



(11) **EP 2 941 167 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
29.08.2018 Bulletin 2018/35

(51) Int Cl.:
A47L 15/42^(2006.01) A47L 15/44^(2006.01)

(21) Application number: **13814179.1**

(86) International application number:
PCT/EP2013/078059

(22) Date of filing: **27.12.2013**

(87) International publication number:
WO 2014/102330 (03.07.2014 Gazette 2014/27)

(54) **A DISHWASHER**
GESCHIRRSPÜLER
LAVE-VAISSELLE

(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: **31.12.2012 TR 201215798**

(43) Date of publication of application:
11.11.2015 Bulletin 2015/46

(73) Proprietor: **Arçelik Anonim Sirketi**
34950 Istanbul (TR)

(72) Inventors:
• **AKYILDIZ, Erdem**
34950 Istanbul (TR)
• **BASARAN, Fatih**
34950 Istanbul (TR)
• **DEMIRCIOGLU, Ismail**
34950 Istanbul (TR)
• **ALDAG, Ahmet**
34950 Istanbul (TR)

(56) References cited:
WO-A1-02/23106 DE-A1- 3 520 272
DE-A1-102008 027 127 FR-A1- 2 593 697
US-A- 4 329 596 US-A- 4 412 710

EP 2 941 167 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to a dishwasher comprising a control panel. The control of present dishwashers is generally realized via a control panel disposed on the body or the door which provides access into the body. The users, before starting the cycle of such a dishwasher, generally open the door of the dishwasher entirely, place the objects to be washed inside the body, fill in powder or tablet detergent into the detergent dispenser and close the door. Afterwards, the users start the cycle by selecting a program from the control panel situated on the body or the movable door. The users can generally monitor the step of the selected program during the cycle via an illuminated display disposed on the control panel.

[0002] United States Patent US 4 412 710 discloses a dishwasher with a tilt-out control console that is mounted in the door of the dishwasher and that includes a program input switch control portion.

[0003] United States Patent US 4 329 596 discloses a control console that is mounted in an upper portion of the door of a dishwasher and that can be tilted outwardly.

[0004] International Patent Application WO 2002/23106 discloses a dishwasher with a plurality of input and display elements being arranged in the top edge of its door.

[0005] German Patent Application DE 10 2008 027 127 A1 discloses an oven with a door the handle of which comprises a pivotable input device.

[0006] French Patent Application FR 2 593 697 discloses a dishwasher with a door having an opening leading to a detergent dispenser, said opening being located at the top edge of the door next to a control panel.

[0007] The aim of the present invention is the realization of an ergonomic dishwasher.

[0008] The dishwasher realized in order to attain the aim of the present invention and explicated in the attached claims, comprises a body, a door providing access into the body, and a control panel disposed on the door, having a control interface, that can be moved forwards/backwards by being rotated around the axis where it is connected to the door, between a first position and a second position with respect to the door, when the door is closed. Thus, the user is enabled to independently open/close the control panel in the closed position of the door, to bring the control interface situated on the control panel to a suitable position facing him/her, to select the desired program from the control interface at this suitable position, to actuate the cycle of the machine and to monitor the step of the selected program from the control interface. Thus, an ergonomic dishwasher (1) is realized.

[0009] In an embodiment of the present invention, the control interface is disposed on the control board such that the control interface can be reached from outside the body when the door is closed and the control panel is in the second position, on the other hand, the control interface cannot be reached from outside the body when the door is closed and the control panel is in the first

position. Thus, the user is enabled to bring the control interface to a position that does not allow access of the children. Consequently, a dishwasher is realized that is safe for the home environment and optically smooth.

5 **[0010]** The control panel becomes coplanar with the door in the first position when the door is closed and extends outwards with a certain angle from the surface of the door in the second position. Thus, the user is enabled to easily access the control interface in a suitable angle.

10 **[0011]** In an embodiment of the present invention, the control panel can be stopped gradually at one or more than one intermediary position between the first position and the second position in the closed position of the door.

15 The said intermediary positions are designed such that the control interface can be reached from outside the body at each intermediary position. Thus, the user is enabled to change the control panel from the first position to an intermediary position with an angle suitable to him/her and to use the control interface in this position.

20 **[0012]** In an embodiment of the present invention, the control panel is disposed at the upper edge of the door to form the upper portion of the door. Thus, the user is enabled to easily reach the control panel without bending over.

25 **[0013]** In an embodiment of the present invention, the control interface is disposed at the surface of the control panel that faces upwards. Thus, the user is enabled to easily access the control surface without bending over and to control from above.

30 **[0014]** In an embodiment of the present invention, a "detergent loading system" that enables loading detergent into the dishwasher in the closed position of the door is added to the dishwasher comprising "a control panel that can be opened/closed in the closed position of the door" which is described above. The said detergent loading system is disposed on the door so as to be accessed by the user from over the control panel. Consequently, a more ergonomic dishwasher is realized. The dishwasher according to the invention comprises further a detergent dispenser wherein detergent is filled, disposed at the inner side of the door, an opening disposed on the control panel which is situated on the door, that provides loading detergent into the detergent dispenser when the control panel is in the second position and a channel that joins the said opening with the detergent dispenser, enabling the detergent filled in from the opening to be delivered to the detergent dispenser with the effect of gravity. Thus, the user is enabled to fill in detergent into the machine from the said opening without having to bend over to the detergent dispenser situated inside the machine.

45 **[0015]** By means of the present invention, the dishwasher is enabled to be practically actuated from the control panel by providing the control panel to move independently from the door even when the door is closed. By means of the present invention, a highly ergonomic dishwasher is realized.

[0016] The model embodiments relating to the dishwasher realized in order to attain the aim of the present invention are illustrated in the attached figures, where:

Figure 1 - is the perspective view of the dishwasher when the door is closed and the control panel is in the first position.

Figure 2 - is the perspective view of the dishwasher when the door is closed and the control panel is in the second position.

Figure 3 - is the perspective view of the dishwasher when the door is open.

Figure 4 - is the perspective view of the control panel, the channel and the detergent dispenser in an embodiment of the present invention.

Figure 5 - is the perspective view of the control panel, the channel and the detergent dispenser from another angle in an embodiment of the present invention.

[0017] The elements illustrated in the figures are numbered as follows:

1. Dishwasher
2. Body
3. Door
4. Control panel
5. Control interface
6. Detergent dispenser
7. Opening
8. Channel

[0018] The dishwasher (1) comprises a body (2), a door (3) that provides access into the body (2) and a control panel (4) having a control interface (5) and situated on the door (3).

[0019] The control panel (4) has a first position and a second position wherein it can be moved forwards/backwards by being rotated with respect to the door (3) around the axis where it is connected to the door (3) when the door (3) is closed. Thus, the user is enabled to open/close the control panel (4) independently from the door (3) when the door (3) is closed.

[0020] The control panel (4) is coplanar with the door (3) in the first position when the door (3) is closed and extends outwards with respect to the outer surface of the door (3) with a predetermined angle in the second position whereto it is changed by being tilted forward from the first position. Thus, in the first position of the control panel (4), other objects are prevented from getting tangled to the control panel (4) and the dishwasher (1) is enabled to be used in confined spaces without problems. As the control panel (4) extends outwards in an inclined manner from the surface of the door (3) in the second position, a user with average height is enabled to easily reach the control interface (5) situated on the control panel (4) without requiring to lean backwards or bend over.

[0021] In an embodiment of the present invention, the

control interface (5) cannot be reached from outside the body (2) when the door (3) is closed and the control panel (4) is in the first position but can be reached from outside the body (2) when the door (3) is closed and the control panel (4) is in the second position. Thus, the user is enabled to bring the control interface (5) to a suitable position facing him/her by changing the control panel (4) to the second position and to select the desired program from the control interface (5) and actuate the dishwasher (1). Thus, a dishwasher (1) with an ergonomic control is realized. Furthermore, the user is enabled to bring the control interface (5) to a position that does not allow access of the children. Thus, a dishwasher (1) is realized that is optically smooth and safe for the home environment.

[0022] In an embodiment of the present invention, a multi-step latch is used for enabling the control panel (4) to be opened/closed. Thus, the control panel (4) can be stopped gradually at one or more than one intermediary positions that are between the first position and the second position when the door (3) is closed. The said intermediary positions are designed such that the control interface (5) can be reached from outside the body (2) at each intermediary position. Thus, the user is enabled to change the control panel (4) from the first position to an intermediary position at an angle suitable for him/her and to access the control interface (5) in this position.

[0023] In an embodiment of the present invention, a spring compression apparatus, functioning non-gradually, is used for enabling the control panel (4) to be opened/closed. Thus, the control panel (4) can be stopped non-gradually between the first position and the second position in the closed position of the door (3). Thus, the user is enabled to stop the control panel (4) at an intermediary position corresponding to an angle that is suitable for him/her while changing the control panel (4) from the first position to the second position and to reach the control interface (5) from this angle.

[0024] In the first embodiment of the present invention, the control panel (4) is situated at the side of the door (3) close to the upper edge. Thus, the user is enabled to easily access the control panel (4) without bending over and to control from above.

[0025] In the first embodiment of the present invention, the control interface (5) is disposed at the upper edge of the control panel (4). Thus, the user is enabled to easily access the control interface (5) without bending over and to control from above. The control panel (4) comprises a display that provides the displaying of a selected program and/or the program step during the cycle. The said display is controlled by a control unit that is not shown in the figures. Thus, the user is enabled to control the control panel (4) from above and to monitor the display from above while the dishwasher (1) is operating when the door (3) is closed. The user can change the control panel (4) to the first position when the display is not desired to be monitored while the machine (1) is operating.

[0026] In an embodiment of the present invention, a

"detergent loading system" that enables loading detergent (D) to the dishwasher (1) in the closed position of the door (3) is added to the dishwasher (1) comprising "a control panel (4) that can be opened/closed in the closed position of the door (3)" which is described above. The said detergent loading system is disposed on the door (3) so as to be accessed by the user from over the control panel (4). Consequently, a more ergonomic dishwasher (1) is realized.

[0027] In this embodiment of the present invention, the dishwasher (1) comprises a detergent dispenser (6) wherein detergent (D) is loaded, disposed on the inner surface of the door (3), an opening (7) that is situated on the control panel (4) and that can be reached when the control panel (4) is in the second position, and a channel (8) that is arranged on the door (3), that connects the opening (7) and the detergent dispenser (6) to each other and that enables the detergent (D) loaded from the opening (7) to be delivered into the detergent dispenser (6). Thus, the user is enabled to load the detergent (D) into the machine (1) from the said opening (7) by changing the control panel (4) to the second position without having to bend over to the detergent dispenser (6) inside the dishwasher (1).

[0028] By means of the present invention, the user is enabled to actuate a dishwasher (1) by a control panel (4) that can be opened/closed while the door (3) is closed. By means of the present invention, the user is furthermore enabled to easily load detergent (D) into the same dishwasher (1) from an opening (7) situated on the control panel (4) when the door (3) is closed without difficulty and not having to bend over. Consequently, loading of the detergent (D) and actuating the dishwasher (1) from the control panel (4) can be realized very quickly. By means of the present invention, a dishwasher (1) is realized that is highly ergonomic in both aspects.

Claims

1. A dishwasher (1) comprising a body (2), a door (3) that provides access into the body (2) and a control panel (4) having a control interface (5) and situated on the door (3),
wherein the control panel (4) has a first position and a second position wherein it can be moved forwards/backwards by being rotated with respect to the door (3) around the axis where it is connected to the door (3) when the door (3) is closed, wherein the dishwasher (1) further comprises a detergent dispenser (6) wherein detergent (D) is loaded, the detergent dispenser (6) being situated on the inner surface of the door (3),
characterised by an opening (7) that is situated on the control panel (4) and that can be reached when the control panel (4) is in the second position, a channel (8) that is arranged on the door (3), that connects the opening (7) and the detergent dispenser (6) to

each other and that enables the detergent (D) loaded from the opening (7) to be delivered into the detergent dispenser (6).

2. A dishwasher (1) as in Claim 1, **characterized by** the control panel (4) that is coplanar with the door (3) in the first position when the door (3) is closed and extends outwards with respect to the outer surface of the door (3) with a predetermined angle in the second position whereto it is changed by being tilted forward from the first position.
3. A dishwasher (1) as in Claim 1 or 2, **characterized by** the control interface (5) that cannot be reached from outside the body (2) when the door (3) is closed and the control panel (4) is in the first position and that can be reached from outside the body (2) when the door (3) is closed and the control panel (4) is in the second position.
4. A dishwasher (1) as in Claim 4, **characterized by** the control panel (4) that can be stopped gradually at one or more than one intermediary positions between the first position and the second position when the door (3) is closed, and of which the control interface (5) can be reached from outside the body (2) both at the intermediary positions and at the second position.
5. A dishwasher (1) as in any one of the above claims, **characterized by** the control panel (4) that is situated at the side of the door (3) close to the upper edge and that forms a portion of the door (3).
6. A dishwasher (1) as in any one of the above claims, **characterized by** the control interface (5) that is situated at the upwards facing side of the control panel (4) and that is enabled to be controlled from above.

40

Patentansprüche

1. Geschirrspüler (1) umfassend einen Körper (2), eine Tür (3), die Zugang zum Körper (2) ermöglicht, und ein Steuerungsfeld (4), das eine Steuerschnittstelle (5) aufweist und auf der Tür (3) angeordnet ist, **wobei** Steuerungsfeld (4) eine erste Position und eine zweite Position aufweist, wobei es nach vorne/hinten bewegt werden kann, indem es in Bezug auf die Tür (3) um die Achse gedreht wird, wo es mit der Tür (3) verbunden ist, wenn die Tür (3) geschlossen ist, wobei der Geschirrspüler (1) ferner einen Reinigungsmittelspender (6) umfasst, in dem Reinigungsmittel (D) geladen ist, wobei der Reinigungsmittelspender (6) an der Innenseite der Tür (3) angeordnet ist, **gekennzeichnet durch** eine Öffnung (7), die sich auf dem Steuerungsfeld (4) befindet und die erreicht werden kann, wenn das Steuerungsfeld (4) in

der zweiten Position ist, ein Kanal (8), das auf der Tür (3) angeordnet ist, das die Öffnung (7) und Reinigungsmittelspender (6) miteinander verbindet und das ermöglicht, dass das aus der Öffnung (7) geladene Reinigungsmittel (D) in den Reinigungsmittelspender (6) abgegeben wird.

2. Geschirrspüler (1) nach Anspruch 1, **gekennzeichnet durch** ein Steuerungsfeld (4), das in der ersten Position koplanar mit der Tür (3) ist, wenn die Tür (3) geschlossen ist und sich in Bezug auf die Außenfläche der Tür (3) mit einem vorbestimmten Winkel in der zweiten Position nach außen erstreckt, zu dem es geändert wird, indem es von der ersten Position nach vorne geneigt wird.
3. Geschirrspüler (1) nach Anspruch 1 oder 2, **gekennzeichnet durch** eine Steuerschnittstelle (5), die von außerhalb des Körpers (2) nicht erreichbar ist, wenn die Tür (3) geschlossen ist und das Steuerungsfeld (4) sich in der ersten Position befindet und die von außerhalb des Körpers (2) erreichbar ist, wenn die Tür (3) geschlossen ist und das Steuerungsfeld (4) sich in der zweiten Position befindet.
4. Geschirrspüler (1) nach Anspruch 4, **gekennzeichnet durch** das Steuerungsfeld (4), das schrittweise auf einer oder mehreren mittleren Positionen zwischen der ersten Position und der zweiten Position angehalten werden kann, wenn die Tür (3) geschlossen ist, und dessen Steuerschnittstelle (5) von außerhalb des Körpers (2) sowohl auf der mittleren Position als auch auf der zweiten Position erreicht werden kann.
5. Geschirrspüler (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** das Steuerungsfeld (4), das sich an der Seite der Tür (3) in der Nähe der oberen Kante befindet und das einen Teil der Tür (3) bildet.
6. Geschirrspüler (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** die Steuerschnittstelle (5), die sich an der nach oben weisende Seite des Steuerungsfelds (4) befindet und das von oben gesteuert werden kann.

Revendications

1. Lave-vaisselle (1) comprenant un corps (2), une porte (3) donnant accès au corps (2) et un panneau de commande (4) ayant une interface de commande (5) et situé sur la porte (3), **dans lequel** le panneau de commande (4) a une première position et une seconde position dans laquelle il peut être déplacé vers l'avant / vers l'arrière par rotation par rapport à la porte (3) autour de l'axe

où il est relié à la porte (3) lorsque la porte (3) est fermée, dans lequel le lave-vaisselle (1) comprend en outre un distributeur de détergent (6) dans lequel le détergent (D) est chargé, le distributeur de détergent (6) étant situé sur la surface interne de la porte (3), **caractérisé par** une ouverture (7) qui est située sur le panneau de commande (4) et qui peut être atteinte lorsque le panneau de commande (4) est dans la seconde position, un canal (8) qui est agencé sur la porte (3), qui relie l'ouverture (7) et le distributeur de détergent (6) l'un à l'autre et qui permet au détergent (D) chargé depuis l'ouverture (7) d'être distribué dans le distributeur de détergent (6).

2. Lave-vaisselle (1) selon la revendication 1, **caractérisé par** le panneau de commande (4) qui est coplanaire avec la porte (3) dans la première position lorsque la porte (3) est fermée et s'étend vers l'extérieur par rapport à la surface externe de la porte (3) avec un angle prédéterminé dans la seconde position à laquelle elle est modifiée en étant inclinée vers l'avant par rapport à la première position.
3. Lave-vaisselle (1) selon la revendication 1 ou 2, **caractérisé par** l'interface de commande (5) qui ne peut pas être atteinte de l'extérieur du corps (2) lorsque la porte (3) est fermée et le panneau de commande (4) est dans le premier la position et qui peut être atteinte de l'extérieur du corps (2) lorsque la porte (3) est fermée et que le panneau de commande (4) est dans la seconde position.
4. Lave-vaisselle (1) selon la revendication 4, **caractérisé par** le panneau de commande (4) peut être arrêté progressivement à une ou plusieurs positions intermédiaires entre la première position et la seconde position lorsque la porte (3) est fermée, et dont l'interface de commande (5) peut être atteinte depuis l'extérieur du corps (2) à la fois aux positions intermédiaires et à la seconde position.
5. Lave-vaisselle (1) selon l'une quelconque des revendications précédentes, **caractérisé par** le panneau de commande (4) est situé sur le côté de la porte (3) à proximité du bord supérieur et forme une partie de la porte (3).
6. Lave-vaisselle (1) selon l'une quelconque des revendications précédentes, **caractérisé par** l'interface de commande (5) qui est située du côté du panneau de commande (4) faisant face vers le haut et qui peut être commandée depuis le dessus.

Figure 1

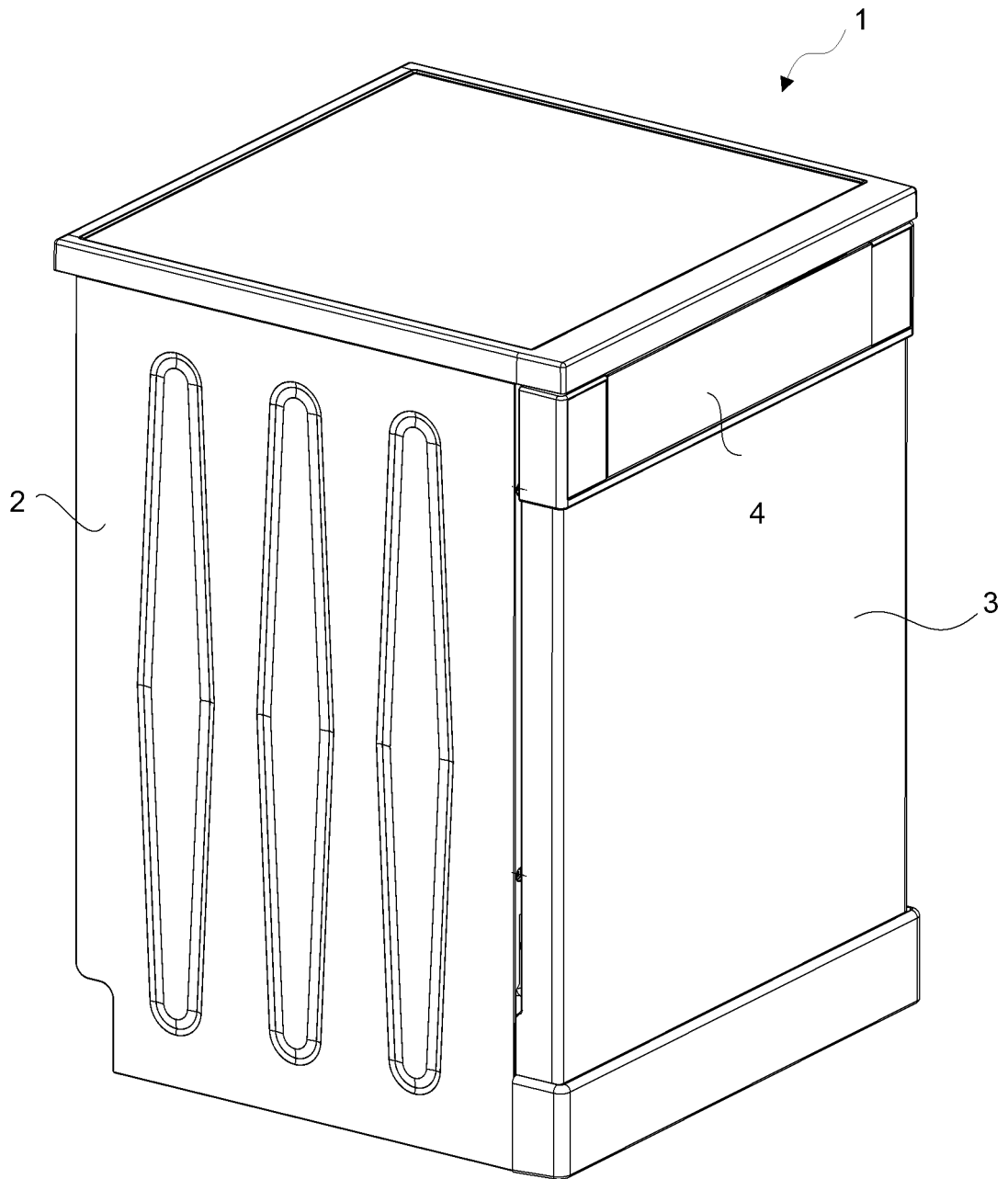


Figure 2

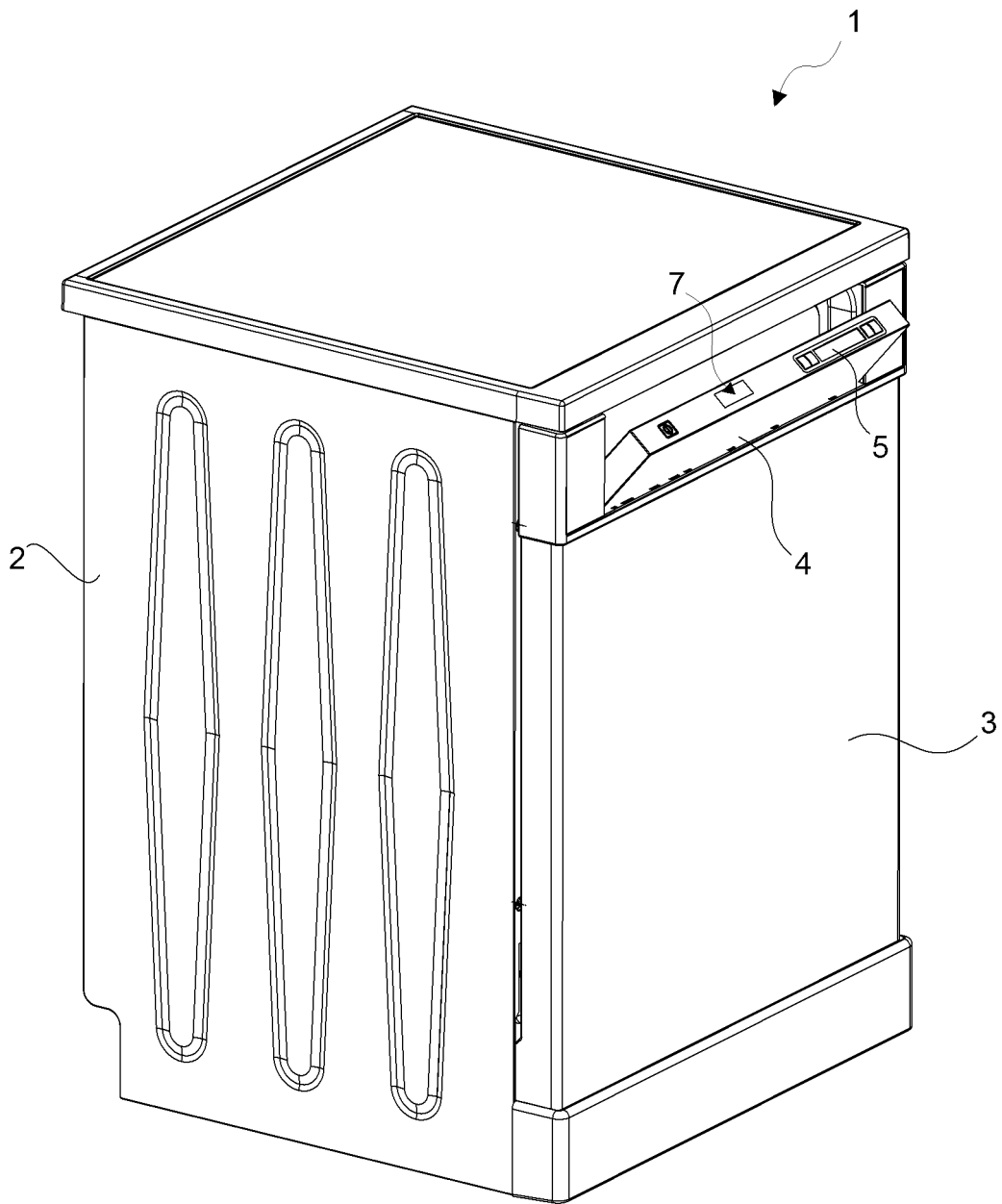


Figure 3

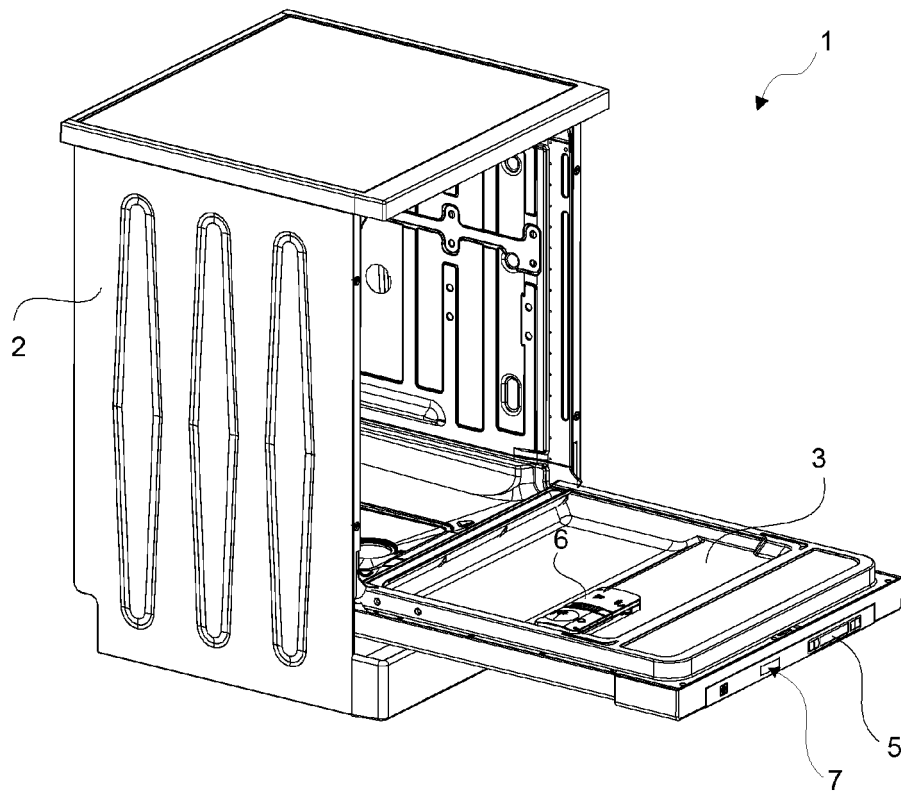


Figure 4

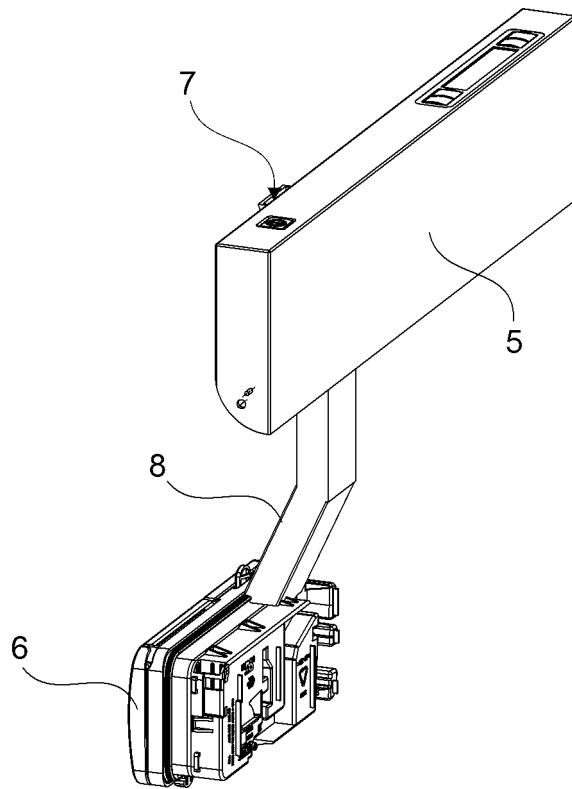
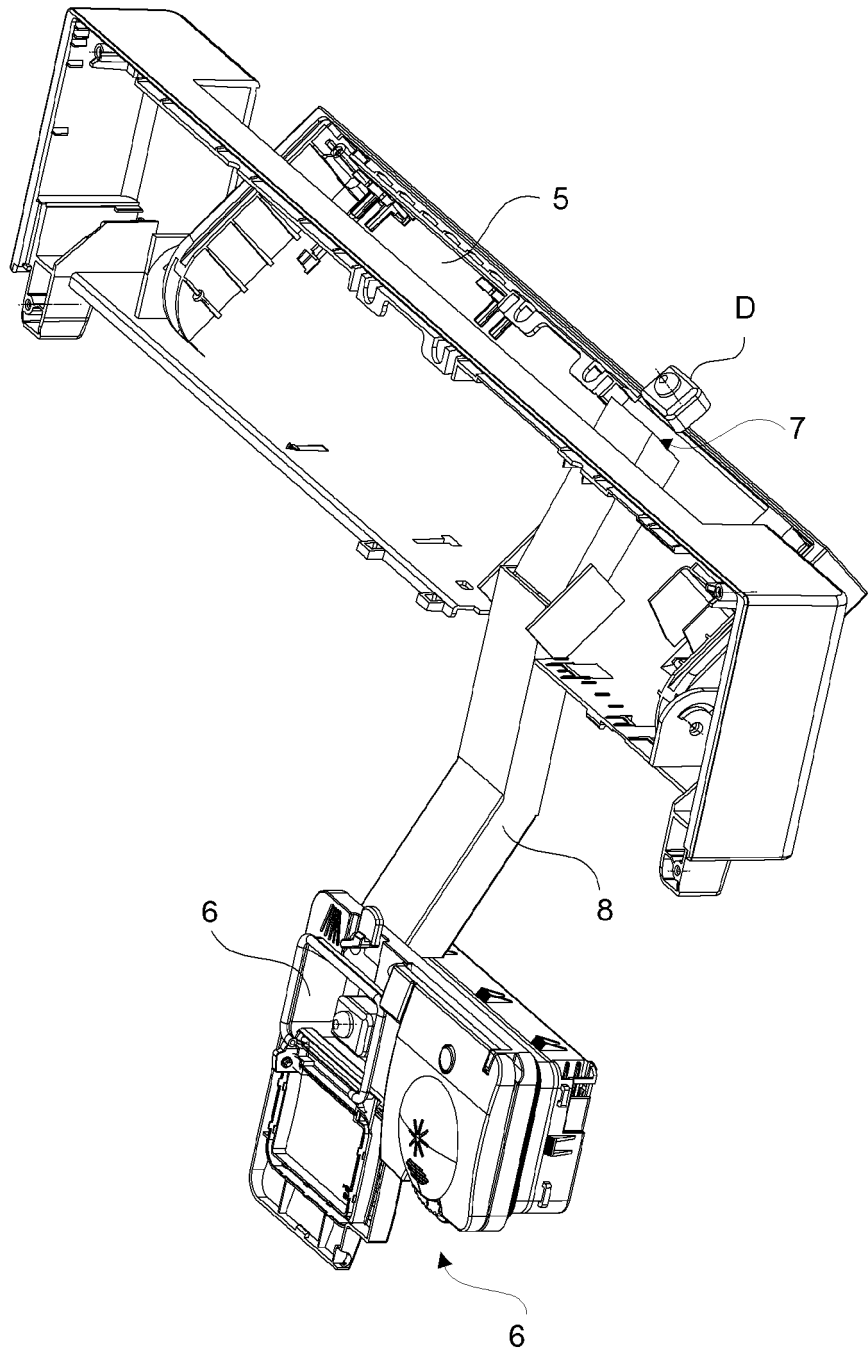


Figure 5



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

- US 4412710 A [0002]
- US 4329596 A [0003]
- WO 200223106 A [0004]
- DE 102008027127 A1 [0005]
- FR 2593697 [0006]