

WHAT IS CLAIMED IS:

1. A dividing apparatus for dividing a plate-shaped workpiece along projected dicing lines thereon, the workpiece being stuck to an upper surface of a protective tape mounted on an annular frame and having a strength reduced along the projected dicing lines, comprising:

a frame holding unit having a holding surface for holding the annular frame, the frame holding unit being rotatable about its own axis;

a detecting unit configured to detect the projected dicing lines on the workpiece stuck to the protective tape;

a dividing unit configured to divide the workpiece into chips along a projected dicing line among the plurality of the projected dicing lines detected by the detecting unit; and

a moving mechanism configured to move the frame holding unit and the dividing unit with respect to each other; wherein

the dividing unit includes:

a holder configured to hold one of two regions of the workpiece which are next to each other across the detected projected dicing line where the workpiece is to be broken, from both upper and lower surfaces of the workpiece;

wherein the holder includes:

a first holder configured to push upwardly the workpiece from the lower surface thereof through the protective tape, wherein the first holder comprises a rotor and a plurality of rectangular abutment members; and

a second holder disposed above the workpiece in facing relation to the first holder across the workpiece, for abutting and holding the workpiece from above the workpiece; and

a presser configured to press an other of the two regions of the workpiece which is next to the one of the two regions that is held by the holder across the projected dicing line where the workpiece is to be broken, thereby to divide the workpiece along the projected dicing line.

2. A dividing apparatus for dividing a plate-shaped workpiece along projected dicing lines thereon, the workpiece being stuck to an upper surface of a protective tape mounted on an annular frame and having a strength reduced along the projected dicing lines, comprising:

a frame holding unit having a holding surface for holding the annular frame, the frame holding unit being rotatable about its own axis;

a detecting unit configured to detect the

projected dicing lines on the workpiece stuck to the protective tape;

a dividing unit configured to divide the workpiece into chips along a projected dicing line among the plurality of the projected dicing lines detected by the detecting unit; and

a moving mechanism configured to move the frame holding unit and the dividing unit with respect to each other; wherein

the dividing unit includes:

a holder configured to hold one of two regions of the workpiece which are next to each other across the detected projected dicing line where the workpiece is to be broken, from both upper and lower surfaces of the workpiece,

wherein the holder includes:

a first holder configured to push upwardly the workpiece from the lower surface thereof through the protective tape; and

a second holder disposed above the workpiece in facing relation to the first holder across the workpiece, for abutting and holding the workpiece from above the workpiece; wherein

the first holder includes a plurality of rectangular abutment members of different lengths, the first holder being operable to position one of the

rectangular abutment members which has a length corresponding to the length of the projected dicing line; and

a presser configured to press an other of the two regions of the workpiece which is next to the one of the two regions that is held by the holder across the projected dicing line where the workpiece is to be broken, thereby to divide the workpiece along the projected dicing line.

3. The dividing apparatus of claim 1 wherein the abutment members have different lengths.

4. The dividing apparatus of claim 1 wherein the first holder further comprises a lifting and lowering mechanism.

5. The dividing apparatus of claim 1 wherein the second holder is supported on a support plate.

6. The dividing apparatus of claim 5 wherein the second holder further comprises an air cylinder hanging from the support plate.

7. The dividing apparatus of claim 6 wherein the second holder further comprises an upper abutment member connected to a lower end of a piston rod of the air cylinder, where the upper abutment member comprises a plate.

8. The dividing apparatus of claim 2 wherein the first holder comprises a rotor and a plurality of

rectangular abutment members.

9. The dividing apparatus of claim 8 wherein the abutment members have different lengths.

10. The dividing apparatus of claim 8 wherein the first holder further comprises a lifting and lowering mechanism.

11. The dividing apparatus of claim 2 wherein the second holder is supported on a support plate.

12. The dividing apparatus of claim 11 wherein the second holder further comprises an air cylinder hanging from the support plate.

13. The dividing apparatus of claim 12 wherein the second holder further comprises an upper abutment member connected to a lower end of a piston rod of the air cylinder, where the upper abutment member comprises a plate.