WHAT IS CLAIMED IS:

1. A grinding method applied when a circular plate-shaped workpiece having a first surface and a second surface on an opposite side of the first surface is to be ground from the second surface, the grinding method comprising:

a first grinding step of moving the workpiece and a first grinding wheel in which a plurality of first grindstones each including abrasive grains are arrayed in an annular area with a first diameter smaller than a diameter of the workpiece relative to each other in a first direction that intersects with the second surface, while mutually rotating the workpiece and the first grinding wheel, and causing the first grindstones to come into contact with the workpiece from the second surface side, to grind the workpiece and thereby form on the workpiece a circular plate-shaped first thin plate portion and an annular first thick plate portion surrounding the first thin plate portion; and

a second grinding step of, after the first grinding step, moving the workpiece and a second grinding wheel in which a plurality of second grindstones each including abrasive grains smaller than those included in the first grindstones are arrayed in an annular area with

a second diameter smaller than the diameter of the workpiece relative to each other in a second direction that intersects with the second surface, while mutually rotating the workpiece and the second grinding wheel, and causing the second grindstones to come into contact with the first thick plate portion and the first thin plate portion from the second surface side, to grind the workpiece and thereby form on the workpiece a thin circular plate-shaped second thin plate portion that has a larger diameter than the first thin plate portion and an annular second thick plate portion surrounding the second thin plate portion, wherein,

in the second grinding step, the second grindstones are caused to come into contact with an area on the second surface that remains on the first thick plate portion at a distance of equal to or more than a width of the second grindstones in a direction of the second diameter from an inner edge of the second surface toward an outer side,

and wherein, in the second grinding step, at a stage where only the first thick plate portion is ground from the second surface side, the workpiece and the second grinding wheel are moved relative to each other in the second direction at a first grinding feed speed, and at a

stage where an area including the first thin plate portion is ground from the second surface side, the workpiece and the second grinding wheel are moved relative to each other in the second direction at a second grinding feed speed that is lower than the first grinding feed speed.

2. The grinding method according to claim 1, wherein,

in the first grinding step, while the first grinding wheel and the workpiece are moved relative to each other in a direction perpendicular to the second surface, a center of rotation of the first grinding wheel and a center of rotation of the workpiece are caused to come close to each other in a direction parallel to the second surface.

3. The grinding method according to claim 1 or 2, wherein,

in the second grinding step, while the second grinding wheel and the workpiece are moved relative to each other in a direction perpendicular to the second surface, a center of rotation of the second grinding wheel and a center of rotation of the workpiece are caused to come close to each other in a direction parallel to the second surface.