WHAT IS CLAIMED IS:

1. A polishing apparatus which performs polishing of an object to be polished using a polishing pad having a polishing surface, the polishing apparatus comprising:

a polishing table configured to be rotatable, and to support the polishing pad;

a holder configured to hold the object to be polished, and to press the object to be polished against the polishing pad;

a polishing liquid supplying portion configured to supply a polishing liquid to the polishing surface;

a polishing liquid removing portion configured to remove the polishing liquid from the polishing surface; and

a temperature adjuster configured to adjust a temperature of the polishing surface, wherein

the polishing table is configured to rotate with the polishing pad in a rotating direction, when polishing the object,

in the rotating direction of the polishing table, the polishing liquid supplying portion, a polishing region where the object to be polished is pressed against the polishing surface by the holder, the polishing liquid removing portion, and the temperature adjuster are disposed in this order,

the polishing liquid removing portion includes a suction portion having a slit and configured to suck the polishing liquid through the slit and a dam portion which comes into contact with the polishing liquid on the polishing surface thus preventing the polishing liquid from moving in the rotating direction, and

in a longitudinal direction of the polishing liquid removing portion, the slit is formed with a length shorter than a length of the dam portion and longer than a diameter of the object held by the holder.

2. A polishing apparatus which performs polishing of an object to be polished using a polishing pad having a polishing surface, the polishing apparatus comprising:

a polishing table configured to rotate in a rotating direction, and to support the polishing pad;

a holder configured to hold the object to be polished, and to press the object to be polished against the polishing pad;

a polishing liquid supplying portion configured to supply a polishing liquid to the polishing surface;

a polishing liquid removing portion configured to remove the polishing liquid from the polishing surface; and

a temperature adjuster configured to adjust a temperature of the polishing surface, wherein

the polishing table is configured to rotate with the polishing pad in a rotating direction, when polishing the object,

in the rotating direction of the polishing table, the polishing liquid supplying portion, a polishing region where the object to be polished is pressed against the polishing surface by the holder, the polishing liquid removing portion, and the temperature adjuster are disposed in this order,

the polishing liquid removing portion includes a suction portion having a dam portion which comes into contact with the polishing liquid on the polishing surface thus preventing the polishing liquid from moving in the rotating direction, and

the dam portion includes a rounded or chamfered portion which comes into contact with the polishing surface.

3. The polishing apparatus according to claim 1 or 2, wherein

the temperature adjuster includes at least one of an injector which is configured to spray a gas to the polishing surface or a heat exchanger in which a fluid flows.

4. The polishing apparatus according to any one of claims 1 to 3, wherein

the polishing liquid removing portion includes a suction portion configured to suck the polishing liquid and a dam portion which comes into contact with the polishing liquid on the polishing surface thus preventing the polishing liquid from moving in the rotating direction, and

the dam portion is disposed rearward of the suction portion in the rotating direction, and is integrally formed with the suction portion.

5. The polishing apparatus according to any one of claims 1 to 4 further comprising a temperature measuring portion configured to measure a temperature of the polishing surface, wherein

the temperature adjuster is configured to adjust the temperature of the polishing surface such that the temperature measured by the temperature measuring portion reaches a target temperature.

6. A polishing method of polishing an object, said polishing method comprising:

rotating an object;

rotating a polishing table with a polishing pad in a rotating direction;

polishing the object by pressing the object against a polishing surface of the polishing pad;

supplying a polishing liquid to a polishing surface of the polishing pad;

removing the polishing liquid from the polishing surface with a polishing liquid removing portion; and

adjusting a temperature of the polishing surface, wherein

in the rotating direction of the polishing table, a region in which said supplying

step is performed, a region in which said polishing step is performed, a region in which said removing step is performed, and a region in which said adjusting step is performed are arranged in this order,

the polishing liquid removing portion includes a suction portion having a slit and configured to suck the polishing liquid through the slit and a dam portion which comes into contact with the polishing liquid on the polishing surface thus preventing the polishing liquid from moving in the rotating direction, and

in a longitudinal direction of the polishing liquid removing portion, the slit is formed with a length shorter than a length of the dam portion and longer than a diameter of the object held by the holder.

7. The polishing apparatus according to any one of claims 1 to 5, wherein

the polishing liquid removing portion and the temperature adjuster are disposed adjacently to each other.

8. A polishing apparatus which performs polishing of an object to be polished using a polishing pad having a polishing surface, the polishing apparatus comprising:

a polishing table configured to rotate in a rotating direction, and to support the polishing pad;

a holder configured to hold the object to be polished, and to press the object to be polished against the polishing pad;

a polishing liquid supplying portion configured to supply a polishing liquid to the polishing surface;

a polishing liquid removing portion configured to remove the polishing liquid from the polishing surface; and

a temperature adjuster configured to adjust a temperature of the polishing surface, wherein

the polishing table is configured to rotate with the polishing pad in a rotating direction, when polishing the object,

in the rotating direction of the polishing table, the polishing liquid supplying portion, a polishing region where the object to be polished is pressed against the polishing surface by the holder, the polishing liquid removing portion, and the temperature adjuster are disposed in this order,

the polishing liquid removing portion includes a suction portion having a slit which opens toward the polishing surface and is connected to a vacuum source through a flow passage, and

the slit and the flow passage are inclined in the direction in which the holder is arranged.