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(54) **A DISHWASHER COMPRISING A DETERGENT DISPENSER**

(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 spraying member (4) which delivers water onto the kitchen items in the washing tub (3); a delivery line (5) which delivers the water received from the mains to the spraying member (4); and a detergent dispenser (6) which is provided on the delivery line (5).

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Description

[0001] The present invention relates to a dishwasher comprising a detergent dispenser.

[0002] In dishwashers, the cleaning process is realized by mixing the water and the detergent so as to be sprayed onto the dirty kitchen items. The kitchen items are placed onto the racks by the user. Generally, detergent in liquid or solid form is loaded into a detergent box provided on the door. The detergent boxes comprise a lid in order to prevent the uncontrolled scattering of the detergent into the washing tub. Thus, the user closes the lid of the detergent box after adding the detergent. During the washing process, the lid is opened so as to deliver the detergent into the washing tub. It is electronically determined when to open the lid and when to deliver the detergent into the washing tub. At a predetermined time of the washing program, the detergent box is energized by electrical components such as solenoid coil or thermal pusher/puller provided thereon. Thus, the lid of the detergent box is opened and the detergent is delivered into the washing tub at the correct time. However, the use of electrical components increases both the costs and the risk of malfunction. Moreover, the detergent boxes used on the door directly face the rack when the door is closed. This causes the rack area to decrease when the size of the detergent box is increased. Therefore, the loading volume decreases, causing inconvenience of use.

[0003] In the state of the art French Patent Document No. FR2885789, a dishwasher is disclosed, comprising a detergent box which is disposed under the rack and through which water passes.

[0004] The aim of the present invention is the realization of a dishwasher which provides 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; at least one spraying member which sprays water into the washing tub; a delivery line which delivers the water taken from the mains into the washing tub; and a detergent dispenser which is disposed on the delivery line. The washing process is performed in the washing tub. The water taken from the mains is transferred into the washing tub by means of the delivery line and delivered to the spraying member. The water is delivered onto the dirty kitchen items by means of the spraying member.

[0006] The dishwasher of the present invention comprises a movement mechanism which is disposed on the delivery line and which has a piston getting in contact with the detergent dispenser from time to time with one end. When the piston contacts the detergent dispenser, the detergent is delivered into the washing tub.

[0007] In an embodiment of the present invention, the dishwasher comprises the detergent dispenser having a drawer, a frame provided on the drawer and at least one detergent box with one end attached to the frame and the other end to the drawer, and the movement mechanism having the piston which contacts the frame so as to push the frame. The frame is disposed on the drawer so as to move in the horizontal plane. The detergent box is attached to the drawer at one end and to the frame at the other end. Thus, the detergent box moves depending on the movement of the frame. The piston pushes the frame and enables the frame to move in the horizontal plane.

[0008] In an embodiment of the present invention, the dishwasher comprises the movement mechanism having a first position and a second position. When the movement mechanism is in the first position, the piston moves towards the detergent dispenser with the pressure of the water flowing through the delivery line. The piston contacts the frame and the pushes the frame forward in the horizontal plane. Thus, the detergent boxes move to an inclined position with respect to the drawer, and the detergent is enabled to mix with the washing water. When the movement mechanism is in the second position, the detergent box is parallel to the base of the drawer.

[0009] In an embodiment of the present invention, the dishwasher comprises an abutment which is provided on the piston. The abutment contacts the delivery line while the piston moves towards the detergent dispenser, and stops the movement of the piston. Moreover, by means of the abutment contacting the delivery line, leakproofing is provided for the water in the delivery line.

[0010] In an embodiment of the present invention, the dishwasher comprises a mounting member which is provided on the detergent dispenser and which enables the detergent dispenser to be mounted onto the delivery line. By means of the mounting member, the drawer is enabled to be mounted onto the delivery line.

[0011] In an embodiment of the present invention, the dishwasher comprises a slot which is provided on the mounting member and a protrusion which is provided on the drawer. The slot almost longitudinally extends on the inner surfaces of the mounting member. The protrusion engages with the slot and enables the drawer to slidably move over the mounting member.

[0012] In an embodiment of the present invention, the dishwasher comprises an extension which is provided on the drawer. By means of the extension, the user can move the drawer.

[0013] In an embodiment of the present invention, the dishwasher comprises the piston which moves by means of an impeller provided on the delivery line.

[0014] By means of the present invention, a dishwasher is realized, comprising a detergent dispenser which can be mechanically controlled.

[0015] 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 - is the sideways view of the delivery line, the spraying member and the detergent dispenser when the movement mechanism is in the second

position.

Figure 3 - is the sideways view of the delivery line, the spraying member and the detergent dispenser when the movement mechanism is in the first position.

Figure 4 - is the sideways view of the delivery line, the piston and the detergent dispenser when the movement mechanism is in the first position.

Figure 5 - is the sideways view of the delivery line, the piston and the detergent dispenser when the movement mechanism is in the second position.

Figure 6 - is the perspective view of the movement mechanism.

Figure 7 - is the perspective view of the impeller.

[0016] The elements illustrated in the figures are numbered as follows:

1. Dishwasher
2. Body
3. Washing tub
4. Spraying member
5. Delivery line
6. Detergent dispenser
7. Piston
8. Movement mechanism
9. Drawer
10. Frame
11. Detergent box
12. Abutment
13. Mounting member
14. Slot
15. Protrusion
16. Extension
17. Impeller

a. First position

b. Second position

[0017] 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 spraying member (4) which delivers water onto the kitchen items in the washing tub (3); a delivery line (5) which delivers the water received from the mains to the spraying member (4); and a detergent dispenser (6) which is provided on the delivery line (5). The water received from the mains is transferred into the washing tub (3) by means of the delivery line (5) and sprayed onto the kitchen items by means of the spraying member (4). Thus, the washing process is performed.

[0018] The dishwasher (1) of the present invention comprises a movement mechanism (8) which is disposed on the delivery line (5) and which has a piston (7) getting in contact with the detergent dispenser (6) with one end. The piston (7) is provided on the extension (16) of the delivery line (5) connected to the spraying member (4). By means of the pressure of the water flowing through the delivery line (5), the piston (7) moves forwards and contacts the detergent dispenser (6). Thus, the detergent is delivered into the washing tub (3).

[0019] In an embodiment of the present invention, the movement mechanism (8) comprises the detergent dispenser (6) having a drawer (9), a frame (10) disposed on the drawer (9) and at least one detergent box (11) with one end attached to the frame (10) and the other end to the drawer (9), and the piston (7) which moves with the pressure of the water flowing through the delivery line (5) and contacts the frame (10). The frame (10) is disposed on the drawer (9). One end of the detergent box (11) is positioned over the frame (10) and the other end over the drawer (9). Thus, when the piston (7) contacts the frame (10), the detergent is delivered into the washing tub (3).

[0020] In an embodiment of the present invention, the dishwasher (1) comprises the movement mechanism (8) having a first position (A) wherein the piston (7) moves after being pushed by the water flowing through the delivery line (5) and contacts the frame (10) so as to push the frame (10) and wherein the detergent box (11) moves to an inclined position as the frame (10) slidably moves over the drawer (9), and a second position (B) wherein the detergent box (11) moves to a position parallel to base of the drawer (9) as the drawer (9) moves in the horizontal direction. When the movement mechanism (8) is in the first position (A), the piston (7) contacts the frame (10) so as to push the frame (10). Thus, the end of the detergent box (11) positioned over the frame (10) rises while the end thereof positioned on the drawer (9) moves down. Thus, the detergent box (11) moves to an inclined position and the detergent is delivered into the washing tub (3). When the movement mechanism (8) is in the second position (B), the base of the drawer (9) is parallel to the detergent box (11). Thus, the detergent placed into the detergent box (11) is prevented from being delivered into the washing tub (3).

[0021] In an embodiment of the present invention, the dishwasher (1) comprises an abutment (12) which is provided on the piston (7). The abutment (12) provided on the piston (7) contacts the delivery line (5) when the piston (7) moves with the pressure of the water, and prevents the piston (7) from leaving the movement mechanism (8). Moreover, the abutment (12) closes the end of the delivery line (5), thus preventing water leaks and enabling the water to be delivered to the spraying member (4).

[0022] In an embodiment of the present invention, the dishwasher (1) comprises the detergent dispenser (6) which is detachably attached onto the delivery line (5) and which has a mounting member (13) whereon the drawer (9) is disposed. By means of the mounting member (13), the drawer (9) can be mounted onto the delivery line (5).

[0023] In an embodiment of the present invention, the dishwasher (1) comprises a slot (14) which extends almost longitudinally on the inner surfaces of the mounting member (13) and a protrusion (15) which extends almost

longitudinally on the drawer (9) and which enables the drawer (9) to slidably move over the slot (14). By means of the movement of the protrusion (15) over the slot (14), the movement mechanism (8) is enabled to shift from the first position (A) to the second position (B).

[0024] In an embodiment of the present invention, the dishwasher (1) comprises an extension (16) which is provided on the drawer (9) and which enables the drawer (9) to be moved by the user. By means of the extension (16), the movement mechanism (8) is enabled to be moved between the first position (A) and the second position (B) by the user.

[0025] In an embodiment of the present invention, the dishwasher (1) comprises an impeller (17) which rotates by means of the water flowing through the delivery line (5) so as to move the piston (7). As the water flowing through the delivery line (5) rotates the impeller (17), the piston (7) is enabled to move in the vertical plane.

[0026] By means of the present invention, a dishwasher (1) is realized, comprising a detergent dispenser (6) which is disposed on the delivery line (5) and which can be mechanically controlled. The detergent dispenser (6) comprises a movement mechanism (8) which can change position by means of the piston (7) moving with the pressure of the water flowing through the delivery line (5). Thus, the detergent is delivered into the washing tub (3) at the correct time.

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 spraying member (4) which delivers water onto the kitchen items in the washing tub (3); a delivery line (5) which delivers the water received from the mains to the spraying member (4); and a detergent dispenser (6) which is provided on the delivery line (5), **characterized by** a movement mechanism (8) which is disposed on the delivery line (5) and which has a piston (7) getting in contact with the detergent dispenser (6) with one end.

2. A dishwasher (1) as in Claim 1, **characterized by** the movement mechanism (8) comprising the detergent dispenser (6) having a drawer (9), a frame (10) disposed on the drawer (9) and at least one detergent box (11) with one end attached to the frame (10) and the other end to the drawer (9), and the piston (7) which moves with the pressure of the water flowing through the delivery line (5) and contacts the frame (10).

3. A dishwasher (1) as in Claim 2, **characterized by** the movement mechanism (8) having a first position (A) wherein the piston (7) moves after being pushed by the water flowing through the delivery line (5) and contacts the frame (10) so as to push the frame (10) and wherein the detergent box (11) moves to an inclined position as the frame (10) slidably moves over the drawer (9), and a second position (B) wherein the detergent box (11) moves to a position parallel to base of the drawer (9) as the drawer (9) moves in the horizontal direction.

4. A dishwasher (1) as in any one of the above claims, **characterized by** an abutment (12) which is disposed on the piston (7).

5. A dishwasher (1) as in any one of Claim 2 to Claim 4, **characterized by** the detergent dispenser (6) which is detachably attached onto the delivery line (5) and which comprises a mounting member (13) whereon the drawer (9) is disposed.

6. A dishwasher (1) as in Claim 5, **characterized by** a slot (14) which extends almost longitudinally on the inner surfaces of the mounting member (13) and a protrusion (15) which extends almost longitudinally on the drawer (9) and which enables the drawer (9) to slidably move over the slot (14).

7. A dishwasher (1) as in any one of Claim 2 to Claim 6, **characterized by** an extension (16) which is provided on the drawer (9) and which enables the drawer (9) to be moved by the user.

8. A dishwasher (1) as in Claim 1, **characterized by** an impeller (17) which rotates by means of the water flowing through the delivery line (5) so as to move the piston (7).

Figure 1

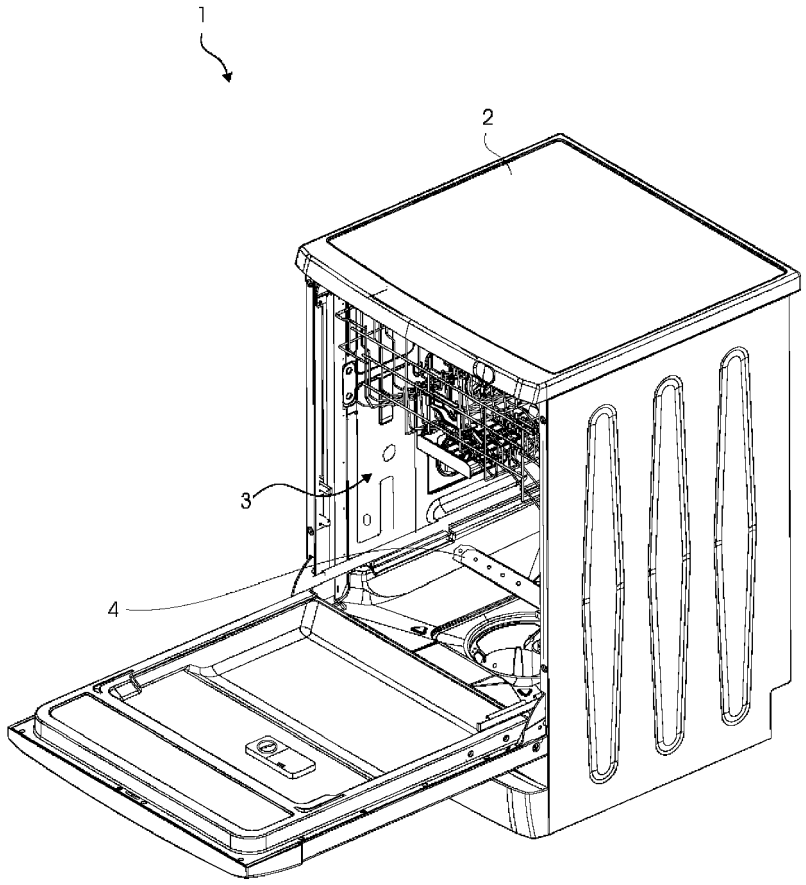


Figure 2

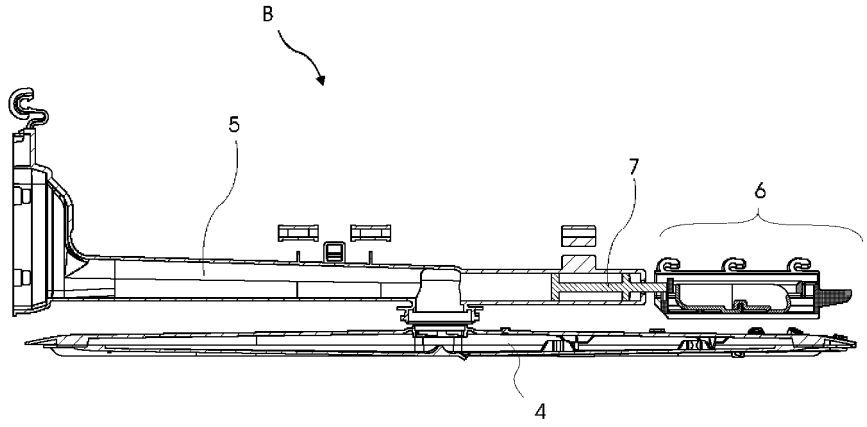


Figure 3

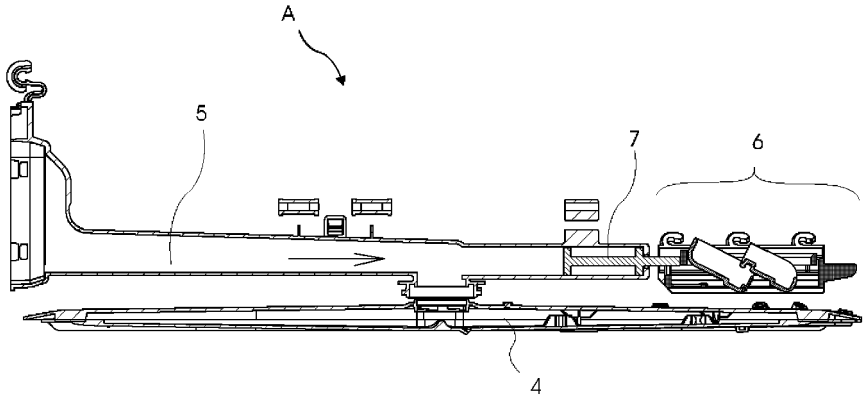


Figure 4

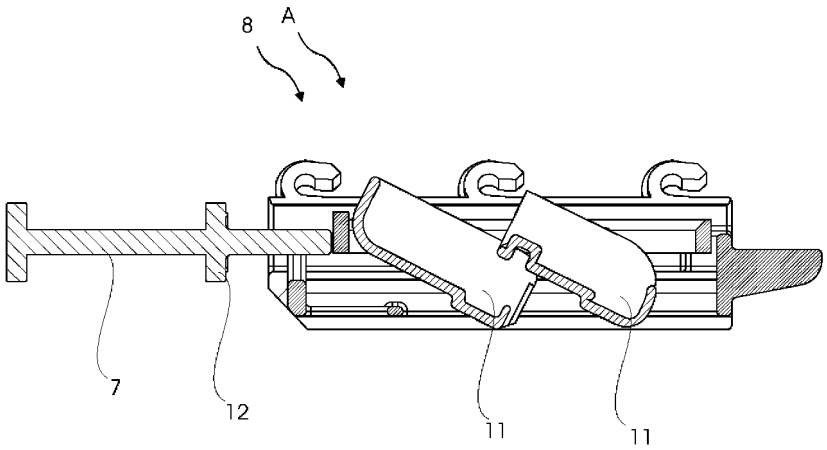


Figure 5

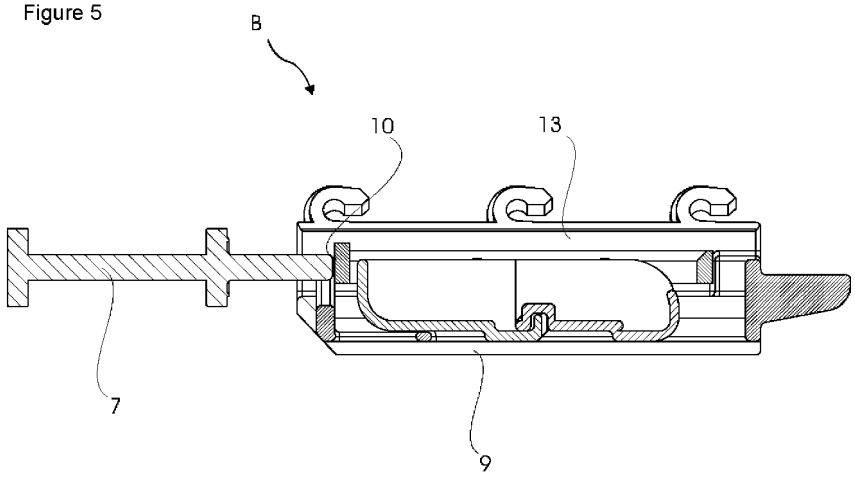


Figure 6

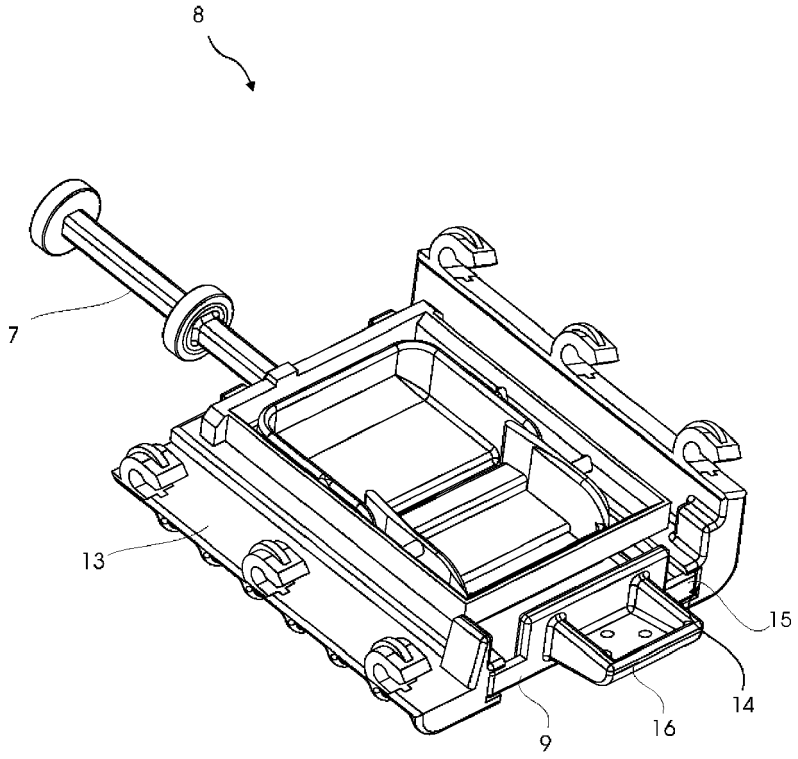
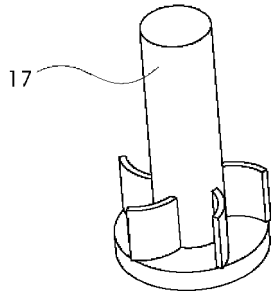


Figure 7



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EUROPEAN SEARCH REPORT

Application Number
EP 21 18 2235

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 November 2021	Popara, Velimir

CATEGORY OF CITED DOCUMENTS

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