CLAIMS

WHAT IS CLAIMED IS:

1. A shadow mask comprising:

a mask comprising one surface, another surface, and an opening that passes from one surface to the other; and

a shutter provided on the one surface of the mask and configured to adjust a size of the opening,

wherein the shutter is configured to move from an edge to a center of the opening to adjust the size of the opening, and

wherein the shadow mask is applied in manufacturing a blank mask for a semiconductor lithography process,

further comprising a guide rail in a portion of an inner space of the mask,

wherein an opening rail is provided between the mask and the shutter, which opens up the portion of the inner space of the mask,

wherein a groove portion is positioned at a partial path of the guide rail,

wherein the shutter comprises a sliding unit configured to move while being engaged with the guide rail, and a support configured to connect the sliding unit and the shutter, and

wherein the sliding unit is fixedly engaged with the groove portion.

2. The shadow mask of claim 1,

wherein the opening has the same rectangular shape as the blank mask,

wherein the shutter comprises:

a vertical shutter configured to move to the center of the opening from upper and lower sides or return therefrom; and

a horizontal shutter configured to move to the center of the opening from left and right sides or return therefrom, and

wherein the vertical and horizontal shutters are configured to be positioned at such a height that the vertical and horizontal shutters do not interfere with each other as they move to the center of

the opening or return therefrom.

3. The shadow mask of claim 2, further comprising:

a detection unit provided on the one surface of the mask; and

a transmission unit connected to the detection unit and the shutter, and configured to transmit a force to move the shutter when a predetermined force is applied to the detection unit.

4. The shadow mask of claim 3, wherein the transmission unit is an actuator configured to convert the force received from the detection unit into a movement of the shutter via hydraulic or pneumatic pressure.

5. The shadow mask of claim 3,

wherein the detection unit comprises a first sawtooth portion configured to linearly move when the predetermined force is applied,

wherein the shutter comprises a second sawtooth portion,

wherein the transmission unit comprises a gear portion engaged with the first and second sawtooth portions, and

wherein the transmission unit is configured to convert the linear movement of the detection unit into a movement of the shutter through the gear portion.

6. The shadow mask of claim 3,

wherein the detection unit comprises a first detection unit and a second detection unit,

wherein the first detection unit comprises a first transmission unit configured to transmit the force to move the vertical shutter when the predetermined force is applied to the detection unit, and

wherein the second detection unit comprises a second transmission unit configured to transmit the force to move the horizontal shutter when the predetermined force is applied to the detection unit.

7. A shadow mask comprising:

a mask comprising one surface, another surface, and an opening that passes from one surface to the other; and

a shutter provided on the one surface of the mask and configured to adjust a size of the opening,

wherein the shutter is configured to move from an edge to a center of the opening to adjust the

size of the opening,

wherein the shadow mask is applied in manufacturing a blank mask for a semiconductor lithography process,

wherein the opening has the same rectangular shape as the blank mask,

wherein the shutter comprises:

a vertical shutter configured to move to the center of the opening from upper and lower sides or return therefrom; and

a horizontal shutter configured to move to the center of the opening from left and right sides or return therefrom,

wherein the vertical and horizontal shutters are configured to be positioned at such a height that the vertical and horizontal shutters do not interfere with each other as they move to the center of the opening or return therefrom.

a detection unit provided on the one surface of the mask,

a transmission unit connected to the detection unit and the shutter, and configured to transmit a force to move the shutter when a predetermined force is applied to the detection unit,

a vertical guide rail in a portion of an inner space of the mask, and a horizontal guide rail in the other portion of the inner space of the mask;

a vertical opening rail which is provided between the mask and the vertical shutter and through which the portion of the inner space of the mask is open; and

a horizontal opening rail which is provided between the mask and the horizontal shutter and through which the other portion of the inner space of the mask is open,

wherein a first groove portion is positioned at a partial path of the vertical guide rail and a second groove portion is positioned at a partial path of the horizontal guide rail,

wherein the vertical shutter comprises a first sliding portion configured to move while being engaged with the vertical guide rail, and a first support configured to connect the first sliding portion and the vertical shutter,

wherein the horizontal shutter comprises a second sliding portion configured to move while being engaged with the horizontal guide rail, and a second support configured to connect the second sliding portion and the horizontal shutter, and

wherein the first sliding portion is fixedly engaged with the first groove portion, and the second sliding portion is fixedly engaged with the second groove portion.

8. A method of manufacturing a blank mask, the method comprising:

providing a film formation apparatus to which the shadow mask of claim 1 is applied; and

forming a film as a target layer in the film formation apparatus.

9. The method of claim 8, wherein the forming of the film comprises:

adjusting the size of the opening by moving the shutter of the shadow mask; and

forming the film on a predetermined substrate while a raw material passes through the opening of the shadow mask.