[CLAIMS]

1. A stirring device comprising:

a stirring body; and

a driving device;

the stirring body comprising

a flat plate in which a plurality of spiral blade portions extending from a central portion is formed by a spiral cut that does not contact an outer peripheral portion, and

an operating member that supports the flat plate,

the driving device being configured to move the operating member or the flat plate of the stirring body,

either one of the operating member or an outer peripheral portion of the flat plate being movable in a direction of separating and approaching in relation to each other, and

the blade portion being configured to rise while being separated from an adjacent blade portion in conjunction with the movement in a direction of separating in relation to each other, thereby the flat plate being configured to extend to form a three-dimensional shape.

2. The stirring device according to claim 1, wherein

the operating member of the stirring body supports the flat plate in a state of being fixed.

3. The stirring device according to claim 1, wherein

the operating member of the stirring body supports the flat plate in a state of being rotatable.

4. The stirring device according to claim 1, wherein

the operating member or the flat plate of the stirring body is rotatable in forward and reverse directions during the movement.

5. The stirring device according to any one of claims 1 to 4, wherein

one or more neck portions are formed in the three-dimensional shape in which the flat plate is extended.

6. The stirring device according to any one of claims 1 to 5, wherein

the blade portion of the stirring body is formed in a plurality of wavy shapes of which the front and back surfaces are exposed on condition that seen from one direction in the three-dimensional shape in which the flat plate is extended.

7. The stirring device according to claim 1, wherein

the cut of the stirring body is formed by connecting circular arcs, straight lines, or combinations thereof in series.

8. The stirring device according to claim 1, wherein

the driving device is configured to move and rotate the operating member or the flat plate.

9. The stirring device according to any one of claims 1 to 8, further comprising a low frequency vibration device configured to vibrate vertically the flat plate.

10. A gas stirring device comprising

a stirring body; and

a driving device;

the stirring body comprising

a flat plate in which a plurality of spiral blade portions extending from a central portion is formed by a spiral cut that does not contact an outer peripheral portion; and

an operating member that supports the flat plate,

the driving device being configured to move the operating member or the flat plate of the stirring body,

either one of the operating member or an outer peripheral portion of the flat plate being movable in a direction of separating and approaching in relation to the other, and

the blade portion being configured to rise while being separated from an adjacent blade portion in conjunction with the movement in a direction of separating in relation to each other, thereby the flat plate being configured to extend to form a three-dimensional shape.

11. A gas mixing device comprising

a stirring body; and

a driving device;

the stirring body comprising

a flat plate in which a plurality of spiral blade portions extending from a central portion is formed by a spiral cut that does not contact an outer peripheral portion; and

an operating member that supports the flat plate,

the driving device being configured to move the operating member or the flat plate of the stirring body,

either one of the operating member or an outer peripheral portion of the flat plate being movable in a direction of separating and approaching in relation to the other, and

the blade portion being configured to rise while being separated from an adjacent blade portion in conjunction with the movement in a direction of separating in relation to each other, thereby the flat plate being configured to extend to form a three-dimensional shape.