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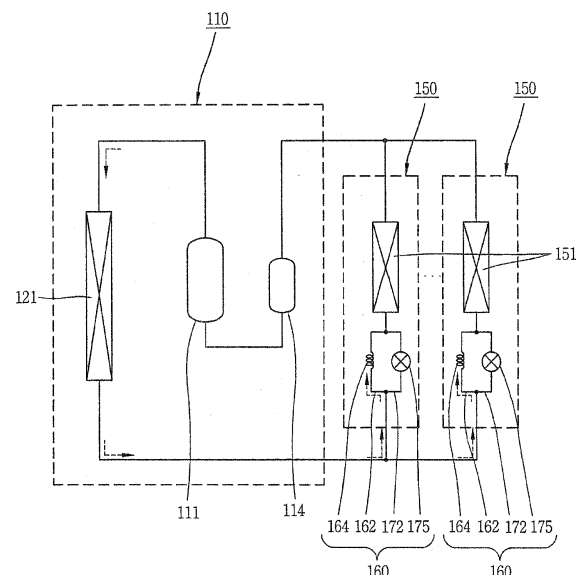
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(54) **Air conditioner and refrigerant control method thereof**

(57) Disclosed are an air conditioner and a refrigerant control method thereof. An air conditioner according to an embodiment of the invention an outdoor unit including a compressor, an outdoor heat exchanger, and a four-way valve that switches a flow passage of refrigerant, an indoor unit including an indoor heat exchanger, an indoor expansion unit disposed at a refrigerant inlet side of the indoor heat exchanger and allowing the refrigerant to be expanded during the cooling operation, an outdoor expansion unit disposed at a refrigerant inlet side of the outdoor heat exchanger and allowing the refrigerant to be expanded during the heating operation, and a control unit controlling the indoor expansion unit and the outdoor expansion unit such that the refrigerant is expanded in the indoor expansion unit during the cooling operation and the refrigerant is expanded in the outdoor expansion unit during the heating operation. Therefore, the distance between the evaporator and the expansion unit is reduced to thereby raise operating efficiency.

FIG. 2





EUROPEAN SEARCH REPORT

Application Number
EP 06 12 7265

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	US 4 771 610 A (NAKASHIMA YASUO [JP] ET AL) 20 September 1988 (1988-09-20) * column 1, line 9 - column 2, line 24; figure 2 *	1,2,4	
X	US 5 720 179 A (JUNG NACK-HUN [KR]) 24 February 1998 (1998-02-24) * column 1, line 24 - column 2, line 62; figure 2 *	1,4	
X	EP 0 692 683 A (TOKYO SHIBAURA ELECTRIC CO [JP]) 17 January 1996 (1996-01-17) * page 3, lines 15-44; figure 1 *	1,4	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25B F24F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 January 2009	Examiner Ritter, Christoph
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)



Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due 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 those claims for which no payment was due.

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 additional sheet(s)"

☐ 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).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 06 12 7265

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: 1-5

claim 1 is directed to a reversible air conditioner cycle
and to the control of the indoor/outdoor unit

2. claims: 6-11

claim 6 is directed to an air conditioner and to the
refrigerant distribution at the inlet of the indoor unit.

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

EP 06 12 7265

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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19-01-2009

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