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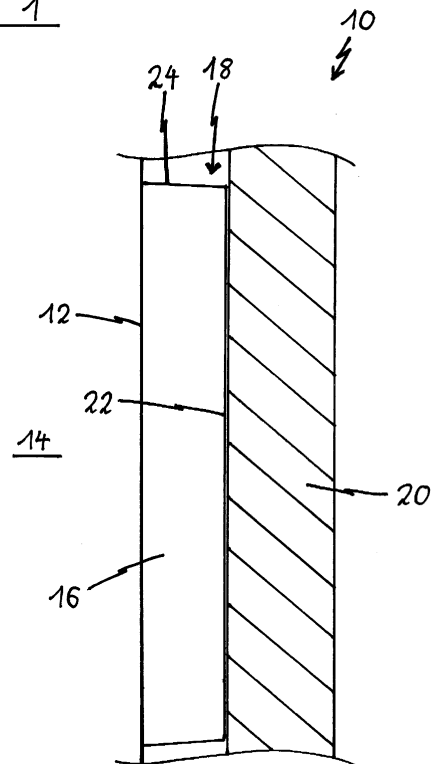
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(54) **OVEN CAVITY FOR A COOKING OVEN**

(57) The present invention relates to an oven cavity (10) for a cook-ing oven. The oven cavity (10) comprises a cavity wall (12) en-closing an interior space (14) of said oven cavity (10). The cavity wall (12) includes two side walls, a top wall, a bottom wall and a rear wall. The cavity wall (12) is enclosed by at least one insulating layer (20). At least one air spacer (18) is arranged between the insulating layer (20) and at least one cor-responding wall of the cavity wall (12). The air spacer (18) is aligned at the corresponding wall of the cavity wall (12). The air spacer (18) includes at least one plane portion (22) ar-ranged parallel to the corresponding wall of the cavity wall (12). At least one air chamber (16) is formed between the air spacer (18) and the corresponding wall of the cav-ity wall (12).

FIG 1



Description

[0001] The present invention relates to an oven cavity for a cooking oven. Further, the present invention relates to a cooking oven including at least one oven cavity.

[0002] An oven cavity of a cooking oven is usually wrapped by an insulating layer. Said insulating layer keeps the thermal energy inside the oven cavity on the one hand and allows a low temperature outside the oven cavity on the other hand. However, the insulating layer requires a lot of material. Further, the insulating layer increases the volume of the oven cavity, so that a lot of space is required.

[0003] It is an object of the present invention to provide an oven cavity for a cooking oven, which comprises an improved insulation by low complexity.

[0004] The object is achieved by an oven cavity for a cooking oven according to claim 1.

[0005] According to the present invention an oven cavity for a cooking oven is provided, wherein:

- the oven cavity comprises a cavity wall enclosing an interior space of said oven cavity,
- the cavity wall includes two side walls, a top wall, a bottom wall and a rear wall,
- the cavity wall is enclosed by at least one insulating layer,
- at least one air spacer is arranged between the insulating layer and at least one corresponding wall of the cavity wall,
- the air spacer is aligned at the corresponding wall of the cavity wall,
- the air spacer includes at least one plane portion arranged parallel to the corresponding wall of the cavity wall, and
- at least one air chamber is formed between the air spacer and the corresponding wall of the cavity wall.

[0006] The core of the present invention is the air chamber with static air between the cavity wall and the insulating layer. Static air is a very good insulating material and improves the thermal insulation of the oven cavity by low complexity.

[0007] Preferably, at least one air spacer is arranged at each side wall of the cavity wall.

[0008] In particular, the at least one air spacer extends over a complete plane portion of the corresponding wall of the cavity wall.

[0009] Further, the air spacer may include at least one flange enclosing the plane portion of said air spacer, wherein preferably said flange extends perpendicular to the plane portion of the air spacer.

[0010] For example, the air spacer is formed as a shell. Moreover, the air spacer may be formed as a single-piece part.

[0011] Additionally, the air spacer includes one or more spacer elements extending from the plane portion of said air spacer towards the corresponding wall of the cavity

wall. The spacer elements ensure the desired distance between the spacer element and the cavity wall. Preferably, the one or more spacer elements have the same height as the flange.

[0012] Furthermore, at least one spacer element may be an embossment in the plane portion of the air spacer, wherein preferably the contact surface between the spacer elements and the corresponding wall of the cavity wall is minimised.

[0013] For example, the air spacer is made of aluminium, wherein preferably edges of the air spacer carry a sealing made of material having low heat conductivity and being in contact to the corresponding wall of the cavity wall.

[0014] Alternatively, the air spacer is made of a dielectric or non-metallic material, wherein said air spacer is coated by a reflective aluminium layer directed towards and/or away from the corresponding wall of the cavity wall, and wherein preferably edges of the air spacer carry a sealing made of material having low heat conductivity and being in contact to the corresponding wall of the cavity wall.

[0015] Moreover, the air spacer may be made of a compressed insulating material, wherein preferably edges of the air spacer are in direct contact to the corresponding wall of the cavity wall.

[0016] Further, the air spacer may be made of a synthetic material, wherein preferably edges of the air spacer are in direct contact to the corresponding wall of the cavity wall.

[0017] In particular, the insulating layer is made of a conventional insulating, preferably stone wall.

[0018] Further, the present invention relates to a cooking oven comprising at least one oven cavity mentioned above.

[0019] Novel and inventive features of the present invention are set forth in the appended claims.

[0020] The present invention will be described in further detail with reference to the drawing, in which

FIG 1 illustrates a schematic partial sectional view of a side wall of an oven cavity according to a preferred embodiment of the present invention,

FIG 2 illustrates a schematic perspective view of the oven cavity according to the preferred embodiment of the present invention,

FIG 3 illustrates a schematic sectional perspective view of an air spacer at the lateral cavity wall of the oven cavity according to the preferred embodiment of the present invention, and

FIG 4 illustrates a schematic detailed sectional perspective view of the air spacer at the lateral cavity wall of the oven cavity according to the preferred embodiment of the present invention.

[0021] FIG 1 illustrates a schematic partial sectional view of a side wall of an oven cavity 12 according to a preferred embodiment of the present invention.

[0022] The oven cavity 10 comprises a cavity wall 12 enclosing an interior space 14 of the oven cavity 10. Usually, the cavity wall 12 includes two side walls, a top wall, a bottom wall and a rear wall. In this example, a partial sectional view of the side wall is shown. The cavity wall 12 is enclosed by an insulating layer 20.

[0023] An air chamber 16 is arranged between the cavity wall 12 and the insulating layer 20. The air chamber 16 is formed by an air spacer 18. The air spacer 18 includes a plane portion 22 and a flange 24. Said flange 24 encloses the border of the plane portion 22. The flange 24 extends perpendicular to the plane portion 22. Further, the flange 24 extends from the plane portion 22 towards the cavity wall 12. In this example, all edges of the air spacer 18 are directed towards the cavity wall 12. Said edges form the open end of the flange 24. The plane portion 22 of the air spacer 18 is arranged parallel to the cavity wall 12. The air chamber 16 is enclosed by the plane portion 22 and flange 24 of the air spacer 18 on the one hand and by the cavity wall 12 on the other hand. The air spacer 18 is formed as a shell and covers a plane part of the cavity wall 12. Preferably, the part of the cavity wall 12 covered by the air spacer 18 is as large as possible. A flat air layer is formed at the outer side of the cavity wall 12.

[0024] The air chamber 16 provides static air between the cavity wall 12 and the insulating layer 20. Static air is a very good insulating material and improves the thermal insulation of the oven cavity 10 by low complexity. The air spacer 18 is tightly attached at the cavity wall 12, so that the air chamber 16 is airtight and the air in the air chamber 16 does not circulate.

[0025] Preferably, the air spacer 18 is made of aluminium. The air spacer 18 is as thin as possible in order to obtain a sufficient stiffness. The air spacer 18 may keep the insulating layer 20 at a distance from the cavity wall 12. In general, the air spacer 18 may be made of any suitable material. For example, the air spacer 18 is formed by compressed insulating material, e.g. stone wool. Further, the air spacer 18 may be formed of synthetic material. The insulating layer 20 is made of stone wool or another conventional insulating layer.

[0026] The air spacer 18 made of aluminium is heat resistant at temperatures of 450°C to 500°C. Such temperatures may occur during a pyrolytic cleaning operation. Further, the air spacer 18 made of aluminium reflects heat back to the oven cavity 10. Moreover, the air spacer 18 may be formed of a dielectric or non-metallic material and coated by a reflective aluminium layer directed towards and/or away from the oven cavity 10.

[0027] If the material of the air spacer 18 has low heat conductivity, then the edges of the air spacer 18 may directly contact the cavity wall 12. However, if the material of the air spacer 18 has high heat conductivity, then a sealing 28 made of a material with low heat conductivity

is arranged between the edges of the air spacer 18 and the cavity wall 12. In this case, the edges of the air spacer 18 may carry a sealing 28 made of the material with low heat conductivity. For example, the edges of the air spacer 18 carry a graphite gasket contacting the cavity wall 12.

[0028] Additionally, one or more spacer elements 26 may be arranged between the plane portion 22 of the air spacer 18 and the cavity wall 12. Preferably, the spacer elements 26 have the same heights as the flange 24 of the air spacer 18. The spacer elements 26 contribute to a sufficient stiffness of the air spacer 18, so that the desired distance between the plane portion 22 of the air spacer 18 and the cavity wall 12 is ensured. For example, the spacer elements 26 are embossments 26 in the plane portion 22 of the air spacer 18, wherein preferably the contact surface between the spacer elements 26 and the cavity wall 12 are minimised.

[0029] FIG 2 illustrates a schematic perspective view of the oven cavity 10 according to the preferred embodiment of the present invention. In this example, the air spacer 18 is attached at the both lateral cavity walls 12 of the oven cavity 10. In general, the air spacer 18 may be attached at the top cavity wall, the bottom cavity wall, the rear cavity wall and/or the lateral cavity walls 12 of the oven cavity 10. For clarity, the insulating layer 20 enclosing the oven cavity 10 is not shown in FIG 2. Said insulating layer 20 may partially or completely enclose the oven cavity 10.

[0030] The air spacer 18 includes the plane portion 22 and the flange 24, wherein said flange 24 encloses the border of the plane portion 22. Preferably, the air spacer 18 with the plane portion 22 and the flange 24 is formed as a single-piece part. The flange 24 extends perpendicular to the plane portion 22. Further, the flange 24 extends from the plane portion 22 towards the cavity wall 12. In this example, all edges of the air spacer 18 are directed towards the cavity wall 12. Said edges form the open end of the flange 24. The plane portion 22 of the air spacer 18 is arranged parallel to the cavity wall 12. The air chamber 16 is enclosed by the plane portion 22 and flange 24 of the air spacer 18 on the one hand and by the cavity wall 12 on the other hand. The air spacer 18 is formed as the shell and covers the planar part of the lateral cavity wall 12. Preferably, the part of the cavity wall 12 covered by the air spacer 18 is as large as possible. The flat air layer is formed at the outer side of the lateral cavity wall 12.

[0031] FIG 3 illustrates a schematic sectional perspective view of an air spacer 18 at the lateral cavity wall 12 of the oven cavity 10 according to the preferred embodiment of the present invention. For clarity, the insulating layer 20 enclosing partially or completely the oven cavity 10 is not shown in FIG 3.

[0032] The flange 24 encloses the border of the plane portion 22 and extends perpendicular to said plane portion 22. Further, the flange 24 extends from the plane portion 22 towards the cavity wall 12. In this example, all edges of the air spacer 18 are directed towards the cavity

wall 12, wherein said edges form the open end of the flange 24. The plane portion 22 of the air spacer 18 extends parallel to the lateral cavity wall 12. The air chamber 16 is enclosed by the plane portion 22 and flange 24 of the air spacer 18 on the one hand and by the cavity wall 12 on the other hand. The air spacer 18 is formed as the shell and covers the planar part of the lateral cavity wall 12. Preferably, the part of the cavity wall 12 covered by the air spacer 18 is as large as possible. The flat air layer is formed at the outer side of the lateral cavity wall 12.

[0033] In this example, the embossments 26 are formed in the plane portion 22 of the air spacer 18. Said embossments 26 act as spacer elements. The embossments 26 contribute to the sufficient stiffness of the air spacer 18, so that the desired distance between the plane portion 22 of the air spacer 18 and the cavity wall 12 is ensured.

[0034] FIG 4 illustrates a schematic detailed sectional perspective view of the air spacer 18 at the lateral cavity wall 12 of the oven cavity 10 according to the preferred embodiment of the present invention. For the purposes of clarity, the insulating layer 20 enclosing partially or completely the oven cavity 10 is not shown in FIG 4.

[0035] Preferably, the embossments 26 are formed in such a way that the contact surfaces between said embossments 26 and the cavity wall 12 are minimised. The small contact surface between the embossments 26 and the cavity wall 12 minimises the heat transfer from the cavity wall 12 to the plane portion 22 of the air spacer 18.

[0036] Further, a sealing 28 is arranged between the edges of the air spacer 18 and the cavity wall 12. The edges of the air spacer 18 are formed by the open end of the flange 24. The sealing 28 is made of material with low heat conductivity. For example, the sealing 28 is made of silicone or graphite. Alternatively, if the material of the air spacer 18 has low heat conductivity, then the edges of the air spacer 18 may directly contact the cavity wall 12.

[0037] The oven cavity 10 according to the present invention allows an improved thermal insulation by low complexity. The air spacer 18 has a simple structure and provides efficient heat insulation. The shape of the air spacer 18 allows a stable distance between the plane portion 22 of the air spacer 18 and the cavity wall 12.

[0038] Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawing, it is to be understood that the present invention is not limited to that precise embodiment, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

List of reference numerals

[0039]

10	oven cavity
12	cavity wall
14	interior space of the oven cavity
16	air chamber
18	air spacer
20	insulating layer
22	plane portion
24	flange
26	embossment
28	sealing

Claims

1. An oven cavity (10) for a cooking oven, wherein:
 - the oven cavity (10) comprises a cavity wall (12) enclosing an interior space (14) of said oven cavity (10),
 - the cavity wall (12) includes two side walls, a top wall, a bottom wall and a rear wall,
 - the cavity wall (12) is enclosed by at least one insulating layer (20),
 - at least one air spacer (18) is arranged between the insulating layer (20) and at least one corresponding wall of the cavity wall (12),
 - the air spacer (18) is aligned at the corresponding wall of the cavity wall (12),
 - the air spacer (18) includes at least one plane portion (22) arranged parallel to the corresponding wall of the cavity wall (12), and
 - at least one air chamber (16) is formed between the air spacer (18) and the corresponding wall of the cavity wall (12).
2. The oven cavity according to claim 1, **characterised in that** at least one air spacer (18) is arranged at each side wall of the cavity wall (12).
3. The oven cavity according to claim 1 or 2, **characterised in that** the at least one air spacer (18) extends over a complete plane portion of the corresponding wall of the cavity wall (12).
4. The oven cavity according to any one of the preceding claims, **characterised in that** the air spacer (18) includes at least one flange (24) enclosing the plane portion (22) of said air spacer (18), wherein preferably said flange (24) extends perpendicular to the plane portion (22) of the air spacer (18).
5. The oven cavity according to any one of the preceding claims, **characterised in that**

the air spacer (18) is formed as a shell.

6. The oven cavity according to any one of the preceding claims,
characterised in that
the air spacer (18) is formed as a single-piece part.

7. The oven cavity according to any one of the preceding claims,
characterised in that
the air spacer (18) includes one or more spacer elements (26) extending from the plane portion (22) of said air spacer (18) towards the corresponding wall of the cavity wall (12).

8. The oven cavity according to claim 7 as far as related back to claim 4,
characterised in that
the one or more spacer elements (26) have the same height as the flange (24).

9. The oven cavity according to claim 7 or 8,
characterised in that
at least one spacer element (26) is an embossment (26) in the plane portion (22) of the air spacer (18), wherein preferably the contact surface between the spacer elements (26) and the corresponding wall of the cavity wall (12) is minimised.

10. The oven cavity according to any one of the preceding claims,
characterised in that
the air spacer (18) is made of aluminium, wherein preferably edges of the air spacer (18) carry a sealing (28) made of material having low heat conductivity and being in contact to the corresponding wall of the cavity wall (12).

11. The oven cavity according to any one of the claims 1 to 9,
characterised in that
the air spacer (18) is made of a dielectric or non-metallic material, wherein said air spacer (18) is coated by a reflective aluminium layer directed towards and/or away from the corresponding wall of the cavity wall (12), and wherein preferably edges of the air spacer (18) carry a sealing (28) made of material having low heat conductivity and being in contact to the corresponding wall of the cavity wall (12).

12. The oven cavity according to any one of the claims 1 to 9,
characterised in that
the air spacer (18) is made of a compressed insulating material, wherein preferably edges of the air spacer (18) are in direct contact to the corresponding wall of the cavity wall (12).

13. The oven cavity according to any one of the claims 1 to 9,

characterised in that

the air spacer (18) is made of a synthetic material, wherein preferably edges of the air spacer (18) are in direct contact to the corresponding wall of the cavity wall (12).

14. The oven cavity according to any one of the preceding claims,

characterised in that

the insulating layer (20) is made of a conventional insulating, preferably stone wall.

15. A cooking oven comprising at least one oven cavity (10),

characterised in that

the cooking oven comprises at least one oven cavity (10) according to any one the preceding claims.

FIG 1

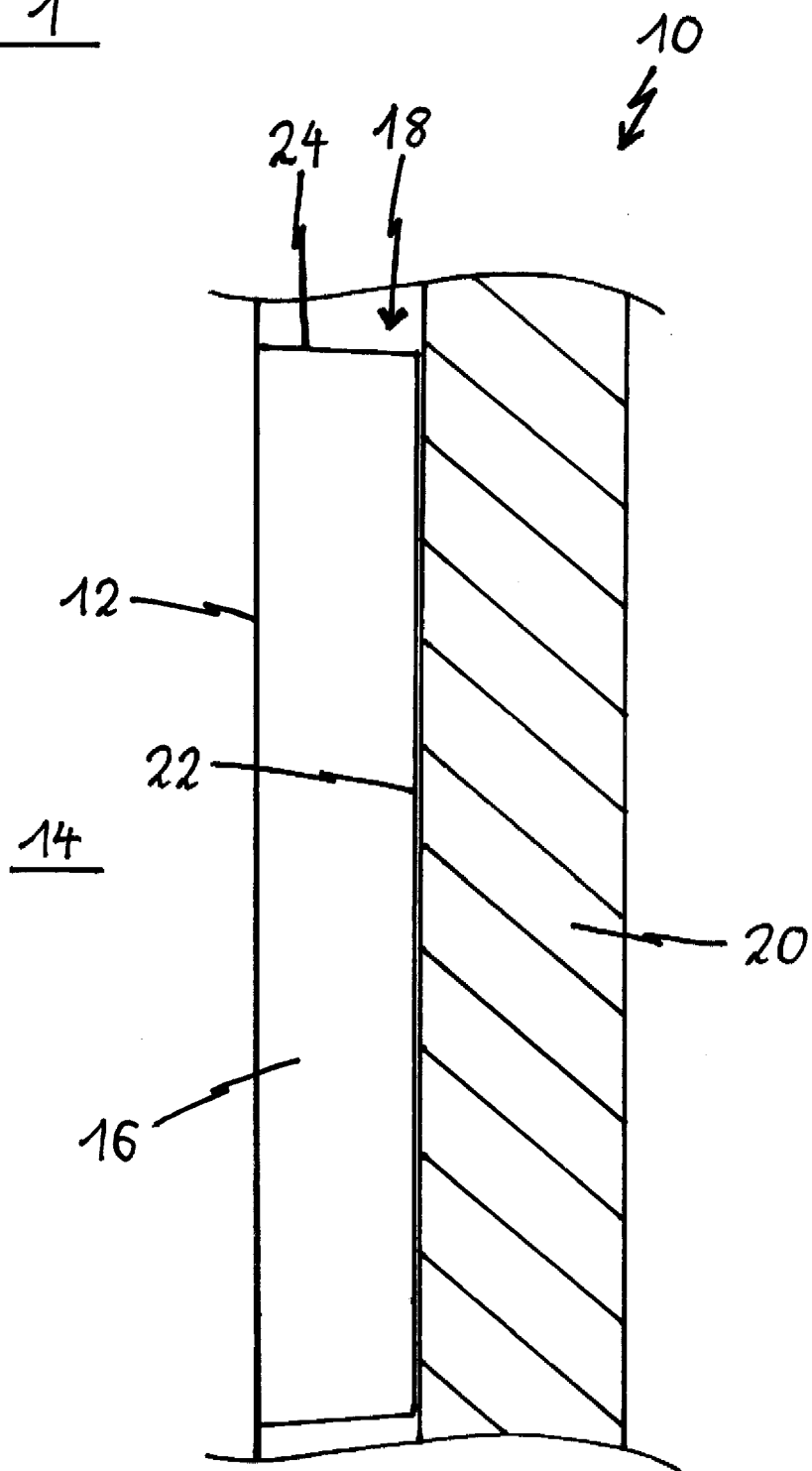


FIG 2

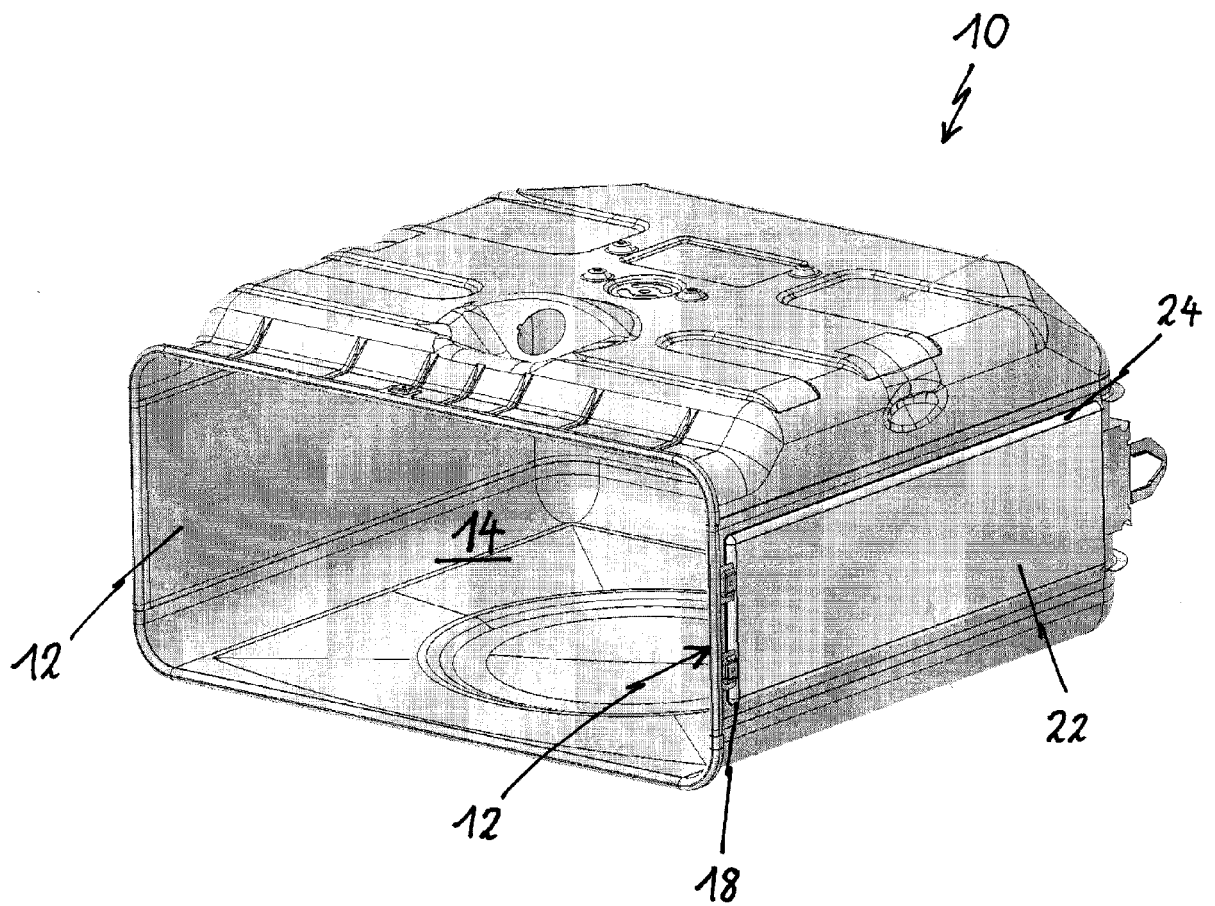


FIG 3

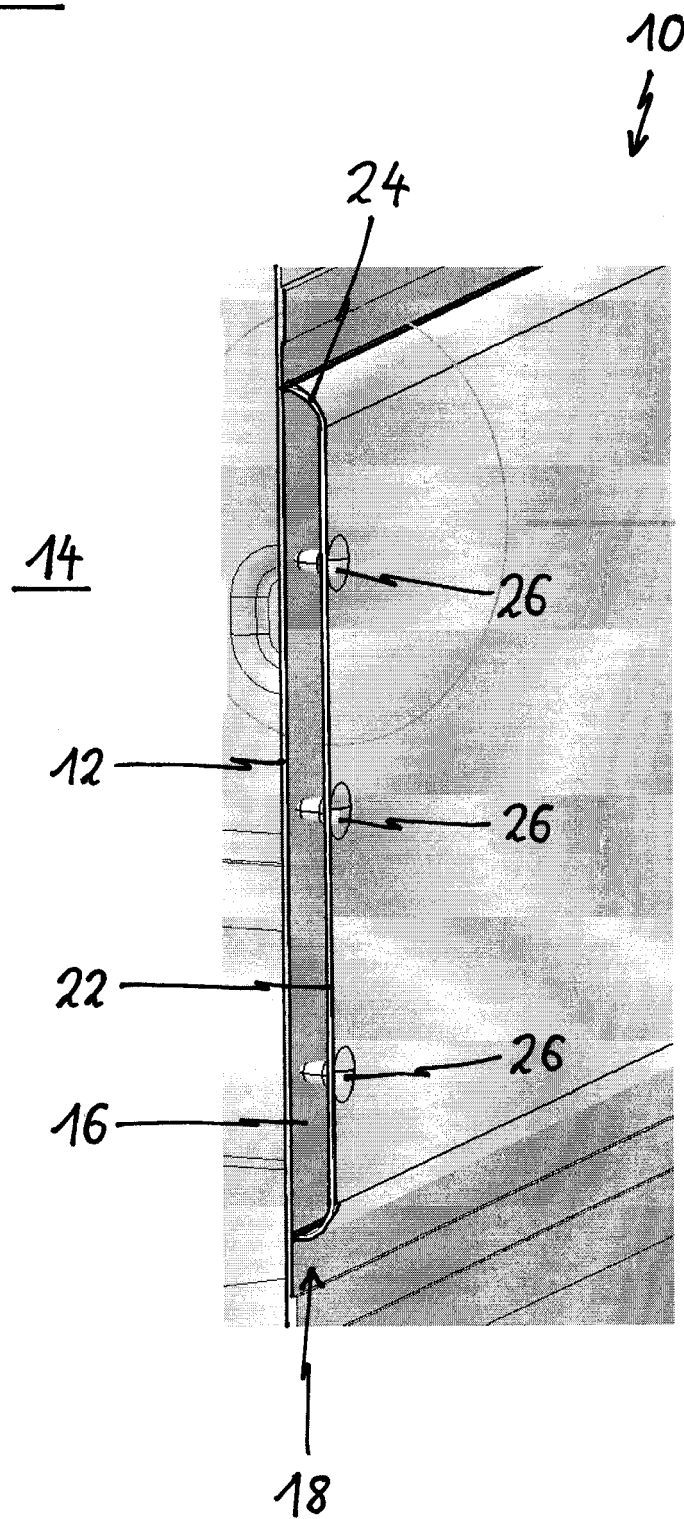
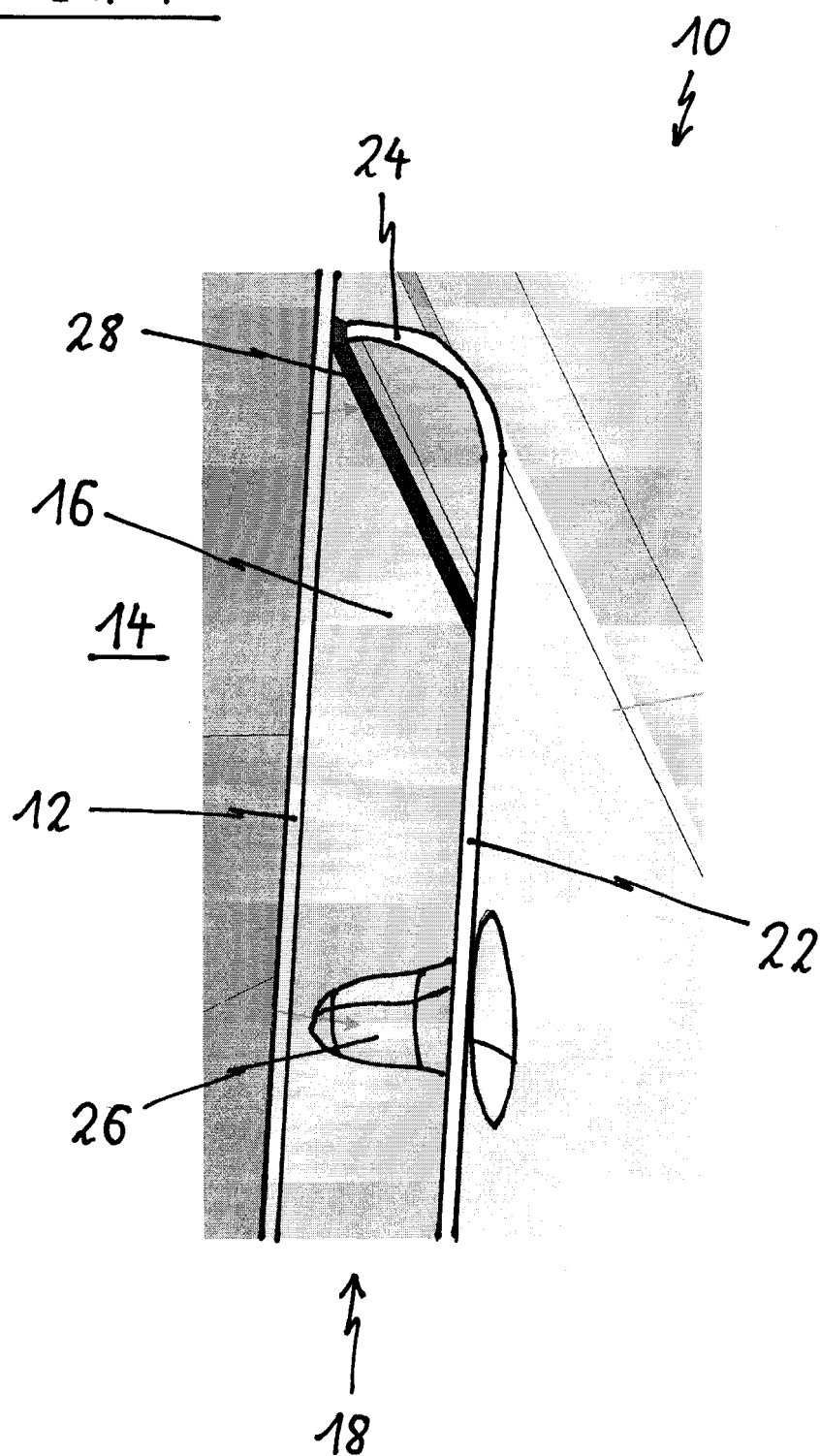


FIG 4





EUROPEAN SEARCH REPORT

 Application Number
 EP 16 20 2604

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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 11 May 2017	Examiner Moreno Rey, Marcos
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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11-05-2017

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