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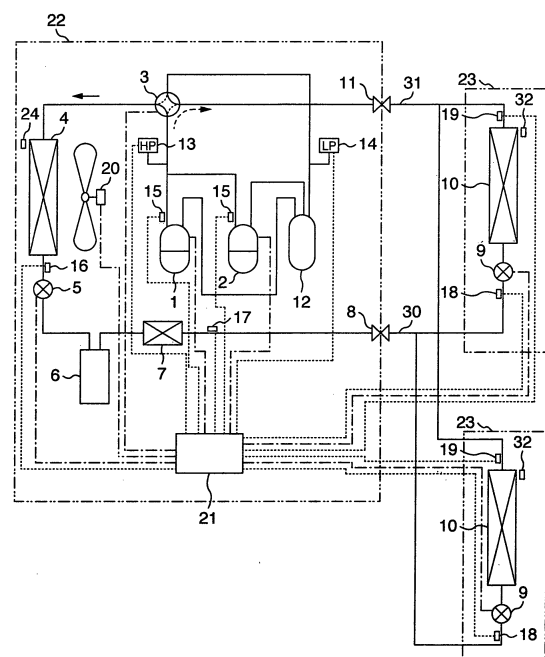
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(54) **Air conditioner and method of determining refrigerant quantity**

(57) In an air conditioner, an occurrence of a refrigerant leakage can be immediately detected after a normal operation thereof is started. The air conditioner includes an outdoor unit having compressors 1, 2, a four-way valve 3, an outdoor heat exchanger 4, an outdoor expander 5 and an outdoor air blower 20, and an indoor unit having an indoor expander 9, an indoor heat exchanger 10 and an indoor air blower, the outdoor unit being connected to the indoor unit through a liquid pipe line 30 and a gas pipe line 31. Beforehand, in a state where an appropriate quantity of refrigerant is charged, a relationship between an ambient temperature and a coefficient χ related to a ratio between an output quantity delivered to the indoor or outdoor expander and an output quantity delivered to the compressor is obtained and stored in memory, and then, the coefficient χ related to the ratio between the output quantity delivered to the indoor or outdoor expander and the output quantity delivered to the compressor which are obtained during operation of the air conditioner is compared with the beforehand stored value with respect to the present ambient temperature, thereby determining advisability of the refrigerant quantity.

FIG. 1





EUROPEAN SEARCH REPORT

Application Number
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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)
X	WO 2006/109677 A1 (DAIKIN IND LTD [JP]; YOSHIMI MANABU [JP]; YAMAGUCHI TAKAHIRO [JP]; NIS) 19 October 2006 (2006-10-19) * figures 31, 32, 33 *	1-11	INV. F25B49/00
X	EP 1 065 452 A2 (DENSO CORP [JP]) 3 January 2001 (2001-01-03) * figure 11 *	1-11	ADD. F25B13/00
			TECHNICAL FIELDS SEARCHED (IPC)
			F25B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 October 2013	Examiner Dezso, Gabor
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82