

## (11) **EP 1 832 820 A3**

(12)

### **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3: **26.09.2007 Bulletin 2007/39** 

(51) Int Cl.: **F25B** 1/00 (2006.01)

F25B 13/00 (2006.01)

(43) Date of publication A2: 12.09.2007 Bulletin 2007/37

(21) Application number: 07012492.0

(22) Date of filing: 24.07.2001

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU

MC NL PT SE TR

(30) Priority: 26.07.2000 JP 2000225427

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC: 01950048.7 / 1 304 532

(71) Applicant: DAIKIN INDUSTRIES, LTD. Osaka-shi, Osaka 530-8323 (JP)

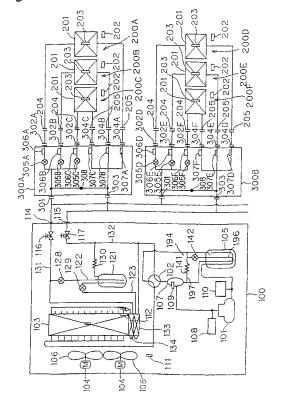
(72) Inventors:

- Kataoka, Hidehiko Kusatsu-shi Shiga 525-0044 (JP)
- Nishiura, Yoshihiro Kusatsu-shi Shiga 525-0044 (JP)
- Sakamoto, Shinichi Kusatsu-shi Shiga 525-0044 (JP)
- (74) Representative: HOFFMANN EITLE Patent- und Rechtsanwälte Arabellastrasse 4 81925 München (DE)

#### (54) Air conditioner

An air conditioner comprising a refrigerant circuit formed of an outdoor unit refrigerant circuit including at least a compressor (101), a four-way valve (102) and an outdoor heat exchanger (103) arranged in an outdoor unit (100), and an indoor heat exchanger (201) arranged in an indoor unit (200) and connected to said outdoor unit refrigerant circuit by a liquid-side pipe and a gas-side pipe, wherein a bypass circuit forming a bypass between said liquid-side and gas-side pipes (131,132) is provided with a receiver (121) for collecting liquid refrigerant, and refrigerant on-off means (128,129) arranged in a liquid pipe connection pipe (122) connecting said receiver (121) to said liquid-side pipe (131) and in a gas pipe connecting pipe (123) connecting said receiver (121) to said gas-side pipe (132), said refrigerant on-off means (128,129) is controlled based on determination of presence/absence of surplus refrigerant performed by determining a current heat exchanging performance of said outdoor heat exchanger (103), and thereby an amount of the refrigerant in said receiver (121) is controlled.

Fig. 1





# **EUROPEAN SEARCH REPORT**

Application Number EP 07 01 2492

	DOCUMENTS CONSID	ERED TO BE RELEVANT		
Category	Citation of document with in of relevant pass	ndication, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Υ	JP 60 114669 A (TOS 21 June 1985 (1985- * the whole documer	06-21)	1	INV. F25B1/00 F25B13/00
Y	JP 2000 146322 A (7 26 May 2000 (2000-0 * paragraph [0017] figures 1-6 *		1	
A	US 5 937 660 A (LAU 17 August 1999 (199 * column 2, line 61 figures 1-25 *		1	
E	EP 1 300 637 A (DAI 9 April 2003 (2003- * the whole documer	KIN INDUSTRIES, LTD) 04-09) it *	1	
				TECHNICAL FIELDS SEARCHED (IPC)
				F25B
	The present search report has	oeen drawn up for all claims		
	Place of search	Date of completion of the search		Examiner
	Munich	1 August 2007	Sz	ilagyi, Barnabas
C	ATEGORY OF CITED DOCUMENTS	T: theory or princ	iple underlying the	invention
	icularly relevant if taken alone icularly relevant if combined with anot	after the filing o	document, but publ date d in the application	•
docu	ument of the same category nological background	L : document cited	d for other reasons	
A:tech				

EPO FORM 1503 03.82 (P04C01) 9

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

EP 07 01 2492

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.

01-08-2007

7-08-1999 NONE 9-04-2003 AU 766170 B2 09-10-20 AU 6951201 A 30-01-20 CN 1386184 A 18-12-20 WO 0206738 A1 24-01-20 JP 3584862 B2 04-11-20	2000146322 A 26-05-2000 NONE  5937660 A 17-08-1999 NONE  1300637 A 09-04-2003 AU 766170 B2 09-10-2	Patent document cited in search report		Publication date		Patent family member(s)	Publication date
7-08-1999 NONE 9-04-2003 AU 766170 B2 09-10-20 AU 6951201 A 30-01-20 CN 1386184 A 18-12-20 WO 0206738 A1 24-01-20 JP 3584862 B2 04-11-20	5937660 A 17-08-1999 NONE  1300637 A 09-04-2003 AU 766170 B2 09-10-2	JP 60114669	Α	21-06-1985	NONE		1
9-04-2003 AU 766170 B2 09-10-20 AU 6951201 A 30-01-20 CN 1386184 A 18-12-20 WO 0206738 A1 24-01-20 JP 3584862 B2 04-11-20	1300637 A 09-04-2003 AU 766170 B2 09-10-2 AU 6951201 A 30-01-2 CN 1386184 A 18-12-2 W0 0206738 A1 24-01-2 JP 3584862 B2 04-11-2	JP 2000146322	Α	26-05-2000	NONE		
AU 6951201 A 30-01-20 CN 1386184 A 18-12-20 WO 0206738 A1 24-01-20 JP 3584862 B2 04-11-20	AU 6951201 A 30-01-2 CN 1386184 A 18-12-2 WO 0206738 A1 24-01-2 JP 3584862 B2 04-11-2	US 5937660	Α	17-08-1999	NONE		
		EP 1300637	A	09-04-2003	AU CN WO JP	6951201 A 1386184 A 0206738 A1 3584862 B2	30-01-20 18-12-20 24-01-20
					WO JP	0206738 A1 3584862 B2	2

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