each other by welding. Accordingly, if there is a portion which is not completely bonded in the welded portions, water leaks out from a gap of a defectively welded portion when water is supplied from water supply valve 113. The overflowed water may come into contact with an electric terminal of an electrical component such as water supply valve 113 of water injection device 110, or enter the inside thereof. Accordingly, there is a problem that an operation failure or a breakdown of a washing machine may occur.

In the configuration of water injection device 121 disclosed in PTL 2, the aid-agent liquid overflowing from aid-agent case 124 irregularly falls from the front end to flowing water port 125. Accordingly, the falling water is scattered to the outside of the washing tub, and there is a problem that the quality of the appearance of the washing machine deteriorates due to attachment of washing aid agent 122 or the like.

Citation List

Patent Literature

PTL 1: Japanese Patent Unexamined Publication No. 2014-033837

PTL 2: Japanese Patent Unexamined Publication No. 11-042392

SUMMARY

Embodiments of present disclosure provide a washing machine in which a water injection case of a water injection device is integrally formed, water leakage from the water injection device is prevented, and occurrence of operation failures or the like is prevented.

That is, a washing machine of a first aspect of the present disclosure includes a washing tub which is provided inside a main body, a water injection device which supplies water to the washing tub, and a control

device which performs a

washing operation. The water injection device includes an accommodation case into which a washing aid agent is loaded, a water injection case which has an opening on a front portion of the water injection case, is integrally formed, and holds the accommodation case so as to be freely taken in and out, and a flow regulator which is disposed inside the water injection case and forms an channel. The water injection device further includes a first water injector which communicates with the flow regulator, a first water supply valve which communicates with the first water injector, a second water injector which is provided in the water injection case and injects water into the accommodation case; and a second water supply valve which communicates with the second water injector wherein the first water injector is provided on at least one of a right side or a left side of the accommodation case on a rear side of the accommodation case, and wherein the flow regulator is provided on the rear side of a bottom portion of the accommodation case, and includes an outlet portion at substantially a center of the accommodation case.

According to another aspect, there is a washing machine comprising a washing tub which is provided inside a main body;

a water injection device which supplies water to the washing tub; and

a control device which performs a washing operation,

wherein the water injection device includes:

an accommodation case into which a washing aid agent is loaded;

a water injection case which has an opening on a front portion of the water injection case, is integrally formed, and holds the accommodation case so as to be freely taken in and out;

a flow regulator which is disposed inside the water injection case and forms a channel;

a first water injector which communicates with the flow regulator;

a first water supply valve which communicates with the first water injector;

a second water injector which is provided in the water injection case and injects water into the accommodation case; and

a second water supply valve which communicates with the second water injector,

wherein the second water injector is provided to inject, into the accommodation case, only a portion of water supplied via the second water supply valve.

According to this configuration, the water injection device includes the water injection case which is integrally formed without using a fixing method performed by bonding such as welding. Accordingly, occurrence of operation failures or the like due to water leakage from the water injection device is prevented, and it is possible to improve reliability of the washing machine. Since a bonding step such as welding of the water injection case and a leakage inspection step thereof are not required, it is possible to realize a reasonable manufacturing operation having improved productivity.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a view showing a cross-section of a side surface of a washing machine according to an embodiment of the present invention.

FIG. 2 is a view showing a cross-section of a side surface of a main portion of the washing machine according to the embodiment.

FIG. 3 is an exploded perspective view showing a water injection device of the washing machine according to the embodiment.

CLAIMS

1. The washing machine comprising,

a washing tub which is provided inside a main body;

a water injection device which supplies water to the washing tub; and

a control device which performs a washing operation,

wherein the water injection device includes:

an accommodation case into which a washing aid agent is loaded;

a water injection case which has an opening on a front portion of the water injection case, is integrally formed, and holds the accommodation case so as to be freely taken in and out;

a flow regulator which is disposed inside the water injection case and forms a channe;

a first water injector which communicates with the flow regulator;

a first water supply valve which communicates with the first water injector;

a second water injector which is provided in the water injection case and injects water into the accommodation case; and

a second water supply valve which communicates with the second water injector,

wherein the first water injector is provided on at least one of a right side or a left side of the accommodation case on a rear side of the accommodation case, and

wherein the flow regulator is provided on the rear side of a bottom portion of the accommodation case, and includes an outlet portion at

substantially a center of the accommodation case.

2. The washing machine comprising,

a washing tub which is provided inside a main body;

a water injection device which supplies water to the washing tub; and

a control device which performs a washing operation,

wherein the water injection device includes:

an accommodation case into which a washing aid agent is loaded;

a water injection case which has an opening on a front portion of the water injection case, is integrally formed, and holds the accommodation case so as to be freely taken in and out;

a flow regulator which is disposed inside the water injection case and forms a channel;

a first water injector which communicates with the flow regulator;

a first water supply valve which communicates with the first water injector;

a second water injector which is provided in the water injection case and injects water into the accommodation case; and

a second water supply valve which communicates with the second water injector,

wherein the second water injector is provided to inject, into the accommodation case, only a portion of water supplied via the second water supply valve.

3. The washing machine of Claim 1,

wherein the second water injector is provided above a rear side of the accommodation case, and

wherein the accommodation case is configured such that a portion receiving water injected from the second water injector is inclined.

4. The washing machine of Claim 1,

wherein the flow regulator includes a rib inside the flow regulator.

5. The washing machine of Claim 1,

wherein the accommodation case includes through holes on a right side and a left side of the accommodation case, and water which flows into the accommodation case and overflows falls through the through holes.

6. The washing machine of Claim 5,

wherein the accommodation case includes an accommodation portion which holds the washing aid agent, and grooves which are provided on at least the right side and the left side of the accommodation portion, and

wherein the through holes are provided on the grooves.