(19) Europäisches Patentamt
European Patent Office
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(11) **EP 1 939 554 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.07.2008 Bulletin 2008/27

(51) Int Cl.:
F25D 3/08 *(2006.01)* ***F25D 16/00*** *(2006.01)*
F25D 17/06 *(2006.01)*

(21) Application number: **06425862.7**

(22) Date of filing: **28.12.2006**

(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 LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

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(54) **Container with eutectic plate and refrigerator with such a container**

(57) A container is described capable of being refrigerated by a frost-free refrigerator; the refrigerator comprises at least one first (300) and one second (400) opening and the container is capable of containing food to be refrigerated. The container is thermally insulated and comprises at least one eutectic plate (5), an opening (3) for the inflow of cold air connectable to said first opening (300) on the refrigerator and a further opening (4) for the outflow of said air from the container connectable to said second opening (400) on the refrigerator.

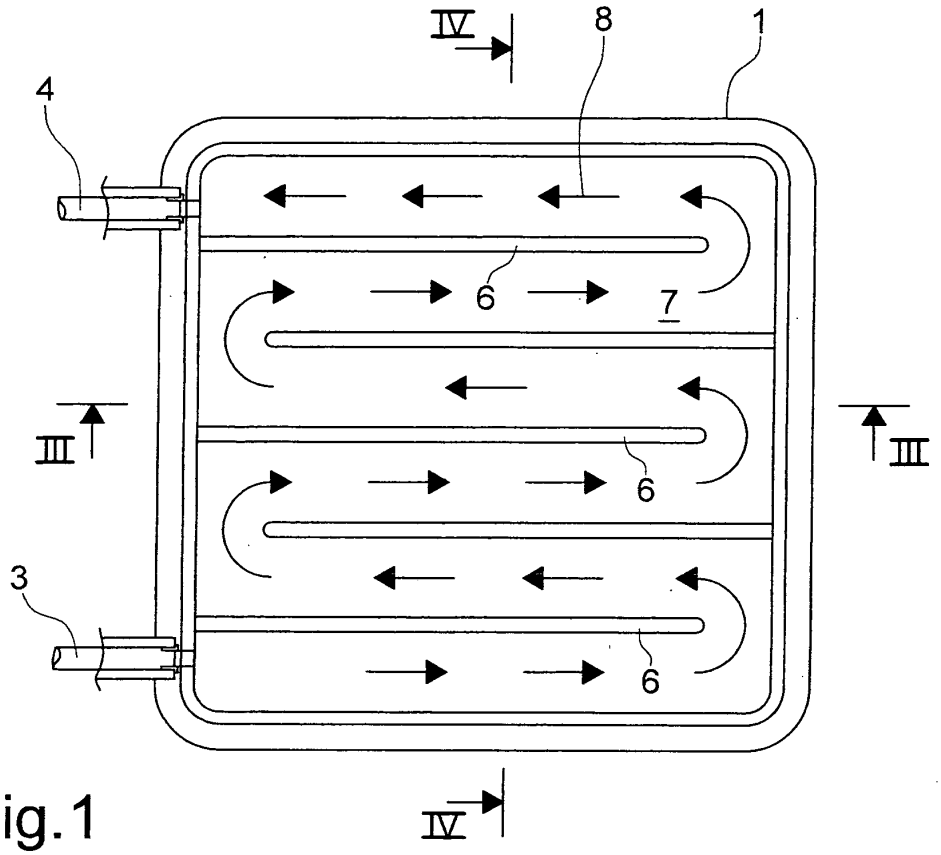

Fig.1

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Description

[0001] The present invention refers to a container for a refrigerator and relative refrigerator.

[0002] Current refrigerators for domestic use normally comprise at least two compartments at different temperatures, one at a higher temperature (typically between +3°C and +6°C) for fresh foodstuffs and the other at a lower temperature (typically -18°C) for frozen and deep-frozen food. Each of the two compartments is equipped with a respective evaporator, or with a respective portion of the same evaporator, which forms part of a normal refrigerating circuit with compressor and condenser.

[0003] These refrigerators are generally "frost-free", i.e. equipped with means capable of preventing the formation of frost. For this reason a so-called "ventilated" evaporator, i.e. one which is subjected to forced air circulation, is provided in the lower-temperature compartment.

[0004] Normally it is possible for domestic refrigerators in some circumstances not to have the capacity necessary for containing all the food to be refrigerated, for example when a greater number of people is present than normal.

[0005] In view of the state of the art described, the object of the present invention is to provide a container for a refrigerator which allows the above disadvantages to be overcome.

[0006] In accordance with the present invention, this object is achieved by means of a container capable of being refrigerated by a frost-free refrigerator, said refrigerator comprising at least one first and one second opening and said container being capable of containing food to be refrigerated, characterised by the fact of being thermally insulated and of comprising at least one eutectic plate, an opening for the inflow of cold air connectable to said first opening on the refrigerator and a further opening for the outflow of said air from the container connectable to said second opening of the refrigerator.

[0007] Still in accordance with the present invention it is possible to provide a refrigerator as defined in claim 10.

[0008] The characteristics and advantages of the present invention will become evident from the following detailed description of its practical embodiments, which are illustrated by way of non-limiting examples in the attached drawings, in which:

figure 1 is a schematic view on plan of a container for a refrigerator in accordance with a first embodiment of the present invention;
figure 2 is a schematic lateral view of the container for a refrigerator shown in figure 1;
figure 3 is a schematic view in vertical section along line III-III of the container for a refrigerator shown in figure 1;
figure 4 is a schematic view in transverse section along line VI-VI of the container for a refrigerator shown in figure 1;
figure 5 is a schematic lateral view of a container for a refrigerator in accordance with a second embodiment of the present invention;
figure 6 is also a schematic lateral view of the container for a refrigerator in accordance with the second embodiment of the present invention;
figure 7 is a schematic view in section along line VII-VII of the container for a refrigerator shown in figure 6;
figure 8 is a schematic view in transverse section of the container for a refrigerator shown in figure 6;
figure 9 is a schematic view in vertical section of a refrigerator with the container shown in figure 1;
figure 10 is a schematic frontal view of the refrigerator shown in figure 9.

[0009] With reference to figures 1-4, a container for a refrigerator is shown in accordance with a first embodiment of the present invention. The container comprises a compartment 1 capable of housing food to be refrigerated and another compartment 2 into which flows cold air coming from a refrigerating apparatus through a port 3; the cold air flows out through another port 4. Ports 3 and 4 consist of insulated tubular elements preferably made of plastic. Compartment 1 is separated from compartment 2 by means of a plurality of eutectic plates 5 arranged in the manner of a separating wall; the plates 5 are arranged on a plurality of elements 6 connected to the lower wall 7 of the container. The elements 6 are arranged in such a way as to force the cold air coming from opening 3 along a particular path 8 inside the container. Path 8 is preferably of serpentine type and consequently the elements 6 are arranged substantially parallel to each other and parallel to the lateral walls 9 of the container; the serpentine path means a longer stay for the cold air inside the container and therefore faster cooling of the eutectic plates 5. The container is provided with a removable cover 10.

[0010] The container is thermally insulated so as to maintain a constant temperature for a determinate period of time; the eutectic plates 5 contribute to maintaining said temperature constant for a longer period of time. In this way the container is capable of preserving foodstuffs for a determinate period of time.

[0011] The container is also fitted with closing stoppers and/or valves with quick connections 11 for ports 3 and 4, preferably in polyethylene, to avoid possible falls in temperature through contact between the interior of the container and the external environment after the container has been refrigerated.

[0012] In figures 5-8, a container for a refrigerator is shown in accordance with a second embodiment of the present invention. The container in figures 5-8 differs from the container in figures 1-4 in that compartment 1 has a removable insulated tent-like cover 20. The cover 20 is supported by a frame 21 of adjustable height so as to utilise the minimum volume in relation to the quantity of food to be kept. Cover 20 has a sealing rim 22 capable

of engaging with a suitable rim on the container for sealing container 1. The container has an overall size variable between a minimum shown in figure 5 and a maximum shown in figure 6.

[0013] Figures 9 and 10 show a refrigerator equipped with a container as described above; the container from figures 1-4 is shown by way of example. The refrigerator is of the frost-free type and includes a freezer compartment 100 and a refrigerator compartment 200 at a lower temperature than the freezer compartment 100.

[0014] The refrigerator comprises preferably two pipes 300 and 400 connected to the refrigerating circuit 500; the openings in pipes 300 and 400 engage uniquely with ports 3 and 4 on the container for the inflow and outflow of cold air. Cold air coming from the refrigerating circuit 500 is forced through pipe 300, while air flows out through pipe 400 towards the refrigerating circuit 500. Once the container is refrigerated, it can be removed from the refrigerator, after closing ports 3 and 4 with stoppers 10 .

[0015] The refrigerator can include a first and a second opening in the pipes for the inflow and outflow of the forced air from the refrigerating circuit 500 inside the refrigerator; in said first and second openings, ports 3 and 4 on the container in figure 1 or figure 5 engage.

Claims

1. Container capable of being refrigerated by a frost-free refrigerator, said refrigerator comprising at least one first (300) and one second (400) opening and said container being capable of containing food to be refrigerated, **characterised by** the fact of being thermally insulated and in comprising at least one eutectic plate (5), an opening for the inflow of cold air connectable to said first opening (300) on the refrigerator and a further opening (4) for the outflow of said air from the container connectable to said second opening (400) on the refrigerator.

2. Container according to claim 1, **characterised by** the fact of including a compartment (1) capable of containing foodstuffs, and a further compartment (2), separated from the first by at least one eutectic plate (5) arranged in the manner of a dividing wall, said further compartment (2) comprising said openings (3, 4) for the flow and return of air.

3. Container according to claim 2, **characterised by** the fact of comprising a grille of elements (6) integral with the bottom wall (7) of the container and capable of imposing a serpentine path (8) on the flow of air inside the container.

4. Container according to claim 3, **characterised by** the fact of including at least two eutectic plates (5) located on the elements (6) of said grille.

5. Container according to claim 2, **characterised in that** said compartment (1) comprises a removable cover (10).

6. Container according to claim 2, **characterised in that** said compartment (1) comprises a tent-like removable cover (20).

7. Container according to claim 1, **characterised in that** said opening (3) and said further opening (4) are thermally insulated tubular elements.

8. Container according to claim 1, **characterised by** the fact of including closing stoppers for said openings.

9. Container according to claim 1, **characterised by** the fact of comprising valves with quick connections at said openings.

10. Refrigerator of frost-free type comprising a container as defined in claims 1 to 9.

11. Refrigerator according to claim 10, **characterised by** the fact of comprising a refrigerating circuit (500) and a pipe (300) capable of engaging with said opening (3) on the container for the flow of cold air and a further pipe (400) capable of engaging with the further opening (4) on the container for the outflow of the air from the container.

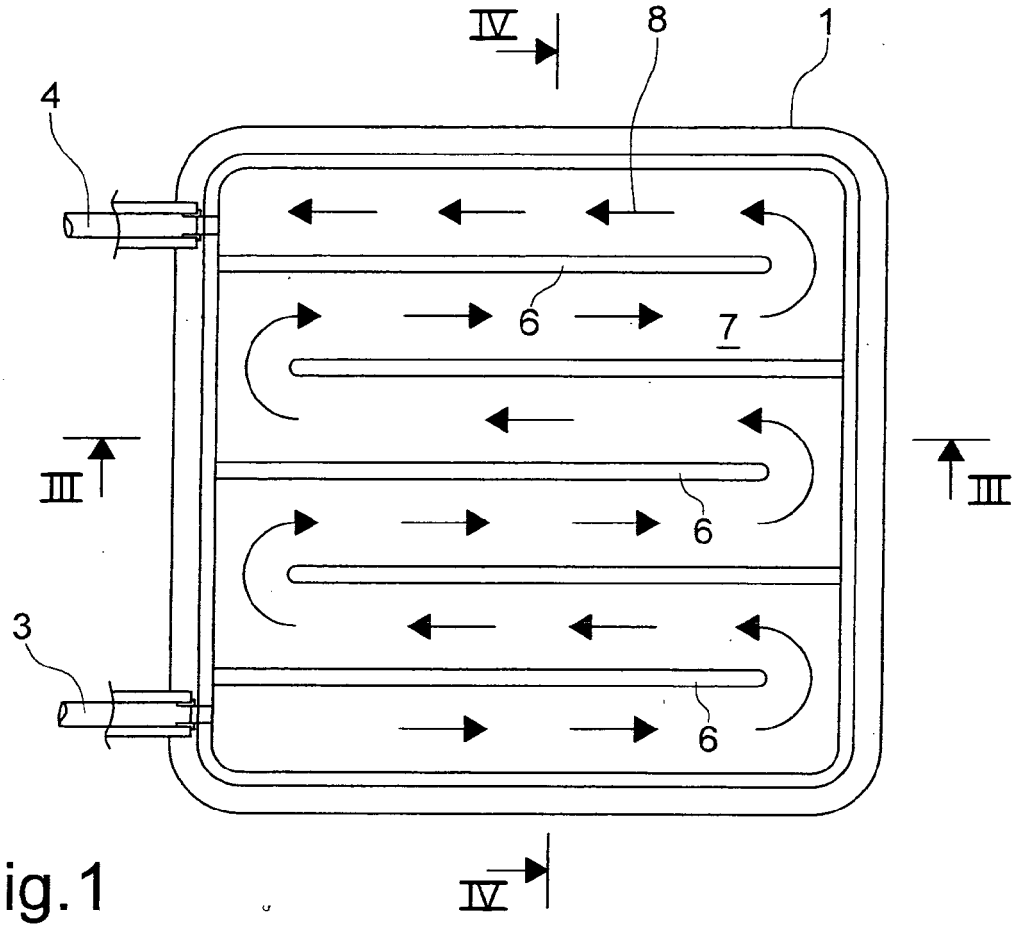

Fig.1

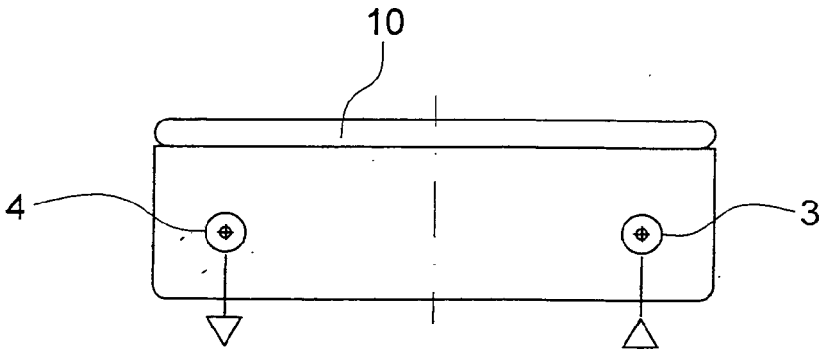

Fig.2

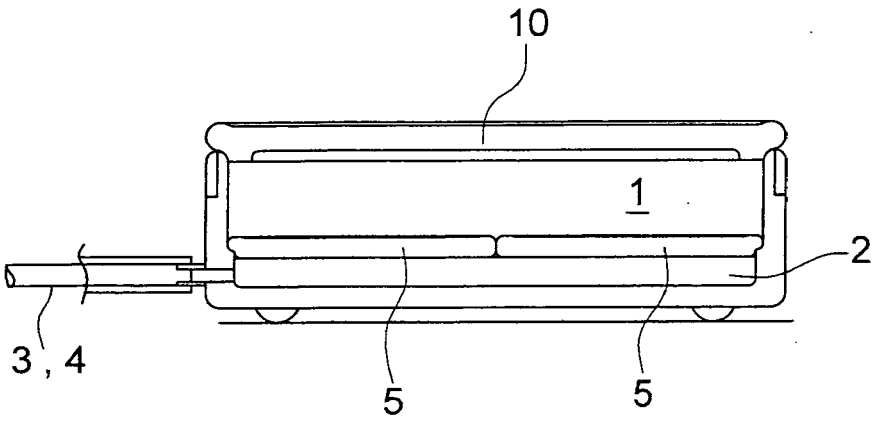

Fig.3

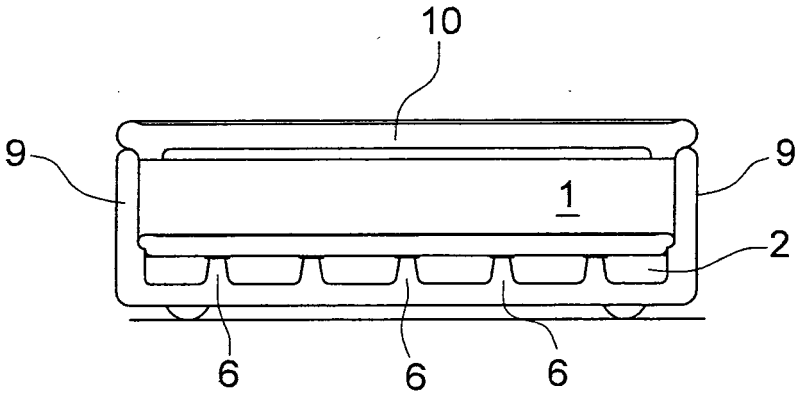

Fig.4

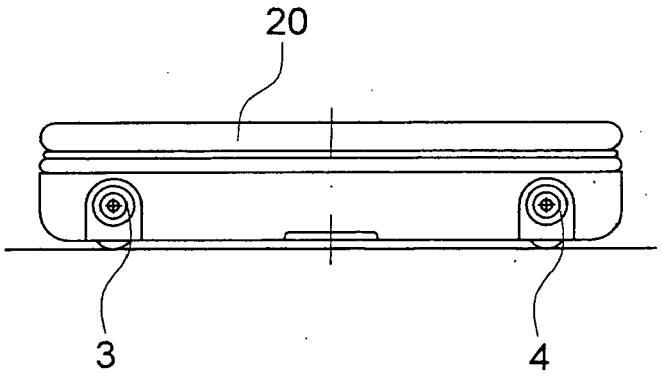

Fig.5

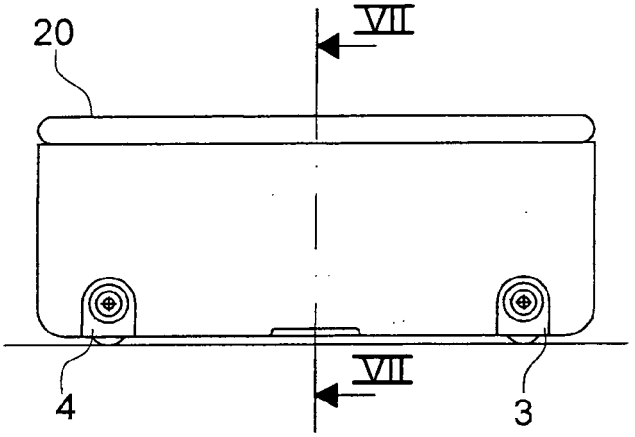

Fig.6

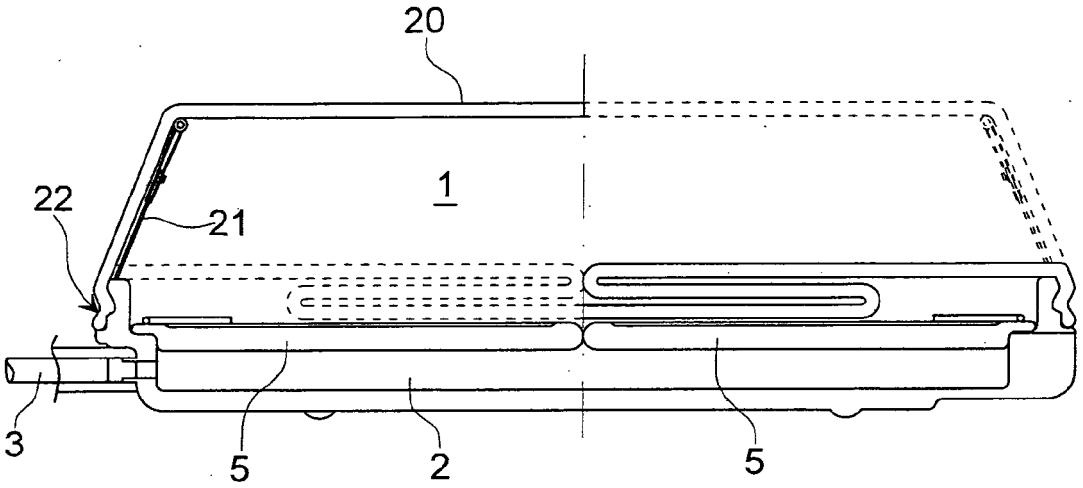

Fig.7

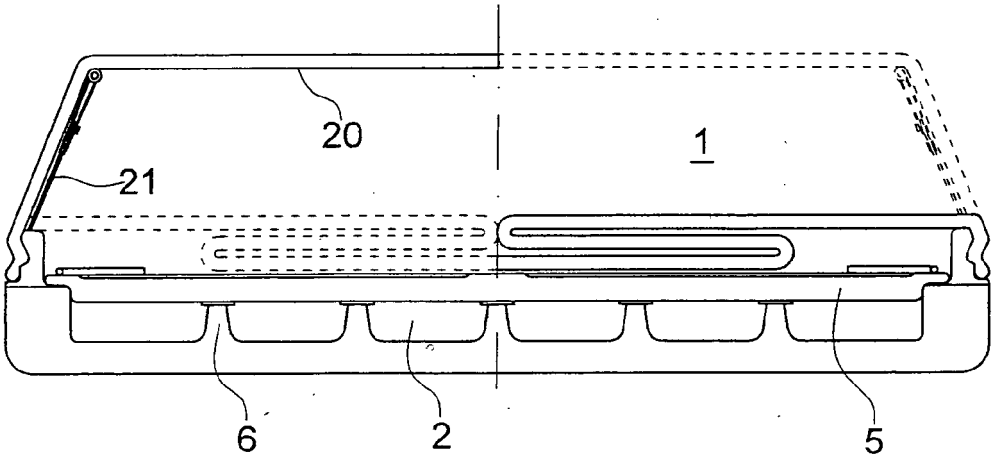

Fig.8

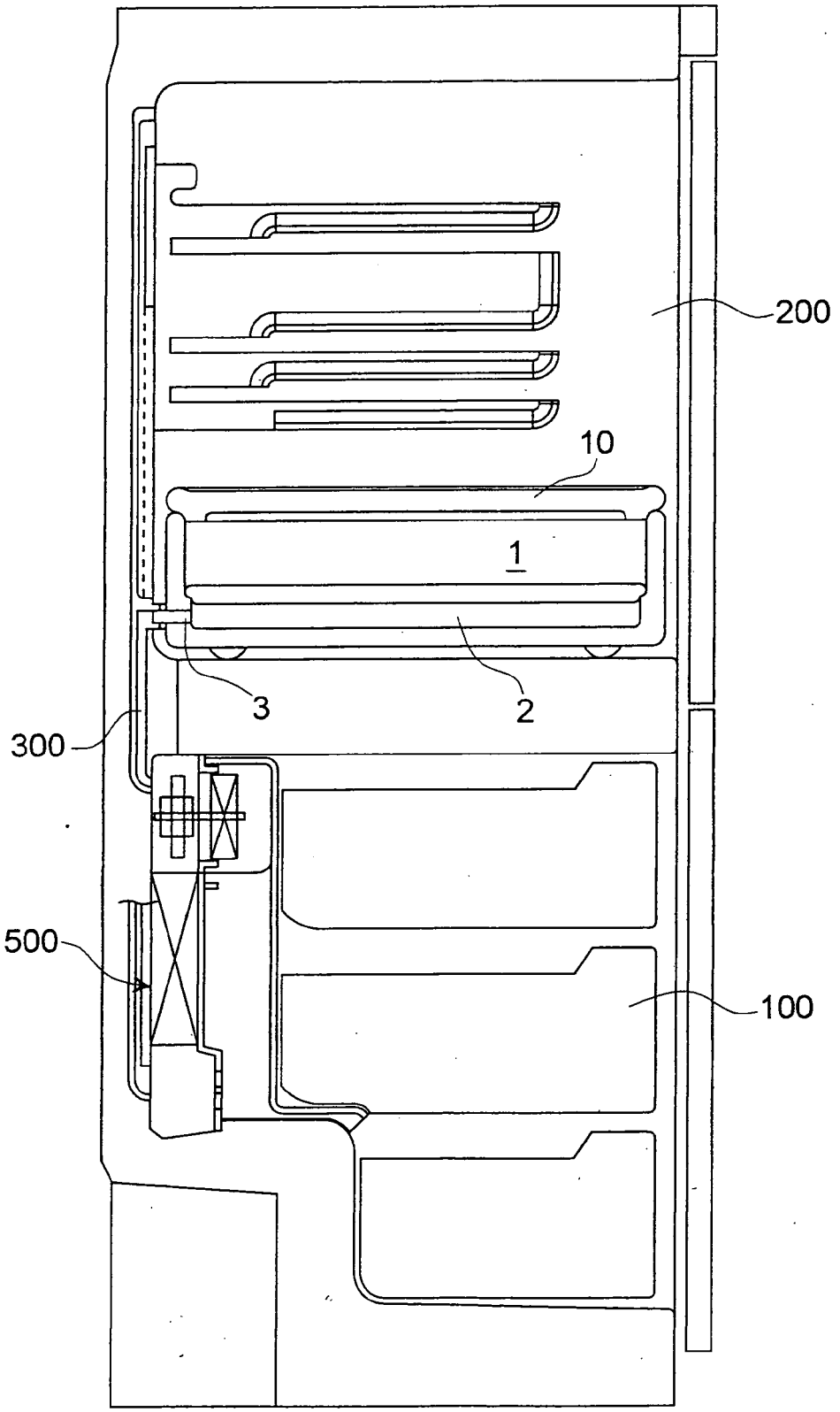

Fig.9

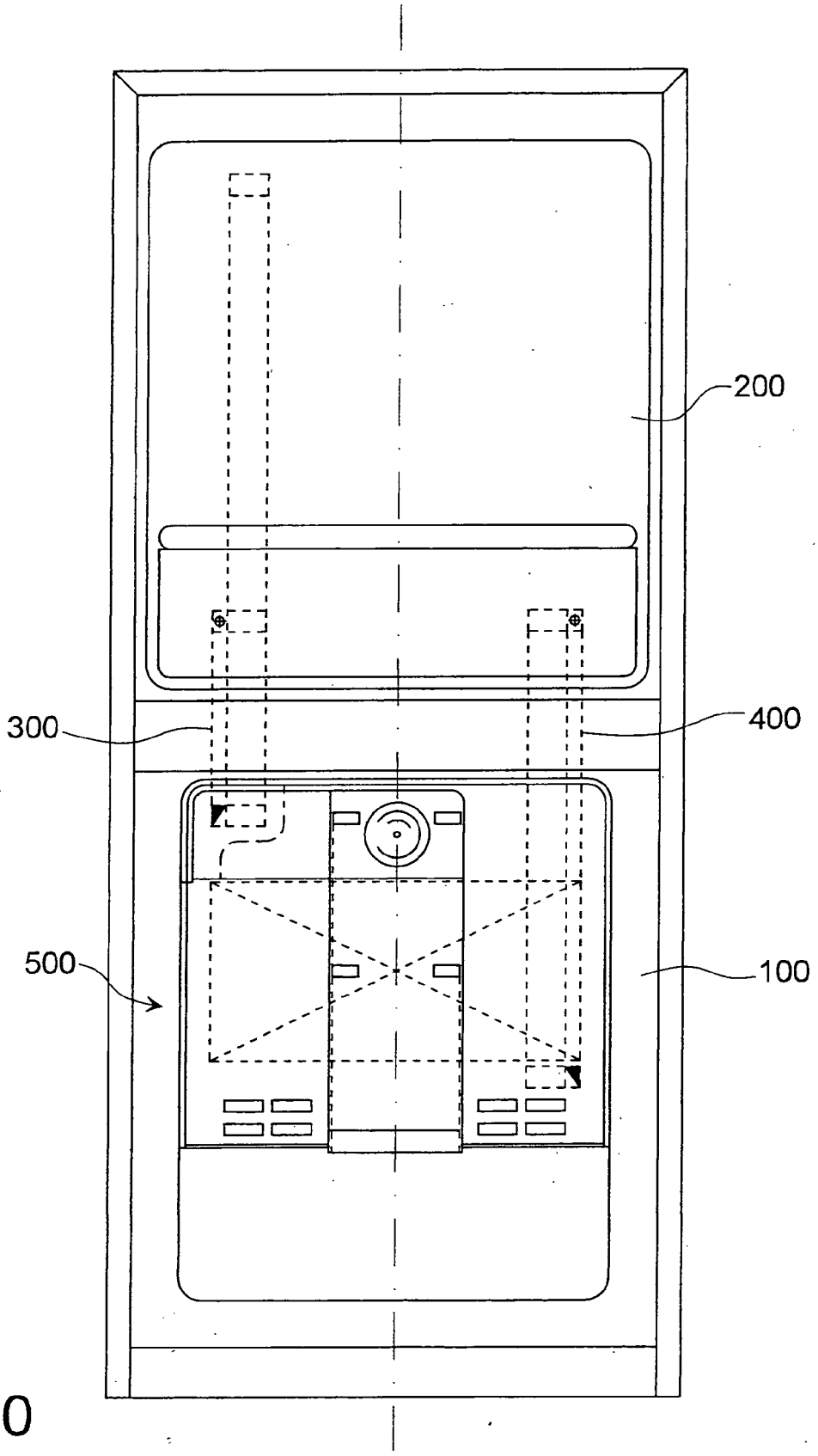

Fig.10

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EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5862

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2004/139757 A1 (KUEHL STEVEN J [US] ET AL KUEHL STEVEN J [US] ET AL) 22 July 2004 (2004-07-22) * paragraphs [0060], [0061] * * figures 21,22 *	1,9-11	INV. F25D3/08 F25D16/00 F25D17/06
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X	EP 1 475 589 A (WELITA GMBH [DE]) 10 November 2004 (2004-11-10) * paragraphs [0029], [0030] * * figures 5,6 *	1	
X	US 4 103 510 A (HALL ROGER W) 1 August 1978 (1978-08-01) * column 2, line 53 - column 3, line 26 * * column 4, line 3 - column 5, line 8 * * figures 2-7 *	1	TECHNICAL FIELDS SEARCHED (IPC) F25D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 October 2007	Salaün, Eric

CATEGORY OF CITED DOCUMENTS

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12-10-2007

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