



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**04.04.2018 Bulletin 2018/14**

(51) Int Cl.:  
**F25B 13/00 (2006.01) F25B 49/02 (2006.01)**

(43) Date of publication A2:  
**21.05.2014 Bulletin 2014/21**

(21) Application number: **13192866.5**

(22) Date of filing: **14.11.2013**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**

(72) Inventors:  
• **Nakamoto, Masahiko**  
**TOKYO, 108-8215 (JP)**  
• **Yamaguchi, Toru**  
**TOKYO, 108-8215 (JP)**  
• **Enya, Atsushi**  
**TOKYO, 108-8215 (JP)**

(30) Priority: **16.11.2012 JP 2012252547**

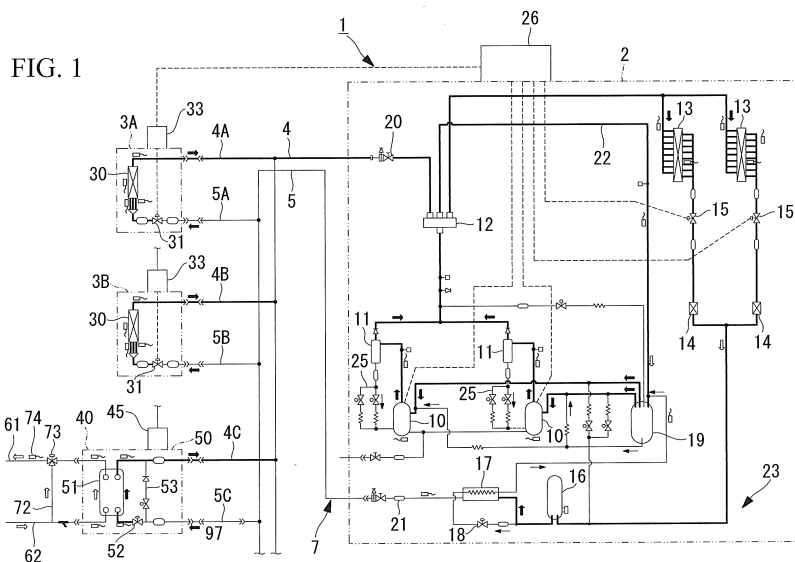
(74) Representative: **Intès, Didier Gérard André et al**  
**Cabinet Beau de Loménie**  
**158 rue de l'Université**  
**75340 Paris Cedex 07 (FR)**

(71) Applicant: **MITSUBISHI HEAVY INDUSTRIES THERMAL SYSTEMS, LTD.**  
**Tokyo 108-8215 (JP)**

(54) **Multi-type air conditioner**

(57) The present invention has an object to perform an operation with a high degree of freedom in each of an indoor unit (3A,3B,3C) and a water temperature regulation apparatus (40) and perform an efficient operation in accordance with operation states of the indoor unit and the water temperature regulation apparatus. In a mode in which indoor air conditioning by the indoor unit is prioritized, in the case where a target pressure of a refrigerant circuit of an outdoor unit (2) is set in accordance with a set temperature of each indoor unit, a water tem-

perature regulation controller controls the degree of opening of an expansion valve (52) such that the capability of a water heat exchanger does not become equal to or more than 100%. Moreover, in the case where sufficient control cannot be performed by only adjusting the degree of opening of the expansion valve, the amount of water passing through a bypass (72) is adjusted by a water control valve (73), whereby the capability of the water heat exchanger of a water temperature regulation unit can be suppressed to be less than 100%.





## EUROPEAN SEARCH REPORT

Application Number  
EP 13 19 2866

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

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	EP 2 224 188 A2 (LG ELECTRONICS INC [KR]) 1 September 2010 (2010-09-01) * paragraph [0140] - paragraph [0161]; figures 3,6,7 *	1	INV. F25B13/00 F25B49/02
X	WO 2012/056739 A1 (MITSUBISHI ELECTRIC CORP [JP]; TAMAKI SHOGO [JP]; SAITO MAKOTO [JP]) 3 May 2012 (2012-05-03) * paragraph [0116] - paragraph [0163]; figures 1-14 *	1-3	
A	& US 2013/180274 A1 (TAMAKI SHOGO [JP] ET AL) 18 July 2013 (2013-07-18) * paragraph [0116] - paragraph [0163]; figures 1-14 *	4	
X,P		1-3	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25B
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>26 February 2018</b>	Examiner <b>Szilagyi, Barnabas</b>
<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 ..... &amp; : member of the same patent family, corresponding document</p>			

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

EP 13 19 2866

5 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.

26-02-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2224188 A2	01-09-2010	CN 101818969 A	01-09-2010
		EP 2224188 A2	01-09-2010
		KR 20100097365 A	03-09-2010
-----	-----	-----	-----
WO 2012056739 A1	03-05-2012	CN 103180676 A	26-06-2013
		EP 2634508 A1	04-09-2013
		JP 5228023 B2	03-07-2013
		JP 2012097910 A	24-05-2012
		US 2013180274 A1	18-07-2013
		WO 2012056739 A1	03-05-2012
-----	-----	-----	-----