



(11)

EP 4 644 804 A3

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
21.01.2026 Bulletin 2026/04

(43) Date of publication A2:
05.11.2025 Bulletin 2025/45

(21) Application number: **25203327.9**

(22) Date of filing: **28.11.2018**

(51) International Patent Classification (IPC):
F24F 1/0326 ^(2019.01) **F24F 13/20** ^(2006.01)
F25B 41/00 ^(2021.01) **F24F 1/0068** ^(2019.01)
F24F 1/32 ^(2011.01) **F25B 41/40** ^(2021.01)
F25B 13/00 ^(2006.01) **F25B 49/02** ^(2006.01)
F25B 39/02 ^(2006.01) **F25B 39/04** ^(2006.01)

(52) Cooperative Patent Classification (CPC):
F24F 1/0068; F24F 1/32; F24F 13/20; F25B 41/40;
F24F 1/0326; F25B 13/00; F25B 39/02; F25B 39/04

(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

(30) Priority: **05.12.2017 JP 2017233170**

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
18886031.6 / 3 722 686

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(54) **AIR CONDITIONER**

(57) An air conditioner in which galvanic corrosion of a connecting portion connecting pipes made of different types of metals can be easily reduced is provided. The air conditioner includes an outdoor unit having an outdoor heat exchanger; an indoor unit (20) having an indoor heat exchanger (25) and an indoor fan (28) that supplies air to the indoor heat exchanger; and a gas-refrigerant connection pipe (GP) and a liquid-refrigerant connection pipe (LP) that connect the outdoor unit and the indoor unit to each other. The air conditioner performs air-conditioning of a space to be air conditioned, in which the indoor unit is disposed, by circulating refrigerant in a refrigerant circuit including the outdoor heat exchanger, the indoor heat exchanger, and the connection pipes (GP, LP). The refrigerant circuit includes refrigerant pipes (21, 22) made of a metal material, the connection pipes (GP, LP) made of a metal material of a type different from a type of the metal material of the refrigerant pipes (21, 22), and connecting portions (21a, 22a) between the refrigerant pipes (21, 22) and the connection pipes (GP, LP). The connecting portions are disposed in an unventilated space (90).

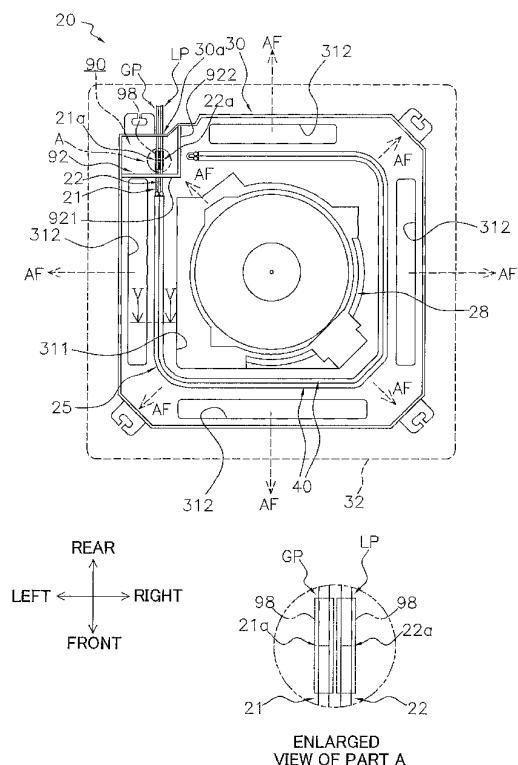


FIG. 4



EUROPEAN SEARCH REPORT

Application Number

EP 25 20 3327

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 3 101 353 A1 (DAIKIN IND LTD [JP]) 7 December 2016 (2016-12-07) * paragraph [0017] - paragraph [0034]; claim 1; figures 2-5 *	1-5	INV. F24F1/0326 F24F13/20 F25B41/00 F24F1/0068
A	EP 2 620 736 A2 (MITSUBISHI ELECTRIC CORP [JP]) 31 July 2013 (2013-07-31) * paragraph [0031] - paragraph [0049]; figures 1-6 *	1-5	F24F1/32 F25B41/40 F25B13/00 F25B49/02 F25B39/02 F25B39/04
A	KR 2008 0095628 A (LG ELECTRONICS INC [KR]) 29 October 2008 (2008-10-29) * paragraph [0123] - paragraph [0152]; figures 1, 12-15 *	1-5	
A	JP 2014 167376 A (KUMAGAI GUMI CO LTD) 11 September 2014 (2014-09-11) * paragraph [0013] - paragraph [0019]; figures 1-4 *	1-5	
A	KR 2009 0091529 A (LG ELECTRONICS INC [KR]) 28 August 2009 (2009-08-28) * paragraph [0038] - paragraph [0040]; figures 1,2 *	1-5	TECHNICAL FIELDS SEARCHED (IPC) F24F F25B F28F
A	CN 203 163 114 U (DONGGUAN JINRUI HARDWARE PRODUCTS CO LTD) 28 August 2013 (2013-08-28) * abstract; figure 1 *	1-5	
A	US 2015/027660 A1 (CHO SUNG JUNE [KR] ET AL) 29 January 2015 (2015-01-29) * paragraph [0051]; figures 1-8 *	1-5	
A	JP 2000 055452 A (HITACHI LTD) 25 February 2000 (2000-02-25) * paragraph [0009] - paragraph [0012]; figures 1-4 *	1-5	

The present search report has been drawn up for all claims

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Place of search	Date of completion of the search	Examiner
Munich	8 December 2025	Valenza, Davide
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)



EUROPEAN SEARCH REPORT

Application Number

EP 25 20 3327

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	JP 2012 184870 A (PANASONIC CORP) 27 September 2012 (2012-09-27) * abstract; figure 1 * -----	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
Munich	8 December 2025	Valenza, Davide	
CATEGORY OF CITED DOCUMENTS		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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EPO FORM 1503 03.82 (P04C01)

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EP 25 20 3327

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08-12-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3101353 A1	07-12-2016	AU 2015212207 A1	11-08-2016
		CN 105917173 A	31-08-2016
		EP 3101353 A1	07-12-2016
		ES 2678749 T3	17-08-2018
		JP 5861723 B2	16-02-2016
		JP 2015140998 A	03-08-2015
		WO 2015115127 A1	06-08-2015

EP 2620736 A2	31-07-2013	CN 103225847 A	31-07-2013
		EP 2620736 A2	31-07-2013
		ES 2756774 T3	27-04-2020
		JP 5881435 B2	09-03-2016
		JP 2013155892 A	15-08-2013
		MY 166580 A	17-07-2018
		RU 2509969 C1	20-03-2014
		SG 192323 A1	30-08-2013

KR 20080095628 A	29-10-2008	NONE	

JP 2014167376 A	11-09-2014	NONE	

KR 20090091529 A	28-08-2009	NONE	

CN 203163114 U	28-08-2013	NONE	

US 2015027660 A1	29-01-2015	AU 2014293844 A1	17-12-2015
		BR 112015032474 A2	25-07-2017
		CN 105408697 A	16-03-2016
		CN 108361837 A	03-08-2018
		EP 2986919 A1	24-02-2016
		KR 20150011556 A	02-02-2015
		RU 2675084 C1	14-12-2018
		RU 2016102015 A	27-07-2017
		US RE48080 E	07-07-2020
		US 2015027660 A1	29-01-2015
		US 2015267938 A1	24-09-2015
		WO 2015012588 A1	29-01-2015

JP 2000055452 A	25-02-2000	NONE	

JP 2012184870 A	27-09-2012	JP 5934936 B2	15-06-2016
		JP 2012184870 A	27-09-2012

EPO FORM P0459

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