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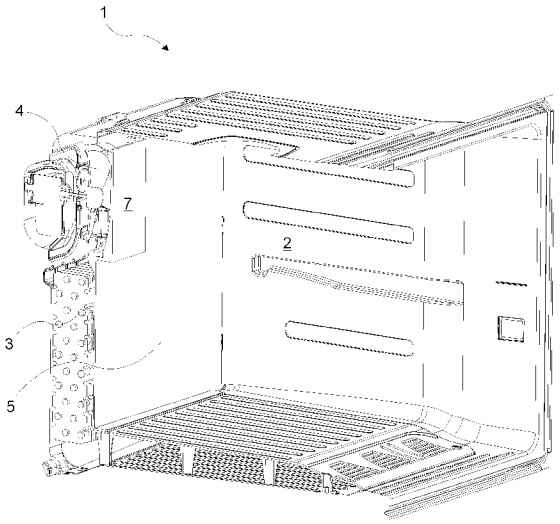
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(54) Title: A REFRIGERATOR

Figure 2



(57) Abstract: The present invention relates to a refrigerator (1) comprising a body (2) wherein items to be cooled are placed, an evaporator (3), a fan (4) that blows the air around the evaporator (3) into the body (2), a rear wall (5) that is disposed on the body (2), a fan (4) that is disposed on the body (2) so as to be behind the rear wall (5) of the body (2), an opening (6) that enables the air blown by the fan (4) to reach the inside of the body (2), and a lid (7) that is mounted around the opening.

Description

A REFRIGERATOR

[0001] The present invention relates to a refrigerator that can be used safely and wherein homogeneous air distribution is provided inside the body.

[0002] Refrigerators comprise an opening provided inside the body and through which the cold air around the evaporator is transferred into the body. A fan that transmits the air around the evaporator to the opening is provided behind the said opening. A lid is disposed on the opening to prevent the user from directly reaching the fan. Lids with holes thereon are available in the state of the art. However, these holes provided on the said lids cannot completely prevent access to the fan and cannot provide sufficient safety against the risk of an object or a limb sized as the hole getting caught on or going in the said holes. Moreover, the lid is also required to provide a homogenous air distribution inside the body.

[0003] In the state of the art Japanese Patent Application No. JP4082925, a lid is explained, that is disposed inside the refrigerator and that at least partially covers the opening on the body.

[0004] The aim of the present invention is the realization of a refrigerator wherein homogeneous air distribution is provided inside the body.

[0005] Another aim of the present invention is the realization of a refrigerator that can be used safely.

[0006] The refrigerator realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a rear wall facing the door provided on the body, a fan that remains behind the rear wall and an opening arranged on the rear wall. The refrigerator comprises an imperforate lid that faces the opening when placed on the body, that prevents access to the opening from the front side and that has a width at least as much as the opening.

[0007] In an embodiment of the present invention, the lid is mounted to the rear wall so as to allow air passage between the rear wall and the lid. At least one extension is disposed on the lid seated on the rear wall. The lid is fixed to the rear wall by connecting the said extension to the rear wall. The length of the extension determines the distance between the lid and the

rear wall.

[0008] In an embodiment of the present invention, the gap between the lid and the rear wall does not have a fixed width around the lid, but has a variable width.

[0009] In an embodiment of the present invention, the lid comprises at least two quadrilateral edges one of which is closer to the rear wall with respect to the other when the lid is placed on the rear wall. Edges with different widths are provided on the lid. Thus, the gaps between the lid and the rear wall vary for each edge.

[0010] In an embodiment of the present invention, the lid comprises an inclined inner surface that extends towards the edge and that faces the opening when the lid is placed on the rear wall. Thus, the air blown from the opening is directed towards the edges of the lid by the curved surface.

[0011] By means of the present invention, a refrigerator is realized wherein the risk of getting caught on the fan or the risk of an object getting caught on the fan is eliminated and furthermore the heat distribution inside the body is kept homogeneous.

[0012] A refrigerator realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0013] Figure 1 – is the partial schematic view of a refrigerator.

[0014] Figure 2 – is the partial schematic view of the refrigerator when the lid is closed in an embodiment of the present invention.

[0015] Figure 3 – is the perspective view of the lid.

[0016] The elements illustrated in the figures are numbered as follows:

1. Refrigerator
2. Body
3. Evaporator
4. Fan
5. Rear wall
6. Opening
7. Lid
8. Surface
9. Extension

[0017] The refrigerator (1) comprises a body (2) wherein items to be cooled are placed, an evaporator (3), a fan (4) that blows the air around the evaporator (3) into the body (2), a rear wall (5) that separates the evaporator (3) and the inner volume of the body (2) from each other, a fan (4) that is disposed behind the rear wall (5), and an opening (6) that is arranged on the rear wall (5) and that enables the air blown by the fan (4) to reach the inside of the body (2).

[0018] The refrigerator (1) of the present invention comprises a lid (7) that is mounted around the opening (6) so as to close the front of the opening (6) and that directs the air blown from the fan (4) and impacting thereon towards the gaps between the rear wall (5) and the lid (7) (Figure 1, Figure 2, Figure 3).

[0019] The fan (4) remaining behind the opening (6) cannot be seen thanks to the lid (7) placed on the opening (6). Moreover, the user is prevented from reaching the fan (4) from the front of the opening (6). The cold air blown into the body (2) by the fan (4) flows towards the sides of the lid (7) by hitting the lid (7) and reaches the inside of the body (2) from between the lid (7) and the rear wall (5). Thus, the air blown from the opening (6) does not directly contact the foodstuffs to be cooled inside the body (2) and contacts the foodstuffs inside the body (2) after being distributed to the sides by the lid (7).

[0020] In an embodiment of the present invention, the lid (7) is mounted to the rear wall (5) such that a distance remains between the rear wall (5) and the lid (7). The air blown by the fan (4) reaches the inside of the body (2) through the gaps formed by the distance between the lid (7) and the rear wall (5).

[0021] In an embodiment of the present invention, a variable distance is provided between the lid (7) and the rear wall (5). Thus, the said distances predetermined by the producer enable the air blown by the fan (4) to be homogeneously distributed inside the body (2) and to be distributed almost equally in every direction from around the lid (7). By means of the air blown by the fan (4) passing through gaps with different cross-sections, cold air with the same flow rate is delivered to every direction around the

lid (7).

[0022] In an embodiment of the present invention, the lid (7) comprises at least two quadrilateral edges one of which is closer to the rear wall (5) with respect to the other when the lid (7) is placed on the rear wall (5). Edges with different widths are provided on the lid (7). Thus, the gaps between the lid (7) and the rear wall (5) vary for each edge.

[0023] In an embodiment of the present invention, the lid (7) comprises a curved inner surface (8) that extends towards the edge and that faces the opening (6) when the lid (7) is placed on the rear wall (5). Thus, the air blown from the opening (6) is directed towards the edges of the lid (7) by the curved surface (8). The said surface (8) has an inclination that increases from the center of the lid (7) towards the edge thereof.

[0024] In an embodiment of the present invention, the refrigerator (1) comprises at least one extension (9) that is disposed on the lid (7) and that enables the lid (7) to be connected to the rear wall (5). The lid (7) is fixed to the rear wall (5) by connecting the said extension (9) to the rear wall (5). The length of the extension (9) determines the distance between the lid (7) and the rear wall (5).

[0025] In an embodiment of the present invention, the lid (7) has edges with different thicknesses from one another. Different edge thicknesses enable the formation of different gaps between the edges of the lid (7) and the rear wall (5). Thus, air can be delivered to the location in the body (2) desired by the producer with the desired flow rate.

[0026] In an embodiment of the present invention, the lid (7) is mounted to the rear wall (5) so as to be parallel to the rear wall (5). The surface (8) of the lid (7) is parallel to the rear wall (5).

[0027] By means of the present invention, a refrigerator (1) is realized, that comprises a lid (7) that prevents direct access to the fan (4), that enables the air to be homogeneously distributed inside the body (2) and that almost entirely closes the front of the opening (6).

Claims

1. A refrigerator (1) **comprising** a body (2) wherein items to be cooled are placed, an evaporator (3), a fan (4) that blows the air around the evaporator (3) into the body (2), a rear wall (5) that separates the evaporator (3) and the inner volume of the body (2) from each other, a fan (4) that is disposed behind the rear wall (5) and an opening (6) that is arranged on the rear wall (5) and that enables the air blown by the fan (4) to reach the inside of the body (2), **characterized by** a lid (7) that is mounted around the opening (6) so as to close the front of the opening (6) and that directs the air blown from the fan (4) and impacting thereon towards the gaps between the rear wall (5) and the lid (7).
2. A refrigerator (1) as in Claim 1, **characterized by** the lid (7) that is mounted to the rear wall (5) such that a distance remains between the rear wall (5) and the lid (7).
3. A refrigerator (1) as in Claim 1 or 2, **characterized by** the lid (7) having a variable distance to the rear wall (5).
4. A refrigerator (1) as in any one of the above claims, **characterized by** the lid (7) having at least two quadrilateral edges one of which is closer to the rear wall (5) with respect to the other when the lid (7) is placed on the rear wall (5).
5. A refrigerator (1) as in any one of the above claims, **characterized by** a curved inner surface (8) that extends towards the edge and that faces the opening (6) when the lid (7) is placed on the rear wall (5).
6. A refrigerator (1) as in any one of the above claims, **characterized by** at least one extension (9) that is disposed on the lid (7) and that enables the lid (7) to be connected to the rear wall (5).
7. A refrigerator (1) as in any one of the above claims, **characterized by** the lid (7) that has edges with different thicknesses from one another.
8. A refrigerator (1) as in any one of the above claims, **characterized by** the lid (7) that is mounted to the rear wall (5) so as to be parallel to the rear wall (5).

Figure 1

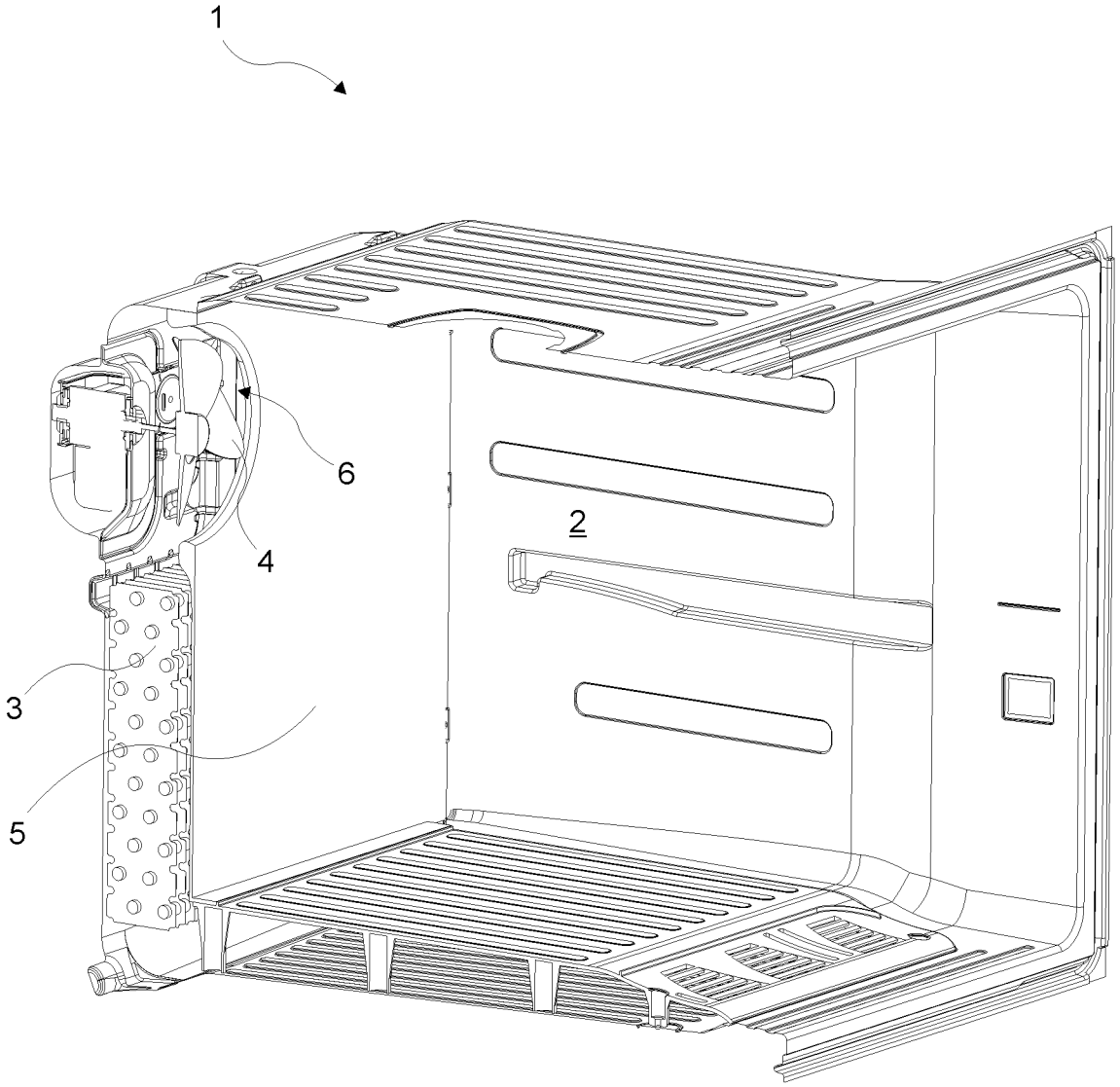


Figure 2

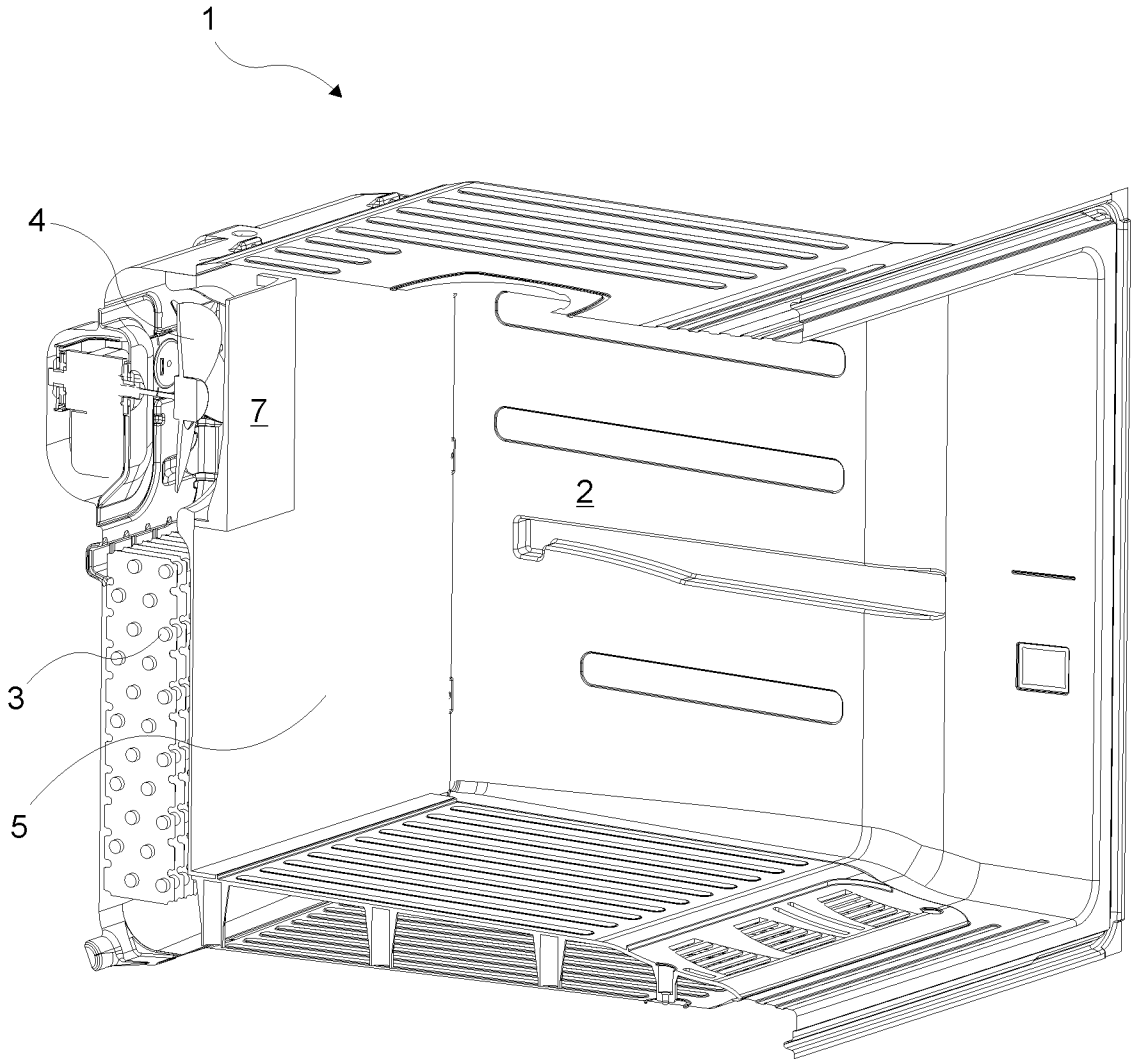
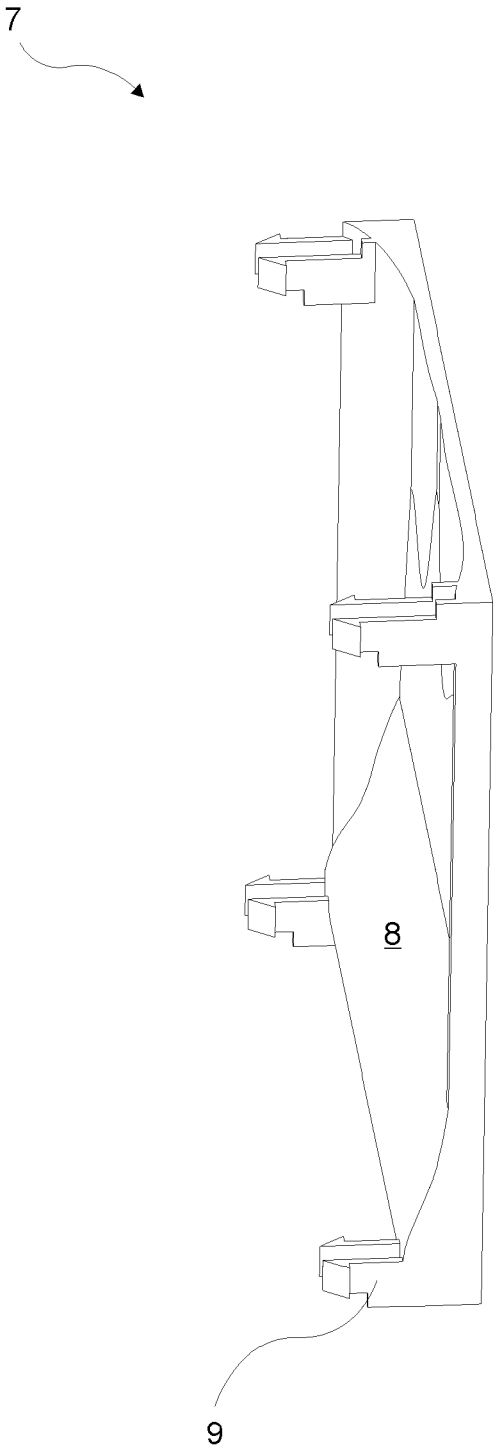


Figure 3



INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. F25D17/06
ADD.

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)
F25D

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/120099 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]; SCHUBERT JAN-GRIGOR [DE]; STELZER) 16 November 2006 (2006-11-16)	1-3,5-8
Y	page 1, line 8 - line 11; figures 1,3,6	4
Y	DE 10 2011 013351 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 13 September 2012 (2012-09-13) figure 5	4
X	US 4 059 966 A (TRUE JR HOWARD D F) 29 November 1977 (1977-11-29) figure 2	1,2,5,8
X	DE 20 2005 012627 U1 (LIEBHERR HAUSGERAETE [DE]) 5 October 2006 (2006-10-05) paragraphs [0027], [0030]; figures 3-5	1,2,8

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 January 2015	28/01/2015

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2014/072982

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 590 596 A (JOHNSON ROY V) 6 July 1971 (1971-07-06) figures 1,2	1,2,5,8
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2014/072982

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