WHAT IS CLAIMED IS:

1. A grinding wheel that is mounted on a tip end of a spindle and grinds a workpiece according to rotation of the spindle, the grinding wheel comprising:

an annular base; and

a plurality of grindstone sets disposed in an annular manner on one surface side of the base along a circumferential direction of the base,

wherein each of the plurality of grindstone sets has a first grindstone and a second grindstone having a hardness higher than that of the first grindstone, such that the first grindstone and the second grindstone are adjacent to each other in a predetermined orientation in the circumferential direction of the base, and

a predetermined interval larger than an interval between the first grindstone and the second grindstone in the circumferential direction of the base is provided between adjacent ones of the grindstone sets.

2. A grinding method of grinding a workpiece having a single crystal substrate formed with a non-single crystal layer on a front surface of the substrate, with use of a grinding wheel,

the grinding wheel including

an annular base, and

a plurality of grindstone sets disposed in an annular manner on one surface side of the base along a circumferential direction of the base,

in which each of the plurality of grindstone sets has a first grindstone and a second grindstone having a hardness higher than that of the first grindstone, such that the first grindstone and the second grindstone are adjacent to each other in a predetermined orientation in the circumferential direction of the base, and

a predetermined interval larger than an interval between the first grindstone and the second grindstone in the circumferential direction of the base is provided between adjacent ones of the grindstone sets,

the grinding method comprising:

a holding step of holding under suction, on a chuck table, a back surface of the substrate that is positioned opposite to the front surface of the substrate;

a first grinding step of rotating the spindle in a predetermined direction such that the second grindstone is set in front of the first grindstone in each of the grindstone sets, to grind the front surface of the substrate, thereby removing the non-single crystal layer, after the holding step is carried out; and

a second grinding step of rotating the spindle in a direction opposite to the predetermined direction such that the first grindstone is set in front of the second grindstone in each of the grindstone sets, to grind the substrate, after the first grinding step is carried out.

3. A grinding method of grinding a workpiece having a substrate formed with a film on a front surface of the substrate, with use of a grinding wheel,

the grinding wheel including

an annular base, and

a plurality of grindstone sets disposed in an annular manner on one surface side of the base along a circumferential direction of the base,

in which each of the plurality of grindstone sets has a first grindstone and a second grindstone having a hardness higher than that of the first grindstone, such that the first grindstone and the second grindstone are adjacent to each other in a predetermined orientation in the circumferential direction of the base, and

a predetermined interval larger than an interval between the first grindstone and the second grindstone in the circumferential direction of the base is provided between adjacent ones of the grindstone sets,

the grinding method comprising:

a holding step of holding under suction, on a chuck table, a back surface of the substrate that is positioned opposite to the front surface of the substrate;

a first grinding step of rotating the spindle in a predetermined direction such that the first grindstone is set in front of the second grindstone in each of the grindstone sets, to grind the film, thereby removing the film, after the holding step is carried out; and

a second grinding step of rotating the spindle in a direction opposite to the predetermined direction such that the second grindstone is set in front of the first grindstone in each of the grindstone sets, to grind the substrate, after the first grinding step is carried out.