A water heating and distribution includes a water heating device for heating water, a water output device connected to the water heating device and configured to output the heated water from the water heating device, and a system control device connected to the water heating device and the water output device. The system control device is configured to allow the water heating device to receive water from a water supply when the system control device works in a first mode. The system control device is configured to disconnect the water heating device from the water supply and allow water to circulate between the water heating device and the water output device when the system control device works in a second mode.
FIG. 1
WATER HEATING AND DISTRIBUTION SYSTEM AND SYSTEM CONTROL DEVICE
CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 201410454703.1 filed on Sep. 9, 2014, the contents of which are hereby incorporated by reference.

FIELD

[0002] The subject matter herein generally relates to a water heating and distribution system.

BACKGROUND

[0003] Water heaters are widely used. Electric water heaters and gas water heaters have hot water in pipes connected between the water heater and a water output device but the hot water will become cold after a period of time. When users need hot water, the existing cold water must be discharged from the pipes first.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Implementations of the present technology will now be described, by way of example only, with reference to the attached figures.
[0005] FIG. 1 is a diagrammatic view of a water heating and distribution system in accordance with an embodiment, wherein a system control device works in a first mode.
[0006] FIG. 2 is similar to FIG. 1, wherein the system control device works in a second mode.
[0007] FIG. 3 is a block diagram of a system control device of the water heating and distribution system of FIG. 1.

DETAILED DESCRIPTION

[0008] It will be appreciated that for simplicity and clarity of illustration, where appropriate, reference numerals have been repeated among the different figures to indicate corresponding or analogous elements. In addition, numerous specific details are set forth in order to provide a thorough understanding of the embodiments described herein. However, it will be understood by those of ordinary skill in the art that the embodiments described herein can be practiced without these specific details. In other instances, methods, procedures, and components have not been described in detail so as not to obscure the related relevant feature being described. Also, the description is not to be considered as limiting the scope of the embodiments described herein. The drawings are not necessarily to scale and the proportions of certain parts may be exaggerated to better illustrate details and features of the present disclosure.

[0009] Several definitions that apply throughout this disclosure will now be presented.

[0010] The term “substantially” is defined to be essentially conforming to the particular dimension, shape, or other feature that the term modifies, such that the component need not be exact. For example, “substantially cylindrical” means that the object resembles a cylinder, but can have one or more deviations from a true cylinder. The term “comprising,” when utilized, means “including, but not necessarily limited to”; it specifically indicates open-ended inclusion or membership in the so-described combination, group, series, and the like.

[0011] FIG. 1 illustrates a water heating and distribution system 100 including a water heating device 20 configured to heat water, and a water output device 30 connected to the water heating device 20 and configured to output the heated water from the water heating device 20. A system control device 10 is connected to the water heating device 20 and the water output device 30.

[0012] The system control device 10 can include a housing 11 and a switch 12 movably mounted in the housing 11.

[0013] The housing 11 includes a water inlet 111, a first water outlet 112, and a second water outlet 113. The water inlet 111 is connected to a water supply (not shown).

[0014] The switch 12 is substantially T-shaped. The switch 12 can rotate to drive the system control device 10 to change between a first mode and a second mode. The switch 12 can include a first port 121, a second port 122, and a third port 123, all of which communicate with each other. When the system control device 10 works in the first mode, the first port 121 is connected to the water supply via the water inlet 111, the second port 122 is connected to the water heating device 20 via the first water outlet 112, and the third port 123 is connected to the water output device 30 via the second water outlet 113. The water heating device 20 and the water output device 30 can receive water from the water supply.

[0015] The system control device 10 further includes a pump 15 configured to drive water to circulate between the water heating device 20 and the water output device 30. The pump 15 is mounted to switch 12 and located between the first port 121 and the second port 122.

[0016] The water heating device 20 can include a water entrance 21 and a water exit 22. The water entrance 21 is connected to the first water outlet 112. The water heating device 20 further includes a heating module 23. Cold water can flow into the water heating device 20 from the water entrance 21, be heated by the heating module 23, and flow out from the water exit 22.

[0017] The water output device 30 can include a first tap 31 and a second tap 32. The first tap 31 is connected to the second water outlet 113. The second tap 32 is connected to the water exit 22.

[0018] The water heating and distribution system 100 can include a connecting pipe 40. One end of the connecting pipe 40 is connected to the first tap 31, and the other end of the connecting pipe 40 is connected to the second tap 32.

[0019] FIG. 2 illustrates the system control device 10 working in the second mode. The first port 121 is connected to the water heating device 20 via the first outlet 121, the second port 122 is connected to the water output device 30 via the second outlet 122, and the third port is closed. The switch 12 disconnects the water heating device 20 and the water output device 30 from the water supply.

[0020] FIG. 3 illustrates that the system control device 10 can further include a control unit 14, an operation unit 16, and an urgent stopping switch 17. The control unit 14 is configured to drive the switch 12 to rotate. The pump 15, the operation unit 16, and the urgent stopping switch 17 are connected to the control unit 14. The pump 15 is configured to drive water to flow. The operation unit 16 is configured to send instructions to the control unit 14. The urgent stopping switch 17 is configured to drive the system control device 10 to immediately change the second mode to the first mode. When the operation unit 16 is turned off, the system control device 10 works in the first mode, and the pump 15 is turned off.
When the operation unit 16 is turned on, the system control device 10 works in the second mode, and the pump 15 is turned on.

[0021] The system control device 10 works in the first mode in a standby condition, and the pump 15 is turned off. If users turn on the first tap 31, cold water can flow out.

[0022] When users need hot water, running time of the system control device 10 is set and the operation unit 16 is turned on. The system control device 10 works in the second mode. Water can be driven by the pump 15 to circulate between the water heating device 20 and the water output device 30. The heating module 23 is heating the water. After reaching the preset time, the system control device 10 is changed to work in the first mode, and the pump 15 is turned off. If users turn on the second tap 32, hot water can flow out. A water outflow of cold water is avoided when users need hot water, in order to save water.

[0023] The first tap 31 and the second tap 32 must be turned off when the system control device 10 works in the second mode, otherwise the heating module 23 will stop working because no water is circulating between the water heating device 20 and the water output device 30.

[0024] If users need water when the system control device 10 works in the second mode, the urgent stopping switch 17 should be opened. The system control device 10 will revert to working in the first mode. The first tap 13 is turned on and water can flow out.

[0025] The embodiments shown and described above are only examples. Many details are often found in the art such as the other features of a water heating and distribution system. Therefore, many such details are neither shown nor described. Even though numerous characteristics and advantages of the present technology have been set forth in the foregoing description, together with details of the structure and function of the present disclosure, the disclosure is illustrative only, and changes may be made in the details, especially in matters of shape, size, and arrangement of the parts within the principles of the present disclosure, up to and including the full extent established by the broad general meaning of the terms used in the claims. It will therefore be appreciated that the embodiments described above may be modified within the scope of the claims.

What is claimed is:

1. A water heating and distribution system comprising:
a water heating device configured to heat water;
a water output device connected to the water heating device and configured to output the water from the water heating device; and
a system control device connected to the water heating device and the water output device;
wherein the system control device is configured to allow the water heating device to receive water from a water supply when the system control device works in the first mode, and the system control device is configured to disconnect the water heating device from the water supply and allow the water to circulate between the water heating device and the water output device when the system control device works in a second mode.

2. The water heating and distribution system of claim 1, wherein the system control device comprises a pump to drive water to circulate between the water heating device and the water output device.

3. The water heating and distribution system of claim 2, wherein the pump is turned off when the system control device works in the first mode, the pump is turned on when the system control device works in the second mode.

4. The water heating and distribution system of claim 3, wherein the system control device further comprises a housing and a switch mounted in the housing, the pump is mounted to the switch.

5. The water heating and distribution system of claim 4, wherein the switch comprises a first port, a second port, and a third port, when the system control device works in the first mode, the first port is connected to the water supply, the second port is connected to the water heating device, and the third port is connected to the water output device; when the system control device works in the second mode, the first port is connected to the water heating device, the second port is connected to the water output device, and the third port is closed.

6. The water heating and distribution system of claim 4, wherein the system control device is changed between the first mode and the second mode by rotating the switch.

7. The water heating and distribution system of claim 5, wherein the pump is located between the first port and the second port.

8. The water heating and distribution system of claim 4, wherein the system control device comprises a control unit connected to the switch and configured to drive the switch to rotate according to instructions.

9. The water heating and distribution system of claim 8, wherein the system control device further comprises an urgent stopping switch configured to change the second mode to the first mode, the urgent stopping switch is connected to the control unit.

10. The water heating and distribution system of claim 8, wherein the system control device further comprises an operation unit connected to the control unit, the operation unit is configured to send the instructions to the control unit.

11. The water heating and distribution system of claim 4, wherein the switch is substantially T-shaped.

12. A system control device in a water heating and distribution system, comprising:
a switch; and
a pump mounted to the switch;
wherein the switch is configured to allow the water heating and distribution system to receive water from a water supply when the system control device works in a first mode, and the switch is configured to disconnect the water heating and distribution system from the water supply, and the pump is configured to drive the water to circulate in the water heating and distribution system when the system control device works in a second mode.

13. The system control device of claim 12, further comprising a housing, wherein the switch is movably mounted in the housing, the system control device is changed between the first mode and the second mode by rotating the switch.

14. The system control device of claim 12, wherein the switch comprises a first port, a second port, and a third port, when the system control device works in the first mode, the first port is configured to connect to the water supply, the second port is configured to connect to a water heating device, and the third port is configured to connect to a water output device; when the system control device works in the second mode, the first port is configured to connect to the water heating device, the second port is configured to connect to the water output device, and the third port is configured to be closed.
15. The system control device of claim 14, wherein the pump is located between the first port and the second port.

16. The system control device of claim 12, further comprising a control unit connected to the switch, wherein the control unit is configured to drive the switch to rotate according to instructions.

17. The system control device of claim 16, further comprising an urgent stopping switch connected to the control unit, wherein the urgent stopping switch is configured to change the second mode to the first mode.

18. The system control device of claim 16, further comprising an operation unit connected to the control unit, wherein the operation unit is configured to send the instructions to the control unit.

19. The system control device of claim 12, wherein the switch is substantially T-shaped.

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