

What is claimed is:

1. A substrate holding apparatus comprising:

a top ring main body to which an elastic film comprising a surface that can suck a substrate can be attached, wherein when the elastic film is attached to the top ring main body, a plurality of areas are formed between the elastic film and the top ring main body;

a first line communicating with a first area among the plurality of areas;

a second line communicating with a second area different from the first area among the plurality of areas;

a pressure adjuster capable of pressurizing the first area by feeding fluid into the first area through the first line, and capable of generating negative pressure in the second area through the second line; and

a determiner configured to perform determination of whether the substrate is sucked to the elastic film based on a measurement value corresponding to a volume of the fluid fed into the first area or corresponding to pressure in the first area, wherein

when the determination is performed, exhaust from the first area is not performed;

the pressure adjuster comprises a pressurizing mechanism configured to feed fluid into the first area through the first line; and

the determiner comprises a position sensor configured to detect a part of the pressurizing mechanism that moves when

feeding fluid into the first area as the measurement value corresponding to the volume of the fluid fed into the first area.

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

the determiner performs the determination by using a fact that when the substrate is sucked to the elastic film, the volume of the fluid fed into the first area is smaller or the pressure in the first area is higher as compared with those when the substrate is not sucked to the elastic film.

3. The substrate holding apparatus according to claim 1, wherein

the determiner comprises a pressure gauge configured to measure pressure in the first area.

4. A substrate holding apparatus comprising:

a top ring main body to which an elastic film comprising a surface that can suck a substrate can be attached, wherein when the elastic film is attached to the top ring main body, a plurality of areas are formed between the elastic film and the top ring main body;

a first line communicating with a first area among the plurality of areas;

a second line communicating with a second area different from the first area among the plurality of areas;

a pressure adjuster capable of pressurizing the first area by feeding fluid into the first area through the first line, and capable of generating negative pressure in the second area through the second line; and

a determiner configured to perform determination of whether the substrate is sucked to the elastic film based on a measurement value corresponding to a volume of the fluid fed into the first area or corresponding to pressure in the first area, wherein

when the determination is performed, exhaust from the first area is not performed;

the pressure adjuster comprises a pressurizing mechanism configured to feed fluid into the first area through the first line; and

the determiner comprises:

a position sensor configured to detect a part of the pressurizing mechanism that moves when feeding fluid into the first area as the measurement value corresponding to the volume of the fluid fed into the first area, and

a pressure gauge configured to measure pressure in the first area.

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

the determiner determines that

the substrate is not sucked to the elastic film based on a detection result of the position sensor, and

the substrate is sucked to the elastic film based on a measurement result of the pressure gauge.

6. The substrate holding apparatus according to claim 5, wherein

the pressurizing mechanism comprises a cylinder and a

weight main body coupled to a piston of the cylinder, and
fluid is fed into the first area when the weight main body
is moved downward by gravity.

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

the piston is capable of moving up and down in a state
where the piston is in contact with an inner surface of the
cylinder,

the piston divides inside of the cylinder into a lower
space and an upper space, and

the cylinder is provided with

a first opening provided to the lower space and
connected to the first line,

a second opening provided to the lower space,

a third opening provided to the upper space, wherein
a piston rod that couples the weight main body and the piston
penetrates through the third opening, and

a fourth opening provided to the upper space.

8. The substrate holding apparatus according to claim 7,
wherein

when the determination is performed, the second opening
is closed and the fourth opening is opened, and

after the determination is performed, the second opening
is opened and the weight is raised by sucking the upper space
from the fourth opening.

9. The substrate holding apparatus according to claim 7,
wherein

the first line is connected to the first opening of the cylinder and a polishing pressure controller configured to pressurize the first area when polishing the substrate sucked to the elastic film, and

a switch that switches whether to cause the first area, through the first line, to communicate with the first opening of the pressurizing mechanism or communicate with the polishing pressure controller is provided.