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(54) **Cooling appliance having storage unit**

(57) The present invention provides a storage unit for use in a cooling appliance. The storage unit includes a plurality of walls (21-25, 3, 21'), an evacuable storage space (4) defined by the plurality of walls (21-25, 3, 21'),

and at least one reinforcing member (7-9, 7a, 7b, 7c) for reinforcing at least one of the walls (21-25, 3, 21'). According to the present invention, the at least one reinforcing member (7-9, 7a, 7b, 7c) is at least partially embedded in at least one of the walls (21-25, 3, 21')

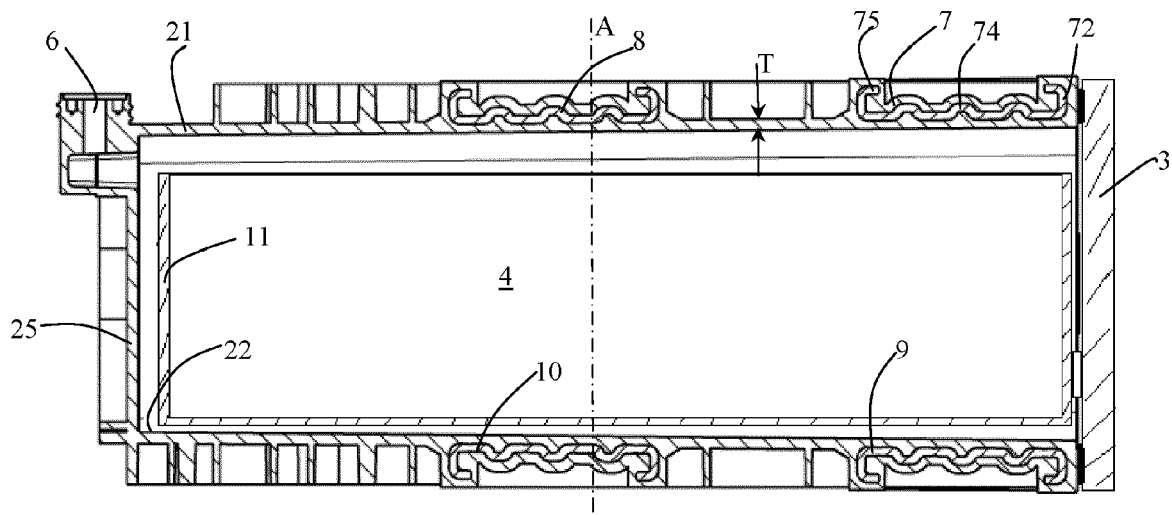


FIG. 3

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a cooling appliance, and more particularly to a cooling appliance having a low-pressure storage unit, for example, a refrigerator. The present invention also relates to a low-pressure storage unit for a cooling appliance.

Related Art

[0002] A cooling appliance capable of keeping articles in a low-pressure atmosphere is well known in the prior art. The cooling appliance usually has an evacuable storage chamber. The gas in the storage chamber is evacuated, so that the air content in the storage chamber decreases to reduce oxidation of foods, thereby extending food preservation time and improving food quality.

[0003] In a cooling appliance having an evacuable storage chamber (also called "low-pressure chamber" or "vacuum chamber") disclosed by Chinese Patent Application No. CN 1013243942 A, a main body of the low-pressure chamber having a food access port includes a box-shaped resin-made outer profile that forms the access port, and a metal-made plate-shaped component extending along a plurality of wall surfaces (including a bottom surface) of the outer profile, so that the metal-made plate-shaped component supports the easily deformable outer profile, so as to reduce deformation of the outer profile incurred by a pressure, thereby improving air tightness of the outer profile and a low-pressure chamber door at the access port.

[0004] US Patent No. 8,052,235 A discloses a storage unit having an evacuable chamber, the storage unit includes a plastic box integrally formed through injection molding, and an outer side of the box is provided with many plastic reinforcing ribs integrally formed through injection molding. The storage unit includes a reinforcing plate connected to outer sides of a top wall and a bottom wall of the box, so as to enhance intensity of the box. Due to different material properties, a large stress is incurred between the plastic box and the metal reinforcing plate which have a large gap therebetween, and even the plastic box may be damaged.

SUMMARY OF THE INVENTION

[0005] An object of the present invention is to provide a low-pressure storage unit which is advantageous for improving intensity and material cost efficiency thereof, and to provide a cooling appliance having such a storage unit.

[0006] The object may be achieved through features in the independent claims. Preferable embodiments of the present invention are the theme of the accompanying

drawings, specification, and dependent claims.

[0007] An aspect of the present invention is related to a storage unit for a cooling appliance. The storage unit includes a plurality of walls, an evacuable storage space defined by the plurality of walls, and at least one reinforcing member for reinforcing at least one of the walls. The at least one reinforcing member is at least partially embedded in at least one of the walls.

[0008] Therefore, on one hand, the reinforcing member and the standing wall of the storage unit may be closely joined, and a surface support relationship may be formed between the standing wall and the reinforcing member, which can significantly improve the reinforcing efficiency of the reinforcing member on the standing wall of the low-pressure storage unit, which is advantageous for reducing the stress between the reinforcing member and the standing wall, thereby enhancing resistance of the storage unit to deformation. On the other hand, as the reinforcing efficiency of the reinforcing member is improved, the material cost efficiency of the storage unit wall and the reinforcing member can be increased, and therefore it can be expected that the storage unit of the same or even higher intensity can be obtained while less material (the material of the reinforcing member and/or the material of the wall) is used.

[0009] According to a possible embodiment of the present invention, the plurality of walls forms a box and a cover wall, the box has an access port selectively closed and opened by the cover wall, and the at least one reinforcing member is at least partially embedded in at least one wall of the box.

[0010] According to a possible embodiment of the present invention, the plurality of walls includes at least one first wall and at least one second wall. The first wall has an area larger than that of the second wall, and the at least one reinforcing member is at least partially embedded in the at least one first wall.

[0011] According to a possible embodiment of the present invention, the at least one reinforcing member extends in the at least one wall along the entire width, height or depth of the storage space. Therefore, a part of the reinforcing member, for example, an end portion, may be supported by the wall connected to the at least one wall, so as to improve the reinforcing efficiency of the reinforcing member.

[0012] According to a possible embodiment of the present invention, the at least one wall is embedded with at least two reinforcing members spaced apart from one another. Therefore, smaller reinforcing members may be reasonably arranged on a wall where the stress is evenly distributed, so as to efficiently increase the intensity of different regions of the wall in a targeted manner.

[0013] According to a possible embodiment of the present invention, at least one reinforcing member is embedded in at least two of the walls.

[0014] According to a possible embodiment of the present invention, the plurality of walls is made of a first material, the at least one reinforcing member is made of

a second material, and the second material has a Young's modulus greater than that of the first material. The first material is preferably plastic, and the second material is preferably metal.

[0015] According to a possible embodiment of the present invention, the at least one reinforcing member is bar-shaped, box-shaped or net-shaped.

[0016] According to a possible embodiment of the present invention, the at least one reinforcing member is at least partially embedded in at least one wall close to the access port, and is adjacent to the access port.

[0017] According to a possible embodiment of the present invention, the at least one wall has a center line parallel to the access port, and at least one reinforcing member overlaps the center line.

[0018] According to a possible embodiment of the present invention, the at least one reinforcing member is completely sealed in the at least one wall.

[0019] According to another possible embodiment of the present invention, at least part of the reinforcement is exposed to outside of the at least one wall, which is advantageous for reducing stress between the reinforcement member and the wall, which stress for instance can be generated when the storage unit is placed in a cooled compartment.

[0020] In a possible embodiment, at least one end of the reinforcement member is exposed to outside of the at least one wall. As at least one end of the reinforcement member is exposed, i.e. at least part of the end of the reinforcement member is not within the wall, stress between the end of the reinforcement and the wall can be eliminated. Otherwise, as the stress at this area may make the wall covering the end portion that may have a sharp edge and/or angle, cracked. On the other hand, it is much easier to produce such storage unit as a tool can clamp the end portions of the reinforcement member during insert molding process of the storage unit.

[0021] According to a possible embodiment of the present invention, a cross section of the at least one reinforcing member has at least one L-shaped portion, and the L-shaped portion is buried in the at least one wall. Therefore, intensity of the reinforcing member and the storage unit can be enhanced.

[0022] According to a possible embodiment of the present invention, the at least one wall has a reinforcing rib protruding outwards from an outer surface thereof, and the L-shaped portion is at least partially embedded in the reinforcing rib.

[0023] According to a possible embodiment of the present invention, the at least one reinforcing member has at least one protruding rib, which is advantageous for increase of the intensity of the reinforcing member and increase of a bite force between the reinforcing member and the wall, thereby further increasing the intensity of the storage unit.

[0024] According to a possible embodiment of the present invention, the at least one reinforcing member has at least one through hole, and the through hole is

filled with the material of the at least one wall, which is advantageous for increase of the bite force between the reinforcing member and the wall, and is advantageous for reducing possibility of forming a gap between the reinforcing member and the wall.

[0025] Another aspect of the present invention is related to a cooling appliance including the storage unit according to any one of the above descriptions.

[0026] The structure, other object, and beneficial effects of the present invention will become more comprehensible through description of preferable embodiments with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] As a part of the specification and used for providing a further understanding of the present invention, the following accompanying drawings illustrate specific embodiments of the present invention and describe principles of the present invention together with the specification.

FIG. 1 is a schematic three-dimensional view of a cooling appliance according to a preferable embodiment of the present invention, where a door is not shown;

FIG. 2 is a schematic three-dimensional view of a box of a storage unit according to a preferable embodiment of the present invention;

FIG. 3 is a schematic sectional view of a storage unit cut along a center plane perpendicular to an access port of a box according to a preferable embodiment of the present invention;

FIG. 4 is a schematic three-dimensional view of a reinforcing member according to a preferable embodiment of the present invention;

FIG. 5 is a schematic partial three-dimensional view of a pretreated reinforcing member according to a preferable embodiment of the present invention, where an end portion of the reinforcing member has an encapsulation portion;

FIG. 6 is a schematic side view of a reinforcing member according to another preferable embodiment of the present invention;

FIG. 7 is a schematic side view of a reinforcing member according to another preferable embodiment of the present invention; and

FIG. 8 is a schematic partial sectional view of a storage unit according to another preferable embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0028] FIG. 1 is a three-dimensional view of a cooling appliance 100 according to a preferable embodiment of the present invention, where a door is not shown. As shown in FIG. 1, the cooling appliance 100 includes a thermally insulating main body 101 having a plurality of storage chambers 103, 104, and 105. The storage chambers 103, 104, and 105 may be selectively closed and opened by a corresponding thermally insulating door (not shown) connected to the main body 101.

[0029] The cooling appliance 100 includes a low-pressure storage unit 1 located in the storage chamber 104. The cooling appliance 100 may include an evacuation device (for example, a vacuum pump) in fluid communication with a storage space, so as to evacuate the sealed storage space of the low-pressure storage unit 1. In an alternative embodiment, the low-pressure storage unit 1 is manually depressurized by a user (for example, through an evacuating tool independent of the cooling appliance) before being stored in the cooling appliance 100, which is also acceptable.

[0030] Referring to FIG. 1 to FIG. 3, the low-pressure storage unit 1 includes a box 2 having one side provided with an access port 20, and a cover wall 3 for selectively opening or closing the access port 20.

[0031] The cover wall 3 may be connected to the box 2 by a pair of guide rails 5, so as to slide relative to the box 2. A tray 11 for storing food may be connected to a rear side of the cover wall 3. By pulling/drawing the cover wall 3, the tray 11 may be pushed into the box 2 or may be at least partially drawn out of the box 2.

[0032] The box 2 includes a top wall 21, a bottom wall 22, a left side wall 23, a right side wall 24, and a rear wall 25. The walls 21-25 together form a chamber having the access port 20. When the access port 20 is closed by the cover wall 3 in an airtight manner, the top wall 21, the bottom wall 22, the left side wall 23, the right side wall 24, and the rear wall 25 of the box 2, and the cover wall 3 together surround and form an evacuable storage space 4. In this embodiment, the shape of the storage space 4 is essentially determined by the box 2.

[0033] The top wall 21, the bottom wall 22, the left side wall 23, the right side wall 24, and the rear wall 25 are made of plastic. In a preferable embodiment, the top wall 21, the bottom wall 22, the left side wall 23, the right side wall 24, and the rear wall 25 are made of a polypropylene resin filled with a reinforcing additive. Preferably, the top wall 21, the bottom wall 22, the left side wall 23, the right side wall 24, and the rear wall 25 are made of a polypropylene resin (PP-TV 30) filled with 30% talcum powder.

[0034] The cover wall 3 may also be made of PP-TV30 or may be made of an ABS resin.

[0035] The box 2 may be integrally formed through injection, so that the top wall 21, the bottom wall 22, the left side wall 23, the right side wall 24, and the rear wall 25 form an integral structure.

[0036] The storage unit 1 includes an evacuating chan-

nel 6 for being connected to an evacuating device, and a gas-filling channel (not shown) for filling the evacuated storage space 4 with air. In an embodiment, the evacuating channel 6 is formed on the box 2, and the gas-filling channel may be formed on the cover wall 3.

[0037] The storage unit 1 is substantially of a flat structure. The top wall 21 and the bottom wall 22 opposite to one another each have a larger area than the other walls (the left side wall 23, the right side wall 24, the rear wall 25, and the cover wall 3).

[0038] When a pressure difference is incurred between the inside and the outside of the storage space 4 because the storage space 4 is evacuated, the walls (the walls 3 and 21-25) of the storage space 4 bear a pressure caused by the pressure difference. The storage unit 1 is provided with a plurality of reinforcing members 7, 8, 9, and 10 for increasing intensity of the storage unit 1, so as to prevent deformation of one or more walls of the evacuated storage unit 1 from being big enough to incur gas leakage to the storage space 4.

[0039] The reinforcing members 7, 8, 9, and 10 are respectively at least partially embedded in at least one wall of the storage unit 1. In this embodiment, the top wall 21 and the bottom wall 22 that have the largest area among the walls forming the outer profile of the storage unit 1 are respectively embedded with at least one reinforcing member 7, 8, 9, and 10.

[0040] A Young's modulus of a material made into the reinforcing members 7, 8, 9, and 10 is greater than a Young's modulus of a material made into the box 2, so as to improve resistance of the reinforcing members 7, 8, 9, and 10 to deformation. The reinforcing members 7, 8, 9, and 10 may be made of metal, for example, steel or iron.

[0041] The reinforcing members 7, 8, 9, and 10 may be embedded on the box 2 through an insert injection molding method. Specifically, before the box 2 is formed through injection molding, the reinforcing members 7, 8, 9, and 10 that are prepared in advance are disposed in a mold for forming the box 2, and then a material (for example, a resin) for forming the box 2 is injected, so that the melted material and the reinforcing members 7, 8, 9, and 10 acting as inserts are joined and cured, thereby forming an integral structure.

[0042] In the injection molding process in which the reinforcing members 7, 8, 9, and 10 are embedded in the box 2, the reinforcing members 7, 8, 9, and 10 acting as insert parts are fixed in the mold. For example, two ends of each of the reinforcing members 7, 8, 9, and 10 are positioned by a jig, and after injection molding of the box 2 is completed, the two ends of each of the reinforcing members 7, 8, 9, and 10 are exposed to the outside of the box 2.

[0043] Alternatively, each of the reinforcing members 7, 8, 9, and 10 can be completely sealed in a corresponding wall of the box 2. To achieve this, before the step of forming the box 2 by injection molding, the two ends of the reinforcing member 7, 8, 9, and 10 may be encapsu-

lated respectively in advance. For example, through the insert injection molding method, the two ends of the reinforcing member 7, 8, 9, and 10 are first at least partially embedded in a resin material, as shown in FIG. 5, and before being placed in the mold for forming the box 2 through injection molding, two ends of each of the reinforcing members 7, 8, 9, and 10 that acts as an insert are encapsulated by an encapsulation portion 75. In the insert injection molding process in which the reinforcing members 7, 8, 9, and 10 are embedded in the box 2, the jig clamps the encapsulation portion 75, so as to fix the reinforcing members 7, 8, 9, and 10.

[0044] In an alternative embodiment, by selecting a suitable mold structure, the reinforcing member 7, 8, 9, and 10 may also be completely sealed in a corresponding wall of the box 2 during the injection molding process of the box 2.

[0045] Because the melted material and the metal insert are joined, after the molding, a very large friction force and bite force are formed between the reinforcing member 7, 8, 9, and 10 and the corresponding wall of the box 2, so as to enable the storage unit 1 to achieve required reliability and intensity with less box material. In a preferable embodiment, for the storage unit 1 with a volume being 15 L, the thickness of the part of box 2 where is not provided with the reinforcing member 7, 8, 9, and 10, is about 4 millimeters.

[0046] In an alternative embodiment, the reinforcing member 7, 8, 9, and 10 may also be embedded on the corresponding wall of the box 2 through a press-in forming method. Specifically, after being heated, the reinforcing member 7, 8, 9, and 10 is embedded in a corresponding wall of the box 2 made of plastic.

[0047] The top wall 21, the bottom wall 22, the left side wall 23, the right side wall 24, and the rear wall 25 are integrally formed with many reinforcing ribs 28 protruding outwards from outer surfaces thereof. The reinforcing ribs 28 and the walls 21-25 are integrally formed by using the same material in the injection molding process.

[0048] Density distribution of the reinforcing ribs 28 on at least one of the top wall 21, the bottom wall 22, the left side wall 23, and the right side wall 24 is uneven. In an easily deformable region of the box 2, denser reinforcing ribs 28 are distributed, but in a region that is not deformed easily, less reinforcing ribs 28 are distributed, so that less material is used to form the box 2 while gas leakage incurred by the deformation of the box 2 is prevented.

[0049] For example, on the top wall 21 and the bottom wall 22, the density (mass) of the reinforcing ribs 28 near a center plane perpendicular to the access port 20 is greater than the density (mass) of the reinforcing ribs 28 in an edge region of the top wall 21 and the bottom wall 22. For another example, the density of the reinforcing ribs 28 in regions, close to the access port 20, of the left and right side walls 23 and 24 is greater than the density of reinforcing ribs 28 in regions, close to the rear wall 25, of the left and right side walls 23 and 24.

[0050] According to a preferable embodiment of the

present invention, one end, close to the access port, of the top wall 21 and one end, close to the access port, of the bottom wall 22 are embedded with a reinforcing member 7 and 9 respectively, so as to prevent failure of sealing between the box 2 and the cover wall 3 incurred by deformation of parts, close to the access port 20, of the top wall 21 and the bottom wall 22.

[0051] The top wall 21 and the bottom wall 22 each have a center line parallel to the access port. In this embodiment, the center lines of the top wall 21 and the bottom wall 22 are located in a same plane, and the plane is a center cross section A of the box 2.

[0052] At least one reinforcing member 8 and 10 longitudinally overlaps the center lines of the top wall 21 and the bottom wall 22, and at least partially intersects with the center cross section A-A.

[0053] Referring to FIG. 2 to FIG. 4, the reinforcing members 7, 8, 9, and 10 have the length not smaller than the transverse width of the storage space 4, and essentially extend in the top wall 21 or the bottom wall 22 along the entire width of the storage space 4. Therefore, the reinforcing member 7, 8, 9, and 10 has two ends each located at an edge on a corresponding side of the top wall 21 or the bottom wall 22 and overlapping the left side wall 23 and the right side wall 24 connected to the top wall 21 and the bottom wall 22 in a direction perpendicular to the top wall 21 or the bottom wall 22, so as to be supported on the left side wall 23 and the right side wall 24, which is advantageous for increasing the intensity of the box 2.

[0054] It should be understood that, according to different arrangements of the reinforcing member on the storage unit 1, the reinforcing member may also extend along the entire height or depth of the storage space 4.

[0055] The reinforcing members 7, 8, 9, and 10 may have the same shape. The structure of the reinforcing member according to a preferable embodiment of the present invention is described below in detail by using the reinforcing member 7 as an example.

[0056] As shown in FIG. 3 and FIG. 4, the reinforcing member 7 includes a substantially plate-like base plate 71 and a pair of leg portions 72 each extending from a corresponding side of the base plate 71 in a bent manner. The reinforcing member 7 has a constant cross section that is substantially U-shaped. An end of each leg portion 72 may have a flange 75.

[0057] Therefore, the cross section of the reinforcing member 7 has a plurality of L-shaped portions, for example, an L-shaped portion formed by the base plate 71 and each leg portion 72, and an L-shaped portion formed by each leg portion 72 and the corresponding flange 75.

[0058] The base plate 71, the leg portions 72, and the flanges 75 of the reinforcing member 7 are all embedded in the top wall 21 or the bottom wall 22. Preferably, the leg portions 72 and the flanges 75 are at least partially embedded in the corresponding reinforcing rib 28 protruding outwards from an outer surface of the top wall 21 or the bottom wall 22.

[0059] The base plate 71 has a plurality of protruding ribs 74, so as to have a wavy cross section. Each protruding rib 74 may extend in a lengthwise direction of the base plate 71 along the entire length of the base plate 71. The protruding ribs 74 may be formed on the base plate 71 by stamping. Adjacent protruding ribs 74 may be parallel and spaced apart from one another by a preset distance.

[0060] The reinforcing member 7 may have at least one through hole 73 disposed on the base plate 71. In the insert injection molding process in which the reinforcing member 7 is embedded in the box 2, the melted material for forming the box 2 may flow from one side of the base plate 71 to the other side through the through hole 73, and the through hole 73 is filled with the material of the box 2. Therefore, possibility that a gap is formed between the base plate 71 and the box 2 can be reduced, and the material on two sides of the base plate 71 may be connected reliably by the material in the through hole 73, so that it can be expected that the base plate 71 and the corresponding wall of the box 2 are gaplessly and closely connected, and the intensity of the box 2 is increased.

[0061] In this embodiment, the reinforcing members 7, 8, 9, and 10 are bar-shaped, and are embedded in a wall of the box 2 respectively. However, the present invention is not limited thereto, and for example, in an alternative embodiment, at least one reinforcing member is embedded in at least two walls of the box 2. For example, as shown in FIG. 6, a reinforcing member 7a includes a first portion 71a embedded in a profile wall of the box 2 and two second portions 72a each extending from a corresponding end of the first portion 71a in a bent manner and buried in another profile wall of the box 2. For another example, as shown in FIG. 7, a reinforcing member 7b is box-shaped, and is embedded in at least four walls of the box 2.

[0062] In an embodiment, the reinforcing member may be net-shaped.

[0063] In the above embodiments, the reinforcing members 7, 8, 9, and 10 are completely sealed in the top wall 21 or the bottom wall 22. However, in an alternative embodiment, at least one reinforcing member is partially embedded in a corresponding profile wall of the storage unit 1. For example, as shown in FIG. 8, at least one surface 71c of a reinforcing member 7c is exposed to the outside of a profile wall 21' of the storage unit 1. Anti-rust treatment may be performed on the surface of the reinforcing member 7c that is exposed to the outside.

[0064] It is easily understandable that besides the top wall 21 and the bottom wall 22, the other walls of the storage unit 1 (for example, the left side wall 23, the right side wall 24, the rear side wall 25, and the cover wall 3) may also be embedded with at least one reinforcing member when needed.

[0065] Embodiments of single parts and components illustrated with reference to FIG. 1 to FIG. 8 may be combined in any given manner, so as to achieve advantages

of the present invention. In addition, the present invention is not limited to the shown embodiments, and usually other means besides the shown means may also be applied as long as the means can also achieve the same effect.

Claims

1. A storage unit (1) for a cooling appliance, comprising a plurality of walls (21-25, 3, 21'), an evacuable storage space (4) defined by the plurality of walls (21-25, 3, 21'), and at least one reinforcing member (7-9, 7a, 7b, 7c) for reinforcing at least one of the walls (21-25, 3, 21'), **characterized in that** the at least one reinforcing member (7-9, 7a, 7b, 7c) is at least partially embedded in at least one of the walls (21-25, 3, 21').
2. The storage unit according to claim 1, **characterized in that** the plurality of walls (21-25, 3, 21') forms a box (2) and a cover wall (3), the box (2) has an access port (20) selectively closed and opened by the cover wall (3), and the at least one reinforcing member (7-9, 7a, 7b, 7c) is at least partially embedded in at least one wall (21, 22) of the box (2).
3. The storage unit according to claim 1 or 2, **characterized in that** the plurality of walls (21-25, 3, 21') comprises at least one first wall (21, 22) and at least one second wall (23, 24, 25, 3), wherein the first wall (21, 22) has an area larger than that of the second wall (23, 24, 25, 3), and the at least one reinforcing member (7, 8, 9, 10) is at least partially embedded in the at least one first wall (21, 22).
4. The storage unit according to claim 1, 2 or 3, **characterized in that** the at least one reinforcing member (7, 8, 9, 10) extends in the at least one wall (21, 22) along the entire width, height or depth of the storage space (4).
5. The storage unit according to any of the preceding claims, **characterized in that** the at least one wall (21, 22) is embedded with at least two reinforcing members (7, 8, 9, 10) spaced apart from one another.
6. The storage unit according to any of the preceding claims, **characterized in that** at least one reinforcing member is embedded in at least two of the walls.
7. The storage unit according to any of the preceding claims, **characterized in that** the plurality of walls (21-25, 3, 21') is made of a first material, the at least one reinforcing member (7, 8, 9, 10, 7a, 7b, 7c) is made of a second material, and the second material has a Young's modulus greater than that of the first material.

8. The storage unit according to claim 7, **characterized in that** the first material is plastic and the second material is metal.

9. The storage unit according to any of the preceding claims, **characterized in that** the at least one reinforcing member (7, 8, 9, 10, 7a, 7b, 7c) is bar-shaped, box-shaped or net-shaped. 5

10. The storage unit according to claim 2, **characterized in that** the at least one reinforcing member (7, 9) is at least partially embedded in at least one wall (21, 22) close to the access port (20), and is adjacent to the access port (20). 10
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11. The storage unit according to claim 2, **characterized in that** the at least one wall (21, 22) has a center line parallel to the access port, and at least one reinforcing member (8, 10) overlaps the center line. 20

12. The storage unit according to any of the preceding claims, **characterized in that** the at least one reinforcing member (7, 8, 9, 10) is completely sealed in the at least one wall. 25

13. The storage unit according to any of claims 1 to 12, **characterized in that** at least one end of the reinforcement member (7, 8, 9, 10) is exposed to outside of the at least one wall. 30

14. The storage unit according to any one of the preceding claims, **characterized in that** a cross section of the at least one reinforcing member (7, 8, 9, 10) has at least one L-shaped portion, and the L-shaped portion is embedded in the at least one wall (21, 22). 35

15. The storage unit according to claim 14, **characterized in that** the at least one wall (21-25) has a reinforcing rib (28) protruding outwards from an outer surface thereof, and the L-shaped portion is embedded in the reinforcing rib (28). 40

16. The storage unit according to any one of the preceding claims, **characterized in that** the at least one reinforcing member (7, 8, 9, 10) has at least one protruding rib (74). 45

17. The storage unit according to any one of the preceding claims, **characterized in that** the at least one reinforcing member (7, 8, 9, 10) has at least one through hole (73), and the through hole (73) is filled with the material of the at least one wall (21-25). 50

18. A cooling appliance (100), **characterized by** comprising the storage unit (1) according to any one of the above claims. 55

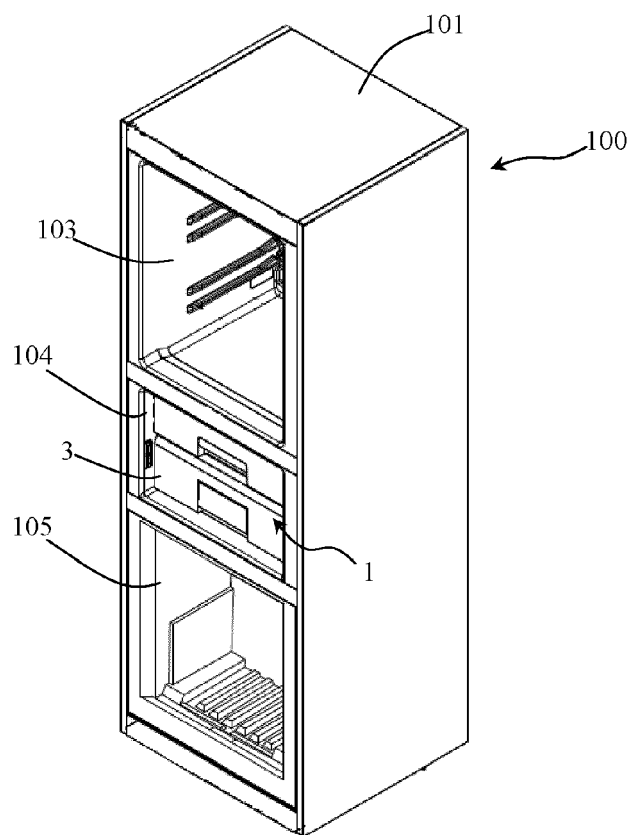


FIG. 1

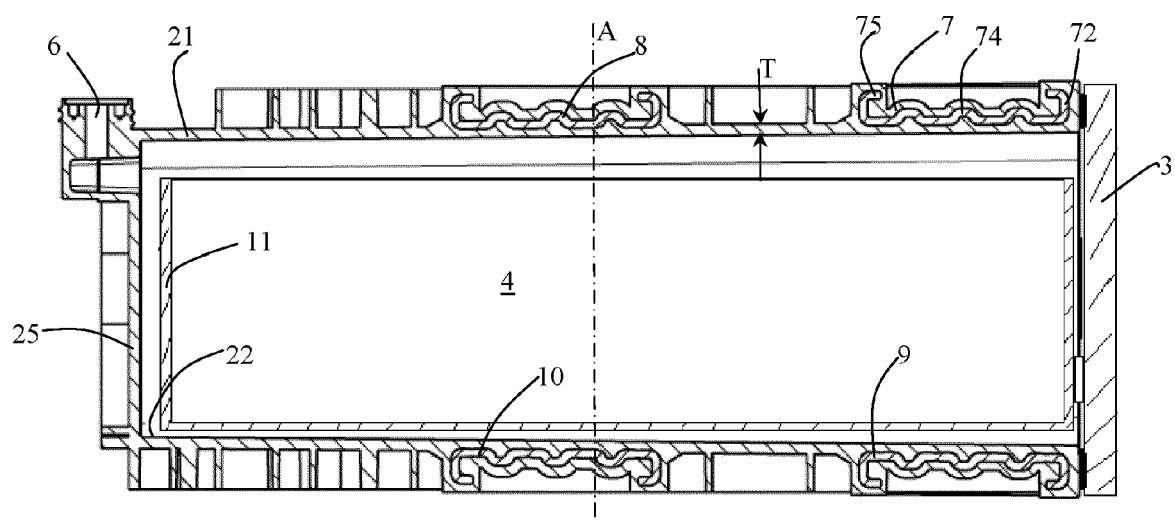


FIG. 3

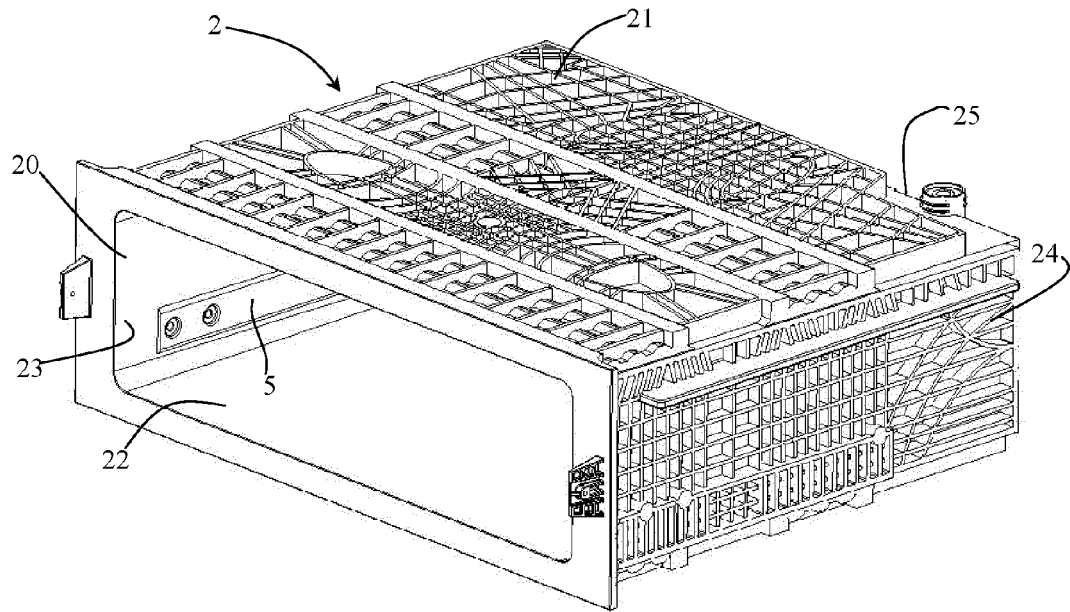


FIG. 2

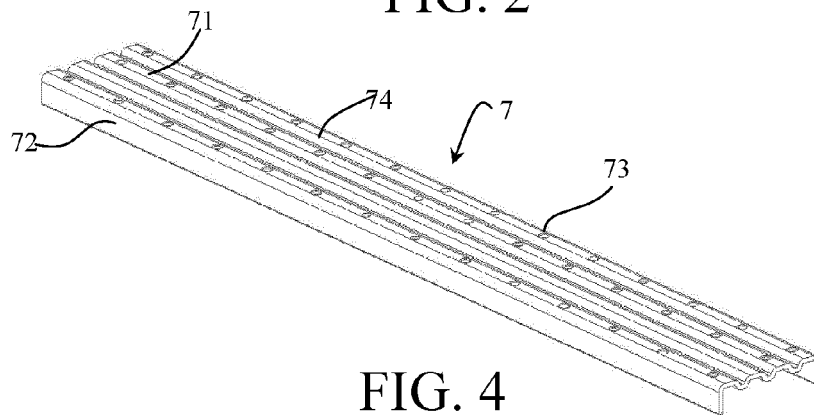


FIG. 4

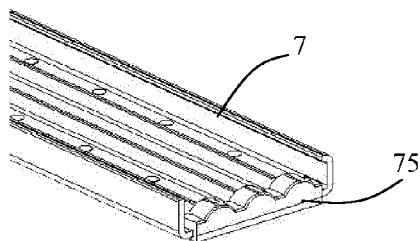


FIG. 5

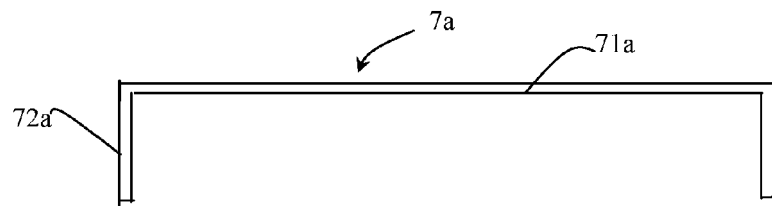


FIG. 6

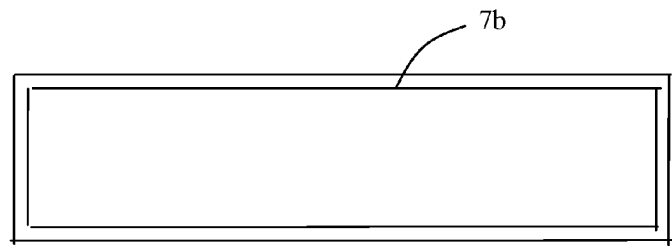


FIG. 7

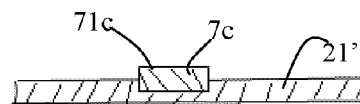


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 1013243942 A [0003]
- US 8052235 A [0004]