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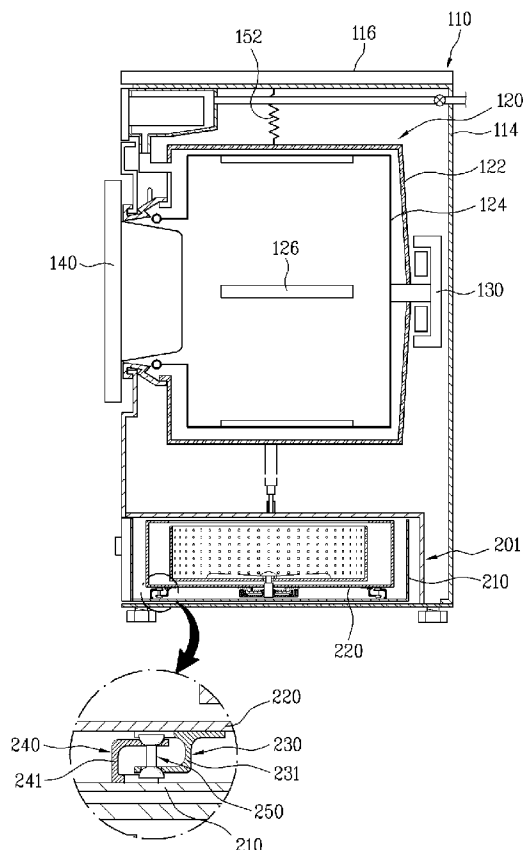
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(54) Title: LAUNDRY MACHINE

[Fig. 4]



(57) Abstract: A laundry machine is provided capable of washing or drying the laundry. The laundry machine includes a first washing tub that receives laundry, a housing, the first washing tub in a predetermined space therein; a second washing tub provided within the housing that receives laundry separately from the first washing tub, and a support member that supports the second washing tub with respect to the housing, substantially preventing displacement of the second washing tub due to its load, and limiting displacement against vibration of the second washing tub within a predetermined width.



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Description

LAUNDRY MACHINE

Technical Field

- [1] A laundry machine capable of washing and/or drying the laundry is disclosed herein.

Background Art

- [2] Laundry machines are known. However, they suffer from various disadvantages.

Disclosure of Invention

Technical Problem

- [3] It is not good for underwears and baby clothing, etc. to be left for a long time in view of sanitation. And, if such laundry is left for a long time, dirt is clung to cloth to causes a problem that it is not cleanly washed.
- [4] Therefore, the necessity of a small-sized laundry machine having much smaller capacity than the conventional large-sized laundry machine has increased. However, despite the small-size, it is not preferable to provide two laundry machines in one home in view of the space utilization, and it is not good either in appearance.

Technical Solution

- [5] The present invention proposes to solve the above problem. It is an object of the present invention to provide a laundry machine improving the convenience thereof, with a high positioned laundry inlet, and comprising at least one or more washing washing tubs.
- [6] The present invention is to provide a laundry machine comprising: a cabinet; a first washing tub that receives laundry disposed within the cabinet; a housing disposed adjacent the cabinet; a second washing tub provided within the housing that receives laundry; and at least one support device that supports the second washing tub with respect to the housing, substantially preventing vertical displacement of the second washing tub due to the weight of the second washing tub and limiting the displacement of the second washing tub due to vibration thereof.

[7]

Advantageous Effects

- [8] A laundry machine according to embodiments disclosed herein has at least the following advantages.
- [9] First, because the height of the first washing tub of the laundry machine is increased, it is not necessary for a user to excessively bend his body when putting laundry into the first washing tub and taking it out of the first washing tub, improving convenience in use.
- [10] Second, because a small capacity second washing tub is installed adjacent the first

washing tub, a user may select the washing tub appropriate for the amount of laundry to be washed, reducing unnecessary washing water and waste of energy.

[11] Third, because the second washing tub may be used in a different washing manner a method from that of the first washing tub, a proper washing manner or method may be selected depending on the type of laundry to be washed.

[12] Fourth, as the displacement of the second washing tub due to its load may be substantially prevented or reduced, space utilization may be improved. Because the vibration displacement width may be limited and the vibration damped with a simple structure, the size of the second washing tub may be enlarged or maximized.

[13] Fifth, because the second washing tub suspended by means of a support member is always returned to an initial position, stability may be improved.

Brief Description of the Drawings

[14] FIG. 1 is a front perspective view of a laundry machine according to an embodiment;

[15] FIG. 2 is a side, cross-sectional view of the laundry machine of FIG. 1;

[16] FIG. 3 is an exploded perspective view of a laundry machine according to another embodiment;

[17] FIG. 4 is a side cross-sectional view of the laundry machine of FIG. 3;

[18] FIG. 5 is a side, partial cross-sectional view enlarging a support member of a laundry machine according to an embodiment;

[19] FIG. 6 is a side, partial cross-sectional view showing a state in which the support member of FIG. 5 rotates;

[20] FIG. 7 is a partial cross-sectional view enlarging a coupling part between a support member and a lower bracket according to an embodiment;

[21] FIG. 8 is a partial cross-sectional view enlarging a coupling part between a support member and a lower bracket according to another embodiment; and

[22] FIG. 9 is a side, cross-sectional view of a laundry machine having an elastic support part.

Best Mode for Carrying Out the Invention

[23] A washing machine is an electric home appliance capable of washing laundry, and a drying machine is an electric home appliance drying capable of drying laundry. Recently, electric home appliances combining the functions of the washing machine and the drying machine have been widely used. Hereinafter, for the sake of explanatory convenience, the washing machine, the drying machine, and the electric home appliances combining these functions of thereof will be commonly called a laundry machine.

[24] The laundry machine may generally be classified into a top loading type and a front loading type according to a position in which the laundry is input. Further, the laundry

machine may be classified into a vertical axis type in which a drum or a pulsator rotates around a vertical axis and a horizontal axis type in which a drum rotates around a horizontal axis.

- [25] A conventional laundry machine is generally directly installed on a floor or surface, and an inlet of the front loading type laundry machine is low so that it is inconvenient for a user to input and take out laundry therefrom. Therefore, it is requested that a height of the inlet of the laundry machine be raised.
- [26] Generally, each home is provided with one laundry machine. Therefore, in order to wash different types of laundry, the washing machine is used or run several times. For example, laundry may be divided into adult clothing and underwears and baby clothing, the washing machine is used twice in order to wash both the latter and the former. Thereby, a lot of washing time is taken and a lot of energy is also consumed.
- [27] Also, in view of the energy saving, it is not preferable to use a large-sized laundry machine as shown in the prior art when washing a small amount clothing. The washing course provided in the large-sized laundry machine generally consumes a large amount of water. Further, a lot of power is consumed rotating a large-sized drum or a pulsator.
- [28] Also, since the washing course expects a large amount of laundry, the washing time is comparatively long. Additionally, the large-sized laundry machine is provided with the washing course, expecting mainly general clothing, so that it may not be suitable for washing delicate clothing such as underwear or baby clothing.
- [29] Even in the case in which a small amount of laundry is frequently washed, the large-sized washing machine is not suitable. A consumer gathers laundry over several days or more in order to wash a suitably large load of laundry.
- [30] It is not good for underwear, baby clothing, and similar items to be left for a long time in view of sanitation concerns. If such laundry is left for a long time, dirt clings to the clothing causing a problem that it is not completely cleaned.
- [31] Therefore, the necessity of a small-sized laundry machine having a much smaller capacity than the conventional large-sized laundry machine has increased. However, despite the small-size, it is not preferable to provide two laundry machines in one home in view of space utilization appearance.
- [32] FIG. 1 is a front perspective view of a laundry machine according to an embodiment.
- [33] FIG. 2 is a side, cross-sectional view of the laundry machine of FIG. 1.
- [34] The laundry machine 1 of FIG. 1 includes a cabinet 110, and a first washing tub 120 provided within the cabinet 110. The cabinet 110 may include a front cover 112, sidewalls 113, a rear wall 114, and a top cover or plate 116.
- [35] The front cover 112 of the cabinet 110 may be provided with a door 140 and a front upper portion of the cabinet 110 may be provided with a control panel 119 for operating the laundry machine 1.

- [36] The first washing tub 120 may include a first tub 122 that stores washing water and a first drum 124 rotatably disposed in the first tub 122. The first tub 122 and the first drum 124 may be provided with an opening through which laundry may be input and withdrawn from the washing tub 120 when the door 140 is opened. Also, the first drum 124 may be rotated by a motor 130. Lifts 126 may be provided in the first drum 124 to lift up the laundry within the first drum 124 when rotated.
- [37] The opening part may be formed to face up rather than toward the front of the cabinet. Further, the first washing tub may be oriented such that its control longitudinal axis extends vertically rather than lying horizontally.
- [38] When the door 140 of the laundry machine 1 is formed in the front of the cabinet 110, a user must bend his body to put laundry into and withdraw the laundry from the inside of the first washing tub 120. Therefore, in order to prevent the user from excessively bending his body, the washing tub 120 should be positioned at a predetermined height.
- [39] As shown in FIGS. 1 and 2, a case 200 that increases the height of the first washing tub to a predetermined height may be used under the laundry machine 1. The case 200 may be formed to have a predetermined height so that the cabinet of the laundry machine 1 may be raised. Also, the case 200 may be formed to have a predetermined space in an inside thereof so as to receive laundry in the inside the space to efficiently use space.
- [40] Also, in order for the user to conveniently put laundry into and withdraw laundry from inside the case 200, the inside of the case 200 has a predetermined space capable of receiving supplies and may be further provided with a housing 210 configured to be inserted into and withdrawn from the space of the case 200.
- [41] The case 200 as discussed above may be installed at a lower portion of the cabinet 110. However, it may also be installed at an upper side or a side portion thereof, as needed, although not shown in the drawings. Further, as discussed above the housing 210 may be provided in the inside of the case 200 separately provided from the cabinet 110 which receives the first washing tub 120. Alternatively, as shown in FIGS. 3 and 4, the case 200 may be provided in the inside of the cabinet 110 to be integrated with the cabinet 110. In such a case, a sub-housing 201 may be provided with rails 201a, 201b that allow the housing 210 to be inserted into and withdrawn from the cabinet 110.
- [42] Further, the housing 210 may be disposed below the first washing tub 120.
- [43] Also, the housing 210 may be provided in the inside of the cabinet 110, and may be provided in the inside of the case 200 providing a predetermined space to receive the housing 210.
- [44] A second washing tub 220 capable of receiving the laundry separately from the first

washing tub 120 and then performing the washing may be disposed inside the housing 210.

[45] The second washing tub 220 may be operable by the controller 119 provided in the cabinet 110.

[46] The second washing tub 220 may be operable independently from the first washing tub 120, and may include a second tub 220 that receives washing water and a second drum disposed within the second tub. Also, the second washing tub 220 may include a pulsator provided to be rotatable in the second tub 220. Further, other washing tubs in various manners not described in the present description may be provided.

[47] Therefore, as the second washing tub 220 is provided, separate from the first washing tub 120, the washing may be promptly performed by selecting a proper washing tub depending on the amount of laundry, without wasting washing water and energy.

[48] Also, as the first washing tub 120 and the second washing tub 220 each are separately and independently operated, they may be configured to perform different washing methods, and a user may select and use the more appropriate washing tub based on the type and characteristics of the laundry to be washed, improving washing efficiency and reducing clothing damage.

[49] Also, dark colored clothes and light colored clothes are often classified and washed separately in order to prevent them from dyeing one another. The first washing tub 120 and the second washing tub 220 may be utilized to wash different loads at once without performing two washing cycles, reducing washing time.

[50] As shown in FIGS. 2 and 4, the second washing tub 220 may be received in the inside of the housing 210, as described above, and vibration may be generated depending on an eccentricity of the inside laundry when the second washing tub 220 rotates. Also, there may be a tendency to fall into the lower side due to the weight of the laundry and the washing water.

[51] However, it is general to form the height of the housing 210 provided in the inside of the case 200 not to be high for the sake of convenience in actual use. In other words, if the height of the case 200 is too high, the opening part of the first washing tub 120 is formed too high when the case 200 is provided below the first washing tub 120 which is inconvenient in use is reduced, and if the case 200 is provided at the upper portion of the first washing tub 120, the height of the second washing tub 220 becomes too which is inconvenient in use.

[52] Therefore, the height of the housing 210 may be formed not to be too high, and it may further include a support member 250 capable of supporting the second washing tub 220 and damping the vibration in the space inside limited inside the housing 210.

[53] The supporting and the damping of the washing tub may be made by means of a suspension including a cylinder, a piston, a spring, and a damper, etc. and may be

formed to be retractable; however, the suspension, as described above is retracted depending on the weight of the washing tub to allow the washing tub to fall so that it is disadvantageous to use it in supporting the second washing tub 220, which is provided in the inside of the housing 210 and has a very narrow height and width.

- [54] FIG. 5 is a side, partial cross-sectional view enlarging a support member of a laundry machine according to an embodiment.
- [55] FIG. 6 is a side, partial cross-sectional view showing a state in which the support member of FIG. 5 rotates.
- [56] The support member 250 supporting the second washing tub provided in the inside of the housing 210 and damping a vibration may be formed to prevent the second washing tub 220 from falling due to its load and to limit the displacement generated due to the vibration of the second washing tub 220 within a predetermined width. Further, the support members 250 may be coupled to the portion vibrating integrally with the second washing tub 220 and the portion moving integrally with the housing 210, respectively.
- [57] Hereinafter, the portion vibrating integrally with the second washing tub 220 will be called a first part 230, and the portion moving integrally with the housing 210 will be called a second part 240. The support members 250 may be provided between the first part 230 and the second part 240, and may be coupled to the first part 230 and the second part 240, respectively. The support members 250 may be coupled so as not to be removed from the first part 230 and the second part 240.
- [58] Also, the support member 250, both ends thereof being coupled to the first part 230 and the second part 240, may be made of a rigid material so as not to be retracted or deformed regardless of the load of the second washing tub 220. Since the support member 250 may be made of a rigid material, while supporting the load of the second washing tub 220, the falling of the second washing tub 220 due to the load of the second washing tub 220 may be prevented.
- [59] Also, the support member 250 may be formed to be applied with tensile force due to the load of the second washing tub 220. In other words, the support member 250 may be approximately formed in a shape stood from the ground, wherein the second part 240 may be coupled to the upper end of the support member 250, and the first part 230 may be coupled to the lower end of the support member 250.
- [60] The support member may be formed to damp the vibration conveyed from the second washing tub 220 through friction force. The portion where the friction occurs may be portions where the support member 250 is coupled to the first part 230 and the support member 250 is coupled to the second part 240. Therefore, since the load of the second washing tub 220 acts on the portion where the friction occurs, it is possible to maximize friction force.

- [61] In order that friction occurs in the portions where the support member 250 is coupled to the first part 230 and the support member is coupled to the second part 240 depending on the vibration of the second washing tub 220, the support members 250 may be coupled to be movable between the first part 230 and the second part 240 and may also be coupled to be rotatable between the first part 230 and the second part 240. The support member 250 may be formed to have a clearance of a predetermined distance in the portions coupled to the first part 230 and the second part 240.
- [62] The support member 250 may be coupled so that its rotating angle is limited within a predetermined angle by means of the interference between the support member and the first part 230 and the second part 240.
- [63] Meanwhile, when the second washing tub 220 does not vibrate, the support member 250 may be positioned in order that the second washing tub 220 may be returned to its original initial position. The support member 250 may be applied with tensile force due to the weight of the second washing tub 220, in this case, the support member 250 may be applied with force couples where a virtual line connecting both ends of the support member rotates to be vertical to the ground when the second washing tub 220 does not vibrate by the tensile force.
- [64] Hereinafter, the support member 250 of the laundry machine according to an embodiment will be described in more detail, with reference to FIGs. 5 and 6.
- [65] The second washing tub 220 may be provided with an upper bracket 231. The upper bracket 231 may be coupled to vibrate integrally with the second washing tub 220, wherein it corresponds to the aforementioned first part 230.
- [66] The housing 210 may be provided with a lower bracket 241. The lower bracket 241 may be coupled to move integrally with the housing 210, wherein it corresponds to the aforementioned second part 240.
- [67] The support members 250 may be coupled to the upper bracket 231 and the lower bracket 241, respectively. The lower bracket 241 may be coupled to the upper end of the support member 250 and the upper bracket 231 may be coupled to the lower end of the support member 250.
- [68] The upper bracket 231 may be coupled to the lower surface or the side of the second washing tub 220 and may be extended to face the lower side, wherein a first hole 233 penetrating through the lower end of the support member 250 may be formed on its end. Also, the lower bracket 241 may be coupled to the lower surface or the side of the housing 210 and may be extended to face the upper side, wherein a second hole 243 penetrating through the upper end of the support member 250 may be formed on its end. And, the extended end of the lower bracket 241 may be formed to be positioned on a more upper side than the end of the upper bracket 231. Therefore, the support member 250 may be applied with tensile force due to the load of the second washing

tub 220.

- [69] The first hole 233 and the second hole 243 each may be formed to have a larger diameter than that of the support member 250 penetrating through the first hole 233 and the second hole 243.
- [70] Also, the end of the support member 250 penetrating through the first hole 233 and the second hole 243 may be formed to have a larger diameter than those of the first hole 233 and the second hole 243.
- [71] Constraint parts 252 having a larger diameter than those of the first hole 233 and the second hole 243 may be provided in both ends of the support member 250 penetrating through the first hole 233 and the second hole 243, respectively.
- [72] Therefore, the support member 250 forms a clearance of a predetermined distance between the first hole 233 and the second hole 243, not being removed from the first hole 233 and the second hole 243, and may be coupled to be rotatable within a predetermined angle. Also, when the second washing tub 220 vibrates, the support member 250 rotates by means of the upper bracket 231 vibrating integrally with the second washing tub 220.
- [73] Friction occurs between the constraint part 252 of the support member 250 and the inner circumferential surfaces of the first hole 233 and the second hole 243 connected to the constraint part 252 so that the vibration damps due to the friction force. Also, if the vibration displacement of the second washing tub 220 exceeds a predetermined range, interference between the support member 250 and the upper bracket 231 and the lower bracket 241 occurs so that the rotating angle of the support member 250 is limited. Therefore, the vibration displacement of the second washing tub 220 may also be limited by the horizontal and vertical displacement of the maximum rotating angle of the support member 250.
- [74] As described above, the constraint part 250 and the first hole 233 and the second hole 243 may be rubbed with each other when the support member 250 rotates. At this time, as shown in FIG. 7 or FIG. 8, the inner circumferential surfaces of the first hole 233 and the second hole 243 and the constraint part 252 provided in the end of the support member 250, connected to each other, may be formed to have an approximately spherical contact surface, in order that the support member 250 may smoothly rotate.
- [75] Herein, the shapes of the first hole 233 and the second 243 may be selectively adopted by those skilled in the art depending on necessary friction force between the constraint part 252 and the first hole 233 and the second hole 243, and further may be formed in any other shapes.
- [76] Also, at least any one of the inner circumferential surfaces of the first hole 233 and the second hole 243 or the surface of the constraint part 252, contacted and rubbed with each other not to generate noise at the time of friction, may be made of resin

material capable of maintaining friction coefficients and preventing a noise generation. The support member having the above structure may be applied with tensile force due to the load of the second washing tub 220 so that it is applied with force couples always intending to be vertical to the ground. In other words, the support member may be applied with the force couples where a straight line connecting both ends of the support member 250 intends to be vertical to the ground. Therefore, the support member 250 always shows a tendency intending to rotate in a direction to be vertical to the ground. Therefore, although the second washing tub 220 suspended by means of the support member 250 may be deviated from an initial position when vibrating, it may be returned to the initial position when not vibrating.

- [77] An elastic support part 260 elastically supporting right and left vibration of the second washing tub 220 may further be provided. As shown in FIG. 9, the elastic support part 260 may be formed of a spring, and it may also be formed of other constituent, such as a rubber band, as needed.
- [78] One end of the elastic support part 260 may be coupled indirectly to the first part 230 vibrating integrally with the second washing tub 220, and the other end of the elastic support part 260 may be coupled indirectly to the second part 240 vibrating integrally with the housing 210, respectively. In other words, one end of the elastic support part 260 may be directly coupled to the second washing tub 220 or may be coupled to the upper bracket 231 vibrating integrally with the second washing tub 220, and the other end of the elastic support part 210 may be directly coupled to the housing 210 or may be coupled to the lower bracket 241 moving integrally with the housing 210.
- [79] Therefore, the elastic support part 260 elastically supports the right and left vibration of the second washing tub 220, making it possible to more efficiently damp the vibration of the second washing tub 220.
- [80] Embodiments disclosed herein provide a laundry machine with improved convenience, a high positioned laundry inlet, and comprising at least one or more washing tubs.
- [81] Embodiments disclosed herein provide a laundry machine that includes a first washing tub receiving the laundry, a housing disposed neighboring the first washing tub and having a predetermined space in the inside thereof, a second washing tub provided in the inside of the housing and receiving the laundry separately from the first washing tub, and a support member supporting the second washing tub against the housing, substantially preventing the displacement of the second washing tub from generating due to its load, and limiting the displacement against the vibration of the second washing tub within a predetermined width. A case forming a space in the inside may be provided, and the housing may be installed to be received in the space of the case or to be able to be drawn in and out.

- [82] The support member may be provided between a first part vibrating integrally with the second washing tub and a second part vibrating integrally with the housing, and may be coupled not to be removed from the first part and the second part. The support member may be substantially made of a rigid body. The support member may be formed to be applied with tensile force due to the load of the second washing tub.
- [83] Also, the support member, both ends thereof being coupled not to be removed, respectively, in the first part vibrating integrally with the second washing tub and the second part vibrating integrally with the housing, may be formed to reduce the vibration by means of the friction force between the first part and the second part, when the vibration of the second washing tub is generated. The friction force generated when the second washing tub vibrates may be formed to be generated from the portion where the support member is coupled to the first part and the second part.
- [84] The support member may be made of material of a rigid body and may be coupled to be rotatable within a predetermined angle between the first part and the second part. The rotating angle of the support member may be limited within a predetermined angle by means of the interference between the support member and the first and second parts coupled to the support member.
- [85] The support member may be positioned in order that the second washing tub is returned to its initial position when the second washing tub does not vibrate. The support member may be applied with force couples where a virtual line connecting both ends of the support member intends to be vertical to the ground when the second washing tub does not vibrate. The support member may be formed to be applied with tensile force due to the weight of the second washing tub.
- [86] The laundry machine may further include a first bracket vibrating integrally with the second washing tub and formed with a first hole penetrating through the one side end of the support member, and a second bracket moving integrally with the housing and formed with a second hole penetrating through the other side end of the support member. The upper end of the support member may be formed to penetrate through the second hole, and the lower end of the support member may be formed to penetrate through the first hole.
- [87] The support member may further include constraint parts each provided in the ends penetrated through the first hole and the second hole not to be removed from the first hole and the second hole. The constraint parts may generate friction force by being rubbed with the inner circumferential surface of the first and second holes when the support member rotates.
- [88] The constraint parts each may be provided in the both side ends of the support member and may be formed to have a larger diameter than the first and the second holes. The portion of the support member penetrating through the first and second

holes may be formed to have a clearance of a predetermined distance from the inner circumferential surfaces of the first and second holes.

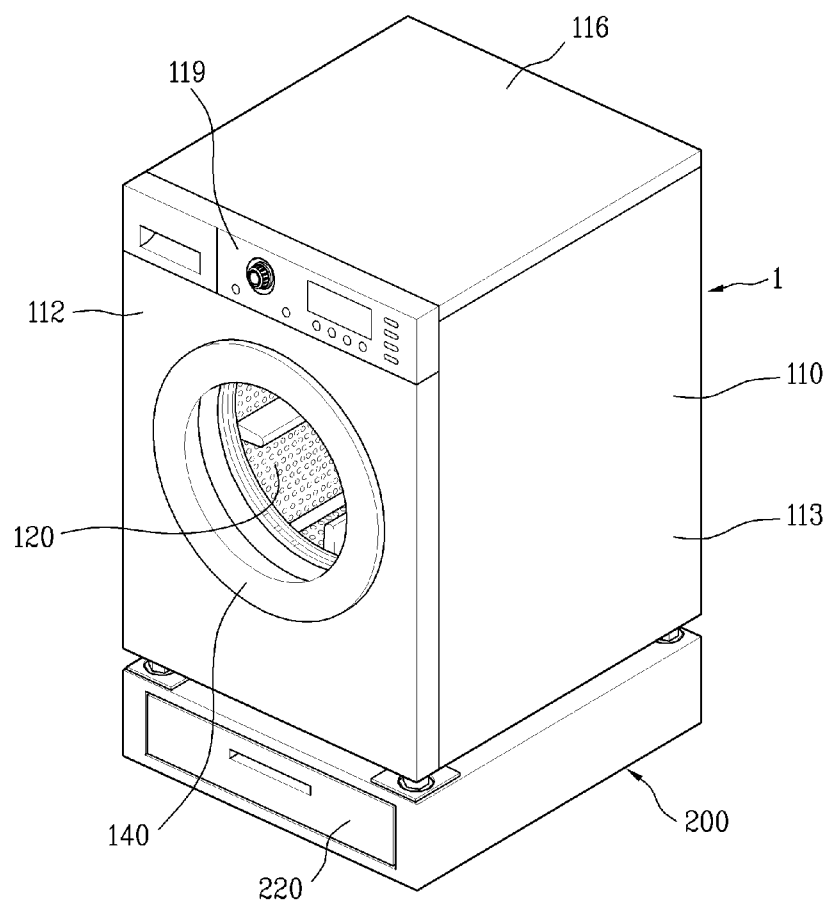
- [89] The inner circumferential surfaces of the first and second holes may be formed in an arc shape forming a portion of a sphere. The portion of the constraint part connected to the inner circumferential surfaces of the first and second holes may be formed to have a spherical arc corresponding to the inner circumferential surfaces of the first and second holes. The surface of at least one side of the constraint part of the support member and the inner circumferential surfaces of the first and second holes, rubbed with each other, may be made of material maintaining friction force and preventing noise. The laundry machine may further include an elastic support part elastically supporting right and left vibrations of the second washing tub. Additionally, the laundry machine may include an elastic support part, one end coupling to the first part and the other end coupling to the second part, to elastically support right and left vibration of the second washing tub.

Claims

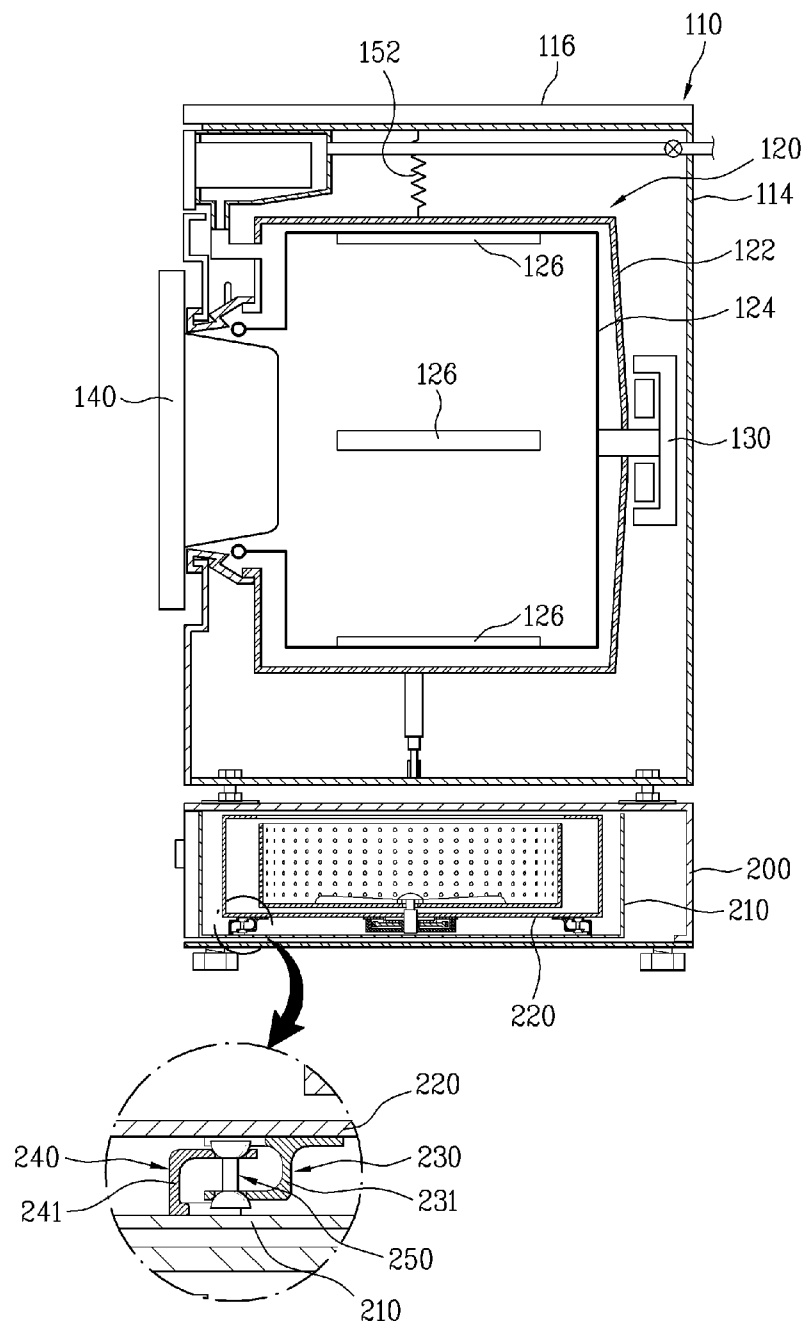
- [1] A laundry machine, comprising:
 - a cabinet;
 - a first washing tub that receives laundry disposed within the cabinet;
 - a housing disposed adjacent the cabinet;
 - a second washing tub provided within the housing that receives laundry; and
 - at least one support device that supports the second washing tub with respect to the housing, substantially preventing vertical displacement of the second washing tub due to the weight of the second washing tub and limiting the displacement of the second washing tub due to vibration thereof.
- [2] The laundry machine as claimed in claim 1, wherein the at least one support device comprises a support member that extends between first and second support brackets.
- [3] The laundry machine as claimed in claim 1, further comprising a case, wherein the housing is installed in the case so as to be inserted into and withdrawn from the case.
- [4] The laundry machine as claimed in claim 2, wherein the first support bracket moves integrally with the second washing tub and the second support bracket moves integrally with the housing, and wherein the rigid support member is non-removably coupled to the first and second support brackets.
- [5] The laundry machine as claimed in claim 4, wherein the support member comprises a substantially rigid body.
- [6] The laundry machine as claimed in claim 4, wherein the support member applies a tensile force in response to the weight of the second washing tub.
- [7] The laundry machine as claimed in claim 2, wherein the at least one support device reduces the vibration due to a friction force created between the support member and the first and second support brackets.
- [8] The laundry machine as claimed in claim 7, wherein the friction force is generated at portions where the support member is coupled to the first and second support brackets.
- [9] The laundry machine as claimed in claim 7, wherein the support member comprises a substantially rigid body and is coupled to be rotatable within a pre-determined angle between the first and second support brackets when the second washing tub vibrates.
- [10] The laundry machine as claimed in claim 9, wherein the support member is configured to return the second washing tub to its initial position when the second washing tub does not vibrate.

- [11] The laundry machine as claimed in claim 1, further comprising:
a first bracket vibrating integrally with the second washing tub and formed with a first hole penetrating through the one side end of the support member; and
a second bracket moving integrally with the housing and formed with a second hole penetrating through the other side end of the support member.
- [12] The laundry machine as claimed in claim 11, wherein the upper end of the support member penetrates through the second hole, and the lower end of the support member penetrates through the first hole.
- [13] The laundry machine as claimed in claim 11, wherein the support member further comprises constraint parts each provided in the ends penetrated through the first hole and the second hole not to be removed from the first hole and the second hole.
- [14] The laundry machine as claimed in claim 13, wherein the constraint parts generate friction force by being rubbed with the inner circumferential surface of the first and second holes when the support member rotates.
- [15] The laundry machine as claimed in claim 13, wherein the constraint parts each are provided in the both side ends of the support member and are formed to have a larger diameter than the first and the second holes.
- [16] The laundry machine as claimed in claim 11, wherein the portion of the support member penetrating through the first and second holes has a clearance of predetermined distance from the inner circumferential surfaces of the first and second holes.
- [17] The laundry machine as claimed in claim 14, wherein the inner circumferential surfaces of the first and second holes are formed in an arc shape forming a portion of a sphere, and the portion of the constraint part connected to the inner circumferential surfaces of the first and second holes is formed to have a spherical arc corresponding to the inner circumferential surfaces of the first and second holes.
- [18] The laundry machine as claimed in claim 14, wherein the surface of at least one side of the constraint part of the support member and the inner circumferential surfaces of the first and second holes, rubbed with each other, is made of material maintaining friction force and preventing noise.
- [19] The laundry machine as claimed in claim 1, further comprising an elastic support part elastically supporting right and left vibrations of the second washing tub.
- [20] The laundry machine as claimed in claim 4, further comprising an elastic support part, one end coupling to the first part and the other end coupling to the second part, to elastically support right and left vibration of the second washing tub.

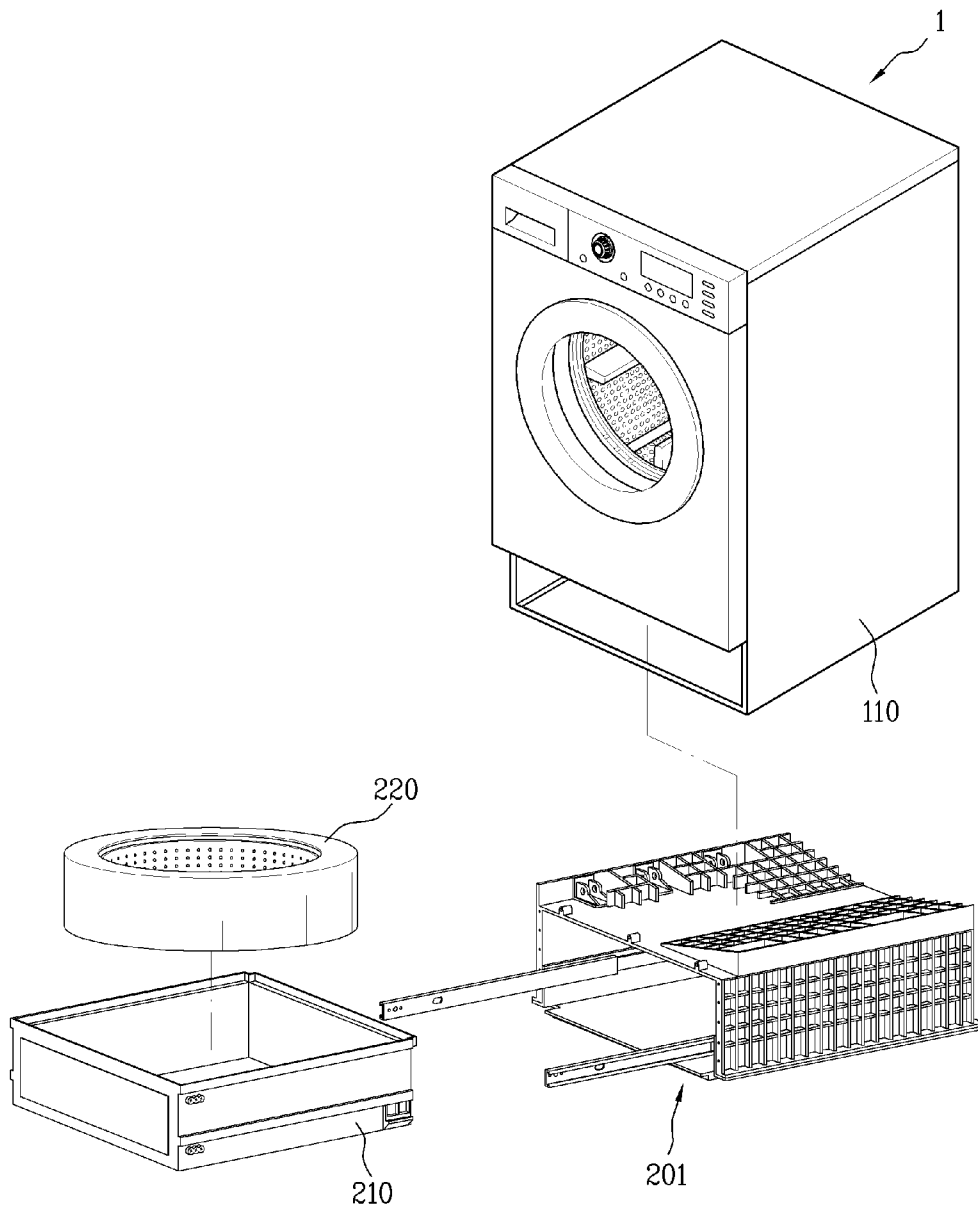
[Fig. 1]



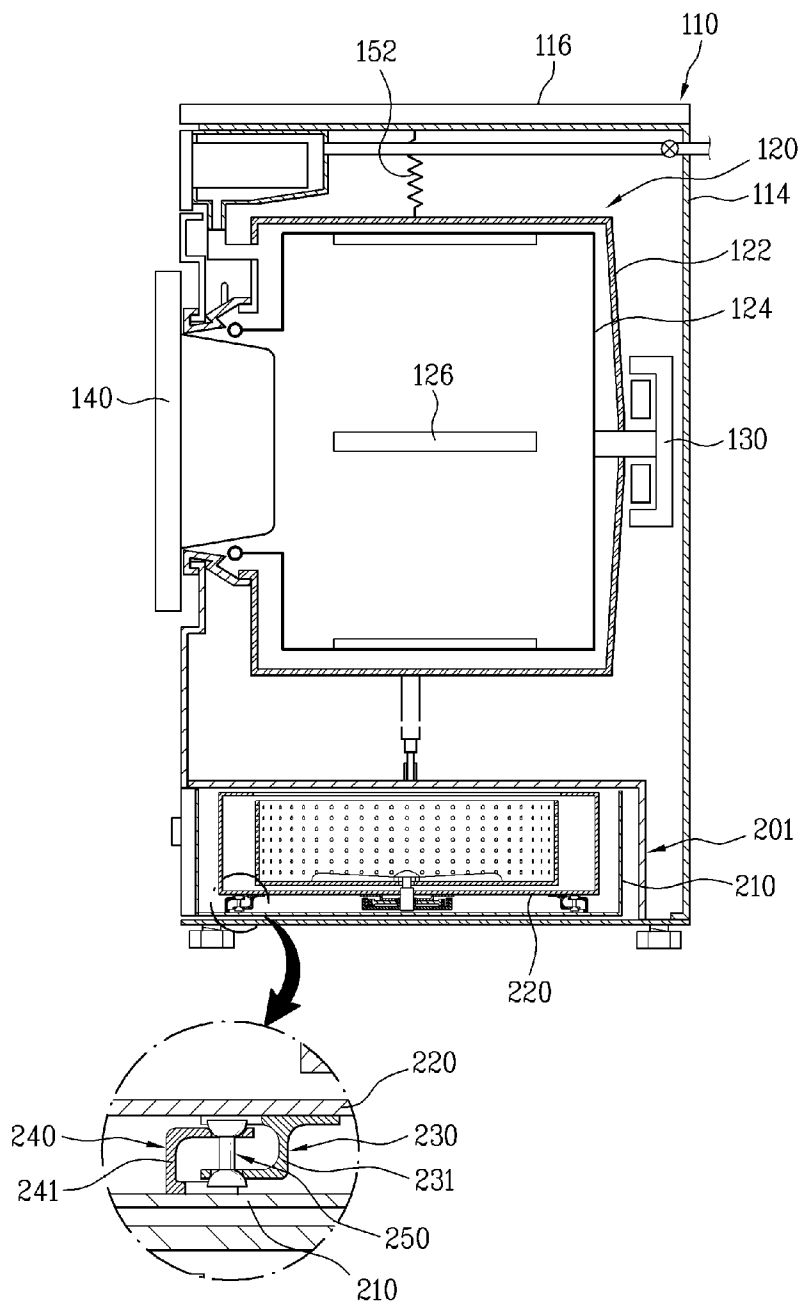
[Fig. 2]



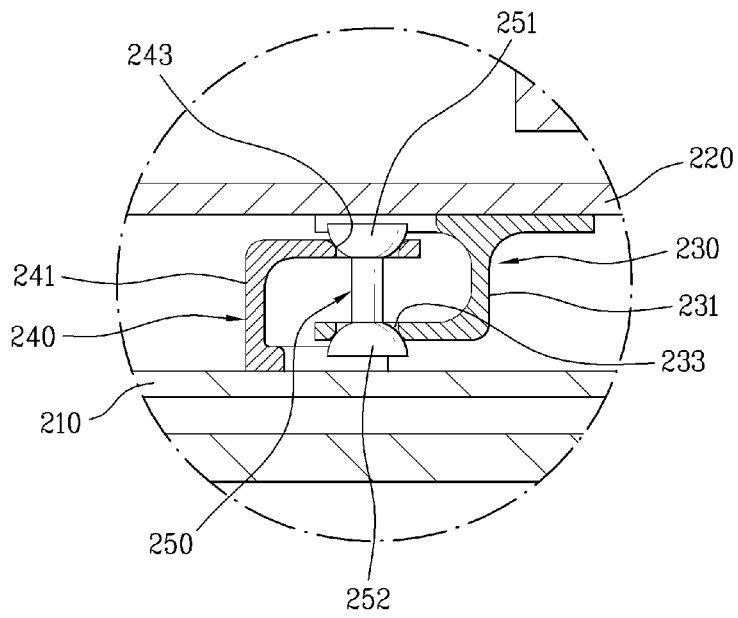
[Fig. 3]



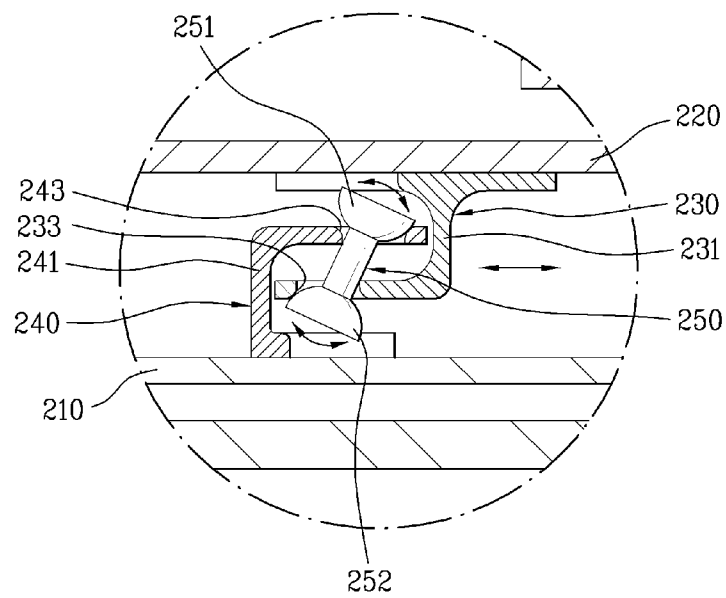
[Fig. 4]



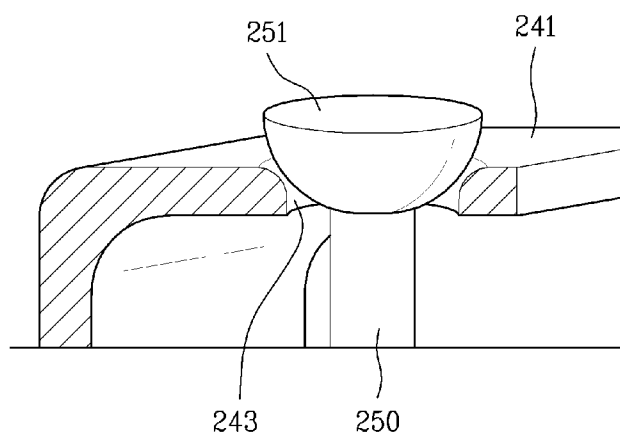
[Fig. 5]



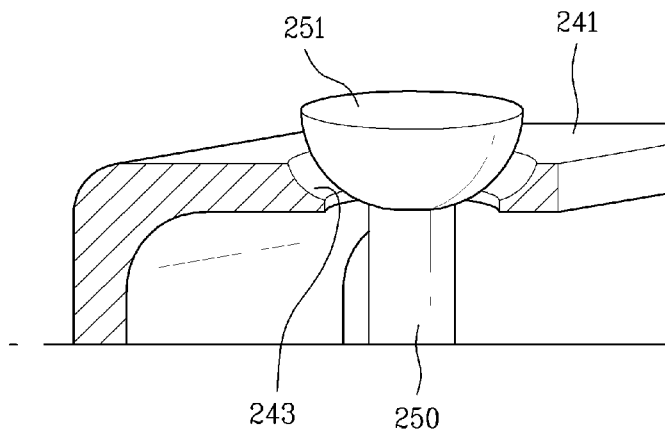
[Fig. 6]



[Fig. 7]



[Fig. 8]



[Fig. 9]

