



(12)

EUROPEAN PATENT APPLICATION

- (43)

Date of publication:
19.06.2024 Bulletin 2024/25
- (51)

International Patent Classification (IPC):
A47L 15/50^(2006.01)
- (21)

Application number: 23207211.6
- (52)

Cooperative Patent Classification (CPC):
A47L 15/507
- (22)

Date of filing: 31.10.2023

- (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 ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN
- (71)

Applicant: Arçelik Anonim Sirketi
34445 Istanbul (TR)

(72)

Inventor: ARGINHAN, OMER
34445 ISTANBUL (TR)
- (30)

Priority: 12.12.2022 TR 202219025

(54)

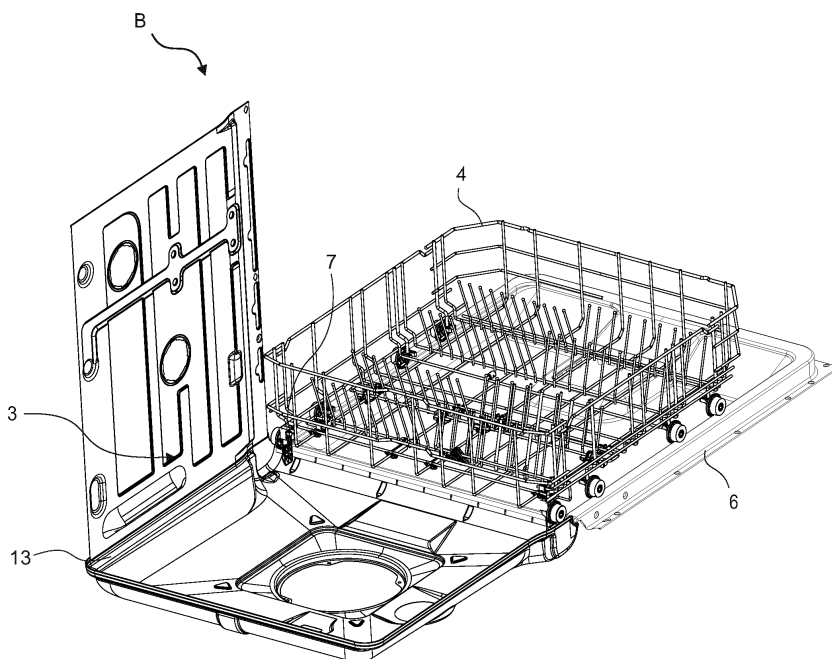
A DISHWASHER COMPRISING A RACK STOPPER

(57)

The present invention relates to a dishwasher (1) comprising a body (2); a washing tub (3) which is disposed in the body (2) and wherein the washing process is performed; at least one rack (4) which is disposed in the washing tub (3) and whereon the kitchen items are placed; at least one spraying member (5) which sprays water onto the rack (4); a door (6) which is provided on the body (2) and which has a closed position (K) where

the washing tub (3) is completely isolated from the outside environment and an open position (A) where the user can access the washing tub (3) and the door (6) is parallel to the bottom of the washing tub (3); and a stopper (7) which extends from the bottom of the rack (4) towards the door (6) while the rack (4) moves outward from the washing tub (3) over the door (6) and which prevents the rack (4) from leaving the door (6).

Figure 2



Description

[0001] The present invention relates to a dishwasher comprising a rack whereon items to be washed are placed and a rack stopper.

[0002] In dishwashers, racks are used for placing items to be washed into the dishwasher. Generally, two racks are placed in the dishwasher one above the other. The lower racks stay on the base of the washing tub when the door of the dishwasher is in the closed position. In order to load the dishes for washing and then to unload the same, the rack is pulled forward on the door such that the rack moves over the door which is parallel to the horizontal axis. If pulled forward rapidly, the lower rack comes out of the washing tub completely and falls to the ground, causing the items placed therein to be damaged. Therefore, stoppers extending from the bottom of the rack towards the door are developed. In particular, stoppers are known which extend from the rear-bottom part of the rack to the back of the door and prevent the rack from leaving the door. However, the stoppers which extend continuously from the base of the rack to the base of the washing tub narrow the space required for the rotation of the spraying arm. Therefore, it is necessary to use spraying arms with smaller dimensions. This situation adversely affects the washing performance.

[0003] The state of the art German Patent Document No. DE8506735 discloses a front wheel and a rear wheel each having a different radius and a stopper member which is provided on the side wall.

[0004] The aim of the present invention is the realization of a dishwasher wherein the lower rack, in which items to be washed are placed, can be moved safely, providing ease of use.

[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 disposed in the body; a rack which is disposed in the washing tub; at least one spraying member which sprays water onto the rack; a door which is provided on the body and which has a closed position and an open position; and a stopper which prevents the rack from dislodging while being pulled over the door when the door is in the open position. The washing tub wherein the washing process is performed is disposed in the body. The racks are placed into the washing tub. The kitchen items are placed on the racks, water is delivered onto the kitchen items by means of the spraying member, and thus the cleaning process is performed. The door provided on the body has a closed position where the washing tub is completely isolated from the outside environment and an open position where the door is parallel to the bottom of the washing tub. The user pulls the rack towards over the door while loading and unloading the kitchen items. By means of a pathway provided on the door, the rack is enabled to move over the door. By means of a stopper extending from the rear and bottom of the rack to the lower edge of the door, the rack is

prevented from leaving the door. Thus, the safety of the rack and the kitchen items thereon is ensured during loading and unloading.

[0006] The dishwasher of the present invention comprises the stopper which has a first position where the stopper extends from the rack towards the base of the washing tub and a second position where the stopper is positioned parallel to the base of the rack, and which moves by rotating between the first position and the second position. While the door shifts between the open position and the closed position, the stopper rotates and shifts between the first position and the second position. Thus, when the rack is pulled forward on the door, the rack is stopped, and when the rack is pushed towards the washing tub, the stopper shifts to the second position and does not occupy additional space in the washing tub.

[0007] In an embodiment of the present invention, the dishwasher comprises a plurality of wheels which enable the rack to move in the washing tub; a plurality of connection members which enable the wheel to be attached onto the rack; a wheel shaft which is provided on the connection member and onto which the wheel is attached; and the stopper which is attached onto the wheel shaft. A wheel shaft is provided on a connection member which is attached to each wire of the rack. The stopper is rotatably attached onto the wheel shaft and the wheel is attached onto the latter. Thus, the grouping of the stopper and the wheel is ensured.

[0008] In an embodiment of the present invention, the dishwasher comprises the stopper having a hole which enables the same to be rotatably attached onto the wheel shaft and a weight part which is provided under the hole. The stopper is attached onto the wheel shaft via the hole. By means of the weight part provided at the lower side of the hole, the stopper is enabled to move to a vertical position when there is a gap thereunder.

[0009] In an embodiment of the present invention, the dishwasher comprises a movement path which is provided on two opposite side walls of the washing tub, which is positioned close to the base of the washing tub and whereon the rack moves. When the rack is moved into the washing tub and when the weight part reaches the movement path, the stopper rotates so as to be positioned on the wheel shaft and the stopper shifts to the horizontal position.

[0010] In an embodiment of the present invention, the dishwasher comprises the stopper which, while shifting from the second position to the first position, rotates by means of the weight part and contacts the lower edge of the door through the rack, and which rotates by hitting the movement path while shifting from the first position to the second position. Thus, the stopper prevents the rack from dislodging from the door, and when the rack is pushed into the washing tub, the stopper does not occupy space in the washing tub.

[0011] By means of the present invention, a dishwasher is realized, comprising a stopper which allows the entire area at the base of the washing tub to be used while

the rack is in the washing tub.

[0012] A dishwasher realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the perspective view of the dishwasher.

Figure 2 - the schematic view of the stopper when in the first position.

Figure 3 - the schematic view of the stopper in the second position.

Figure 4 - is the exploded view of the stopper, the connection member and the wheel.

[0013] The elements illustrated in the figures are numbered as follows.

1- Dishwasher

2- Body

3- Washing tub

4- Rack

5- Spraying member

6- Door

7- Stopper

B- First position

I- Second position

8- Wheel

9- Connection member

10- Wheel shaft

11- Hole

12- Weight part

13-Movement path

[0014] The dishwasher (1) comprises a body (2); a washing tub (3) which is disposed in the body (2) and wherein the washing process is performed; at least one rack (4) which is disposed in the washing tub (3) and whereon the kitchen items are placed; at least one spraying member (5) which sprays water onto the rack (4); a door (6) which is provided on the body (2) and which has a closed position (K) where the washing tub (3) is completely isolated from the outside environment and an

open position (A) where the user can access the washing tub (3) and the door (6) is parallel to the bottom of the washing tub (3); and a stopper (7) which extends from the bottom of the rack (4) towards the door (6) while the rack (4) moves outward from the washing tub (3) over the door (6) and which prevents the rack (4) from leaving the door (6). The kitchen items are placed onto the rack (4). The cleaning process is performed by delivering water by means of the spraying members (5). When the door (6) is in the open position, the interior of the washing tub (3) can be accessed. When the door (6) is in the closed position, the washing tub (3) is isolated from the outside environment. The door (6) is perpendicular to the base of the washing tub (3) when in the closed position, and is parallel to the washing tub (3) when in the open position. While the door (6) is in the open position, the rack (4) is pulled outwards over the door (6) for loading and unloading. A stopper (7) is provided which enables the rack (4) to be stopped on the door (6).

[0015] The dishwasher (1) of the present invention comprises the stopper (7) which has a first position (B) where the stopper (7) extends from the rack (4) towards the base of the washing tub (3) and a second position (I) where the stopper (7) is positioned parallel to the base of the rack (4), and which moves by rotating between the first position (B) and the second position (I) while the door (6) shifts between the open position and the closed position. The stopper (7) has the first position (B) and the second position (I). When in the first position (B), the stopper (7) extends vertically from the rack (4) towards the door (6). Thus, the stopper (7) and the lower side of the rack (4) contact each other. Consequently, the rack (4) is prevented from leaving the door (6). When the rack (4) moves into the washing tub (3), the stopper (7) rotates and shifts to the second position (I) where the stopper (7) extends horizontally. Thus, the stopper (7) is prevented from extending from the rack (4) towards the spraying member (5) provided on the base of the washing tub (3). Consequently, a larger spraying member (5) can be used, improving the washing efficiency.

[0016] In an embodiment of the present invention, the dishwasher (1) comprises a plurality of wheels (8) which enable the rack (4) to move in the washing tub (3); a plurality of connection members (9) which enable the wheel (8) to be attached and fixed onto the rack (4); a wheel shaft (10) which is provided on the connection member (9) and onto which the wheel (8) is rotatably attached; and the stopper (7) which is attached onto the wheel shaft (10). A wheel shaft (10) is provided on a connection member (9) which is attached to each foot of the rack (4). The wheel shaft (10) extends from the connection member (9) towards the side walls of the washing tub (3). The stopper (7) and the wheel (8) are attached onto the wheel shaft (10). Thus, the grouping is carried out.

[0017] In an embodiment of the present invention, the dishwasher (1) comprises the stopper (7) having a hole (11) which enables the same to be rotatably attached

onto the wheel shaft (10) and a weight part (12) which is provided under the hole (11) and whereon the center of gravity is located. The stopper (7) is attached onto the wheel shaft (10) via the hole (11). Thus, the hole (11) is enabled to move rotatably on the wheel shaft (10). The weight part (12) where the center of gravity is located is provided under the hole (11). By means of the weight part (12), when there is a gap under the stopper (7), the center of gravity provides the downwards movement, and the stopper (7) extends from the rack (4) towards the door (6), thus shifting to the horizontal position. Thus, the stopper (7) contacts the lower side of the door (6), preventing the rack (4) from leaving the door (6).

[0018] In an embodiment of the present invention, the dishwasher (1) comprises a movement path (13) which is provided on two opposite side walls of the washing tub (3), which is positioned close to the base of the washing tub (3) and whereon the rack (4) moves. The stoppers (7) which are located in the first position (B) on the rack (4) pushed into the washing tub (3) rotate at the hole (11) while moving onto the movement path (13) so as to shift to the second position (I). Thus, the stoppers (7) do not extend from the rack (4) towards the washing tub (3).

[0019] In an embodiment of the present invention, the dishwasher (1) comprises the stopper (7) which, while shifting from the second position (I) to the first position (B), rotates by means of the weight part (12) and contacts the lower edge of the door (6) through the rack (4), and which rotates by hitting the movement path (13) while shifting from the first position (B) to the second position (I). By means of the stopper (7) which rotates and shifts between the first position (B) and the second position (I) with the movement of the rack (4), the space in the washing tub (3) is enabled to be used more efficiently.

[0020] By means of the present invention, a dishwasher (1) is realized, comprising the stopper (7) which rotates and shifts between the first position (B) and the second position (I) with the movement of the rack (4). By means of the rotational movement of the stopper (7) thanks to the hole (11), when the rack (4) is pulled outwards over the door (6), the rack (4) is prevented from being completely dislodged, and when the rack (4) is in the washing tub (3), the stopper (7) is prevented from occupying space at the base of the washing tub (3). Consequently, larger spraying members (5) can be used, improving the washing efficiency.

Claims

1. A dishwasher (1) **comprising** a body (2); a washing tub (3) which is disposed in the body (2) and wherein the washing process is performed; at least one rack (4) which is disposed in the washing tub (3) and whereon the kitchen items are placed; at least one spraying member (5) which sprays water onto the rack (4); a door (6) which is provided on the body (2) and which has a closed position (K) where the washing

tub (3) is completely isolated from the outside environment and an open position (A) where the user can access the washing tub (3) and the door (6) is parallel to the bottom of the washing tub (3); and a stopper (7) which extends from the bottom of the rack (4) towards the door (6) while the rack (4) moves outward from the washing tub (3) over the door (6) and which prevents the rack (4) from leaving the door (6), **characterized by** the stopper (7) which has a first position (B) where the stopper (7) extends from the rack (4) towards the base of the washing tub (3) and a second position (I) where the stopper (7) is positioned parallel to the base of the rack (4), and which moves by rotating between the first position (B) and the second position (I) while the door (6) shifts between the open position and the closed position.

2. A dishwasher (1) as in Claim 1, **characterized by** a plurality of wheels (8) which enable the rack (4) to move in the washing tub (3); a plurality of connection members (9) which enable the wheel (8) to be attached and fixed onto the rack (4); a wheel shaft (10) which is provided on the connection member (9) and onto which the wheel (8) is rotatably attached; and the stopper (7) which is attached onto the wheel shaft (10).
3. A dishwasher (1) as in Claim 2, **characterized by** the stopper (7) having a hole (11) which enables the same to be rotatably attached onto the wheel shaft (10) and a weight part (12) which is provided under the hole (11) and whereon the center of gravity is located.
4. A dishwasher (1) as in any one of the above claims, **characterized by** a movement path (13) which is provided on two opposite side walls of the washing tub (3), which is positioned close to the base of the washing tub (3) and whereon the rack (4) moves.
5. A dishwasher (1) as in Claim 4, **characterized by** the stopper (7) which, while shifting from the second position (I) to the first position (B), rotates by means of the weight part (12) and contacts the lower edge of the door (6) through the rack (4), and which rotates by hitting the movement path (13) while shifting from the first position (B) to the second position (I).

Figure 1

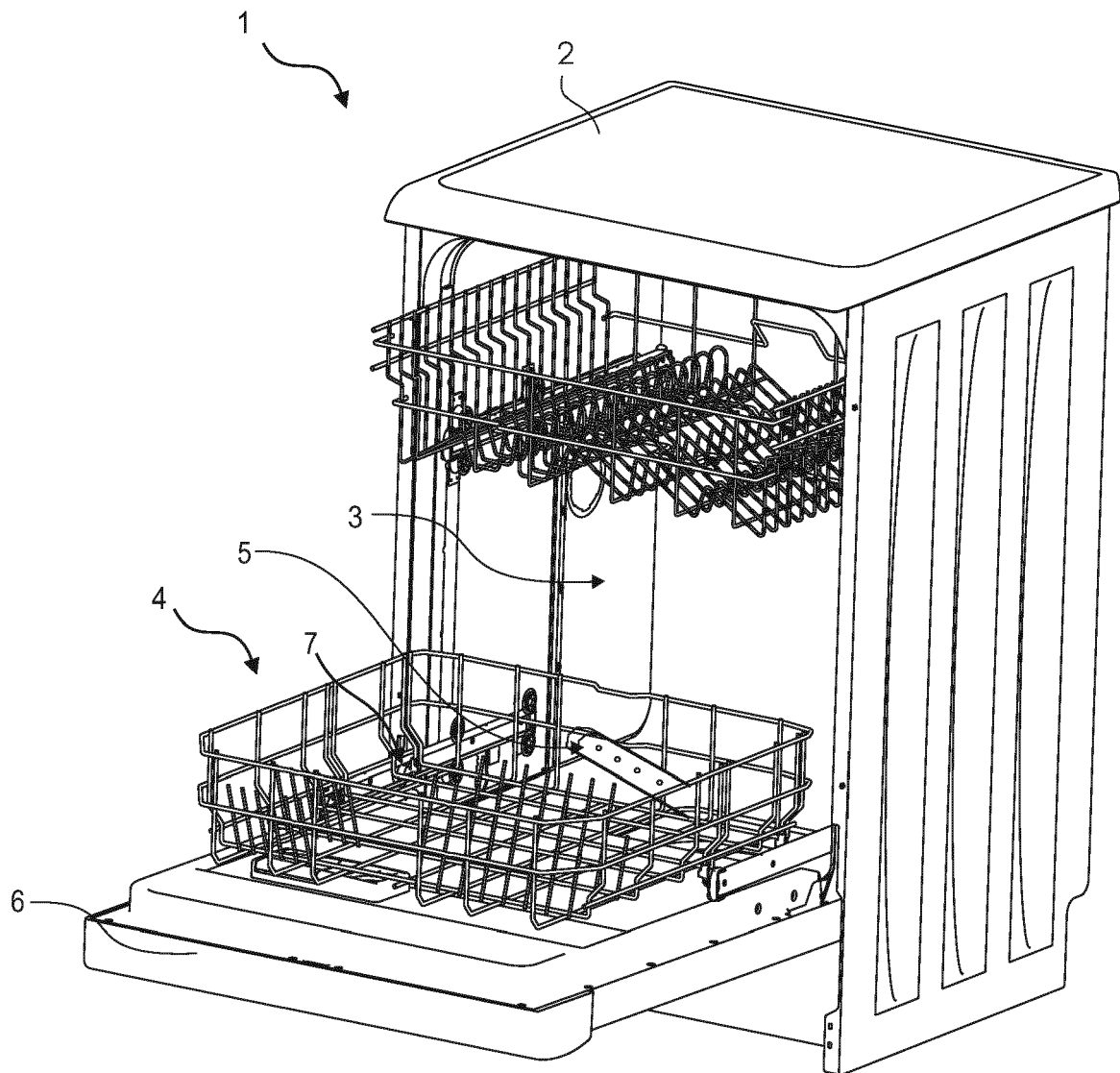


Figure 2

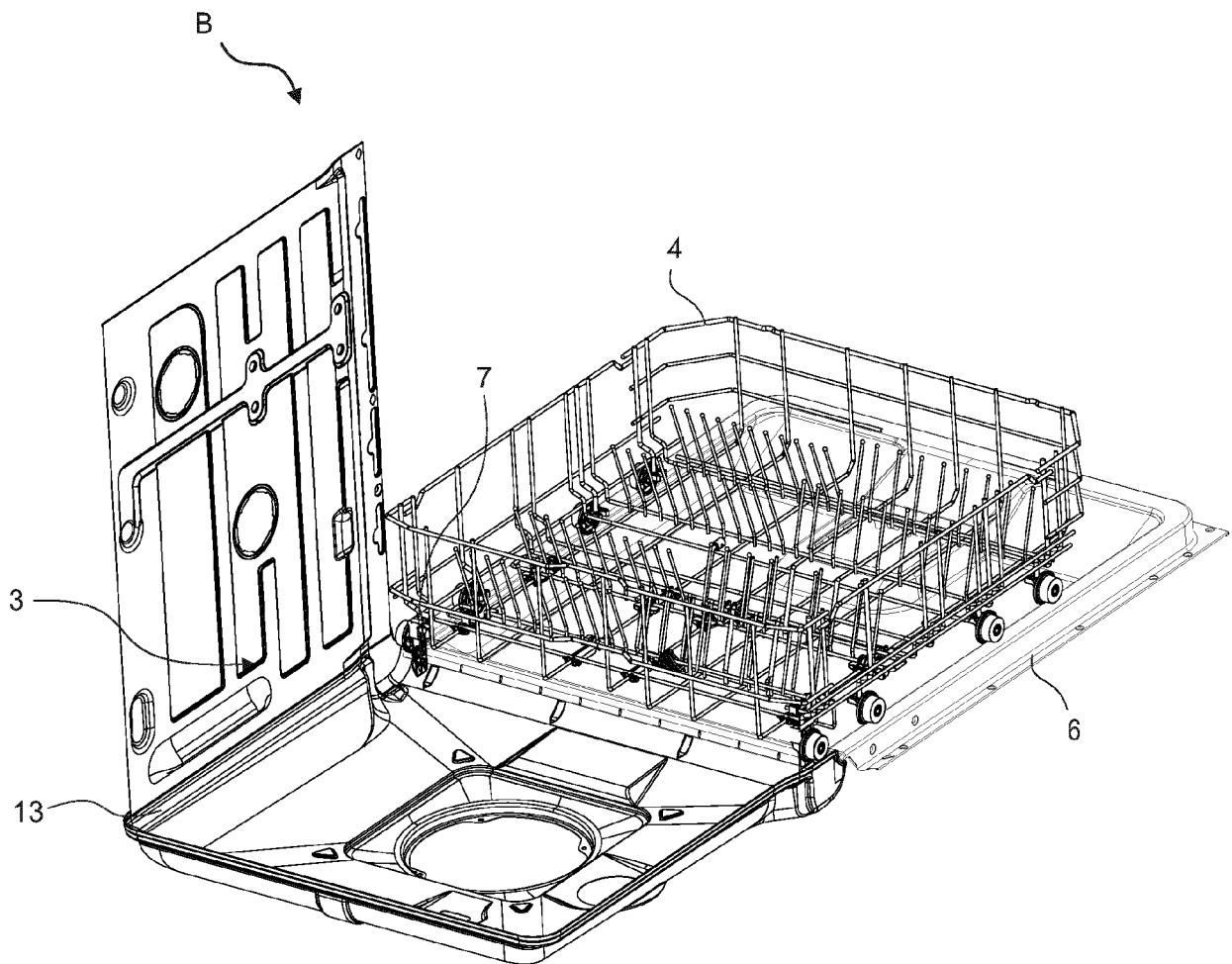


Figure 3

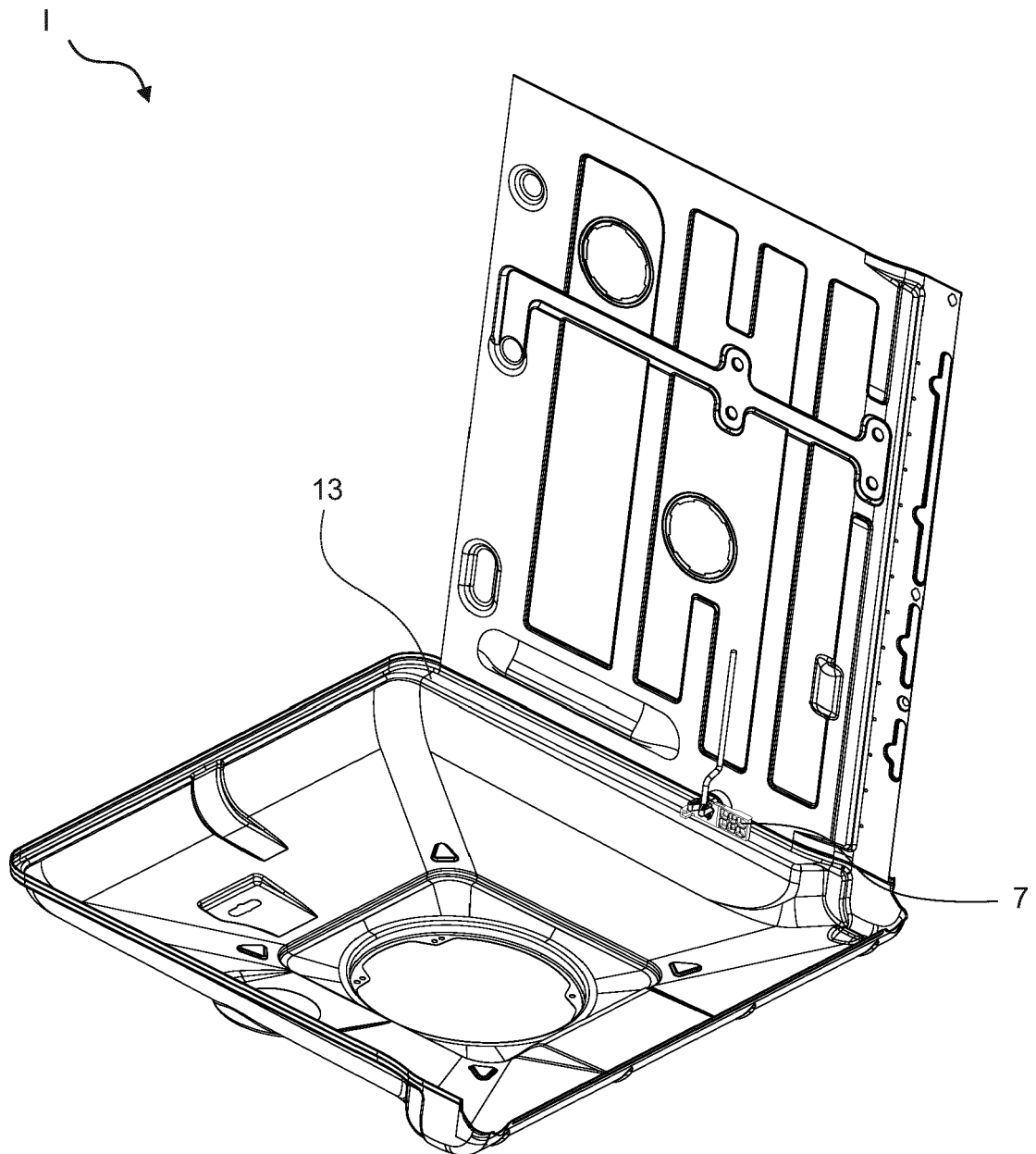
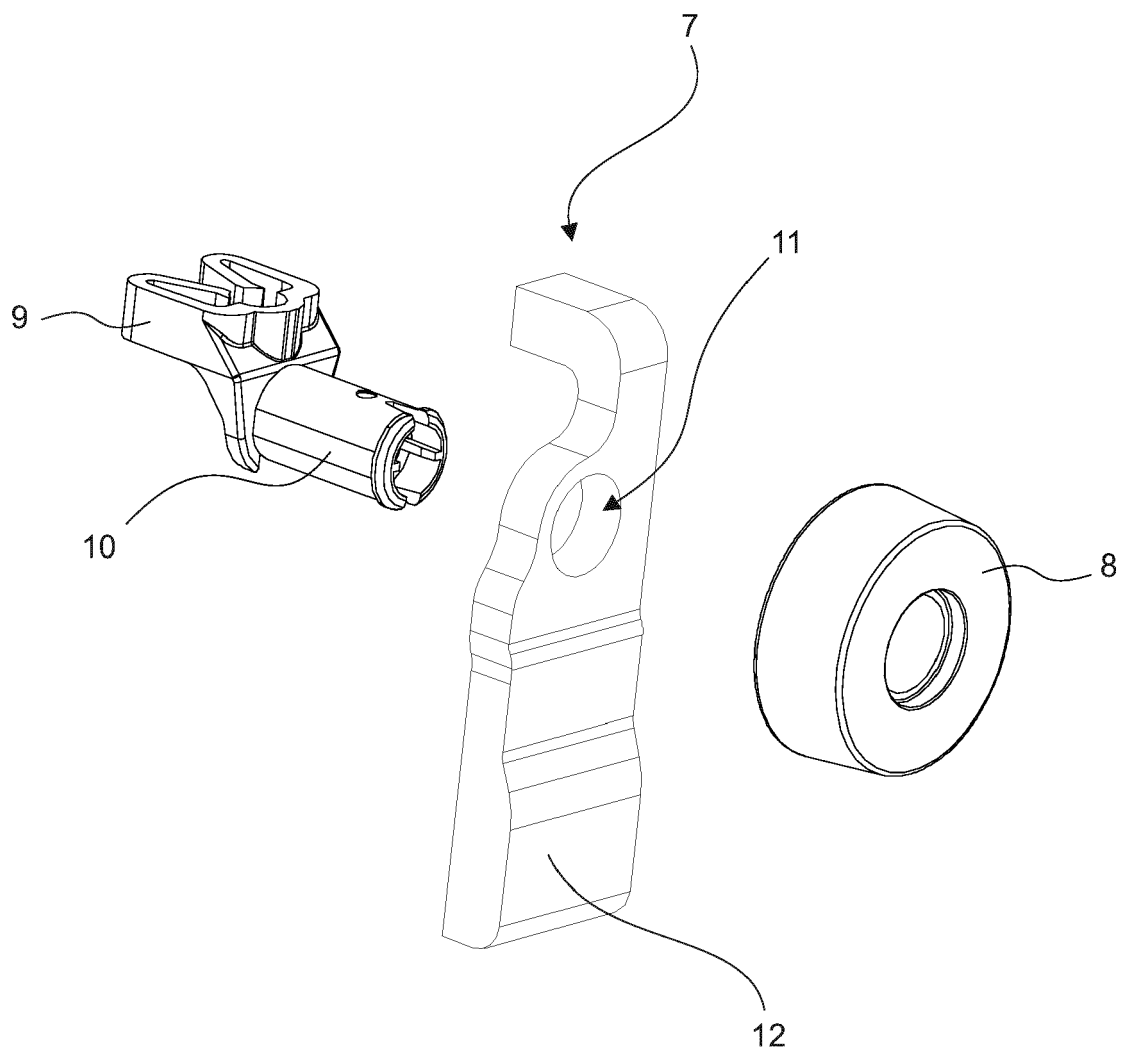


Figure 4





EUROPEAN SEARCH REPORT

Application Number

EP 23 20 7211

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

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	KR 2017 0021600 A (LG ELECTRONICS INC [KR]) 28 February 2017 (2017-02-28)	1, 4, 5	INV. A47L15/50
Y	* abstract *	2, 3	
	* paragraphs [0030] - [0063]; figures *		

Y	EP 2 658 432 B1 (ARCELIK AS [TR]) 8 June 2016 (2016-06-08)	2, 3	
	* the whole document *		

X	DE 10 2008 029367 B4 (BSH HAUSGERAETE GMBH [DE]) 16 June 2016 (2016-06-16)	1, 4, 5	TECHNICAL FIELDS SEARCHED (IPC) A47L
A	* the whole document *	2, 3	

A	US 9 723 970 B1 (CARR CASEY [US] ET AL) 8 August 2017 (2017-08-08)	1-5	
	* abstract; figures *		

The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 17 March 2024	Examiner Prosig, Christina
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	

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

EP 23 20 7211

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.

17-03-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 20170021600 A	28-02-2017	NONE	

EP 2658432 B1	08-06-2016	CN 103269633 A	28-08-2013
		EP 2658432 A1	06-11-2013
		WO 2012089515 A1	05-07-2012

DE 102008029367 B4	16-06-2016	NONE	

US 9723970 B1	08-08-2017	CA 2958481 A1	12-02-2018
		US 9723970 B1	08-08-2017

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 8506735 [0003]