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(54) **REFRIGERATOR**

(57) A refrigerator is disclosed, including a case body (10) enclosing a storage space, and a heat insulation wall (20) disposed within the storage space. The storage space is divided into mutually isolated storage compartments (10a) by the heat insulation wall (20). The heat insulation wall (20) includes a vacuum glass module, and

the vacuum glass module includes at least two glass layers (21) disposed at a spacing and a vacuum heat insulation cavity (22) located between adjacent glass layers (21). This solution can reduce the thickness of the heat insulation wall and improve the storage performance of the refrigerator.

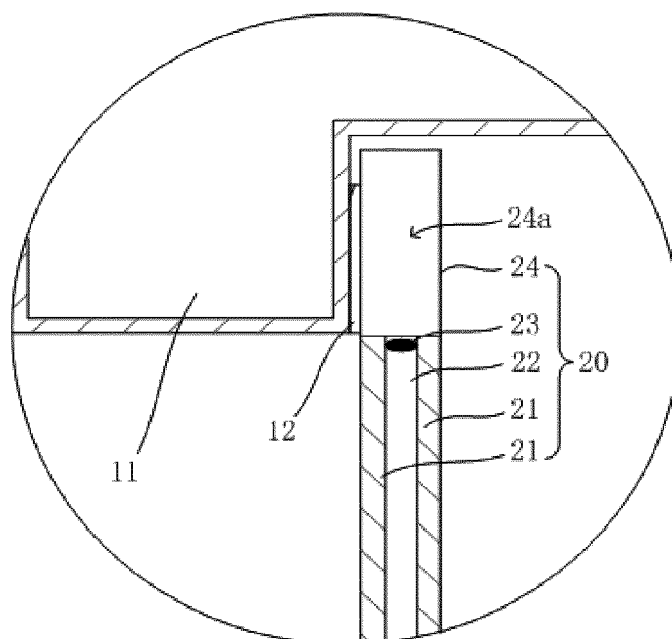


FIG. 3

Description

BACKGROUND

Technical Field

[0001] The present invention relates to the field of refrigeration appliances, and specifically, to a refrigerator.

Related Art

[0002] A refrigerator usually includes a plurality of storage compartments, and adjacent storage compartments are spaced by a heat insulation wall. In an existing refrigerator, a heat insulation wall and a case body are both foams. However, the heat insulation wall formed by means of foaming is relatively thick and occupies relatively large space for heat insulation. Consequently, space of a storage compartment is limited.

SUMMARY

[0003] The present invention provides an improved refrigerator to resolve the foregoing technical problem.

[0004] To resolve the foregoing problem, the present invention provides a refrigerator, including a case body enclosing a storage space, and a heat insulation wall disposed within the storage space. The storage space is divided into mutually isolated storage compartments by the heat insulation wall. The heat insulation wall includes a vacuum glass module, and the vacuum glass module includes at least two glass layers disposed at a spacing and a vacuum heat insulation cavity located between adjacent glass layers. The storage compartment may be a refrigeration compartment, a variable temperature compartment, or a freezing compartment.

[0005] In comparison with the prior art, the technical solution of the present invention has the following advantages: The vacuum glass module is used for the heat insulation wall to perform heat insulation between adjacent storage compartments. When heat insulation requirements are the same, the thickness of the vacuum glass module is significantly reduced compared with that of a heat insulation wall formed by means of foaming. In this way, space of the storage compartments can be enlarged and a storage capability of the refrigerator can be improved.

[0006] Optionally, the vacuum glass module may include a frame surrounding the glass layers, and the frame is supported on an inner wall of the case body.

[0007] Optionally, a heat isolation space may be provided within the frame, and the heat isolation space is filled with a foaming heat insulation material or the heat isolation space is an air layer to avoid leakage of cold air from the frame.

[0008] Optionally, the heat isolation space may be separated, in a direction surrounding the heat insulation wall, into a plurality of heat isolation spaces isolated from each

other, to impair mobility of air within the frame and improve the heat insulation performance of the frame.

[0009] Optionally, the case body may further include a support wall extending towards the storage space, and the heat insulation wall is supported on the support wall.

[0010] Optionally, the heat insulation wall may be provided with support walls on both sides of a thickness direction, and be sandwiched between the support walls.

[0011] Optionally, a heat insulation space filled with a foaming heat insulation material may be provided within the case body, and the heat insulation space extends into the support wall.

[0012] Optionally, the support wall may be provided with a reinforcement plate on a side towards the heat insulation wall, and be connected to the heat insulation wall by using the reinforcement plate, to improve the strength of the support wall and avoid deformation of the support wall during load-bearing.

[0013] Optionally, the support wall and the case body may be separately molded, and the support wall is fixedly connected to the case body.

[0014] Optionally, the vacuum glass module and the case body may be bonded. For example, the vacuum glass module and the case body are connected by using an adhesive material such as a double-sided adhesive tape or a hot melt adhesive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

FIG. 1 is a schematic planar structural diagram of a refrigerator according to a first embodiment of the present invention;

FIG. 2 is a schematic sectional structural diagram of FIG. 1 in a direction AA;

FIG. 3 shows a structure of a joint between a heat insulation wall and a case body in the refrigerator according to the first embodiment of the present invention;

FIG. 4 is a schematic sectional structural diagram of a refrigerator according to a second embodiment of the present invention in a direction AA; and

FIG. 5 shows a structure of a joint between a heat insulation wall and a case body in the refrigerator according to the second embodiment of the present invention.

DETAILED DESCRIPTION

[0016] To make the foregoing objectives, features, and advantages of the present invention more comprehensible, the following describes in detail the specific embod-

iments of the present invention with reference to the accompanying drawings.

First embodiment

[0017] This embodiment provides a refrigerator. Referring to FIG. 1, the refrigerator includes a case body 10 enclosing a storage space, and a heat insulation wall 20 disposed within the storage space. The storage space is divided into mutually isolated storage compartments 10a by the heat insulation wall 20.

[0018] The storage compartment 10a may be any one of a refrigeration compartment, a variable temperature compartment, or a freezing compartment. In addition to a lateral arrangement manner in FIG. 1, adjacent storage compartments 10a may be vertically arranged. In addition, the number of the storage compartments 10a may be two or more.

[0019] Referring to FIG. 2 and FIG. 3, different from the prior art, the heat insulation wall 20 in this embodiment includes a vacuum glass module, and the vacuum glass module includes at least two glass layers 21 disposed at a spacing and a vacuum heat insulation cavity 22 located between adjacent glass layers 21. The two adjacent glass layers 21 are sealed at a peripheral edge by using a sealing element 23, to form the vacuum heat insulation cavity 22.

[0020] Therefore, the vacuum glass module is used for the heat insulation wall to perform heat insulation between the adjacent storage compartments. When heat insulation requirements are the same, the thickness of the vacuum glass module is significantly reduced compared with that of a heat insulation wall formed by means of foaming. In this way, space of the storage compartments can be enlarged and a storage capability of the refrigerator can be improved.

[0021] The heat insulation wall 20 formed by the vacuum glass module is supported within the storage space. There may be a variety of connection manners between the heat insulation wall 20 and the case body. For example, a frame 24 surrounding the glass layers 21 is disposed at a circumferential edge of the vacuum glass module and the vacuum glass module is supported on an inner wall of the case body 10 by using the frame 24.

[0022] To avoid leakage of cold air from the frame 24, a heat isolation space 24a may be provided within the frame 24, and the heat isolation space 24a may be full of air or be filled with a foaming heat insulation material. When the heat isolation space 24a is an air layer, the heat isolation space 24a is separated, in a direction surrounding the heat insulation wall 20, into a plurality of heat isolation spaces isolated from each other, to impair mobility of air within the frame 24 and improve the heat insulation performance of the frame 24.

[0023] Still referring to FIG. 3, the case body 10 further includes a support wall 11 extending towards the storage space, and the heat insulation wall 20 is supported on the support wall 11. Specifically, in a thickness direction

of the heat insulation wall 20, the heat insulation wall 20 is disposed on a side of the support wall 11, and surfaces of the heat insulation wall 20 and the support wall 11 facing each other are connected by using an adhesive.

5 The adhesive may be an adhesive material such as a hot melt adhesive or a double-sided adhesive tape.

[0024] When the heat insulation wall 20 is bonded into the support wall 11, the support wall 11 bears the weight of the heat insulation wall 20 as a load-bearing element. To avoid deformation of the support wall 11 during load-bearing, the support wall 11 may further be provided with a reinforcement plate 12 on a side towards the heat insulation wall 20, and be connected to the heat insulation wall 20 by using the reinforcement plate 12.

10 **[0025]** It should be noted that, in this embodiment, the support wall 11 is a part of the case body. A heat insulation space filled with a foaming heat insulation material is provided within the case body, and the heat insulation space extends into the support wall 11. That is, a heat insulation space is also provided within the support wall 11, and the heat insulation space is a part of the heat insulation space of the case body and is also filled with a foaming heat insulation material.

15 **[0026]** In another embodiment, the support wall may alternatively be an element independent of the case body. That is, the support wall and the case body are separately molded, and the support wall is fixedly connected to the case body.

Second embodiment

20 **[0027]** Referring to FIG. 4 and FIG. 5, a difference between this embodiment and the first embodiment lies in that structures of support walls are different. In this embodiment, the heat insulation wall 20 is provided with support walls 11 on both sides of a thickness direction, an insertion groove is formed between the support walls 11 on the two sides of the heat insulation wall 20, and the heat insulation wall 20 is inserted in the insertion groove between the support walls 11.

25 **[0028]** The connection manner between the heat insulation wall 20 and the support wall 11 is the same as that in Embodiment.

30 **[0029]** In other embodiments, the insertion groove may alternatively be recessed on the inner wall of the case body directly. That is, a support wall is not disposed on the inner wall of the case body 10 by extending towards the storage space. Instead, a groove is recessed on the inner wall of the case body 10 away from the storage space, a groove wall of the groove is used as a support wall, and the heat insulation wall is inserted in the groove and connected to the support wall.

35 **[0030]** Although the present invention is disclosed above, the present invention is not limited thereto. Any person skilled in the art may make various changes and modifications thereto without departing from the spirit or scope of the present invention. Therefore, the protection scope of the present invention shall be subject to the

scope defined by the claims.

Claims

1. A refrigerator, comprising a case body (10) enclosing a storage space, and a heat insulation wall (20) disposed within the storage space, the storage space being divided into mutually isolated storage compartments (10a) by the heat insulation wall (20), **characterized in that**, the heat insulation wall (20) comprises a vacuum glass module, and the vacuum glass module comprises at least two glass layers (21) disposed at a spacing and a vacuum heat insulation cavity (22) located between adjacent glass layers (21). 5
2. The refrigerator according to claim 1, **characterized in that**, the vacuum glass module comprises a frame (24) surrounding the glass layers (21), and the frame (24) is supported on an inner wall of the case body (10). 10
3. The refrigerator according to claim 2, **characterized in that**, a heat isolation space (24a) is provided within the frame (24), and the heat isolation space (24a) is filled with a foaming heat insulation material or the heat isolation space (24a) is an air layer. 15
4. The refrigerator according to claim 3, **characterized in that**, the heat isolation space (24a) is separated, in a direction surrounding the heat insulation wall (20), into a plurality of heat isolation spaces isolated from each other. 20
5. The refrigerator according to one of the preceding claims, **characterized in that**, the case body (10) further comprises a support wall (11) extending towards the storage space, and the heat insulation wall (20) is supported on the support wall (11). 25
6. The refrigerator according to claim 5, **characterized in that**, the heat insulation wall (20) is provided with support walls (11) on both sides of a thickness direction, and is sandwiched between the support walls (11). 30
7. The refrigerator according to claim 5 or 6, **characterized in that**, a heat insulation space filled with a foaming heat insulation material is provided within the case body (10), and the heat insulation space extends into the support wall (11). 35
8. The refrigerator according to one of the claims 5 to 7, **characterized in that**, the support wall (11) is provided with a reinforcement plate (12) on a side towards the heat insulation wall (20), and is connected to the heat insulation wall (20) by using the rein- 40

forcement plate (12).

9. The refrigerator according to one of the claims 5 to 8, **characterized in that**, the support wall (11) and the case body (10) are separately molded, and the support wall (11) is fixedly connected to the case body (10). 45
10. The refrigerator according to one of the preceding claims, **characterized in that**, the vacuum glass module and the case body (10) are bonded by using an adhesive material. 50
11. The refrigerator according to claim 10, **characterized in that**, the adhesive material is a double-sided adhesive tape or a hot melt adhesive. 55
12. The refrigerator according to one of the preceding claims, **characterized in that**, the storage compartment (10a) is a refrigeration compartment, a variable temperature compartment, or a freezing compartment.

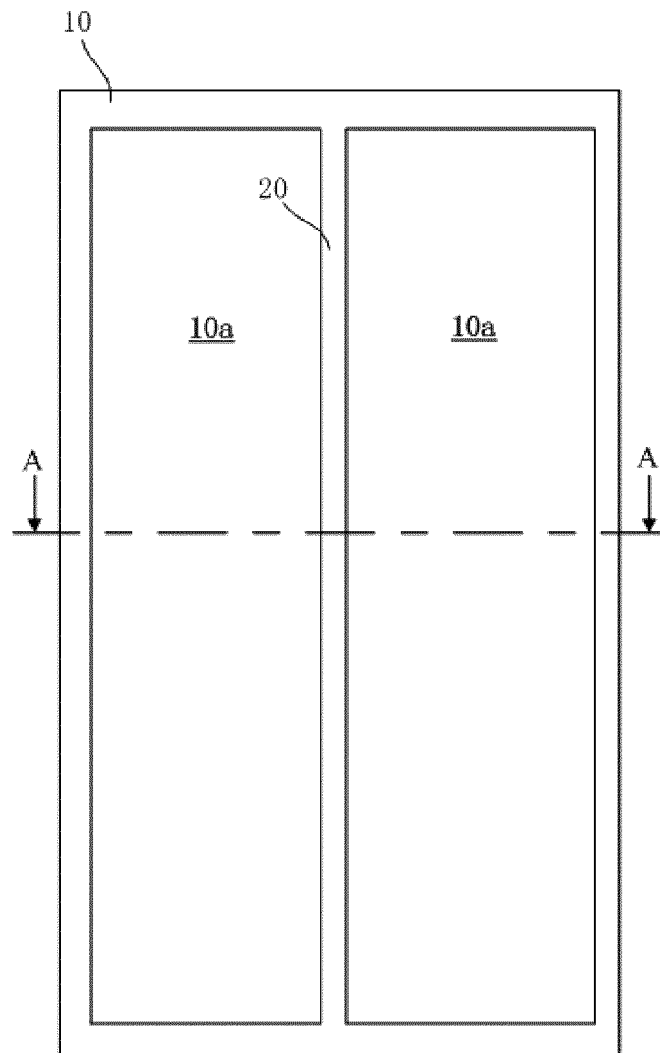


FIG. 1

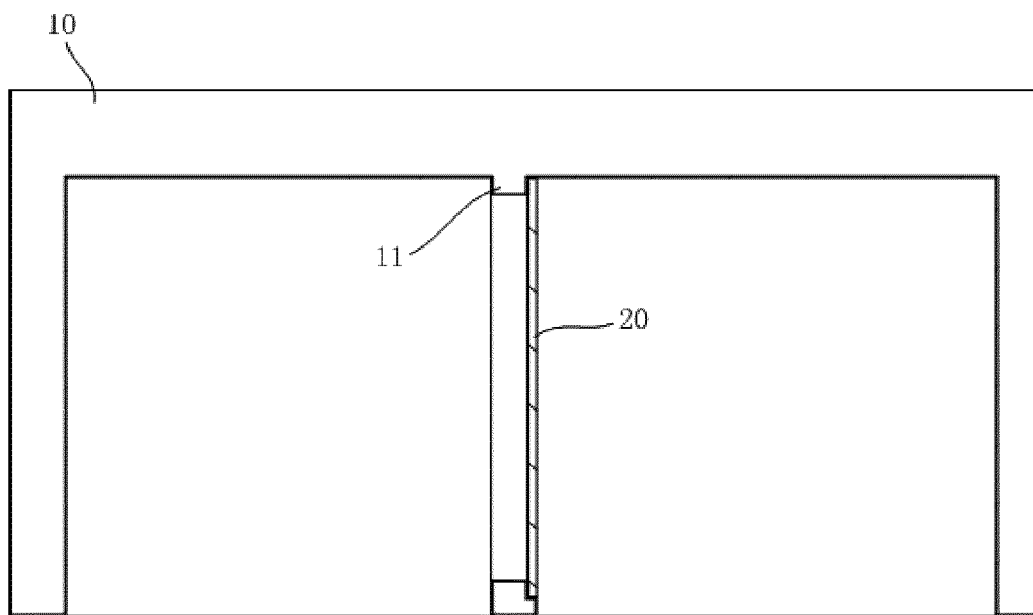


FIG. 2

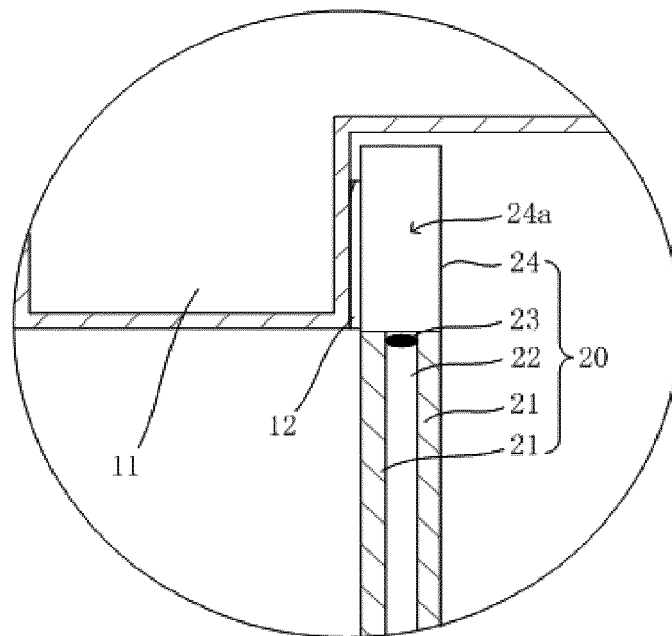


FIG. 3

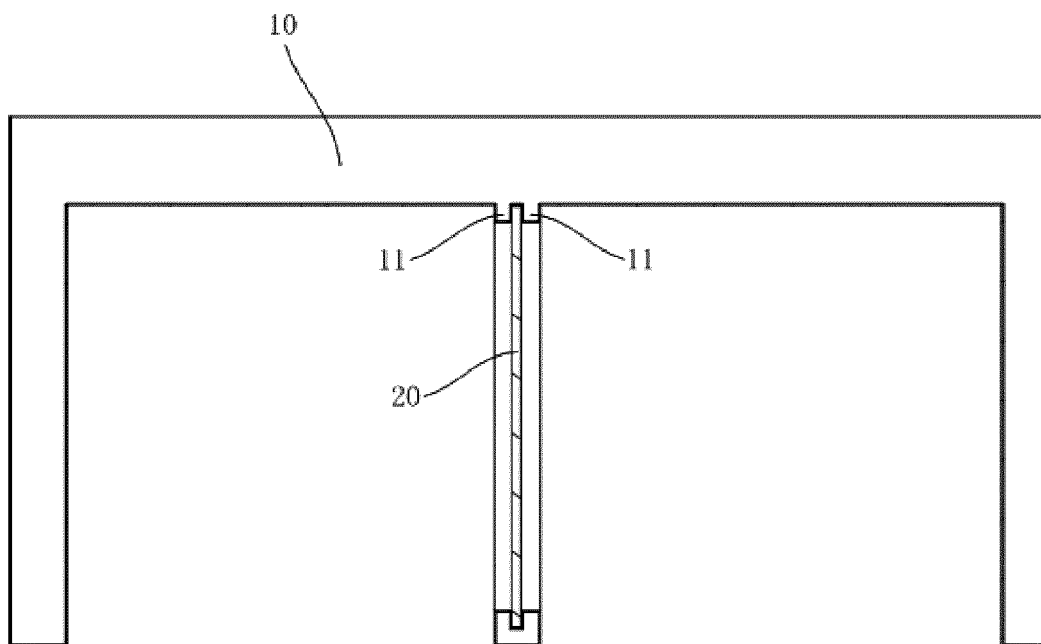


FIG. 4

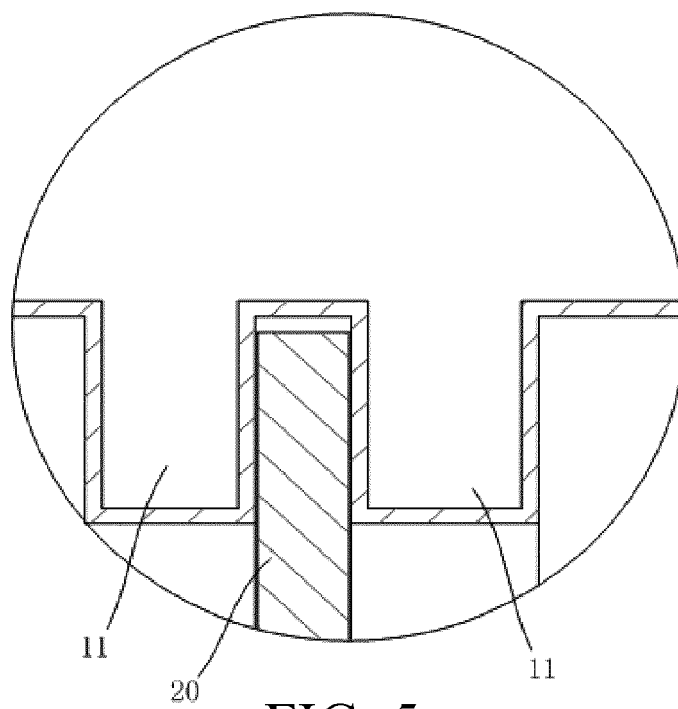


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 18 15 9535

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 887 298 A1 (MATSUSHITA ELECTRIC IND CO LTD [JP]) 13 February 2008 (2008-02-13) * paragraphs [0009] - [0160]; figures 1-13 *	1-5, 10-12	INV. F25D23/06 A47F3/04
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			TECHNICAL FIELDS SEARCHED (IPC)
			F25D A47F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 July 2018	Examiner Kolev, Ivelin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 15 9535

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82