The automatic liquid-agent feeding device includes a water supply valve provided with the housing and configured to control supply of tap water into the water tub, a pump unit configured to suck and discharge the liquid agent stored in the tank, and a liquid channel that allows the pump unit to communicate with the water supply valve, the liquid agent discharged from the pump unit falls freely into the water tub and wherein the water supply valve is configured to be opened for a predetermined period of time after the liquid agent stored in the tank is supplied into the water tub.. This configuration suppresses the liquid agent discharged from the pump unit from attaching and being fixed to a liquid channel leading to the water tub. As a result, a highly reliable washing machine can be provided.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of a washing machine according to an exemplary embodiment of the present invention.

FIG. 2 is a vertical sectional view of the washing machine according to the exemplary embodiment.

FIG. 3 is a plan view of an automatic liquid-agent feeding device of the washing machine according to the exemplary embodiment.

FIG. 4 is a right side view of the automatic liquid-agent feeding device of the washing machine according to the exemplary embodiment.

FIG. 5 is a left side view of the automatic liquid-agent feeding device of the washing machine according to the exemplary embodiment.

FIG. 6 is a left sectional view of the automatic liquid-agent feeding device of the washing machine according to the exemplary embodiment.

FIG. 7 is an exploded perspective view of the automatic liquid-agent feeding device of the washing machine according to the exemplary embodiment.

FIG. 8A is a schematic view of a three-way valve unit of the washing machine according to the exemplary embodiment in supplying tap water.

FIG. 8B is a schematic view of the three-way valve unit of the washing machine according to the exemplary embodiment in supplying detergent liquid.

FIG. 8C is a schematic view of the three-way valve unit of the washing

CLAIMS

1. A washing machine comprising:

a housing;

a water tub supported inside the housing;

a washing tub rotatably provided in the water tub;

a tank containing case disposed above the water tub and including a container;

a tank disposed in the container of the tank containing case and configured to store a liquid agent;

an automatic liquid-agent feeding device configured to automatically feed the liquid agent stored in the tank into the washing tub;

a liquid channel that allows the pump unit to communicate with the water supply valve,

wherein the automatic liquid-agent feeding device includes a water supply valve provided with the housing and configured to control supply of tap water into the water tub, a pump unit configured to suck and discharge the liquid agent stored in the tank, and a liquid channel that allows the pump unit to communicate with the water supply valve,

wherein the liquid agent discharged from the pump unit falls freely into the water tub, and wherein the water supply valve is configured to be opened for a predetermined period of time after the liquid agent stored in the tank is supplied into the water tub.

2. The washing machine according to claim 1, comprising:

a detergent case that is disposed in the container of the tank containing case, and is configured to store powder detergent for manual feeding;

a drain port provided at a bottom of the tank containing case; and

a coupling hose that allows the drain port to communicate with the water tub,

wherein the coupling hose is connected with a branch liquid channel, and

wherein the branch liquid channel is connected with and communicates with a discharge channel of the pump unit.

3. The washing machine according to claim 1,

wherein subsequent to supplying of the liquid agent stored in the tank into the water tub, the pump unit is driven for a predetermined period of time after the water supply valve is opened.

4. The washing machine according to claim 1,

wherein subsequent to supplying of the liquid agent stored in the tank into the water tub, the water supply valve is configured to be opened and closed intermittently for a predetermined period of time.

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

the liquid channel is configured to provide a three-way valve unit for controlling an inflow of the liquid agent from the tank between the water supply valve and the pump unit.