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SUMMARY

However, in the conventional configuration, the washing tub (not shown) is rotatably provided in water tub 71, and rotates in a direction of the arrows in FIG. 16 during a spin-drying operation. This rotation of the washing tub causes a flow of the washing liquid in the direction of the arrows in FIG. 16.

Since a support portion of heater 72 of fixing portion 74 is disposed in a direction orthogonal to the flow of the washing liquid, the washing liquid collides with the support portion of heater 72. This causes turbulence, prevents a favorable rotation of the washing tub, and causes vibration. Otherwise, spin-drying failure occurs due to an increase in rotational resistance because of abnormal occurrence of foam.

The present disclosure provides a washing machine capable of suppressing vibration and abnormal occurrence of foam during a spin-drying operation.

In an aspect, the present disclosure provides a washing machine comprising: a housing; a water tub provided in the housing; a washing tub rotatably provided in the water tub; a driving device that drives the washing tub to rotate; and a heating device that is provided in the water tub and heats a washing liquid, wherein the heating device is attached to an attachment portion disposed in the water tub, and the attachment portion has a first side surface disposed to be inclined toward a rotation direction side of the washing tub, the first side surface being substantially orthogonal to the rotation direction of the washing tub during spin-drying

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In an example, the present disclosure provides a washing machine comprising: a housing; a water tub provided in the housing; a washing tub rotatably provided in the water tub; a driving device that drives the washing tub to rotate; a drain port that is provided on a bottom surface of the water tub and drains a washing liquid in the water tub, and a heating device that is provided at a bottom of the water tub and heats the washing liquid, wherein the drain port and the heating device are provided apart from each other.

In an example, the present disclosure provides a washing machine comprising: a housing; a water tub provided in the housing; a washing tub rotatably provided in the water tub; a driving device that drives the washing tub to rotate; and a heating device that is provided in the washing tub and heats the washing liquid, wherein the housing has an opening that is openably closed by a door, the water tub is provided with an attachment portion to which the heating device is attached, and the attachment portion is disposed with an attachment opening through which the heating device is inserted into the water tub from outside of the water tub at a position facing the opening.

In an example, the present disclosure provides a heated water generation device comprising: a water tub; a heating device that is provided at a bottom of the water tub and heats a liquid in the water tub; a temperature sensor provided in the heating device; and a heating plate provided above the heating device to cover the heating device, wherein the heating plate has a passage hole disposed substantially above the temperature sensor.

In an example, the present disclosure provides a

washing machine comprising: a housing; a water tub provided in the housing; a washing tub rotatably provided in the water tub; a driving device that drives the washing tub to rotate; a water supply device that supplies a washing liquid into the water tub; a heating device that is provided at a bottom of the washing tub and heats the washing liquid; a temperature sensor provided in the heating device; and a heating plate provided above the heating device to cover the heating device, wherein the heating plate has a passage hole disposed substantially above the temperature sensor.

In an example, the present disclosure provides a washing machine comprising: a housing; a water tub provided in the housing; a washing tub rotatably provided in the water tub; a pulsator rotatably provided at an inner bottom of the washing tub; a driving device that drives the washing tub and the pulsator to rotate; a circulation path that circulates the washing liquid in the washing tub; a circulation pump that forms a flow of the washing liquid in the circulation path; a heating device that is provided in the water tub and heats the washing liquid; and a control device that controls the driving device, the circulation pump, and the heating device, wherein the control device operates the circulation pump and the heating device simultaneously..

In an example, the present disclosure provides a washing machine comprising: a housing; a water tub provided in the housing; a washing tub rotatably provided in the water tub; a driving device that drives the washing tub to rotate; a heating device that is provided in the water tub and heats a washing liquid; and a circulation path that circulates the washing liquid in the water tub from above into the washing tub, wherein a circulation water port to the circulation path is disposed at a bottom of the water tub.

This configuration can provide a washing machine capable of suppressing vibration and abnormal occurrence of foam during the spin-drying

CLAIMS

1. A washing machine comprising:

a housing;

a water tub provided in the housing;

a washing tub rotatably provided in the water tub;

a driving device that drives the washing tub to rotate; and

a heating device that is provided in the water tub and heats a washing liquid, wherein

the heating device is attached to an attachment portion disposed in the water tub, and

the attachment portion has a first side surface disposed to be inclined toward a rotation direction side of the washing tub, the first side surface being substantially orthogonal to the rotation direction of the washing tub during spin-drying.

2. The washing machine according to claim 1, wherein the attachment portion is disposed with an attachment opening of the heating device, on a second side surface substantially orthogonal to the first side surface.

3. The washing machine according to claim 1 or 2, wherein

the water tub includes a drain port and a bottom surface that is gradually lower toward the drain port, and

the heating device is provided substantially parallel to the bottom surface of the water tub.

4. The washing machine according to any one of claims 1 to 3, further

comprising a heat shield plate that shields transmission of heat generated by the heating device to the bottom surface of the water tub is provided between the bottom surface of the water tub and the heating device.

5. The washing machine according to any one of claims 1 to 4, further comprising a heating plate that covers an upper side of the heating device is provided between the bottom surface of the washing tub and the heating device.