WHAT IS CLAIMED IS:

1. A wafer producing apparatus for producing an SiC wafer from a single crystal SiC ingot, said wafer producing apparatus comprising:

a holding unit for holding said ingot;

a flattening unit for grinding the upper surface of said ingot held by said holding unit, thereby flattening the upper surface of said ingot;

a laser applying unit for setting the focal point of a laser beam having a transmission wavelength, the laser beam being focused at a focal point inside said ingot, where in the focal point is at a predetermined depth from the upper surface of said ingot held by said holding unit, said predetermined depth corresponding to the thickness of said wafer to be produced, and for applying said laser beam to said ingot to thereby form a separation layer for separating said wafer from said ingot;

a wafer separating unit for holding the upper surface of said ingot to separate said wafer from said ingot along said separation layer; and

a wafer storing unit for storing said wafer separated from said ingot.

2. The wafer producing apparatus according to

claim 1, further comprising:

an ingot storing unit for storing said ingot; and

an ingot transfer unit for transferring said ingot from said ingot storing unit to said holding unit.

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

a cleaning unit for cleaning said ingot processed by said flattening unit.

4. The wafer producing apparatus according to claim 1, wherein said holding unit is provided on a turn table, so that when said turn table is rotated, said holding unit is positioned sequentially below said flattening unit, said laser applying unit, and said wafer separating unit.

5. The wafer producing apparatus according to claim 4, further comprising four circular chuck tables rotatably provided on an upper surface of said turn table.

6. The wafer producing apparatus according to claim 1, wherein said wafer separating unit includes an ultrasonic vibration generating member configured for generating an ultrasonic vibration and applying the ultrasonic vibration to said ingot to separate said wafer from said ingot.

7. The wafer producing apparatus according to claim

1, wherein said wafer storing unit includes a cassette that is configured to store said wafer separated from said ingot and at least one additional wafer separated from said ingot.