(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 331 893 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
18.01.2012 Bulletin 2012/03

(21) Application number: **09782727.3**

(22) Date of filing: **08.09.2009**

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

(86) International application number:
PCT/EP2009/061591

(87) International publication number:
WO 2010/029053 (18.03.2010 Gazette 2010/11)

(54) **Cooling device with rotatable shelf**

Kühlvorrichtung mit drehbarer Ablage

Appareil de réfrigération comprenant une clayette rotative

(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 MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **09.09.2008 TR 200806825**

(43) Date of publication of application:
15.06.2011 Bulletin 2011/24

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EP 2 331 893 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a cooling device comprising a shelf for effectively using the spaces inside the body wherein items are emplaced.

[0002] In cooling devices, for example refrigerators or freezers, various types of stepped, foldable or collapsible telescopic shelves, bottle carriers or etc. are utilized for the purpose of using the available volume efficiently and for storing items such as bottles, food or beverage cans without occupying too much space and allowing the user convenience in emplacing and taking them out.

[0003] In the state of the art, the shelves used in cooling devices are held by shelf supports disposed oppositely on the body side walls. When an object, for example a bottle that is longer than the distance between the two shelves is desired to be placed on the shelf, some portion of the shelf is folded over the shelf or on the side wall of the body for performing this operation. However, when this folded portion is desired to be used for the aim of supporting, the problem of rigidity arises whereby bending and imbalances may occur.

[0004] In the state of the art United States of America Patent no US2092430, a cooling device is described which comprises a body, at least one shelf having a carrier placed inside the body and a shelf support on which the shelf is seated, the cooling device further comprising:

- a connection member which is seated on the shelf support, fitted to one side of the carrier extending horizontally between the two side walls of the body, thereby enabling the carrier to be secured to the body from this side,

- the connection member being constructed in such a way that it allows changing the carrier from the vertical position to the horizontal position such that it extends from one side wall to the other side wall, by rotating it approximately 90° on its side whereto it is secured, around a rotational axis perpendicular to said side wall,

- the connection member further being constructed in such a way that it allows the carrier to be folded on the side wall when rotated approximately 90° on its same side from which it is secured to the side wall, around another axis parallel to the side wall and perpendicular to the floor.

The shelf can be swung outwardly from the refrigerator by rotating about an axis and folded on the refrigerator side wall when rotated on another axis. The shelf is configured telescopically to easily move inside the body.

[0005] The aim of the present invention is the realization of a cooling device comprising ergonomic shelves for using the available volume in the body efficiently wherein items are stored and presenting the user with different utilization alternatives.

[0006] The cooling device realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a carrier that is seated on the shelf supports. The carrier is changed from the horizontal position to the vertical position by rotating around its long side such that it extends from one side wall to the other side wall by means of the connection member and is folded on the side wall by changing its rotational axis, this time being rotated around the short side by the same connection member.

[0007] Accordingly, folding the shelf on the side wall is maintained without requiring dislodging of the shelf above or below or making any changes in the width of the shelf. In addition to this, a greater number of shelves can be mounted into the same volume of the body.

[0008] Moreover, the carrier can be easily moved both towards the front side of the cooling device and also over the side wall by the connection member by rotating around two axes that are vertical to each other. The carrier, when changed to virtually the vertical position by rotating around the long side extending from one side wall to the other side wall, forms a barrier in front of the cooling device and serves as a barrier preventing the bottles placed on the subjacent shelf from falling down. As a result of this motion, the rotational axis of the carrier is also changed, whereby the carrier is rotated around the short side and folded over the side wall.

[0009] The connection member comprises a support means fitted into one side of the carrier, a housing affixed on the side wall of the body, an intermediate component fitted into the housing to be rotatable therein, thereby providing the carrier to rotate along the long side, and a first pin that connects the intermediate component with the support means, bearing rotatable on the intermediate component thereby maintaining the carrier to rotate along the short side wherefrom it is secured to the support means and to be folded on the side wall.

[0010] In an embodiment of the present invention, the support means comprises a channel wherein the short side of the carrier is seated.

[0011] In an embodiment of the present invention, the intermediate component comprises a second pin that is seated in the housing, forming the rotational axis of the carrier which is vertical to the side wall by extending vertically to the side wall.

[0012] In an embodiment of the present invention, the connection member comprises obstacles and stoppers that restrict the movement of the carrier. Thus, the carrier can only move in the desired direction. In the preferred embodiment of the present invention, a 90° angle is provided between the stoppers.

[0013] In an embodiment of the present invention, the carrier is configured as a plate.

[0014] In another embodiment of the present invention, the carrier is configured by joining the wires like a grate.

[0015] By means of the present invention, a shelf is enabled to be used in three different positions. The di-

verse usage of the shelves not only creates consumer satisfaction but also enables an effective storage process inside the cooling device.

[0016] A cooling device realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0017] Figure 1 - is the perspective view of a cooling device comprising a carrier.

[0018] Figures 2, 3 - is the perspective view of the cooling device when the carrier functions as a barrier.

[0019] Figures 4, 5 - is the perspective view of the cooling device when the carrier is folded over the side wall.

[0020] Figure 6 - is the perspective view of a connection member.

[0021] Figure 7 - is the exploded view of a connection member.

[0022] Figure 8 - is the perspective view of a connection member.

[0023] The elements illustrated in the figures are numbered as follows:

1. Cooling device
2. Body
3. Shelf support
4. Shelf
5. Channel
6. Carrier
7. Connection member
8. Intermediate component
9. Housing
10. Support means
11. First pin
12. Second pin
13. Locking element
14. Obstacle
15. 25. Stopper

[0024] The cooling device (1) of the present invention comprises a body (2), at least one shelf (4) having a carrier (6), emplaced inside the body (2) and shelf supports (3) disposed oppositely on the side walls of the body (2) whereon the shelf (4) is seated.

[0025] The cooling device (1) furthermore comprises,

- a connection member (7) fitted to one side of the carrier (6) which is seated on the shelf supports (3) at the same level, extending in the horizontal position between the two side walls of the body (2), thereby enabling thereof to be secured to the side wall of the body (2) from this side,
- rotating the carrier (6) approximately 90° the edge that is secured to the side wall, in a rotational axis vertical to the side wall, changing from the horizontal position to the vertical position such that it extends from one side wall to the other side wall,
- enabling the carrier (6) to be folded on the side wall when rotated approximately 90° on the same edge that is secured to the side wall, in another axis parallel to the side wall and vertical to the floor.

[0026] The carrier (6) can be rotated around two axes perpendicular to each other by means of the connection member (7) and can stay on three planes vertical to each other. At the same time, in cases wherein the distance between the two shelves (4) is shorter than the width of a shelf (4), the shelf (4) can be folded over the side wall without making any changes in the width of the shelf (4) and without requiring dislodging of the upper or lower shelf (4). Moreover, a greater number of shelves (4) can be mounted into the same body (2) volume.

[0027] The carrier (6) can be moved easily by means of the connection member (7) both toward the front side of the cooling device (1) and also over the side wall by rotating around two axes that are vertical to each other. The carrier (6), when changed to virtually the vertical position by rotating around the long side extending from one side wall to the other side wall, forms an obstacle at the front side of the cooling device (1) and serves as a barrier that prevents the bottles placed on the lower shelf (4) from falling. During this motion, in fact the rotational axis of the carrier (6) is also changed and the carrier (6) can be folded over the side wall by rotating around its short side.

[0028] The connection member (7) comprises a support means (10) fitted to one side of the carrier (6), a housing (9) affixed on the body (2) side wall, an intermediate component (8) enabling the carrier (6) to rotate around the axis that extends vertically to the main body (2) side wall (along the long side) by being rotatably fitted into the housing (9), a first pin (11) that connects the intermediate component (8) with the support means (10), bearing on the intermediate component (8) rotatably and enables the carrier (6) to fold over the side wall by rotating around the axis extending parallel to the body (2) side wall (along the short side) (Figure 6, Figure 7 and Figure 8). The connection member (7) is fitted to the front end of the shelf support (3).

[0029] The connection member (7) comprises more than one locking element (13) formed as recesses and protrusions arranged oppositely on the first pin (11), the support means (10) and the intermediate component (8) thereby enabling thereof to rotate around the axis it is fastened by one end of the first pin (11) connected to the support means (10) and the other end to the intermediate component (10). The first pin (11) is beared on the intermediate component (8) and the support means (10) and rotates around the axis of bearing.

[0030] The support means (10) comprises a channel (5) that is affixed to the short side of the carrier (6).

[0031] The intermediate component (8) comprises a second pin (12) seated in the housing (9), forming the rotational axis of the carrier (6) vertical to the side wall by extending vertically to the side wall.

[0032] In this embodiment of the present invention, the connection member (7) comprises an obstacle (14) situated on the first pin (11) and two stoppers (15 and 25)

with a certain distance there between, disposed on the intermediate component (8) that restrict the motion of the said obstacle (14). Accordingly, the carrier (6) is prevented from opening outwardly from the body (2) and to move due to involuntary forces. In the preferred embodiment of the present invention, the angle between the stoppers (15 and 25) is 90°.

[0033] At the start, the carrier (6) is situated on the shelf supports (3) disposed on the same horizontal plane. In this position, the obstacle (14) and a stopper (15) are in the horizontal position and the obstacle (14) bears against the stopper (15) from below. Thus, the carrier (6) in the horizontal position is prevented from moving when a force is exerted from below. In this case, the carrier (6) also functions to carry and support the items such as bottle, container etc. placed thereon (Figure 1).

[0034] When an item longer than the distance between the two shelves (4), for example a bottle, is desired to be placed on the shelf (4), the carrier (6) is changed from the horizontal position to the vertical position such that it extends from one side wall to the other side wall. For this, the user rotates the carrier (6) preferably 90° around the second pin (12) on the intermediate component (8) which is seated in the housing (9) on the side wall. In this case, the carrier (6) rotates around its long side and a barrier is formed when the carrier (6) changes from the horizontal position to the vertical position. During this movement, the carrier (6) and the support member (10) rotate around the second pin (12) by means of the intermediate component (8) by conserving the existing position between the carrier (6) and the support member (10) whereto it is affixed (Figure 7). Thus, a clearance as big as the area occupied by the carrier (6) while resting in the horizontal position is created. Accordingly, tall bottles can easily be placed on the lower shelf (4) to coincide with the clearance. In this position, as the carrier (6) allows placing of bottles on the lower shelf (4) taller than the distance between the two shelves (4), at the same time serves as a barrier preventing the bottles on the lower shelf (4) from falling (Figure 2 and Figure 3).

[0035] When the carrier (6) is desired to be folded over the side wall by means of the same connection member (7), the user rotates the carrier (6), preferably 90° around the first pin (11) on the support means (10) mounted onto the intermediate component (8) which is seated in the housing (9) on the side wall until the obstacle (14) bears against the other stopper (25) (Figure 8). In this position, the carrier (6) this time rotates around its short side and the carrier (6) that forms a barrier by extending from one side wall to the other wall, is folded over the side wall whereto the connection member (7) is secured. Consequently, loading to and unloading from the shelf (4) can be made more easily by preventing the carrier (6) from forming a restraint. Thus, the bottles or containers that are longer than the distance between the two shelves (4) can be placed on the bottom shelf (4) (Figure 4 and Figure 5).

[0036] In another embodiment of the present invention, the support means (10) is configured as a frame that surrounds the carrier (6) all around.

[0037] In an embodiment of the present invention, the carrier (6) is configured as a plate.

[0038] In another embodiment of the present invention, the carrier (6) is configured by joining the wires in a grate shape.

[0039] In another embodiment of the present invention, the cooling device (1) comprises a locking mechanism (not shown in the figures) on the side wall opposite the side wall whereto the connection member (7) is affixed, preferably aligned with the connection member (7), that prevents the carrier (6) from opening without the intervention of the user.

[0040] By means of the present invention, the user is equipped with alternative loading and unloading facilities by forming different combinations. In addition to this, a two-piece shelf (4) can be used in a stepped form in three positions.

[0041] It is to be understood that the present invention is not limited by the embodiments disclosed above and an expert in the technique can easily introduce different embodiments within the scope of the claims of the present invention.

Claims

1. A cooling device (1) that comprises a body (2), at least one shelf (4) having a carrier (6) placed inside the body (2) and shelf supports (3) disposed oppositely on the side walls of the body (2) on which the shelf (4) is seated and wherein

   - a connection member (7) is seated on one of the shelf supports (3) at the same level, fitted to one side of the carrier (6) extending horizontally between the two side walls of the body (2), thereby enabling the carrier (6) to be secured to the body (2) side wall from this side,
   - the connection member (7) being such that it allows changing the carrier (6) from the vertical position to the horizontal position such that it extends from one side wall to the other side wall, by rotating it approximately 90° on its side whereto it is secured around a rotational axis perpendicular to the side wall,
   - the connection member (7) further being such that it allows the carrier (6) to be folded on the side wall when rotated approximately 90° on its same side from which it is secured to the side wall, around another axis parallel to the side wall and perpendicular the floor, the connection member (7) comprising a support means (10) fitted to one side of the carrier (6), a housing (9) affixed on the side wall of the body (2), an intermediate component (8) enabling the carrier (6) to rotate around the axis that extends perpen-

dicular to the side wall of the main body (2) by being rotatably fitted into the housing (9), a first pin (11) that connects the intermediate component (8) together with the support means (10), bearing on the intermediate component (8) rotatably and enabling the carrier (6) to fold over the side wall by rotating along the side from which it is secured to the support means, around the axis extending in a parallel direction to the side wall of the main body (2) along the short side of the carrier (6).

2. A cooling device (1) as in Claim 1, **characterized by** a support means (10) comprising a channel (5) wherein the short side of the carrier (6) is seated.

3. A cooling device (1) as in Claim 1, **characterized by** an intermediate component (8) having a second pin (12), seated in the housing (9), forming the rotational axis of the carrier (6) that is vertical to the side wall by extending vertically to the side wall.

4. A cooling device (1) as in Claim 1, **characterized by** a connection member (7) comprising an obstacle (14) situated on the first pin (11).

5. A cooling device (1) as in Claim 4, **characterized by** a connection member (7) comprising two stoppers (15 and 25), disposed on the intermediate component (8) that restrict the motion of the obstacle (14).

6. A cooling device (1) as in Claim 5, **characterized by** stoppers (15 and 25) having an angle of 90° therebetween.

7. A cooling device (1) as in any one of the above Claims, **characterized by** a support means (10) that is configured as a frame, which surrounds the carrier (6) all around.

8. A cooling device (1) as in any one of the above Claims, **characterized by** a connection member (7) comprising more than one locking element (13) formed as recesses and protrusions, arranged oppositely on the first pin (11), the support means (10) and the intermediate component (8) thereby enabling thereof to rotate around the axis whereto it is fastened by connecting one end of the first pin (11) to the support means (10) and the other end to the intermediate component (10).

9. A cooling device (1) as in any one of the above Claims, **characterized by** a connection member (7) that is affixed to the front end of the shelf support (3).

10. A cooling device (1) as in Claim 1, **characterized by** a locking mechanism on the side wall opposite the side wall whereto the connection member (7) is affixed, preferably aligned with the connection member (7), which prevents the carrier (6) from opening without the intervention of the user.

Patentansprüche

1. Kühlvorrichtung (1), umfassend einen Gehäusekörper (2), wenigstens ein Regal (4) mit einem Träger (6), das im Gehäusekörper (2) untergebracht ist, und Regalträger (3), die gegenüber an den Seitenwänden des Gehäusekörpers (2) angeordnet sind und auf denen das Regal (4) sitzt, **und wobei**

- ein Verbindungselement (7) auf der gleichen Höhe auf einem der Regalträger (3) sitzt und an einer Seite des Trägers (6) angebracht ist und sich horizontal zwischen den zwei Seitenwänden des Gehäusekörpers (2) erstreckt, wodurch der Träger (6) von an der Seitenwand des Gehäusekörpers (2) dieser Seite aus gesichert werden kann,
- wobei das Verbindungselement (7) derart ist, dass es ein Wechseln des Trägers (6) aus der vertikalen Position in die horizontale Position erlaubt, derart, dass er sich von einer Seitenwand zur anderen Seitenwand erstreckt, indem er um eine Drehachse, die senkrecht zur Seitenwand verläuft, um etwa 90° auf seine Seite gedreht wird, an der er gesichert ist,
- wobei das Verbindungselement (7) ferner derart ist, dass es zulässt, dass der Träger (6) von derselben Seite aus, an der er an der Seitenwand gesichert ist, um eine andere Achse parallel zur Seitenwand und senkrecht zum Boden an die Seitenwand geklappt werden kann, wenn er um etwa 90° gedreht wird,

wobei das Verbindungselement (7) ein Tragemittel (10) umfasst, das an einer Seite des Trägers (6) angebracht ist, ein Gehäuse (9), das an der Seitenwand des Gehäusekörpers (2) befestigt ist, ein Zwischenbauteil (8), das es dem Träger (6) ermöglicht, sich um die Achse zu drehen, die sich senkrecht zur Seitenwand des Hauptgehäusekörpers (2) erstreckt, indem es drehbar im Gehäuse (9) eingesetzt ist, einen ersten Stift (11), der das Zwischenbauteil (8) mit dem Tragemittel (10) verbindet und drehbar auf dem Zwischenbauteil (8) ruht und es dem Träger (6) ermöglicht, sich durch Drehen entlang der Seite, an der er an dem Tragemittel (10) gesichert ist, um die Achse, die sich parallel zur Seitenwand des Hauptgehäusekörpers (2) an der kurzen Seite des Trägers (6) erstreckt, über die Seitenwand zu klappen.

2. Kühlvorrichtung (1) nach Anspruch 1, **gekennzeich-**

net durch ein Tragemittel (10), das einen Kanal (5) umfasst, in dem die kurze Seite des Trägers (6) sitzt.

3. Kühlvorrichtung (1) nach Anspruch 1, **gekennzeichnet durch** ein Zwischenbauteil (8) mit einem zweiten Stift (12), der in dem Gehäuse (9) sitzt und die Drehachse des Trägers (6) bildet, die vertikal zu der Seitenwand verläuft, indem er sich vertikal zur Seitenwand erstreckt.

4. Kühlvorrichtung (1) nach Anspruch 1, **gekennzeichnet durch** ein Verbindungselement (7), das ein Hindernis (14) aufweist, das am ersten Stift (11) angeordnet ist.

5. Kühlvorrichtung (1) nach Anspruch 4, **gekennzeichnet durch** ein Verbindungselement (7), das zwei Anschläge (15 und 25) umfasst, die am Zwischenbauteil (8) angeordnet sind und die Bewegung des Hindernisses (14) einschränken.

6. Kühlvorrichtung (1) nach Anspruch 5, **gekennzeichnet durch** Anschläge (15 und 25), zwischen denen ein Winkel von 90° vorliegt.

7. Kühlvorrichtung (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** ein Tragemittel (10), das als ein Rahmen konfiguriert ist, der den Träger (6) vollständig umgibt.

8. Kühlvorrichtung (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** ein Verbindungselement (7), das mehr als ein Verriegelungselement (13) umfasst, das als Vertiefungen und Vorsprünge ausgebildet ist, die einander gegenüber an dem ersten Stift (11), dem Tragemittel (10) und dem Zwischenbauteil (8) angeordnet sind, wodurch der erste Stift (11) um die Achse gedreht werden kann, an der er befestigt ist, indem ein Ende davon mit dem Tragemittel (10) und das andere Ende mit dem Zwischenbauteil (8) verbunden ist.

9. Kühlvorrichtung (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** ein Verbindungselement (7), das am vorderen Ende des Regalträgers (3) befestigt ist.

10. Kühlvorrichtung (1) nach Anspruch 1, **gekennzeichnet durch** einen Verriegelungsmechanismus an der Seitenwand gegenüber der Seitenwand, an der das Verbindungselement (7) befestigt ist, vorzugsweise in Übereinstimmung mit dem Verbindungselement (7), was verhindert, dass sich der Träger (6) ohne das Eingreifen eines Benutzers öffnet.

Revendications

1. Un dispositif de refroidissement (1) qui comprend un corps (2), au moins une étagère (4) ayant un porteur (6) placé dans le corps (2) et des supports d'étagère (3) disposés face à face sur les parois latérales du corps (2) sur lesquels l'étagère (4) est placée **et où**

- un élément de raccordement (7) est placé sur l'une des supports d'étagère (3) au même niveau, fixé à l'un côté du porteur (6) s'étendant horizontalement entre les deux parois latérales du corps (2), ainsi permettant au porteur (6) d'être fixé à la parois latérale du corps (2) de ce côté-ci,
- l'élément de raccordement (7) étant tel qu'il permet de changer le porteur (6) de la position verticale à la position horizontale de telle sorte que celui-ci s'étend d'une paroi latérale à l'autre paroi latérale, en le tournant à environ 90° sur son coté auquel il est fixé, autour un axe de rotation perpendiculaire à la paroi latérale,
- l'élément de raccordement (7) en outre étant tel qu'il permet au porteur (6) d'être plié sur la paroi latérale lors de son rotation d'approximativement 90° sur le même côté duquel il est fixé à la paroi latérale, autour d'un autre axe parallèle à la paroi latérale et perpendiculaire au sol.

l'élément de raccordement (7) comprenant un élément de support (10) fixé à un côté du porteur (6), un logement (9) attaché sur la paroi latérale du corps (2), un élément intermédiaire (8) permettant au porteur (6) de tourner autour de l'axe qui s'étend perpendiculairement à la paroi latérale de corps principal (2) en étant monté de manière rotative dans le logement (9), une première goupille (11) qui relie l'élément intermédiaire (8) avec l'élément de support (10), s'appuyant sur l'élément intermédiaire (8) de manière rotative et permettant au porteur (6) d'être plié sur la paroi latérale en tournant le long de côté duquel il est fixé à l'élément de support (10), autour de l'axe s'étendant dans un sens qui est parallèle à la paroi latérale du corps principal (2) le long du côté court du porteur (6).

2. Un dispositif de refroidissement (1) selon la Revendication 1, **caractérisé par** un élément de support (10) comprenant un canal (5) dans lequel le côté court du porteur (6) est placé.

3. Un dispositif de refroidissement (1) selon la Revendication 1, **caractérisé par** un élément intermédiaire (8) ayant une seconde goupille (12), placé dans le logement (9), formant l'axe de rotation du porteur (6) qui est perpendiculaire à la paroi latérale en s'étendant perpendiculairement à la paroi latérale.

4. Un dispositif de refroidissement (1) selon la Revendication 1, **caractérisé par** un élément de raccordement (7) comprenant une barrière (14) située sur la première goupille (11).

5. Un dispositif de refroidissement (1) selon la Revendication 4, **caractérisé par** un élément de raccordement (7) comprenant deux butées (15 et 25), disposées sur l'élément intermédiaire (8) qui limitent le mouvement de la barrière (14).

6. Un dispositif de refroidissement (1) selon la Revendication 5, **caractérisé par** des butées (15 et 25) ayant un angle de 90° entre elles.

7. Un dispositif de refroidissement (1) selon l'une quelconque des revendications précédentes, **caractérisé par** un élément de support (10) qui est configuré comme un cadre, qui entoure le porteur (6) partout.

8. Un dispositif de refroidissement (1) selon l'une quelconque des revendications précédentes, **caractérisé par** un élément de raccordement (7) qui comprend plus d'un élément de blocage (13) formé comme des évidements et protubérances, disposé de façon opposée sur la première goupille (11), l'élément de support (10), et l'élément intermédiaire (8), donc qui permet à cette dernière-ci de tourner autour de l'axe auquel elle est fixé en raccordant une extrémité de la première goupille (11) à l'élément de support (10) et l'autre extrémité à l'élément intermédiaire (8).

9. Un dispositif de refroidissement (1) selon l'une quelconque des revendications précédentes, **caractérisé par** un élément de raccordement (7) qui est attaché à l'extrémité avant du support d'étagère (3).

10. Un dispositif de refroidissement (1) selon la Revendication 1, **caractérisé par** un mécanisme de blocage sur la paroi latérale opposée à la paroi latérale à laquelle l'élément de raccordement (7) est attaché, de préférence aligné avec l'élément de raccordement (7), qui empêche le porteur (6) de s'ouvrir sans l'intervention de l'utilisateur.

Figure 1

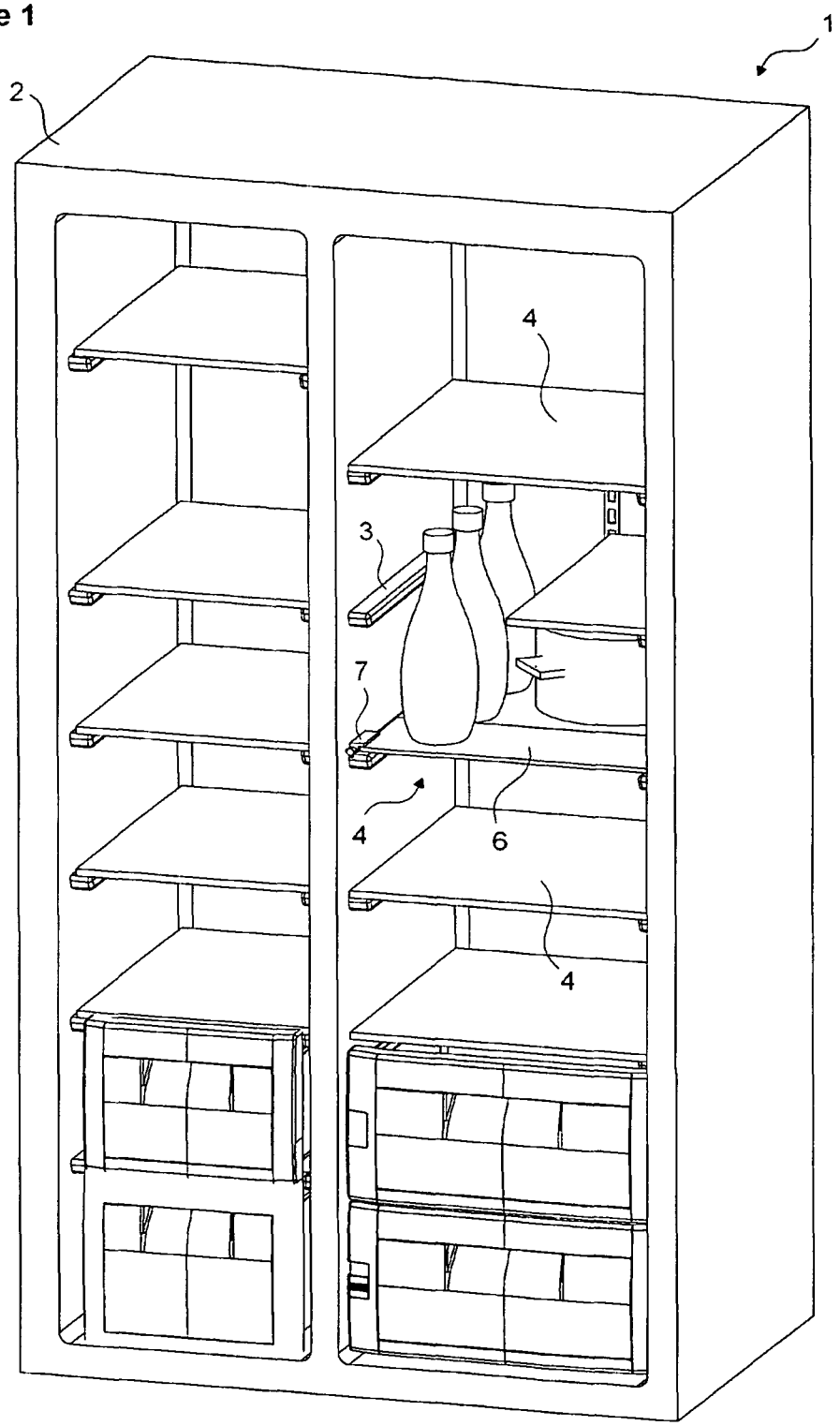


Figure 2

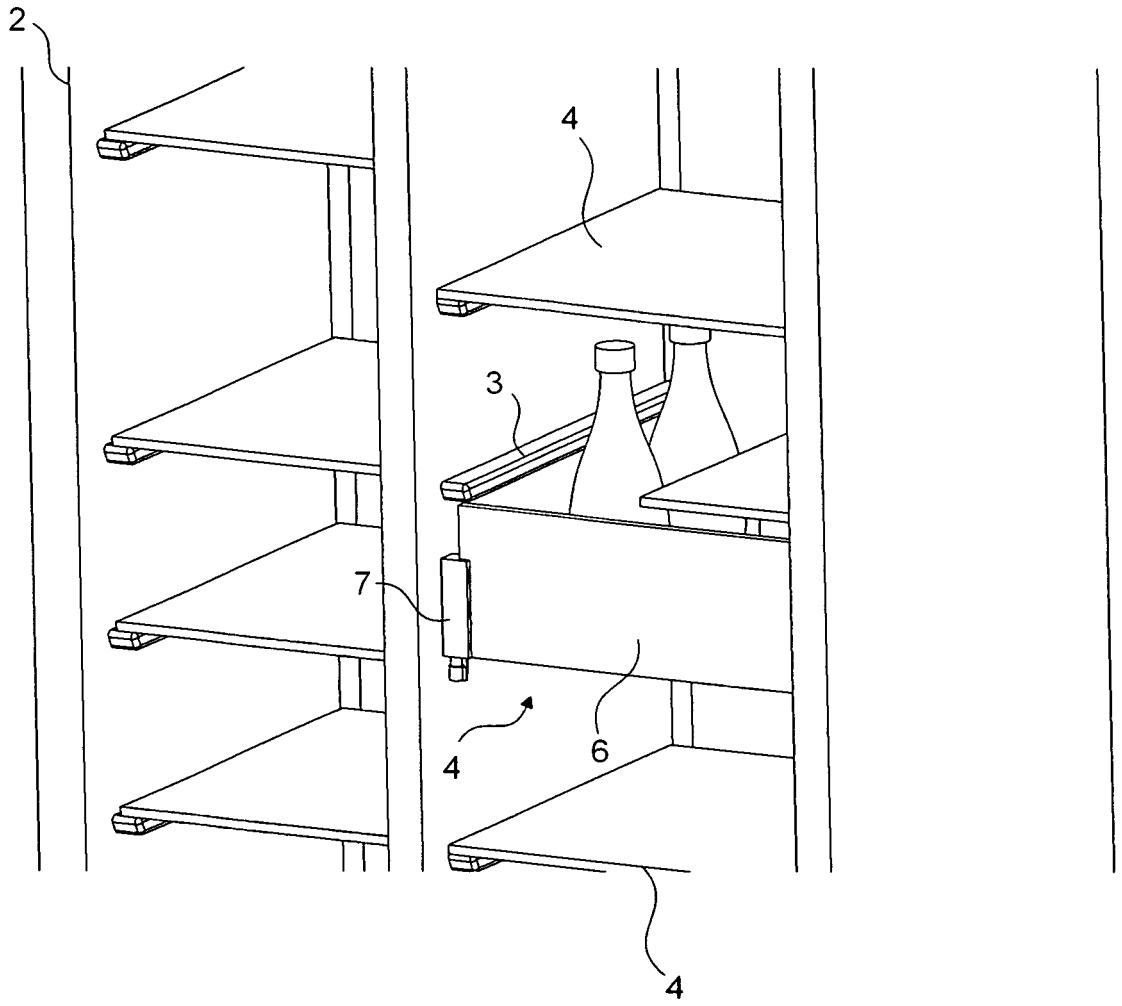


Figure 3

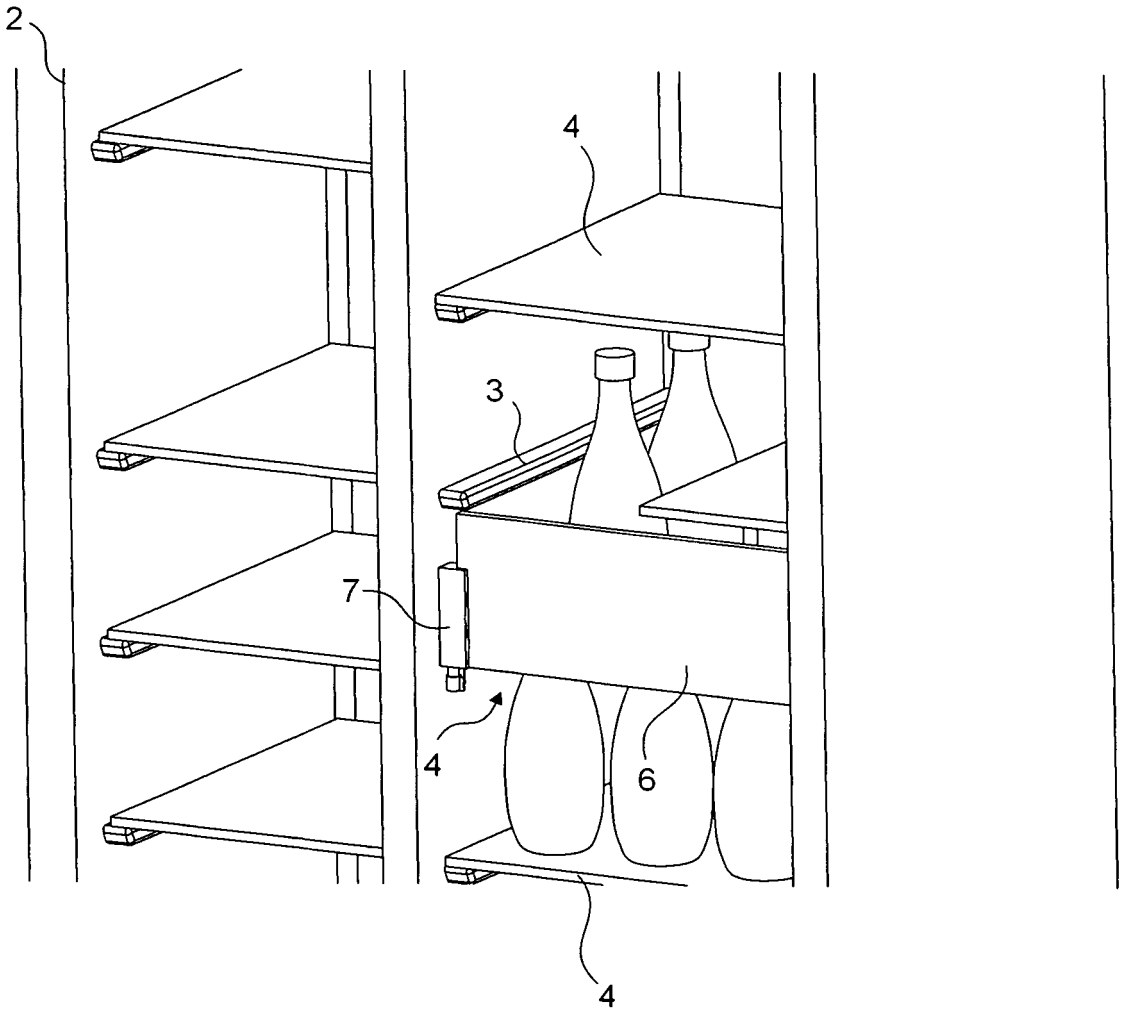


Figure 4

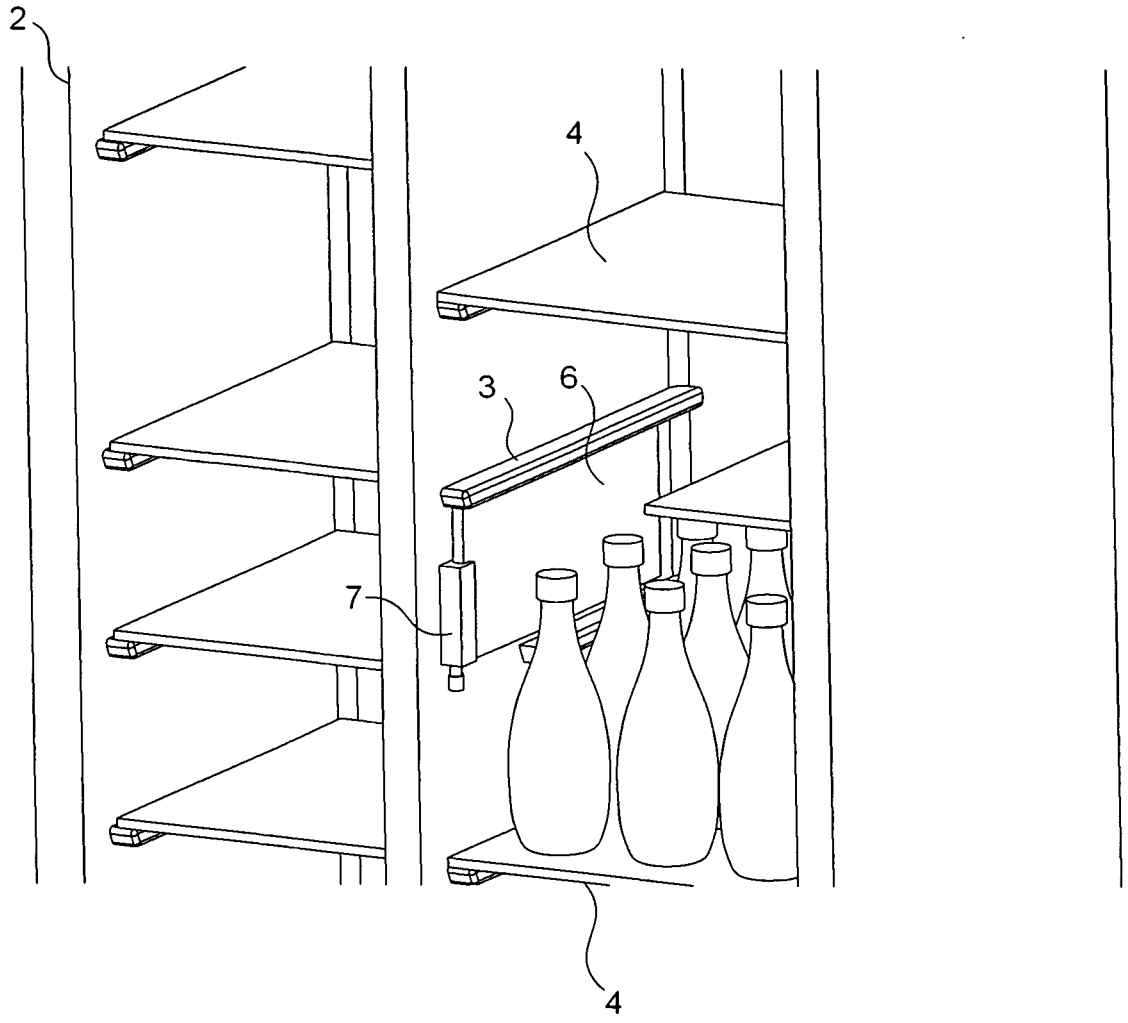


Figure 5

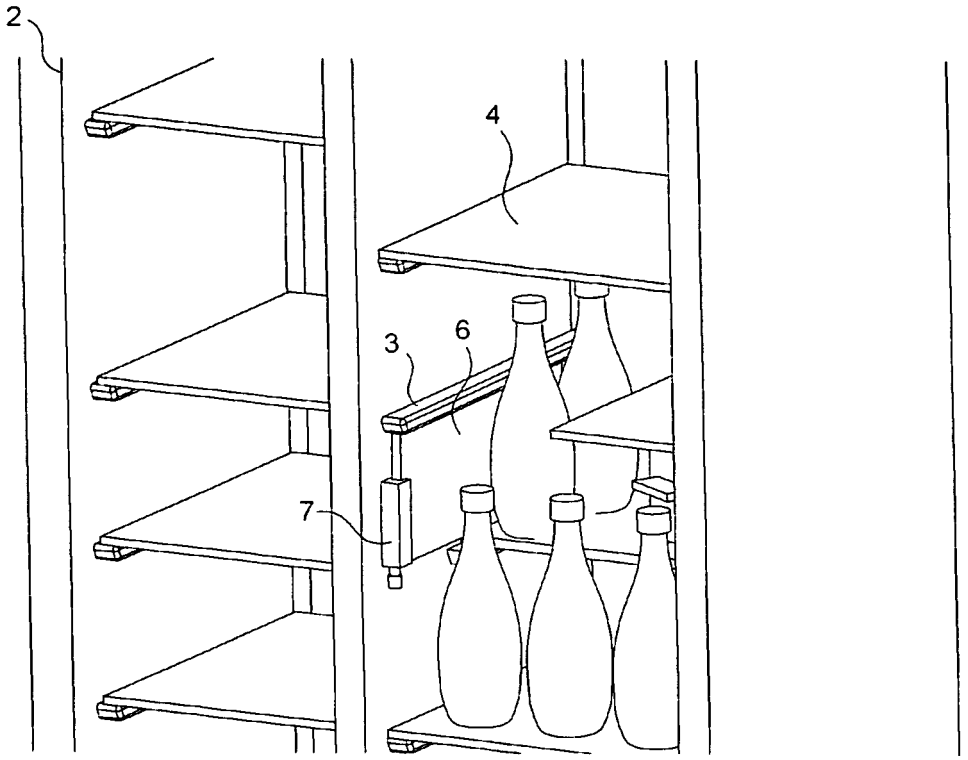


Figure 6

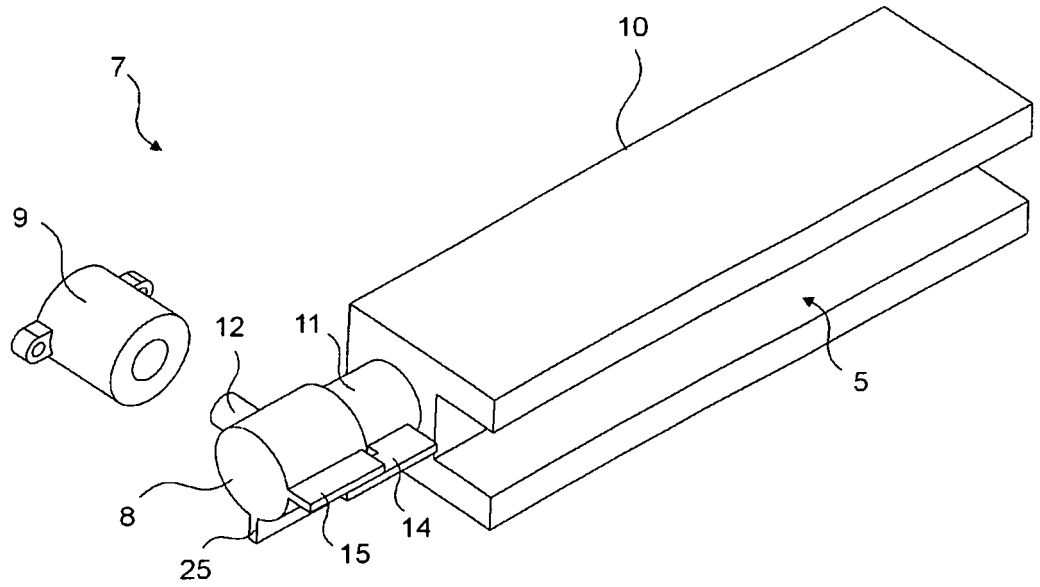


Figure 7

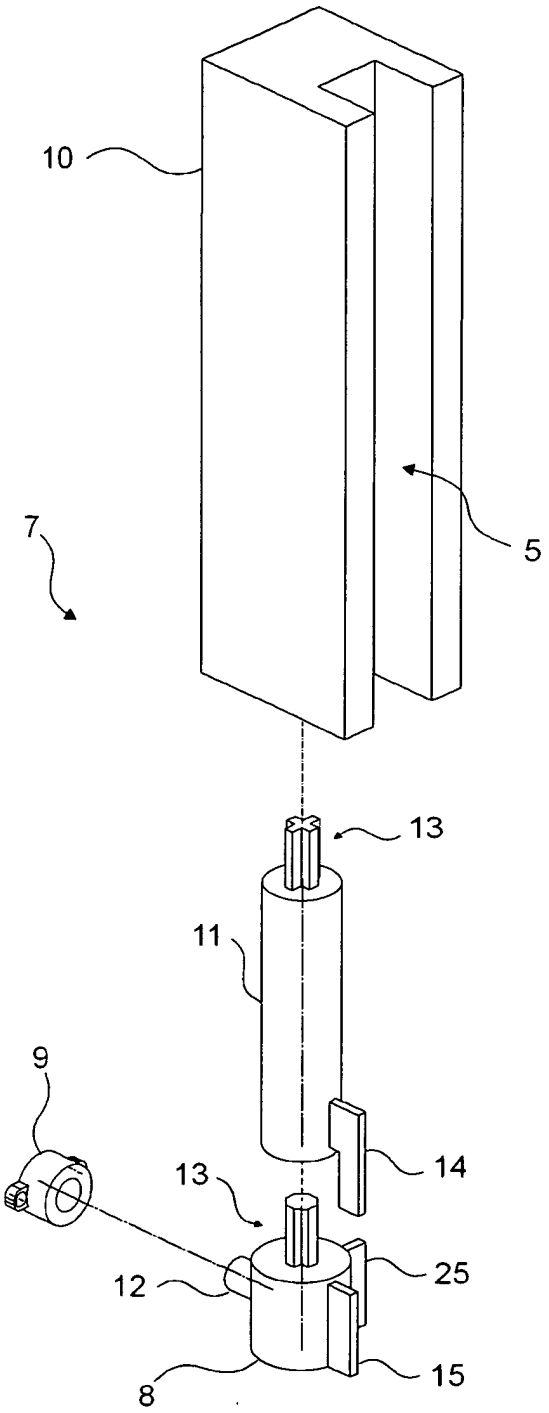
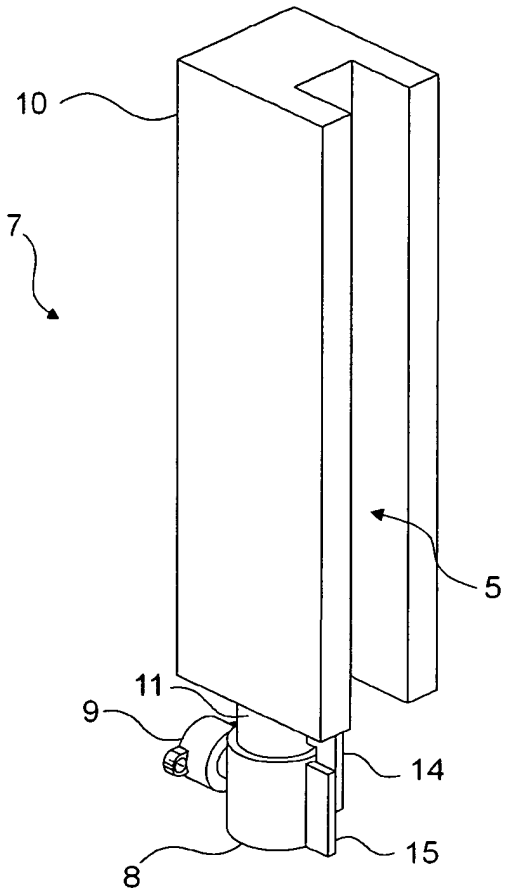


Figure 8



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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