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(71) Applicant: **BSH Bosch und Siemens Hausgeräte GmbH**
81739 München (DE)

(72) Inventors:
• **Dagci, Özkan**
59600 Tekirdag (TR)
• **Kara, Caner**
59850 Tekirdag (TR)
• **Özsoy, Yalcin**
59510 Cerkezköy (TR)

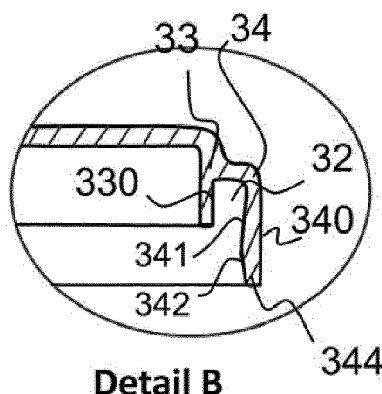
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(54) **A cooling device having a tank with a cover**

(57) A cooling device (1) comprising a heat insulating body (10); a door (11) hinged to the body (10); a dispenser (2) adapted to an inner wall (110) of the door (11), having a cover (3) with an upper part (30) fixing to a mouth part (200) of a tank (20) of the dispenser (2) and a peripheral snap-on part (31) integrated with the upper part (30). The snap-on part (31) of the cover (3) interlaced to the peripheral mouth part (200) of the tank (20) in a manner to

provide sealing comprises a peripheral inner wall (33), a peripheral outer wall (34) formed parallel to the peripheral inner wall (33) and having a declining slope surface (342) and a rising slope surface (341) providing to hold to the mouth part (200), and a snap-on gap (32) formed between the peripheral inner wall (33) and the peripheral outer wall (34).

Fig. 1



Description

TECHNICAL FIELD

[0001] The present invention relates to a cooling device having a container like a tank or a dispenser having a delivery outlet with a cover being disposed in a sealed manner, which may be filled in with liquids or solid goods mixed with liquids.

PRIOR ART

[0002] Cooling devices comprises a plurality of compartments usually in the form of a freezer and/or a cooling part. The cooling part delays deterioration of the beverages and food contained so that they remain good longer. The freezer part maintains the temperature at zero degree or lower for maintaining the goods frozen.

[0003] In addition to these primary functions, features are added to cooling devices to make the same more practical. A long or short or a vertical or horizontal tank may be adapted to the inner side of the cooling device's door may in the form of a rack or a container. Hence, the area on the inner side of the cooling device's door may be utilized to store foods or beverages. Moreover, there exists cooling devices which have dispensers that allow delivery of water, beverages or icy water without having the need for opening the door. These may be delivered through a fluid valve of the dispenser. As the dispenser may be accessible from outside of the device door, delivery may be accomplished without opening the door. The dispenser is mounted on the inner part of the door such that it remains inside the cooling device. In this way, the dispenser is maintained inside the insulated compartment of the cooling device and water or the beverage contained can be cooled. The water from the dispenser may be delivered through a delivery channel connecting the inner wall and the outer wall of the door simply by way of opening a valve of the dispenser. An internal cavity and an external cavity are formed respectively on the inner and the outer sides of the door such that they are connected to each other through a delivery channel. A tank for containing water and a valve connection slot are located on the inner side of the door in a position to correspond to the delivery channel. The location of the cavity on the inner wall defines the fixed position of the dispenser. An external cavity is formed on the outer wall for access to the valve element. Both cavities on the door are located in a position which may be conveniently reached without having the need for a person to bend down. A tray is located on the bottom part of the external cavity of the door in a position underneath the valve element. Beverages or water may be filled in a glass once the glass is located on the tray and the valve is opened. As the tray is in the form of a grate, excess water spilling out of a glass may be accumulated in a part of the tray.

[0004] Dispensers contain a tank which might contain water or beverages along with water or ice. A filling open-

ing and a mouth part is needed for filling in dispensers. Once the filling procedure is completed, a cover is placed on the filling opening and the mouth part for avoiding ingress of undesired or foreign materials into the tank. Furthermore, the cover helps to preserve the temperature of the cooled beverage contained in the tank. Therefore, the cover helps to seal the tank in both aspects. A sealing element usually made of an elastic material like rubber is additionally located in between the cover and the mouth portion of the tank for a tight sealing. In some embodiments, the cover placed on the tank is made of an elastic material and an additional sealing element is not used. Embodiments may be exemplified in the prior art.

[0005] One such embodiment exists in JP8114374. The embodiment is introduced in the following way in its abstract. A device for cold and warm water; comprising an external container and a water containing tank located on top of said external container. Upper surfaces of the container and the tank are open. An upper plane is integral with the upper end of the container and has an edge extending inside and above the upper end. A sealing element is mounted on the inside below the edge and is tightly connected to the outer periphery of the tank. The periphery of a cover plate leans on the upper part of the sealing element and connecting portions are hidden out of the plane towards the edge.

[0006] Another embodiment is disclosed in patent no GB2457519. The embodiment is introduced in the following way in its abstract. An atmospheric water vapor vessel has a stainless steel container having side walls and a stainless steel tank located inside said side walls. A gap exists in between the side walls and the upper part of the water vapor vessel. A tray made of low heat conductivity plastic material is covers the gap existing in between the side walls and the upper part of the water vapor vessel in order to provide a water proof sealing element. The tray not only prevents water from the container from entering inside in order to avoid damage to the power and control unit located therein, but also prevents heat conduction from the water vapor vessel towards the outer surfaces of the container's side walls.

BRIEF DESCRIPTION OF THE INVENTION

[0007] An object of the present invention is to provide full sealing in between mouth portion of a cooling device tank made of a hard plastic and a cover likewise made of a hard plastic without the need for using an additional element.

[0008] In order to achieve the objects which were mentioned above and which will become evident hereinafter in the detailed description of the invention, the present invention relates to a cooling device comprising a heat insulating body, a door hinged to the body, a dispenser adapted to an inner wall of the door, said dispenser having a cover with an upper part fixing to a mouth part of a tank and a peripheral snap-on part integrated with the

upper part. The snap-on part of the cover interlaced to the peripheral mouth part of the tank in a manner to provide sealing comprises a peripheral inner wall, a peripheral outer wall formed parallel to the peripheral inner wall and having a declining slope surface and a rising slope surface providing to grip to the mouth part, and a snap-on gap formed between the peripheral inner wall and the peripheral outer wall. In this way, the cover can be tightly fit on the mouth part of the tank in an easy fit and remove manner and full sealing in between the cover and the mouth part is established without the need for using an additional element.

[0009] In an embodiment of the invention, the rising slope surface of the peripheral outer wall of the cover is extending towards a middle part from a top point of the snap-on part in a manner to increase the wall thickness of the peripheral outer wall. In a further embodiment of the invention, the declining slope surface of the peripheral outer wall of the cover is extending towards a tip part from a middle part of the snap-on part in a manner to decrease the wall thickness of the peripheral outer wall. In this way, the inner side of the outer wall's periphery is provided with surfaces fitting tightly to the mouth part of the tank. At the same time, the declining and inclining slope surfaces ensure that the cover can be removed easily.

[0010] In another embodiment of the invention, the outer side of the mouth part of the tank may be formed compatible with the rising and declining slope surfaces on the inner side of the peripheral outer wall. In this way, the outer side of the mouth part of the tank and the inner side of the peripheral outer wall of the cover can be locked to each other.

[0011] In another embodiment of the invention, the snap-on part of the cover is manufactured from a hard - non elastic plastic material. In another embodiment of the invention, the mouth part of the tank is manufactured from a hard - non elastic plastic material. Therefore, the impact resistance of the components of the dispenser are increased and further, use of a hard - non elastic plastic material fits well with the form of the dispenser from an aesthetic aspect. The dispenser provided this way is both visually and functionally enhanced.

[0012] In another embodiment of the invention, the peripheral inner wall of the cover comprises a plane surface striking with the mouth part of the tank. In this way, surface sealing among these is achieved.

[0013] In another embodiment of the invention, the peripheral outer wall of the cover comprises a plane surface at a side facing outwards. In this way, a smooth and aesthetic appearance is provided when the cover of the dispenser is looked from outside.

[0014] In another embodiment of the invention, the peripheral outer wall of the cover comprises an outward bended tab formed as outwardly in angle and providing to apply a force in a manner to provide the cover to open.

BRIEF DESCRIPTION OF FIGURES

[0015]

Figure 1 shows a perspective view of a cover according to the present invention.

A-A section, is a sectional view shown in Fig. 1.

Detail B stems from A-A section and is detailed view of peripheral section of the cover.

Figure 2 shows a perspective front view of a tank of a dispenser on that a cover according to the present invention is closed.

Figure 3 shows a two dimensional front view of a tank of a dispenser on that a cover according to the present invention is closed.

C-C section, is a sectional side view of the dispenser from Fig. 3.

Detail D, stems from C-C section and shows partial sectional view of the mouth part of the tank of the dispenser closed with a cover. In alternative embodiment I, mouth part of the tank sits fully in the snap-on gap of the cover. In alternative embodiment II, mouth part of the tank does not sit fully in the snap-on gap of the cover. The only structural difference in between them is the fact that mouth part of the tank in embodiment I is longer than that of embodiment II. Figure 4 shows a two dimensional view of the inner wall of the door of the cooling device.

E-E section is a longitudinal sectional view of a door having a dispenser according to the present invention as illustrated in Fig. 4.

Figure 5 is a perspective front view of a cooling device having a dispenser which is adapted on the inner side of device's door.

DETAILED DESCRIPTION OF THE INVENTION

[0016] The present invention relates to a cooling device (1) having a dispenser (2) which comprises a cover (3) that can be tightly fixed on the mouth part (200) of a tank (20). The mouth part (200) of the tank (20) of the dispenser (2) and the cover (3) are made of a hard plastic material.

[0017] Figure 1 shows a perspective view of a cover (3) according to the present invention. A-A section, is a sectional view shown in Fig. 1. Detail B stems from A-A section and is detailed view of peripheral snap-on part (31) of the cover (3). Figure 3 shows a two dimensional front view of a cover (3) according to the present invention closed on a tank (20) of a dispenser (2). C-C section is a sectional side view of the dispenser (2) from Fig. 3. As the tank (20) of the dispenser (2) is in the form of a rectangular prism, the cover (3) is also in the form of a rectangular prism in order to fit conveniently with the mouth part (200) of the tank (20). As shown in Figure 2, a guiding rail (201) is mounted on both sides of the tank (20) for fixing the dispenser (2) on the door (11) of the cooling device (1). A valve (22) is mounted on a delivery port

(202) formed on the lower part of the tank (20).

[0018] Detail D, stems from C-C section and shows partial sectional view of the mouth part (200) of the tank (20) of the dispenser (2) closed with a cover (3). In dispensers with a filter (210), the tank (20) comprises an internal tank (21). A filter (210) is located inside the internal tank (21). In alternative embodiment I given in Detail D, mouth part (200) of the tank (20) sits fully in the snap-on gap (32) of the cover (3). In alternative embodiment II, mouth part (200) of the tank (20) does not fill the snap-on gap (32) of the cover (3) in the longitudinal direction. The only structural difference in between the two is the fact that mouth part (200) of the tank (20) in embodiment I is longer than that of embodiment II. However, the cover (3) according to the present invention functions leak-proof in both embodiments based on the features to be mentioned below.

[0019] The snap system of the cover (3), designated as "snap-fit" can be seen in Figure 1, A-A section, Detail B and Detail D. In A-A section, the side walls of the cover (3) along its entire perimeter are formed by a peripheral inner wall (33) and a peripheral outer wall (34). The peripheral inner and outer walls (33, 34) are integral with the upper part (30) of the cover (3). A snap-on gap (32) is formed like a vacancy in between the peripheral inner wall (33) and the peripheral outer wall (34). The mouth part (200) of the tank (20) is located in the snap-on gap (32). The surface (330) of the peripheral inner wall (33) contacting with the mouth part (200) of the tank (20) is flat and forms a plane surface. As can be seen in Detail B, the peripheral inner wall (33) is shorter than the peripheral outer wall (34). The external surface of the peripheral outer wall (34) is a plane surface whereas the inner surface contacting the mouth part (200) of the tank (20) has a rising slope surface (341) from its starting portion towards its middle part and a declining slope surface (342) from the middle part towards the tip part (344). Both inner and outer surfaces of the mouth part (200) of the tank (20) are plane.

[0020] In Detail D, as can be seen in embodiments I and II, an outwardly bended tab (343) is formed on the peripheral outer wall (34) on a portion on one of the edges of the cover (3). In detail B, the sectional view was taken at a portion where the outwardly bent tab (343) did not exist.

[0021] Figure 4 shows a two dimensional view of the inner wall (110) of the door (11) of the cooling device (1). E-E section is a longitudinal sectional view of a door (11) having a dispenser (2) according to the present invention as illustrated in Figure 4. Figure 5 is a perspective front view of a cooling device (1) having a dispenser (2) which is adapted on the inner wall (110) of device's door (11). As can be seen in the drawings, the dispenser (2) is mounted on the inner wall (110) of the door (11) of the device (1). The door (11) is attached to the body of the cooling device (1) by a hinge for opening and closing. The dispenser (2) is mounted in an internal cavity (113) formed on the inner wall (110) through the guiding rails

(201). A support element (112) also exists for supporting the dispenser (2) from below of the tank (20), said element protruding from the lower portion of the internal cavity (110) on the inner wall (110). A valve (22) is used for receiving water or beverages from the dispenser (2). The valve (22) is located such that it is accessible through an external cavity (114) formed on the outer wall (111) of the door (11). In order to accomplish this, the valve (22) is passed through a delivery channel (115) starting from the inner cavity (113) towards the outer cavity (114) during assembly. Racks (12) are provided on the upper and lower parts of the dispenser (2) in order to provide efficient use of the area on the inner wall (110) of the door (11)

[0022] In a more specific description, the invention functions in the following manner. The cover (3) according to the present invention is mounted on the mouth part (200) of the tank (20) which forms the outermost part of the dispenser (2). Once mounted, the peripheral inner wall (33) of the cover is located inside of the mouth part (200) of the tank (20) whereas the peripheral outer wall (34) of the cover is located outside the mouth part (200) of the tank (20). The peripheral mouth part (200) of the tank (20) is located in the peripheral snap-on gap (32) of the cover (3). Both the internal and external surfaces of the mouth part (200) of the tank (20) are plane. In an alternative embodiment of the invention, the outer side of the mouth part (200) of the tank (20) is formed compatible with the rising and declining slope surfaces (341, 342) on the inner side of the peripheral outer wall (34) as female for the former and male for the latter such that they can be locked to each other (not shown in the appended drawings). In an embodiment given in the appended drawings, the outer side of the mouth part (200) of the tank (20) has a tight fit connection "snap-fit" with the inner side of the peripheral outer wall (34). The rising slope surface (341) and the declining slope surface (342) formed on the inner side of the peripheral outer wall (34) ensures that cover (3) fits tightly without the use of a gasket or an additional similar sealing element. Along the entire periphery of the peripheral outer wall (34), the wall thickness increases from the top point towards the middle part such that a rising slope surface (341) is maintained and the wall thickness decreases from the middle part towards to lip portion (344) so as to maintain a declining slope surface (342). In this way, a liquid proof connection is established in between peripheral snap-on part (31) of the cover (3) and the mouth part (200) of the tank (20), both of which are manufactured from a hard plastic material. The outwardly bended tab (343) which is formed on a portion of one of the edges of the peripheral outer wall (34) is used when the cover (3) is intended to be removed. Once a person puts his or her nails in between a gap (not shown) formed between the outer side of the tank (20) and the outwardly bended tab (343), the cover (3) can be removed from the tank (20) as the person pulls the outwardly bended tab (343) upwardly towards himself or herself. The cover (3) can be snap-fit onto the

mouth part (200) of the tank (20) once the tank (20) and/or the internal tank (21) is filled.

REFERENCE NUMERALS

[0023]

1	cooling device
10	body
11	door
110	inner wall
111	outer wall
112	support element
113	internal cavity
114	external cavity
115	delivery channel
12	rack
2	dispenser
20	tank
200	mouth part
201	guiding rail
202	delivery port
21	internal tank
210	filter
22	valve
3	cover
30	upper part
31	snap-on part
32	snap-on gap
33	peripheral inner wall
330	plane surface
34	peripheral outer wall
340	plane surface
341	rising slope surface
342	declining slope surface
343	outward bended tab
344	lip portion

Claims

1. A cooling device (1) comprising a heat insulating body (10); a door (11) hinged to the body (10); a dispenser (2) adapted to an inner wall (110) of the door (11), having a cover (3) with an upper part (30) fixing to a mouth part (200) of a tank (20) of the dispenser (2) and a peripheral snap-on part (31) integrated with the upper part (30) **characterized in that** the snap-on part (31) of the cover (3) interlaced to the peripheral mouth part (200) of the tank (20) in a manner to provide sealing comprises a peripheral inner wall (33), a peripheral outer wall (34) formed parallel to the peripheral inner wall (33) and having a declining slope surface (342) and a rising slope surface (341) providing to grip to the mouth part (200), and a snap-on gap (32) formed between the peripheral inner wall (33) and the peripheral outer wall (34).

2. A cooling device (1) according to claim 1, wherein the rising slope surface (341) of the peripheral outer wall (34) of the cover (3) is extending towards a middle part from a top point of the snap-on part (31) in a manner to increase the wall thickness of the peripheral outer wall (34).
3. A cooling device (1) according to any of the preceding claims, wherein the declining slope surface (342) of the peripheral outer wall (34) of the cover (3) is extending towards a tip part (344) from a middle part of the snap-on part (31) in a manner to decrease the wall thickness of the peripheral outer wall (34).
4. A cooling device (1) according to claim 2 and 3, wherein the outer side of the mouth part (200) of the tank (20) is formed compatible with the rising and declining slope surfaces (341, 342) on the inner side of the peripheral outer wall (34).
5. A cooling device (1) according to any of the preceding claims, wherein the snap-on part (31) of the cover (3) is manufactured from a hard - non elastic plastic material.
6. A cooling device (1) according to any of the preceding claims, wherein the mouth part (200) of the tank (20) is manufactured from a hard - non elastic plastic material.
7. A cooling device (1) according to any of the preceding claims, wherein the peripheral inner wall (33) of the cover (3) comprises a plane surface (330) striking with the mouth part (200) of the tank (20).
8. A cooling device (1) according to any of the preceding claims, wherein the peripheral outer wall (34) of the cover (3) comprises a plane surface (340) at a side facing outwards.
9. A cooling device (1) according to any of the preceding claims, wherein the peripheral outer wall (34) of the cover (3) comprises an outward bended tab (343) formed as outwardly in angular and providing to apply a force in a manner to provide the cover (3) to open.

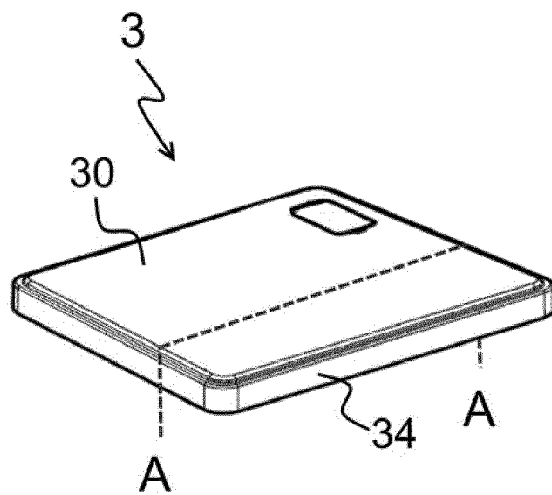


Fig. 1

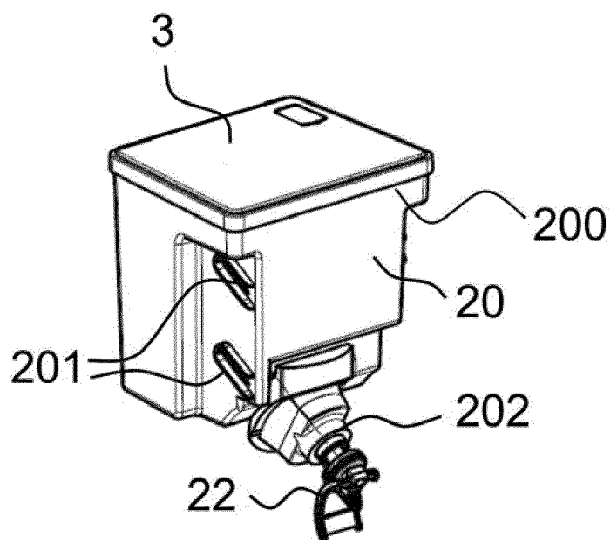
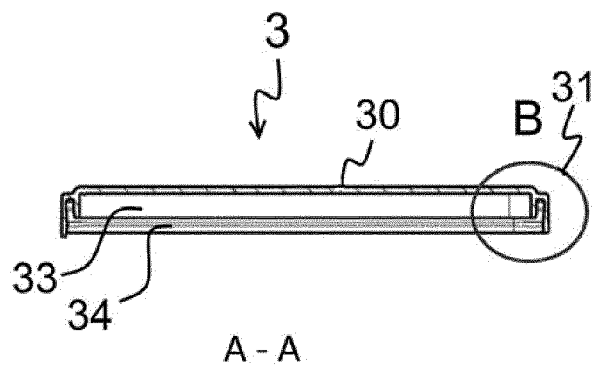
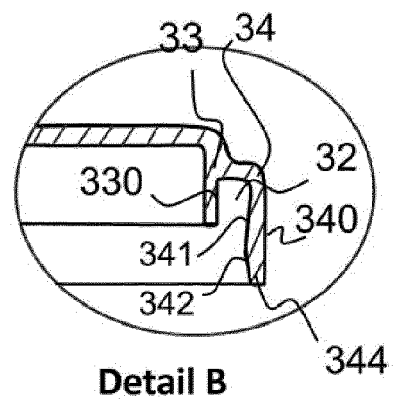


Fig. 2



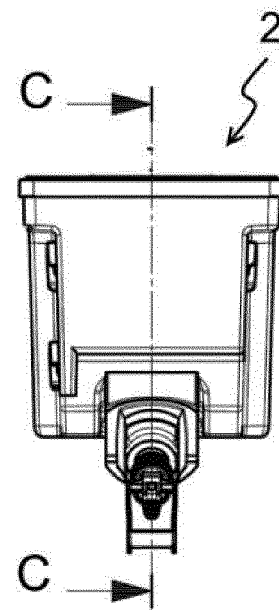
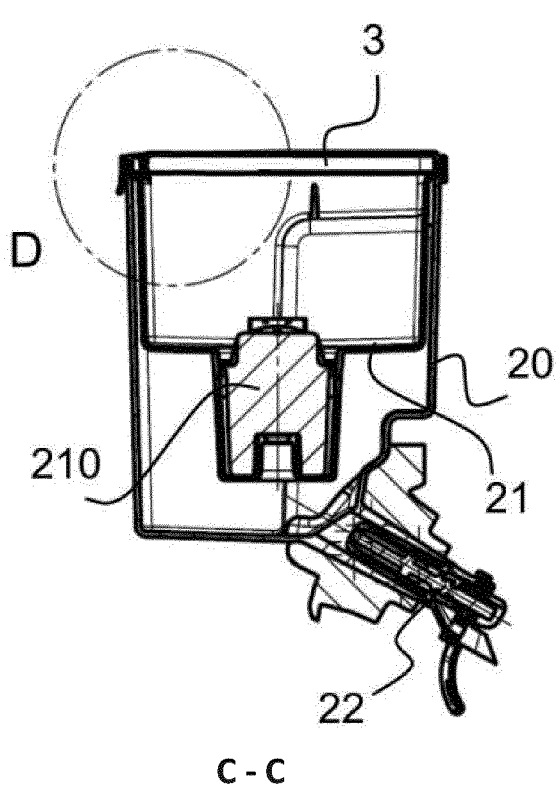
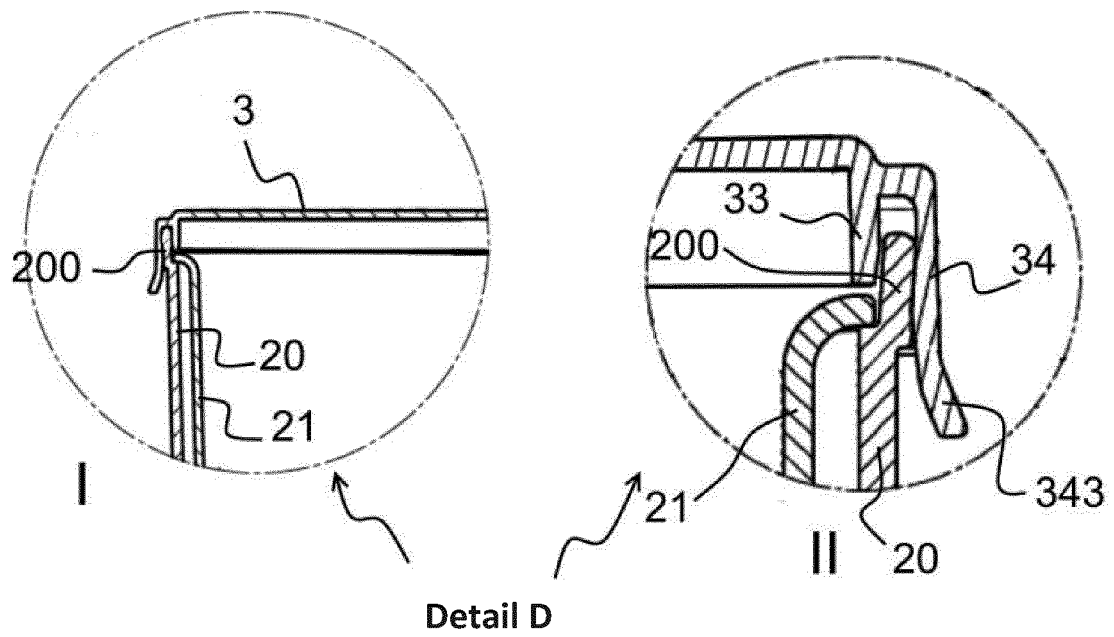


Fig. 3

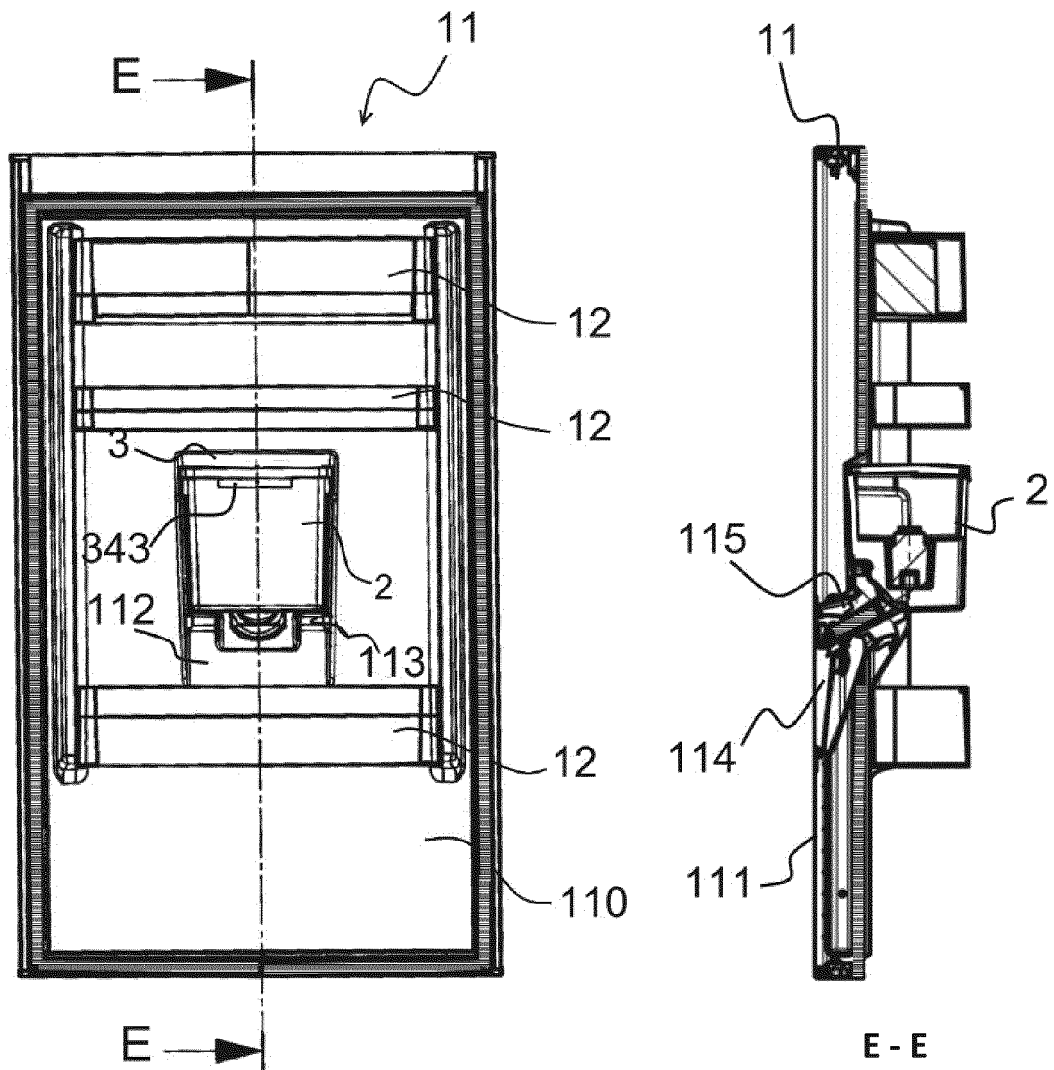


Fig. 4

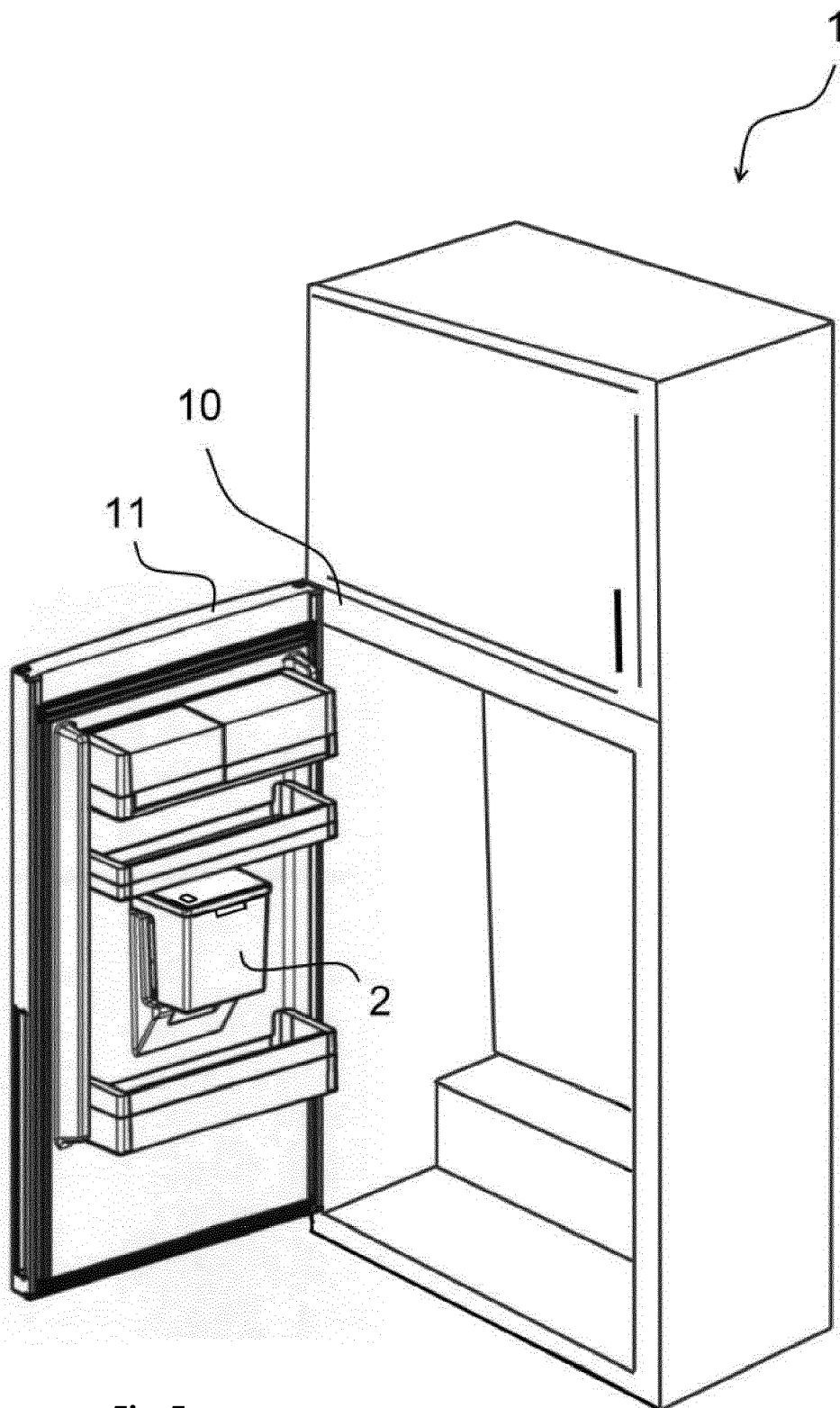


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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