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(57) **ABSTRACT**

A washing machine having a plurality of washing units to separately wash laundry according to quantity and type of the laundry, and a method to control the same. In the washing machine having the plurality of washing units to separately wash laundry having different quantities and types, when the plurality of washing units are being simultaneously operated, a current load value of one of the washing units is detected through monitoring of a power line, to thereby determine the operation state of the washing unit. Therefore, the operation of the other washing unit may be controlled so that the power limit is not exceeded. As a result, the plurality of washing units may be operated simultaneously within the range of allowable power capacity of the installation place of the washing machine.

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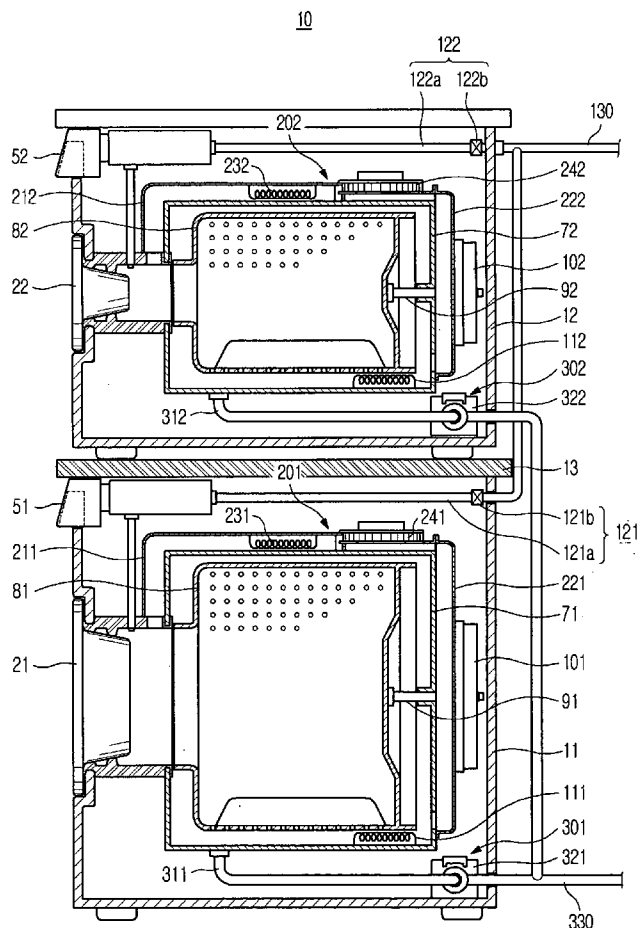


FIG. 1

10

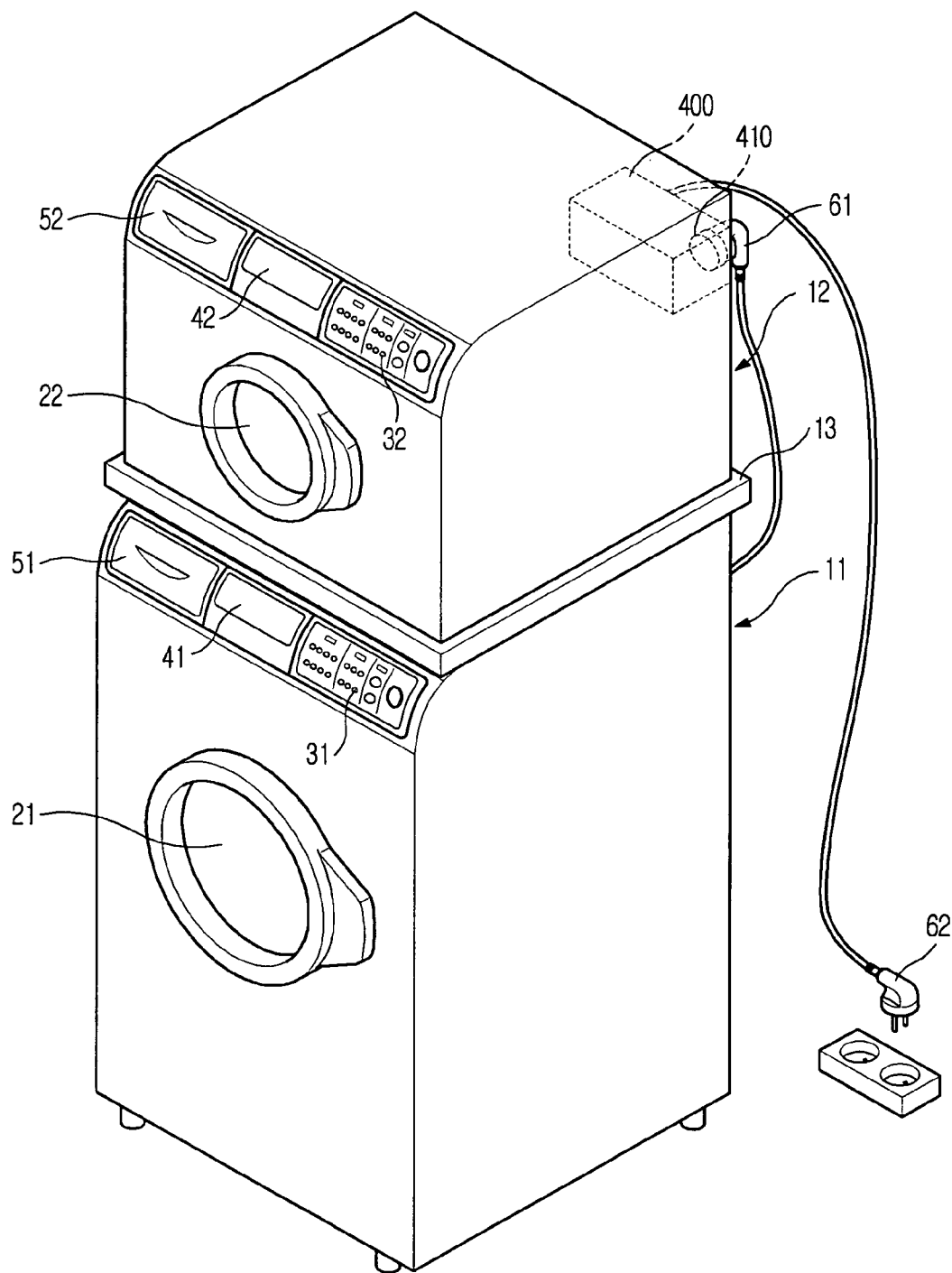


FIG. 2

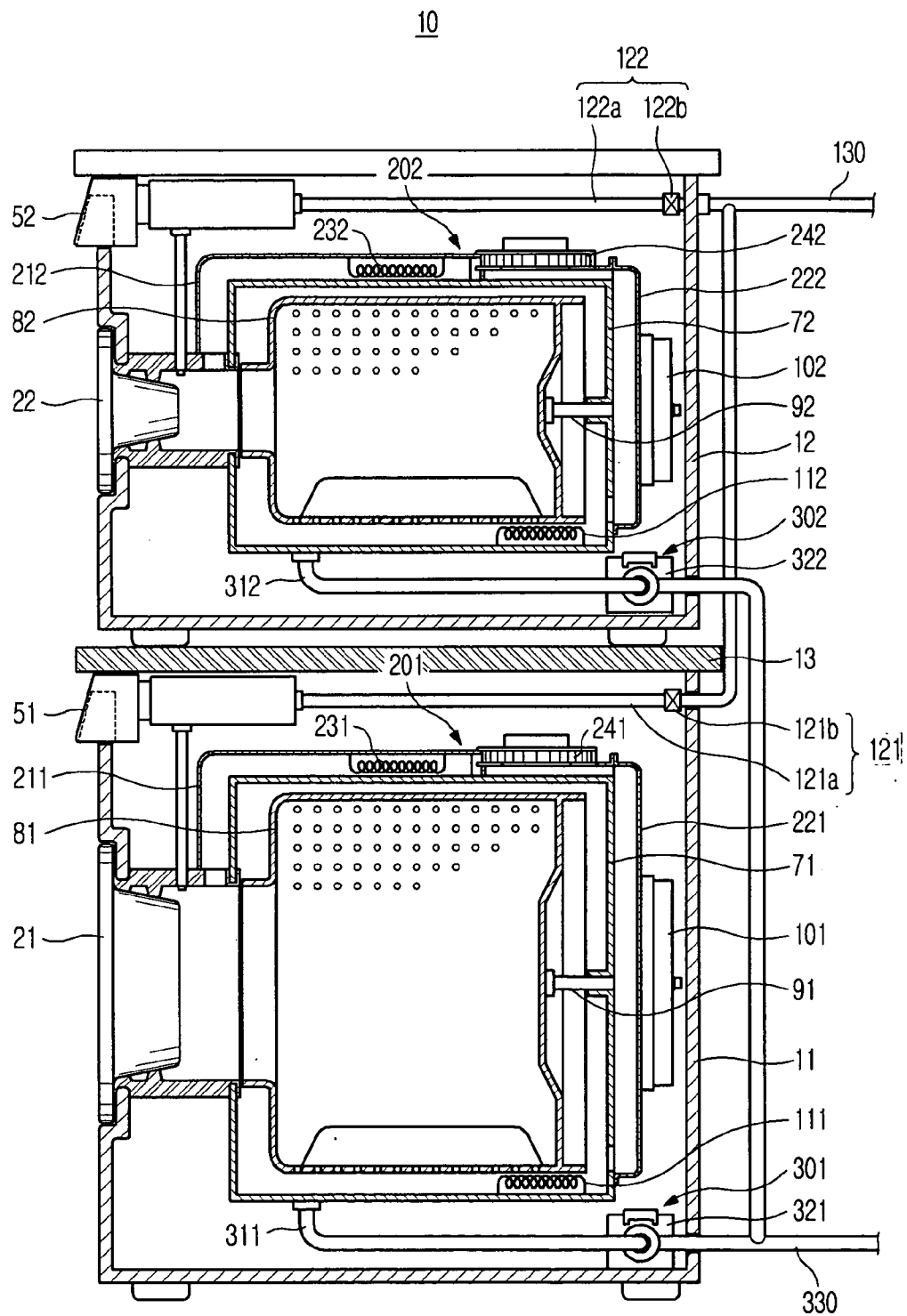


FIG. 3

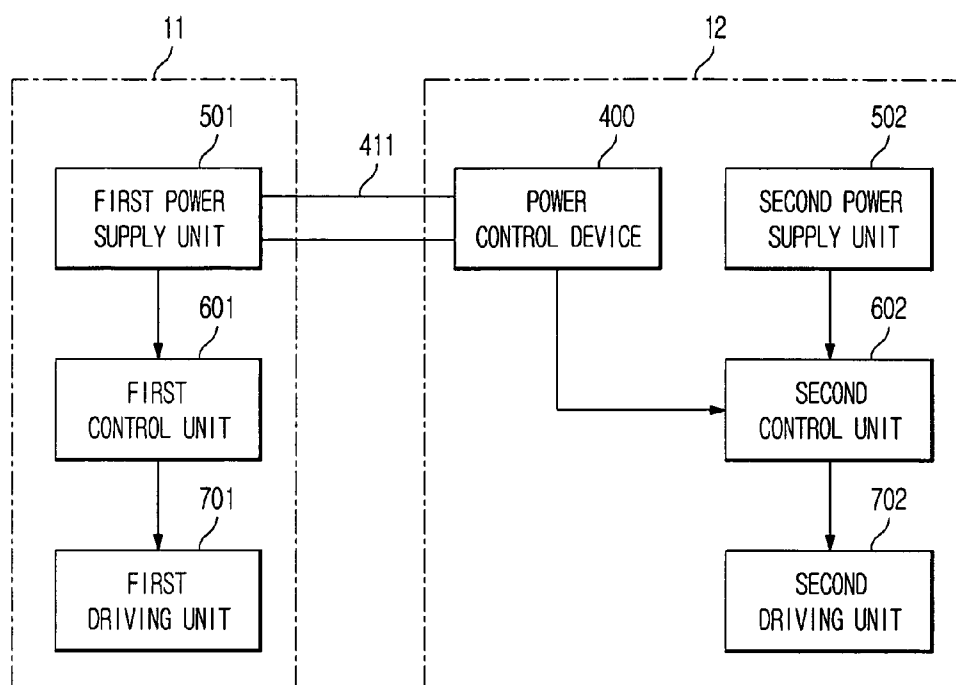


FIG. 4

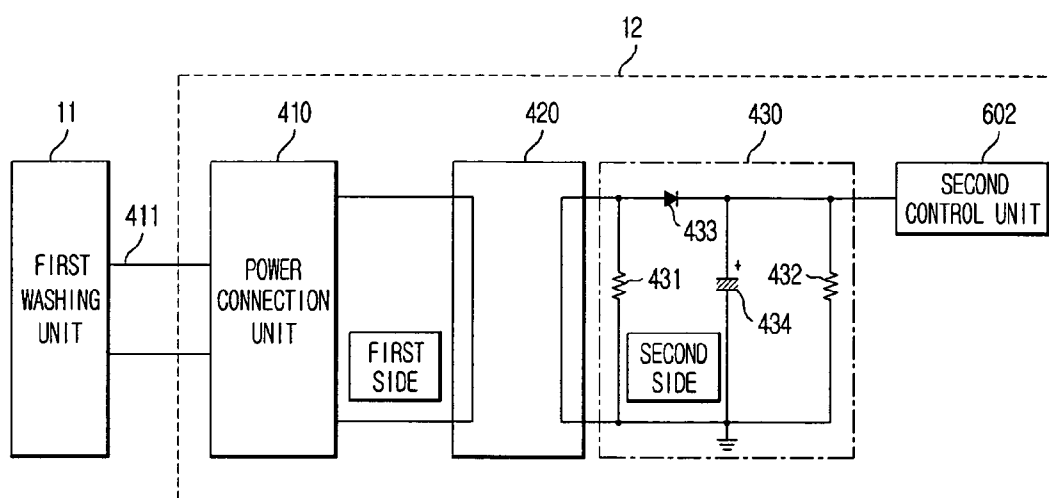


FIG. 5

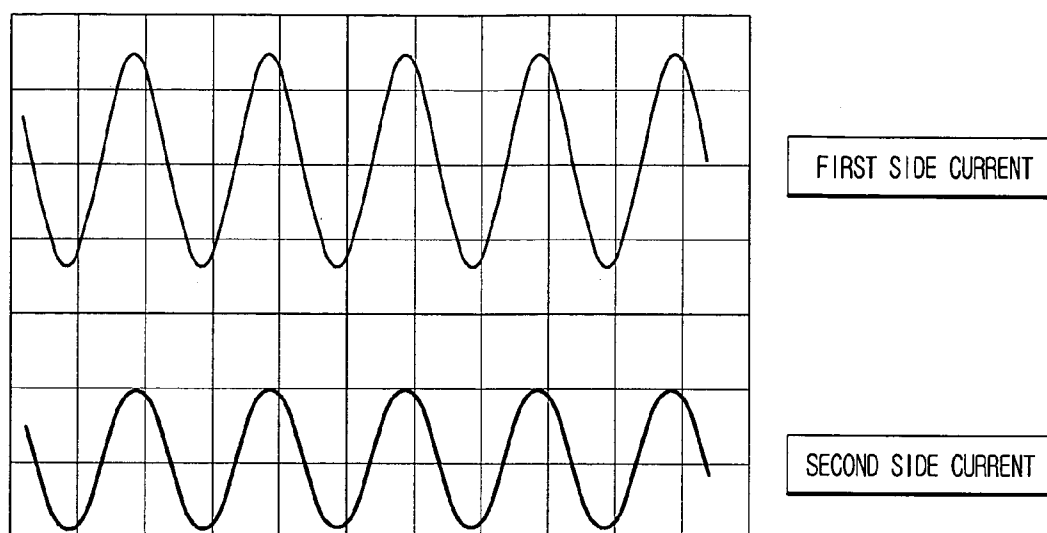


FIG. 6

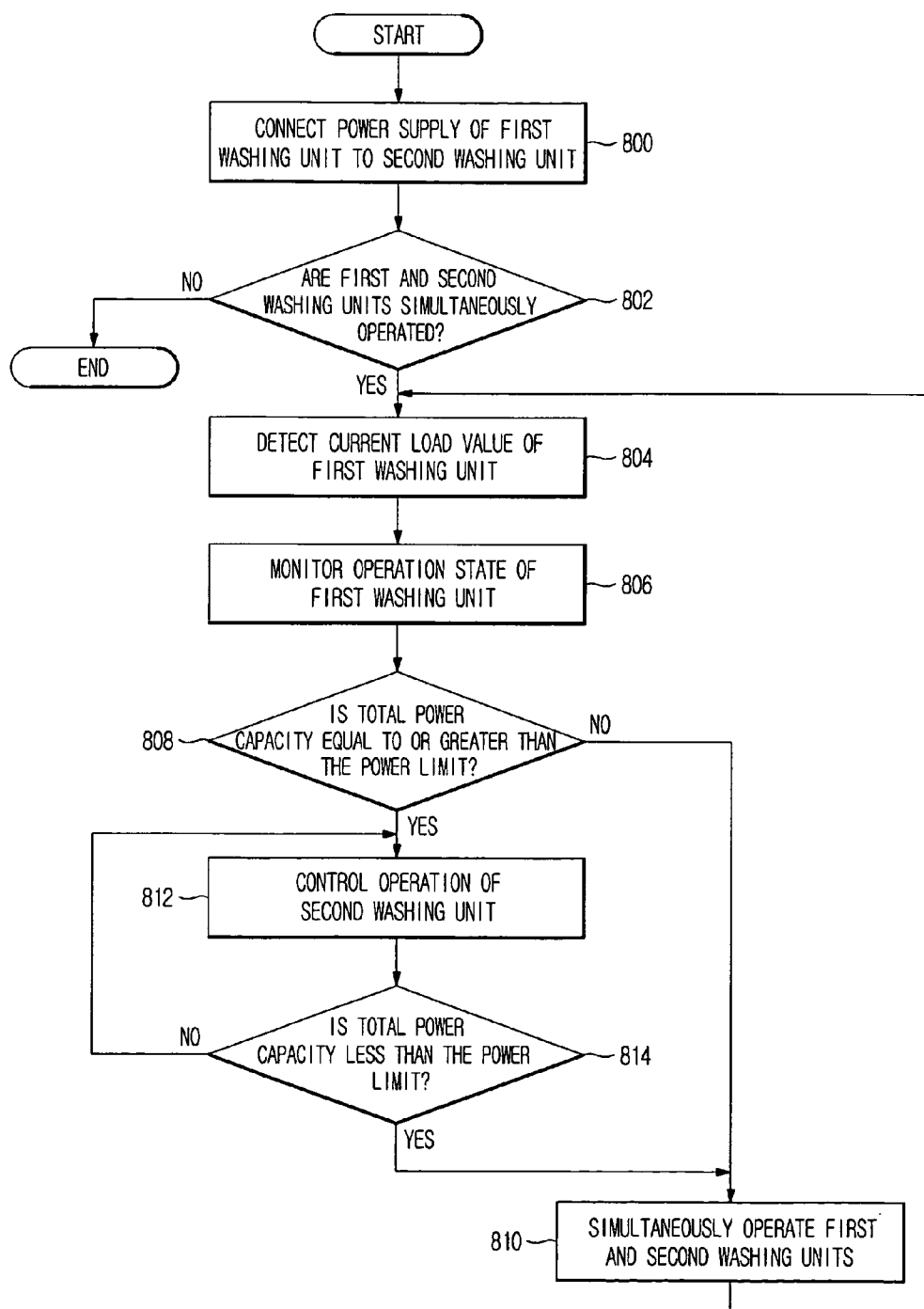
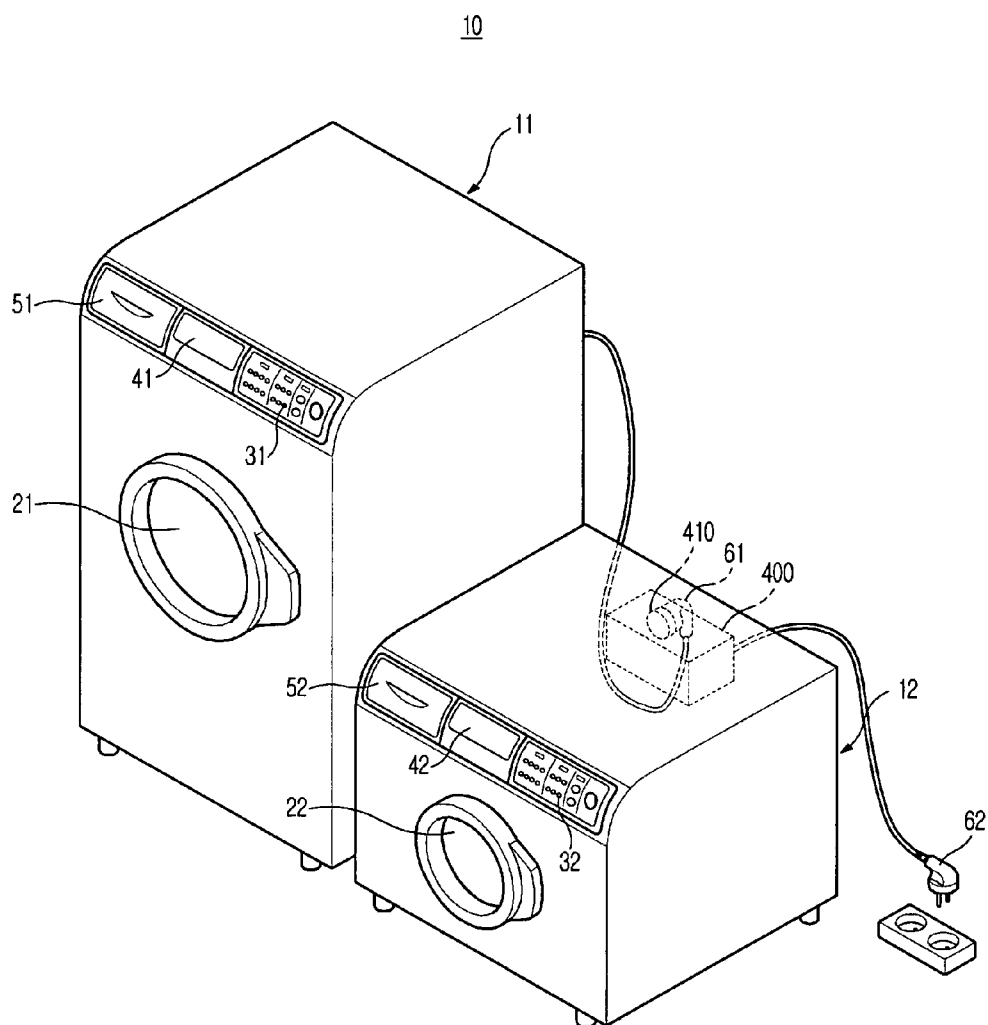


FIG. 7





## WASHING MACHINE AND METHOD TO CONTROL THE SAME

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 2009-0076656, filed on Aug. 19, 2009 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

### BACKGROUND

[0002] 1. Field

[0003] Embodiments relate to a washing machine having a plurality of washing units capable of separately washing laundry in accordance with quantity and type of laundry, and a method to control the same.

[0004] 2. Description of the Related Art

[0005] A washing machine, generally, a drum-type washing machine is an apparatus equipped with a washing tub to wash contaminated washing objects (hereinafter, referred to as 'laundry') using water and detergent. The washing machine may perform washing through a series of operations including a washing operation in which the laundry is put into the washing tub and dirt is separated from the laundry by water containing detergent, that is, a wash water, a rinsing operation in which foam and residual detergent are rinsed off the laundry by water not containing detergent, that is, a rinse water, and a spin-drying operation in which the washed laundry is spin-dried at a high speed.

[0006] Some types of laundry should not be washed together in one washing tub because of their different characteristics and materials. With a general washing machine having one washing tub, such different types of laundry that cannot be washed together need to be washed separately. Therefore, it becomes cumbersome to wash the laundry separately and operate the washing machine several times, for example, at least twice, which also causes waste of time and energy. Furthermore, when the washing tub has a large capacity, the large washing tub needs to be wholly operated to wash even a small quantity of laundry, thereby causing waste of electric power.

[0007] Recently, some people having sufficient purchasing power use two washing machines of different capacities such as a large capacity and a small capacity. However, in this case, the power capacity required to operate the two washing machines, for example two heaters, simultaneously may exceed allowable power capacity of the place in which the two washing machines are installed.

### SUMMARY

[0008] Therefore, it is an aspect to provide a washing machine having a plurality of washing units to separately wash different quantities and types of laundry, and enabling simultaneous operation of the plurality of washing units within the allowable power capacity of an installation place of the washing machine, and a method to control the same.

[0009] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the embodiments.

[0010] In accordance with one aspect, a washing machine includes a plurality of washing units; a power connection unit provided to any one of the washing units to share electric

power with the other washing unit; and a power control device which monitors a power line of the other washing units and thereby controls the operation of the washing unit having the power control device so that the total power capacity of the plurality of washing units does not exceed a power limit, when the plurality of washing units are simultaneously operated.

[0011] The power control device may include a current sensor monitoring the power line of the other washing unit through the power connection unit, thereby detecting current load value; and a control unit determining the operation state of the other washing unit based on the detected current load value and accordingly controlling the operation of the washing unit having the power control device.

[0012] The power control device may be provided to any one of the plurality of washing units and connected to the other washing unit not having the power control device through the power line.

[0013] The washing machine may further include a plurality of control units each provided to the plurality of washing units to independently control the operations of the washing units. Any one of the plurality of control units may be connected to the power control device.

[0014] The plurality of washing units may be operated independently from one another or in connection with one another.

[0015] The plurality of washing units may include any one of a drum-type washing machine and a full-automatic washing machine.

[0016] The plurality of washing units may include washing machines of different capacities being accumulated in an up and down direction.

[0017] The plurality of washing units may include washing machines of different capacities arranged side by side.

[0018] In accordance with another aspect, a method to control a washing machine having a first washing unit and a second washing unit includes connecting a power supply of the first washing unit to the second washing unit; and monitoring a power line of the first washing unit and thereby controlling the operation of the second washing unit so that a power limit is not exceeded, when the first and the second washing units are simultaneously operated.

[0019] The connecting may be performed by connecting a power cord of the first washing unit to a power connection unit of the second washing unit.

[0020] The monitoring may include detecting a current load value of the first washing unit; and determining whether the power limit is exceeded, by monitoring the operation state of the first washing unit based on the current load value.

[0021] The determining may be performed by determining whether the total power capacity of the first and the second washing units is equal to or greater than the power limit when the washing units are being simultaneously operated.

[0022] The first and the second washing units may be simultaneously operated if the total power capacity of the first and the second washing units is less than the power limit.

[0023] The operation of the second washing unit may be controlled if the total power capacity of the first and the second washing units is equal to or greater than the power limit.

[0024] The controlling of the operation of the second washing unit may be performed so that the power limit is not exceeded when the first and the second washing units are simultaneously driving heaters thereof.

[0025] The controlling of the operation of the second washing unit may be performed in a manner that driving of the heater is delayed or other washing functions such as soaking are performed although the heater needs to be driven.

[0026] The method may further include monitoring the operation state of the first washing unit during control of the operation of the second washing unit so as to determine whether the total power capacity is less than the power limit; and performing a simultaneous operation of the first and the second washing units when the total power capacity is less than the power limit.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0027] These and/or other aspects of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

[0028] FIG. 1 is a perspective view showing the structure of a washing machine;

[0029] FIG. 2 is a sectional view showing the structure of the washing machine;

[0030] FIG. 3 is a control system view of the washing machine;

[0031] FIG. 4 is a structure block diagram of a power control device of the washing machine;

[0032] FIG. 5 is a current waveform view of the power control device of the washing machine;

[0033] FIG. 6 is a flowchart illustrating the control operations of the washing machine; and

[0034] FIG. 7 is a perspective view showing the structure of a washing machine.

#### DETAILED DESCRIPTION

[0035] Reference will now be made in detail to the embodiments, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout.

[0036] FIG. 1 is a perspective view showing the structure of a washing machine according to an embodiment.

[0037] Referring to FIG. 1, the washing machine 10 includes a plurality of, for example two, washing units 11 and 12 which may be operated independently from each other or in connection with each other. For example, the plurality of washing units 11 and 12 are arranged vertically in a manner that a first washing unit 11 having a large capacity such as 13 kg is disposed at the lower part and a second washing unit 12 having a small capacity such as 3 kg is disposed at the upper part. That is, the washing machine 10 having the plurality of washing units 11 and 12 is installed by accumulatively mounting the second washing unit 12 on an upper surface 13 of the first washing unit 11.

[0038] In other words, the first and the second washing units 11 and 12 may be purchased by a user as independent washing machines. Therefore, the first and the second washing units 11 and 12 may be purchased together or separately as necessary, and applied in a manner that the second washing unit 12 is mounted on the upper surface 13 of the first washing unit 11.

[0039] The first and the second washing units 11 and 12 may have the same capacity. However, it is exemplary that the washing units 11 and 12 are divided into a large capacity washing unit and a small capacity washing unit considering that the washing machine 10 is characterized by having the

plurality of washing units 11 and 12. In this case, as aforementioned, even a small quantity of laundry, especially for steam cleaning, can be washed efficiently by operating only the second washing unit 12 having a small capacity. Therefore, waste of power may be prevented.

[0040] The washing units 11 and 12 respectively include doors 21 and 22 through which laundry is inserted, input units 31 and 32 to input the user's command related to the operations thereof, and display units 41 and 42 to display the operation states.

[0041] The input units 31 and 32 may each include a power button, a start/stop button to start and stop the operation of a corresponding one of the washing units 11 and 12, a washing unit selection button to select one or more of the plurality of, for example two, washing units 11 and 12 to perform independent washing/drying operations, and a course and function button to select a washing course and a washing function of the corresponding one of the washing units 11 and 12. However, the input units 31 and 32 may have various other structures, and are not limited by this embodiment.

[0042] According to the embodiment, the input units 31 and 32 and the display units 41 and 42 are separately provided to the washing units 11 and 12, respectively. However, an input unit and a display unit may each be provided in an integrated form.

[0043] In addition, detergent supply units 51 and 52 are disposed at a left upper end and a left middle of the washing machine 10 with respect to the drawing, to supply detergent to the washing units 11 and 12, respectively.

[0044] Although the detergent supply units 51 and 52 are separately formed for the plurality of washing units 11 and 12 in this embodiment, a single integrated detergent supply unit may be provided, by having a plurality of separate paths to supply detergent to the washing units 11 and 12. Also, mounting positions of the detergent supply units 51 and 52 are not limited to those described above but may be varied according to the user.

[0045] The washing units 11 and 12 further include first and second power cords 61 and 62, respectively, to supply electric power to the washing units 11 and 12. The second washing unit 12 is equipped with a power control device 400 to share the power supply with the first washing unit 11 and thereby control the operation of the second washing unit 12.

[0046] FIG. 2 is a sectional view showing the structure of the washing machine according to the embodiment.

[0047] Referring to FIG. 2, the first and the second washing units 11 and 12 of the washing machine 10 respectively include first and second washing tubs 71 and 72 therein to separately wash laundry according to quantity and type of the laundry. The other basic structures of the first and the second washing units 11 and 12 are equivalent to each other.

[0048] First and second cylindrical drums 81 and 82 each having a plurality of holes are rotatably mounted in the first and the second washing tubs 71 and 72. First and second motors 101 and 102 are mounted at outer rear parts of the first and the second washing tubs 71 and 72, respectively, as driving devices which rotate first and second rotational shafts 91 and 92 connected to the first and second drums 81 and 82 so as to perform washing, rinsing and spin-drying operations. Motors and driving belts may be provided instead of the first and the second motors 101 and 102. Also, the washing tubs 71 and 72 may be simultaneously or independently operated using other driving methods such as a clutch.

[0049] First and second wash heaters 111 and 112 are mounted at inner lower parts of the first and the second washing tubs 71 and 72, respectively, to heat water present in the first and the second washing tubs 71 and 72. First and second water supply devices 121 and 122 are mounted at upper parts of the first and the second washing tubs 71 and 72, respectively, to supply wash water or rinse water to the washing tubs 71 and 72. The first and the second water supply devices 121 and 122 include first and second water supply pipes 121a and 122a, and first and second water supply valves 121b and 122b. The first and the second water supply pipes 121a and 122a connect an external water supply pipe 130 with the first and the second detergent supply units 51 and 52 so that wash water or rinse water is supplied into the first and the second washing tubs 71 and 72. The first and the second water supply valves 121b and 122b are mounted on the first and the second water supply pipes 121a and 122a to control supply of water. According to this structure, the water is passed through the first and the second detergent supply units 51 and 52 before being supplied into the first and the second washing tubs 71 and 72. Therefore, detergent stored in the first and the second detergent supply units 51 and 52 is supplied to the first and the second washing tubs 71 and 72 along with the water.

[0050] In addition, the first and the second washing units 11 and 12 further include first and second drying devices 201 and 202, respectively, to dry the laundry in the first and the second washing tubs 71 and 72. The first and the second drying devices 201 and 202 respectively include first and second drying ducts 211 and 212 disposed at upper parts of the first and the second washing tubs 71 and 72 to supply hot air into the first and the second washing tubs 71 and 72, first and second condensing ducts 221 and 222 mounted at the rear parts of the first and the second washing tubs 71 and 72 to remove steam generated during the drying process, and first and second drying heaters 231 and 232 and first and second drying fans 241 and 242 mounted in the respective drying ducts 211 and 212 to supply the hot air.

[0051] Although the first and the second washing tubs 71 and 72 respectively have the first and the second drying devices 201 and 202 to dry the laundry therein according to this embodiment, a drying device may be provided at any one of the first and the second washing units 11 and 12 considering the structure of the washing machine 10.

[0052] The first and the second washing units 11 and 12 further include first and second drain devices 301 and 302, respectively, to discharge the water from the insides of the first and the second washing tubs 71 and 72. The first and the second drain devices 301 and 302 include first and second drain pipes 311 and 312 connected to lower parts of the first and the second washing tubs 71 and 72 to guide the water to the outside, and first and second drain pumps 321 and 322 mounted to the first and the second drain pipes 311 and 312, respectively. The drain devices 301 and 302 are respectively in fluid communication with an external drain pipe 330.

[0053] According to this embodiment, the first and the second drain pumps 321 and 322 are separately provided to drain water from the first and the second washing tubs 71 and 72. However, considering the structure of the washing machine 10, the second washing tub 72 disposed at the upper part may have a drain valve such that the water in the second washing tub 72 is drained by gravity.

[0054] FIG. 3 is a control system view of the washing machine according to the embodiment. The first washing unit

11 further includes a first power supply unit 501, a first control unit 601, and a first driving unit 701. The second washing unit 12 further includes the power control device 400, a second power supply unit 502, a second control unit 602, and a second driving unit 702.

[0055] The first and the second power supply units 501 and 502 supply electric power applied through power lines to the first and the second washing units 11 and 12, respectively.

[0056] The first and the second control units 601 and 602 may include a micro computer that controls the overall operations of the washing units 11 and 12, including washing, rinsing, spinning and drying, in accordance with operation data input through the input units 31 and 32.

[0057] According to driving control signals from the first and the second control units 601 and 602, the first and the second driving units 701 and 702 drive the first and the second motors 101 and 102, the first and the second wash heaters 111 and 112, the first and the second water supply valves 121 and 122, the first and the second drying heaters 231 and 232, the first and the second drying fans 241 and 242, and the first and the second drain pumps 321 and 322, respectively.

[0058] The power control device 400 provided to the second washing unit 12 connects the power supply of the first washing unit 11 to the second washing unit 12 to share the power supply with the first washing unit 11. Therefore, the power control device 400 monitors the operation state of the first washing unit 11 so that the total power capacity of the first and the second washing units 11 and 12 does not exceed an allowable power capacity.

[0059] FIG. 4 is a structure block diagram of the power control device according to the embodiment, and FIG. 5 is a current waveform view of the power control device.

[0060] Referring to FIG. 4, the power control device 400 includes a power connection unit 410 connected with the first power cord 61 of the first washing unit 11 to connect the power supply of the first washing unit 11 to the second washing unit 12, a current sensor 420 connected to a power line 411 of the first washing unit 11 to detect a current load value of the power line 411, and a voltage conversion part 430 to convert the current load value detected by the current sensor 420 into a voltage value and transmit the voltage value to the second control unit 602 of the second washing unit 12.

[0061] Referring to FIG. 5, the current sensor 420 monitors the operation state of the first washing unit 11 and accordingly generates a predetermined current at a second side thereof proportional to a current of a first side. The second control unit 602 may determine the operation state of the first side of the current sensor 420, that is, the first washing unit 11 using the current generated at the second side of the current sensor 420.

[0062] The power conversion part 430 may be a general voltage conversion circuit including resistors 431 and 432, a diode 433 and a condenser 434.

[0063] When the first and the second washing units 11 and 12 are being simultaneously operated, the second control unit 602 of the second washing unit 12 monitors the operation state of the first washing unit 11 based on the current load value detected by the current sensor 420 and accordingly controls the operation of the second washing unit 12 so that the first and the second washing units 11 and 12 are operated within the allowable capacity range.

[0064] According to the above-described embodiment, the power control device 400 is formed at the second washing unit 12 to monitor the operation state of the first washing unit

**11** and the operation of the second washing unit **12** is controlled so that the power limit is not exceeded during the simultaneous operation of the first and the second washing units **11** and **12**. However, embodiments of the present invention are not limited to this. For example, the power control device **400** may be formed at the first washing unit **11** to monitor the operation state of the second washing unit **12** and accordingly control the operation of the first washing unit **11** so that the power limit is not exceeded during the simultaneous operation.

[0065] Here, the simultaneous operation of the first and the second washing tubs **71** and **72** may be performed in various manners. For example, both of the first and the second washing tubs **71** and **72** may be supplied with laundry and operated simultaneously. In another case, after one of the first and the second washing tubs **71** and **72** is supplied with laundry and operated, the other one may be next supplied with laundry and operated while the former one is operating.

[0066] Hereinafter, the operational processes and effects of the above-structured washing machine will be described.

[0067] FIG. 6 is a flowchart illustrating the control operations of the washing machine to perform the simultaneous operation of the first and the second washing units **11** and **12** which are capable of separately washing different quantities and types of laundry, such that the power limit is not exceeded during the simultaneous operation.

[0068] First, laundry is classified according to quantity or type and is separately put into the first and the second washing tubs **71** and **72** of the first and the second washing units **11** and **12**. When the user selects the washing courses and functions corresponding to the washing tubs **71** and **72**, the operation data selected by the user is input to the first and the second control units **601** and **602** through the first and the second input units **31** and **32**, respectively.

[0069] Here, the first power cord **61** of the first washing unit **11** is connected to the power connection unit **410** of the power control device **400** provided to the second washing unit **12** (operation **S800**) so that the simultaneous operation of the first and the second washing units **11** and **12** is performed within the allowable power capacity.

[0070] The first and the second control units **601** and **602** determine whether the first and the second washing units **11** and **12** are being simultaneously operated (operation **S802**). When it is determined that the simultaneous operation is being performed, the power control device **400** monitors the power line **411** of the first washing unit **11** through the current sensor **420**, thereby detecting the current load value of the first washing unit as shown in FIG. 5 (operation **S804**).

[0071] The current load value detected by the current sensor **420** is converted into a voltage value by the voltage conversion part **430** and then input to the second control unit **602** of the second washing unit **12**.

[0072] Accordingly, the second control unit **602** monitors the operation state of the first washing unit **11** using the second side current of the current sensor **420** input through the voltage conversion part **430** (operation **S806**) and determines whether the total power capacity of the first and the second washing units **11** and **12** is equal to or greater than the power limit (operation **S808**).

[0073] Here, the power limit refers to a predetermined maximum value of power defined so as not to exceed the allowable power capacity in general homes. In an electric appliance including a combination of at least two devices, the

total power capacity should not exceed the power limit even when the devices are operating simultaneously.

[0074] When the total power capacity of the first and the second washing units **11** and **12** is less than the power limit as a result of the determination in operation **S808**, the first and the second washing units **11** and **12** are simultaneously operated (operation **S810**) and the process is fed back to operation **S804** to continue monitoring the operation state of the first washing unit **11**.

[0075] If the total power capacity of the first and the second washing units **11** and **12** is equal to or greater than the power limit as a result of the determination in operation **S808**, the operation of the second washing unit **12** is controlled (operation **S812**).

[0076] The operation of the second washing unit **12** may be controlled in a manner that the second wash heater **112** or the second drying heater **232** of the second washing unit **12** may be kept on standby while the first wash heater **111** or the first drying heater **231** of the first washing unit **11** is in operation. During this, for example, other washing functions such as soaking may be performed although the second wash heater **112** or the second drying heater **232** needs to be driven. Accordingly, the first and the second washing unit **11** and **12** may be simultaneously operated within the range of the allowable power capacity.

[0077] It is determined whether the total power capacity of the first and the second washing units **11** and **12** is less than the power limit as the washing function of the second washing unit **12** is controlled (operation **S814**). When the total power capacity is less than the power limit, the process is fed back to operation **S810** so that the first and the second washing units **11** and **12** are simultaneously operated.

[0078] If the total power capacity is not less than the power limit as a result of the determination of operation **S814**, the process is fed back to operation **S812** and subsequent operations are performed.

[0079] FIG. 7 is a perspective view showing the structure of a washing machine according to another embodiment.

[0080] Referring to FIG. 7, the washing machine **10** according to another embodiment of the present invention includes the plurality of, for example two, washing units **11** and **12** which may be operated independently from each other or in connection with each other. The washing units **11** and **12** are arranged side by side, for example, in a manner that the first washing unit **11** having a large capacity such as 13 kg is disposed on the left while the second washing unit **12** having a small capacity such as 3 kg is disposed on the right with respect to the drawing.

[0081] Therefore, the user may purchase the first and the second washing units **11** and **12** separately as independent washing machines. That is, the first and the second washing units **11** and **12** may be purchased together or separately as necessary, and applied by being arranged side by side.

[0082] In the embodiment shown in FIG. 1 as well, the first power cord **61** of the first washing unit **11** is connected to the power connection unit **410** of the power control device **400** provided to the second washing unit **12** so that the simultaneous operation of the first and the second washing units **11** and **12** is performed within the range of the allowable power capacity.

[0083] If a general washing machine without the power control device **400** is newly purchased in addition to the existing second washing unit **12** having the power control device **400**, a power supply of the general washing machine

may be monitored by the second washing unit **12** by connecting a power cord of the general washing machine. Accordingly, the first and the second washing units **11** and **12** may be simultaneously operated within the range of allowable power capacity.

**[0084]** On the other hand, when the second washing unit **12** having the power control device **400** is purchased in addition to an existing general washing machine without the power control device **400**, the power supply of the general washing machine may be monitored by the second washing machine **12** by connecting a power cord of the second washing unit **12**. Accordingly, the first and the second washing units **11** and **12** may be simultaneously operated within the range of allowable power capacity.

**[0085]** Furthermore, although the washing units **11** and **12** both have been explained as drum-type washing machines in the embodiments, the present invention is not limited to the disclosed embodiments. The same purpose and effect may be achieved when the first and the second washing units **11** and **12** are both full-automatic washing machines, or a drum-type washing machine and a full-automatic washing machine.

**[0086]** As is apparent from the above description, in a washing machine having a plurality of, for example two, washing units to separately wash laundry having different quantities and types, when the plurality of washing units are being simultaneously operated, a current load value of one of the washing units is detected through monitoring of a power line, to thereby determine the operation state of the washing unit. Therefore, the operation of the other washing unit may be controlled so that the power limit is not exceeded. As a result, the plurality of washing units may be operated simultaneously within the range of allowable power capacity of the installation place of the washing machine.

**[0087]** Although a few embodiments have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

What is claimed is:

1. A washing machine comprising:
  - a plurality of washing units;
  - a power connection unit provided to any one of the washing units to share electric power with the other washing unit; and
  - a power control device to monitor a power line of the other washing units and control the operation of the washing unit having the power control device so that the total power capacity of the plurality of washing units does not exceed a power limit, when the plurality of washing units are simultaneously operated.
2. The washing machine according to claim 1, wherein the power control device comprises:
  - a current sensor to monitor the power line of the other washing unit through the power connection unit, thereby detecting current load value; and
  - a control unit to determine the operation state of the other washing unit based on the detected current load value and accordingly control the operation of the washing unit having the power control device.
3. The washing machine according to claim 2, wherein the power control device is provided to any one of the plurality of washing units and connected to the other washing unit not having the power control device through the power line.

4. The washing machine according to claim 1, further comprising a plurality of control units each provided to the plurality of washing units to independently control the operations of the washing units.

5. The washing machine according to claim 4, wherein any one of the plurality of control units is connected to the power control device.

6. The washing machine according to claim 1, wherein the plurality of washing units are operated independently from one another or in connection with one another.

7. The washing machine according to claim 6, wherein the plurality of washing units comprise any one of a drum washing machine and a full-automatic washing machine.

8. The washing machine according to claim 6, wherein the plurality of washing units comprise washing machines of different capacities arranged vertically.

9. The washing machine according to claim 6, wherein the plurality of washing units comprise washing machines of different capacities arranged horizontally.

10. A method to control a washing machine having a first washing unit and a second washing unit, the method comprising:

connecting a power supply of the first washing unit to the second washing unit; and

monitoring a power line of the first washing unit and thereby controlling the operation of the second washing unit such that a power limit is not exceeded, when the first and the second washing units are simultaneously operated.

11. The method according to claim 10, wherein the connecting is performed by connecting a power cord of the first washing unit to a power connection unit of the second washing unit.

12. The method according to claim 10, wherein the monitoring comprises:

detecting a current load value of the first washing unit; and determining whether the power limit is exceeded, by monitoring the operation state of the first washing unit based on the current load value.

13. The method according to claim 12, wherein the determining is performed by determining whether the total power capacity of the first and the second washing units is equal to or greater than the power limit when the washing units are being simultaneously operated.

14. The method according to claim 13, wherein the first and the second washing units are simultaneously operated if the total power capacity of the first and the second washing units is less than the power limit.

15. The method according to claim 13, wherein the operation of the second washing unit is controlled if the total power capacity of the first and the second washing units is equal to or greater than the power limit.

16. The method according to claim 15, wherein controlling the operation of the second washing unit is performed so that the power limit is not exceeded when the first and the second washing units are simultaneously driving heaters thereof.

17. The method according to claim 16, wherein controlling the operation of the second washing unit includes delaying driving of the heater and performing other washing functions including soaking while the driving of the heater is delayed.

18. The method according to claim 17, further comprising: monitoring the operation state of the first washing unit during control of the operation of the second washing

unit so as to determine whether the total power capacity is less than the power limit; and  
performing a simultaneous operation of the first and the second washing units when the total power capacity is less than the power limit.

**19.** A washing machine comprising:

a first washing unit and a second washing unit;

a power connection unit provided in one of the first and second washing units to share electric power with the other washing unit; and

a power control device to monitor a power line of the other washing unit and to control the operation of the washing unit having the power control device  
wherein the power control device controls total power consumption of the first and second washing units to stay below a predetermined power limit.

**20.** The washing machine according to claim **19**, wherein the first washing unit has a capacity of approximately 13 kg, and the second washing unit has a capacity of approximately 3 kg.

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