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- (71) Applicant: SHARP KABUSHIKI KAISHA Osaka 545-8522 (JP)
- (72) Inventors:
 - Kontani, Mamoru Amagasaki-shi, Hyogo (JP)

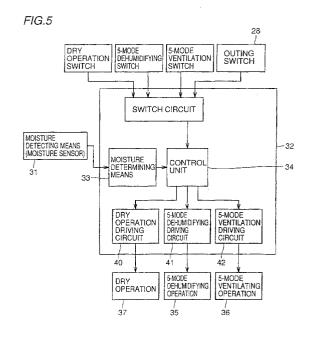
- Bougauchi, Tsukasa Itami-shi, Hyogo (JP)
- Kakiuchi, Atsushi Yao-shi, Osaka (JP)
- Okitsu, Masahiro Kashiwara-shi, Osaka (JP)

81667 München (DE)

- Morikawa, Mamoru Yamatokoriyama-shi, Nara (JP)
- (74) Representative: Müller Hoffmann & Partner Patentanwälte, Innere Wiener Strasse 17

(54) Air conditioner having dehumidifying and ventilating functions

(57)In order to solve the problems of ventilation and dehumidifying of an air conditioner, the air conditioner includes a refrigerant circuit formed by coupling at least a compressor (7), an indoor heat exchanger (4), a decompressor (8) and an outdoor heat exchanger (6), a humidifying/dehumidifying apparatus (10, 11, 12, 13, 14) provided separate from the refrigerant circuit, for removing moisture in the room, a moisture detection sensor (31) for detecting indoor moisture, and a control unit (34) for switching an operation mode based on the moisture detected by the moisture detection sensor (31). The humidifying/dehumidifying apparatus (10, 11, 12, 13, 14) guides the sucked indoor air to a path communicated to the room and a path communicated to the outside of the room in a ventilation mode (37, 35), and guides the sucked indoor air to the outside of the room in a dehumidifying mode.





Application Number EP 00 11 9509

	DOCUMENTS CONSID				T		
Category	Citation of document with of relevant pas	indication, where sages	appropriat	9,	Relevant to claim	CLASSIFICAT APPLICATION	TION OF THE N (int.Cl.7)
X Y A	US 4 474 021 A (HARBAND JOEL) 2 October 1984 (1984-10-02) * abstract * * column 3, line 63 - column 4, line 53 * * figure 1 *				8 9,10 11-20	F24F3/14 F24F11/00)
Y	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 09, 30 July 1999 (1999-07-30) -& JP 11 094316 A (SHARP CORP), 9 April 1999 (1999-04-09)				1-4,9,1	0	
Α	9 April 1999 (1999-04-09) * abstract *				5-7	Miller all od suite	
Y	PATENT ABSTRACTS OF vol. 1999, no. 09, 30 July 1999 (1999- -& JP 11 101473 A (13 April 1999 (1999 * abstract *	-07-30) SHARP CORP	·),		1-4		
X	PATENT ABSTRACTS OF JAPAN vol. 014, no. 155 (M-0954), 26 March 1990 (1990-03-26) -& JP 02 017343 A (DAIKIN IND LTD), 22 January 1990 (1990-01-22) * abstract *				8	TECHNICAL SEARCHED F24F	FIELDS (Int.CI.7)
Y A	EP 0 892 330 A (JOHNSON SERVICE CO) 20 January 1999 (1999-01-20) * abstract *				21 22-31	AND THE RESIDENCE OF THE PARTY	
ļ	* column 4, line 17 * figures 1,7A,7B,8		*				
Υ	DE 196 28 735 A (HC 22 January 1998 (19 * the whole documen	98-01-22)	S)	,	21		
			-/	•			
	The present search report has	been drawn up fo	r all claims				
****************	Place of search		completion of	the search		Examiner	Maryla (c. a. a. 1 (c. a.
	THE HAGUE		August		De	Graaf, J.D	
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Application Number

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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:



Application Number EP 00 11 9509

Category	Citation of document with indic of relevant passag		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
χ	CN 1 226 663 A (SAMSL LTD) 25 August 1999 (33	
Α	* abstract * * figures 3-5 * -& US 6 145 328 A (CH) 14 November 2000 (200	34-39	i	
X	PATENT ABSTRACTS OF 30 vol. 1999, no. 09, 30 July 1999 (1999-07 -& JP 11 101493 A (FU 13 April 1999 (1999-08 abstract *	33		
A	US 4 916 909 A (MATHL 17 April 1990 (1990-0 * abstract *	33		
Ρ,Χ	PATENT ABSTRACTS OF 3 vol. 1999, no. 14, 22 December 1999 (199 -& JP 11 248222 A (TO 14 September 1999 (199 * abstract *	33	TECHNICAL FIELDS SEARCHED (Int.Cl.7)	
Ρ,Χ	PATENT ABSTRACTS OF 30 vol. 2000, no. 10, 17 November 2000 (200 -& JP 2000 186849 A (4 July 2000 (2000-07-4 abstract *	00-11-17) SHARP CORP),	21,27,31	
Α	PATENT ABSTRACTS OF 3 vol. 1997, no. 02, 28 February 1997 (199 -& JP 08 270980 A (SH 18 October 1996 (1996 * abstract *	17-02-28) NARP CORP),	1	
	The present search report has bee	an drawn un for all claime		
	Place of search	Date of completion of the search		Examiner
	THE HAGUE	30 August 2002	De (Graaf, J.D.
X : part Y : part docu A : tech	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with another ament of the same category inological background—written disclosure	E : earlier patent d after the filing d D : document cited L : document cited	in the application for other reasons	shed on, or



LACK OF UNITY OF INVENTION SHEET B

Application Number EP 00 11 9509

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: 1-7

An air conditioner including a refrigerant circuit and a separate humidifier/dehumidifier apparatus, comprising a moisture detecting means for detecting moisture in a room, a control means switching operation mode based on the detected moisture level wherein said humidifier/dehumidifier in a first operation mode guides sucked indoor air into the room as well as to a path to the outside of the room (part recirculation) and in a second operation mode guides the sucked indoor air to the outside of the room (full ventilation).

2. Claims: 8-20

An air conditioner including a refrigerant and a separate humidifying/dehumidifying apparatus, capable of driving in an operating mode in which said refrigerant circuit and said humidifying/dehumidifying apparatus are driven simultaneously.

3. Claims: 21-32

An air conditioner including a refrigerant circuit comprising an indoor temperature sensor, an indoor moisture sensor, a display unit and an operation mode determining means for determining an optimal operation mode based on said various sensors, wherein said display unit displays an advice based on a result of determination made by said operation mode determining means.

4. Claims: 33-39

An air conditioner including a refrigerant circuit, comprising an air conditioner load detecting unit, an electric charge calculating means, a display unit for displaying a calculated amount of electricity charge and a unit price changing means for changing the unit price of electricity.



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	Citation of decument with in	01.000(210.2200)		
Category	Of relevant pass	dication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
A	PATENT ABSTRACTS OF vol. 1996, no. 11, 29 November 1996 (1 -& JP 08 178350 A (CO LTD), 12 July 19 * abstract *	996-11-29) MATSUSHITA ELECTRIC IND	1	
Α	CA 2 211 746 A (VAL PIERRE (CA)) 19 Feb * figures 1,2 *			
A	PATENT ABSTRACTS OF vol. 1999, no. 09, 30 July 1999 (1999- -& JP 11 094298 A (9 April 1999 (1999- * abstract *	07-30) DAIKIN IND LTD),	1	
A	DE 22 10 473 B (ERN KLIMATECHNIK KG) 6 September 1973 (1 * figure 4 *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7)	
А	PATENT ABSTRACTS OF vol. 011, no. 047 (13 February 1987 (14 -& JP 61 212313 A (14 LTD), 20 September * abstract *	8		
Α	US 5 448 895 A (CAL' 12 September 1995 (* abstract * * figure 1 *		8	
	The present search report has b	•		
		Date of completion of the search 30 August 2002	De.	Graaf, J.D.
X : part Y : part doce A : tech	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with another and of the same category incological background in-written disclosure	T : theory or princip E : earlier patent do after the filling de ner D : document cited L : document cited	le underlying the coment, but publ- ate in the application for other reasons	invention ished on, or



Application Number EP 00 11 9509

Category	Citation of document with indica		Relevant	CLASSIFICATION OF THE
	of relevant passage	\$	to claim	APPLICATION (Int.Cl.7)
A	US 5 070 931 A (HARTLI 10 December 1991 (199 * abstract * * figure 1 *		21	
A	US 5 775 406 A (GHITE) 7 July 1998 (1998-07-0 * abstract *		25	
Α	US 4 971 136 A (MATHUI 20 November 1990 (1990 * abstract *		33	
Α	US 4 716 957 A (THOMPS 5 January 1988 (1988-0 * abstract *		33	
Α	US 5 924 486 A (SILVA 20 July 1999 (1999-07- * abstract *		33	
	outen dama p			TECHNICAL FIELDS SEARCHED (Int.CI.7)
				i
i	The present search report has beer	drawn up for all claims		
	Place of search	Date of completion of the searc	h	Examiner
	THE HAGUE	30 August 2002	De 0	Graaf, J.D.
X : part Y : part docu	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with another urnent of the same category inological background	E : earlier pater after the filin D : document c L : document ci	nciple underlying the interest document, but publis	nvention shed on, or

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

EP 00 11 9509

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.

30-08-2002

	Patent document cited in search repo	rt	Publication date		Patent fam member(Publicatio date
US	4474021	Α	02-10-1984	IL	64915	Α	30-04-198
JP	11094316	Α	09-04-1999	NONE	and dome the gala. Many very home plate while 1999 w		ann and any ages see see one page page ages after see
JP	11101473	A	13-04-1999	NONE	1886 1886 1886 1886 1886 1886 1886 1886		
JP	02017343	A	22-01-1990	NONE	2000 3000 3000 pales 2000 2000 per pent Mag. 2000 a		AND THE PART OFFE PART SPEE SPEE SPEE SPEE SPEE SPEE SPEE SPE
EP	0892330	Α	20-01-1999	US EP JP US	6006142 0892330 11193953 6408228	A1 A	21-12-199 20-01-199 21-07-199 18-06-200
DE	19628735	Α	22-01-1998	DE	19628735	A1	22-01-199
CN	1226663	А	25-08-1999	ES IT JP JP US	2149129 T0990108 3011715 11281122 6145328	A1 B2 A	16-10-200 19-08-199 21-02-200 15-10-199 14-11-200
JP	11101493	A	13-04-1999	NONE	100 1000 Mile Sales 4000 0000 per anna suus uu	rec control proces statistic annual pupping distin	MAN
US	4916909	Α	17-04-1990	NONE	900 Vigin. 1914 Sales Allert Book 1900 Vigin Vigin Sales Sales Ri	THE PERSON NAMES ASSESSED ASSESSED ASSESSED.	Takan Manin Maga, agasa, garaf sirina saman saman ayagat ayasa, gasan saman saman
JP	11248222	Α	14-09-1999	NONE			
JP	2000186849	Α	04-07-2000	CN TW US	1257182 402676 6334317	В	21-06-200 21-08-200 01-01-200
JP	08270980 9	Α		NONE			200 CATE CATE CATE CATE CATE CATE CATE CATE
JP	08178350 9	Α		NONE			
CA	2211746	A	19-02-1999	CA	2211746	A1	19-02-199
JP	11094298 9	A	and again glabs many proof story strain which story proof state West States States	NONE		17. Mar 100 Augu 100 100 100 100	The same was about the part this day for the part the same to be s
DE	2210473	В	06-09-1973	DE	2210473	B1	06-09-197
JP	61212313 9	A	nds, gran word over dove their their state of the date when the date was been to	NONE			times don't spice upon start from their diffe pages gave their www times
US	5448895	Α	12-09-1995	US US US	5564281 5579647 5649428	Α	15-10-199 03-12-199 22-07-199

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

EP 00 11 9509

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.

30-08-2002

	Patent documer cited in search rep		Publication date		Patent family member(s)	Publication date
US	5070931	Α	10-12-1991	EP DE	0414948 A1 58901615 D1	06-03-1991 09-07-1992
US	5775406	Α	07-07-1998	NONE		na atawa ununi Magiri Magini (pinku shilini manga angan panga panga garini pinku ukina
US.	4971136	Α	20-11-1990	NONE		no hann dittil desta desta Putta kotta kilita nema urusa dittil dilika dilika dasad julua
JS	4716957	A	05-01-1988	JP JP JP JP AU AU KR	61225535 A 61225529 A 61256138 A 61272549 A 567005 B2 5530186 A 9002143 B1	07-10-1986 07-10-1986 13-11-1986 02-12-1986 05-11-1987 02-10-1986 02-04-1990
US	5924486	A	20-07-1999	AU CN EP JP WO US	7381998 A 1278339 T 1025474 A1 2001521139 T 9922284 A1 6216956 B1	17-05-1999 27-12-2000 09-08-2000 06-11-2001 06-05-1999 17-04-2001

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