Claims

1. A conveyance device for applying suction to a member whereby the member can be held and conveyed, comprising:

a main body;

a first end face that is formed at the main body and faces the member;

a through-hole that opens on the first end face and a second end face opposite to the first end face;

a jetting port that is formed on an inner periphery of the main body, the inner periphery facing the through-hole;

a fluid passage that allows fluid to be discharged into the through-hole via the jetting port so as to form a swirl flow that generates negative pressure for applying suction to the member;

a plate body; and

a holding member that holds the plate body such that the plate body faces the second end face, and that forms, between the second end face and the plate body, a flow path for fluid that has flowed out from the hole, wherein the inner periphery is formed so as to guide fluid discharged via the jetting port, toward an opening of the second end face.

2. The conveyance device according to Claim 1, wherein at least part of the inner periphery is formed such that a cross-sectional area of the through-hole expands with distance from the member.

3. The conveyance device according to Claim 1 or 2, wherein the inner periphery is formed such that a cross-sectional area of the hole gradually enlarges with distance from the member from an opening of the first end face to the opening of the second end face.

4. The conveyance device according to Claim 3, wherein the jetting port is formed in a substantially center of the inner periphery in a penetration direction of the through-hole.

5. The conveyance device according to any one of Claims 1 to 4, wherein the second end surface includes a chamfered or rounded opening edge.

6. The conveyance device according to any one of Claims 1 to 5 , wherein the holding member holds the plate body such that the plate body is able to move in a penetration direction of the through-hole.

7. The conveyance device according to any one of Claims 1 to 6, wherein the fluid passage is formed such that fluid discharged through the jetting port flows in a

direction away from the member.

8. The conveyance device according to any one of Claims 1 to 5, further comprising a member for controlling an amount of fluid to be discharged from the conveyance device through the flow path.

9. The conveyance device according to any one of Claims 1 to 6, wherein the fluid passage is formed so as to extend substantially perpendicular to a penetration direction of the through-hole.

10. A conveyance device for applying suction to a member whereby the member can be held and conveyed, comprising:

a main body;

a first end face that is formed at the main body and faces the member;

a through-hole that opens on the first end face and a second end face opposite to the first end face;

a jetting port that is formed on an inner periphery of the main body, the inner periphery facing the through-hole;

a fluid passage that allows fluid to be discharged into the through-hole via the jetting port so as to form a swirl flow that generates negative pressure for applying suction to the member,

a plate body; and

a holding member that holds the plate body such that the plate body faces the second end face, and that forms, between the second end face and the plate body, a flow path for fluid that has flowed out from the hole, wherein the fluid passage is formed so as to guide fluid discharged via the jetting port, toward an opening of the second end face.

11. A conveyance device for applying suction to a member whereby the member can be held and conveyed, comprising:

a main body;

a first end face that is formed at the main body and faces the member;

a hole that opens on the first end face;

a jetting port that is formed on an inner periphery of the main body, the inner periphery facing the hole; and

a first fluid passage that allows fluid to be discharged into the hole via the jetting port so as to form a swirl flow that generates negative pressure for applying suction to the member, wherein:

the inner periphery is formed so as to guide fluid discharged via the jetting port, in a direction away from the member, to be discharged from the hole; and

the first fluid passage is formed so as to extend in a direction tangential to the inner periphery of the main body.

12. A conveyance device for applying suction to a member whereby the member can be held and conveyed, comprising:

a main body;

a first end face that is formed at the main body and faces the member;

a hole that opens on the first end face;

a jetting port that is formed on an inner periphery of the main body, the inner periphery facing the hole; and

a first fluid passage that allows fluid to be discharged into the hole via the jetting port so as to form a swirl flow that generates negative pressure for applying suction to the member, wherein:

the first fluid passage is formed so as to allow fluid discharged via the jetting port to flow in a direction away from the member to be discharged from the hole; and

the first fluid passage is formed so as to extend in a direction tangential to the inner periphery of the main body.

13. The conveyance device according to Claim 8 or 9, further comprising:

an outlet port that is formed on the inner periphery at a position farther away from the member than the jetting port;

a discharge port that is formed on an outside surface of the main body; and

a second fluid passage that allows fluid that has entered the outlet port to be discharged, wherein the inner periphery is formed so as to guide fluid discharged via the jetting port, toward outlet port.

14. A suction device, comprising:

a base body; and

at least one conveyance device according to any one of Claims 1 to 13, provided in the base body.