

CLAIMS

1. A substrate processing apparatus comprising:

a processing tank that stores a processing liquid and accommodates a plurality of substrates arranged at a predetermined pitch in a standing state;

a bubble forming section that includes a plurality of bubble pipes, wherein each of the plurality of bubble pipes is divided into a tubular first discharge unit that extends in an arrangement direction of the plurality of substrates and a tubular second discharge unit that is coaxial with the first discharge unit and extends in the arrangement direction within an arrangement range where the plurality of substrates are arranged, wherein one end on a divided side of the first discharge unit and one end on the divided side of the second discharge unit is closed and a plurality of gas discharge holes are formed on the first discharge unit and the second discharge unit along the arrangement direction, and the plurality of bubble pipes are disposed at an interval in a horizontal direction orthogonal to the arrangement direction below the plurality of substrates to be accommodated in the processing tank;

a liquid supply pipe portion that includes a plurality of liquid supply pipes, wherein a plurality of

liquid discharge holes that discharge the processing liquid are formed on the plurality of liquid supply pipes along the arrangement direction, and the plurality of liquid supply pipes are disposed at an interval in the horizontal direction below the plurality of substrates to be accommodated and are disposed inside with respect to the plurality of bubble pipes in the processing tank; and

a plurality of flow rate adjustment units that are provided corresponding to each of the first discharge units and each of the second discharge units and independently adjust flow rate of an inert gas with respect to the corresponding first discharge units or second discharge units.

2. The substrate processing apparatus according to claim 1, wherein the plurality of gas discharge holes of the first discharge unit and the second discharge unit discharge the inert gas downward inward.

3. A substrate processing apparatus comprising:

a processing tank that stores a processing liquid and accommodates a plurality of substrates arranged at a predetermined pitch in a standing state;

a liquid supply pipe that is disposed below the plurality of substrates to be accommodated in the

processing tank and has a plurality of liquid discharge holes that are formed in an arrangement direction of the plurality of substrates and discharge the processing liquid downward inward and downward outward; and

a bubble pipe that is disposed below the plurality of substrates to be accommodated in the processing tank and has a plurality of gas discharge holes that are formed in the arrangement direction and discharge an inert gas obliquely downward to form bubbles of the inert gas in the processing liquid, wherein

the bubble pipe is disposed close to the outside with respect to the liquid supply pipe, and discharges the inert gas downward inward.

4. The substrate processing apparatus according to claim 3, wherein the plurality of gas discharge holes are arranged at positions lower than the plurality of liquid discharge holes.