CLAIMS

1. A film-forming apparatus comprising:

a guiding mechanism that guides a carrier transported along a transporting route while holding a substrate on which a film-forming process is performed, wherein

the guiding mechanism comprises:

a first support surface that is arranged on one lateral side of the transporting route and supports a part of the carrier transported on the transporting route from beneath; and

a second support surface that is arranged on an opposite side of the first support surface across the transporting route and supports a part of the carrier transported on the transporting route from beneath, and wherein

the first support surface is provided with a tilt descending toward a side where the second support surface is provided, and the second support surface is provided with a tilt descending toward a side where the first support surface is provided.

2. The film-forming apparatus according to claim 1, wherein

the first support surface is arranged on the one lateral side of the transporting route and is arranged along the transporting route to support the part of the carrier transported on the transporting route from beneath and to guide the part, and

the second support surface is arranged on the other lateral side of the transporting route and is arranged along the transporting route to support the part of the carrier transported on the transporting route from

beneath and to guide the part.

3. The film-forming apparatus according to claim 2, wherein each of a portion of the carrier to be supported by the first support surface and a portion of the carrier to be supported by the second support surface is provided with a rotating member.

4. The film-forming apparatus according to claim 3, wherein,

of the carrier, the portion to be supported by the first support surface is provided with a first rotating member that rotates around a rotational shaft having one end and the other end, and the portion to be supported by the second support surface is provided with a second rotating member that rotates around a rotational shaft having one end and the other end,

the first rotating member is arranged so that the one end of the rotational shaft is positioned at the transporting route side and the other end of the rotational shaft is positioned at the one lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to a horizontal direction, and

the second rotating member is arranged so that the one end of the rotational shaft is positioned at the transporting route side and the other end of the rotational shaft is positioned at the other lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to the horizontal direction.

5. The film-forming apparatus according to claim 4, wherein

each of the first rotating member and the second rotating member

comprises a hollow-cylindrical rotating body,

the first support surface contacts an outer circumferential surface of the rotating body of the first rotating member from beneath to support the first rotating member, and

the second support surface contacts an outer circumferential surface of the rotating body of the second rotating member from beneath to support the second rotating member.

6. The film-forming apparatus according to any one of claims 1 to 5, wherein, of the carrier, the portion to be supported by the first support surface and the portion to be supported by the second support surface are located above a center of gravity of the carrier.

7. A carrier, to which a substrate to be subjected to a film-forming process is attached, transported along a transporting route provided in a film-forming apparatus while being guided by a guiding portion provided on one lateral side of the transporting route and a guiding portion provided on the other lateral side of the transporting route, the carrier comprising:

a carrier main body, to which the substrate is attached, that is transported on the transporting route in the film-forming apparatus;

a first rotating member that is provided rotatably around a rotational shaft having one end and the other end, and is guided by the guiding portion provided at the one lateral side while being supported from beneath when the carrier main body is transported on the transporting route; and

a second rotating member that is provided rotatably around a rotational shaft having one end and the other end, and is guided by the

guiding portion provided at the other lateral side while being supported from beneath when the carrier main body is transported on the transporting route, wherein,

the first rotating member is arranged so that, when the carrier main body is transported on the transporting route, the one end of the rotational shaft is positioned at the transporting route side and the other end is positioned at the one lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to a horizontal direction, and

the second rotating member is arranged so that, when the carrier main body is transported on the transporting route, the one end of the rotational shaft is positioned at the transporting route side and the other end is positioned at the other lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to the horizontal direction.

8. The carrier according to claim 7, wherein the first rotating member and the second rotating member are provided so that setting positions of the first rotating member and the second rotating member are different from each other in a transporting direction when the carrier main body is transported on the transporting route.

9. A method of manufacturing a substrate on which a film is formed, in which a carrier holding a substrate is transported and a film-forming process is performed on the substrate to manufacture a film-forming substrate that is a substrate to be subjected to the film-forming process, the method comprising:

when the carrier is transported, guiding the carrier by a guiding mechanism that guides the carrier to transport the carrier along a predetermined transporting route, wherein

the guiding mechanism comprises:

a first support surface that is arranged on one lateral side of the transporting route and supports a part of the carrier transported on the transporting route from beneath; and

a second support surface that is arranged on an opposite side of the first support surface across the transporting route and supports a part of the carrier transported on the transporting route from beneath, and wherein

the first support surface is provided with a tilt descending toward a side where the second support surface is provided, and the second support surface is provided with a tilt descending toward a side where the first support surface is provided.

CLAIMS

1. A film-forming apparatus comprising:

a guiding mechanism that guides a carrier transported along a transporting route while holding a substrate on which a film-forming process is performed, wherein

the guiding mechanism comprises:

a first support surface that is arranged on one lateral side of the transporting route and supports a part of the carrier transported on the transporting route from beneath; and

a second support surface that is arranged on an opposite side of the first support surface across the transporting route and supports a part of the carrier transported on the transporting route from beneath, and wherein

the first support surface is provided with a tilt descending toward a side where the second support surface is provided, and the second support surface is provided with a tilt descending toward a side where the first support surface is provided, and

the first support surface that supports the carrier and the second support surface that supports the carrier are located above a center of gravity of the carrier.

2. A film-forming apparatus comprising:

a guiding mechanism that guides a carrier transported along a transporting route while holding a substrate on which a film-forming process is performed, wherein

the guiding mechanism comprises:

a first support surface that is arranged on one lateral side of the transporting route and supports a part of the carrier transported on the transporting route from beneath; and

a second support surface that is arranged on an opposite side of the first support surface across the transporting route and supports a part of the carrier transported on the transporting route from beneath, and wherein

the first support surface is provided with a tilt descending toward a side where the second support surface is provided, and the second support surface is provided with a tilt descending toward a side where the first support surface is provided, and,

each of a contact portion contacting the carrier in the first support surface and a contact portion contacting the carrier in the second support surface is formed to be a linear shape when viewed from an upstream side in a transporting direction of the carrier.

3. The film-forming apparatus according to any one of claims 1 and 2, wherein

the first support surface is arranged on the one lateral side of the transporting route and is arranged along the transporting route to support the part of the carrier transported on the transporting route from beneath and to guide the part, and

the second support surface is arranged on the other lateral side of the transporting route and is arranged along the transporting route to support the part of the carrier transported on the transporting route from beneath and to guide the part.

4. The film-forming apparatus according to claim 3, wherein each of a portion of the carrier to be supported by the first support surface and a portion of the carrier to be supported by the second support surface is provided with a rotating member.

5. The film-forming apparatus according to claim 4, wherein,

of the carrier, the portion to be supported by the first support surface is provided with a first rotating member that rotates around a rotational shaft having one end and the other end, and the portion to be supported by the second support surface is provided with a second rotating member that rotates around a rotational shaft having one end and the other end,

the first rotating member is arranged so that the one end of the rotational shaft is positioned at the transporting route side and the other end of the rotational shaft is positioned at the one lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to a horizontal direction, and

the second rotating member is arranged so that the one end of the rotational shaft is positioned at the transporting route side and the other end of the rotational shaft is positioned at the other lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to the horizontal direction.

6. The film-forming apparatus according to claim 5, wherein

each of the first rotating member and the second rotating member comprises a hollow-cylindrical rotating body,

the first support surface contacts an outer circumferential surface of

the rotating body of the first rotating member from beneath to support the first rotating member, and

the second support surface contacts an outer circumferential surface of the rotating body of the second rotating member from beneath to support the second rotating member.

7. A carrier, to which a substrate to be subjected to a film-forming process is attached, transported along a transporting route provided in a film-forming apparatus while being guided by a guiding portion provided on one lateral side of the transporting route and a guiding portion provided on the other lateral side of the transporting route, the carrier comprising:

a carrier main body, to which the substrate is attached, and that is transported on the transporting route in the film-forming apparatus;

a first rotating member that is provided rotatably around a rotational shaft having one end and the other end, and is guided by the guiding portion provided at the one lateral side while being supported from beneath when the carrier main body is transported on the transporting route; and

a second rotating member that is provided rotatably around a rotational shaft having one end and the other end, and is guided by the guiding portion provided at the other lateral side while being supported from beneath when the carrier main body is transported on the transporting route, wherein,

the first rotating member is arranged so that, when the carrier main body is transported on the transporting route, the one end of the rotational shaft is positioned at the transporting route side and the other end is positioned at the one lateral side, and the other end is positioned above the

one end to incline the rotational shaft with respect to a horizontal direction,

the second rotating member is arranged so that, when the carrier main body is transported on the transporting route, the one end of the rotational shaft is positioned at the transporting route side and the other end is positioned at the other lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to the horizontal direction and,

a supported portion of the first rotating member, which is supported by the guiding portion, and a supported portion of the second rotating member, which is supported by the guiding portion, are located above a center of gravity of the carrier.

8. A carrier, to which a substrate to be subjected to a film-forming process is attached, transported along a transporting route provided in a film-forming apparatus while being guided by a guiding portion provided on one lateral side of the transporting route and a guiding portion provided on the other lateral side of the transporting route, the carrier comprising:

a carrier main body, to which the substrate is attached, and that is transported on the transporting route in the film-forming apparatus;

a first rotating member that is provided rotatably around a rotational shaft having one end and the other end, and is guided by the guiding portion provided at the one lateral side while being supported from beneath when the carrier main body is transported on the transporting route; and

a second rotating member that is provided rotatably around a rotational shaft having one end and the other end, and is guided by the guiding portion provided at the other lateral side while being supported from

beneath when the carrier main body is transported on the transporting route, wherein,

the first rotating member is arranged so that, when the carrier main body is transported on the transporting route, the one end of the rotational shaft is positioned at the transporting route side and the other end is positioned at the one lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to a horizontal direction,

the second rotating member is arranged so that, when the carrier main body is transported on the transporting route, the one end of the rotational shaft is positioned at the transporting route side and the other end is positioned at the other lateral side, and the other end is positioned above the one end to incline the rotational shaft with respect to the horizontal direction, and,

each of a contact portion contacting the guiding portion in the first rotating member supported by the guiding portion and a contact portion contacting the guiding portion in the second rotating member supported by the guiding portion is formed to be a linear shape when viewed from an upstream side in a transporting direction of the carrier guided by the guiding portion to be transported.

9. The carrier according to any one of claims 7 and 8, wherein the first rotating member and the second rotating member are provided so that setting positions of the first rotating member and the second rotating member are different from each other in a transporting direction when the carrier main body is transported on the transporting route.

10. A method of manufacturing a substrate on which a film is formed, in

which a carrier holding a substrate is transported and a film-forming process is performed on the substrate to manufacture a film-forming substrate that is a substrate to be subjected to the film-forming process, the method comprising:

when the carrier is transported, guiding the carrier by a guiding mechanism that guides the carrier to transport the carrier along a predetermined transporting route, wherein

the guiding mechanism comprises:

a first support surface that is arranged on one lateral side of the transporting route and supports a part of the carrier transported on the transporting route from beneath; and

a second support surface that is arranged on an opposite side of the first support surface across the transporting route and supports a part of the carrier transported on the transporting route from beneath, and wherein

the first support surface is provided with a tilt descending toward a side where the second support surface is provided, and the second support surface is provided with a tilt descending toward a side where the first support surface is provided, and.

a supported portion of the carrier, which is supported by the first support surface and a supported portion of the carrier, which is supported by the second support surface are located above a center of gravity of the carrier.

11. A method of manufacturing a film-forming substrate, in which a carrier holding a substrate is transported and a film-forming process is performed on the substrate to manufacture the film-forming substrate that

is a substrate subjected to the film-forming process, the method comprising:

when the carrier is transported, guiding the carrier by a guiding mechanism that guides the carrier to transport the carrier along a predetermined transporting route, wherein

the guiding mechanism comprises:

a first support surface that is arranged on one lateral side of the transporting route and supports a part of the carrier transported on the transporting route from beneath; and

a second support surface that is arranged on an opposite side of the first support surface across the transporting route and supports a part of the carrier transported on the transporting route from beneath, and wherein

the first support surface is provided with a tilt descending toward a side where the second support surface is provided, and the second support surface is provided with a tilt descending toward a side where the first support surface is provided,

each of a contact portion contacting the first support surface in the carrier supported by the first support surface and a contacted portion contacting the carrier in the first support surface is formed to be a linear shape when viewed from an upstream side in a transporting direction of the carrier, and

each of a contact portion contacting the second support surface in the carrier supported by the second support surface and a contacted portion contacting the carrier in the second support surface is formed to be a linear shape when viewed from the upstream side in the transporting direction of the carrier.