CLAIMS

1. A polishing apparatus comprising:

a holder for holding a workpiece;

a polishing member for polishing a peripheral portion of the workpiece while the polishing member is pressed against the peripheral portion;

an identifying unit for identifying data associated with a cross-sectional shape of the peripheral portion before the polishing and for transmitting the data obtained, the data indicating to which of a plurality of predetermined types related to the cross-sectional shape the cross-sectional shape of the peripheral portion belongs;

a polishing-condition determiner for determining a polishing condition prepared in advance for each of the types, based on the data transmitted from the identifying unit, the data being associated with cross-sectional shape of the peripheral portion before the polishing; and

a controller for controlling the polishing member to polish the workpiece in accordance with the polishing condition.

2. A polishing apparatus according to Claim 1, wherein the identifying unit identifies to which of the plurality of types the cross-sectional shape of the peripheral portion belongs, based on whether or not the cross-sectional shape has a straight line at its center, whether or not the cross-sectional shape has a slanted straight line, and a length of a curved line.

3. A polishing apparatus according to Claim 1, wherein the identifying unit uses a template matching technique to determine a degree of similarity between the cross-sectional shape and the types to identify to which of the plurality of types the cross-sectional shape of the peripheral portion belongs.

4. A polishing apparatus according to Claim 1, wherein the identifying unit has a confocal laser microscope, and the data associated with the cross-sectional shape of the peripheral portion is obtained by the confocal laser microscope.

5. A polishing apparatus according to Claim 1, wherein the identifying unit has a telecentric optical system, and the data associated with the cross-sectional shape of the peripheral portion is obtained by the telecentric optical system.

6. A polishing apparatus according to Claim 1, further comprising a polishing-termination determiner that, after the polishing member polishes the workpiece, determines whether to terminate the polishing, based on data associated with the cross-sectional shape of the peripheral portion after polishing.

7. A polishing apparatus according to Claim 1, wherein the polishing member polishes a bevel portion that is an end face of the peripheral portion of the workpiece.

8. A polishing method for polishing a peripheral portion of a workpiece by pressing a polishing member against the peripheral portion while the workpiece is held and rotated,

the method comprising:

identifying data associated with a cross-sectional shape of the peripheral portion before the polishing, the data indicating to which of a plurality of predetermined types related to the cross-sectional shape the cross-sectional shape of the peripheral portion belongs;

determining a polishing condition prepared in advance for each of the types, based on the data associated with cross-sectional shape of the peripheral portion before the polishing; and

polishing the workpiece in accordance with the polishing condition.

9. A polishing apparatus according to Claim 8, wherein the identifying step identifies to which of the plurality of types the cross-sectional shape of the peripheral portion belongs, based on whether or not the cross-sectional shape has a straight line at its center, whether or not the cross-sectional shape has a slanted straight line, and a length of a curved line.

10. A polishing apparatus according to Claim 8, wherein the identifying step uses a template matching technique to determine a degree of similarity between the cross-sectional shape and the types to identify to which of the plurality of types the cross-sectional shape of the peripheral portion belongs.