CLAIMS

1. A substrate processing apparatus comprising:

a table for supporting a substrate;

a pad holder for holding a polishing pad for polishing the substrate supported by the table;

a nozzle for supplying a polishing liquid around the pad holder; and

a pad rotation mechanism for rotating the pad holder, wherein

the pad holder includes:

a discharge hole formed in a center of a holding surface configured to hold the polishing pad; and

a discharge passage communicated with an outside of the pad holder from the discharge hole,

wherein the discharge passage is formed in the pad holder so as to communicate the discharge hole with a side surface of the pad holder.

2. The substrate processing apparatus according to claim 1, wherein

the discharge passage is formed in the pad holder so as to extend radially from the discharge hole and open at a plurality of positions on the side surface of the pad holder.

3. The substrate processing apparatus according to claim 1 or 2, wherein

the discharge hole is a circular hole, and

the discharge passage is formed in the pad holder so as to extend from the discharge hole in a tangential direction of the discharge hole when the pad holder is viewed in plan view and open at a plurality of positions on the side surface of the pad holder.

4. The substrate processing apparatus according to any one of claims 1 to 3, wherein

the pad holder is configured to hold the polishing pad, the polishing pad having a polishing surface in which a through-hole communicated with the discharge hole is formed, the polishing surface being configured to contact the substrate supported by the table, the

polishing pad having a groove formed on the polishing surface, the groove being configured to communicate the through-hole with the side surface of the polishing pad.

5. The substrate processing apparatus according to claim 4, wherein

the groove includes a spiral groove configured to communicate the through-hole with the side surface of the polishing pad.

6. The substrate processing apparatus according to any one of claims 1 to 5, further comprising:

a swing mechanism for swinging the pad holder in a radial direction of the substrate; and

a supporting member for supporting the polishing pad swung to an outside of the table by the swing mechanism.

7. The substrate processing apparatus according to claim 6, wherein

the nozzle includes a first nozzle arranged on a swing path of the pad holder and a second nozzle arranged on a swing path of the pad holder on a side opposite to the first nozzle across the pad holder.

8. The substrate processing apparatus according to claim 6 or 7, wherein

the supporting member includes a first supporting member arranged on a swing path of the pad holder outside the table and a second supporting member arranged on a swing path of the pad holder on a side opposite to the first supporting member across the table.

9. The substrate processing apparatus according to any one of claims 1 to 8, comprising

a polishing liquid recovery member for recovering the polishing liquid discharged from the discharge passage, wherein

the polishing liquid recovery member includes an annular portion arranged so as to surround the pad holder.

10. A substrate processing method comprising:

an installing step of installing a substrate on a table;

a supplying step of supplying a polishing liquid from a nozzle arranged around a pad holder, the pad holder being for holding a polishing pad, the pad holder including a discharge hole formed in a center of a holding surface for holding the polishing pad and a discharge passage communicated with an outside of the pad holder from the discharge hole;

a rotating step of rotating the pad holder; and

a pressing step of pressing the polishing pad held onto the pad holder against the substrate,

wherein the discharge passage is formed in the pad holder so as to communicate the discharge hole with a side surface of the pad holder.

11. The substrate processing method according to claim 10, further comprising

a mounting step of mounting a polishing pad to the pad holder, the polishing pad having a polishing surface in which a through-hole communicated with the discharge hole is formed, the polishing surface being configured to contact the substrate installed on the table, the polishing pad having a groove formed on the polishing surface, the groove being configured to communicate the through-hole with the side surface of the polishing pad.

12. The substrate processing method according to claim 11, wherein

the groove includes a spiral groove configured to communicate the through-hole with the side surface of the polishing pad.

13. The substrate processing method according to any one of claims 10 to 12, further comprising

a swinging step of swinging the polishing pad in a radial direction of the substrate, wherein

the supplying step includes a step of supplying the polishing liquid to a swing path of the pad holder.

14. The substrate processing method according to claim 13, wherein

the supplying step is configured such that the supplying step supplies the polishing liquid when a polishing pad swung to the outside of the table in the swinging step is supported by a supporting member arranged around the table.

15. The substrate processing method according to any one of claims 10 to 14, comprising

a recovering step of recovering a polishing liquid discharged from the discharge passage by a polishing liquid recovery member, the polishing liquid recovery member including an annular portion arranged so as to surround the pad holder.