



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 321 727 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
19.11.2003 Bulletin 2003/47

(51) Int Cl.7: **F25B 13/00**

(43) Date of publication A2:
25.06.2003 Bulletin 2003/26

(21) Application number: **02023360.7**

(22) Date of filing: **18.10.2002**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Jang, Sae-Dong**
Gwangmyeong, Gyeonggi-Do (KR)

(74) Representative: **Cohausz & Florack**
Patentanwälte
Kanzlerstrasse 8a
40472 Düsseldorf (DE)

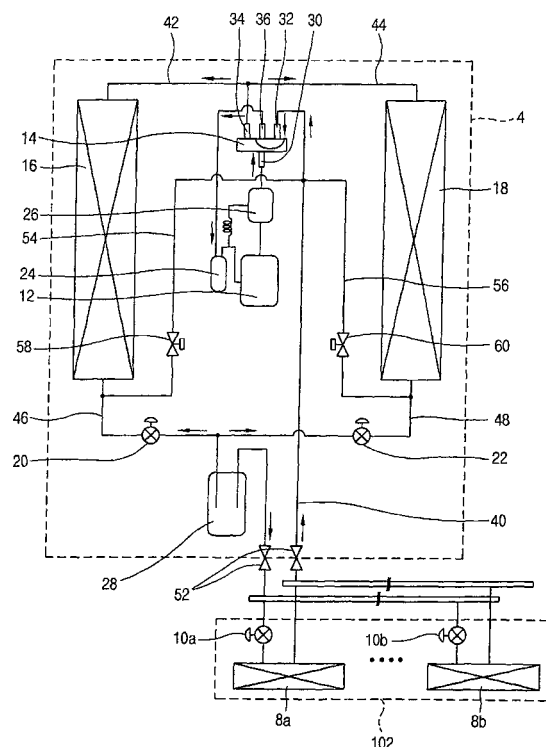
(30) Priority: **20.12.2001 KR 2001081991**

(71) Applicant: **LG ELECTRONICS INC.**
Seoul (KR)

(54) **Heat pump type air conditioner**

(57) In a heat pump type air conditioner capable of maintaining a room temperature constantly by including two outdoor heat exchangers (16,18) and performing a heating operation with one heat exchanger when the other heat exchanger performs a defrosting operation, the heat pump type air conditioner includes a compressor (12) for compressing a coolant; a four-way valve (14) for switching a flow of the coolant normally or reversely; a first and a second outdoor heat exchangers (16,18) respectively installed outdoors, used as a condenser in cooling and used as an evaporator in heating; plural indoor heat exchangers respectively installed at each indoor space and performing a cooling/heating operation; a first and a second outdoor expansion valves (20,22) respectively installed at coolant pipes for connecting the first and second outdoor heat exchangers (16,18) with the indoor heat exchangers (8a,8b) in order to turn the coolant into a low temperature-low pressure state and open/close the coolant pipes; and a control unit (6) for making one of the first and second outdoor heat exchangers (16,18) perform a defrosting operation and making the rest perform a heating operation by controlling the first and second outdoor expansion valves (20,22).

FIG.2



EP 1 321 727 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 02 3360

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 6 276 158 B1 (LOWES) 21 August 2001 (2001-08-21) * column 3, line 5 - line 19 * * column 3, line 31 - line 42 * * column 2, line 13 - line 19 * ---	1,10	F25B13/00
A	US 6 244 057 B1 (YOSHIDA) 12 June 2001 (2001-06-12) * column 3, line 43 - line 52 * * column 5, line 44 - column 6, line 49 * * column 6, line 43 - line 49 * ---	1,10	
A	US 5 467 604 A (SEKIGAMI) 21 November 1995 (1995-11-21) * column 8, line 9 - line 26 * * column 5, line 23 - line 34 * ---	1,10	
A	US 5 186 016 A (NIGO) 16 February 1993 (1993-02-16) * column 3, line 35 - line 42 * * column 10, line 4 - line 49 * ---	1,10	
A	US 4 565 070 A (RAYMOND) 21 January 1986 (1986-01-21) * abstract * ---	1,10	
A	US 4 774 813 A (YOKOYAMA) 4 October 1988 (1988-10-04) * column 4, line 32 - line 52 * ---	1,10	
A,P	EP 1 197 710 A (EATON-WILLIAMS GROUP LIMITED) 17 April 2002 (2002-04-17) * column 5, line 36 - line 47 * * column 1, line 32 - line 47 * -----	1,10	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 September 2003	Examiner SOGNO, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

EPO FORM 1503 03 82 (P04C01)

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

EP 02 02 3360

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.

26-09-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6276158	B1	21-08-2001	EP	0974792 A2	26-01-2000
US 6244057	B1	12-06-2001	JP	2000146344 A	26-05-2000
US 5467604	A	21-11-1995	JP	7234038 A	05-09-1995
			CN	1114406 A ,B	03-01-1996
			DE	69520701 D1	23-05-2001
			DE	69520701 T2	15-11-2001
			EP	0668474 A2	23-08-1995
			ES	2158000 T3	01-09-2001
			KR	135902 B1	01-07-1998
US 5186016	A	16-02-1993	JP	2831838 B2	02-12-1998
			JP	4174238 A	22-06-1992
			GB	2251318 A ,B	01-07-1992
			KR	9507285 B1	07-07-1995
US 4565070	A	21-01-1986	DE	3464796 D1	20-08-1987
			EP	0128108 A2	12-12-1984
			JP	60017662 A	29-01-1985
US 4774813	A	04-10-1988	JP	62255762 A	07-11-1987
EP 1197710	A	17-04-2002	CA	2358972 A1	13-04-2002
			EP	1197710 A2	17-04-2002
			US	2002162348 A1	07-11-2002

EPO FORM P0459

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