A brace is provided to hold a refrigerator machine compartment cover open during servicing of various refrigeration compartments. The brace includes a longitudinal center section having first and second ends, a hinge support section attached to the first end and a mounting section attached to the second end. The brace is placed against a hinge assembly to support the cover in the open position. When not in use, the brace may be stored in a machine compartment portion of the refrigerator.
BRACE FOR A REFRIGERATOR MACHINE COMPARTMENT COVER

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention
[0002] The present invention pertains to the art of refrigerators and, more particularly, to a brace that supports a cover for a refrigerator machine compartment.

[0003] 2. Discussion of the Prior Art
[0004] In general, a refrigerator includes a variety of refrigeration components, such as a compressor, a condenser, an evaporator etc., for maintaining selected temperatures in one or more refrigerated compartments. Normally the refrigerator components are mounted in a rear portion of the refrigerator. When access to the refrigeration components is necessary, a technician simply removes a panel from the rear portion of the refrigerator and performs any required service. If necessary, the components may be completely removed and replaced through the back panel.

[0005] In today's market, it is becoming more popular to recess refrigerators into kitchen walls and adjacent cabinetry or the like in order to provide a built-in look that is considered aesthetically appealing. However, so called recessed refrigerators cannot be readily serviced if the refrigeration components are located in the back of the refrigerator. Recessed refrigerators tend to be large and therefore are often very cumbersome to move. Also, by definition, they are located in a recess so the back side of such a refrigerator cannot be readily accessed once installed.

In order to address this problem, manufacturers have arranged the refrigeration components in a compartment located atop the refrigerator. A decorative panel or cover is provided to cover the compartment and hide the refrigeration components. In some cases, the cover must be removed each time the refrigerator requires servicing. However, some manufacturers attach the cover with an upper hinge that allows the cover to close under the force of gravity. With such an arrangement, service personnel simply open the cover when the refrigerator requires servicing.

[0006] Of course, an advantage exists with a cover that closes under the force of gravity in that the cover will remain closed during the refrigerator’s normal operation. However, one disadvantage exists in that the cover also tends to close when the refrigerator is being serviced. In order to address this problem, several manufacturers employ a biasing unit that supports the cover in an open position. Typically, the biasing unit constitutes a gas filled cylinder that interconnects the cover and the refrigerator. While effective, gas filled cylinders add to manufacturing complexity and costs and, over time, can wear out, thereby requiring replacement.

[0007] Thus, despite the existence of cover supports in the prior art, there still exists a need in the art for a cover support or brace that securely holds a machine compartment cover open, particularly during servicing of the refrigerator. Moreover, there exists a need for a brace that is simple and inexpensive, easily manufactured and requires no maintenance.

SUMMARY OF THE INVENTION

[0008] The present invention is directed to a brace for supporting a refrigerator machine compartment cover. The machine compartment houses various refrigeration components which are operated to maintain selected temperatures in one or more refrigerated compartments. The cover, or panel, is preferably attached at an upper edge portion with a hinge so as to pivot upward about a substantially horizontal axis to provide access to the machine compartment. The cover is designed to close under the force of gravity with the brace being adapted to support the cover in an open position when one or more of the refrigeration components require servicing and access to the machine compartment is necessary.

[0009] In accordance with the invention, the brace includes a longitudinal center section having first and second end portions, a hinge support section provided at the first end portion and a mounting section provided at the second end portion. In accordance with one aspect of the invention, the hinge support section is preferably approximately 1/4 inches (3.18 cm) long and approximately 1 inch (2.54 cm) wide. The longitudinal center section is preferably approximately 2.5-3 inches (6.35-7.62 cm), most preferably about 2.8 inches (7.11 cm) long. The mounting section preferably has an elongated U-shape that is spring biased so as to form a clip. When the brace is placed against the hinge, the cover is supported in the open position to provide access to the machine compartment. Service personnel can then readily access the refrigeration components. When not in use, the brace is simply stored in the machine compartment.

[0010] Additional objects, features and advantages of the present invention will become more readily apparent from the following detailed description of a preferred embodiment when taken in conjunction with the drawings wherein like reference numerals refer to corresponding parts in the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is an upper right perspective view of a refrigerator incorporating a machine compartment cover support brace constructed in accordance with the present invention.

[0012] FIG. 2A is a partial, lower left perspective view of a machine compartment portion of the refrigerator of FIG. 1 illustrating the machine compartment cover in an open, unsupported position, with the support brace shown in a stored position;

[0013] FIG. 2B is a partial lower left perspective view of the machine compartment illustrating the machine compartment cover in an open, supported position, with the support brace shown positioned within a hinge assembly that pivotally connects the machine compartment cover and the refrigerator; and

[0014] FIG. 3 is a left perspective view of the support brace of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] With initial reference to FIG. 1, a refrigerator constructed in accordance with the present invention is generally indicated at 2. Refrigerator 2 is shown to include a freezer door 6 having an associated handle 7 and a fresh food door 10 having an associated handle 11. In a manner known in the art, freezer and fresh food doors 6 and 10 selectively provide access to corresponding freezer and fresh food compartments 12 and 13. In the embodiment shown, refrigerator 2 is of the recessed type such that, essentially, only freezer and fresh food doors 6 and 10 project forward of an adjacent wall 15, as well as a plurality of cabinets.
generally indicated at 18-23. Refrigerator 2 also includes a plurality of peripheral trim pieces 28-30 which provide an aesthetically appealing, seamless appearance for refrigerator 2.

As best shown in FIGS. 2A and 2B, refrigerator 2 is preferably designed with main refrigeration components, indicated generally at 31, of a refrigeration circuit positioned in a machine compartment 32 provided above freezer and fresh food compartments 12 and 13. For the sake of simplicity, not all components of a conventional refrigeration system have been shown. Refrigeration components 31, which include a compressor, a condenser, an evaporator and the like, are preferably located within machine compartment 32 and are operated to maintain selected temperatures in freezer and fresh food compartments 12 and 13. A machine compartment cover 33 is preferably pivotally mounted across machine compartment 32 through a pair of left and right hinge assemblies, a right side one of which is indicated at 39. With this construction, machine compartment cover 33 is pivoted upward, about hinge assemblies 39, to provide access to machine compartment 32 and downward, under the force of gravity, to close machine compartment 32.

In the embodiment shown, hinge assembly 39 includes support portion 40 and an articulating or hinge portion 41. Support portion 40 includes a support base 42 having an open box portion 46 including a side panel 52, a back panel 54, a bottom panel 57 and a top panel 58. Side panel 52 is secured to an inner wall portion 59 of machine compartment 32, with back panel 54 being attached to a flange member 60 that extends substantially perpendicularly outward from inner wall portion 59. Bottom panel 57 is attached to side and back panels 52 and 54 to form a floor of box portion 46. In a manner similar to that described with respect to side panel 52, top panel 58 is secured to an inside top wall portion 61 of machine compartment 32, such as through suitable mechanical fasteners (not shown).

Hinge portion 41 includes a lower bracket 62 that is connected to an upper bracket 64 through lower and upper intermediate pivoting members 66 and 68. More specifically, lower bracket 62 is secured to back and top panels 54 and 58 of support base 42, while upper bracket 64 is secured to an underside 69 of machine compartment cover 33 through an upper mounting plate 70. Lower intermediate pivoting member 66 is pivotally attached at an upper portion (not separately labeled) of lower bracket 62 through a pin 72 and pivotally attached to upper intermediate pivoting member 68 through a pin 76. Lower pivoting member 66 also includes detents (not shown) that prevent upper pivoting member 68 from freely pivoting about pin 76 when machine compartment cover 33 is open. Of course, it should be realized that a spring or a spring combination with detents could also be employed. As shown, upper intermediate pivoting member 68 connects upper bracket 64 with lower intermediate pivoting member 66. With this arrangement, machine compartment cover 33 is able to automatically close under the force of gravity. However, in order to prevent machine compartment cover 33 from inadvertently closing, particularly during servicing, refrigerator 2 is provided with a cover support brace 100.

In accordance with the invention, brace 100 is positioned within box portion 46 to retain machine compartment cover 33 open during servicing of refrigeration components 31. When properly positioned during use as shown in FIG. 2B, brace 100 engages with hinge assembly 39, supporting lower pivoting member 66 and preventing machine compartment cover 33 from falling under the force of gravity, thereby retaining cover 33 open. As best shown in FIG. 3, brace 100 includes a longitudinal center section 110 having a first end 111 that extends to a second end 112 through an intermediate section 113. A hinge support section 115 projects from first end 111 and a mounting section 120 extends from second end 112. Mounting section 120 includes a spring-biased clip portion 122 defined by a leg 123 that extends through a curved portion 124 back along, and below, leg 123 prior to terminating in a down turned end section 126.

In the most preferred form of the invention, hinge support section 115 is preferably approximately 1/16 inches (3.18 cm) in length and approximately 1-inch (2.54 cm) in width, while longitudinal center section 110 is preferably approximately 2.5-3 inches (6.35-7.62 cm) in length, most preferably about 2.8 inches (7.11 cm). As described above, brace 100 is placed within box portion 46 to support cover 32 in the open position. Once in place, hinge support section 115 abuts lower pivoting member 66 while clip portion 122 engages with bottom panel 57 so as to retain brace 100 in an operative position as clearly shown in FIG. 3. When not in use, brace 100 may simply be stored in machine compartment 32 as shown in FIG. 2A.

At this point, it should be readily apparent that brace 100 is a simple, easy to manufacture device that requires no servicing yet, when properly positioned, securely maintains machine compartment cover 33 in the open position. With this construction, service personnel are provided unobstructed access to the refrigeration components located in machine compartment 32. Although described with reference to a preferred embodiment of the invention, it should be readily understood that various changes and/or modifications can be made to the invention without departing from the spirit thereof. For instance, the shape of the brace could be altered while still functioning to hold open the machine compartment door. In addition, while described as employing a single brace, multiple braces, e.g., a brace for each hinge assembly could also be employed. In general, the invention is only intended to be limited by the scope of the following claims.

I/We claim:
1. A refrigerator assembly comprising:
a refrigerated compartment;
a door pivotally mounted relative to the refrigerator for selectively closing the refrigerated compartment;
a machine compartment arranged over the refrigerated compartment, said machine compartment housing refrigeration components which operate to maintain a selected temperature in the refrigerated compartment;
a machine compartment cover shiftable between an open position exposing the machine compartment and a closed position covering the machine compartment;
a hinge assembly pivotally interconnecting the machine compartment cover and the machine compartment for movement between open and closed positions; and
a brace selectively mounted to the hinge assembly to retain the machine compartment cover in the open position, said brace including:
a longitudinal center section having first and second ends;
a hinge support section provided at the first end of the longitudinal center section, said hinge support section being received by the hinge assembly; and a mounting section provided at the second end of the longitudinal center section, said mounting section engaging the hinge assembly so as to selectively retain the machine compartment cover in the open position to provide unobstructed access to the machine compartment.

2. The refrigerator according to claim 1, wherein the hinge support section is about 1/4 inches (3.18 cm) long and about 1 (2.54 cm) inch wide.

3. The refrigerator according to claim 1, wherein the longitudinal center section is approximately 2.5-3 inches (6.35-7.62 cm) long and is connected the hinge support section.

4. The refrigerator according to claim 1, wherein the mounting section is connected to the second section and has an elongated U-shape.

5. The refrigerator according to claim 4, wherein the mounting section is spring biased so that the U-shape forms a clip.

6. The refrigerator according to claim 1, wherein the hinge assembly includes a support portion and a pivoting portion, said brace extending between the support portion and the pivoting portion to retain the machine compartment cover in the open position.

7. The refrigerator according to claim 6, wherein the support portion includes a back panel, a bottom panel and a side panel, said brace clipping to the bottom panel of the support portion and abutting the pivoting portion to retain the machine compartment cover in the open position.

8. A brace selectively mounted to a hinge assembly to retain a machine compartment cover in an open position comprising:

a longitudinal center section having first and second ends; a hinge support section provided at the first end of the longitudinal center section, said hinge support section being received by the hinge assembly; and a mounting section provided at the second end of the longitudinal center section, said mounting section engaging the hinge assembly so as to selectively retain the machine compartment cover in the open position to provide unobstructed access to the machine compartment.

9. The brace according to claim 8, wherein the hinge support section is about 1/4 inches (3.18 cm) long and about 1 inch (2.54 cm) wide.

10. The brace according to claim 8, wherein the longitudinal center section is approximately 2.5-3 inches (6.35-7.62 cm) long and is connected the hinge support section.

11. The brace according to claim 8, wherein the mounting section is connected to the second section and has an elongated U-shape.

12. The brace according to claim 11, wherein the mounting section is spring biased so that the U-shape forms a clip.

13. A method of accessing a machine compartment positioned above a refrigerated compartment of a refrigerator comprising:

lifting a machine compartment cover through a hinge assembly having a support portion and a pivoting portion;
clipping a first end of a brace to the support portion of the hinge assembly;
abutting a second end of the brace against the pivoting portion of the hinge assembly so as to support the machine compartment cover in an open position thereby providing unobstructed access to the machine compartment.

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