

Claims

1. Device for moving an object comprising at least a substrate (2) through an open side of a processing station (1a,b) of a processing apparatus, the device comprising:
 - 5 at least one support (26;26'), placeable at the processing station (1a,b),
 - at least one carrier (27a,b;27'a,b), each guided for movement relative to the support(s) (26;26') along a respective path predominantly directed in parallel to a reference axis (z) in a reference co-ordinate system;
 - 10 at least one controlling device (29a,b,30a,b,31a,b;37a,b) for controlling the movement of at least one of the carriers (27a,b;27'a,b) and driving the movement in at least one of opposite directions along the path;
 - a component (21;21') for holding the object; and
 - a suspension mechanism with which the holding component (21;21') is
 - 15 connected to the at least one carrier (27a,b;27'a,b),
 - wherein the suspension mechanism is arranged to guide movement of the holding component (21;21') relative to the at least one carrier (27a,b;27'a,b) along a holding component (21;21') path, and
 - wherein the controlling device (29a,b,30a,b,31a,b;37a,b) is arranged to
 - 20 drive the movement of the holding component (21;21') in at least one direction along the holding component path, **characterised in that** the holding component path is predominantly directed in parallel to the reference axis (z).
2. Device according to claim 1,
 - 25 wherein at least one of the controlling devices (29a,b,30a,b,31a,b;37a,b) for controlling the movement of at least one of the carriers (27a,b;27'a,b) is also arranged to drive the movement of the holding component (21;21').
3. Device according to claim 2,
 - 30 wherein at least one carrier (27a,b;27'a,b) is provided with a part (32a,b;42,48) movably journaled to the carrier (27a,b;27'a,b),
 - wherein the carrier (27a,b;27'a,b) is guided for movement along one of the supports (26;26') past a feature (35;50) arranged to engage the

movable part (32a,b;42,48) from at least a certain position along the path of the carrier (27a,b;27'a,b) along the support (26;26'), and wherein the suspension mechanism comprises a mechanism for translating movement of the movable part (32a,b;42,48) relative to the carrier (27a,b;27'a,b) into movement of the holding component (21;21') relative to the carrier (27a,b;27'a,b).

4. Device according to claim 3,
wherein the movable part (42,48) is guided for linear motion relative to the carrier (27'a) in a direction at least approximately directed in parallel to the reference axis (z), and

wherein the mechanism for translating movement of the movable part (42,48) relative to the carrier (27'a,b) into movement of the holding component (21') relative to the carrier (27'a,b) comprises a further movable part (41,47) guided for linear motion relative to the carrier (27'a,b) in a direction at least approximately directed in parallel to the holding component path and a force transfer device for transferring a force between the movable part (42,48) and the further movable part (41,47).

5. Device according to claim 4,
wherein the force transfer device comprises a medium (43) interconnecting the movable part (42,48) and the further movable part (41,47) and wrapped around a wheel (44) rotatably journaled to the carrier (27'a).

6. Device according to any one of the preceding claims,
wherein the carriers (27a,b;27'a,b), the suspension mechanism and the holding component (21;21') form a planar linkage.

7. Device according to any one of the preceding claims,
wherein the reference axis (z) is a first reference axis in a reference coordinate system further comprising a second reference axis (y) perpendicular to the first reference axis (z), together defining a plane parallel to a plane in which the holding component path lies, and

wherein the device includes at least two carriers (27a,b;27'a,b), guided for movement on opposite sides of the holding component (21;21') seen in a direction parallel to the second reference axis (y).

8. Device according to claim 7,
5 wherein the at least one support (26;26') comprises a support frame supporting each of the at least two carriers (27a,b;27'a,b).
9. Device according to any one of the preceding claims,
wherein the at least one controlling device (29a,b,30a,b,31a,b;37a,b) for controlling movement of at least one of the carriers (27a,b;27'a,b)
10 comprises a linear actuator.
10. Device according to claim 9,
wherein the linear actuator (29a,b,30a,b,31a,b;37a,b) comprises a rotary motor (30a,b) and a mechanism (29a,b,31a,b) for converting rotary motion into linear motion,
15 wherein the rotary motor (30a,b) is arranged on the at least one support (26;26').
11. Device according to any one of the preceding claims,
wherein the holding component path extends in a direction parallel to the reference axis (z) beyond end points of the paths of the carriers (27a,b;27'a,b) proximal to the processing station (1a,b), in use.
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12. Device according to any one of the preceding claims,
wherein the carriers (27a,b;27'a,b) and the suspension mechanism are located laterally adjacent the holding component (21;21') with respect to the holding component path at an end point of the holding component path distal to the processing station (1a,b), in use.
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13. System for conveying an object comprising at least a substrate (2) between processing stations (1a,b) of a processing apparatus,
wherein the conveying system comprises a transporter (3), movable from processing station (1a,b) to processing station (1a,b), and
30 wherein the transporter (3) comprises at least one device according to any one of the preceding claims.

14. Apparatus for processing a substrate (2), comprising at least one of a device according to any one of claims 1-12 and a conveying system according to claim 13.
15. Method of handling a substrate (2) in a processing apparatus, comprising moving an object comprising at least the substrate (2) through an open side of a processing station (1a,b) of the processing apparatus, wherein moving the object through the open side comprises:
moving at least one carrier (27a,b;27'a,b) along a path predominantly directed in parallel to a reference axis (z) in a reference co-ordinate system;
holding the object by means of a holding component (21;21'), connected to the at least one carrier (27a,b;27'a,b); and
moving the holding component (21;21') relative to the at least one carrier (27a,b;27'a,b) along a holding component path,
characterised in that
the holding component path is predominantly directed in parallel to the reference axis (z).