[NAME OF DOCUMENT] SPECIFICATION
[TITLE OF THE INVENTION] ELECTRIC INSTANTANEOUS WATER HEATER
[TECHNICAL FIELD]
[0001]
The present invention relates to an electric instantaneous water heater which is especially used for shower.
[BACKGROUND TECHNIQUE]
[0002]
There is conventionally proposed an electric instantaneous water heater which is especially suitable for shower (patent document 1 for example). The electric instantaneous water heater according to patent document 1 includes a chassis configuring an outline, a tank placed in the chassis, a heater placed in the tank, a water supply pipe for supplying water to the tank, and a hot water supply pipe for serving hot water from the tank.
[PRIOR ART DOCUMENT]
[PATENT DOCUMENT]
[0003]
[Patent Document 1] Japanese Patent Application Laid-open No.2012-172947
[SUMMARY]

[0004]
The tank according to patent document 1 is laterally long, and the electric instantaneous water heater is longer in its height direction than its width direction. It is difficult in some cases to install such a conventional electric instantaneous water heater at a place, such as a lower space of a sink, where a space in the height direction is limited.
[0005]
Hence, embodiments of the present disclosure provide an electric instantaneous water heater which can reduce a height of its chassis.

[0006]
In an aspect, there is provided an electric instantaneous water heater including: a chassis 10 configuring an outline; a tank 20 placed in the chassis 10; a heater 30 placed in the tank 20; a water supply pipe 40 for supplying water to the tank 20; and a hot water supply pipe 50 for deriving hot water from

the tank 20, in which the tank 20 is formed of a cylindrical torso 21 and a pair of end surfaces 22 and 23 which close both ends of the cylindrical torso 21, wherein a longitudinal direction length 21L of the cylindrical torso 21 is set longer than diameters 22D of the end surfaces 22 and 23, the cylindrical torso 21 is placed such that its longitudinal direction is directed to a width direction of the chassis 10, a width direction length of the chassis 10 is set longer than a height direction length of the chassis 10, an electrical substrate on which an electronic component is mounted is placed on a lower surface of a resin cover, and the resin cover is placed below the tank such that a predetermined space is secured from the tank.

According to an example, in the electric instantaneous water heater of an example, a tank water supply connection port 41 of the water supply pipe 40 is connected to the one end surface 22, a tank hot water supply connection port 51 of the hot water supply pipe 50 is connected to an upper portion of the cylindrical torso 21 on a side of the other end surface 23, and at least a portion of the hot water supply pipe 50 is placed at a position higher than a virtual tank center line 20C of the cylindrical torso 21 and lateral to the cylindrical torso 21.

According to an example, in the electric instantaneous water heater of an example, coil heaters 30A and 30B are used as the heater 30, a virtual coil center line 30C of the coil heaters 30A and 30B is parallel to the virtual tank center line 20C, and the heater 30 is placed in the tank 20 such that the virtual coil center line 30C of the coil heaters 30A and 30B is located lower than the virtual tank center line 20C.

According to an example, in the electric instantaneous water heater of an embodiment, the tank water supply connection port 41 is located lower than the virtual tank center line 20C.

According to an example, in the electric instantaneous water heater of an example, the tank water supply connection port 41 is located at a position which does not coincide with the virtual coil center line.

According to an example, in the electric instantaneous water heater of an example, the tank water supply connection port 41 is located lower than the virtual coil center line.

According to an example, in the electric instantaneous water heater according to an example, an electrical substrate 60 on which an

electronic component is mounted is placed on a lower surface of a resin cover 70, and the resin cover 70 is placed below the tank 20 such that a predetermined space is secured from the tank 20.

According to an example, in the electric instantaneous water heater of claim 7, the resin cover 70 is placed such that it inclines from a horizontal plane.

According to an example, in the electric instantaneous water heater of an example, an upward wall standing up from the resin cover 70 is provided around the resin cover 70, and a dew condensation water discharging section is formed in the upward wall or the resin cover 70.

According to an example, in the electric instantaneous water heater according to an example, a downward wall which is suspended from the resin cover 70 is provided around the resin cover 70.

[0007]

According to the present disclosure, by laterally placing the cylindrical tank such that the longitudinal direction of the tank is directed to the width direction of the chassis, the height of the chassis can be lowered, and the water heater is easily placed in a lower space of a sink for example.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[0008]

Fig. 1 is a partially sectional front view showing an interior of a chassis of an electric instantaneous water heater according to an embodiment of the present invention; and

Figs. 2 are configuration diagrams of essential portions of the electric instantaneous water heater.

[MODE FOR CARRYING OUT THE INVENTION]

[0009]

In the electric instantaneous water heater according to the first embodiment of the present invention, a longitudinal direction length of the cylindrical torso is set longer than diameters of the end surfaces, the cylindrical torso is placed such that its longitudinal direction is equal to a width direction of the chassis, and a width direction length of the chassis is set longer than a height direction length of the chassis. According to

[NAME OF DOCUMENT] CLAIMS

[Claim 1]

An electric instantaneous water heater comprising:

a chassis configuring an outline;

a tank placed in the chassis;

a heater placed in the tank;

a water supply pipe for supplying water to the tank; and

a hot water supply pipe for deriving hot water from the tank, in which

the tank is formed of a cylindrical torso and a pair of end surfaces which close both ends of the cylindrical torso, wherein

a longitudinal direction length of the cylindrical torso is set longer than diameters of the end surfaces,

the cylindrical torso is placed such that its longitudinal direction is directed to a width direction of the chassis,

a width direction length of the chassis is set longer than a height direction length of the chassis

an electrical substrate on which an electronic component is mounted is placed on a lower surface of a resin cover, and

the resin cover is placed below the tank such that a predetermined space is secured from the tank.

[Claim 2]

The electric instantaneous water heater according to claim 1, wherein

a tank water supply connection port of the water supply pipe is connected to the one end surface,

a tank hot water supply connection port of the hot water supply pipe is connected to an upper portion of the cylindrical torso on a side of the other end surface, and

at least a portion of the hot water supply pipe is placed at a position higher than a virtual tank center line of the cylindrical torso and lateral to the cylindrical torso.

[Claim 3]

The electric instantaneous water heater according to claim 2, wherein

coil heaters are used as the heater,

a virtual coil center line of the coil heaters is parallel to the virtual tank center line, and

the heater is placed in the tank such that the virtual coil center line of the coil heaters is located lower than the virtual tank center line.

[Claim 4]

The electric instantaneous water heater according to claim 2 or 3, wherein

the tank water supply connection port is located lower than the virtual tank center line.

[Claim 5]

The electric instantaneous water heater according to claim 3,wherein

the tank water supply connection port is located at a position which does not coincide with the virtual coil center line.

[Claim 6]

The electric instantaneous water heater according to claim 3, wherein

the tank water supply connection port is located lower than the virtual coil center line.

[Claim 7]

The electric instantaneous water heater according to claim 6, wherein

the resin cover is placed such that it inclines from a horizontal plane.

[Claim 8]

The electric instantaneous water heater according to claim 6 or 7, wherein

an upward wall standing up from the resin cover is provided around the resin cover, and

a dew condensation water discharging section is formed in the upward wall or the resin cover.

[Claim 9]

The electric instantaneous water heater according to any one of claims 6 to 8, wherein

a downward wall which is suspended from the resin cover is provided around the resin cover.