WHAT IS CLAIMED IS:

1. A grinding apparatus for grinding a workpiece, comprising:

a chuck table for holding the workpiece thereon;

a plate-shaped table base disposed beneath a support plate, supporting the chuck table;

a grinding unit for grinding the workpiece held on the chuck table with a grinding wheel, the grinding unit having a spindle and the grinding wheel mounted on an end of the spindle;

a load detecting unit having load measuring devices, for detecting a load applied from the grinding unit to the table base;

a tilt adjustment unit supporting the table base thereon, for adjusting a tilt of the table base;

a storage for storing a correlative relation between loads applied to the table base and changes in the tilt of the table base that are caused by the loads; and

a controller having a processor, for controlling the tilt adjustment unit on a basis of the load detected by the load detecting unit and the correlative relation, to adjust the tilt of the table base so that a change in the tilt of the table base that corresponds to the

detected load is cancelled out, .

wherein the load measuring devices are circumferentially spaced from each other on the upper surface of the table base and have respective upper surfaces held in contact with the lower surface of the support plate.

2. The grinding apparatus according to claim 1, wherein the tilt adjustment unit has a fixed support mechanism and a plurality of movable support mechanisms,

the correlative relation represents a correlative relation between loads applied to the fixed support mechanism and the movable support mechanisms and changes in the tilt of the table base that are caused by respective contractions of the fixed support mechanism and the movable support mechanisms to which the loads are applied, and

the controller adjusts respective lengths of the movable support mechanisms on a basis of the correlative relation, thereby adjusting the tilt of the table base.

3. A grinding method for grinding a workpiece, comprising:

a first tilt adjusting step of adjusting a tilt of a table base that supports a chuck table, in order to make parallel to each other a grinding surface defined by

respective lower surfaces of grindstones of a grinding wheel that are disposed on a surface of a wheel base and arrayed along circumferential directions of the surface of the wheel base and a local area of a holding surface of the chuck table that overlaps an area of contact between the grindstones and the workpiece held on the chuck table;

after the first tilt adjusting step, a first grinding step of grinding the workpiece with the grinding wheel and detecting a load applied to the table base;

after the first grinding step, a second tilt adjusting step of adjusting a tilt of the table base in order to cancel out a change in the tilt of the table base that corresponds to the load detected in the first grinding step, on a basis of the correlative relation between loads applied to the table base and changes in the tilt of the table base that are caused by the loads and the load detected in the first grinding step; and

after the second tilt adjusting step, a second grinding step of grinding the workpiece to a predetermined finished thickness,

wherein in the first grinding step, a load current of a servomotor for rotating the grinding wheel remains unchanged.

4. The grinding method according to claim 3, wherein the correlative relation represents a correlative relation between loads applied to a fixed support mechanism and a plurality of movable support mechanisms and changes in the tilt of the table base that are caused by respective contractions of the fixed support mechanism and the movable support mechanisms to which the loads are applied, the fixed support mechanism and the plurality of movable support mechanisms being configured to adjust the tilt of the table base, and

the second tilt adjusting step includes a step of adjusting respective lengths of the movable support mechanisms on a basis of the loads applied to the fixed support mechanism and the movable support mechanisms and the correlative relation.

5. The grinding method according to claim 4, further comprising:

after the second grinding step, a third grinding step of holding another workpiece different from the workpiece and grinding the other workpiece with the grinding wheel while the lengths of the movable support mechanisms remain to have lengths adjusted in the second tilt adjusting step.

6. The grinding method according to claim 5,

wherein the third grinding step includes a step of detecting a load applied to the table base as well as grinding the other workpiece with the grinding wheel, and

the grinding method further includes a third tilt adjusting step of adjusting the tilt of the table base in order to cancel out a change in the tilt of the table base that corresponds to the load detected in the third grinding step, on a basis of the load detected in the third grinding step and the correlative relation.