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(54) Cooling appliance having a panel coated with a sealing material

(57) The invention is a cooling appliance (1), having at least one panel (12) made of a material based on plastic so as to form a thermally insulated body. The cooling

appliance comprises a paper (2), covering at least a surface of the panels (12) of the cooling appliance (1) and adjusted so as to be impermeable to air and humidity.

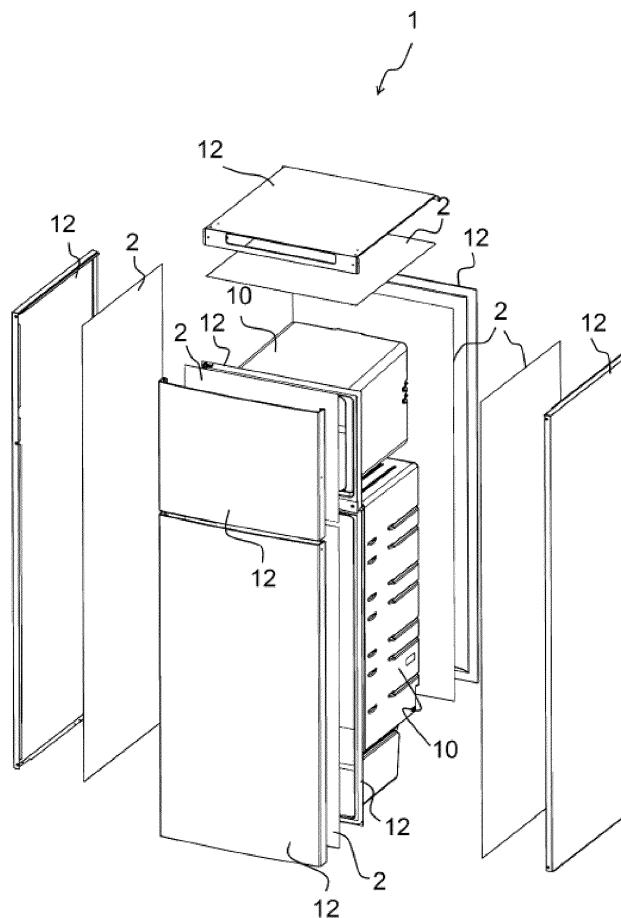


Figure 1

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Description

TECHNICAL FIELD

[0001] The invention relates to cooling appliances in which there is provided a panel or an insulating layer between the panels.

STATE OF THE ART

[0002] Cooling appliances generally comprise a cooling section and a freezing section. To form the bodies of the freezing and cooling sections of the cooling appliance, a respective inner basin and a respective outer shell that closes the inner basin from outside and is formed using panels, are produced in desired dimensions. The inner basins and the panels forming the outer shell are usually made of plastic material and its derivatives. There are some types of cooling appliances that are made metal materials.

[0003] To be able to insulate the freezing and cooling sections of the cooling appliance from the outer environment, a gap between the inner basin and the outer shells of the cooling appliance of the present technique is filled with polyurethane foam material. However, some additional materials are started to be used between the outer basin and the outer environment in order to be able to insulate humidity occurring with air and air convection.

[0004] One of them are given in the patent publication with the file number EP2279967. A structure existing in the present technique is an insulated container. The insulated container comprises a container opening that can be locked with a door, and a lower part, an insulation body with a hollow receptacle and an outer wall surrounding the insulation body. The outer wall in the region of the lateral wall of the container is transparent or translucent. An intermediate layer is provided, that is made of plastic or paper, wooden material, natural fiber, natural products or textile material.

SHORT DESCRIPTION OF THE INVENTION

[0005] The objective of the invention is to insulate panels made of a material based on plastic and forming the outer shell of the cooling appliance, such that air and humidity transitions from the outer environment are prevented.

[0006] In order to realize all the objectives explained above that will come out of the detailed description below, the present invention is a cooling appliance, having at least one panel made of a material based on plastic so as to form a thermally insulated body. The cooling appliance comprises a paper, covering at least a surface of the panels of the cooling appliance and adjusted so as to be impermeable to air and humidity. Thereby panels made of a material based on plastic are insulated such that air and humidity transitions from the outer environment are prevented.

[0007] In a configuration of the invention, the paper comprises a wax layer covering at least a surface of the paper in a manner providing its sealing. Thereby a paper is presented having a wax layer having the characteristics of air and water-humidity impermeability of the wax made of paraffin.

[0008] In another configuration of the invention, it comprises a paper that forms the outer shell of the thermally insulated body and has a wax layer in a manner covering entirely the inner faces of the panels positioned in its front, back, lateral and upper sides. Thereby an outer shell is provided preventing air and humidity transitions.

[0009] In another configuration of the invention, both faces of the paper covering the inner face of the outer shell comprise a wax layer. Thereby sealing against air and humidity transitions in the outer shell of the thermally insulated body is improved.

[0010] In another configuration of the invention, it comprises a paper having a wax layer such that it covers entirely the outer face of the inner basin of the thermally insulated body. Thereby an inner basin is obtained preventing air and humidity transitions.

[0011] In another configuration of the invention, both faces of the paper comprise a wax layer. Thereby sealing transitions in the inner basin of the thermally insulated body against air and humidity.

[0012] In order to realize all the objectives explained above that will come out of the detailed description below, the present invention is a method of producing a cooling appliance so as to form a thermally insulated body. It comprises the production method step of coating the panels based on plastic that form the thermally insulated body, with the paper having the waxy layer providing impermeability to air and humidity. Thereby the panels made of a material based on plastic are insulated so as to prevent air and humidity transitions from the outer environment.

[0013] In another configuration of the invention, it comprises the production method step of applying a silicone adhesive on the panels and subsequently coating by wax impregnating method with the paper having the waxy layer. Thereby, the paper will be fixed on the panel.

[0014] In another configuration of the invention, the wax impregnated in at least one surface of the paper comprises paraffin. Thereby, a non-permeable paper is obtained using the chemical and physical characteristics of the paraffin.

[0015] In another configuration of the invention, a waxy layer is obtained, which thickness is millimetrically improved by a method of impregnating and setting the wax on the paper more than once. Thereby, it is provided for the reinforcement of the necessary saturation and strength but also sealing.

SHORT DESCRIPTION OF THE FIGURES

[0016]

Figure 1 is a perspective front view of a cooling appliance subject of the invention with a paper with a characteristic providing sealing, in which its panels forming an outer shell and also the inner basins are in a demounted state.

Figure 2a is a view of the layers of a paper having on one side a waxy layer subject of the invention providing sealing.

Figure 2b is a view of the layers of a paper having on both sides respectively one waxy layer subject of the invention providing sealing.

Figure 3 is a perspective front view of the cooling appliance, in which all its elements forming a thermally insulated body are in a mounted state.

Figure 4 is a view of the layers of a thermally insulated body of the cooling appliance, consisting respectively of layers of a panel, a paper, a polyurethane and an inner basin.

Figure 5 is a view of the layers of a thermally insulated body of the cooling appliance, consisting respectively of layers of a panel, a paper, a polyurethane and an inner basin and forming an alternative configuration of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] In this detailed description, the novelty subject of the invention is described in the light of the annexed figures with examples such that it does not create any limiting effect for the sole purpose of better understanding the subject. The present invention relates to a cooling appliance (1) having at least an inner basin (10) forming a receptacle providing for the storage of food, drink and other products in it, an outer shell (11) covering from outside the inner basin (10) in a manner providing a space between the inner basin (10) and itself and; a thermally insulated body provided with a polyurethane layer (3) in a manner filling the gap between the inner basin (10) and the outer shell (11) (figure 1, 3). In the present invention, the inner surfaces of a front, a back, two lateral and an upper panel (12) facing the polyurethane layer (3) constituting the outer shell (11) of the cooling appliance (1), are coated with a paper (2) that is sealingly adjusted (figure 1). A front face or both front and back faces of the paper (2) can have respectively one wax layer (20) (figure 2a, 2b).

[0018] The cooling appliance (1) has two inner basins (10) in different forms, an inner basin (10) forming a cooling compartment another inner basin (10) forming a freezing compartment. The inner basin (10) is constructed with a thermoform method from a panel (12) made of plastic or a plastic derivative in a defined mould shape. Likewise the front, back, upper and lateral panels (12)

constituting the outer shell (11) are also made of plastic or a plastic derivative material. The panels (12) are by themselves not completely non-permeable, because of the characteristics of the material based on plastic.

5 [0019] Figure 4 is a view of the layers of the thermally insulated body of the cooling appliance (1), composed respectively of a panel (12), a paper (2) with wax layers (20) providing sealing, a polyurethane layer (3) and layers of an inner basin (10). Figure 5 is a view of the layers of the thermally insulated body of the cooling appliance (1), constituting an alternative configuration of the invention and composed respectively of a panel (12), a polyurethane layer (3), a paper (2) with wax layers (20) providing sealing and layers of an inner basin (10).

15 [0020] In an alternative configuration of the invention, both the inner sides of the panels (12) and the outer side of the inner basin (10) can be coated with a paper (2) having a wax layer (20) on at least one side such that both sides face the polyurethane layer (3).

20 [0021] In a more detailed description, the operation of the invention is as follows. The paper (2) having at least a wax layer (20) on at least one side is obtained as follows; it is obtained by coating the paper (2) produced by any paper production method with hot paraffin melt and impregnating the paper (2) with paraffin until it becomes saturated. Through paraffining the paper (2) gains resistance against water, oil and water vapor. Even if the melting point differs with respect to the number of carbon atoms in different fractions, it is always low. Thus the melting point of the paraffin with the lowest molecular weight is 30°C. However the melting points of all types of paraffin varies between (43-65)°C. In temperatures of the cooling appliance (1) varying from 4°C to -18°C, the waxy layer (20) does not melt and is resistant.

35 [0022] As in figure 1, the inner parts of each of the panels (12) are entirely coated with papers (2) having wax layer(s) (20) so as to remain in a region between the panels (12) constituting an outer shell (11) of the cooling appliance (1) and the inner basin (10). The papers (2) are affixed to the inner sides of the panels (12) or the outer side of the inner basin (10) with a silicone adhesive. For the complete realization of the sealing, all the panels (12) are entirely coated with the paper (2) subject of the invention with impermeable characteristic such that there is no opening. Subsequently mounting of the panels (12) to front, lateral, back and upper sides of the cooling appliance (1) is realized so as to form the outer shell (11). After mounting, polyurethane foam that will form the polyurethane layer (3) is injected between the outer shell (11) and the inner basin (10).

50 [0023] In an execution of the invention, as in the figure 4, an inner surface of the panel (12) facing the inner basin (10) is entirely coated with the paper (2) having the wax layer (20). In an alternative configuration of the invention, to take more sealing measures, both inner sides of the panels (12) and outer surfaces of the inner basin (10) are entirely coated with the paper (2) having the wax layer (20), as in figure 2b. Thereby humidity with air and air

transitions resulting from the outer environment are completely prevented. In an alternative configuration of the invention, to reinforce the necessary saturation and strength but also sealing, the thickness of the wax layer (20) is millimetrically improved.

REFERENCE NUMBERS

[0024]

- 1. Cooling appliance
- 10. Inner basin
- 11. Outer shell
- 12. Panel
- 2. Paper
- 20. Wax layer
- 3. Polyurethane layer

Claims

1. Cooling appliance (1), having at least one panel (12) made of a material based on plastic so as to form a thermally insulated body, **characterised in that** it comprises a paper (2), covering at least one surface of the panels (12) of the cooling appliance (1) and adjusted so as to be impermeable to air and humidity.
2. Cooling appliance (1) according to claim 1, **characterised in that** it comprises a wax layer (20) covering at least one surface of the paper (2) in a manner providing the sealing of the paper (2).
3. Cooling appliance (1) according to anyone of the preceding claims, **characterised in that** it comprises a paper (2) that forms the outer shell (11) of the thermally insulated body and that has a wax layer (20) in a manner covering entirely the inner faces of the panels (12) positioned in its front, back, lateral and upper sides.
4. Cooling appliance (1) according to claim 3, **characterised in that** both faces of the paper (2) comprise a wax layer (20).
5. Cooling appliance according to anyone of the preceding claims, **characterised in that** it comprises a paper (2) having a wax layer (20) such that it covers entirely the outer face of the inner basin (10) of the thermally insulated body.
6. Cooling appliance (1) according to claim 5, **characterised in that** both faces of the paper (2) comprise a wax layer (20).
7. Method of producing a cooling appliance (1) so as to form a thermally insulated body, **characterised in that** it comprises the production method step of

coating the panels (12) based on plastic that form the thermally insulated body, with the paper (2) having the wax layer (20) providing impermeability to air and humidity.

8. Method of producing a cooling appliance according to claim 7, **characterised in that** it comprises the production method step of applying a silicon adhesive on the panels (12) and subsequently coating by wax impregnating method with the paper (2) having the waxy layer (20).
9. Method of producing a cooling appliance according to claim 7 and 8, **characterised in that** the wax impregnated to at least one surface of the paper (2) comprises paraffin.
10. Method of producing a cooling appliance (1) according to anyone of the preceding claims, **characterised in that** a waxy layer (20) is obtained, which thickness is millimetrically improved by a method of impregnating and setting the wax on the paper (2) more than once.

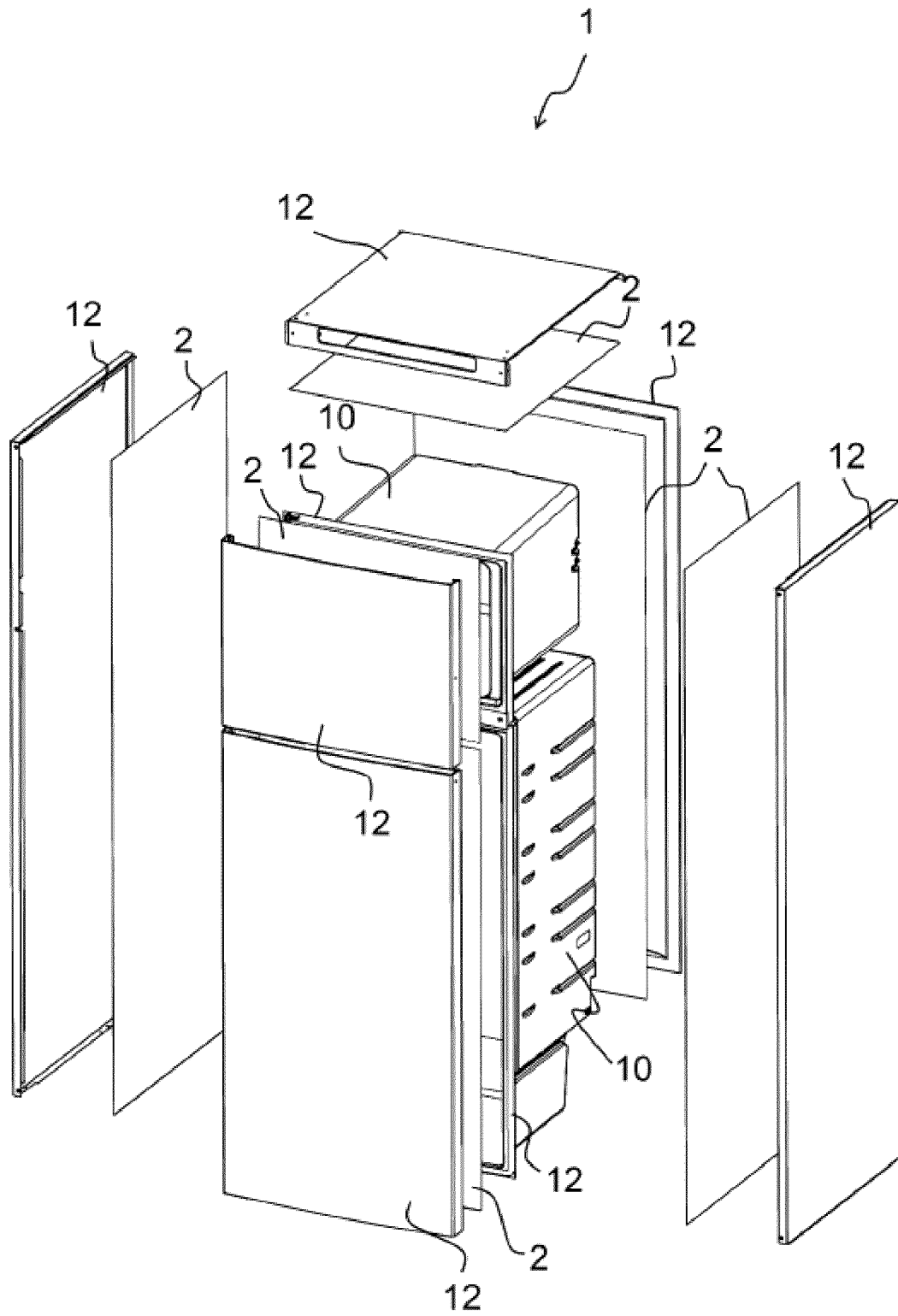


Figure 1

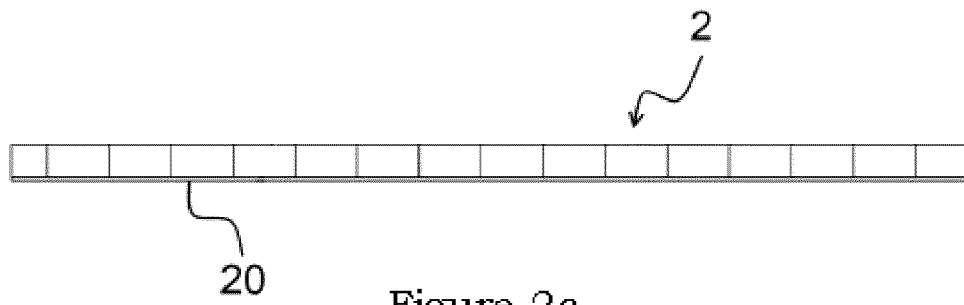


Figure 2a

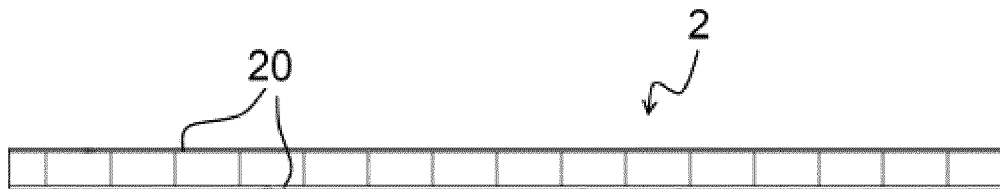


Figure 2b



Figure 3

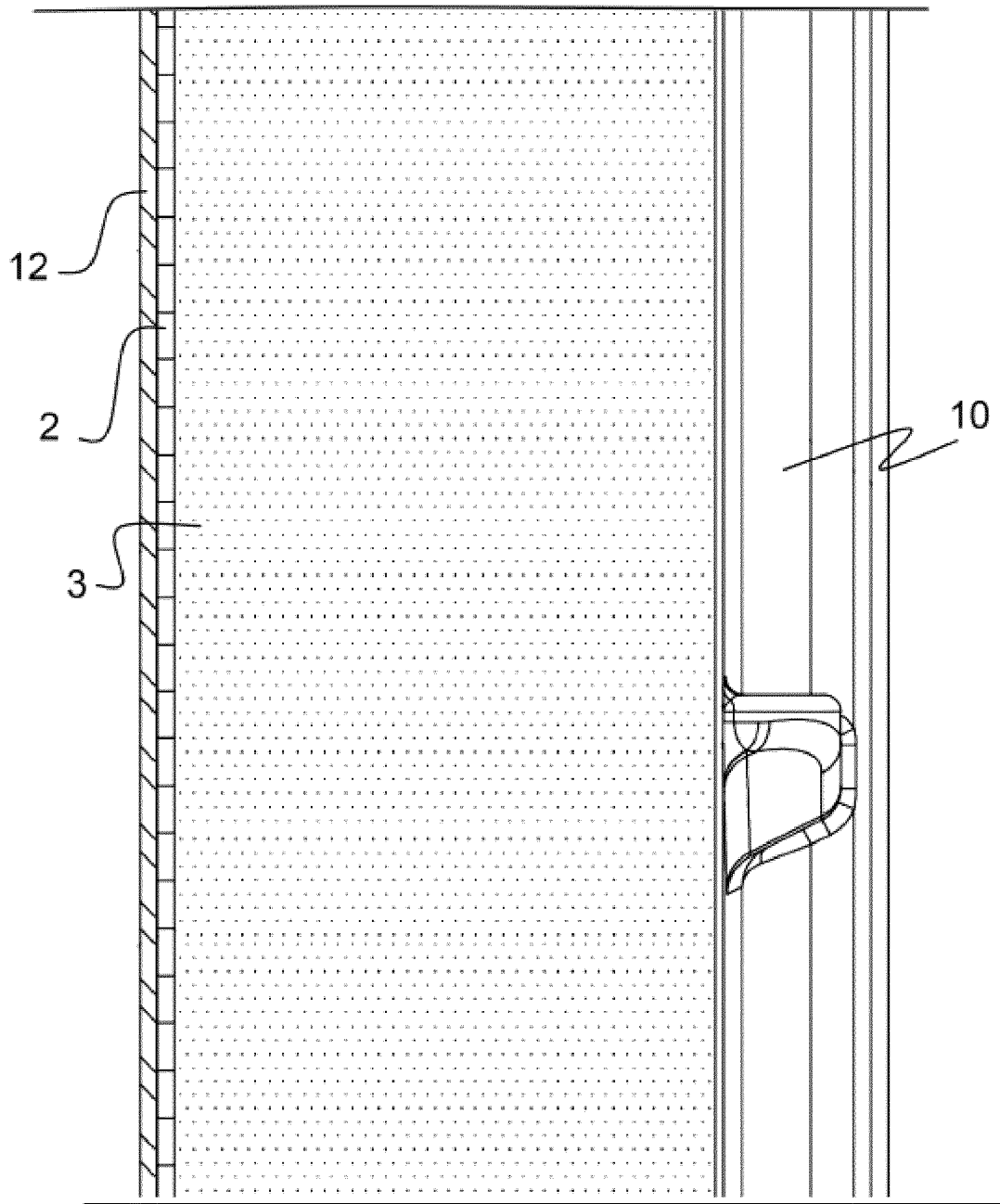


Figure 4

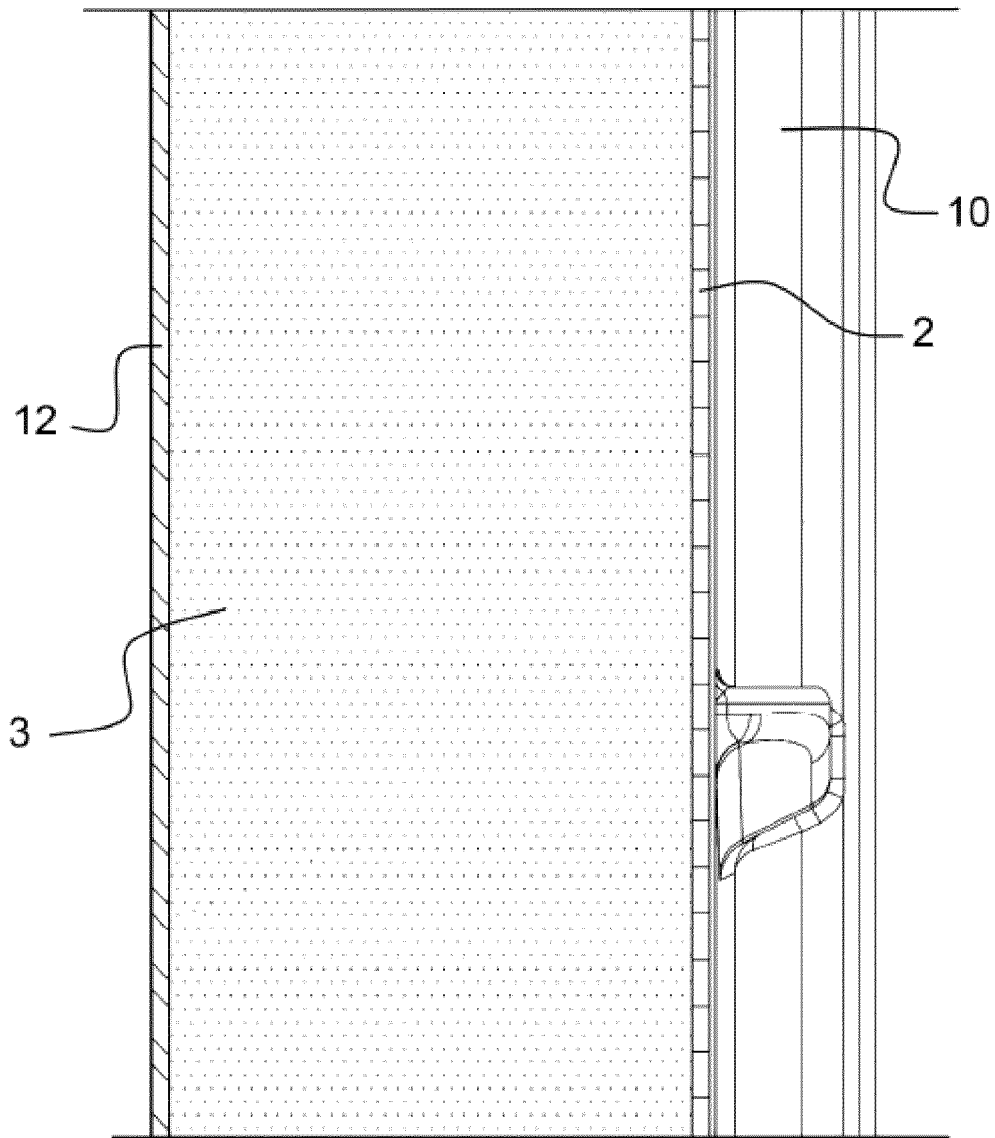


Figure 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2279967 A [0004]