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(54) **Hob with seal element**

(57) It concerns a hob (10) comprising a hob tray (12), a burner opening (16) provided in the hob tray (12); a burner (20) positioned under the hob tray (12) so that it can be accessed through the burner opening (16); a flange (22) provided on the burner (20) below the hob tray (12);

a circumferential sealing element (30) positioned around the burner (20) between the flange (22) and the hob tray (12); the sealing element (30) including a circumferential sealing projection (40) which serves to settle the sealing element (30) onto the flange (22) by reason of the weight of the hob tray (12).

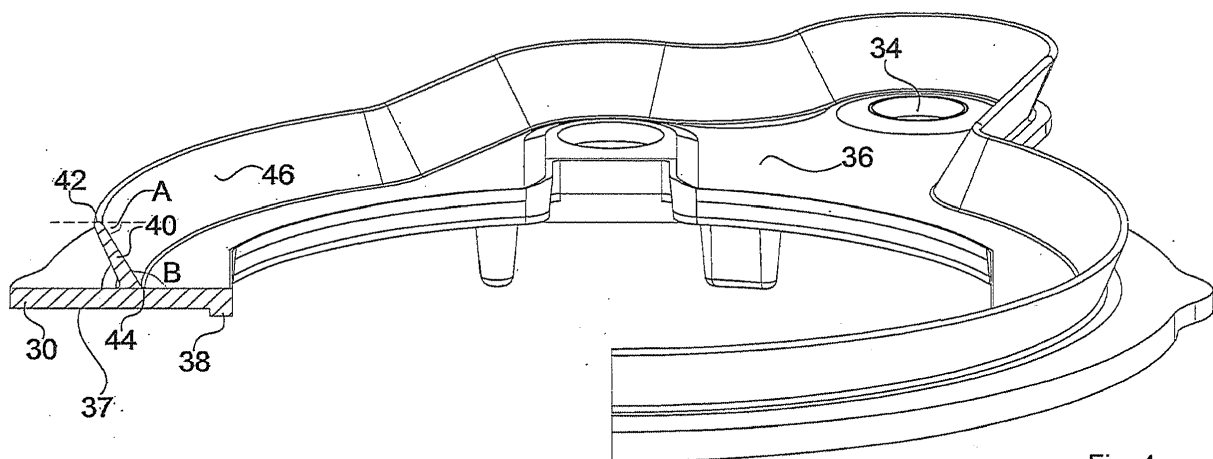


Fig. 4

**Description****Technical Field**

5     **[0001]** The invention concerns a hob which comprises a hob tray with a burner opening and a seal element located between the burner accessed through the burner opening and the hob tray.

**Known State of the Art**

10    **[0002]** The heads of gas burners in the state of the art are positioned so that they pass through burner openings created in a hob tray or are at least accessible through the opening. On top of the burner opening is positioned a gas distributor which ensures the distribution of gas and the mixing of the gas and air, and also the cap.

15    **[0003]** In order to ensure that liquids spilled onto the hob tray do not pass under the hob tray, a sealing element is positioned between the burner and the hob tray. In order to ensure a complete seal, the gas distributor and the burner are usually brought together by a connecting element (a screw etc). In this fashion, the seal element is compressed between the hob tray and the burner in order to ensure a seal. However, in enamel hob trays in particular, screw holes can cause enamel cracking. The cracks tend to grow over time, causing undesirable visual defects in the hob tray.

20    **[0004]** There are state of the art configurations in which connection elements such as screws are not used. The hob referred to in document JP10153305 A is an example of a configuration without screws. There is a flange on the burner shown in figure-1 and figure-2 in the document. The ends of the flange include a section with a difference in level. A sealing element is positioned in the edge of this section upon which the hob tray is positioned. The hob tray is positioned on the sealing element which also constitutes the periphery of the burner opening. A flexible section around the sealing element is folded to form a reverse C form folded toward the burner. However, the external periphery of the flexible section of the sealing element may form ripples because it forms a smaller circle when folded. As a result of the rippled edge, it fails to provide full contact with the hob tray and a full seal.

**Brief Explanation of the Invention**

30    **[0005]** The invention is inspired by the situation currently encountered and the aim is to overcome the deficiencies described above.

**[0006]** The purpose of the invention is to ensure a complete seal in order to prevent water passing into the underside of the hob tray.

35    **[0007]** The invention intended to achieve the purpose referred to is a hob which includes a hob tray, a burner opening provided in the hob tray; a burner positioned under the hob tray so that it can be accessed through the burner opening; a flange provided on the burner below the hob tray; a sealing element placed around the burner and located between the flange and the hob tray, with a circumferential sealing projection which firmly positions the sealing element on the flange by reason of the weight of the hob tray bearing upon it. Thus, contrary to the existing state of the art, full contact and a full seal is provided between the sealing element and the hob tray without using a screw or other connecting element.

40    **[0008]** On the sealing projection in a preferred embodiment of the invention, there is a seal area on the sealing projection which is defined by the upper periphery and the inner lower periphery which contacts the underside of the hob tray in a manner which provides a seal and also supports the hob tray. Contact with the underside of the hob tray is thus provided at all times throughout the entire circumference of the sealing extension.

45    **[0009]** In one embodiment, the sealing projection has a shape which provides an acute angle between the underside of the hob tray and the seal area. Optionally, the sealing projection may have a shape which is an inverted U form in section, or a Z form in section which extends away from the burner, at an obtuse angle, or a straight form which extends away from the burner at an obtuse angle. In this way the sealing projection continually receives the force imposed by reason of the weight of the hob tray in the direction from the centre of the sealing element toward the outside. Thus, because it does not transition from a resting volume to a form with a smaller volume, it does not cause problems such as a buckling or rippling, and is in contact with the hob tray at all times. In this way it provides a seal.

50    **[0010]** In another embodiment of the sealing projection in the straight section form, the sealing projection has a shape which, in section, becomes thicker toward the junction point. This ensures that the sealing projection is continually trying to attain its former position under the force applied in the opposite direction to the center of the sealing element. This ensures that continuous contact with the hob tray is maintained. The thickening ensures that the force applied by the sealing projection against the hob tray will be more long-lasting. This will ensure that the sealing element has a long service life.

55    **[0011]** In another embodiment of the invention, there is a centering lip on the underside of the sealing element which is positioned in a centering recess on the burner flange. This ensures that the sealing element is centered before it is fixed in place by the weight of the hob tray.

**[0012]** In an optional embodiment of the invention, the sealing element includes an aperture, in a sealed position, for items such as the burner igniter or the flame control element. Thus all of the components of the burner under the hob tray which could permit leakage of liquids are fully sealed with a single sealing element.

**[0013]** In another embodiment, the sealing element includes an elastic material. In this way, any variations in the shape or gap in the hob tray and/or burner will be compensated for. Because such variations are compensated for, a persistent seal is ensured. The fact that the sealing projection is made of flexible material ensures that the sealing projection tries to retain its shape despite the force imposed by the hob tray. This ensures that continuous contact with the hob tray is maintained despite any such variations.

**[0014]** In one embodiment of the invention, the sealing element includes heat-resistant material. This will ensure that the sealing element has a long service life in hobs which operate at high temperatures.

## Explanation of Diagrams

**[0015]**

Figure-1 shows a representational view of the hob tray positioned on the side walls. A partial section is given in the figure to show the burner and the sealing element.

Figure-2 gives a representational perspective view of the burner and the sealing element shown separated from each other.

Figure-3 gives a cross-section view of the sealing element positioned between the hob tray and the burner flange.

Figure-4 gives a representational perspective view of the sealing element with a partial section.

Figure-4a shows a representational section view of the embodiment which includes the zigzag-shaped sealing projection, shown in section.

Figure-4b shows a representational section view of the embodiment which includes the U-shaped sealing projection, shown in section.

## Detailed Description of Invention

**[0016]** In this detailed explanation, the preferred embodiments of the hob (10) which is the subject of the invention are explained only in order that the subject is understood more clearly, and shall in no way be restrictive in its effect.

**[0017]** The invention concerns a hob (10) (Figure-1) which includes a hob tray (12), a burner opening (16) provided in the hob tray (12); a burner (20) positioned under the hob tray (12) so that it can be accessed through the burner opening (16); a flange (22) provided on the burner (20) below the hob tray (12); a circumferential sealing element (30) positioned around the burner (20) between the flange (22) and the hob tray (12). The special property of the invention is that the sealing element (30) includes a circumferential sealing projection (40) which serves to settle the sealing element (30) onto the flange (22) with the weight of the hob tray (12) (Figure-2).

**[0018]** The hob (10) used in the invention is preferably a gas hob which may be separate or attached to a cooker. It is equipped with one or more cooking sections. In each cooking section there is one burner (20) which may be of a variety of sizes. The burner (20) rests on support points provided on a hob under the tray located under the hob tray (12) and the connection pipes are connected to the gas supply. The support points prevent the burner (20) from moving downwards in a vertical direction when a load is imposed upon it.

**[0019]** Later the hob tray (12) is positioned on the burners (20). The hob tray (12) is fixed to the side walls of the hob (11) at its own periphery or on the side walls of the domestic appliance such as a cooker. For this reason the burner (20) and the hob tray (12) are separate from each other.

**[0020]** The sealing element (30) is roughly hoop-shaped, as in the state of the art. In the opening a burner head (24) is located in the burner void (32). The sealing element (30) is located on a flange (22) which is a disk surrounding the burner head (24). The flange (22) and the sealing element (30) are located under the hob tray (12). The inner wall (33) of the burner hole comes into contact with the burner head (24) to form a seal. The sealing element (30) is positioned on the burner (20) before the hob tray (12) is fixed. Since the igniter and flame control elements pass through in an area within the perimeter of the sealing element (30), there are one or more apertures (34). The side of the sealing element (30) which faces the flange (22) also contains a centering lip (38) which passes round the entirety of the burner hole (32). The centering lip (38) is preferably on the periphery of the burner hole (32) and projects downward toward the flange (22). It is preferably at an angle of 90 degrees to the underside of the flange (22). Compatible with this, there is a centering recess (23) on the burner flange (22) into which the centering lip (38) fits. The centering recess (23) is preferably located at the point where the burner head (24) and the flange (22) meet.

**[0021]** The sealing projection (40) preferably extends towards the hob tray (12) from the upper surface (36) of the sealing element (30) which faces the hob tray (12). The sealing projection (40) forms a boundary which includes the burner hole (32) and the apertures (34) (Figure-4). A preferred embodiment of the sealing projection (40) is straight in

section. However, it does not extend toward the hob tray (12) at a right angle. The straight section sealing projection (40) extends away from the burner (20) forming an obtuse angle (B) with the upper surface (36) of the sealing element. The obtuse angle (B) can be at any angle, preferably between 90 and 180 degrees. The obtuse angle (B) in its preferred embodiment, is between 90 and 135 degrees. In section view, the sealing projection (40) becomes to a certain extent thicker toward the point at which it meets the upper surface of the sealing element (30) (Figure-4). As a consequence of the thicker lower part, the sealing projection (40) is able to stand at the angle referred to above when no force is applied to it. Also, when force is applied to it, it provides a counterforce in the opposite direction to the applied force.

**[0022]** When the assembly of the invention is completed, the hob tray (12) sits upon the face of the sealing projection (40) which faces the hob tray (12). The area of this surface which is able to come into contact with the hob tray (12) is referred to as the seal area (46). The seal area (46) is preferably defined by the upper periphery (42) and the lower periphery (44) of the sealing projection (40). That is, the surface lying between the two peripheries (42, 44), taking in the points formed by the upper periphery (42) of the sealing projection (40) and its inner lower periphery (44), constitutes the seal area (46). Depending on the load applied to it, the whole of the seal area (46) or part of it will be in contact with the hob tray (12). The sealing projection (40) is inclined, and therefore when a load is applied to it by the hob tray (12), it bends in the direction in which it is inclined, depending on the intensity of the load applied (Figure-3). By reason of the structure of the sealing projection (40) and its deflection, there is always an acute angle (A) between the underside (14) of the hob tray (12) and the seal area (46). If the burner (20) and the hob tray (12) are not parallel with one another, the sealing projection (40) will be deflected less in one area, and more in another area. But it will maintain its contact with the hob tray (12) at all times. This provides a seal.

**[0023]** In addition to the embodiment of the sealing projection (40) mentioned above, there are two alternative embodiments. In the first of these, the cross section of the sealing projection (40) forms an inverted U (Figure-4a). The arms of the U shape spread out towards their junction point with the sealing element (30). Thus, just as in the initial embodiment, a wall extending at an obtuse angle (B) is provided pointing away from the burner (20). This wall creates an acute angle (A) with the underside of the hob tray (12) in order to create the seal area (46) which has been mentioned. There is an upper periphery (42) and an inner lower periphery (44). The gap between the two arms of the U form assists in providing flexibility.

**[0024]** In the second alternative embodiment, the sealing projection (40), in section, forms a zigzag. The zigzag configuration comprises three arms roughly in a Z shape (Figure-4b). The arm which forms the free end of the Z shape has an obtuse angle pointing away from the burner (20). Thus, as in the initial embodiment, a wall extending at an obtuse angle (B) is provided pointing away from the burner (20). This wall also creates an acute angle with the underside of the hob tray (12) in order to create the seal area (46) which has been mentioned. The sealing projection (40) has an upper periphery (42) and an inner lower periphery (44).

**[0025]** In all embodiments of the invention, the sealing element (30) includes flexible and/or heat-resistant material. In the most preferred form, the sealing element (30) includes silicone.

**[0026]**

#### Reference Numbers

<b>10.</b>	Hob	<b>30.</b>	Sealing element
<b>11.</b>	Side wall	<b>32.</b>	Burner hole
<b>12.</b>	Hob tray	<b>33.</b>	Inner wall
<b>14.</b>	Underside	<b>34.</b>	Aperture
<b>16.</b>	Burner opening	<b>36.</b>	Upper surface
<b>20.</b>	Burner	<b>37.</b>	Underside
<b>22.</b>	Flange	<b>38.</b>	Centering lip
<b>23.</b>	Centering recess	<b>40.</b>	Sealing projection
<b>24.</b>	Head	<b>42.</b>	Upper periphery
		<b>44.</b>	Inner lower periphery
		<b>46.</b>	Seal area
		<b>A.</b>	Acute angle
		<b>B.</b>	Obtuse angle

#### Claims

1. The hob (10) comprising a hob tray (12), a burner opening (16) provided in the hob tray (12); a burner (20) positioned under the hob tray (12) so that it can be accessed through the burner opening (16); a flange (22) provided on the

burner (20) below the hob tray (12);

a circumferential sealing element (30) positioned around the burner (20) between the flange (22) and the hob tray (12); is **characterized in that** the sealing element (30) includes a circumferential sealing projection (40) which serves to settle the sealing element (30) onto the flange (22) by reason of the weight of the hob tray (12).

2. A hob (10) as claimed in claim 1, its special property being that it includes a seal area (46) defined by the upper periphery (42) and the inner lower periphery (44) of the sealing projection (40) which comes into contact with the underside (14) of the hob tray in such a manner as to form a seal, and which supports the hob tray (12).
3. A hob (10) as claimed in claim 1 or 2, in which the sealing projection (40) has a shape which provides an acute angle (A) between the underside (14) of the hob tray (12) and the seal area (46).
4. A hob (10) as claimed in any one of the previous claims, in which the sealing projection (40) forms an inverted U in section.
5. A hob (10) as claimed in any one of claims 1 to 3, in which the sealing projection (40) has a shape which forms an obtuse angle (B) in section extending away from the burner (20).
6. A hob (10) as claimed in claim 5, in which the sealing projection (40), in section, has a shape which becomes thicker toward the junction point with the sealing element (30).
7. A hob (10) as claimed in any one of claims 1 to 3, in which the sealing projection (40) has a Z shape which forms an obtuse angle (B) in section, offering two surfaces extending away from the burner (20).
8. A hob (10) as claimed in any one of the previous claims, its special property being that it includes a centering lip (38) on the underside (37) of the sealing element (30) which is positioned in a centering recess (23) in the burner flange (22).
9. A hob (10) as claimed in any one of the previous claims, its special property being that the sealing element (30) includes an aperture (34), in a sealed position, for items such as the burner (20), igniter or the flame control element.
10. A hob (10) as claimed in any one of the previous claims, in which the sealing element (30) includes an elastic material.
11. A hob (10) as claimed in any one of the previous claims, in which the sealing element (30) includes a heat-resistant material.

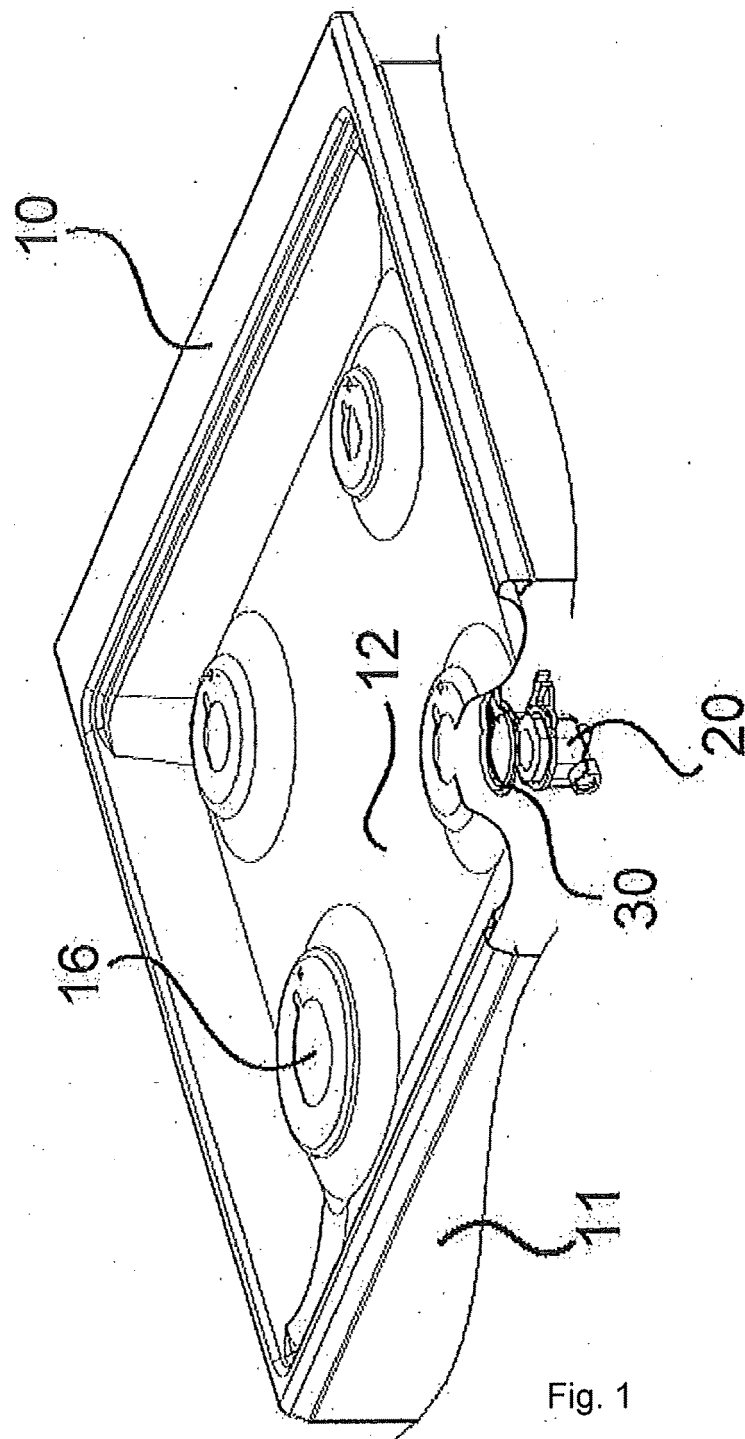


Fig. 1

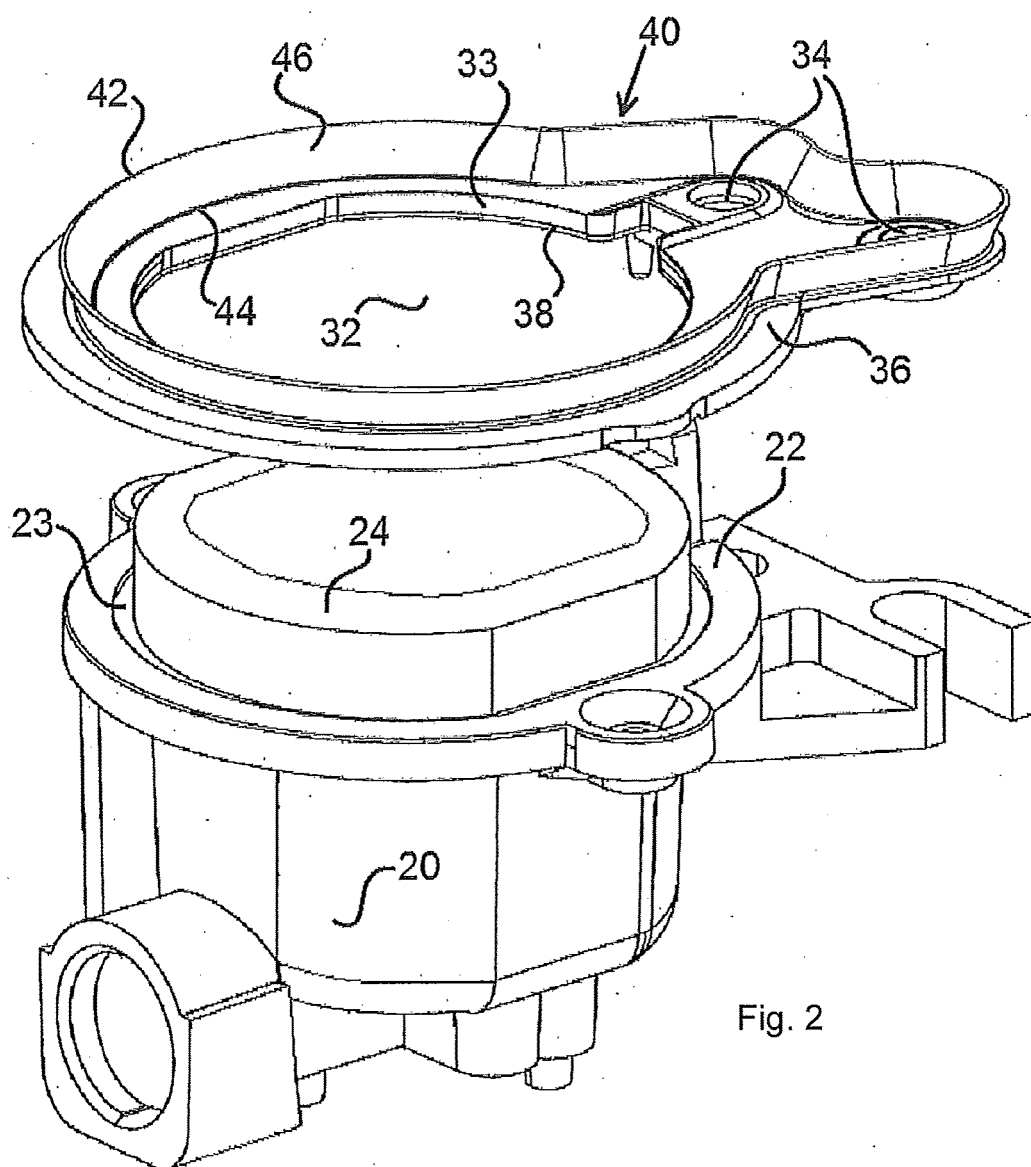


Fig. 2

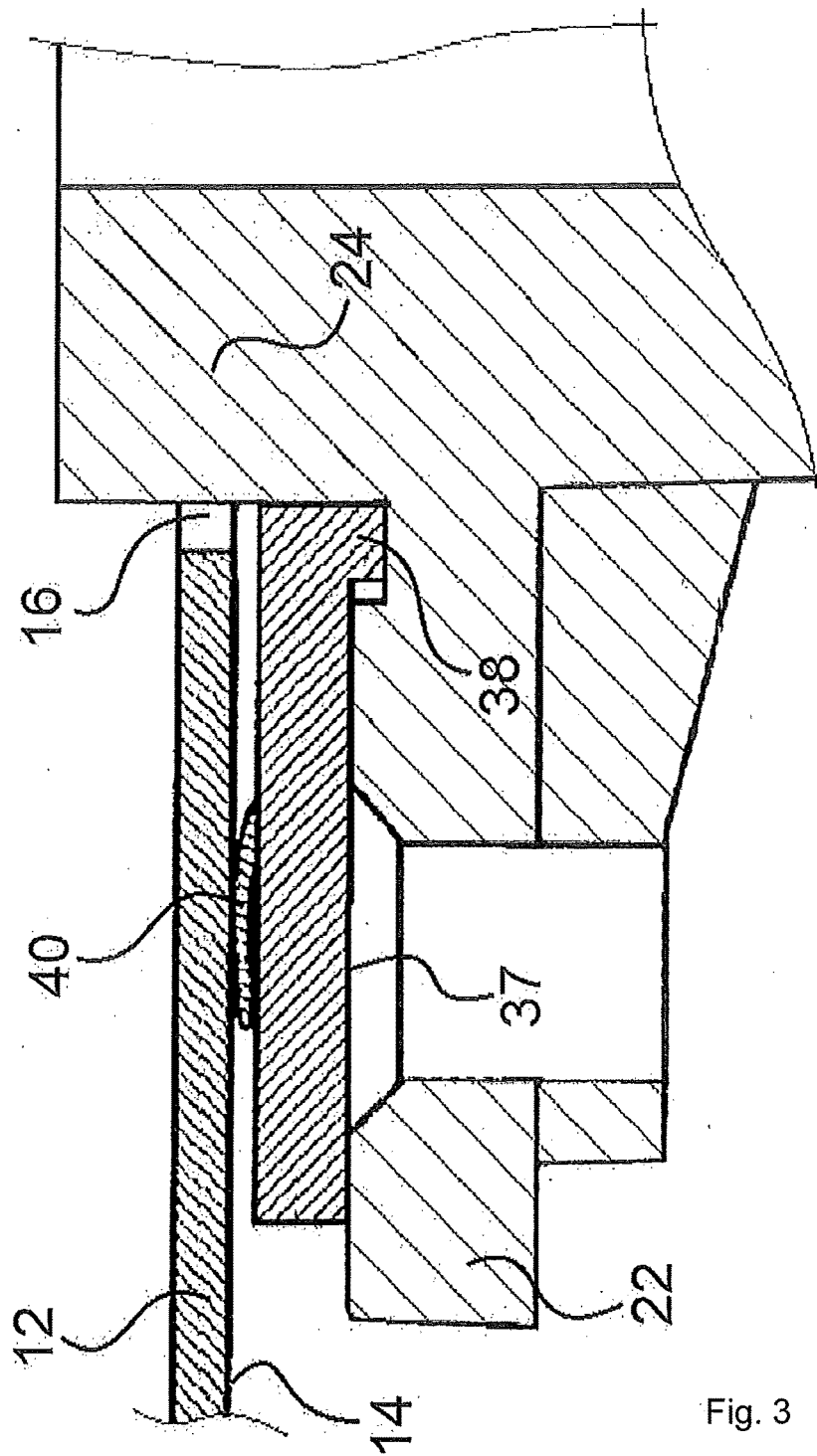
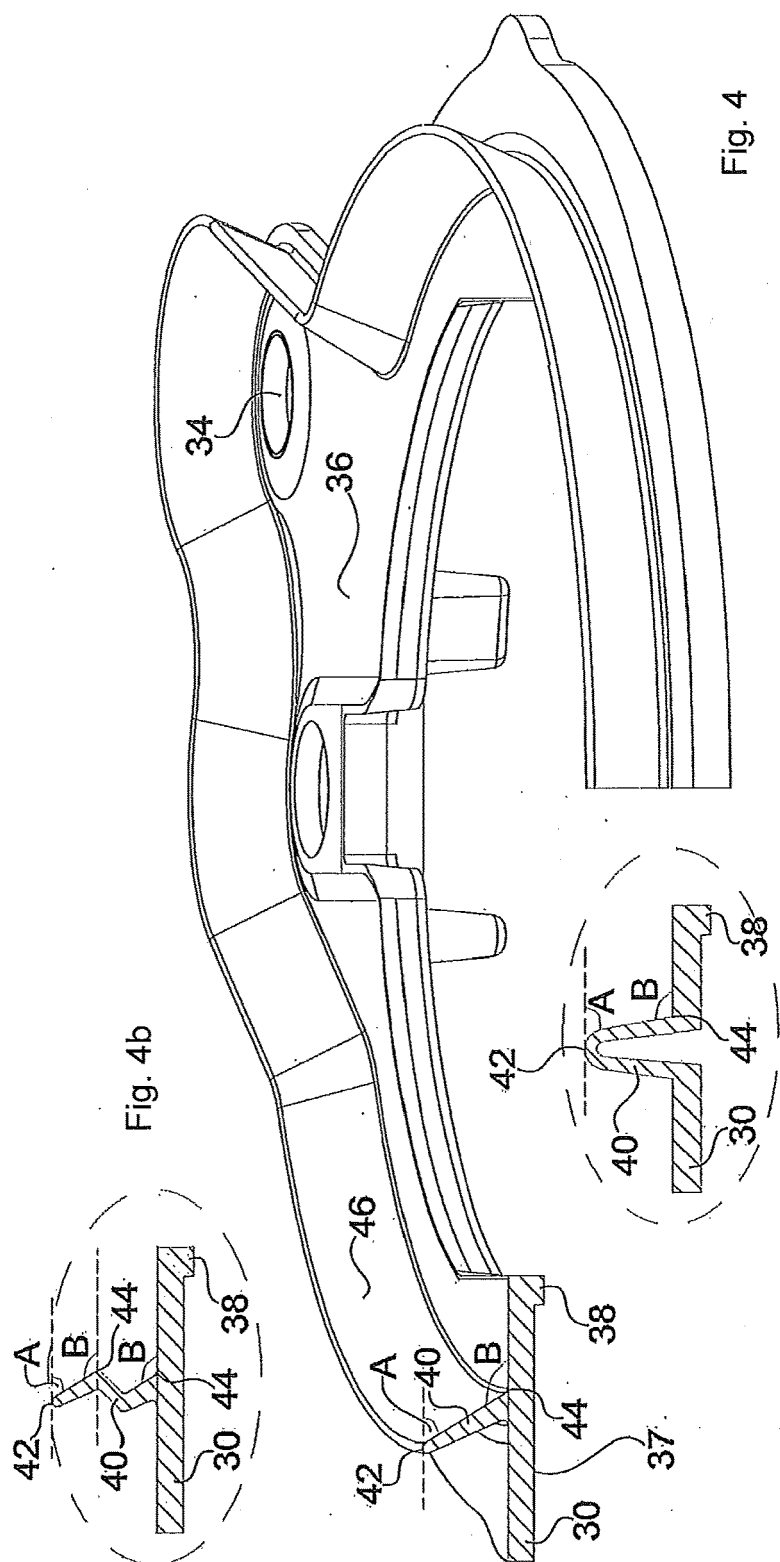


Fig. 3







## EUROPEAN SEARCH REPORT

Application Number  
EP 13 17 6830

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 2 December 2013	Examiner Rodriguez, Alexander
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 ..... &amp; : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 13 17 6830

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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**REFERENCES CITED IN THE DESCRIPTION**

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