WHAT IS CLAIMED IS:

1. A processing apparatus used in processing of a workpiece having a device in each of a plurality of regions demarcated by a plurality of dividing lines formed on a front surface of the workpiece in a grid pattern, the processing apparatus comprising:

an apparatus base;

a chuck table holding the workpiece;

a positioning means for positioning the workpiece to a predetermined position before grinding at a grinding unit;

a resin coating means including a spinner table, said spinner table is a rotatable spinner table and said resin coating means coating the front surface of the workpiece with a resin, while the workpiece is held on the spinner table;

a cleaning means for cleaning the workpiece coated with the resin after the grinding at the grinding unit;

the grinding unit including grinding stones which grind a back surface of the workpiece and the resin coated on the front surface of the workpiece; and

a transfer unit which loads/unloads the workpiece to/from the chuck table and causes the front surface and the back surface of the workpiece unloaded from the chuck

table to be inverted;

the positioning means and the cleaning means are located within a movable range of the transfer unit;

the transfer unit includes:

a first transfer unit which directly transfers the workpiece from the positioning means to the spinner table and from the spinner table to the chuck table, wherein the first transfer unit includes a first transfer pad that is configured and arranged for holding the workpiece,

a second transfer unit which directly transfers the workpiece from the chuck table to the cleaning means, wherein the second transfer unit includes a second transfer pad that is configured and arranged for holding the workpiece, and

a front/back surface inversion transfer unit which transfers the workpiece from the cleaning means to the second transfer unit, wherein the front/back surface inversion transfer unit includes a third transfer pad that is configured and arranged for holding the workpiece,

wherein:

the front/back surface inversion transfer unit holds the workpiece via the third transfer pad, after the front surface of the workpiece which includes the resin

has been cleaned by the cleaning means, and inverts the front surface and the back surface of the workpiece, causing the back surface of the workpiece to face upward,

the second transfer unit takes the workpiece from the front/back surface inversion transfer unit, with the back surface of the workpiece facing upward and the second transfer unit directly transfers the workpiece to the chuck table,

the chuck table holds the front surface of the workpiece, and

the grinding unit grinds the back surface of the workpiece with the grinding stones,

wherein said transfer unit, said cleaning means, said grinding unit, said resin coating means, said positioning means, and said cleaning means, are all located on a same surface of the apparatus base.

2. The processing apparatus according to claim 1, wherein a resin thickness of the resin after grinding with the grinding stones is measured, and the back surface of the workpiece is thinned to a predetermined thickness.

3. The processing apparatus according to claim 1, further comprising:

a cleaning nozzle jetting cleaning water to the

grinding stones,

wherein the resin is ground with the grinding stones while resin stuck to the grinding stones is cleaned.

4. The processing apparatus according to claim 1, wherein grinding of the resin and grinding of the back surface of the workpiece are performed with same grinding stones.