What is claimed is:

1. A method of raising a polishing head after polishing of a workpiece, comprising:

polishing the workpiece by pressing the workpiece against a polishing pad while rotating the polishing head and the polishing pad;

stopping the rotations of the polishing pad and the polishing head while the workpiece and a retainer ring of the polishing head are in contact with the polishing pad;

separating the retainer ring from the polishing pad and moving the retainer ring to a position higher than the workpiece; and then

raising the polishing head to separate the workpiece from the polishing pad with the workpiece held on the polishing head by vacuum suction of the polishing head.

2. The method according to claim 1, wherein holding the workpiece by the polishing head is performed while supplying fluid directly to an area between the workpiece and the polishing pad.

3. The method according to claim 1, wherein the polishing head includes an elastic membrane forming a plurality of pressure chambers for pressing the workpiece against the polishing pad,

holding the workpiece by the polishing head comprises holding the workpiece with the polishing head by forming a negative pressure in an outer pressure chamber of the plurality of pressure chambers and then forming a negative pressure in an inner pressure chamber of the plurality of pressure chambers.

4. The method according to claim 1, wherein raising the polishing head comprises: raising the polishing head at a first speed until the entire workpiece is separated from the polishing pad; and raising the polishing head at a second speed higher than the first speed after the entire workpiece is separated from the polishing pad.

5. The method according to claim 1, further comprising:

holding the workpiece by vacuum suction of the polishing head after raising the retainer ring to the position higher than the workpiece.

6. The method according to claim 1, further comprising:

holding the workpiece by vacuum suction of the polishing head before separating the retainer ring from the polishing pad.

7. A polishing apparatus for a workpiece, comprising:

a polishing table configured to support a polishing pad;

a polishing-table rotating device configured to rotate the polishing table together with the polishing pad;

a polishing head configured to press the workpiece against the polishing pad to polish the workpiece;

a polishing-head pressure controller configured to control pressure in the polishing head;

a polishing-head rotating device configured to rotate the polishing head;

a polishing-head elevating device configured to raise and lower the polishing head relative to the polishing table; and

an operation controller configured to control operations of the polishing-table rotating device, the polishing-head pressure controller, the polishing-head rotating device, and the polishing-head elevating device,

the polishing head having a retainer ring surrounding the workpiece,

the operation controller being configured to:

after polishing of the workpiece, instruct the polishing-table rotating device and the polishing-head rotating device to stop rotations of the polishing pad and the polishing head while the workpiece and the retainer ring of the polishing head are in contact with the polishing pad;

instruct the polishing-head pressure controller to separate the retainer ring from the polishing pad and move the retainer ring to a position higher than the workpiece; and then

instruct the polishing-head elevating device to raise the polishing head to separate the workpiece from the polishing pad with the workpiece held on the polishing head by vacuum suction of the polishing head.

8. The polishing apparatus according to claim 7, further comprising a fluid supply system configured to supply fluid to an area between the workpiece and the polishing pad, the operation controller being configured to instruct the fluid supply system to supply the fluid directly to the area between the workpiece and the polishing pad when the polishing head holds the workpiece.

9. The polishing apparatus according to claim 7, wherein the polishing head includes an elastic membrane forming a plurality of pressure chambers for pressing the workpiece against the polishing pad, and

the operation controller is configured to instruct the polishing-head pressure controller to cause the polishing head to hold the workpiece by forming a negative pressure in an outer pressure chamber of the plurality of pressure chambers and then forming a negative pressure in an inner pressure chamber of the plurality of pressure chambers.

10. The polishing apparatus according to claim 7, wherein the operation controller is configured to instruct the polishing-head elevating device to raise the polishing head at a first speed until the entire workpiece is separated from the polishing pad, and raise the polishing head at a second speed higher than the first speed after the entire workpiece is separated from the polishing pad.

11. The polishing apparatus according to claim 7, wherein the operation controller

is configured to instruct the polishing-head pressure controller to hold the workpiece by vacuum suction of the polishing head before the retainer ring is separated from the polishing pad.

12. The polishing apparatus according to claim 7, wherein the operation controller is configured to instruct the polishing-head pressure controller to hold the workpiece by vacuum suction of the polishing head after the retainer ring is raised to the position higher than the workpiece.