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(54) **LAUNDRY TREATMENT DEVICE AND METHOD FOR CONTROLLING SAME**

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(57) **ABSTRACT**

The present invention relates to a laundry treatment device and a method for controlling the same, the laundry treatment device comprising: a first washing unit having a first tub; and a second washing unit that has a second tub and which operates independently of the first washing unit, wherein: the first washing unit comprises a heater for drying the laundry inside the first tub, a switch for tuning on/off the operation of the heater, a heater driving unit for controlling operating power supplied to the heater, and a control unit for controlling the switch such that the heater operates or stops operating, the control unit applying a control signal to the heater driving unit; when the first washing unit and the second washing unit operate simultaneously, the control unit applies a control signal following the simultaneous operation to the heater driving unit; and the heater driving unit controls operating power supplied to the heater such that power consumed by the heater decreases, in response to the control signal. The laundry treatment device, which has a plurality of washing units that perform washing independently of each other, is advantageous in that, when the plurality of washing units simultaneously conduct washing, the operation of the heater is controlled such that the amount of consumed power is adjusted, simultaneous washing can be conducted without stopping one of the plurality of washing units, the life of provided components can be increased, and any abrupt increase in the amount of consumed power can be prevented.

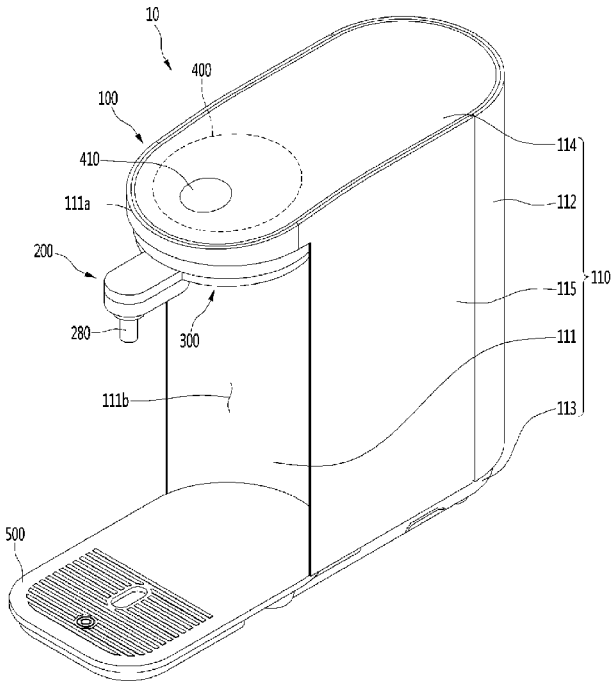

Fig. 1

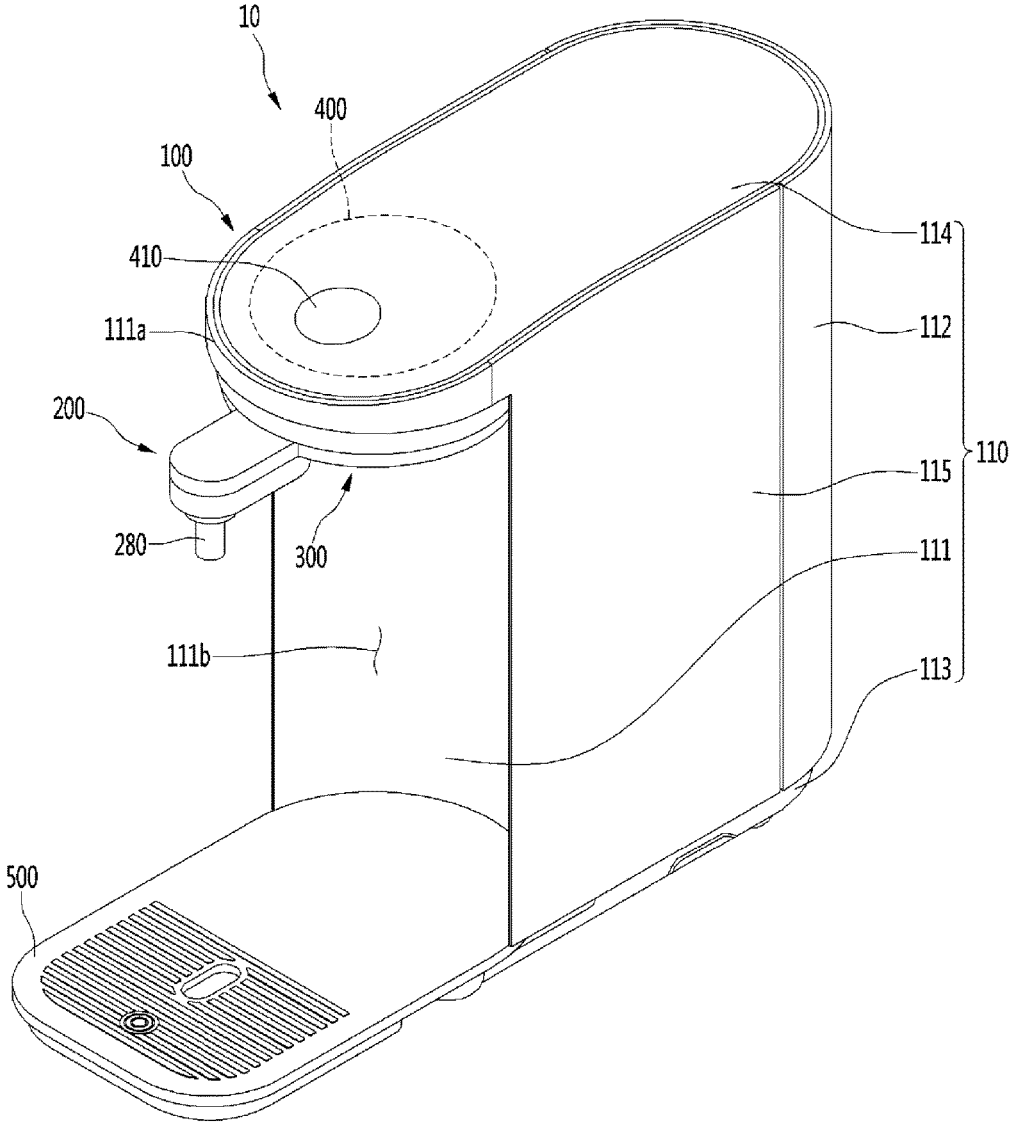

Fig. 2

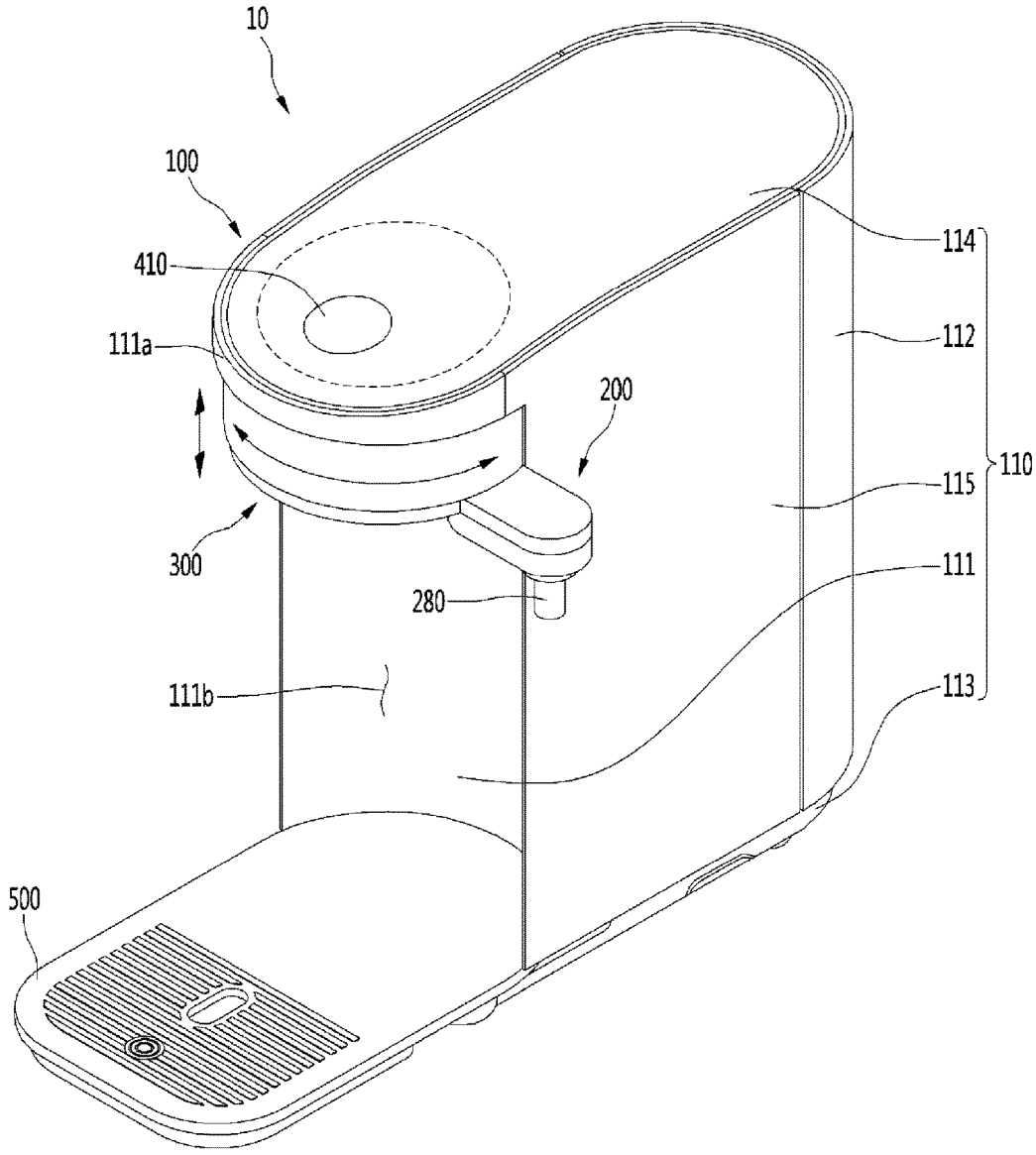

Fig. 3

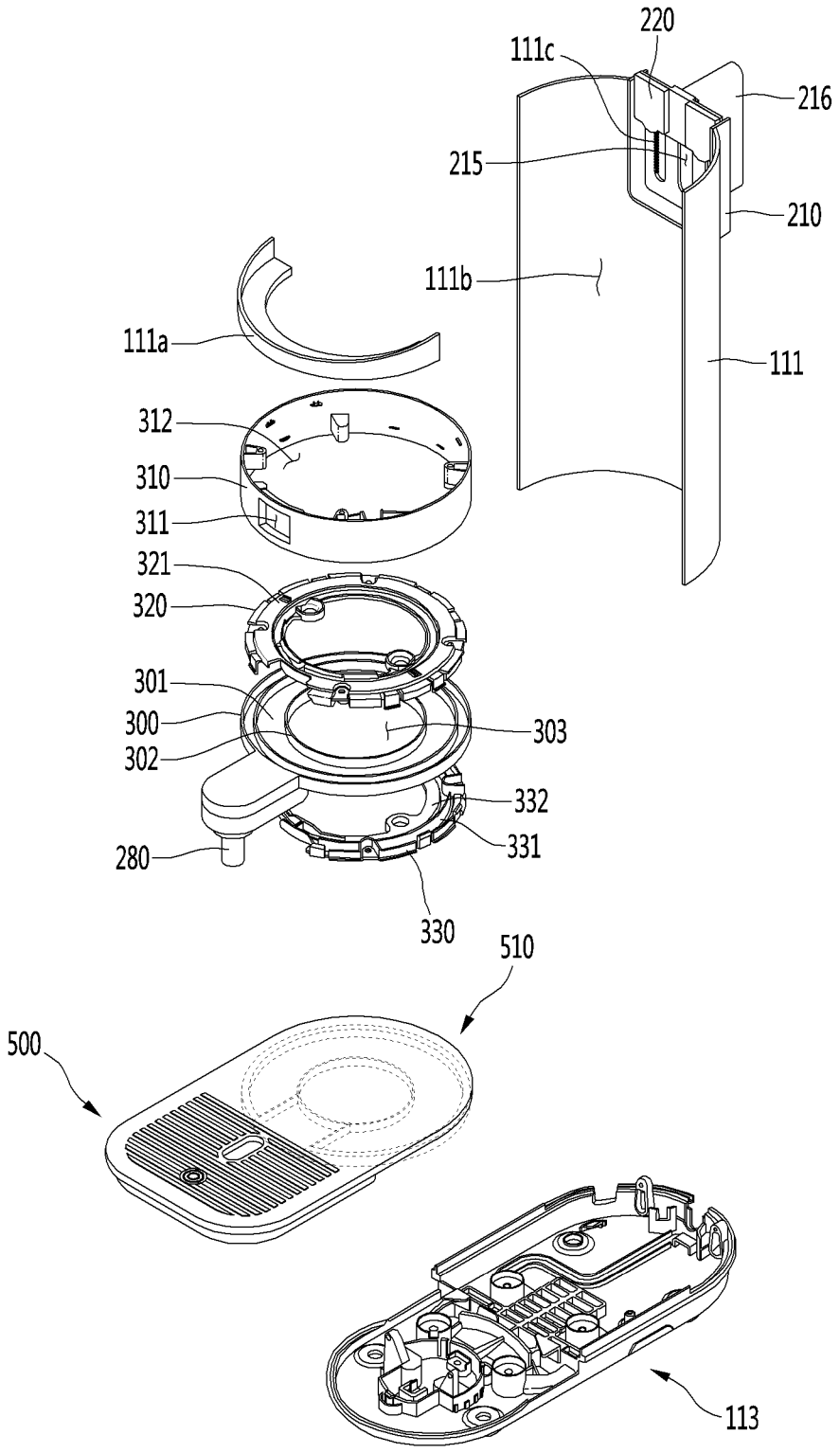
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Fig. 4

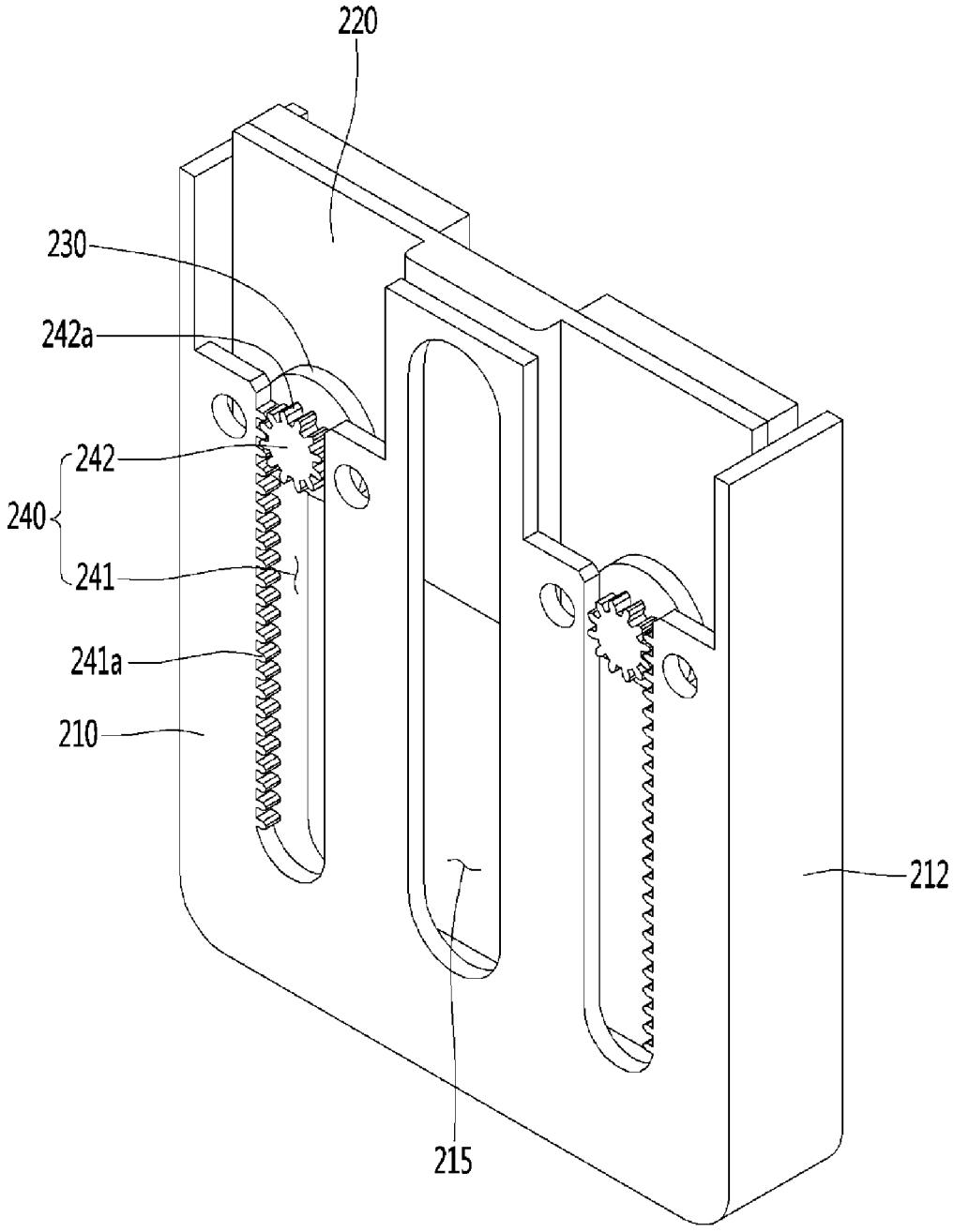


Fig. 5

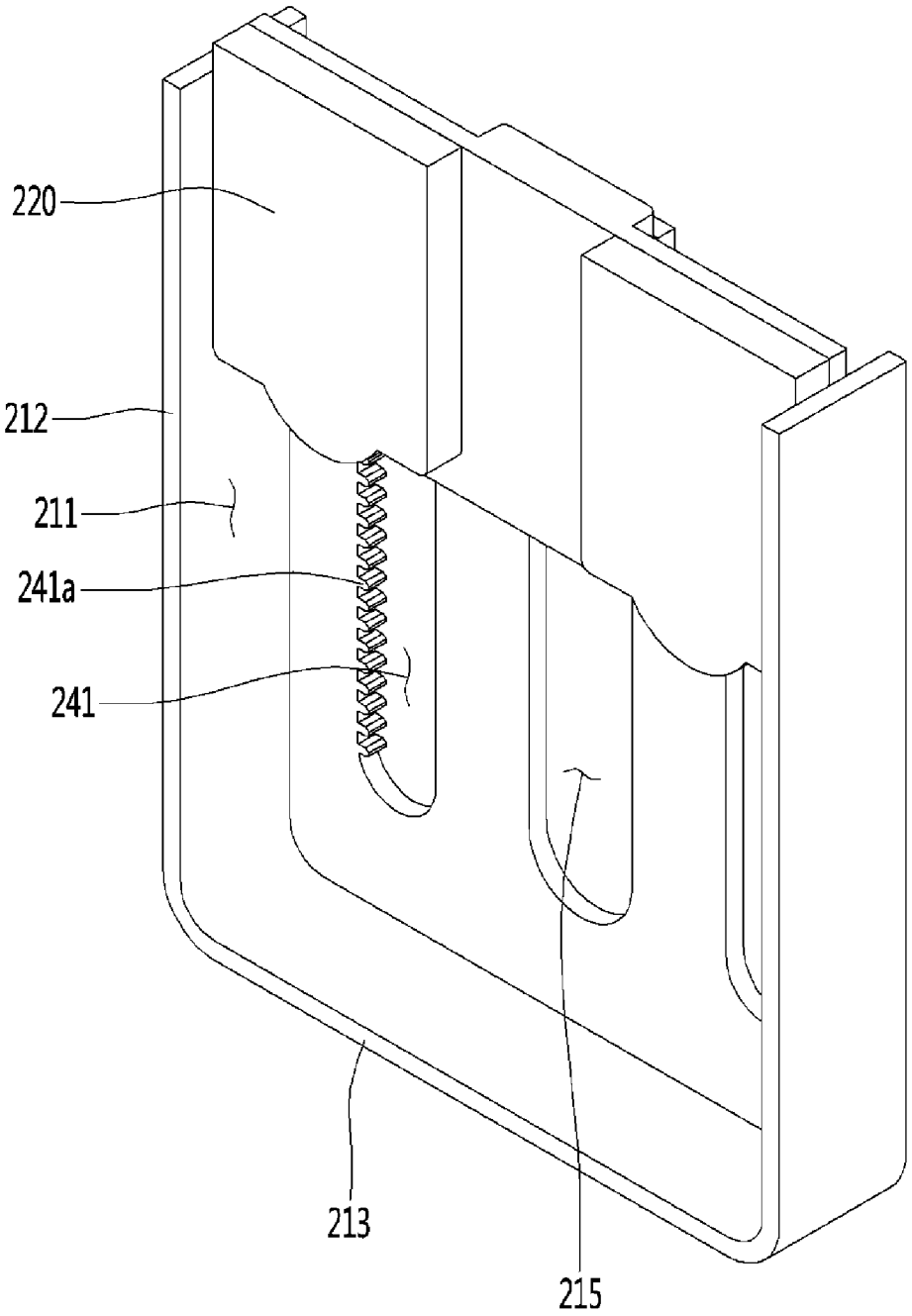


Fig. 6

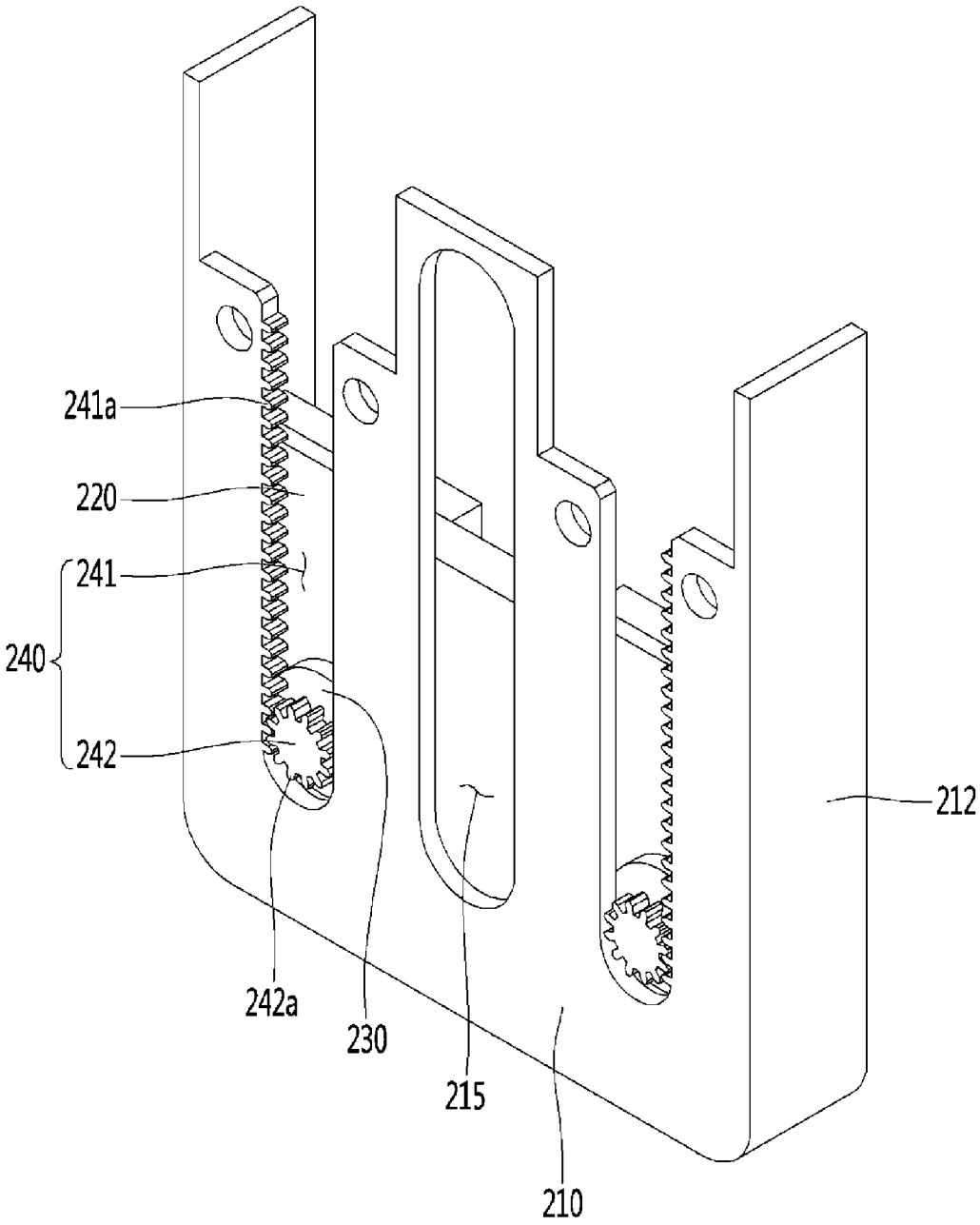


Fig. 7

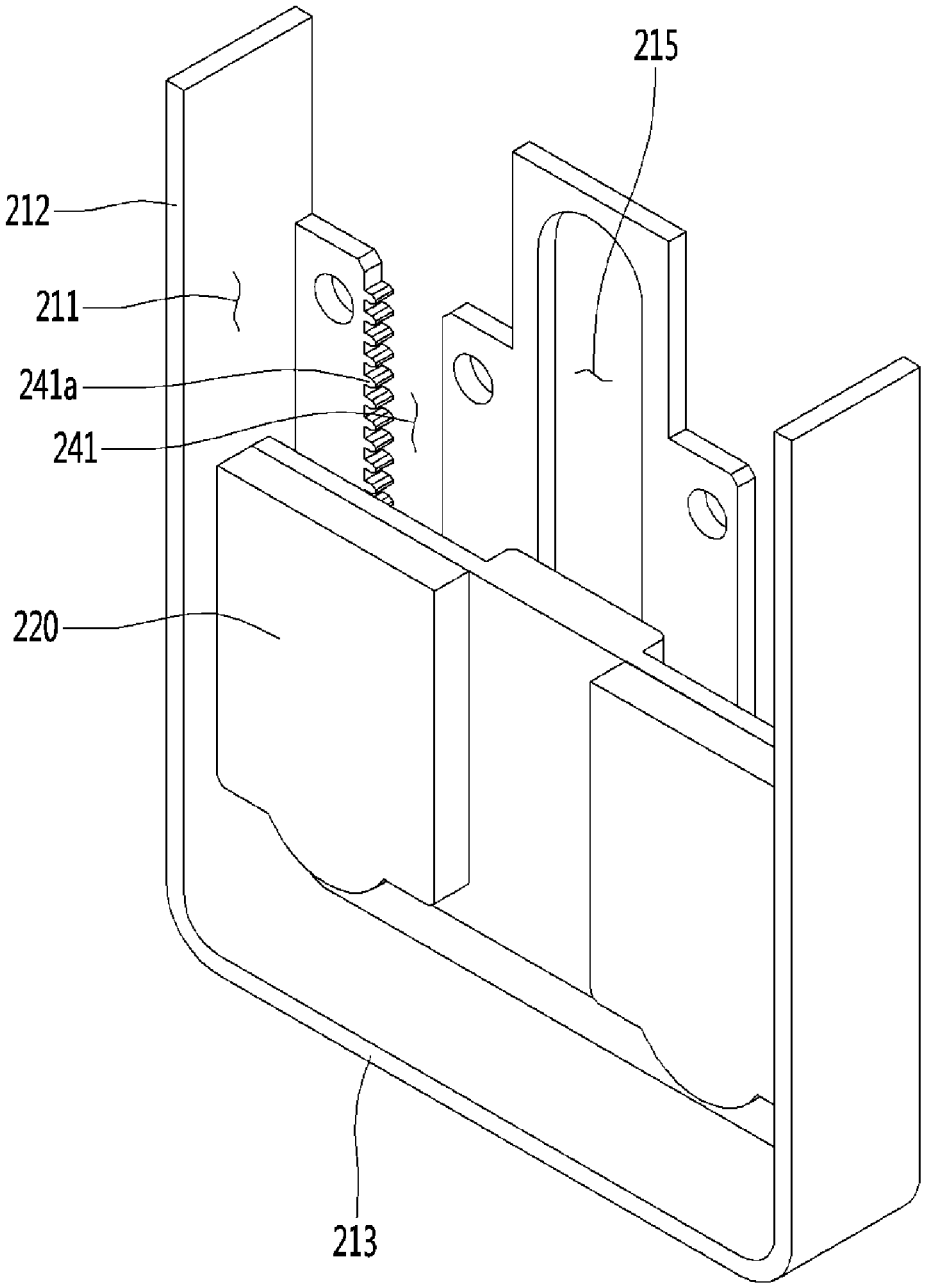


Fig. 8

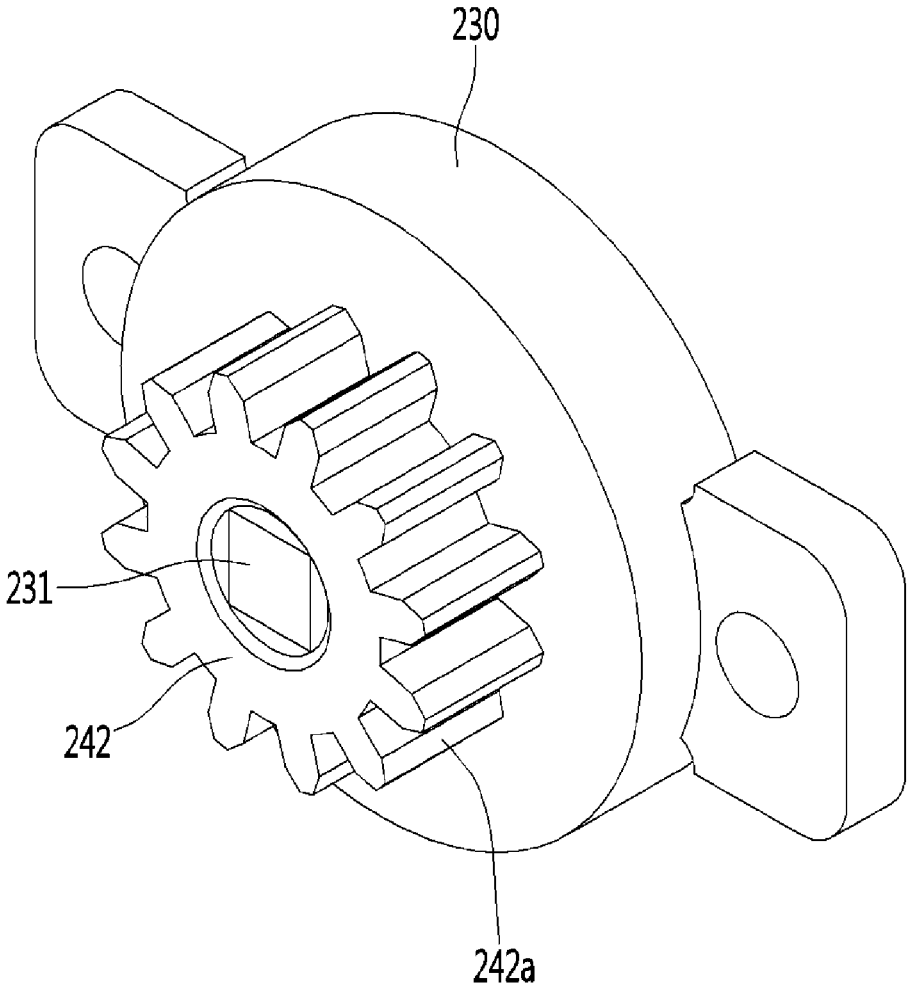


Fig. 9

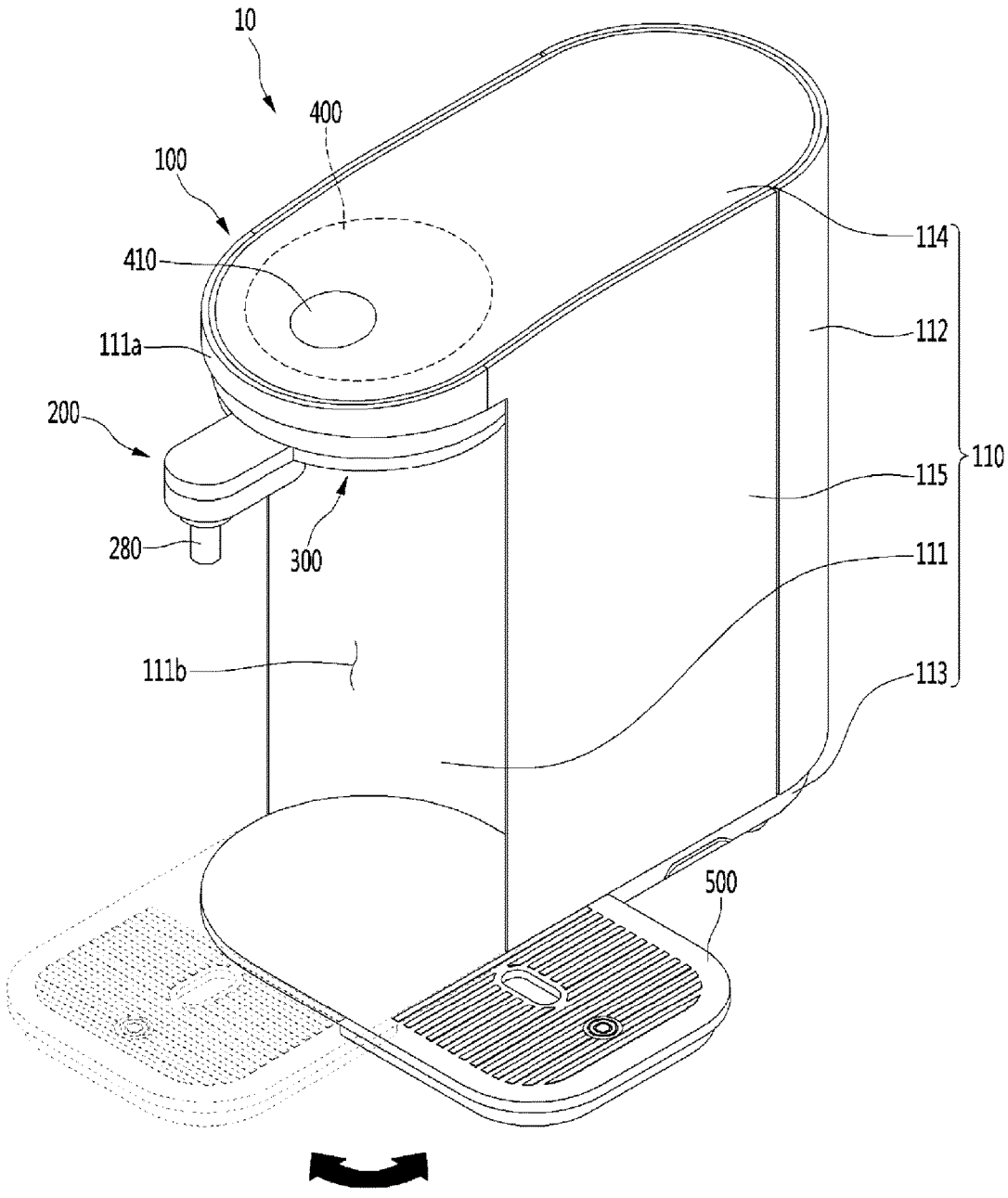
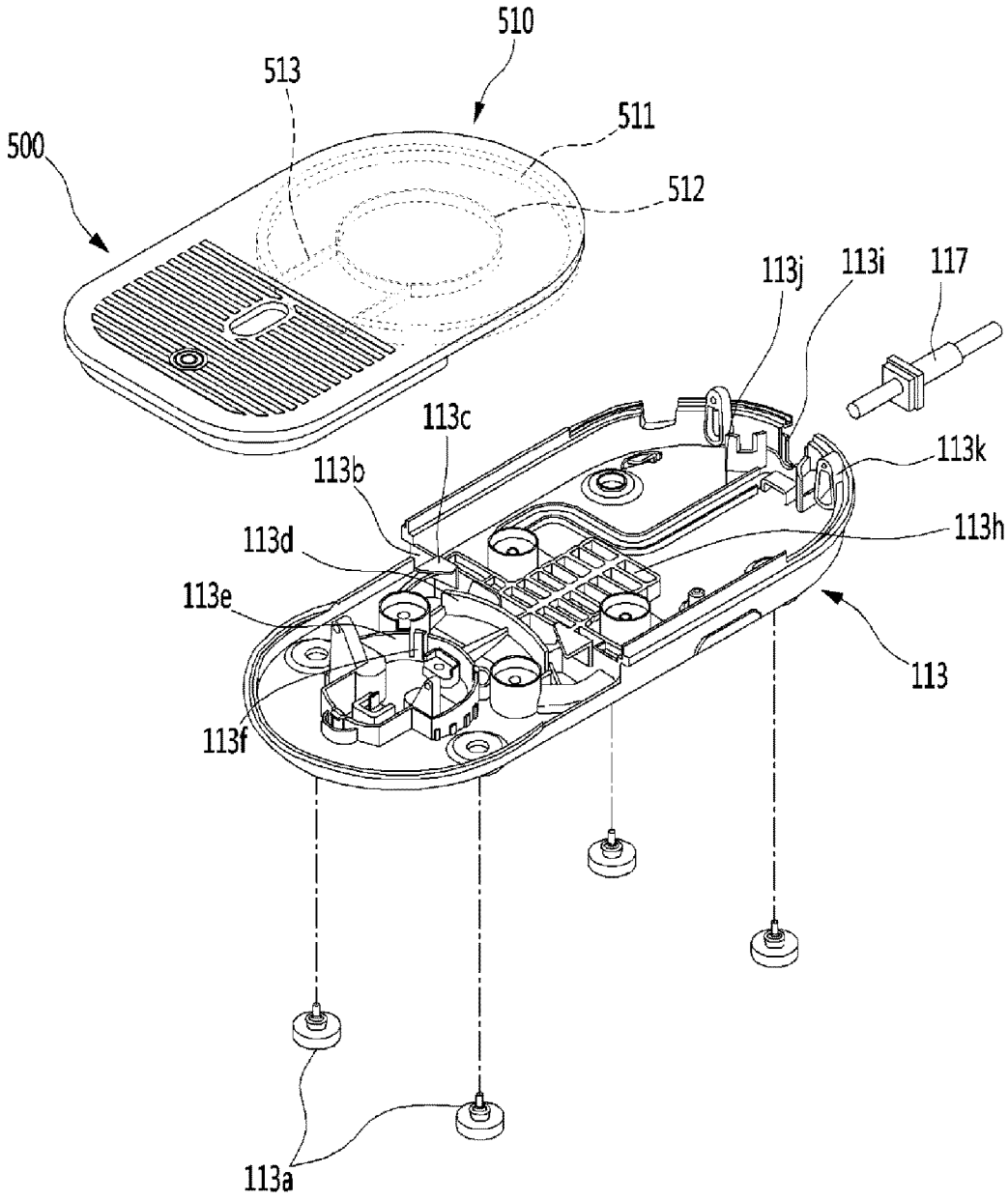


Fig. 10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LAUNDRY TREATMENT DEVICE AND METHOD FOR CONTROLLING SAME

TECHNICAL FIELD

[0001] The present invention relates to a laundry treatment device having a plurality of washing units, and more particularly, to a laundry treatment device for controlling the amount of power consumed by a plurality of washing units as washing is progressed simultaneously, and a method for controlling the same.

BACKGROUND ART

[0002] Generally, a laundry treatment device is an apparatus that processes laundry through various operations such as washing, spin-dry and/or drying.

[0003] The laundry treatment device is an apparatus that supplies water to immerse the laundry, and dissolves an appropriate amount of the detergent in the wash water to remove the impurities from the laundry.

[0004] Such a laundry treatment device includes a laundry treatment device that washes laundry such as clothing or bedding by using the emulsifying action of the detergent, the water current action caused by the rotation of the washing tub or the laundry blade, and a mechanical force applied by the laundry blade, a dryer that applies a hot air or a cold air to dry the laundry, and a refresher that removes the wrinkles of the clothes by applying steam. In addition, a washer-drier provides a combination of various functions.

[0005] A general laundry treatment device should be supplied with a minimum amount of wash water for performing washing. In the case where a washing tub having a large capacity is provided, there is a problem in that a large amount of wash water is required even when washing a small amount of laundry.

[0006] In response to this demand, a mini laundry treatment device for washing a small amount of laundry or a laundry treatment device for babies has been appeared. Further, there is a tendency to develop a laundry treatment device having a plurality of washing units having different capacities.

[0007] However, in the case of a mini laundry treatment device, it is required to purchase a separate laundry treatment device. In the case of a laundry treatment device having a plurality of washing units, when a plurality of washing units perform washing simultaneously, there is a problem in that instantaneous power consumption increases sharply as two laundry treatment devices consume power simultaneously.

[0008] Particularly, when the wash water is heated or when the laundry is dried simultaneously, the instantaneous power consumption increases sharply. Accordingly, there is a problem in that either one is stopped.

DISCLOSURE

Technical Problem

[0009] It is an object of the present invention to provide a laundry treatment device that can prevent a sudden increase in the amount of power consumption when a plurality of washing units performing washing independently perform washing simultaneously, and a method for controlling the same.

Technical Solution

[0010] In an aspect, there is provided a laundry treatment device including: a first washing unit having a first tub; and a second washing unit that has a second tub and which operates independently of the first washing unit, wherein the first washing unit includes: a heater for drying a laundry inside the first tub, a switch for turning on/off an operation of the heater, a heater driving unit for controlling operating power supplied to the heater, and a control unit for controlling the switch such that the heater operates or stops operating, the control unit applying a control signal to the heater driving unit; when the first washing unit and the second washing unit operate simultaneously, the control unit applies a control signal according to the simultaneous operation to the heater driving unit; and the heater driving unit controls operating power supplied to the heater such that power consumed by the heater decreases, in response to the control signal.

[0011] The heater driving unit performs a switching control of the operating power supplied to the heater, in response to the control signal.

[0012] The heater driving unit controls the operating power supplied to the heater through a PWM control, in response to the control signal.

[0013] The heater driving unit controls a duty for the operating power supplied to the heater, in response to the control signal.

[0014] The heater driving unit controls the operating power supplied to the heater so that power consumption of the heater is reduced by half.

[0015] The heater driving unit is connected between the switch and the heater, and the heater driving unit and the heater stop operation when the switch is turned off.

[0016] The control unit determines whether the first washing unit and the second washing unit operate simultaneously, in correspondence with intensity of measured vibration, water supply time, and power consumption amount.

[0017] The second washing unit includes: a second heater for drying a laundry inside the second tub; a second heater driving unit for controlling operating power of the second heater; and a second controller for controlling the second washing unit, wherein, when the first washing unit and the second washing unit operate simultaneously, the second controller applies a control signal according to the simultaneous operation to the second heater driving unit, wherein the second heater driving unit performs a switching control of an operating power supplied to the second heater, in response to the control signal.

[0018] The control unit applies the control signal to the heater driving unit to reduce power consumption of the heater when the heater and the second heater operate simultaneously, wherein the heater driving unit performs a switching control of the operating power supplied to the heater.

[0019] The control unit transmits data requesting reduction of power consumption to the second control unit when the heater and the second heater operate simultaneously, wherein the second control unit applies the control signal to the second heater driving unit in response to the data, wherein the second heater driving unit performs a switching control of the operating power supplied to the second heater.

[0020] In another aspect, there is provided a method for controlling a laundry treatment device including a first washing unit having a first tub, and a second washing unit that has a second tub and which is disposed below the first

washing unit and operates independently of the first washing unit, the method including: performing a specified operation by the first washing unit and the second washing unit, respectively; operating a heater of the first washing unit, when heating wash water or performing drying; applying a control signal according to simultaneous operation; and performing a switching control of operating power supplied to the heater so that power consumption of the heater decreases in response to the control signal.

[0021] The method further includes, during operation of the first washing unit, operating a second heater of the second washing unit; and performing a switching control of the second heater so that power consumption of the second heater decreases.

[0022] The method further includes, during operation of the heater, operating a second heater of the second washing unit; and performing a switching control of one of the heater and the second heater.

[0023] The method further includes, during operation of the heater, operating a second heater of the second washing unit; and performing a switching control of both the heater and the second heater.

[0024] The method, after applying the control signal, further includes adding an operating time for one of a case where a temperature of wash water does not reach a target temperature and a case where drying is not completed within a set time.

Advantageous Effects

[0025] According to the laundry treatment device and the method for controlling the same of the present invention configured as described above, the laundry treatment device, which has a plurality of washing units that perform washing independently of each other, is advantageous in that, when the plurality of washing units simultaneously conduct washing, the operation of the heater is controlled such that the amount of consumed power is adjusted, simultaneous washing can be conducted without stopping one of the plurality of washing units, the life of provided components can be increased, and any abrupt increase in the amount of consumed power can be prevented.

DESCRIPTION OF DRAWINGS

[0026] FIG. **1** is a perspective view illustrating a laundry treatment device according to an embodiment of the present invention.

[0027] FIG. **2** is a perspective view illustrating a shape of a laundry treatment device according to another embodiment of the present invention.

[0028] FIG. **3** is a block diagram illustrating a control configuration of a laundry treatment device according to an embodiment of the present invention.

[0029] FIG. **4** is a diagram for explaining an operation signal according to a heater control of a laundry treatment device according to an embodiment of the present invention.

[0030] FIG. **5** is a diagram for describing a heater control of a laundry treatment device according to an embodiment of the present invention.

[0031] FIG. **6** is a diagram for explaining the amount of power consumption of a laundry treatment device according to an embodiment of the present invention.

[0032] FIG. **7** is a flowchart illustrating a method of controlling a laundry treatment device according to an exemplary embodiment of the present invention.

MODE FOR INVENTION

[0033] Hereinafter, preferred embodiments of the present invention will be described with standard to the accompanying drawings. In describing the present embodiment, the same designations and the same standard numerals are used for the same components, and further description thereof will be omitted.

[0034] FIG. **1** is a perspective view illustrating a laundry treatment device according to an embodiment of the present invention.

[0035] Referring to FIG. **1**, a laundry treatment device **100** includes a first washing unit **140** and a second washing unit **150**.

[0036] The first washing unit **140** and the second washing unit **150** are disposed vertically. The first washing unit **140** is disposed above the second washing unit **150**, and the first washing unit **140** and the second washing unit **150** can be coupled to and separated from each other.

[0037] The first washing unit **140** is in the form of a front load laundry treatment device, and the second washing unit **150** is in the form of a top load laundry treatment device.

[0038] The second washing unit **150** has a structure in which it is slidably opened and closed in the front and rear direction like a drawer. When the second washing unit **150** is pulled to the front, the upper end of the second washing unit **150** is exposed. A second input unit **154**, a second output unit **152**, and a second door **157** are disposed in the upper end of the second washing unit **150**.

[0039] The first washing unit **140** may include a first input unit **144**, a first output unit **142** and a first door **147**. The second washing unit **150** may include the second input unit **154**, the second output unit **152**, and the second door **157**.

[0040] The first washing unit **140** and the second washing unit **150** are provided with separate input units **144** and **154** and output units **142** and **152**, so that a command can be input independently of each other and an operation corresponding to the inputted command can be performed.

[0041] The first washing unit **140** and the second washing unit **150** may respectively include a water storage tank for containing water, a tub **148**, **158** which accommodates laundry and is rotatably installed in the water storage tank, a motor for rotating the tub, a water supply device for supplying water into the water storage tank or the tub, and a draining device for draining water in the water storage tank, and perform washing independently of each other.

[0042] It is shown in the drawing that the capacity of the tub of the first washing unit **140** is larger than the capacity of the tub of the second washing unit **150**. However, the capacity of the tub of the first washing unit **140** may be equal to or smaller than the capacity of the tub of the second washing unit **150**. The tub capacity of each of the washing units **140** and **150** is not limited.

[0043] The first washing unit **140** and the second washing unit **150** may be a washer-drier for simultaneously providing a washing function and a drying function.

[0044] FIG. **2** is a perspective view illustrating a shape of a laundry treatment device according to another embodiment of the present invention.

[0045] As shown in FIG. **2**(*a*), in the laundry treatment device, both the first washing unit **140***b* and the second washing unit **150***b* may be in the form of a front load laundry treatment device.

[0046] In addition, in the laundry treatment device, the second washing unit **150***b* may be disposed above the first washing unit **140***a*.

[0047] As shown in FIG. **2**(*b*), in the laundry treatment device, both the first washing unit **140***c* and the second washing unit **150***c* may be in the form of a top load laundry treatment device.

[0048] In addition, in the laundry treatment device, the first washing unit **140** and the second washing unit **150** may not be disposed vertically, but may be disposed laterally.

[0049] Hereinafter, the laundry treatment device will be illustrated that, as shown in FIG. **1**, the first washing unit **140** and the second washing unit **150** are vertically disposed, but the disposition and form are not limited.

[0050] FIG. **3** is a block diagram illustrating a control configuration of a laundry treatment device according to an embodiment of the present invention.

[0051] As shown in FIG. **3**, the first washing unit **140** includes an input unit **144**, an output unit **142**, a tub (first tub) **148**, a motor **131**, a motor driving unit **130**, a heater **171**, a heater driving unit **170**, a detection unit **160**, a data unit **120**, and a control unit **110** for controlling the overall operation of the first washing unit **140**.

[0052] In addition, the second washing unit **150** includes a second tub (not shown), and includes a second motor (not shown), a second motor driving unit (not shown), a second data unit (not shown), a second detection unit (not shown), a second input unit **154**, a second output unit **152**, a second heater driving unit (not shown), a second heater (not shown), and a second control unit, and performs washing independently of the first washing unit **140**. Hereinafter, the present invention will be described by taking the first washing unit **140** as an example, but the operation of each unit can be applied to the second washing unit **150** as well, and a description thereof will be omitted below.

[0053] The input unit **144** includes input means such as at least one button, a switch, and a touch pad, and inputs operation settings such as a power input, a washing course, a wash water temperature, and the like. In some cases, the input unit may include a separate key for the setting of simultaneous operation.

[0054] The output unit **142** includes a display unit for displaying information on the operation setting inputted by the input unit **144** and outputting the operation state of the laundry treatment device, and includes a speaker, a buzzer, or the like for outputting a certain sound effect or a warning sound.

[0055] The data unit **120** stores control data for controlling the operation of the laundry treatment device, input operation setting data, data on the washing course, and standard data for determining whether an error has occurred in the laundry treatment device. In addition, the data unit **120** stores data detected or measured during operation of the laundry treatment device.

[0056] The detection unit **160** includes a plurality of sensors, and each sensor measures the voltage or current of the laundry treatment device, and measures the temperature or the water pressure to input to the control unit **110**. For example, the detection unit **160** detects the temperature and water level of the wash water in the tub through the plurality of sensors, and detects the temperature of the heater **171** and the voltage applied to the heater to input to the control unit **110**.

[0057] The motor driving unit **130** controls the operating power supplied to the motor **131** so that the motor **131** connected to the tub **148** rotates, according to a control command of the controller **110**. The motor driving unit **130** controls the rotation direction, the rotation angle, and the rotation speed of the motor **131** according to the setting.

[0058] The motor driving unit **130** controls the motor **131** to operate differently as the set washing course, or washing, rinsing, spin-dry, and drying progress. At this time, the motor driving unit **130** controls the rotation direction, the rotation angle, and the rotation speed of the motor **131** differently so that the wash water in the tub **148** forms a certain form of water current.

[0059] The heater driving unit **170** controls the operating power applied to the heater **171** in response to a control command of the control unit **110** so that the heater **171** operates or stops operating. The heater driving unit **170** performs a general control or a switching control of the heater **171** in response to a control signal applied from the control unit **110**. The heater driving unit **170** controls the heater **171** to operate continuously for a certain time during the general control, and controls the heater to operate for a certain time while being turned on and off repeatedly at certain time intervals during the switching control.

[0060] At this time, the heater driving unit **170** is connected to a switch (not shown) for turning the heater **171** on and off. The heater driving unit **170** has one end connected to the switch and the other end connected to the heater.

[0061] The switch allows the heater driving unit **170** and the heater **171** to operate or stop operating according to an operation signal applied from the control unit **110**. During the operation of the heater, the switch allows to apply operating power to the heater driving unit **170**, and the heater driving unit **170** performs a general control or switching control for the heater **171**. Meanwhile, in response to the operation signal, the switch blocks power supply to the heater driving unit **170** when the heater is turned off, thereby stopping the operation of heater **171** as well as the operation of heater driving unit **170**.

[0062] At this time, the switch and the heater driving unit **170** operate according to the control signal of the control unit **110**, and the operation or stop of the heater is controlled by the switch. The heater driving unit **170** performs a general control such that the heater **171** continuously operates in a state in which the heater operation is turned on by the switch, or performs switching control so as to periodically turn the heater **171** on and off. At this time, the heater driving unit **170** controls duty through a PWM control in response to the control signal.

[0063] At least one heater **171** may be provided to heat the wash water or generate heat during the drying operation. During the drying operation, the heater **171** generates heat, and the generated heat is circulated in the tub by a drying fan (not shown) to dry the laundry.

[0064] The control unit **110** applies a control command to the motor driving unit **130** according to the operation setting inputted from the input unit **144** so that the washing is performed by the rotation of the tub **148**, and applies a control command to the switch or heater driving unit **170** to operate the heater **171** so that the wash water is heated or dried.

[0065] The control unit **110** controls a series of washing processes for washing, rinsing, spin-dry, and drying.

[0066] The control unit **110** stores the input operation setting in the data unit **120** and outputs the operation setting or operation state through the output unit **142**. In some cases, the controller **110** may communicate with the second washing unit **150** through a communication unit (not shown).

[0067] The control unit **110** determines whether the first washing unit and the second washing unit operate simultaneously and applies a control signal for the motor **131** or the heater **171** to the motor driving unit **130** or the heater driving unit **170** respectively.

[0068] At this time, the controller **110** can determine whether the first washing unit **140** and the second washing unit **150** operate simultaneously according to the intensity of the vibration measured by the detection unit **160**, and can also determine whether the operation is simultaneously performed when the water supply time is increased beyond a certain time or more. In addition, the controller **110** may receive information on the amount of power consumption, and may determine that the first and second washing units operate when the power consumption is increased beyond a certain value. Particularly, when the motor or the heater operates simultaneously, the amount of power consumption increases sharply, so that the control unit **110** can determine the simultaneous operation through the change amount in the amount of power consumption.

[0069] In addition, when the communication unit is provided, the control unit **110** can determine the simultaneous operation through mutual communication with the second washing unit. At this time, the control unit may transmit data requesting the power saving to the second control unit. In response to this, the second control unit may control the second heater to reduce the power consumption. The control unit **110** can also reduce the power consumption of the heater **171** by applying a control signal to the heater driving unit **170** according to a request for reducing the power consumption of the second washing unit.

[0070] When the heater **171** starts to operate or performs an operation, e.g., when heating the washing water or performing drying operation, if it is determined that the first washing unit and the second washing unit operate simultaneously, the control unit **110** applies a control signal to the heater driving unit **170** so as to perform the switching control for the heater **171**.

[0071] At this time, when the second washing unit starts to operate while the heater **171** is operating under the normal control, the control unit **110** applies a control signal to the heater driving unit **170** so as to perform the switching control for the heater **171**.

[0072] When heating the washing water or performing drying operation, the control unit **110** applies an operation signal to the switch so that the heater driving unit **170** and the heater **171** start the operation, and applies a control signal to the heater driving unit **170** to control the heater **171**.

[0073] The controller **110** applies a PWM control signal to the heater driving unit **170** during the switching control of the heater, so that the heater driving unit **170** controls the heater **171** to be repeatedly turned on and off at certain time intervals. The control unit **110** varies the PWM control signal applied to the heater driving unit **170** to change an on-off cycle of the heater or the magnitude of the voltage applied to the heater so that the power consumed by the heater **171** can be controlled. Accordingly, the heater **171** is turned on and off within the set time, so that the power consumption is reduced in comparison with the case where the heater **171** is continuously operated. Accordingly, the amount of power consumption of the first washing unit is reduced.

[0074] At this time, the control unit **110** switches the heater so as to add the operation time, i.e., the heating time or the drying time when the temperature of the wash water does not reach the target temperature or when the drying is not completed within the set time, to perform an additional operation.

[0075] Meanwhile, when the amount of power consumption is not decreased even when the heater **171** is switching-controlled, the controller **110** may transmit a power reduction request to the second washing unit, and accordingly, the second heater can also be switching-controlled.

[0076] FIG. **4** is a diagram for explaining an operation signal according to a heater control of a laundry treatment device according to an embodiment of the present invention.

[0077] As shown in FIG. **4**, one end of the heater driving unit **170** is connected to the switch **172** and the other end is connected to the heater **171**.

[0078] The control unit **110** controls the switch **172** by applying an ON/OFF operation signal SN**1** to the switch **172** according to the operation of the heater. When the switch **172** is turned on by the control unit **110**, the heater is operated by supplying the operating power to the heater driving unit **170** and the heater **171**. When the switch **172** is turned off, the power of the heater driving unit **170** and the heater **171** is blocked and the heater is stopped.

[0079] The control unit **110** applies an operation signal to turn on the switch **172** so as to operate the heater when performing the heating of the washing water or the drying operation through the heater, and applies an OFF signal to the switch so that the switch **172** is turned off when the heater operation is stopped.

[0080] In addition, the controller **110** applies a control signal SN**2** for duty control to the heater driving unit **170** during a heater operation (switch ON). The controller **110** applies a PWM control signal to the heater driving unit **170** to control the duty for the heater.

[0081] The heater driving unit **170** performs switching control so that the heater **171** is turned on and off repeatedly at certain time intervals in response to the control signal SN**2** of the control unit. Thus, the heater operates according to the duty set by the control unit.

[0082] The control unit **110** may control the switch **172** to be turned on and off at certain time intervals, but performs the switching control of the heater **171** through the heater driving unit **170** as the switch **172** may be damaged.

[0083] The control unit **110** performs switching-control for the heater, when the first and second washing units operate simultaneously, or when the amount of power consumption increases beyond a certain value or more, so that the power consumption is not increased beyond a certain value.

[0084] The second washing unit **150** may also control the amount of power consumption by switching the second heater when the first washing unit and the second washing unit operate simultaneously or when the power consumption increases.

[0085] At this time, the first washing unit and the second washing unit can perform the switching control for only one of the heaters and. In some cases, when the power consump-

tion is sharply increased, the power consumption can be reduced by switching-controlling both the heaters of the first washing unit and the second washing unit.

[0086] FIG. **5** is a diagram for describing a heater control of a laundry treatment device according to an embodiment of the present invention. FIG. **5**A is an operation graph for a case where the heater is general-controlled, and FIG. **5**B is a graph for a case where the heater is switching-controlled.

[0087] As shown in FIG. **5**A, when the heater **171** is general-controlled, the heater driving unit **170** allows the heater **171** to operate continuously from a first time T**1** to a second time T**2** for a set time (S**1**). Accordingly, the heater maintains the turned-on state from the first time to the second time to generate heat.

[0088] Meanwhile, As shown in FIG. **5**B, the heater driving unit **170** operates the heater **171** from the first time T**1** to the second time T**2** during the switching control for the heater **171**, while the heater is turned on and off repeatedly at set time interval TD**1** (S**2**). At this time, the heater driving unit **170** varies the time interval TD**1** according to the turned-on/off of the heater depending on the control signal applied from the control unit **110**. At this time, when the time for which the heater **171** is maintained in the turned-on state is increased or the voltage applied to the heater is increased, the power consumption is also increased proportionally.

[0089] FIG. **6** is a diagram for explaining the amount of power consumption of a laundry treatment device according to an embodiment of the present invention.

[0090] As shown in FIG. **6**, the control unit **110** controls the power consumption by controlling the heater **171** to perform general control or switching control.

[0091] As shown in FIG. **6**A, when the heater **171** is general-controlled, the heater operates continuously for a set time (T**11** to T**12**), so that the power of a first power amount PW**1** per hour is consumed (S**11**).

[0092] Meanwhile, as shown in FIG. **6**B, when the heater **171** is switching-controlled, the heater **171** consumes power with a second power amount PW**2** lower than the first power amount PW**1** (S**12**).

[0093] At this time, as shown in FIG. **6**B, when the heater **171** is switching-controlled, the control unit **110** determines whether the temperature of the wash water does not reach a target temperature or whether the drying is completed, so that the operation time for heating wash water or for drying can be added.

[0094] When the operation time is added up to a third time T**13** as shown in FIG. **6**C, the power consumption is increased by the time (T**12**-T**13**) added to the second power amount PW**2** (S**13**). At this time, since the total power consumption is increased but the instantaneous power consumption is not increased, the increase of the power consumption can be prevented while maintaining the satisfaction for the degree of wash water heating or drying.

[0095] FIG. **7** is a flowchart illustrating a method of controlling a laundry treatment device according to an exemplary embodiment of the present invention.

[0096] As shown in FIG. **7**, when the first washing unit **140** starts to operate (S**310**), and when the heater operation is required (S**320**), e.g., when performing the heating of washing water or the drying operation, the controller **110** applies a control signal for heater operation.

[0097] The control unit **110** applies an operation signal to the switch **172** to supply the operating power to the heater driving unit **170** and the heater **171**, and applies a control signal to the heater driving unit **170**. Accordingly, the heater driving unit **170** supplies the operating power to the heater **171** so that the heater **171** operates.

[0098] At this time, the controller **110** determines whether the first washing unit and the second washing unit operate simultaneously (S**330**). Particularly, the controller **110** determines whether the heaters of the first and second washing units operate simultaneously.

[0099] When the controller **110** can communicate with the second washing unit, the control unit **110** can determine the simultaneous operation through data transmission/reception with the second washing unit. In addition, the simultaneous operation can be determined according to the water supply time during washing, the simultaneous operation setting of the input unit, and the intensity of vibration measured through the detection unit. In addition, the controller **110** can determine whether the first and second washing units operate simultaneously based on the amount of power consumed by the first and second washing units.

[0100] The control unit **110** applies a control signal according to the general control to the heater driving unit **170** so that the heater **171** is general-controlled when the operation is not simultaneously performed (S**340**). Accordingly, the heater driving unit **170** allows the heater **171** to operate continuously for a set time.

[0101] Meanwhile, when it is determined that the operation is simultaneously performed, the controller **110** applies a control signal according to the switching control to the heater driving unit **170** (S**350**). The heater driving unit **170** performs the switching control so that the heater **171** is turned on and off repeatedly at certain time intervals in response to the PWM control signal of the control unit **110**. Accordingly, the heater **171** is turned on and off repeatedly during the set time, and thus, the power consumed by the heater decreases.

[0102] When the set time is elapsed, the controller **110** determines whether additional operation of the heater **171** is required (S**360**). For example, when the temperature of the wash water does not reach the target temperature, or when drying is not completed, the controller **110** determines that additional operation is required.

[0103] The controller **110** adds an operation time when additional operation is required, and the heater driving unit **170** performs a switching control for the heater **171** during an additional operation time.

[0104] When the additional operation is not required, the control unit **110** applies an off-signal to the switch **172** to enable the heater **171** to stop operating.

[0105] Therefore, the laundry treatment device having a plurality of washing units of the present invention performs the switching control so that the heater consuming a large amount of power is not continuously operated but turned on and off at regular time intervals, thereby controlling the power consumption not to be significantly increased even when the plurality of washing units operate simultaneously.

[0106] Although the exemplary embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims. Accordingly, the scope of the present invention is not construed as being limited to the described embodiments but is defined by the appended claims as well as equivalents thereto.

1. A laundry treatment device comprising:
a first washing unit having a first tub; and
a second washing unit that has a second tub and which operates independently of the first washing unit,
wherein the first washing unit comprises:
a heater for drying a laundry inside the first tub,
a switch for turning on/off an operation of the heater,
a heater driving unit for controlling operating power supplied to the heater, and
a control unit for controlling the switch such that the heater operates or stops operating, the control unit applying a control signal to the heater driving unit;
when the first washing unit and the second washing unit operate simultaneously, the control unit applies a control signal according to the simultaneous operation to the heater driving unit; and
the heater driving unit controls operating power supplied to the heater such that power consumed by the heater decreases, in response to the control signal.

2. The laundry treatment device of claim 1, wherein the heater driving unit performs a switching control of the operating power supplied to the heater, in response to the control signal.

3. The laundry treatment device of claim 1, wherein the heater driving unit controls the operating power supplied to the heater through a PWM control, in response to the control signal.

4. The laundry treatment device of claim 1, wherein the heater driving unit controls a duty for the operating power supplied to the heater, in response to the control signal.

5. The laundry treatment device of claim 1, wherein the heater driving unit controls the operating power supplied to the heater so that power consumption of the heater is reduced by half.

6. The laundry treatment device of claim 1, wherein the heater driving unit is connected between the switch and the heater,
wherein the heater driving unit and the heater stop operation when the switch is turned off.

7. The laundry treatment device of claim 1, wherein the control unit determines whether the first washing unit and the second washing unit operate simultaneously, in correspondence with intensity of measured vibration, water supply time, and power consumption amount.

8. The laundry treatment device of claim 1, wherein the second washing unit comprises:
a second heater for drying a laundry inside the second tub;
a second heater driving unit for controlling operating power of the second heater; and
a second controller for controlling the second washing unit,
wherein, when the first washing unit and the second washing unit operate simultaneously, the second controller applies a control signal according to the simultaneous operation to the second heater driving unit,
wherein the second heater driving unit performs a switching control of an operating power supplied to the second heater, in response to the control signal.

9. The laundry treatment device of claim 8, wherein the control unit applies the control signal to the heater driving unit to reduce power consumption of the heater when the heater and the second heater operate simultaneously,
wherein the heater driving unit performs a switching control of the operating power supplied to the heater.

10. The laundry treatment device of claim 8, wherein the control unit transmits data requesting reduction of power consumption to the second control unit when the heater and the second heater operate simultaneously,
wherein the second control unit applies the control signal to the second heater driving unit in response to the data,
wherein the second heater driving unit performs a switching control of the operating power supplied to the second heater.

11. A method for controlling a laundry treatment device comprising a first washing unit having a first tub, and a second washing unit that has a second tub and which is disposed below the first washing unit and operates independently of the first washing unit, the method comprising:
performing a specified operation by the first washing unit and the second washing unit, respectively;
operating a heater of the first washing unit, when heating wash water or performing drying;
applying a control signal according to simultaneous operation; and
performing a switching control of operating power supplied to the heater so that power consumption of the heater decreases in response to the control signal.

12. The method of claim 11, further comprising:
during operation of the first washing unit,
operating a second heater of the second washing unit; and
performing a switching control of the second heater so that power consumption of the second heater decreases.

13. The method of claim 11, further comprising:
during operation of the heater,
operating a second heater of the second washing unit; and
performing a switching control of one of the heater and the second heater.

14. The method of claim 11, further comprising:
during operation of the heater,
operating a second heater of the second washing unit; and
performing a switching control of both the heater and the second heater.

15. The method of claim 11, after applying the control signal, further comprising adding an operating time for one of a case where a temperature of wash water does not reach a target temperature and a case where drying is not completed within a set time.

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