HEATING APPARATUS OF HOT DRINK MACHINE

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Appl. No.: 13/587,070

Filed: Aug. 16, 2012

ABSTRACT

The present invention provides a heating apparatus of a hot drink machine comprising a conduit pipe extended from a reservoir and connected to an internal heating assembly, a conduit pipe connected between an outlet of the internal heating assembly and a sprinkler outlet on an entrance of a brewing container, a gate for controlling hot water provided on conduit pipe adjacent to sprinkler outlet, characterized in that: said internal heating assembly comprises an electric heating liner surrounding an outer circumference of a stainless steel pipe, and an aluminum material die casted to encompass the electric heating liner on the outer circumference of the stainless steel pipe; whereby heat from said electric heating liner is uniformly distributed on the stainless steel pipe via said aluminum material encompassed said outer circumference thereof such that heat is uniformly transmitted to raw water in said internal heating assembly to increase a heating efficiency thereof.
HEATING APPARATUS OF HOT DRINK MACHINE

BACKGROUND OF THE INVENTION

1. Technical Field

The present invention is related to a heating apparatus of a hot drink machine and is primarily used for heating raw water in an internal heating assembly to a predetermined temperature by utilizing an electric heating liner to uniformly distribute heat to the stainless steel pipe containing raw water therein and provided in the internal heating assembly to effectively increase the heating efficiency of the internal heating assembly.

2. Description of Related Art

It is known that currently there are numerous designs and configurations of heating apparatus for brewing or boiling hot drinks in the industry, among which that are directed to brewing including such as tea bags, coffee powder, hot drink machines 80 (as shown in FIG. 1). The hot drink machine 80 is configured to comprise a reservoir 10 for containing raw water and a conduit pipe 20 extended from a bottom of the reservoir 10 and connected to an internal heating assembly 30 of a column shape having an electric heating liner 40 externally surrounding an outer circumferential thereof. An outlet along the column shaped internal heating assembly 30 is also connected to a conduit pipe 20 that is further connected to a sprinkler outlet 201 provided on top of the entrance of the brewing container 60. A gate 50 is provided on the conduit pipe 20 adjacent to the sprinkler outlet 201 to control the opening or closing of the hot water. Furthermore, a boiler bottle 70 for containing brewed or boiled hot drink is provided underneath the brewing container 60.

Although the abovementioned hot drink machine 80 is able to heat the raw water entering into the column shaped internal heating assembly 30 to a predetermined temperature during its use, the electric heating liner 40 for heating the raw water is being provided to directly surrounding an outer side of the internal heating assembly such that the raw water in the column shaped internal heating assembly cannot be completely heated.

SUMMARY OF THE INVENTION

The present invention is an improvement to a heating apparatus of a hot drink machine that can be used for brewing any types of hot drinks in order to overcome existing drawbacks of such machine during its uses such that the raw water entering into the internal heating assembly of the hot drink machine to be heated to a predetermined temperature is able to utilize an electric heating liner capable of distributing heat uniformly to a stainless steel pipe containing raw water therein and provided in said internal heating assembly and such that the heating of the internal assembly is of a better heat conductivity to substantially increase the heating efficiency of the internal heating assembly.

A first objective of the present invention is to provide a hot drink machine comprising a reservoir for containing a raw water, a conduit pipe extended from a bottom of said reservoir and connected to an internal heating assembly, a conduit pipe connected between an outlet of said internal heating assembly and a sprinkler outlet provided on a top of an entrance of a brewing container, a gate for controlling opening or closing of hot water provided on a section of said conduit pipe adjacent to said sprinkler outlet; characterized in that said internal heating assembly comprises an electric heating liner externally surrounding an outer circumference of a stainless steel pipe of a predetermined diameter, and an aluminum material die casted to encompass said electric heating liner on said outer circumference of said stainless steel pipe; whereby during a heating process of said raw water entering said internal heating assembly, heat from said electric heating liner is uniformly distributed on said stainless steel pipe containing said raw water via said aluminum material encompassed said outer circumference thereof such that said heat is uniformly transmitted to said raw water entering said internal heating assembly to increase a heating efficiency of said internal heating assembly.

A second objective of the present invention is to provide a hot drink machine comprising a reservoir for containing a raw water, a conduit pipe extended from a bottom of said reservoir and connected to an internal heating assembly, a conduit pipe connected to an outlet of said internal heating assembly to a sprinkler outlet provided on a top of a brewing container, a gate for controlling opening or closing of hot water is provided on a section of said conduit pipe adjacent to said sprinkler outlet; characterized in that said conduit pipe connected between said reservoir and said internal heating assembly is provided with a receiving space adjacent to said bottom of said reservoir; at least two water-level sensors are provided in said receiving space whereby when a water level in said reservoir is lower than said sensors, electricity to said internal heating assembly is shut off by a sensor signal transmitted from a circuit board connected to said sensors such that heating of said internal heating assembly is stopped to prevent any idle heating.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of an assembly of a known hot drink machine;
FIG. 2 is a front view of an assembly of a hot drink machine of the present invention;
FIG. 2A is a cross sectional and enlarged perspective view of portion A as shown in FIG. 2;
FIG. 2B is a cross sectional and enlarged side view of portion B as shown in FIG. 2; and
FIG. 3 is a perspective view of FIG. 2B.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

As shown in FIG. 2, a heating apparatus of a hot drink machine 9 comprising a reservoir 1 for containing a raw water, a conduit pipe 2 extended from a bottom of said reservoir 1 and connected to an internal heating assembly 7, a conduit pipe 2 connected between an outlet of said internal heating assembly 7 and a sprinkler outlet 21 provided on a top of an entrance of a brewing container 8, a gate 22 for controlling opening or closing of hot water is provided on a section of said conduit pipe 2 adjacent to said sprinkler outlet 21 and a boiler bottle 91 for containing brewed or boiled hot drink is provided underneath the brewing container 8; characterized in that:

 Said internal heating assembly 7, as shown in FIGS. 2 and 2A, comprises an electric heating liner 5 externally surrounding an outer circumference of a stainless steel pipe 4 of a predetermined diameter, and an aluminum material 6 die casted to encompass said electric heating liner 5 on said outer
circumference of said stainless steel pipe 4; said conduit pipe 2 connected between said reservoir 1 and said internal heating assembly 7 is provided with a receiving space 11, as shown in FIGS. 2 and 2A, adjacent to said bottom of said reservoir 1; at least two water-level sensors 3, as shown in FIG. 3, are provided in said receiving space 11.

[0016] During a heating process (as shown in FIGS. 2 and 2A) of said raw water entering said internal heating assembly 7 of the abovementioned hot drink machine 9 provided, heat from said electric heating liner 5 is uniformly distributed on said stainless steel pipe 4 containing said raw water via said aluminum material 6 encompassed said outer circumference thereof such that said heat is uniformly transmitted to said raw water entering said internal heating assembly 7 to increase a heating efficiency of said internal heating assembly 7.

[0017] Also, during the use of the abovementioned hot drink machine 9, when a water level in said reservoir 1 is lower than said sensors 3, electricity to said internal heating assembly 7 is shut off by a sensor signal transmitted from a circuit board (circuit board not shown in the figures) connected to said sensors 3 to stop the heating of the stainless steel pipe 4 by the electric heating liner 5 and such that heating of said internal heating assembly 7 is stopped to prevent any idle heating.

What is claimed is:

1. A heating apparatus of a hot drink machine, said hot drink machine comprising a reservoir for containing a raw water, a conduit pipe extended from a bottom of said reservoir and connected to an internal heating assembly, a conduit pipe connected between an outlet of said internal heating assembly and a sprinkler outlet provided on a top of an entrance of a brewing container, a gate for controlling opening or closing of hot water provided on a section of said conduit pipe adjacent to said sprinkler outlet;

characterized in that: said internal heating assembly comprises an electric heating liner externally surrounding an outer circumference of a stainless steel pipe of a predetermined diameter, and an aluminum material is casted to encompass said electric heating liner on said outer circumference of said stainless steel pipe; whereby during a heating process of said raw water entering said internal heating assembly, heat from said electric heating liner is uniformly distributed on said stainless steel pipe containing said raw water via said aluminum material encompassed said outer circumference thereof such that said heat is uniformly transmitted to said raw water entering said internal heating assembly to increase a heating efficiency of said internal heating assembly,

2. A heating apparatus of a hot drink machine, said hot drink machine comprising a reservoir for containing a raw water, a conduit pipe extended from a bottom of said reservoir and connected to an internal heating assembly, a conduit pipe connected to an outlet of said internal heating assembly to a sprinkler outlet provided on a top of a brewing container, a gate for controlling opening or closing of hot water is provided on a section of said conduit pipe adjacent to said sprinkler outlet;

characterized in that: said conduit pipe connected between said reservoir and said internal heating assembly is provided with a receiving space adjacent to said bottom of said reservoir, at least two water-level sensors are provided in said receiving space whereby when a water level in said reservoir is lower than said sensors, electricity to said internal heating assembly is shut off by a sensor signal transmitted from a circuit board connected to said sensors such that heating of said internal heating assembly is stopped to prevent any idle heating.

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