

What is claimed is:

1. A polishing method of polishing a substrate by bringing the substrate into sliding contact with a polishing pad while supplying a polishing liquid, which has passed
5 through a filter, onto the polishing pad, comprising:

passing the polishing liquid through the filter while increasing a physical quantity of the polishing liquid at a predetermined increasing rate until the physical quantity reaches a predetermined set value, the physical quantity being one of flow rate and pressure of the polishing liquid; and

10 polishing the substrate on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.

2. The polishing method according to claim 1, wherein after the physical quantity of the polishing liquid has reached the predetermined set value, polishing of the
15 substrate is performed on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.

3. The polishing method according to claim 2, wherein the polishing liquid that has passed through the filter is supplied onto the polishing pad until the physical quantity
20 reaches the predetermined set value.

4. The polishing method according to claim 2, wherein the polishing liquid that has passed through the filter is discharged outside the polishing pad or recovered until the physical quantity reaches the predetermined set value.

25 ~~5. A polishing method of polishing a substrate by bringing the substrate into sliding contact with a polishing pad while supplying a polishing liquid, which has passed through a filter, onto the polishing pad, comprising:~~

—performing a filter cleaning process of passing the polishing liquid intermittently through the filter when the substrate is not polished; and—

—polishing the substrate on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.—

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—6. The polishing method according to claim 5, further comprising:—

—while performing the filter cleaning process, discharging the polishing liquid that has passed through the filter outside the polishing pad or recovering the polishing liquid that has passed through the filter.—

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—7. The polishing method according to claim 5, further comprising:—

—while performing the filter cleaning process, supplying the polishing liquid that has passed through the filter onto the polishing pad; and

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—supplying a cleaning fluid onto the polishing pad to remove the polishing liquid from the polishing pad,—

—wherein polishing of the substrate is then performed on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.—

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—8. The polishing method according to claim 5, further comprising:—

—after the filter cleaning process, passing the polishing liquid through the filter while increasing a physical quantity of the polishing liquid until the physical quantity reaches a predetermined set value, the physical quantity being one of flow rate and pressure of the polishing liquid,—

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—wherein polishing of the substrate is then performed on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.—

—9. A polishing method of polishing a substrate by bringing the substrate into sliding contact with a polishing pad while supplying a polishing liquid, which has passed

through a filter, onto the polishing pad, comprising:—

—when the substrate is not polished, performing a filter cleaning process of passing the polishing liquid continuously through the filter while keeping a physical quantity of the polishing liquid larger than the physical quantity at which the substrate is to be polished, the physical quantity being one of flow rate and pressure of the polishing liquid; and—

—polishing the substrate on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.—

10. The polishing method according to claim 9, further comprising:—

—while performing the filter cleaning process, discharging the polishing liquid that has passed through the filter outside the polishing pad or recovering the polishing liquid that has passed through the filter.—

11. The polishing method according to claim 9, further comprising:—

—while performing the filter cleaning process, supplying the polishing liquid that has passed through the filter onto the polishing pad; and

—supplying a cleaning fluid onto the polishing pad to remove the polishing liquid from the polishing pad,—

—wherein polishing of the substrate is then performed on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.

12. The polishing method according to claim 9, further comprising:—

—after the filter cleaning process, passing the polishing liquid through the filter while increasing the physical quantity of the polishing liquid until the physical quantity reaches a predetermined set value,—

—wherein polishing of the substrate is then performed on the polishing pad while supplying the polishing liquid that has passed through the filter onto the polishing pad.

~~13.5.~~ A polishing apparatus for polishing a substrate by bringing the substrate into sliding contact with a polishing pad while supplying a polishing liquid onto the polishing pad, comprising:

- 5 a polishing table configured to support the polishing pad;
 a top ring configured to press the substrate against the polishing pad; and
 a polishing-liquid supply structure configured to supply the polishing liquid onto the polishing pad,
 the polishing-liquid supply structure includes:
- 10 a slurry supply nozzle configured to supply the polishing liquid onto the polishing pad;
 a filter coupled to the slurry supply nozzle; and
 a regulator configured to regulate a physical quantity of the polishing liquid that is to pass through the filter, the physical quantity being one of flow rate and
- 15 pressure of the polishing liquid, the regulator being configured to increase the physical quantity at a predetermined increasing rate until the physical quantity reaches a predetermined set value.

~~14.6.~~ The polishing apparatus according to claim ~~135~~, wherein the polishing-liquid supply structure is configured to supply the polishing liquid onto the polishing pad after the physical quantity has reached the predetermined set value, while the top ring is pressing the substrate against the polishing pad to polish the substrate.

~~15.7.~~ The polishing apparatus according to claim ~~146~~, wherein the slurry supply nozzle is configured to supply the polishing liquid that has passed through the filter onto the polishing pad until the physical quantity reaches the predetermined set value.

~~16.8.~~ The polishing apparatus according to claim ~~146~~, wherein the slurry supply nozzle is configured to discharge the polishing liquid that has passed through the filter

outside the polishing pad until the physical quantity reaches the predetermined set value.

5 ~~17. A polishing apparatus for polishing a substrate by bringing the substrate into sliding contact with a polishing pad while supplying a polishing liquid onto the polishing pad, comprising:—~~

~~—— a polishing table configured to support the polishing pad;—~~

~~—— a top ring configured to press the substrate against the polishing pad; and—~~

~~—— a polishing liquid supply structure configured to supply the polishing liquid onto the polishing pad,—~~

10 ~~—— the polishing liquid supply structure includes:—~~

~~—— a slurry supply nozzle configured to supply the polishing liquid onto the polishing pad;—~~

~~—— a delivery pipe configured to deliver the polishing liquid to the slurry supply nozzle;—~~

15 ~~—— an on-off valve configured to open and close the delivery pipe; and—~~

~~—— a filter coupled to the delivery pipe, the on-off valve being configured to perform its opening and closing operations predetermined number of times to allow the polishing liquid to pass through the filter intermittently when the substrate is not polished.~~

20 ~~—— 18. The polishing apparatus according to claim 17, wherein the slurry supply nozzle is configured to discharge the polishing liquid that has intermittently passed through the filter outside the polishing pad.—~~

25 ~~—— 19. The polishing apparatus according to claim 17, further comprising a pad cleaning structure configured to supply a cleaning fluid onto the polishing pad,—~~

~~—— the slurry supply nozzle is configured to supply the polishing liquid that has intermittently passed through the filter onto the polishing pad, and—~~

~~—— the pad cleaning structure is configured to supply the cleaning fluid onto the~~

polishing pad to remove the polishing liquid from the polishing pad.—

—20. The polishing apparatus according to claim 17, wherein:—

—the polishing liquid supply structure further includes a regulator configured to regulate a physical quantity of the polishing liquid that is to pass through the filter, the physical quantity being one of flow rate and pressure of the polishing liquid; and—

—the regulator is configured to increase the physical quantity until the physical quantity reaches a predetermined set value after the on-off valve has performed the opening and closing operations the predetermined number of times.—

—21. A polishing apparatus for polishing a substrate by bringing the substrate into sliding contact with a polishing pad while supplying a polishing liquid onto the polishing pad, comprising:—

—a polishing table configured to support the polishing pad;—

—a top ring configured to press the substrate against the polishing pad; and—

—a polishing liquid supply structure configured to supply the polishing liquid onto the polishing pad,

—the polishing liquid supply structure includes:—

—a slurry supply nozzle configured to supply the polishing liquid onto the polishing pad;—

—a filter coupled to the slurry supply nozzle; and—

—a regulator configured to regulate a physical quantity of the polishing liquid that is to pass through the filter, the physical quantity being one of flow rate and pressure of the polishing liquid, the polishing liquid supply structure being configured to perform, when the substrate is not polished, a filter cleaning process of passing the polishing liquid continuously through the filter while keeping the physical quantity larger than the physical quantity at which the substrate is to be polished.—

— 22. The polishing apparatus according to claim 21, wherein the slurry supply nozzle is configured to discharge the polishing liquid that has passed through the filter outside the polishing pad when the filter cleaning process is performed. —

5 — 23. The polishing apparatus according to claim 21, further comprising a pad cleaning structure configured to supply a cleaning fluid onto the polishing pad, —

— the slurry supply nozzle is configured to supply the polishing liquid that has passed through the filter onto the polishing pad when the filter cleaning process is performed, and —

10 — the pad cleaning structure is configured to supply the cleaning fluid onto the polishing pad to remove the polishing liquid from the polishing pad. —

— 24. The polishing apparatus according to claim 21, wherein the regulator is configured to increase the physical quantity after the filter cleaning process until the physical quantity reaches a predetermined set value. —

15 9. The polishing method according to claim 2, wherein polishing of the substrate is performed while keeping the physical quantity constant. —

20 10. The polishing apparatus according to claim 6, wherein the polishing-liquid supply structure is configured to supply the polishing liquid onto the polishing pad after the physical quantity has reached the predetermined set value with the physical quantity kept constant, while the top ring is pressing the substrate against the polishing pad to polish the substrate.