

(19)



(11)

**EP 2 650 629 A3**

(12)

**EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**21.10.2015 Bulletin 2015/43**

(51) Int Cl.:  
**F25D 25/02 (2006.01)**

(43) Date of publication A2:  
**16.10.2013 Bulletin 2013/42**

(21) Application number: **13162046.0**

(22) Date of filing: **03.04.2013**

(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:  
 • **Park, Sung Cheul  
 Gwangju (KR)**  
 • **Go, Hyoung Min  
 Gwang-ju (KR)**  
 • **Kim, Sang bum  
 Gwangju (KR)**

(30) Priority: **12.04.2012 KR 20120037924**

(71) Applicant: **Samsung Electronics Co., Ltd  
 Gyeonggi-do 443-742 (KR)**

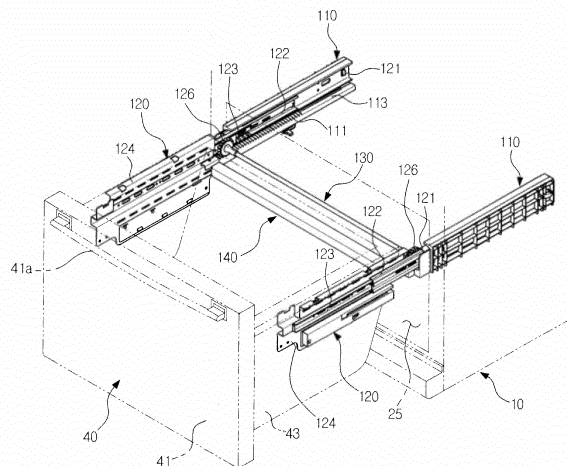
(74) Representative: **Grünecker Patent- und  
 Rechtsanwälte  
 PartG mbB  
 Leopoldstraße 4  
 80802 München (DE)**

**(54) Sliding apparatus and refrigerator having the same**

(57) Disclosed herein is a refrigerator which improves the structure of a sliding apparatus to reduce noise and warpage generated when a storage unit slides. The refrigerator includes storage units inserted into and extracted out of storage chambers in a sliding manner, cover rails combined with both side walls of the insides of the storage chambers and provided with rack gears and planar parts, slide units combined with both side surfaces of the storage units and including pinion gears mov-

ing in a state in which the pinion gears are engaged with the rack gears and moving in a state in which the pinion gears are suspended above the planar parts, a connection bar connected between the pinion gears to prevent movement of the storage units, and a reinforcing frame connected between the slide units to prevent warpage of the storage units generated when the pinion gears move above the planar parts.

FIG.2



**EP 2 650 629 A3**



EUROPEAN SEARCH REPORT

Application Number  
EP 13 16 2046

5

10

15

20

25

30

35

40

45

50

55

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	US 2008/314067 A1 (LEE CHANG LIM [KR]) 25 December 2008 (2008-12-25)	1,2	INV. F25D25/02
Y	* abstract; figures 2-16 * * paragraphs [0043], [0044], [0051], [0052], [0127] - [0129], [0134] - [0140], [0149] *	3-8	
A	----- US 2010/090574 A1 (LIM JAE HOON [KR] ET AL) 15 April 2010 (2010-04-15) * abstract; figures 3-4 * * paragraphs [0049] - [0052] *	1	
A	----- US 2002/153816 A1 (BANICEVIC NEDO [CA] ET AL) 24 October 2002 (2002-10-24) * abstract; figures 1-5 * * paragraphs [0039] - [0041] *	1	
Y	----- US 2005/160854 A1 (ROTTER CHAD [US]) 28 July 2005 (2005-07-28)	3-8	
A	* abstract; figures 1-28 * * paragraphs [0050] - [0056], [0080] - [0082] *	1	
A	----- US 2008/203875 A1 (LIM JAE HOON [KR] ET AL) 28 August 2008 (2008-08-28) * the whole document *	1,3-5,8	
E	----- US 2013/093306 A1 (SHIN JUNGIL [KR]) 18 April 2013 (2013-04-18) * the whole document *	1-8	
E	----- US 2013/264928 A1 (HONG YOUNG BAE [KR] ET AL) 10 October 2013 (2013-10-10) * the whole document *	1-8	
		----- -/--	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 9 September 2015	Examiner Bejaoui, Amin
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 03.02 (P04C01)



EUROPEAN SEARCH REPORT

Application Number  
EP 13 16 2046

5

10

15

20

25

30

35

40

45

50

55

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	DE 198 58 387 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 21 June 2000 (2000-06-21) * the whole document *	1-8	
E	EP 2 674 708 A2 (LG ELECTRONICS INC [KR]) 18 December 2013 (2013-12-18) * the whole document *	1-8	
A	KR 2010 0064581 A (LG ELECTRONICS INC [KR]) 15 June 2010 (2010-06-15) * the whole document *	1-8	
A	CN 101 210 763 A (TAIZHOU LG ELECT REFRIGERATOR [CN]) 2 July 2008 (2008-07-02) * the whole document *	1-8	
			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
The Hague		9 September 2015	Bejaoui, Amin
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	
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			

EPO FORM 1503 03.02 (P04C01)

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

EP 13 16 2046

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.

09-09-2015

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008314067 A1	25-12-2008	KR 20080112750 A US 2008314067 A1	26-12-2008 25-12-2008
US 2010090574 A1	15-04-2010	EP 2175218 A2 KR 20100041033 A US 2010090574 A1	14-04-2010 22-04-2010 15-04-2010
US 2002153816 A1	24-10-2002	CA 2344923 A1 MX PA02003984 A US 2002153816 A1 US 2003111943 A1	20-10-2002 06-10-2003 24-10-2002 19-06-2003
US 2005160854 A1	28-07-2005	CA 2492681 A1 US 2005160854 A1 US 2007144408 A1	16-07-2005 28-07-2005 28-06-2007
US 2008203875 A1	28-08-2008	KR 20080079106 A US 2008203875 A1	29-08-2008 28-08-2008
US 2013093306 A1	18-04-2013	KR 20130039436 A US 2013093306 A1	22-04-2013 18-04-2013
US 2013264928 A1	10-10-2013	CN 103363765 A EP 2650630 A2 KR 20130114991 A US 2013264928 A1 WO 2013154307 A1	23-10-2013 16-10-2013 21-10-2013 10-10-2013 17-10-2013
DE 19858387 A1	21-06-2000	AT 244386 T BR 9916222 A CN 1330759 A DE 19858387 A1 DK 1141640 T3 EP 1141640 A1 ES 2203243 T3 PT 1141640 E TR 200101570 T2 US 2001054296 A1 US 2004035129 A1 WO 0036349 A1	15-07-2003 11-09-2001 09-01-2002 21-06-2000 27-10-2003 10-10-2001 01-04-2004 28-11-2003 21-11-2001 27-12-2001 26-02-2004 22-06-2000
EP 2674708 A2	18-12-2013	EP 2674708 A2 KR 20130140313 A US 2013334950 A1	18-12-2013 24-12-2013 19-12-2013
KR 20100064581 A	15-06-2010	NONE	

EPO FORM P0459

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

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

EP 13 16 2046

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.

09-09-2015

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 101210763	A	02-07-2008	NONE

15

20

25

30

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