MULTI-PART REFRIGERATOR BODY AND METHOD FOR THE PRODUCTION THEREOF

Inventors: Thomas Benz, Haar (DE); Alexander Gorz, Aalen (DE)

Correspondence Address:
BSH HOME APPLIANCES CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
100 BOSCH BOULEVARD
NEW BERN, NC 28562 (US)

Assignee: BSH Bosch und Siemens Hausgerate GmbH, Munich (DE)

Appl. No.: 11/658,060

PCT Filed: Jul. 27, 2005

Abstract
A refrigerator housing comprising a door and a base body which comprises lateral walls, a rear wall, a cover and a base. The thickness of the isolation layer of the lateral walls is smaller than that of the rear wall, the base or the cover, and an additional isolation layer is mounted on the lateral walls. An additional isolation layer can be, in particular, a plate or a lateral wall of an adjacent base body.
MULTI-PART REFRIGERATOR BODY AND METHOD FOR THE PRODUCTION THEREOF

[0001] The invention relates to a body for a refrigerator of modular structure and a method for the production of such a body.

[0002] The body of a conventional refrigerator is generally an essentially cuboid hollow body with an open front side, two lateral walls, a rear wall, cover and base, in which the insides of the walls are formed coherently in one piece by the deep drawing of flat plastic material, the outsides of the walls are joined together from a knife cylinder of sheet metal plates or other rigid materials, and an interval between the insides and outsides is filled with isolating material. The thickness of the isolating material layer is generally established by the planned use of the body; the lower the intended operating temperature is to be inside the refrigerator, the more efficient must be the insulating and correspondingly thicker must be the insulating layer.

[0003] If several individual refrigerating devices, for example a refrigerator and a freezer, are placed next to each other, so that their lateral walls touch, an insulating layer of considerable thickness is formed between the insides of the refrigerating devices. They are of little benefit, however, because the temperature difference between the insides is smaller than between the insides and the surrounding area, and because any heat transfer between the insides would not impair the common energy balance of the devices.

[0004] Use is made of this fact in the case of single-piece side-by-side refrigerators in which two insides are arranged in a coherent body so that they can be used as a refrigerating compartment and a freezing compartment, side by side, and in which an insulating layer between both insides is made thinner than on the outsides of the devices. Although such a design is economical because it enables the same quality of insulation to be achieved as in the case of two individual devices with a quantity of insulating material that is considerably reduced in comparison, and although the ratio of the useable inside to the total volume of the device is better than in individual devices, the low flexibility remains unsatisfactory in such a device; whilst in the case of two individual devices the user is free to decide how they are to stand next to each other and what volumes each of them are to have, it is generally established by the manufacture, in the case of the single-piece side-by-side device, which compartment can be used as the freezing compartment and which as the refrigerating compartment, and an adaptation to individual preferences of the user in terms of the arrangement and sizes of the individual compartments is only possible if a large number of different models is produced, the cost advantage achieved by reducing the quantity of insulating material is again cancelled out.

[0005] The object of this invention is to indicate a design for a refrigerator body and a method of producing such a body which enable a large number of different refrigerator models to be produced from a clearly discernible number of different types of body parts, which models are adapted to the requirements of the users.

[0006] Because of the structure of the refrigerator body according to the invention from a base body with lateral walls, in which the thickness of the insulating layer is less than on other walls and an additional insulating layer mounted on the lateral walls, the possibility is provided of using the same base body both in an individual device and in a side-by-side device by supplementing insulation of the lateral walls of the base body that is intrinsically insufficient with a suitable additional insulating layer.

[0007] In the case of an individual device or on one outer side of a side-by-side device, such an additional insulating layer then preferably takes the form of a flat plate, and in particular preference that of a fixed hollow body filled with an insulating foam.

[0008] In the case of a side-by-side device the additional insulating layer mounted on a lateral wall of a first base body is the adjacent lateral wall of the second base body.

[0009] For the use of the two base bodies at different operating temperatures walls corresponding to each other, such as lateral walls, rear wall, base, cover, are preferably designed so that they are thicker on one of the base bodies than on the other.

[0010] In order to minimise the variety of types of the base body, however, it may also be appropriate to make corresponding walls of the base bodies each of the same thickness so that the same type of base body can be installed in one model of refrigerator as a refrigerating compartment and in another model as a freezing compartment.

[0011] When two base bodies are assembled side by side, both bear on their outsides preferably a flat plate as an additional insulating layer, the two plates each having different wall thicknesses, depending on whether one base body is used as a refrigerating compartment and the other as a freezing compartment.

[0012] In order to cover joints on the front of the refrigerator housing resulting from joining together the different parts, the edges of the housing on the door side are preferably covered by a common decorative frame.

[0013] This decorative frame may contribute to holding together at least the door-side front of the refrigerator by overlapping the door-side edges of the housing.

[0014] It is also appropriate for the decorative frame to consist at least in places of ferromagnetic material against which the magnetic seal of a door can closely nestle.

[0015] Connecting profiles that engage in one another and are each fastened to the front sides of the lateral wall or the additional insulating layer are preferably provided for mounting an additional insulating layer on the lateral wall of the base body adjacent to it. Such connecting profiles may also serve as a decorative frame, particularly when these connecting profiles are designed as extruded profiles.

[0016] The engagement between the connecting profiles can preferably be removed by swivelling the lateral wall and additional insulating layer. This means that as long as the additional insulating layer bears against the lateral wall it is retained on the latter by the connecting profiles, but this connection can be removed by swivelling about a common front edge of the lateral wall and additional insulating layer.

[0017] In order to prevent heat from penetrating into the gap between the outer skins of the lateral wall facing each other and the insulating layer, a layer of insulating material is preferably inserted between each connecting profile and the outer skin concerned.
The connecting profiles can suitably provide a connection not only between the lateral wall and the additional insulating layer, but also between the inner container and the outer skin of the lateral wall, or between the outer skin pieces on opposite sides of a plate-shaped insulating layer.

As a further measure for preventing the penetration of heat into an air gap between the lateral wall and the additional insulating layer mounted on it, this air gap is filled, at least on its edges, with a flexibly compressible material that is essentially impermeable to air.

The object of the invention is also achieved by a method for producing a refrigerating body, in particular a refrigerating body as described above, with the following steps:

a) the preparation of base bodies in a plurality of types of different widths and of flat plates in two wall thicknesses that can be mounted on the base body;

b) the joining together of at least one base body and two plates to form the refrigerating body.

wherein the widths of the base bodies and the wall thicknesses of the plates are chosen so that by combining different types of base bodies total widths of the refrigerating body can be obtained which differ from each other by n-times a base dimension D, n being a small natural number.

Thus it is possible, with a comparatively small number of base body types, to create a wide variety of refrigerating models by combining them one with another and with the plates, which models differ in terms of their total width by D or a multiple thereof. In this case D may correspond to the difference that is normal in the market between the widths of different models of refrigerator housings, such as 2" or 10 cm, or a small whole number fraction of such a value, e.g. 1", 5 cm or 2.5 cm.

Such a selection of body widths may be advantageously formed when a group of base body types is provided with a first set of widths and a second group of base body types with a second set of widths, there being for a multiplicity of widths of the first set one width in the second set which differs from the corresponding width of the first set by 2d, d being the wall thickness difference between two plates of different wall thicknesses. This selection enables individual devices whose base body consists of a base body and two plates mounted laterally on it to be produced, the widths of the individual device models being equal if base body types of the first group are combined with plates of a first wall thickness and base body types of the second group with plates of the second wall thickness.

The sum of the two different wall thicknesses of the plates is preferably equal to base dimension D, for this ensures that the widths of the side-by-side devices that can be manufactured differ from those of the individual devices by a whole number multiple of D.

A further particular characteristic of the invention is the fact that it enables the device to be adapted to varying requirements when a device is already installed by removing existing plates and fitting new plates. Such a replacement may, for example, serve to improve the existing insulation, vary the outer appearance of the device, etc.

Further features and advantages of the invention may be deduced from the following description of exemplary embodiments with reference to the attached drawings, in which:

FIG. 1 shows an exploded perspective view of a combination refrigerating device according to the invention;

FIG. 2 shows a diagrammatic section through a refrigerator and a freezer, each of which has a base body and two additional insulation plates;

FIG. 3 shows detailed sections through the components of a combination refrigerating device;

FIG. 4 shows an enlarged detail from FIG. 3; and

FIG. 5 shows a section through a refrigerating device installed in a furniture recess.

The perspective view in FIG. 1 shows, in a simplified representation, a first base body 1 and a second base body 2 of a refrigerator housing L1 and L2 respectively, each with an inner space 3, lateral walls 4, 5 of a rear wall, a cover 6. The walls, cover and base are each filled between a fixed inner and outer skin with an insulating layer whose thickness is the same in the two lateral walls 4, 5 and is smaller than in the rear wall, cover 6 and base 7. A door 9, 10 suspended by fitting angle 8 on base body 1 and 2 respectively forms, together with the base bodies, refrigerator housing L1 and L2 respectively, and has an insulating layer whose thickness is equal to the thicknesses of the cover, base or rear wall.

In the example shown here base body 1 is provided for receiving a refrigerating compartment, and the thickness of an additional insulating plate 11, which is designed to be fastened to a lateral wall 5 of base body 1, and to overlap it fully, is dimensioned so that together with lateral wall 5 it achieves a thermal insulation value required for economic operation of the refrigerating compartment.

Additional insulating plate 11 can be provided in the form of an intrinsically rigid hollow body whose outer skin is joined together in the same manner and from the same materials as the outer skin of base body 1, and which is filled, as the latter, on the inside, with an expanded foam material. However, the plate may also be an intrinsically rigid plate consisting of a solid insulating material such as expanded polystyrol, which is coated with a thin outer skin, for instance a shrink-on film, for protection from contamination and/or damage. The latter possibility is considered in particular in the case of a refrigerating device in installation/design, where the outer surfaces of additional insulating plate 11 are covered after the installation of furniture elements.

The second base body 2 is provided for receiving a freezing compartment. Its lateral walls 4, 5, rear wall, cover 6, base 7 are each slightly thinner than the corresponding walls of base body 1. An additional insulating plate 12 to be mounted on lateral wall 5 has a greater wall thickness than plate 11.

Base body 1 and base body 2 each belong to a first and second group of base body types respectively, where all the types within a group have identical wall thicknesses and differ only in terms of their total width and that of inner space 3. The widths are staggered within a group in steps of D=1" or a whole number multiple thereof.
In a first exemplary embodiment base body 2 provided for forming a freezing compartment belongs to a first group with types A to G, with base body widths of between 15.25" and 33.25". For a thickness of 1.375" of lateral plates 12 provided for use in combination with a freezing compartment, housing widths are obtained in a 6-inch grid of 18, 24, 30 and 36" for types A, D, F, G, as summarised in Table 1 below.

TABLE 1

<table>
<thead>
<tr>
<th>Type</th>
<th>Width of inner space</th>
<th>Base body width</th>
<th>Total width with lateral plates 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12.75&quot;</td>
<td>15.25&quot;</td>
<td>18&quot;</td>
</tr>
<tr>
<td>B</td>
<td>14.75&quot;</td>
<td>17.25&quot;</td>
<td>20&quot;</td>
</tr>
<tr>
<td>C</td>
<td>17.75&quot;</td>
<td>20.25&quot;</td>
<td>23&quot;</td>
</tr>
<tr>
<td>D</td>
<td>18.75&quot;</td>
<td>21.25&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>E</td>
<td>20.75&quot;</td>
<td>23.25&quot;</td>
<td>26&quot;</td>
</tr>
<tr>
<td>F</td>
<td>24.75&quot;</td>
<td>27.25&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>G</td>
<td>30.75&quot;</td>
<td>33.25&quot;</td>
<td>36&quot;</td>
</tr>
</tbody>
</table>

Group 2 (lateral wall thickness 1.25"

<table>
<thead>
<tr>
<th>Inner space width</th>
<th>Total width with lateral plates 11</th>
<th>Total width in combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>14.75&quot;</td>
<td>16.75&quot;</td>
</tr>
<tr>
<td>I</td>
<td>20.75&quot;</td>
<td>22.75&quot;</td>
</tr>
<tr>
<td>J</td>
<td>22.75&quot;</td>
<td>25.75&quot;</td>
</tr>
<tr>
<td>K</td>
<td>26.75&quot;</td>
<td>28.75&quot;</td>
</tr>
<tr>
<td>L</td>
<td>32.75&quot;</td>
<td>34.75&quot;</td>
</tr>
</tbody>
</table>

Base body 1 belongs to a second group which includes types H to L, each of which is provided for providing an independent refrigerating device or refrigerating compartment in a side-by-side device. With a thickness of lateral plates of 0.625", total widths of the refrigerating devices of 18, 24, 30 and 36" are obtained for types H, I, K, L and combination devices with widths of 36 to 48" in 6-inch steps can be realised by various combinations of housing types B, C, E and H, I, J, K.

FIG. 2 shows diagrammatic sections through a refrigerating device with base body 1, two lateral additional insulating plates 11 and door 9, as well as through a freezing device with the same total width B, with base body 2 and additional insulating plates 12 and door 10, where the width of base body 2 is smaller by 2/3 than that of base body 1.

In a second embodiment a base body 2 has a lateral wall thickness of 1.5" for realising a freezing compartment and the lateral plates provided for fastening to a lateral wall of such a base body have a thickness of 1.25", whilst a lateral wall thickness of 1.25" is provided for a refrigerating compartment base body 1 and one of 0.75" is provided for lateral plates to be mounted on it. Possible widths for base body types k to f of a first group and i to n of a second group, are indicated in Table 2. Standalone freezes with total widths of 18, 24, 30 and 36" can here be realised with base body types a, d, f and g, refrigerating devices with the same widths with base body types h, j, m, n, and side-by-side devices with widths 36, 42 and 48" by various combinations of types a to f of the first group and h to l of the second group.

TABLE 2

<table>
<thead>
<tr>
<th>Inner space width</th>
<th>Total width</th>
<th>Total width with lateral plates (1.25&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>12.5&quot;</td>
<td>15.5&quot;</td>
</tr>
<tr>
<td>b</td>
<td>14.5&quot;</td>
<td>17.5&quot;</td>
</tr>
<tr>
<td>c</td>
<td>16.5&quot;</td>
<td>19.5&quot;</td>
</tr>
<tr>
<td>d</td>
<td>18.5&quot;</td>
<td>21.5&quot;</td>
</tr>
<tr>
<td>e</td>
<td>19.5&quot;</td>
<td>22.5&quot;</td>
</tr>
<tr>
<td>f</td>
<td>24.5&quot;</td>
<td>27.5&quot;</td>
</tr>
<tr>
<td>g</td>
<td>30.5&quot;</td>
<td>33.5&quot;</td>
</tr>
</tbody>
</table>

Group 2 (lateral wall thickness 1.25"

<table>
<thead>
<tr>
<th>Inner space width</th>
<th>Total width</th>
<th>Total width with lateral plates (0.75&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>14&quot;</td>
<td>16.5&quot;</td>
</tr>
<tr>
<td>i</td>
<td>16&quot;</td>
<td>18.5&quot;</td>
</tr>
<tr>
<td>j</td>
<td>20&quot;</td>
<td>22.5&quot;</td>
</tr>
<tr>
<td>k</td>
<td>22&quot;</td>
<td>25.5&quot;</td>
</tr>
<tr>
<td>l</td>
<td>24&quot;</td>
<td>28.5&quot;</td>
</tr>
<tr>
<td>m</td>
<td>26&quot;</td>
<td>28.5&quot;</td>
</tr>
<tr>
<td>n</td>
<td>32&quot;</td>
<td>34.5&quot;</td>
</tr>
</tbody>
</table>

FIG. 3 shows in a detailed horizontal section the various components of the refrigerator body according to the invention. Base bodies 1, 2 differ in terms of the thickness of their rear walls 13, which is less in base body 1 provided as the refrigerating compartment than in base body 2 provided as the freezing compartment. The thickness of lateral walls 4, 5 is the same in both. Apart from the dimensions, the structure in each base body is the same, and it is therefore only described in more detail here for base body 1. The inside of the walls is formed by a single-part plastic container 14. The outer skin of each of s consists here of flat sheets 15, 16, which are fixedly connected on their longitudinal edges facing towards each other by heat insulating profiles 17 of plastic. Sheets 15 of the lateral walls each have a bent over front edge 18 which, as can clearly been seen in the enlargement in FIG. 4, engages in a groove of connecting profile 19 and 20 respectively, which extend throughout the height of the base body over the front edges of lateral walls 4, 5. A front edge 21 of plastic container 14, correspondingly bent over, engages in a similar manner in a groove of connecting profile 19, 20 so that connecting profile 19, 20 creates the cohesion between container 14 and the outer skin.

A foam insulating layer 22 prevents contact over a large area between sheet 15 and connecting profile 19 or 20, which is also of metal for reasons of mechanical loading capacity, so that heat in a large quantity penetrates via connecting profiles 19, 20 and sheets 15 into air gap 23 between the two base bodies. A closed raw foam strip 24, forms a closed frame extending along the edges of sheet 15, and contacts the opposite sheet 15 along its entire length, is adhered to one of the two opposing sheets 15. Foam strip 24 therefore prevents the penetration of hot air.
into the depth of air gap 23 and hence not only the penetration of heat between base bodies 1, 2, but also of moisture, which could otherwise result in the formation of condensation in air gap 23.

[0044] Connecting profile 19 is provided on its outer edge with a web extending throughout the length of the edge, on the end of which web is formed a cylindrical bead 25 with a projecting nose 26. In the position of connecting profile 19 shown represented by a continuous line in FIG. 4, bead 25 is received in an almost complementarily formed recess 27 of adjacent connecting profile 20. In this position the connecting profiles cannot be released from one another. Only in a swivelled position, represented in FIG. 3 as a dotted contour line of connecting profile 19, can its bead 25 be inserted in recess 27 and removed from it. In order to fasten the base bodies to each other bead 25 must therefore first be inserted in recess 27 and base bodies 1, 2 then swivelled next to each other; a fixed connection can then be made between base bodies 1, 2, by fitting a connecting part (not shown) between the rear corner profiles 17.

[0045] The structure of additional insulating plates 11, 12 is similar to that of base bodies 1, 2. Two outer sheets 28 surround a flat isolating body 29 of expanded polystyrol. Outer sheets 28 are mounted on all four edges in peripheral profiles, two of which can be seen in the section in FIG. 2. A front profile is designed as a connecting profile 30 or 31 that fits connecting profiles 19, 20, with a projecting bead and a recess for receiving such a bead. Rear profiles 32 each have a laterally projecting web 33, which is shaped so that it can be locked on a corner profile 17 of the adjacent base body 1 or 2 or fastened to it by other means.

[0046] FIG. 5 shows a side-by-side refrigerator with a body according to the invention, already assembled and installed in a furniture niche. The furniture niche has two door panels 34, 35 on whose insides is mounted a refrigerator door 36 and 37 assigned to base body 1 and 2 respectively. The width of refrigerator door 36, 37 is equal to that of assigned base body 1, 2, a door widening element 38 or 39 is fitted on the edges of doors 36, 37 facing away from each other, the width of which is equal to the thickness of the adjacent additional insulating plate 11 or 12. Widening elements 38, 39 are each fitted here with a spring which engages in a groove 40 of a lateral edge of door 36 or 37. Grooves 40 are formed on both lateral edges of the doors so that, when necessary, a widening element can be fitted on both sides. It is therefore possible always to use the same type of door on a given type of base body, regardless of whether the base body is to be used in a side-by-side device, a shown in FIG. 5—where only one widening element per door is used—or whether the base body is fitted with additional insulating plates on both lateral walls in a standalone refrigerator—where a door fitted on both sides with widening elements is then also used.

[0047] A coherent decorative frame 41 of plastic overlaps both front sides of base bodies 1, 2, facing towards doors 37, 36, and the front sides of additional insulating plates 11, 12 so that the modular structure of the device as a whole remains concealed from the user. Decorative frame 41 engages a short distance into the door openings of base bodies 1, 2, and also surrounds these and additional insulating plates 11, 12 on their outsides so that a cross-section of decorative frame 41 is shown in the section in FIG. 5 in the form of three U-shaped sections.

[0048] The decorative frame is backed on its front side with metal in order to retain magnetic seals 42 of doors 36, 37. A foam insulating layer is preferably also installed between the decorative frame and the front sides of lateral walls 4, 5 and additional insulating plates 11, 12 respectively.

1-25. (canceled)

26. A refrigerator housing comprising:

at least one base body including lateral walls, a rear wall, a cover, a base, and at least one door, wherein the lateral walls, the rear wall, the cover, and the base include an insulating layer with the thickness of the insulating layer of the lateral walls being less than the thickness of the insulating layer of the rear wall, the base or the cover; and

an additional insulating layer mounted on each of the lateral walls.

27. The refrigerator housing according to claim 26, wherein at least one of the additional insulating layers includes a flat plate.

28. The refrigerator housing according to claim 27, wherein the flat plate includes a fixed hollow body filled with a foam.

29. The refrigerator housing according to claim 26, further comprising a second base body, the additional insulating layer being mounted on one of the lateral walls of the first base body by an adjacent lateral wall of the second base body.

30. The refrigerator housing according to claim 29, wherein corresponding walls are designed so that they are thicker on the first base body than on the second device body.

31. The refrigerator housing according to claim 29, wherein the first and second base bodies each have the same wall thicknesses.

32. The refrigerator housing according to claim 29, wherein the first and second base bodies are each provided with a flat plate as an additional insulating layer, wherein the two plates have different wall thicknesses.

33. The refrigerator housing according to claim 26, wherein edges of the housing on the door side are covered by a common decorative frame.

34. The refrigerator housing according to claim 33, wherein the decorative frame has a U-shaped section with which it encloses the door-side edges of the housing.

35. The refrigerator housing according to claim 33, wherein the decorative frame includes ferromagnetic material.

36. The refrigerator housing according to claim 26, wherein one of the additional insulating layers is mounted on the lateral wall adjacent to it by means of connecting profiles engaging in one another and fastened to each of the front edges of the lateral wall and of the additional insulating layer.

37. The refrigerator housing according to claim 36, wherein the connecting profiles form the decorative frame.

38. The refrigerator housing according to claim 36, wherein the engagement between the connecting profiles can be removed by swivelling the lateral wall and the additional insulating layer towards each other.

39. The refrigerator housing according to claim 36, wherein a layer of insulating material is inserted between
each connecting profile and an outer skin of the lateral wall or additional insulating layer, on which the connecting profile is mounted.

40. The refrigerator housing according to claim 36, wherein one of the connecting profiles connects inner containers and the outer skin of the lateral wall to each other.

41. The refrigerator housing according to claim 27, wherein one of the connecting profiles connects outer skin pieces on opposite sides of the plate to each other.

42. The refrigerator housing according to claim 26, wherein an air gap between one of the lateral walls and the additional insulating layer mounted on them is filled at least on its edges with a flexibly compressible material that is essentially impermeable to air.

43. The refrigerator device according to claim 26, wherein widening elements are provided that are adapted to the increase in wall thickness produced by the additional insulating layer and which can be secured to lateral cheeks of the door.

44. A method for producing a refrigerator housing including at least one base body including lateral walls, a rear wall, a cover, a base, and at least one door forming an insulating layer, and an additional insulating layer mounted on each of the lateral walls, the method including the following acts:

a) preparing base bodies in a plurality of types of different widths and of flat plates that can be mounted on the base body, in two wall thicknesses;

b) joining together at least one base body and two plates to form the refrigerator body;

wherein the widths of the base bodies and the wall thicknesses of the plates are chosen so that by combining different types of base body and plates, widths of the refrigerator body can be achieved which differ from each other by n-times a base diameter D, wherein n is a small natural number.

45. The method according to claim 44, wherein a first group of base body types is provided with a first set of widths and a second group of base body types is provided with a second set of widths, wherein there is one width in the second set for a plurality of widths of the first set, which width differs from that of the first set by 2d, wherein d is the difference in wall thickness between two plates of different wall thicknesses.

46. The method according to claim 45, wherein the thickness of the base, rear wall and cover in the base body types is substantially the same in one group and the thickness is different between the two groups.

47. The method according to claim 44, wherein the sum of the two different wall thicknesses of the plates is equal to the base diameter D.

48. The method according to claim 44, wherein in act b) a base body and two plates of the same thickness are joined together to form one refrigerator body.

49. The method according to claim 44, wherein in act b) two base bodies and two plates of different thicknesses are joined together to form one refrigerator body.

50. The method according to claim 44, wherein two existing plates are removed before act b).

* * * * *