CLAIMS

[Claim 1]

A polishing method comprising:

a step of preparing a polishing device including a processing member, an abrasive grain feed mechanism, and a suction mechanism configured to generate suction force;

a step of setting a workpiece in the processing member;

a step of feeding the abrasive grains toward the workpiece by the abrasive grain feed mechanism through free fall; and

a step of accelerating abrasive grains fed toward the workpiece to a predetermined speed with an air flow generated by operation of the suction mechanism, and polishing the workpiece by causing the abrasive grains to contact with or collide with the workpiece.

[Claim 2]

The polishing method according to claim 1, wherein

the processing member includes a placing board having a first face and a second face as a reverse face to the first face,

a plurality of through holes penetrating the placing board in a direction from the first face toward the second face are provided in the placing board,

each of the plurality of through holes has a dimension such that each of the abrasive grains is capable of passing through and the workpiece is incapable of passing through, and

in the step of setting the workpiece in the processing member, the workpiece is placed on the first face.

[Claim 3]

The polishing method according to claim 2, wherein

the suction mechanism is disposed on the second face side, and

the air flow is an air flow from the first face toward the second face.

[Claim 4]

The polishing method according to claim 2 or 3, further comprising

a step of recovering the abrasive grains, wherein

in the step of polishing the workpiece, the abrasive grains are fed from the first face side toward the workpiece, and

in the step of recovering, the abrasive grains having reached the second face are sucked and recovered by the suction mechanism.

[Claim 5]

The polishing method according to any one of claims 1 to 4, further comprising

a step of straightening the air flow by the suction mechanism, wherein

in the step of straightening, by straightening the air flow, a mode of the abrasive grains contacting with or colliding with the workpiece is controlled.

[Claim 6]

The polishing method according to any one of claims 2 to 4, wherein the processing member further includes a frame body provided at an outer edge part of the placing board.

[Claim 7]

The polishing method according to claim 6, further comprising

a step of stirring a plurality of the workpieces by setting the plurality of workpieces in a fluidized state, wherein

in the step of setting the workpiece, the plurality of workpieces are placed on the first face, and

in the step of polishing the workpiece, the plurality of workpieces are polished by causing the abrasive grains to contact with or collide with the plurality of workpieces in the fluidized state.

[Claim 8]

The polishing method according to claim 7, wherein in the step of stirring the plurality of workpieces, the plurality of workpieces are stirred by disposing the processing member with an inclination at a predetermined angle and rotating the processing member.

[Claim 9]

The polishing method according to claim 8, wherein the predetermined angle is 30 to 70°.

[Claim 10]

The polishing method according to claim 8 or claim 9, wherein a rotational speed of the processing member is 5 to 50% of critical rotational speed.

[Claim 11]

The polishing method according to any one of claim 1 to claim 10, wherein

a Vickers hardness of the workpiece is 3 to 200 Hv, and

a speed of the abrasive grains in the occasion when the abrasive

grains contact with or collide with the workpiece is 5 to 30 m/sec.

[Claim 12]

The polishing method according to claim 11, wherein a ratio of the abrasive grains occupying a space of the abrasive grains contributing to polishing on the workpiece is 3 to 20 vol%.

[Claim 13]

A polishing device for polishing a workpiece, comprising:

a processing member for placing the workpiece;

an abrasive grain feed mechanism configured to feed abrasive grains toward the workpiece placed on the processing member; and

a suction mechanism configured to generate an air flow in a direction from the abrasive grain feed mechanism toward the processing member with suction force, wherein

the abrasive grain feed mechanism feeds the abrasive grains toward the workpiece through free fall, and

the suction mechanism accelerates the abrasive grains fed toward the workpiece by the abrasive grain feed mechanism to a predetermined speed with the air flow, and polishes the workpiece by causing the accelerated abrasive grains to contact with or collide with the workpiece.