(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 871 276 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.05.2015 Bulletin 2015/20

(21) Application number: **14177126.1**

(22) Date of filing: **15.07.2014**

(51) Int Cl.:
D06F 37/02 *(2006.01)* ***D06F 37/26*** *(2006.01)*
D06F 39/12 *(2006.01)* *D06F 21/02* *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **06.11.2013 KR 20130134409**

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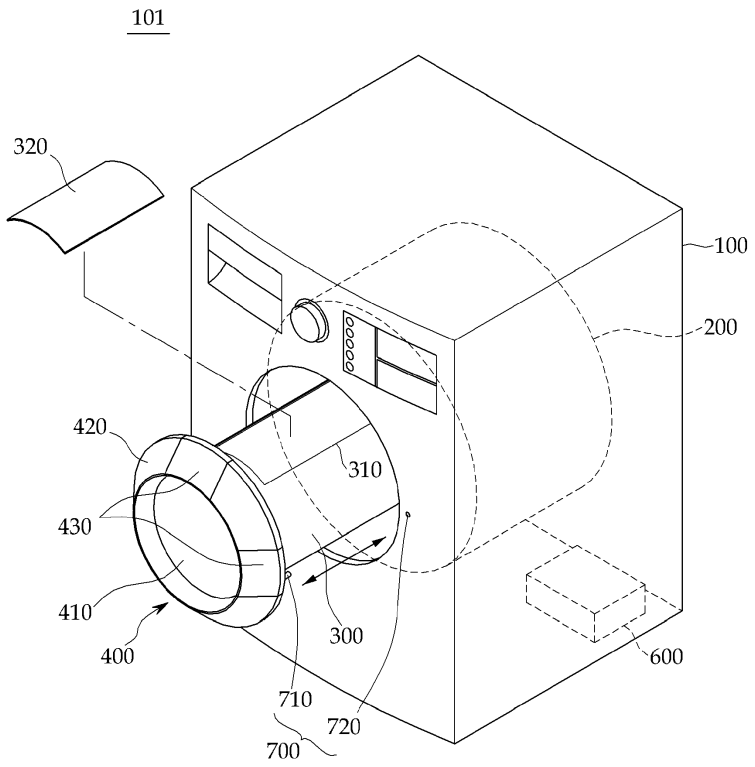
(54) Drum type washing machine

(57) Disclosed is a drum type washing machine (101), including a housing (100); an internal housing (200) in the housing; a withdrawable drum (300) in the internal housing, having an opening (310) on an outer peripheral surface thereof; a door (400) coupled to one end of the drum; and a guide (450) between the door and/or drum and the internal housing, configured to slide the drum.

FIG. 1



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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a drum type washing machine, and more particularly, to a drum type washing machine including a drum that is insertable and withdrawable.

BACKGROUND

[0002] In general, in a drum type washing machine, washing is performed by friction between water and laundry in the drum by rotation of the drum with the laundry therein.

[0003] A user opens a door on one surface of the housing of the drum type washing machine in order to place the laundry in the drum in the direction of the shaft fixed to the drum, parallel to the installation surface of the drum type washing machine (e.g., the floor).

[0004] However, the user must sometimes bend his/her waist and/or back in order to place the laundry in the drum of the drum type washing machine, and as a result, user fatigue may increase, and the user may experience pain in an extreme circumstance.

[0005] Since the door in the drum type washing machine is pivotably coupled to the housing, the drum type washing machine needs to be installed with the pivotable radius of the door in mind at the time of installing the drum type washing machine. That is, installation of the drum type washing machine should consider interference articles such as home appliances and furniture positioned adjacent to the drum type washing machine, or an interference space such as a wall when the door pivots, as well as an installation space of the drum type washing machine at the time of installing the drum type washing machine.

SUMMARY

[0006] The present disclosure has been made in an effort to provide a drum type washing machine including a drum which is insertable and withdrawable.

[0007] One or more exemplary embodiments of the present disclosure provide a drum type washing machine, including a housing; an internal housing in the housing; a withdrawable drum in the internal housing, having an opening on an outer peripheral surface thereof; a door coupled to one end of the drum; and a guide between the door and/or the drum and the internal housing, configured to slide the drum.

[0008] The guide may include a guide groove or slot in the internal housing, configured to guide movement of the drum; and a slide rail coupled to the door and/or the drum, configured to move along the guide groove or slot.

[0009] The door may further include a handle at one side of the door.

[0010] The drum type washing machine may further include a cover configured to open and/or close the opening.

[0011] The drum type washing machine may further include a rotary driving member in the housing, configured to rotate the drum; and a control unit configured to control the rotary driving member. For example, the control unit may control the rotary driving member so that the opening faces upward when the rotary driving member stops and/or the drum is not rotating.

[0012] The drum type washing machine may further include a lock between the door and the housing, configured to couple the door to the housing.

[0013] According to exemplary embodiment(s) of the present disclosure, in a drum type washing machine, the user can insert and withdraw the drum to effectively place laundry in the drum.

[0014] The foregoing summary is illustrative only and is not intended to be in any way limiting. In addition to the illustrative aspects, embodiments, and features described above, further aspects, embodiments, and features will become apparent by reference to the drawings and the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

FIG. 1 is a perspective view of a drum type washing machine according to one or more exemplary embodiments of the present disclosure.

FIG. 2 is a cross-sectional view of the exemplary drum type washing machine of FIG. 1 having an inserted drum.

FIG. 3 is a cross-sectional view of an exemplary guide taken along line A-A in FIG. 2 according to an exemplary embodiment.

FIG. 4 is a cross-sectional view of an exemplary guide according to another exemplary embodiment.

FIG. 5 is a cross-sectional view illustrating an exemplary drum type washing machine of FIG. 1 having a partially withdrawn drum.

DETAILED DESCRIPTION

[0016] In the following detailed description, reference is made to the accompanying drawings, which forms a part hereof. The illustrative embodiments described in the detailed description, drawings, and/or claims are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented here.

[0017] Hereinafter, exemplary embodiments of the present disclosure will be described more fully hereinafter with reference to the accompanying drawings, in which exemplary embodiments of the present disclosure can be implemented by those skilled in the art. As those skilled in the art may realize, the described exemplary embodiments may be modified in various different ways,

all without departing from the spirit or scope of the present disclosure, and the spirit and/or scope of the present disclosure is not limited to the exemplary embodiments described herein.

[0018] It is noted that the drawings are schematic and are not necessarily schematically and/or dimensionally accurate. Relative sizes and proportions of parts in the drawings may be exaggerated or reduced in their sizes, and any predetermined size is just exemplary and not limiting, for accuracy and convenience in the figures. The same reference numerals designate the same structures, elements, or parts illustrated in multiple drawings in order to exhibit similar characteristics.

[0019] Exemplary embodiments of the present disclosure may represent ideal embodiments of the present disclosure in detail. As a result, various modifications of the drawings may be expected. Accordingly, the exemplary embodiments are not limited to a specific form of the illustrated structure, arrangement and/or region, and for example, include modifications of form by manufacturing.

[0020] Hereinafter, a drum type washing machine 101 according to one or more exemplary embodiments of the present disclosure will be described with reference to FIGS. 1 to 4.

[0021] As illustrated in FIGS. 1 and 2, a drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure includes a housing 100, an internal housing 200, a drum 300, a door 400, and a guide 450.

[0022] The housing 100 forms an exterior of the drum type washing machine 101. In detail, an operating unit (e.g., a user interface) that may operate and/or actuate the drum type washing machine 101 may be provided on or outside the housing 100.

[0023] The internal housing 200 is in the housing 100. The internal housing 200 may have a cylindrical or substantially cylindrical shape. Watertightness may be maintained between one end (e.g., the front end) of the internal housing 200 and one end (e.g., the front panel) of the housing 100 having the door 400 detachably coupled thereto by a gasket (not illustrated).

[0024] Alternatively, the internal housing 200 may be integral with the housing 100. The internal housing 200 is generally configured to house the drum 300.

[0025] The drum 300 contains washing water therein from a water supply device (not illustrated) and is housed in the internal housing 200. The drum 300 may be connected to a washing water discharging device or drain (not illustrated).

[0026] The drum 300 may have a cylindrical or substantially cylindrical shape, and has an opening 310 on an outer peripheral (e.g., an upper or uppermost) surface thereof. The opening 310 on the outer peripheral surface of the drum 300 is a passage through which the laundry is put into and withdrawn from the drum 300.

[0027] The door 400 is coupled to one end of the drum 300. In detail, the door 400 may include a frame 420 and a transparent part or window 410.

[0028] The frame 420 may be coupled to an outer side of the transparent part or window 410 using a watertight connection or seal. The user may view the washing progress in the drum 300 through the transparent part or window 410 of the door 400. The window 410 may be made of a transparent material such as glass or transparent plastic.

[0029] The frame 420 may support the outer side of the transparent part 410.

[0030] One end of the drum 300 may be coupled to the frame 420 by a rolling and/or rotating member such as a bearing. Thus, the frame 420 may be fixed in place (e.g., not rotatable), and the drum 300 may rotate inside the housing 100 by virtue of the bearing between it and the frame 420.

[0031] The guide 450 is provided between the door 400 and the internal housing 200 and guides the drum 300 in and out of the housing 100 and/or internal housing 200 (e.g., by sliding). The guide 450 may guide the drum 300 to be withdrawn to the outside of the housing 100 from the internal housing 200 housing the drum 300, and guide the withdrawn drum 300 back into the internal housing 200.

[0032] That is, the guide 450 may be configured to guide the drum 300 into and from the housing 100.

[0033] The guide 450 is between the door 400 and the internal housing 200. The guide 450 may be further configured to prevent the door 400 from rotating at the time of withdrawing the drum 300.

[0034] Accordingly, since the drum 300 having laundry therein may be pushed into and withdrawn from the housing 100, the drum type washing machine 101 may be installed in a smaller area than that of the drum type washing machine in the related art, in which the laundry is placed in the drum by opening the door fixed to the housing using one or more hinges.

[0035] In the related art, in order to install the conventional drum type washing machine, space must be provided to one side of the housing and in front of the washing machine to allow full movement of the door fixed to the housing using one or more hinges. However, according to the drum type washing machine 101 of the present disclosure, the drum 300 is withdrawn straight from the housing 100, and as a result, the drum type washing machine 101 may be installed considering only a space in front of the housing 100.

[0036] The drum 300 slides along the guide 450, and as a result, the user may insert and withdraw the drum 300 without applying a large force to the door 400.

[0037] The door 400 is coupled to the drum 300, and when the user pulls the door 400 away from the housing 100, the door 400 and the drum 300 are withdrawn together to effectively enable placing the laundry in the drum 300.

[0038] Since the drum 300 of the drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure may contain the washing water,

a water tank or tub provided in the drum type washing machine 101 in the related art is not required.

[0039] The guide 450 of the drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure may further include a guide groove or slot 451 and a slide rail 452.

[0040] The guide groove or slot 451 is at one side (e.g., a lowermost side) of the internal housing 200 to guide movement of the drum 300. In detail, the guide groove or slot 451 is on an inner peripheral surface (e.g., a lowermost surface) of the internal housing 200, and is aligned in a longitudinal direction of the drum 300, to guide and/or enable the drum 300 to slide.

[0041] The slide rail 452 is coupled or secured to the door 400 and may move along the guide groove or slot 451. In detail, the slide rail 452 is spaced apart from the drum 300 and may be aligned in the longitudinal direction (e.g., along the long axis) of the drum 300. One end of the slide rail 452 is coupled to the door 400, and another (e.g., opposite) end of the slide rail 452 may be supported by the guide groove or slot 451. In one embodiment, substantially the entire rail 452 is supported by the guide groove or slot 451 when the drum 300 is inserted all the way into the housing 100, and only a portion of the rail 452 is supported by the guide groove or slot 451 when the drum 300 is withdrawn from the housing 100.

[0042] Alternatively, when the door 400 includes the frame 420, one end of the slide 452 that is spaced apart from the drum 300 and aligned along the longitudinal direction of the drum 300 is coupled with the frame 420, and another end (e.g., an opposite end) may be supported by the guide 451.

[0043] For the slide 452, for example, at least one of the guide 451 and the slide 452 may further include a rolling member such as a rail, a bearing, or a wheel.

[0044] As illustrated in FIGS. 2 and 3, the guide 450 may be provided between the inner peripheral surface of the internal housing 200 and the drum 300 and/or the door 400. The internal housing 200, the drum 300, the door 400 and/or the guide 450 may be adjacent to an installation surface of the housing 100.

[0045] The guide 450 may be on a lower inner peripheral surface of the internal housing 200 and at one lower side of the door 400. The guide 450 effectively supports the weight of the laundry in the drum 300, and may guide the drum 300 and/or enable the drum 300 to slide into and out of the internal housing 200.

[0046] As illustrated in FIG. 4, the guide 450 may be comprise a plurality of guide members 450[?] and 450[?]. In detail, the guide members 450[?] and 450[?] may be between the inner peripheral surface of the internal housing 200 and one side (e.g., an inside) of the door 400 and/or around a rotational shaft of the drum 300.

[0047] That is, the guide members 450[?] and 450[?] are configured to support the drum 300 and the weight of the laundry placed in the drum 300, regardless of the distribution of the laundry in the drum 3000, thereby effectively guiding the sliding movement of the drum 300.

[0048] The door 400 of the drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure may further include a handle 430.

[0049] The handle 430 may be at one side (e.g., an outside) of the door 400. In detail, the handle 430 may be grasped by the user, and as illustrated in FIG. 1, the handle 430 may be at one side (e.g., an upper half) of the door 400 adjacent to the opening 310 when the drum 300 is inserted, and/or before withdrawing the drum 300.

[0050] Alternatively, the handle 430 may be at one side of the frame 420 when the door 400 includes the frame 420.

[0051] The user may effectively insert and withdraw the drum 300 with the handle 430 at one side (e.g., an upper half and/or outside) of the door 400. That is, the user may easily input and withdraw the drum 300 with the handle 430 to effectively place the laundry through the opening 310 in the drum 300.

[0052] The drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure may further include a cover 320 as illustrated in FIG. 1.

[0053] The cover 320 may open and/or close the opening 310 in an outer peripheral surface of the drum 300. In detail, the cover 320 may prevent the laundry from being ejected from the drum 300 by closing the opening 310 while washing. The cover 320 may comprise a panel having substantially the same arc as the drum 300, with one or more securing members thereon or affixed thereto. In one example, the opening 310 and cover 320 include one or more tongue-in-groove joints (preferably at least two such joints on opposite sides of the opening 310 and cover 320), configured to allow the cover 320 to slide into place over the opening 310. Alternatively, one or more sides of the cover 320 may have a plurality of tabs configured to mate with a corresponding number of slots along corresponding side(s) of the opening 310, and one or more latches (not shown) may secure the cover 320 in place over the opening 310. A gasket or seal (not illustrated) may be between the opening 310 and the cover 320 so that the opening 310 and the cover 320 maintain watertightness.

[0054] The cover 320 may be opened or removed from the opening 310 when the drum 300 is withdrawn from the washing machine 101. That is, the user may open or close the opening 310 using the cover 320.

[0055] Accordingly, the cover 320 is configured to open and/or close the opening 310 in the peripheral surface of the drum 300, prevent the laundry being washed in the drum 300 from being ejected from the drum 300 (when closed), and easily input and withdraw the laundry through the opening 310 (when open).

[0056] The drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure may further include a rotary driving member 500 and a control unit 600 as illustrated in FIGS. 1 and 2.

[0057] The rotary driving member 500 is in the housing 100 and configured to rotate the drum 300. As one ex-

ample, the rotary driving member 500 may include a motor.

[0058] When washing or spin-drying is completed, the rotation of the drum 300 by the rotary driving member 500 is decelerated, and the control unit 600 may control the rotary driving member 500 so that the drum 300 stops at a position where the opening 310 on the outer peripheral surface of the drum 300 faces upward (e.g., at 12:00, or at 0° when 0° points directly and orthogonally up from the floor, although other positions, such as a position between 10:00 and 2:00 or from -60° to +60° are also acceptable).

[0059] That is, the control unit 600 may control the rotary driving member 500 so that the rotation of the drum 300 stops at the position where the opening 310 of the drum 300 faces upward when the rotary driving member 500 stops.

[0060] As one example, rotational speed or rpm information of the drum 300 may be input into the control unit 600 according to the washing and spin-drying cycle, and the rotation of the drum 300 may stop at the position where the opening 310 faces upward. That is, the position of the drum 300 after washing and spin-drying may have a predetermined value based on washing conditions (washing conditions including a water height, washing information, and a washing mode) and/or other on information input or selected by the user (e.g., using the control panel shown on the upper right-hand corner of the front panel of the washing machine 101 in FIG. 1)..

[0061] Alternatively, the control unit 600 may stop the rotary driving member 500 at a position where the opening 310 faces upward using a detection device such as an shape or image sensor and optional software and/or logic (e.g., for machine vision).

[0062] Accordingly, the control unit 600 may control the rotation of the drum 300 so that the opening 310 of the drum 300 faces upward when the rotary driving member 500 stops. Therefore, the drum type washing machine 101 according to the present disclosure may reduce user fatigue generated when the user bends his/her waist and/or back, and/or extends his/her arms substantially parallel to the floor, in order to place the laundry in the drum or take the laundry out of the drum in the related art.

[0063] The drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure may further include a lock 700 as illustrated in FIG. 1.

[0064] The lock 700 is between the door 400 and the housing 100, and may couple or secure the door 400 to the housing 100. The lock 700 couples the door 400 (which may, in turn, be fixed to and/or rotatably coupled with the drum 300) to the housing 100 to prevent the door 400 from rotating while the drum 300 rotates.

[0065] That is, the drum 300 and the door 400 are rotatably coupled to each other by a rolling and/or rotating member such as a bearing, and as a result, the drum 300 rotates during washing, but the door 400 coupled to the housing 100 does not. Watertightness may be maintained between the door 400 and the drum 300 by a watertight member such as a gasket or seal (not illustrated) to prevent water in the drum 300 from leaking outside the door 400.

[0066] In detail, the lock 700 may include a protrusion, pin, tab or prong 710 (hereinafter, "protrusion") and a lock receiver 720.

[0067] The protrusion 710 may protrude or extend from one side (e.g., an inside surface) of the door 400 facing one surface (e.g., an exterior surface of the front panel) of the housing 100.

[0068] The lock receiver 720 may be on one surface (e.g., an exterior surface of the front panel) of the housing 100 facing the protrusion 710. The lock receiver 720 engages with the protrusion 710 to couple the door 400 to the housing 100. In various embodiments, the washing machine 101 may comprise a plurality (e.g., 2, 3, 4 or more) protrusions/pins 710 and matching or corresponding lock receivers 720.

[0069] The protrusion 710 and/or lock receiver 720 is/are connected to the handle 430 provided on the door 400 to decouple the door 400 and the housing 100 from each other when the user pulls the handle 430 to open the door 400 after the washing is completed.

[0070] That is, when the user pulls the door 400 by the handle 430, the protrusion 710 and the lock receiver 720 are disengaged from each other, and as a result, the drum 300 may be withdrawn from the housing 100 together with the door 400.

[0071] Hereinafter, referring to FIGS. 1, 2, and 5, an operating process of the drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure will be described.

[0072] As illustrated in FIGS. 1 and 5, the user withdraws the drum 300 by pulling the handle 430 on the door 400. The drum 300 is withdrawn while sliding or rolling along the guide(s) 450.

[0073] The opening 310 of the withdrawn drum 300 is opened. That is, when the opening 310 is closed by the cover 320, the cover 320 and the opening 310 are decoupled from each other to open the opening 310.

[0074] The user puts laundry in the drum 300 through the opened opening 310.

[0075] As illustrated in FIG. 2, when the laundry is completely placed in the drum 300, the user places the cover 320 on the opening 310 and secures the cover 320 to the drum 300 to close the opening 310.

[0076] When the opening 310 is completely closed, the user pushes the door 400 to put the drum 300 in the housing 100.

[0077] When the door 400 and the housing 100 are coupled to each other by the lock 700, the user inputs a desired washing condition to operate and/or actuate the drum type washing machine 101.

[0078] While the drum type washing machine 101 is operating, the drum 300 is rotated by the rotary driving member (e.g., motor) 500, and the door 400 remains coupled to the housing 100 and does not rotate.

[0079] While the drum type washing machine 101 is operating, the user may check the washing progress in the drum 300 through the door 400 (e.g., through the window 410).

[0080] As illustrated in FIGS. 1 and 5, after the drum type washing machine 101 completes the operation(s) according to the washing condition(s) input by the user, the user pulls the handle 430 in/on the door 400. In this case, the lock 700 may decouple the door 400 from the housing 100. That is, the lock 700 decouples the door 400 and the housing 100 from each other before the drum 300 is withdrawn by pulling the handle 430.

[0081] The opening 310 of the drum 300 withdrawn by pulling the handle 430 faces upward. That is, the control unit 600 controls the rotary driving member 500 so that the opening 310 formed in the drum 300 faces upward when the actuation when the washing operation is completed.

[0082] The user removes or decouples the cover 320 on or over the opening 310 to open the opening 310 in the drum 300.

[0083] The user withdraws the washed laundry through the opened opening 310.

[0084] As illustrated in FIG. 2, after the user withdraws the laundry, the user closes the opening 310 of the drum 300 with the cover 320 and puts the drum 300 back into the housing 100.

[0085] In such a configuration, the drum type washing machine 101 according to exemplary embodiment(s) of the present disclosure allows the user to effectively place the laundry in the withdrawable drum 300.

[0086] From the foregoing, it will be appreciated that various embodiments of the present disclosure have been described herein for purposes of illustration, and that various modifications may be made without departing from the scope and spirit of the present disclosure. The exemplary embodiments disclosed in the specification of the present disclosure are not intended to limit the present disclosure. The scope of the present disclosure will be interpreted by the claims below, and all techniques within the scope equivalent thereto belong to the scope of the present disclosure.

Claims

1. A drum type washing machine, comprising:

a housing(100);
an internal housing(200) in the housing(100);
a withdrawable drum(300) in the internal housing(200) and having an opening(310) on an outer peripheral surface thereof;
a door(400) or handle(430) coupled to one end of the drum(300); and
a guide(450) between the drum(300) and the internal housing(200), configured to slide the drum(300).

2. The drum type washing machine of claim 1, wherein the guide(450) is configured to slide the drum(300) out of and into the internal housing(200) and/or housing(100).

3. The drum type washing machine of claim 1, wherein the guide(450) includes:

a guide slot or groove(451) in the internal housing guiding movement of the drum(300); and
a slide rail(452) coupled to the door(400) and/or the drum(300), configured to move along the guide slot or groove(451).

4. The drum type washing machine of claim 1, comprising the door(400).

5. The drum type washing machine of claim 4, wherein the door(400) further includes the handle(430) at one side of the door(400).

6. The drum type washing machine of claim 5, wherein the handle(430) is on or in an upper half of an external surface of the door(400).

7. The drum type washing machine of claim 1, further comprising:

a cover(320) configured to open and/or close the opening(310).

8. The drum type washing machine of claim 7, wherein the cover(320) comprises a sliding connection configured to sealably slide into place over the opening(310) to the drum(300).

9. The drum type washing machine of claim 7, wherein the cover(320) comprises a plurality of hooks or tabs configured to mate with corresponding connection openings in the drum(300) adjacent to the opening(310) and thus seal the opening(310)..

10. The drum type washing machine of claim 1, further comprising:

a rotary driving member(500) in the housing configured to rotate the drum(300); and
a control unit(600) configured to control the rotary driving member(500),
wherein the control unit(600) controls the rotary driving member(500) so that the opening(310) faces upward when the rotary driving member(500) stops or is not rotating the drum(300).

11. The drum type washing machine of claim 1, further comprising:

a lock(700) between the door(400) and the

housing(100) configured to couple the door(400) to the housing(100).

12. A method of operating a drum type washing machine, comprising:

sliding a drum(300) out of an internal housing(200) in the drum type washing machine;
placing laundry in the drum(300);
sliding the drum(300) back into the internal housing(200); and
washing the laundry.

13. The method of claim 12, wherein sliding the drum(300) out of the internal housing(200) comprises pulling a handle(430) or opening a door(400) on or over the drum(300).

14. The method of claim 12, further comprising, after sliding the drum(300) out of the internal housing(200) and before placing the laundry in the drum(300), opening a cover(320) on an outer peripheral surface of the drum(300) to expose an interior of the drum(300).

15. The method of claim 12, further comprising, when washing the laundry is completed:

sliding the drum(300) out of the internal housing(200);
removing the laundry from the drum(300); and
sliding the drum(300) back into the internal housing(200).

FIG. 1

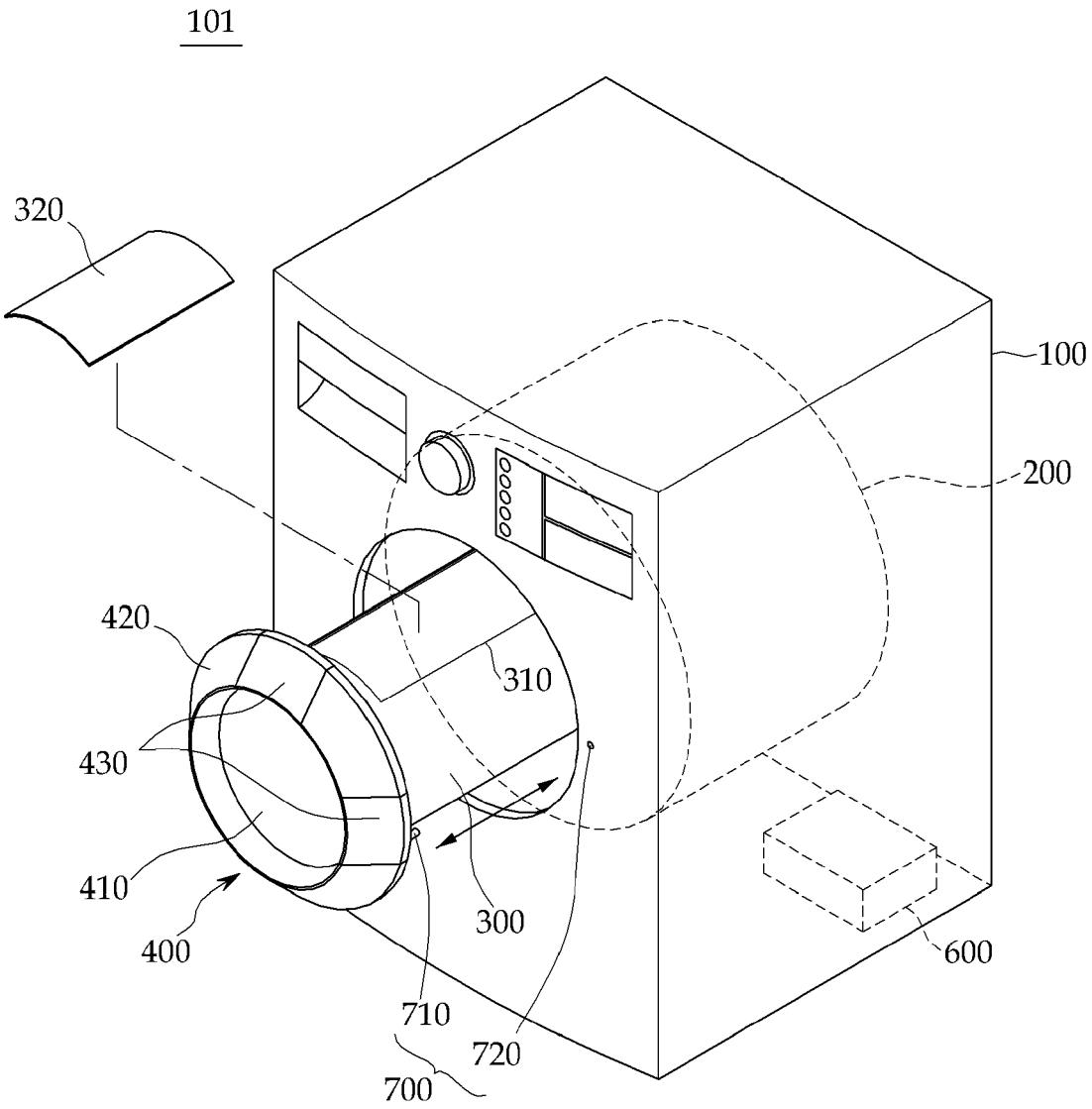


FIG. 2

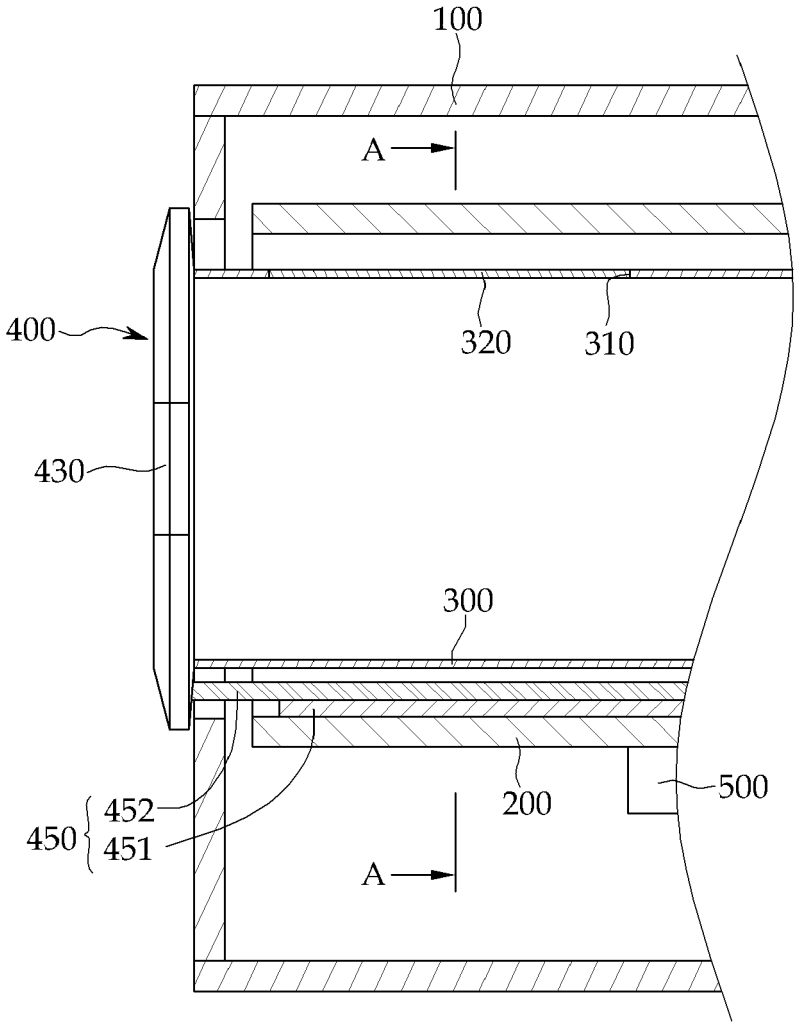


FIG. 3

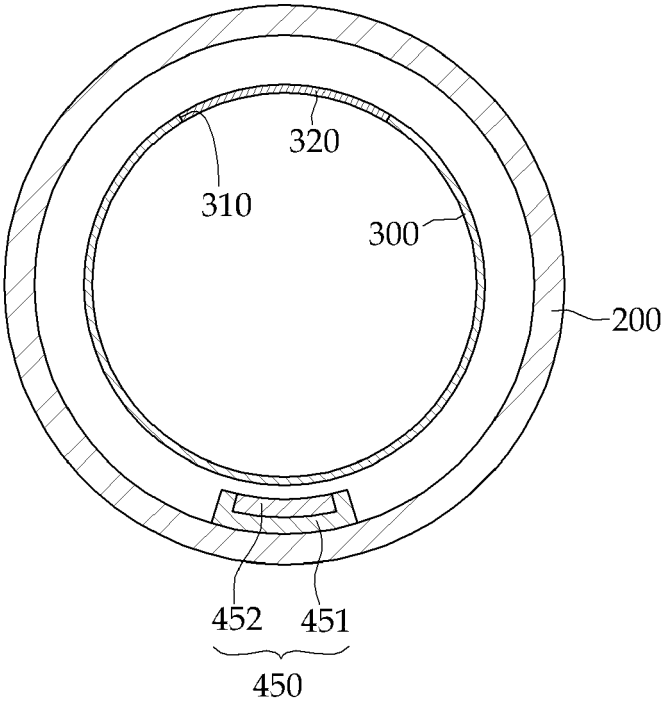


FIG. 4

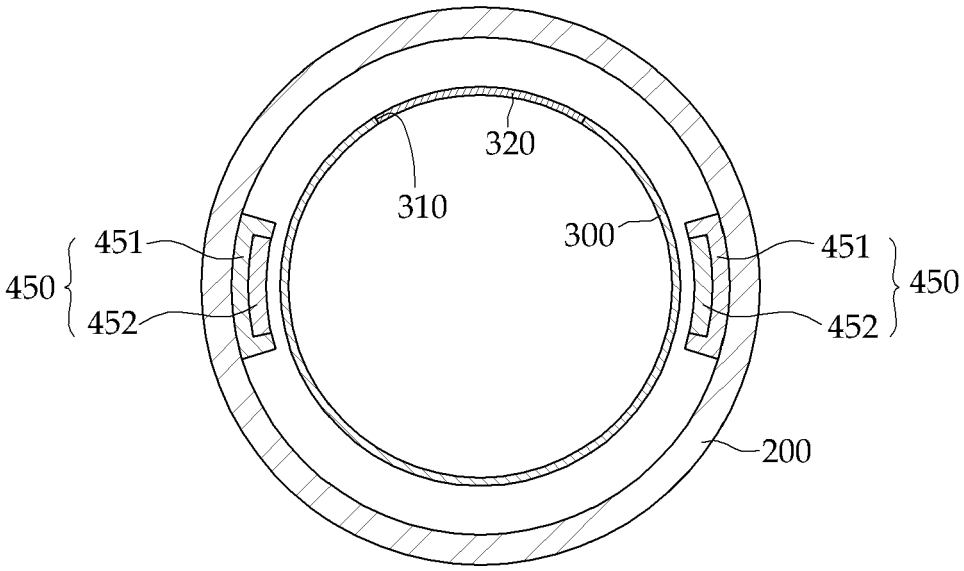
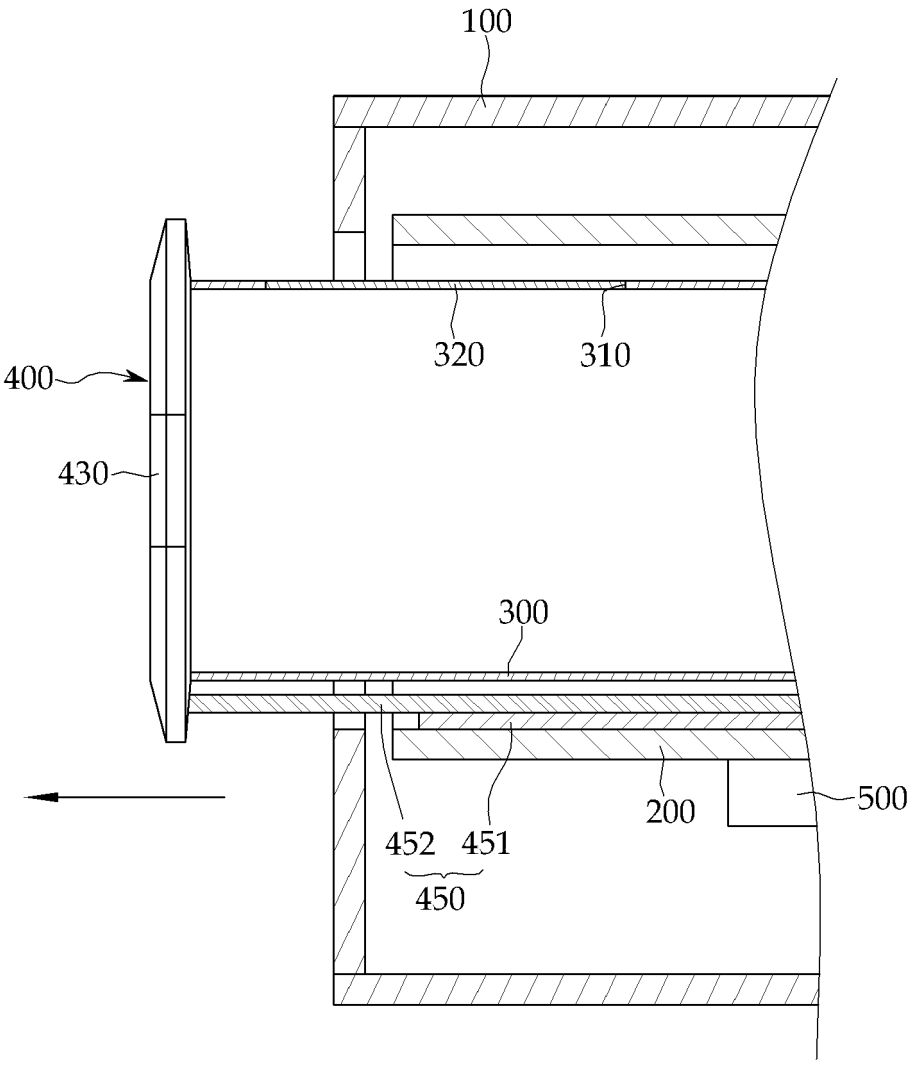


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 14 17 7126

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	DE 10 2008 009791 A1 (MIELE & CIE [DE]) 27 August 2009 (2009-08-27) * paragraph [0009] * * paragraphs [0027] - [0031] * * figures 1-5 *	1,2,10, 12 8,9,11	INV. D06F37/02 D06F37/26 ADD. D06F39/12
X	EP 2 607 544 A1 (ELECTROLUX HOME PROD CORP [BE]) 26 June 2013 (2013-06-26) * paragraphs [0027] - [0034] * * paragraph [0040] * * paragraphs [0043] - [0046] * * figures 1-7 *	1,3-7, 12-15	D06F21/02
Y	DE 10 2011 005923 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 27 September 2012 (2012-09-27) * paragraph [0011] * * paragraph [0014] * * paragraphs [0052] - [0056] * * figures 5, 6, 12-16 *	8,9,11	
A	US 2010/162774 A1 (REASON ANDREW [GB] ET AL) 1 July 2010 (2010-07-01) * paragraphs [0121] - [0125] * * figures 5, 10, 14-16 *	1,2,10, 12-15	TECHNICAL FIELDS SEARCHED (IPC) D06F
A	US 2 508 245 A (GERLACH FRANK A) 16 May 1950 (1950-05-16) * the whole document *	1,2, 12-15	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	26 February 2015	Weidner, Maximilian

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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& : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 17 7126

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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26-02-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102008009791 A1	27-08-2009	NONE	
EP 2607544 A1	26-06-2013	NONE	
DE 102011005923 A1	27-09-2012	NONE	
US 2010162774 A1	01-07-2010	EP 1996755 A2	03-12-2008
		EP 2420608 A1	22-02-2012
		EP 2428606 A2	14-03-2012
		JP 2009517111 A	30-04-2009
		US 2010162774 A1	01-07-2010
		US 2011167877 A1	14-07-2011
US 2508245 A	16-05-1950	NONE	

EPO FORM P0459

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