What is claimed is:

1. A cutting method for cutting a processing-target object by a cutting blade, the cutting method comprising:

a holding step of holding the processing-target object by a holding table; and

a cutting step of cutting the processing-target object by the cutting blade by causing the cutting blade that rotates to cut into the processing-target object held by the holding table and causing the holding table and the cutting blade to relatively move after the holding step is carried out,

wherein:

in the cutting step, cutting is carried out with detection of whether or not a crack in the processing-target object exists by a crack detecting unit disposed on a rear side relative to the cutting blade in a cutting progression direction in which cutting processing of the processing-target object by the cutting blade progresses, and

the cutting blade and the crack detecting unit are both supported by a blade unit, and further wherein said blade unit, with the cutting blade and the crack detecting unit supported thereon, and the holding table are moved relative to each other in the cutting progression direction during the cutting step.

2. The cutting method according to claim 1, wherein:

relative movement between the holding table and the cutting blade is stopped or speed of the relative movement is decreased when a crack in the processing-target object is detected by the crack detecting unit in execution of the cutting step.

3. A cutting apparatus that cuts a processing-target object, the cutting apparatus comprising:

a holding table that holds the processing-target object;

cutting means having a cutting blade that cuts the processing-target object held by the holding table;

moving means that causes the cutting blade and the holding table to relatively move; and

a crack detecting unit that is disposed on a rear side relative to the cutting blade in a cutting progression direction in which cutting processing of the processing-target object by the cutting blade progresses, and detects whether or not a crack in the processing-target object exists, and

wherein the cutting blade and the crack detecting unit are both supported by a blade unit, and further wherein said blade unit, with the cutting blade and the crack detecting unit supported thereon, and the holding table are moved relative to each other in the cutting progression direction during the cutting step.

4. The cutting method according to claim 1, wherein when a crack is detected by the crack detecting unit during execution of the cutting step, information related to the crack is transmitted to control equipment, whereby said control equipment decreases the cutting-feed rate or changes the rotational speed of the cutting blade.

5. The cutting apparatus according to claim 3, wherein when a crack is detected by the crack detecting unit during cutting processing, information related to the crack is transmitted to control equipment, whereby said control equipment decreases the cutting-feed rate or changes the rotational speed of the cutting blade.

6. The cutting method according to claim 1, wherein the blade unit is configured and arranged to be moved up and down in a Z-axis direction with respect to the holding table via a Z-axis movement mechanism.

7. The cutting apparatus according to claim 3, wherein the blade unit is configured and arranged to be moved up and down in a Z-axis direction with respect to the holding table via a Z-axis movement mechanism.

8. The cutting method according to claim 1, wherein when the crack detecting unit detects the generation of a crack, the position of the crack is recorded and device chips located near the position of the crack are considered as defective.

9. The cutting apparatus according to claim 3, wherein when the crack detecting unit detects the generation of a crack, the position of the crack is recorded and device chips located near the position of the crack are considered as defective.

10. The cutting method according to claim 1, wherein the crack detecting unit detects cracks by oscillating and observing ultrasonic waves.

11. The cutting apparatus according to claim 3, wherein the crack detecting unit detects cracks by oscillating and observing ultrasonic waves.

12. The cutting method according to claim 4, wherein said change in the rotational speed of the cutting blade comprises stopping the rotation of the cutting blade.

13. The cutting apparatus according to claim 5, wherein said change in the rotational speed of the cutting blade comprises stopping the rotation of the cutting blade.