



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.02.2014 Bulletin 2014/07

(51) Int Cl.:
F24C 3/08 (2006.01)

(21) Application number: **13177011.7**

(22) Date of filing: **18.07.2013**

(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

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(30) Priority: **06.08.2012 TR 201209135**

(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) which includes a soft synthetic material positioned around the burner (20) between the flange (22) and the hob tray (12); and an acute angle (34) presented toward the flange (22) between the burner (20) and the inner wall (33) of the sealing element (30) which comes into contact with the burner (20) to form a seal.

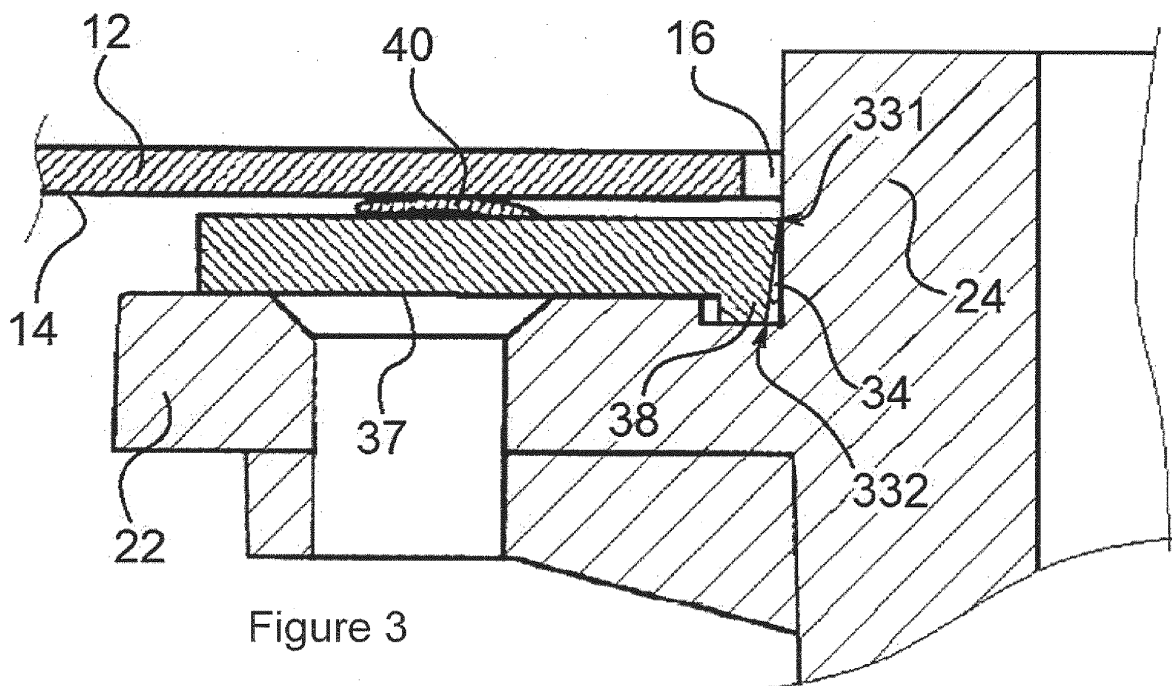


Figure 3

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.
- [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
- 15 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. In some hobs in the state of the art, no screw or similar connection element is used.
- [0004]** The sealing element is passed over the burner head in a tensioned state to provide a seal and the free edges of the sealing element bear against the burner flange. Usually, as a result of any upward movement, the sealing element
- 20 may be moved out of place. During the assembly of the hob tray, the lifting edges of the sealing element, or a sealing element which has moved out of place becomes lodged between the flange and the hob tray in an unacceptable manner.

Brief Explanation of the Invention

- 25 **[0005]** The purpose of the invention is to ensure that a sealing element positioned on the burner flange stays in place on the flange so that it provides a seal.
- [0006]** In order to achieve the objective described, the invention 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 circumferential sealing element which includes a soft synthetic
- 30 material positioned around the burner between the flange and the hob tray; an acute angle presented to the flange between the burner and the inner wall of the sealing element which comes into contact with the burner to form a seal. Thus the intention is that the sealing element, which is in contact with the burner in a tensioned fashion in order to provide a seal, moves in the direction of the flange. This safeguards the positioning of the sealing element ready in position on the flange.
- 35 **[0007]** In an optional embodiment of the invention, there is a sealing element 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.
- [0008]** On the sealing projection in a preferred embodiment of the invention, there is a seal area defined by the upper periphery of the sealing projection and the inner lower periphery which contacts the underside of the hob tray in a manner
- 40 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.
- [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
- 45 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 center 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 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 element 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
- 55 element has a long service life.
- [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. Also because it is elastic, sealed contact with the inner wall in the burner hole is ensured.

[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.

[0015] In one embodiment of the invention, the sealing element includes a material with a Shore hardness value of between 30 and 60. This ensures flexibility and durability which will assist in achieving the objectives referred to above.

Details of Diagrams

[0016]

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-sectional 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 inverted U-shaped sealing projection, shown in section.

Detailed Description of Invention

[0017] 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.

[0018] 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) which includes a soft synthetic material positioned around the burner (20) between the flange (22) and the hob tray (12). The special property of the invention is the presence of an acute angle (34) presented toward the flange (22) between the burner (20) and the inner wall (33) of the sealing element (30) which comes into contact with the burner (20) to form a seal. (figure 3).

[0019] 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 fitted to the gas source. The support points prevent the burner (20) from moving downwards in a vertical direction when a load is imposed upon it.

[0020] 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 cooker tray (12) are separate from each other.

[0021] 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 hole (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. Because of the acute angle (34) described above, the upper periphery (331) of the inner wall (33) which is distant from the flange (22) comes into contact with the

burner head (24). However, the intention is to bring the lower periphery (332) close to the flange (22) of the sealing element (30) which is positioned on the burner head (24) under tension into contact with the burner head (24). The body of the sealing element (30) which covers the upper surface of the flange (22) is thus drawn downward in the direction of the flange (22). Since the sealing element (30) when first positioned is already positioned in contact with the flange (22), because of the tendency toward downward movement referred to, it continues to sit on the flange (22). It does not attempt to move upward and separate from the burner head, as occurs in the state of the art.

[0022] 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 (35). 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 sealing element (30). 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. The value of the acute angle (34) which is the subject of the invention may also be determined by the centering lip (38). The acute angle (34) is preferably at a value which permits the creation of a centering lip (38). If the acute angle (34) is close to 90 degrees, then the lower periphery (332) of the inner wall (33) will lie behind the centering recess (23). A centering lip (38) cannot then be provided. But the absence of a centering lip (38) does not negatively affect the principal purpose of this patent, and therefore the embodiment according to claim 1 without the centering lip (38) is adequate for the invention.

[0023] 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). 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 (35) (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.

[0024] 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 inclination, 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 less, and more in another area. But it will maintain its contact with the hob tray (12) at all times. This provides a seal.

[0025] 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 in the opposite 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.

[0026] 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).

[0027] In all embodiments of the invention, the sealing element (30) includes elastic and/or heat-resistant material with a Shore hardness valued of between 30 and 60. In the most preferred form, the sealing element (30) includes silicone.

[0028]

Reference Numbers

10.	Hob	34.	Acute angle
11.	Side wall	35.	Aperture
12.	Hob tray	36.	Upper surface
14.	Underside	37.	Underside
16.	Burner opening	38.	Centering lip
20.	Burner	40.	Sealing projection
22.	Flange	42.	Upper periphery
23.	Centering recess	44.	Inner lower periphery
24.	Head	46.	Seal area
30.	Sealing element	A.	Acute angle
32.	Burner hole	B.	Obtuse angle
33.	Inner wall		
331.	Upper periphery		
332.	Lower periphery		

Claims

1. 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) which includes a soft synthetic material positioned around the burner (20) between the flange (22) and the hob tray (12); is **characterized by** the inclusion of an acute angle (34) presented toward the flange (22) between the burner (20) and the inner wall (33) of the sealing element (30) which comes into contact with the burner (20) to form a seal.
2. The hob (10) as claimed in claim 1, its special property being 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).
3. The hob (10) as claimed in claim 2, 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).
4. The hob (10) as claimed in claim 2 or 3, 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).
5. The hob (10) as claimed in any one of claims 2 to 4, in which the sealing projection (40) forms an inverted U in section.
6. The hob (10) as claimed in any one of claims 2 to 5, in which the sealing projection (40) has a shape which forms an obtuse angle (B) in section extending away from the burner (20).
7. A hob (10) as claimed in claim 6, in which the sealing projection (40), in section, has a shape which becomes thicker toward the junction point with the sealing element (30).
8. The hob (10) as claimed in any one of claims 2 to 4, 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).
9. The 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).
10. The hob (10) as claimed in any one of the previous claims, its special property being that the sealing element (30) includes an aperture (35), in a sealed position, for items such as the burner (20) igniter or the flame control element.

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11. The hob (10) as claimed in any one of the previous claims, in which the sealing element (30) includes an elastic material.
12. The hob (10) as claimed in any one of the previous claims, in which the sealing element (30) includes a heat-resistant material.
13. The hob (10) as claimed in any one of the previous claims, in which the sealing element (30) includes a material with a Shore hardness value of between 30 and 60.

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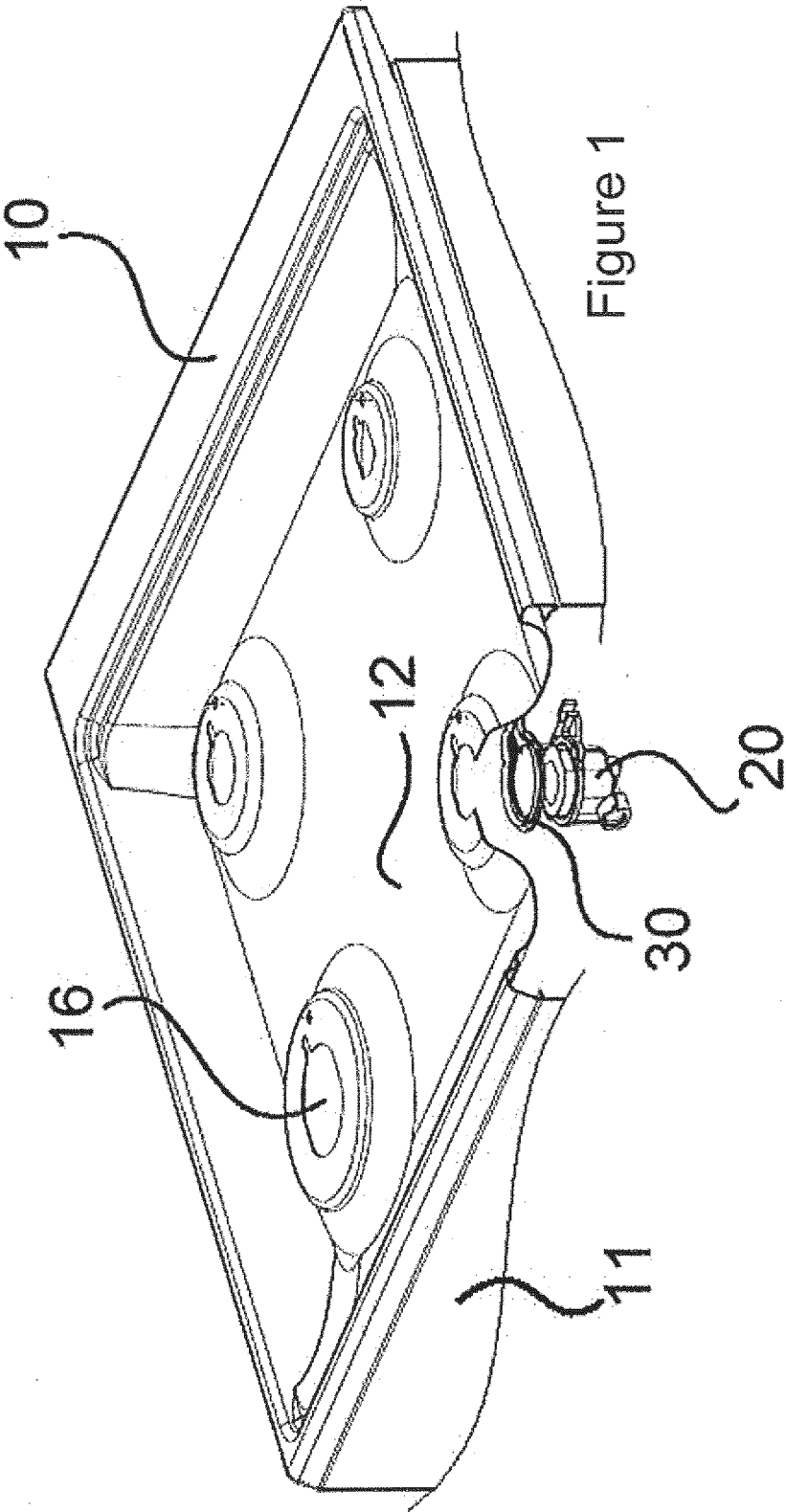
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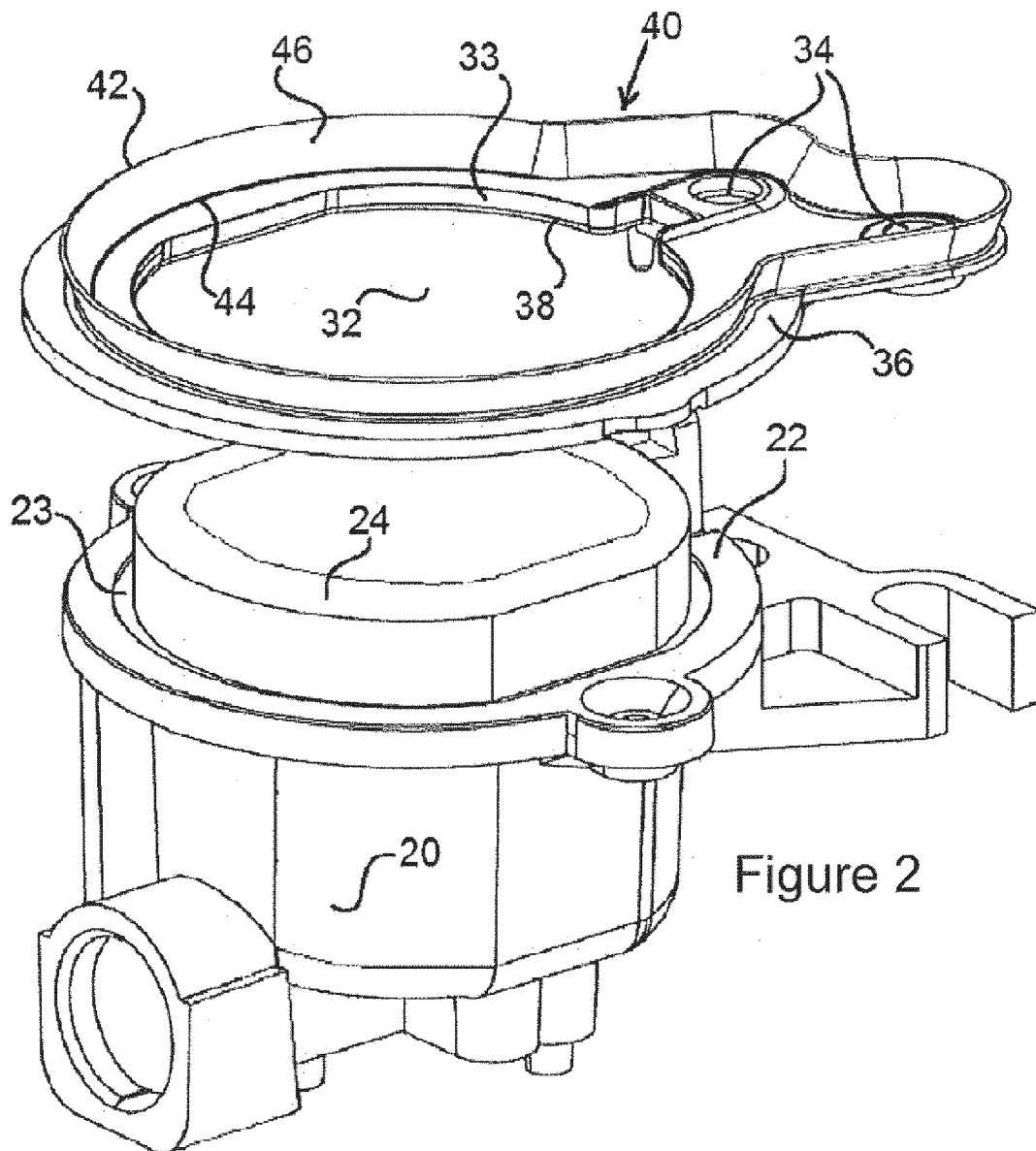


Figure 2

