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(54) **SIDE-BY-SIDE REFRIGERATOR**

(57) Disclosed is a side-by-side refrigerator (1), comprising a box body (100), a left door body (200) and a right door body (300), a left door opening part (500), a right door opening part (600), and a left pedal part (700) and a right pedal part (800), wherein the left door opening part (500) is mounted on the box body (100) and can move between a left propped open position and a left retracted position, and the right door open part (600) is mounted on the box body (100) and can move between a right propped open position and a right retracted position. The left pedal part (700) and the right door opening part (600) are connected and correspond to the left door

body (200) in the up and down direction. When the left pedal part (700) moves from a left raised position to a left depressed position, the right door opening part (600) is driven to move from a right retracted position to a right propped open position. The right pedal part (800) and the left door opening part (500) are connected and correspond to the right door body (300) in the up and down direction. When the right pedal part (800) moves from a right raised position to a right depressed position, the left door opening part (500) is driven to move from a left retracted position to a left propped open position.

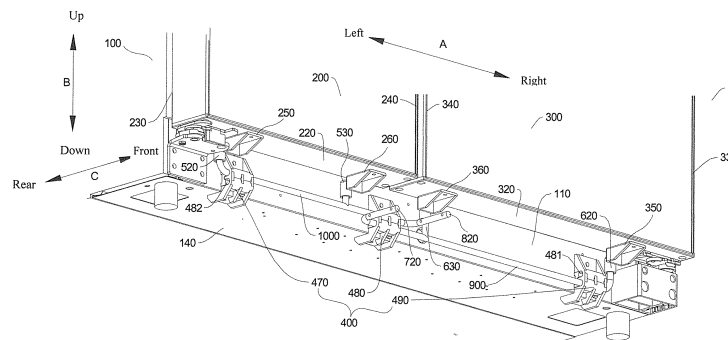


Fig. 10

Description

FIELD

[0001] Embodiments of the present invention generally relate to a household appliance, and more particularly, to a side-by-side refrigerator.

BACKGROUND

[0002] Currently, due to a large area of a door of a side-by-side refrigerator and an adsorption force between a door gasket and a refrigerator body of the side-by-side refrigerator, it takes a lot of effort for a user to open the door, and particularly when it is required for the user with both hands fully occupied to open the door, it is extremely inconvenient. In order to solve the problem, a power-assisted pedal is provided, however in actual operation, the door of the side-by-side refrigerator always interferes with a foot or leg of the user, which obstructs the door from being opened, thus resulting in much inconvenience for the user to use it.

SUMMARY

[0003] Embodiments of the present invention seek to solve at least one of the problems existing in the related art to at least some extent, or to provide a consumer with a useful commercial choice. Accordingly, an object of the present invention is to provide a side-by-side refrigerator, of which a door is easy and convenient to open.

[0004] In order to achieve above object, embodiments of the present invention provide a side-by-side refrigerator, including: a refrigerator body; a left door body and a right door body rotatably disposed on the refrigerator body; a left door member disposed on the refrigerator body and movable between a left opening position in which the left door body is opened and a left closing position in which the left door body is allowed to be closed; a right door member disposed on the refrigerator body and movable between a right opening position in which the right door body is opened and a right closing position in which the right door body is allowed to be closed; a left pedal member connected with the right door member, corresponding to the left door body in an up and down direction and movable between a left stepping position and a left lifting position, wherein when the left pedal member moves from the left lifting position to the left stepping position, the right door member is driven to move from the right closing position to the right opening position; and a right pedal member connected with the left door member, corresponding to the right door body in the up and down direction and movable between a right stepping position and a right lifting position, wherein when the right pedal member moves from the right lifting position to the right stepping position, the left door member is driven to move from the left closing position to the left opening position.

[0005] With the side-by-side refrigerator according to embodiments of the present invention, by forming a linkage between the light pedal member and the left door member and a linkage between the left pedal member and the right door member, the left door body may be opened by stepping the right pedal member and the right door body may be opened by stepping the left pedal member, so that in processes of opening the left door body and the right door body, the left door body and the right door body will not interfere with feet or legs of the user, and thus it is easier and more convenient for the user to open the left door body and the right door body. Moreover, since the user opens the left door body by stepping the right pedal member and opens the right door body by stepping the left pedal member, hands of the user can be freed, on the other hand, it is much easier for the user to open the left door body and the right door body. In particular, when the user holds heavy things with his hands, it is easier and more convenient for the user to open the left door body and the right door body. Thus, the door of the side-by-side refrigerator according to embodiments of the present invention is easy and convenient to be opened.

[0006] In some embodiments, the refrigerator further includes a bracket, and the left door member, the right door member, the left pedal member and the right pedal member are disposed on the bracket respectively. By disposing the bracket on the refrigerator body, it is easy and convenient to dispose the left door member, the right door member, the left pedal member and the right pedal member on the refrigerator body.

[0007] In some embodiments, the bracket is disposed on a front surface of the refrigerator body and is located below the left door body and the right door body.

[0008] In some embodiments, the left door member and the left pedal member are adjacent to a right edge of the left door body, and the right door member and the right pedal member are adjacent to a left edge of the right door body. Thus, the left door member is away from a left hinge and the right door member is away from a right hinge, such that the left door member and the left pedal member can be arranged compactly, the right door member and the right pedal member can be arranged compactly and it is easy for the user to open the left door body and the right door body with less effort.

[0009] In some embodiments, the side-by-side refrigerator further includes: a first shaft and a second shaft pivotally disposed on the bracket and spaced from each other in a front and rear direction and in the up and down direction, the second shaft defining a left end connected with the left door member and a right end connected with the right pedal member, the first shaft defining a right end connected with the right door member and a left end connected with the left pedal member. By disposing the first shaft and the second shaft, it is easier to dispose the left pedal member, the right pedal member, the left door member and the right door member on the bracket pivotally.

[0010] In some embodiments, the left pedal member and the right pedal member are configured as pedals, the left door member and the right door member are configured as plates, the right pedal member is aligned with the right door member and the left pedal member is aligned with the left door member. Thus, contact areas between the user's feet and the right and left pedal members are improved, such that it is easier for the user to step the right pedal member and the left pedal member.

[0011] In some embodiments, the left pedal member, the right door member and the first shaft are formed integrally, and the right pedal member, the left door member and the second shaft are formed integrally.

[0012] In some embodiments, the bracket includes: a rear frame with a L-shaped cross-section and having a first vertical portion and a first horizontal portion, and a first support plate being disposed on the first vertical portion and defining a first clamping groove and a second clamping groove; and a front frame with an inverted L-shaped cross-section and having a second vertical portion and a second horizontal portion, a second support plate being disposed on the second vertical portion and spaced from the first support plate in a right and left direction, and the second support plate defining a third clamping groove and a fourth clamping groove, in which the first shaft is pivotally fitted in the first clamping groove and the third clamping groove, the second shaft is pivotally fitted in the second clamping groove and the fourth clamping groove, a left door member window and a right door member window are formed in the second horizontal portion, a left pedal member window and a right pedal member window are formed in the second vertical portion, a free end of the left door member is extended upwards and passed through the left door member window and a free end of the right door member is extended upwards and passed through the right door member window, and a free end of the left pedal member is extended forwards and passed through the left pedal member window and a free end of the right pedal member is extended forwards and passed through the right pedal member window. Thus, the side-by-side refrigerator has a simple and artistic appearance, and the left door member, the right door member, the left pedal member, the right pedal member, the first shaft and the second shaft can be protected. Moreover, it is easier to dispose the first shaft and the second shaft on the bracket pivotally.

[0013] In some embodiments, lower ends of the left pedal window and the right pedal window are open. Thus, it is easier to dispose the left pedal member and the right pedal member, i.e., it is easier to dispose a left power-assisted opening mechanism and a right power-assisted opening mechanism.

[0014] In some embodiments, the rear frame includes a first side plate, the front frame includes a second side plate, one of the first side plate and the second side plate defines a sliding groove and the other thereof has a sliding rail fitted in the sliding groove and movable in a front and rear direction within the sliding groove. Thus, it is

easy and convenient to assembly the rear frame and the front frame detachably.

[0015] In some embodiments, the side-by-side refrigerator further includes a bottom beam cover disposed on a bottom beam of the refrigerator body and formed with the front frame integrally. Thus, a structural strength can be improved, a production process can be simplified and a manufacturing cost can be reduced.

[0016] In some embodiments, the side-by-side refrigerator further includes a first elastic member disposed between the left pedal member and the bracket and configured to push the left pedal member from the left stepping position to the left lifting position; and a second elastic member disposed between the right pedal member and the bracket and configured to push the right pedal member to the right lifting position from the right stepping position. By disposing the first elastic member and the second elastic member, the left pedal member and the right door member can be reset when the user's feet are removed from the left pedal member, and the right pedal member and the left door member can be reset when the user's feet are removed from the right pedal member.

[0017] In some embodiments, a left boss is disposed on a lower surface of the left door body, and the free end of the left door member is located between the left boss and a front surface of the refrigerator body; a right boss is disposed on a lower surface of the right door body, and the free end of the right door member is located between the right boss and the front surface of the refrigerator body. Therefore, the left door body and the right door body will not be damaged after having been opened for many times, thus increasing a working life of the left door body and the right door body, i.e., increasing a working life of the side-by-side refrigerator.

[0018] In some embodiments, the side-by-side refrigerator further includes a first shaft and a second shaft pivotally disposed on the bracket and spaced from each other in the up and down direction, in which the second shaft is connected with the left door member and defines a right end connected with the right pedal member and a left end, the first shaft is connected with the right door member and defines a left end connected with the left pedal member and a right end. Thus, it is easier to dispose the left pedal member, the right pedal member, the left door member and the right door member on the bracket pivotally.

[0019] In some embodiments, the left door member is adjacent to a left edge of the left door body, and the right door member is adjacent to a right edge of the right door body. Thus, the left door body can be opened with a larger angle by the left door member, and the right door body can be opened with a larger angle by the right door member.

[0020] In some embodiments, the left pedal member is adjacent to a right edge of the left door body, and the right pedal member is adjacent to a left edge of the right door body. Thus, the left pedal member and the right pedal member can be arranged compactly.

[0021] In some embodiments, the left door member includes a first left door arm connected with the left end of the second shaft and adjacent to the left edge of the left door body and a second left door arm connected with the second shaft and located between the first left door arm and the right pedal member; in which the right door member comprises a first right door arm connected with the right end of the first shaft and adjacent to the right edge of the right door body and a second right door arm connected with the first shaft and located between the first right door arm and the left pedal member.

[0022] By disposing the first left door arm and the second left door arm, the user can open the left door body with a little effort and the left door body can also obtain a larger power-assisted travel. By disposing the first right door arm and the second right door arm, the user can open the right door body with a little effort and the right door body can also obtain a larger power-assisted travel.

[0023] In some embodiments, the left pedal member and the second left door arm are adjacent to a right edge of the left door body, and the right pedal member and the second right door arm are adjacent to a left edge of the right door body. Thus, it is easier for the user to open the left door body and the right door body with less effort.

[0024] In some embodiments, the first left door arm, the second left door arm, the first right door and the second right door arm are configured as rods, in which the left pedal member includes a left support rod connected with the left end of the first shaft and a left pedal disposed on the left support rod, the right pedal member includes a right support rod connected with the right end of the second shaft and a right pedal disposed on the right support rod, and the first left door arm, the second shaft and the right support rod are formed integrally, and the first right door arm, the first shaft and the left support rod are formed integrally. Thus, the left pedal member and the right pedal member have artistic appearances, the contact areas between the user's feet and the right and left pedal members are increased, such that it is easier for the user to step the right pedal member and the left pedal member.

[0025] In some embodiments, a first left boss and a second left boss are disposed on a lower surface of the left door body, a free end of the first left door arm is located between the first left boss and a front surface of the refrigerator body, and a free end of the second left door arm is located between the second left boss and the front surface of the refrigerator body; a first right boss and a second right boss are disposed on a lower surface of the right door body, a free end of the first right door arm is located between the first right boss and the front surface of the refrigerator body, and a free end of the second right door arm is located between the second right boss and the front surface of the refrigerator body. Therefore, the left door body and the right door body will not be damaged after having been opened for many times, thus increasing a working life of the left door body and the right door body, i.e., increasing a working life of the side-

by-side refrigerator.

[0026] In some embodiments, the bracket includes: a first support located below the left door body and adjacent to the left edge of the left door body; a second support located below the left door body and/or the right door body; and a third support located below the right door body and adjacent to the right edge of the right door body, in which the right end of the first shaft is supported on the third support, the left end of the second shaft is supported on the first support, and the left end of the first shaft and the right end of the second shaft are supported on the second support. By disposing the first support, the second support and the third support, the first shaft and the second shaft can be disposed on the side-by-side refrigerator stably.

[0027] In some embodiments, the side-by-side refrigerator further includes a decoration cover disposed on a bottom beam of the refrigerator body, in which a first gap and a second gap are formed in a rear edge of an upper surface of the decoration cover, and a third gap and a fourth gap are formed in a lower edge of a front surface of the decoration cover; a free end of the left door member is extended upwards and passed through the first gap, a free end of the right door member is extended upwards and passed through the second gap, a free end of the left pedal member is extended forwards and passed through the third gap, and a free end of the right pedal member is extended forwards and passed through the fourth gap.

[0028] Therefore, the left door member, the right door member, the left pedal member and the right pedal member can be covered up, thus providing an artistic appearance with the side-by-side refrigerator.

[0029] Additional aspects and advantages of embodiments of present invention will be given in part in the following descriptions, become apparent in part from the following descriptions, or be learned from the practice of the embodiments of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030] These and other aspects and advantages of embodiments of the present invention will become apparent and more readily appreciated from the following descriptions made with reference to the accompanying drawings, in which:

Fig. 1 is a partially schematic view of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 2 is a partially exploded view of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 3 is an enlarged view of region D in Fig. 2;

Fig. 4 is a partially exploded rear view of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 5 is an enlarged view of region E in Fig. 4;

Fig. 6 is a partially exploded view of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 7 is a partially exploded view of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 8 is a partially sectional view of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 9 is an exploded view of a bracket of a side-by-side refrigerator according to an embodiment of the present invention;

Fig. 10 is a partially schematic view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 11 is a partially schematic view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 12 is a partially schematic view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 13 is a partially schematic view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 14 is a partially schematic view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 15 is a partially exploded view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 16 is a partially schematic view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 17 is a bottom view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 18 is a front view of a side-by-side refrigerator according to another embodiment of the present invention;

Fig. 19 is a sectional view of the side-by-side refrigerator along a direction of F-F in Fig. 18 therein;

Fig. 20 is a sectional view of the side-by-side refrigerator along a direction of G-G in Fig. 18;

Fig. 21 is a sectional view of the side-by-side refrigerator along a direction of H-H in Fig. 18;

Fig. 22 is a sectional view of the side-by-side refrigerator along a direction of I-I in Fig. 18;

Fig. 23 is a schematic view of a decoration cover of a side-by-side refrigerator according to another embodiment of the present invention.

DETAILED DESCRIPTION

[0031] Reference will be made in detail to embodiments of the present invention. Embodiments of the present invention will be shown in drawings, in which the same or similar elements and the elements having same or similar functions are denoted by like reference numer-

als throughout the descriptions. The embodiments described herein according to drawings are explanatory and illustrative, not construed to limit the present invention.

[0032] In the specification, unless specified or limited otherwise, relative terms such as "central", "longitudinal", "lateral", "up", "down", "front", "rear", "right", "left", "vertical", "horizontal", "top", "bottom", "inner", "outer", as well as derivative thereof (e.g., "horizontally", "downwardly", "upwardly", etc.) should be construed to refer to the orientation as then described or as shown in the drawings under discussion. These relative terms are for convenience of description and do not require that the present invention be constructed or operated in a particular orientation. In addition, terms such as "first" and "second" are used herein for purposes of description and are not intended to indicate or imply relative importance or significance. Thus, features limited by "first" and "second" are intended to indicate or imply including one or more than one these features. In the description of the present invention, "a plurality of" relates to two or more than two.

[0033] In the description of the present invention, unless specified or limited otherwise, it should be noted that, terms "mounted," "connected" and "coupled" may be understood broadly, such as permanent connection or detachable connection, electronic connection or mechanical connection, direct connection or indirect connection via intermediary, inner communication or inter-reaction between two elements. Those having ordinary skills in the art should understand the specific meanings in the present invention according to specific situations.

[0034] A side-by-side refrigerator 1 according to embodiments of the present invention will be described in the following with reference to Figs. 1-8 and Figs. 10-22. As shown in Figs. 1-8 and Figs. 10-22, the side-by-side refrigerator 1 according to embodiments of the present invention includes a refrigerator body 100, a left door body 200, a right door body 300, a left door member 500, a right door member 600, a left pedal member 700 and a right pedal member 800.

[0035] The left door body 200 and the right door body 300 are rotatably disposed on the refrigerator body 100. The left door member 500 is disposed on the refrigerator body 100 and is movable between a left opening position in which the left door body 200 is opened and a left closing position in which the left door body 200 is allowed to be closed. The right door member 600 is disposed on the refrigerator body 100 and is movable between a right opening position in which the right door body 300 is opened and a right closing position in which the right door body 300 is allowed to be closed.

[0036] The left pedal member 700 is connected with the right door member 600 and corresponding to the left door body 200 in an up and down direction, and the left pedal member 700 is movable between a left stepping position and a left lifting position. When the left pedal member 700 moves from the left lifting position to the left stepping position, the right door member 600 is driven to move from the right closing position to the right opening

position. The right pedal member 800 is connected with the left door member 500 and corresponding to the right door body 300 in the up and down direction, and the right pedal member 800 is movable between a right stepping position and a right lifting position. When the right pedal member 800 moves from the right lifting position to the right stepping position, the left door member 500 is driven to move from the left closing position to the left opening position.

[0037] The left and right direction is illustrated by the arrows A in Figs. 1-7, 9-18 and 23. The up and down direction is illustrated by the arrows B in Figs. 1-16 and 18-23. The front and rear direction is illustrated by the arrows C in Figs. 1-17 and 19-23.

[0038] Processes of opening the left door body 200 and the right door body 300 of the side-by-side refrigerator 1 according to embodiments of the present invention will be described in the following with reference to Figs. 1-8 and 10-22.

[0039] When a user needs to open the left door body 200 (for example, the user needs to put stuff into a left compartment of the side-by-side refrigerator 1 or take stuff out of the left compartment of the side-by-side refrigerator 1), the user may step the right pedal member 800 with his foot to move the right pedal member from the right lifting position to the right stepping position, such that the right pedal member 800 may drive the left door member 500 to move from the left closing position to the left opening position so as to open the left door 200. In other words, when the right pedal member 800 is in the right lifting position, the left door member 500 is in the left closing position and the left door 200 is closed; when the right pedal member 800 is in the right stepping position, the left door member 500 is in the left opening position and the left door 200 is open.

[0040] When the user needs to open the right door body 300 (for example, the user needs to put stuff into a right compartment of the side-by-side refrigerator 1 or take stuff out of the right compartment of the side-by-side refrigerator 1), the user may step the left pedal member 700 with his foot to move the left pedal member from the left lifting position to the left stepping position, such that the left pedal member 700 may drive the right door member 600 to move from the right closing position to the right opening position so as to open the right door 300. In other words, when the left pedal member 700 is in the left lifting position, the right door member 600 is in the right closing position and the right door 300 is closed; when the left pedal member 700 is in the left stepping position, the right door member 600 is in the right opening position and the right door 300 is open.

[0041] With the side-by-side refrigerator 1 according to embodiments of the present invention, by forming a linkage between the left pedal member 800 and the left door member 500 and the a linkage between the left pedal member 700 and the right door member 600, the left door body 200 may be opened by stepping the right pedal member 800 and the right door body 300 may be opened

by stepping the left pedal member 700, so that in the processes of opening the left door body 200 and the right door body 300, the left door body 200 and the right door body 300 will not interfere with feet or legs of the user, and thus it is easier and more convenient for the user to open the left door body 200 and the right door body 300. Moreover, since the user opens the left door body 200 by stepping the right pedal member 800 and opens the right door body 300 by stepping the left pedal member 700, hands of the user can be freed, on the other hand, it is much easier for the user to open the left door body 200 and the right door body 300. In particular, when the user holds heavy things with his hands, it is easier and more convenient for the user to open the left door body 200 and the right door body 300. Thus, the door of the side-by-side refrigerator 1 according to embodiments of the present invention is easy and convenient to be opened.

[0042] In some embodiments, the right pedal member 800 is corresponding to the right door body 300 in the up and down direction, i.e., the right pedal member 800 may be located below the right door body 300. In other words, the right pedal member 800 may be located outside of a horizontal projection of the left door body 200 and may be located within a horizontal projection of the right door body 300. Specifically, the right pedal member 800 may be located at a right side of the horizontal projection of the left door body 200. Thus, when the user opens the left door body 200 by stepping the right pedal member 800, the left door body 200 will not interfere with the user's feet, i.e., the left door body 200 will not hit the user's feet in the processing of opening the left door body 200.

[0043] Similarly, the left pedal member 700 is corresponding to the left door body 200 in the up and down direction, i.e., the left pedal member 700 may be located below the left door body 200. In other words, the left pedal member 700 may be located outside of the horizontal projection of the right door body 300 and may be located within the horizontal projection of the left door body 200. Specifically, the left pedal member 700 may be located at a left side of the horizontal projection of the right door body 300. Thus, when the user opens the right door body 300 by stepping the left pedal member 700, the right door body 300 will not interfere with the user's feet, i.e., the right door body 300 will not hit the user's feet in the processing of opening the right door body 300.

[0044] When the left door body 200 is closed, the left door body 200 drives the left door member 500 to move from the left opening position to the left closing position, and thus the left door member 500 can drive the right pedal member 800 to move from the right stepping position to the right lifting position. When the right door body 300 is closed, the right door body 300 drives the right door member 600 to move from the right opening position to the right closing position, and thus the right door member 600 can drive the left pedal member 700 to move from the left stepping position to the left lifting position.

[0045] Specifically, the left door body 200 may be dis-

posed on the refrigerator body 100 via a left hinge, and the right door body 300 may be disposed on the refrigerator body 100 via a right hinge.

[0046] As shown in Figs. 1-23, in some embodiments of the present invention, the side-by-side refrigerator 1 further includes a bracket 400, in which the left door member 500, the right door member 600, the left pedal member 700 and the right pedal member 800 are disposed on the bracket 400 respectively. By disposing the bracket 400 on the refrigerator body 100, it is easy and convenient to dispose the left door member 500, the right door member 600, the left pedal member 700 and the right pedal member 800 on the refrigerator body 100.

[0047] In an embodiment of the present invention, the bracket 400 may be disposed on a front surface 110 of the refrigerator body 100 and may be located below the left door body 200 and the right door body 300. In other words, the bracket 400 may be disposed on the front surface 110 of a lower portion of the refrigerator body 100.

[0048] As shown in Figs. 1-8, in an embodiment of the present invention, the left door member 500 and the left pedal member 700 are adjacent to a right edge 240 of the left door body 200, and the right door member 600 and the right pedal member 800 are adjacent to a left edge 340 of the right door body 300. Thus, the left door member 500 is away from the left hinge and the right door member 600 is away from the right hinge, such that the left door member 500 and the left pedal member 700 can be arranged compactly, the right door member 600 and the right pedal member 800 can be arranged compactly and it is easy for the user to open the left door body 200 and the right door body 300 with less effort.

[0049] Specifically, since the left door member 500 is adjacent to the right edge 240 of the left door body 200, when the user steps the right pedal member 800 to open the left door body 200, an action point of a force acted on the left door body 200 by the left door member 500 is away from the left hinge, such that the force acted on the left door body 200 by the left door member 500 has the maximum force arm, and thus the user can open the left door body 200 with a little effort.

[0050] Similarly, since the right door member 600 is adjacent to the left edge 340 of the right door body 300, when the user steps the left pedal member 700 to open the right door body 300, an action point of a force acted on the right door body 300 by the right door member 600 is away from the right hinge, such that the force acted on the right door body 300 by the right door member 600 has the maximum force arm, and thus the user can open the right door body 300 with a little effort.

[0051] As shown in Figs. 1-8, in some embodiments of the present invention, the side-by-side refrigerator 1 may further include a first shaft 900 and a second shaft 1000. The first shaft 900 and the second shaft 1000 may be pivotally disposed on the bracket 400 and be spaced from each other in the front and rear direction and in the up and down direction, the second shaft 1000 defines a left end connected with the left door member 500 and a

right end connected with the right pedal member 800, and the first shaft 900 defines a right end connected with the right door member 600 and a left end connected with the left pedal member 700.

[0052] In other words, the left door member 500 is disposed on the bracket 400 and rotated between the left opening position and the left closing position, and the right door member 600 is disposed on the bracket 400 and rotated between the right opening position and the right closing position, and the left pedal member 700 is rotated between the left stepping position and the left lifting position and the right pedal member 800 is rotated between the right stepping position and the right lifting position. With the first shaft 900 and the second shaft 1000 being spaced from each other both in the up and down direction and in the front and rear direction, the first shaft 900 and the second shaft 1000 are prevented from interfering with the left pedal member 700, the left door member 500, the right pedal member 800 and the right door member 600. By disposing the first shaft 900 and the second shaft 1000, it is easier to dispose the left pedal member 700, the left door member 500, the right pedal member 800 and the right door member 600 on the bracket 400. In an embodiment of the present invention, the first shaft 900 may be parallel with the second shaft 1000, and first shaft 900 and the second shaft 1000 are extended in the left and right direction.

[0053] A fixed end of the left door member 500 (a lower end of the left door member 500) may be connected with a left end of the second shaft 1000, a free end of the left door member 500 (an upper end of the left door member 500) may be extended upwards and located between a lower portion of the left door body 200 and the refrigerator body 100. A fixed end of the right door member 600 (a lower end of the right door member 600) may be connected with a right end of the first shaft 900, a free end of the right door member 600 (an upper end of the right door member 600) may be extended upwards and located between a lower portion of the right door body 300 and the refrigerator body 100. In an embodiment of the present invention, the free end of the left door member 500 may contact with the lower portion of the left door body 200 and the free end of the right door member 600 may contact with the lower portion of the right door body 300.

[0054] Specifically, as shown in Fig. 7, the first shaft 900 is located above the second shaft 1000, the left compartment is a freezing chamber and the right compartment is a refrigerating chamber. A left power-assisted opening mechanism consists of the left door member 500, the second shaft 1000 and the right pedal member, and a right power-assisted opening mechanism consists of the right door member 600, the first shaft 900 and the left pedal member 700.

[0055] In an embodiment of the present invention, the left door member 500, the second shaft 1000, and the right pedal member 800 are formed integrally, and the right door member 600, the first shaft 900 and the left

pedal member 700 are formed integrally. Thus, structural strengths of the left power-assisted opening mechanism and the right power-assisted opening mechanism can be improved, producing processes of the left power-assisted opening mechanism and the right power-assisted opening mechanism can be simplified and producing costs of the left power-assisted opening mechanism and the right power-assisted opening mechanism can be reduced. Specifically, the left door member 500, the second shaft 1000, and the right pedal member 800 are formed by integral injection molding, and the right door member 600, the first shaft 900 and the left pedal member 700 are formed by integral injection molding.

[0056] As shown in Figs. 1-7, in an embodiment of the present invention, the left pedal member 700 and the right pedal member 800 may be configured as pedals (i.e., the left pedal member is a pedal and the right pedal member also may be a pedal), the left door member 500 and the right door member 600 may be configured as plates (i.e., the left door member 500 is a plate and the right door member 600 is a plate), the right pedal member 800 is aligned with the right door member 600 and the left pedal member 700 is aligned with the left door member 500.

[0057] By configuring the left pedal member 700 and the right pedal member 800 as pedals, contact areas between the user's feet and the left pedal member 700 and between the user's feet and the right pedal member 800 can be increased, and thus it is easier for the user to step the left pedal member and the right pedal member 800. By configuring the left door member 500 and the right door member 600 as plates, contact areas between the left door member 500 and the left door body 200 and between the right door member 600 and the right door body 300 can be increased, and thus it is much easier for the user to open the left door body 200 and the right door body 300. By aligning the right pedal member 800 with the right door member 600 and the left pedal member 700 with the left door member 500 (i.e., aligning the right pedal member 800 with the right door member 600 in the left and right direction and aligning the left pedal member 700 with the left door member 500 in the left and right direction), the left door member 500 and the left pedal member 700 are arranged compactly, and the right door member 600 and the right pedal member 800 are arranged compactly.

[0058] In an embodiment of the present invention, antiskid stripes 1100 may be formed in an upper surface of the left pedal member 700 and may also be formed in an upper surface of the right pedal member 800, such that friction forces between the user's feet and the left pedal member 700 and between the user's feet and the right pedal member 800 can be improved, thus performing a skid resistance function and further making it easier for the user to operate.

[0059] As shown in Figs. 2-9, in some embodiments of the present invention, the bracket 400 further includes a rear frame 410 and a front frame 420. The rear frame

410 has an L-shaped cross-section and has a first vertical portion 411 and a first horizontal portion 413, and a first support plate 412 is disposed on the first vertical portion 411 and defines a first clamping groove 414 and a second clamping groove 415.

[0060] The front frame 420 has an inverted L-shaped cross-section and has a second vertical portion 421 and a second horizontal portion 427, a second support plate 422 is disposed on the second vertical portion 421 and is spaced from the first support plate 412 in the right and left direction, and the second support plate 422 defines a third clamping groove 423 and a fourth clamping groove 424. The first shaft 900 is pivotally fitted in the first clamping groove 414 and the third clamping groove 423, the second shaft 1000 is pivotally fitted in the second clamping groove 415 and the fourth clamping groove 424. A left door member window 428 and a right door member window 429 are formed in the second horizontal portion 427, a left pedal member window 425 and a right pedal member window 426 are formed in the second vertical portion 421, a free end 510 of the left door member 500 is extended upwards and passed through the left door member window 428 and a free end 610 of the right door member 600 is extended upwards and passed through the right door member window 429, and a free end 710 of the left pedal member 700 (a front end of the left pedal member 700) is extended forwards and passed through the left pedal member window 425 and a free end 810 of the right pedal member 800 (a front end of the right pedal member 800) is extended forwards and passed through the right pedal member window 426.

[0061] By disposing the rear frame 410 and the front frame 420, a space configured to receive a part of the left door member 500, a part of the right door member 600, a part of the left pedal member 700, a part of the right pedal member 800, the first shaft 900 and the second shaft 1000 is defined, such that the side-by-side refrigerator 1 has a simple and artistic appearance and the left door member 500, the right door member 600, the left pedal member 700, the right pedal member 800, the first shaft 900 and the second shaft 1000 can be protected. Moreover, by defining the first clamping groove 414 and the second clamping groove 415 in the first support plate 412 of the rear frame 410 and defining the third clamping groove 423 and the fourth clamping groove 424 in the second support plate 422 of the front frame 420, it is much easier to dispose the first shaft 900 and the second shaft 1000 on the bracket pivotally.

[0062] Specifically, a rear end of the second horizontal portion 427 of the front frame 420 contacts with an upper end of the first vertical portion 411 of the rear frame 410, and a lower end of the second vertical portion 421 of the front frame 420 contacts with a front end of the horizontal portion 413 of the rear frame 410, and thus a chamber with a general rectangle shape is defined by the rear frame 410 with the L-shaped cross-section and the front frame 420 with the inverted L-shaped cross-section. The first support plate 412 is disposed on a front surface of

the first vertical portion 411 of the rear frame 410 (a surface of the first vertical portion 411 close to the user) and is extended forwards. The second support plate 422 is disposed on a rear surface of the second vertical portion 421 of the front frame 420 (a surface of the vertical portion away from the user) and is extended backwards. The first clamping groove 414 and the second clamping groove 415 may be formed in the first support plate 412 and spaced from each other in the up and down direction, and the third clamping groove 423 and the fourth clamping groove 424 may be formed in the second support plate 422 and spaced from each other in the up and down direction.

[0063] In an embodiment of the present invention, as shown in Fig. 9, both the first support plate 412 and the second support plate 422 may be oriented in the front and rear direction, rear ends of the first clamping groove 414 and the second clamping groove 415 may be configured as semicircles, and front ends of the third clamping groove 423 and the fourth clamping groove 424 may be configured as semicircles, such that the first shaft 900 can be fitted in the first clamping groove 414 and the third clamping groove 423 stably and the second shaft 1000 may be fitted in the second clamping groove 415 and the fourth clamping groove 424 stably.

[0064] There may be a plurality of first support plates 412, and the plurality of first support plates 412 are disposed on the first vertical portion 411 of the rear frame 410 and spaced from each other in the left and right direction. There may be a plurality of second support plates 422, and the plurality of second support plates 422 are disposed on the second vertical portion 421 of the front frame 420 and spaced from each other in the left and right direction. Each first support plate 412 is spaced from each second support 422 in the left and right direction. By disposing the plurality of first support plates 412 and second support plates 422, the first shaft 900 and the second shaft 1000 can be supported stably.

[0065] In an embodiment of the present invention, the first support plate 412 and the rear frame 410 are formed integrally, and the second support plate 422 and the front frame 420 are formed integrally. Specifically, the first support plate 412 and the rear frame 410 are integrally formed by injection molding, and the second support plate 422 and the front frame 420 are integrally formed by injection molding, and thus the structural strength is improved, the producing process is simplified and the producing cost is reduced.

[0066] As shown in Fig. 5, in an embodiment of the present invention, lower ends of the left pedal window 425 and the right pedal window 426 are open, such that it is easy to dispose the left pedal member 700 and the right pedal member 800, i.e., it is easy to dispose the left power-assisted opening mechanism and the right power-assisted opening mechanism.

[0067] As shown in Figs. 3 and 5, in an embodiment of the present invention, the rear frame 410 further includes a first side plate 430, the front frame 420 further

includes a second side plate 440, one of the first side plate 430 and the second side plate 440 defines a sliding groove 450 and the other thereof has a sliding rail 460 which is fitted in the sliding groove 450 and movable in the front and rear direction within the sliding groove 450. By disposing the first side plate 430, the second side plate 440, the sliding groove 450 and the sliding rail 460, it is easy and convenient to assembly the rear frame 410 and the front frame 420 detachably.

[0068] Specifically, there may be two first side plates 430, and one is disposed at a left side of the rear frame 410 and the other one is disposed at a right side of the rear frame 410; there may be two second side plates 440, one is disposed at a left side of the front frame 420 and the other one is disposed at a right side of the front frame 420.

[0069] In an embodiment of the present invention, the first side plate 430 and the rear frame 410 are formed integrally, and the second side plate 440 and the front frame 420 are formed integrally. Specifically, the first side plate 430 and the rear frame 410 are integrally formed by injection molding, and the second side plate 440 and the front frame 420 are integrally formed by injection molding, and thus the structural strength is improved, the producing process is simplified and the producing cost is reduced.

[0070] As shown in Figs. 1-7, in an embodiment of the present invention, the side-by-side refrigerator 1 further includes a bottom beam cover 1200 disposed on a bottom beam 140 of the refrigerator body 100 and formed with the front frame 420 integrally. Specifically, the bottom beam cover 1200 is formed with the front frame 420 by injection molding integrally, and thus the structural strength is improved, the producing process is simplified and the producing cost is reduced.

[0071] As shown in Fig. 8, in an embodiment of the present invention, the side-by-side refrigerator 1 includes a first elastic member (not shown) and a second elastic member 1300. The first elastic member is disposed between the left pedal member 700 and the bracket 400 and is configured to push the left pedal member 700 from the left stepping position to the left lifting position. The second elastic member 1300 is disposed between the right pedal member 800 and the bracket 400 and is configured to push the right pedal member 800 to the right lifting position from the right stepping position.

[0072] In other words, when the user steps the left pedal member 700, i.e., when the left pedal member 700 is in the left stepping position, the first elastic member is compressed; when the user's feet are removed from the left pedal member 700, the first elastic member moves the left pedal member 700 from the left stepping position to the left lifting position. Likewise, when the user steps the right pedal member 800, i.e., when the right pedal member 800 is in the right stepping position, the second elastic member 1300 is compressed; when the user's feet are removed from the right pedal member 800, the second elastic member 1300 moves the right pedal mem-

ber 800 from the right stepping position to the right lifting position.

[0073] By disposing the first elastic member and the second elastic member 1300, the left pedal member 700 and the right door member 600 can be reset when the user's feet are removed from the left pedal member 700, and the right pedal member 800 and the left door member 500 can be reset when the user's feet are removed from the right pedal member 800.

[0074] Specifically, a first end of the first elastic member is connected with a lower surface of the left pedal member 700 and a second end of the first elastic member is connected with an upper surface of the first horizontal portion 413 of the rear frame 410. The first end of the second elastic member 1300 (an upper end of the second elastic member 1300 in Fig. 8) is connected with a lower surface of the right pedal member 800 and a second end of the second elastic member 1300 (a lower end of the second elastic member 1300 in Fig. 8) is connected with the upper surface of the first horizontal portion 413 of the rear frame 410.

[0075] In an embodiment of the present invention, a left boss is disposed on a lower surface of the left door body 200, and the free end 510 of the left door member 500 is located between the left boss and the front surface 110 of the refrigerator body 100; a right boss is disposed on a lower surface of the right door body 300, and the free end 610 of the right door member 600 is located between the right boss and the front surface 110 of the refrigerator body 100.

[0076] Thus, when the user opens the left door body 200 via the left door member 500 and opens the right door body 300 via the right door member 600, the left door member 500 applies a force to the left boss and the right door member 600 applies a force to the right boss. In other words, by disposing the left boss on the lower surface of the left door body 200, the left door member 500 is prevented from applying a force to the left door body directly; by disposing the right boss on the lower surface of the right door body 300, the right door member 600 is prevented from applying a force to the right door body 300 directly. Therefore, the left door body 200 and the right door body 300 will not be damaged after having been opened for many times, thus increasing a working life of the left door body 200 and the right door body 300, i.e., increasing a working life of the side-by-side refrigerator 1.

[0077] In an embodiment of the present invention, the left boss is disposed on the lower surface of the left door body 200 detachably, and the right boss is disposed on the lower surface of the right door body 300 detachably. Thus, if the left boss and the right boss are damaged, they can be replaced. In addition, a cost of replacing the left boss and the right boss is much less than that of replacing the left door body 200 and the right door body 300.

[0078] As shown in Figs. 10-22, in other embodiments of the present invention, the side-by-side refrigerator 1

may further includes a first shaft 900 and a second shaft 1000. The first shaft 900 and the second shaft 1000 may be pivotally disposed on the bracket 400 and be spaced from each other in the up and down direction, the second shaft 1000 is connected with the left door member 500 and defines a right end connected with the right pedal member 80, and the first shaft 900 is connected with the right door member 600 and defines a left end connected with the left pedal member 700.

[0079] In other words, the left door member 500 is disposed on the bracket 400 and rotated between the left opening position and the left closing position, and the right door member 600 is disposed on the bracket 400 and rotated between the right opening position and the right closing position, and the left pedal member 700 is rotated between the left stepping position and the left lifting position and the right pedal member 800 is rotated between the right stepping position and the right lifting position. The first shaft 900 and the second shaft 1000 are spaced from each other both in the up and down direction, and thus the first shaft 900 and the second shaft 1000 are prevented from interfering with the left pedal member 700 and the right pedal member 800.

[0080] By disposing the first shaft 900 and the second shaft 1000, it is easier to dispose the left pedal member 700, the left door member 500, the right pedal member 800 and the right door member 600 on the bracket 400. In an embodiment of the present invention, the first shaft 900 may be parallel with the second shaft 1000, and first shaft 900 and the second shaft 1000 are extended in the left and right direction.

[0081] A fixed end of the left door member 500 (a lower end of the left door member 500) may be connected with a left end of the second shaft 1000, a free end of the left door member 500 (an upper end of the left door member 500) may be extended upwards and located between a lower portion of the left door body 200 and the refrigerator body 100. A fixed end of the right door member 600 (a lower end of the right door member 600) may be connected with a right end of the first shaft 900, a free end of the right door member 600 (an upper end of the right door member 600) may be extended upwards and located between a lower portion of the right door body 300 and the refrigerator body 100. In an embodiment of the present invention, the free end of the left door member 500 may contact with the lower portion of the left door body 200 and the free end of the right door member 600 may contact with the lower portion of the right door body 300.

[0082] Specifically, as shown in Figs. 10-12 and 16, the first shaft 900 is located below the second shaft 1000, the left compartment is a freezing chamber and the right compartment is a refrigerating chamber. A left power-assisted opening mechanism consists of the left door member 500, the second shaft 1000 and the right pedal member 800, and a right power-assisted opening mechanism consists of the right door member 600, the first shaft 900 and the left pedal member 700.

[0083] In an embodiment of the present invention, the left door member 500, the second shaft 1000, and the right pedal member 800 are formed integrally, and the right door member 600, the first shaft 900 and the left pedal member 700 are formed integrally. Thus, structural strengths of the left power-assisted opening mechanism and the right power-assisted opening mechanism can be improved, producing processes of the left power-assisted opening mechanism and the right power-assisted opening mechanism can be simplified and producing costs of the left power-assisted opening mechanism and the right power-assisted opening mechanism can be reduced.

[0084] As shown in Figs. 10-18, in another embodiment of the present invention, the left door member 500 is adjacent to a left edge 230 of the left door body 200, and the right door member 600 is adjacent to a right edge 330 of the right door body 300, such that the left door member 500 is adjacent to the left hinge and the right door member 600 is adjacent to the right hinge. Thus, the left door body 200 can be opened with a larger angle by the left door member 500, and the right door body 300 can be opened with a larger angle by the right door member 600. In other words, the left door body 200 and the right door body 300 have larger power-assisted travels.

[0085] Specifically, by disposing the left door member 500 in a position adjacent to the left edge 230 of the left door body 200, when the right pedal member 800 is stepped to open the left door body 200, in a case that the left door member 500 is rotated a certain angle, the left door body 200 can have the maximum power-assisted travel, i.e., the left door body 200 is opened with the maximum angle. Likewise, by disposing the right door member 600 in a position adjacent to the right edge 330 of the right door body 300, when the left pedal member 700 is stepped to open the right door body 300, in a case that the right door member 600 is rotated a certain angle, the right door body 300 can have the maximum power-assisted travel, i.e., the right door body 300 is opened with the maximum angle.

[0086] Specifically, as shown in Figs. 10-18, the left pedal member 700 is adjacent to the right edge 240 of the left door body 200, and the right pedal member 800 is adjacent to the left edge 340 of the right door body 300. By disposing the left pedal member 700 in a position adjacent to the right edge 240 of the left door body 200 and disposing the right pedal member 800 in a position adjacent to the left edge 340 of the right door body 300, the left pedal member 700 and the right pedal member 800 can be arranged compactly.

[0087] As shown in Figs. 10-18, in some embodiments of the present invention, the left door member 500 includes a first left door arm 520 and a second left door arm 530. The first left door arm 520 is connected with the left end of the second shaft 1000 and is adjacent to the left edge 230 of the left door body 200 and the second left door arm 530 is connected with the second shaft 1000 and is located between the first left door arm 520 and the

right pedal member 800. The right door member 600 includes a first right door arm 620 and a second right door arm 630. The first right door arm 620 is connected with the right end of the first shaft 900 and is adjacent to the right edge 330 of the right door body 300 and the second right door arm 630 is connected with the first shaft 900 and is located between the first right door arm 620 and the left pedal member 700.

[0088] In other words, each of the first left door arm 520 and the second left door arm 530 may be disposed on the bracket 400 and rotated between the left opening position and the left closing position, and each of the first right door arm 620 and the second right door arm 630 may be disposed on the bracket 400 and rotated between the right opening position and the right closing position.

[0089] Processes of opening the left door 200 and the right door 300 of the side-by-side refrigerator 1 according to embodiments of the present invention will be described in the following with reference to Figs. 10-22.

[0090] When the user needs to open the left door body 200 (for example, the user needs to put stuff into a left compartment of the side-by-side refrigerator 1 or get stuff out of the left compartment of the side-by-side refrigerator 1), the user may step the right pedal member 800 with his foot to move the right pedal member 800 from the right lifting position to the right stepping position, such that the right pedal member 800 may drive the first left door arm 520 and the second left door arm 530 to move from the left closing position to the left opening position so as to open the left door 200. In other words, when the right pedal member 800 is in the right lifting position, the first left door arm 520 and the second left door arm 530 are in the left closing position and the left door 200 is closed; when the right pedal member 800 is in the right stepping position, the first left door arm 520 and the second left door arm 530 are in the left opening position and the left door 200 is open.

[0091] When the user needs to open the right door body 300 (for example, the user needs to put stuff into a right compartment of the side-by-side refrigerator 1 or get stuff out of the right compartment of the side-by-side refrigerator 1), the user may step the left pedal member 700 with his foot to move the left pedal member from the left lifting position to the left stepping position, such that the left pedal member 700 may drive the first right door arm 620 and the second right door arm 630 to move from the right closing position to the right opening position so as to open the right door 300. In other words, when the left pedal member 700 is in the left lifting position, the first right door arm 620 and the second right door arm 630 are in the right closing position and the right door 300 is closed; when the left pedal member 700 is in the left stepping position, the first right door arm 620 and the second right door arm 630 are in the right opening position and the right door 300 is open.

[0092] Since the first left door arm 520 is adjacent to the left edge 230 of the left door body 200 and the first right door arm 620 is adjacent to the right edge 330 of

the right door body 300 (i.e., the first left door arm 520 is adjacent to the left hinge and the first right door arm 620 is adjacent to the right hinge), the left door body 200 can be opened with a larger angle by the first left door arm 520 and the right door 300 can be opened with a larger angle by the first right door arm 620. In other words, the left door body 200 and the right door body 300 have larger power-assisted travels. Since the second left door arm 530 is away from to the left edge 230 of the left door body 200 and the second right door arm 630 is away from to the right edge 330 of the right door body 300 (i.e., the second left door arm 530 is away from to the left hinge and the second right door arm 630 is away to the right hinge), an action point of a force acted on the left door body 200 by the second left door arm 530 is away from the left hinge, and an action point of a force acted on the right door body 300 by the second right door arm 630 is away from the right hinge, and thus the user can open the left door 200 and the right door 300 with a little effort.

[0093] Therefore, by disposing the first left door arm 520 adjacent to the left edge 230 of the left door body 200 and disposing the second left door arm 530 away from to the left edge 230 of the left door body 200, not only the user can open the left door 200 with a little effort, but also the left door body 200 can have a larger power-assisted travel. By disposing the first right door arm 620 adjacent to the right edge 330 of the right door body 300 and disposing the second right door arm 630 away from to the right edge 330 of the right door body 300, not only the user can open the right door 300 with a little effort, but also the right door body 300 can have a larger power-assisted travel.

[0094] In some embodiments of the present invention, in the left closing position, the second left door arm 530 contacts with the left door body 200 and the first left door arm 520 is spaced from the left door body 200 with a certain distance (such as 3mm to 20mm, preferably 10mm); in the right closing position, the second right door arm 630 contacts with the right door body 300 and the first right door arm 620 is spaced from the right door body 300 with a certain distance (such as 3mm to 20mm, preferably 10mm).

[0095] The process of opening the left door body 200 of the side-by-side of the refrigerator 1 according to embodiments of the present invention will be described in the following with reference to Figs. 10-22.

[0096] When the user steps the right pedal member 800 to move the right pedal member 800 from the right lifting position to the right stepping position, the first left door arm 520 and the second left door arm 530 are rotated forwards (i.e., swung forwards). Since the second left door arm 530 contacts with the left door body 200, the left door body 200 is opened with a certain angle (such as 3 degrees to 5 degrees) by the second left door arm 530, and thus the left door 200 is beyond a magnetism scope of a door gasket. As the left door body 200 is opened, the second left door arm 530 separates from the left door body 200 and the first left door body contacts

with the left door body 200 so as to continuously open the left door body 200 (at the moment, the left door 200 has been beyond the magnetism scope of the door gasket and has a certain initial velocity, and thus the left door body 200 has a small opening resistance), until the first left door arm 520 separates from the left door body 200. Finally, the left door body 200 can be opened with an angle of 5 degrees to 20 degrees and even be opened with an angle larger than 90 degrees by means of inertia thereof. The process of opening the right door body 300 is the same with that of opening the left door body 200 and is omitted herein.

[0097] In an embodiment of the present invention, the left pedal member 700 and the second left door arm 530 may be adjacent to the right edge 240 of the left door body 200, and the right pedal member 800 and the second right door arm 630 may be adjacent to left edge 340 of the right door body 300. By disposing the second left door arm 530 in a position adjacent to the right edge 240 of the left door body 200, the force acted on the left door body 200 by the second left door arm 530 has the longest force arm, and thus the user can open the left door body 200 with a little effort. Likewise, by disposing the second right door arm 630 in a position adjacent to the left edge 340 of the right door body 300, the force acted on the right door body 300 by the second right door arm 630 has the longest force arm, and thus the user can open the right door body 300 with a little effort.

[0098] Moreover, by disposing the left pedal member 700 in a position adjacent to the right edge 240 of the left door body 200 and disposing the right pedal member 800 in a position adjacent to the left edge 340 of the right door body 300, the left pedal member 700, the second left door arm 530, the right pedal member 800 and the second right door arm 630 can be arranged compactly.

[0099] As shown in Figs. 10-13 and Figs. 15-16, in some embodiments of the present invention, the first left door arm 520, the second left door arm 530, the first right door arm 620 and the second right door arm 630 may be configured as rods. The left pedal member 700 includes a left support rod 720 connected with the left end of the first shaft 900 and a left pedal 730 disposed on the left support rod 720, the right pedal member 800 includes a right support rod 820 connected with the right end of the second shaft 1000 and a right pedal 830 disposed on the right support rod 820. The first left door arm 520, the second shaft 1000 and the right support rod 820 are formed integrally, and the first right door arm 620, the first shaft 900 and the left support rod 720 are formed integrally.

[0100] By disposing the right pedal 830 on the right support rod 820 and disposing the left pedal 730 on the left support rod 720, the left pedal member 700 and the right pedal member 800 have artistic appearances, and the contact areas between the user's feet and the right pedal member 800 and the left pedal member 700 are increased, such that it is easier for the user to step the right pedal member 800 and the left pedal member 700.

In some embodiments, antiskid stripes may be formed in an upper surface of the left pedal 730 and may also be formed in an upper surface of the right pedal 830, such that friction forces between the user's feet and the left pedal 730 and between the user's feet and the right pedal 830 can be improved, thus performing a skid resistance function and further making it easier for the user to operate.

[0101] Specifically, the first left door arm 520, the second shaft 1000 and the right support rod 820 are made of a steel bar with a diameter of 8mm by bending, and a first end of the steel bar is bent forwards with an angle of 90 degrees so as to from the right support rod 820, and a second end of the steel bar is bent upwards with an angle of 90 degrees so as to form the first left door arm 520. The first right door arm 620, the first shaft 900 and the left support rod 720 also are made of a steel bar with a diameter of 8mm by bending, and a manufacturing method thereof is the same with that in above descriptions. In addition, the second left door arm 530 and the second right door arm 630 are made of steel, and the second left door arm 530 is welded on the second shaft 1000 and the second right door arm 630 is welded on the first shaft 900.

[0102] In the left closing position, the first left door arm 520 and the second left door arm 530 are oriented in the up and down direction; in the right closing position, the first right door arm 620 and the second right door arm 630 are oriented in the up and down direction. In the left lifting position, the left support rod 720 and the left pedal 730 are oriented in a front and rear position; in the right lifting position, the right support rod 820 and the right pedal 830 are oriented in the front and rear direction. The second shaft 1000 is orthogonal to each of the first left door arm 520, the second left door arm 530, the right support rod 820 and the right pedal 830, and the first shaft 900 is orthogonal to each of the first right door arm 620, the second right door arm 630, the left support rod 720 and the left pedal 730.

[0103] As shown in Figs. 10-15, 17 and 19-22, in some embodiments of the present invention, a first left boss 250 and a second left boss 260 are disposed on a lower surface 220 of the left door body 200, a free end 521 of the first left door arm 520 is located between the first left boss 250 and a front surface 110 of the refrigerator body 100, and a free end 531 of the second left door arm 530 is located between the second left boss 260 and the front surface 110 of the refrigerator body 100. A first right boss 350 and a second right boss 360 are disposed on a lower surface 320 of the right door body 300, a free end 621 of the first right door arm 620 is located between the first right boss 360 and the front surface 110 of the refrigerator body 100, and a free end 631 of the second right door arm 630 is located between the second right boss 360 and the front surface 110 of the refrigerator body 100.

[0104] Therefore, when the user opens the left door body 200 with the first left door arm 520 and the second left door arm 530 and opens the right door body 300 with

the first right door arm 620 and the second right door arm 630, the first left door arm 520 applies a force to the first left boss 250 and the second left door arm 530 applies a force to the second left boss 260, and the first right door arm 620 applies a force to the first right boss 350 and the second right door arm 630 applies a force to the second right boss 360. In other words, by disposing the first left boss 250 and the second left boss 260 on the lower surface 220 of the left door body 200, the first left door arm 520 and the second left door arm 530 are prevented from applying a force to the left door body 200 directly; by disposing the first right boss 350 and the second left door boss 360 on the lower surface 320 of the right door body 300, the first right door arm 620 and the second left door arm 630 are prevented from applying a force to the right door body 300 directly. Therefore, the left door body 200 and the right door body 300 will not be damaged after having been opened for many times, thus increasing a working life of the left door body 200 and the right door body 300, i.e., increasing a working life of the side-by-side refrigerator 1.

[0105] In an embodiment of the present invention, the first left boss 250 and the second left boss 260 are disposed on the lower surface 220 of the left door body 200 detachably, and the first right boss 350 and the second right boss 360 are disposed on the lower surface 320 of the right door body 300 detachably. Thus, if the first left boss 250, the second left boss 260, the first right boss 350 and the second right boss 360 are damaged, they can be replaced. In addition, a cost of replacing the first left boss 250, the second left boss 260, the first right boss 350 and the second right boss 360 is much less than that of replaying the left door body 200 and the right door body 300.

[0106] Specifically, in the left closing position, the second left door arm 530 contacts with the second left boss 260 and the first left door arm 520 is spaced from the first left boss 250 with a certain distance (such as 3mm-20mm, preferably 10mm); in the right closing position, the second right door arm 630 contacts with the second right boss 360 and the first right door arm 620 is spaced from the first right boss 350 with a certain distance (such as 3mm-20mm, preferably 10mm).

[0107] In an embodiment of the present invention, the bracket 400 includes a first support 470, a second support 480 and a third support 490. The first support 470 is located below the left door body 200 and is adjacent to the left edge 230 of the left door body 200. The second support 480 is located below the left door body 200 and/or the right door body 300. The third support 490 is located below the right door body 300 and is adjacent to the right edge 330 of the right door body 300. The right end of the first shaft 900 is supported on the third support 490, the left end of the second shaft 1000 is supported on the first support 470, and the left end of the first shaft 900 and the right end of the second shaft 1000 are supported on the second support 480. By disposing the first support 470, the second support 480 and the third support 490,

the first shaft 900 and the second shaft 1000 can be disposed on the side-by-side refrigerator 1 stably.

[0108] Specifically, each of the first support 470, the second support 480 and the third support 490 includes a third vertical portion and a third horizontal portion. The third vertical portion is disposed on a front surface of the bottom beam 140 of the refrigerator body 100, and a first shaft hole 481 and a second shaft hole 482 penetrated through the third vertical portion in the left and right direction are spaced from each other in the up and down direction. The third horizontal portion is disposed on a lower face of the refrigerator body 100, and a front edge of the third horizontal portion is connected with a lower edge of the third vertical portion. By forming the first shaft hole 481 and the second shaft hole 482 in each of the first support 470, the second support 480 and the third support 490, a product standardization level can be improved and kinds of components and parts can be reduced.

[0109] In an embodiment of the present invention, the side-by-side refrigerator 1 further includes a first reinforcer, a second reinforcer and a third reinforcer. The first reinforcer, the second reinforcer and the third reinforcer may be disposed on a rear surface of the bottom beam 140 of the refrigerator body 100 and spaced from one another. The first support 470 may be disposed on the bottom beam 140 of the refrigerator body 100 and the first reinforcer by a first fastener. The second support 480 may be disposed on the bottom beam 140 of the refrigerator body 100 and the second reinforcer by a second fastener. The third support 490 may be disposed on the bottom beam 140 of the refrigerator body 100 and the third reinforcer by a third fastener. By disposing the first reinforcer, the second reinforcer and the third reinforcer, the first support 470, the second support 480, the third support 490 can be disposed on the bottom beam 140 of the refrigerator body 100 stably and can bear larger forces. The first fastener, the second fastener and the third fastener may be screws.

[0110] As shown in Figs. 14-15 and 23, the side-by-side refrigerator 1 further includes a decoration cover 1400 disposed on the bottom beam 140 of the refrigerator body 100. A first gap 1411 and a second gap 1422 are formed in a rear edge of an upper surface 1410 of the decoration cover 1400, and a third gap 1421 and a fourth gap 1422 are formed in a lower edge of a front surface 1420 of the decoration cover 1400. The free end 510 of the left door member 500 is extended upwards and passed through the first gap 1411, the free end 610 of the right door member 600 is extended upwards and passed through the second gap 1412, the free end 710 of the left pedal member 700 is extended forwards and passed through the third gap 1421, and the free end 810 of the right pedal member 800 is extended forwards and passed through the fourth gap 1422.

[0111] By disposing the decoration cover 1400 on the bottom beam 140 of the refrigerator body 100, the left door member 500, the right door member 600, the left

pedal member 700 and the right pedal member 800 can be covered up, thus providing an artistic appearance with the side-by-side refrigerator 1.

[0112] In an embodiment of the present invention, a first opening 1423 and a second opening 1424 are formed in the decoration cover 1400. The free end 521 of the first left door arm 520 is extended upwards and passed through the first gap 1411, the free end 531 of the second left door arm 530 is extended upwards and passed through the first opening 1423, the free end 621 of the first right door arm 620 is extended upwards and passed through the second gap 1412, and the free end 632 of the second right door arm 630 is extended upwards and passed through the second opening 1424.

[0113] With the side-by-side refrigerator 1 according to embodiments of the present invention, it is easy and convenient for the user to open the doors thereof.

[0114] Reference throughout this specification to "an embodiment," "some embodiments," "one embodiment," "another example," "an example," "a specific example," or "some examples," means that a particular feature, structure, material, or characteristic described in connection with the embodiment or example is included in at least one embodiment or example of the present invention. Thus, the appearances of the phrases such as "in some embodiments," "in one embodiment," "in an embodiment," "in another example," "in an example," "in a specific example," or "in some examples," in various places throughout this specification are not necessarily referring to the same embodiment or example of the present invention. Furthermore, the particular features, structures, materials, or characteristics may be combined in any suitable manner in one or more embodiments or examples.

[0115] Although explanatory embodiments have been shown and described, it would be appreciated by those skilled in the art that the above embodiments cannot be construed to limit the present invention, and changes, alternatives, and modifications can be made in the embodiments without departing from spirit, principles and scope of the present invention.

Claims

1. A side-by-side refrigerator, comprising:

- a refrigerator body;
- a left door body and a right door body rotatably disposed on the refrigerator body;
- a left door member disposed on the refrigerator body and movable between a left opening position in which the left door body is opened and a left closing position in which the left door body is allowed to be closed;
- a right door member disposed on the refrigerator body and movable between a right opening position in which the right door body is opened and

- a right closing position in which the right door body is allowed to be closed;
 a left pedal member connected with the right door member, corresponding to the left door body in an up and down direction and movable between a left stepping position and a left lifting position, wherein when the left pedal member moves from the left lifting position to the left stepping position, the right door member is driven to move from the right closing position to the right opening position; and
 a right pedal member connected with the left door member, corresponding to the right door body in the up and down direction and movable between a right stepping position and a right lifting position, wherein when the right pedal member moves from the right lifting position to the right stepping position, the left door member is driven to move from the left closing position to the left opening position.
2. The refrigerator according to claim 1, further comprising a bracket, wherein the left door member, the right door member, the left pedal member and the right pedal member are disposed on the bracket respectively.
 3. The refrigerator according to claim 2, wherein the bracket is disposed on a front surface of the refrigerator body and is located below the left door body and the right door body.
 4. The refrigerator according to claim 2, wherein the left door member and the left pedal member are adjacent to a right edge of the left door body, and the right door member and the right pedal member are adjacent to a left edge of the right door body.
 5. The refrigerator according to claim 2, further comprising: a first shaft and a second shaft pivotally disposed on the bracket and spaced from each other in a front and rear direction and in the up and down direction, the second shaft defining a left end connected with the left door member and a right end connected with the right pedal member, the first shaft defining a right end connected with the right door member and a left end connected with the left pedal member.
 6. The refrigerator according to claim 5, wherein the left pedal member and the right pedal member are configured as pedals, the left door member and the right door member are configured as plates, the right pedal member is aligned with the right door member and the left pedal member is aligned with the left door member.
 7. The refrigerator according to claim 5, wherein the left pedal member, the right door member and the first shaft are formed integrally, and the right pedal member, the left door member and the second shaft are formed integrally.
 8. The refrigerator according to claim 2, wherein the bracket comprises:
 - a rear frame with an L-shaped cross-section and having a first vertical portion and a first horizontal portion, and a first support plate being disposed on the first vertical portion and defining a first clamping groove and a second clamping groove; and
 - a front frame with an inverted L-shaped cross-section and having a second vertical portion and a second horizontal portion, a second support plate being disposed on the second vertical portion and spaced from the first support plate in a right and left direction, and the second support plate defining a third clamping groove and a fourth clamping groove,
 wherein the first shaft is pivotally fitted in the first clamping groove and the third clamping groove, the second shaft is pivotally fitted in the second clamping groove and the fourth clamping groove, a left door member window and a right door member window are formed in the second horizontal portion, a left pedal member window and a right pedal member window are formed in the second vertical portion, a free end of the left door member is extended upwards and passed through the left door member window and a free end of the right door member is extended upwards and passed through the right door member window, and a free end of the left pedal member is extended forwards and passed through the left pedal member window and a free end of the right pedal member is extended forwards and passed through the right pedal member window.
 9. The refrigerator according to claim 8, wherein lower ends of the left pedal window and the right pedal window are open.
 10. The refrigerator according to claim 8, wherein the rear frame comprises a first side plate, the front frame comprises a second side plate, one of the first side plate and the second side plate defines a sliding groove and the other thereof has a sliding rail fitted in the sliding groove and movable in a front and rear direction within the sliding groove.
 11. The refrigerator according to claim 8, further comprising a bottom beam cover disposed on a bottom beam of the refrigerator body and formed with the front frame integrally.

12. The refrigerator according to any one of claims 2-11, further comprising:

a first elastic member disposed between the left pedal member and the bracket and configured to push the left pedal member from the left stepping position to the left lifting position; and
a second elastic member disposed between the right pedal member and the bracket and configured to push the right pedal member to the right lifting position from the right stepping position.

13. The refrigerator according to claim 4, wherein a left boss is disposed on a lower surface of the left door body, and the free end of the left door member is located between the left boss and the front surface of the refrigerator body; a right boss is disposed on a lower surface of the right door body, and the free end of the right door member is located between the right boss and the front surface of the refrigerator body.

14. The refrigerator according to claim 2, further comprising a first shaft and a second shaft pivotally disposed on the bracket and spaced from each other in the up and down direction,
wherein the second shaft is connected with the left door member and defines a right end connected with the right pedal member and a left end, the first shaft is connected with the right door member and defines a left end connected with the left pedal member and a right end.

15. The refrigerator according to claim 14, wherein the left door member is adjacent to a left edge of the left door body, and the right door member is adjacent to a right edge of the right door body.

16. The refrigerator according to claim 15, wherein the left pedal member is adjacent to a right edge of the left door body, and the right pedal member is adjacent to a left edge of the right door body.

17. The refrigerator according to claim 15, wherein the left door member comprises a first left door arm connected with the left end of the second shaft and adjacent to the left edge of the left door body and a second left door arm connected with the second shaft and located between the first left door arm and the right pedal member;
wherein the right door member comprises a first right door arm connected with the right end of the first shaft and adjacent to the right edge of the right door body and a second right door arm connected with the first shaft and located between the first right door arm and the left pedal member.

18. The refrigerator according to claim 17, wherein the

left pedal member and the second left door arm are adjacent to a right edge of the left door body, and the right pedal member and the second right door arm are adjacent to a left edge of the right door body.

19. The refrigerator according to claim 17, wherein the first left door arm, the second left door arm, the first right door and the second right door arm are configured as rods,
wherein the left pedal member comprises a left support rod connected with the left end of the first shaft and a left pedal disposed on the left support rod, the right pedal member comprises a right support rod connected with the right end of the second shaft and a right pedal disposed on the right support rod,
wherein the first left door arm, the second shaft and the right support rod are formed integrally, and the first right door arm, the first shaft and the left support rod are formed integrally.

20. The refrigerator according to claim 17, wherein a first left boss and a second left boss are disposed on a lower surface of the left door body, a free end of the first left door arm is located between the first left boss and a front surface of the refrigerator body, and a free end of the second left door arm is located between the second left boss and the front surface of the refrigerator body;
wherein a first right boss and a second right boss are disposed on a lower surface of the right door body, a free end of the first right door arm is located between the first right boss and the front surface of the refrigerator body, and a free end of the second right door arm is located between the second right boss and the front surface of the refrigerator body.

21. The refrigerator according to claim 14, wherein the bracket comprises:

a first support located below the left door body and adjacent to the left edge of the left door body;
a second support located below the left door body and/or the right door body; and
a third support located below the right door body and adjacent to the right edge of the right door body,
wherein the right end of the first shaft is supported on the third support, the left end of the second shaft is supported on the first support, and the left end of the first shaft and the right end of the second shaft are supported on the second support.

22. The refrigerator according to claim 14, further comprising a decoration cover disposed on a bottom beam of the refrigerator body,
wherein a first gap and a second gap are formed in a rear edge of an upper surface of the decoration

cover, and a third gap and a fourth gap are formed in a lower edge of a front surface of the decoration cover,

wherein a free end of the left door member is extended upwards and passed through the first gap, a free end of the right door member is extended upwards and passed through the second gap, a free end of the left pedal member is extended forwards and passed through the third gap, and a free end of the right pedal member is extended forwards and passed through the fourth gap.

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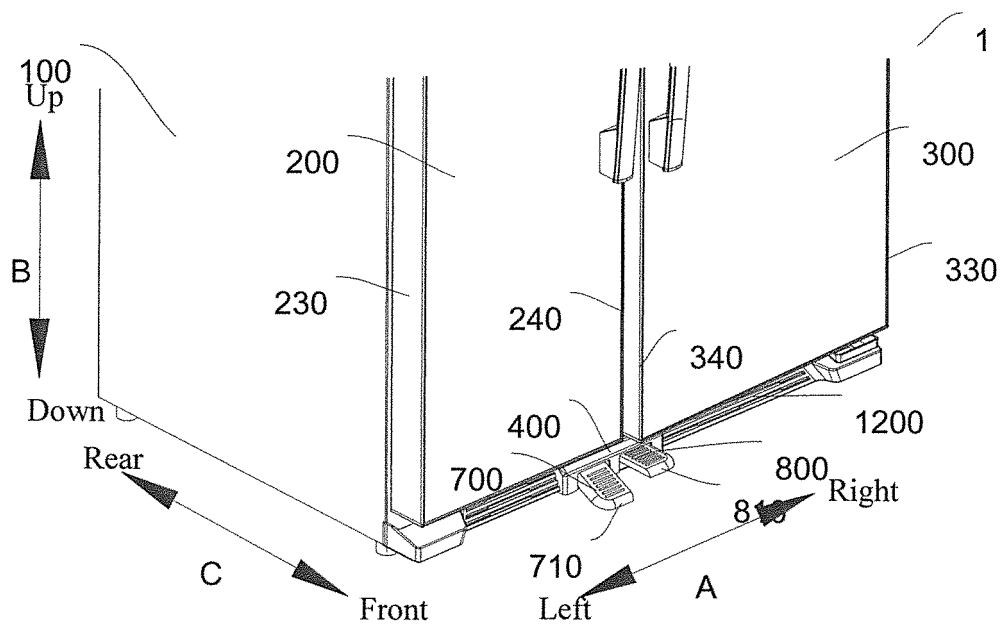


Fig. 1

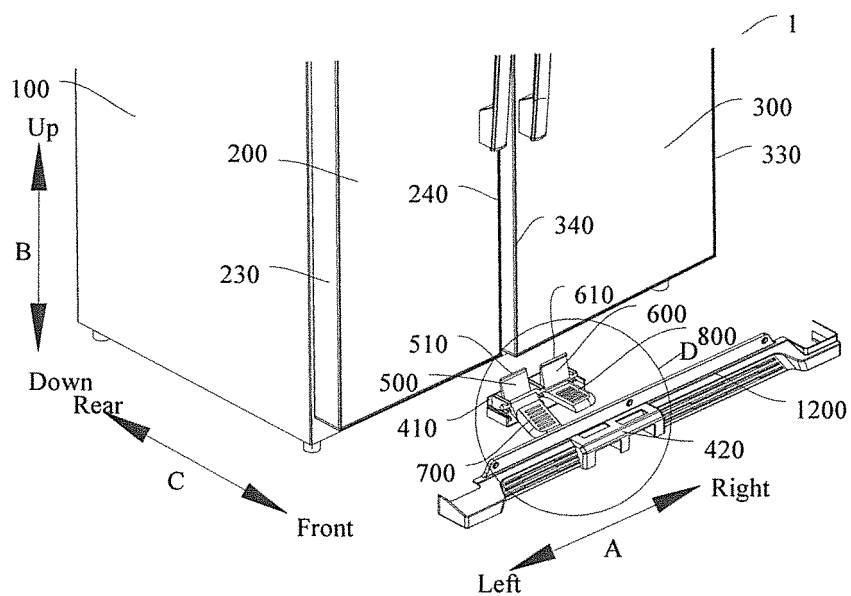


Fig. 2

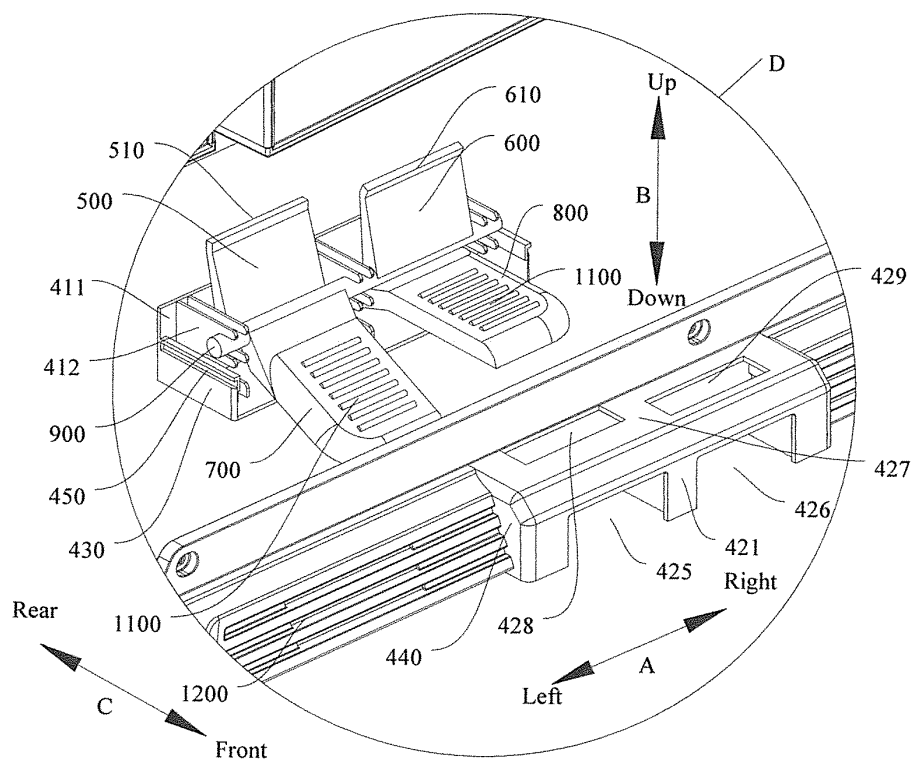


Fig. 3

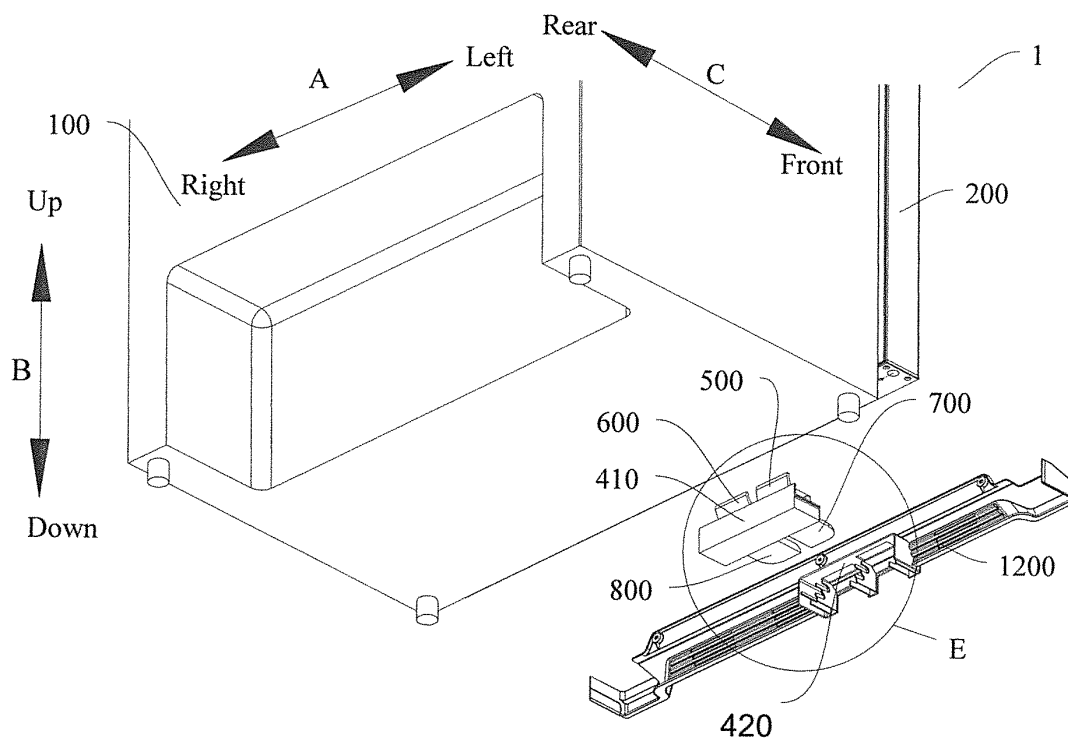


Fig. 4

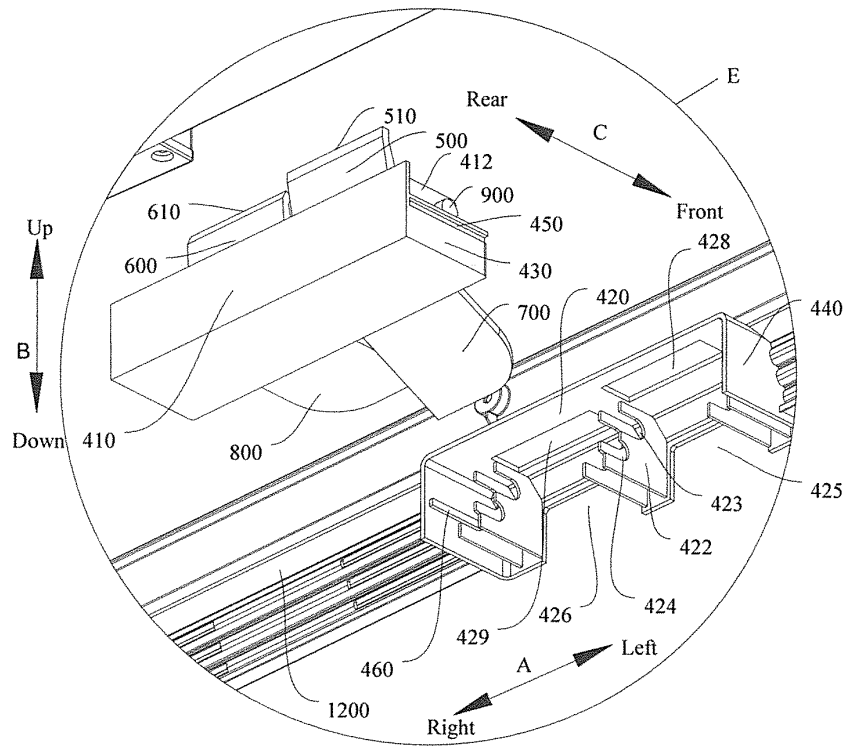


Fig. 5

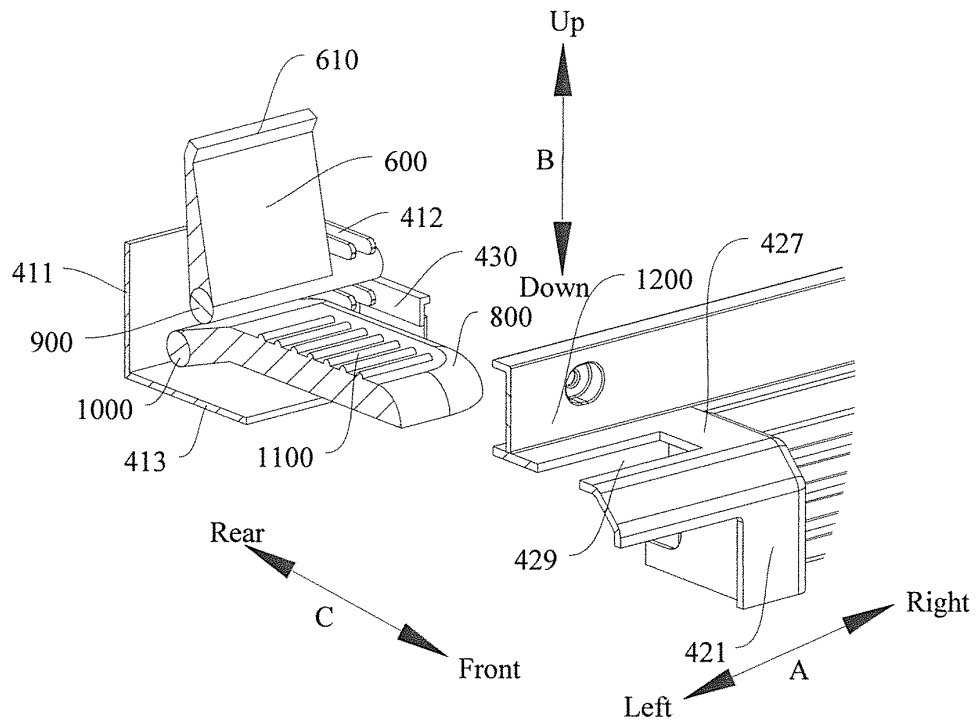


Fig. 6

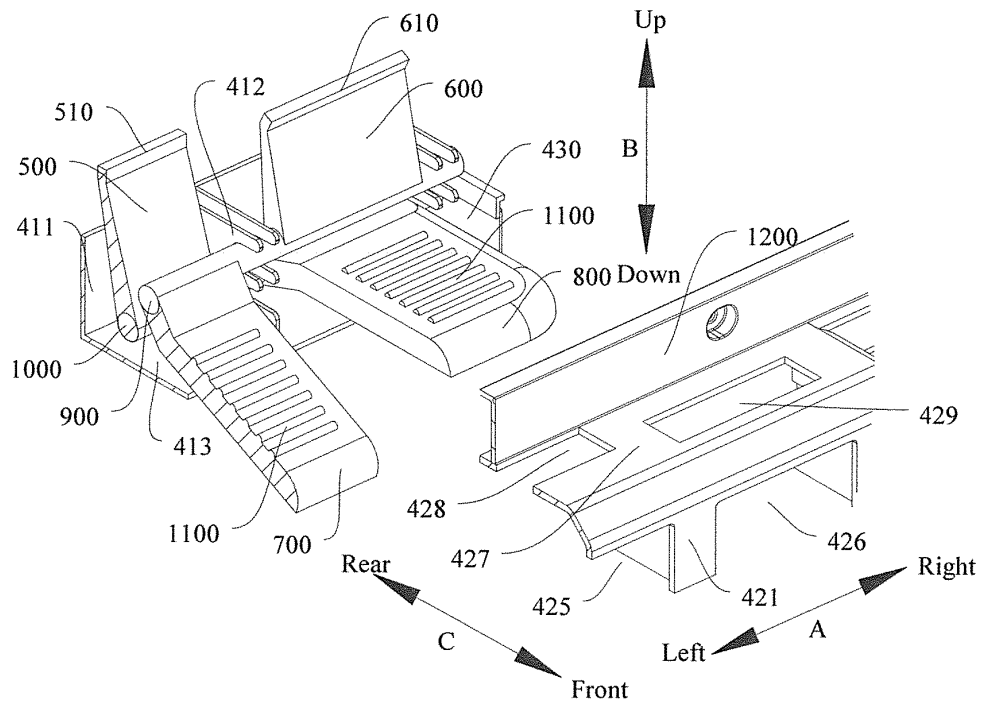
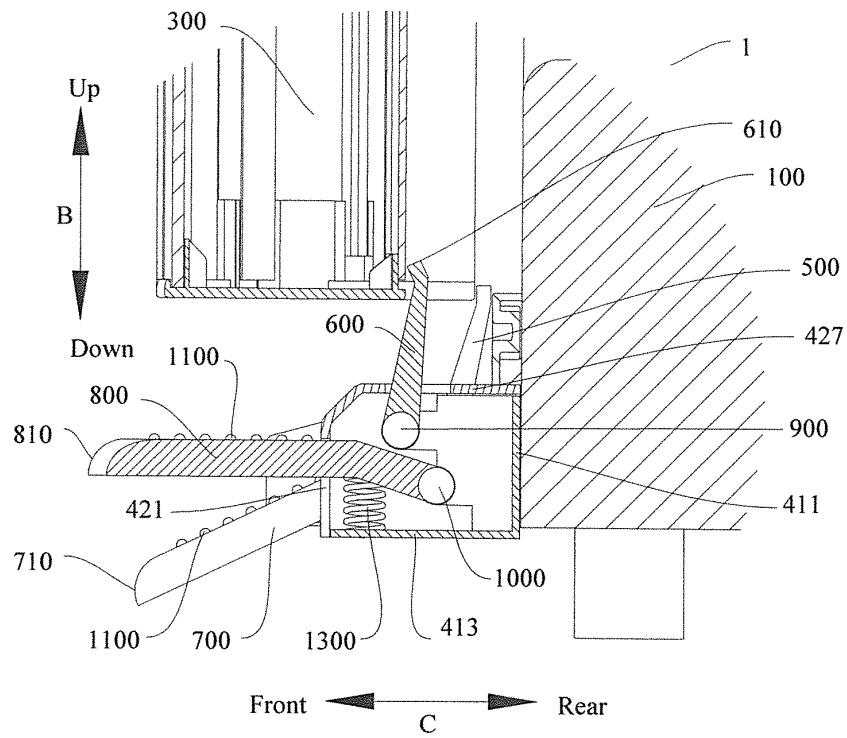


Fig. 7



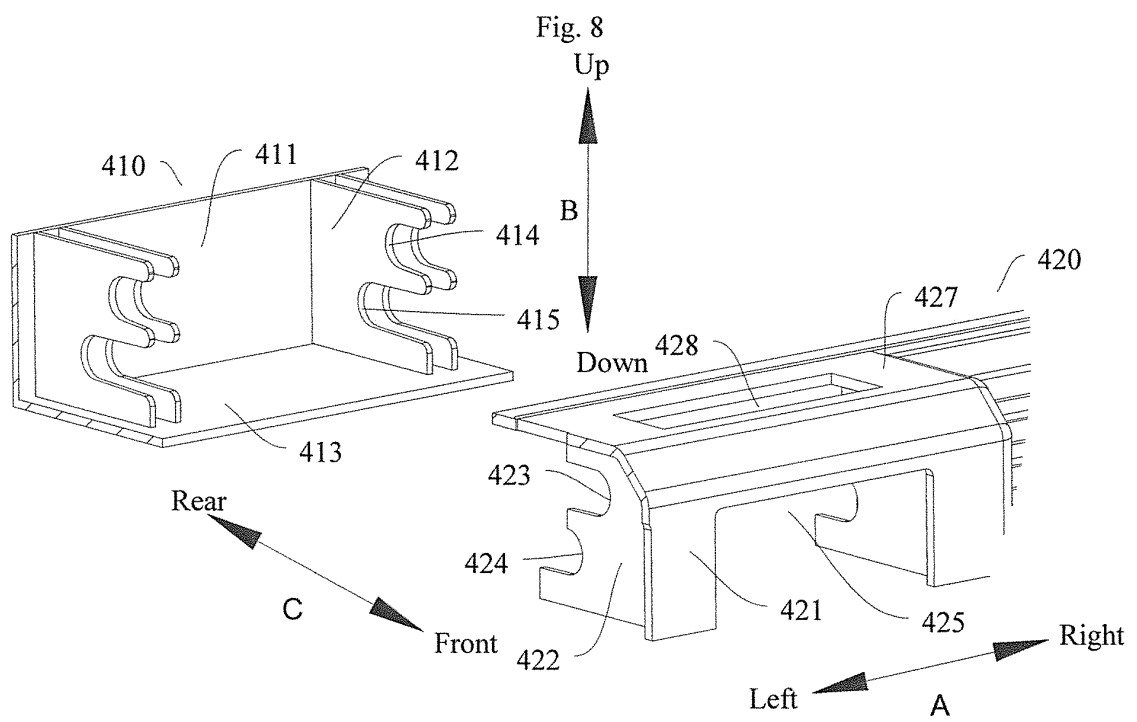


Fig. 9

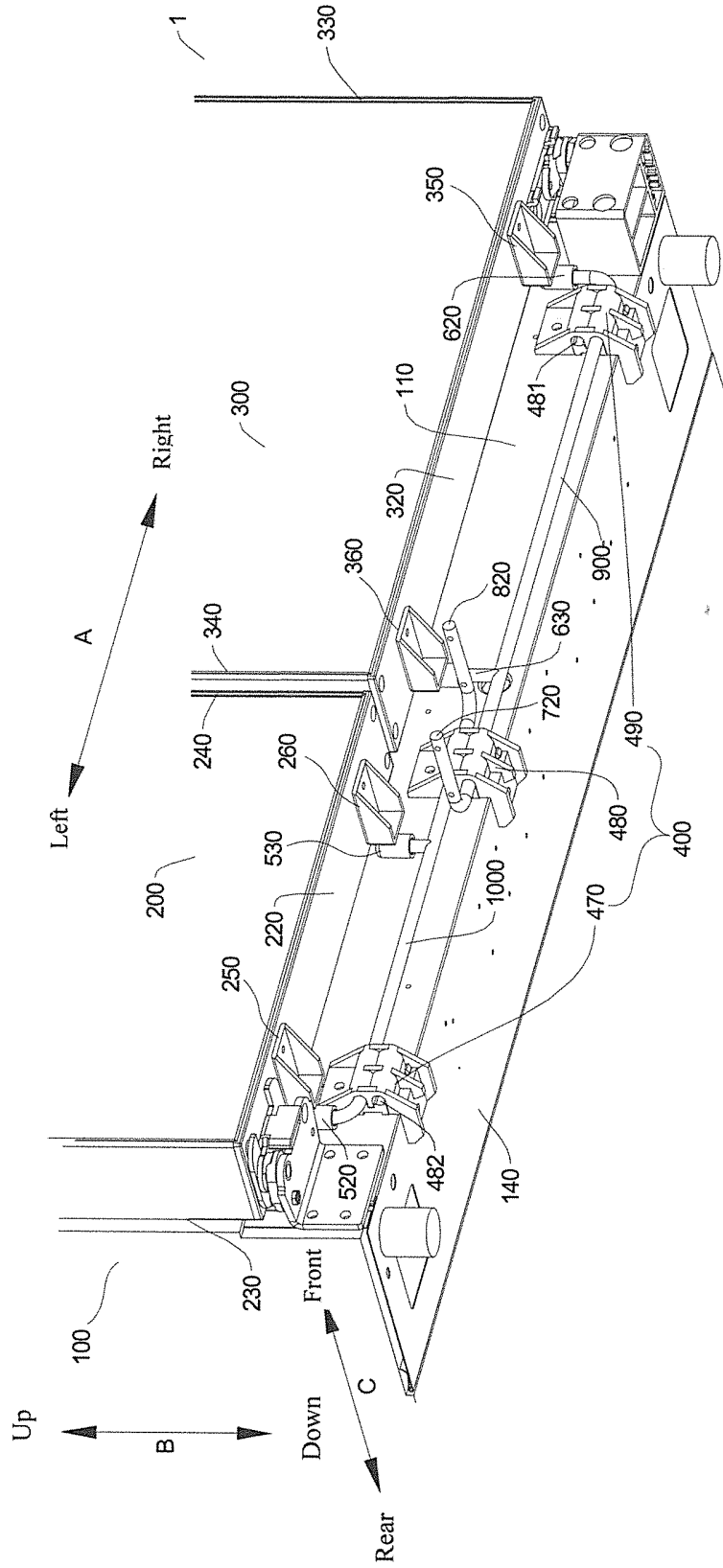


Fig. 10

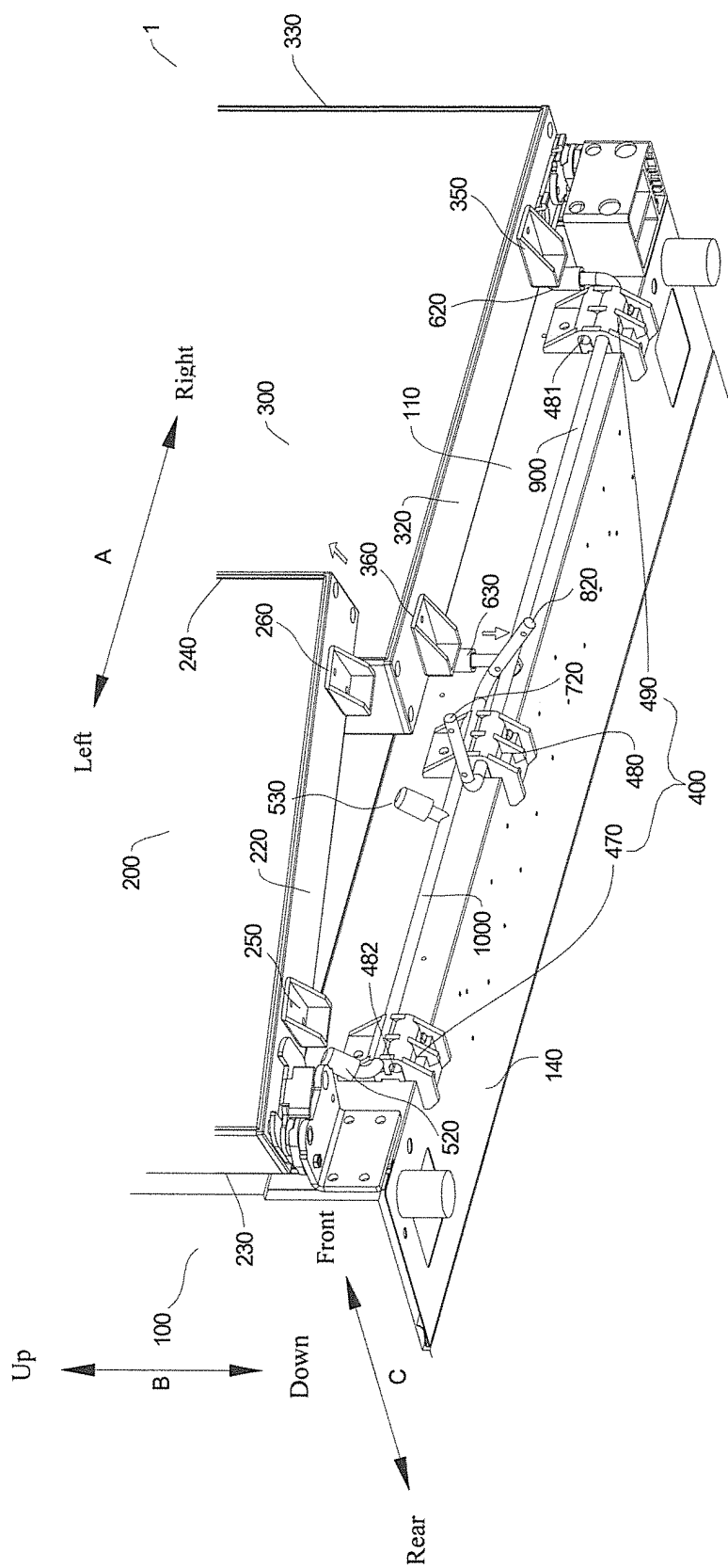


Fig. 11

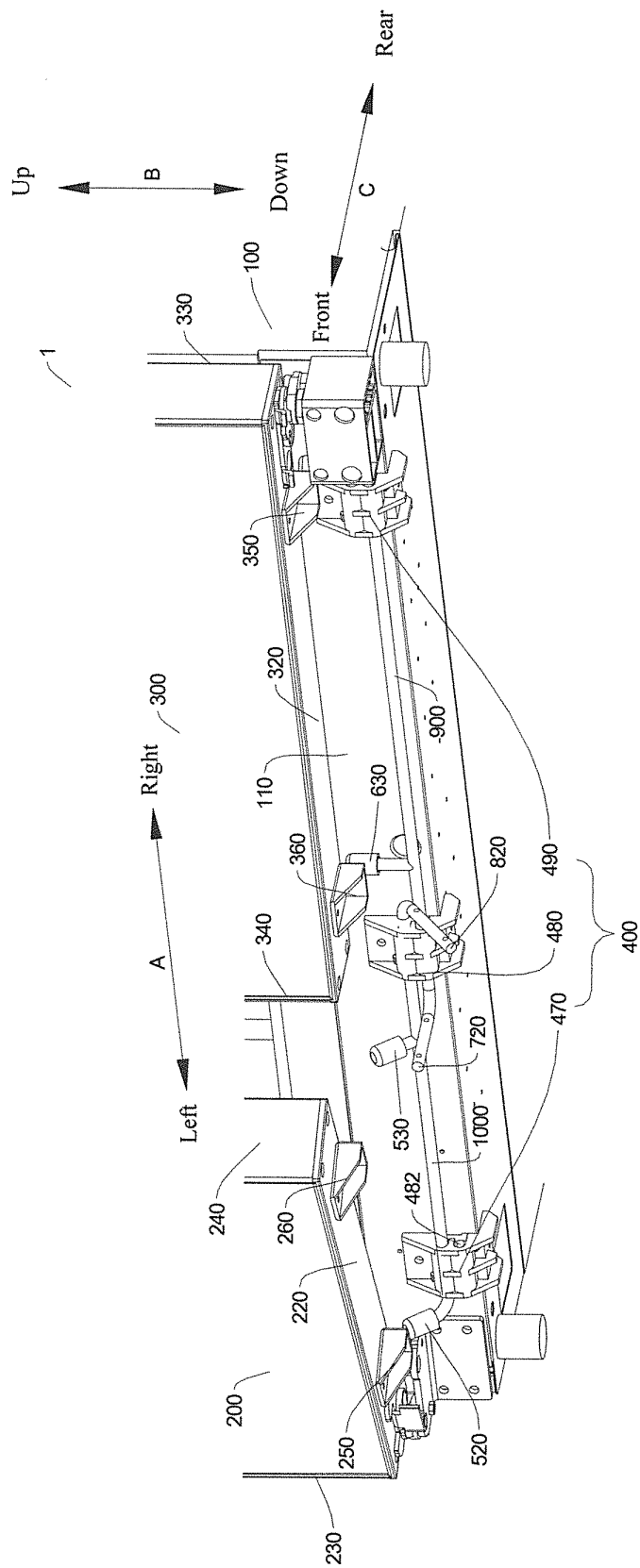


Fig. 12

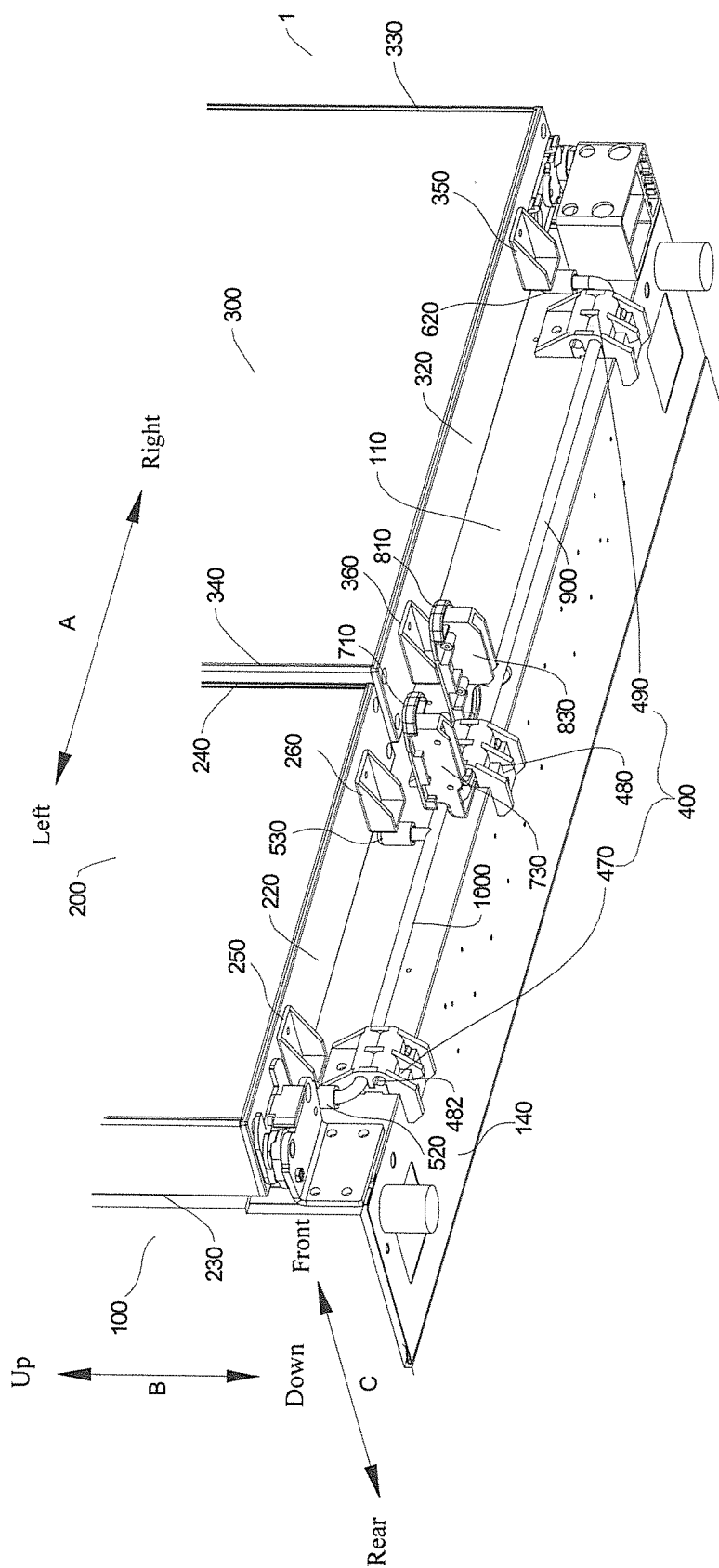


Fig.13

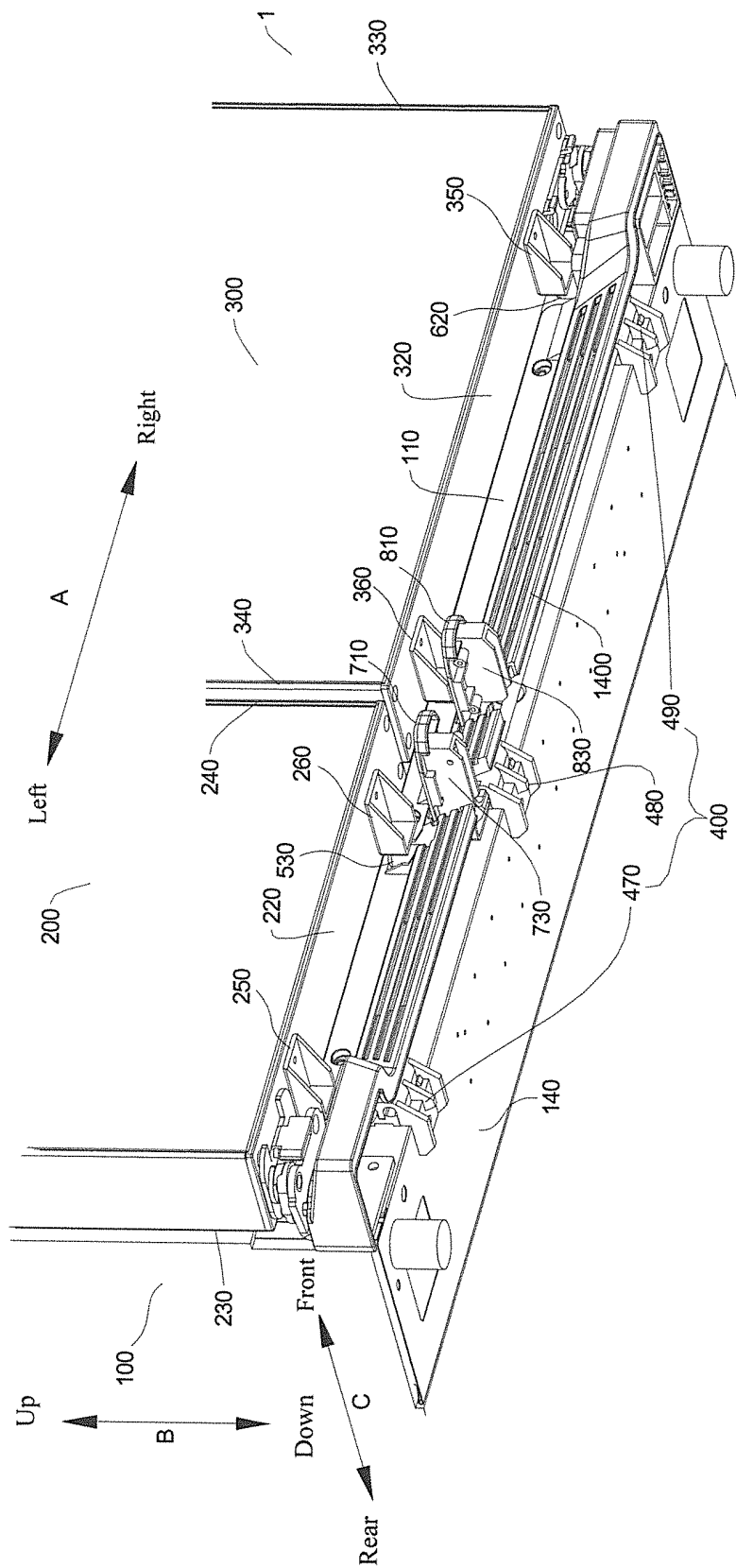


Fig. 14

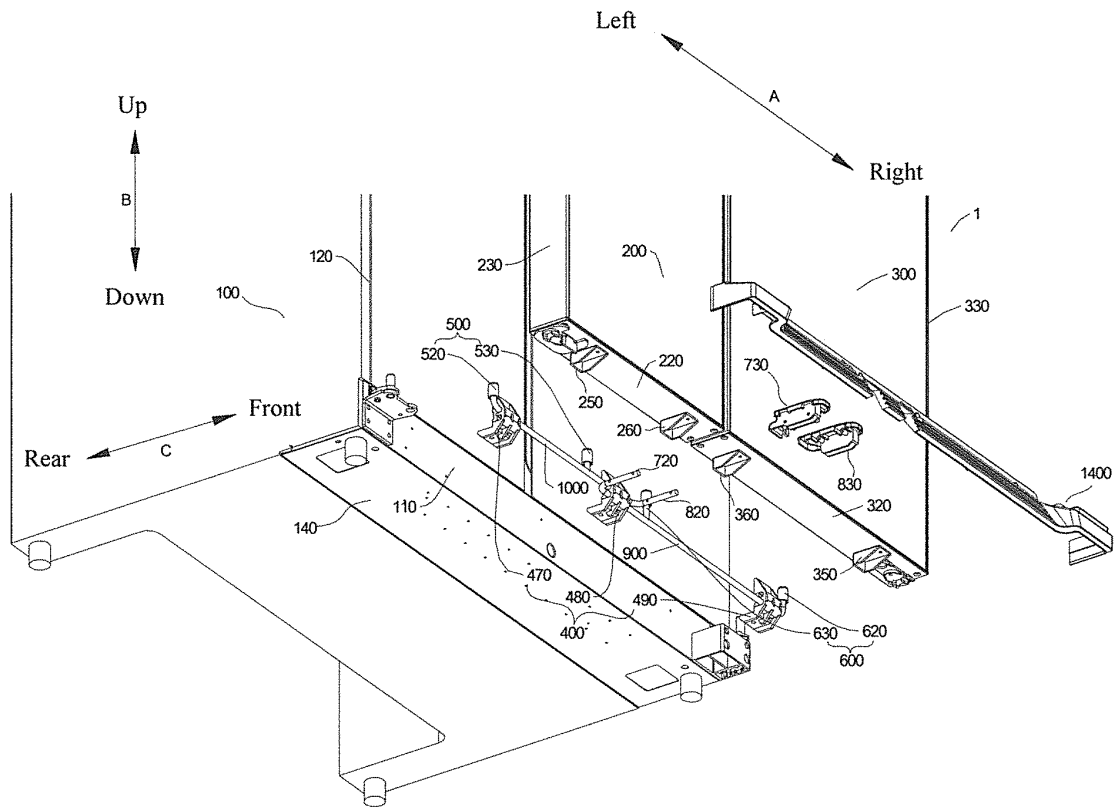


Fig. 15

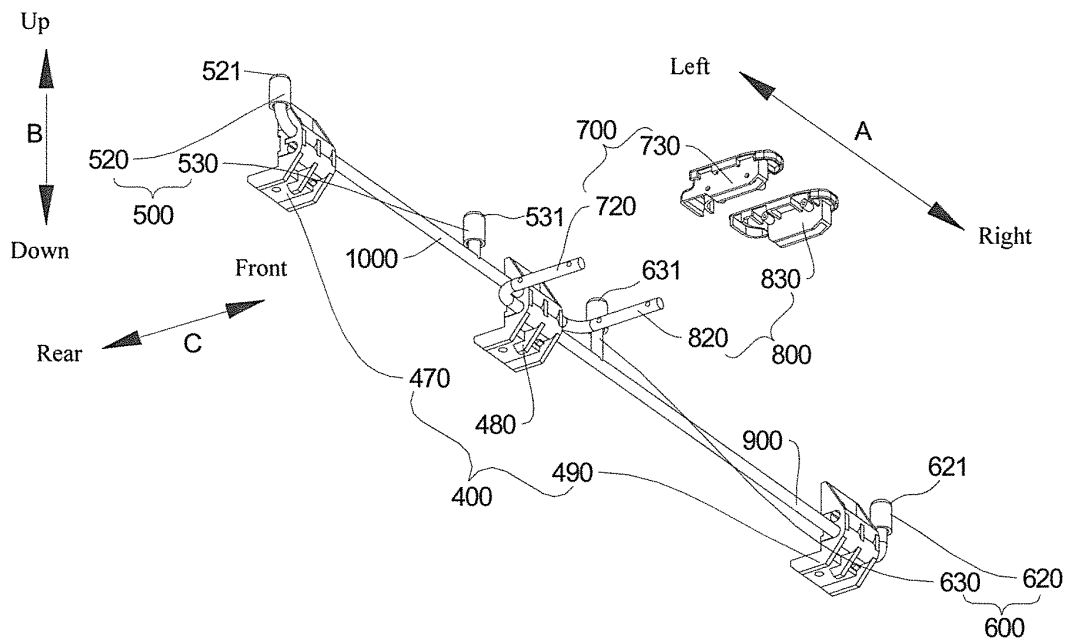


Fig. 16

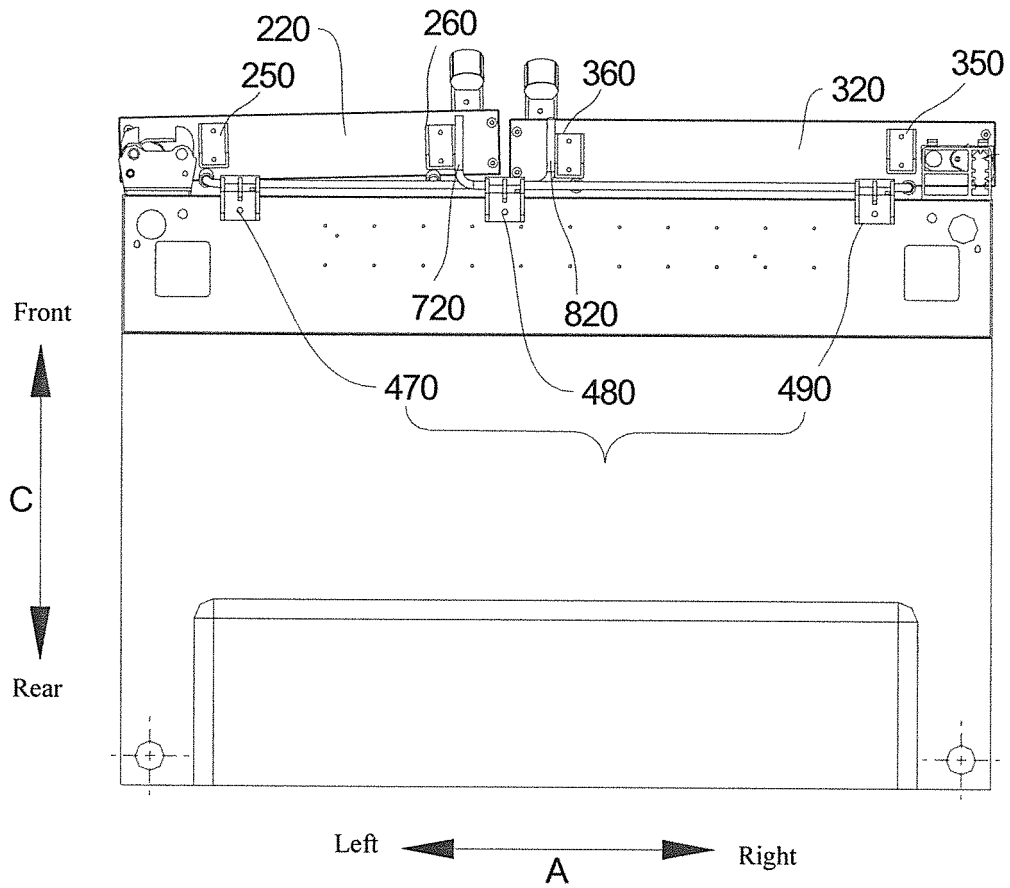


Fig. 17

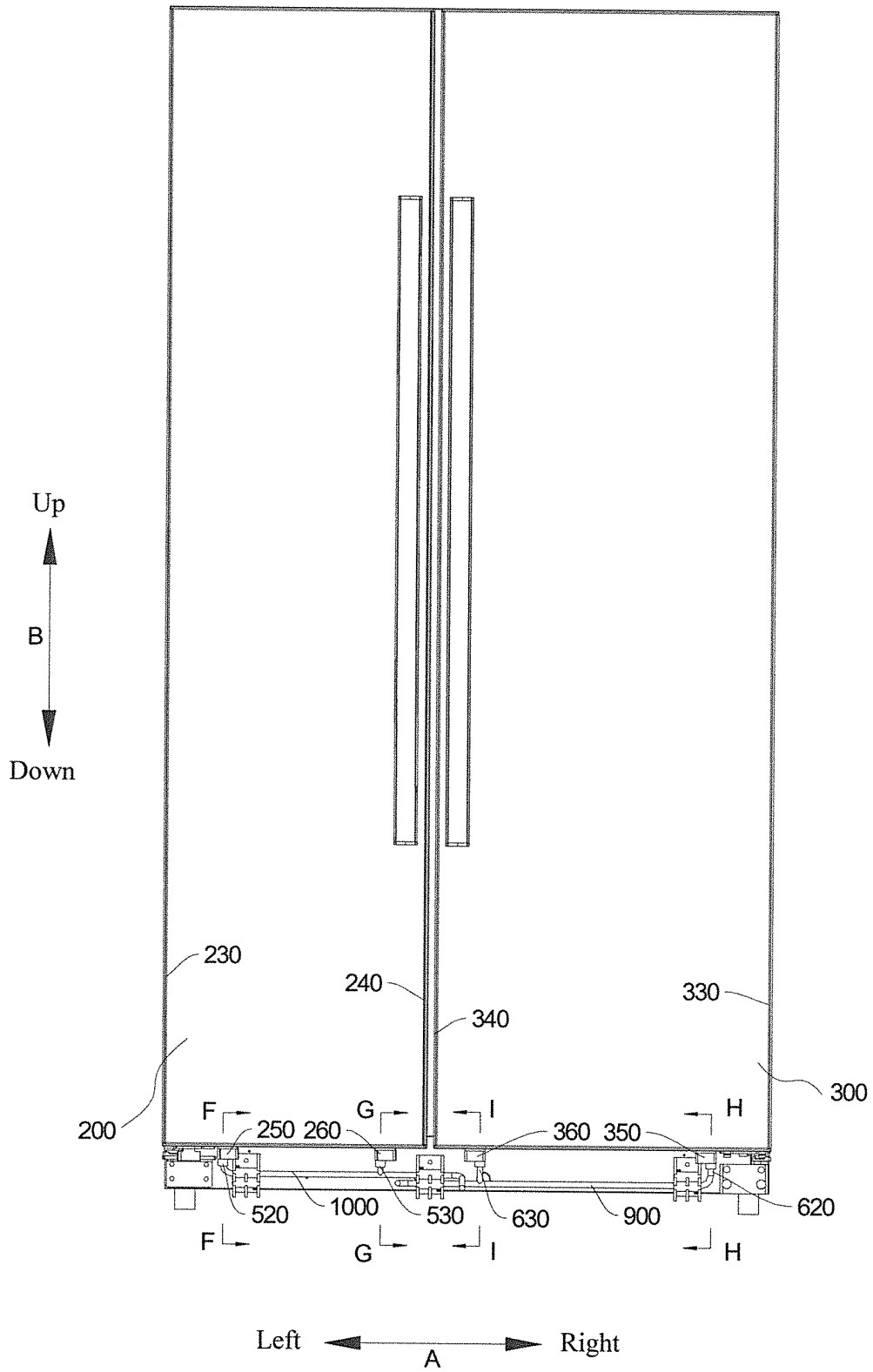


Fig. 18

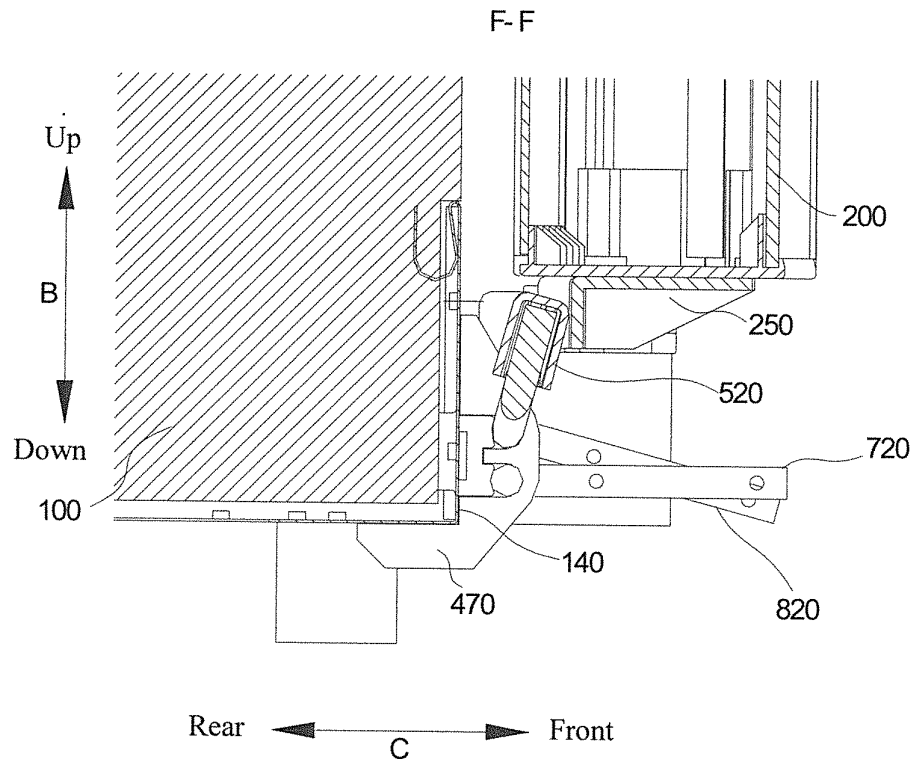


Fig. 19

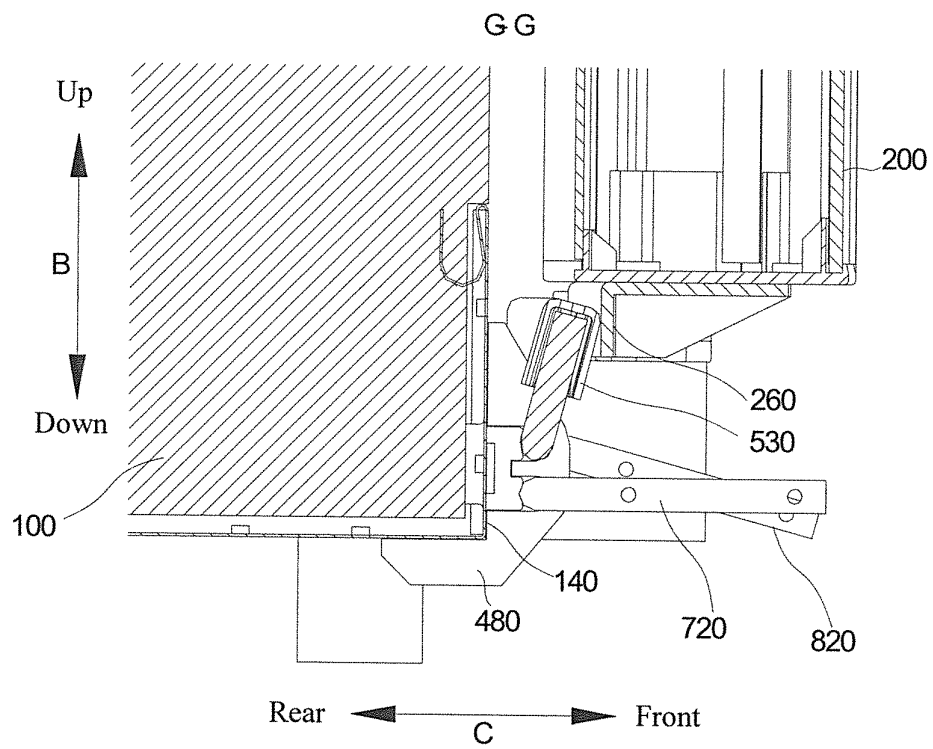


Fig. 20

H-H

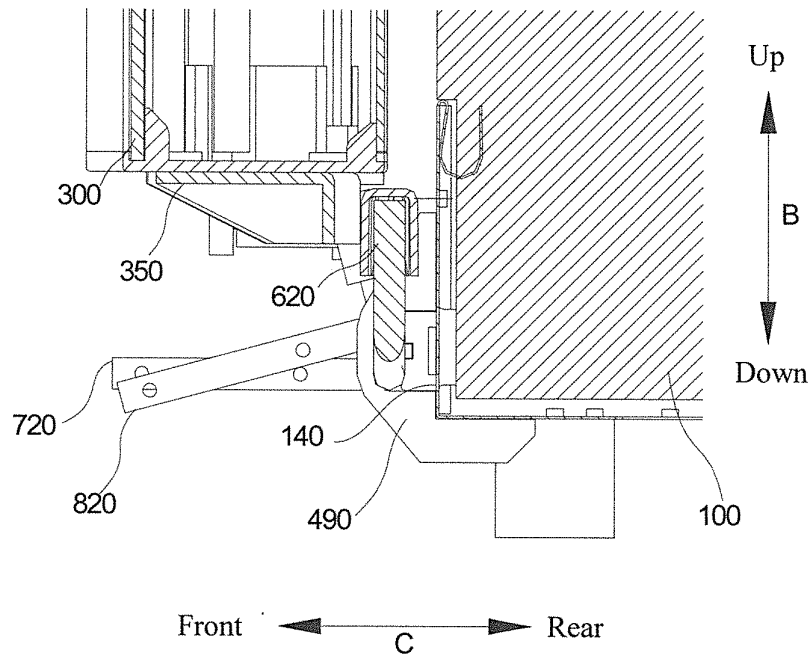


Fig. 21

I-I

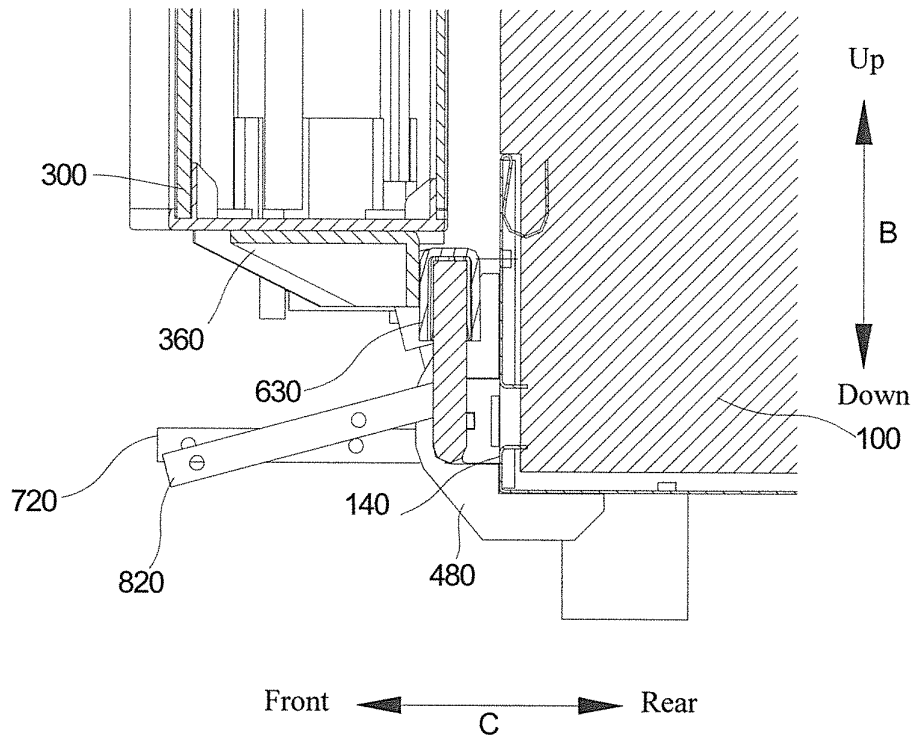


Fig. 22

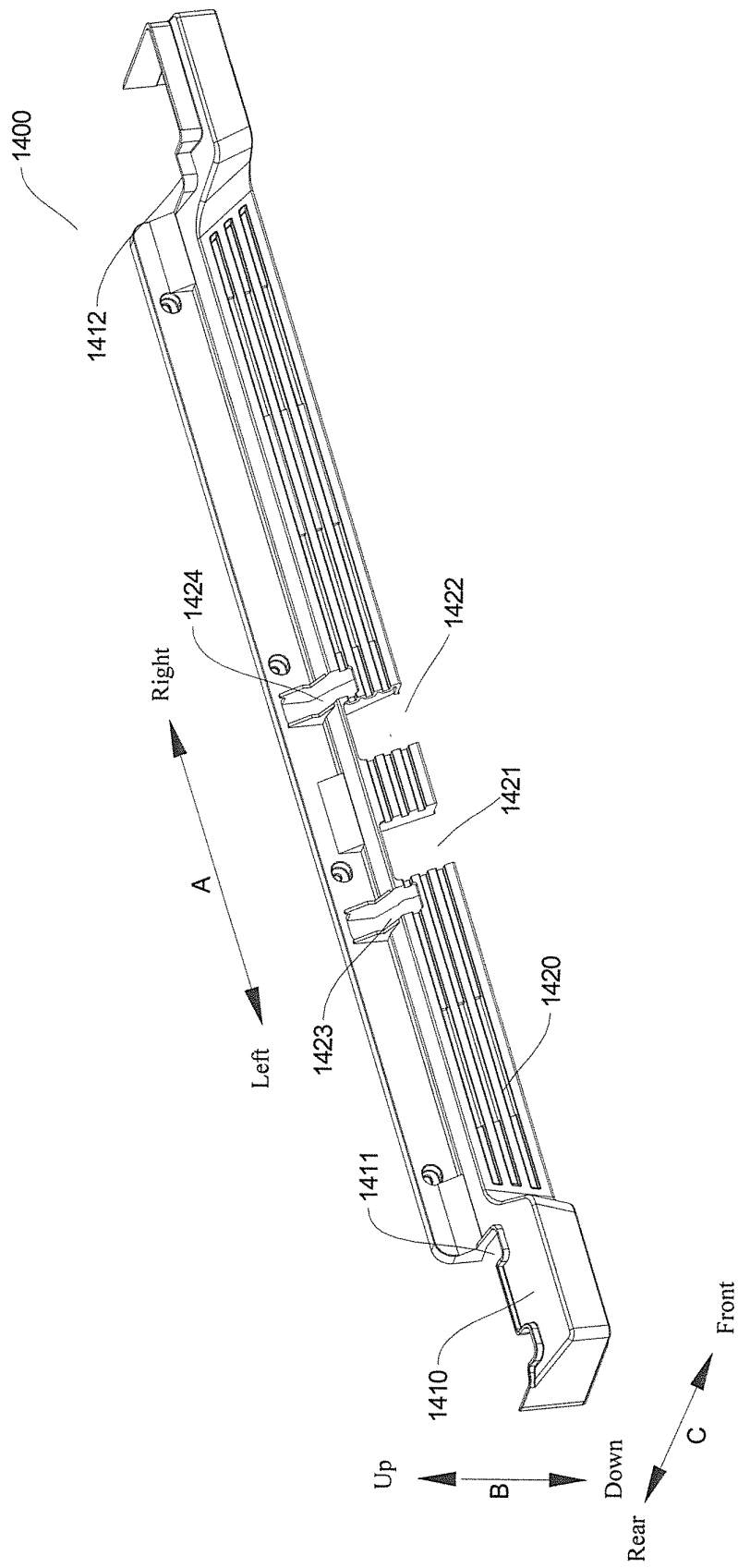


Fig. 23

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/077764

A. CLASSIFICATION OF SUBJECT MATTER

See the extra sheet

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)

IPC: F25D 11/- F25D 23/-

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 practicable, search terms used)

CNPAT, CNKI, WPI, EPODOC: double doors, left door, opening-assisting, refrigerator, fridge, icebox, freezer, door, footplate, gangplank, pedal, treadboard, treadle, footboard, open+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102538337 A (HEFEI MIDEA ROYALSTAR REFRIGERATOR CO., LTD. et al.), 04 July 2012 (04.07.2012), description, paragraphs [0005]-[0053], and figures 1-9	1-12, 14
PX	CN 103017435 A (HEFEI MIDEA ROYALSTAR REFRIGERATOR CO., LTD.), 03 April 2013 (03.04.2013), description, paragraphs [0004]-[0138], figures 1-23, and claims 1-22	1-22
PX	CN 202885388 U (HEFEI MIDEA ROYALSTAR REFRIGERATOR CO., LTD.), 17 April 2013 (17.04.2013), description, paragraphs [0004]-[0138], figures 1-23, and claims 1-22	1-22
A	CN 201412998 Y (PAN, Shuwei), 24 February 2010 (24.02.2010), the whole document	1-22
A	CN 201628440 U (CHINDUCS TECHNOLOGY (NINGBO) CO., LTD.), 10 November 2010 (10.11.2010), the whole document	1-22
A	CN 2438071 Y (HAIER GROUP CORP. et al.), 04 July 2001 (04.07.2001), the whole document	1-22

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search
01 September 2013 (01.09.2013)Date of mailing of the international search report
10 October 2013 (10.10.2013)Name and mailing address of the ISA/CN:
State Intellectual Property Office of the P. R. China
No. 6, Xitucheng Road, Jimenqiao
Haidian District, Beijing 100088, China
Facsimile No.: (86-10) 62019451

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LI, Hong

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/077764

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 20090043972 A (LG ELECTRONICS INC.), 07 May 2009 (07.05.2009), the whole document	1-22
A	US 6328392 B1 (HOSHIZAKI AMERICA INC.), 11 December 2001 (11.12.2001), the whole document	1-22

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2013/077764

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
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CN 103017435 A	03.04.2013	CN 102538337 A	04.07.2012
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CN 202885388 U	17.04.2013	CN 102538337 A	04.07.2012
		CN 103017435 A	03.04.2013
CN 201412998 Y	24.02.2010	None	
CN 201628440 U	10.11.2010	None	
CN 2438071 Y	04.07.2001	None	
KR 20090043972 A	07.05.2009	None	
US 6328392 B1	11.12.2001	None	

Form PCT/ISA/210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/077764

CLASSIFICATION OF SUBJECT MATTER

F25D 11/00 (2006.01) i

F25D 23/02 (2006.01) i