

Claims

1. A device for supporting a work piece, the device comprising
a continuous base having a planar supporting surface for holding the work piece disposed thereon, and an opening through the base for partially exposing the back surface of the work piece; and
a continuous clamp having a planar clamping surface parallel to the supporting surface, for clamping the work piece thereover.
2. A device according to claim 1, wherein the base further has at least one vacuum slot carved therein, which has a first opening to the supporting surface, and a second opening in communication with a vacuum source; wherein a negative pressure is generated in the at least one vacuum slot so as to stabilize the contact between the work piece and the supporting surface, when the vacuum source is switched on.
3. A device according to claim 1, wherein the base further has a recess in the supporting surface for allowing an end effector to pass through so as to load/unload the wafer onto/from the supporting surface.
4. A device according to claim 1, wherein the opening through the base is so dimensioned that the region to be marked on the back surface of the wafer is fully exposed.
5. A device according to claim 1, wherein the opening through the base is circular.
6. A device according to claim 1, wherein the opening through the base is rectangular.
7. A device according to claim 1, wherein the clamp is a circular ring.
8. A device according to claim 1, wherein the clamp is a rectangular ring.

9. A device according to claim 1, wherein the clamp comprises a plurality of extended clamp jaws, each having a planar clamping surface; and wherein the clamping surfaces fall within a common planar plane.

10. A device according to claim 1, which further comprises at least one mechanical drive for adjusting the relative distance between the clamping surface and the supporting surface.

11. A device according to claim 10, wherein the at least mechanical drive is a pneumatic cylinder.

12. A device according to claim 10, wherein the at least mechanical drive is a linear stepper.

13. A device according to claim 1, which further comprises at least one ejector coupled to the clamp for ejecting the work piece from the clamping surface when the clamp is unclamped and moved away from the supporting surface.

14. A device according to claim 13, wherein the at least one ejector comprises:
an ejector pin movable with respect to the clamp, and having a step end; and
a biasing element for biasing the ejector pin towards a default position where the step end protrudes from the clamping surface for a pre-determined distance;
wherein during clamping, the step end is in contact with the supporting surface but not with the work piece, so that biasing force exerted on the ejector pin is not transmitted to the work piece; and
wherein after unclamping, the step end keeps in contact with the supporting surface until the pre-determined distance between the step end and the clamping surface is recovered, thereby stopping the work piece from adhering to and moving with the clamp further.

15. A device according to claim 14, wherein the at least one ejector further comprises:

a support member secured to the clamp and holding the ejector pin therein, the support member having a side slot and a top surface; and

a stopper having a first end associated with the ejector pin, and a second end movably disposed in the side slot;

wherein the biasing element is disposed between the top surface of the support member and the stopper.

16. A device according to claim 14, wherein the biasing means is a compression spring.

17. A device according to claim 14, wherein the biasing means is a pneumatic pin.

18. A device for supporting a work piece, the device comprising:

a continuous base having a planar supporting surface for holding the work piece disposed thereon, an opening through the base for partially exposing the back surface of the work piece, and at least one vacuum slot carved in the base through which a negative pressure is applied so as to stabilize the contact between the work piece and the supporting surface; and

a continuous clamp for clamping the work piece over the supporting surface, the clamp having a plurality of extended clamp jaws, each with a planar clamping surface, wherein the clamping surfaces fall within a common planar plane parallel to the supporting surface.

19. A device according to claim 18, wherein the at least one vacuum slot is configured to be vertically in alignment with one of the plurality of clamp jaws.

20. A device according to claim 18, which further comprises at least one ejector coupled to the clamp for ejecting the work piece from the at least one clamping surface when the clamp is unclamped and moved away from the supporting surface.

21. A device according to claim 20, wherein the at least one ejector is coupled to one of the plurality of clamp jaws.