

(19)



(11)

**EP 2 159 523 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**03.03.2010 Bulletin 2010/09**

(51) Int Cl.:  
**F25D 23/06<sup>(2006.01)</sup> F25D 25/02<sup>(2006.01)</sup>**

(21) Application number: **08015342.2**

(22) Date of filing: **29.08.2008**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA MK RS**

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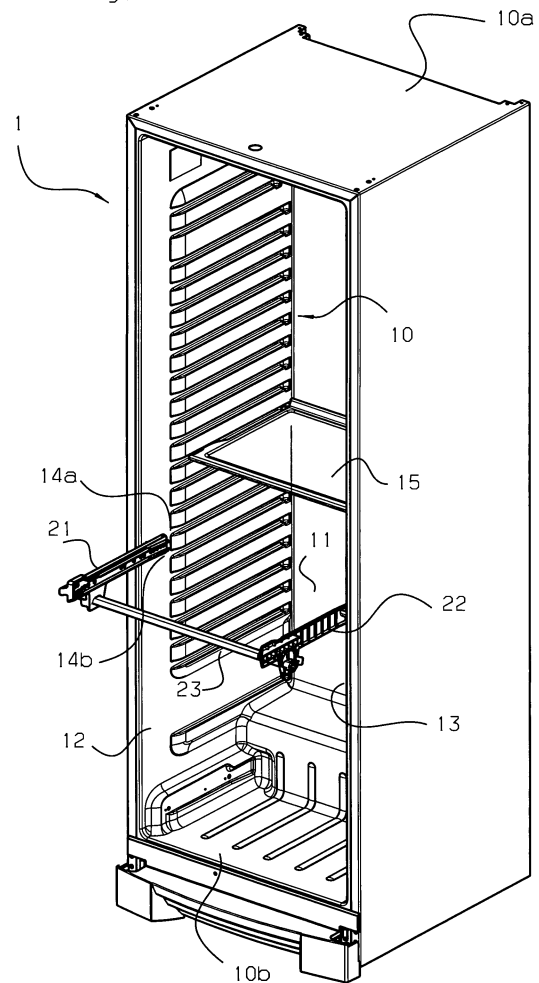
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(54) **Refrigeration equipment and console system for use therein**

(57) The present invention relates to a refrigeration equipment comprising a first and a second side wall (12, 13) defining between them an inner space (10) for receiving items to be refrigerated, the side walls (12, 13) being arranged opposite to each other and having a plurality of side grooves (14a, 14b); and a console system (20) arranged to couple a storage unit (24) to the side grooves (14a, 14b) in the inner space (10), the console system (20) comprising a first and a second side section (21, 22) substantially parallel with each other and designed for sliding engagement with the storage unit (24). According to the invention, each side section (21, 22) comprises a first portion (211, 221) and a second portion (212, 222), wherein the first portion (211) of the first side section (21) is arranged in a first side groove (14a) in the first side wall (12) and the first portion (221) of the second side section (22) is arranged in a first side groove (14a) in the second side wall (13), and wherein the second portion (212) of the first side section (21) is arranged in a second side groove (14b) in the first side wall (12) and the second portion (222) of the second side section (22) is arranged in a second side groove (14b) in the second side wall (13).

Fig 1a



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## Description

### Technical field

**[0001]** The present disclosure relates to a refrigeration equipment, in particular a kitchen appliance, such as a refrigerator, the refrigeration equipment comprises an inner space for receiving objects that are to be refrigerated, the inner space is partly defined by two opposite side walls, the side walls are arranged with several side grooves. The refrigeration equipment further comprises a console system arranged to attach a storage unit to the side grooves in the inner space.

**[0002]** The present disclosure further relates to a console system for mounting of storage units in a refrigeration equipment.

### Background

**[0003]** A refrigeration equipment, in particular a kitchen appliance, such as a refrigerator or a freezer, is used in order to refrigerate objects, for example different kind of provisions, in an inner space of the refrigeration equipment. A top part, a bottom part, a rear portion, a front portion (comprising a door arranged to make it possible to close the refrigerator) and two opposite side walls define the inner space.

**[0004]** In such refrigerator equipments the walls of the inner space are arranged with side grooves to receive shelves on which the provisions can be kept. A pair of drawers for keeping, for example, vegetables are often placed on the bottom part of the inner space with no connection to the side grooves.

**[0005]** In order to receive a more flexible refrigerator interior which makes it possible for the user to place shelves and drawers according to individually needs and requirements, it is known to provide shelves and drawers, in the inner space of a refrigeration equipment, by means of removably attached console systems.

**[0006]** EP 1 030 146 shows a prior art system wherein guides in the form of lateral bearer arms of a U-shaped bearer frame are removably attached to the side walls of a cold chamber. At least one shelf is movably mounted in the guides to slide like a drawer. An arrangement according to EP 1 030 146 is solely adapted for shelves.

**[0007]** US 2005156494 shows a refrigerator including a universal crisper pan, a drawer for keeping vegetables, and support frame. The frame is adapted to support various different shelving units and to slidably receive a crisper pan. The frame bear upon projections in the inner side walls of the refrigerator. A support frame according to US 2005156494 is quite complicated, includes many different parts, and results therefore in an expensive and ungainly system.

**[0008]** Compared to the prior art arrangements described above there is a need for a refrigeration equipment having a cost-effective console system, for receiving shelves or drawers, which is not only detachably at-

tached to the side walls of the inner space, in a non-destructive way, but also has a durable, stable and secure construction, even though the shelves and/or drawers are heavy loaded.

### Summary

**[0009]** The above defined problems are at least substantially solved by a refrigeration equipment comprising a first and a second side wall opposite to each other, defining between them an inner space for receiving items to be refrigerated and having a plurality of side grooves, and a console system arranged to couple a storage unit to the side grooves in the inner space, the console system comprising a first and a second side section substantially parallel with each other and designed for sliding engagement with the storage unit; each side section comprises a first portion and a second portion, wherein:

- the first portion of the first side section is arranged in a first side groove in the first side wall,
- the first portion of the second side section is arranged in a first side groove in the second side wall,
- the second portion of the first side section is arranged in a second side groove in the first side wall, and the second portion of the second side section is arranged in a second side groove in the second side wall.

**[0010]** By designing the side sections such that it is possible to couple them to two different side grooves a very durable console system is achieved since the system has two different attachments points, which results in a stable construction.

**[0011]** By designing the first portion of each side section substantially horizontal and the second portion substantially vertical, preferably in direction downwards from the first portion, it is possible to arrange each side section in two different grooves which are arranged on two different levels. This arrangement results in a console system having two different attachments points, on two different levels, which results in an even more stable construction.

**[0012]** By arranging the console system with at least one crosspiece extending from the first side section to the second side section a stable construction which demands a small amount of material is achieved. The crosspiece makes it possible to keep a fixed distance between the first side section and the second side section, which makes the drawer run smoothly since the crosspiece prevents the drawer from getting stuck if the distance between the inner side walls should change due to variations in the material.

**[0013]** By arranging the first portion of each side section with a sliding part for sliding engagement with the storage unit, and an attachment part for attaching the console system to the walls delimiting the inner space makes it possible to achieve a smooth drawer movement

without wearing the inner side walls of the refrigeration equipment.

**[0014]** By arranging the attachment part on each side section detachably to the side grooves on each opposite side wall it is easy to move the shelves and/or drawers between the side grooves inside the inner space of the refrigeration equipment without effecting the side walls.

**[0015]** Since the drawer in its lower part, close to the bottom part, is arranged with a guide on each side, which guides are adapted for sliding engagement with the sliding parts of the first side sections, it is possible to construct the side sections from simple and quite small parts. The side sections, the crosspiece and the guides are all placed close to each other, which results in a very stable construction.

**[0016]** By arranging the side grooves with an elongated shape which extends, substantially horizontal, over each opposite side wall, a quite large attachment surface is achieved which improves the adhesive capacity, since the drawer also has an as large attachment surface.

**[0017]** According to another aspect of the invention, a console system is claimed comprising a first and a second side section, wherein a second portion of each of the first side sections is arranged in a second side groove of the first side wall of the refrigeration equipment, so that a stable and secure console system is achieved.

**[0018]** By arranging the console system with at least one crosspiece an even more stable construction is achieved. The crosspiece is adapted to fix the side sections of the console system to the side grooves of the inner walls of the refrigeration equipment. This construction results in that the pick-up efficiency of tolerance increases with the depth of the side grooves.

#### Brief description of The Drawings

**[0019]** The invention will in the following be described in more detail with reference to the enclosed drawings, wherein:

Fig 1a schematically illustrates a perspective view of a refrigeration equipment, and a console system, arranged to attach a storage unit to side grooves in an inner space of the refrigeration equipment.

Fig 1b schematically illustrates a perspective view of the refrigeration equipment in fig 1a, when the console system is arranged therein.

Fig 1c schematically illustrates a perspective view of the refrigeration equipment in fig 1b, and a drawer adapted to be arranged therein.

Fig 1d schematically illustrates a perspective view of the refrigeration equipment in fig 1c, when the drawer is arranged therein.

Fig 2 schematically illustrates a perspective view of an embodiment of the refrigeration equipment, wherein two drawers are arranged in the inner space.

Fig 3a schematically illustrates a perspective view of a console system comprising two side sections

and a cross piece.

Fig 3b schematically illustrates a perspective view of the console system in fig 3a, seen from the front.

Fig 4a schematically illustrates a perspective view of a console system, a drawer and a shelf adapted to be arranged to interact with one another.

Fig 4b schematically illustrates a perspective view of the including parts in fig 4a, wherein the parts are arranged together.

#### Description of a preferred Embodiment

**[0020]** The present invention will be described in more detail hereinafter with reference to the accompanying drawings, in which a preferred embodiment of the invention is shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiment set forth herein; rather, the embodiment is provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. In the drawings, like numbers refer to like elements. In the embodiment of the invention described in the figures, a refrigeration equipment 1, is shown. The refrigeration equipment is in particular a kitchen appliance, such as a refrigerator.

**[0021]** The refrigeration equipment 1 comprises an inner space 10 for receiving objects that are to be refrigerated. A top part 10a, a bottom part 10b, a rear portion 11, a front portion (comprising a door arranged to make it possible to close the refrigerator, not shown) and two opposite side walls 12, 13 define the inner space 10. The side walls 12, 13 can be slightly vaulted, in such a way that the inner space, when looking into the inner space 10 in direction from the front portion towards the rear portion 11, can be slightly hourglass shaped.

**[0022]** The inner side walls 12, 13 are made of plastic material such as HIPS (High Impact Polystyrene), or other materials suitable for the purpose. The inner side walls 12, 13 holds a hollow space that during fabrication are filled with a compound of chemicals that rises and cures and thereby forms a solid foam. The hourglass shape can occur due to the fact that this chemical process might be not completed, i.e. the foam might not have reached its final solidifying point, when the refrigerators are put together. The inner side walls 12, 13 can therefore take a slightly vaulted shape since the material is still moving. The material of the inner side walls 12, 13 can also move, during use, due to temperature variations in the refrigerator.

**[0023]** The opposite side walls 12, 13 are arranged in a conventional way and show several side grooves 14 for receiving at least one conventional storage unit (or element) 15. The conventional storage unit 15 is often a shelf but can also be, where appropriate, a drawer. The drawers are otherwise often placed on the bottom of the inner space 10, with no connection to the grooves 14.

**[0024]** The side grooves 14a, 14b advantageously have an elongated shape and extend, substantially hor-

horizontal, over each opposite side wall 12, 13. The side grooves 14a, 14b may also have different shapes. In this description, reference is made to a first 14a and a second 14b side groove. These side grooves 14a, 14b are arranged adjacent to each other. The second side groove 14b is arranged immediately underneath the first side groove 14a.

**[0025]** Figures fig 3a-3b shows a console system 20, which is arranged to couple a storage unit 24 to the side grooves 14 in the inner space 10, see figures 4a-4b. The storage unit 24 is advantageously a drawer, a tray or similar, and for the sake of simplicity the storage unit 24 will henceforth be referred to as a drawer 24, described more in detail below.

**[0026]** The console system 20 comprises a first side section 21 and a second side section 22, which side sections 21, 22 have an elongated shape and are adapted to be arranged substantially parallel with each other in the inner space 10. The first side section 21 is arranged to be coupled to the first side wall 12. The second side section 22 is arranged to be coupled to the second side wall 13.

**[0027]** The first side section 21 comprises a first portion 211 and a second portion 212. The second side section 22 comprises a first portion 221 and a second portion 222. The first portion 211, 221 of each side section 21, 22 has an elongated shape and extends, when arranged inside the inner space 10, substantially horizontal over the side walls 12, 13, in direction from the front portion/the door (not shown) towards the rear portion 11. The second portion 212, 222 is substantially square-shaped and extends substantially vertical, downwards, from the first portion 211, 221.

**[0028]** The first portion 211, 221 of each side section 21, 22 comprises a gliding part 211a, 221 a for sliding engagement with the drawer 24. A glide system, such as a friction, roller or ball bearing glide system can be used as gliding part 211 a, 221 a. The first portion 211, 221 further comprises an attachment part 211 b, 221 b for coupling the console system 20 to the inner space 10. The attachment part 211 b, 221 b and the sliding part 211 a, 221 a are attached to each other by means of some kind of attachment devices, such as screws or the like, see fig 3a.

**[0029]** The first portion 211, 221 of each of the at least first 21 and second 22 side section 12, 13 is arranged in a first side groove 14a in each opposite side wall 12, 13. The second portion 212, 222 of each of the at least first 21 and second 22 side section is arranged in a second side groove 14b in each opposite side wall 12, 13. The second side groove 14b is preferably arranged immediately underneath the first side groove 14a in each opposite side wall 12, 13.

**[0030]** In one possible embodiment of the invention the second portion 212, 222 is extending downwards from the first portion 211, 221 such that the second groove 14b to which the second portion 212, 222 is to be coupled is not the groove immediately underneath the

first side groove 14a, but a groove that is one or several grooves downwards from the first groove 14a.

**[0031]** In another embodiment of the invention the second portion 212, 222 is extending upwards from the first portion 211, 221 such that the second groove 14b to which the second portion 212, 222 is to be coupled is not the groove immediately underneath the first side groove 14a, but the groove immediately above the first groove or a groove that is one or several grooves upwards from the first groove 14a.

**[0032]** The attachment part 211 b, 221 b on each side section 21, 22 is removably coupled to the side grooves 14a on each opposite side wall 12, 13. Thanks to their shape, the attachment parts 211 b, 221 b allow a snap-in coupling with the side grooves 14a.

**[0033]** The console system 20 comprises at least one crosspiece 23, which has an elongated shape and extends from the first side section 21 to the second side section 22 for keeping the side sections 21, 22 apart from each other (at a fixed distance) and close or in contact with the opposite side walls 12, 13 (in particular, the first side section 21 towards the first side wall 12 and the second side section 22 towards the second side wall 13).

The crosspiece 23 is more specifically arranged between the second portion 212 of the first side section 21 and the second portion 222 of the second side section 22. Each of the second portions 212, 222 has a recess 212a, 222a for receiving the crosspiece 23. Each of the second portions 212, 222 has also a projection 212b, 222b shaped (in cross-section) as the attachment part 211 b, 221 b. The projection 212b is designed to be arranged into the second side groove 14b on the first side wall 12 and the projection 222b is designed to be arranged into the second side groove 14b on the second side wall 13.

**[0034]** The side sections 21, 22 and the crosspiece 23 can be advantageously moulded by using different kinds of plastic materials, or may be made of metal, preferably aluminium, or partly of plastic and partly of metal (aluminium), or other suitable materials.

**[0035]** The drawer 24 is of conventional kind, but it is suitable for gliding in the gliding part 211 a, 221 a of the console system 20, see figures 4a-4b. The drawer 24 is defined by a front 241, a back 242, a bottom 243 and two side pieces 244, 245. The outer surface of the side pieces 244, 245 is, in the lower part, i.e. close to the bottom part 243, arranged with a guide 246 on each side piece 244, 245. The guides 246 are adapted for sliding engagement with the sliding parts 211 a, 221 a.

**[0036]** In the drawings and specification, there have been disclosed preferred embodiments and examples of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for the purpose of limitation, the scope of the invention being set forth in the following claims.

## Claims

1. Refrigeration equipment, in particular a kitchen appliance, such as a refrigerator, comprising:

a first side wall (12) and a second side wall (13) defining between them an inner space (10) for receiving items to be refrigerated, the side walls (12, 13) being arranged opposite to each other and having a plurality of side grooves (14a, 14b), a console system (20) arranged to couple a storage unit (24) to the side grooves (14a, 14b) in the inner space (10), the console system (20) comprising a first and a second side section (21, 22) substantially parallel with each other and designed for sliding engagement with the storage unit (24),

**characterized in that:**

each of the first and the second side sections (21, 22) comprises a first portion (211, 221) and a second portion (212, 222),

wherein the first portion (211) of the first side section (21) is arranged in a first side groove (14a) in the first side wall (12), and the first portion (221) of the second side section (22) is arranged in a first side groove (14a) in the second side wall (13), and

wherein the second portion (212) of the first side section (21) is arranged in a second side groove (14b) in the first side wall (12), and the second portion (222) of the second side section (22) is arranged in a second side groove (14b) in the second side wall (13).

2. The refrigeration system according to claim 1, wherein the first portion (211, 221) of each side section (21, 22) extends substantially horizontal, and wherein the second portion (212, 222) of each side section (21, 22) extends substantially vertical from the first portion (211, 221).

3. The refrigeration system according to claim 1 or 2, wherein the console system (20) comprises at least one crosspiece (23) extending between the first side section (21) and the second side section (22) for keeping the first side section (21) close to, or in contact with, the first side wall (12), and the second side section (22) close to, or in contact with, the second side wall (13).

4. The refrigeration system according to claim 3, wherein the crosspiece (23) is arranged between the second portion (212) of the first side section (21) and the second portion (222) of the second side section (22).

5. The refrigeration system according to any one of the preceding claims, wherein the first portion (211, 221)

of each side section (21, 22) comprises a sliding part (211 a, 221 a) for sliding engagement with the storage unit (24), and an attachment part (211 b, 221 b) for coupling the console system (20) to the first and second side walls (12, 13).

6. The refrigeration system according to claim 5, wherein the attachment part (211 b) on the first side section (21) is removably coupled to the first side groove (14a) on the first side wall (12), and the attachment part (221 b) on the second side section (22) is removably coupled to the first side groove (14a) on the second side wall (13).

7. The refrigeration system according to any one of the preceding claims, wherein the side grooves (14a, 14b) have an elongated shape and extend, substantially horizontal, over each opposite side wall (21, 22).

8. Console system for mounting of storage units (24) in a refrigeration equipment (1), the console system (20) comprises a first side section (21) and a second side section (22) that are adapted to be coupled to a first side wall (12) and, respectively, to a second side wall (13) in an inner space (10) of the refrigeration equipment (1), said side sections (21, 22) being substantially parallel with each other and being adapted for sliding engagement with a storage unit (24),

**characterized in that**

a first portion (211) of the first side section (21) is adapted to be arranged in a first side groove (14a) in the first side wall (12),

a first portion (221) of the second side section (22) is adapted to be arranged in a first side groove (14a) in the second side wall (13),

a second portion (212) of the first side section (21) is adapted to be arranged in a second side groove (14b) in the first side wall (12), and

a second portion (222) of the second side section (22) is adapted to be arranged in a second side groove (14b) in the second side wall (13).

9. A console system as claimed in claim 8, comprising at least one crosspiece (23) extending from the first side section (21) to the second side section (22), the crosspiece (23) being adapted for forcing the first side section (21) against the first side wall (12) and the second side section (22) against the second side wall (13), when the console system (20) is arranged inside the inner space (10) of the refrigeration system (1).

Fig. 1a

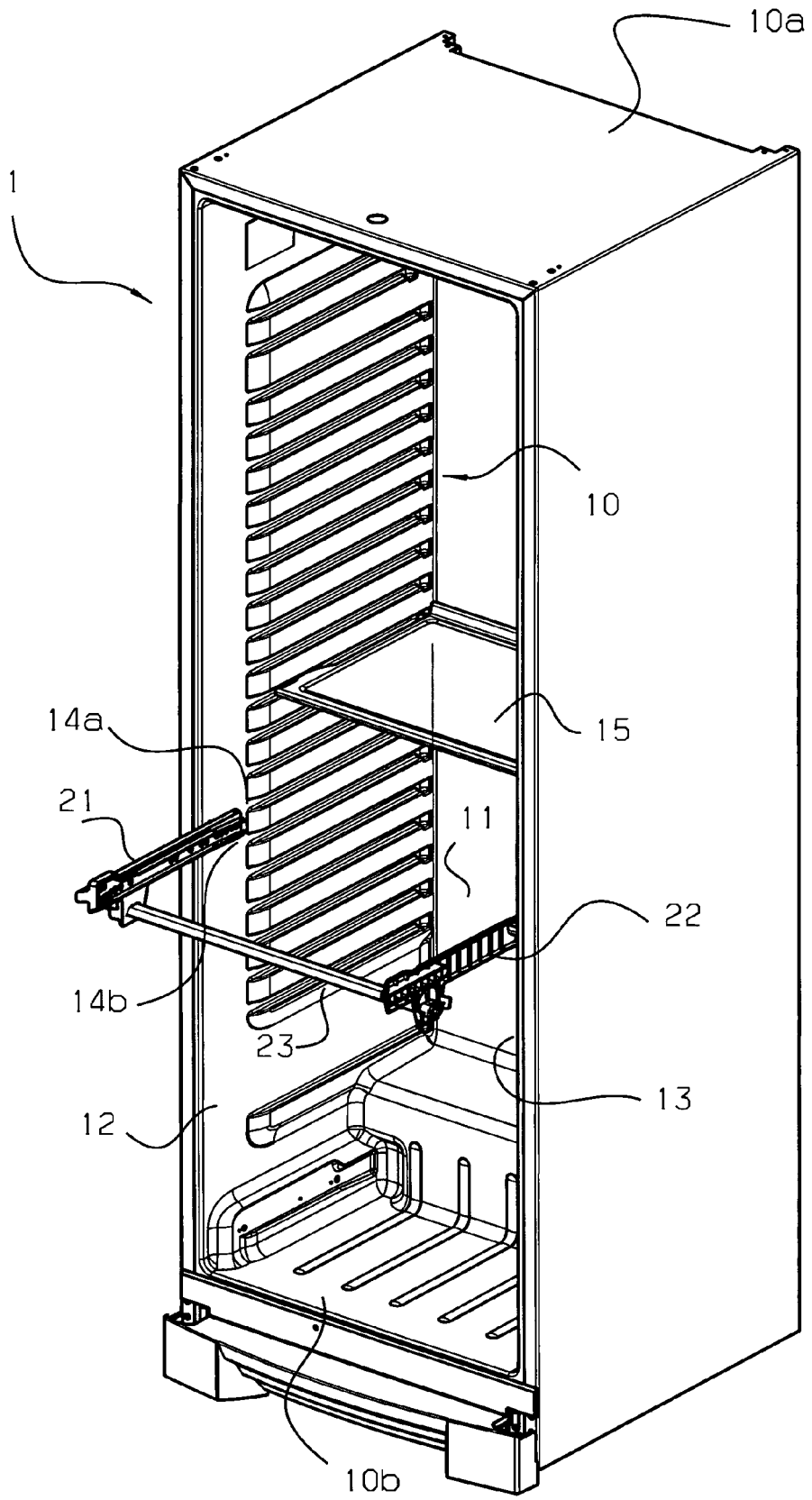


Fig 1b

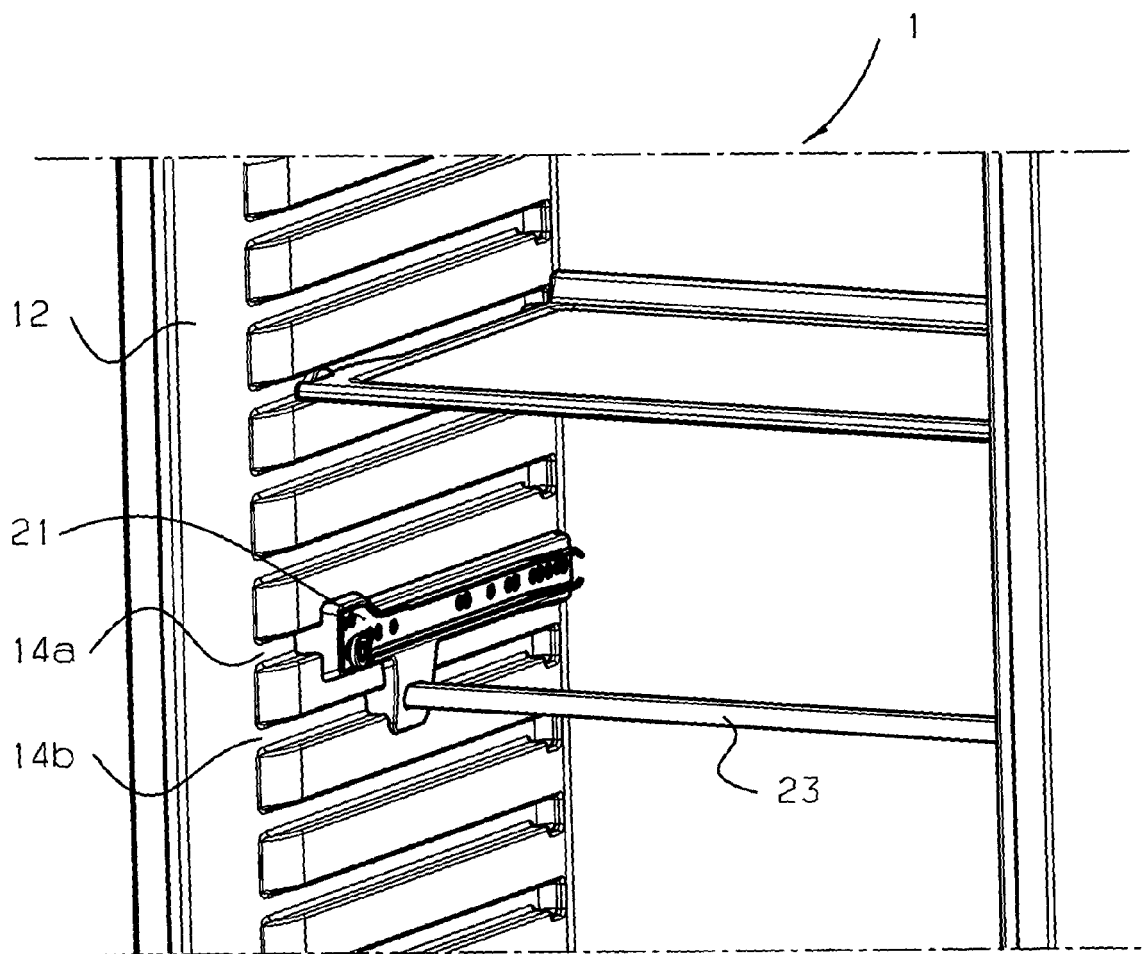


Fig 1c

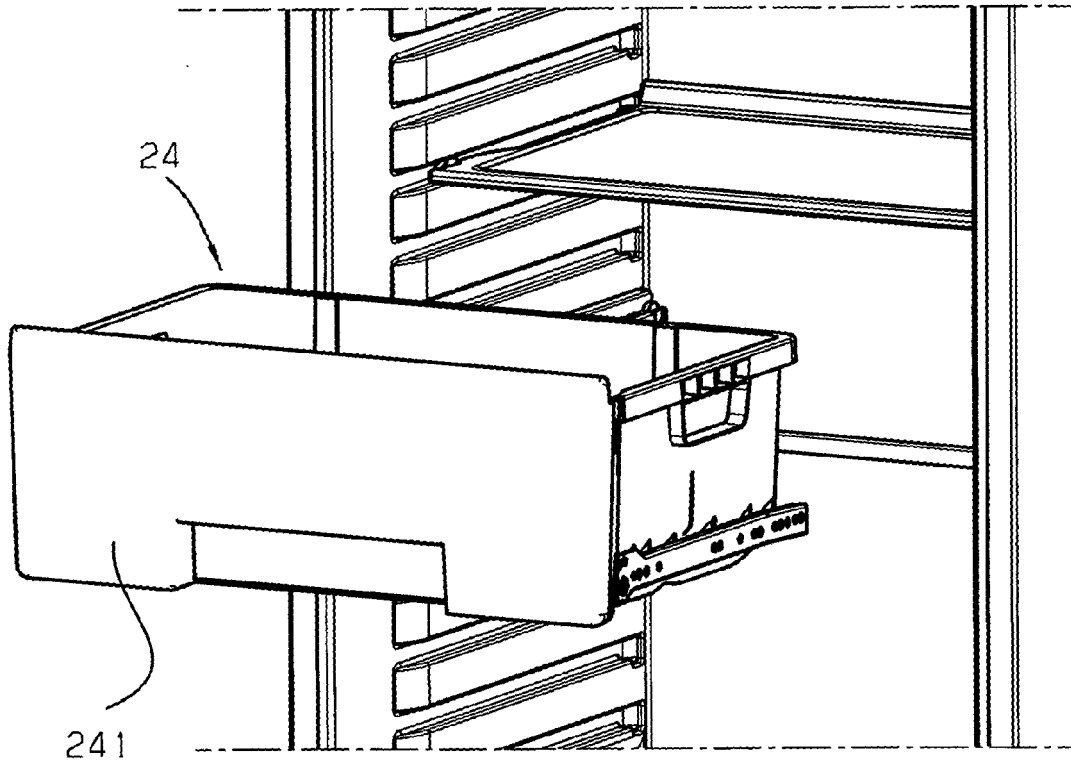


Fig 1d

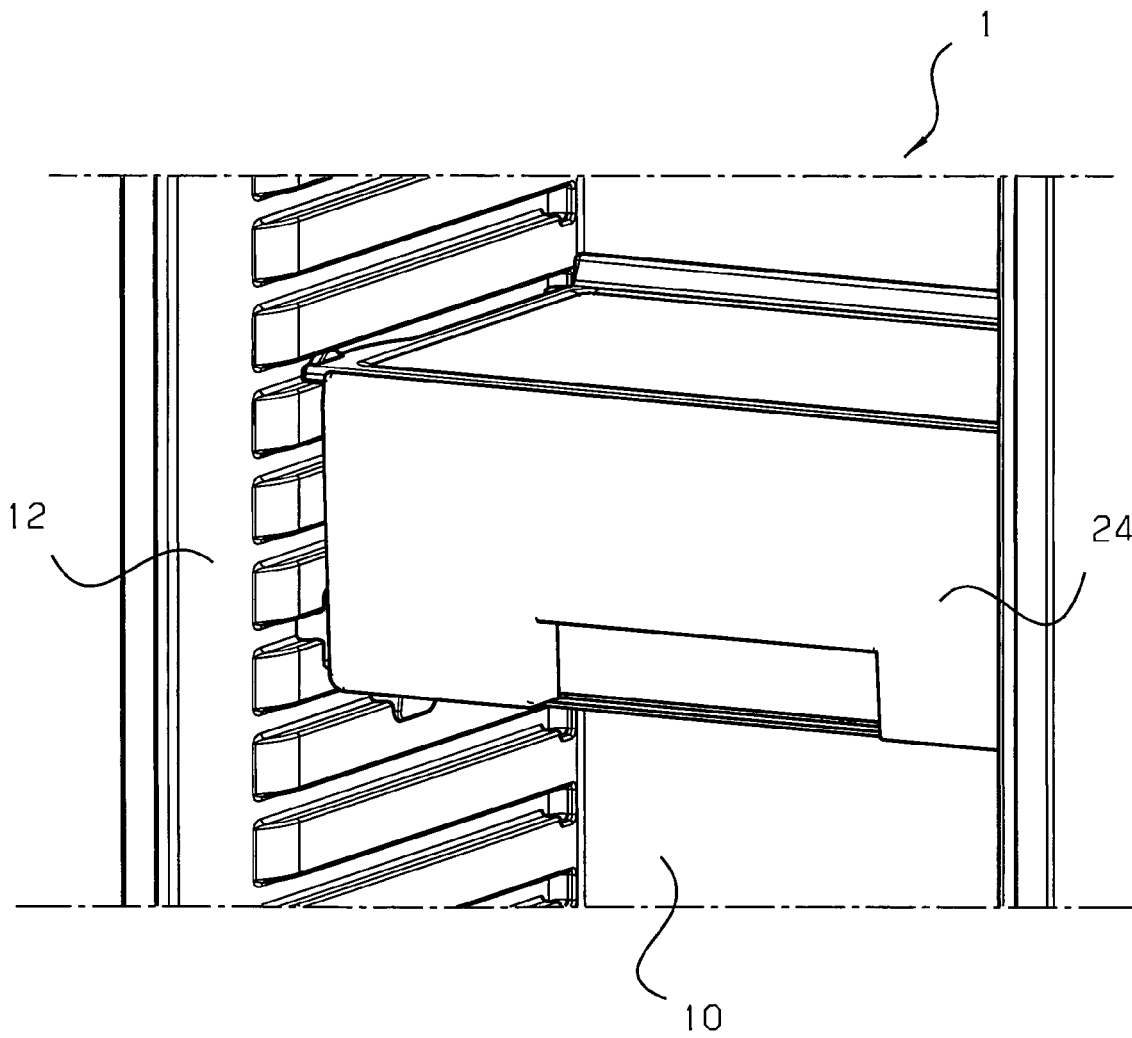


Fig 2

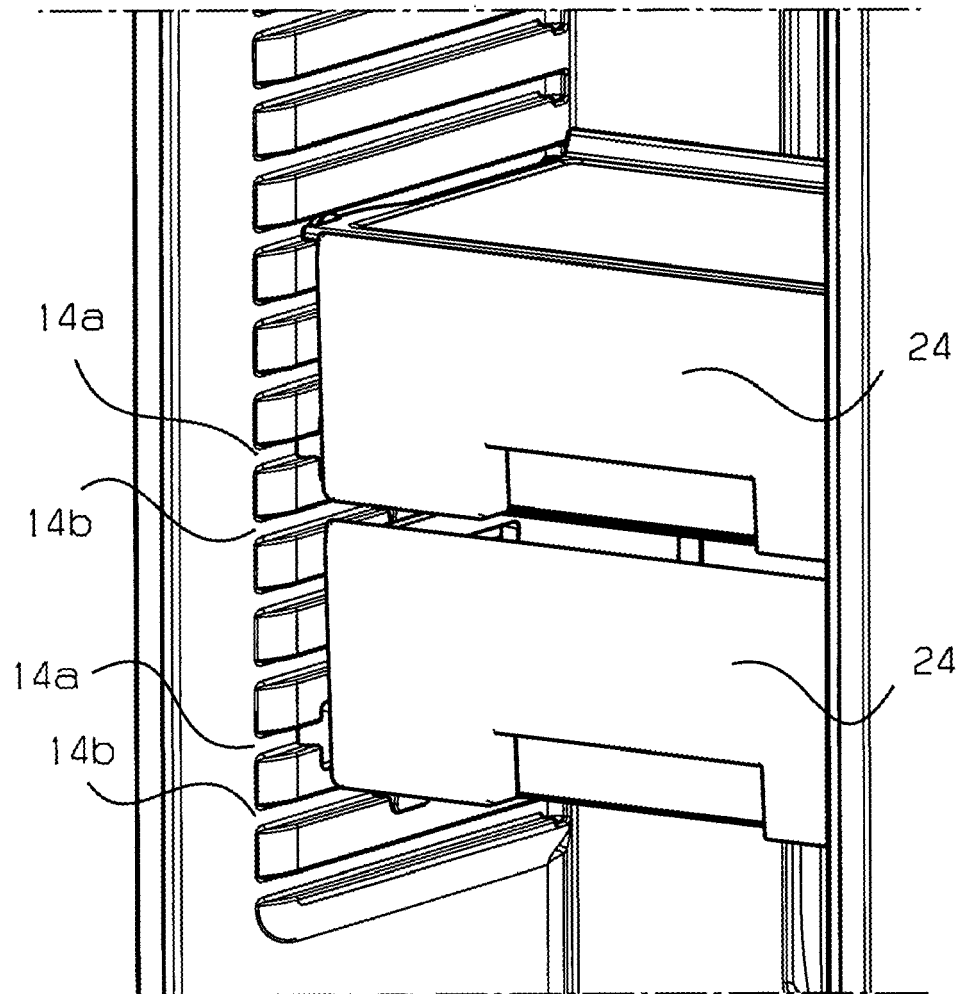


Fig 3a

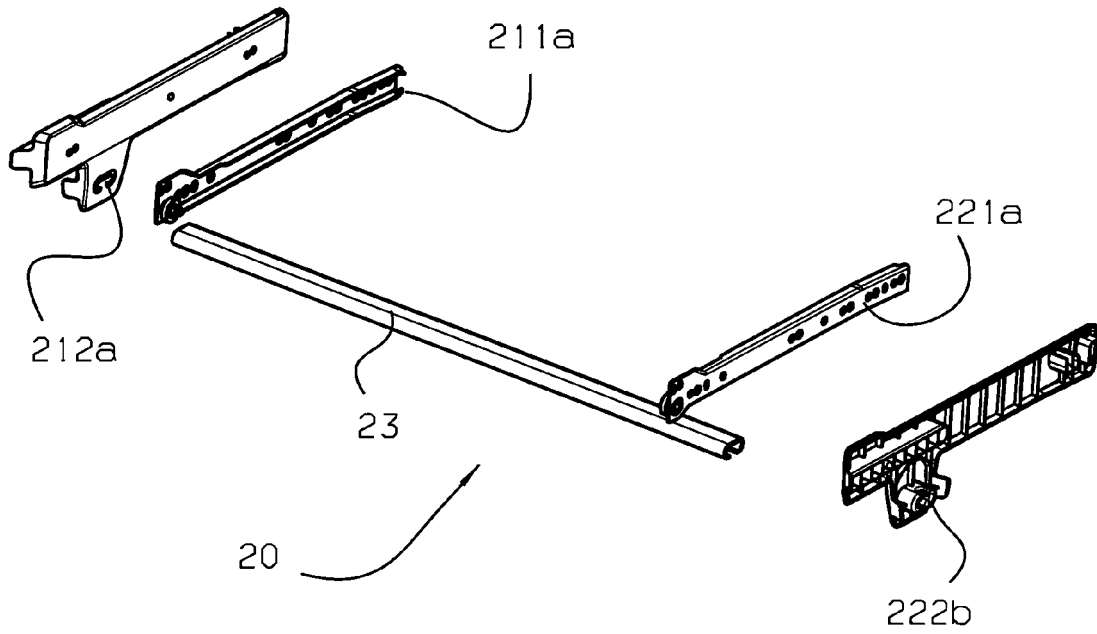


Fig 3b

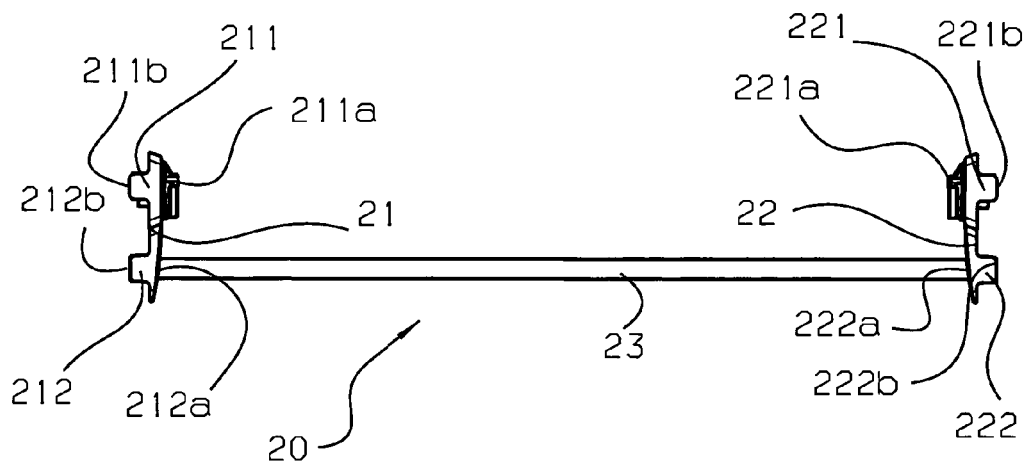


Fig 4a

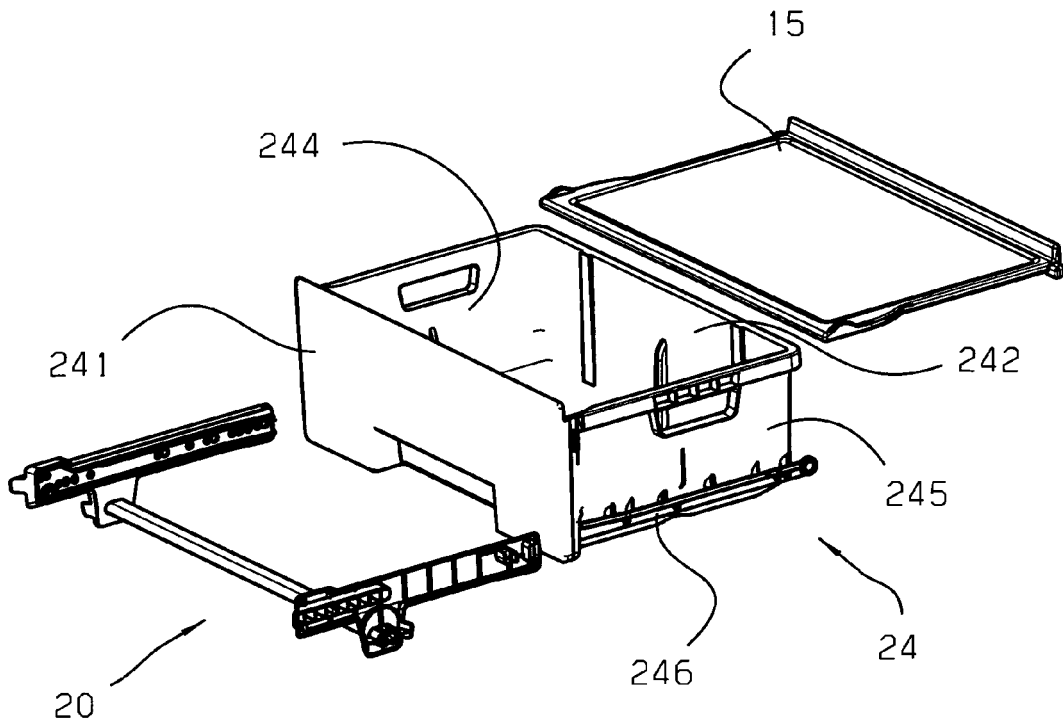
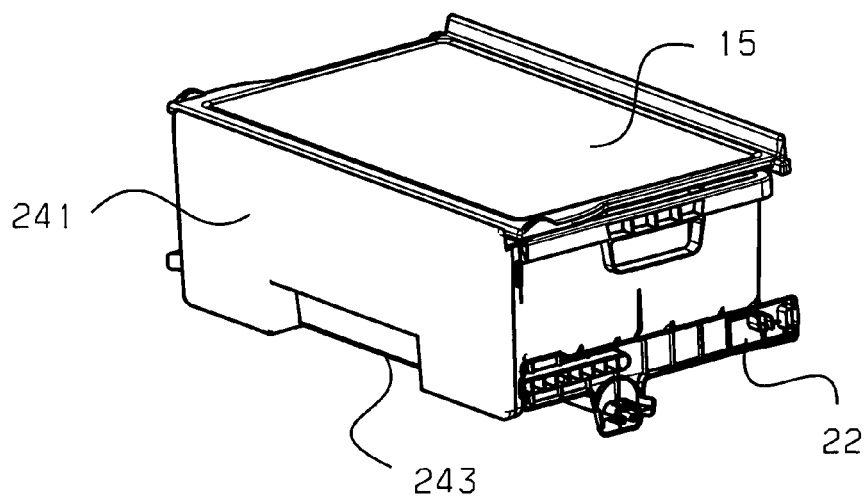


Fig 4b





EUROPEAN SEARCH REPORT

Application Number  
EP 08 01 5342

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Place of search		Date of completion of the search	Examiner
The Hague		19 January 2009	Yousufi, Stefanie
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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EPO FORM 1503 03.02 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 01 5342

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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**REFERENCES CITED IN THE DESCRIPTION**

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