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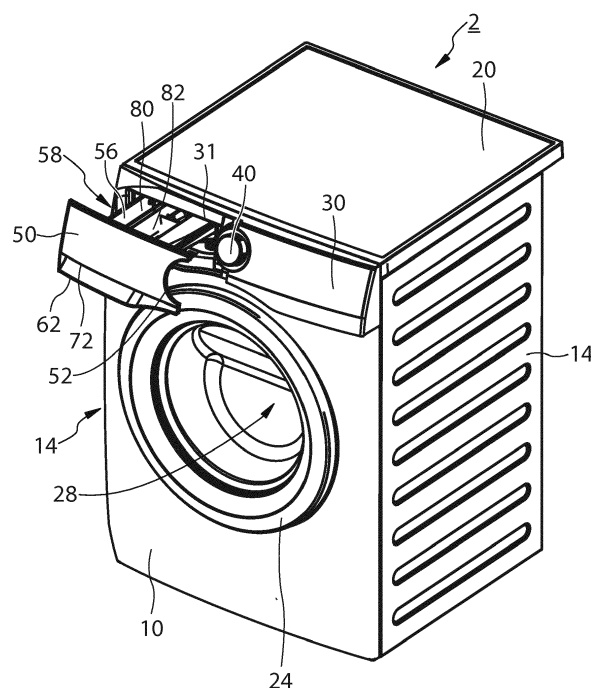
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(54) **Front panel of a drawer for a laundry treatment appliance**

(57) Laundry treatment appliance (2), comprising an operation element (40), a drawer (56) and an opening (58) configured for insertion/extraction of said drawer (56), wherein said drawer (56) comprises a drawer frontal

panel (50) that comprises a shaped portion (52) which in a fully inserted position of said drawer (56) at least partially encircles said operation element (40).

FIG. 2



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Description

Field of the invention

[0001] The present invention generally relates to a laundry treatment appliance, especially a front loading washing machine, dryer or combined washer and dryer, both for domestic and professional use. More particularly, the present invention relates to a laundry treatment appliance comprising an operation element, a drawer and an opening configured for insertion/extraction of said drawer.

Background of the invention

[0002] Laundry treatment appliances/machines such as washers, dryers or combined washers and dryers, typically comprise a user interface, with an operation element, comprising a knob and / or a push button and / or a display and / or a further kind of device by which the user can modify and / or check the operation of the appliance; moreover, these laundry treatment appliances typically comprise a thin inlay with a hole for the operation element passage; such an inlay can comprise aesthetic symbols, which can, for instance, indicate the functions activated by the operation element on a predetermined angular position or can be transparent in order to show symbols and / or lights provided on the user interface.

[0003] The European patent application EP 2 436 828 A1 discloses a front panel with a user interface having a thin inlay placed around a knob, on one side with respect to the drawer, and on the other side with respect to the remaining user interface. This configuration has as a drawback several clearances between the drawer, the inlay and the user interface, resulting in a collection of dirt or dust in these spaces, which can affect the visual appearance of the frontal side of the laundry machine. Moreover, these spaces can lead to passages for contaminant entrance of particles into the clean chambers of the machine.

Summary of the invention

[0004] The object of the present invention is therefore to provide a laundry treatment appliance that avoids the collection of dirt or contaminating particles at the front panel and/or in the appliance.

[0005] It is a further object of the present invention to provide a laundry appliance easier to assemble with a good appearance independent of the number of assembled components.

[0006] According to a first aspect, the invention relates to a laundry treatment machine, comprising an operation element, a drawer and an opening configured for insertion/extraction of the drawer, wherein the drawer comprises a drawer frontal panel that comprises a shaped portion which in a fully inserted position of the drawer at least partially encircles the operation element.

[0007] Preferred embodiments of the invention are described in relation to the dependent claims and the description of the enclosed drawings.

[0008] The invention is based on the consideration that a collection on and an entrance into the region of the drawer frontal panel of dirt or other contaminating particles should be avoided for several reasons. Firstly, the visual appearance of the appliance is diminished by dirt collection on the appliance and/or its front panel, since this front panel is the optical focus for a user, and its minor appearance can lead the user to infer a low quality of the whole machine. These dirty / contaminant particles can also enter the interior of the machine and get into the compartments of the drawer and/or the washing tub, leading to a possibly reduced washing efficiency and / or to a damaging of delicate / sensitive components, such as electronic boards, etc.

[0009] Applicant has recognized that a most critical spatial region is located around the operating element which should be covered in order to prevent dirt to collect / enter the machine. This should be achieved without separate elements which would degrade the visual appearance of the laundry treatment appliance.

[0010] Applicant has found that by providing the drawer frontal panel with a portion which encircles at least partially the operating element, a high-quality appearance of the frontal panel can be preserved while simultaneously solving the above described problem and essentially sealing a gap around the operating element.

[0011] The terms laundry treatment appliance or laundry machine or laundry treatment device includes washing machines as such but also combined washing/drying machines that can incorporate both functionalities. Also the terms laundry washing machine and washing machine are used interchangeably. The laundry washing machine can, for instance, be designed as a front-loading laundry washing machine. Alternatively, the appliance can be a dryer.

[0012] In a preferred embodiment, the laundry treatment appliance comprises a machine front panel, whereby the operation element and / or the opening are provided on this machine front panel.

[0013] The operation element is any kind of device which serves for receiving user interaction actively and/or for displaying status information of the laundry machine. This means the user can, by utilizing the operation element, control the machine and/or obtain information of its state, especially by at least one optical indicator. The operation element preferably comprises a knob and / or a push button and / or a display and / or light. The operation element can thus be built as knob and/or a push button and / or a display or a light. For instance, it can be built in a combined design as a rotatable knob which can be pushed to act as a push button. The knob can comprise a display which shows, for instance, the currently selected treatment program and/or parameters and / or status updated thereof and / or errors which occurred. Additionally or alternatively, the display can be

of the touch-type, allowing the change of programs or display modes through the user touch of said display.

[0014] The operation element preferably comprises a circular shape at least partially, whereby the drawer comprises a drawer frontal panel that comprises a rounded profile which in a fully inserted position of the drawer at least partially encircles the circular shape.

[0015] The operation element advantageously has an essentially circular perimeter concentric around a vertical axis, whereby the shaped portion of the drawer frontal panel extends in a lateral direction parallel to the vertical axis.

[0016] The fully inserted position of the drawer preferably corresponds to its position during operation of the laundry treatment appliance. In case of a washing machine, the drawer preferably comprises at least one compartment for a washing and/or rinsing product which can be transported by a water stream into the washing tub. The fully inserted position is preferably defined and mechanically realized by block or stop means which limit the movement of the drawer further into an opening which receives it. These stop means can, for instance, be realized by the opening having a smaller cross section than the drawer frontal panel and / or by any known locking device configured such that the drawer is stopped in its movement when it is entirely inserted into the opening.

[0017] For at least partially encirclement of the operation element by the shaped portion of the drawer frontal panel it is meant that said shaped portion at least partially follows the contour of the operation element and / or the eventual aesthetic element framing said operation element in a congruent way; in case of at least partly circular operation element such as a knob, the shaped portion is also shaped in a circular way, following / surrounding / wrapping the operation element on the fully inserted position of the drawer; in case of non-circular operation elements, the shaped portion, following the contour of the operation element, have a consequent non-circular portion.

[0018] In a preferred embodiment a recess is provided in association with the drawer opening, this recess having a depth dimensioned such that in a fully inserted position, the drawer frontal panel flushes with the external surface of the appliance and / or the machine front panel. Consequently, being the drawer frontal panel justified with the appliance / front panel, the visual appearance of the laundry treatment appliance is improved.

[0019] Preferably an aesthetic ring is provided on the appliance and / or on the machine front panel which frames the operation element, whereby the shaped portion of the drawer frontal panel in a fully inserted position wraps the ring at least partially. The aesthetic ring is preferably made of plastic. It can preferably comprise printed symbols or patterns which support an aesthetically pleasing appearance of the laundry treatment appliance.

[0020] A further decoration element is advantageously provided on the shaped portion of the drawer frontal panel which can further improve the aesthetic appearance of

the appliance.

[0021] The decoration element is preferably assembled to the shaped portion by a snap connection and/or by welding and/or by gluing.

[0022] In a preferred embodiment an inlay is provided on the drawer frontal panel. The inlay can provide information on available laundry treatment programs and/or contain decorative elements or symbols. Preferable, the inlay is transparent, whereas the general information to the user are provided below said inlay. The contour of the inlay is preferably congruent to the contour of the drawer frontal panel.

[0023] The inlay is preferably assembled to the drawer frontal panel by a snap connection and/or by welding and/or by gluing and/or by an adhesive tape.

[0024] Advantageously, the drawer frontal panel comprises a recess on which the inlay is assembled, the depth of the recess being dimensioned to allow the flush of the inlay with the external surface of the drawer frontal panel and / or the machine front panel when the drawer is on its fully inserted position on the appliance and / or on the front panel. In other words, the inlay is justified with the external surface of the drawer frontal panel and / or the appliance/machine and / or the front panel.

[0025] The drawer frontal panel preferably comprises a further shaped portion which substantially encircles at least partially at least a shaped portion of the appliance door adjacent to the drawer frontal panel.

[0026] The drawer frontal panel advantageously comprises a handle with a frontal recess or a frontal recess configured to allow the insertion of a user's finger. By inserting a finger, the user can easily pull the drawer and extract it at least partially so he/she can gain access to the compartments of the drawer and fill the respective compartment with a washing and/or rinsing product.

[0027] The recess is preferably placed adjacent and below the inlay which leads to an intuitive and convenient operation/handling of the drawer.

[0028] The laundry treatment machine is preferably a front-loading washing machine, a dryer or a front-loading combined washer/dryer.

[0029] The advantages of the invention are essentially as follows. By providing a drawer frontal panel which in its shape encircles at least partially an operation element of the appliance, the collection of dirt and entry of dirt into the interior of the appliance are prevented, preserving simultaneously the aesthetic appearance of the part of the appliance with which the user interacts for its operation and the washing quality of the cleaning process.

Brief description of the drawings

[0030] Further features and advantages of the present invention shall become clearer from the following detailed description of some of its preferred embodiments, made with reference to the attached schematic drawings and given as an indication and not for limiting purposes.

[0031] In particular, the attached drawings are includ-

ed to provide a further understanding of the invention and are incorporated in and constitute a part of this specification. The drawings together with the description explain the principles of the invention. In the drawings, corresponding characteristics and/or components are identified by the same reference numbers. In these drawings:

FIG. 1 shows in a perspective view a front-loading washing machine according to a preferred embodiment with the drawer in the fully inserted position;

FIG. 2 shows the washing machine of FIG. 1 in another perspective view with the drawer in an extracted position;

FIG. 3 shows the washing machine of FIG. 2 with the drawer frontal panel, the inlay, and a decoration element in an exploded view;

FIG. 4 shows drawer frontal panel, inlay, and decoration element in an exploded perspective view;

FIG. 5 shows drawer frontal panel, inlay, and decoration element in an assembled state in a perspective view;

FIG. 6 shows drawer frontal panel, inlay, and decoration element in an assembled state in a frontal view;

FIG. 7 shows a cut through line A-A shown in FIG. 6.

Detailed description of the invention

[0032] In FIG. 1, a laundry treatment appliance 2 is shown which is built as a front-loading washing machine and comprises a housing or casing 6 with a preferable parallelepiped shape, the casing 6 comprising a front wall 10, two side walls 14, a cover plate 20 and a rear wall (not shown). Front wall 10 and side walls 14 are preferably part of a cabinet. A front door 24 is provided which can be opened for loading or unloading laundry through an opening 28 into a washing drum.

[0033] Advantageously a washing tub is contained within casing 6, whereby a rotatable and perforated drum is contained within the washing tub. Both washing tub and drum have a substantially cylindrical shape. Advantageously the tub is suspended in a floating manner inside casing 6 by means of a number of coil springs and shock absorbers. The drum is rotated by an electric motor (not shown), which transmits the rotating motion of a motor shaft to the drum by a belt/pulley system. In a different embodiment of the invention, the motor can be directly associated with the shaft of the drum. The tub is preferably connected to casing 6 by means of an elastic bellows or gasket. Alternatively, said laundry appliance can be a dryer (in which case the tub is not provided) or a combined washer and dryer.

[0034] Laundry treatment appliance 2 comprises a machine front panel or front panel 30 which preferably is covered at least partially by an inlay 36. An operation element 40 is provided which is built in the current embodiment as a push-knob and can be used by the user of laundry treatment appliance 2 for selecting a washing program and/or selecting a parameter thereof. This knob has a concentric perimeter. Operation element 40 is preferable framed by an aesthetic ring 41 which encircles the hole (not shown) provided on the front panel 30 for the passage of the operation element 40; the ring 41 is preferable made of plastic and preferable comprises printed symbols or patterns which support an aesthetically pleasing appearance of the laundry machine appliance 2. Front panel 30 has a rounded portion 46 wrapping the aesthetic ring 41 partly. Alternatively, the operation element 40 can be configured with a different shape, i.e. it can have a circular shape at least partially, or a non-circular shape.

[0035] The operation element 40 preferable comprises a knob and / or a push button and / or a display and / or light. The operating operation element can thus be built as knob and/or a push button and / or a display or a light. For instance, it can be built in a combined way as a rotatable knob which can be pushed to act as a push button. The knob can comprise a display which shows, for instance, the currently selected treatment program and/or remaining time parameters and / or status updated thereof and / or errors which occurred. Additionally or alternatively, the display can be of the touch-type, allowing the change of programs or display modes through the user touch of said display.

[0036] Laundry treatment appliance 2 comprises a drawer 56 having a drawer frontal panel 50 which in the fully inserted position of the drawer preferable flushes or is justified with front panel 30. Drawer frontal panel 50 comprises essentially a cover plate or cover for the drawer 56 which can be inserted in or extracted from an opening 58 (see FIGs, 2 and 3) in front panel 30. Drawer frontal panel 50 preferably comprises a handle 62 for handling drawer 56. Handle 62 preferable comprises a space or recess 72, configured so that a user can insert at least one finger which allows her/him to easily pull drawer 56 from its inserted position to an extracted position.

[0037] Drawer front panel 50 comprises a shaped portion 52 which encircles operation element 40 partially. Shaped portion 52 is shaped as a segment of a circle, essentially half of a circle in the present embodiment configured to encircle the operation element (knob) 40; on the alternative embodiments where the operation element 40 is configured with different shapes (i.e. partial circular or non-circular shape), the shaped portion 52 of the drawer frontal panel 50 encircles the operator member or operation element 40 with a essentially congruent shape (i.e. a partial circular or a non-circular shape respectively). With this design, a collection of dirt around operation element 40 is strongly reduced and particles are prevented from entering drawer 56 or the interior of

appliance 2.

[0038] In the shown preferred embodiment, the front panel 30 has a width substantially equal to the width of the appliance; in this embodiment, the operation element 40 as well as the opening 58 for the insertion / extraction of the drawer 56 are provided on the front panel 30; according to an alternative embodiment, the front panel 30 can be omitted on the appliance or can have a width considerably smaller than the width of the appliance; in this case, the operation element and / or the drawer opening can be provided on one wall of the appliance, for example on the front wall 10.

[0039] In case where according to the above mentioned preferred embodiment the drawer frontal panel 50, in the fully inserted position, flushes / is justified with the front panel 30 external surface, the front panel 30 can be preferable provided of a recess 31 in association / around the opening 58, having a depth dimensioned to allow the justification / flush of the drawer frontal panel 50 with the front panel 30 external surface; in case of the alternative embodiment where the drawer opening is provided on the appliance wall directly (see above), the drawer frontal panel can have an external shape / thickness configured to flush with the external shape / thickness of the machine front panel; alternatively, the appliance wall can be provided of a recess in association / around the opening configured so that the drawer frontal panel flushes / is justified with the appliance wall external surface on the fully inserted position of the drawer.

[0040] FIG. 2 and FIG. 3 show two other perspective views of the washing machine shown in FIG. 1. Drawer frontal panel 50 is shown in a position of drawer 56 in which it has been partially extracted from opening 58. In this position, washing and/or rinsing products can be filled into compartments 80, 82 of drawer 56. An inlay 86 is provided on drawer frontal panel 50 which preferably comprises a shape which has the same contour as drawer frontal panel 50. It especially also comprises a shaped portion 92 which in its shape/form corresponds to shaped portion 52 of drawer frontal panel 50.

[0041] On the shown preferred embodiment the drawer frontal panel preferable comprises on its front surface a recess 68 (see FIG. 4); recess 68 preferable has a shape substantially corresponding to the shape of the inlay, so that the inlay 86 can be wedged on recess 68; on the preferred shown embodiment, the inlay 86 is connected to drawer frontal panel 50 by an adhesive connection, through for example a bi-adhesive tape; alternatively, inlay 86 can be assembled to said drawer frontal panel 50 by a snap connection (for example through snap means provided on the inlay connectable with engaging means provided on the drawer frontal panel or vice versa) and / or by welding and / or by gluing.

[0042] Preferable, the depth of the recess 68 provided on the drawer frontal panel 50 is dimensioned so that, once the inlay 86 is on its mounting position, the inlay 86 flushes with the external frame of the drawer frontal panel 50 resulting around said recess 68 and / or flushes with

the machine front panel 30 and / or flushes with the appliance wall (in case of drawer opening directly on the appliance wall, see embodiments above).

[0043] As above described, the drawer frontal panel 50 preferable comprises a handle 62 that preferable comprises a recess 72, which allows a comfortable way of pulling it out for accessing the at least one compartment 80, 82 and pushing it into a fully inserted position for the operation mode of the machine; preferable, the recess 72 is placed adjacent and below said inlay.

[0044] As shown in FIG. 3 to 6, a decoration element 100 is preferable provided, which partially encircles the operation element 40 on the fully inserted position of the drawer 56. In the preferred embodiment, the decoration element 100 has a shape that substantially follows the shaped portion 52, so that in its mounting position on the drawer frontal panel 50 and on the fully inserted position of the drawer 56, it encircles the operation element 40 (and the aesthetic ring 41 on the shown embodiment) at least partially and it extends in a lateral direction parallel to the axis defined by the circular perimeter of said operation element 40.

[0045] Alternatively, the shaped portion 52 extending in a lateral direction parallel to the operation element axis can be obtained without the use of a further decoration element, but for example through a lip integral of and merging from the shaped portion of the drawer frontal panel or by said shaped portion 52 directly, through the thickness of the drawer frontal panel.

[0046] In the preferred embodiment shown in FIGs. 6 and 7, the drawer frontal panel 50 comprises on the shaped portion a reduced thickness portion 118, resulting from a rear recess 117 provided on the shaped portion thickness facing the appliance 2, and from an external recess 116 provided on the shaped portion thickness facing the external space of the appliance 2; preferable, the decoration element 100 has a radial lip 110 externally extending away from the operation element 40, wherein lip 110 and rear recess 117 are preferable dimensioned to allow the insertion of lip 110 in recess 117; preferable, in the mounting position of decoration element 100 on the drawer frontal panel 50, the external face of the lip 110 flushes with the rear surface of the frontal panel facing the drawer; in the preferred shown embodiment, the radius of the decoration element substantially corresponds to the radius of the operation element 40; the lip 110 can be glued on the recess 117; alternatively, the decoration element 100 can be assembled on the shaped portion 52 by a snap connections (for example through snap means provided on the decoration element and engaging means provided on the drawer frontal panel or vice versa) and / or by welding and / or by an adhesive tape.

[0047] Preferable, the axial height of the ring is such that on its mounting position on the drawer frontal panel, the axial external edge of the ring 101 flushes with the inlay 86 external surface on its mounting position; consequently, the recess 116 is preferably confined between

the decoration element 100, the inlay 86 and the drawer frontal panel 50; in case of a transparent inlay, aesthetic symbols can be provided on the recess 116 in addition to those eventually shown / provided on the main aesthetic ring 41 of the appliance.

[0048] According to a further alternative embodiment of the present invention, the drawer frontal panel 50 is provided with a further shaped portion 59 (see FIG. 1) which substantially partially encircles the shaped portion of the door appliance 24 adjacent to the drawer frontal panel.

[0049] The invention thus conceived can be subjected to numerous modifications and variants all falling within the scope of the inventive concept.

[0050] In addition, all details can be replaced by other technically equivalent elements. In practice, all the materials used, as well as the shapes and contingent dimensions, may vary depending on the requirements without departing from the scope of protection of the following claims

Claims

1. Laundry treatment appliance (2), comprising an operation element (40), a drawer (56) and an opening (58) configured for insertion/extraction of said drawer (56),
characterized in that
said drawer (56) comprises a drawer frontal panel (50) that comprises a shaped portion (52) which in a fully inserted position of said drawer (56) at least partially encircles said operation element (40).
2. Laundry treatment appliance (2) according to claim 1, comprising a machine front panel (30), whereby said operation element (40) and / or said opening (58) are provided on said machine front panel (30).
3. Laundry treatment appliance (2) according to claim 1 or 2, whereby said operation element (40) comprises a knob and / or a push button and / or a display.
4. Laundry treatment appliance (2) according to one of the claims 1 to 3, whereby said operation element (40) comprises a circular shape at least partially, and whereby said drawer frontal panel (50) comprises a rounded profile (52) which in a fully inserted position of said drawer (56) at least partially encircles said circular shape.
5. Laundry treatment appliance (2) according to claim 4, whereby said operation element (40) has an essentially circular perimeter concentric around a vertical axis, and whereby said shaped portion (52) of said drawer frontal panel (50) extends in a lateral direction parallel to said vertical axis.
6. Laundry treatment appliance (2) according to claim 1 to 5, whereby a recess (31) is provided in association with said opening (58), said recess (31) having a depth dimensioned such that in a fully inserted position said drawer frontal panel (50) flushes with the external surface of said appliance (2) and / or said machine front panel (30).
7. Laundry treatment appliance (2) according to one of the claims 1 to 6, whereby an aesthetic element (41) is provided on said appliance (2) and / or on said machine front panel (30) which frames said operation element (40), and whereby said shaped portion (52) of said drawer frontal panel (50) in a fully inserted position encircles said operation element (40) and / or said aesthetic element (41) at least partially.
8. Laundry treatment appliance (2) according to one of the claims 1 to 7, whereby a further decoration element (100) is provided on said shaped portion (52) of said drawer frontal panel (50).
9. Laundry treatment appliance (2) according to claim 8, whereby said decoration element (100) is assembled to said shaped portion (52) by a snap connection and/or by welding and/or by gluing.
10. Laundry treatment appliance (2) according to one of the claims 1 to 9, whereby an inlay (86) is provided on said drawer frontal panel (50).
11. Laundry treatment appliance (2) according to claim 10, whereby said inlay (86) is assembled to said drawer frontal panel (50) by a snap connection and/or by welding and/or by gluing and/or by an adhesive tape.
12. Laundry treatment appliance (2) according to claim 10 or 11, whereby said drawer frontal panel (50) comprises a recess (68) on which said inlay (86) is assembled, the depth of said recess being dimensioned to allow the flush of said inlay (86) with the external surface of said drawer frontal panel (50) and / or said machine front panel (30) when said drawer (56) is on its fully inserted position on said appliance (2) and / or on said front panel (30).
13. Laundry treatment appliance (2) according to one of the claims 1 to 12, whereby said drawer frontal panel (50) comprises a further shaped portion (59) which substantially encircles at least partially at least a shaped portion of the appliance door (24) adjacent to said drawer frontal panel.
14. Laundry treatment appliance (2) according to one of the claims 1 to 13, whereby said drawer frontal panel (50) comprises an handle (62) configured to allow the insertion of a user's finger.

15. Laundry treatment appliance (2) according to claims 10 and 14, whereby said handle (62) is placed adjacent and below said inlay (86).

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FIG. 1

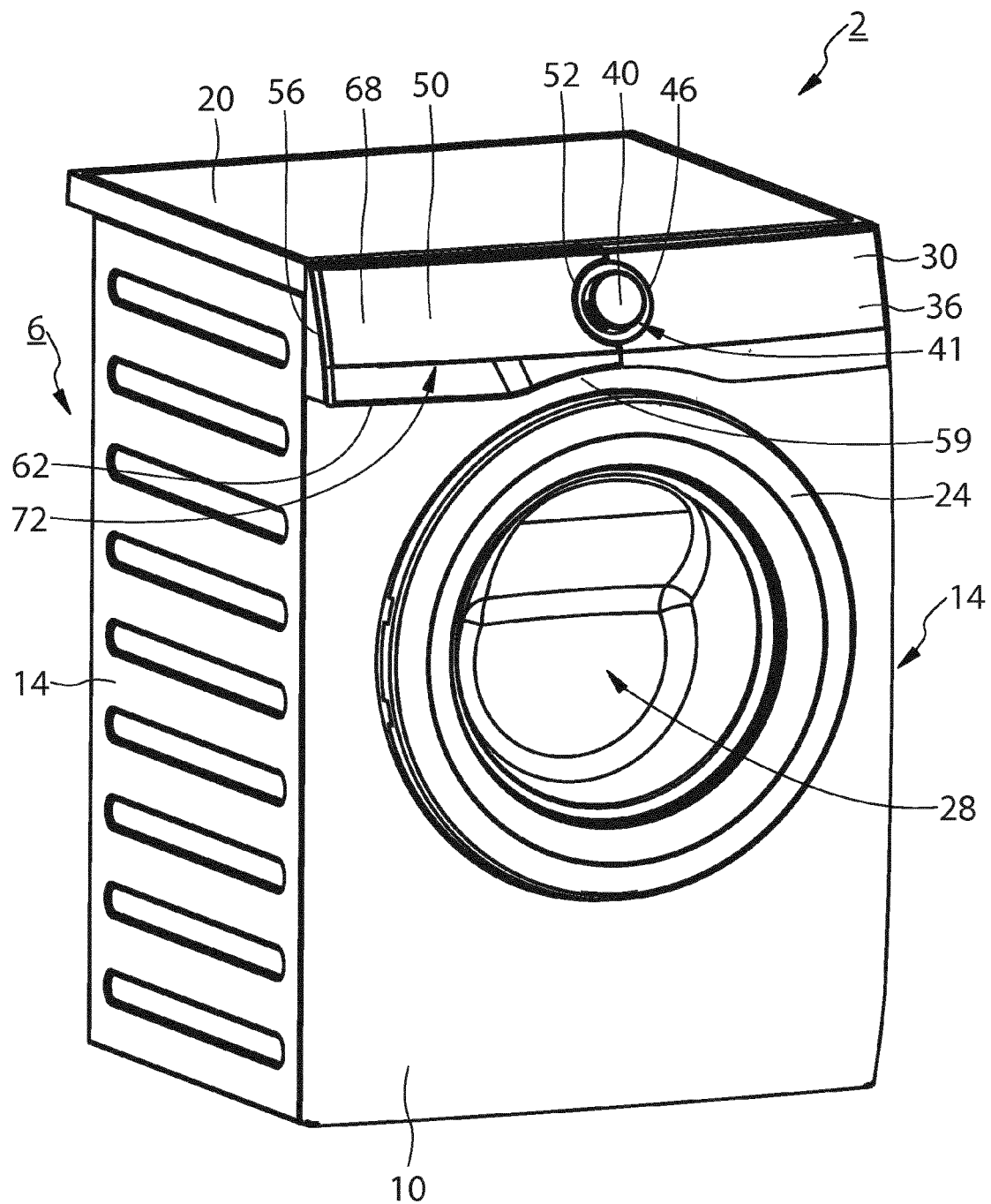


FIG. 2

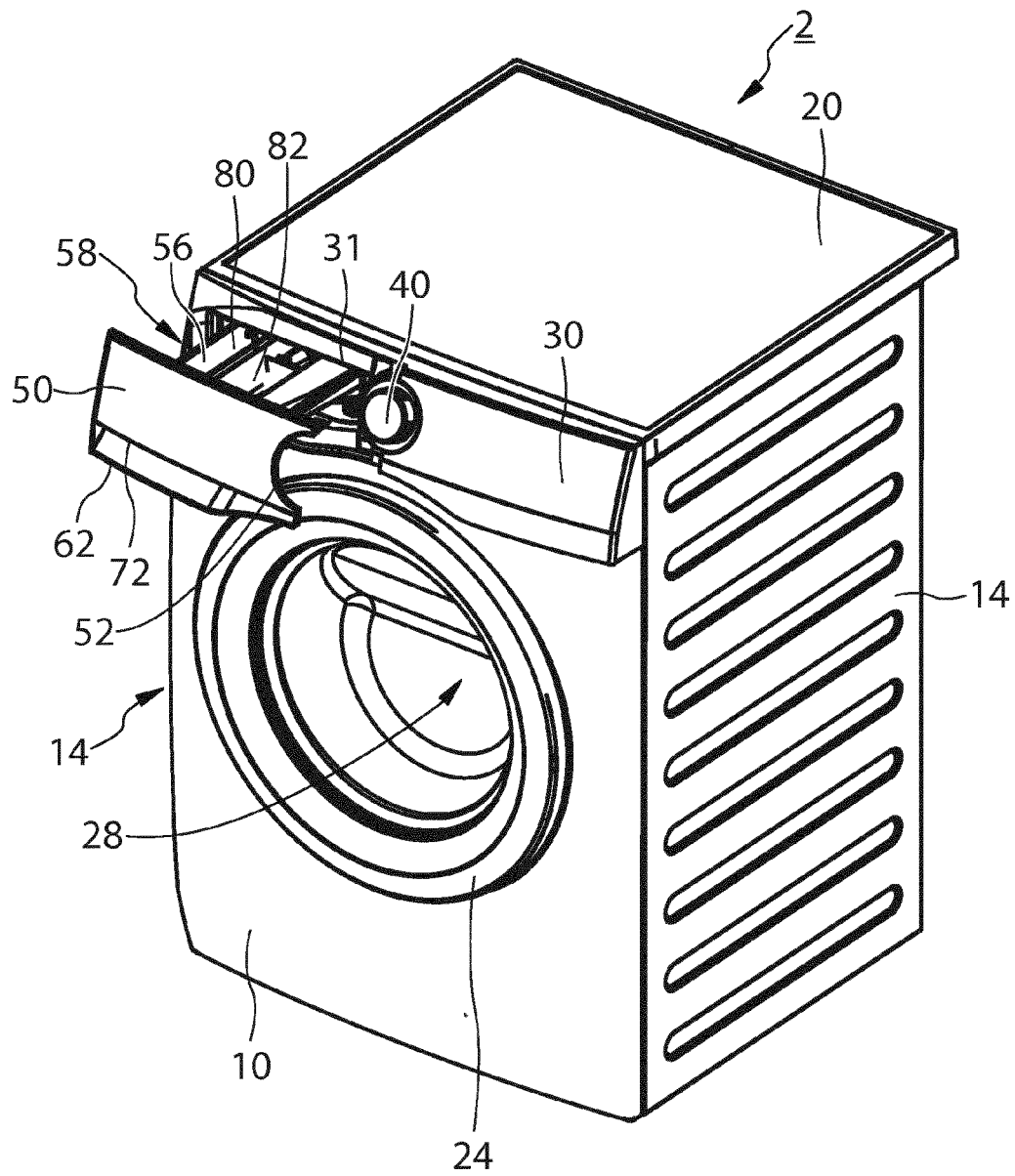


FIG. 3

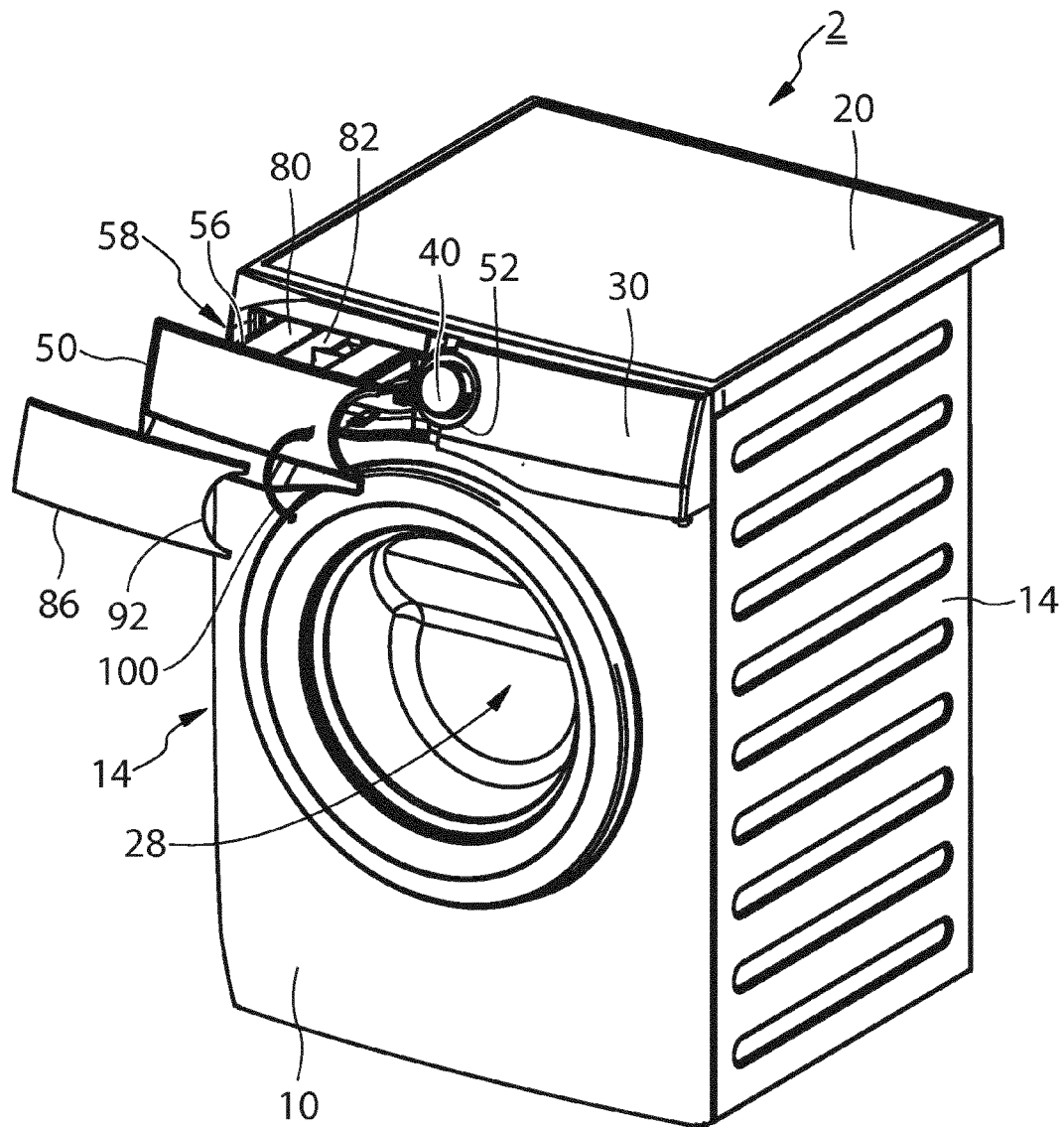


FIG. 4

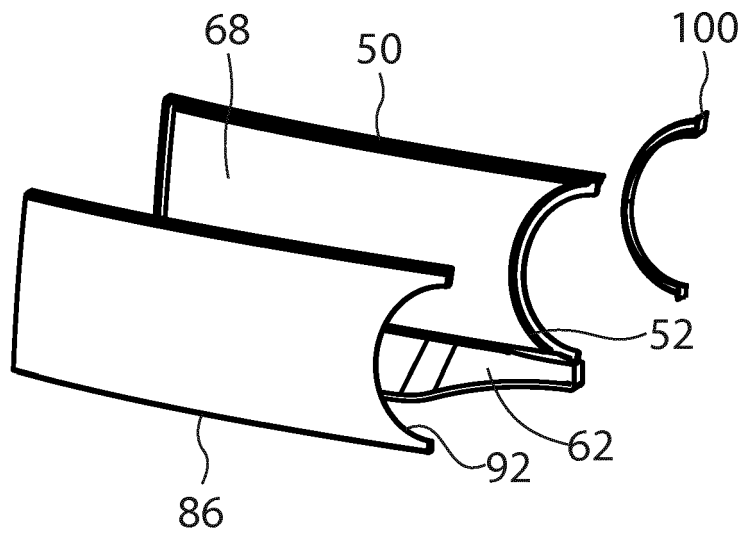


FIG. 5

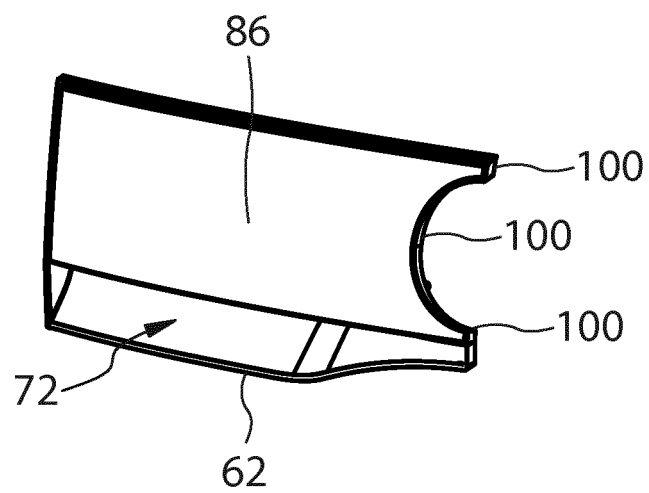


FIG. 6

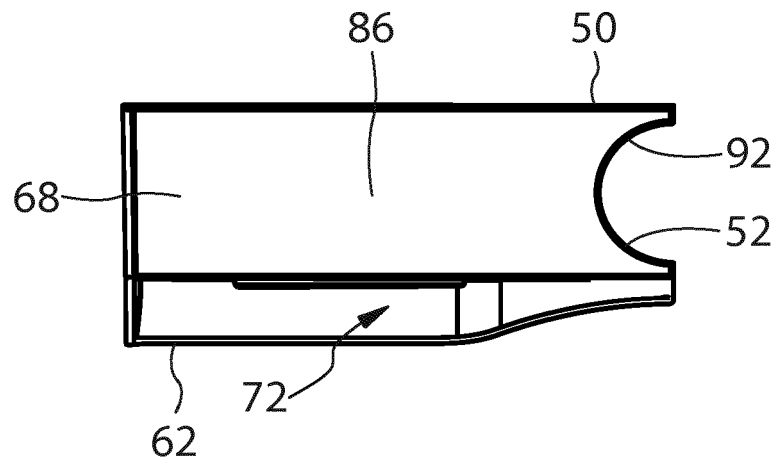
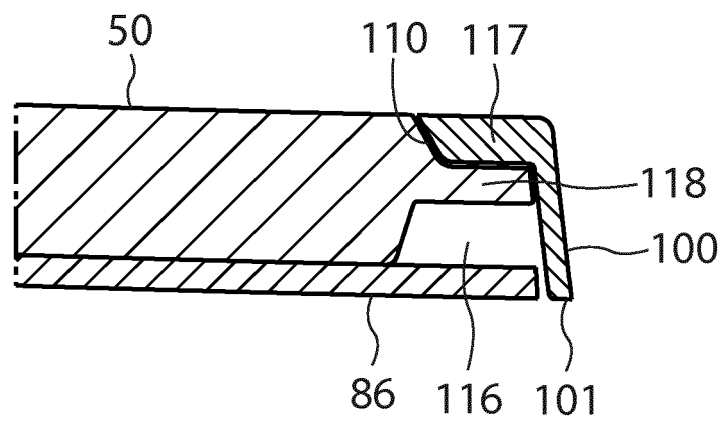


FIG. 7





EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 17 April 2015	Examiner Sabatucci, Arianna
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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

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