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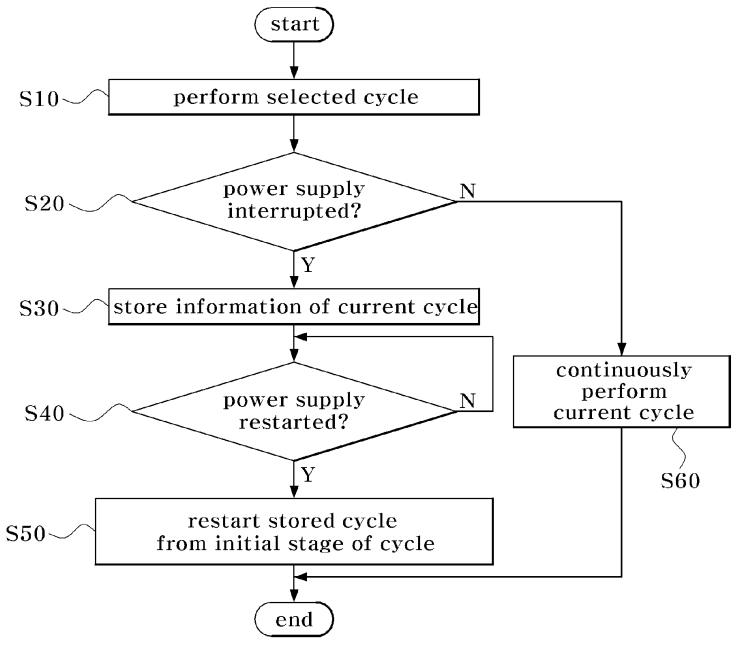
(54) POWER-CUT COMPENSATING METHOD FOR A WASHING MACHINE

(57) The present invention relates to a power-cut (power outage) compensating method for a washing machine. A characterising feature of the present invention is that it comprises the stages of: carrying out the selected routine; deciding whether the power supply has been interrupted while carrying out the selected routine; if the power supply has been interrupted, storing in a memory unit information about the routine currently being carried out; deciding whether the power supply has restarted; and, if the power supply has restarted, restarting the routine stored in the memory unit.

【Figure 3】



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Description

[Technical Field]

[0001] The present invention relates to a washing machine and, more particularly, to a power-cut compensating method for a washing machine_to allow operation of the washing machine to restart from a cycle, which has been stopped due to power failure, when power supply is restarted after the power failure.

[Background Art]

[0002] Fig. 1 is a sectional view of a typical drum washing machine. Referring to Fig. 1, the drum washing machine includes a cabinet 1, a tub 2 disposed inside the cabinet 1 to receive wash water, a drum 3 rotatable disposed inside the tub 2 to receive laundry, a drive motor 4 rotating the drum 3, a water supply device 5 supplying wash water to the tub 2, and a drainage device 7 draining the wash water from the tub 2 to an outside of the cabinet 1.

[0003] When a user turns on the washing machine and selects a desired cycle with laundry received in the drum 3, wash water is supplied into the tub 2 by the water supply device 5 connected to a water source (not shown) outside the cabinet 1. Then, the drum 3 is rotated by the drive motor 4 to perform the selected cycle.

[Disclosure]

[Technical Problem]

[0004] In a conventional method of operating the washing machine, when power is resupplied to the washing machine after power failure, the washing machine does not remember a cycle performed prior to power failure and returns back to an initial state, thereby suffering energy loss and damage of laundry caused by repetition of an unnecessary cycle.

[0005] Therefore, there is a need to solve such problems of the washing machine.

[0006] The present invention is conceived to solve the problems as described above, and an aspect of the present invention is to provide a power-cut compensating method for a washing machine to allow operation of the washing machine to restart from a cycle, which has been stopped due to power failure, when power supply is restarted after the power failure.

[Technical Solution]

[0007] In accordance with one aspect of the present invention, a power-cut compensating method for a washing machine includes performing a selected cycle; determining whether power supply is interrupted during the selected cycle; storing information of a current performed cycle in a memory if the power supply is interrupted; determining whether the power supply is restarted; and restarting the stored cycle if the power supply is restarted.

[0008] The restarting the stored cycle may include performing the stored cycle from an initial stage of the stored cycle.

[0009] The method may further include continuously performing the current performed cycle if the power supply is not interrupted.

[0010] Interruption of the power supply may be determined according to whether a pulse by an alternating power is interrupted for a preset period of time.

[Advantageous Effects]

[0011] As apparent from the above description, according to one embodiment of the invention, operation of the washing machine can be restarted from a cycle which has been stopped due to power failure, when power supply is restarted after the power failure, so that the washing machine can suppress repetition of an unnecessary cycle, thereby preventing damage of laundry while reducing time and cost for washing operation.

[0012] Further, according to one embodiment, a preliminary course of a cycle stored in a memory is performed before a main course of the cycle, thereby reducing noise and vibration of the washing machine, which can be generated upon restarting the cycle by resupply of power.

[Description of Drawings]

[0013] The above and other aspects, features, and advantages of the present invention will become apparent from the following detailed description in conjunction with the accompanying drawings, in which:

Fig. 1 is a sectional view of a conventional drum washing machine;
Fig. 2 is a block diagram of a drum washing machine according to one embodiment of the present invention; and
Fig. 3 is a flowchart of a power-cut compensating method for a washing machine according to one embodiment of the present invention.

[Best Mode]

[0014] Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings. Herein, the present invention will be described with reference to a drum washing machine as an example. It should be noted that the drawings are not to precise scale and may be exaggerated in thickness of lines or size of components for descriptive convenience and clarity. Furthermore, the terms used herein are defined by taking functions of the present invention into account and can be changed according to the custom or intention of users or operators. Therefore,

definition of the terms should be made according to the overall disclosures set forth herein.

[0015] Fig. 2 is a block diagram of a drum washing machine according to one embodiment of the present invention, and Fig. 3 is a flowchart of a power-cut compensating method for a washing machine according to one embodiment of the present invention.

[0016] Referring to Figs. 1, 2 and 3, the power-cut compensating method for a washing machine according to this embodiment includes performing a selected cycle with power supplied from a power supply unit 10 to a drive motor 4 and a controller 50 in S10; determining whether power supply to the washing machine is interrupted in S20; storing information of a current performed cycle in a memory 52 if the power supply is interrupted in S30; determining whether the power supply to the washing machine is restarted in S40; and restarting the current performed cycle stored in the memory 52 if the power supply is restarted in S50 or continuously performing the current selected cycle if the power supply is not interrupted in S60.

[0017] When performing the selected cycle in S10, at least one of a washing cycle, a rinsing cycle, and a spin-drying cycle selected through an operation panel (not shown) by a user is performed. The respective cycles are individually or sequentially performed according to user selection.

[0018] While performing the selected cycle in S10, the controller 50 continuously determines whether power failure occurs to interrupt power supply to the washing machine in S20. Here, interruption of the power supply is determined according to whether a pulse by an alternating power is interrupted for a preset period of time while the selected cycle is performed in S10. In this embodiment, the preset period of time is 1 second. Accordingly, in S20, the controller 50 determines that power failure occurs when a pulse generated by a certain frequency of the alternating current supplied to the washing machine is interrupted for 1 second. Although the preset period of time is set to 1 second in this embodiment, the present invention is not limited thereto. Thus, when the preset period of time is set shorter than 1 second, the washing machine can detect even momentary power failure, thereby enabling compensation for the momentary power failure.

[0019] If it is determined that the power supply is not interrupted, the controller 50 allows the washing machine to perform the current performed cycle in S60, and terminates the washing operation after completing the selected cycle.

[0020] If the power supply is interrupted, information of the current performed cycle is stored in the memory 52 in S30. For example, if the current cycle is a washing cycle, information of the washing cycle is stored in the memory 52, and if the current cycle is a spin-drying cycle, information of the spin-drying cycle is stored in the memory 52. Here, the information of the current cycle includes the kind of the cycle, elapsed time of the cycle, remaining time of the cycle, and the like.

[0021] The controller 50 determines whether the power supply to the washing machine is restarted in S40. In other words, when the power supply is restarted, power is also supplied from the power supply unit 10 to the controller 50, so that the controller 50 can immediately detect power resupply.

[0022] If the power supply is restarted, the controller 50 restarts the cycle, which has been stopped due to the power failure, using the information of the cycle stored in the memory 52, in S50. Then, the controller 50 terminates the washing operation after completing the selected cycle. At this time, the restarted cycle is performed from an initial course of the performed cycle.

[0023] For example, the spin-drying cycle is divided into a preliminary spin-drying course in which the drum 3 is rotated at a low speed to allow laundry to be uniformly distributed in the drum 3, and a main spin-drying course in which the drum 3 is rotated at a high speed to remove moisture from the laundry. If power failure occurs during the main spin-drying course, an initial course of the spin-drying cycle, that is, the preliminary spin-drying course, is newly started when power supply is restarted. As a result, the laundry can be uniformly distributed in the drum 3 before the main spin-drying course performed at a high speed, thereby reducing noise and vibration caused by non-uniform distribution of the laundry during the spin-drying cycle.

[0024] As such, if the cycle stored in the memory is a main course of the cycle, a preliminary course of the cycle as an initial stage of the cycle is performed before a main course of the cycle, thereby reducing noise and vibration, which can be generated when directly restarting the main course of the cycle.

[0025] Although some embodiments have been provided to illustrate the present invention in conjunction with the accompanying drawings, it will be apparent to those skilled in the art that the embodiments are given by way of illustration only, and that various modifications and equivalent embodiments can be made without departing from the spirit and scope of the present invention. Further, the description of the drum washing machine as provided herein is only one example of the present invention, and the present invention can be applied to other products. Accordingly, the scope and spirit of the present invention should be limited only by the following claims.

Claims

1. A power-cut compensating method for a washing machine, comprising:

   performing a selected cycle;
   determining whether power supply is interrupted during the selected cycle;
   storing information of a current performed cycle in a memory if the power supply is interrupted;

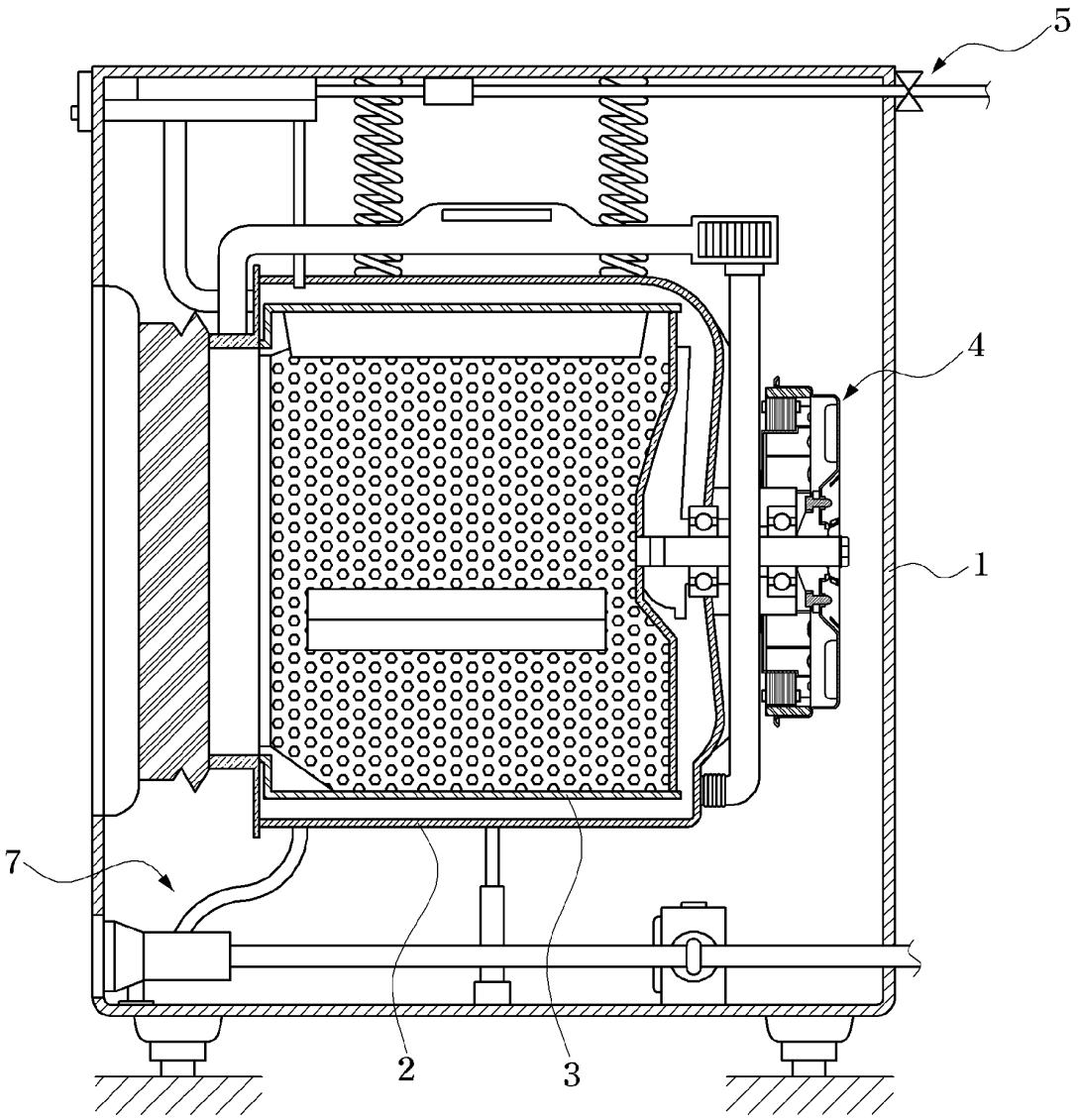
determining whether the power supply is restarted; and
restarting the stored cycle if the power supply is restarted.

2. The method according to claim 1, wherein the restarting the stored cycle comprises performing the stored cycle from an initial stage of the stored cycle.

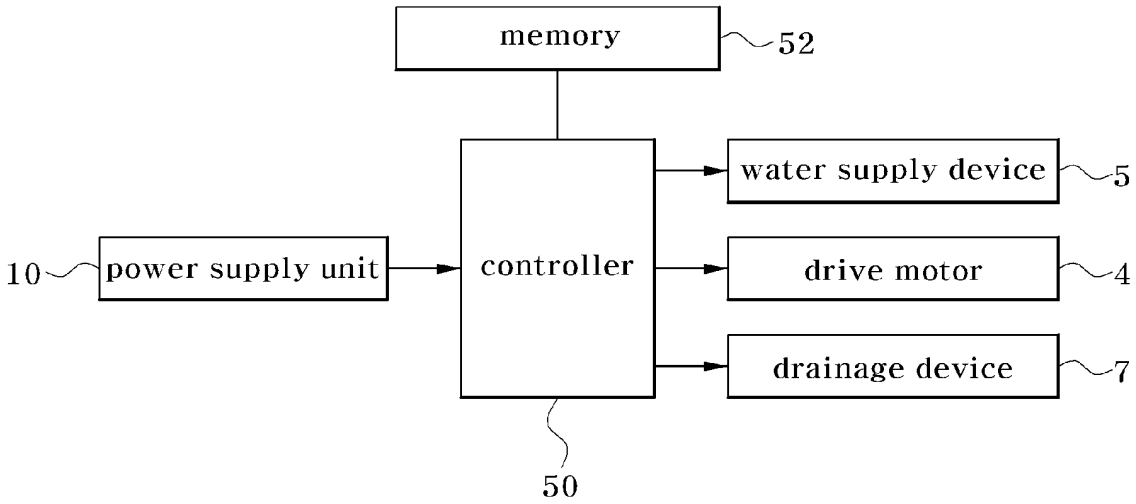
3. The method according to claim 1, further comprising continuously performing the current performed cycle if the power supply is not interrupted.

4. The method according to claim 1, wherein interruption of the power supply is determined according to whether a pulse by an alternating power is interrupted for a preset period of time.

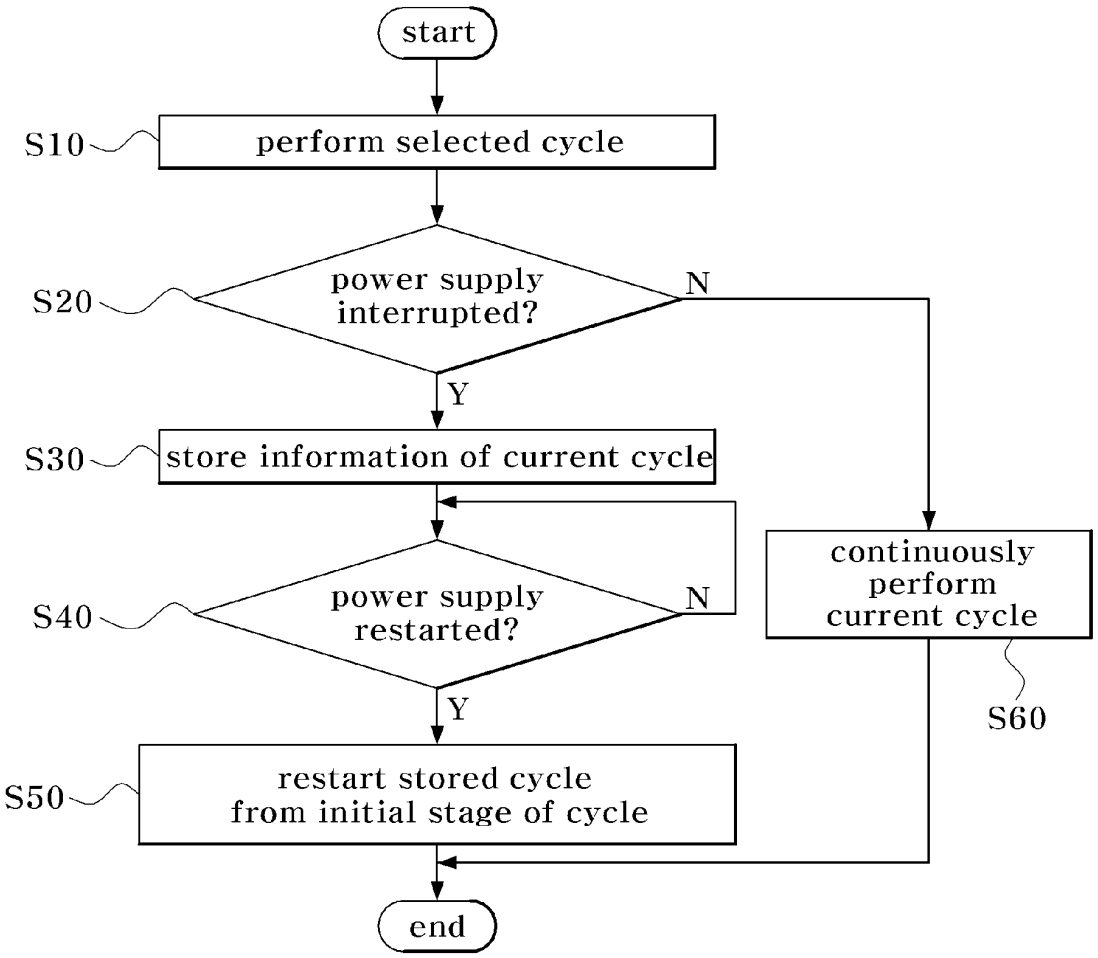
【Figure 1】



【Figure 2】


memory
52
water supply device
5
10
power supply unit
controller
drive motor
4
drainage device
7
50

【Figure 3】


start
S10
perform selected cycle
S20
power supply interrupted?
N
Y
S30
store information of current cycle
S40
power supply restarted?
N
Y
S50
restart stored cycle from initial stage of cycle
continuously perform current cycle
S60
end