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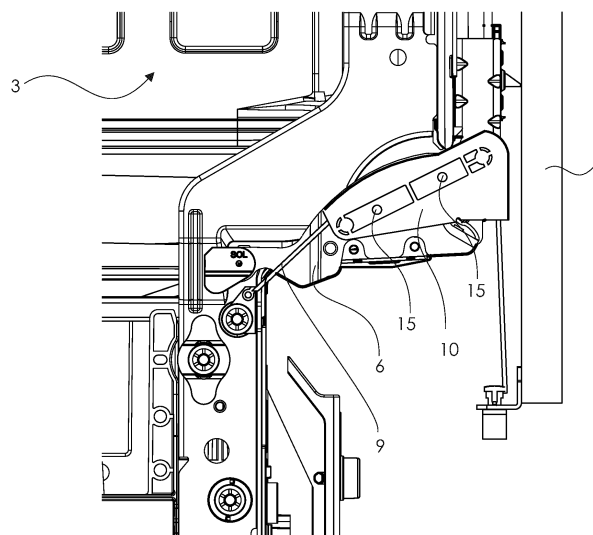
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(54) **A DISHWASHER COMPRISING A PROTECTIVE MEMBER**

(57) The present invention relates to a dishwasher (1) comprising a body (2); a washing tub (3) which is provided in the body (2) and wherein the washing process is performed; a door (4) which enables the washing tub (3) to be isolated from the outer environment and which is opened downwards by rotating around the horizontal axis; a decorative panel (D) which is attached onto the door (4); a hinge (5) which enables the door (4) to be

connected so as to move on the body (2); a hinge arm (6) which extends from the door (4) towards the lower section of the washing tub (3); at least one pulley (7) which is provided under the hinge arm (6); and a transmission member (9), one end of which extends as connected to the hinge arm (6) and passes over the pulley (7) and the other end of which is connected to a movement member (8) which slidably moves in the horizontal plane.

Figure 2



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Description

[0001] The present invention relates to a dishwasher comprising a protective member.

[0002] In dishwashers, the washing process is performed in the washing tub. The washing tub is isolated from the outer environment by means of a door. In the dishwasher, the door is opened by rotating on the horizontal axis such that the lower edge thereof remains fixed on the body. The door is perpendicular to the floor of the environment in the closed position, and parallel to the floor of the environment in the fully open position. Today, the use of built-in dishwashers is known. The built-in dishwashers are placed in the kitchen furniture and decorative panels compatible with the kitchen furniture are attached onto the door. Thus, the dishwasher is completely hidden in the kitchen and an aesthetic appearance is provided. The decorative panels attached onto the door are selected by the user and mounted on the dishwasher by service staff. The decorative panel attached onto the dishwasher door varies depending on the kitchen structure and the design of the cabinets. In the state of the art, there are door support mechanisms suitable for various decorative panels. It is known that flexible members and ropes are used in said mechanisms. The moving members used on the mechanism pose a danger to users during the opening and closing of the door.

[0003] In the state of the art Patent Document No. EP2276387, a dishwasher is disclosed, comprising a lid mounted on the hinge arm for sound blocking purposes.

[0004] The aim of the present invention is the realization of a dishwasher comprising a door opening mechanism with improved safety.

[0005] The dishwasher realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a body; a washing tub which is provided on the body; a door which enables the washing tub to be isolated from the outer environment; a hinge which enables the door to be connected to the body; a hinge arm connected to the hinge; and at least one pulley provided under the hinge arm. The kitchen items to be washed are placed into the washing tub. The door is closed such that the washing tub is isolated from the outer environment and the washing process is enabled to be performed. The door is connected onto the body by means of a hinge via the lower edge thereof. The door opens by rotating around the horizontal axis as connected to the body via the lower edge thereof, and the upper edge thereof moves away from the body.

[0006] The dishwasher of the present invention comprises a protective member which is mounted on the hinge arm. The transmission member passes through the protective member. Thus, the transmission member is prevented from getting into contact with the external environment.

[0007] In an embodiment of the present invention, the

dishwasher comprises a movement surface which is arranged on the protective member. The transmission member moves by sliding on the movement surface. Thus, the transmission member is supported and guided by the movement surface.

[0008] In an embodiment of the present invention, the dishwasher comprises a channel which is provided on the protective member and which enables the transmission member moving on the movement surface to be guided in the vertical plane. The transmission member moving on the movement surface moves in the vertical plane to be connected to the door.

[0009] In an embodiment of the present invention, the dishwasher comprises a abutment member which is arranged on the protective member. The abutment member bears against the hinge arm. Thus, the position of the protective member on the hinge arm is determined.

[0010] In an embodiment of the present invention, the dishwasher comprises at least one hole which is provided on the protective member and at least one fixing member which engages with the hole. The fixing member passes through the hole and enables the protective member to be fixed to the hinge arm.

[0011] In an embodiment of the present invention, the dishwasher comprises the protective member which has a form suitable to be attached onto the hinge arm. Thus, the protective member can be easily attached onto the hinge arm.

[0012] By means of the present invention, a dishwasher is realized, comprising a protective member ensuring the safety of the user during the opening and closing of the door.

[0013] A dishwasher realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the sideways view of the dishwasher.

Figure 2 - is the schematic view of the hinge arm and the protective member.

Figure 3 - is the perspective view of the protective member.

[0014] The elements illustrated in the figures are numbered as follows.

1- Dishwasher

2- Body

3- Washing tub

4- Door

5- Hinge

6- Hinge arm

- 7- Pulley
- 8- Movement member
- 9- Transmission member
- 10- Protective member
- 11- Movement surface
- 12- Channel
- 13- Abutment member
- 14- Hole
- 15- Fixing member

[0015] The dishwasher (1) comprises a body (2); a washing tub (3) which is provided in the body (2) and wherein the washing process is performed; a door (4) which enables the washing tub (3) to be isolated from the outer environment and which is opened downwards by rotating around the horizontal axis; a decorative panel (D) which is attached onto the door (4); a hinge (5) which enables the door (4) to be connected so as to move on the body (2); a hinge arm (6) which extends from the door (4) towards the lower section of the washing tub (3); at least one pulley (7) which is provided under the hinge arm (6); and a transmission member (9), one end of which extends as connected to the hinge arm (6) and passes over the pulley (7) and the other end of which is connected to a movement member (8) which slidably moves in the horizontal plane.

[0016] The dishwasher (1) of the present invention comprises a protective member (10) which is attached to the hinge arm (6) and through which the transmission member (9) passes. The protective member (10) is attached to the hinge arm (6) to enable the transmission member (9) to be isolated from the external environment. Thus, the user is protected from the transmission member (9) which moves during the opening and closing of the door (4).

[0017] In an embodiment of the present invention, the dishwasher (1) comprises a movement surface (11) which is arranged on the protective member (10) and whereon the protective member (9) slidably moves. The transmission member (9) moves by sliding on the movement surface (11). By means of the movement surface (11), the transmission member (9) is guided and supported. Thus, the transmission member (9) is prevented from leaving the system or moving in an uncontrolled manner or getting stuck on different surfaces. The system is enabled to operate in a regular and controlled manner.

[0018] In an embodiment of the present invention, the dishwasher (1) comprises a channel (12) which is provided on the protective member (10) and which enables the transmission member (9) moving on the movement

surface (11) to be guided in the vertical plane. The transmission member (9) moving on the movement surface (11) is guided onto the channel (12). Thus, the transmission member (9) is enabled to be guided in the vertical plane. At this point, the transmission member (9) is connected to the door (4).

[0019] In an embodiment of the present invention, the dishwasher (1) comprises an abutment member (13) which is arranged on the protective member (10) and which extends towards the hinge arm (6) so as to enable the protective member (10) to be positioned on the hinge arm (6). The abutment member (13) bears against the side of the hinge arm (6). Thus, the position of the protective member (10) on the hinge arm (6) is determined.

[0020] In an embodiment of the present invention, the dishwasher (1) comprises at least one hole (14) which is provided on the protective member (10) and at least one fixing member (15) which engages with the hole (14) so as to enable the protective member (10) to be fixed to the hinge arm (6). After the abutment member (13) is attached to the hinge arm (6), the holes (14) engage with appropriate parts and the protective member (10) is enabled to be attached to the hinge arm (6) by means of the fixing member (15). The protective member (10) is fixed onto the hinge arm (6). When the hinge arm (6) moves, the protective member (10) also moves together with the hinge arm (6).

[0021] In an embodiment of the present invention, the dishwasher (1) comprises the protective member (10) which has a matching form with the hinge arm (6). The protective member (10) is formed so as to be easily attached onto the hinge arm (6). The protective member (10) bears against the sides of the hinge arm (6). Thus, ease of production is provided.

[0022] By means of the present invention, a dishwasher (1) is realized, comprising a protective member (10) covering the transmission member (9) moving during the opening and closing of the door (4). Thus, the movement member (8) is enabled to be isolated from the external environment. Consequently, the safety of the user is improved. Moreover, the risk of failure of the door (4) opening and closing mechanism is reduced.

Claims

1. A dishwasher (1) **comprising** a body (2); a washing tub (3) which is provided in the body (2) and wherein the washing process is performed; a door (4) which enables the washing tub (3) to be isolated from the outer environment and which is opened downwards by rotating around the horizontal axis; a decorative panel (D) which is attached onto the door (4); a hinge (5) which enables the door (4) to be connected so as to move on the body (2); a hinge arm (6) which extends from the door (4) towards the lower section of the washing tub (3); at least one pulley (7) which is

provided under the hinge arm (6); and a transmission member (9), one end of which extends as connected to the hinge arm (6) and passes over the pulley (7) and the other end of which is connected to a movement member (8) which slidably moves in the horizontal plane, **characterized by** a protective member (10) which is attached to the hinge arm (6) and through which the transmission member (9) passes.

2. A dishwasher (1) as in Claim 1, **characterized by** a movement surface (11) which is arranged on the protective member (10) and whereon the protective member (9) slidably moves.
3. A dishwasher (1) as in Claim 2, **characterized by** a channel (12) which is provided on the protective member (10) and which enables the transmission member (9) moving on the movement surface (11) to be guided in the vertical plane.
4. A dishwasher (1) as in any one of the above claims, **characterized by** an abutment member (13) which is arranged on the protective member (10) and which extends towards the hinge arm (6) so as to enable the protective member (10) to be positioned on the hinge arm (6).
5. A dishwasher (1) as in any one of the above claims, **characterized by** at least one hole (14) which is provided on the protective member (10) and at least one fixing member (15) which engages with the hole (14) so as to enable the protective member (10) to be fixed to the hinge arm (6).
6. A dishwasher (1) as in any one of the above claims, **characterized by** the protective member (10) which has a matching form with the hinge arm (6).

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Figure 1

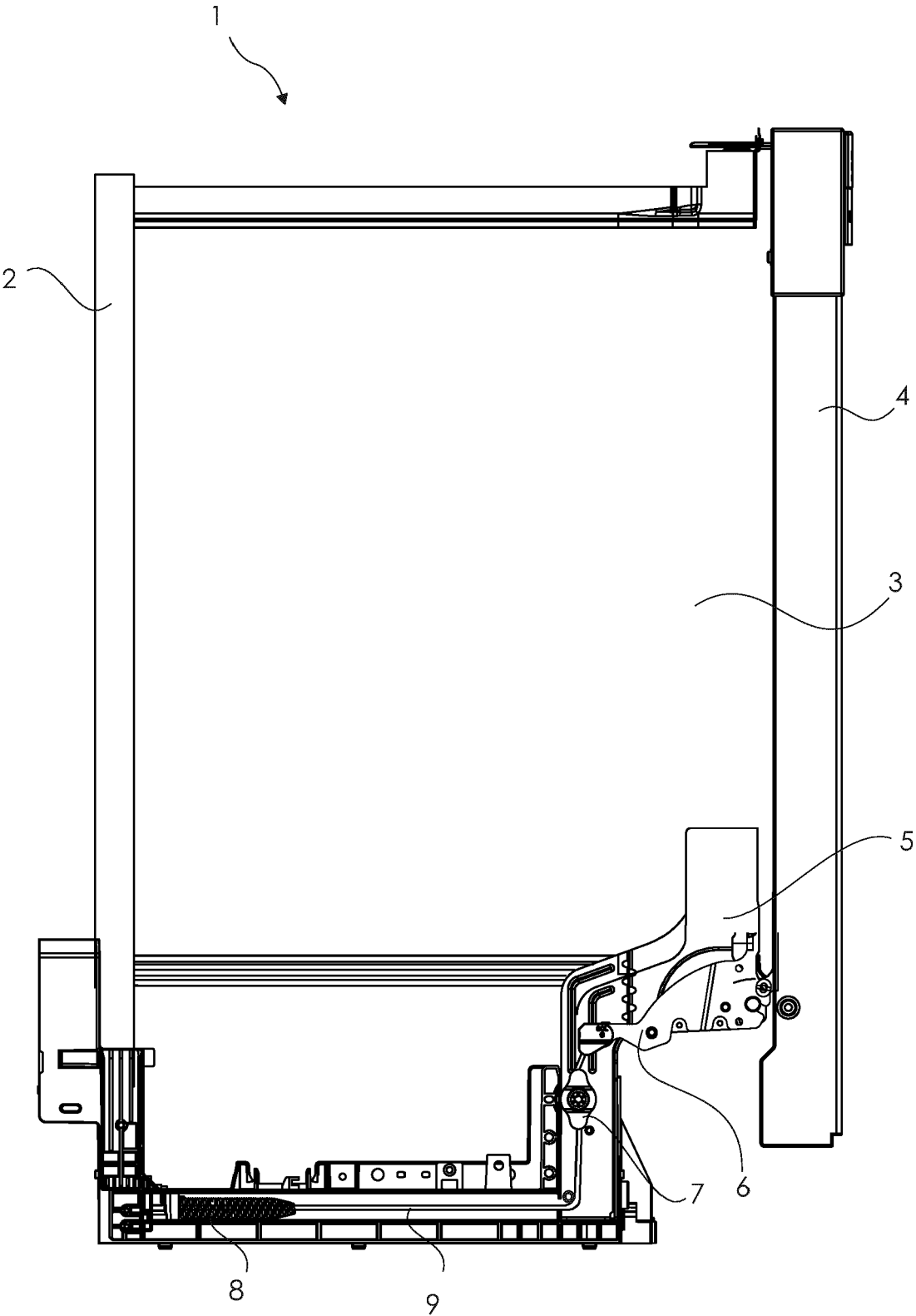


Figure 2

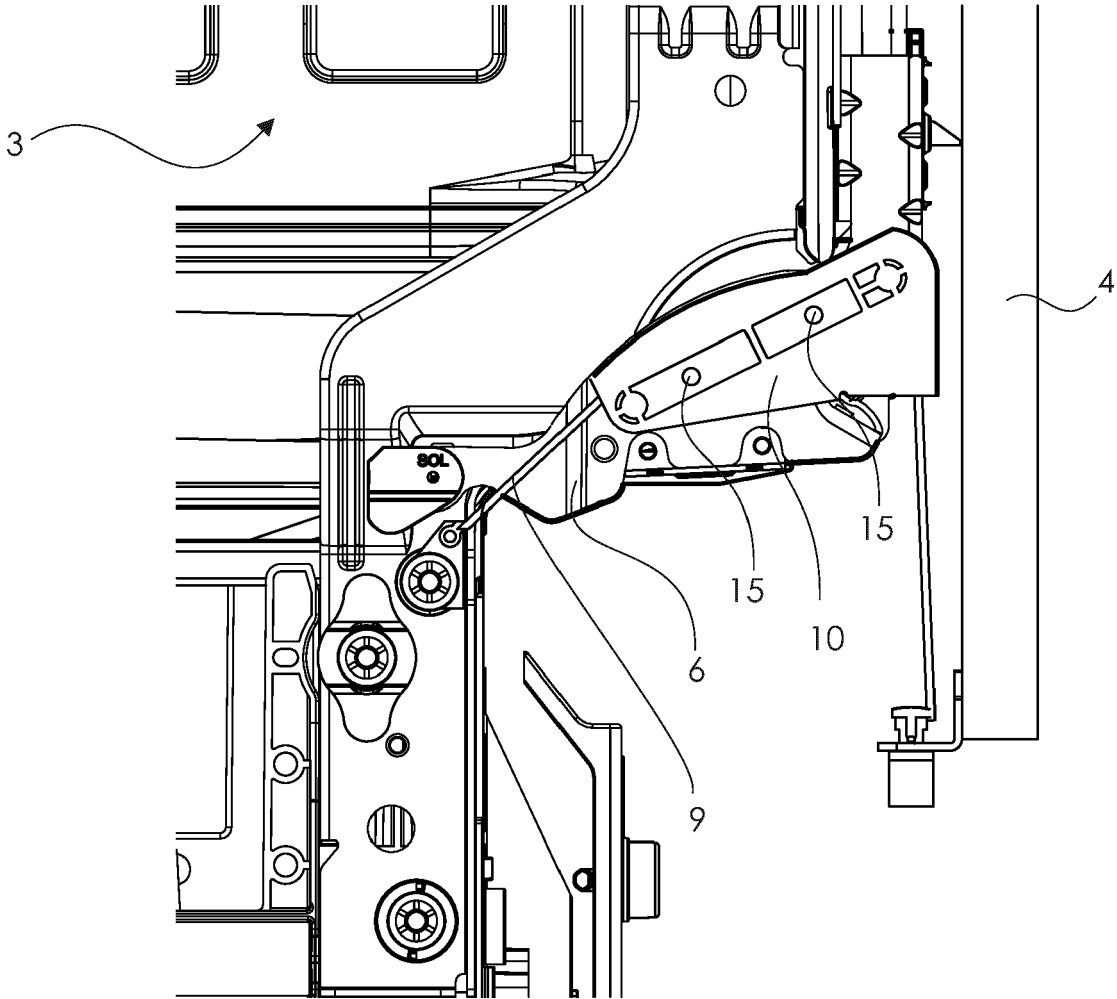
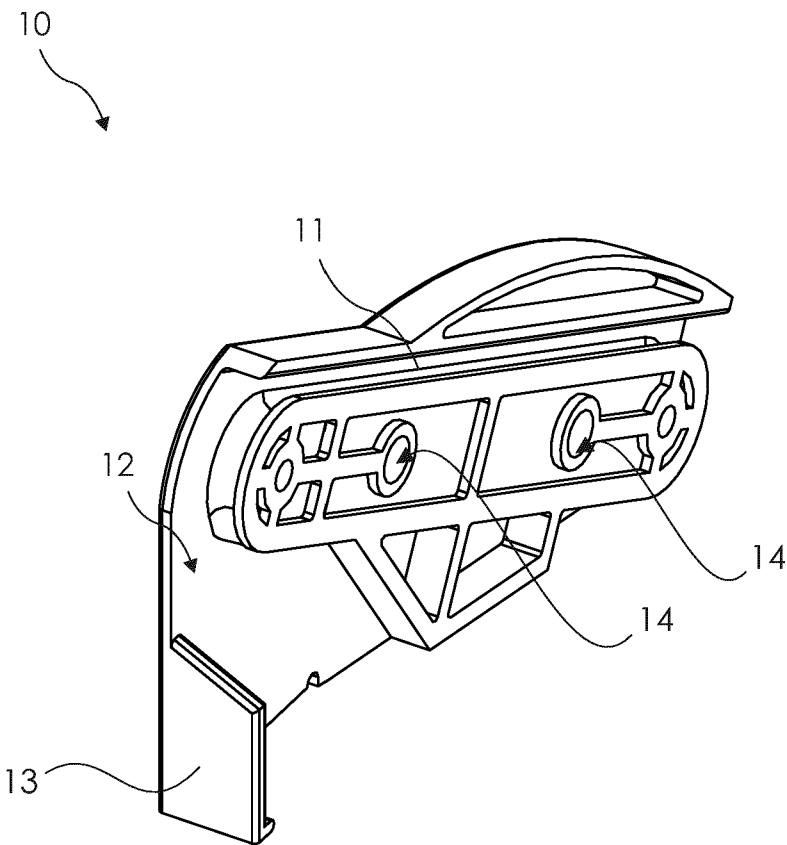


Figure 3





EUROPEAN SEARCH REPORT

Application Number

EP 24 19 2032

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	US 2015/182101 A1 (CHAE SEUNG MIN [KR] ET AL) 2 July 2015 (2015-07-02) * the whole document *	1-6	INV. A47L15/42
A	US 2016/029873 A1 (UCAR ALI EGEMEN [TR] ET AL) 4 February 2016 (2016-02-04) * the whole document *	1-6	
A	EP 2 526 848 B1 (BSH HAUSGERAETE GMBH [DE]) 8 July 2015 (2015-07-08) * the whole document *	1-6	
A	DE 10 2007 056708 B4 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 28 January 2010 (2010-01-28) * the whole document *	1-6	
A	KR 2017 0011056 A (LG ELECTRONICS INC [KR]) 2 February 2017 (2017-02-02) * the whole document *	1-6	
A	US 5 988 933 A (WILHELMSTAETTER JOHANN [DE] ET AL) 23 November 1999 (1999-11-23) * the whole document *	1-6	TECHNICAL FIELDS SEARCHED (IPC)
A	US 11 026 558 B2 (SAMSUNG ELECTRONICS CO LTD [KR]) 8 June 2021 (2021-06-08) * the whole document *	1-6	A47L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 January 2025	Examiner Lodato, Alessandra
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			

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

EP 24 19 2032

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
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13 - 01 - 2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2015182101 A1	02-07-2015	EP 2888985 A1	01-07-2015
		US 2015182101 A1	02-07-2015
-----		-----	
US 2016029873 A1	04-02-2016	AU 2014224782 A1	16-07-2015
		EP 2964068 A2	13-01-2016
		TR 201719385 T3	21-05-2019
		US 2016029873 A1	04-02-2016
		WO 2014135505 A2	12-09-2014
-----		-----	
EP 2526848 B1	08-07-2015	DE 102011076204 A1	22-11-2012
		EP 2526848 A1	28-11-2012
-----		-----	
DE 102007056708 B4	28-01-2010	DE 102007056708 A1	28-05-2009
		WO 2009068383 A1	04-06-2009
-----		-----	
KR 20170011056 A	02-02-2017	NONE	
-----		-----	
US 5988933 A	23-11-1999	DE 19611051 A1	25-09-1997
		US 5988933 A	23-11-1999
-----		-----	
US 11026558 B2	08-06-2021	EP 3863492 A1	18-08-2021
		KR 20200056775 A	25-05-2020
		US 2020154974 A1	21-05-2020
		WO 2020101418 A1	22-05-2020
-----		-----	

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2276387 A [0003]