(11) **EP 4 375 581 A3**

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 14.08.2024 Bulletin 2024/33

(43) Date of publication A2: 29.05.2024 Bulletin 2024/22

(21) Application number: 24169559.2

(22) Date of filing: 01.12.2017

(51) International Patent Classification (IPC): F24C 15/20 (2006.01) F24F 7/06 (2006.01) F24F 9/00 (2006.01)

(52) Cooperative Patent Classification (CPC): F24C 15/2028; F24F 7/06; F24F 9/00

(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: **02.12.2016** KR 20160163512 **28.11.2017** KR 20170160370

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC: 17875992.4 / 3 550 212

(71) Applicant: LG Electronics Inc. Seoul 07336 (KR)

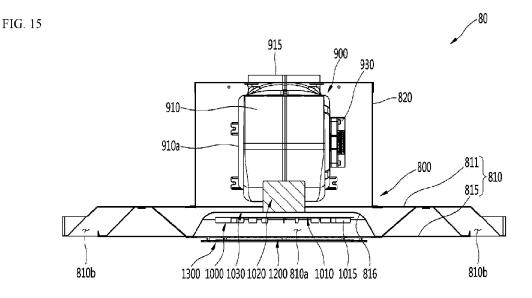
(72) Inventors:

- LEE, Semi 08592 Seoul (KR)
- LEE, Sangcheol 08592 Seoul (KR)
- HWANG, Seonghoon 08592 Seoul (KR)
- KIM, Wontae 08592 Seoul (KR)
- (74) Representative: Ter Meer Steinmeister & Partner Patentanwälte mbB
 Nymphenburger Straße 4
 80335 München (DE)

(54) COOKWARE AND EXHAUST DEVICE

(57) A ventilation apparatus according to the present invention comprises: a case having a flow hole; a flow guide positioned inside the case, the flow guide having an inflow opening that communicates with the flow hole, and the flow guide having a guide surface that slopes downward as the same extends outward; a swirler positioned in an area formed by the flow guide and configured to rotate in order to discharge a part of air introduced

through the flow hole out of the case again, the swirler having a plurality of blades; a driving motor for rotating the swirler; and a grill member that covers the swirler outside the case and provides an air channel. The grill member comprises a grill rib that forms a suction channel for suctioning air and a discharge channel for discharging air. The discharge channel may be positioned outside the suction channel.



DOCUMENTS CONSIDERED TO BE RELEVANT

Citation of document with indication, where appropriate,

of relevant passages

DE 28 37 543 A1 (KLING MIGUEL)

13 March 1980 (1980-03-13)



Category

Х

EUROPEAN SEARCH REPORT

Application Number

EP 24 16 9559

CLASSIFICATION OF THE APPLICATION (IPC)

INV.

F24C15/20

Relevant

to claim

1-3

10	
15	
20	
25	
30	
35	
40	

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

5

Y	* figures 1a, 1c, 2 * page 12, last par paragraph first * * the whole document	* ragraph - page 13,	15	F24F7/06 F24F9/00
A	JP 3 072420 B2 (JET 31 July 2000 (2000- * the whole document	07-31)	1-15	
Y	KR 2005 0090575 A ([KR]) 14 September * the whole document	2005 (2005-09-14)	15	
A	JP 3 720452 B2 (TOS 30 November 2005 (2 * the whole document	005-11-30)	1-15	
A	JP 2000 266385 A (E 29 September 2000 (* the whole document	(2000-09-29)	1-15	TECHNICAL FIELDS SEARCHED (IPC)
A	WO 99/50603 A1 (DAI MIYAKE KUNIHIKO [JE 7 October 1999 (199 * paragraph [0116];	P] ET AL.) 9-10-07)	1-15	F24C F24F
A	WO 2009/044627 A1 (SUGIMOTO KAZUMA [JF 9 April 2009 (2009- * figures 2,13 * * the whole document	1-15		
А	JP S53 7876 A (HOWO 24 January 1978 (19 * the whole documen	1-15		
	The present search report has	been drawn up for all claims		
	Place of search	Date of completion of the search		Examiner
	The Hague	5 July 2024	Jal	al, Rashwan
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 CATEGORY OF CITED DOCUMENTS T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filling date D: document cited in the application L: document cited for other reasons S: member of the same patent family, corresponding document				

EP 4 375 581 A3

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

EP 24 16 9559

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.

05-07-2024

10		Patent document cited in search report		Publication date		Patent family member(s)		Publication date
		DE 2837543	A1	13-03-1980	CA	1160095		10-01-1984
					DE	2837543		13-03-1980
15					GB	2029567		19-03-1980
					US 	4450756	A 	29-05-1984
		JP 3072420	в2	31-07-2000	JP	3072420	в2	31-07-2000
					JP	н11304216	A	05-11-1999
20		KR 20050090575	A	14-09-2005	NON	E		
		JP 3720452	в2	30-11-2005	CN	1179525	 2	22-04-1998
		01 3720432	בע	30 11 2003	JP	3720452		30-11-2005
					JP	H09280621		31-10-1997
					KR	970070801		07-11-1997
25					TW	428712		01-04-2001
		JP 2000266385	A	29-09-2000	JP	3327247	в2	24-09-2002
					JP	2000266385	A	29-09-2000
30		WO 9950603	A1	07-10-1999	CN	1296561	 А	23-05-2001
		NO 3330003		0, 10 1333	EP	1069381		17-01-2001
					KR	20010042385		25-05-2001
					KR	20030011374		07-02-2003
					US	6551185		22-04-2003
35					WO	9950603		07-10-1999
		WO 2009044627	ъ ъ1	09-04-2009	AU	2008308277	 ∆1	09-04-2009
		NO 2003011027	211	05 01 2005	CN	101815907		25-08-2010
					EP	2196739		16-06-2010
					JP	2009085562		23-04-2009
40					KR	20100043101		27-04-2010
					WO	2009044627		09-04-2009
		JP \$537876	 А	24-01-1978	AU	2387177		27-07-1978
		31 3337070	23	24 UI 17/0	CA	1081027		08-07-1980
45					CH	614280		15-11-1979
40					DE	2717613		10-11-1977
					DE	7712474		26-06-1980
					FR	2350554		02-12-1977
50					GB	1555563		14-11-1979
					IT	1084577		25-05-1985
					JP	S537876		24-01-1978
					JP	\$5950369		07-12-1984
					ZA	771939		22-02-1978
	0459							
	FORM P0459							
55	Ģ							

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