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

(11) EP 1 683 449 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
30.05.2007 Bulletin 2007/22

(21) Application number: **05001329.1**

(22) Date of filing: **24.01.2005**

(51) Int Cl.:
A47F 3/04 *(2006.01)* ***F25D 25/02*** *(2006.01)*

(54) Refrigerator with movable shelf carriage

Kühlschrank mit bewegbarem Träger

Réfrigérateur avec étagère roulante

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

(43) Date of publication of application:
26.07.2006 Bulletin 2006/30

(73) Proprietor: **Enjoy Group AB**
850 60 Bräcke (SE)

(72) Inventor: **Andersen, John**
1605 Fredrikstad (NO)

(74) Representative: **Pierrou, Mattias**
Awapatent AB,
P.O. Box 45 086
104 30 Stockholm (SE)

(56) References cited:
GB-A- 943 675
US-A- 2 457 919
US-A- 2 955 892
US-A- 3 719 408
US-A- 4 285 391
US-B1- 6 626 508

- **PATENT ABSTRACTS OF JAPAN vol. 018, no. 131 (C-1175), 3 March 1994 (1994-03-03) & JP 05 317127 A (HOSHIZAKI ELECTRIC CO LTD), 3 December 1993 (1993-12-03)**

EP 1 683 449 B1

Description

Technical field of the invention

[0001] The invention generally relates to refrigerators, and more specifically to refrigerators with an outer cabinet and an inner shelf carriage accessible from the rear side thereof.

Background art

[0002] In stores, refrigerators are typically used for storing, cooling, down to temperatures above as well as below the freezing-point, and displaying items of merchandise to the customers. Examples of merchandise in such a refrigerator are cans and bottles of drink, snuff boxes, cartons with dairies or juices etc. Since this type of merchandise generally has expiry dates, it is desirable to have the oldest items in the front of the shelves, thereby making the oldest items sell first and lowering the risk that items are sold after their expiry dates. When the refrigerator is to be filled with new items, it is therefore desirable to fill the new items from the back of the shelves.

[0003] In prior art, access to the rear side of the shelves has e.g. been facilitated by making the interior part of the refrigerator extractable. That is, the shelves have been arranged on a carriage supplied with wheels, the shelf carriage being extractable from the outer cabinet. When the shelf carriage is extracted from the outer cabinet the shelves can be refilled from the rear side, after which the shelf carriage can be reinserted into the outer cabinet.

[0004] A problem with this is that the fully loaded shelf carriages can be very heavy. The shop assistants find it hard to manouvre the heavy shelf carriage back into the outer cabinet.

[0005] In GB 943,675 a minor improvement is disclosed. Nothing is said about loading the carriage shelves from the rear, but about rolling the carriage away from the cabinet to loading the carriage at a distance from the cabinet. At the bottom of the cabinet there are grooved tracks for guiding the wheels of the carriage. Small guide wings at the front end of the tracks have curved edges, which help a bit in guiding the carriage wheels into the tracks when the wheels are laterally displaced from the front ends of the tracks. However, the above-mentioned problem substantially remains.

[0006] Hence, there is a need for a refrigerator with a shelf carriage that is easier to handle in the process of loading.

Summary of the invention

[0007] An object of the invention is to alleviate the problems of prior art.

[0008] According to one aspect of the invention, a refrigerator is provided. An outer cabinet surrounds an inner shelf carriage having a plurality of shelves. The shelf carriage is accessible from a rear side thereof. The shelf carriage is connected with a connection device and the connection device is connected with the outer cabinet such that a controlled movement of the shelf carriage in relation to the cabinet is provided. The controlled movement provided by the connection device is such that the shelf carriage is movable between a display position at least substantially inside of the outer cabinet and a refill position at least substantially outside of the outer cabinet while being connected with the connection device. The controlled movement comprises rotation of the shelf carriage for providing access to said rear side thereof.

[0009] By "display position" is meant the ordinary position wherein the goods are displayed and sold. By "refill position" is meant a position wherein the shelf carriage is refilled from said rear side.

[0010] The outer cabinet surrounds the shelf carriage such that the shelf carriage can be refrigerated inside the cabinet. The cabinet may have one or more doors at the front side, but can also be open or have other arrangements such as a curtain. Due to the above-mentioned controlled movement, the shelf carriage can be moved to the refill position where the shelves are accessible from the rear side. The movement either consists of or includes the rotation. While in the refill position, the shelves are easily accessible for a shop assistant to fill merchandise from the rear side. Since the shelf carriage is connected to the outer cabinet via the connection device in such a way that a controlled movement is obtained, it can thereafter be easily moved back to the original position, despite the heavy weight it carries.

[0011] Thus, by forming the connection device such that the shelf carriage is able to perform the controlled movement, the manoeuvring of the shelf carriage is facilitated. When the carriage is fully loaded, and typically heavy, the shop assistant can focus on pushing the carriage, not needing to worry about the steering. The arrangement assures that the carriage is moved back to the original, wanted position, i.e. the display position.

[0012] In an embodiment of the refrigerator according to the invention, the shelf carriage is rotatable around a vertical axis at a periphery of a front side of the shelf carriage.

[0013] Since the rotation movement is provided as a rotation of the carriage around a vertical axis at the periphery of the front side, it is possible to provide the whole movement between the display position and the refill position as said rotation.

[0014] In another embodiment of the refrigerator, the front side of the shelf carriage is substantially rectangular with two substantially horizontal edges and two substantially vertical edges. The vertical axis extends along the length of one of the vertical edges.

[0015] According to this embodiment the front side is of a rectangular shape with the rotation axis placed at a side of the front. This shape offers large exposure of the shelves and the merchandise, and the placement of the rotation axis ensures a convenient extraction of the shelf carriage.

[0016] In another embodiment of the refrigerator the controlled movement comprises linearly moving the shelf carriage between the display position and an intermediate position at least substantially outside of the outer cabinet. The shelf carriage is movable, by means of said rotation, between said intermediate position and said refill position.

[0017] The shelf carriage is connected with the connection device. The connection device is connected with the outer cabinet such that it allows movement of the shelf carriage in a controlled way in relation to the outer cabinet. To move the carriage to a position where the rear side of the shelves is accessible, i.e. the refill position, it can be extracted to a position either substantially or fully outside of the cabinet, i.e. the intermediate position, and then rotated in relation to the cabinet to offer easy access to the rear side. Since the connection device is connected to the cabinet and therefore controls the movement, the reinsertion of the carriage is facilitated.

[0018] In another embodiment of the refrigerator, based on the just described embodiment, the connection device comprises a support structure carrying said shelf carriage. The support structure comprises wheels resting on a base.

[0019] The wheels of the support structure rest on a base such as the floor or the bottom of the cabinet. The shelf carriage and the support structure can be extracted from the cabinet and the shelf carriage can thereafter be rotated to a position with access to the rear side.

[0020] In another embodiment of the refrigerator, the support structure comprises a centre axle. The shelf carriage is rotatably connected with the centre axle.

[0021] With the shelf carriage being rotatable around the centre axle of the support structure, the carriage can be positioned to offer easy access to the rear side while still being centred over the support structure. When the support structure is extracted from the outer cabinet, the walls of the outer cabinet do not restrain the rotation.

[0022] In another embodiment of the refrigerator, the shelf carriage comprises a plurality of wheels arranged at a bottom portion thereof. The wheels rest on the support structure.

[0023] By supplying the shelf carriage with wheels, the movement of the shelf carriage in relation to the support structure is facilitated. Thus, it should be noted that within the scope of this invention the term carriage does not necessarily demand the presence of wheels, although in many embodiments the presence of wheels on the shelf carriage is preferred.

[0024] In another embodiment of the refrigerator, the connection device comprises a vertical axle. The shelf carriage is rotatably connected with the vertical axle at a periphery of a rear side of the shelf carriage.

[0025] When the shelf carriage is linearly moved to a position at the front of, and at least mainly outside of, the outer cabinet, the rear side of the shelf carriage will be at least mainly outside of the outer cabinet. Thereafter the carriage can be rotated around the vertical axle, thus allowing easy access to the rear side.

[0026] In another embodiment the shelf carriage comprises a plurality of wheels arranged at a bottom portion thereof and resting on a base.

[0027] The wheels of the shelf carriage simplify the movement of the shelf carriage between a position at least mainly inside of the outer cabinet and a position at least mainly outside of the outer cabinet. The wheels also facilitate the rotation of the carriage around the connection device.

[0028] In another embodiment of the refrigerator, the connection device comprises a connection member which is slidably connected with the cabinet.

[0029] As the connection device is slidably connected to the cabinet, it can be linearly moved in relation to the cabinet while controlling the movement of the shelf carriage.

Brief description of the drawings

[0030] In the following, the embodiments of the invention will be described in detail with reference to the enclosed drawings, in which:

Figure 1 is a perspective view of one embodiment of the invention;
Figure 2 is a view from below of the embodiment of figure 1;
Figure 3 is a view from above showing the embodiment of figure 1 in a refill position;
Figure 4 is a perspective view of another embodiment of the invention;
Figure 5 is a view from below of the embodiment of figure 4;
Figure 6 is a detail view of the lower part of the embodiment of figure 4;
Figure 7 is a perspective view of another embodiment of the invention;
Figure 8 is a perspective view of another embodiment of the invention; and
Figure 9 is a perspective view of another embodiment of the invention.

Detailed description of preferred embodiments of the invention

[0031] Embodiments of the invention can be realised in a refrigerator as disclosed in figures 1, 2 and 3.

[0032] The refrigerator 101 comprises an outer cabinet 102 with a rear side 103, a front side 104, a right side 105, a left side 106, a top 107 and a bottom 108. The cabinet 102 surrounds a carriage 109 comprising a frame 110, shelves 111 and a bottom plate 112 provided with wheels 113 resting on the bottom 108 of the cabinet 102 or the floor. The carriage 109 is connected to a connection device 201 which is connected to the cabinet 102. The front side 104 comprises two doors 114.

[0033] The refrigerator 101 exposes refrigerated mer-

chandise (not shown) to customers. The cabinet 102 is refrigerated in a customary way. The merchandise is made accessible to the customers by having the front side 104 of the cabinet 102 open, or by providing the front side 104 with doors 114, as in this embodiment, or in other ways.

[0034] Inside the outer cabinet 102 there is the carriage 109 with shelves 111 for the merchandise. The shelves 111 are typically sloping forward which makes the merchandise move forward when an item is removed from the front of the shelves 111. When the carriage 109 is inside the cabinet 102 it is in a display position, i.e. a position where the goods are displayed to, and accessible for, the customers.

[0035] The frame 110 of the shelf carriage 109 supports the shelves 111, and the bottom plate 112 supports the frame 110. At the left side of the front 104, the shelf carriage 109 is connected with the connection device 201. The connection device 201 comprises an axle 301 which is rotatably connected to the cabinet 102. The carriage 109 can be rotated clockwise around this axle 301 to a refill position where the carriage 109 is outside of the cabinet 102, as shown in Fig. 3. While in this position, the shelves 111 can be refilled from a rear side.

[0036] To move the carriage 109 back to the display position it is rotated counterclockwise around the axle 301. The axle 301 controls the movement so that the carriage 109 is steered back to the original position, i.e. the display position.

[0037] Figure 3 shows the same refrigerator 101 from the top. The carriage 109 can be rotated around the axle 301. From this perspective the cabinet 102 is rectangular. To maximise the size of the carriage 109 while allowing for the rotational movement, one corner 302 of the carriage 109 is rounded. The front side 303 of the carriage 109 can be of a length close to the inner length of the cabinet 102. The back side 304 of the carriage 109 is shorter to allow for the rotation. The rounded shape of the corner 302 keeps the loss of space on the shelves 111 to a minimum.

[0038] Other embodiments of the invention can be realised in a refrigerator as disclosed in figures 4, 5 and 6.

[0039] At the rear right corner 401 of the carriage 402 it is connected to the connection device 501, which is connected to the cabinet 403. The connection device 501 comprises an axle 502 which can be linearly moved from the position in the rear right corner 503 of the cabinet 403 to a position in the front right corner 504 of the cabinet 403. For instance, this movement can be realised by making the axle 502 movable in a rail 505 on the lower part of the cabinet 403.

[0040] The carriage 402 can be moved from the display position to an intermediate position outside of the cabinet 403, as shown in Fig. 4. During this movement the axle 502 is moved from the back to the front of the cabinet 403. From the intermediate position the carriage 402 can be rotated counterclockwise around the axle 502 to a refill position where the rear side 506 is accessible for refilling. It can then be rotated clockwise back to the intermediate position, after which it can be pushed back into the cabinet 403 to the display position.

[0041] Other embodiments of the invention can be realised in a refrigerator as disclosed in figure 7.

[0042] In this embodiment, the carriage 701 rests on the connection device 702. The connection device 702 according to this embodiment comprises a support plate 703 which is provided with and carried by wheels 704, and an axle 708 connected to the center of the support plate 703. At the center of the bottom 705 of the carriage 701 it is connected to the axle 708. The carriage is provided with wheels 707 which rest on the support plate 703. The carriage 701 can be moved from the display position to an intermediate position outside of the cabinet 706. During this movement the carriage 701 and the support plate 703 are linearly moved forward, out of the cabinet 706. While the support plate 703 remains in this position the carriage 701 can be rotated around the axle 708 to a refill position where the rear side is accessible, while remaining centred over the support plate 703. The wheels 707 supporting the carriage 701 facilitate the rotation in relation to the support plate 703. After refilling, the carriage 701 is rotated back to the intermediate position and the support plate 703 and the carriage 701 are linearly moved back into the cabinet 706.

[0043] As can be seen from this embodiment, the carriage 701 and the support plate 703 remain partly inside of the outer cabinet 706. The carriage 701 can be made rotatable while remaining partly inside of the cabinet 706 by slightly reducing the size of the carriage 701, or by rounding the corners of the carriage 701. The carriage 701 and the connection device 702 according to this embodiment can advantageously be used in existing refrigerators.

[0044] Other embodiments of the invention can be realised in a refrigerator as disclosed in figure 8.

[0045] In this embodiment the carriage is provided with a door 801.

[0046] Other embodiments of the invention can be realised in a refrigerator as disclosed in figure 9.

[0047] This figure shows a refrigerator with an open front 901, i.e. the merchandise is accessible to the customers through an opening 902 in the front. This makes the merchandise very accessible to the customers.

[0048] The above mentioned embodiments are examples. Other embodiments are conceivable within the scope of the invention. For example, the embodiment disclosed in figure 1 can be modified such that, in the refill position, a part of the carriage remains inside of the cabinet. This can be achieved by connecting the connection device with the cabinet at a position distanced from the front of the cabinet.

[0049] Within the scope of the invention, the connection device disclosed in figure 7 can be altered. The axle can be replaced by for instance a ball joint or any other suitable rotational device.

[0050] The axle mentioned in several of the embodi-

ments can be arranged in various ways. For example, it can be arranged to be rotational in relation to the cabinet and fixed in relation to the carriage. Another one of the possible arrangements is to have the axle fixed in relation to the cabinet and rotational in relation to the carriage.

Claims

1. A refrigerator, comprising:

   an outer cabinet (102),
   an inner shelf carriage (109) having a plurality of shelves (111) the shelf carriage being accessible from a rear side thereof, **characterized in** the shelf carriage being connected with a connection device (201) the connection device being connected with the outer cabinet and providing a controlled movement of the shelf carriage in relation to the cabinet, whereby the shelf carriage is movable between a display position at least substantially inside of the outer cabinet and a refill position at least substantially outside of the outer cabinet while being connected with said connection device;
   said controlled movement comprising rotation of the shelf carriage for providing access to said rear side thereof.

2. The refrigerator according to claim 1, wherein said shelf carriage (109) is rotatable around a vertical axis (301) at a periphery of a front side (303) of the shelf carriage.

3. The refrigerator according to claim 2, wherein, said front side (303) is substantially rectangular with two substantially horizontal edges and two substantially vertical edges, and wherein said vertical axis (301) extends along the length of one of said vertical edges.

4. The refrigerator according to claim 1, wherein said controlled movement comprises a linear movement, whereby the shelf carriage (402) is movable between said display position and an intermediate position at least substantially outside of the outer cabinet (403), and wherein the shelf carriage is movable, by means of said rotation, between said intermediate position and said refill position.

5. The refrigerator according to claim 4, wherein said connection device (702) comprises a support structure (703) carrying said shelf carriage (701) and comprising wheels (704) resting on a base.

6. The refrigerator according to claim 5, wherein said support structure (703) comprises a centre axle (708), and wherein said shelf carriage (701) is rotatably connected with said centre axle.

7. The refrigerator according to claim 5 or 6, wherein said shelf carriage (701) comprises a plurality of wheels (707) arranged at a bottom portion (705) thereof and resting on said support structure (703).

8. The refrigerator according to claim 4, wherein said connection device (501) comprises a vertical axle (502), and wherein said shelf carriage (402) is rotatably connected with said vertical axle at a periphery of a rear side (503) of the shelf carriage.

9. The refrigerator according to claim 8, wherein said shelf carriage (402) comprises a plurality of wheels arranged at a bottom portion thereof and resting on a base.

10. The refrigerator according to any one of claims 4-9, wherein said connection device (501,702) comprises a connection member (502) which is slidably connected with the cabinet.

11. The refrigerator according to any one of the preceding claims, wherein a bottom (705) of said shelf carriage comprises four basically right corners.

12. The refrigerator according to any one of the preceding claims, wherein a bottom (705) of said shelf carriage comprises three basically right corners and a fourth rounded corner (302).

Patentansprüche

1. Kühlschrank, der umfasst:

   einen äußeren Schrank (102);
   einen inneren Regalboden-Wagen (109), der eine Vielzahl von Regalböden (111) aufweist, wobei der Regalboden-Wagen von einer Rückseite desselben her zugänglich ist, **dadurch gekennzeichnet, dass** der Regalboden-Wagen mit einer Verbindungsvorrichtung (201) verbunden ist, wobei die Verbindungsvorrichtung mit dem äußeren Schrank verbunden ist und eine gesteuerte Bewegung des Regalboden-Wagens in Bezug auf den Schrank ermöglicht, so dass der Regalboden-Wagen zwischen einer Schauposition wenigstens im Wesentlichen innerhalb des äußeren Schranks und einer Auffüllposition wenigstens im Wesentlichen außerhalb des äußeren Schranks bewegt werden kann, und dabei mit der Verbindungsvorrichtung verbunden ist;

   wobei die gesteuerte Bewegung Drehung des Regalboden-Wagens umfasst, um Zugang zu der

Rückseite desselben zu ermöglichen.

2. Kühlschrank nach Anspruch 1, wobei der Regalboden-Wagen (109) um eine vertikale Achse (301) an einem Rand einer Vorderseite (303) des Regalboden-Wagens herum gedreht werden kann.

3. Kühlschrank nach Anspruch 2, wobei die Vorderseite (303) im Wesentlichen rechteckig mit zwei im Wesentlichen horizontalen Kanten und zwei im Wesentlichen vertikalen Kanten ist und wobei sich die vertikale Achse (301) entlang der Länge einer der vertikalen Kanten erstreckt.

4. Kühlschrank nach Anspruch 1, wobei die gesteuerte Bewegung eine lineare Bewegung umfasst und der Regalboden-Wagen (402) zwischen der Schauposition und einer Zwischenposition wenigstens im Wesentlichen außerhalb des äußeren Schranks (403) bewegt werden kann und wobei der Regalboden-Wagen mittels der Drehung zwischen der Zwischenposition und der Auffüllposition bewegt werden kann.

5. Kühlschrank nach Anspruch 4, wobei die Verbindungsvorrichtung (702) eine Tragestruktur (703) umfasst, die den Regalboden-Wagen (701) trägt und Räder (704) umfasst, die an einem Unterteil sitzen.

6. Kühlschrank nach Anspruch 5, wobei die Tragestruktur (703) eine Mittelachse (708) umfasst und der Regalboden-Wagen (701) drehbar mit der Mittelachse verbunden ist.

7. Kühlschrank nach Anspruch 5 oder 6, wobei der Regalboden-Wagen (701) eine Vielzahl von Rädern (707) umfasst, die an einem unteren Abschnitt (705) desselben angeordnet sind und an der Tragestruktur (703) sitzen.

8. Kühlschrank nach Anspruch 4, wobei die Verbindungsvorrichtung (501) eine vertikale Achse (502) umfasst und wobei der Regalboden-Wagen (402) an einem Rand einer Rückseite (503) des Regalboden-Wagens drehbar mit der vertikalen Achse verbunden ist.

9. Kühlschrank nach Anspruch 8, wobei der Regalboden-Wagen (402) eine Vielzahl von Rädern umfasst, die an einem unteren Abschnitt desselben angeordnet sind und an einem Unterteil sitzen.

10. Kühlschrank nach einem der Ansprüche 4-9, wobei die Verbindungsvorrichtung (501, 702) ein Verbindungselement (502) umfasst, das verschiebbar mit dem Schrank verbunden ist.

11. Kühlschrank nach einem der vorangehenden Ansprüche, wobei ein unteres Ende (705) des Regalboden-Wagens vier im Wesentlichen gerade Ecken umfasst.

12. Kühlschrank nach einem der vorangehenden Ansprüche, wobei ein unteres Ende (705) des Regalboden-Wagens drei im Wesentlichen gerade und eine vierte abgerundete Ecke (302) umfasst.

Revendications

1. Réfrigérateur, comprenant :

une caisse externe (102),
un chariot à étagères interne (109) ayant une pluralité d'étagères (111), le chariot à étagères étant accessible depuis un côté arrière de celui-ci, **caractérisé en ce que** le chariot à étagères est relié à un dispositif de connexion (201), le dispositif de connexion étant relié à la caisse externe et permettant un mouvement contrôlé du chariot à étagères par rapport à la caisse, moyennant quoi le chariot à étagères est mobile entre une position d'affichage au moins sensiblement à l'intérieur de la caisse externe et une position de remplissage au moins sensiblement à l'extérieur de la caisse externe, tout en étant relié audit dispositif de connexion,
ledit mouvement contrôlé comprenant la rotation du chariot à étagères pour permettre un accès au côté arrière de ce dernier.

2. Réfrigérateur selon la revendication 1, dans lequel ledit chariot à étagères (109) est rotatif autour d'un axe vertical (301) au niveau d'une périphérie d'un côté avant (303) du chariot à étagères.

3. Réfrigérateur selon la revendication 2, dans lequel ledit côté avant (303) est sensiblement rectangulaire avec deux bords sensiblement horizontaux et deux bords sensiblement verticaux, et dans lequel ledit axe vertical (301) s'étend le long de la longueur de l'un desdits bords verticaux.

4. Réfrigérateur selon la revendication 1, dans lequel ledit mouvement contrôlé comprend un mouvement linéaire, moyennant quoi le chariot à étagères (402) est mobile entre ladite position d'affichage et une position intermédiaire au moins sensiblement à l'extérieur de la caisse externe (403), et dans lequel le chariot à étagères est mobile, au moyen de ladite rotation entre ladite position intermédiaire et ladite position de remplissage.

5. Réfrigérateur selon la revendication 4, dans lequel ledit dispositif de connexion (702) comprend une structure de support (703) portant ledit chariot à éta-

gères (701) et comprenant des roues (704) reposant sur une base.

6. Réfrigérateur selon la revendication 5, dans lequel ladite structure de support (703) comprend un axe central (708) et dans lequel ledit chariot à étagères (701) est relié de manière rotative audit axe central.

7. Réfrigérateur selon la revendication 5 ou 6, dans lequel ledit chariot à étagères (701) comprend une pluralité de roues (707) agencées au niveau d'une partie inférieure (705) de celui-ci et reposant sur ladite structure de support (703).

8. Réfrigérateur selon la revendication 4, dans lequel ledit dispositif de connexion (501) comprend un axe vertical (502) et dans lequel ledit chariot à étagères (402) est relié de manière rotative audit axe vertical au niveau d'une périphérie d'un côté arrière (503) du chariot à étagères.

9. Réfrigérateur selon la revendication 8, dans lequel ledit chariot à étagères (402) comprend une pluralité de roues agencées au niveau d'une partie inférieure de celui-ci et reposant sur une base.

10. Réfrigérateur selon l'une quelconque des revendications 4 à 9, dans lequel ledit dispositif de connexion (501, 702) comprend un élément de connexion (502) qui est relié de manière coulissante à la caisse.

11. Réfrigérateur selon l'une quelconque des revendications précédentes, dans lequel un fond (705) dudit chariot à étagères comprend quatre coins fondamentalement droits.

12. Réfrigérateur selon l'une quelconque des revendications précédentes, dans lequel un fond (705) dudit chariot à étagères comprend trois coins fondamentalement droits et un quatrième coin arrondi (302).

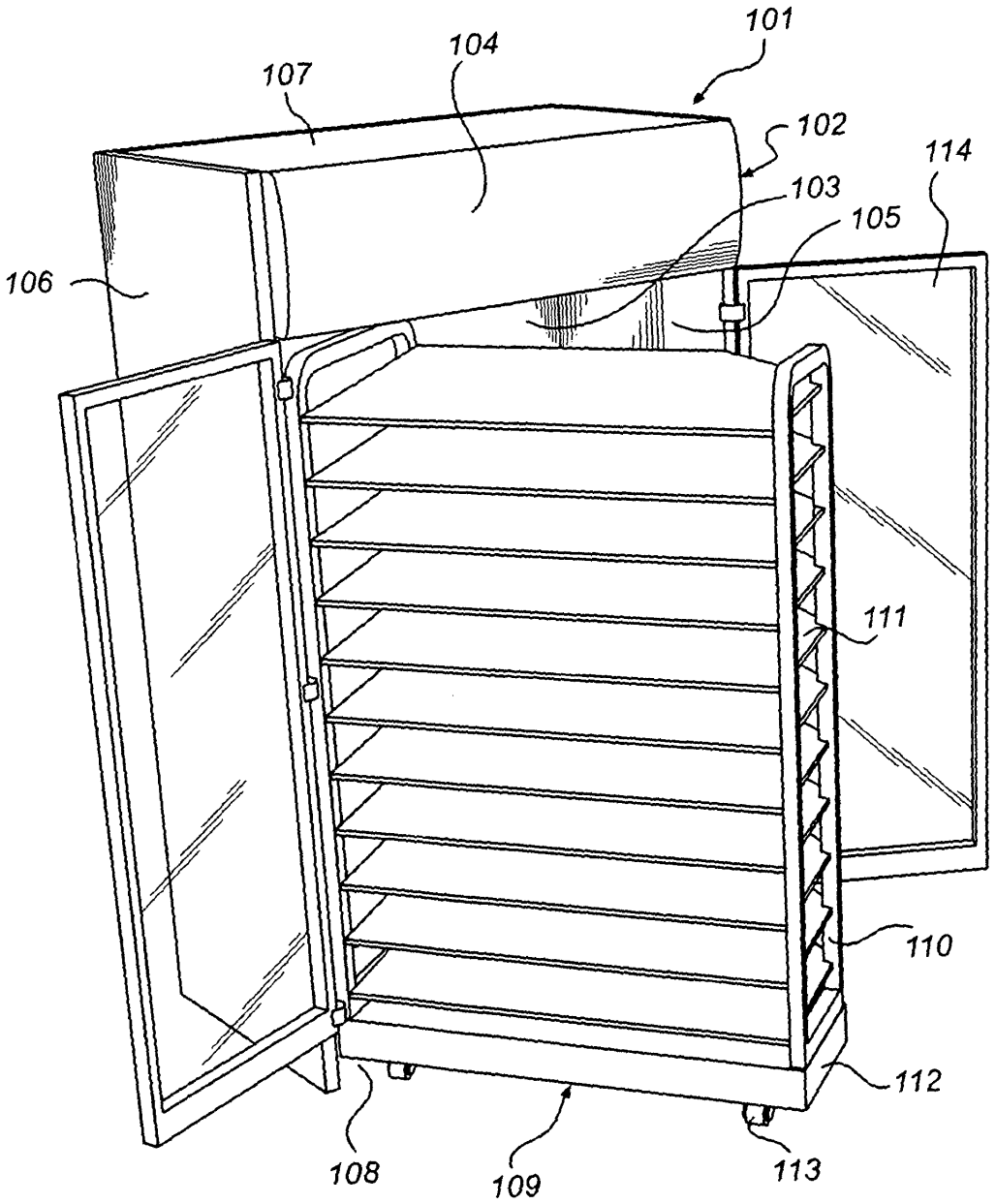

Fig. 1

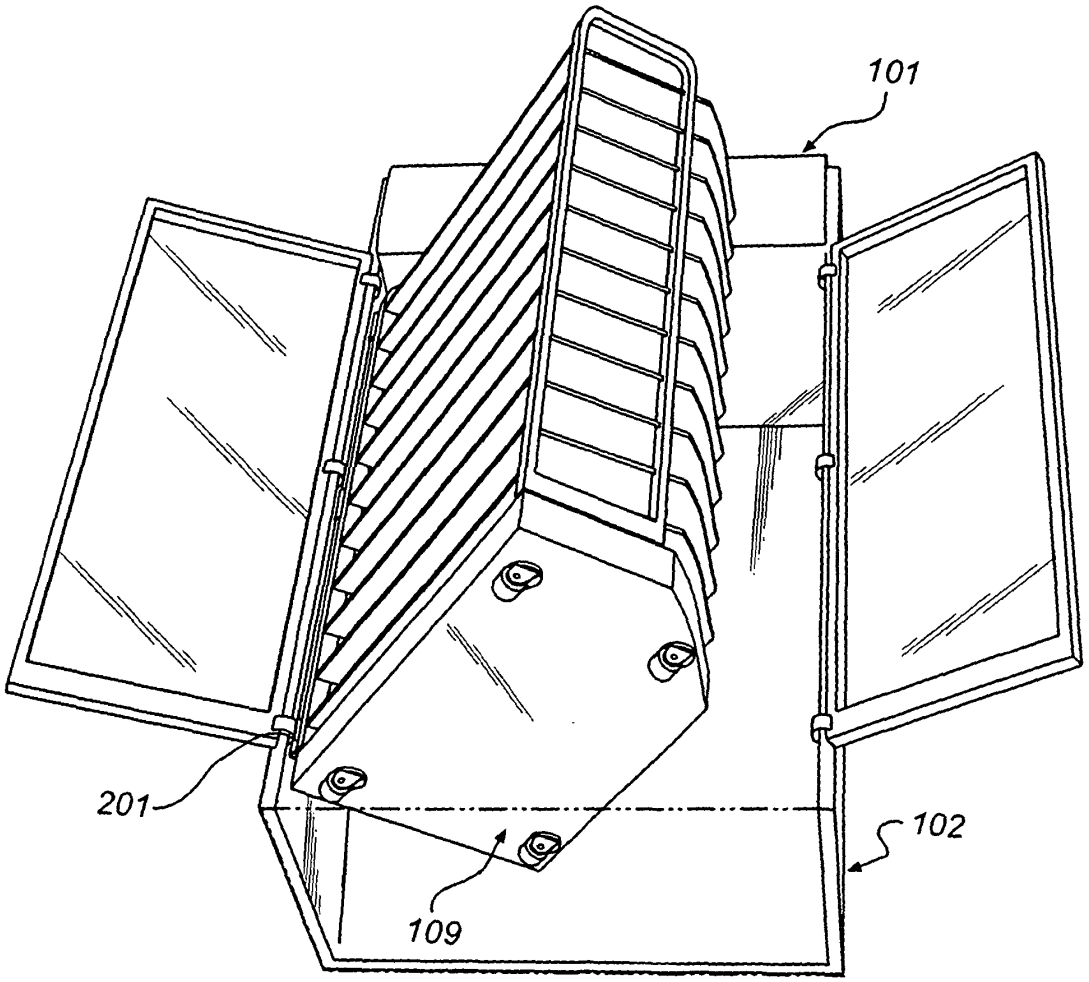

Fig. 2

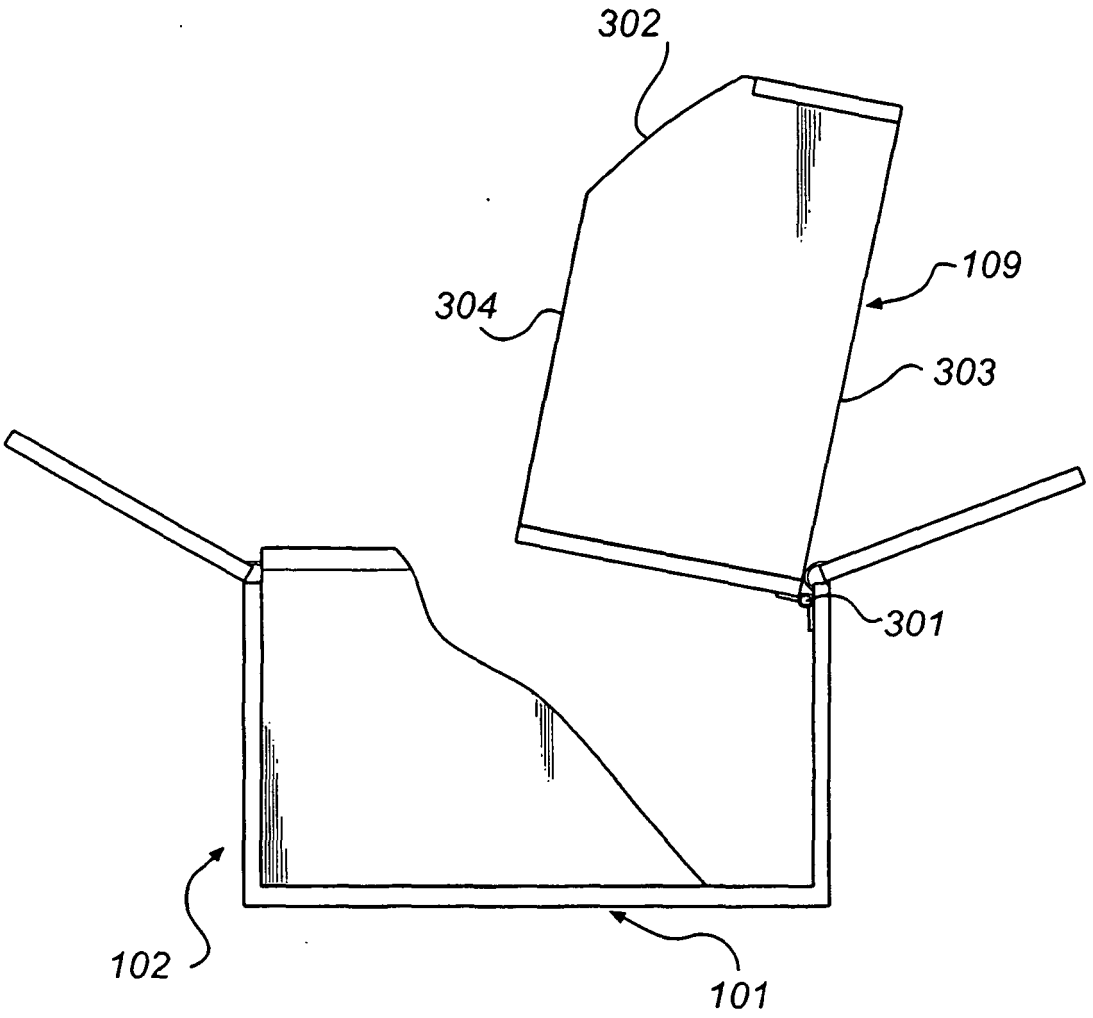

Fig. 3

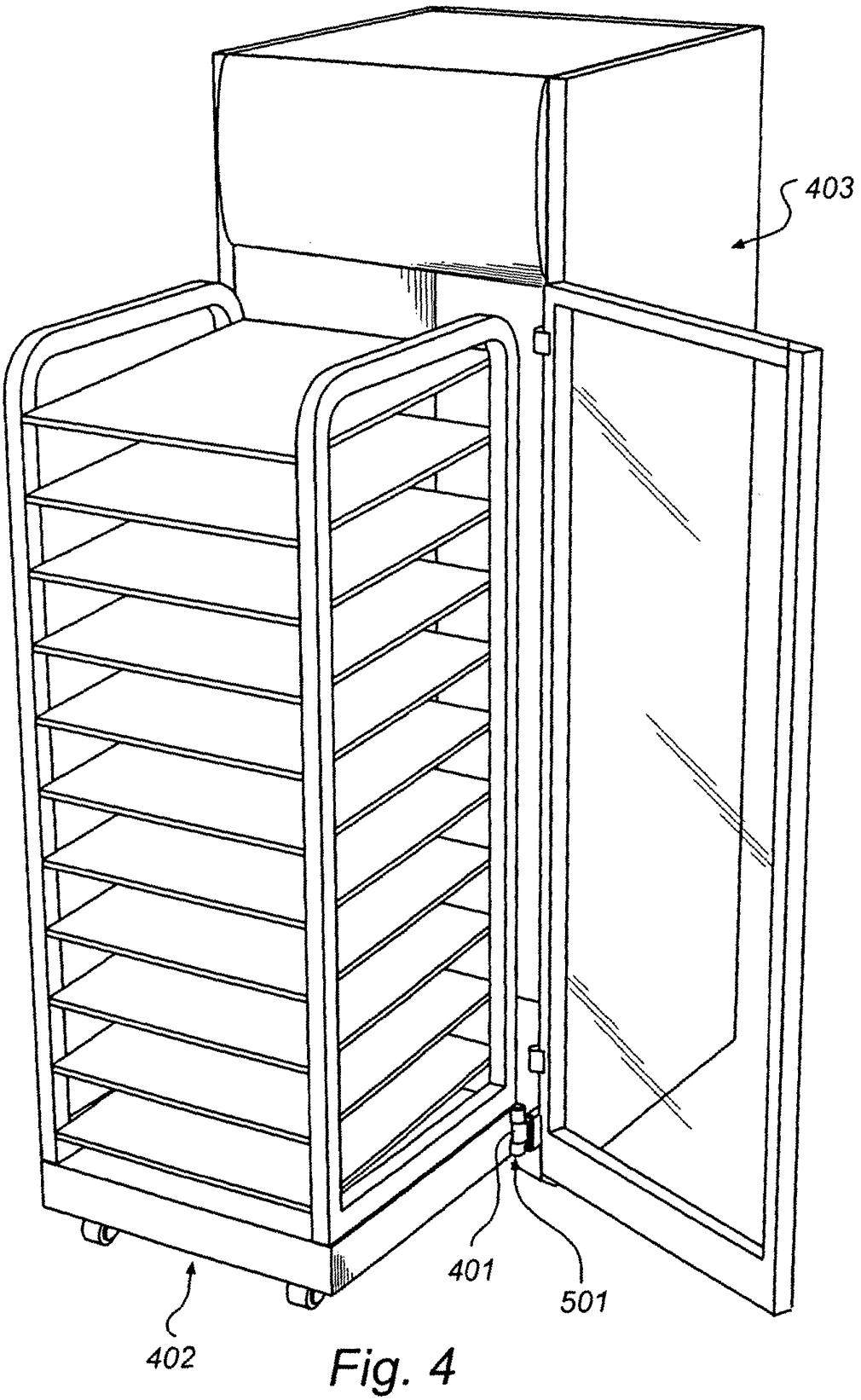

Fig. 4

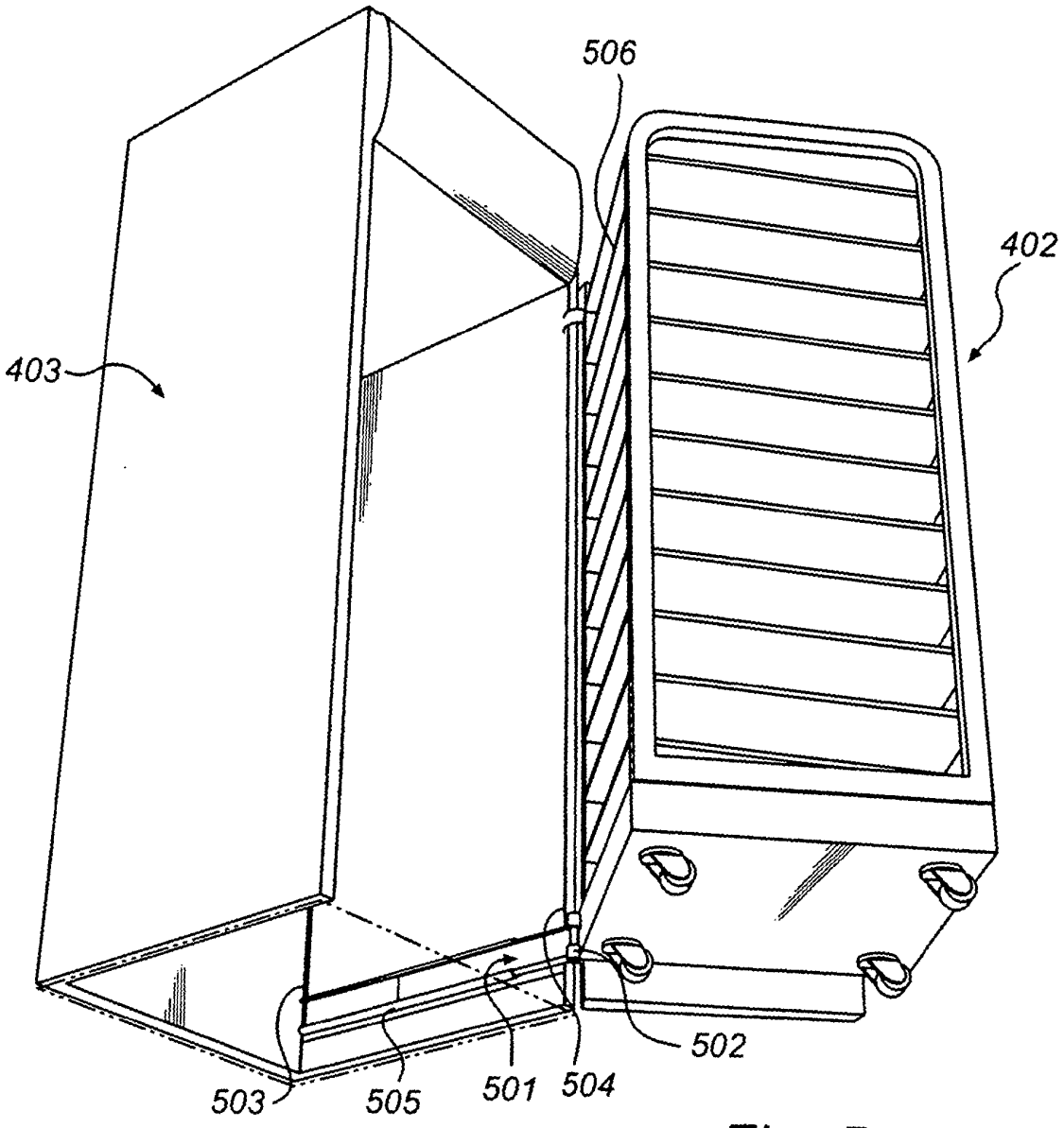

Fig. 5

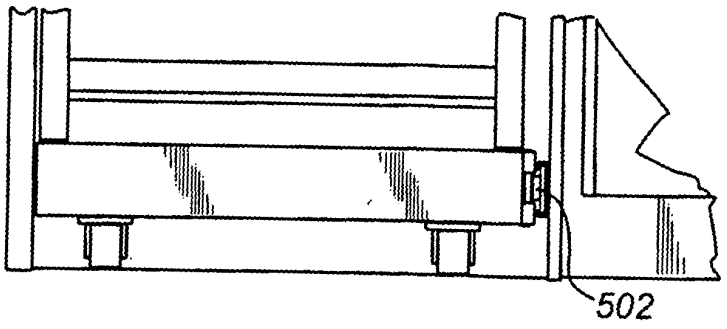

Fig. 6

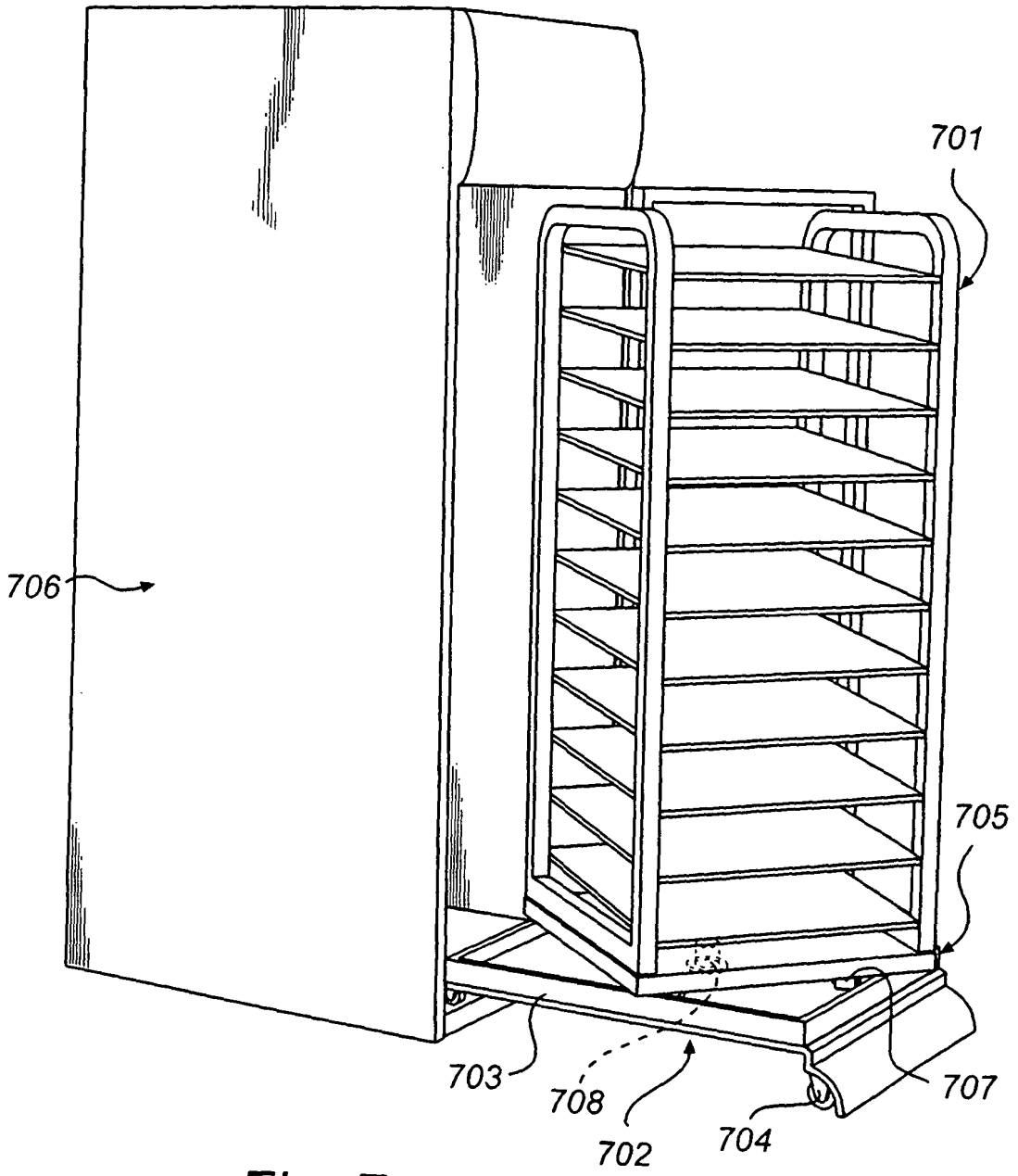

Fig. 7

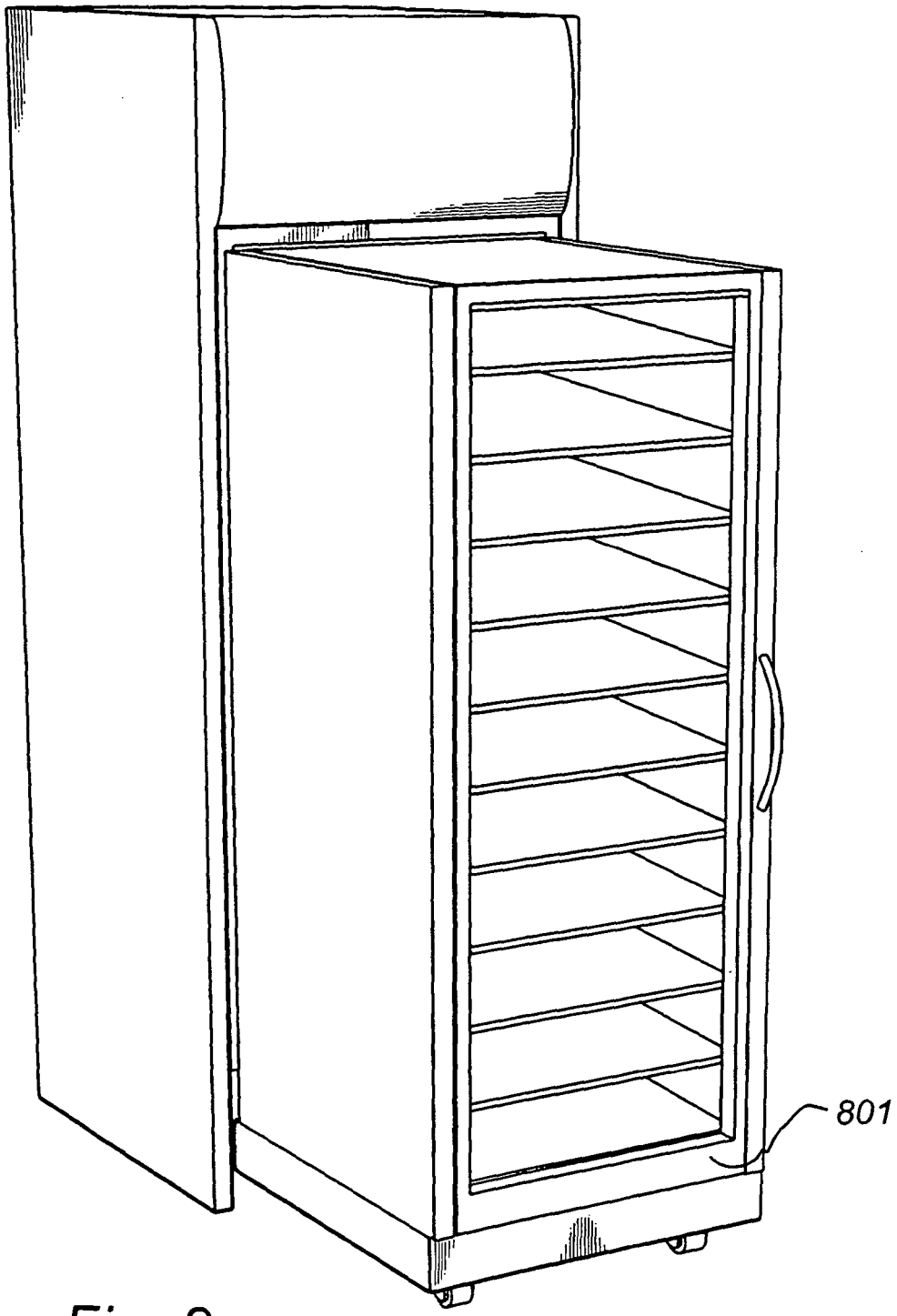

Fig. 8

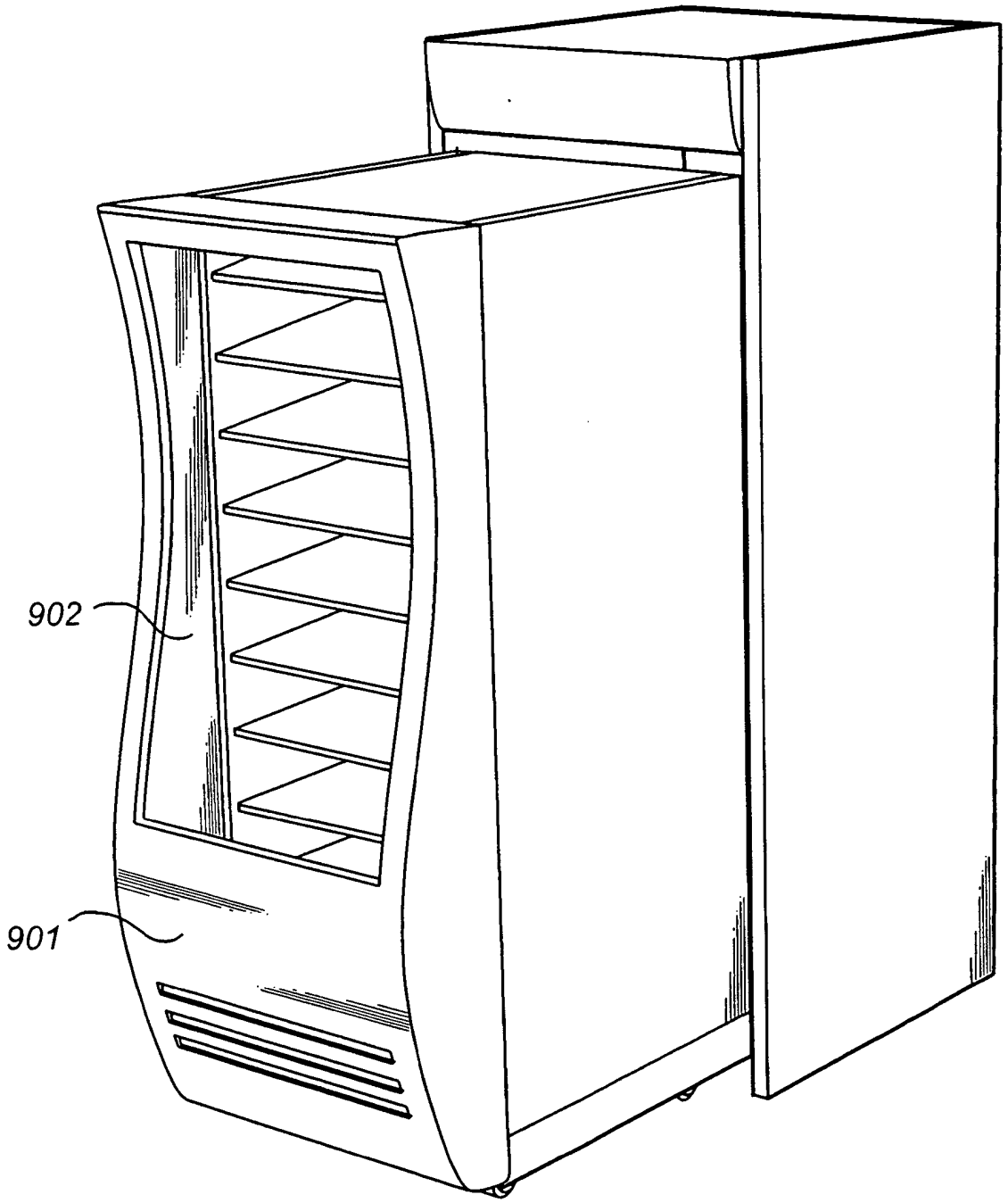

Fig. 9