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# (12) EUROPEAN PATENT APPLICATION

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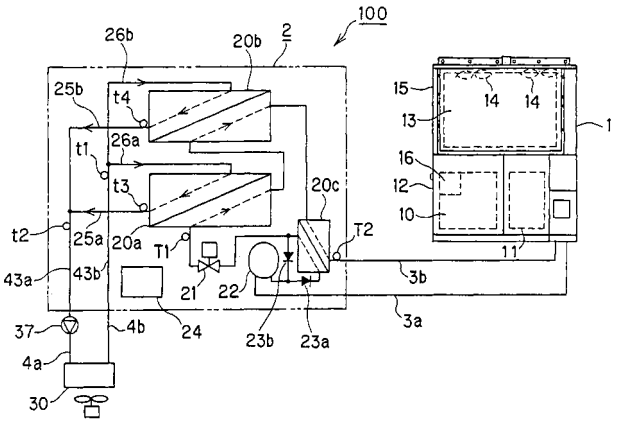
## (54) Refrigerating machine having refrigerant/water heat exchanger

(57) Plural plate type refrigerant/water heat exchangers 20a, 20b are connected in parallel to a cold/hot water circuit containing cold/hot water pipes 4a, 4b connected to a use-side heat exchanger 30, and also they are connected in series to a refrigerant circuit containing refrigerant pipes 3a, 3b connected to a heat source unit 1. Furthermore, there are provided a refrigerant heat exchanger 20c for heat-exchange refrigerant flowing at the upstream side of the refrigerant/water heat exchangers 20a, 20b with refrigerant flowing at the downstream side thereof, a first refrigerant temperature sensor for detecting the temperature of the refrigerant flowing at the upstream side and a second refrigerant temperature sensor for detecting the temperature of the refrigerant flowing at the downstream side, and the refrigerating machine is operated by selecting and using the temperature detected by the first or second refrigerant temperature sensor.

FIG. 1

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# EUROPEAN SEARCH REPORT

Application Number
EP 04 03 0334

## 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<br>Y | JP 10 115475 A (AISIN SEIKI)<br>6 May 1998 (1998-05-06)<br>* abstract; figure 1 *<br>----- | 1,3,4<br>2 | INV.<br>F25B5/04<br>F25B25/00<br>F25B39/02 |
| Y | JP 11 287583 A (HISAKA WORKS LTD)<br>19 October 1999 (1999-10-19)<br>* abstract; figures 1,2 *<br>----- | 2 | |
| A | DE 100 62 764 A1 (BUDERUS HEIZTECHNIK GMBH [DE]) 20 June 2002 (2002-06-20)<br>* abstract; figure *<br>----- | 1,2 | |
| A | DE 26 50 437 A1 (LANG OTTO DIPL ING)<br>11 May 1978 (1978-05-11)<br>* abstract; figure 2 *<br>----- | 1,2 | |

TECHNICAL FIELDS SEARCHED (IPC)

F25B
F24F

~~The present search report has been drawn up for all claims~~

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 8 February 2008 | Yousufi, Stefanie |

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

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EPO FORM 1503 03.82 (P04C01)

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## CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

## LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

see annex

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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## LACK OF UNITY OF INVENTION
## SHEET B

Application Number
EP 04 03 0334

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-4

Piping of plural plate type heat exchangers
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2. claims: 1, 5-9

Positioning of heat exchangers and receiver in heat exchange unit
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3. claims: 1, 10-12

Heat transfer means
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4. claims: 13-15

Power-saving operation of refrigeration machine
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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 03 0334

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-02-2008

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| JP 11287583 A | 19-10-1999 | NONE | |
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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82