What is claimed is:

1. A substrate cleaning apparatus, comprising:

a substrate holder configured to hold and rotate a substrate;

a cylindrical scrub-cleaning tool configured to come into sliding contact with a surface of the substrate;

a rotating device configured to rotate the scrub-cleaning tool about its own axis; and

a self-cleaning device configured to clean the scrub-cleaning tool,

the self-cleaning device including

a cleaning body having an inner circumferential surface that is shaped along an circumferential surface of the scrub-cleaning tool, and

at least one cleaning nozzle configured to eject a cleaning fluid toward the circumferential surface of the scrub-cleaning tool through a gap between the circumferential surface of the scrub-cleaning tool and the inner circumferential surface of the cleaning body.

2. The substrate cleaning apparatus according to claim 1, wherein the at least one cleaning nozzle comprises a first cleaning nozzle and a second cleaning nozzle disposed at both sides of the scrub-cleaning tool.

3. The substrate cleaning apparatus according to claim 1, wherein the cleaning nozzle comprises a plurality of slit nozzles arranged along a central axis of the scrub-cleaning tool.

4. The substrate cleaning apparatus according to claim 1, wherein the self-cleaning device further includes a blow nozzle configured to eject a gas toward the circumferential surface of the scrub-cleaning tool through the gap,

the blow nozzle being disposed downstream of the cleaning nozzle with respect to a rotational direction of the scrub-cleaning tool.

5. The substrate cleaning apparatus according to claim 1, wherein the cleaning nozzle is inclined downwardly.

6. The substrate cleaning apparatus according to claim 1, wherein the cleaning fluid comprises a mixture of a cleaning liquid and a high-pressure gas.

7. The substrate cleaning apparatus according to claim 1, wherein the cleaning fluid comprises a high-pressure cleaning liquid.

8. The substrate cleaning apparatus according to claim 1, wherein the self-cleaning device further includes a suction passage for sucking a gas from the gap.

9. The substrate cleaning apparatus according to claim 1, wherein the self-cleaning device further includes a drain having a fluid inlet lying in the inner circumferential surface of the cleaning body.

10. The substrate cleaning apparatus according to claim 1, wherein the at least one cleaning nozzle comprises a first cleaning nozzle and a second cleaning nozzle disposed at both sides of the scrub-cleaning tool, a third cleaning nozzle disposed below the first cleaning nozzle, and a fourth cleaning nozzle disposed below the second cleaning nozzle.

11. The substrate cleaning apparatus according to claim 1, wherein the scrub-cleaning tool is disposed so as to come into sliding contact with a lower surface of the substrate, and the self-cleaning device is disposed below the scrub-cleaning tool.

12. The substrate cleaning apparatus according to claim 1, further comprising:

a transporting mechanism configured to transport the scrub-cleaning tool to the self-cleaning device,

the scrub-cleaning tool being disposed so as to come into sliding contact with an upper surface of the substrate, and

the self-cleaning device being disposed adjacent to the substrate holder.

What is claimed is:

1. A substrate cleaning apparatus, comprising:

a substrate holder configured to hold and rotate a substrate;

a cylindrical scrub-cleaning tool configured to come into sliding contact with a surface of the substrate;

a rotating device configured to rotate the scrub-cleaning tool about its own axis; and

a self-cleaning device configured to clean the scrub-cleaning tool,

the self-cleaning device including

a cleaning body having an inner circumferential surface that is shaped along an circumferential surface of the scrub-cleaning tool, and

at least one cleaning nozzle configured to eject a cleaning fluid toward the circumferential surface of the scrub-cleaning tool through a gap between the circumferential surface of the scrub-cleaning tool and the inner circumferential surface of the cleaning body.

2. The substrate cleaning apparatus according to claim 1, wherein the at least one cleaning nozzle comprises a first cleaning nozzle and a second cleaning nozzle disposed at both sides of the scrub-cleaning tool.

3. The substrate cleaning apparatus according to claim 1, wherein the cleaning nozzle comprises a plurality of slit nozzles arranged along a central axis of the scrub-cleaning tool.

4. The substrate cleaning apparatus according to claim 1, wherein the self-cleaning device further includes a blow nozzle configured to eject a gas toward the circumferential surface of the scrub-cleaning tool through the gap,

the blow nozzle being disposed downstream of the cleaning nozzle with respect to a rotational direction of the scrub-cleaning tool.

5. The substrate cleaning apparatus according to claim 1, wherein the cleaning nozzle is inclined downwardly.

6. The substrate cleaning apparatus according to claim 1, wherein the cleaning fluid comprises a mixture of a cleaning liquid and a high-pressure gas.

7. The substrate cleaning apparatus according to claim 1, wherein the cleaning fluid comprises a high-pressure cleaning liquid.

8. The substrate cleaning apparatus according to claim 1, wherein the self-cleaning device further includes a suction passage for sucking a gas from the gap.

9. The substrate cleaning apparatus according to claim 1, wherein the self-cleaning device further includes a drain having a fluid inlet lying in the inner circumferential surface of the cleaning body.

10. The substrate cleaning apparatus according to claim 1, wherein the at least one cleaning nozzle comprises a first cleaning nozzle and a second cleaning nozzle disposed at both sides of the scrub-cleaning tool, a third cleaning nozzle disposed below the first cleaning nozzle, and a fourth cleaning nozzle disposed below the second cleaning nozzle.

11. The substrate cleaning apparatus according to claim 1, wherein the scrub-cleaning tool is disposed so as to come into sliding contact with a lower surface of the substrate, and the self-cleaning device is disposed below the scrub-cleaning tool.

12. The substrate cleaning apparatus according to claim 1, further comprising:

a transporting mechanism configured to transport the scrub-cleaning tool to the self-cleaning device,

the scrub-cleaning tool being disposed so as to come into sliding contact with an upper surface of the substrate, and

the self-cleaning device being disposed adjacent to the substrate holder.

13. A substrate cleaning method, comprising:

holding and rotating a substrate by a substrate holder;

bringing a cylindrical scrub-cleaning tool into sliding contact with a surface of the substrate while rotating the scrub-cleaning tool about its own axis to thereby clean the surface of the substrate;

after cleaning of the surface of the substrate, transporting the scrub-cleaning tool to a self-cleaning device that includes a cleaning body having an inner circumferential surface that is shaped along an circumferential surface of the scrub-cleaning tool; and

ejecting a cleaning fluid toward the circumferential surface of the scrub-cleaning tool through a gap between the circumferential surface of the scrub-cleaning tool and the inner circumferential surface of the cleaning body.

14. The substrate cleaning method according to claim 13, wherein ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool comprises ejecting the cleaning fluid from a first cleaning nozzle and a second cleaning nozzle, disposed at both sides of the scrub-cleaning tool, toward the circumferential surface of the scrub-cleaning tool.

15. The substrate cleaning method according to claim 13, wherein ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool comprises

ejecting the cleaning fluid from a plurality of slit nozzles, arranged along a central axis of the scrub-cleaning tool, toward the circumferential surface of the scrub-cleaning tool.

16. The substrate cleaning method according to claim 13, wherein ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool comprises ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool while ejecting a gas toward the circumferential surface of the scrub-cleaning tool through the gap.

17. The substrate cleaning method according to claim 13, wherein the cleaning fluid comprises a mixture of a cleaning liquid and a high-pressure gas.

18. The substrate cleaning method according to claim 13, wherein the cleaning fluid comprises a high-pressure cleaning liquid.

19. The substrate cleaning method according to claim 13, wherein ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool comprises ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool while sucking a gas from the gap.

20. The substrate cleaning method according to claim 13,

wherein ejecting the cleaning fluid toward the circumferential surface of the scrub-cleaning tool comprises ejecting the cleaning fluid from a first cleaning nozzle, a second cleaning nozzle, a third cleaning nozzle, and a fourth cleaning nozzle, toward the circumferential surface of the scrub-cleaning tool, and

wherein the first cleaning nozzle and the second cleaning nozzle are disposed at both sides of the scrub-cleaning tool, the third cleaning nozzle is disposed below the first cleaning nozzle, and the fourth cleaning nozzle is disposed below the second cleaning

nozzle.

21. The substrate cleaning method according to claim 13,

wherein bringing the cylindrical scrub-cleaning tool into sliding contact with the surface of the substrate comprises bringing the cylindrical scrub-cleaning tool into sliding contact with a lower surface of the substrate, and

wherein the self-cleaning device is disposed below the scrub-cleaning tool.

22. The substrate cleaning method according to claim 13,

wherein bringing the cylindrical scrub-cleaning tool into sliding contact with the surface of the substrate comprises bringing the cylindrical scrub-cleaning tool into sliding contact with an upper surface of the substrate, and

wherein the self-cleaning device is disposed adjacent to the substrate holder.