



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



(11)

EP 2 530 400 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
12.11.2014 Bulletin 2014/46

(51) Int Cl.:
F24H 4/04 (2006.01) **F24H 9/02 (2006.01)**
F24H 9/14 (2006.01)

(43) Date of publication A2:
05.12.2012 Bulletin 2012/49

(21) Application number: 12170259.1

(22) Date of filing: 31.05.2012

(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

(30) Priority: 31.05.2011 JP 2011121359

(71) Applicant: **Panasonic Corporation**
Osaka 571-8501 (JP)

(72) Inventors:
• **Nakatani, Kazuhito**
Chuoku, OSAKA, 540-6207 (JP)

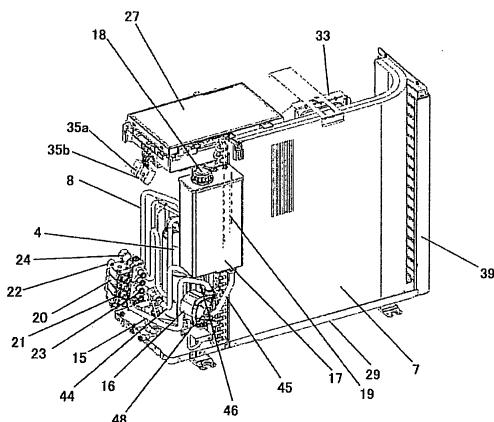
- **Mihara, Hiroshi**
Chuoku, OSAKA, 540-6207 (JP)
- **Nishihara, Yoshikazu**
Chuoku, OSAKA, 540-6207 (JP)
- **Fukunaga, Toshikatsu**
Chuoku, OSAKA, 540-6207 (JP)

(74) Representative: **Eisenführ Speiser**
Patentanwälte Rechtsanwälte PartGmbB
Postfach 31 02 60
80102 München (DE)

(54) Heat pump hydronic heater

(57) A heat pump hydronic heater of the present invention includes a refrigerant circuit 8, a circulation pump 16 which circulates a heating medium heated by a water refrigerant heat exchanger to an external radiator, and a cistern 17 in which the heating medium is stored, and the circulation pump 16 is disposed below the cistern 17. A pipe which connects the cistern and the circulation pump to each other can be a short pipe, bending times can be reduced and thus, power of the circulation pump 16 can be reduced and as a result, power consumption can be reduced, energy can be saved and efficiency can be enhanced. Noise and vibration can be reduced, maintenance performance is excellent and the heat pump hydronic heater can be designed compact.

[Fig. 1]



5



EUROPEAN SEARCH REPORT

Application Number
EP 12 17 0259

10

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	FR 2 304 036 A1 (SVENSKA GEOTHERM AB [SE]) 8 October 1976 (1976-10-08) * pages 2-4; figures 1,2 *	1-3,5	INV. F24H4/04 F24H9/02 F24H9/14
X	JP 2003 014382 A (SANYO ELECTRIC CO; SANYO ELECTRIC AIR CONDITION) 15 January 2003 (2003-01-15) * the whole document *	1-3,5	
X	JP 2005 221088 A (MATSUSHITA ELECTRIC IND CO LTD) 18 August 2005 (2005-08-18) * abstract; figures 1-5,7,8 *	1	
A	US 6 260 373 B1 (ROCKWOOD WILLIAM B [US]) 17 July 2001 (2001-07-17) * abstract *	4	

			TECHNICAL FIELDS SEARCHED (IPC)
			F24H
30			
35			
40			
45			
50			
55			
The present search report has been drawn up for all claims			
1	Place of search	Date of completion of the search	Examiner
	Munich	8 October 2014	Blot, Pierre-Edouard
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	
EPO FORM 1503/03.82 (P04C01)			

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

EP 12 17 0259

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.

08-10-2014

10

	Patent document cited in search report	Publication date		Patent family member(s)	Publication date
15	FR 2304036 A1	08-10-1976	AT AU AU BE CA CH DE DK ES FI FR GB GR IT JP NL NO PT SE US ZA	351709 B 507978 B2 1175276 A 839410 A1 1028863 A1 611403 A5 2609489 A1 94975 A 445907 A1 751535 A 2304036 A1 1515636 A 58232 A1 1056963 B S51110843 A 7602409 A 760817 A 64860 A 409240 B 4091994 A 7601295 A	10-08-1979 06-03-1980 15-09-1977 01-07-1976 04-04-1978 31-05-1979 23-09-1976 11-09-1976 01-05-1977 11-09-1976 08-10-1976 28-06-1978 31-08-1977 20-02-1982 30-09-1976 14-09-1976 13-09-1976 01-04-1976 06-08-1979 30-05-1978 23-02-1977
20	JP 2003014382 A	15-01-2003		NONE	
25	JP 2005221088 A	18-08-2005		NONE	
30	US 6260373 B1	17-07-2001	AU US WO	3288201 A 6260373 B1 0161258 A1	27-08-2001 17-07-2001 23-08-2001
35					
40					
45					
50					
55	EPO FORM P0459				

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