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Description

[0001] The current invention relates to a packaging article comprising a container and a lid arranged to be mounted on the container to seal the contents of the container, said container defining a volume with an opening and a first outwardly protruding circumferential flange arranged around the periphery of the opening, and said lid comprising a central portion and a rim portion arranged at the periphery of the central portion with an upper edge of the rim portion being raised above said central portion, said rim portion comprising a first downwardly facing U-shaped circumferential groove arranged to accommodate the first outwardly protruding circumferential flange of the container when the lid is mounted on the container,

[0002] It should be noted that for the sake of this specification, the terms which imply an orientation, for example "upwardly", "vertically", "upstanding", "downwardly", "inside", "outside" and "outwardly", should be interpreted with reference to the orientation of the packaging article as shown in the figures.

[0003] It should also be noted that in most cases, the outwardly protruding circumferential flange of the container will be arranged such that the flange extends perpendicularly to the plane of the opening of the container. In most cases, the opening of the container will be arranged in a single plane and be facing upwardly, so the outwardly protruding circumferential flange will extend vertically. However, embodiments could be envisioned where the opening is not facing upwards, but could be arranged at an angle. In this case, the flange will not be arranged vertically.

[0004] Likewise, the downwardly facing U shaped groove will in most cases extend in a direction which is perpendicular to the plane of the central portion of the lid. If the central portion is not flat, then the U shaped groove will in most cases extend perpendicular to the plane which forms the average to the central portion. In case it is difficult to define the average plane of the central portion, then one could say that the groove extends perpendicular to the plane defined by the outermost portion of the central portion of the lid. The word downwardly was chosen to reflect the orientation of the lid as shown in the figures. However, it should be obvious to the person skilled in the art that if the opening of the container were arranged at an angle, then the lid would also be arranged at an angle when mounted on the container and the groove would not be arranged "downwardly" when mounted on the container, but when the lid is lying flat, the groove would be downwardly facing.

Description of related art

[0005] There are a multitude of prior art containers of the kind as described above. For example many containers for liquid paint and containers for food are of this kind.

[0006] Typically, the first flange and the first groove are arranged such that a squeeze fit is provided. When the first flange is inserted into the first groove, a seal is provided between the lid and the container due to this squeeze fit. However due to imperfections in the material of the flange and the groove and/or due to manufacturing tolerances and or due/to wear and tear, the seal established by this squeeze fit is not always effective enough.

[0007] In cases were a more effective seal is desired, a soft gasket can therefore be arranged in the first U shaped groove. When the flange is pressed into the groove, the top edge of the first flange comes into contact with the gasket which then establishes an effective seal between the first flange of the container and the first groove of the lid.

[0008] However, it has been discovered that even in this situation, there are situations where the seal established is not good enough and a better seal is desired. A packaging article according to the preamble of claim 1 is disclosed by EP 2 392 521 A1.

Summary of the invention

[0009] A first aspect of the current invention is therefore to provide a packaging article with a seal between the container and the lid which is better than the seals of the prior art.

[0010] A second aspect of the current invention is to provide a packaging article where the connection between the container and the lid is better than in the prior art.

[0011] These aspects are in part provided by a packaging article having the features of the characterized portion of claim 1.

[0012] Other beneficial features for a packaging article with an improved seal are described in the dependent claims and in the description.

[0013] It should be emphasized that the term "comprises/comprising/comprised of" when used in this specification is taken to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

Brief description of the drawings

[0014] In the following, the invention will be described in greater detail with reference to embodiments shown by the enclosed figures. It should be emphasized that the embodiments shown are used for example purposes only and should not be used to limit the scope of the invention.

Figure 1 shows a partial cross section of a container and a lid according to the current invention, the lid being mounted on the container.

Figure 2 shows a partial cross section of a lid according to the current invention.

Figure 3 shows a partial cross section of a container according to the current invention.

Figure 4 shows a partial schematic cross section of a prior art container.

Figure 5 shows a partial schematic cross section of a container according to the current invention.

Figure 6 shows a partial cross section view of a container and a lid according to the current invention including some dimensions.

Figure 7 shows a partial cross section view of two lids according to the current invention, stacked on top of each other.

Figure 8 and 9 show schematic representations of a prior art lid and container when exposed to internal pressure.

Figure 10 shows a cross section view of a second embodiment of a container according to the current invention.

Detailed description of the embodiments

[0015] The packaging article 1 shown in figures 1-3 and 5-7 comprises a container 10 and a lid 20. The figures only show partial cross section views of the packaging articles showing details of the interaction between the lid and the container since the person skilled in the art will understand the remaining portions of the packaging articles.

[0016] It should be noted that while most packaging articles according to the current invention will have a circular shape, other shapes could also be imagined. For example rectangular and oval shaped containers could also make use of the teachings of the current invention.

[0017] The container and the lid of the current embodiment are made from a Poly Propylene plastic material, but other materials are also possible as will be known to the person skilled in the art. One non limiting example of another material which is suitable is Poly Ethylene.

[0018] As can especially be seen from figure 2, the lid 20 comprises a central portion 21 and a rim portion 22. The central portion in the current embodiment is flat, however, it could also have other forms, for example domed. The rim portion is provided to give the lid stiffness and to allow stacking of one container on the other while preventing stacked containers from sliding with respect to each other as is known to the person skilled in the art. On the outer side of the rim, a skirt 23 is provided. On the inner side of the skirt 24, an inwardly facing ridge 25 is provided. The inwardly facing ridge 25 is arranged to engage with an outwardly facing flange (described later) on the container to lock the lid on the container.

[0019] The rim of the lid also comprises a first downwardly facing U-shaped circumferential groove 26 running around the circumference of the lid. The groove 26 comprises an inwardly facing surface 26a, an outwardly facing surface 26b and a downwardly facing surface 26c.

[0020] The rim portion also comprises a second downwardly facing circumferential groove 27 also running around the periphery of the rim. The second groove 27 is arranged on the inside of the first groove. In other words, the diameter of the second groove is smaller than the first groove. Furthermore, the first groove and the second groove are co-centric. The second groove 27 comprises an inwardly facing surface 27a, an outwardly facing surface 27b and a downwardly facing surface 27c.

[0021] Furthermore, the second groove 27 is arranged lower than the first groove 26 (according to the orientation of the lid as shown in the figures). In other words the downwardly facing surface 26c of the first groove is located above the downwardly facing surface 27c of the second groove. In the embodiment shown in the figures, the downwardly facing surface 26c of the first groove is located about 5mm higher than the downwardly facing surface 27c of the second groove 27.

[0022] Furthermore, the downwardly facing surface 27c of the second groove 27 is located close to the plane defined by the upper surface of the flat central portion 21 of the lid. In the figures, the downwardly facing surface 27c of the second groove is located 1 mm above the plane defined by the upper surface of the flat central portion 21 of the lid. In general, it can be described that the second groove should be located in the transition area between the flat central portion of the lid and the rim portion of the lid.

[0023] In the current embodiment, it can also be seen that the lower surface of the flat central portion 21 of the lid smoothly transitions over into the outwardly facing surface 27b of the second groove 27. This is beneficial in the case where a barrier label is to be applied to the inside surface of the lid. It could be said that the lower and inner edge of the second groove is located at or above the lower and outer edge of the flat central portion of the lid. In another situation, one could say that there is no protruding edge between the lower flat central portion of the lid and the outwardly facing surface of the second groove. This is advantageous in different embodiments where a barrier foil is desired.

[0024] The rim portion of the current embodiment also comprises a number of ribs 28 spaced around the inner periphery of the rim portion. The ribs provide extra stiffness and strength to the lid. The ribs end at a vertically upstanding flange 29.

[0025] In the second groove 27, a gasket 40 is arranged. The gasket is made of a material which is elastically deformable and which provides good sealing properties. Two non-limiting examples of such a material are polyurethane and a hot melt adhesive. Depending on the desired properties and the manufacturing facilities available, the gasket could either be a pre-formed gasket which is inserted into the second groove, or it could be

directly injected in a fluid form into the groove after which it solidifies.

[0026] The lid of the current embodiment is also provided with a barrier film 30 arranged on the inside surface of the lid. The barrier film is shown with a thick dotted line in order to visually identify it. The barrier film is however a solid material which is provided to prevent oxygen from passing through the lid. Different forms of barrier film are available as will be known to the person skilled in the art. In one non limiting example, the barrier film is provided by an in mould label made from EVOH. The label is placed in the mould before the plastic material of the lid is injected into the mould. In order to achieve the best barrier effect with the current embodiment, the barrier film is placed on the inside surface of the lid (as will be described in more detail later) however in other embodiments, the barrier film could also be placed on the outer surface of the lid and be combined with branding/product information.

[0027] While the current specification focusses on the second downwardly facing U-shaped groove 27, it could also be said that there is a downwardly facing flange 31 which is arranged on the inside of the first U-shaped groove. This interpretation provides for an alternative scope of protection to that defined in the current claims as will be described later on.

[0028] The container 10, as shown in detail in figure 3, comprises a side wall 11 and a bottom (not shown). The side wall and bottom define a volume with an open top. The upper edge of the side wall defines an opening 12 for the container. Around the upper edge of the side wall and around the opening, the container also has a rim portion 13. In the current embodiment, the rim portion comprises a first outwardly protruding circumferential flange 14. In the current embodiment, it can be said that the flange is outwardly protruding and it can also be said that the flange is vertically upstanding. The flange 14 is in the current embodiment provided with an inwardly facing surface 14a, and outwardly facing surface 14b and an upwardly facing surface 14c. In the current embodiment, the inwardly and outwardly facing surfaces are arranged parallel. However, in general, it can be said that the first flange 14 is arranged to engage with the first groove 26 of the lid in a form fitting relationship, at least at the upper end of the first flange. In the current embodiment, the first flange runs around the entire periphery of the rim portion of the container.

[0029] In the current embodiment, a second vertically upstanding circumferential flange 15 is arranged on the inside of the first flange. It can also be said that the first flange and the second flange are co-centric and that the diameter of the first flange is greater than the second flange. The second flange 15 comprises an inwardly facing surface 15a, an outwardly facing surface 15c and an upwardly facing surface 15c. In the current embodiment, the upwardly facing surface 15c is curved such that a smooth transition is provided between the outwardly and inwardly facing surfaces of the second flange. In the current embodiment, it can also be seen that the inwardly facing surface 15c of the second flange is an extension of the inwardly facing side wall of the container. In particular, in this embodiment the transition between the inwardly facing surface 15c of the second flange and the inwardly facing surface of the sidewall is smooth. This geometry has benefits when applying a barrier film to the inside of the container as will be discussed later on.

[0030] It can also be seen in the current embodiment that the upper edge of the first flange is higher than the upper edge of the second flange. The first flange is used to provide support for the rim of the lid such that stability is provided to a stack of containers. The second flange on the other hand is used to provide an effective seal in cooperation with the first flange.

[0031] While the current specification focusses on the second vertically upstanding flange 15, an alternative scope of protection focusses on the upwardly facing U-shaped groove 16 provided on the inside of the first vertically upstanding flange 14 as will be described later on.

[0032] As with the lid, the container of the current embodiment also comprises a barrier film 17. As with the lid, the barrier film is shown with a thick dashed line to visually identify it, however in reality, the barrier film is a solid film which prevents oxygen from getting into the container. The barrier film can also be arranged to prevent chemicals from the contents of the container from chemically reacting with the container itself. In the current embodiment the barrier film is in the form of an in mould label made from EVOH. Other forms of barrier film are known to the person skilled in the art.

[0033] In the current embodiment, the barrier film is arranged on the inside surface of the side wall, as this is the most optimal placement for the current embodiment as will be described later on, however, in other embodiments the barrier film could also be placed on the outer side of the container and/or combined with branding/product information. Furthermore, it could be imagined that the lid and/or the container comprise an IML on both the inner and/or outer sides.

[0034] The outer portion of the rim portion of the container is also provided with a skirt 18. The skirt also has a circumferential outwardly facing flange 19. This flange is arranged to engage with the inwardly facing ridge 25 of the lid to lock the lid on the container. When closing the lid, the ridge is snapped over the flange 19. When opening the container, it is required to pull the skirt of the lid outwardly to disengage the ridge 25 of the lid from the flange 19 of the container. This is known from the prior art and multiple different embodiments of such locking mechanisms are available to the person skilled in the art.

[0035] When looking at figure 1, one can see the lid mounted on the container. As can be seen, the first flange 14 is inserted into the first groove 26 in a form fitting relationship. The figure shows the "non-stretched" dimensions of the lid and container, and one can therefore see that the lid is smaller than the container such that the skirt of the lid needs to be "stretched" to get the ridge 25 of the lid past the flange 19 of the container. This

stretching also provides the locking effect.

[0036] It can also be seen that the second flange 15 of the container is arranged in the second groove 27 of the lid. Due to the gasket arranged in the second groove, the second flange 15 is pressed into and "embedded" in the gasket. This provides a large surface area between the gasket and the second flange and therefore results in a very good seal. In certain embodiments, it can be considered beneficial that the second flange does not have any direct contact with the second groove, but that the second flange is embedded in the gasket instead. In this way, the second flange is completely surrounded by the gasket thereby ensuring a good seal around the entire surface of the second flange.

[0037] It can also be said that in the current embodiment the second flange is arranged such that it extends past the plane which contains the lower and outer edge of the inner surface of the lid. In this way, the lower plane of the lid and the plane of the second flange intersect. This could also be advantageous in other embodiments.

[0038] In addition, due to the location of the second groove/gasket, the second flange and second groove/gasket provide the effect that the "corner" of the lid is held in place and prevented from displacing in towards the centre of the container when pressure is applied from the inside of the container. Pressure can be applied in many circumstances, for example when gas inside the container is warmed, for example when the container is placed in sunlight, or when the container is moved and the contents of the container move inside the container. By ensuring that the "corner" of the lid doesn't displace inwardly, the seal provided between the container and the lid is much better than that provided by prior art containers. It can also be said that the lid and the container are arranged such that the gasket itself provides the lowest point of connection between the lid and the container.

[0039] In contrast, figure 8-9 show prior art containers and what happens when pressure is applied from the inside of the container. As can be seen, the outwardly facing surface of the first groove of the lid is "peeled" away from the inwardly facing surface of the first flange. This completely removes the sealing effect provided between these two surfaces. Furthermore, when the lid is peeled away from the flange, the contents of the container can come into contact with the surfaces of the lid and the container and contaminate them. There will be a large risk that the contents of the container will leave residues on the surface whereby it will no longer be possible to return to the previous effective seal.

[0040] It can also be seen from figure 1, that the outwardly facing surface 15b of the second flange is arranged adjacent the inwardly facing surface 27a of the second groove. In this way, an even stiffer connection between the container and the lid is provided. An alternative to this arrangement is shown in figure 10, where the second flange 15' is arranged at a distance from the inwardly facing surface of the second groove. While the arrangement of figure 10 allows slightly more movement than the embodiment of figure 1 due to the elasticity of the gasket 40, an effective seal is still provided.

[0041] In the current embodiment, the second groove is arranged to be wider than the second flange. In this way, the gasket material can be arranged to completely surround the second flange when the lid is mounted on the container. By making the groove wider than the flange, the percent compression of the gasket can be reduced, making the gasket last longer and allowing the use of a softer and more flexible gasket.

[0042] It can also be seen from figure 1, that the barrier film 17 of the container and the barrier film 30 of the lid meet at the gasket. The gasket therefore forms a direct connection between the barrier film of the lid and the barrier film of the container. If the material of the gasket is also a barrier material preventing oxygen from passing through the gasket, a very effective barrier seal is provided. Furthermore, since the gasket is arranged right at the corner between the lid and the container, the barrier films of the lid and the container do not need to cover the entire rim portion of the lid and the container respectively. As such less barrier film needs to be provided and a simpler barrier film can be provided. In particular, it is possible to form the barrier film on the lid such that it does not extend past the second groove. In the current embodiment, it doesn't even extend past the downwardly facing surface of the second groove. In this way, the barrier film does not need to fit into and cover the entire surface of the second groove. The same is true for the barrier film on the container where the barrier film on the container does not extend past the second flange. Again, the barrier film on the container does not even need to extend past the upwardly facing surface of the second flange.

[0043] If one compares the embodiment of the current invention to the prior art embodiment shown in figures 8-9, it would be necessary for the barrier film to cover almost the entire inner surface of the rim of the lid and the container in order to provide a proper barrier. However, in the case of the prior art solution, even though the barrier film needs to cover almost the entire inner surface of the rim of both the lid and the container, a poorer barrier is provided when compared to the current invention.

[0044] In order to provide some realistic dimensions of a packaging article according to the current invention, figure 6 is provided where dimensions in millimetres are marked. These dimensions should not be used to limit the scope of protection and are purely provided as a single example embodiment of a packaging article according to the invention.

[0045] It can also be noted that in comparison to prior art containers, only small changes need to be made to the container and the lid in order to take advantage of the current invention. Figure 4 shows a prior art container and figure 5 shows a container according to the current invention. As can be seen, the only area that needs to

be changed is the area marked by the circle A.

[0046] Furthermore, it can be noted that the current claims focus on a second flange on the container arranged in a second groove on the lid. Another way of defining a packaging article with an improved seal is to focus on a lid having a downwardly protruding flange 31 arranged in an upwardly facing U-shaped groove 16 on the container. While the embodiments discussed in the current specification have only had a gasket in the second groove, it would also be possible to arrange a gasket in the first groove if desired.

[0047] Figure 7 is furthermore provided to show how two lids are stacked on top of each other, and how the downwardly protruding flange 31 arranged between the first and second grooves is arranged to contact the upper surface of the rim portion of the lid, so that the gasket 40 of the upper lid is not in contact with any parts of the lower lid when stacked. This is important since the lids can be stored for longer periods of time in a stacked configuration and if the gasket materials were under compression during storage, there is a risk that the gasket could get damaged over time. In the current embodiment, it could be said that the downwardly protruding flange 31 which extends from the lid between the first and second grooves extends further downwards than the lower surface of the gasket 40 arranged in the second groove or it could be said that the downwardly protruding flange 31 of an upper lid is arranged such that a portion of the downwardly protruding flange 31 of the upper lid is arranged between the lower surface of the gasket of the upper lid and the upper surface of the lower lid when stacked.

[0048] It is to be noted that the figures and the above description have shown the example embodiments in a simple and schematic manner. Many of the details have not been shown since the person skilled in the art should be familiar with these details and they would just unnecessarily complicate this description. For example, only the rim portion of the container and the lid have been shown. The complete side walls and the bottom have not been shown since the person skilled in the art would be able to provide a number of alternatives.

Claims

1. A packaging article (1) comprising a container (10) and a lid (20) arranged to be mounted on the container to seal the contents of the container,

   a. said container (10) defining a volume with an opening (12) and a first outwardly protruding circumferential flange (14) arranged around the periphery of the opening,
   b. said lid (20) comprising a central portion (21) and a rim portion (22) arranged at the periphery of the central portion with an upper edge (22a) of the rim portion being raised above said central portion, said rim portion comprising a first downwardly facing U-shaped circumferential groove (26) arranged to accommodate the first outwardly protruding circumferential flange (14) of the container when the lid is mounted on the container,
   c. the container comprising a second outwardly protruding circumferential flange (15), said second outwardly protruding circumferential flange being arranged around the periphery of the opening and inside the first outwardly protruding circumferential flange (14) and such that the upper edge (14c) of the first outwardly protruding circumferential flange (14) is higher than the upper edge (15c) of the second outwardly protruding circumferential flange (15), **characterized in that**
   d. the rim portion (22) of the lid comprises a second downwardly facing U-shaped circumferential groove (27) arranged to accommodate the second outwardly protruding circumferential flange (15) when the lid is mounted on the container, said second downwardly facing U shaped circumferential groove (27) being arranged on the inside of the first downwardly facing U shaped circumferential groove (26) of the rim portion of the lid, and **in that**
   e. the rim portion (22) of the lid (20) comprises a flexible sealing material, for example a gasket (40), arranged in the second downwardly facing U shaped circumferential groove (27).

2. A packaging article (1) according to claim 1, **characterized in that** the first downwardly facing U-shaped circumferential groove (26) of the lid (20) is essentially the same width as the first outwardly protruding circumferential flange (14) of the container (10) such that a squeeze fit is provided between said first flange and said first groove.

3. A packaging article (1) according to any one of claims 1-2,
   characterized in that the second downwardly facing U-shaped circumferential groove (27) of the lid (20) is wider than the second outwardly protruding circumferential flange (15) of the container (10).

4. A packaging article (1) according to any one of claims 1 to 3,
   characterized in that the second downwardly facing U-shaped circumferential groove (27) of the lid (20) and the second outwardly protruding circumferential flange (15) of the container (10) are arranged such that said second flange (15) is not in direct contact with said second groove (27) when the lid is mounted on the container

5. A packaging article (1) according to claim 3 or 4, **characterized in that** the flexible sealing material,

for example a gasket (40), fills more than 50% of the volume of the second downwardly facing U-shaped circumferential groove (27).

6. A packaging article (1) according to any one of claims 3-5,
characterized in that the flexible sealing material, of for example a gasket (40), is of the kind which is elastically deformable such that the second outwardly protruding circumferential flange (15) is pressed into the sealing material when the lid (20) is mounted on the container (10).

7. A packaging article (1) according to any one of claims 1-6,
characterized in that the upper edge (15c) of the second outwardly protruding circumferential flange (15) is less than 5mm above the plane defined by the upper surface of the central portion (21) of the lid (20) when the lid is mounted on the container.

8. A packaging article (1) according to any one of claims 1-7,
characterized in that the vertical distance between the upper edge (14c) of the first outwardly protruding circumferential flange (14) and the upper edge (15c) of the second outwardly protruding circumferential flange (15) is greater than 5mm.

9. A packaging article (1) according to any one of claims 1-8,
characterized in that the inner surface (30) of the lid (20) and the inner surface (17) of the container (10) comprise a barrier layer (30,17).

10. A packaging article (1) according to claim 9, **characterized in that** the barrier layer (17) of the container (10) does not extend past the second outwardly protruding circumferential flange (15) and/or the barrier layer (30) of the lid (20) does not extend past the second downwardly facing U-shaped circumferential groove (27).

11. A packaging article (1) according to any one of claims 1-10,
characterized in that the inwardly facing surface (15c) of the second flange is an extension of the inwardly facing side wall of the container.

12. A packaging article (1) according to any one of claims 1-11,
characterized in that the inner and lower edge of the second groove is located at or above the level of the outer and lower edge of the flat central portion of the lid.

Patentansprüche

1. Verpackungsartikel (1), einen Behälter (10) und einen Deckel (20) umfassend, der angeordnet ist, um auf dem Behälter montiert zu werden, um die Inhalte des Behälters abzudichten,

a. wobei der Behälter (10) ein Volumen mit einer Öffnung (12) und einem ersten nach außen vorspringenden Umfangsflansch (14) definiert, der um die Peripherie der Öffnung angeordnet ist,
b. wobei der Deckel (20) einen zentralen Abschnitt (21) und einen Randabschnitt (22) umfasst, der an der Peripherie des zentralen Abschnitts angeordnet ist, mit einer Oberkante (22a) des Randabschnitts, die über den zentralen Abschnitt erhaben ist, wobei der Randabschnitt eine erste abwärts gewandte U-förmige Umfangsnut (26) umfasst, die angeordnet ist, um den ersten nach außen vorspringenden Umfangsflansch (14) des Behälters aufzunehmen, wenn der Deckel an dem Behälter montiert ist,
c. wobei der Behälter einen zweiten nach außen vorspringenden Umfangsflansch (15) umfasst, wobei der zweite nach außen vorspringenden Umfangsflansch um die Peripherie der Öffnung herum, und innerhalb des ersten nach außen vorspringenden Umfangsflansches (14) angeordnet ist, und sodass die Oberkante (14c) des ersten nach außen vorspringenden Umfangsflansches (14) höher ist als die Oberkante (15c) des zweiten nach außen vorspringenden Umfangsflansches (15), **dadurch gekennzeichnet, dass**
d. der Randabschnitt (22) des Deckels eine zweite abwärts gewandte U-förmige Umfangsnut (27) umfasst, die angeordnet ist, um den zweiten nach außen vorspringenden Umfangsflansch (15) aufzunehmen, wenn der Deckel an dem Behälter montiert ist, wobei die zweite abwärts gewandte U-förmige Umfangsnut (27) innerhalb der ersten abwärts gewandten U-förmigen Umfangsnut (26) des Randabschnitts des Deckels angeordnet ist, und dadurch, dass
e. der Randabschnitt (22) des Deckels (20) ein flexibles Dichtungsmaterial, beispielsweise einen Dichtungsring (40) umfasst, der in der zweiten abwärts gewandten U-förmigen Umfangsnut (27) angeordnet ist.

2. Verpackungsartikel (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die erste abwärts gewandte U-förmige Umfangsnut (26) des Deckels (20) von im Wesentlichen dieselbe Breite wie der erste nach außen vorspringende Umfangsflansch (14) des Behälters (10) ist, sodass eine Quetschpassung zwischen dem ersten Flansch und der ersten Nut bereitgestellt

wird.

3. Verpackungsartikel (1) nach einem der Ansprüche 1-2, **dadurch gekennzeichnet, dass** die zweite abwärts gewandte U-förmige Umfangsnut (27) des Deckels (20) breiter als der zweite nach außen vorspringende Umfangsflansch (15) des Behälters (10) ist.

4. Verpackungsartikel (1) nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die zweite abwärts gewandte U-förmige Umfangsnut (27) des Deckels (20) und der zweite nach außen vorspringende Umfangsflansch (15) des Behälters (10) derart angeordnet sind, dass der zweite Flansch (15) nicht in direktem Kontakt mit der zweiten Nut (27) ist, wenn der Deckel an dem Behälter montiert ist.

5. Verpackungsartikel (1) nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** das flexible Dichtungsmaterial, beispielsweise ein Dichtungsring (40), mehr als 50% des Volumens der zweiten abwärts gewandten U-förmigen Umfangsnut (27) ausfüllt.

6. Verpackungsartikel (1) nach einem der Ansprüche 3-5, **dadurch gekennzeichnet, dass** das flexible Dichtungsmaterial, beispielsweise ein Dichtungsring (40), von der Art ist, die elastisch verformbar ist, sodass der zweite nach außen vorspringende Umfangsflansch (15) in das Dichtungsmaterial gedrückt wird, wenn der Deckel (20) an dem Behälter (10) montiert ist.

7. Verpackungsartikel (1) nach einem der Ansprüche 1-6, **dadurch gekennzeichnet, dass** die Oberkante (15c) des zweiten nach außen vorspringenden Umfangsflansches (15) weniger als 5 mm über der Ebene liegt, die durch die obere Oberfläche des zentralen Abschnitts (21) des Deckels (20) definiert wird, wenn der Deckel an dem Behälter montiert ist.

8. Verpackungsartikel (1) nach einem der Ansprüche 1-7, **dadurch gekennzeichnet, dass** der vertikale Abstand zwischen der Oberkante (14c) des ersten nach außen vorspringenden Umfangsflansches (14) und der Oberkante (15c) des zweiten nach außen vorspringenden Umfangsflansches (15) größer als 5 mm ist.

9. Verpackungsartikel (1) nach einem der Ansprüche 1-8, **dadurch gekennzeichnet, dass** die Innenoberfläche (30) des Deckels (20) und die Innenoberfläche (17) des Behälters (10) eine Sperrschicht (30, 17) umfassen.

10. Verpackungsartikel (1) nach Anspruch 9, **dadurch gekennzeichnet, dass** sich die Sperrschicht (17) des Behälters (10) nicht bis nach dem zweiten nach außen vorspringenden Umfangsflansch (15) erstreckt, und/ oder sich die Sperrschicht (30) des Deckels (20) nicht bis nach der zweiten abwärts gewandten U-förmigen Umfangsnut (27) erstreckt.

11. Verpackungsartikel (1) nach einem der Ansprüche 1-10, **dadurch gekennzeichnet, dass** die nach innen gewandte Oberfläche (15c) des zweiten Flansches eine Erweiterung der nach innen gewandten Seitenwand des Behälters ist.

12. Verpackungsartikel (1) nach einem der Ansprüche 1-11, **dadurch gekennzeichnet, dass** die Innen- und Unterkante der zweiten Nut an oder über dem Niveau der Außen-und Unterkante des flachen zentralen Abschnitts des Deckels gelegen ist.

Revendications

1. Article d'emballage (1) comprenant un récipient (10) et un couvercle (20) conçu pour être monté sur le récipient afin de sceller le contenu du récipient,

   a. ledit récipient (10) définissant un volume avec une ouverture (12) et une première collerette circonférentielle en saillie vers l'extérieur (14) disposée autour de la périphérie de l'ouverture,
   b. ledit couvercle (20) comprenant une partie centrale (21) et une partie de rebord (22) disposée à la périphérie de la partie centrale avec un bord supérieur (22a) de la partie de rebord surélevé par rapport à ladite partie centrale, ladite partie de rebord comprenant une première rainure circonférentielle en forme de U orientée vers le bas (26) conçue pour recevoir la première collerette circonférentielle en saillie vers l'extérieur (14) du récipient lorsque le couvercle est monté sur le récipient,
   c. le récipient comprenant une seconde collerette circonférentielle en saillie vers l'extérieur (15), ladite seconde collerette circonférentielle en saillie vers l'extérieur étant disposée autour de la périphérie de l'ouverture et à l'intérieur de la première collerette circonférentielle en saillie vers l'extérieur (14) et de telle manière que le bord supérieur (14c) de la première collerette circonférentielle en saillie vers l'extérieur (14) se situe plus haut que le bord supérieur (15c) de la seconde collerette circonférentielle en saillie vers l'extérieur (15), **caractérisé en ce que**
   d. la partie de rebord (22) du couvercle comprend une seconde rainure circonférentielle en forme de U orientée vers le bas (27) conçue pour recevoir la seconde collerette circonférentielle en saillie vers l'extérieur (15) lorsque le couvercle est monté sur le récipient, ladite seconde

rainure circonférentielle en forme de U orientée vers le bas (27) étant disposée à l'intérieur de la première rainure circonférentielle en forme de U orientée vers le bas (26) de la partie de rebord du couvercle, et **en ce que**
e. la partie de rebord (22) du couvercle (20) comprend un matériau de scellement flexible, par exemple un joint (40), disposé dans la seconde rainure circonférentielle en forme de U orientée vers le bas (27).

2. Article d'emballage (1) selon la revendication 1, **caractérisé en ce que** la première rainure circonférentielle en forme de U orientée vers le bas (26) du couvercle (20) a essentiellement la même largeur que la première collerette circonférentielle en saillie vers l'extérieur (14) du récipient (10) de manière à établir un ajustement serré entre ladite première collerette et ladite première rainure.

3. Article d'emballage (1) selon l'une quelconque des revendications 1-2, **caractérisé en ce que** la seconde rainure circonférentielle en forme de U orientée vers le bas (27) du couvercle (20) est plus large que la seconde collerette circonférentielle en saillie vers l'extérieur (15) du récipient (10).

4. Article d'emballage (1) selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** la seconde rainure circonférentielle en forme de U orientée vers le bas (27) du couvercle (20) et la seconde collerette circonférentielle en saillie vers l'extérieur (15) du récipient (10) sont agencées de telle manière que ladite seconde collerette (15) n'est pas en contact direct avec ladite seconde rainure (27) lorsque le couvercle est monté sur le récipient.

5. Article d'emballage (1) selon la revendication 3 ou 4, **caractérisé en ce que** le matériau de scellement flexible, par exemple un joint (40), occupe plus de 50 % du volume de la seconde rainure circonférentielle en forme de U orientée vers le bas (27).

6. Article d'emballage (1) selon l'une quelconque des revendications 3-5, **caractérisé en ce que** le matériau de scellement flexible, par exemple un joint (40), est du type qui est déformable élastiquement de telle manière que la seconde collerette circonférentielle en saillie vers l'extérieur (15) est pressée dans le matériau de scellement lorsque le couvercle (20) est monté sur le récipient (10).

7. Article d'emballage (1) selon l'une quelconque des revendications 1-6, **caractérisé en ce que** le bord supérieur (15c) de la seconde collerette circonférentielle en saillie vers l'extérieur (15) est à moins de 5 mm au-dessus du plan défini par la surface supérieure de la partie centrale (21) du couvercle (20) lorsque le couvercle est monté sur le récipient.

8. Article d'emballage (1) selon l'une quelconque des revendications 1-7, **caractérisé en ce que** la distance verticale entre le bord supérieur (14c) de la première collerette circonférentielle en saillie vers l'extérieur (14) et le bord supérieur (15c) de la seconde collerette circonférentielle en saillie vers l'extérieur (15) est supérieure à 5 mm.

9. Article d'emballage (1) selon l'une quelconque des revendications 1-8, **caractérisé en ce que** la surface interne (30) du couvercle (20) et la surface interne (17) du récipient (10) comprennent une couche barrière (30, 17).

10. Article d'emballage (1) selon la revendication 9, **caractérisé en ce que** la couche barrière (17) du récipient (10) ne s'étend pas au-delà de la seconde collerette circonférentielle en saillie vers l'extérieur (15) et/ou la couche barrière (30) du couvercle (20) ne s'étend pas au-delà de la seconde rainure circonférentielle en forme de U orientée vers le bas (27).

11. Article d'emballage (1) selon l'une quelconque des revendications 1-10, **caractérisé en ce que** la surface orientée vers l'intérieur (15c) de la seconde collerette est une extension de la paroi latérale orientée vers l'intérieur du récipient.

12. Article d'emballage (1) selon l'une quelconque des revendications 1-11, **caractérisé en ce que** le bord interne et inférieur de la seconde rainure est situé au niveau ou au-dessus du niveau du bord externe et inférieur de la partie centrale plate du couvercle.

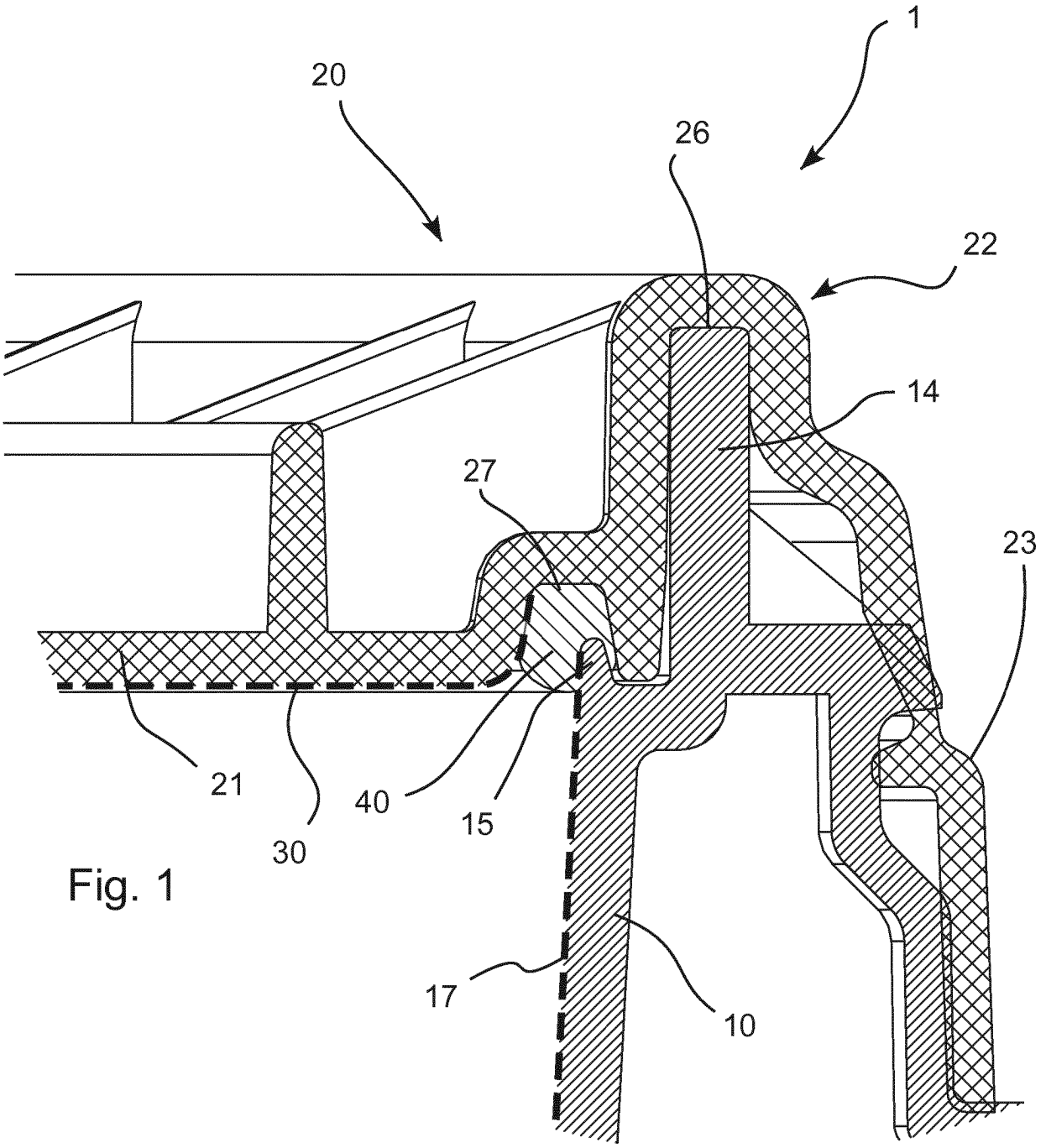

Fig. 1

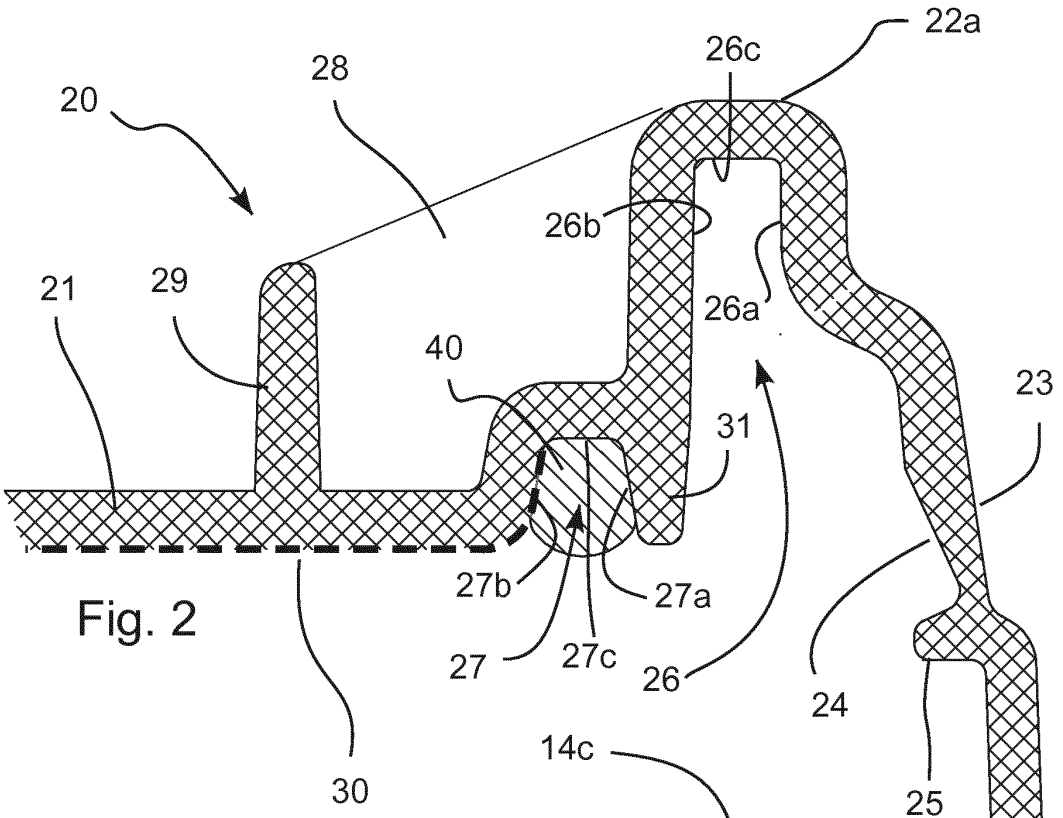
20
28
22a
26c
26b
26a
21
29
40
23
31
27b
27a
27
27c
26
24
30
25

Fig. 2

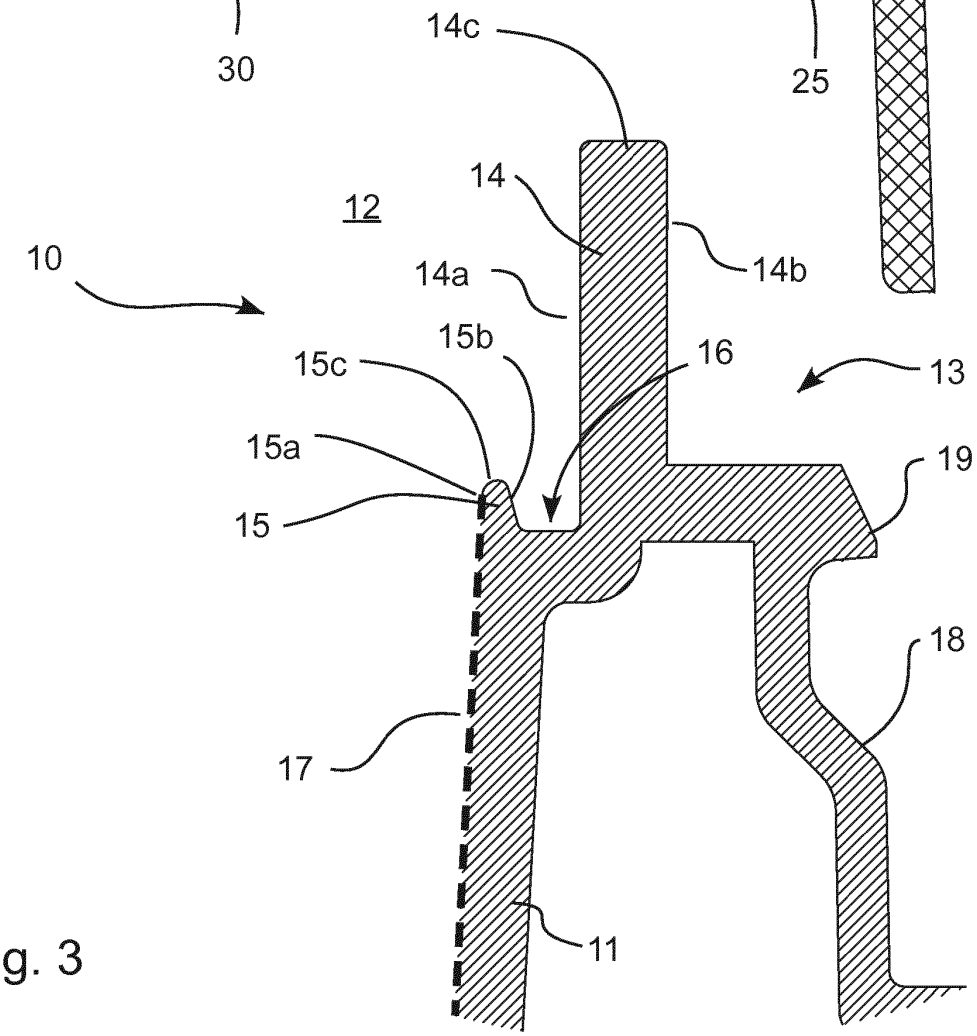
14c
14
12
14b
10
14a
15b
16
13
15c
15a
19
15
18
17
11

Fig. 3

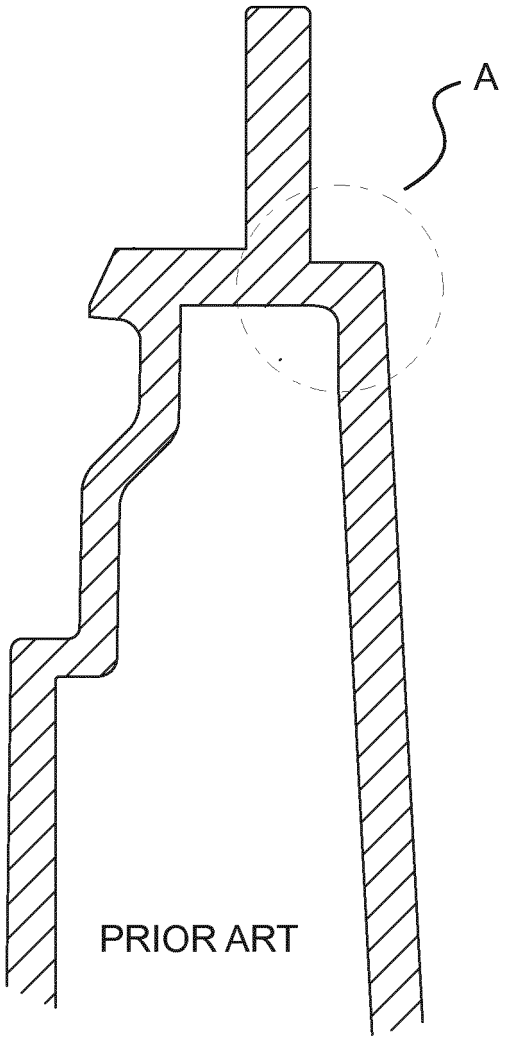

Fig. 4

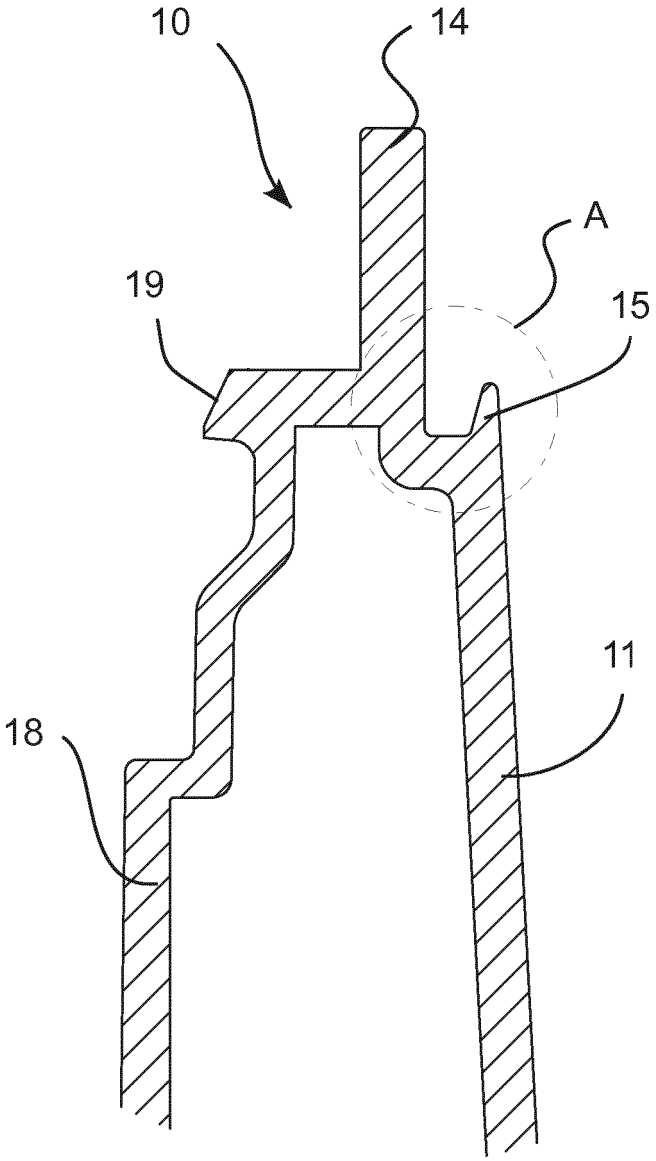

Fig. 5

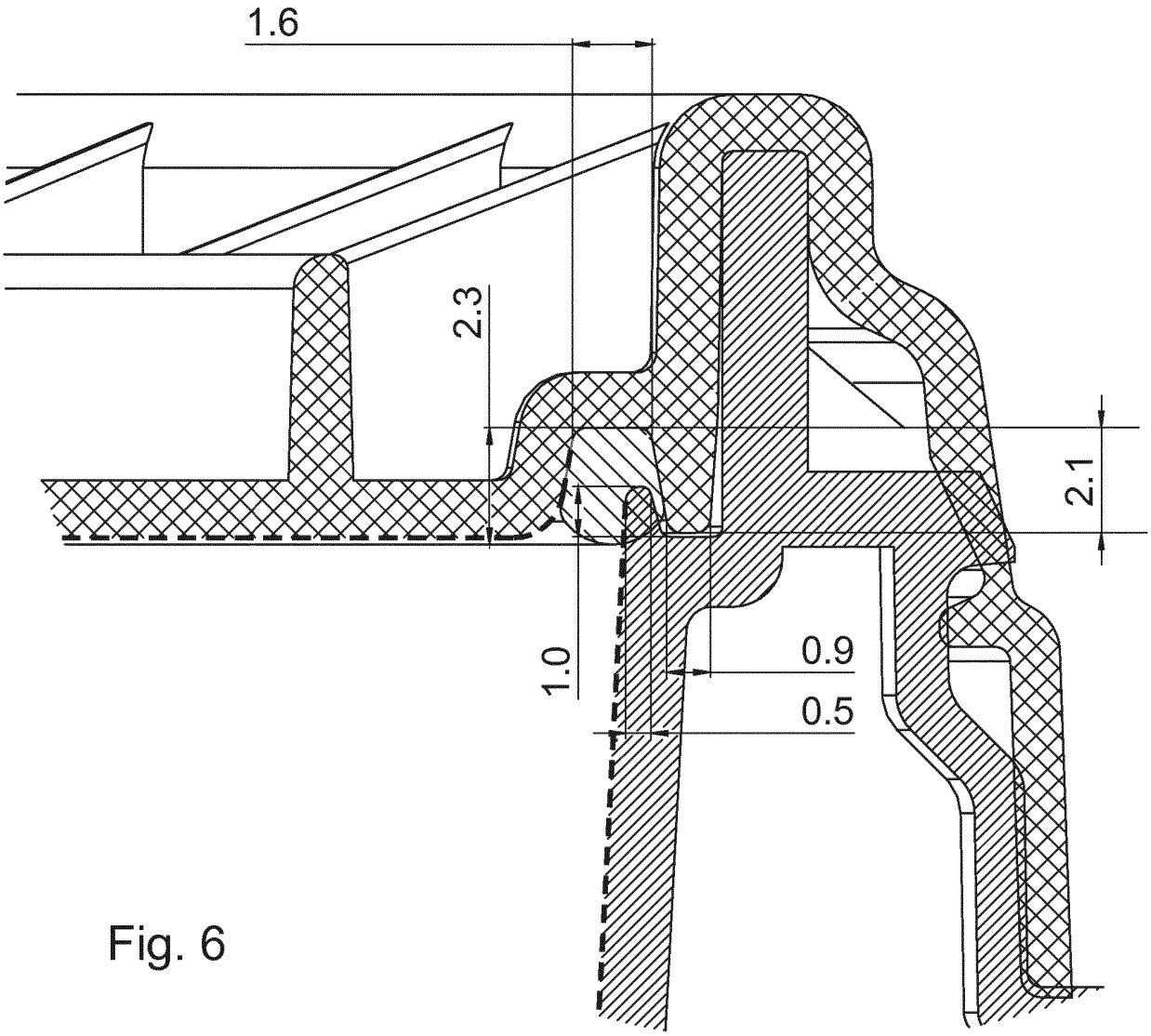

Fig. 6

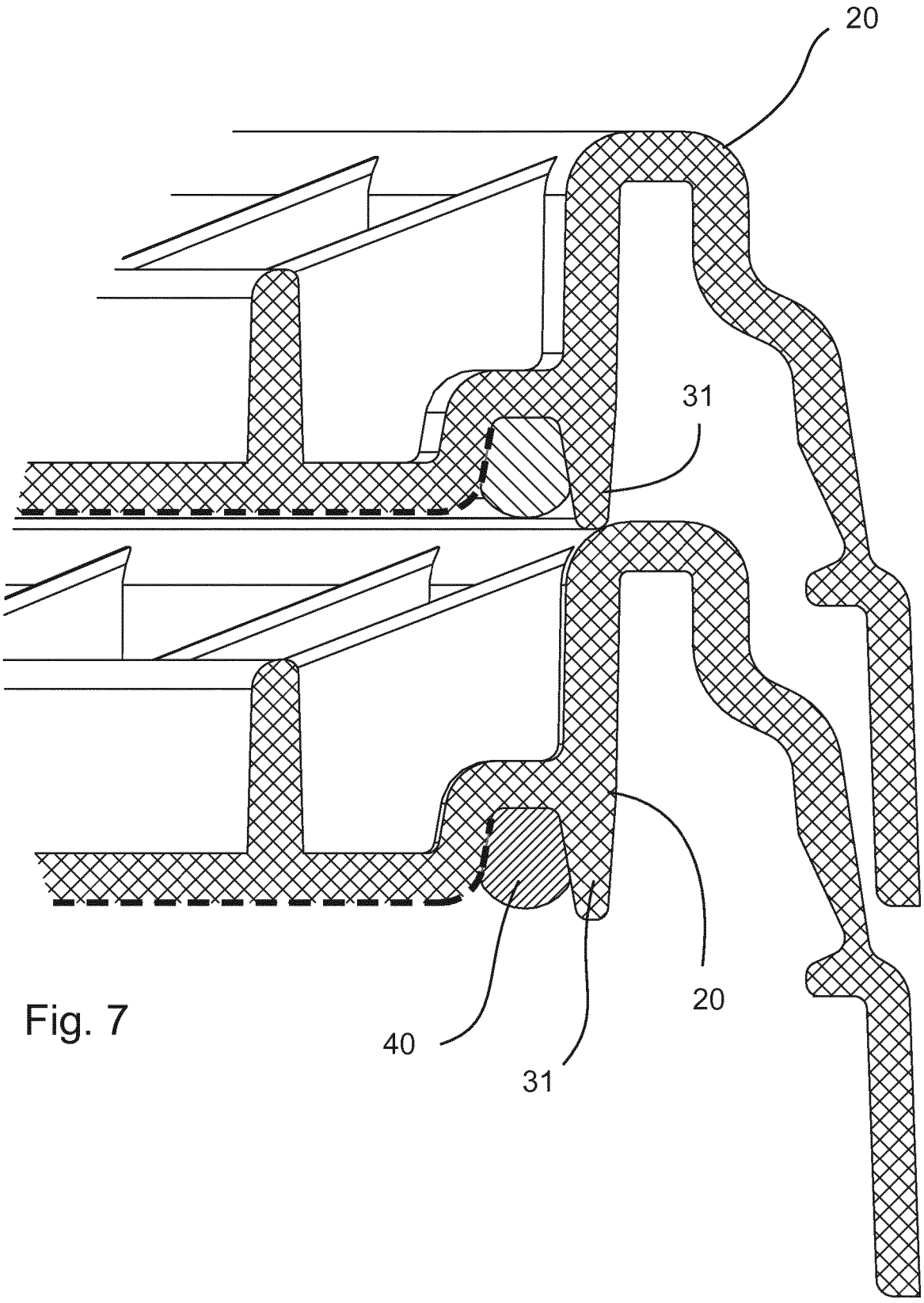

Fig. 7

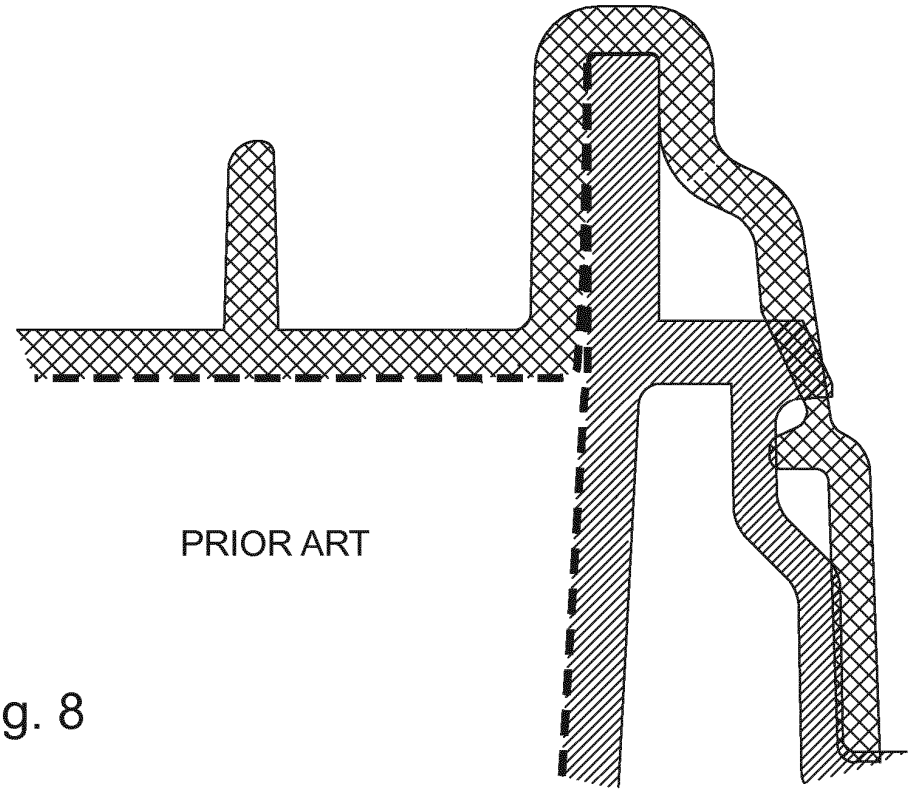

Fig. 8

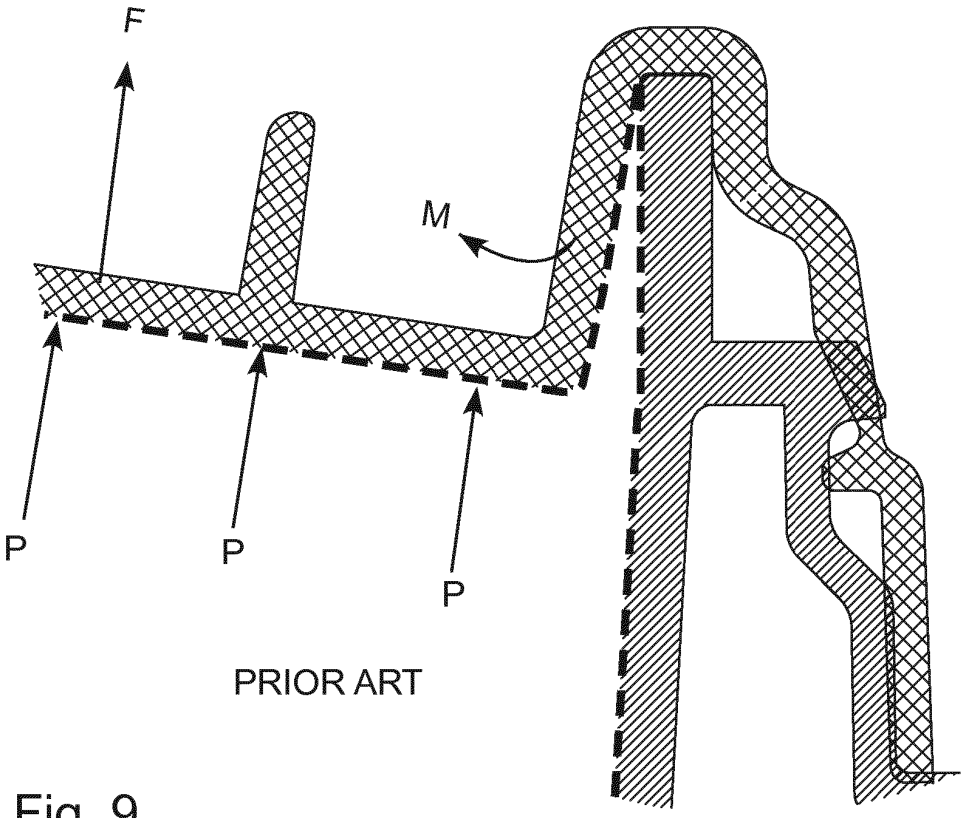

Fig. 9

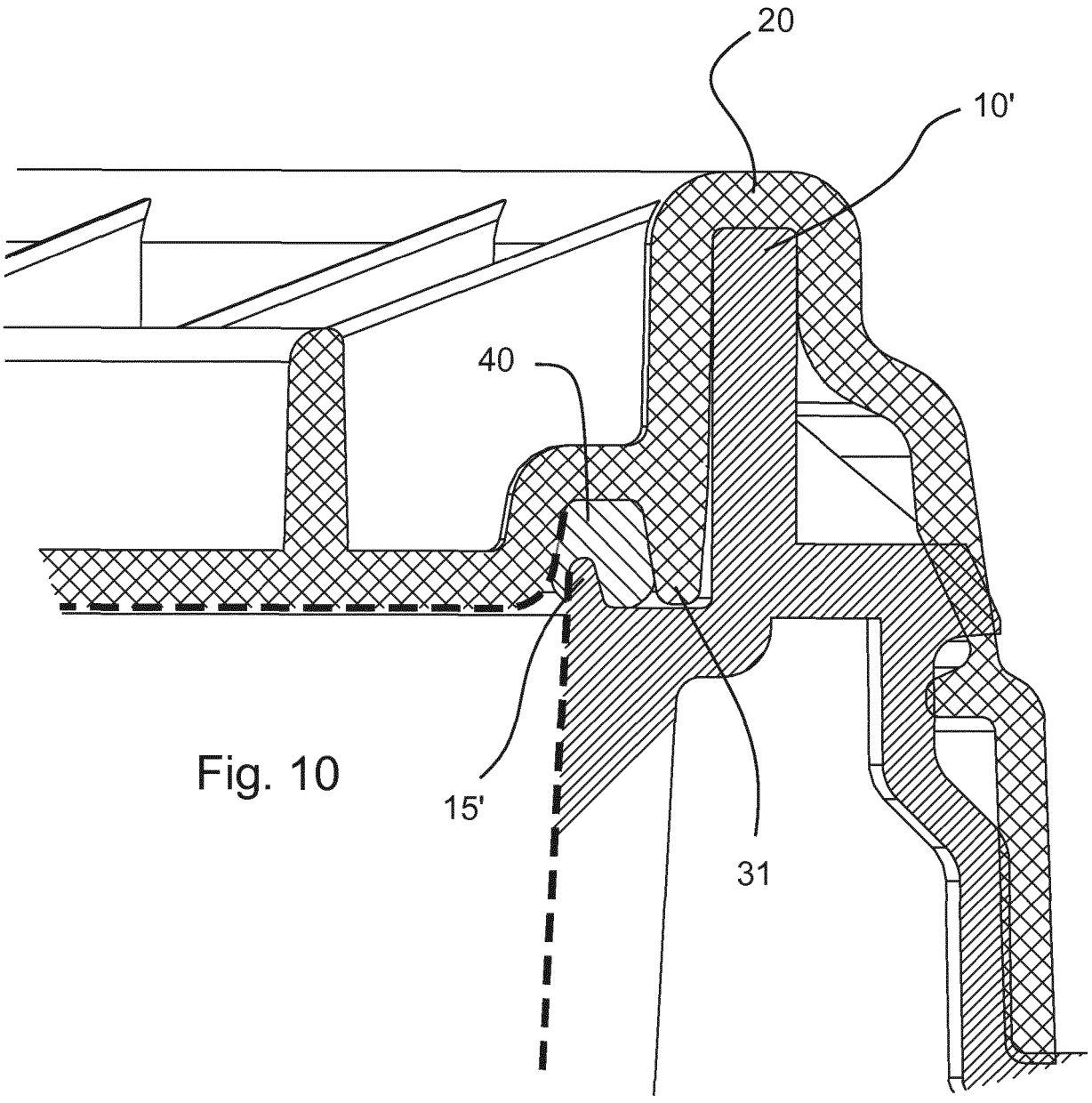

Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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