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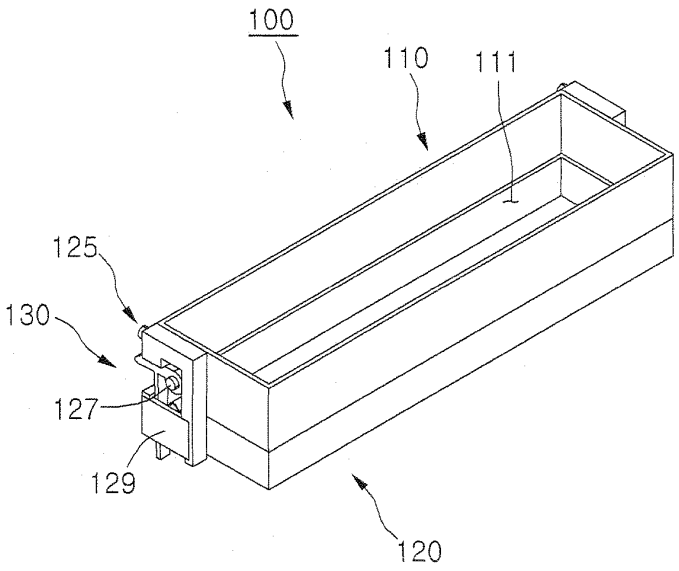
(54) DOOR BASKET AND REFRIGERATOR INCLUDING SAME

(57) Provided is a refrigerator. A door basket is disposed vertically movable along guide slots defined in a back surface of the door for selectively opening or closing a storage. The door basket a basket body receiving goods, a basket support on which the basket body is detachably disposed, a stopping lever fixing the basket support to a position corresponding to one of a plurality of fixing grooves vertically spaced apart from each other in the bask surface of the door, and an elastic member applying an elastic force to the stopping lever so that the stopping lever is maintained in a state where the stopping lever is inserted into one of the fixing grooves. Thus, the door basket may be more easily adjusted in position, and also, the goods may be more easily taken in or out of the door basket.

[Fig. 1]



EP 2 532 996 A1

Description

BACKGROUND

[0001] The present disclosure relate to a refrigerator.

[0002] Refrigerators are home appliances for storing goods in a frozen or refrigerated state. Such a refrigerator includes a storage space, i.e., a cabinet provided with a freezing compartment or/and a refrigerating compartment, and a door for selectively opening or closing the freezing compartment or the refrigerating compartment.

[0003] In general, a plurality of door baskets are provided on a back surface of the door. The door baskets provide spaces for receiving goods to be frozen or refrigerated. In general, the door baskets are fixed to the back surface of the door at preset heights, respectively.

[0004] However, the door baskets according to a related art have following limitations.

[0005] First, the door baskets are fixed to the back surface of the door only at preset heights, respectively. Thus, it is difficult to change positions of the door baskets according to heights of goods to be stored in the door baskets.

[0006] Also, since the door baskets are fixed to the back surface of the door, it is difficult to attach or detach the door baskets. Thus, to take out a plurality of goods received in each of the door baskets at a time, there is inconvenience that the goods received in the door basket should be taken out one by one.

SUMMARY

[0007] Embodiments provide a door basket which can be more easily varied in position and a refrigerator including the door basket.

[0008] Embodiments also provide a door basket configured to more easily take out goods and a refrigerator including the door basket.

[0009] In one embodiment, a door basket disposed on a back surface of a door for selectively opening or closing a storage space includes: a basket body receiving goods; a basket support on which the basket body is detachably disposed; a stopping lever fixing the basket support to a position corresponding to one of a plurality of fixing grooves vertically spaced apart from each other in the bask surface of the door; and an elastic member applying an elastic force to the stopping lever so that the stopping lever is maintained in a state where the stopping lever is inserted into one of the fixing grooves.

[0010] In another embodiment, a refrigerator includes: a door selectively opening or closing a storage space; two guide slots vertically lengthily defined in a back surface of the door, the two guide slots being horizontally spaced apart from each other; a plurality of fixing grooves defined within the door, the plurality of fixing grooves being vertically spaced apart from each other; a door basket vertically moved along the guide slots; a guide member disposed movable along each of the guide slots; a stopping member selectively inserted into one of the fixing grooves to stop the door basket at a position corresponding to one of the fixing groove; and an elastic member applying an elastic force into the stopping lever in a direction in which the stopping member is maintained in a state where the stopping member is inserted into one of the fixing groove.

[0011] The details of one or more embodiments are set forth in the accompanying drawings and the description below. Other features will be apparent from the description and drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Fig. 1 is a perspective view of a door basket according to an embodiment.

[0013] Fig. 2 is an exploded perspective view of the door basket according to an embodiment.

[0014] Fig. 3 is a perspective view illustrating a back surface of a door on which the door basket is installed according to an embodiment.

[0015] Fig. 4 is a cross-sectional view illustrating a main part of the door according to an embodiment.

[0016] Figs. 5 to 8 are views illustrating a moving process of the door basket according to an embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0017] Hereinafter, a door basket according to an embodiment will be described in detail with reference to the accompanying drawings.

[0018] Fig. 1 is a perspective view of a door basket according to an embodiment, and Fig. 2 is an exploded perspective view of the door basket according to an embodiment.

[0019] Referring to Figs. 1 and 2, a door basket 100 according to an embodiment includes a basket body 110 and a basket support 120. The basket body 110 may provide a space for substantially receiving goods. Also, the door basket 100 is detached from the basket support 120. The basket support 120 is movably disposed on the door 10 (see Fig. 3).

[0020] In more detail, a receiving space 111 is defined inside the basket body 110. The receiving space 111 may be a space for receiving goods. The basket body 110 has an opened top surface with an approximately polyhedral shape. For example, in the current embodiment, the basket body 110 may have an opened top surface with a hexahedral shape. At least one portion of the basket body 110 may be formed of a transparent or translucent material to easily indentify goods received therein.

[0021] A hook 113 is disposed on a circumference surface of the basket body 110. The hook 113 may be defined by an outwardly stopped portion between an upper portion of the circumference surface of the basket body 110 and a lower portion of the circumference surface. The hook 113 is closely attached to an upper end of the circumference surface of the basket support 120 in a

state where the basket body 110 is mounted on the basket support 120.

[0022] A seat space 121 is defined in the basket support 120. The seat space 121 may substantially provide a space in which the basket body 110 detachably disposed on the basket support is seated. For example, the basket support 120 has an opened top surface with a polyhedral shape. Also, the seat space 121 may be defined in the basket support 120. Here, a circumference surface of the basket support 120 may have a height relatively higher than that of the basket body 110. The circumference and bottom surfaces of the basket support 120 are closely attached to those of the basket body 110 seated in the seat space 121, respectively. As described above, an upper end of the circumference of the basket support 120 is closely attached to the hook 113.

[0023] An installation bracket 123 is disposed on a rear end of each of both circumference surfaces of the basket support 120. The installation bracket 123 is lengthily vertically disposed on each of both circumference surfaces of the basket support 120. Here, the installation bracket 123 may have a height less than that of the basket body 110.

[0024] The installation bracket 123 includes first and second stoppers 124A and 124B. The first and second stoppers 124A and 124B delimit a range of the rotation of a stopping lever 130. The first stopper 124A is disposed above the second stopper 124B. The stopping lever 130 is rotated along a predetermined trace within a region corresponding between the first and second stoppers 124A and 124B.

[0025] The installation bracket 123 includes a guide protrusion 125. The guide protrusion 125 protrudes backward from a rear end of the installation bracket 123. The guide protrusion 125 is moved along a guide slot 11 (see Fig. 3) that will be described later in a state where the guide protrusion 125 is inserted into the guide slot 11. The guide protrusion 125 has a diameter (a left/right width in case where the guide protrusion does not have a circular shape) less than a left/right width of the guide slot 11.

[0026] A hook rib 126 is disposed on a rear end of the guide protrusion 125. The hook rib 126 prevents the guide protrusion 125 from being arbitrarily separated from the guide slot 11 in the state where the guide protrusion 125 is inserted into the guide slot 11. For this, the hook rib 126 radially extends from the rear end of the guide protrusion 125. Here, the hook rib 126 may have a diameter greater than the left/right width of the guide slot 11.

[0027] Also, the installation bracket 123 includes first and second protrusions 127 and 128. The first and second protrusions 127 and 128 are spaced apart from each other. Also, the first and second protrusions 127 and 128 protrude outward from one surface of the installation bracket 123. The stopping lever 130 and an elastic member 140 are disposed on the first and second protrusions 127 and 128, respectively.

[0028] A cover member 129 is fixed to the installation bracket 123. The cover member 129 is fixed to the installation bracket 123 so that one surface of the cover member 129 is closely attached to front ends of the first and second protrusions 127 and 128. Thus, the cover member 129 prevents the stopping lever 130 and the elastic member 140 from being separated from the first and second protrusions 127 and 128.

[0029] The stopping lever 130 is disposed on the installation bracket 123. Here, the stopping lever 130 is rotatably disposed with respect to the first protrusion 127. As described above, a rotation range of the stopping lever 130 rotated with respect to the first protrusion 127 is delimited by the first and second stoppers 124A and 124B. The stopping lever 130 includes a lever body 131, a fixing part 133, and a manipulation part 135.

[0030] In more detail, an insertion hole 132 is defined in the lever body 131. The first protrusion 127 is inserted into the insertion hole 132. Thus, the lever body 131 is rotated with respect to the first protrusion 127 inserted into the insertion hole 132. In the current embodiment, the lever body 131 has an approximately ring shape.

[0031] Also, the fixing part 133 extends backward from a side of the lever body 131. Here, a front end of the fixing part 133 protrudes toward a rear side of the basket support 120. The front end of the fixing part 133 protruding in a rear direction of the basket support 120 is substantially disposed directly under the guide protrusion 125. The fixing part 133 is substantially inserted into a fixing groove 15 (see Fig. 4) defined inside the guide slot 11. The fixing part 133 may be rotated between a position at which the fixing part 133 protrudes toward the rear side of the basket support 120 and a position at which the fixing part 133 is disposed within the installation bracket 123 by the rotation of the lever body 131. Substantially, the fixing part 133 is rotated between a position at which a top surface of the fixing part 133 is closely attached to the first stopper 124A and a position at which a bottom surface of the fixing part 133 is closely attached to the second stopper 124B.

[0032] An inclined guide surface 134 is disposed on the top surface of the fixing part 133. The top surface of the fixing part 133 is inclined downward toward the front end of the fixing part 133 to define the inclined guide surface 134. The inclined guide surface 134 prevents the fixing part 133 and the fixing groove 15 from interfering with respect to each other when the door basket 100, substantially, the basket support 120 is moved upward along the guide slot 11.

[0033] The manipulation part 135 extends from a side of the lever body 131. Here, a front end of the manipulation part 135 protrudes toward a lower side of the basket support 120. The manipulation part 135 may be a portion which is pulled by a user to rotate the stopping lever 130. In more detail, when the manipulation part 135 is pulled, the stopping lever 130 is rotated with respect to the first protrusion 127 by overcoming an elastic force of the elastic member 140.

[0034] The elastic member 140 applies an elastic force

to the stopping lever 130. In more detail, the elastic member 140 applies an elastic force to the stopping lever 130 so that the fixing part 133 extends in a rear direction of the basket support 120 and is inserted into the fixing groove 15. In current embodiment, a torsion spring of which both ends are respectively supported by a side of the installation bracket 123 and the stopping lever 130, substantially, the manipulation part 135 in a state where the torsion spring is inserted into the second protrusion 128 may be used as the elastic member 140. The torsion spring applies an elastic force to the stopping lever 130 so that the fixing part 133 protrudes in the rear direction of the basket support 120, i.e., the fixing part 133 is inserted into the fixing groove 15.

[0035] Hereinafter, a door on which the door basket is disposed according to an embodiment will be described in detail with reference to the accompanying drawings.

[0036] Fig. 3 is a perspective view illustrating a back surface of a door on which the door basket is installed according to an embodiment. Fig. 4 is a cross-sectional view illustrating a main part of the door according to an embodiment.

[0037] Referring to Figs. 3 and 4, two guide slots 11 are defined in a back surface of a door 10 for selectively opening or closing a storage space. Portions of both side ends of the back surface of the door 10 are lengthily cut in a vertical direction to define the guide slots 11, respectively. Here, a distance between the guide slots 11 may be equal to that between the guide protrusions 125 and that between the fixing parts 133. The guide slot 11 substantially guides a vertical movement of the door basket 100. Substantially, a portion of the back surface of the door 10 is recessed into the inside of the door 10 to define the guide slot 11.

[0038] A fixing member 13 is disposed within the door 10. The fixing member 13 is disposed on each of both inner side ends of the door 10 corresponding to the guide slot 11. The plurality of fixing groves 15 are defined in the fixing member 13. Each of the fixing grooves 15 is defined by cutting a portion of the fixing member 13. The fixing grooves 15 are vertically disposed spaced a predetermined distance from each other. The fixing part 133 is selectively inserted into the fixing groove 15. Also, the fixing groove 15 may have a vertical height at least greater than a height of the fixing part 133.

[0039] When the door basket 100 is mounted on the back surface of the door 10, the guide protrusion 125 and the fixing part 133 are inserted into the guide slot 11. Also, in the state where the guide protrusion 125 is inserted into the guide slot 11, the hook rib 126 is hooked on the back surface of the door 10 adjacent to the guide slot 11. Thus, it may prevent the guide protrusion 125 from being arbitrarily from the guide slot 11. Also, the fixing part 133 is inserted into one of the fixing grooves 15. Also, the fixing part 133 is not arbitrarily separated from the fixing groove 15 by the elastic force applied into the stopping lever 130 from the elastic member 140 in the state where the fixing part 133 is inserted into the fixing groove 15.

[0040] Hereinafter, effects of the door basket according to an embodiment will be described in detail with reference to the accompanying drawings.

[0041] Figs. 5 to 8 are views illustrating a moving process of the door basket according to an embodiment.

[0042] First, in the state where the door basket 100 is mounted on the back surface of the door 10, substantially, in the state where the basket support 120 is mounted on the back surface of the door 10 (see Fig. 4), the guide protrusion 125 is inserted into the guide slot 11. Here, the guide protrusion 125 is not arbitrarily separated from the guide slot 11 by the hook rib 126 hooked on the inside of the back surface of the door 10 adjacent to the guide slot 11.

[0043] Here, the fixing part 133 is inserted into one (hereinafter, for convenience of description, referred to as the "first fixing groove 15A") of the fixing grooves 15. The elastic member 140 applies an elastic force into the stopping lever 130 so that the fixing part 133 protrudes in the rear direction of the basket support 120 to maintain a state in which the fixing part 133 is inserted into the first fixing groove 15A. Here, since the top surface of the fixing part 133 is closely attached to the first stopper 124A, the stopping lever 130 is not rotated ever by the elastic force applied from the elastic member 140. When the fixing part 133 is inserted into the first fixing groove 15A, the door basket 100 is maintained in the state where the door basket 100 is mounted on the bask surface of the door 10 at a height corresponding to the first fixing groove 15A.

[0044] Referring to Fig. 5, to move the door basket 100 downward, a user pulls the manipulation part 135. When the user pulls the manipulation part 135, the stopping lever 130 is rotated with respect to the first protrusion 127 by overcoming an elastic force of the elastic member 140. Thus, the fixing part 133 is separated from the first fixing groove 15A and disposed inside the installation bracket 123. Here, the rotation of the stopping lever 130 may be performed until the fixing part 133 is closely attached to the second stopper 124B.

[0045] Referring to Fig. 6, in the state where the user pulls the manipulation part 135, the door basket 100 is moved downward so that the door basket 100 is disposed at a predetermined position. Here, as described above, since the fixing part 133 is disposed within the installation bracket 123, the door basket 100 does not interfere with the fixing part 133 and the fixing groove 15 or/and the fixing member 13 during the movement thereof.

[0046] Also, in the state where the door basket 100 is disposed at the predetermined position, when the user remove a force for pulling the manipulation part 135, the stopping lever 130 is rotated by the elastic force by the elastic member 140 to allow the fixing part 133 to protrude in the rear direction of the basket support 120, thereby inserting the fixing part 133 into the other fixing groove (hereinafter, for convenience of description, referred to as the "second fixing groove 15B") of the fixing grooves

15. Thus, the door basket 100 may be maintained in the state where the door basket 100 is mounted on the bask surface of the door 10 at a height corresponding to the second fixing groove 15B.

[0047] Referring to Fig. 7, to move the door basket 100 upward, it is unnecessary to pull the manipulation part 135. In more detail, when the user moves the door basket 100 upward, the door basket 100 is guided by the inclined guide surface 134, and thus, the fixing part 133 overstrides the first fixing groove 15A. That is to say, the fixing part 133 is guided by the inclined guide surface 134 and thus is pushed by the fixing member 13 while being separated from the first fixing groove 15A. Thus, when the door basket 100 is moved upward, the door basket 100 does not interfere by the fixing part 133 and the fixing groove 15 or the fixing member 13. Here, the stopping lever 130 is rotated with respect to the first protrusion 127 by overcoming the elastic force of the elastic member 140.

[0048] Referring to Fig. 8, when the door basket 100 is continuously moved upward, and thus the fixing part 133 is disposed at a height corresponding to the other fixing groove (hereinafter, for convenience of description, referred to as a "third fixing groove 15C") disposed above the first fixing groove 15A, an external force pushing the fixing part 133 is substantially removed. Thus, the stopping lever 130 is rotated by the elastic force of the elastic member 140. Also, since the stopping lever 130 is rotated to insert the fixing part 133 into the third fixing groove 15C, the door basket 100 may be maintained in a state where the door basket 100 is mounted on the bask surface of the door 100 at the height corresponding to the third fixing groove 15C.

[0049] In the state where the door basket 100 is mounted on the bask surface of the door 10 at a height corresponding to one of the first to third fixing grooves 15A to 15C, the user may separate the basket body 110 from the basket support 120. Thus, goods may be more easily received into the basket body 110, i.e., the receiving space 111.

[0050] It should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this disclosure. More particularly, various variations and modifications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the disclosure, the drawings and the appended claims.

[0051] In the foregoing embodiment, although the torsion spring is described as an example of the elastic member, different types of springs or members may be used as the elastic member. For example, a coil spring of which both ends are respectively fixed to a side of the installation bracket and a side of the stopping lever may be used as the elastic member.

[0052] In the door basket and the refrigerator including the door basket according to the embodiment, the door basket can be easily varied in position according to heights of goods received in the door basket. Also, since the door basket can be easily detached from the door, the user may more easily take in or out the goods received in the door basket.

Claims

1. A door basket disposed on a back surface of a door for selectively opening or closing a storage space, the door basket comprising:

   a basket body receiving goods;
   a basket support on which the basket body is detachably disposed;
   a stopping lever fixing the basket support to a position corresponding to one of a plurality of fixing grooves vertically spaced apart from each other in the bask surface of the door; and
   an elastic member applying an elastic force to the stopping lever so that the stopping lever is maintained in a state where the stopping lever is inserted into one of the fixing grooves.

2. The door basket according to claim 1, wherein the stopping lever is rotatably disposed on the basket support.

3. The door basket according to claim 1, wherein the stopping lever comprises:

   a lever body rotatably disposed with respect to a protrude disposed on the basket support;
   a fixing part extending from the lever body, the fixing part being selectively inserted into the fixing grooves; and
   a manipulation part manipulated by a user to rotate the lever body.

4. The door basket according to claim 3, wherein an inclined guide surface for preventing the fixing part and the fixing grooves from interfering with each other when the basket support is moved upward along a guide slot is disposed on a top surface of the fixing part.

5. The door basket according to claim 1, wherein an installation bracket on which the stopping lever is rotatably disposed is disposed on the basket support.

6. The door basket according to claim 5, wherein a stopper for delimiting a rotation range of the stopper lever is disposed on the installation bracket.

7. The door basket according to claim 6, wherein the stopper comprises:

a first stopper for delimiting a maximum rotation range of the stopping lever in a direction in which the stopping lever is inserted into one of the fixing grooves; and

a second stopper for delimiting the maximum rotation range of the stopper lever in a direction in which the stopping lever is separated from one of the fixing grooves.

8. The door basket according to claim 5, wherein the elastic member comprises a torsion spring disposed on the installation bracket, and of which both ends are closely attached to a side of the installation bracket and a side of the stopping member, respectively.

9. The door basket according to claim 8, further comprising a cover member for covering the installation bracket to prevent the stopping lever and the elastic member from being arbitrarily separated in a state where the stopping lever and the elastic member are mounted on the installation bracket.

10. The door basket according to claim 1, wherein a guide protrusion inserted into a guide slot defined in the back surface of the door so that at least one portion of the guide protrusion horizontally overlaps with one of the fixing grooves, thereby being moved along the guide slot, is disposed on the basket support.

11. The door basket according to claim 10, wherein a hook rib for preventing the guide protrusion from being arbitrarily separated from the guide slot is disposed on a rear end of the guide protrusion.

12. A refrigerator comprising:

a door selectively opening or closing a storage space;

two guide slots vertically lengthily defined in a back surface of the door, the two guide slots being horizontally spaced apart from each other;

a plurality of fixing grooves defined within the door, the plurality of fixing grooves being vertically spaced apart from each other;

a door basket vertically moved along the guide slots;

a guide member disposed movable along each of the guide slots;

a stopping member selectively inserted into one of the fixing grooves to stop the door basket at a position corresponding to one of the fixing groove; and

an elastic member applying an elastic force into the stopping lever in a direction in which the stopping member is maintained in a state where the stopping member is inserted into one of the fixing groove.

13. The refrigerator according to claim 12, wherein each of the guide slots is defined by vertically lengthily cutting a portion of each of both ends of the back surface of the door.

14. The refrigerator according to claim 12, wherein the guide member comprises a guide protrusion disposed on the door basket and slid along each of the guide slots in a state where the guide protrusion is inserted into each of the guide slots.

15. The refrigerator according to claim 12, wherein the stopping member is rotatably disposed with respect to the door basket, and at least one portion of the stopping member is selectively inserted into one of the fixing grooves.

16. The refrigerator according to claim 15, wherein an operation part to be grasped by a user to rotate the stopping member in a direction in which the stopping lever is separated from one of the fixing groove is disposed on the stopping member.

17. The refrigerator according to claim 15, wherein a guide surface for preventing the door basket from interfering with the fixing grooves when the door basket is moved upward is disposed on the stopping lever inserted into one of the fixing grooves.

18. The refrigerator according to claim 12, wherein the elastic member comprises a torsion spring of which both ends are respectively closely attached to a side of the door basket and a side of the stopping member.

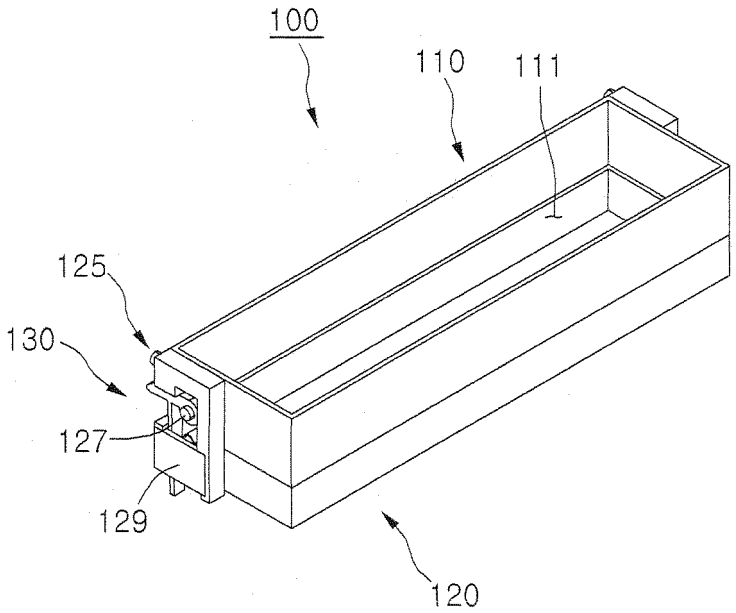
19. The refrigerator according to claim 12, wherein door basket comprises:

a basket support moved along the guide slots; and

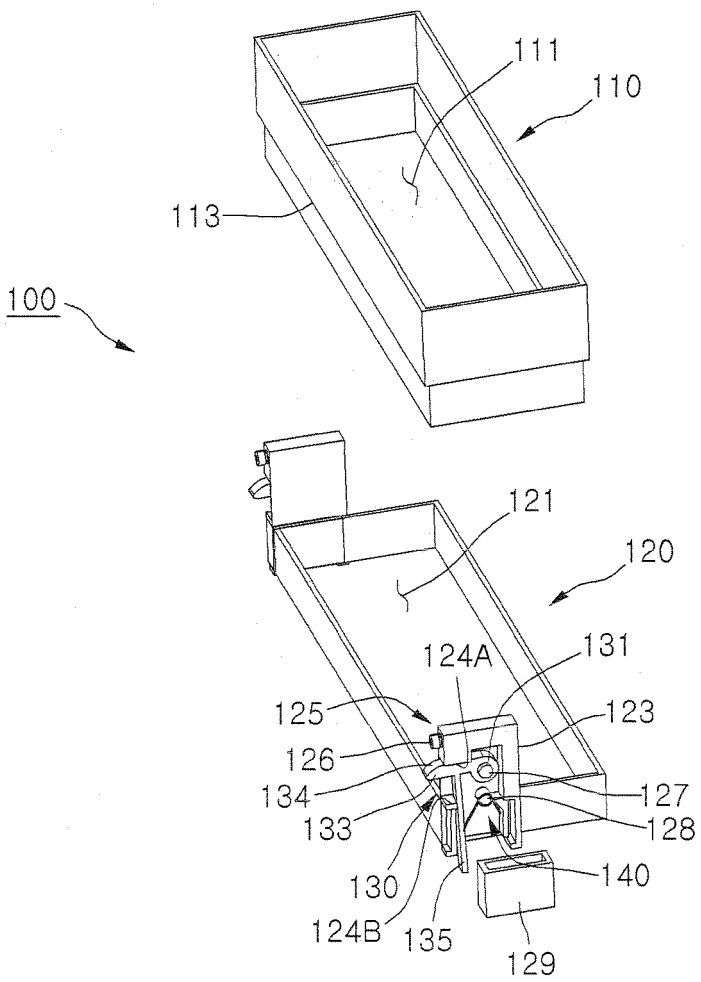
a basket body detachably disposed on the basket support.

20. The refrigerator according to claim 12, wherein the fixing grooves are defined in two fixing members defined within the door and of which at least portions horizontally overlap with the guide slots, respectively.

[Fig. 1]



[Fig. 2]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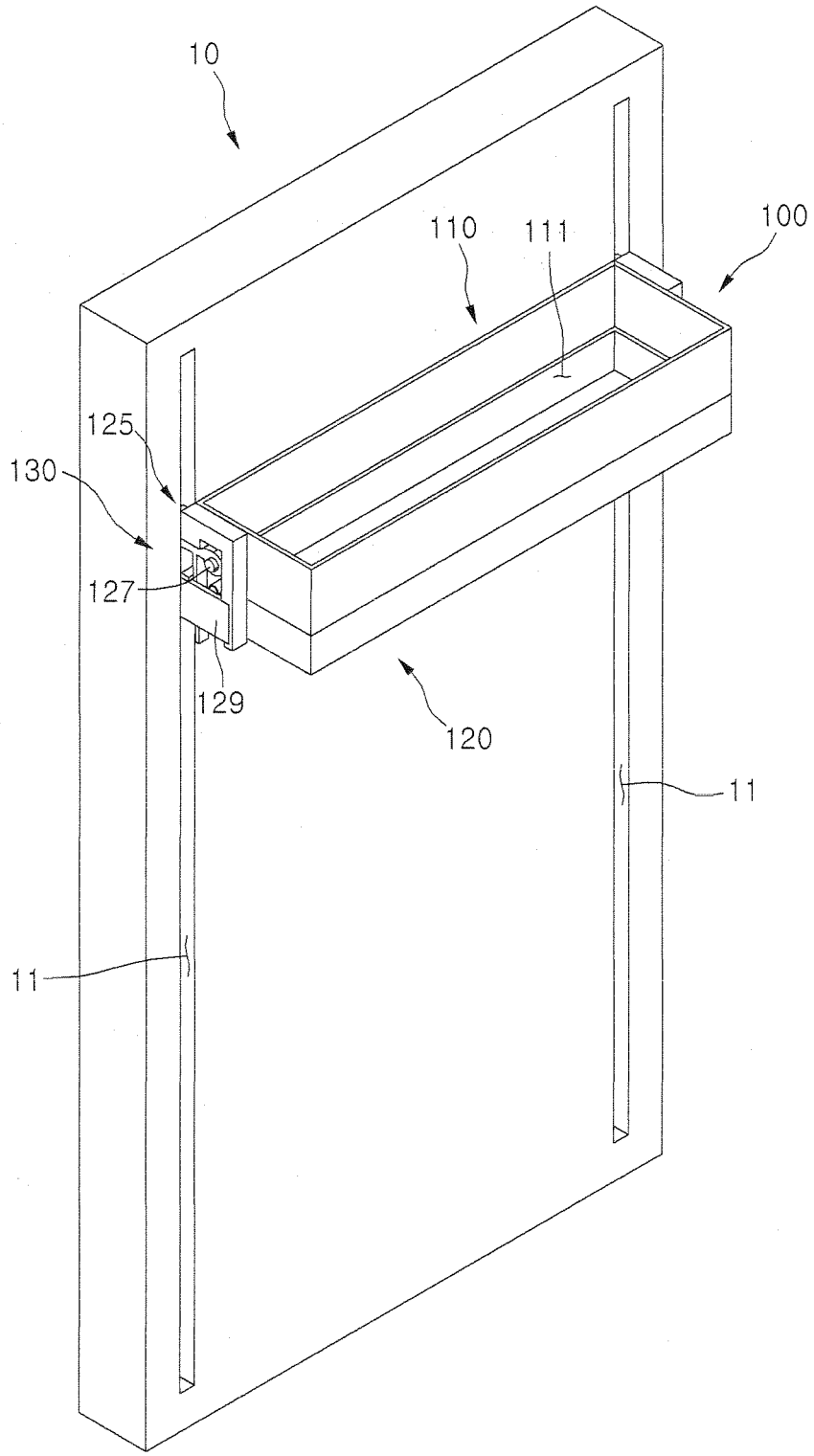
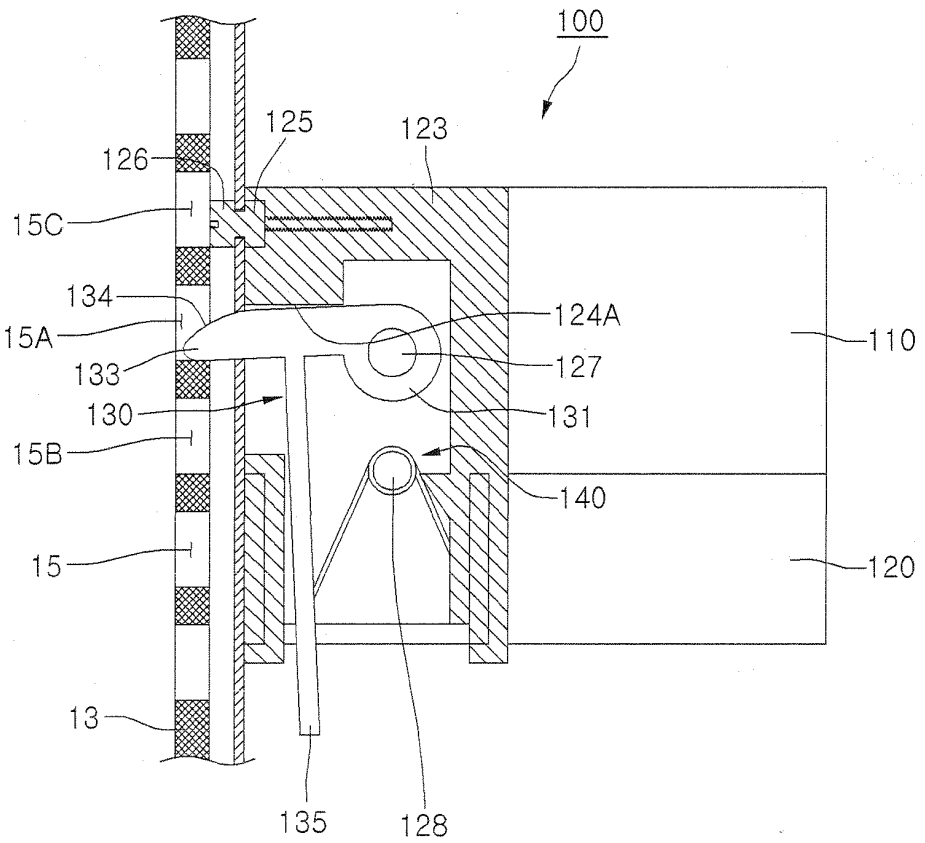


[Fig. 3]

[Fig. 4]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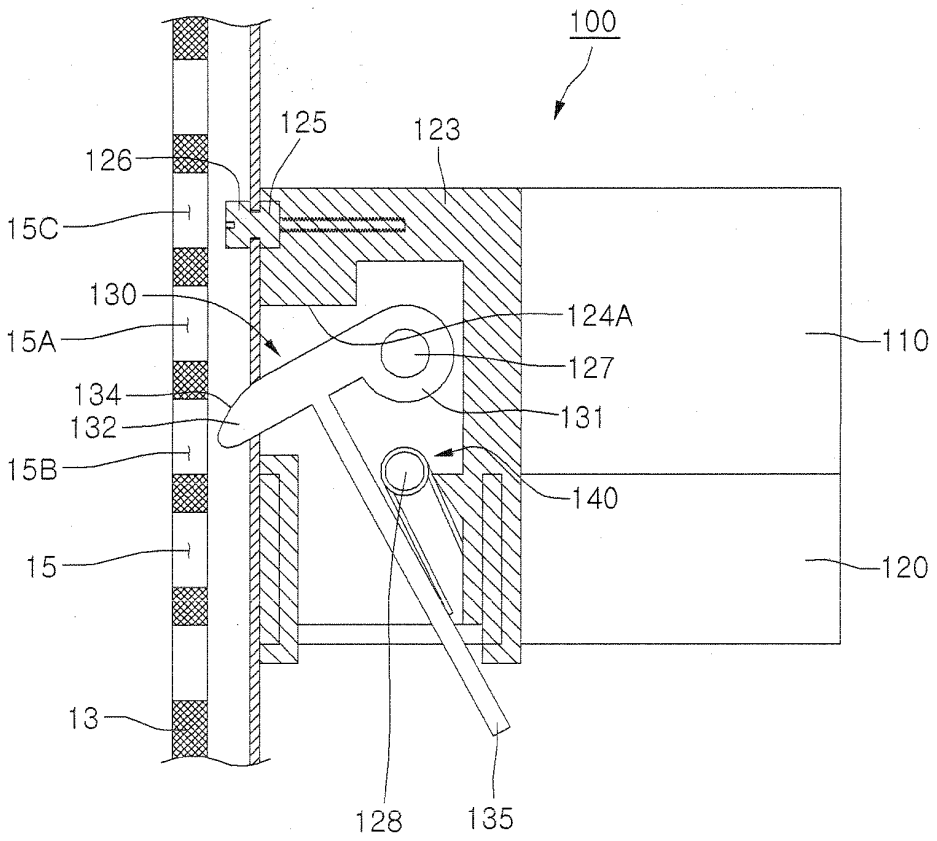
[Fig. 5]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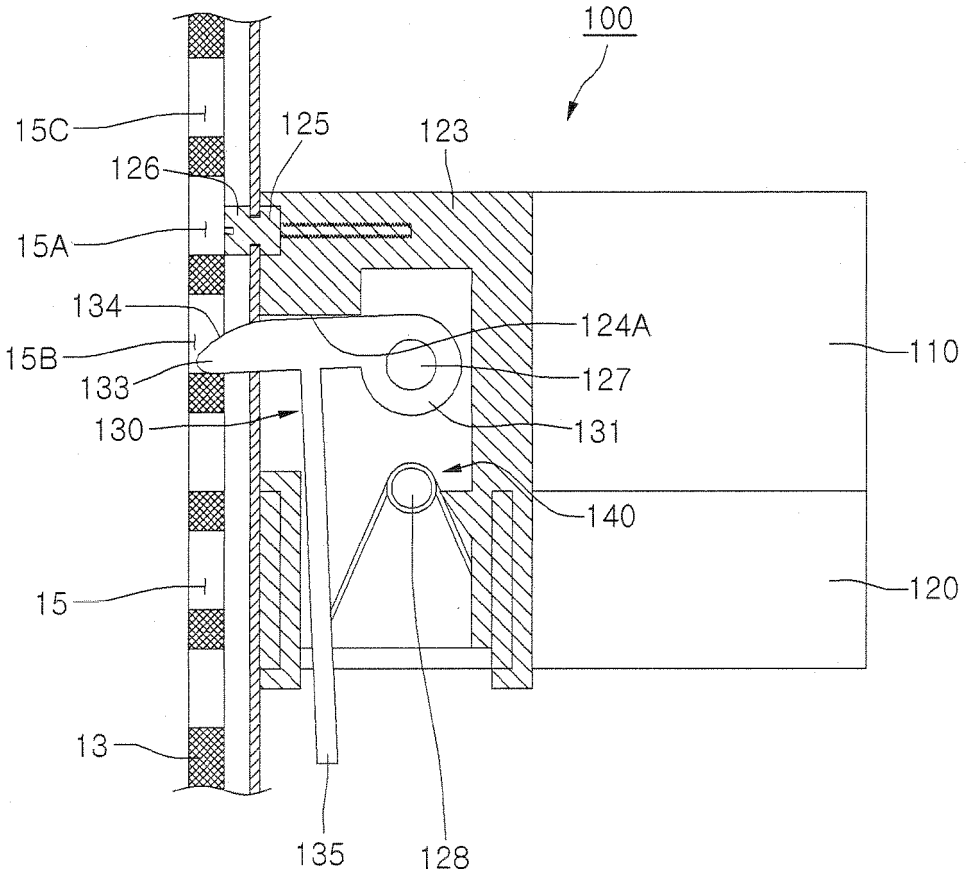
[Fig. 6]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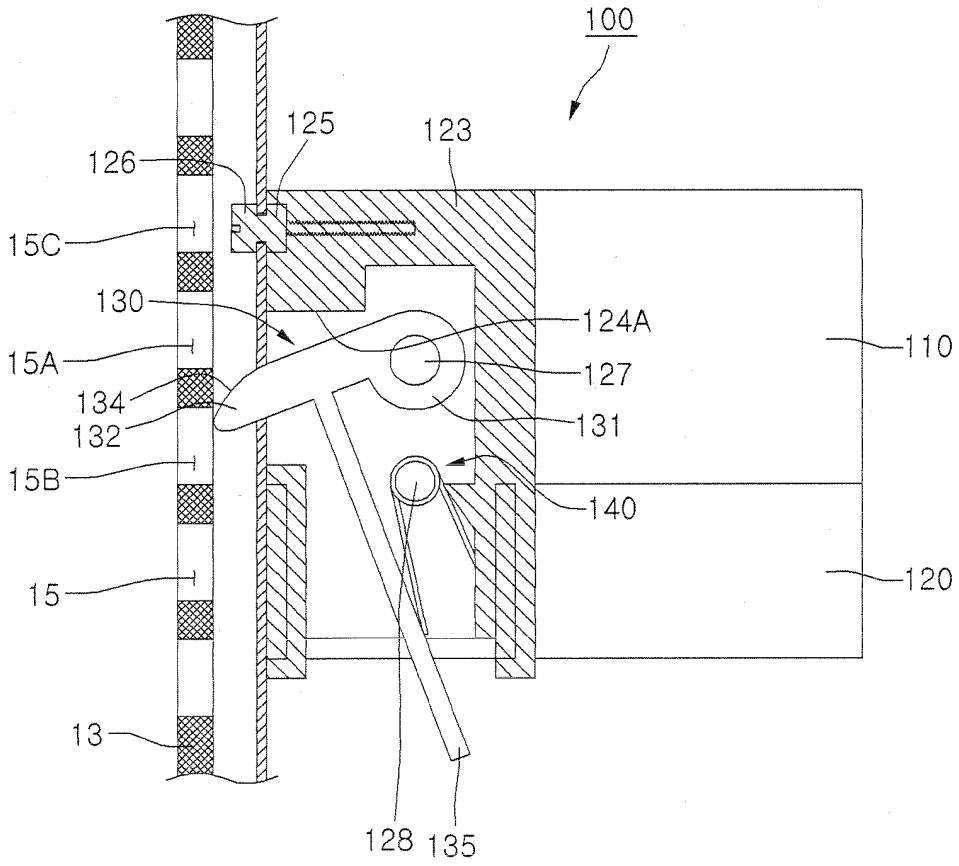
[Fig. 7]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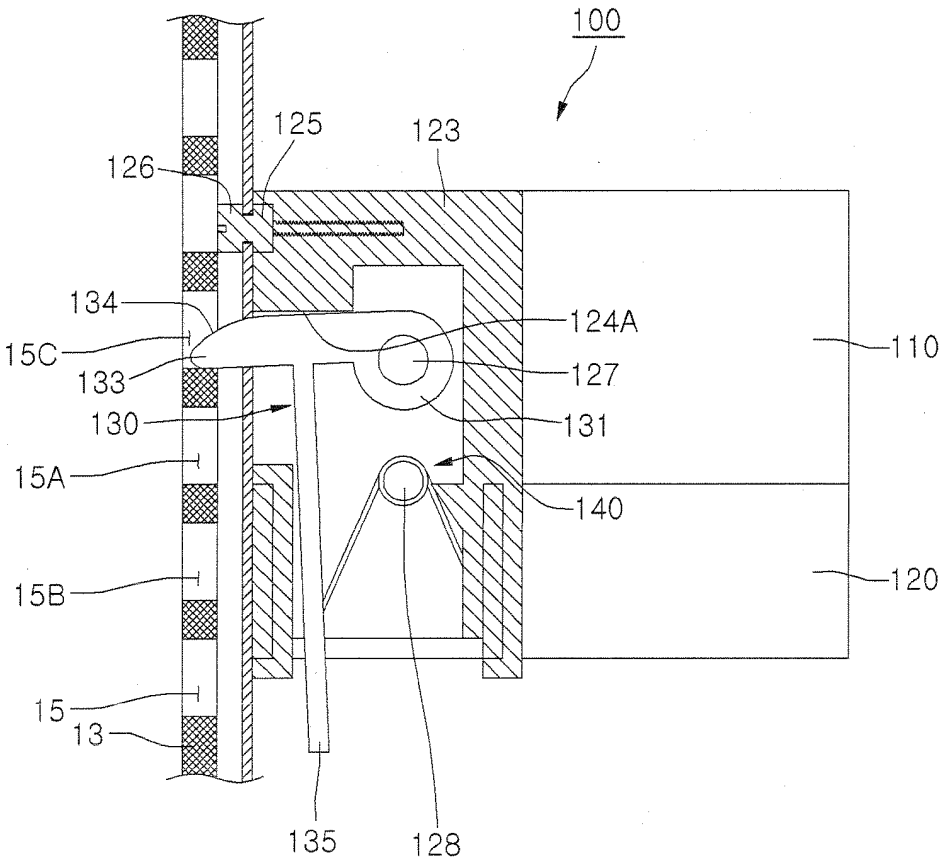
[Fig. 8]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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2010/007419

A. CLASSIFICATION OF SUBJECT MATTER

F25D 23/04(2006.01)i, F25D 23/00(2006.01)i

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 23/04; F25D 23/02; F25D 23/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: refrigerator, door, basket, stopping, guide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-1999-0069240 A (SAMSUNG ELECTRONICS CO., LTD.) 06 September 1999 See page 2, line 1 - page 4, line 3; and figures 1 to 3	1-20
A	KR 10-2008-0065859 A (LG ELECTRONICS INC.) 15 July 2008 See paragraphs [0028]-[0055]; and figures 1-5	1-20
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☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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20 MAY 2011 (20.05.2011)	**23 MAY 2011 (23.05.2011)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Telephone No.

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Information on patent family members

International application No.
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