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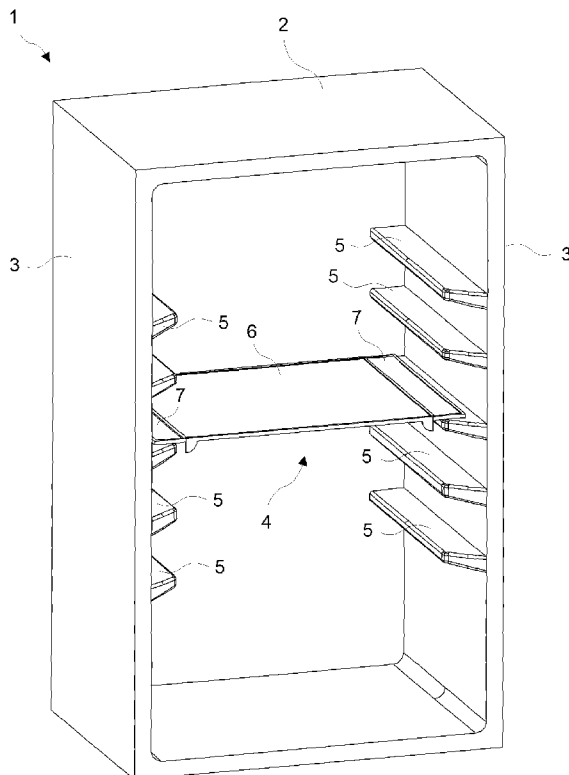
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[Continued on next page]

(54) Title: A COOLING DEVICE

Figure 1



(57) Abstract: The present invention relates to a cooling device (1) comprising a body (2) having two opposite side walls (3), at least one shelf (4) used for placing objects thereon and more than one shelf support (5) disposed on the side walls (3) that support the shelves (4).



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Description**A COOLING DEVICE**

- [0001] The present invention relates to a cooling device comprising a shelf the height of which can be adjusted.
- [0002] In cooling devices such as refrigerators and deep freezers the foodstuffs and various containers are placed on the shelves. Depending on the needs of the user, the distance between the two shelves can be required to be changed, in other words the height of the shelf in the body can be required to be adjusted.
- [0003] In some cooling devices, a large number of channels or rails are formed on two opposite walls of the body so that the shelf height can be adjusted. The user changes the height of the shelf by taking it out from the channels at one level and placing through another pair of channels at the desired level. However, for this operation the user has to first pull the shelf towards the outside of the body and to push back after adjusting the height. This operation presents a problem for the user particularly in cooling devices wherein the door cannot be opened entirely.
- [0004] Furthermore embodiments are known in the technique wherein holes are provided in the body and pins in the shelf that are fitted into these holes. Such an embodiment is explained in the United States Patent No. US4603782. In this embodiment, the shelf comprises support tabs that are inserted into the slots on four vertical uprights. Two of the tabs are configured to be movable, pushed by the spring and released from the slot by being pulled backwards by an actuator button. A different actuator button is used to command each movable tab.
- [0005] In the embodiment explained in the United States Patent No. US471481, the shelf is provided with two suitable shaped bolts and springs that push these bolts into the slots in the body in a semicircular shaped channel at one side thereof. Two buttons each secured to the bolts allow the height of the shelf to be adjusted by pulling the bolts inwards to the channel when required.
- [0006] However, in these state of the art embodiments, the configurations of channels, bolts etc. for changing the height of the shelf results in hardships

both in production and usage.

[0007] The aim of the present invention is the realization of a cooling device comprising a shelf the height of which can be easily adjusted.

[0008] The shelf used in the cooling device realized in order to attain the aim of the present invention and explicated in the attached claims, comprises a plate shaped main carrier forming the main part, on which the objects to be carried are placed. Auxiliary carriers, again plate shaped, are mounted so as to rotate in the downward direction on the sides of the main carrier facing the side walls. The auxiliary carriers allow the shelf to be positioned at a certain height in the cooling device body by being seated on the shelf supports. When the shelf height is desired to be changed, the shelf is first raised upwards from the shelf supports by as much as the width of the auxiliary carrier. Consequently, the area allowing the auxiliary carrier to rotate in the downward direction is created. The auxiliary carriers are folded by rotating in the downward direction and the shelf is changed to the movement position wherein it can pass between the shelf supports. The shelf, when changed to the movement position by folding the auxiliary carriers, is moved until coming to the new desired placing position in the vertical axis. Afterwards, the auxiliary carriers are opened again, changed to the carrying position and the shelf is placed on the shelf supports. Consequently, the height of the shelf is provided to be changed easily.

[0009] In an embodiment of the present invention, the auxiliary carriers rotate downwards by the effect of their own weight when the shelf is lifted from over the shelf supports.

[0010] In an embodiment of the present invention, a spring is placed at the point whereat the main carrier and the auxiliary carrier are connected to each other, which exerts pressure on the auxiliary carriers providing the auxiliary carriers to remain in the carrying position when free. Thus, the auxiliary carriers are provided to be at the carrying position unless desired otherwise.

[0011] The shelf furthermore comprises braces that provide the auxiliary carriers to be supported while in the carrying position and hence maintaining the strength of the shelf in the carrying position.

[0012] In an embodiment of the present invention, the sides of the auxiliary carrier and the main carrier from which they are connected to each other are shaped such that the auxiliary carrier is prevented from rotating upwards.

[0013] A cooling device realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0014] Figure 1 – is the perspective view of the cooling device while the auxiliary carriers are in the carrying position in an embodiment of the present invention.

[0015] Figure 2 – is the perspective view of the cooling device while the auxiliary carriers are in the movement position in an embodiment of the present invention.

[0016] Figure 3 – is the exploded view of the shelf in an embodiment of the present invention.

[0017] Figure 4 – is the front schematic view of the shelf in an embodiment of the present invention.

[0018] The elements illustrated in the figures are numbered as follows:

1. Cooling device
2. Body
3. Side wall
4. Shelf
5. Shelf support
6. Main carrier
7. Auxiliary carrier
8. Spring
9. Brace

[0019] The cooling device (1) comprises a body (2) having two opposite side walls (3), at least one shelf (4) used for placing objects thereon and more than one shelf support (5) disposed on the side walls (3) that support the shelves (4).

[0020] The shelf (4) comprises a main carrier (6), two auxiliary carriers (7)

- pivotally and rotatably mounted to the sides of the main carrier (6) facing the side walls (3),
- seated on the shelf supports (5) in the carrying position being at the

same level with the main carrier (6),

- providing the shelf (4) to move in the vertical axis by rotating into the body (2), towards under the main carrier (6) in the movement position (Figure 1 and Figure 2).

[0021] The user lifts the main carrier (6) upwards when the shelf (4) is desired to be placed from the current shelf support (5) to the next upper shelf support (5). The auxiliary carriers (7) change to the movement position by rotating downwards and the shelf (4) is passed between the shelf supports (5) thereabove and brought to the height to remain on the next upper shelf support (5). At this height, the auxiliary carriers (7) are opened again and the shelf (4) is again brought to the carrying position. Consequently, the shelf (4) height is provided to be changed easily.

[0022] The main carrier (6) and the auxiliary carriers (7) are shaped as rectangular plates that are placed side by side.

[0023] In an embodiment of the present invention, when the main carrier (6) is lifted upwards in order to change the vertical position of the shelf (4), the auxiliary carriers (7) that are no longer in contact with the shelf support (5) on which they stayed, change to the movement position by rotating around the side from which they are connected to the main carrier (6) by their own weight. In this embodiment, when the auxiliary carriers (7) are changed to the movement position, the shelf (4) is passed between the shelf supports (5) above and brought to the new vertical position whereat it is desired to be placed. In this position, the auxiliary carriers (7) are reopened by the user, providing the shelf (4) to be changed to the carrying position and is seated on the shelf supports (5) suitable for the new vertical position at which it is desired to be placed.

[0024] In an embodiment of the present invention, the shelf (4) comprises two prestressed springs (8), each disposed at the region where the auxiliary carriers (7) are connected to the main carrier (6), providing the auxiliary carriers (7) to remain at the carrying position unless a force is exerted thereon (Figure 3). When the user moves the shelf (4) in the upward direction, the auxiliary carriers (7) bump into the shelf supports (5) at the next upper level and change to the movement position by rotating as the

exerted force exceeds the prestress of the spring (8). After the shelf (4) is passed between the shelf supports (5), the auxiliary carriers (7) become free again and changes to the carrying position by the effect of the spring (8) force.

[0025] In an embodiment of the present invention, the shelf (4) comprises at least two braces (9), disposed at the region where the auxiliary carriers (7) are connected to the main carrier (6), supporting the auxiliary carrier (7) in the carrying position (Figure 3). Accordingly, in the carrying position, especially when loading is made on this connection, the movement of the auxiliary carrier (7) is prevented and the strength of the shelf (4) is increased.

[0026] In an embodiment of the present invention, the sides of the main carrier (6) and the auxiliary carrier (7) adjacent to each other are shaped such that the auxiliary carriers (7) are prevented from rotating upwards (Figure 4).

[0027] In the preferred version of this embodiment, the main carrier (6) comprises two recesses on the lower part of its sides facing the auxiliary carriers (7), each auxiliary carrier (7) comprises a protrusion disposed on the lower part of its sides facing the main carrier (6) which is seated into the recess (Figure 4).

[0028] By means of the present invention, a cooling device (1) is realized comprising a shelf (4), the height of which can be changed easily.

Claims

1. A cooling device (1) comprising a body (2) having two opposite side walls (3), at least one shelf (4) used for placing objects thereon and more than one shelf support (5) disposed on the side walls (3) that support the shelves (4), **characterized by** a main carrier (6) and two auxiliary carriers (7) - that are pivotally and rotatably mounted to the sides of the main carrier (6) facing the side walls (3), - that are seated on the shelf supports (5) in the carrying position being at the same level with the main carrier (6), - that provides the shelf (4) to move in the vertical axis by rotating into the body (2), towards under the main carrier (6) in the movement position.
2. A cooling device (1) as in Claim 1, **characterized by** the shelf (4) that comprises two prestressed springs (8), each disposed at the region where the auxiliary carriers (7) are connected to the main carrier (6), providing the auxiliary carriers (7) to remain at the carrying position unless a force is exerted thereon.
3. A cooling device (1) as in Claim 1 or 2, **characterized by** the shelf (4) that comprises at least two braces (9), disposed at the region where the auxiliary carriers (7) are connected to the main carrier (6), supporting the auxiliary carrier (7) in the carrying position.
4. A cooling device (1) as in any one of the above Claims, **characterized by** the main carrier (6) and the auxiliary carriers (7) the sides adjacent to each other of which are shaped such that the auxiliary carriers (7) are prevented from rotating upwards.

Figure 1

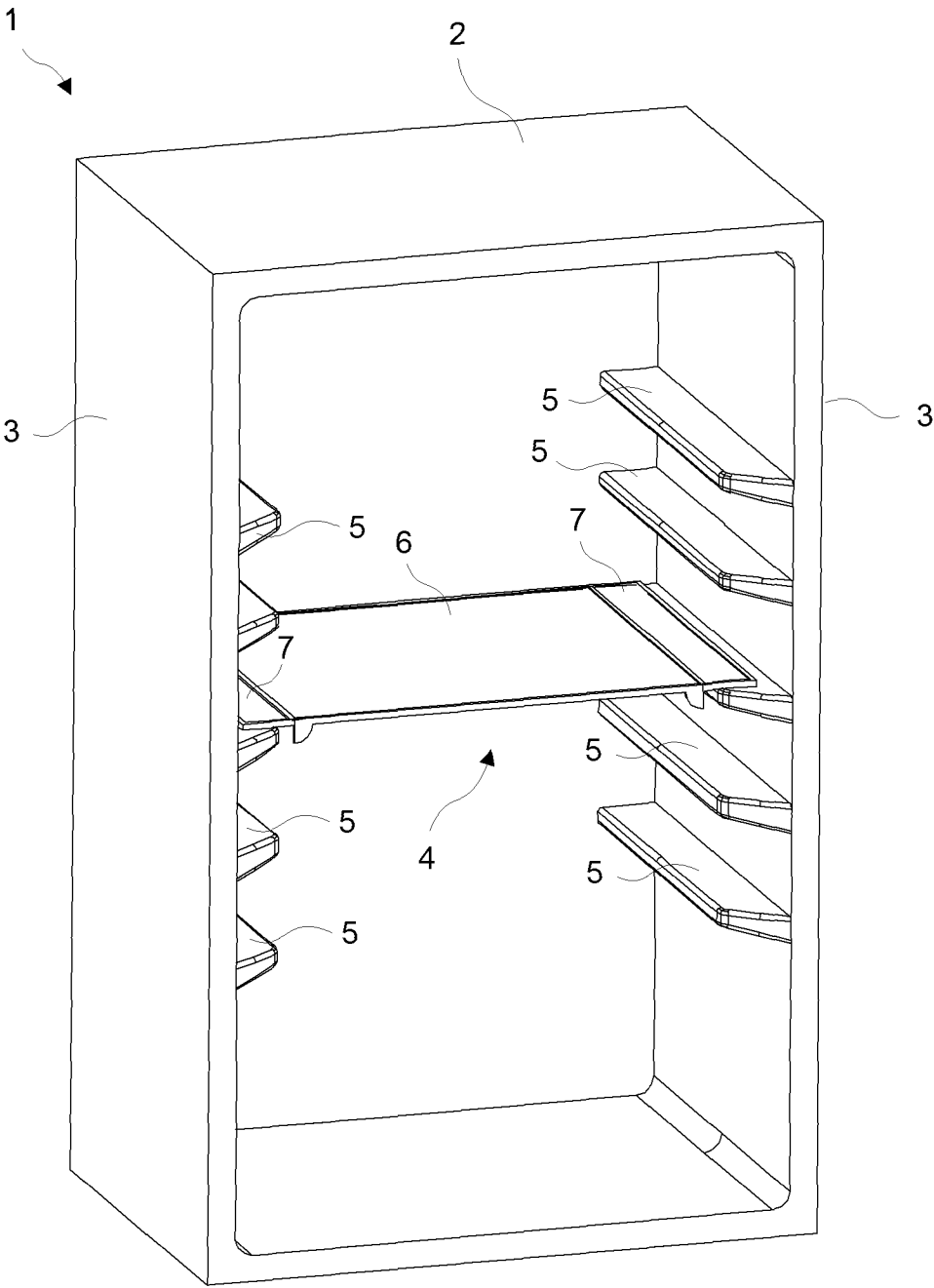


Figure 2

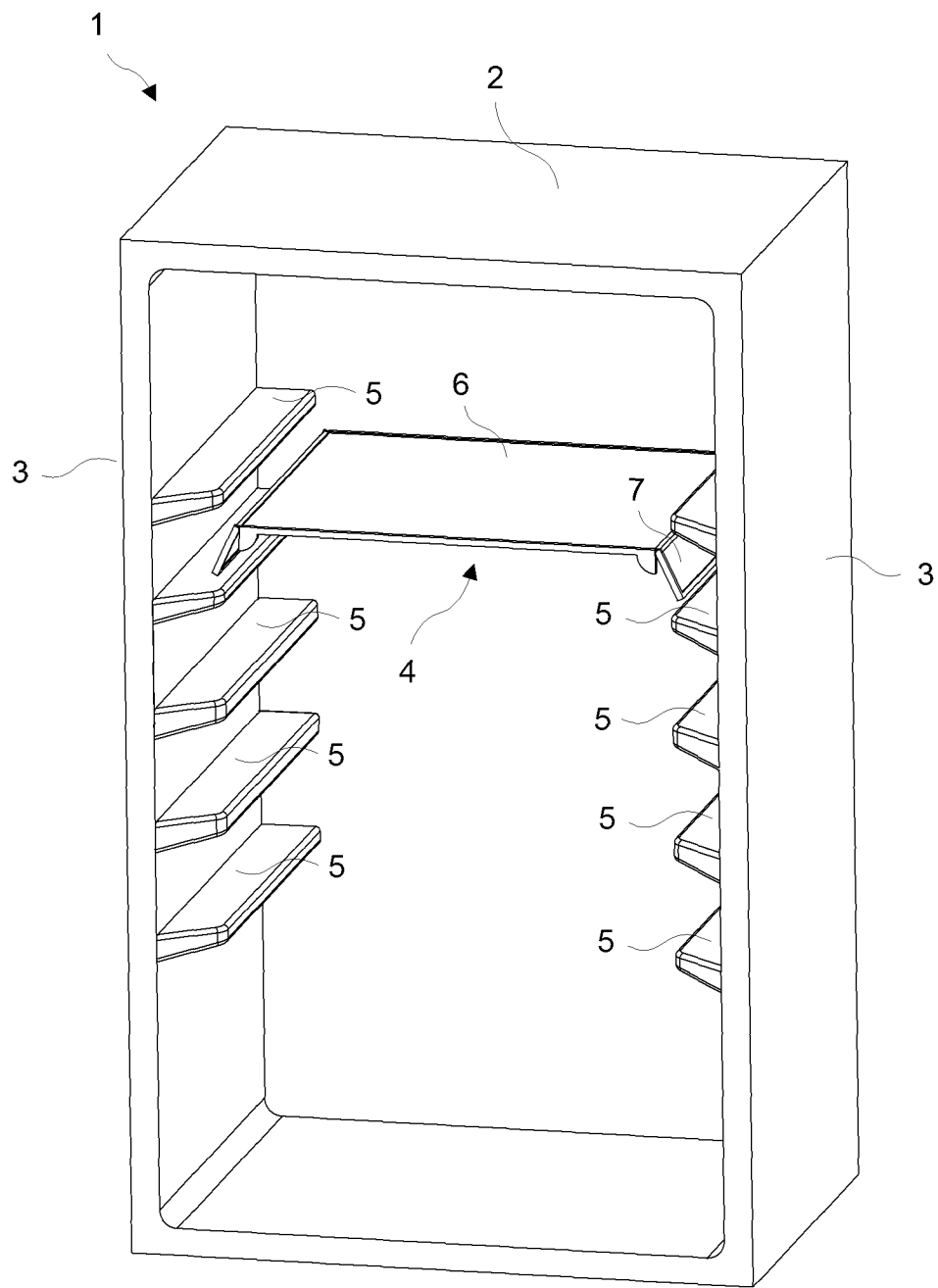


Figure 3

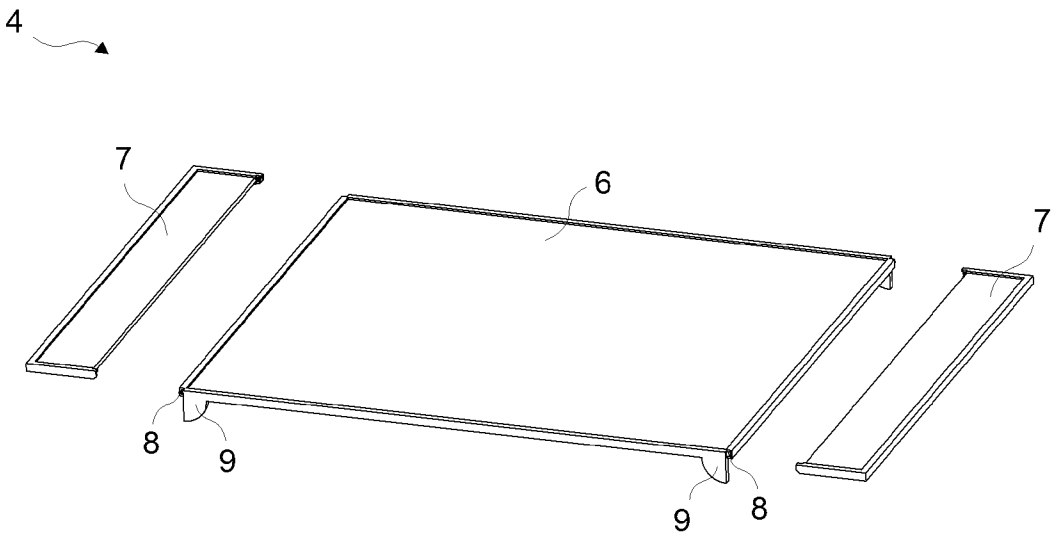
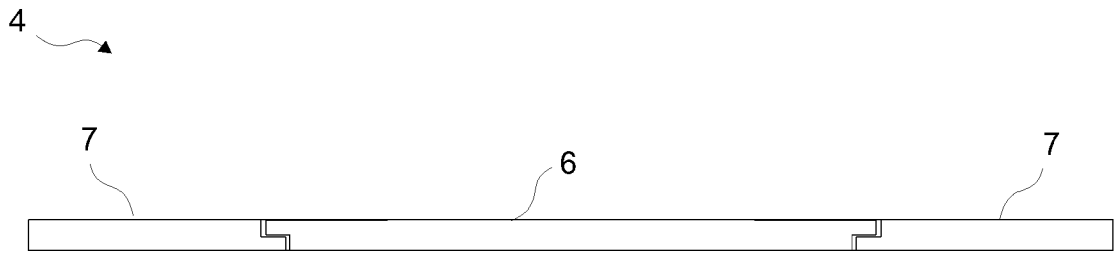


Figure 4



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/059443

A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F25D A47B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 564 512 A1 (ELECTROLUX HOME PROD CORP [BE]) 17 August 2005 (2005-08-17) figures 1,2,5 -----	1-4
A	EP 1 790 250 A2 (WHIRLPOOL CO [US]) 30 May 2007 (2007-05-30) paragraph [0008] - paragraph [0034]; figures 1-8D -----	1-4



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2011/059443

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1564512	A1	17-08-2005	NONE

EP 1790250	A2	30-05-2007	NONE
