

CLAIMS

1. A chip detaching apparatus for detaching a semiconductor chip adhered to a thin tape, the chip detaching apparatus comprising:

an ejection hood comprising a supporting body supporting a lower surface of the tape on an outer circumference of the semiconductor chip to be detached from the tape, an vacuum clamping hole formed in an upper surface of the supporting body to clamp a portion of the lower surface of the tape that is in contact with the supporting body, and a push hole formed to vertically pass through a center portion of the upper surface of the supporting body;

a lifting member comprising a lifting body that is inserted into the push hole of the ejection hood and liftably mounted so as to upwardly push up, through the push hole, the tape clamped via vacuum transferred through the vacuum clamping hole of the ejection hood, a through hole formed to vertically pass through a center portion of an upper surface of the lifting body, and a cavity formed in the lifting body to communicate with the through hole;

an elastic member that is filled in the cavity of the lifting member such that the elastic member is elastically deformed in a convex shape through the through hole so as to push up the tape with the semiconductor chip;

a pressing member mounted in the lifting body to move forward and backward with respect to the cavity, the pressing member being formed to correspond to an inner circumferential shape of the cavity of the lifting member so as to elastically deform the elastic member by applying pressure to the elastic member; and

a pick-up head placed above the ejection hood to clamp the semiconductor chip by vacuum and lift up the semiconductor chip to be pushed up by the elastic member so as to detach the semiconductor chip,

wherein the lifting member further comprises an engaging portion that protrudes from an upper portion of the through hole to prevent the elastic member, which is elastically deformed and protrudes toward an upper portion of the through hole, from deviating to the outside.

2. The chip detaching apparatus of claim 1, wherein a plurality of vacuum clamping holes of the ejection hood are formed and arranged along an outer

circumference of the push hole, and the plurality of vacuum clamping holes clamp the tape by vacuum on an outer circumference of the semiconductor chip.

3. The chip detaching apparatus of claim 1, wherein the semiconductor chip is detached from the tape such that when the semiconductor chip is pushed up by the lifting member and the elastic member, the pick-up head lifts up the semiconductor chip while clamping the semiconductor chip by vacuum.

4. The chip detaching apparatus of claim 1, wherein an outer surface of the elastic member that comes into contact with the tape is formed of an adhesive material.

5. The chip detaching apparatus of claim 1, wherein the contact surface of the elastic member is formed concavely in a state where no external pressure is applied.

6. A chip detaching method of detaching a semiconductor chip adhered to a thin tape, the chip detaching method comprising:

(a) while the tape is disposed on the ejection hood, clamping a lower surface of the tape by vacuum on an outer circumference of the semiconductor chip that is to be detached from the tape, through a plurality of vacuum clamping holes formed in an upper surface of an ejection hood;

(b) pushing up the tape that is in contact with the lifting member by lifting up the lifting member inserted into a push hole formed in a center portion of the ejection hood;

(c) detaching the tape in a portion around the semiconductor chip, from the semiconductor chip by elastically deforming an elastic member in an upwardly convex shape by applying pressure to the elastic member that is filled in the cavity formed to communicate with a through hole formed in a center portion of the lifting member, by using a pressing member formed to correspond to an inner

circumferential shape of the cavity and installed to move forward or backward with respect to the cavity;

(d) clamping an upper surface of the semiconductor chip by vacuum by lowering the pick-up head placed above the ejection hood; and

(e) lifting the pick-up head that has clamped the semiconductor chip in (d) to detach the semiconductor chip from the tape,

wherein the lifting member further comprises an engaging portion that protrudes from an upper portion of the through hole to prevent the elastic member, which is elastically deformed and protrudes toward an upper portion of the through hole, from deviating to the outside.

7. The chip detaching method of claim 6, wherein (d) is performed after performing (a),

while performing (b) and (c), in (e), the semiconductor chip is lifted up using the pick-up head in synchronization with operation of the ejection hood and the elastic member.

8. The chip detaching method of claim 6, wherein (d) is performed after performing (a) and (b),

and while performing (c), in (e), the semiconductor chip is lifted up using the pick-up head in synchronization with operation of the elastic member.

9. The chip detaching method of claim 6, further comprising (f) elastically restoring the elastic member by retracting the pressing member after completing (d).

10. The chip detaching method of claim 9, wherein a contact surface of the elastic member is formed of an adhesive material, and the elastic member adheres to the tape to lower the tape in (f).