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(54) **LID FOR CONTAINERS WITH IMPROVED SEAL**

(57) The present invention relates to a cap for containers, comprising a cylindrical body comprising a cylindrical skirt (5) and a rib (7) on the inner face thereof, where the cylindrical skirt and the rib are sized for contacting the inner face of the neck (2) of the container and creating at least two sealing areas.

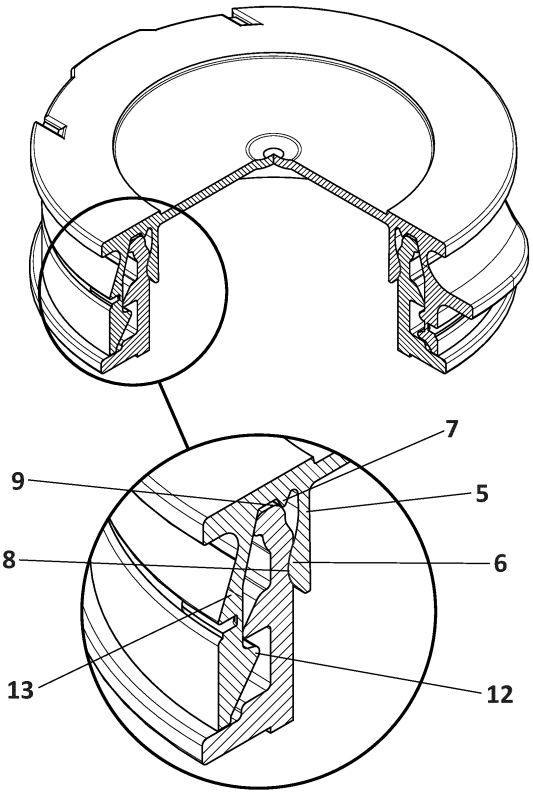

FIG. 4

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Description

Object of the Invention

[0001] The present invention belongs to the field of closure elements for containers, and more specifically caps for containers with a leaktight closure. An object of the invention is to therefore provide a cap for containers capable of assuring the sealing of the content.

[0002] Another object of the invention is also to provide a cap for containers capable of improving tightness with the neck of the container, such that the resistance to pressures or damage sustained during transport is improved.

[0003] Another object of the invention is also to provide a cap for containers capable of improving stability against the risk of sliding and seal loss during palletization, storage or horizontal transport operations.

Background of the Invention

[0004] In the field of caps for containers, those caps with a contact surface provided for being coupled to the neck of a container and preserving its content are known.

[0005] Generally, caps of this type use a type of irregularity on their inner perimetral face to contact the outer side of the neck of the container, which allows a certain sealing to be achieved when a user couples the cap to the container.

[0006] However, caps of this type have a series of drawbacks. These notably include, among others, the fact that these caps often close the container through the outer side of the neck thereof and the presence of small burrs causes the sealing to be inadequate. Likewise, even starting from an initial leaktight situation, due to the configuration thereof, it is common for storage or transport operations to cause a critical sealing deformation, even giving rise to leakages.

[0007] It is therefore desirable in the state of the art to improve caps of this type for the purpose of providing caps for containers capable of assuring a reliable and long-lasting sealing of the content.

Description of the Invention

[0008] Therefore, the cap for containers proposed by the present invention is therefore presented as an improvement over what is known in the state of the art, given that it satisfactorily achieves the objectives indicated above as ideal for the art.

[0009] The invention consists of a cap for containers comprising a cylindrical body comprising, on the inner face thereof, a cylindrical skirt and a rib, where the cylindrical skirt and the rib are sized for contacting the inner face of the neck of the container and creating at least two sealing areas. Therefore, the invention advantageously provides closure means for closing the opening of the neck for improving the sealing of the container.

[0010] In a preferred embodiment, the rib has a cylindrical shape providing a continuous perimetral relief on the inner face of the upper base of the cylindrical body. In another preferred embodiment, the rib has an outer perimeter larger than the outer perimeter of the cylindrical skirt. In a particular embodiment of the invention, the width of the cylindrical skirt, according to the axial axis of the cap, is greater than that of the rib.

[0011] Additionally, it is contemplated in one of the embodiments for the cylindrical skirt to comprise a protuberance on the lower edge of its outer face for contacting the neck of the container. Therefore, the contact of the cylindrical skirt with the inner face of the neck of the container is advantageously made easier, which assures the sealing of the container.

[0012] According to a preferred embodiment of the invention, the inner face of the upper base of the cap comprises a first and second attachment point, from which the cylindrical skirt and the rib project, respectively. Therefore, advantageously, the sealing areas are completely independent and offer better resistance against sealing loss due to manufacturing defects, blows received during storage, warehousing or transport.

[0013] In another preferred embodiment of the invention, the rib is arranged on the outer face of the cylindrical skirt. Therefore, a second point of contact of the cylindrical skirt with the neck of the container is advantageously assured, which assures a second sealing area.

[0014] In one embodiment of the invention, the cylindrical body is formed by the articulated attachment of two superimposed parts, a lower part and an upper part. In this sense, the double-sealing solution of the present invention described above is advantageously arranged in the upper part of the cap, so, in addition to the caps described above which are formed by a single rigid body, the present invention is also adapted to caps of this type having two bodies which are widely used, for example, in oil bottles or small water bottles. Additionally, a particular embodiment contemplates for the lower portion to be provided with gripping means for the retention thereof on the neck of the container and the upper portion to be provided with the cylindrical skirt and the rib. Advantageously, this configuration keeps the cap, specifically its lower portion, coupled to the neck of the container at all times, so the loss thereof is prevented and there is only a need for a simple movement of the upper portion of the cap which fits into the neck by pivoting about the hinge-type articulated attachment, the container being closed and sealed.

[0015] According to the foregoing, the present invention contains a series of technical features involving advantageous technical effects which mainly include, among others, improvement of the sealing that is provided. Therefore, the present invention prevents dust and/or foreign bodies from entering the container, preventing them from coming into contact with the content thereof. Advantageously, the double-sealing solution of the present invention is applicable to all types of caps, such as for example caps having a single body, caps having

two parts attached to one another by means of a hinge or any other variation.

[0016] Since they are located in the inner area, the two sealing areas provided by the cap reduce the weight of the cap and use a clean surface of the neck of the container for contact. Furthermore, the risk of receiving blows is lower in the inner area than in the outer area of the neck, which allows better withstanding any pressure or damage sustained during transport or palletization. On the other hand, the two inner circular contacts that are provided assure good vertical stability of the cap when it is placed on the neck of a bottle and excellent stability against any risk of sliding and seal loss in warehousing or horizontal transport operations.

Description of the Drawings

[0017] To complement the description that is being made and in order to help better understand the features of the invention according to a preferred practical embodiment thereof, drawings in which the following has been depicted with an illustrative and non-limiting character are attached as an integral part of said description:

Figure 1 shows a perspective view of a cap according to an embodiment of the invention which has two articulated portions and is provided on the neck of a container in an open position.

Figure 2 shows a front view of the cap for containers of Figure 1 in a closed position according to an embodiment of the invention.

Figure 3 shows a rear view of the cap for containers of the preceding figures in a closed position, from a bottom view, according to an embodiment of the invention.

Figure 4 shows a cross-section of a cap according to an embodiment of the invention which has two parts and is provided on the neck of a container in a closed position.

Figure 5 shows a cross-section of a cap according to an embodiment of the invention which has a single body and is provided on the neck of a container.

Detailed Description of the Invention

[0018] Everything defined in this detailed description is provided to help fully understand the invention. Persons having ordinary skill in the art will therefore appreciate that variations, changes and modifications of the embodiments described in the present specification are possible without departing from the scope of the invention, so the designs and specific implementations presented in this document are provided solely for purposes of illustration and comprehension, and not for limiting the aspects of the invention in any way.

[0019] The present invention discloses a double-sealing solution for container caps which is based on a cap inner face configuration comprising a cylindrical skirt 5 and a rib 7, where the cylindrical skirt and the rib are sized for contacting the inner face of the neck (2) of a container and thereby creating two sealing areas.

[0020] This solution is applicable to any type of cap, but by way of example, a particular embodiment showing a cap having two portions attached to one another by means of a hinge is described in detail below in Figures 1-4, and the same double-sealing solution but applied on a cap having a single body is described in Figure 5.

[0021] Figure 1 shows a cap 1 provided on the neck2 of a container in an open position.

[0022] The cap 1 is formed by the articulated attachment of two superimposed parts, a lower part 3 and an upper part 4. The lower part 3 comprises gripping means for the retention thereof on the neck2 of the container, both while opening and closing the cap 1.

[0023] Figure 2 shows a front view of the cap 1 in a closed position. As can be seen, said cap 1 consists of a substantially cylindrical body formed by the articulated attachment of the lower part 3 and the upper part 4.

[0024] Figure 3 shows the inner portion of the cap from a rear view. As can be seen, the upper part comprises a cylindrical skirt 5 projecting from the inner face of said upper part and a cylindrical rib arranged continuously on the inner face of the upper part. Both the cylindrical skirt and the rib are sized for the insertion thereof into the neck2 of the container, such that they contact the inner face of the neck at at least two points of contact located at different heights. The points of contact are substantially circular and concentric points of contact, providing continuous contact with the inside of the neck of the container along the entire perimeter thereof. Good vertical stability of the cap when it is coupled to the neck of the container is thereby assured.

[0025] The cylindrical skirt preferably has a protuberance 6 arranged continuously on the lower edge of its outer face for contacting the neck of the container.

[0026] The cylindrical skirt 5 and the cylindrical rib 7 each have a permanent attachment with the upper part at two different points of the inner face thereof, specifically following two concentric circumferences with a different diameter.

[0027] However, in an alternative embodiment with respect to the preceding paragraph, it is contemplated for the cylindrical rib to be arranged on the outer face of the cylindrical skirt itself. In this sense, there is only a single attachment point with the inner face of the upper part, i.e., the one defined by the cylindrical skirt 5 itself and the inner face of the upper part. In this configuration, the cylindrical rib projects from the upper edge of the cylindrical skirt 5, on the outer face thereof, to contact the neck of the container at a point close to the neck.

[0028] Figure 4 shows a cross-section of the cap 1. As can be seen, the two points of contact 8 and 9 between the cylindrical skirt 5, the cylindrical rib 7 and the inner face of the neck of the container, respectively, define two sealing areas. Therefore, the sealing areas advantageously use a clean surface of the neck of the container,

or at least one that is cleaner than the outer surface, which also reduces the risk of receiving blows with respect to configurations using the outer face of the neck of the container and reduces the weight of the cap.

[0029] The diameter of the outer perimeter of the protuberance 6 is smaller than the outer perimeter of the cylindrical rib 7. On the other hand, the width of the skirt 7, measured according to the axial axis of the cap, is greater than that of the cylindrical rib 7. Therefore, the protuberance of the cylindrical skirt is sized for being introduced a certain distance into the container and to contact a first point of contact 8 assuring a first sealing area, whereas the rib is sized to contact a second point of contact 9 inside the container, closer to the end or mouth of the container than the first point of contact, assuring a second sealing area.

[0030] The sealing areas thus defined inside the container withstand any pressure or possible damage sustained during transport better than the solutions using the outside of the container do. Likewise, it offers excellent stability against the risk of sliding and assures that there is no seal loss during palletization, storage or horizontal transport operations.

[0031] Additionally, it is rather unlikely for the inner portion of a container to have burrs which may affect the attachments described above, whereas it is likely for the outer portion to have some form of burr as a result of the manufacturing thereof. When the cap is closed from the outside with an outer lip, these burrs can cause the sealing to be affected. However, the contacting of the cylindrical skirt and the cylindrical rib described above through the inner area of the container assure two sealing areas that are immune to these burrs.

[0032] The double sealing of the product is achieved every time the cap is closed, i.e., when the upper part 3 is introduced in the mouth of the container using the articulated attachment which attaches the upper part 3 with the lower part 2. This articulated attachment comprises two pairs of vertical notches 10, arranged in a manner parallel to the axial axis of the cap 1, defining two strips 11 for attachment between both lower and upper parts. Said strips 11 form the articulation of the lower part and the upper part.

[0033] In the closed position, the described configuration provides an improved sealing as it has at least two sealing areas preserving the interior of the container. Additionally, closure can be improved by combining the cylindrical skirt 5 and the cylindrical rib 7, arranged to contact the inner portion of the container, with similar elements arranged to contact the outer portion of the container. Therefore, one or more perimetral reliefs 12 can be included on the inner face of the lower part 3 which reduce the inner area of the cap 1 and contribute to preventing dust from entering the container. Additionally, the upper part 4 can also include one or more burrs on the lower edge of the perimetral wall 13 thereof, such that it faces the cylindrical skirt and can contact the outer face of the neck 2 of the container, limiting the entry of dust and/or foreign bodies into the areas of contact with the mouth of the consumer.

[0034] Figure 5 shows a cross-section of a cap 20 according to a particular embodiment of the invention. As can be seen, the inner configuration is the same as the one described above for the cap having two articulated parts. The difference lies in the fact that the cap of this embodiment depicted in Figure 5 is formed by a single rigid body.

[0035] The cap 20 therefore has a cylindrical skirt 5 projecting from the inner face of the cap (specifically from its upper base) and a cylindrical rib 7 arranged continuously on said inner face. Both the cylindrical skirt and the rib are sized for the insertion thereof into the neck 2 of the container, such that they contact the inner face of the neck at at least two points of contact 8, 9 located at different heights. The points of contact are substantially circular and concentric points of contact, each of them providing continuous contact with the inside of the neck of the container along the entire perimeter thereof. Good vertical stability of the cap when it is coupled to the neck of the container is thereby assured. Said two points of contact 8, 9 between the cylindrical skirt 5, the cylindrical rib 7 and the inner face of the neck of the container, respectively, define two sealing areas.

[0036] The cylindrical skirt preferably has a protuberance 6 arranged continuously on the lower edge of its outer face for contacting the neck of the container.

[0037] In an alternative embodiment, it is contemplated for the cylindrical rib to be arranged on the outer face of the cylindrical skirt itself. In this sense, there is only a single attachment point with the inner face of the upper part, i.e., the one defined by the cylindrical skirt 5 itself and said inner face. In this configuration, the cylindrical rib projects from the upper edge of the cylindrical skirt 5, on the outer face thereof, to contact the neck of the container at a point close to the mouth of the container.

[0038] Additionally, the cap 20 can include one or more perimetral reliefs 12 and/or one or more burrs on the inner face of the perimetral wall 21 which reduce the inner area of the cap 20 and contribute to preventing dust from entering the container.

[0039] Finally, in view of this description and drawings, the person skilled in the art will understand that the invention has been described according to several preferred embodiments thereof, but multiple variations can be introduced in said preferred embodiments without departing from the object of the invention as claimed.

Claims

1. Cap for containers, comprising a cylindrical body **characterized in that** it comprises a cylindrical skirt (5) and a rib (7) on the inner face thereof, where the cylindrical skirt and the rib are sized for contacting the inner face of the neck (2) of a container and creating at least two sealing areas.

2. Cap for containers according to claim 1, **characterized in that** the rib has a cylindrical shape providing a continuous perimetral relief.

3. Cap for containers according to claim 2, **characterized in that** the rib has an outer perimeter larger than the outer perimeter of the cylindrical skirt.

4. Cap for containers according to claim 3, **characterized in that** the width of the cylindrical skirt, according to the axial axis of the cap, is greater than that of the rib.

5. Cap for containers according to any of the preceding claims, **characterized in that** the cylindrical skirt comprises a protuberance (6) on the lower edge of its outer face for contacting the neck (2) of the container.

6. Cap for containers according to any of the preceding claims, **characterized in that** it comprises an upper base, where the inner face of the upper base comprises a first and second attachment point, from which the cylindrical skirt and the rib project, respectively.

7. Cap for containers, according to any of claims 1-5, **characterized in that** the rib is arranged on the outer face of the cylindrical skirt.

8. Cap for containers according to any of the preceding claims, **characterized in that** the cylindrical body is formed by the articulated attachment of two superimposed parts, a lower part (3) and an upper part (4).

9. Cap for containers according to claim 8, **characterized in that** the lower portion (3) is provided with gripping means for the retention thereof on the neck (2) of the container and the upper portion is provided with the cylindrical skirt (5) and the rib (7).

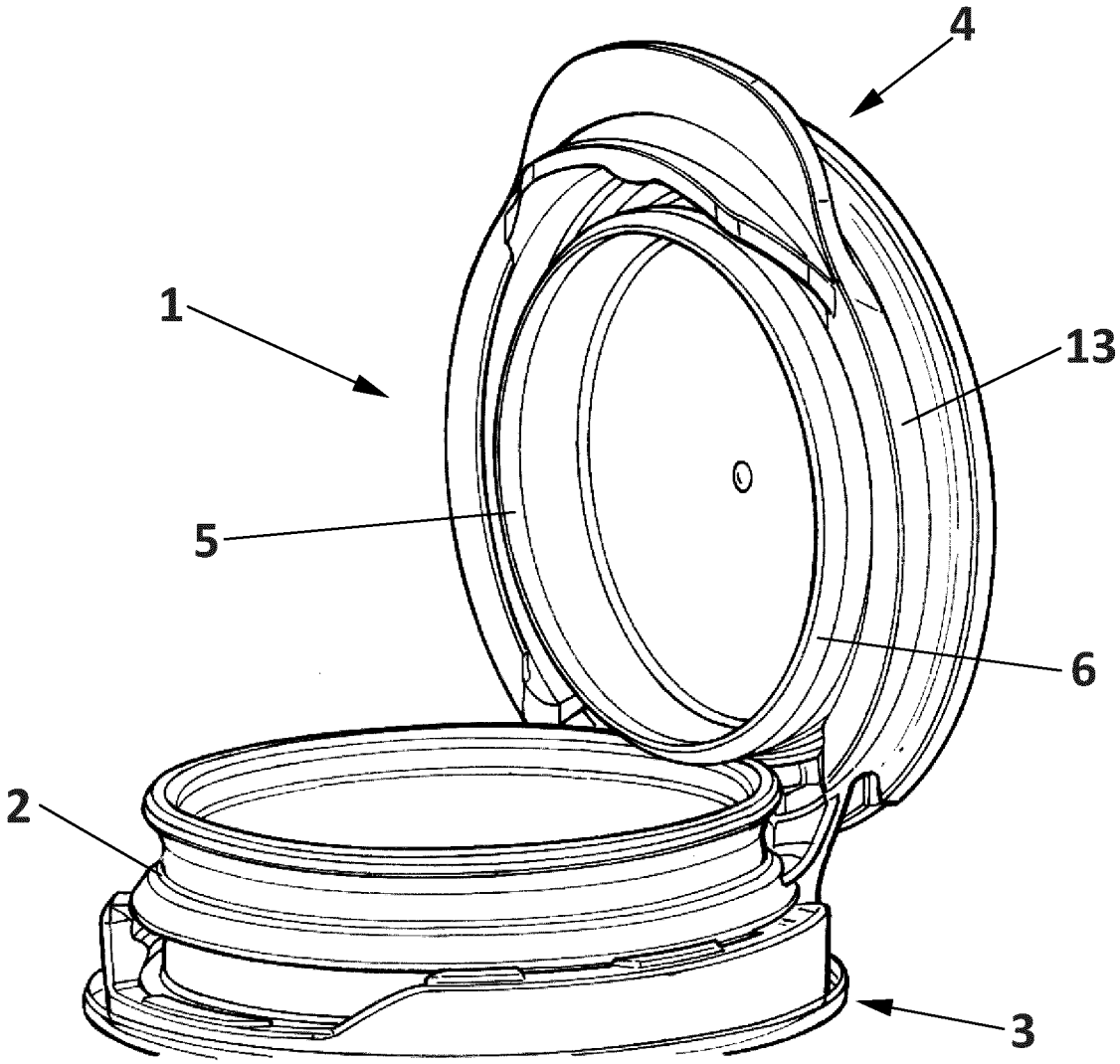

FIG. 1

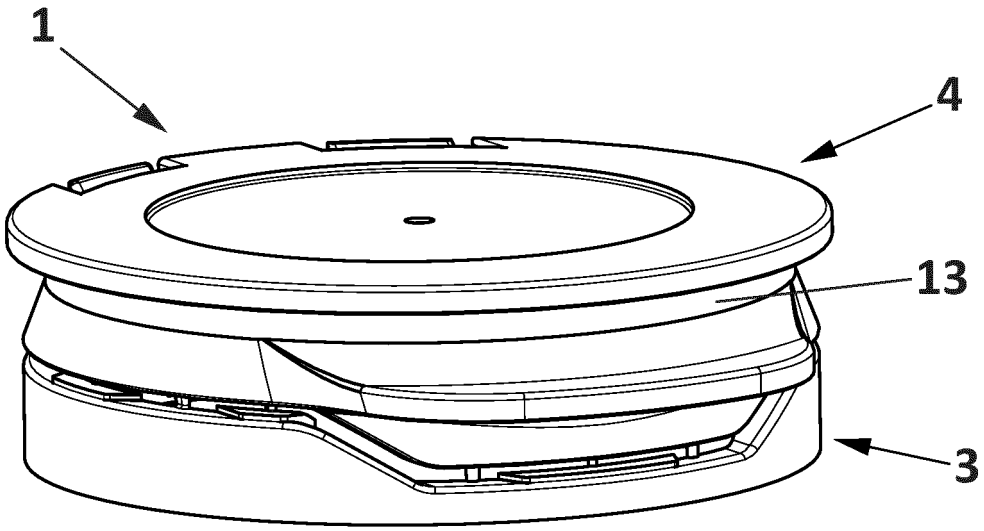

FIG. 2

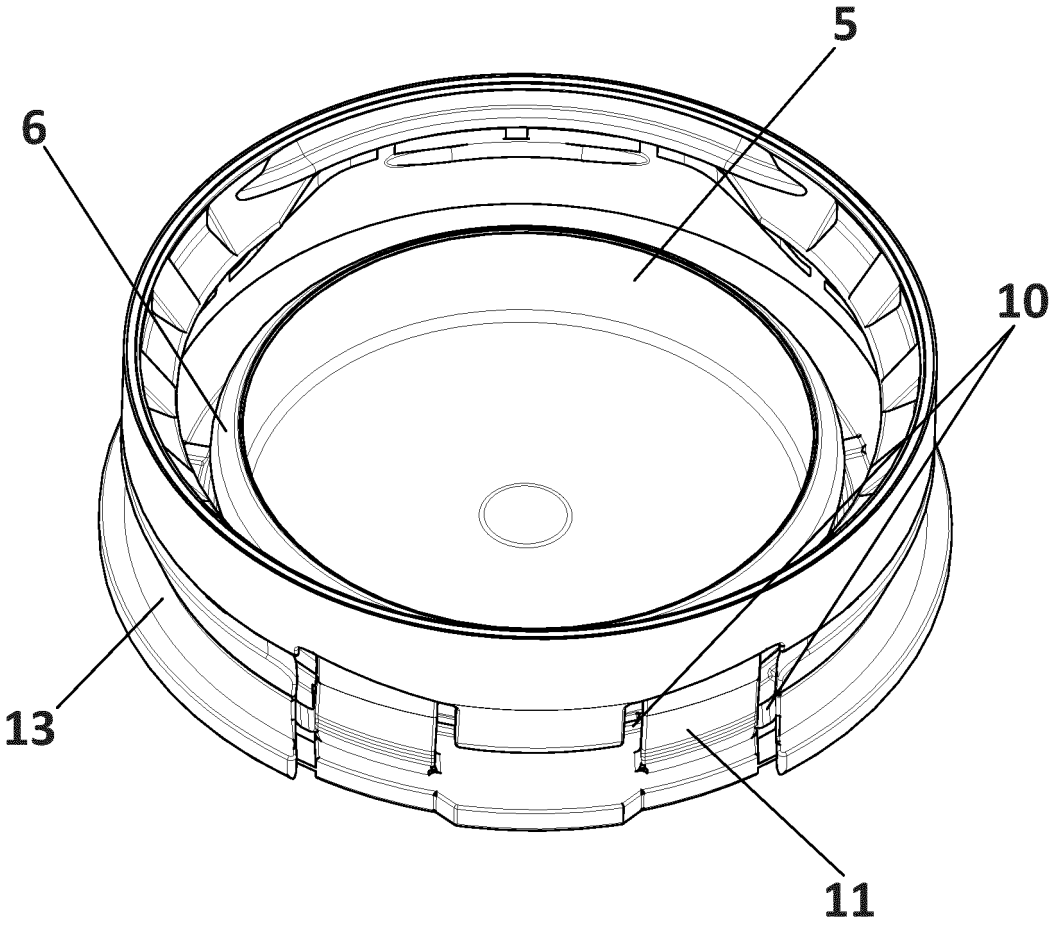

FIG. 3

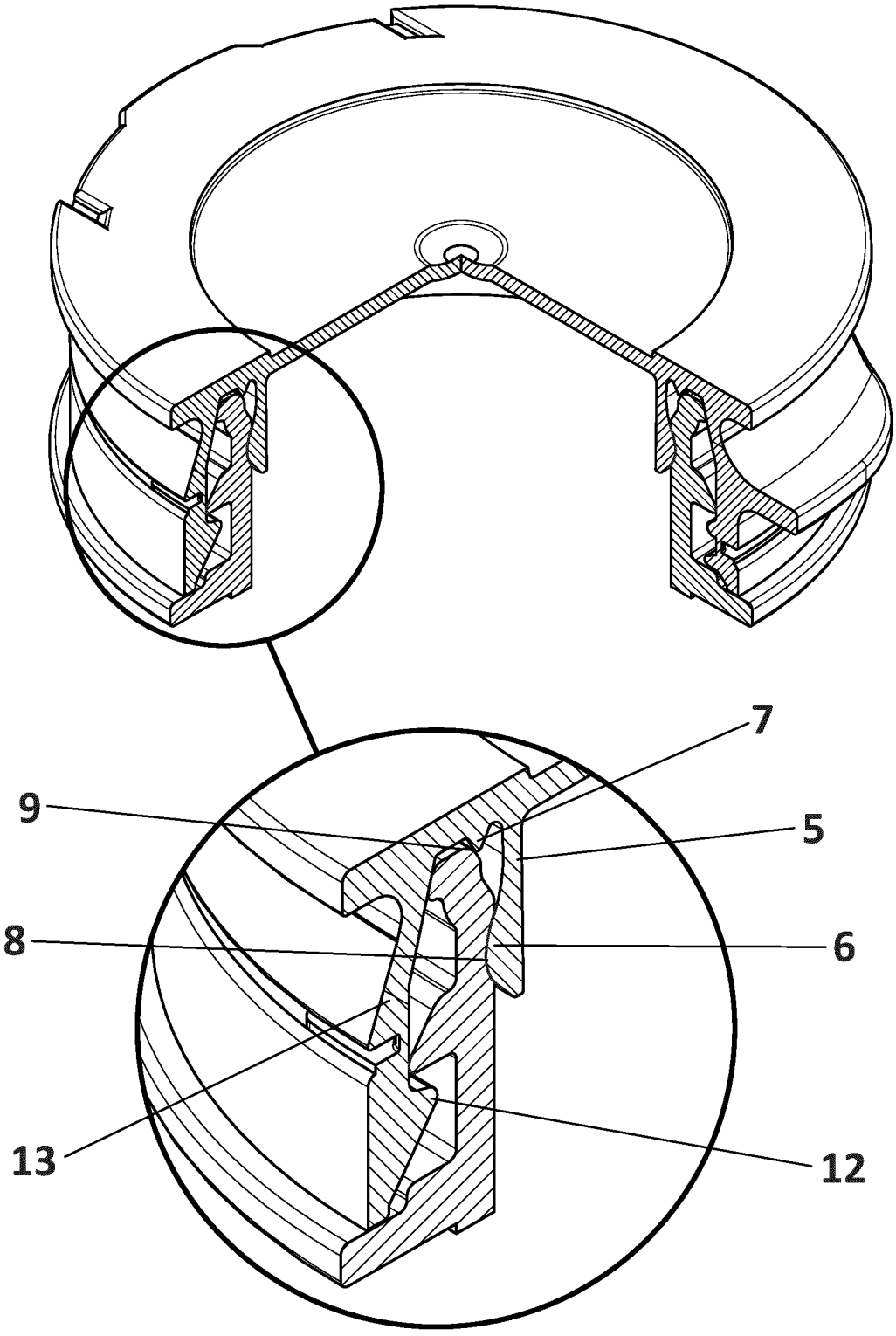

FIG. 4

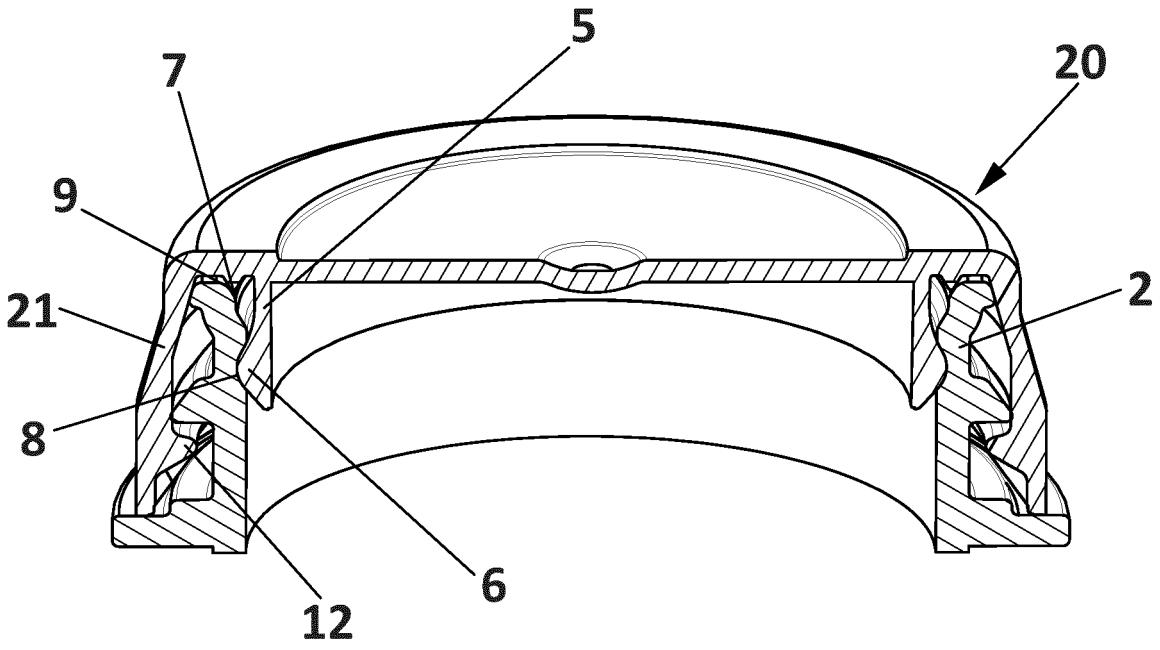

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2017/070593

A. CLASSIFICATION OF SUBJECT MATTER

B65D41/04 (2006.01)
B65D41/34 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	EP 1792840 A1 (BETAPACK) 06/06/2007, Abstract; figures	8, 9
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☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer F. Monge Zamorano Telephone No. 91 3495541

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Information on patent family members

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