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(54) Title: PICKUP DEVICE AND PICKUP METHOD FOR SEMICONDUCTOR DIE

(54) 発明の名称: 半導体ダイのピックアップ装置及びピックアップ方法

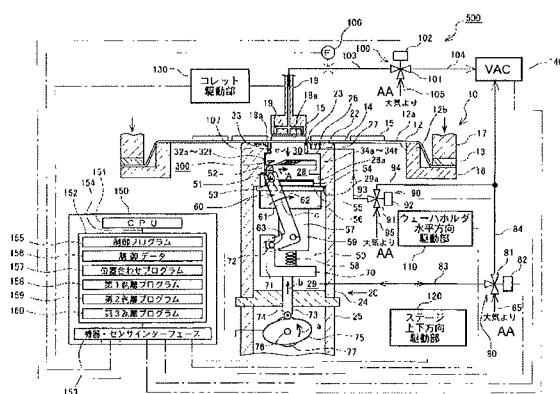


FIG. 1:
110 Wafer holder horizontal direction drive unit
120 Stage vertical direction drive unit
130 Collet drive unit
153 Device/sensor interface
155 Control program
156 Control data
157 Alignment program
158 First separation program
159 Second separation program
160 Third separation program
AA From atmosphere

(57) Abstract: The present invention is provided with: a stage (20) that includes an adsorption surface (22) for adsorbing a dicing sheet (12); a stepped surface formation mechanism (300) that is disposed inside an opening (23) in the stage (20), includes a plurality of moving elements (30) having a front-end surface that moves between a first position which is higher than the adsorption surface (22) and a second position which is lower than the first position, and forms a stepped surface in relation to the adsorption surface (22); an opening pressure switching mechanism (80) that switches the opening pressure of the opening (23) between a first pressure (P₁) which is close to a vacuum and a second pressure (P₂) which is close to atmospheric pressure. During pickup of the semiconductor die (15), at least one moving element (30) is moved from the first position to the second position every time the opening pressure is switched from the first pressure (P₁) to the second pressure (P₂). Thanks to this, the occurrence of damage to the semiconductor die is suppressed, and the semiconductor die is picked up effectively.

(57) 要約:

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ダイシングシート (12) を吸着する吸着面 (22) を含むステージ (20) と、ステージ (20) の開口 (23) の中に配置され、先端面が吸着面 (22) より高い第 1 位置と第 1 位置より低い第 2 位置との間で移動する複数の移動要素 (30) を含み、吸着面 (22) に対する段差面を形成する段差面形成機構 (300) と、開口 (23) の開口圧力を真空中に近い第 1 圧力 P_1 と大気圧に近い第 2 圧力 P_2 との間で切替える開口圧力切替機構 (80) と、を備え、半導体ダイ (15) をピックアップする際に、開口圧力を第 1 圧力 P_1 から第 2 圧力 P_2 に切替える毎に少なくとも 1 つの移動要素 (30) を第 1 位置から第 2 位置に移動する。これにより、半導体ダイの損傷の発生を抑制して効果的に半導体ダイをピックアップする。

ABSTRACT

Provided is a semiconductor die pick-up apparatus including: a stage (20) having a suction surface (22) for suctioning a dicing sheet (12); a stepped-surface forming mechanism (300) configured to form a stepped surface for the suction surface (22), the stepped-surface forming mechanism (300) having a plurality of moving elements (30) disposed in an opening (23) of the stage (20), the moving elements (30) being movable between a first position and a second position, the first position being a position at which tip end surfaces of the moving elements (30) are higher than the suction surface (22), the second position being a position at which the tip end surfaces of the moving elements (30) are lower than the first position; and an opening pressure switch mechanism (80) configured to switch an opening pressure of the opening (23) between a first pressure P_1 that is near vacuum and a second pressure P_2 that is near an atmospheric pressure, wherein when a semiconductor die (15) is picked up, at least one of the moving elements (30) is moved from the first position to the second position every time the opening pressure is switched from the first pressure P_1 to the second pressure P_2 . With this, it is possible to pick up a semiconductor die effectively while reducing occurrence of damages to the semiconductor die.

Figure 1