US012387960B2

(12) **United States Patent**
Hsu et al.

(10) **Patent No.: US 12,387,960 B2**
(45) **Date of Patent: Aug. 12, 2025**

(54) **CARRIER PLATE APPLIED FOR LOAD PORT**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 496 days.

(21) Appl. No.: **18/076,237**

(22) Filed: **Dec. 6, 2022**

(65) **Prior Publication Data**

US 2023/0207360 A1 Jun. 29, 2023

(30) **Foreign Application Priority Data**

Dec. 28, 2021 (TW) 110215509
May 10, 2022 (TW) 111117493

(51) **Int. Cl.**
B05B 1/26 (2006.01)
H01L 21/673 (2006.01)

(52) **U.S. Cl.**
CPC ***H01L 21/67389*** (2013.01)

(58) **Field of Classification Search**
CPC H01L 21/67389; H01L 21/677; H01L 21/6838
See application file for complete search history.

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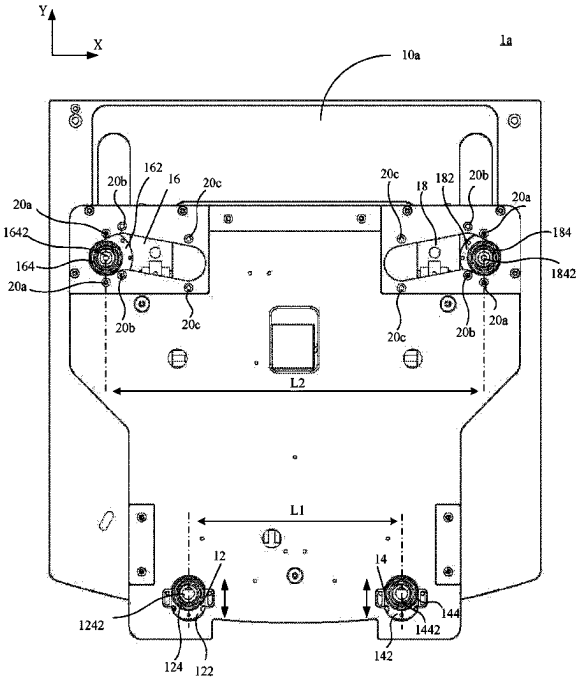
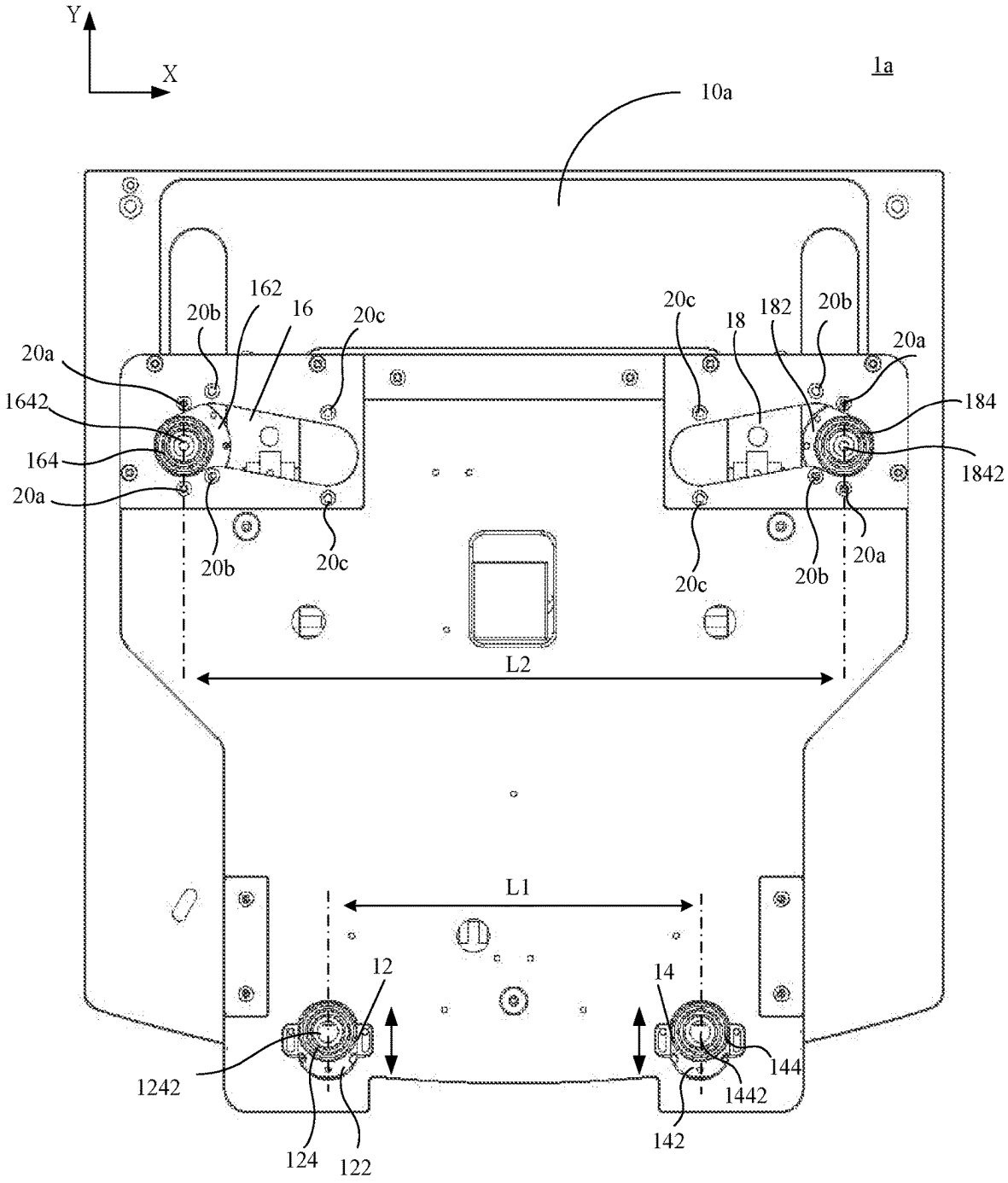
(57) **ABSTRACT**

A carrier plate applied for a load port is provided, which includes a first guide slot is provided with a first switch to drive a first nozzle to move up and down to switch the position, a second guide slot is provided with a second switch to drive a second nozzle to move up and down to switch the position, a third guide slot is provided with a third switch to drive a third nozzle to move obliquely to switch the position, and a fourth guide slot is provided with a fourth nozzle to move obliquely to switch the position, thereby, the first nozzle, the second nozzle, the third nozzle and the fourth nozzle move to the positions corresponding to the air holes on each of the bottoms of the wafer transfer cassettes to inflate or exhaust the wafer transfer cassette.

8 Claims, 6 Drawing Sheets

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1442
142

Fig. 1

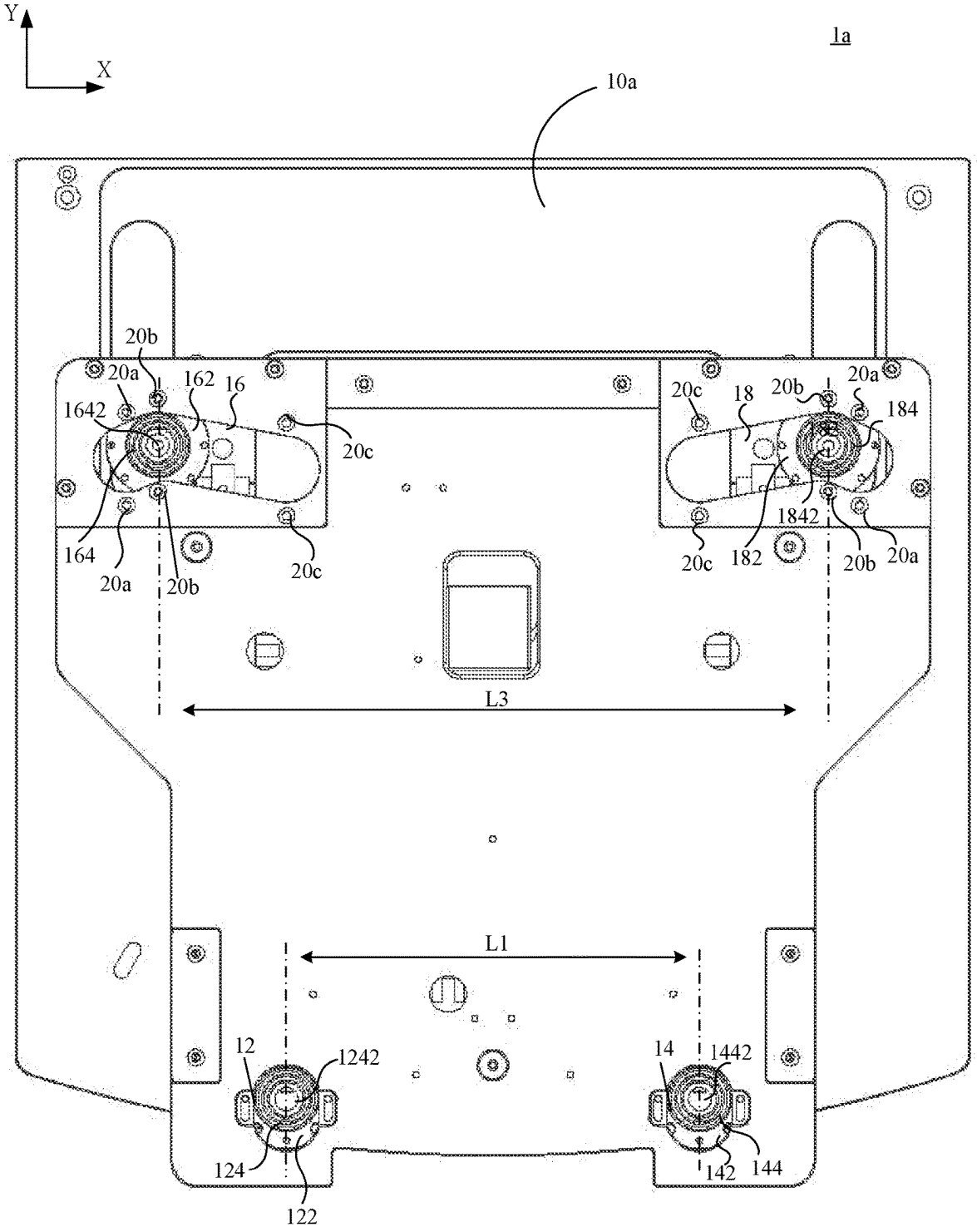
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Fig. 2

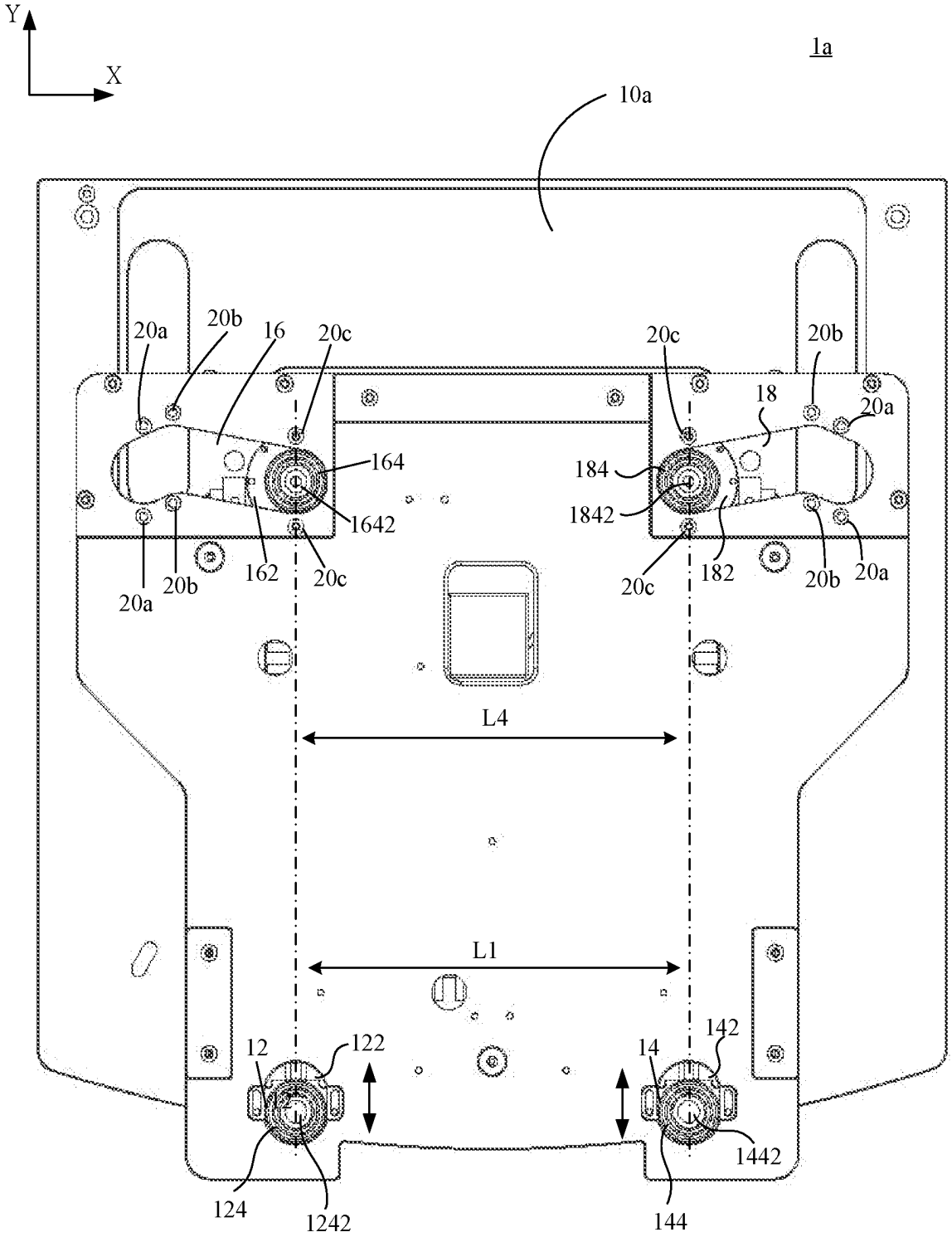
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Fig. 3

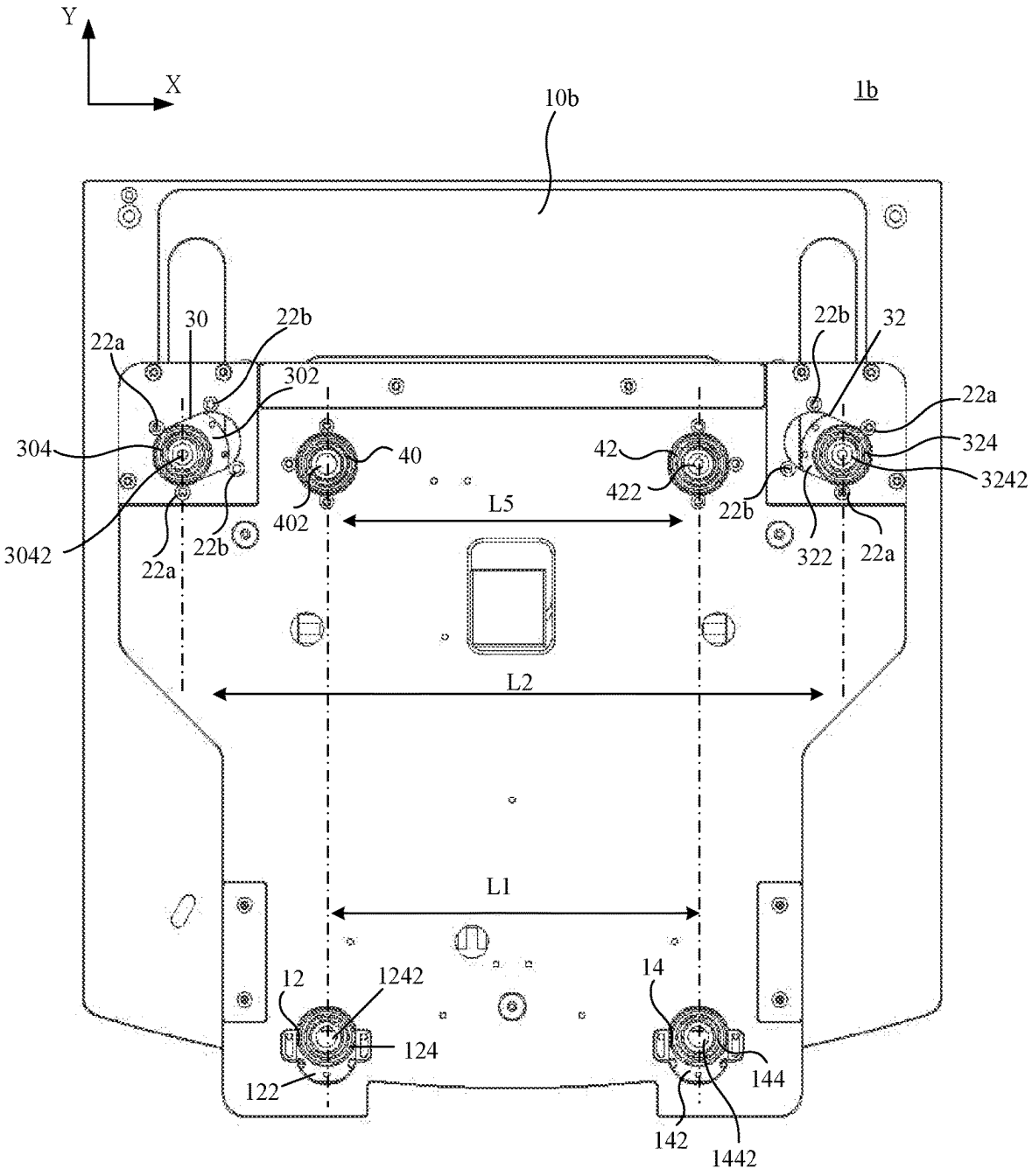
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Fig. 4

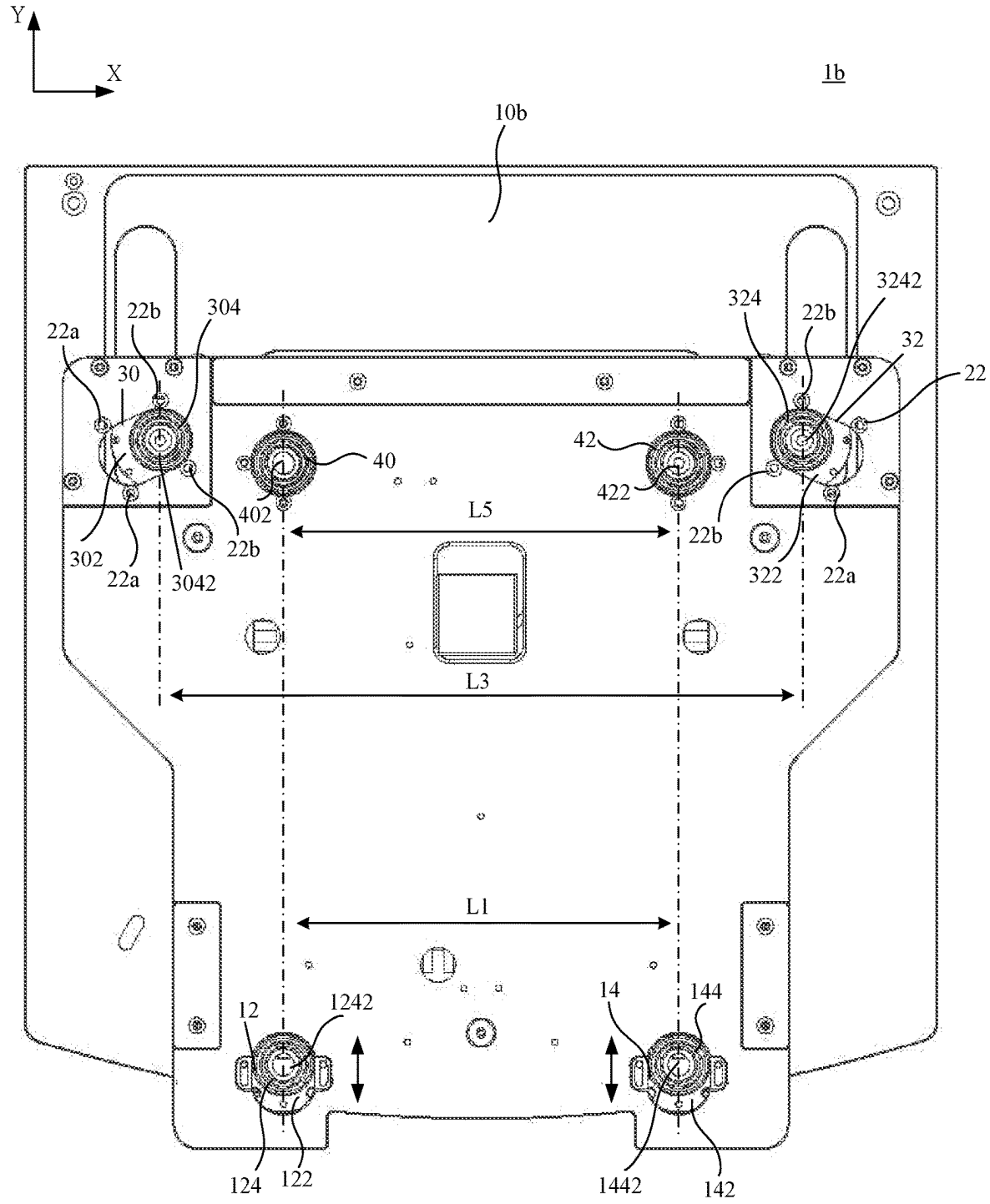
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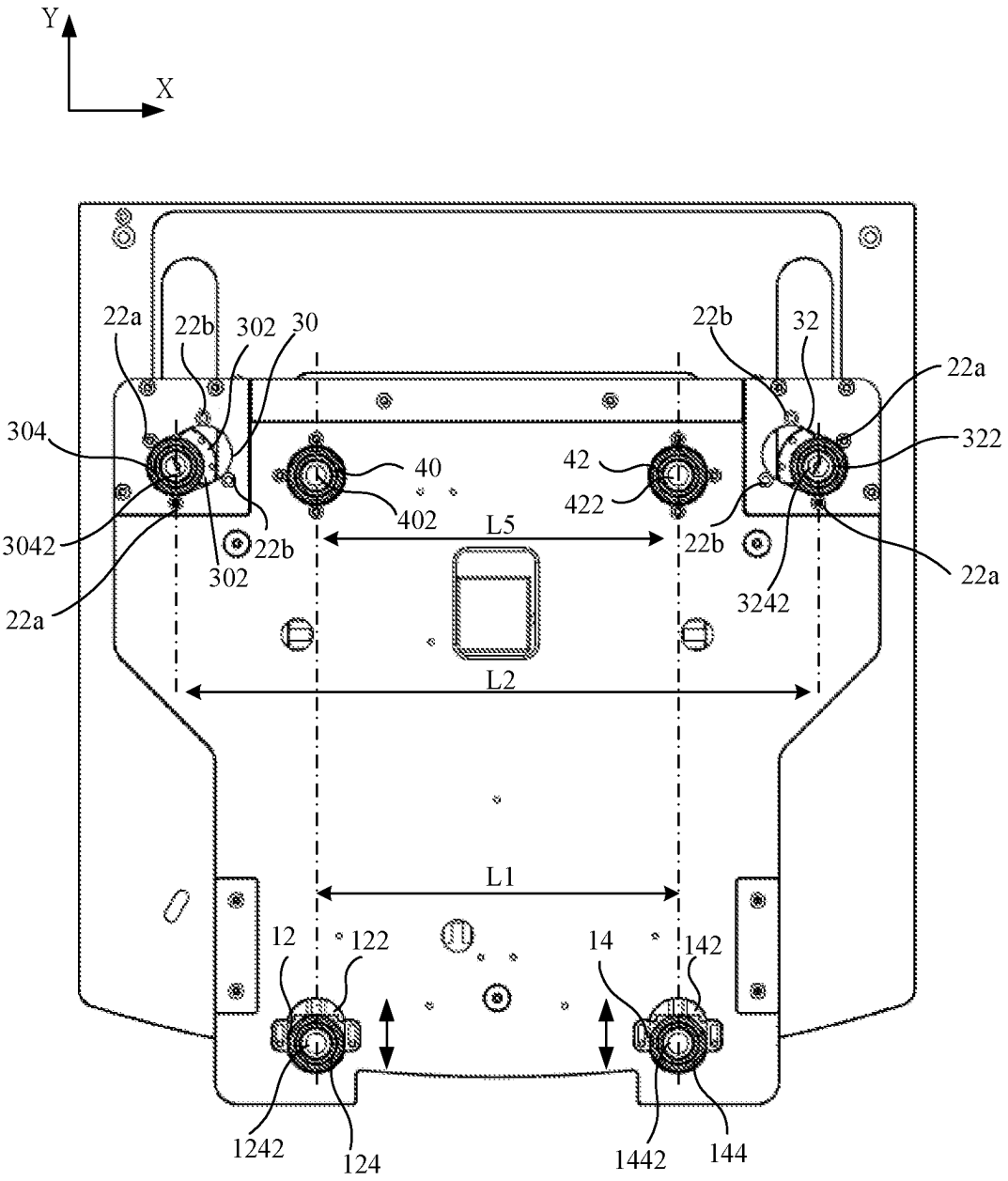
Fig. 5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22a
302
3242
22a
L2
L1
12
122
14
142
1242
124
1442
144

Fig. 6

CARRIER PLATE APPLIED FOR LOAD PORT

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of TW 111117493, filed May 10, 2022, and TW 110215509, filed Dec. 28, 2021, which is incorporated in its entirety by reference herein.

FIELD OF THE INVENTION

The present invention relates to a carrier plate applied for load port, particularly relates to a carrier plate which can switch the position of the nozzle according to the types of different wafer transfer cassette.

BACKGROUND OF THE INVENTION

In recent years, the high integration of wafers or the miniaturization of circuits have developed rapidly, and the environmental requirements have been improved. When exposed to atmosphere, moisture or oxygen tends to adhere to the surface of wafer, and there is a possibility of corrosion or oxidation. Therefore, it is necessary to maintain the microenvironment around the wafer at a high cleanliness to avoid the occurrence of particles or moisture adhering to the wafer surface. The current effective method is to make the periphery of the wafer surrounded by inert gas environment such as nitrogen, the periphery of wafer be in a vacuum state, or surrounded by dry air to avoid the changes in surface properties such as wafer surface oxidation.

In order to properly maintain a microenvironment around the wafer, the wafer is placed and managed inside a closed wafer transfer cassette which is filled with nitrogen gas or dry air.

In recent years, there is no unified standard specification between manufacturers and different types of wafer transfer cassettes, and the positions of inlet and outlet holes are different. The various types of wafer transfer cassettes need to be prepared to match with different specifications of carrier plates, resulting in inconvenient operation and higher cost.

Therefore, to design a carrier plate with high compatibility with different types of wafer transfer cassettes for effectively improving operation efficiency and saving equipment cost becomes an important issue.

SUMMARY OF THE INVENTION

To solve the problems of the prior art, the main object of the present invention is to provide a carrier plate applied for load port. Only one carrier plate is required, and the positions of the nozzles on the carrier plate can be adjusted to correspond to various types of wafer transfer cassettes, which reduces the cost of designing different carrier plates required to match various types of wafer transfer cassettes, and the convenience of the wafer factory in use may be increased. Thus, the problem of storage space for accommodating the plurality of carrier plates for the wafer factory may be solved.

Another object of the present invention is that the nozzles on the carrier plate can switch the positions which corresponding the arrangement of the air holes on each of the bottoms of the wafer transfer cassettes, so that the purge gas can inflate or exhaust the wafer transfer cassette through the nozzles after switching nozzles' positions.

According to the above objects, the present invention provides a carrier plate applied for load port. The carrier plate includes a main body, which is arranged on a load port. The main body of the carrier plate includes a first guide slot, a second guide slot, a third guide slot and the fourth guide slot. The first guide slot is arranged on the lower side of the main body. The first guide slot is provided with a first switch and a first nozzle, and the first switch drives the first nozzle to move up and down to switch the position of the first nozzle. The second guide slot is arranged on the lower side of the main body opposite the first guide slot. The second guide slot is provided with a second switch and a second nozzle, and the second switch drives the second nozzle to move up and down to switch the position of the second nozzle. The third guide slot is arranged on the upper side of the main body opposite the first guide slot. The third guide slot is provided with a third switch and a third nozzle, and the third switch drives the third nozzle to move obliquely to switch the position of the third nozzle. The fourth guide slot is arranged on the upper side of the main body opposite the third guide slot. The fourth slot is provided with a fourth switch and a fourth nozzle, and the fourth switch drives the fourth nozzle to move obliquely to switch the position. The first nozzle, the second nozzle, the third nozzle, and the fourth nozzle move to the positions corresponding the plurality of air holes on a bottom of the wafer transfer cassette to inflate or exhaust the wafer transfer cassette.

In one preferred embodiment of the invention, the carrier plate applied for load port further includes a fifth nozzle and a sixth nozzle, which are respectively arranged on the upper side of the main body, and the distance between the fifth nozzle and the sixth nozzle is smaller than that of between the third nozzle and the fourth nozzle.

In one preferred embodiment of the present invention, when the first nozzle is switched to the upper position of the first guide slot, the second nozzle is switched to the upper position of the second guide slot, the third nozzle is located at the outermost position of the third guide slot and the fourth nozzle is located at the outermost position of the fourth guide slot, in which there is a first distance between the center of the first nozzle hole of the first nozzle and the center of the second nozzle hole of the second nozzle, there is a second distance between the center of the third nozzle hole of the third nozzle and the center of the fourth nozzle hole of the fourth nozzle, and the second distance is larger than the first distance.

In one preferred embodiment of the present invention, when the first nozzle is switched to the upper position of the first guide slot, the second nozzle is switched to the upper position of the second guide slot, the third nozzle is located at the uppermost position of the third guide slot and the fourth nozzle is located at the uppermost position of the fourth guide slot, in which there is a third distance between the center of the third nozzle hole and the center of the fourth nozzle hole of the third nozzle, and the third distance is smaller than the second distance and larger than the first distance.

In one preferred embodiment of the present invention, when the first nozzle is switched to the lower position of the first guide slot, the second nozzle is switched to the lower position of the second guide slot, the third nozzle is located at the innermost position of the third guide slot and the fourth nozzle is located at the innermost position of the fourth guide slot, in which there is a first distance between the center of the first nozzle hole of the first nozzle and the center of the second nozzle hole of the second nozzle, and there is a fourth distance between the center of the third

nozzle hole of the third nozzle and the center of the fourth nozzle hole of the fourth nozzle, and the fourth distance is smaller than the third distance and equal to the first distance.

In one preferred embodiment of the present invention, when the first nozzle is switched to the lower position of the first guide slot and the second nozzle is switched to the lower position of the second guide slot, there is a first distance between the center of the first nozzle hole of the first nozzle and the center of the second nozzle hole of the second nozzle, and there is a fifth distance between the center of the fifth nozzle hole of the fifth nozzle and the center of the sixth nozzle hole of the sixth nozzle, and the fifth distance is equal to the first distance.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic diagram showing a first embodiment of a carrier plate applied for a load port in accordance with the present invention disclosed herein.

FIG. **2** is a schematic diagram showing a second embodiment of a carrier plate applied for a load port in accordance with the present invention disclosed herein.

FIG. **3** is a schematic diagram showing a third embodiment of a carrier plate applied for a load port in accordance with the present invention disclosed herein.

FIG. **4** is a schematic diagram showing a fourth embodiment of a carrier plate applied for a load port in accordance with the present invention disclosed herein.

FIG. **5** is a schematic diagram showing a fifth embodiment of a carrier plate applied for a load port in accordance with the present invention disclosed herein.

FIG. **6** is a schematic diagram showing a sixth embodiment of a carrier plate applied for a load port in accordance with the present invention disclosed herein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please Refer to FIG. **1**. FIG. **1** is a schematic diagram showing a first embodiment of a carrier plate applied for a load port. In FIG. **1**, the carrier plate **1***a* has a main body **10***a*, which is arranged on the load port (not shown). In addition, in FIG. **1**, the upper and lower sides of the main body **10***a* are represented by the Y direction of the Cartesian coordinate system, and the left and right sides of the main body **10***a* are represented by the X direction. The main body **10***a* of the carrier plate **1***a* includes a first guide slot **12**, a second guide slot **14**, a third guide slot **16** and a fourth guide slot **18**, and the structure and positional relationship of above components of the carrier plate **1***a* are described in detail as follows.

The first guide slot **12** is arranged on the lower side of the main body **10***a*. The first guide slot **12** is provided with a first switch **122** and a first nozzle **124**. The first switch **122** drives the first nozzle **124** to move up and down to switch the position of the first nozzle **124** in the first guide slot **12**. The second guide slot **14** is arranged on the lower side of the main body **10** opposite the first guide slot **12**. The second guide slot **14** is provided with a second switch **142** and a second nozzle **144**. The second switch **142** drives the second nozzle **144** to move up and down to switch the position of the second nozzle **144** in the second guide slot **14**. It should be noted that the first guide slot **12** and the second guide slot **14** are respectively arranged on the left and right sides of the lower side of the main body **10***a*. The included angle between the direction in which the first nozzle **124** moves up and down and the X direction is 90 degrees, and the included angle between the direction in which the second nozzle **144** moves up and down and the X direction is 90 degrees. The third guide slot **16** is arranged on the upper side of the main body **10** opposite the first guide slot **12**. The third guide slot **16** is provided with a third switch **162** and a third nozzle **164**. The third switch **162** drives the third nozzle **164** to move obliquely to switch the position of the third nozzle **164**. The fourth guide slot **18** is arranged on the upper side of the main body **10***a* opposite the third guide slot **16**. The fourth guide slot **18** is provided with a fourth switch **182** and a fourth nozzle **184**. The fourth switch **182** drives the fourth nozzle **184** to move obliquely to switch the position of the fourth nozzle **184**. The included angle between the direction in which the third nozzle **164** moves obliquely and the X direction is between 10 degrees and 35 degrees, and the included angle between the direction in which the fourth nozzle **184** move obliquely and the X direction is also between 10 degrees and 35 degrees. It is further explained that the third guide slot **16** and the fourth guide slot **18** are respectively arranged above the first guide slot **12** and the second guide slot **14**. In addition, at least three positioning points **20***a*, **20***b* and **20***c* are respectively defined outside the third guide slot **16** and the fourth guide slot **18**, each positioning points **20***a*, **20***b* and **20***c* corresponds to the positions of the plurality of air holes on each of the bottoms of different types of wafer transfer cassettes (not shown). Accordingly, the third switch **162** can drive the third nozzle **164** to switch to one of the positioning points **20***a*, **20***b* or **20***c* in the third guide slot **16**. The fourth switch **182** can drive the fourth nozzle **184** to switch to one of the positioning points **20***a*, **20***b* or **20***c* in the fourth guide slot **18**. According to the above, according to the positions (not shown) of the plurality of air holes on each of the bottoms (not shown) of the wafer transfer cassettes (not shown), the first switch **122** drives the first nozzle **124**, the second switch **142** drives the second nozzle **144**, the third switch **162** drives the third nozzle **164** and the fourth switch **182** drives the fourth nozzle **184** to move to switch the positions, so the positions of the nozzles after switching can correspond to the positions of the plurality of air holes (not shown) on each of the bottoms (not shown) of different types of wafer transfer cassettes (not shown) and inflate or exhaust the wafer transfer cassette (not shown). That is, the position arrangement of the plurality of air holes on each of the bottoms of the different types of wafer transfer cassettes (not shown) may also be different. The carrier plate **1***a* of the present invention can compatible with at least three kinds of wafer transfer cassettes with different air hole arrangement by switching the positions of the nozzles. It will be illustrated as follows.

In FIG. **1**, when the carrier plate **1***a* carries the first wafer transfer cassette (not shown) thereon, in order to correspond to the arrangement of positions of the plurality of air holes on the bottom of the first wafer transfer cassette (not shown), the first nozzle **124** of the carrier plate **1***a* is switched to the upper position of the first guide slot **12**, the second nozzle **144** is switched to the upper position of the second guide slot **14**, and the third nozzle **164** is located at the outermost position of the third guide slot **16** (positioning point **20***a*), the fourth nozzle **184** is located at the outermost position (positioning point **20***a*) of the fourth guide slot **18**, in which there is a first distance L**1** between the center of the first nozzle hole **1242** of the first nozzle **124** and the center of the second nozzle hole **1442** of the second nozzle **144**, a second distance L**2** between the center of the third nozzle hole **1642** of the third nozzle **164** and the center of the fourth nozzle

hole **1842** of the fourth nozzle **184**. Accordingly, the second distance L**2** is larger than the first distance L**1**.

Please refer to FIG. **2**. FIG. **2** is a schematic diagram of the second embodiment of carrier plate applied for a load port. The structure and position relationship of the first guide slot **12**, the second guide slot **14**, the third guide slot **16** and the fourth guide slot **18** of the main body **10***a* of the carrier plate **1***a* in FIG. **2** are the same as those of in FIG. **1**. Accordingly, the structure and position relationship of above components of the carrier plate **1***a* are not described repeatedly. As shown in FIG. **2**, when the carrier plate **1***a* carries the second wafer transfer cassette (not shown), in order to correspond to the arrangements of positions of the plurality of air holes on the bottom of the second wafer transfer cassette (not shown), the first nozzle **124** of the carrier plate **1***a* is switched to the upper position of the first guide slot **12**, and the second nozzle **144** is switched to the upper position of the second guide slot **14**, and the third nozzle **164** is located at the uppermost position of the third guide slot **16** (positioning point **20***b*), and the fourth nozzle **184** is located at the uppermost position (positioning point **20***b*) of the fourth guide slot **18**, in which there is a third distance L**3** between the center of the third nozzle hole **1642** of the third nozzle **164** and the center of the fourth nozzle hole **1842** of the fourth nozzle **184**. Accordingly, the third distance L**3** is smaller than the second distance L**2** (as shown in FIG. **1**) and larger than the first distance L**1**.

Please refer to FIG. **3**. FIG. **3** is a schematic diagram showing a third embodiment of the carrier plate applied for a load port. Similarly, the structure and position relationship of the first guide slot **12**, the second guide slot **14**, the third guide slot **16** and the fourth guide slot **18** of the main body **10***a* of the carrier plate **1***a* in FIG. **3** are the same as that of in FIG. **1**. Accordingly, the structure and position relationship of above components of the carrier plate **1***a* are not described repeatedly. As shown in FIG. **3**, when the carrier plate **1***a* carries the third wafer transfer cassette (not shown), in order to correspond to the arrangement of the positions of the plurality of air holes on the bottom of the third wafer transfer cassette (not shown), the first nozzle **124** of the carrier plate **1***a* is switched to the lower position of the first guide slot **12**, and the second nozzle **144** is switched to the lower position of the second guide slot **14**, and the third nozzle **164** is located at the innermost position (positioning point **20***c*) of the third guide slot **16**, and the fourth nozzle **184** is located at the innermost position (positioning point **20***c*) of the fourth guide slot **18**, in which there is a fourth distance L**4** between the center of the third nozzle hole **1642** of the third nozzle **164** and the center of the fourth nozzle hole **1842** of the fourth nozzle **184**. Accordingly, the fourth distance L**4** is smaller than the third distance L**3** (as shown in FIG. **2**) and equal to the first distance L**1**.

Please refer to FIG. **4**. FIG. **4** is a schematic diagram showing a fourth embodiment of the carrier plate applied for a load port. In FIG. **4**, the carrier plate **1***b* has a main body **10***b*, which is arranged on the wafer transfer cassette (not shown). Further, in FIG. **4**, the upper and lower sides of the main body **10***b* are represented by the Y direction of the Cartesian coordinate system, and the left and right sides of the main body **10***b* are represented by the X direction. The main body **10***b* of the carrier plate **1***b* includes a first guide slot **12**, a second guide slot **14**, a third guide slot **30** and a fourth guide slot **32**. The structure and position relationship are described as follows.

The first guide slot **12** is arranged on the lower side of the main body **10***b*, and the first switch **122** and the first nozzle **124** are arranged in the first guide slot **12**. The first switch **122** drives the first nozzle **124** to move up and down to switch the position of the first nozzle **124** in the first guide slot **12**. The second guide slot **14** is arranged on the lower side of the main body **10***b* opposite the first guide slot **12**. The second guide slot **14** is provided with a second switch **142** and a second nozzle **144**. The second switch **142** drives the second nozzle **144** to move up and down to switch the position of the second nozzle **144** in the second guide slot **14**. It should be noted that the first guide slot **12** and the second guide slot **14** are respectively arranged on the left and right sides of the lower side of the main body **10***b*. The third guide slot **30** is arranged on the upper side of the main body **10***b* opposite the first guide slot **12**. The third guide slot **30** is provided with a third switch **302** and a third nozzle **304**. The third switch **302** drives the third nozzle **304** to move obliquely to switch the position of the third nozzle **304**. The fourth guide slot **32** is arranged on the upper side of the main body **10***b* opposite the third guide slot **30**. The fourth guide slot **32** is provided with a fourth switch **322** and a fourth nozzle **324**. The fourth switch **322** drives the fourth nozzle **324** to move obliquely to switch the position of the fourth nozzle **324**. In addition, at least two positioning points **22***a* and **22***b* are defined outside the third guide slot **30** and the fourth guide slot **32**, and the positioning points **22***a* and **22***b* corresponds to the positions of the air holes on each of the bottoms of different types of wafer transfer cassettes (not shown). Accordingly, the third switch **302** may drive the third nozzle **304** to switch to one of the positioning points **22***a* or **22***b* in the third guide slot **30**. The fourth switch **322** can drive the fourth nozzle **324** to switch to one of the positioning points **22***a* or **22***b* in the fourth guide slot **32**. In this embodiment, the fifth nozzle **40** and the sixth nozzle **42** are respectively arranged on the upper side of the main body **10***b*. Accordingly, the fifth distance L**5** between the center of the fifth nozzle hole **402** of the fifth nozzle **40** and the center of the sixth nozzle hole **422** of the sixth nozzle **42** is smaller than the second distance L**2**, but equal to the first distance L**1**.

In FIG. **4**, when the carrier plate **1***b* carries the first wafer transfer cassette (not shown), in order to correspond to the arrangement of air holes on the bottom of the first wafer transfer cassette (not shown), the first nozzle **124** of the carrier plate **1***b* is switched to the upper position of the first guide slot **12**, the second nozzle **144** is switched to the upper position of the second guide slot **14**, and the third nozzle **304** of the third guide slot **30** and the fourth nozzle **324** of the fourth guide slot **32** are at the position of the positioning point **22***a*, the third nozzle **304** is located at the outermost position of the third guide slot **30** (positioning point **22***a*), and the fourth nozzle **32** is located at the outermost position of the fourth guide slot **32** (positioning point **22***a*). Accordingly, there is a first distance L**1** between the center of the first nozzle hole **1242** of the first nozzle **124** and the center of the second nozzle hole **1442** of the second nozzle **144**, and there is a fifth distance L**5** between the fifth nozzle **40** and the sixth nozzle **42**, and the first distance L**1** is equal to the fifth distance L**5**. There is a second distance L**2** between the center of the third nozzle hole **3042** of the third nozzle **304** and the center of the fourth nozzle hole **3242** of the fourth nozzle **324**, so that the second distance L**2** is larger than the first distance L**1** and larger than the fifth distance L**5**.

According to the above, according to the position of a plurality of air holes (not shown) on the bottom (not shown) of the first wafer transfer cassette (not shown), the first switch **122** drives the first nozzle **124**, the second switch **142** drives the second nozzle **144**, the third switch **302** drives the third nozzle **304** to switch to the outermost position of the

third guide slot **30** (positioning point **22***a*) and the fourth switch **322** drives the fourth nozzle **324** to switch to the outermost position of the fourth guide slot **18** (positioning point **22***a*), so that the positions of the nozzles after switching can correspond to positions of the plurality of air holes (not shown) of the wafer transfer cassette (not shown) and inflate or exhaust the first wafer transfer cassette (not shown).

Next, please refer to FIG. **5**. FIG. **5** is a schematic diagram showing a fifth embodiment of a carrier plate applied for a load port. The structure and position relationship of the first guide slot **12**, the second guide slot **14**, the third guide slot **30** and the fourth guide slot **32** of the main body **10***b* of the carrier plate **1***b* in FIG. **5** are the same as that of in FIG. **4**. Accordingly, the structure and position relationship of above components of the carrier plate **1***b* are not described repeatedly. In FIG. **5**, when the carrier plate **1***b* carries the second wafer transfer cassette (not shown) thereon, in order to correspond to the arrangement of plurality of air holes on the bottom of the second wafer transfer cassette (not shown), the first nozzle **124** of the carrier plate **1***b* is switched to the upper position of the first guide slot **12**, the second nozzle **144** is switched to the upper position of the second guide slot **14**, and the third nozzle **304** is located at the uppermost position of the third guide slot **30** (positioning point **22***b*), the fourth nozzle **32** is located at the uppermost position of the fourth guide slot **30** (positioning point **22***b*), in which there is a first distance L**1** between the center of the first nozzle hole **1242** of the first nozzle **124** and the center of the second nozzle hole **1442** of the second nozzle **144**, and there is a fifth distance L**5** between the center of the fifth nozzle hole **402** of the fifth nozzle **40** and the center of the sixth nozzle hole **422** of the sixth nozzle **42**, so that the first distance L**1** is equal to the fifth distance L**5**. Accordingly, there is a third distance L**3** between the center of the third nozzle hole **3042** of the third nozzle **304** and the center of the fourth nozzle hole **3242** of the fourth nozzle **324**, in which the third distance L**3** is smaller than the second distance L**2** but larger than the first distance L**1** and larger than the fifth distance L**5**.

Next, please refer to FIG. **6**. FIG. **6** is a schematic diagram showing a sixth embodiment of a carrier plate applied for a load port. Similarly, the structure and position relationship of the first guide slot **12**, the second guide slot **14**, the third guide slot **30** and the fourth guide slot **32** of the main body **10***b* of the carrier plate **1***b* in FIG. **6** are the same as that of in FIG. **4**. Accordingly, the structure and position relationship of above components of the carrier plate **1***b* are not described repeatedly. In FIG. **6**, when the carrier plate **1***b* carries the third wafer transfer cassette (not shown), in order to correspond to the arrangement of the positions of the plurality of air holes on the bottom of the third wafer transfer cassette (not shown), the first nozzle **124** of the carrier plate **1***b* is switched to the lower side of the first guide slot **12**, the second nozzle **144** is switched to the lower side of the second guide slot **14**, and the third nozzle **304** can be located at any position in the third guide slot **30**, such as the outermost position (positioning point **22***a*). The fourth nozzle **32** can also be located at any position in the fourth guide slot **30**, such as the outermost position (positioning point **22***a*), in which there is a first distance L**1** between the center of the first nozzle hole **1242** of the first nozzle **124** and the center of the second nozzle hole **1442** of the second nozzle **144**, a fifth distance L**5** between the center of the fifth nozzle hole **402** of the fifth nozzle **40** and the center of the sixth nozzle hole **422** of the sixth nozzle **42**, and the first distance L**1** is equal to the fifth distance L**5**. There is a second distance L**2** between the center of the third nozzle hole **3042** of the third nozzle **304** and the center of the fourth nozzle hole **3242** of the fourth nozzle **324**. Accordingly, the second distance L**2** is larger than the first distance L**1** and larger than the fifth distance L**5**.

In the foregoing embodiments, the first nozzle **124** and the second nozzle **144** are usually used to inflate the wafer transfer cassette (not shown), and the third nozzle **164**, the fourth nozzle **184**, the fifth nozzle **40** and the sixth nozzle hole **422** are usually used to exhaust the wafer transfer cassette (not shown). In another embodiment, the third nozzle **164** may be used to inflate the wafer transfer cassette (not shown), and the fourth nozzle **184** may be used to exhaust the wafer transfer cassette (not shown). It is not to limit the inflation or exhaust function of each nozzle in this invention, as long as the positions of the nozzles can correspond to various types of wafer transfer cassettes (not shown).

According to the above, the user only needs to adjust the first nozzle **124**, the second nozzle **144**, the third nozzle **164** and the fourth nozzle **184** of the carrier plate **1***a*, and the first nozzle **124**, the second nozzle **144**, the third nozzle **304** and the fourth nozzle **324** of the carrier plate **1***b* according to the corresponding positions of the plurality of air holes (not shown) on each of the bottoms (not shown) of the wafer transfer cassettes (not shown). Accordingly, the carrier plate **1***a* or **1***b* increases the convenience of use and reduces the cost of using different carrier plates at the bottom of the different wafer transfer cassette (not shown) and increase the storage space availability of the wafer fab.

What is claimed is:

1. A carrier plate applied for a load port, comprising:

a main body arranged on the load port;

a first guide slot arranged on the lower side of the main body and provided with a first switch and a first nozzle, wherein the first switch drives the first nozzle to move up and down to switch the position of the first nozzle;

a second guide slot arranged on the lower side of the main body opposite the first guide slot and provided with a second switch and a second nozzle, wherein the second switch drives the second nozzle to move up and down to switch the position of the second nozzle;

a third guide slot arranged on the upper side of the main body opposite the first guide slot and provided with a third switch and a third nozzle,

wherein the third switch drives the third nozzle to move obliquely to switch the position of the third nozzle; and

a fourth guide slot arranged on the upper side of the main body opposite the third guide slot and provided with a fourth switch and a fourth nozzle, wherein the fourth switch drives the fourth nozzle to move obliquely to switch the position of the fourth nozzle,

wherein, the first nozzle, the second nozzle, the third nozzle, and the fourth nozzle move to correspond the positions of a plurality of air holes on each of the bottoms of a plurality of wafer transfer cassettes to inflate or exhaust the wafer transfer cassettes.

2. The carrier plate applied for the load port according to claim **1**, further comprising a fifth nozzle and a sixth nozzle, which are respectively arranged on the upper side of the main body, wherein the distance between the fifth nozzle and the sixth nozzle is smaller than the distance between the third nozzle and the fourth nozzle.

3. The carrier plate applied for the load port according to claim **2**, wherein when the first nozzle is switched to the upper position of the first guide slot, the second nozzle is switched to the upper position of the second guide slot, the

third nozzle is located at the outermost position of the third guide slot, and the fourth nozzle is located at the outermost position of the fourth guide slot, so that there is a first distance between the center of a first nozzle hole of the first nozzle and the center of a second nozzle hole of the second nozzle and a second distance between the center of a third nozzle hole of the third nozzle and the center of a fourth nozzle hole of the fourth nozzle, wherein the second distance is larger than the first distance.

4. The carrier plate applied for the load port according to claim **2**, wherein when the first nozzle is switched to the upper position of the first guide slot, the second nozzle is switched to the upper position of the second guide slot, the third nozzle is located at the uppermost position of the third guide slot and the fourth nozzle is located at the uppermost position of the fourth guide slot, so that there is a first distance between the center of a first nozzle hole of the first nozzle and the center of a second nozzle hole of the second nozzle and a third distance between the center of a third nozzle hole of the third nozzle and the center of a fourth nozzle hole of the fourth nozzle, wherein the third distance is larger than the first distance.

5. The carrier plate applied for the load port according to claim **2**, wherein when the first nozzle is switched to the lower position of the first guide slot and the second nozzle is switched to the lower position of the second guide slot, so that there is a first distance between the center of a first nozzle hole of the first nozzle and the center of a second nozzle hole of the second nozzle and a fifth distance between the center of a fifth nozzle hole of the fifth nozzle and the center of a sixth nozzle hole of the sixth nozzle, wherein the fifth distance is equal to the first distance.

6. The carrier plate applied for the load port according to claim **1**, wherein when the first nozzle is switched to the upper position of the first guide slot, the second nozzle is switched to the upper position of the second guide slot, the third nozzle is located at the outermost position of the third guide slot, and the fourth nozzle is located at the outermost position of the fourth guide slot, so that there is a first distance between the center of a first nozzle hole of the first nozzle and the center of a second nozzle hole of the second nozzle and a second distance between the center of a third nozzle hole of the third nozzle and the center of a fourth nozzle hole of the fourth nozzle, wherein the second distance is larger than the first distance.

7. The carrier plate applied for the load port according to claim **1**, wherein when the first nozzle is switched to the upper position of the first guide slot and the second nozzle is switched to the upper position of the second guide slot, the third nozzle is located at the uppermost position of the third guide slot and the fourth nozzle is located at the uppermost position of the fourth guide slot, so that there is a third distance between the center of a third nozzle hole of the third nozzle and the center of a fourth nozzle hole of the fourth nozzle, wherein the third distance is larger than the first distance.

8. The carrier plate applied for the load port according to claim **1**, wherein when the first nozzle is switched to the lower position of the first guide slot, the second nozzle is switched to the lower position of the second guide slot, the third nozzle is located at the innermost position of the third guide slot and the fourth nozzle is located at the innermost position of the fourth guide slot, so that there is a first distance between the center of a first nozzle hole of the first nozzle and the center of a second nozzle hole of the second nozzle and a fourth distance between the center of a third nozzle hole of the third nozzle and the center of a fourth nozzle hole of the fourth nozzle, wherein the fourth distance is equal to the first distance.

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