

CLAIMS

1. A mounting port via which an article is relayed between a worker and a conveying apparatus or a processing device in a clean room, the mounting port
5 comprising:

an article mounting stand;

an apparatus-side opening via which a conveying apparatus or a processing device transfers an article to and from the mounting stand;

a passageway-side opening that faces a worker passageway;

10 a shutter that is provided at a position for opening and closing the apparatus-side opening and comprises an arc-shaped plate or a plate bent like an arc;
and

a swing mechanism that swings the shutter about a predetermined axis between a state in which the apparatus-side opening is opened and a state in which the
15 apparatus-side opening is closed.

2. The mounting port according to claim 1,

wherein the shutter comprises a pair of shutters,

the predetermined axis comprises a pair of axes, one axis corresponding to one
20 shutter, and another axis corresponding to another shutter,

the swing mechanism comprises a driving axis provided at a position symmetrical with respect to the pair of shutters, a motor that rotates the driving axis, the pair of axes, a link mechanism that swings the pair of axes the same angle in opposite
directions by rotation of the driving axis, and a pair of joining members that are
25 attached to the pair of shutters and swing the pair of shutters about the pair of axes,

the pair of axes are provided at positions that are separated from each other and symmetrical with respect to the driving axis, and

the link mechanism is configured such that force applied to the joining members is not transmitted to the driving axis when the pair of shutters are closed.

3. The mounting port according to claim 2,

5 wherein the pair of shutters are a pair of left and right shutters, and the driving axis and the pair of axes are vertical axes.

4. The mounting port according to claim 3,

10 wherein the link mechanism comprises a crank that is attached to the driving axis in a central portion in a lengthwise direction, and a pair of connection rods,

ends of the pair of connection rods on one side are respectively rotatably attached to two ends of the crank, and ends on another side of the connection rods are respectively rotatably attached to the pair of joining members at positions separated from the pair of axes, and

15 the ends of the pair of connection rods on the one side are at respective dead center positions when the pair of shutters are closed.

5. The mounting port according to claim 4,

20 wherein the swing mechanism is provided in a lower part of the mounting port, and a partition that separates the swing mechanism and the mounting stand is further provided.

6. The mounting port according to claim 5,

25 wherein the partition is a flat plate, and a groove that accommodates a side surface of the flat plate is provided in each of the pair of left and right shutters.

7. The mounting port according to claim 6,

wherein in an upper part of the mounting port, a pair of upper joining members that swing coaxially with the pair of axes are provided separately from the pair of joining members provided in the lower part of the mounting port, and are respectively attached to upper portions of the pair of left and right shutters, and

5 the pair of joining members provided in the lower part of the mounting port and the pair of upper joining members support the pair of left and right shutters in a manner of non-contact with other portions of the mounting port.

8. A method for opening and closing a mounting port via which an article is
10 relayed between a worker and a conveying apparatus or a processing device in a clean room,

the mounting port comprising:

an article mounting stand;

15 an apparatus-side opening that allows a conveying apparatus or a processing device to pass an article to and from the mounting stand;

a passageway-side opening that faces a worker passageway;

a shutter that is provided at a position for opening and closing the apparatus-side opening and comprises an arc-shaped plate or a plate bent like an arc;
and

20 a swing mechanism that swings the shutter about a predetermined axis between a state in which the apparatus-side opening is opened and a state in which the apparatus-side opening is closed,

wherein the apparatus-side opening is opened and closed by swinging the shutter about the predetermined axis.

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CLAIMS

1. A mounting port via which an article is relayed between a worker and a conveying apparatus or a processing device in a clean room, the mounting port comprising:

an article mounting stand;

an apparatus-side opening via which a conveying apparatus or a processing device transfers an article to and from the mounting stand;

a passageway-side opening that faces a worker passageway;

a pair of shutters that are provided at positions for opening and closing the apparatus-side opening and comprise arc-shaped plates or plates bent like an arc; and

a swing mechanism that swings the pair of shutters between a state in which the apparatus-side opening is opened and a state in which the apparatus-side opening is closed,

the swing mechanism comprising a driving axis provided at a position symmetrical with respect to the pair of shutters, a pair of shutter axes, a link mechanism that swings the pair of shutter axes the same angle in opposite directions by rotation of the driving axis, and a pair of joining members that are attached to the pair of shutters and the pair of shutter axes and swing the pair of shutters about the pair of shutter axes, and

the pair of shutter axes being provided at positions that are separated from each other and symmetrically with respect to the driving axis.

2. The mounting port according to claim 1,

further comprising a motor that rotates the driving axis,

wherein the link mechanism is configured such that force applied to the joining members is not transmitted to the driving axis when the pair of shutters are closed.

3. The mounting port according to claim 2,

wherein the pair of shutters are a pair of left and right shutters, and the driving axis and the pair

of shutter axes are vertical axes.

4. The mounting port according to claim 3,

wherein the link mechanism comprises a crank that is attached to the driving axis in a central portion in a lengthwise direction, and a pair of connection rods,

ends of the pair of connection rods on one side are respectively rotatably attached to two ends of the crank, and ends on another side of the connection rods are respectively rotatably attached to the pair of joining members at positions separated from the pair of shutter axes, and

the ends of the pair of connection rods on the one side are at respective dead center positions when the pair of shutters are closed.

5. The mounting port according to claim 4,

wherein the swing mechanism is provided in a lower part of the mounting port, and a partition that separates the swing mechanism and the mounting stand is further provided.

6. The mounting port according to claim 5,

wherein the partition is a flat plate, and a groove that accommodates a side surface of said flat plate is provided in each of the pair of left and right shutters.

7. The mounting port according to claim 6,

wherein in an upper part of the mounting port, a pair of upper joining members that swing coaxially with the pair of shutter axes are provided separately from the pair of joining members provided in the lower part of the mounting port, and are respectively attached to upper portions of the pair of left and right shutters, and

the pair of joining members provided in the lower part of the mounting port and the pair of upper joining members support the pair of left and right shutters in a manner of non-contact with other portions of the mounting port.

8. A method for opening and closing a mounting port via which an article is relayed between a worker and a conveying apparatus or a processing device in a clean room,
 - the mounting port comprising:
 - an article mounting stand;
 - an apparatus-side opening that allows a conveying apparatus or a processing device to pass an article to and from the mounting stand;
 - a passageway-side opening that faces a worker passageway;
 - a pair of shutters that are provided at positions for opening and closing the apparatus-side opening and comprise arc-shaped plates or plates bent like an arc; and
 - a swing mechanism that swings the pair of shutters between a state in which the apparatus-side opening is opened and a state in which the apparatus-side opening is closed,
 - the swing mechanism comprising a driving axis provided at a position symmetrical with respect to the pair of shutters, a pair of shutter axes, a link mechanism that swings the pair of shutter axes the same angle in opposite directions by rotation of the driving axis, and a pair of joining members that are attached to the pair of shutters and the pair of shutter axes and swing the pair of shutters about the pair of shutter axes, and
 - the pair of shutter axes being provided at positions that are separated from each other and symmetrically with respect to the driving axis,
 - wherein the apparatus-side opening is opened and closed by swinging the pair of shutters about the pair of shutter axes.