Claims

1. A chucking mechanism comprising:

a tool configured to chuck a workpiece by suction;

a tool holder comprising a suction path; and

a positioning portion that positions a relative position of the tool with respect to the tool holder in a case where the tool holder holds the tool,

wherein a slit that extends from a top portion to a predetermined depth is formed in the convex portion, and

a length of the concave portion along a direction in which the slit extends is larger than a length of the concave portion in a direction orthogonal to the direction in plan view,

wherein the positioning portion comprises:

at least one convex portion arranged on one of the tool and the tool holder, the at least one convex portion being formed from an elastic material and comprising a tapered surface; and

at least one concave portion arranged on the other of the tool and the tool holder and configured to fit the convex portion.

2. The chucking mechanism according to claim 1,

wherein, as for the direction orthogonal to the direction in which the slit extends in a plan view, a length of the convex portion is larger than a length of the concave portion in a state in which the convex portion is not fitted into the concave portion, and

a length of the convex portion is equal to a length of the concave portion in a state in which the convex portion is fitted into the concave portion.

3. The chucking mechanism according to claim 1 or 2,

wherein the positioning portion comprises a plurality of the convex portions and a plurality of the concave portions, and the convex portions comprise a plurality of convex portions in which the slits extend in a same direction in plan view.

4. The chucking mechanism according to any one of claims 1 to 3, further comprising a position regulation portion that is arranged on one of the tool and the tool holder and eliminates deformation of the convex portion.

5. The chucking mechanism according to any one of claims 1 to 4,

wherein the concave portion comprises a restraining portion that restrains the convex portion in a case where the concave portion fits the convex portion.

6. The chucking mechanism according to any one of claims 1 to 5,

wherein the positioning portion is arranged at least three positions.

7. The chucking mechanism according to any one of claims 1 to 6 further comprising:

a holding means that causes the tool holder to detachably hold the tool by a magnetic force; and

a flexible member configured to airtightly connect the tool and the suction path in a case where the tool holder holds the tool by the magnetic force.

8. The chucking mechanism according to claim 7,

wherein the flexible member comprises a base portion and an inclined surface having one end connected to the base portion.

9. The chucking mechanism according to claim 8,

wherein the inclined surface is annular in plan view, and is inclined in a direction in which a circle diameter on a side connected to the base portion is small and a circle diameter on a side not connected to the base portion is large.

10. The chucking mechanism according to any one of claims 7 to 9,

wherein the flexible member comprises any one of rubber, porous resin, or magnetic fluid.

11. The chucking mechanism according to any one of claims 7 to 10,

wherein the holding means comprises a magnet fixed to one of the tool and the tool holder and a ferromagnetic body fixed to the other.

12. The chucking mechanism according to any one of claims 7 to 10,

wherein the holding means comprises a first magnet fixed to one of the tool and the tool holder and a second magnet fixed to the other, and the first magnet and the second magnet are arranged such that different magnetic poles face each other.

13. The chucking mechanism according to any one of claims 1 to 12, wherein the workpiece is an electronic component, and the tool is a collet.

14. An article manufacturing apparatus comprising:

the chucking mechanism according to claim 13; and

a mounting target member holding portion that holds a mounting target member,

wherein the collet chucks the electronic component and places the electronic component on a predetermined position of the mounting target member.

15. A semiconductor manufacturing apparatus comprising:

the chucking mechanism according to claim 13; and

a lead frame holding body that holds a lead frame,

wherein the collet chucks a first semiconductor chip, places the first semiconductor chip on the lead frame or a second semiconductor chip mounted on the lead frame, and performs

bonding.

16. The chucking mechanism according to any one of claims 1 to 12,

wherein the workpiece is a lead frame, and the tool is a lead frame holding body.

17. A semiconductor manufacturing apparatus comprising:

the chucking mechanism according to claim 16; and

a conveyance portion that conveys a first semiconductor chip,

wherein the conveyance portion conveys the first semiconductor chip, places the first semiconductor chip on the lead frame held by the lead frame holding body or a second semiconductor chip mounted on the lead frame, and performs bonding.