CLAIMS

1. An imprint material discharging device that discharges onto a substrate an imprint material on which a pattern is formed by bringing a mold into contact with the imprint material, the imprint material discharging device comprising:

a container member that includes a container section that contains the imprint material;

a channel that is connected to the container section; and

a discharging member that includes a discharge port for discharging the imprint material, an energy generating element that generates energy for discharging the imprint material from the discharge port, and a region that is disposed between the energy generating element and the discharge port,

wherein the channel has a first opening and a second opening, the first opening supplying the imprint material contained in the container section into the channel and opening into the container section, the second opening supplying the imprint material supplied from the first opening to the container section and opening into the container section, and

wherein a filter that filters the imprint material is

disposed between the first opening and the second opening of the channel, and the imprint material supplied into the channel from the first opening is supplied to the container section from the second opening without passing through the region.

2. An imprint material discharging device that discharges onto a substrate an imprint material on which a pattern is formed by bringing a mold into contact with the imprint material, the imprint material discharging device comprising:

a container member that includes a container section that contains the imprint material;

a channel that is connected to the container section; and

a discharging member that includes a discharge port for discharging the imprint material, an energy generating element that generates energy for discharging the imprint material from the discharge port, and a region that is disposed between the energy generating element and the discharge port,

wherein the channel has a first opening and a second opening, the first opening supplying the imprint material contained in the container section into the channel and opening into the container section, the second opening

supplying the imprint material supplied from the first opening to the container section and opening into the container section,

wherein a filter that filters the imprint material is disposed between the first opening and the second opening of the channel, and

wherein the channel is provided at a portion that differs from the region.

3. The imprint material discharging device according to Claim 1, wherein the filter is not disposed between the container section and the discharging member.

4. The imprint material discharging device according to Claim 1, wherein the energy generating element is a piezoelectric element.

5. The imprint material discharging device according to Claim 1, wherein the container member includes a separation membrane, and the separation membrane separates the container section and a filling liquid section that is filled with a filling liquid.

6. The imprint material discharging device according to Claim 5, wherein pressure of the imprint material in the

container section is controlled by controlling pressure of the filling liquid with which the filling liquid section is filled.

7. The imprint material discharging device according to Claim 1, wherein a pump is disposed in the channel that is provided between the first opening and the second opening.

8. The imprint material discharging device according to Claim 7, wherein the pump is disposed upstream from the filter when the imprint material is supplied from the first opening to the second opening.

9. The imprint material discharging device according to Claim 1, wherein the region does not exist on a straight line that connects the first opening and the second opening to each other.

10. The imprint material discharging device according to Claim 1, wherein the filter has an average aperture that is less than or equal to 10 nm.

11. The imprint material discharging device according to Claim 1, wherein when, in supplying the imprint material from the first opening to the second opening, among surfaces

of the container section, a lower surface in a gravitational direction is a bottom surface, an upper surface in the gravitational direction is a top surface, and surfaces that connect the bottom surface and the top surface are side surfaces, the first opening and the second opening open in the same surface of the container section.

12. The imprint material discharging device according to Claim 1, wherein when, in supplying the imprint material from the first opening to the second opening, among surfaces of the container section, a lower surface in a gravitational direction is a bottom surface, an upper surface in the gravitational direction is a top surface, and surfaces that connect the bottom surface and the top surface are side surfaces, the first opening and the second opening open in different surfaces of the container section.

13. The imprint material discharging device according to Claim 12, wherein the first opening and the second opening open in two opposite side surfaces among the side surfaces.

14. The imprint material discharging device according to Claim 12, wherein the first opening opens in one of the side surfaces, and the second opening opens in the top

surface of the container section.

15. The imprint material discharging device according to Claim 11, wherein the first opening and the second opening open in portions of the side surface that are closer to the bottom surface than to the top surface.

16. The imprint material discharging device according to Claim 1, wherein the container section communicates with air via an air communication port.

17. The imprint material discharging device according to Claim 11, wherein the top surface is provided with a recess that traps air.

18. The imprint material discharging device according to Claim 1, wherein when supplying the imprint material from the first opening to the second opening, the imprint material in the container section is discharged from the discharge port.

19. The imprint material discharging device according to Claim 18, further comprising a pressure adjusting unit configured to adjust pressure in the container section, wherein the pressure adjusting unit causes the imprint

material in the container section to be discharged from the discharge port.

20. The imprint material discharging device according to Claim 19, wherein the pressure adjusting unit adjusts the pressure on the basis of at least one of a supply amount and a supply flow rate of the imprint material that is supplied from the first opening to the second opening.

21. The imprint material discharging device according to Claim 18, further comprising a sucking unit configured to suck the imprint material from the discharge port, wherein when supplying the imprint material from the first opening to the second opening, the sucking unit sucks the imprint material in the container section and causes the imprint material to be discharged from the discharge port.

22. The imprint material discharging device according to Claim 21, wherein the sucking unit determines a suction amount or a suction flow rate of the imprint material on the basis of at least one of a supply amount and a supply flow rate of the imprint material that is supplied from the first opening to the second opening.

23. An imprint apparatus that forms a pattern on an

imprint material on a substrate by bringing a mold into contact with the imprint material, the imprint apparatus comprising:

the imprint material discharging device according to Claim 1 as an imprint material discharging device that discharges the imprint material onto the substrate.

24. The imprint apparatus according to Claim 23, further comprising a light irradiation device that cures the imprint material by irradiating the imprint material with light, wherein the imprint material is a photo-curable resin.

25. The imprint apparatus according to Claim 23, wherein the imprint material discharging device is in the form of a cartridge that is removable from the imprint apparatus.

CLAIMS

1. An imprint material discharging device that discharges onto a substrate an imprint material on which a pattern is formed by bringing a mold into contact with the imprint material, the imprint material discharging device comprising:

a container member that includes a container section that contains the imprint material;

a channel that is connected to the container section; and

a discharging member that includes a discharge port for discharging the imprint material, an energy generating element that generates energy for discharging the imprint material from the discharge port, and a region that is disposed between the energy generating element and the discharge port,

wherein the channel has a first opening and a second opening, the first opening supplying the imprint material contained in the container section into the channel and opening into the container section, the second opening supplying the imprint material supplied from the first opening to the container section and opening into the container section, and

wherein a filter that filters the imprint material is disposed in the channel between the first opening and the second opening of the channel, and the imprint material supplied into the channel from the first opening is supplied to the container section from the second opening without passing through the region and wherein the container member includes a separation membrane, and the separation membrane separates the container section and a filling liquid section that is filled with a filling liquid and wherein pressure of the imprint material in the container section is controlled by controlling pressure of the filling liquid with which the filling liquid section is filled.

2. An imprint material discharging device that discharges onto a substrate an imprint material on which a pattern is formed by bringing a mold into contact with the imprint material, the imprint material discharging device comprising:

a container member that includes a container section that contains the imprint material;

a channel that is connected to the container section; and

a discharging member that includes a discharge port for discharging the imprint material, an energy generating element that generates energy for discharging the imprint

material from the discharge port, and a region that is disposed between the energy generating element and the discharge port,

wherein the channel has a first opening and a second opening, the first opening supplying the imprint material contained in the container section into the channel and opening into the container section, the second opening supplying the imprint material supplied from the first opening to the container section and opening into the container section,

wherein a filter that filters the imprint material is disposed in the channel between the first opening and the second opening of the channel, and

wherein the channel is provided at a portion that differs from the region and wherein the container member includes a separation membrane, and the separation membrane separates the container section and a filling liquid section that is filled with a filling liquid and wherein pressure of the imprint material in the container section is controlled by controlling pressure of the filling liquid with which the filling liquid section is filled.

3. The imprint material discharging device according to Claim 1, wherein the energy generating element is a piezoelectric element.

4. The imprint material discharging device according to Claim 1, wherein a pump is disposed in the channel that is provided between the first opening and the second opening.

5. The imprint material discharging device according to Claim 4, wherein the pump is disposed upstream from the filter when the imprint material is supplied from the first opening to the second opening.

6. The imprint material discharging device according to Claim 1, wherein the region does not exist on a straight line that connects the first opening and the second opening to each other.

7. The imprint material discharging device according to Claim 1, wherein the filter has an average aperture that is less than or equal to 10 nm.

8. The imprint material discharging device according to Claim 1, wherein when, in supplying the imprint material from the first opening to the second opening, among surfaces of the container section, a lower surface in a gravitational direction is a bottom surface, an upper

surface in the gravitational direction is a top surface, and surfaces that connect the bottom surface and the top surface are side surfaces, the first opening and the second opening open in the same surface of the container section.

9. The imprint material discharging device according to Claim 1, wherein when, in supplying the imprint material from the first opening to the second opening, among surfaces of the container section, a lower surface in a gravitational direction is a bottom surface, an upper surface in the gravitational direction is a top surface, and surfaces that connect the bottom surface and the top surface are side surfaces, the first opening and the second opening open in different surfaces of the container section.

10. The imprint material discharging device according to Claim 9, wherein the first opening and the second opening open in two opposite side surfaces among the side surfaces.

11. The imprint material discharging device according to Claim 9, wherein the first opening opens in one of the side surfaces, and the second opening opens in the top surface of the container section.

12. The imprint material discharging device according to Claim 8, wherein the first opening and the second opening open in portions of the side surface that are closer to the bottom surface than to the top surface.

13. The imprint material discharging device according to Claim 1, wherein the container section communicates with air via an air communication port.

14. The imprint material discharging device according to Claim 8, wherein the top surface is provided with a recess that traps air.

15. The imprint material discharging device according to Claim 1, wherein when supplying the imprint material from the first opening to the second opening, the imprint material in the container section is discharged from the discharge port.

16. The imprint material discharging device according to Claim 15, further comprising a pressure adjusting unit configured to adjust pressure in the container section, wherein the

pressure adjusting unit causes the imprint material in the container section to be discharged from the discharge port.

17. The imprint material discharging device according to Claim 16, wherein the pressure adjusting unit adjusts the pressure on the basis of at least one of a supply amount and a supply flow rate of the imprint material that is supplied from the first opening to the second opening.

18. The imprint material discharging device according to Claim 15, further comprising a sucking unit configured to suck the imprint material from the discharge port, wherein when supplying the imprint material from the first opening to the second opening, the sucking unit sucks the imprint material in the container section and causes the imprint material to be discharged from the discharge port.

19. The imprint material discharging device according to Claim 18, wherein the sucking unit determines a suction amount or a suction flow rate of the imprint material on the basis of at least one of a supply amount and a supply flow rate of the imprint material that is supplied from the first opening to the second opening.

20. An imprint apparatus that forms a pattern on an imprint material on a substrate by bringing a mold into contact with the imprint material, the imprint apparatus comprising:

the imprint material discharging device according to Claim 1 as an imprint material discharging device that discharges the imprint material onto the substrate.

21. The imprint apparatus according to Claim 20, further comprising a light irradiation device that cures the imprint material by irradiating the imprint material with light,
wherein the imprint material is a photo-curable resin.

22. The imprint apparatus according to Claim 20, wherein the imprint material discharging device is in the form of a cartridge that is removable from the imprint apparatus.