WHAT IS CLAIMED IS:

1. A processing method of a workpiece, comprising:

an integration step of heating and compression bonding a thermocompression bonding sheet to an annular frame that has an opening to receive the workpiece therein and to the workpiece received in the opening, thereby the annular frame and the workpiece are integrated via the thermocompression bonding sheet; and

a processing step of processing the workpiece integrated with the annular frame via the thermocompression bonding sheet,

wherein, in the integration step, the thermocompression bonding sheet is pressed against the annular frame that has been heated by a heat table with a heat source included therein, by a heat roller with a heat source included therein while being heated by the heat roller, thereby the thermocompression bonding sheet is fixed to the annular frame, and

wherein the integration step includes a workpiece fixing step in which

the thermocompression bonding sheet divides an internal space of a vacuum chamber into two parts, one

on a side of an upper main body, the other on a side of a lower main body, with an on/off valve of a first atmosphere release unit kept closed,

on/off valves of pressure reduction units are opened to reduce a pressure of the internal space of the vacuum chamber through the pressure reduction units, and after both of the parts have been reduced in pressure for a predetermined time, the on/off valves of the pressure reduction units are closed again, and

after that, with the on/off valves of the pressure reduction units and a second atmosphere release unit kept closed, the on/off valve of the first atmosphere release unit is opened, air then flows into the part on the side of the upper main body so that an internal pressure of the part rises closer to atmospheric pressure, and as a consequence, the flowing-in air presses the thermocompression bonding sheet toward a front surface of the workpiece,
and when the thermocompression bonding sheet comes into contact with the front surface of the workpiece, the thermocompression bonding sheet is heated via the workpiece as the workpiece has been being heated by the heat table, so that the thermocompression bonding

sheet is brought into close contact with the front surface of the workpiece.

2. The processing method according to claim 1, wherein, in the integration step, the workpiece and the annular frame are both fixed to one surface of the thermocompression bonding sheet.

3. The processing method according to claim 1, wherein, in the integration step, the workpiece and the annular frame are fixed to one surface and another surface, respectively, of the thermocompression bonding sheet.

4. The processing method according to claim 3, wherein the integration step includes

the workpiece fixing step of fixing the workpiece to the one surface of the thermocompression bonding sheet, and

a frame fixing step of fixing the annular frame to the other surface of the thermocompression bonding sheet.

5. The processing method according to claim 1, wherein the thermocompression bonding sheet has no bonding layer in regions where the workpiece and the annular frame are compression bonded.