[Claim 1]

A fine bubble generating device comprising a pumping section for pumping a liquid fluid from a liquid, a gas introducing section for introducing gas into the liquid fluid, and a fine bubble generating section used in the liquid for generating fine bubbles in the liquid fluid from the gas introduced from the gas introducing section and the liquid fluid pumped out from the pumping section and discharging the liquid fluid and the fine bubbles to the liquid, the fine bubble generating section comprising:

a container body;

a first liquid fluid introducing section provided on the container body for introducing the liquid fluid pumped out from the pumping section into the container body;

a discharging section provided on the container body for discharging the liquid fluid introduced from the first liquid fluid introducing section;

a liquid fluid swirling section provided in the container body for making the liquid fluid introduced from the first liquid fluid introducing section swirl in a spiral toward the discharging section; and

a discharged flow volume adjusting section comprising a baffle board that is movable in an approximately perpendicular direction to the discharging section by the swirled liquid flow generated by the fluid swirling section .

[Claim 2]

The fine bubble generating device of claim 1, wherein the discharged flow volume adjusting section has an axis provided approximately perpendicular to the discharging section and supported by the container body and an insertion bore through which the axis is inserted, the axis being inserted through the baffle board so that the baffle board is movable in the axial direction through the insertion bore.

[Claim 3]
The fine bubble generating device of claim 2, wherein the discharged flow volume adjusting section has a stopper section provided so as to prevent the baffle board from being released from the axis.

[Claim 4]
The fine bubble generating device of claim 2 or 3, wherein
the axis has an end with a large outer diameter and an end with a small outer diameter and is formed to have an outer diameter that gradually increases from the small outer diameter end to the large outer diameter end.

[Claim 5]
The fine bubble generating device of claim 3, wherein
the stopper section restricts the movement of the baffle board at a position where an outer diameter of the axis is approximately identical to an inner diameter of the insertion bore of the baffle board.

[Claim 6]
The fine bubble generating device of claim 3 or 5, wherein
the stopper section comprises a washer through which the axis is inserted, and
the washer restricts the movement of the baffle board from the discharging section to a direction of discharging the liquid fluid and acts as a buffering material.

[Claim 7]
The fine bubble generating device of any one of claims 1 to 6, wherein
the container body has a shape in which an inner wall having an annular shape from the cross sectional view gradually decreases toward the discharging section.

[Claim 8]

The fine bubble generating device of any one of claims 1 to 7, wherein

the gas introducing section is provided upstream of the pumping section.

[Claim 9]

The fine bubble generating device of any one of claims 1 to 8, wherein

the gas introducing section is provided, so that one end of a tube is directed toward the discharging section and gas is introduced into the container body through the tube by suction from the discharging section when a liquid pressure in the vicinity of the discharging section in the container body is lower than a liquid pressure outside the container body.

[Claim 10]

The fine bubble generating device of claim 9, wherein

in the gas introducing section, the tube and the axis which is tubular are connected.

[Claim 11]

The fine bubble generating device of any one of claims 1 to 10, wherein

an inner wall of the container body has an annular cross-section in a direction of the discharging section,

the first liquid fluid introducing section is provided so that the liquid fluid is introduced along a tangential direction of the annular shape from a cross-sectional view.

[Claim 12]

The fine bubble generating device of any one of claims 1 to 11, wherein

the container body comprises

a preliminary swirl chamber where a first swirl flow flows, the first swirl flow being introduced from the first liquid fluid introducing section, a main swirl chamber where

a second swirl flow flows, the second swirl flow being in the opposite direction from the first swirl flow flowing through the preliminary swirl chamber, and a second liquid fluid introducing section for introducing the liquid fluid from the preliminary swirl chamber to the main swirl chamber.

[Claim 13]

The fine bubble generating device of claim 12, wherein

the main swirl chamber and the preliminary swirl chamber are formed by a reverse swirl flow generating wall, and

the second liquid fluid introducing section is provided on the reverse swirl flow generating wall.

[Claim 14]

A fine bubble generating device comprising a pumping section for pumping a liquid fluid from a liquid, a gas introducing section for introducing gas into the liquid fluid, and a fine bubble generating section used in the liquid for generating fine bubbles in the liquid fluid from the gas introduced from the gas introducing section and the liquid fluid pumped out from the pumping section and discharging the liquid fluid and the fine bubbles to the liquid, the fine bubble generating section comprising:

a container body;

a first liquid fluid introducing section for introducing a liquid fluid pumped out from the pumping section into the container body;

a discharging section for discharging the liquid fluid; and

a liquid fluid swirling section for making the liquid fluid introduced from the first liquid fluid introducing section swirl in a spiral toward the discharging section;

wherein the container body comprises

a preliminary swirl chamber where a first swirl flow flows, the first swirl flow being introduced from the first

liquid fluid introducing section, a main swirl chamber where a second swirl flow flows, the second swirl flow being in the opposite direction from the first swirl flow flowing through the preliminary swirl chamber, and a second liquid fluid introducing section for introducing the liquid fluid from the preliminary swirl chamber to the main swirl chamber.

[Claim 15]

The fine bubble generating device of claim 14, wherein

the main swirl chamber and the preliminary swirl chamber are formed by a reverse swirl flow generating wall, and

the second liquid fluid introducing section is provided on the reverse swirl flow generating wall.

[Claim 16]

A method of producing a fine bubble containing-liquid fluid, comprising using the fine bubble generating device of any one of claims 1 to 15 to generate the fine bubbles in the liquid fluid.