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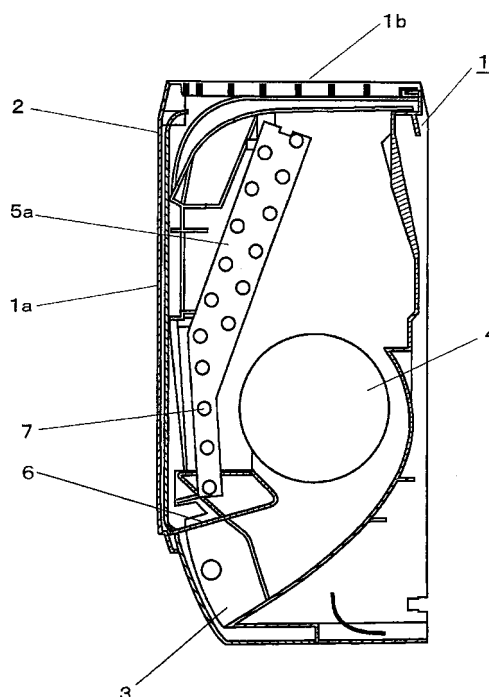
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(54) **Air conditioner**

(57) An air conditioner includes a housing (1) provided with an air suction opening (2) at a front surface (1a) or a top surface (1b) thereof; a cross flow fan (4) disposed in the housing (1); a heat exchanger (5a) installed between the air suction opening (2) and the cross flow fan (4); and a coolant tube (7) of passing through the heat exchanger (5a). The heat exchanger (5a) is fabricated as a single body whose front and rear surfaces are formed as a continuous surface and the coolant tube (7) is arranged in a single row in a lower portion of the heat exchanger while the coolant tube is arranged in two or more rows in an upper portion of the heat exchanger (5a).

FIG. 1





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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	JP 63 101639 A (HITACHI LTD) 6 May 1988 (1988-05-06)	1	INV. F24F1/00
Y	* the whole document *	2-10	F28F1/32
	* abstract *		

D,X	JP 09 210452 A (DAIKIN IND LTD) 12 August 1997 (1997-08-12)	1	
	* abstract *		
	* figure 2 *		

X	US 5 613 554 A (BULL GEORGE B [US] ET AL) 25 March 1997 (1997-03-25)	1	
	* abstract *		

X	JP 63 233225 A (MATSUSHITA ELECTRIC IND CO LTD) 28 September 1988 (1988-09-28)	1	
	* abstract *		
	* figure 1 *		

Y	JP 11 183077 A (FUJITSU GENERAL LTD) 6 July 1999 (1999-07-06)	2-10	TECHNICAL FIELDS SEARCHED (IPC)
	* the whole document *		
	* abstract *		

A	JP 05 296483 A (TOKYO SHIBAURA ELECTRIC CO) 9 November 1993 (1993-11-09)	3	F28F F24F F25B
	* the whole document *		
	* abstract *		

A	US 5 934 363 A (JUNG GY00 HA [KR] ET AL) 10 August 1999 (1999-08-10)	5-10	
	* column 3, lines 36-55; figure 1 *		

A	JP 03 255823 A (MATSUSHITA ELECTRIC IND CO LTD) 14 November 1991 (1991-11-14)	5-10	
	* the whole document *		
	* abstract *		

The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 December 2007	Examiner Lienhard, Dominique
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
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 02 7968

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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06-12-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 63101639	A	06-05-1988	JP 1987498 C	08-11-1995
			JP 7018564 B	06-03-1995

JP 9210452	A	12-08-1997	JP 3612846 B2	19-01-2005

US 5613554	A	25-03-1997	NONE	

JP 63233225	A	28-09-1988	NONE	

JP 11183077	A	06-07-1999	NONE	

JP 5296483	A	09-11-1993	NONE	

US 5934363	A	10-08-1999	JP 10332162 A	15-12-1998

JP 3255823	A	14-11-1991	NONE	
