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(54) **HOUSEHOLD APPLIANCE AND METHOD FOR OPERATING A HOUSEHOLD APPLIANCE**
 HAUSHALTSGERÄT UND VERFAHREN ZUM BETRIEB EINES HAUSHALTSGERÄTS
 APPAREIL MÉNAGER ET PROCÉDÉ DE FONCTIONNEMENT ASSOCIÉ

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Description

Field of the invention

[0001] The present invention generally relates to a household appliance, in particular to a laundry treatment appliance, especially a 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 a user interface and a rotary user interface element which comprises a knob as well as a method of operation.

Background of the invention

[0002] Household appliances, especially laundry machines such as washing machines, dryers, especially tumble dryers, and combined washers/dryers are known which comprise a user interface which can, for instance, be arranged on a front panel. The user interface typically provides several user interface elements for selecting or inputting a desired laundry treatment program and/or related parameters for this program.

[0003] The user interface can also provide symbols, lights, displays or other indicators which allow giving the user a feedback on the selected choices. While switches and push knobs are often used, as a selecting device for a treatment program among a set of available programs, a rotary user interface element such as a rotating or rotary knob, which can also have the functionality of a push button, is often provided. By turning the knob, the user can easily select a desired treatment routine.

[0004] The rotary user interface element or knob is one of the most important element for operating the machine and is used very often. It is therefore of great importance to ensure a long lifetime and also an accurate operation of this user element.

[0005] The rotary user element as the primary interface of the machine transmits the first impression to the user of the quality and handling of the appliance. If the user encounters a user interface element that is easy and convenient to handle and provides between the several rotational steps during the rotation of the user interface element, she or he gains a good quality impression of the appliance. If otherwise the user interface element has a shaky, unpredictable, or varying response, resulting for example in a rough and variable force needed for the rotation of the user interface element, the user projects this impression on the appliance and gets an impression of overall low quality. Therefore, the user interface should be reliable and should not block.

[0006] Since the knob is often a primary user interface element, its frequent use can lead to damages which make a replacement necessary. Since the knob is protruding from the control panel, also during handling or transport, this element can be damaged and needs to be replaced.

[0007] In common machines, the knob can be assem-

bled from the inside / back of the control panel, whereby the knob passes through a control panel aperture and leaves gap such that there is not visual overlapping between knob and control panel from the machine external side. In other embodiments of machines, the knob is assembled from the outside / front of the control panel which leads to a visual overlapping between the knob and the control panel, leaving a gap under the knob.

[0008] In both cases there are mechanical constraints that prevent the removal of the knob by pulling it by hand. In cases when the knob needs to be exchanged, for example due to quality issues (e.g. scratches made during the assembly phase), the operator must disassemble the control panel assembly from the machine, disassemble the electronic subassembly from the control panel and then remove the knob. This sequence of operations takes usually a comparatively long time to perform, increasing the risks of components damages, due to the control panel/electronic board disassembly.

[0009] Document EP 2 933 811 A1 discloses a knob assembly, having a rotary motion and a up-and-down motion, in which in the inserted position it does not protrude from the control panel, and in the extracted position it can be operated, through a rotary motion, by the user.

Summary of the invention

[0010] The aim of the invention is to provide a household appliance allowing a quick, a robust and a reliable removal of the knob.

[0011] It is a further aim of the invention to provide a method for operating a household appliance which yields a quick, a robust and a reliable knob removal.

[0012] The invention therefor relates to a household appliance, comprising a control panel on which a user interface element is provided which comprises a knob which is associated with a selector, whereby the knob is partially extractable from the control panel from a first inserted position to a second extracted position in which the knob is in a non-operating position but axially constrained by the panel for a complete disassembly from the appliance.

[0013] The invention is based on the consideration that it is desirable to allow a quick and convenient removal of the knob without the need of the disassembly of further components. The knob at the same time should still make a qualitatively high and pleasant impression. Current solutions make a rather high demand on time and working steps for the removal of the knob.

[0014] Applicant has found that these demands can be met by designing the knob in such a way that it can be removed in a two-step process. The knob can first be put into a non-operating position in which it is axially constrained. There is thus not the danger that it can be too easily removed or pulled out. In this position, the knob is accessible for disassemble from the panel, preferably by a tool.

[0015] In the first inserted position, the knob, in its nor-

mal operating condition, is operational and functions as a user interface element. In the second extracted position, the knob is configured to be detachable but cannot be ditched by further pulling which would eventually destroy the knob. Its detachment is only possible by actively, especially by using a tool, disengaging the knob.

[0016] According to the invention, especially only, in the second position, the knob is at least partially removable from the control panel.

[0017] According to the invention, the knob comprises a knob cover element and a knob carrier element or underknob, whereby the knob cover element is removably attached to the knob carrier element, and whereby the knob carrier element is, especially in an axial direction of the knob, slideably arranged at least partially behind the control panel. This design is based on the recognition that damages occur typically on the part of the knob protruding from the control panel. When the knob is built in the described two-part design, the carrier element can remain behind the control panel since only the cover element needs to be replaced. The two-part structure therefore enables a convenient replacement without trade-offs in stability or reliability of the knob.

[0018] According to the invention, the knob cover element is fully detachable from the knob carrier element by the user in / only in the second position. It thus can be removed and replaced by a new cover element which can be attached / connected to the carrier element.

[0019] Preferably the knob cover element and the knob carrier element are attached to each other by a snap connection / fastening means. This design allows a quick detachment of these two components.

[0020] The knob carrier element preferably comprises at least one hook seat into which in the attached configuration at least one snap hook of the knob cover element engages. In another embodiment, the hooks are arranged on the carrier element and engage with hook seats on the cover element.

[0021] The knob carrier element preferably comprises an external flange acting as an axial block when the second extracted position of the knob is reached. In this way, when the knob cover is pulled away from the control panel, a natural stop is realized indicating a second position which is suitable for disengagement of cover and carrier elements.

[0022] This flange in the second extracted position preferably is blocked by blocking means / an abutting element or portion, preferably a sleeve, of the control panel. These means, especially this sleeve is therefore arranged behind an outer surface of the control panel and in front of / in contact of the flange of the carrier element when fully inserted.

[0023] Advantageously the knob carrier element is slidably arranged with respect to / on the selector.

[0024] Preferably, in the assembled position of the knob cover element and the knob carrier element, between these two elements a, preferably radial, aperture is provided which is configured to allow the insertion of

a tool when the knob is arranged on its second extracted position.

[0025] Preferably, said tool is configured to allow the cover element disassembly, i.e. the removal of the cover element from the carrier element. The concrete design of the tool can depend on the concrete attachment of these two components. For example, it can be built as a pen- or bolt-type device for disengaging snap elements, especially hooks.

[0026] The knob cover preferably is non-rotatable mounted on the knob carrier element. Knob cover and knob carrier element in this way rotate together in a collinear way with the same angular velocity, i.e. they don't change their relative orientations during rotation. When the knob cover is turned by the user, the knob cover transmits the same rotational movement to the carrier element.

[0027] The knob carrier element advantageously comprises means interacting with an encoder. Preferably, the encoder is provided on an electronic board provided on the rear side of the knob, said encoder preferably comprising a base connected to the electronic board and a rotatable pin, the rotation of which result in a different signal used by the machine control unit to select the program / parameter.

[0028] Preferably the material of the knob cover and/or the knob carrier element is A.B.S. (Acrylonitrile butadiene styrene).

[0029] Advantageously, the household appliance is built as a laundry treatment machine. Most preferably, it is built as a washer, a dryer or combined washer/dryer. It preferably is built as a front-loading washing machine or washer / dryer.

[0030] The invention also relates to a method for operating a household appliance previously described, with the steps of

- pulling the knob cover element away from the control panel until the knob reaches the second extracted position;
- detaching the knob cover element from the knob carrier element.

[0031] The knob cover element is preferably attached to knob carrier element by snap elements or hooks which in the mounted position engage in respective seats.

[0032] Preferably the tool is inserted into a, preferably radial, aperture between these two elements which is designed to allow the insertion of a tool when the knob is arranged on its extracted position.

[0033] Preferably the tool is inserted for disengaging connection elements located on cover and/or carrier elements such that the cover element is not attached anymore to the carrier element and can be disengaged and removed. For initial assembly or replacement, the respective cover element is attached the carrier element. The cover element is then pushed towards the control panel until cover and carrier elements reach the first po-

sition in which the knob is operational as a user interface element.

[0034] The advantages of the invention are essentially as follows. Due to the design of the knob which can assume two positions of which the second allows a disassembly of the knob, it can be replaced very quickly, assuring at the same time a easier way of knob disengagement. For its replacement, the control panel and electronic subassemblies do not need to be removed or disassembled. Moreover, the removal of the electronic subassembly from the control panel is made easier since the encoder's pin is not fixed inside the knob.

Brief description of the drawings

[0035] 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.

[0036] In particular, the attached drawings are included 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 a household appliance with a knob in a preferred embodiment in a perspective view;
- FIG. 2 shows the household appliance according to FIG. 1 in a frontal view;
- FIG. 3 shows a knob cover element;
- FIG. 4 shows a knob carrier element;
- FIG. 5 shows knob cover element and knob carrier element mounted on the control panel of the household appliance in a first position;
- FIG. 6 shows knob cover element and knob carrier element mounted on the control panel of the household appliance in a second position;

[0037] In FIGs 1 and 2, a household 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. Front door 24 comprises a handle 32 for convenient opening and closing.

[0038] Advantageously a washing tub is contained within casing 6, whereby a rotatable and perforated drum

is contained by said 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, the laundry appliance can be a dryer (in which case the tub is not provided) or a combined washer and dryer.

[0039] The preferred washing machine shown in FIGs 1 and 2 on a front panel 48 comprises a drawer 30 with a front plate 34 and a handle 38 for pulling out and pushing back the drawer 30. Drawer 30 preferably comprises at least one compartment for detergent or washing additives. Preferably, adjacent to drawer 30, a rotatable or rotary knob 44 is arranged for selecting a laundry treatment program and/or at least one parameter of a laundry treatment program. Knob 44 is preferably provided on a control panel 62 or user interface which can provide further indicating and/or control elements. Knob 44 is preferably arranged on front panel 48 adjacent to drawer 30, whereby preferably no user interface elements such as controls (buttons, dials) or indicating elements (displays, lights) are arranged between drawer 30 and knob 44. On a panel 64 which is part of control panel 62, user interface elements such as at least one display and/or buttons and/or indicators can be provided. A service hatch 70 is preferably provided on front wall 70 which preferably yields access to a filter unit.

[0040] The knob 44 shown in FIGs. 1 and 2 comprises a knob cover element 70 shown in FIG. 3 and a knob carrier element 72 shown in FIG. 4. Knob cover element 70 preferably has a circular shape and preferably comprises at least one region 74, 76 of corrugated surface which allow the user to conveniently operate the knob 44 by preventing that the users fingers slide on the perimeter of the knob 44 when turning it. Cover element 70 preferably comprises a further corrugated region 78, whereby centrally in this region 78, an indicating element 82 is arranged which protrudes from an outer perimeter 86 of cover element 70. Indicating element 82 is arranged in cover element 70 preferably in such a way that indicating element points vertically upwards when knob 44 does not correspond to a specific setting of an appliance parameter / program. Cover element 70 comprises a circular front surface 88 which is preferably concavely shaped (see Figs 5 and 6).

[0041] As can be seen in FIG. 4, carrier element 72 has a circular base portion or flange 90 from which a first part 94 protrudes. From first part 94 a central part 98 and two pins 100, 102 protrude which are arranged on opposite sides of central part 100. Part 94 preferably comprises, preferably on opposing sides, hook seats 110, 112 into which hooks 120, 122 of cover element 70 engage

(see Figs 5 and 6).

[0042] Pins 100, 102 have two functions: to assist the positioning of cover element 70 on carrier element and to reduce clearances. Regarding the positioning function, pins 100, 102 have different diameter and engage with / are received in two holes provided on a backside of cover element 70 which in the mounted position faces the control panel 62. The two holes have corresponding diameters, resulting in the fact that the cover element 70 can only in one prescribed orientation be mounted on carrier element 72, avoiding mistakes regarding the assembly of these two components.

[0043] The pins 100, 102 additionally serve to reduce clearances between cover element 70 and carrier element 72. Since hooks 120, 122 do not eliminate all possible displacements between elements 70 and 72, the pins 100, 102 together with the respective holes in cover element 70 eliminate possible remaining clearances / play between these two components. They determine the distance between these two components 70, 72 when the pins are fully inserted in the respective holes and prevent also lateral respective movements as well as rotational play.

[0044] In FIG. 5, knob 44 with cover element 70 and carrier element 72 is shown in a mounted position on control panel 62. Carrier element 72 is preferably rotatable mounted on a carrier seat element 130. The carrier seat element 130 provides an axial stop in direction opposite to axial direction 160. In this position, the knob 44 is fully functional. A rotatable pin 142 being part of a selector which is connected to an electronic board of the appliance 2 is received by central opening preferably provided on central part 98 of the carrier element 72 on its side facing control panel 62. Snap hooks 120, 122 of cover element 70 are engaged in hook seats 110, 112 of carrier element 72.

[0045] The encoder of appliance 2 preferably comprises a base connected to the electronic board and a rotatable pin 142, the rotation of which result in a different signal used by the machine control unit to select the program / parameter.

[0046] The hole in central part 98 has in the preferred embodiment shown an asymmetric cross section throughout its depth, corresponding to the cross section of pin 142. When in the mounted configuration pin 142 is received by opening on the central part 98, when cover element 70 and carrier element 72 co-rotate, pin 142 is rotated. In the second extracted position of knob 44 below described, the pin 142 is still at least partially located in opening 98. Thus, when cover element 70 is rotated, still the pin 142 is rotated.

[0047] In an alternative embodiment, the opening on the central part 98 can have a circular cross section in a region facing the control board and a asymmetric cross section in a region opposite to control board in such a way that in the first or fully inserted position, pin 142 engages with the asymmetric part and is turned when cover element 70 is turned. In the second extracted position

below described, however, pin 142 is located in the circular region of opening 98 in such a way that a rotation of cover element 70 and carrier element 72 does not lead to a rotation of pin 142.

[0048] In the configuration displayed, the cover element 70 and carrier element 72 are fixed with each other both in an axial direction 160 as well as radial direction, i.e. both elements 70, 72 rotate collinearly with each other with the same angular velocity when the cover element 70 is turned by the user. The configuration shown in FIG. 5 is a first, fully inserted configuration of knob 44 in which the household appliance 2 is operated.

[0049] In FIG. 6, a second configuration of knob 44 is shown. Both cover element 70 as well as carrier element 72 are translated in axial direction 160 compared to the configuration shown in FIG. 5. The maximal stroke by which carrier element 72 can be moved in axial direction 160 is limited by a, preferably circular, sleeve 166 of control panel 62. At this maximal stroke a second position of knob 44 is defined in which flange 90 touches sleeve 166 by which further movement in axial direction 166 is blocked. In this position, knob 44 is not functional but prepared for full detachment of the knob gaging snap hooks 120, 122 from seats 110, 112. Snap hooks 120, 122 and/or seats 110, 112 are built elastically and can be preferably disengaged one after the other or simultaneously. When both hooks 120, 122 are disengaged, cover element 70 is disengaged from carrier element 72 and can be fully removed.

[0050] The knob replacement is therefore performed as follows. In a first step, starting from the configuration shown in FIG. 5, knob cover element 70 is pulled in axial direction 160 until a mechanical resistance is detected when movement of flange 90 is stopped by sleeve 166. Until this position has reached, cover element 70, which is engaged with carrier element 72, and carrier element 72 move together in axial direction 160.

[0051] When this second position is reached, the aperture 170 between cover element 70 and carrier element 72 is accessible. A tool, preferably a screwdriver, is inserted into aperture for disengaging hooks 120, 122 from respective hook seats 110, 112. Cover element 70 can now be removed, leaving behind carrier element 72. The tool is suitable for this disengagement and is preferably provided with the appliance 2 to the user.

[0052] For initial assembly and/or replacement, another cover element 70 is connected to carrier element 72 by engaging hooks 120, 122 of cover element 70 with hook seats 110, 112 of carrier element 72. Pins 100, 102 described above engage with corresponding holes in cover element 70 and assure a correct rotational orientation of cover element 70 and carrier element 72 with respect to each other. Also they center elements 70, 72 and reduce clearances and play. Both elements 70, 72 can be pushed towards the control board 62 in a direction opposite to axial direction 160 until the first and fully inserted position is reached in which carrier element 72 is seated on carrier seat element 130.

[0053] The invention thus conceived can be subjected to numerous modifications and variants all falling within the scope of the inventive concept.

Claims

1. Household appliance (2), comprising a control panel (62) on which a user interface element is provided which comprises a knob (44) which is associated with a selector, whereby said knob (44) comprises a knob cover element (70) and a knob carrier element (72), whereby said knob cover element (70) is removably attached to said knob carrier element (72), and whereby said knob carrier element (72) is slidably arranged at least partially behind said control panel (62),
characterized in that said knob (44) is partially extractable from said control panel (62) from a first inserted position to a second extracted position in which said knob (44) is in a non-operating position but axially constrained by said panel (62) for a complete disassembly from said appliance (2), whereby in said second position, said knob (44) is at least partially removable from said control panel (62), whereby said knob cover element (70) is fully detachable from said knob carrier element (72) by the user in / only in said second position.
2. Household appliance (2) according to claim 1, whereby said knob cover element (70) and said knob carrier element (72) are attached to each other by a snap connection/fastening means.
3. Household appliance (2) according to claim 2, whereby said knob carrier element (74) comprises at least one hook seat (110, 112) into which in the attached configuration at least one snap hook (120, 122) of said knob cover element (70) engages.
4. Household appliance (2) according to one of the preceding claims, whereby said knob carrier element (72) comprises an external flange (90) acting as an axial block when said second extracted position of said knob (44) is reached.
5. Household appliance (2) according to claim 4, whereby said flange (90) in said second extracted position is blocked by a blocking means (166) of said control panel (62).
6. Household appliance (2) according to one of the preceding claims, whereby said knob carrier element (72) is slidably arranged with respect to / on said selector.
7. Household appliance (2) according to one of the preceding claims, whereby in the assembled position of

said knob cover element (70) and said knob carrier element (72), between said two elements (70, 72) an aperture (170) is provided which is configured to allow the insertion of a tool when said knob (44) is arranged on said second extracted position.

8. Household appliance (2) according to one of the preceding claims, whereby said knob cover element (70) is non-rotatable mounted on said knob carrier element (72).
9. Household appliance (2) according to one of the preceding claims, whereby said knob carrier element (72) comprises means interacting with an encoder.
10. Household appliance (2) according to one of the preceding claims, whereby the material of the knob cover and/or the knob carrier element is A.B.S. (Acrylonitrile butadiene styrene).
11. Household appliance (2) according to one of the preceding claims, which is built as a laundry treatment machine.
12. Method for operating a household appliance (2) according to one of the preceding claims, with the steps of
 - pulling said knob cover element (70) away from said control panel (62) until said knob (44) reaches said second extracted position;
 - detaching said knob cover element (70) from said knob carrier element (72).

Patentansprüche

1. Haushaltsgerät (2), umfassend eine Steuertafel (62), auf der ein Benutzerschnittstellenelement bereitgestellt ist, das einen Knopf (44) umfasst, der mit einer Wahlvorrichtung assoziiert ist, wobei der Knopf (44) ein Knopfabdeckelement (70) und ein Knopfträgererelement (72) umfasst, wobei das Knopfabdeckelement (70) entfernbar an dem Knopfträgererelement (72) angebracht ist, und wobei das Knopfträgererelement (72) zumindest teilweise hinter der Steuertafel (62) verschiebbar angeordnet ist,
dadurch gekennzeichnet, dass der Knopf (44) teilweise aus der Steuertafel (62) von einer ersten eingesetzten Position zu einer zweiten herausgezogenen Position herausziehbar ist, in der der Knopf (44) in einer nicht betriebsbereiten Position, jedoch axial durch die Tafel (62) für eine vollständige Demontage von dem Gerät (2) gehalten ist, wobei in der zweiten Position der Knopf (44) zumindest teilweise aus der Steuertafel (62) entfernbar ist, wobei das Knopfabdeckelement (70) von dem Knopfträgererelement (72) durch den Benutzer in/nur in der zweiten Position

vollständig abnehmbar ist.

2. Haushaltsgesetz (2) nach Anspruch 1, wobei das Knopfbedeckungselement (70) und das Knopfträgerelement (72) durch eine Schnappverbindung/Befestigungsmittel aneinander angebracht sind. 5
3. Haushaltsgesetz (2) nach Anspruch 2, wobei das Knopfträgerelement (74) mindestens einen Hakensitz (110, 112) umfasst, in den in der angebrachten Auslegung mindestens ein Schnapphaken (120, 122) des Knopfbedeckungselements (70) eingreift. 10
4. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, wobei das Knopfträgerelement (72) einen äußeren Flansch (90) umfasst, der als ein axialer Block dient, wenn die zweite herausgezogene Position des Knopfes (44) erreicht ist. 15
5. Haushaltsgesetz (2) nach Anspruch 4, wobei der Flansch (90) in der zweiten herausgezogenen Position durch ein Blockierungsmittel (166) der Steuerplatte (62) blockiert ist. 20
6. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, wobei das Knopfträgerelement (72) in Bezug auf die/an der Wahlvorrichtung verschiebbar angeordnet ist. 25
7. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, wobei in der montierten Position des Knopfbedeckungselements (70) und des Knopfträgerelements (72) zwischen den zwei Elementen (70, 72) ein Durchgang (170) bereitgestellt ist, der ausgelegt ist, das Einsetzen eines Werkzeugs zu ermöglichen, wenn der Knopf (44) an der zweiten herausgezogenen Position angeordnet ist. 30
35
8. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, wobei das Knopfbedeckungselement (70) nichtrotierbar an dem Knopfträgerelement (72) angebracht ist. 40
9. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, wobei das Knopfträgerelement (72) Mittel umfasst, die mit einem Geber zusammenwirken. 45
10. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, wobei das Material des Knopfbedeckungselements und/oder des Knopfträgerelements A.B.S. (Acrylnitril-Butadien-Styrol) ist. 50
11. Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, das als eine Wäschebehandlungsmaschine ausgeführt ist. 55
12. Verfahren zum Betreiben eines Haushaltsgesetz (2) nach einem der vorhergehenden Ansprüche, mit den

Schritten

- Ziehen des Knopfbedeckungselements (70) weg von der Steuerplatte (62), bis der Knopf (44) die zweite herausgezogene Position erreicht;
- Abnehmen des Knopfbedeckungselements (70) von dem Knopfträgerelement (72).

10 Revendications

1. Appareil ménager (2), comportant un tableau (62) de commande sur lequel est placé un élément d'interface d'utilisateur qui comporte un bouton (44) qui est associé à un sélecteur, ledit bouton (44) comportant un élément (70) d'habillage de bouton et un élément support (72) de bouton, ledit élément (70) d'habillage de bouton étant lié de façon amovible audit élément support (72) de bouton, et ledit élément support (72) de bouton étant disposé de façon coulissante au moins partiellement derrière ledit tableau (62) de commande, **caractérisé en ce que** ledit bouton (44) peut être partiellement extrait dudit tableau (62) de commande d'une première position insérée à une seconde position extraite dans laquelle ledit bouton (44) est dans une position non fonctionnelle mais entravé axialement par ledit tableau (62) pour un démontage complet par rapport audit appareil (2), ledit bouton (44), dans ladite seconde position, pouvant être retiré au moins partiellement dudit tableau (62) de commande, ledit élément (70) d'habillage de bouton étant entièrement détachable dudit élément support (72) de bouton par l'utilisateur dans / uniquement dans ladite seconde position.
2. Appareil ménager (2) selon la revendication 1, ledit élément (70) d'habillage de bouton et ledit élément support (72) de bouton étant liés l'un à l'autre par un moyen de liaison/fixation à encliquetage.
3. Appareil ménager (2) selon la revendication 2, ledit élément support (74) de bouton comportant au moins un siège (110, 112) de croc dans lequel s'engage, dans la configuration liée, au moins un croc (120, 122) d'encliquetage dudit élément (70) d'habillage de bouton.
4. Appareil ménager (2) selon l'une des revendications précédentes, ledit élément support (72) de bouton comportant une bride externe (90) agissant comme un arrêtoir axial lorsque ladite seconde position extraite dudit bouton (44) est atteinte.
5. Appareil ménager (2) selon la revendication 4, ladite bride (90), dans ladite seconde position extraite, étant bloquée par un moyen (166) de blocage dudit tableau (62) de commande.

6. Appareil ménager (2) selon l'une des revendications précédentes, ledit élément support (72) de bouton étant disposé de façon coulissante par rapport audit / sur ledit sélecteur. 5
7. Appareil ménager (2) selon l'une des revendications précédentes, dans la position assemblée dudit élément (70) d'habillage de bouton et dudit élément support (72) de bouton, une ouverture (170) étant ménagée entre lesdits deux éléments (70, 72) qui est configurée pour permettre l'insertion d'un outil lorsque ledit bouton (44) est disposé dans ladite seconde position extraite. 10
8. Appareil ménager (2) selon l'une des revendications précédentes, ledit élément (70) d'habillage de bouton étant monté de façon non tournante sur ledit élément support (72) de bouton. 15
9. Appareil ménager (2) selon l'une des revendications précédentes, ledit élément support (72) de bouton comportant un moyen interagissant avec un codeur. 20
10. Appareil ménager (2) selon l'une des revendications précédentes, le matériau de l'élément d'habillage de bouton et/ou du support de bouton étant de l'A.B.S. (acrylonitrile butadiène styrène). 25
11. Appareil ménager (2) selon l'une des revendications précédentes, qui est construit comme une machine de traitement de linge. 30
12. Procédé de manœuvre d'un appareil ménager (2) selon l'une des revendications précédentes, comprenant les étapes consistant à 35
- tirer ledit élément (70) d'habillage de bouton pour l'écarter dudit tableau (62) de commande jusqu'à ce que ledit bouton (44) atteigne ladite seconde position extraite ; 40
 - détacher ledit élément (70) d'habillage de bouton dudit élément support (72) de bouton. 45

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FIG. 1

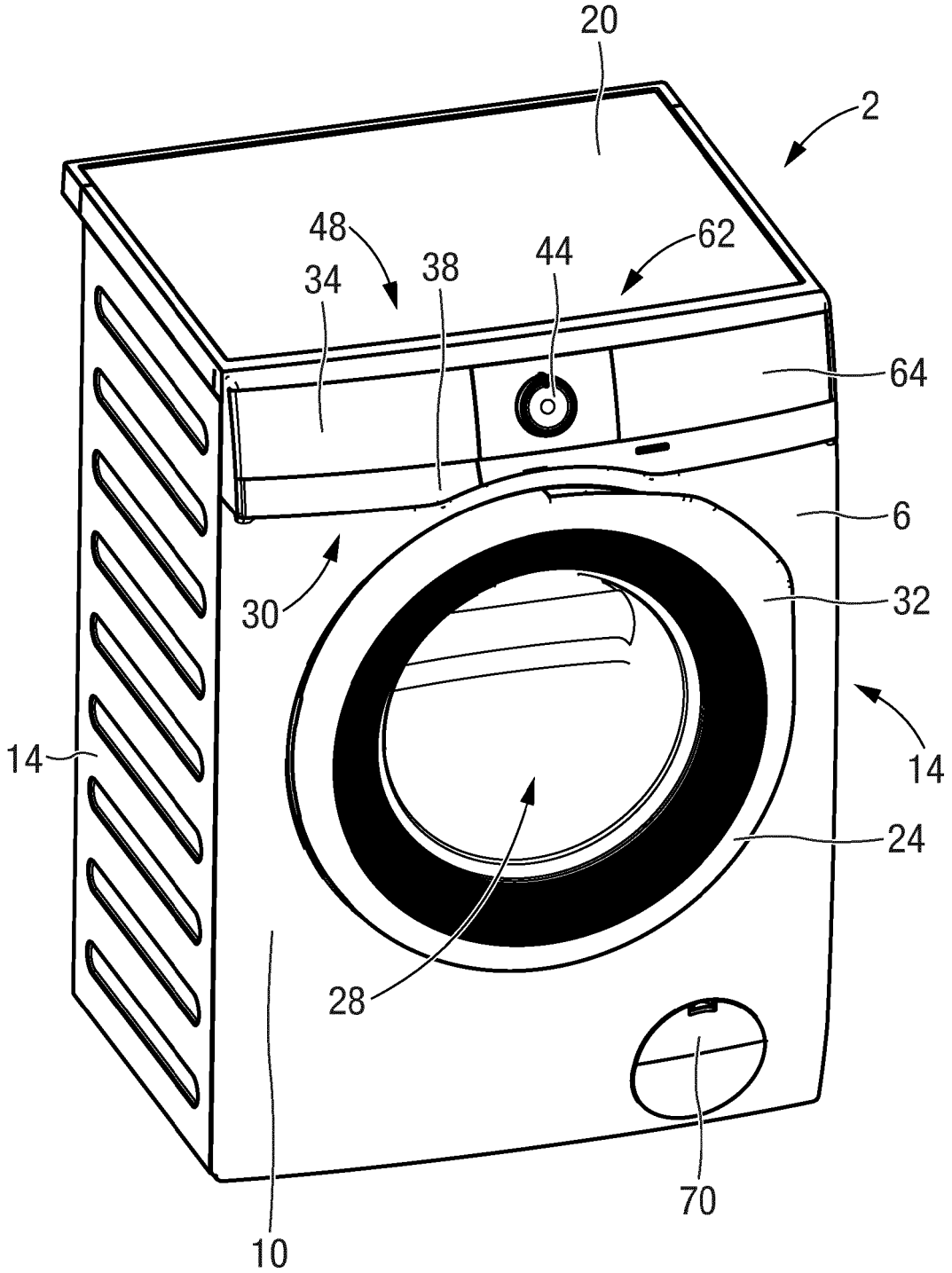


FIG. 2

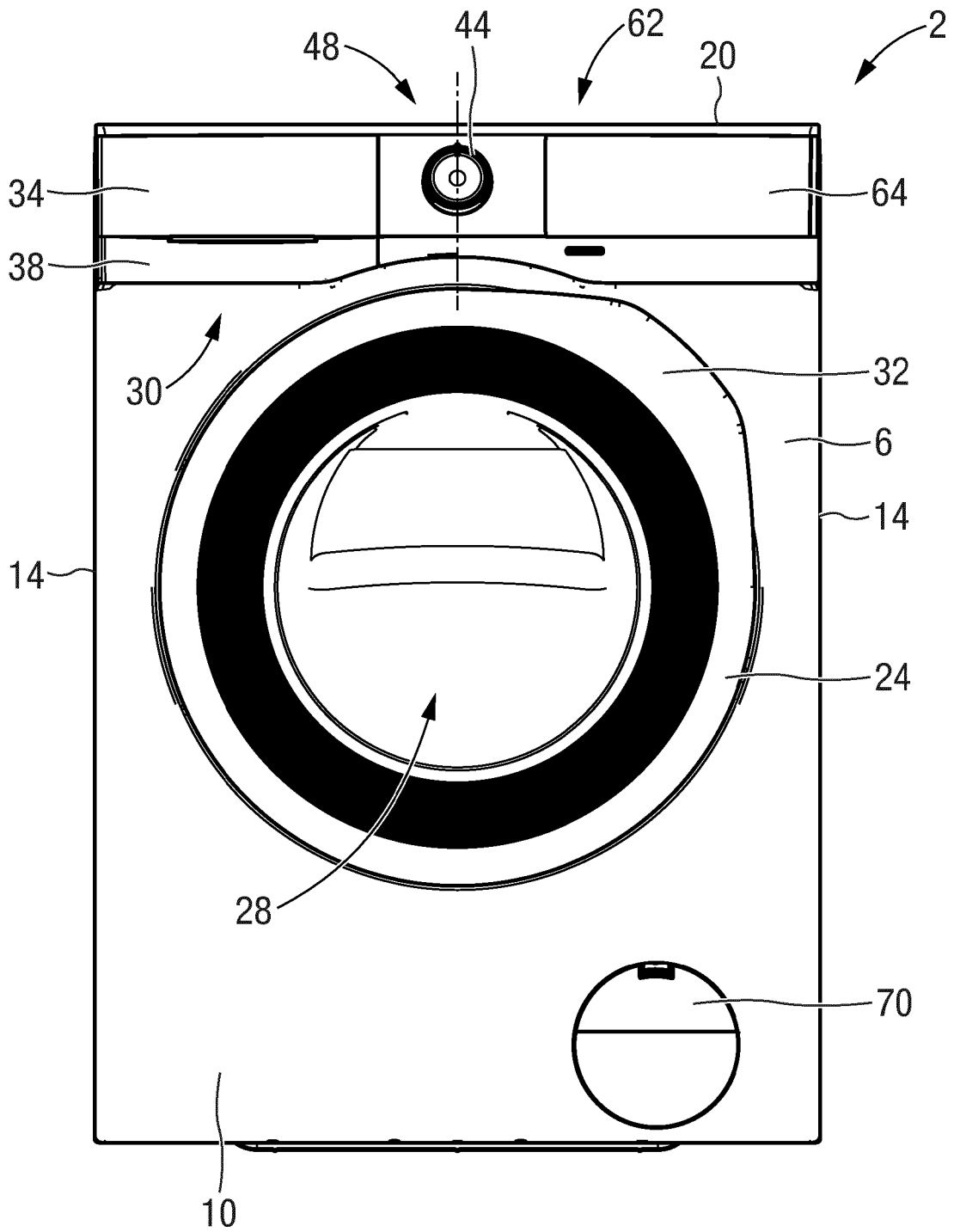


FIG. 3

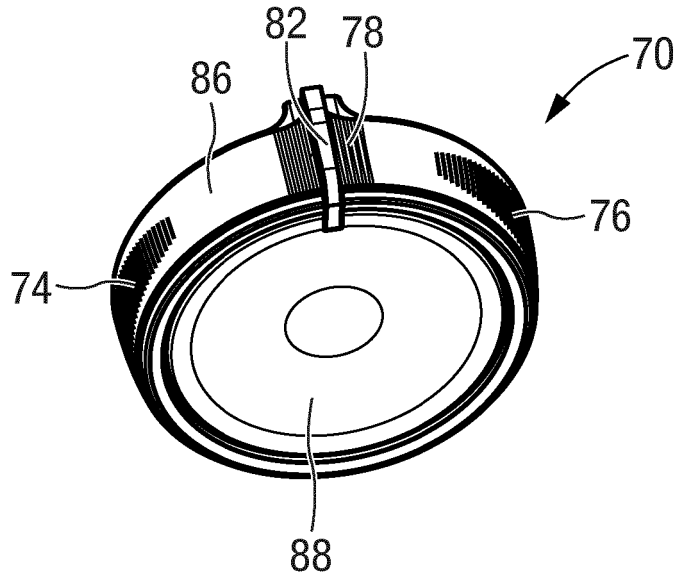


FIG. 4

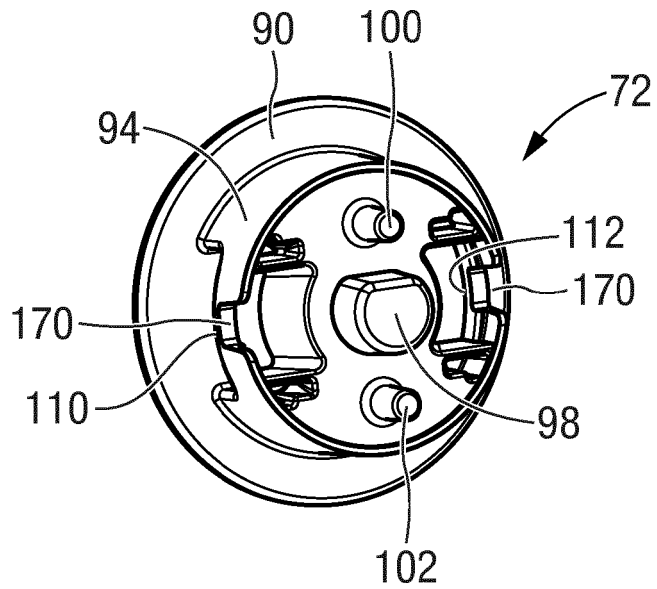


FIG. 5

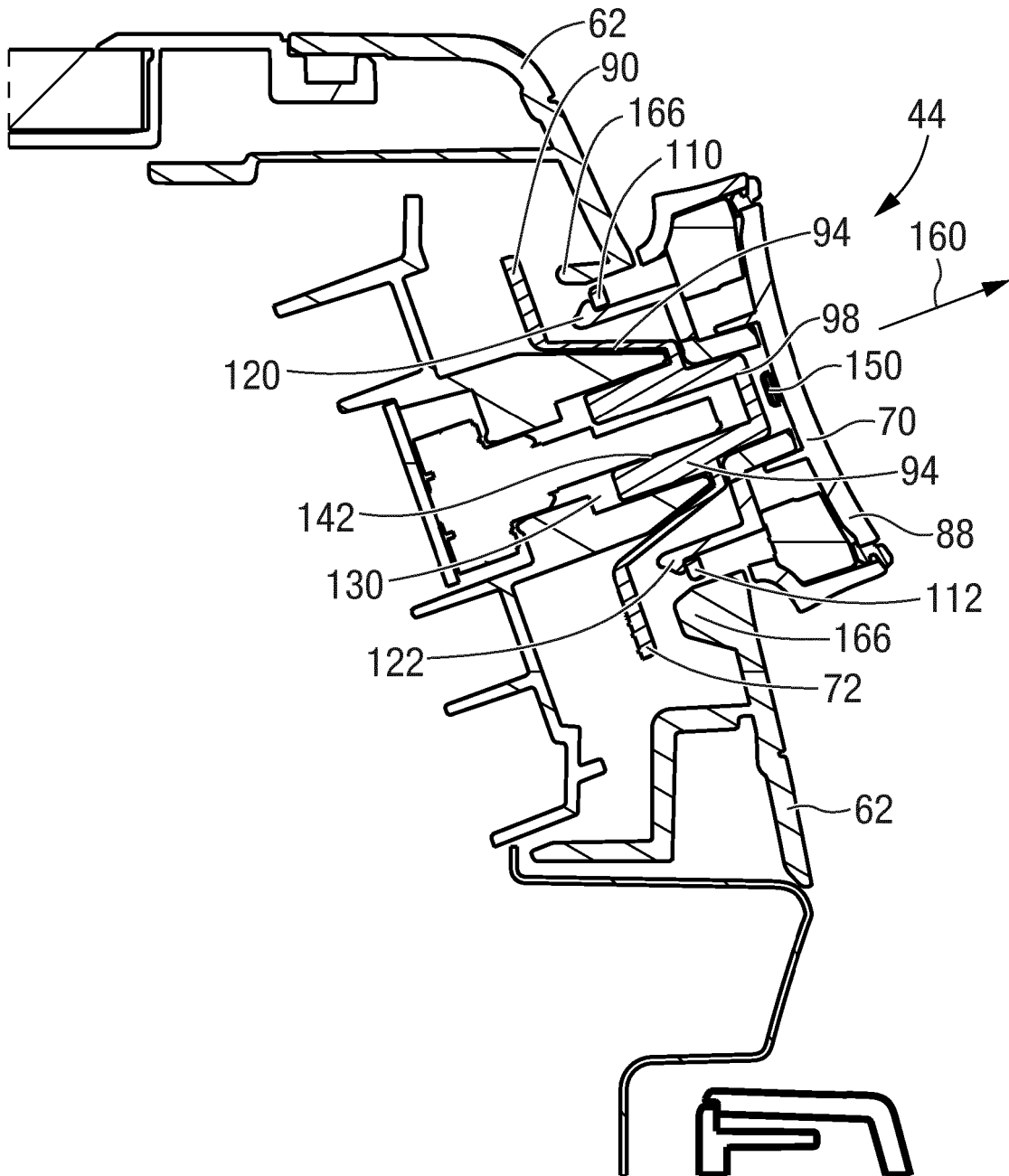
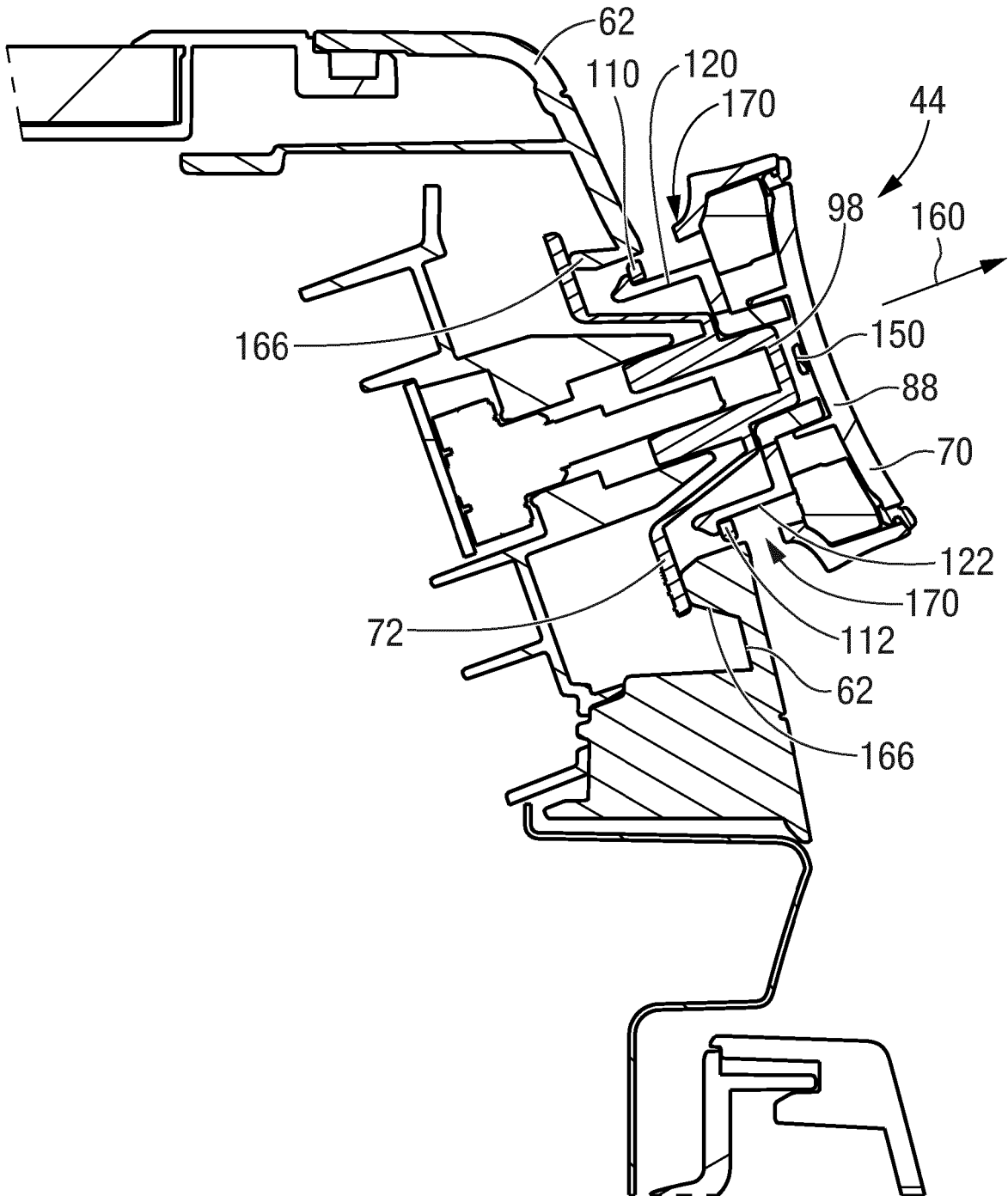


FIG. 6



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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