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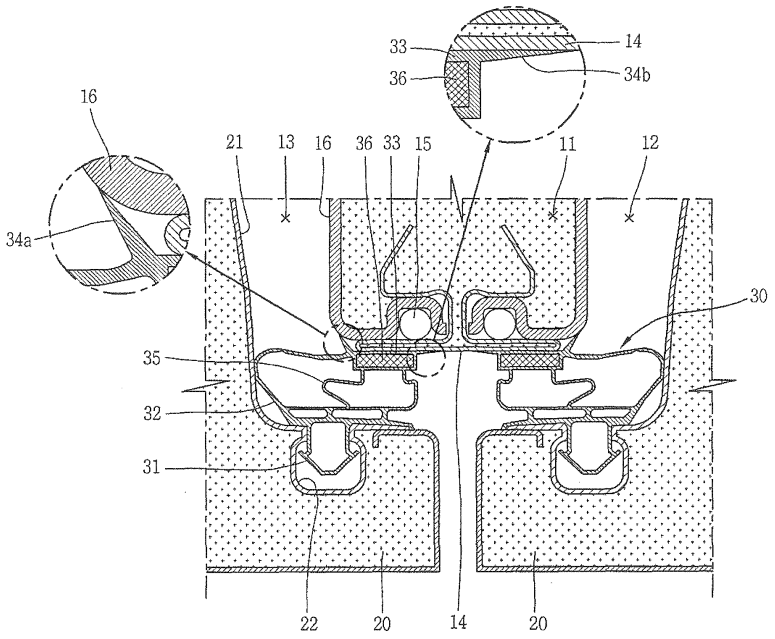
(54) Refrigerator and sealing gasket therefor

(57) A refrigerator includes a refrigerator body (10); a refrigerator door (20) coupled to the refrigerator body (10) so as to be opened and closed; and a gasket (30) mounted on either the door (20) or that body (10). The gasket (30) has a magnet (36) therein so as to hold the door closed against the refrigerator body (10). The gasket (30) has at least one shielding portion (34a) that extends from an edge of the gasket (30). The sealing portion is configured to be elastically deformed when the refrigerator door (20) is closed, which enhances the sealing action of the gasket (30). As a result, even if the magnet (36) has a weak magnetic force due to age or the sealing surface is no longer flat, a sealing force is reinforced by the shielding portion (34a). Accordingly, cool air inside the refrigerator is prevented from leaking out, and external warm air is prevented from being introduced into the refrigerator.

FIG. 2



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Description

[0001] The present invention relates to a refrigerator, and more particularly, to a sealing gasket for a refrigerator capable of preventing cool air from leaking from the refrigerator and/or preventing warm air from entering the refrigerator.

[0002] Generally, a refrigerator generates cool air via a refrigerating cycle performed by a compressor, a condenser, an expansion valve, an evaporator, etc. The cool aft is introduced into the refrigerator so that food can be stored therein in a cool state or a frozen state. In order to improve the efficiency of the refrigerator, leakage of the cool air from the refrigerator or introduction of external warm air into the refrigerator has to be effectively prevented.

[0003] To this end, a gasket is typically installed at contact surfaces between a refrigerator body and a refrigerator door. An outer surface of the gasket is typically formed of a synthetic material having an elastic characteristic, and a magnet is installed in the gasket. When the refrigerator door is closed, the magnet in the gasket is attracted to a front surface plate of the refrigerator body to keep the door closed, and to seal off the inside of the refrigerator. When the refrigerator door is pulled open, the magnet is detached from the front surface plate of the refrigerator body.

[0004] However, the prior aft sealing apparatus for a refrigerator has the following problems. When the magnet inside of the gasket, or the front surface plate of the refrigerator body are not flat, or when a magnetic force of the magnet becomes weak, cool air can leak from the refrigerator body or external warm air may be introduced into the refrigerator body. As a result, power consumption is increased.

[0005] The embodiments will be described in detail with reference to the following drawings in which like reference numerals refer to like elements, and wherein:

FIG. I is a front view showing a two-door type refrigerator to which a sealing gasket is applied;
FIG. 2 is a sectional view taken along line in FIG. 1;
FI . 3 is a horizontal sectional view showing a gasket of a two-door type refrigerator; and
FIG. 4 is a horizontal sectional view showing another embodiment of a gasket for a two-door type refrigerator.

[0006] FIGs. 1 and 2 show a refrigerator body 10 having a cooling chamber 12 and a freezing chamber 13 installed at right and left sides of a partition wall 11. Two refrigerator doors 20 are rotatably installed at sides of the refrigerator body 10, for independently opening and closing the cooling chamber 12 and the freezing chamber 13 of the refrigerator body. A plurality of gaskets 30 are fixedly coupled to the refrigerator doors 20. Edges of the doors 20 are designed to contact the partition wall 11 of the refrigerator body 10 to seal off the cooling chamber 12 and the freezing chamber 13.

[0007] A front surface plate 14, formed of metal, is installed at a front surface of the partition wall 11 of the refrigerator body 10. A magnet 36 is mounted inside the gasket 30, and the magnet 36 is attracted to the front surface plate 14. The magnetic attraction between the magnet 36 and the front surface plate 14 helps to keep the door shut, and helps to ensure that a good seal is made around the peripheral surface of the door. A thermal line 15 for preventing the formation of condensed moisture is installed at a rear surface of the front surface plate. Preferably, an outer surface of the front surface plate 14 is even and flat so that the magnet 36 of the gasket 30 can ensure a good seal between the gasket 30 and the front surface plate.

[0008] A gasket fixing groove 22 for insertion-fixing a coupling portion 31 of the gasket 30 is formed at an inner case 21 of the refrigerator door 20. The gasket 30 comprises a coupling portion 31 which is inserted into the inner case 21 of the refrigerator door 20. A connecting portion 32 integrally extends from the coupling portion 31 so as to be foldable. An adhering portion 33 integrally extends from the connecting portion 32 and is detachably mounted at the front surface plate 14 of the refrigerator body 10 due to the magnetic attraction between the magnet 36 and the front surface plate 14. A first shielding portion 34a and a second shielding portion 34b respectively protrude from opposite sides of the adhering portion 33. The ends of the first and second shielding portions extend upwards from the adhering portion 33. The first and second shielding portions also help to ensure a good seal.

[0009] The coupling portion 31 has an anchor shape so as to be insertion-coupled to the gasket fixing groove 22 of the refrigerator door 20. The connecting portion 32 is divided into a plurality of partitions by walls 35 so as to form an inner space.

[0010] As shown in FIGS. 2 and 3, because the first shielding portion 34a and the second shielding portion 34b protrude upwards from the outer surface of the adhering portion 33 of the gasket 30, as the door is closed, the shielding portions contact the refrigerator body 10 before than the adhering portion 33. In addition, and as also shown in FIG. 3, the first and second shielding portions are tapered. The first shielding portion 34a is formed at an inner edge of the adhering portion 33 and contacts the inner case 16 of the refrigerator body 10, thereby preventing cool air inside the cooling chamber 12 or the freezing chamber 13 from leaking out. The second shielding portion 34b is formed at an outer edge of the adhering portion 33 and contacts the front surface plate 14, thereby preventing external warm air from being introduced into the refrigerator.

[0011] In the embodiment shown in FIGs. 2 and 3, the first and second sealing portions are substantially straight. As the door is closed, the first and second sealing portions are elastically deformed until they assume the shape shown in FIG. 2. This elastic deformation of

the sealing portions helps hold the sealing portions firmly against the refrigerator body to ensure a good seal.

[0012] As shown in FIG. 4, in an alternate embodiment, the first shielding portion 34a and second shielding portion 34b may have curved surfaces that also extend upward from the adhering portion 33. Here again, when the refrigerator door 20 is closed, the shielding portions are elastically deformed to hold the sealing portions firmly against the refrigerator body.

[0013] The operation and effects of the sealing apparatus for a refrigerator according to the present invention will be explained as follows.

[0014] When a user closes the refrigerator door 20, the adhering portion 33 of the gasket 30 coupled to the refrigerator door 20 is adhered to the front surface plate 14 of the refrigerator body 10 due to the magnetic attraction between the magnet 36 in the gasket and the front sealing plate on the refrigerator body. Accordingly, cool air inside the refrigerator is prevented from leaking out, and/or external warm air is prevented from being introduced into the refrigerator.

[0015] The first shielding portion 34a and the second shielding are protrudingly-formed at opposite sides of the adhering portion 33 of the gasket 30. When the refrigerator door 20 is closed, the first shielding portion 34a and the second shielding portion 34b contact the inner case 16 and the front surface plate 14 of the refrigerator body 10, respectively, before the adhering portion 33. Then, as the magnet pulls the adhering portion 33 against the front surface plate, the first shielding portion 34a and the second shielding portion 34b are elastically deformed, thereby enhancing a sealing force for the gasket 30.

[0016] The first shielding portion 34a and the second shielding portion 34b are tapered and are formed to have a curved surface or an inclined surface in a closing direction of the refrigerator door 20. These features ensure that when the refrigerator door 20 is closed, the first shielding portion 34a and the second shielding are elastically deformed, thus intensively adhering to the sealing surfaces of the refrigerator body.

[0017] Accordingly, even when the magnet of the gasket has a weak magnetic force due to aging, or when the sealing surfaces are no longer flat, a sealing force is reinforced by the shielding portions. Accordingly, cool air inside the refrigerator is prevented from leaking out, and external heated air is prevented from being introduced into the refrigerator.

[0018] In the aforementioned embodiment, the gasket was installed on the refrigerator door. However, the gasket can be installed on the refrigerator body. When the gasket is installed on the refrigerator body, the construction and effect are same as those of the aforementioned embodiment.

[0019] Also, although the above description focuses on a refrigerator/freezer having a cooling chamber and a freezing chamber located side-by-side, the sealing gaskets disclosed in the application are equally applicable to other types of refrigerator/freezers. Likewise, the gaskets disclosed in this application could be used on just a refrigerator, or just a freezer.

[0020] Further, in the above-described embodiments, shielding portions extended from opposite sides of the adhering portion of the gasket. However, in alternate embodiments, only a single shielding portion may extend from only a single side of the adhering portion. Likewise, a plurality of shielding portions may extend from one or both sides of the adhering portion.

[0021] As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the metes and bounds of the claims, or equivalents of such metes and bounds are therefore intended to be embraced by the appended claims.

[0022] Any reference in this specification to "one embodiment", "an embodiment", "example embodiment" etc., means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of such phrases in various places in the specification are not necessarily all referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with any embodiment, it is submitted that it is within the purview of one skilled in the art to effect such feature, structure, or characteristic in connection with other ones of the embodiments.

Claims

1. A refrigerator, comprising:

   a refrigerator body;
   a refrigerator door coupled to the refrigerator body so as to be opened and closed; and
   a gasket mounted on one of the refrigerator body and the refrigerator door, and configured to form a seal with the other of the refrigerator body and the refrigerator door, wherein a shielding portion of the gasket is configured to be elastically deformed when the refrigerator door is closed, and wherein the elastic deformation of the shielding portion enhances the seal between the refrigerator body and the refrigerator door.

2. The apparatus of claim 1, wherein the gasket is provided with a magnet therein.

3. The apparatus of claim 1 or 2, wherein the shielding portion comprises first and second shielding portions which are respectively formed at opposite sides of

the gasket.

4. The apparatus of claim 3, wherein the first and second shielding portions are configured to be deformed in opposite directions to each other when the refrigerator door is closed.

5. The apparatus of any of claims 1 to 4, wherein a thickness of the shielding portion tapers and becomes thinner as it extends away from the center of the gasket.

6. The apparatus of any of claims 1 to 5, wherein the shielding portion is configured to have a curved surface or an inclined surface in a closing direction of the refrigerator door.

7. The apparatus of claim 6, wherein the shielding portion extends upward away from an adhering portion of the gasket such that as the refrigerator door is closed, the shielding portion contacts a corresponding sealing surface before the adhering portion does.

8. The apparatus of any of claims 1 to 7, wherein the gasket includes a coupling portion having an anchor shape that protrudes from one side of the gasket.

9. The apparatus of claim 8, wherein a gasket fixing groove is formed in one of the refrigerator body and the refrigerator door and wherein the coupling portion of the gasket is inserted into the gasket fixing groove.

10. The apparatus of any of claims 1 to 9, wherein the gasket is provided with a plurality of foldable partition walls therein.

11. A sealing gasket for a refrigerator and/or freezer comprising
a gasket body which is configured to be mounted on one of a refrigerator body and a refrigerator door, and which is configured to form a seal with the other of the refrigerator body and the refrigerator door;
a magnet mounted in the gasket body adjacent an adhering portion of the gasket body; and
a shielding portion that extends from a side of the adhering portion, wherein the at least one shieldling portion is configured to be elastically deformed when the gasket forms a seal between the refrigerator body and refrigerator door as the refrigerator door is closed.

12. The sealing gasket of claim 11, wherein the shielding portion extends upward from the adhering portion, and wherein the elastic deformation of the shielding portion helps to form a good seal between the refrigerator door and the refrigerator body.

13. The sealing gasket of claim 12, wherein the shielding portion is configured to extend upward from the adhering portion such that the shielding portion will make contact with a sealing surface before the adhering portion.

14. The sealing gasket of claim 12 or 13, wherein the shielding portion has a curved shape.

15. The sealing gasket of claim 12, 13, or 14, wherein the shielding portion is inclined relative to the adhering portion of the gasket body.

16. The sealing gasket of any of claims 11 to 15, wherein the shielding portion comprises first and second shielding portions that are formed on opposite sides of the adhering portion.

17. The sealing gasket of claim 1 wherein the first and second shielding portions are configured to be deformed in opposite directions to each other when the refrigerator door is closed.

18. The sealing gasket of any of claims 11 to 17, wherein the gasket body further comprises:

a coupling portion configured to be inserted into a fixing groove on one of a refrigerator body or a refrigerator door; and
a connecting portion integrally extending from the coupling portion so as to be foldable.

19. The sealing gasket of claim 18, wherein the coupling portion is anchor shaped.

20. The apparatus of any of claims 11 to 19, wherein a thickness of the shielding portion becomes thinner as it extends away from the adhering portion of the gasket body.

FIG. 1

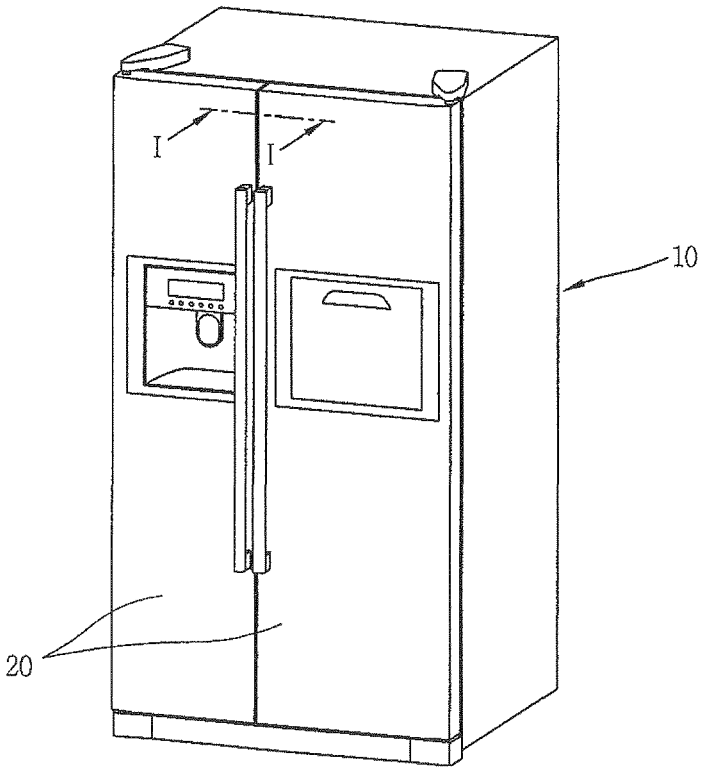

FIG. 2

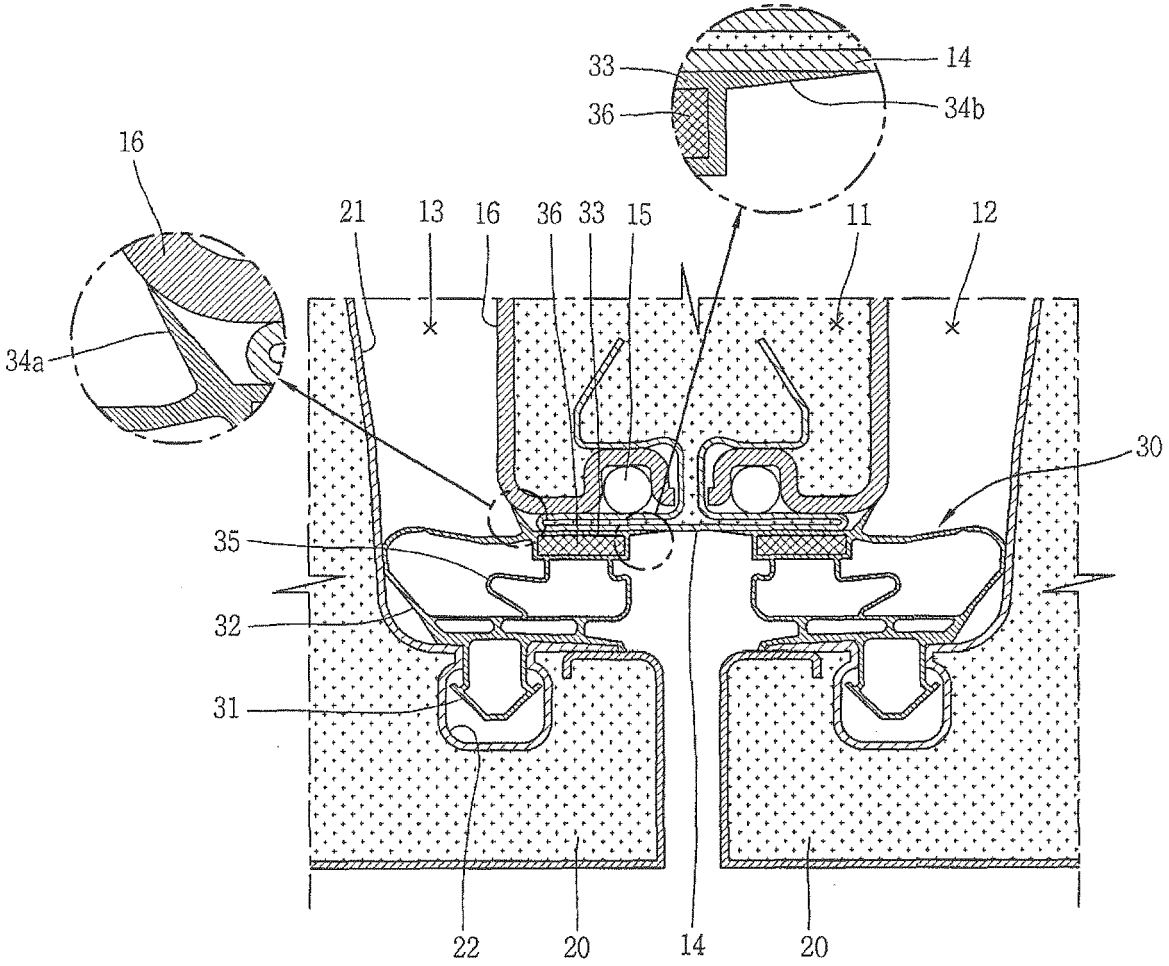

FIG. 3

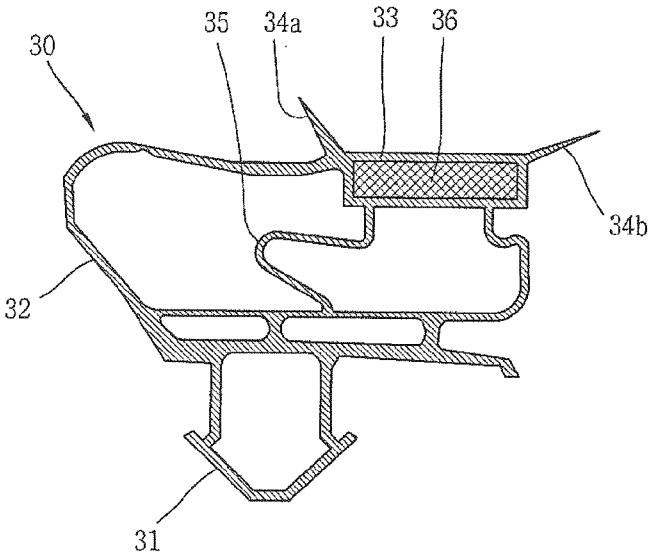
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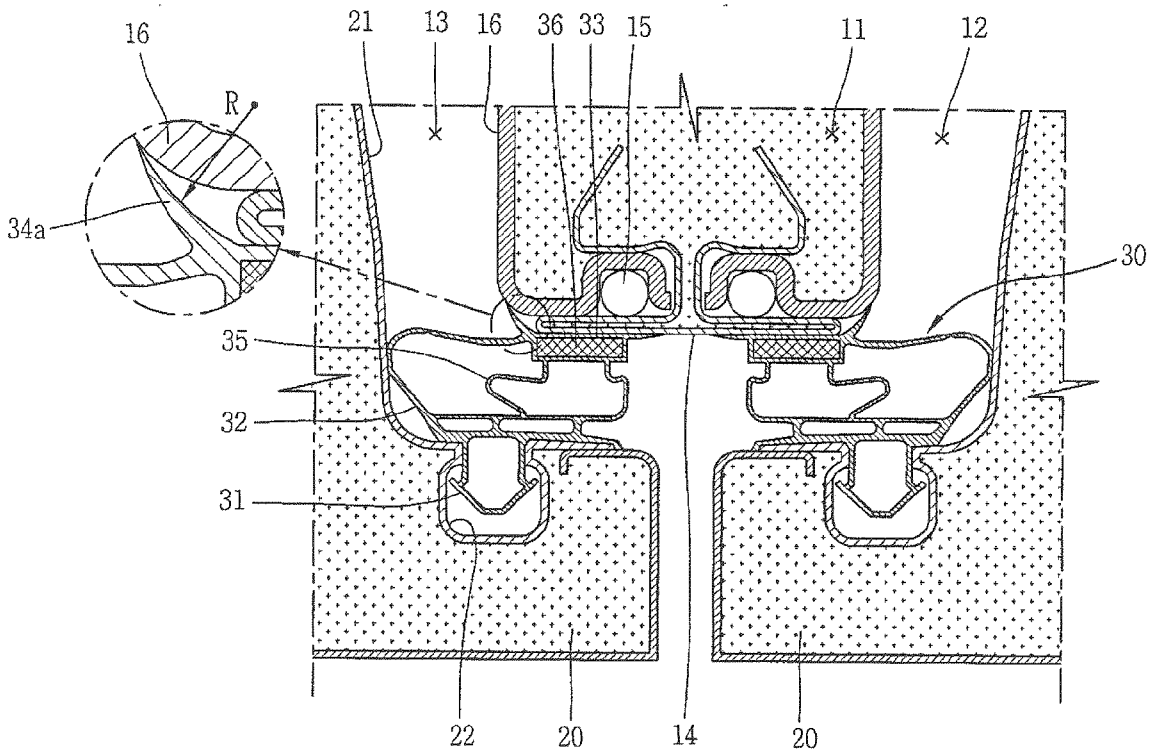
FIG. 4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