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(54) **CLOTHING TREATMENT DEVICE**

(57) A laundry treatment apparatus includes a housing (1) provided with a housing opening (11) in one side surface; a drawer (2) used to be inserted into or pulled out from the housing (1) through the housing opening (11), and provided with a drawer opening (21) in an upper side; a washing tub (3) located inside the drawer opening (21), used for storing washing water, and provided with a tub opening (31) in an upper side; a door cover (4) disposed in a pivotal rotation manner and used for opening or closing the tub opening (31); and a guide member (6) disposed above the door cover (4), extending from an upper edge of the housing opening (11) towards a side wall of the housing (1) opposite to the housing opening (11), and used for guiding the door cover (4) of the washing tub to be moved out from the housing opening (11). The guide member (6) is disposed between the upper edge of the housing opening (11) and the side wall of the housing (1) opposite to the housing opening (11), and the door cover (4) may be moved out from the housing opening (11) under the guidance of the guide member (6), such that the drawer (2) may be smoothly pulled out from the housing (1) without damaging the door cover

(4) or leaving scratches on the door cover (4).

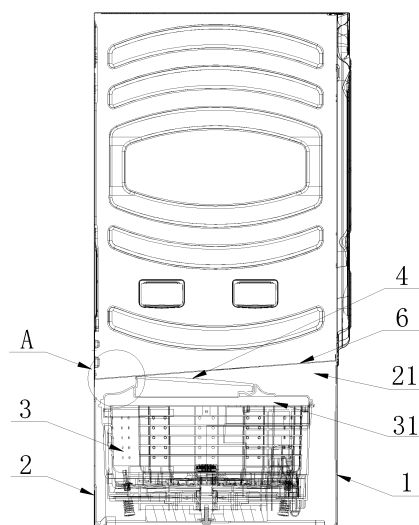


FIG. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to the field of laundry treatment, and in particular, a laundry treatment apparatus.

BACKGROUND

[0002] In the prior art, a washing tub of a laundry treatment apparatus is located in a drawer and is pulled out from a housing along with the drawer. If the door of the washing tub is accidentally opened during washing, a door of the washing tub is blocked by an upper edge of the housing in pulling directly the drawer. So the drawer may not be smoothly pulled out. If an excessive force is applied, the door of the washing tub may be damaged, and it is repaired by extensive disassembly of the device.

[0003] Chinese Patent Application No. 201610512207.6 discloses a laundry treatment apparatus, which includes a housing, provided with an opening; a drawer being pulled out from the housing through the opening; a through hole being penetrated through an upper surface of the drawer; a washing tub disposed inside the drawer and providing a space for storing water, and a feeding opening is penetrated through an upper surface of the washing tub and located below the through hole. A drum is rotatably disposed inside the washing tub and used for accommodating the laundry supplied by the feeding opening. A door is disposed on the drawer or the washing tub and used for opening and closing the feeding opening. A guide member is used for preventing the door from being interfered with by the opening when the drawer is pulled out from the housing. The guide member may be formed by at least one roller rotatably arranged inside the housing. In this case, a distance H2 between the upper surface of the drawer and the lowermost end of the roller is preferably shorter than a distance H1 between the upper surface of the drawer and the opening. In this patent, the drawer is smoothly pulled out by the arrangement of the roller in the inside of the housing. However, due to the limitation by the stroke of the drum and the internal structure of the housing, a part of the opened door cover outside the stroke of the roller is still scratched when the door panel is opened at a very large angle. If the stroke of the roller is large enough, the manufacturing cost is greatly increased.

[0004] In view of this, the present invention is provided.

SUMMARY

[0005] The problem to be solved by the present invention is to overcome the shortcomings of the prior art, and a laundry treatment apparatus is provided. A guide member is disposed between an upper edge of a housing opening and a side wall of a housing opposite to the housing opening. If the door cover of a washing tub in a drawer

is accidentally opened, the door cover can be moved out of the housing opening along the guide member. So, the drawer can be pulled out of the housing without damaging the door cover of the washing tub.

[0006] In order to solve the above-mentioned problems, the present invention is to provide a laundry treatment apparatus, including:

a housing, provided with a housing opening in one side wall;

a drawer, being capable to be inserted into or pulled out of the housing through the housing opening, and provided with a drawer opening in an upper side;

a washing tub, located inside the drawer opening, used for storing washing water, and provided with a tub opening in an upper side, and

a door cover, disposed in a pivotal rotation manner, and used for opening or closing the tub opening.

[0007] The laundry treatment apparatus further includes a guide member, wherein, the guide member is disposed above the door panel, extending from an upper edge of the housing opening towards a side wall of the housing opposite to the housing opening, and used for guiding the door cover of the washing tub to be moved out from the housing opening.

[0008] According to the drawer type laundry treatment apparatus of the present invention, the guide member is disposed between the upper edge of the housing opening and the side wall of the housing opposite to the housing opening. If the door cover inside the housing is accidentally opened, the door cover can be guided to move out from the housing opening by the guide member. So, the drawer may be smoothly pulled out of the housing without damaging the door cover or leaving scratches on the door cover, thereby achieving a good guiding effect and low manufacturing cost.

[0009] Further, the guide member has a slope inclined relative to the door cover, and is extended obliquely upward from the upper edge of the housing opening towards the side wall of the housing opposite to the housing opening. The guide member is used for taking a force for pressing downward when the door cover in an opened state is moved out from the housing.

[0010] Preferably, there is a smooth transition between the slope of the guide member and the upper edge of the housing opening.

[0011] Further, the guide member includes an inclined partition plate extending obliquely upward from the upper edge of the housing opening towards the side wall of the housing opposite to the housing opening.

[0012] A first folding edge and a second folding edge which are extended upward are disposed at two ends of the inclined partition plate separately. The first folding edge and the second folding edge are correspondingly connected with a side wall of the housing provided with the housing opening and the side wall of the housing opposite to the housing opening separately.

[0013] Further, a stiffener is disposed on the side wall above the housing opening, and the first folding edge of the guide member is mounted on the stiffener.

[0014] Further, the stiffener is provided with a protrusion. The first folding edge is provided with a groove matched with the protrusion. The guide member is mounted on the protrusion through the groove.

[0015] Further, an included angle α between the slope and the door cover is in a range of $0^\circ < \alpha < 45^\circ$.

[0016] Preferably, the included angle α between the slope and the door cover is in a range of $3^\circ \leq \alpha \leq 15^\circ$.

[0017] Further, the laundry treatment apparatus further includes an auxiliary guide member that is disposed on a front end of the door cover and is configured to move out from the housing opening along the guide member.

[0018] Further, a front edge of the door cover has an end surface being extended downward. The auxiliary guide member is disposed at the junction of the front edge and the end surface of the door cover, and has a circular arc surface protruding from an upper surface and the end surface of the door cover.

[0019] Further, the front edge of the door cover is provided with a groove, and the auxiliary guide member includes a roller rotatably mounted in the groove.

[0020] Further, the front edge of the door cover has an end surface being extended downward. The groove is formed in the junction of the upper surface and the end surface of the door cover. The roller is configured to protrude from the upper surface and the end surface of the door cover.

[0021] By the above technical solutions, the laundry treatment apparatus has the following beneficial effects compared with the prior art.

[0022] According to the drawer type laundry treatment apparatus of the present invention, the guide member is disposed between the upper edge of the housing opening and the side wall of the housing opposite to the housing opening. If the door cover inside the housing is accidentally opened, the door cover can be guided to move out from the housing opening by the guide member. So, the drawer can be smoothly pulled out from the housing without damaging the door cover or leaving scratches on the door cover, thereby achieving a good guiding effect and low manufacturing cost.

[0023] Specific embodiments of the present invention are further described in detail below with reference to the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The drawings serve as a part of the present invention to further understand the present invention, and illustrative embodiments of the present invention and the description thereof are used to explain the present invention, but do not constitute an undue limitation on the present invention. Apparently, the drawings in the following description are merely some embodiments, and those of ordinary skill in the art can obtain other drawings ac-

cording to these drawings without creative work. In the drawings:

FIG. 1 is a schematic diagram of a laundry treatment apparatus of the present invention;

FIG. 2 is an enlarged view of a part A in FIG. 1 of the present invention;

FIG. 3 is another schematic diagram of FIG. 2 of the present invention;

FIG. 4 is a schematic diagram of a door cover of the present invention; and

FIG. 5 is an enlarged top view of a position B in FIG. 4 of the present invention.

[0025] In the figures: 1, housing; 11, housing opening; 2, drawer; 21, drawer opening; 3, washing tub; 31, tub opening; 4, door cover; 41, groove; 42, end surface; 5, auxiliary guide member; 51, roller; 52, rolling shaft; 6, guide member; 61, inclined partition plate; 62, first folding edge; 621, plug-in groove; 63, second folding edge; 7, stiffener; 71, plug-in tongue; 8, washing tub cover.

[0026] It is to be noted that these drawings and description are not intended to limit the scope of concept of the present invention, but are intended to illustrate the concept of the present invention for those skilled in the art with reference to specific embodiments.

EMBODIMENTS

[0027] In order to make objects, technical solutions and advantages of the embodiments of the present invention clearer, the solutions in the embodiments are clearly and completely described as follows in combination with accompanying drawings in the embodiments of the present invention. The following embodiments are used for illustrating the present invention, rather than limiting the scope of the present invention.

[0028] In the description of the present invention, it should be noted that, the orientation or positional relationship indicated by such terms as "up", "down", "front", "rear", "left", "right", "vertical", "inner" and "outer" is the orientation or positional relationship based on the accompanying drawings. Such terms are merely used for conveniently and simplified describing the present invention, rather than indicating or implying that the device or element referred to must be located in a certain orientation or must be constructed or operated in a certain orientation. Therefore, the terms cannot be understood as a limitation to the present invention.

[0029] In the description of the present invention, it should be noted that, unless otherwise stipulated and defined definitely, such terms as "installed", "connected" and "in connection" should be understood in their broad sense, e.g., the connection can be a fixed connection, a detachable connection or an integral connection; can be mechanical connection or electrical connection; and can be direct connection or can be indirect connection through an intermediate. For those skilled in the art, spe-

cific meanings of the above terms in the present invention can be understood according to specific conditions.

[0030] As shown in FIGS. 1 to 5, a laundry treatment apparatus of the present invention includes a housing 1, a drawer 2, a washing tub 3, and a door cover 4.

[0031] A housing opening 11 is formed in one side of the housing 1. The drawer 2 is configured to be inserted into or pulled out from the housing 1 through the housing opening 11. A drawer opening 21 is formed in an upper side of the drawer 2. The washing tub 3 is located inside the drawer opening 21 and used for storing washing water. A tub opening 31 is formed in an upper side of the washing tub 3. The front edge of door cover 4 is capable of being open or close, and the door cover 4 is disposed in a pivotal rotation manner and is used for opening or closing the tub opening 31.

[0032] The laundry treatment apparatus further includes a guide member 6 that is disposed above the door cover 4. The guide member 6 is extended from an upper edge of the housing opening 11 towards a side wall of the housing 1 opposite to the housing opening 11, and is used for guiding the door cover 4 of the washing tub 3 in the drawer 2 to be moved out from the housing opening 11.

[0033] According to the drawer type laundry treatment apparatus of the present invention, the guide member 6 is disposed between the upper edge of the housing opening 11 and the side wall of the housing 1 opposite to the housing opening 11. The door cover 4 can be guided to move out from the housing opening 11 by the guide member 6 when the door cover 4 inside the housing 1 is accidentally opened, such that the drawer 2 can be smoothly pulled out of the housing 1 without damaging the door cover or leaving scratches on the door cover. Thereby it is achieved a good guiding effect and low manufacturing cost.

[0034] The laundry treatment apparatus of the present invention is a drawer type washing machine. The laundry treatment apparatus may be a single drawer type washing machine, or may also be a combined washing machine formed by combination of a drawer type washing machine and other types of washing machines. For example, in a combined washing machine, a drum washing machine is located on an upper side, and a drawer type washing machine is located on a lower side. Or in a combined washing machine, a drum type laundry dryer is located on an upper side, and a drawer type washing machine is located on a lower side.

[0035] In a solution, the guide member 6 has a plane corresponding to the door cover 4. The guide member 6 is disposed from the side wall of the housing 1 opposite to the housing opening 11 towards the upper edge of the housing opening 11, and is capable of guiding the door cover 4 to the housing opening 11 along the plane to pull the drawer 2 out of the housing 1.

[0036] In another solution, the guide member 6 has a slope; and the slope is inclined relative to the door cover 4, and is extended obliquely upward from the upper edge

of the housing opening 11 towards the side wall of the housing 1 opposite to the housing opening 11. When the door cover 4 is moved out of the housing 1 in an opened state, the guide member 6 is used for providing an acting force for pressing downward and guiding the door cover 4 to be moved out of the housing opening 11.

[0037] In yet another solution, as shown in FIGS. 2 to 3, the guide member 6 has a slope, the slope is inclined relative to the door cover 4, and is extended obliquely upward from the upper edge of the housing opening 11 towards the side wall of the housing 1 opposite to the housing opening 11. When the door cover 4 is moved out from the housing 1 in an opened state, the guide member 6 is used for providing an acting force for pressing downward and guiding the door cover 4 to be moved out of the housing opening 11.

[0038] Preferably, the guide member 6 is extended obliquely upward from the upper edge of the housing opening 11 towards the side wall of the housing 1 opposite to the housing opening 11.

[0039] If the door cover 4 inside the housing 1 is accidentally opened, the door cover 4 moves toward the side having the housing opening 11 and abuts with the slope of the guide member 6 when the drawer 2 needs to be pulled out from the housing 1. The door cover 4 is gradually closed under the downward force acted by the slope during continuing being pulled to move to the housing opening 11 along the slope. Finally the door cover 4 is pulled out of the housing opening 11, and the drawer 2 is smoothly pulled out of the housing 1.

[0040] There is smooth transition between the slope of the guide member 6 and the upper edge of the housing opening 11 to facilitate smooth pulling of the door cover 4 from the housing 1.

[0041] One end of the guide member 6 is flush with and attached to the upper edge of the housing opening 11. The door cover 4 is guided to move into the housing opening 11, and then moves out of the housing 1 by the guiding member 6. Or, the guide member abuts with the upper edge of the housing opening 11. The door cover 4 is guided to move out of the housing 1 directly along the guide member 6.

[0042] Preferably, the laundry treatment apparatus further includes a washing tub cover 8 formed on an upper surface of the washing tub 3. The washing tub cover 8 includes a feeding opening for communicating the washing tub 3 with the outside of washing tub 3. The door cover 4 is mounted on the feeding opening and used for opening/closing the feeding opening. The door cover 4 is hinged to the washing tub cover 8, and the front edge of the door panel 4 is rotatable around a hinge axis.

[0043] Particularly, the guide member 6 includes an inclined partition plate 61 that is extended obliquely upward from the upper edge of the housing opening 11 to the side wall of the housing 1 opposite to the housing opening 11. A lower surface of the inclined partition plate 61 is the slope. A first folding edge 62 extending upward is disposed at one end of the inclined partition plate 61.

The first folding edge 62 is connected to the side wall of the housing 1 provided with the housing opening 11. A second folding edge 63 extending upward is disposed at the other end of the inclined partition plate 61. The second folding edge 63 is connected to the side wall of the housing 1 opposite to the side wall of the housing 1 provided with the housing opening 11.

[0044] Preferably, the first folding edge 62 is attached to the side wall of the housing 1 provided with the housing opening 11, and the second folding edge 63 is attached to the side wall of the housing 1 opposite to the side wall of the housing 1 provided with the housing opening 11.

[0045] Preferably, the guide member 6 is a metal or plastic piece. The inclined partition plate 61 is a rectangular plate.

[0046] The first folding edge 62 and the second folding edge 63 is arranged at two ends of the inclined partition plate 61 separately, the first folding edge 62 is connected with the side wall of the housing 1 above the housing opening 11, the second folding edge 63 is connected with the side wall of the housing 1 opposite to the side wall of the housing 1 provided with the housing opening 11, thereby the mounting strength of the guide member 6 on the housing 1 is improved and the guide member 6 is prevented from falling.

[0047] Preferably, the first folding edge 62 and the second folding edge 63 are screwed or bolted to the housing 1.

[0048] Preferably, the inclined partition plate 61 smoothly transitions with the upper edge of the housing opening 11.

[0049] The first folding edge 62 is disposed at one end of the inclined partition plate 61. The one end of the inclined partition plate 61 is attached to the upper edge of the housing opening 11, and the slope of the lower surface of the inclined partition plate 61 is flush with the upper edge of the housing opening 11.

[0050] Alternatively, the one end of the inclined partition plate 61 is extended into the housing opening 11 and attached to the upper edge of the inside of the housing opening 11.

[0051] A stiffener 7 is disposed on the side wall of the housing 1 above the housing opening 11, and the first folding edge 62 of the guide member 6 is mounted on the stiffener 7. The supporting strength at the position above the housing opening 11 is improved to ensure the mounting stability of the guide member 6, by arranging the stiffener 7 on the side wall of the housing 1 above the housing opening 11 and mounting the first folding edge 62 of the guide member 6 on the stiffener 7.

[0052] Preferably, the stiffener 7 is also be arranged on the side wall of the housing 1 opposite to the side wall of the housing 1 provided with the housing opening 11, and the second folding edge 63 is mounted on the stiffener 7.

[0053] The stiffener 7 is attached to the side wall of the housing 1. The stiffener 7 is a reinforcing plate with rectangular shape, and reinforcing ribs are disposed on the

stiffener 7 for increasing the strength of the stiffener 7. The stiffener 7 is a metal piece.

[0054] Further, the stiffener 7 is provided with a protrusion 71, and the first folding edge 62 is provided with a groove 621 matched with the protrusion 71. The guide member 6 is mounted on the protrusion 71 through the groove 621. The protrusion 71 is disposed vertically on the stiffener 7, to facilitate to the mount and position the guide member 6.

[0055] The protrusion 71 is arranged on the stiffener 7, the groove 621 matched with the protrusion 71 is arranged on the first folding edge 62, and the groove 621 of the guide member 6 is mounted on the protrusion 71, so that the support strength for mounting the guide member 6 is improved and the guide member 6 is also positioned and mounted.

[0056] Further, an included angle α between the slope and the door cover 4 is in a range of $0^\circ < \alpha < 45^\circ$. The included angle α is an included angle between the slope and the door cover 4 in a closed state of the door cover 4. The smaller included angle α saves more space within the housing 1 of the laundry treatment apparatus. The door cannot be open the door due to the included angle α greater than 45° .

[0057] In a preferable solution, the included angle α between the slope and the door panel 4 is in a range of $3^\circ \leq \alpha \leq 15^\circ$. More preferably, the included angle is 3° , 5° , 8° , 10° or 15° . The laundry treatment apparatus further includes an auxiliary guide member 5 disposed on a front end of the door cover 4. The front end of the door cover 4 is opposite to the side wall having the housing opening 11. The auxiliary guide member 5 is moved out of the housing opening 11 along the guide member 6, which makes the drawer 2 move out of the housing 1 more smoothly. The guide member 6 is disposed correspondingly to the auxiliary guide member 5.

[0058] If the door cover 4 inside the housing 1 is accidentally opened, the auxiliary guide member 5 moves toward the side having the housing opening 11 and abuts with the slope of the guide member 6 when the drawer 2 needs to be pulled out from the housing 1. The door cover 4 is gradually closed under the downward force acted by the slope during continuing moving to the housing opening 11 along the slope. Finally the door cover 4 is pulled out of the housing opening 11, and the drawer 2 is smoothly pulled out of the housing 1.

[0059] In a solution, as shown in FIG. 2, the front edge of the door panel 4 has an end surface 42 extending downward. The auxiliary guide member 5 is disposed at the junction of the front edge and the end surface 42 of the door cover 4, and has a circular arc surface protruding from the upper surface and the end surface 42 of the door cover 4. The circular arc surface is capable of moving along the guide member 6 to prevent the front edge of the door cover from being scratched with the guide member. So, the speed of the door cover moving outward is increased, and the drawer is pulled out of the housing more smoothly.

[0060] In another solution, as shown in FIG. 3, the front edge of the door cover 4 is provided with a groove 41. The auxiliary guide member 5 includes a roller 51 that is rotatably mounted in the groove 41. The front edge of the door cover 4 is relative to the side of the housing 1 provided with the housing opening 11. In this solution, the guide member 6 is disposed above the housing opening 11 and is not disposed on the upper edge of the housing opening 11.

[0061] The front edge of the door cover 4 is opened upward due to accidental opening of the door cover 4 when the drawer 2 is located in the housing 1. When the drawer 2 is pulled, the drawer 2 moves forward to drive the front edge of the door cover 4 to move forward. The roller 51 on the front edge of the door cover 4 abuts with the guide member 6, such that the door cover 4 is guided by the guide member 6 to move out of the housing 1.

[0062] As shown in FIGS. 4 to 5, the groove 41 is formed in the front edge of the door cover 4. The auxiliary guide member 5 further includes a rolling shaft 52 through which the roller 51 is mounted in the groove 41. A rotation direction of the roller 51 is the same as an opening and closing direction of the door cover 4. The roller 51 rolls along the guide member 6.

[0063] Alternatively, the front edge of the door cover 4 is provided with a groove 41, and the roller 51 is confined in the groove 41 and is configured to freely rotate in the groove 41.

[0064] The front edge of the door cover 4 has an end surface 42 extending downward. The groove 41 is formed in the junction of the upper surface and the end surface 42 of the door cover 4. The roller 51 protrudes from the upper surface and the end surface 42 of the door cover 4. The roller 51 easily comes into contact with the guide member 6 by the arrangement of the roller 51 protruding from the upper surface and the end surface 42 of the door cover 4, and further the door cover 4 is guided to move out of the housing 1 by the guide member 6.

[0065] Preferably, the door panel 4 is provided with two sets of auxiliary guide members 5 matched with the guide member 6.

[0066] A width of the inclined partition plate 61 is greater than a distance between the two sets of auxiliary guide members 5, such that the two sets of auxiliary guide members 5 can be in contact with the inclined partition plate 61 and move toward the housing opening 11 along the inclined partition plate 61.

[0067] The embodiments merely describe preferred embodiments of the present invention, rather than limiting the concept and scope of the present invention. The preferred embodiments are disclosed above, and not used for limiting the present invention. Under the premise of not departing from the idea of the present invention, various changes and improvements made to the technical solution of the present invention by those skilled in the art, such as simple amendment, equal change and modify according concept of the present invention, shall all fall within the protection scope of the present invention.

The solutions in the above embodiments can be further combined or substituted.

5 Claims

1. A laundry treatment apparatus, including:

a housing, provided with a housing opening in one side wall;
a drawer, being capable to be inserted into or pulled out of the housing through the housing opening, and provided with a drawer opening in an upper side;
a washing tub, located inside the drawer opening, used for storing washing water, and provided with a tub opening in an upper side.
a door cover, disposed in a pivotal rotation manner, and used for opening or closing the tub opening, wherein,
a guide member is provided,
the guide member is disposed above the door cover, extended from an upper edge of the housing opening towards a side wall of the housing opposite to the housing opening, and used for guiding the door cover of the washing tub to be moved out from the housing opening.

2. The laundry treatment apparatus according to claim 1, wherein, the guide member has a slope inclined relative to the door cover, and is extended obliquely upward from the upper edge of the housing opening towards the side wall of the housing opposite to the housing opening, and is used for taking a force for pressing downward on the door cover during moving out of the housing in an opened state.
preferably, there is a smooth transition between the slope of the guide member and the upper edge of the housing opening.

3. The laundry treatment apparatus according to claim 2, wherein, the guide member includes an inclined partition plate extending obliquely upward from the upper edge of the housing opening towards the side wall of the housing opposite to the housing opening, a first folding edge and a second folding edge extending upward are disposed at two ends of the inclined partition plate separately, and the first folding edge and the second folding edge are correspondingly connected with the side wall of the housing provided with the housing opening and the side wall of the housing opposite to the housing opening separately.

4. The laundry treatment apparatus according to claim 3, wherein, a stiffener is disposed on the side wall above the housing opening, and the first folding edge of the guide member is mounted on the stiffener.

5. The laundry treatment apparatus according to claim 4, wherein, the stiffener is provided with a protrusion, the first folding edge is provided with a groove matched with the protrusion, and the guide member is mounted on the protrusion through the groove. 5

6. The laundry treatment apparatus according to any one of claims 2-5, wherein, an included angle α between the slope and the door cover is in a range of $0^\circ < \alpha < 45^\circ$. 10
preferably, the included angle α between the slope and the door cover is in a range of $3^\circ \leq \alpha \leq 15^\circ$.

7. The laundry treatment apparatus according to any one of claims 1-6, further including an auxiliary guide member that is disposed on a front end of the door cover and is configured to move out from the housing opening along the guide member. 15

8. The laundry treatment apparatus according to claim 7, wherein, a front edge of the door cover has an end surface being extended downward, the auxiliary guide member is disposed at a junction of the front edge and the end surface of the door cover, and has a circular arc surface protruding from an upper surface and the end surface of the door cover. 20 25

9. The laundry treatment apparatus according to claim 7, wherein, the front edge of the door cover is provided with a groove, and the auxiliary guide member includes a roller rotatably mounted in the groove. 30

10. The laundry treatment apparatus according to claim 9, wherein, the front edge of the door cover has an end surface being extended downward, the groove is formed in the junction of the upper surface and the end surface of the door cover, and the roller is configured to protrude from the upper surface and the end surface of the door cover. 35 40

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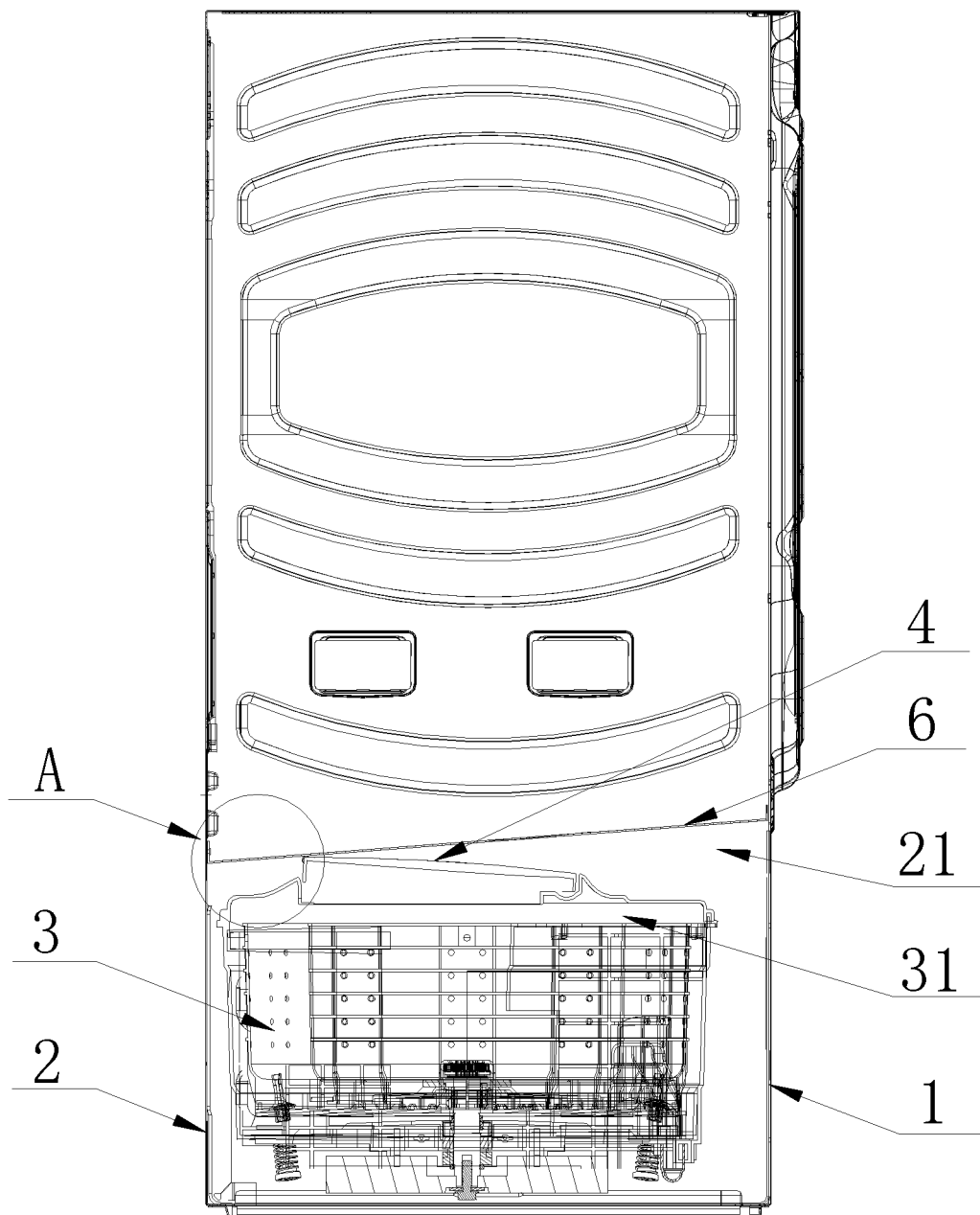


FIG. 1

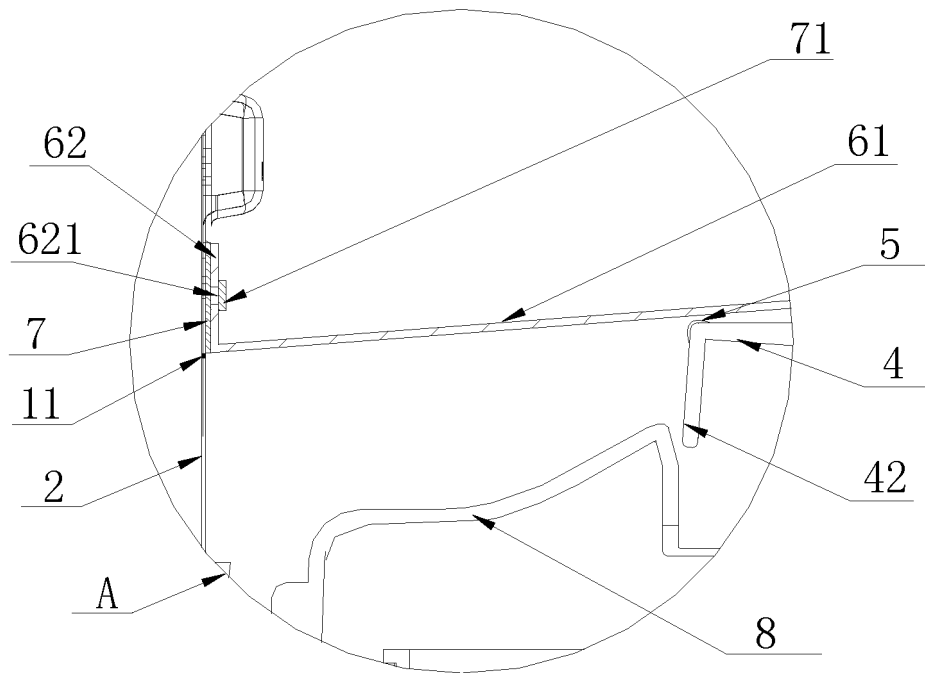


FIG. 2

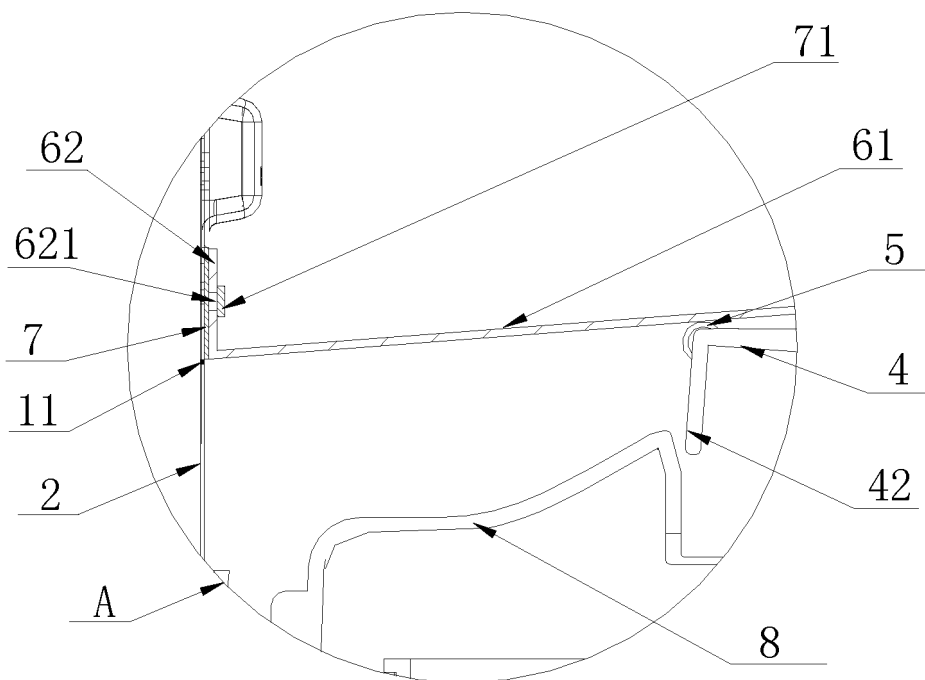


FIG. 3

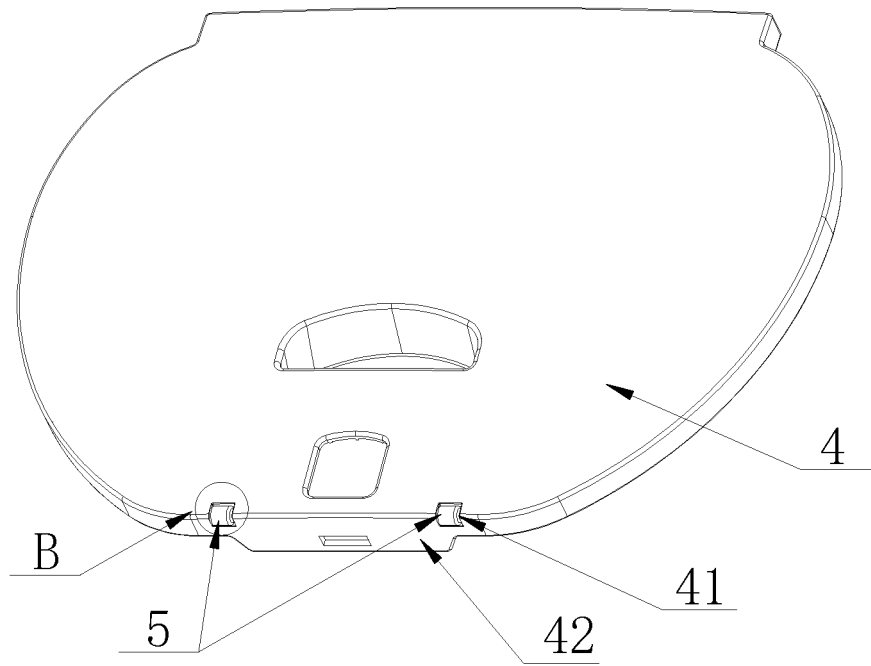


FIG. 4

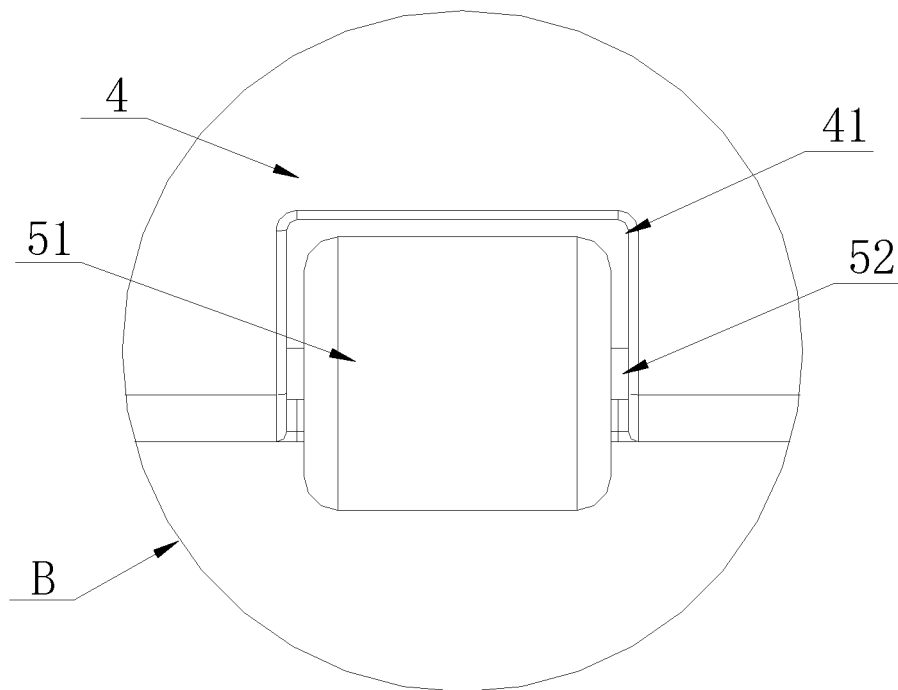


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/130633

A. CLASSIFICATION OF SUBJECT MATTER D06F 39/14(2006.01)i; D06F 37/28(2006.01)i According to International Patent Classification (IPC) or to both national classification and IPC																					
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) D06F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																					
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNPAT, CNKI, EPODOC, WPI: 海尔, 洗衣机, 洗涤, 抽屉, 盖, 斜面, 斜, 引导, 导向, 卡, 滚轮, wash+, drawer, cover, door, inclined+, plate, lead+, guid+, stuck, wheel																					
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 2017002498 A1 (LG ELECTRONICS INC.) 05 January 2017 (2017-01-05) description, paragraphs 19-85, and figures 1-6</td> <td>1</td> </tr> <tr> <td>X</td> <td>CN 106319822 A (LG ELECTRONICS INC.) 11 January 2017 (2017-01-11) description, paragraphs 61-144, and figures 1-8</td> <td>1</td> </tr> <tr> <td>X</td> <td>US 2017002494 A1 (LG ELECTRONICS INC.) 05 January 2017 (2017-01-05) description, paragraphs 52-117, and figures 1-6</td> <td>1</td> </tr> <tr> <td>A</td> <td>CN 104420122 A (LG ELECTRONICS INC.) 18 March 2015 (2015-03-18) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 101407990 A (NANJING LG PANDA APPLIANCES CO., LTD.) 15 April 2009 (2009-04-15) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>GB 201003837 D0 (SHUTTLEWORTH, Mark) 21 April 2010 (2010-04-21) entire document</td> <td>1-10</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 2017002498 A1 (LG ELECTRONICS INC.) 05 January 2017 (2017-01-05) description, paragraphs 19-85, and figures 1-6	1	X	CN 106319822 A (LG ELECTRONICS INC.) 11 January 2017 (2017-01-11) description, paragraphs 61-144, and figures 1-8	1	X	US 2017002494 A1 (LG ELECTRONICS INC.) 05 January 2017 (2017-01-05) description, paragraphs 52-117, and figures 1-6	1	A	CN 104420122 A (LG ELECTRONICS INC.) 18 March 2015 (2015-03-18) entire document	1-10	A	CN 101407990 A (NANJING LG PANDA APPLIANCES CO., LTD.) 15 April 2009 (2009-04-15) entire document	1-10	A	GB 201003837 D0 (SHUTTLEWORTH, Mark) 21 April 2010 (2010-04-21) entire document	1-10
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Date of the actual completion of the international search 20 January 2022	Date of mailing of the international search report 10 February 2022																				
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																				

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