annular shape, positioned substantially perpendicular to the outer wall of the container (C) and around the entire container (C) and that after the initial sealing is fitted into the coupling zone between the outer skirt (T.5) and the tamper-evident band (T.1).
6. Recipient according to the preceding claims, wherein the container (C), below the top ring (C.2), has a bottom ring (C.1) of substantially annular shape, positioned substantially perpendicular to the outer wall of the container (C) and bypassing the entire container (C), and which is substantially against to the tamper-evident band (T.1) after the initial sealing.

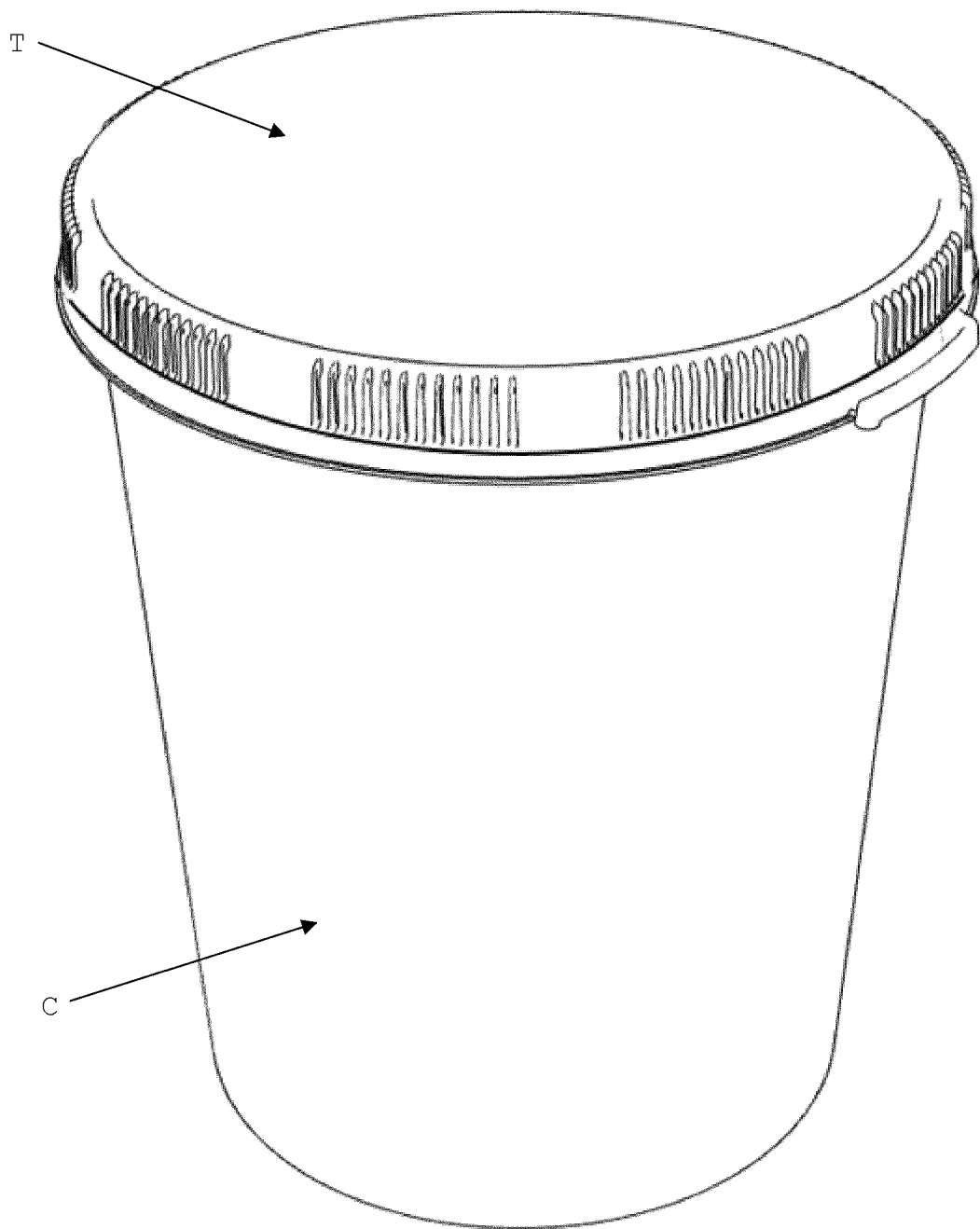


Fig. 1

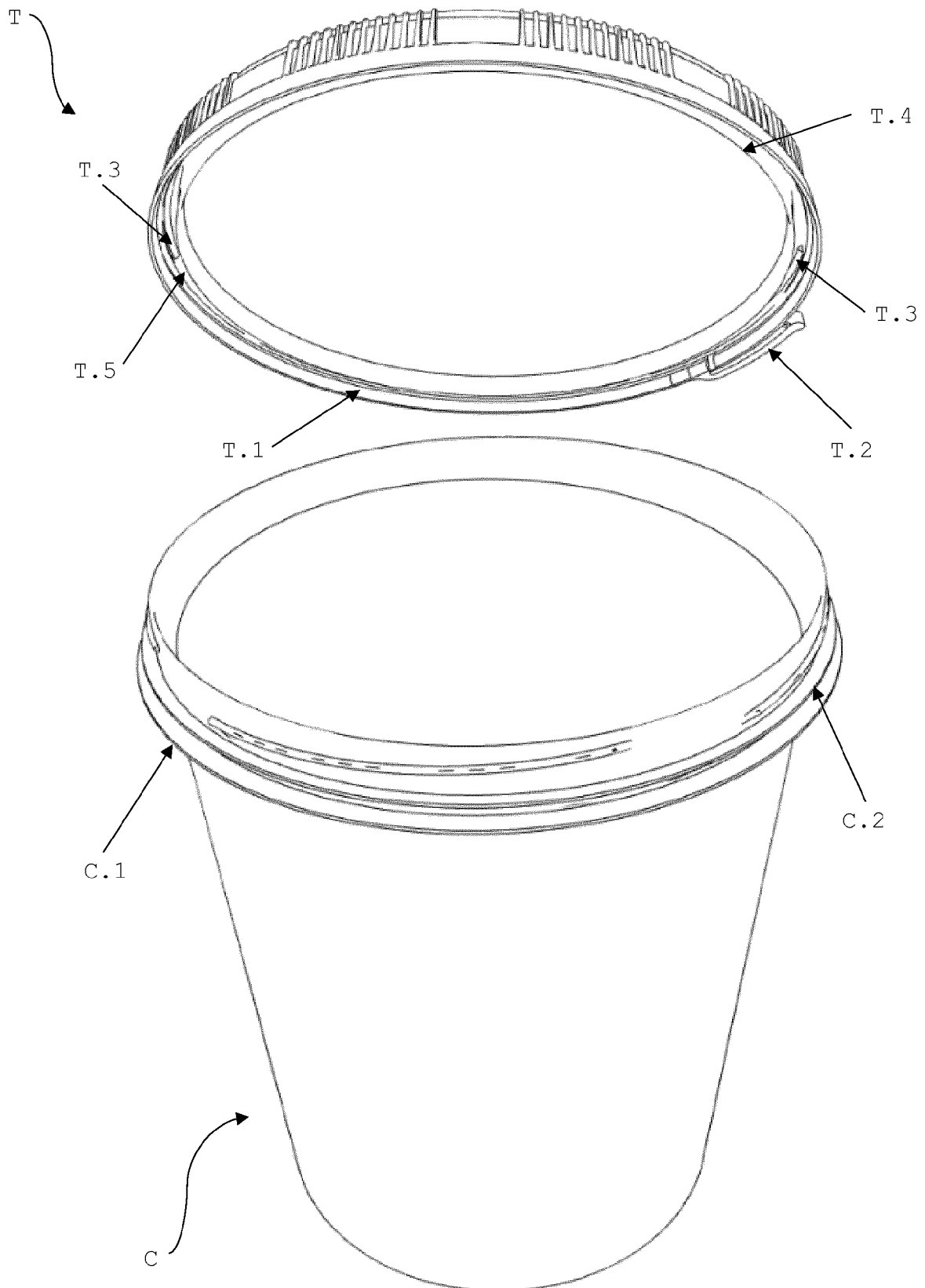


Fig. 2

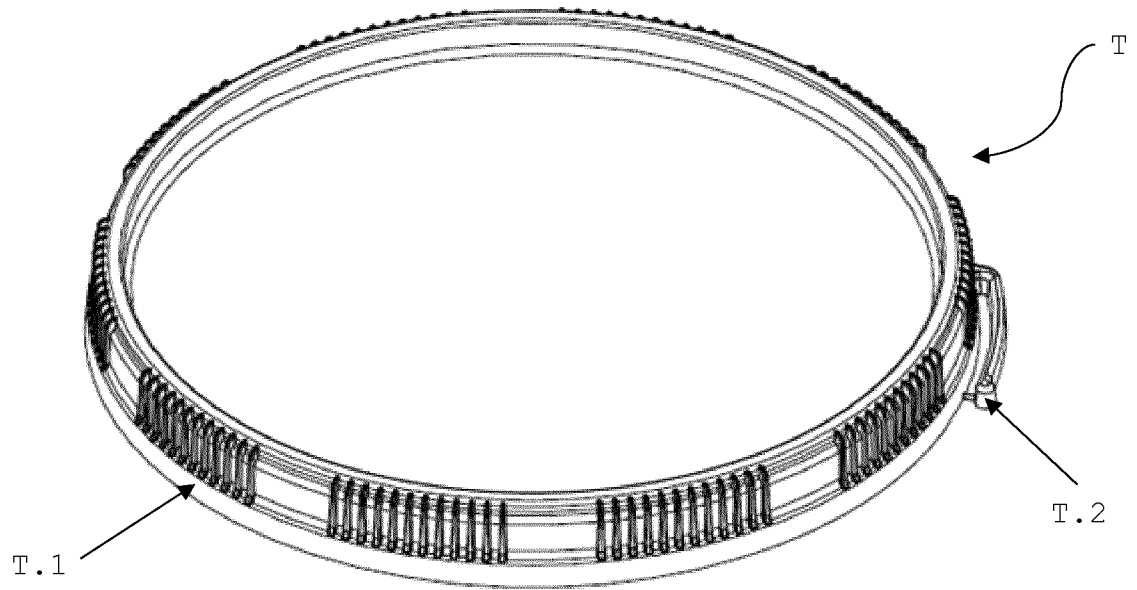


Fig. 3

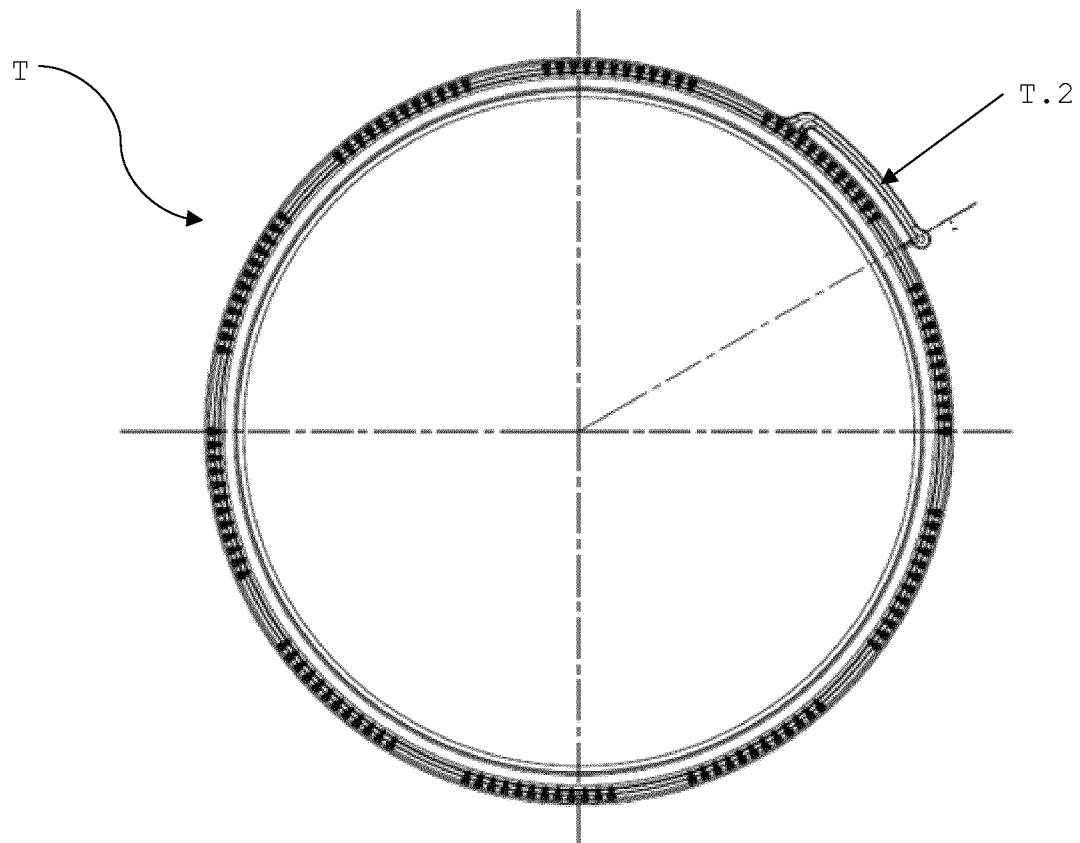


Fig. 4

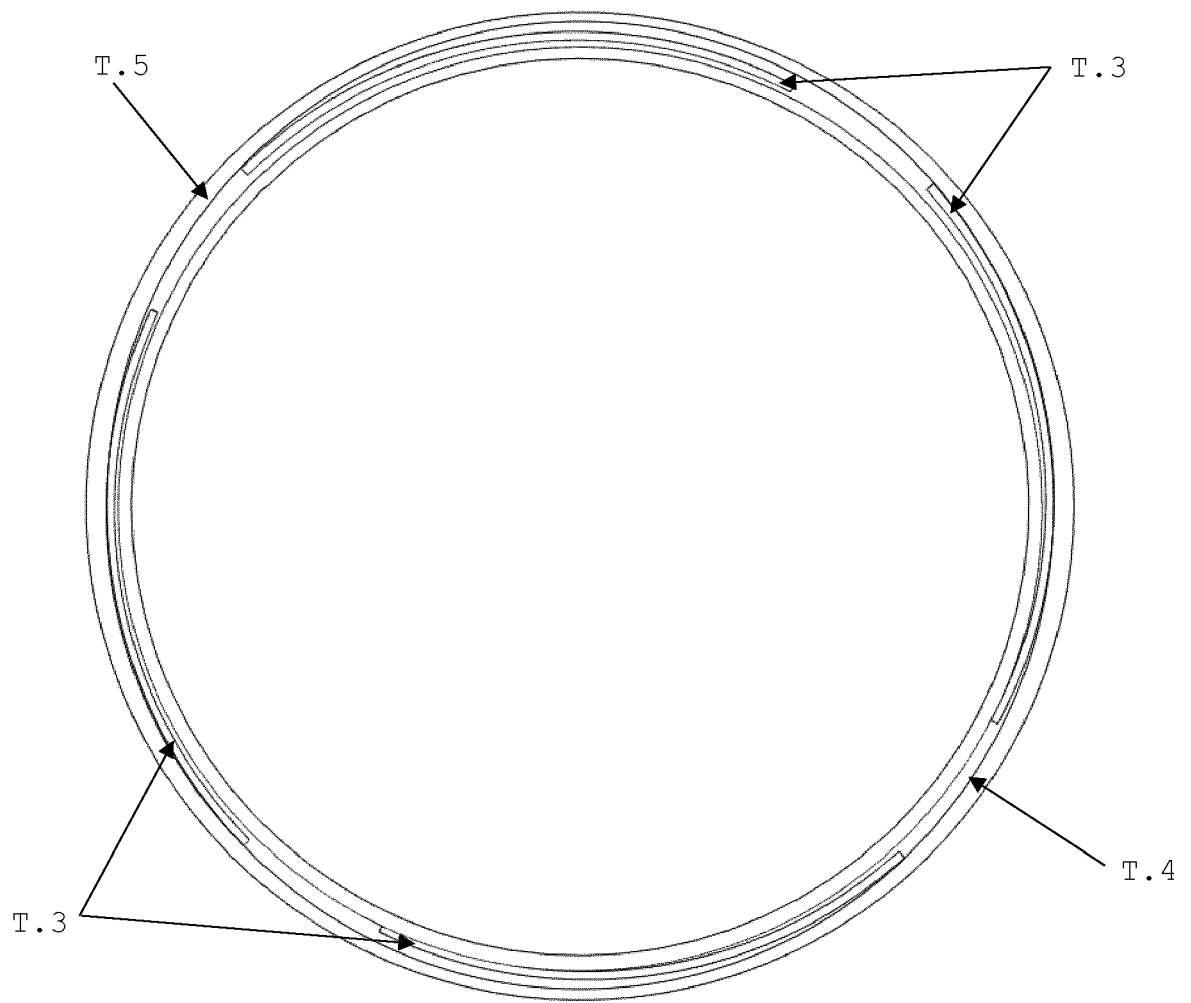


Fig. 5

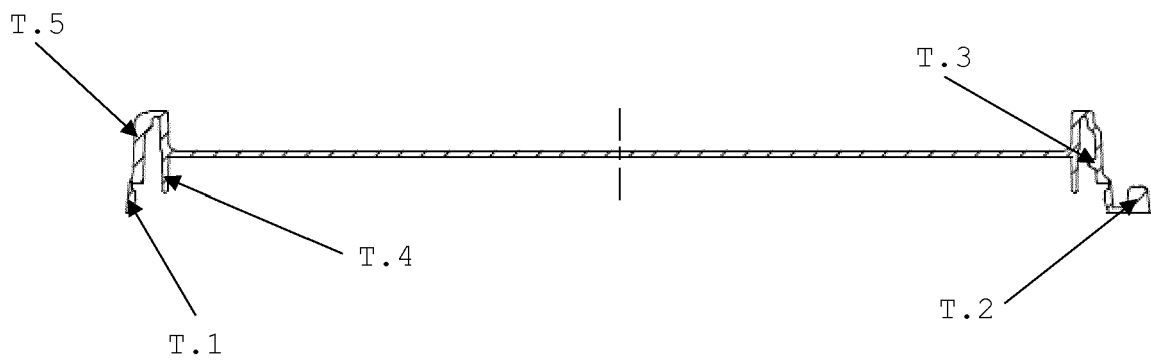


Fig. 6

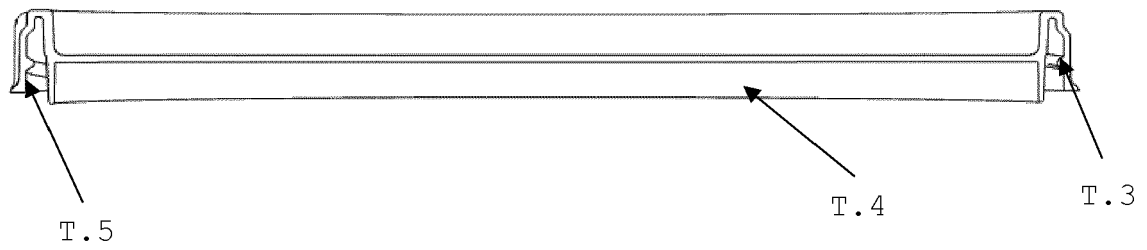


Fig. 7

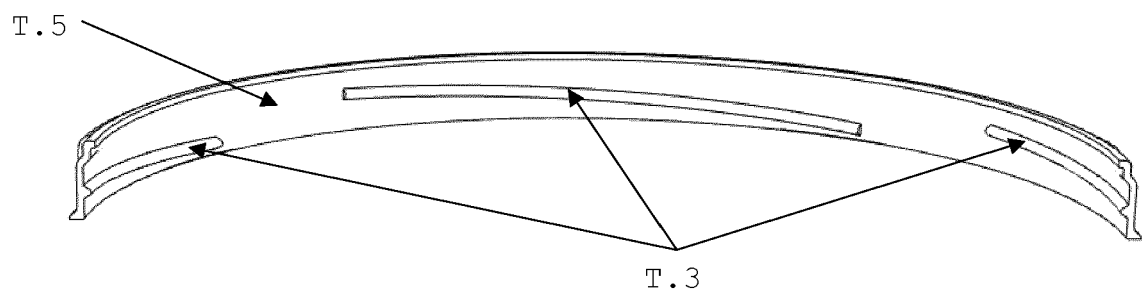


Fig. 8

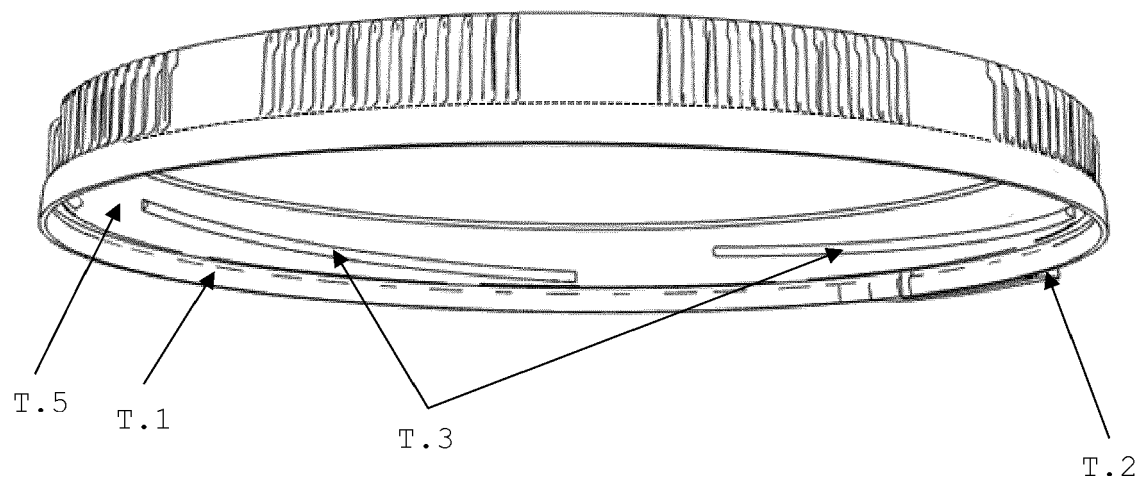


Fig. 9

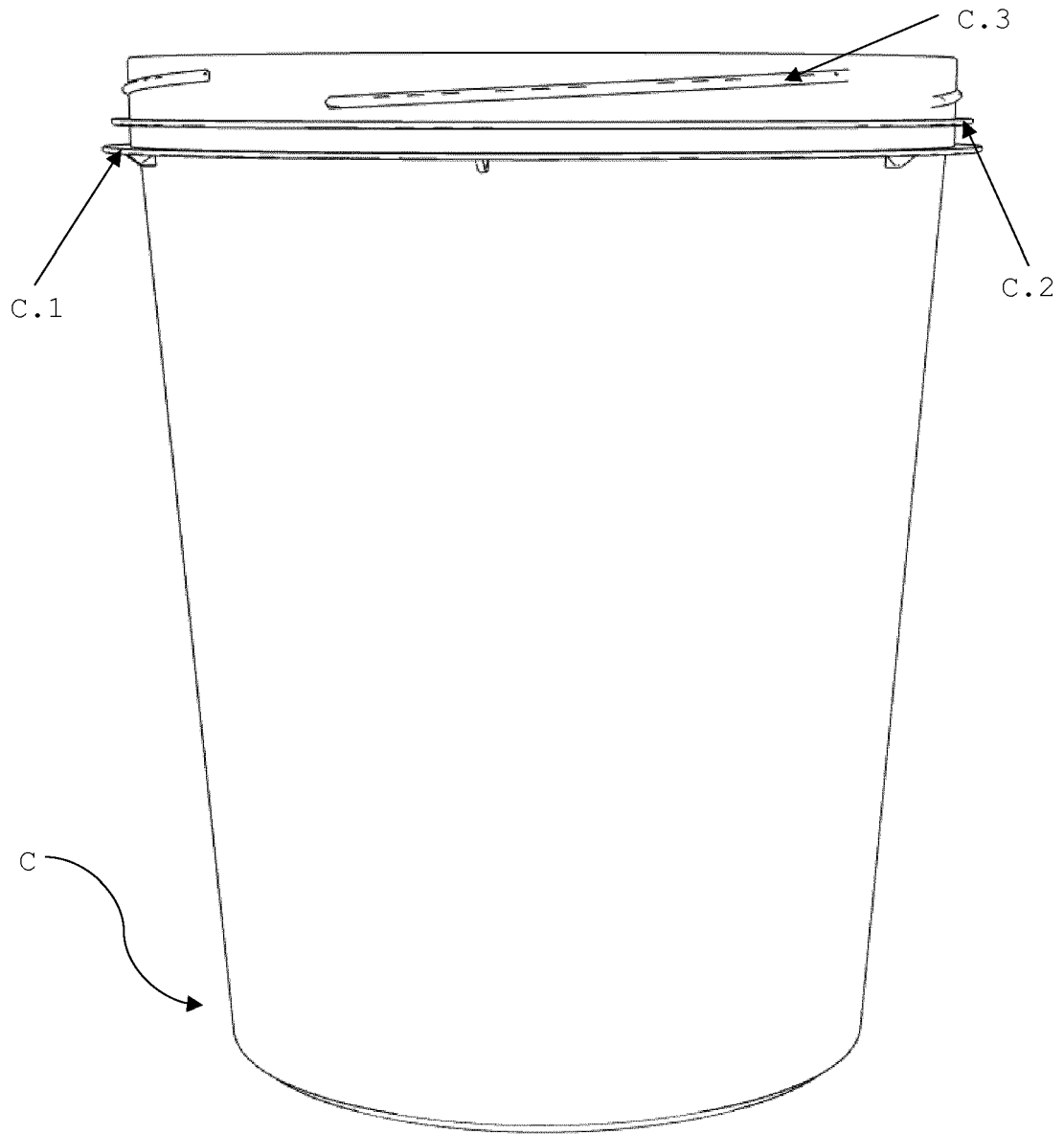


Fig. 10

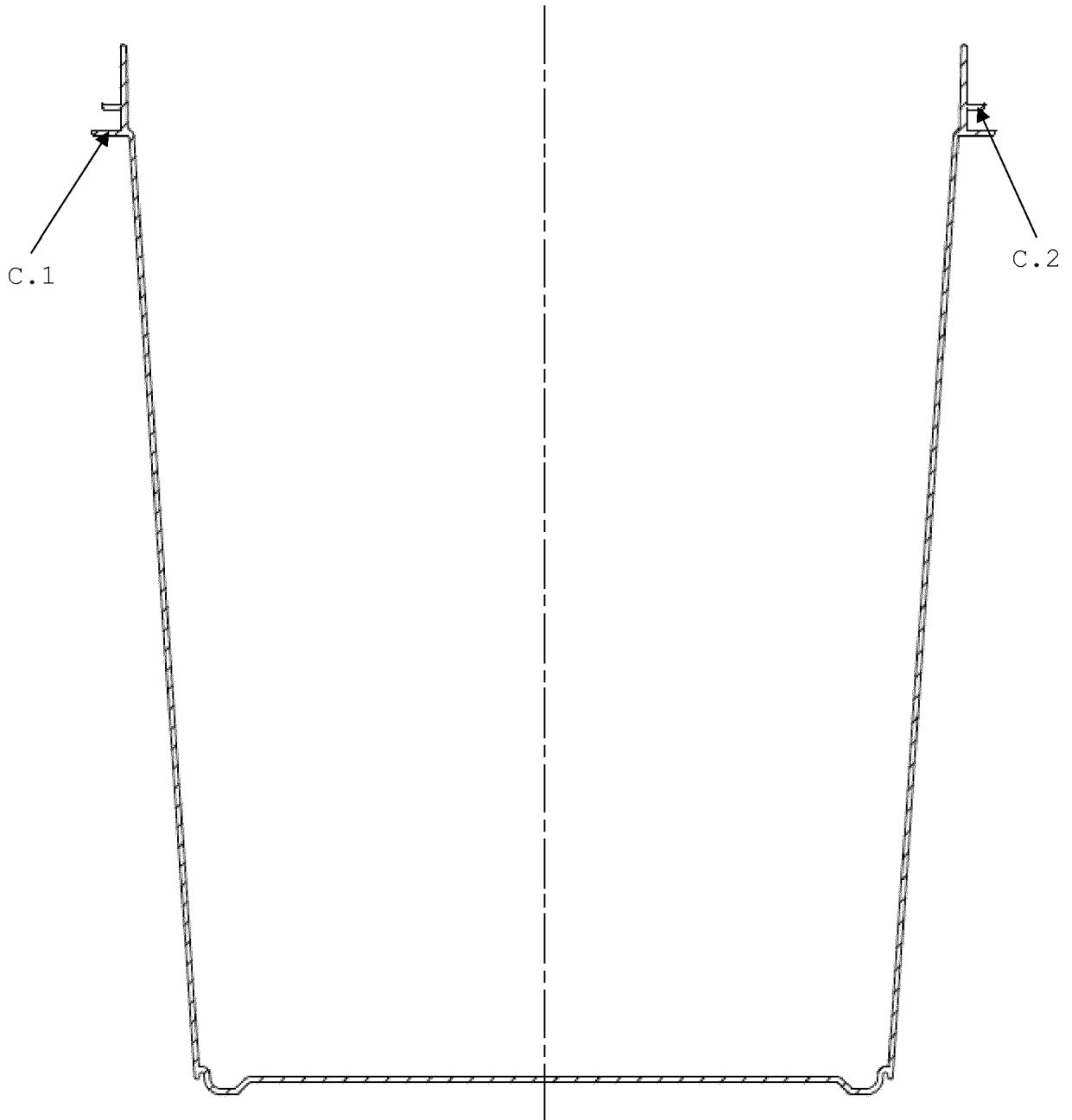


Fig. 11

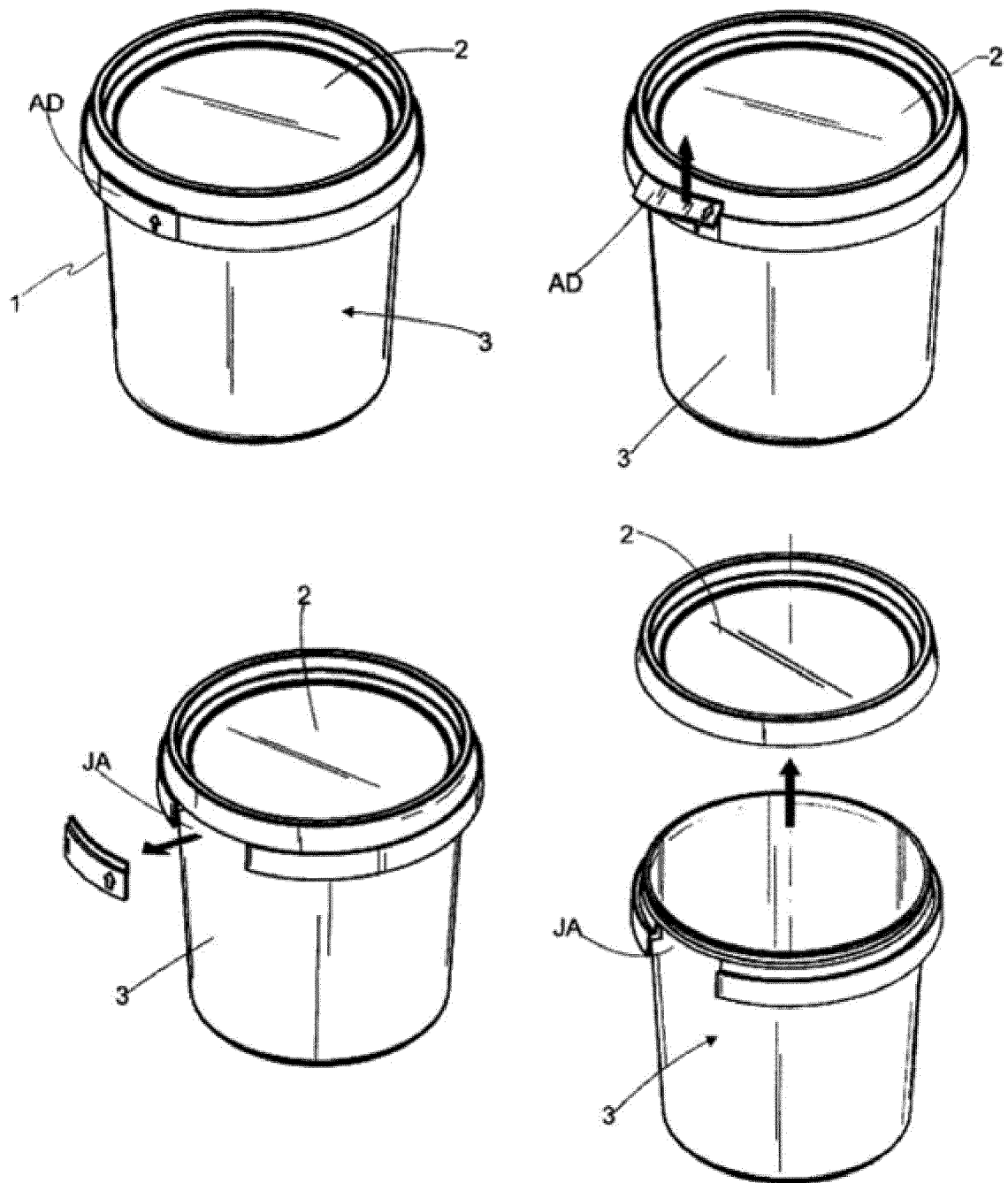


Fig. 12

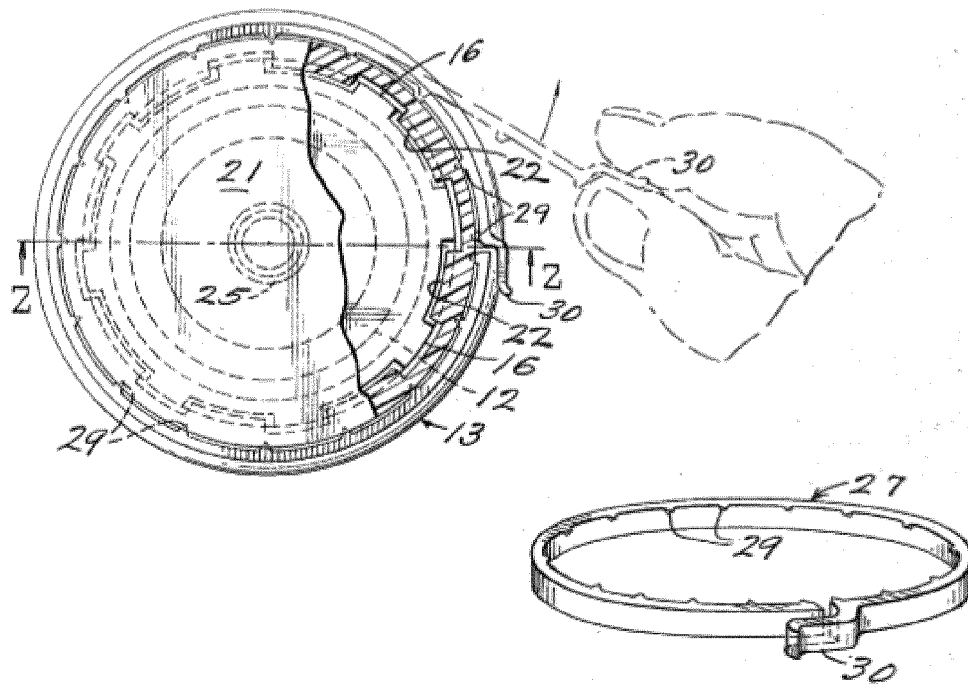


Fig. 13

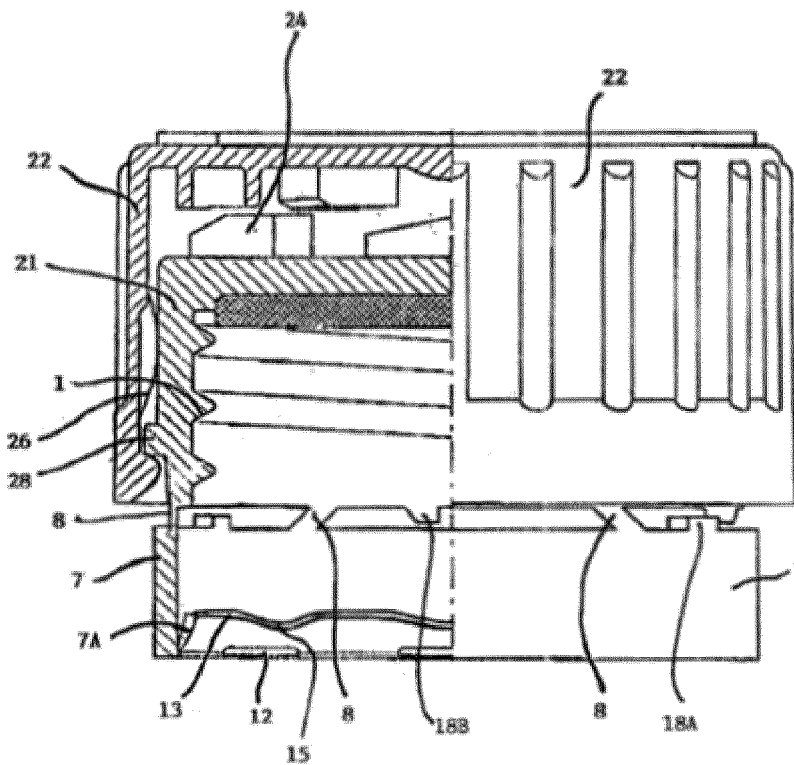


Fig. 14



EUROPEAN SEARCH REPORT

Application Number
EP 18 20 2228

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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)
Y	US 5 152 416 A (CASSEL TIMOTHY [US]) 6 October 1992 (1992-10-06) * column 3, line 1 - line 6; figure 1 *	1-6	INV. B65D43/02
Y	WO 03/051732 A1 (TOP GRADE MOLDS LTD [CA]; CICCONE VINCE [CA]) 26 June 2003 (2003-06-26) * page 8, line 6 - line 9 * * page 9, line 31 - page 10, line 12 * * figures 1, 2, 6, 7 *	1-6	
			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 21 March 2019	Examiner Bridault, Alain
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 20 2228

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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21-03-2019

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- US 3837518 A [0006] [0008] [0013]
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