WHAT IS CLAIMED IS:

1. A method of grinding a plate-shaped workpiece held on a holding surface of a chuck table with a grinding wheel having a plurality of grindstones disposed in an annular array while the chuck table and the grinding wheel are being rotated with the grindstones moving across a rotational axis of the chuck table, the method comprising:

a first grinding step of adjusting a relative tilt of the chuck table and the grinding wheel to a first state in which distances between the grindstones and the holding surface are larger in other positions than a position where the grindstones overlap the rotational axis of the chuck table, and moving the holding surface and the grindstones relatively closer to each other to bring the grindstones into abrasive contact with the workpiece to thereby grind the workpiece so as to make a central portion thereof thinner;

a grinding stopping step of spacing the grindstones from the workpiece to stop grinding the workpiece, after the first grinding step; and

a second grinding step of adjusting the relative tilt of the chuck table and the grinding wheel to a second state, which is different from the first state, in

which the grindstones are held out of contact with the workpiece at a position where the grindstones overlap the rotational axis of the chuck table, and moving the holding surface and the grindstones relatively closer to each other to bring the grindstones into abrasive contact with the workpiece to thereby grind the workpiece so as not to remove the central portion thereof, wherein the second grinding step is performed after the grinding stopping step,

wherein, in the second grinding step,

distances between the grindstones and workpiece are larger at the position where the grindstones overlap the rotational axis of the chuck table than other positions in the outer circumferential region, and

the workpiece is ground under a condition that is varied from the first grinding step for either one of a plurality of items or more than one of a plurality of items representing a speed at which the chuck table is rotated, a speed at which the grinding wheel is rotated and a speed at which the grinding wheel is lowered, for causing the outer circumferential portion workpiece to have a smaller surface roughness than that in the first grinding step, independently of a surface roughness of the central portion of the workpiece.

2. The method according to claim 1,

wherein the chuck table is rotated at a lower speed in the second grinding step than that in the first grinding step.

3. The method according to claim 1,

wherein the grinding wheel is rotated at a higher speed in the second grinding step than that in the first grinding step.

4. The method according to claim 1,

wherein the holding surface and the grindstones are moved closer to each other at a lower speed in the second grinding step than that in the first grinding step.

5. The method according to claim 1, wherein, in the second grinding step, a region of the workpiece is processed, whose distance from an outer circumferential edge of the workpiece ranges from 1/3 to 2/3 of a radius of the workpiece.