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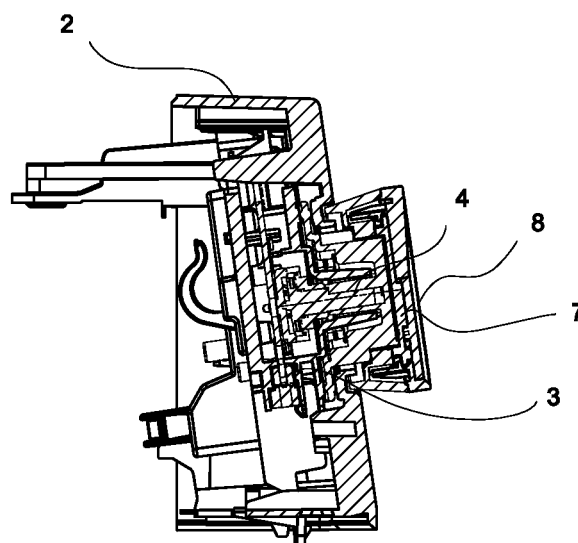
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(54) **A HOUSEHOLD APPLIANCE COMPRISING A KNOB**

(57) The present invention relates to a household appliance (1) comprising a panel (2) which enables the user to control the functions of the household appliance (1); a control unit (3) which is disposed behind the panel (2); a shaft (4) which transmits the preferences of the user to the control unit (3) and which is connected to the control

unit (3); a housing (5) which is arranged on the panel (2); and a knob (9) having a bearing (6) which bears the shaft (4), an intermediate member (7) which is fitted into the housing (5) so as to bear against the panel (2) from behind, and a handle (8) which enables the user to move the shaft (4).

Figure 6



Description

[0001] The present invention relates to a household appliance comprising a rotary knob which is mounted to the control panel.

[0002] Household appliances such as laundry washing/drying machines, cooking appliances, dishwashers, etc. usually comprise a control panel whereon rotary knobs which enable the operational status to be determined as per the preference of the users are disposed. The knobs are attached to a shaft connected to the control card disposed behind the control panel by means of the housings on the control panel. When the user rotates the knob, the movement is transferred to the shaft such that the user preference is transmitted to the control card. The knobs, which are directly related to the use of the household appliance, are one of the most used components on the household appliance by the user, and are generally configured as multi-part components in line with various cosmetic needs and structural designs to increase the quality perception of the users. One embodiment preferred by the manufacturers to increase the quality perception of the knobs is to increase the weight of the knob by placing various weight pieces inside the knob to provide a strong feel. However, there may be deviations in the components which are fixed to each other and in the position of the shaft due to production tolerances and shifts which may occur during assembly, and moreover, as the number of components increases, operating defects such as wobbly and free rotation caused by production and assembly, which cause a decrease in the quality perception of the users, increase.

[0003] In the state of the art International Patent Application No. WO2018054801, a household appliance comprising a knob having weight pieces is disclosed.

[0004] The aim of the present invention is the realization of a household appliance comprising a knob with decreased operating defects and improved quality perception.

[0005] The household appliance realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a panel; a gap-shaped housing which is arranged on the panel; a control card which controls the household appliance, which receives the preferences of the user and which is connected to a shaft extending outwards from the housing; and a knob having a bearing wherein the shaft is seated, an intermediate member which is fitted into the housing from behind the panel, a handle which is provided in front of the panel and which is suitable to be moved by the user and a fixing member whereon the intermediate member and the handle are fixed, which provides the connection between the intermediate member and the handle and which is manufactured from metal. The intermediate member and the handle are directly fixed onto the metal fixing member. While centering the intermediate member and the handle relative to each other, the fixing member also provides the elimination of

stretching and increases the weight of the knob by acting as a weight. By means of the metal fixing member which supports and centers the handle and the intermediate member, production and assembly tolerances are decreased and the weight of the knob is increased without the need for a separate weight piece mounting.

[0006] In another embodiment of the present invention, the handle is composed of a plurality of components and each component is fixed to the fixing member. The handle is configured in at least two components, a circumferential wall defining the lateral circumferential surface thereof and a cover defining the front face thereof, and the circumferential wall and the cover are fixed onto the intermediate member without being directly fixed to each other so as to be seated on top of each other. In a version of this embodiment, the cover is configured as a multi-part component so as to have a frame and a plate, and the frame and the plate are fixed to the fixing member. Thus, each component of the handle as well as the intermediate member are fixed to the fixing member and centered by means of the fixing member. Consequently, due to the individual fixing of the components of the handle, possible misalignments and eccentricities between the components are eliminated and concentric fixation is provided.

[0007] In another embodiment of the present invention, the household appliance comprises the intermediate member having a support portion extending out of the housing, and the fixing member having a body which is fitted over the support portion and remains between the support portion and the circumferential wall so as to be fixed on the support portion and the circumferential wall. The body is a hollow cylinder and is fitted over the support portion while the circumferential wall is fixed to the body. Thus, in this way, the eccentricities between the circumferential wall and the intermediate member are prevented such that the body movement is transmitted to the intermediate member without any gap and the fixing member advantageously creates a weight inside the body.

[0008] In another embodiment of the present invention, there is at least one first claw on the outside of the support facing the circumferential wall and at least one second claw on the inside of the body facing the circumferential wall while the circumferential wall has at least one first claw housing wherein the first claw is fitted, and at least one second claw housing wherein the second claw is fitted. The first claw and the second claw which are provided on the handle and the intermediate member and which are manufactured from a more flexible material relative to the fixing member, for example plastic material, stretch during the assembly so as to be fitted into the housings on the circumferential wall. Thus, it is ensured that the body and the intermediate member are fixed to the fixing member quickly and securely without being screwed.

[0009] In another embodiment of the present invention, a skirt extending almost perpendicular to the body is provided on the fixing member and the cover is fixed onto

the skirt. In a preferred version of this embodiment, the frame and the plate are fixed on the fixing member without being fixed to each other. Thus, the skirt provides support to the cover, which is manufactured from a material with less resistance. By means of the skirt, weight is provided also on the front of the handle and the weight of the knob is advantageously transferred to the front of the handle.

[0010] In another embodiment of the present invention, there is at least one third claw on the frame and at least one fourth claw on the front plate while at least one third housing wherein the third claw is fitted and at least one fourth housing wherein the fourth claw is fitted are arranged on the skirt. Thus, each of the intermediate member, body, frame and front plate is fixed on and supported by the fixing member. Consequently, possible misalignments and eccentricities of each component relative to each other are tolerated. In an embodiment of the present invention, the fixing member is manufactured from zamak. Thus, the fixing member is enabled to be low cost and have high strength, and in case the household appliance is placed in a high humidity environment such as a bathroom or used with wet hands, the liquid reaching the fixing member through the mounting gaps is prevented from causing wear and corrosion over time.

[0011] By means of the present invention, it is ensured that the handle and the intermediate member manufactured from flexible material suitable for decorative shaping are carried and supported by the metal fixing member and operation faults caused by production and assembly errors are eliminated while the weight of the knob is increased.

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

Figure 1 - is the perspective view of the washing machine related to an embodiment wherein the household appliance of the present invention is a washing machine.

Figure 2 - is the exploded view of the panel, the knob and the control unit in an embodiment of the present invention.

Figure 3 - is the exploded view of the knob group in an embodiment of the present invention.

Figure 4 - is the view showing the knob components to which the fixing member and the circumferential wall are connected.

Figure 5 - is the view showing the mounting of the knob to the panel in an embodiment of the present invention.

Figure 6 - is the view of the cross-section B-B in Figure 5.

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

1. Household appliance
2. Panel
3. Control unit
4. Shaft
5. Housing
6. Bearing
7. Intermediate member
8. Handle
9. Knob
10. Fixing member
11. Support portion
12. Circumferential wall
13. Body
14. First fixing claw
15. Second fixing claw
16. First fixing housing
17. Second fixing housing
18. Frame
19. Plate
20. Cover
21. Skirt
22. Third fixing claw
23. Fourth fixing claw
24. Third fixing housing
25. Fourth fixing housing

[0014] The household appliance (1) comprises a panel (2) which enables the user to control the functions of the household appliance (1); a control unit (3) which is disposed behind the panel (2); a shaft (4) which transmits the preferences of the user to the control unit (3) and

which is connected to the control unit (3); a housing (5) which is arranged on the panel (2); and a knob (9) having a bearing (6) which bears the shaft (4), an intermediate member (7) which is fitted into the housing (5) so as to bear against the panel (2) from behind, and a handle (8) which enables the user to move the shaft (4).

[0015] The household appliance (1) of the present invention comprises the knob (9) having a metal fixing member (10) whereon the intermediate member (7) and the handle (8) are fixed.

[0016] In the household appliance (1) of the present invention, the fixing member (10) is manufactured from metal while the intermediate member (7) and the handle (8) can be manufactured from various materials, such as plastic, which are low cost or which are preferred due to the outer appearance. Thus, the fixing member (10) provides high rigidity and significantly increases the weight of the knob (9).

[0017] In an embodiment of the present invention, the household appliance (1) comprises the handle (8) composed of at least two components, each fixed onto the fixing member (10), one being a circumferential wall (12) and the other being a cover (20) positioned in front of the circumferential wall (12).

[0018] In an embodiment of the present invention, the household appliance (1) comprises a support portion (11) which is arranged on the intermediate member (7) and which extends outwards from the housing (5), and the fixing member (10) having a body (13) which at least partially remains between the support portion (11) and the circumferential wall (12) and whereon the support portion (11) and the circumferential wall (12) are fixed.

[0019] In an embodiment of the present invention, the household appliance (1) comprises at least one first fixing claw (14) which is provided on the support portion (11), at least one second fixing claw (15) which is provided on the circumferential wall (12), and the body (13) having at least one first fixing housing (16) wherein the first fixing claw (14) is fitted and at least one second fixing housing (17) wherein the second fixing claw (15) is fitted.

[0020] In an embodiment of the present invention, the household appliance (1) comprises at least one skirt (21) which is provided on the fixing member (10), which extends almost perpendicular to the body (13) and whereon the cover (20) is fixed.

[0021] In an embodiment of the present invention, the household appliance (1) comprises the cover (20) having a frame (18) which is fixed onto the fixing member (10) and which surrounds the side of the circumferential wall (12) and a plate (19) which is fitted into the frame (18) fixed onto the fixing member (10).

[0022] In an embodiment of the present invention, the household appliance (1) comprises at least one third claw (22) which is provided on the plate (19), at least one fourth claw (23) which is provided on the frame (18), and at least one third fixing housing (24) and at least one fourth fixing member (25) which are provided on the skirt (21) and which receives the third fixing claw (22) and the fourth

fixing claw (23), respectively.

[0023] In an embodiment of the present invention, the household appliance (1) comprises the fixing member (10) manufactured from zamak.

5 [0024] In another embodiment of the present invention, the handle (8) has a cover (20) which is disposed on the front surface of the body (13) and the cover (20) is fixed to the fixing member (10). The cover (20) is only seated onto the body (13) and fixed onto the fixing member (10) without being directly fixed onto the body (13). Thus, the body (13) and the cover (20) are centered by means of the fixing member (10), and the gaps and eccentricities between the cover (20) and the body (13) caused by the assembly and production tolerances are prevented from causing the knob (9) to malfunction.

15 [0025] By means of the present invention, a household appliance (1) is realized, comprising a multi-part knob (9) with increased quality perception and improved ease of assembly.

Claims

1. A household appliance (1) **comprising** a panel (2) which enables the user to control the functions of the household appliance (1); a control unit (3) which is disposed behind the panel (2); a shaft (4) which transmits the preferences of the user to the control unit (3) and which is connected to the control unit (3); a housing (5) which is arranged on the panel (2); and a knob (9) having a bearing (6) which bears the shaft (4), an intermediate member (7) which is fitted into the housing (5) so as to bear against the panel (2) from behind, and a handle (8) which enables the user to move the shaft (4), **characterized by** the knob (9) having a metal fixing member (10) whereon the intermediate member (7) and the handle (8) are fixed.
2. A household appliance (1) as in Claim 1, **characterized by** the handle (8) composed of at least two components, each fixed onto the fixing member (10), one being a circumferential wall (12) and the other being a cover (20) positioned in front of the circumferential wall (12).
3. A household appliance (1) as in Claim 1, **characterized by** a support portion (11) which is arranged on the intermediate member (7) and which extends outwards from the housing (5), and the fixing member (10) having a body (13) which at least partially remains between the support portion (11) and the circumferential wall (12) and whereon the support portion (11) and the circumferential wall (12) are fixed.
4. A household appliance (1) as in Claim 3, **characterized by** at least one first fixing claw (14) which is provided on the support portion (11), at least one

second fixing claw (15) which is provided on the circumferential wall (12), and the body (13) having at least one first fixing housing (16) wherein the first fixing claw (14) is fitted and at least one second fixing housing (17) wherein the second fixing claw (15) is fitted. 5

5. A household appliance (1) as in any one of the Claims 2 to 4, **characterized by** at least one skirt (21) which is provided on the fixing member (10), which extends almost perpendicular to the body (13) and whereon the cover (20) is fixed. 10
6. A household appliance (1) as in Claim 5, **characterized by** the cover (20) having a frame (18) which is fixed onto the fixing member (10) and which surrounds the side of the circumferential wall (12) and a plate (19) which is fitted into the frame (18) fixed onto the fixing member (10). 15
7. A household appliance (1) as in Claim 6, **characterized by** at least one third claw (22) which is provided on the plate (19), at least one fourth claw (23) which is provided on the frame (18), and at least one third fixing housing (24) and at least one fourth fixing member (25) which are provided on the skirt (21) and which receives the third fixing claw (22) and the fourth fixing claw (23), respectively. 20 25
8. A household appliance (1) as in any one of the above claims, **characterized by** the fixing member (10) which is manufactured from zamak. 30

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Figure 1

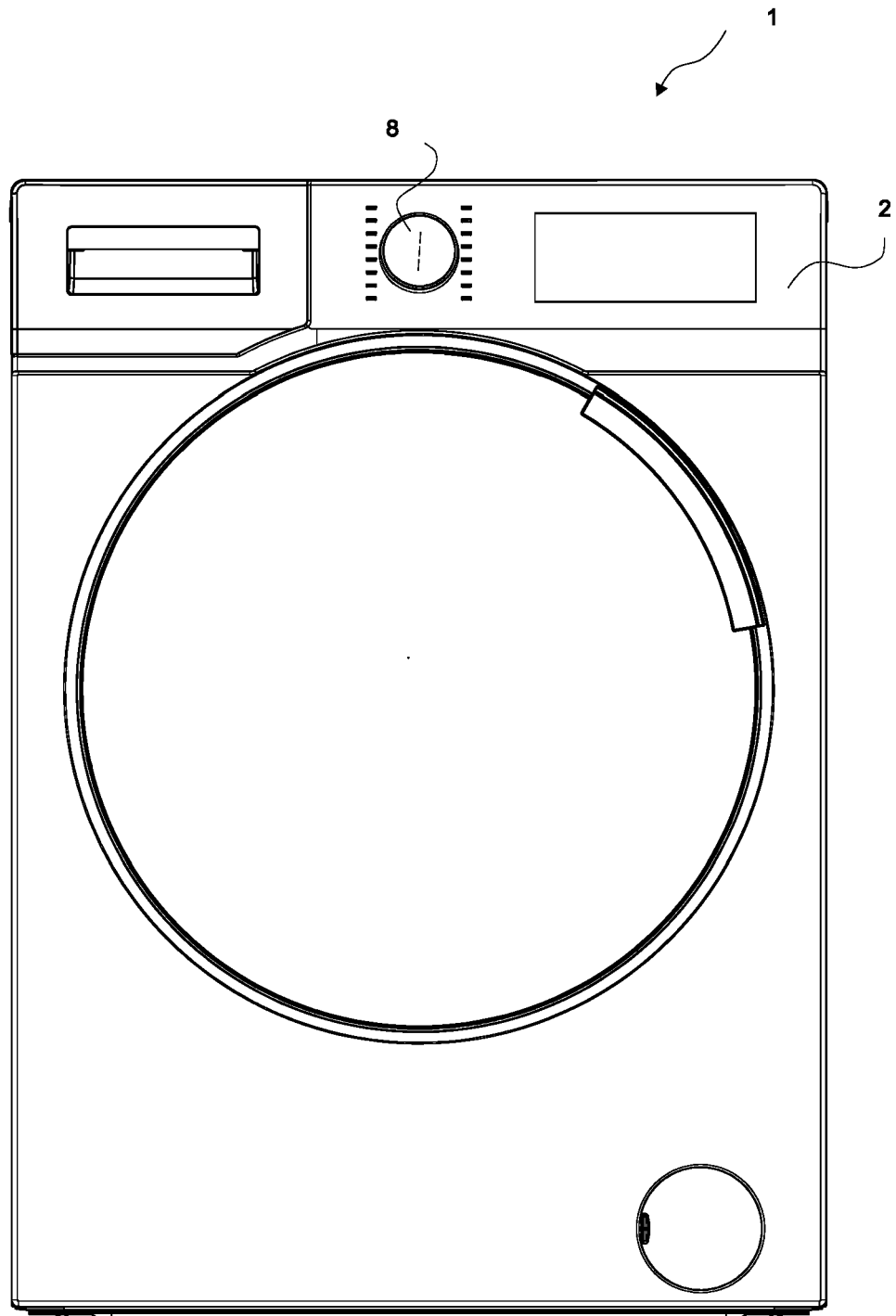


Figure 2

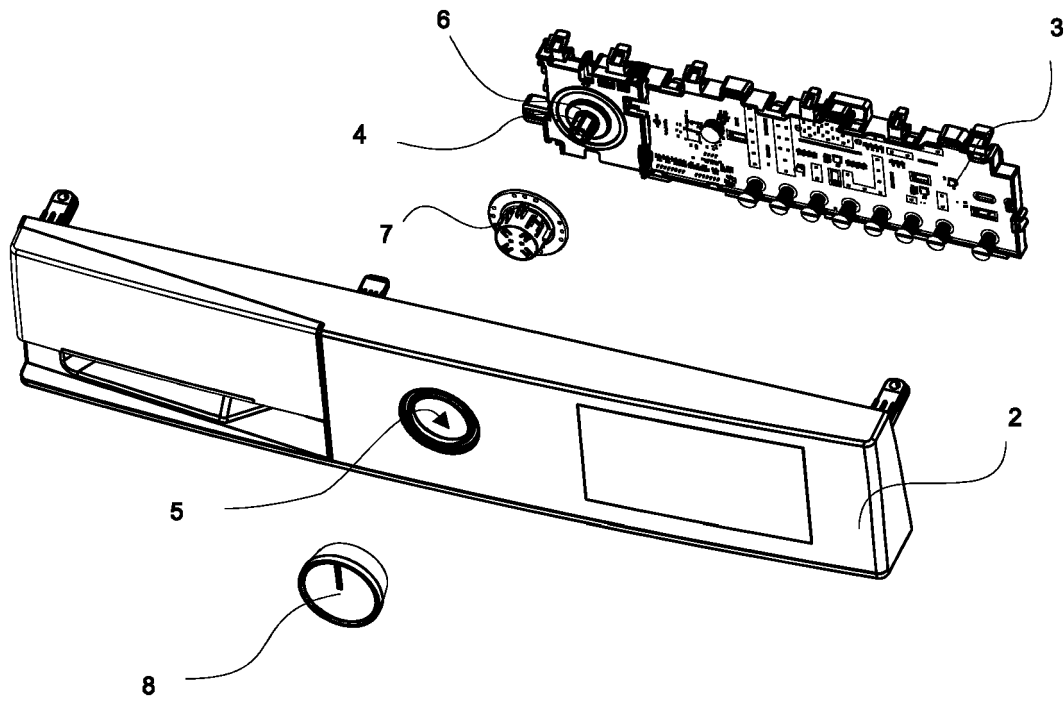


Figure 3

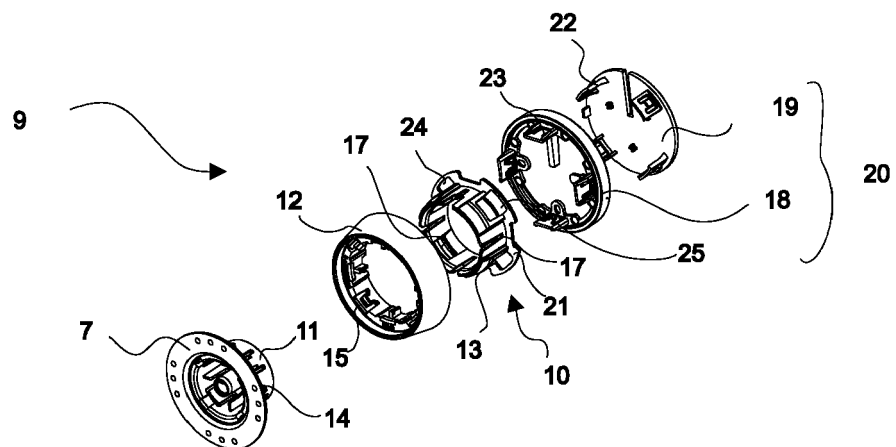


Figure 4

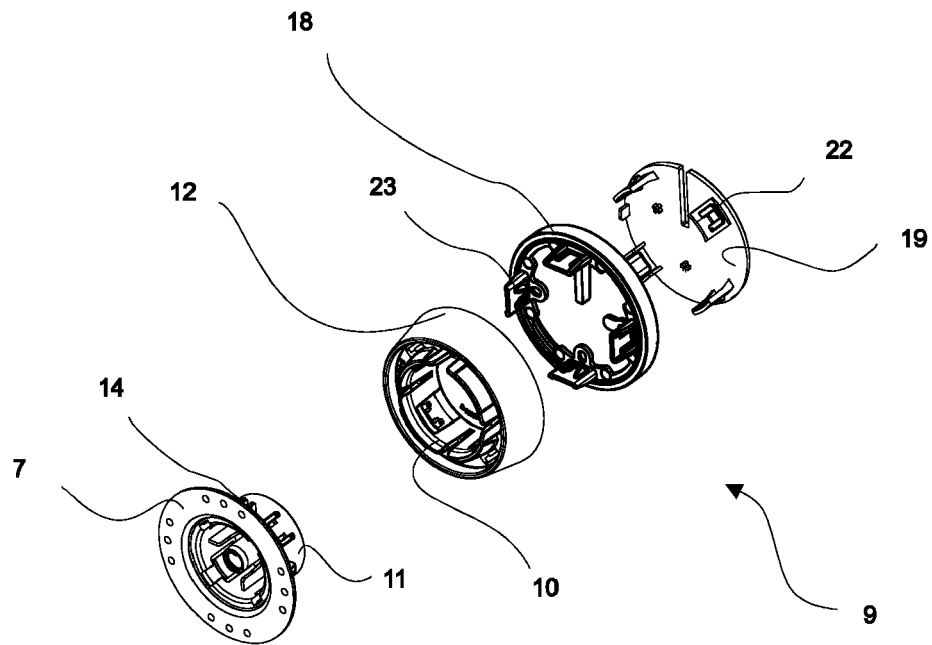


Figure 5

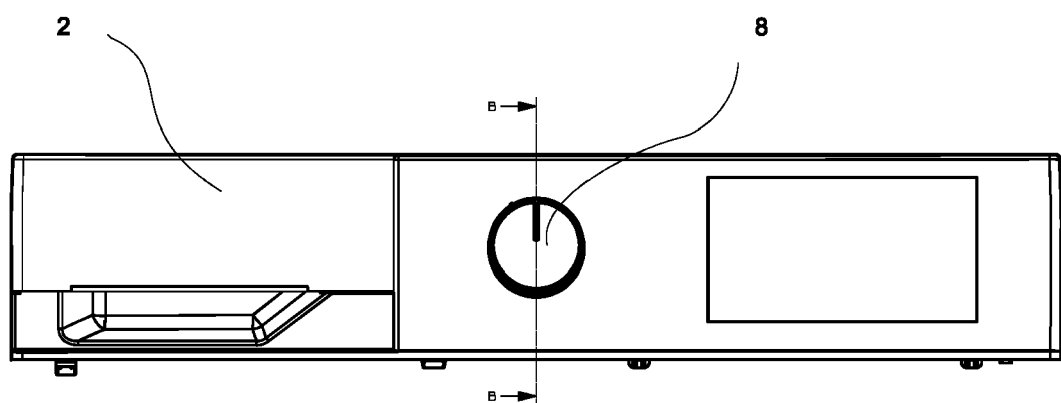
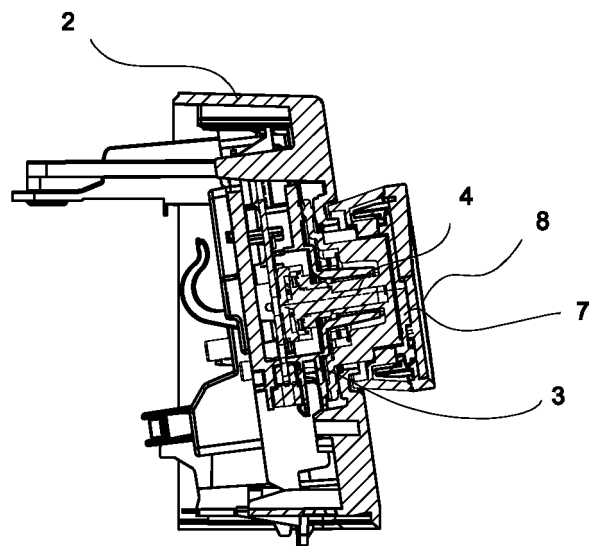


Figure 6





EUROPEAN SEARCH REPORT

Application Number

EP 22 19 9048

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2007/043819 A1 (LG ELECTRONICS INC [KR]; CHOI CHEOL U [KR]; KANG DONG WOO [KR]) 19 April 2007 (2007-04-19) * figure 12 * * paragraph [0011] * -----	1-8	INV. D06F34/30 ADD. A47L15/42
A	KR 2010 0052211 A (LG ELECTRONICS INC [KR]) 19 May 2010 (2010-05-19) * figure 2 * -----	1-8	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 April 2023	Examiner Werner, Christopher
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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

EP 22 19 9048

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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14-04-2023

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REFERENCES CITED IN THE DESCRIPTION

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