<table>
<tr><td rowspan="2">Patent Right</td><td>Date</td><td>August 4, 2020</td><td rowspan="2">Court</td><td rowspan="2">Intellectual Property High Court, First Division</td></tr>
<tr><td>Case number</td><td>2019 (Gyo-Ke)10124</td></tr>
<tr><td colspan="5">- A case in which, with regard to the invention titled "WAFER INSPECTING DEVICE", it cannot be found that the structure related to the different feature is described in the sub cited document, there is no sufficient evidence to find a well-known art, and there is no motivation to combine the structure related to the different feature with the cited invention, either and thus, a person ordinarily skilled in the art could not have made the invention easily.</td></tr>
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Case type: Rescission of Patent Revocation Decision

Result: Granted

Reference: Article 29, paragraph (2) of the Patent Act

Related rights, etc.: Patent No. 6283760

Decision of JPO: Opposition No. 2018-700690

Summary of the Judgment

1. Plaintiff had registration of patent right set for the present invention titled "WAFER INSPECTING DEVICE". The JPO decided to revoke the patent, on grounds that the present invention could have been easily made by a person ordinarily skilled in the art on the basis of the cited invention and the well-known art. This case is a case in which Plaintiff sought rescission of the decision to revoke the patent, and Plaintiff asserted an error in determination of the inventive step on the basis of the cited invention as reasons for rescission.
2. This decision held as follows on how easily Different Feature 1 could have been conceived of, and rescinded the present decision.

   (1) Description in publicly-known documents

   A. The Exhibit Ko 2 document and Exhibits Otsu 1 to 3 do not have description on the structure related to Different Feature 1 (the structure in which an inspection room includes a slide rail for withdrawing a test head to a maintenance space side so that the test head is withdrawn), and there is no other document describing the aforementioned structure with regard to the evidence of this case. Then, even if the matters described in the Exhibit Ko 2 document and the Exhibits Otsu 1 to 3 are combined with the cited invention, the structure of the present invention is not reached.

   Therefore, it cannot be considered that a person ordinarily skilled in the art could have easily conceived of the structure of present invention 1 related to Different Feature 1 by combining the matters described in the Exhibit Ko 2

document and the Exhibits Otsu 1 to 3 with the cited invention.

B. At the time of filing of this original application, the test head with a weight from 25 kg to 300 kg or more is known, and it is obvious that the test head and a probe card are different in weight or size. Therefore, it cannot be considered that withdrawal of a target to be serviced for maintenance and to have the structure for the withdrawal by a slide rail at that time for servicing the targets in general including the test head were well-known matters of art from the description in the cited document related to the probe card and the Exhibit Ko 2 document.

Moreover, the structure of the test head accommodated in the inspection room is not disclosed in Exhibits Otsu 1 to 3 and the test head is not to be withdrawn and thus, it does not support the assertion of well-known art by Defendant.

According to the above, it cannot be considered from the Exhibit Ko 2 document and Exhibits Otsu 1 to 3 that the withdrawal of a target to be serviced for maintenance and to have the structure for the withdrawal by a slide rail at that time were well-known matters of art, and there is no other evidence sufficient to approve that.

(2) Motivation to employ the structure related to the different feature

The cited document describes that [i] replacement of pin electronics or any other maintenance actions for the test head performed in accordance with specifications or test contents of a test target should be performed with a rear-surface door of the accommodation room open; [ii] replacement of the probe card to handle a wafer with a different layout or any other maintenance actions of the probe card should be performed with the maintenance cover of the accommodation room open, and the probe card should be able to be withdrawn to an outside of the accommodation room; and [iii] the rear-surface door is disposed at a position where the maintenance of the test head is easy, and the maintenance cover is disposed at a position where the maintenance of the probe card is easy.

As described above, in the cited invention, the maintenance of the teat head is assumed to be performed with the rear surface door open, and since the rear surface door is disposed at the position where the maintenance can be performed easily, there is no motivation found to employ such structure that the inspection room includes the slide rail for withdrawing the test head on the maintenance space side for withdrawing the test head.

Judgment rendered on August 4, 2020
2019 (Gyo-Ke) 10124 A case of seeking rescission of patent revocation decision
Date of conclusion of oral argument: June 25, 2020

Judgment

Plaintiff: Tokyo Electron Ltd.

Defendant: Commissioner of the Japan Patent Office

Main text

1. The decision rendered by the Japan Patent Office on August 20, 2019 for the case of Opposition No. 2018-700690 shall be rescinded.
2. Defendant shall bear the court costs.

Facts and reasons

No. 1 Claims

The same gist as the main text, clause 1.

No. 2 Outline of the case

1. Histories, etc. of procedures at the JPO

(1) Plaintiff filed a patent application (Division application of the Patent Application No. 2013-224460 (hereinafter, referred to as the "Present Original Application") filed on October 29, 2013) of the invention titled "WAFER INSPECTING DEVICE" on March 14, 2017 and establishment of the patent right was registered on February 2, 2018 (Patent No. 6283760, number of claims: 2, Exhibit Ko 9) (hereinafter, this patent shall be referred to as the "Present Patent").

(2) TOKYO SEIMITSU CO., LTD. filed an opposition to a granted patent of the Present Patent (Opposition No. 2018-700690) on August 20, 2018 (Exhibit Ko 12).

Plaintiff made a request for correction of the scope of claims by written request for correction (Exhibit Ko 19) as of April 15, 2019 (hereinafter, referred to as the "Present Correction").

(3) The Japan Patent Office approved the Present Correction on August 20, 2019 and

then made the decision that "the patent according to Claims 1 and 2 in the Patent No. 6283760 shall be revoked." (hereinafter, referred to as the "Present Decision"), and a certified copy thereof was served to Plaintiff on the 29th day of the month.
(4) Plaintiff instituted the present suit seeking rescission of the Present Decision on September 26, 2019.
2. Recitation in scope of claims
The recitation in Claims 1 and 2 in the scope of claims after the Present Correction is as follows (Exhibit Ko 20). The symbol "/" indicates a line break (the same applies to the following). Hereinafter, the invention according to each claim shall be referred to as "Present Invention 1" and the like, and they are collectively referred to as the "Present Invention". Moreover, the description after the Present Correction (Exhibits Ko 9, Ko 21) including the drawings shall be referred to as the "Present Description".

[Claim 1] A wafer inspecting device, comprising: a plurality of test chambers which are a plurality of test chambers disposed between a loader and a maintenance space and include a test head to be maintained for use at an inspection of a wafer on which a semiconductor device is formed and a slide rail for withdrawing the test head to be maintained to a side of the maintenance space, and / the loader for conveying the wafer into the test chamber at a conveying destination, wherein / a side of the maintenance space to which the test head to be maintained is to be withdrawn and a side of the loader for conveying the wafer are on a side opposite to a cell tower on which the plurality of test chambers are disposed.

[Claim 2] A wafer inspecting device, characterized by including a plurality of test chambers which are a plurality of test chambers disposed between a loader and a maintenance space and include a test head to be maintained for use at an inspection of a wafer on which a semiconductor device is formed, and a slide rail for withdrawing the test head to be maintained to a side of the maintenance space, and / the loader for conveying the wafer into the test chamber at a conveying destination, wherein / the maintenance space to which the test head to be maintained is to be withdrawn and the loader for conveying the wafer face each other with a cell tower on which the plurality of test chambers are disposed between them.
3. Gist of the reasons for the Present Decision
(1) The reasons for the Present Decision are as described in the attached written decision (copy). In short, the Present Invention could have been easily made on the basis of the invention described in the cited document in the following A (hereinafter, referred to as the "Cited Invention") as well as the matters described in the document

and the like in the following B and the well-known art and may not be granted a patent pursuant to the provisions in Article 29, paragraph (2) of the Patent Act.

A. Cited document: Domestic Re-publication of PCT International Publication No. 2011/016096 (Exhibit Ko 1)

B. Exhibit Ko 2 document: Unexamined Patent Application Publication No. 1993-175290 (Exhibit Ko 2)

(2) The Cited Invention found by the Present Decision and common features and differences between the Cited Invention and the Present Invention are as follows.

A. Cited Invention

A test device 100 including an EFEM110 incorporating a mechanism for conveying a substrate such as a semiconductor wafer to be tested (wafer 101) in the test device 100 and incorporating a robot arm 116 for conveying the wafer between a load unit 130 and an alignment unit 400 and / a plurality of storage chambers 172 for storing each of the plurality of test units 170 inside, the test unit 170 having a test head 200 electrically connected to the wafer 101 and testing electric characteristics of a chip formed on the wafer 101 and a probe card 300 electrically connecting the test head 200 and the wafer 101, in which / an opening 173, a rear surface door 190, and a maintenance cover 192 are provided on each of the storage chambers 172, a guide rail 193 for supporting the probe card 300 when the probe card 300 is withdrawn is provided outside the maintenance cover 192, and the storage chamber 172 and the alignment unit 400 communicate with each other through the opening 173 provided at a portion corresponding to a bottom part of the storage chamber 172, / the rear surface door 190 and the maintenance cover 192 are provided on a part on a rear surface side of the storage chamber 172, the rear surface door 190 is disposed at a position where maintenance of the test head 200 is easy, the maintenance cover 192 is disposed at a position where maintenance of the probe card 300 is easy, / and a space where the probe card 300 having been withdrawn to the outside from the maintenance cover 192 is present is on a side opposite to the EFEM110 when seen from the plurality of storage chambers 172.

B. Common feature and differences with respect to Present Invention 1

Common Feature 1: A wafer inspecting device including a plurality of test chambers which are a plurality of test chambers disposed between the loader and the maintenance space and include a test head to be maintained for use at an inspection of the wafer on which a semiconductor device is formed, and / the loader for conveying the wafer into the test chamber at the conveying destination, in which / the side of the maintenance space and the side of the loader for conveying the wafer are on the side

opposite to the plurality of test chambers.

Difference 1: A point that, in Present Invention 1, the "plurality of test chambers" includes the "slide rail for withdrawing the test head to be maintained to the side of the maintenance space" for withdrawing the "test head to be maintained", while in the Cited Invention, "on each of the plurality of storage chambers 172", "the maintenance cover 192 is provided, and outside the maintenance cover 192, the guide rail 193 for supporting the probe card 300 when the probe card 300 is withdrawn" is provided, and although the "probe card 300" is withdrawn, it is not for withdrawing the "test head 200" and does not include the "slide rail for withdrawing" the "test head 200" to "the side of the maintenance space", either.

Difference 2: A point that Present Invention 1 includes the "cell tower on which the plurality of test chambers are disposed", while it is not certain whether or not the Cited Invention includes such structure.

C. Common feature and differences with respect to Present Invention 2

Common Feature 2: The wafer inspecting device including a plurality of test chambers which are a plurality of test chambers disposed between the loader and the maintenance space and include the test head to be maintained for use at the inspection of the wafer on which the semiconductor device is formed and / the loader for conveying the wafer into the test chamber at the conveying destination, in which / the maintenance space and the loader for conveying the wafer face each other with the plurality of test chambers disposed between them.

Difference 3: A point that, in Present Invention 2, the "plurality of test chambers" include the "slide rail for withdrawing the test head to be maintained to the side of the maintenance space" for withdrawing the "test head to be maintained", while in the Cited Invention, "on each of the plurality of storage chambers 172", "the maintenance cover 192 is provided, and outside the maintenance cover 192, the guide rail 193 for supporting the probe card 300 when the probe card 300 is withdrawn" is provided, and although the "probe card 300" is withdrawn, it is not for withdrawing the "test head 200" and does not include the "guide rail for withdrawing" the "test head 200" to "the side of the maintenance space", either.

Difference 4: A point that Present Invention 2 includes the "cell tower on which the plurality of test chambers are disposed", while it is not certain whether or not the Cited Invention includes such structure.

4. Reasons for rescission

Errors in determination on inventive step on the basis of the Cited Document

(omitted)

No. 4 Judgment of the court

1. Present Invention

(1) Recitation in the Present Description

The scope of claims according to the Present Invention is as described in the aforementioned No. 2, 2, and the detailed description of the invention in the Present Description has the following recitation (moreover, the drawings are as in the attached list of the drawings in the Present Description).

A. Technical Field

[0001] The present invention relates to a wafer inspecting device having a plurality of test heads.

B. Background Art

[0002] In order to perform an electric characteristic test of each semiconductor device in a semiconductor wafer on which a large number of semiconductor devices are formed (hereinafter, referred to simply as a "wafer"), a prober as a wafer inspecting device is used. The prober includes a probe card facing the wafer, and the probe card has a contact probe which are a plurality of columnar contact terminals (see Patent Document 1, for example). In this prober, a conductive state and the like of an electric circuit of the semiconductor device are tested by a test signal sent by each contact probe of the probe card to the semiconductor device connected to an electrode pad or a solder bump in the semiconductor device.

[0003] The test signal is sent from a test head on which a mainboard which is a test circuit is mounted to each contact probe of the probe card, but in order to improve test efficiency of the wafer, such a wafer inspecting device has been developed in recent years that includes a plurality of test heads to each of which the probe card is attached, and that is capable of testing the semiconductor device of the wafer by another test head during conveyance of the wafer to one test head by a conveying stage. In this wafer inspecting device, cells for storing the plurality of test heads are disposed in plural stages, from a viewpoint of reduction in a footprint.

[0004] The mainboard of each test head is a consumable and needs to be replaced regularly, but in order to replace the mainboard, the test head needs to be withdrawn onto a maintenance cart from the wafer inspecting device.

C. Technical Problem

[0006] However, the test head has the weight of approximately 70 kgf and is supported by a slide rail and thus, it is difficult to move the test head to a direction

other than a withdrawing direction. Therefore, the position of the maintenance cart needs to be accurately matched with the position of the test head, but the maintenance cart has a lift mechanism and the like and has a large weight and thus, fine adjustment of the position is difficult and as a result, there is a problem that withdrawal of the test head is difficult.

[0007] An object of the present invention is to provide a wafer inspecting device which can easily withdraw the test head.

D. Solution to Problem

[0008] In order to achieve the aforementioned object, the wafer inspecting device of the present invention is characterized by including a plurality of test chambers which are a plurality of test chambers disposed between a loader and a maintenance space and include a test head to be maintained for use at an inspection of a wafer on which a semiconductor device is formed and a slide rail for withdrawing the test head to be maintained to a side of the maintenance space, and the loader for conveying the wafer into the test chamber at a conveying destination, and the side of the maintenance space to which the test head to be maintained is withdrawn and the side of the loader for conveying the wafer are on a side opposite to a cell tower on which the plurality of test chambers are disposed.

[0009] In order to achieve the aforementioned object, the wafer inspecting device of the present invention is characterized by including a plurality of test chambers which are a plurality of test chambers disposed between a loader and a maintenance space and include a test head to be maintained for use at an inspection of a wafer on which a semiconductor device is formed and a slide rail for withdrawing the test head to be maintained to a side of the maintenance space, and the loader for conveying the wafer into the test chamber at a conveying destination, and the maintenance space to which the test head to be maintained is withdrawn and the loader for conveying the wafer face each other with a cell tower on which the plurality of test chambers are disposed between them.

E. Advantageous Effect of the Invention

[0010] According to the present invention, the test head can be withdrawn easily.

F. Description of Embodiment

[0012] Hereinafter, an embodiment of the present invention will be described by referring to the drawings.

[0013] First, a wafer inspecting device according to this embodiment will be described.

[0014] FIG. 1 is a perspective view schematically illustrating a structure of the

wafer inspecting device according to the embodiment of the present invention.

[0015] In FIG. 1, the wafer inspecting device 10 includes a cell tower 12 in which a plurality of test chambers (cells) 11 are disposed in multiple stages; that is, four stages, for example, and a loader 13 disposed adjacent to the cell tower 12 and incorporating a conveying mechanism (not shown) so as to convey the wafer into/out of each cell 11. The cell tower 12 and the loader 13 present a cuboid shape, respectively, and a height is 2.4 m, for example.

[0016] In the wafer inspecting device 10, a space where a worker can perform a maintenance work of each cell 11 is ensured on a side (hereinafter, referred to as an "outside") opposite to a surface adjacent to the loader 13 in each of the cell towers 12, and a maintenance cart 27 which will be described later is disposed.

[0017] FIG. 2 is a diagram for explaining constituent elements incorporated in each cell of the cell tower in FIG. 1, and FIG. 2A is a perspective view of the test head, and FIG. 2B is a front view illustrating a disposed state of a tester head, a pogo frame, and a probe card in each of the cells.

[0018] In FIG. 2A, the test head 15 has a main body 16 made of a cuboid enclosure and a flange 17 protruding to a side from an upper part on the side surface in a longitudinal direction of the main body 16, and the main body 16 stores a mainboard (not shown) which is a test circuit.

[0019] Moreover, as illustrated in FIG. 2B, each cell 11 has the test head 15, a probe card 18, and a pogo frame 19 holding a pogo pin (not shown) for electrically connecting the probe card 18 and the mainboard therein. Seal members 20 and 21 are disposed between the probe card 18 and the pogo frame 19 and between the pogo frame 19 and the test head 15, and as a pressure of a space surrounded by the seal members 20 and 21 is reduced, the probe card 18 and the pogo frame 19 are attached to the test head 15 by vacuum adsorption.

[0020] The probe card 18 has a disc-shaped main body 24 and a plurality of contact probes 25 which are a large number of columnar contact terminals disposed so as to protrude downward from a lower surface of the main body 24 in the figure. Each contact probe 25 is brought into contact with an electrode pad or a solder bump (neither of them is shown) of each semiconductor device formed on the wafer when the wafer (not shown) is brought into contact with the probe card 18.

[0021] Returning to FIG. 1, a maintenance opening portion 26 is opened on the outside of each cell 11, and the test head 15 is withdrawn through the maintenance opening portion 26. The worker removes the exhausted mainboard from the withdrawn test head 15 and mounts a new mainboard.

[0022] The test head has the weight of approximately 70 kgf and is difficult to handle only by a force of a worker and thus, the test head 15 is supported by a slide rail (not shown) disposed along a longitudinal direction of the test head 15 in the cell 11 (hereinafter, referred to simply as the "longitudinal direction") through a flange 17 and is configured so as to be capable of being withdrawn in the longitudinal direction by a plurality of ball bases provided on an upper surface of the slide rail.

[0023] In the wafer inspecting device 10, a support mechanism for supporting the withdrawn test head 15 is needed for a worker to easily replace the mainboard, and in response to that, in this embodiment, a maintenance cart 27 which will be described later is provided.

[0024] FIGs. 3 are diagrams schematically illustrating the structure of the maintenance cart according to the embodiment, in which FIG. 3A is a side view, and FIG. 3B is a front view.

[0025] In FIGs. 3A and 3B, the maintenance cart 27 has a cart base part 29 constituted movably by being supported by a plurality of rollers (wheels) 28, a lift mechanism 30 provided upright from the cart base part 29, and a box-shaped test head case 31 (case) capable of storing the test head 15.

[0029] FIGs. 4 are diagrams schematically illustrating structures of a lifter and a test head case in FIG. 3A and FIG. 3B, in which FIG. 4A is a side view and FIG. 4B is a front view. In order to facilitate explanation, the test head 15 is indicated by a broken line in FIGs. 4A and 4B, and moreover, a slide rail cover 40 which will be described later is indicated by a one-dot chain line, and the slide rail cover 40 is illustrated in a transparent state in FIG. 4B.

[0030] As illustrated in FIGs. 4A and 4B, the test head case 31 presents a cuboid shape, and both ends in relation with the longitudinal direction are opened so as to form an opening portion, and when the test head 15 is to be withdrawn from the cell 11, either one of the opening portions on the both ends faces the maintenance opening portion 26 of the cell 11, and the test head 15 withdrawn through the maintenance opening portion 26 is stored therein. Moreover, since an upper surface of the test head case 31 is also opened, the worker can make an access to the stored test head 15 from the upper surface of the test head case 31, and the mainboard is replaced through the upper surface.

[0034] A slide rail 37 made of a plurality of ball bases is disposed on an upper part of both side surfaces in relation with the longitudinal direction of the test head case 31. The slide rail 37 supports the flange 17 of the test head 15 stored in the test head case 31, and the test head 15 is made to slide in the longitudinal direction of the

test head case 31.

[0038] Returning to FIG. 1, a guide rail 41 is disposed on a lower part on an outer side of the cell tower 12. The guide rail 41 follows along the longitudinal direction of the cell tower 12 and is a tubular body having a rectangular section, and a slit 42 is formed in a side wall 41a on a side opposite to the cell tower 12. Meanwhile, as illustrated in FIG. 3B, the maintenance cart 27 has a guide portion 43 (guide mechanism) disposed on the cart base part 29.

[0044] FIG. 7 is a process diagram for explaining a maintenance method of the wafer inspecting device using the maintenance cart in FIGs. 3.

[0045] First, a roller 43b of the guide portion 43 is stored inside the guide rail 41 on an end portion of the guide rail 41 and then, with the roller 43b still stored inside the guide rail 41, the maintenance cart 27 is moved roughly to a position where the cell 11 in which the test head 15 to be maintained is stored is present. After that, a brake of each of the rollers 28 of the cart base part 29 is operated so as to fix the position of the maintenance cart 27 (FIG. 7A).

[0046] Then, a lift mechanism 30 lifts up the test head case 31 to a height where the slide rail 37 of the test head case 31 faces the flange 17 of the test head 15 to be maintained, and then the position of the test head case 31 is fixed (FIG. 7B).

[0047] Subsequently, the position of the test head case 31 is finely adjusted in a horizontal direction by a horizontal position adjustment stage 35, the slide rail 37 is caused to accurately face the flange 17 of the test head 15 to be maintained (FIG. 7C), and this maintenance method is finished.

[0048] According to the maintenance cart 27 of this embodiment, since the horizontal position adjustment stage 35 is interposed between a lifter 34 of the lift mechanism 30 installed upright from the movable cart base part 29 and the test head case 31 storing the test head 15, and the test head case 31 is moved horizontally to the lifter 34, the position of the cart base part 29 is fixed, the test head case 31 is raised to the position where the test head 15 to be maintained is present, and the position of the test head case 31 is fixed, and then the slide rail 37 can be caused to accurately face the flange 17 of the test head 15 to be maintained by finely adjusting the position of the test head case 31 horizontally and as a result, the test head 15 can be easily withdrawn toward the test head case 31.

(2) According to the aforementioned (1), the outline of the Present Invention is as follows.

The mainboard of the test head needs to be replaced regularly, but in a conventional wafer inspecting device in which cells storing a plurality of test heads

are disposed in plural stages, when the test head is to be withdrawn for replacement onto the maintenance cart from the wafer inspecting device, the test head has a weight of approximately 70 kgf and is supported by the slide rail and thus, it has been difficult to move it to a direction other than the withdrawal direction. Thus, the position of the maintenance cart needs to be accurately matched with the position of the test head, but since the weight of the maintenance cart is large, fine adjustment of the position is difficult and as a result, there is a problem that withdrawal of the test head is difficult. The Present Invention has an object to provide a wafer inspecting device which enables easy withdrawal of the test head. ([0001], [0003], [0004], [0006], [0007], [0010])

The Present Invention is a wafer inspecting device characterized by

including a plurality of test chambers which are a plurality of test chambers disposed between a loader and a maintenance space and include a test head to be maintained for use at an inspection of a wafer on which a semiconductor device is formed and a slide rail for withdrawing the test head to be maintained to a side of the maintenance space, and the loader for conveying the wafer into the test chamber at a conveying destination, and the side of the maintenance space to which the test head to be maintained is withdrawn and the side of the loader for conveying the wafer are on a side opposite to a cell tower on which the plurality of test chambers are disposed (Present Invention 1) or face each other with the cell tower in which the plurality of test chambers are disposed between them (Present Invention 2). ([0008], [0009])

2. Reasons for rescission (errors in determination on inventive step on the basis of the Cited Document)

(1) Cited Invention

A. The Cited Document has the following recitations (the drawings are as in the attached list of cited document drawings).

[0013] ... Moreover, the test device 100 includes an enclosure 171 for storing a plurality of test units therein. The test device 100 determines whether a device to be tested is good or not by testing electric characteristics of a chip formed on a semiconductor wafer, for example. ...

[0014] The EFEM110 incorporates a mechanism for conveying a substrate such as a semiconductor wafer or the like as a test target inside the test device 100. ...

[0020] FIG. 2 schematically illustrates an example of a partial longitudinal sectional view of the test device 100. ...

[0023] The EFEM110 incorporates a robot arm 116. The robot arm 116 is mounted on a column 117 running along a rail 115 and conveys a wafer between a

load unit 130 and an alignment unit 400. ...

[0027] The test unit 170 tests a device to be tested. The test unit 170 has a test head 200 and a probe card 300. In this embodiment, the test device 100 includes a plurality of test units 170. Moreover, the test device 100 includes the enclosure 171 for storing the plurality of test units 170 therein, and the enclosure 171 has a plurality of storage chambers 172. The plurality of storage chambers 172 store the respective test units 170 therein. ...

[0028] In this embodiment, on each of the plurality of storage chambers 172, an opening 173, a rear surface door 190, and a maintenance cover 192 are provided. Moreover, on the outside of the maintenance cover 192, a guide rail 193 for supporting the probe card 300 when the probe card 300 is withdrawn is provided. The opening 173 is provided at a part corresponding to a bottom part of the storage chamber 172 of the enclosure 171, and the storage chamber 172 and the alignment unit 400 communicate with each other through the opening 173.

[0029] The rear surface door 190 and the maintenance cover 192 are provided on a part on the rear surface side of the storage chamber 172 of the enclosure 171 and can open or close each of the plurality of test units 170 with respect to the outside. The rear surface door 190 is disposed at a position where maintenance of the test head 200 is easy, and the maintenance cover 192 is disposed at a position where the maintenance of the probe card 300 is easy.

[0030] The probe card 300 is supported by the periphery of the opening 173 but can be withdrawn from the maintenance cover 192 on the rear surface to the outside by opening the maintenance cover 192. ...

[0036] The test head 200 is electrically connected to the wafer 101 and tests the electric characteristics of the wafer 101. ... The test head 200 stores a plurality of pin electronics 210. An electric circuit required in accordance with a target and contents of a test is mounted on the pin electronics 210. In this embodiment, the test head 200 is electrically connected to the probe card 300 through a contactor 202 attached to a lower surface.

[0037] The probe card 300 may be a wiring board unit for electrically connecting the test head 200 and the wafer 101 by being interposed between the test head 200 and the wafer 101 when a test is conducted in the test device 100. When a test is to be conducted for the wafer 101, the probe card 300 forms an electric signal path between the test head 200 and the wafer 101. By replacing the probe card 300, the test device 100 can be made to handle the wafer 101 with a different layout.

[0061] FIG. 5 is a sectional view of the test head 200. Elements in common

among FIGs. 1 to 4 are given the same reference numerals, and duplicated explanation will be omitted. The test head 200 includes an enclosure 201, a contactor 202, a pin electronics 210, a motherboard 220, and a flat cable 230.

[0063] On an upper surface of the motherboard 220, the pin electronics 210 is attached to each of relay connectors 224 through an angle connector 222. By means of such structure, the pin electronics 210 can be replaced in accordance with specification of a test target and test contents. ...

[0069] FIG. 6 schematically illustrates an example of a rear surface view of the test device 100. ... The test device 100 includes the rear surface door 190, the maintenance cover 192, the guide rail 193, a lock portion 196, and an alarm display portion 198 corresponding to each of the plurality of storage chambers 172.

[0080] ... That is, when the test unit 170 selected by the mode switch 186 matches the test unit 170 selected by the lock portion 196, a control system 500 allows opening of the test unit 170 selected by the mode switch 186 to the outside. As a result, a user can open the corresponding rear surface door 190 and the maintenance cover 192 and replace the pin electronics 210 of the test unit 170 and the probe card 300 or perform other maintenance works.

[0085] As an operation determined in advance, a process sensitive to mechanical vibration or fluctuation of a voltage can be exemplified, such as a process of bringing the test head 200 into contact with the probe card 300 and a process of positioning the wafer 101 and the probe card 300. As a result, while the other test units 170 are performing the operation determined in advance, the user can be notified that an operation affecting the operation should be prohibited. As the operations affecting the operation, there can be exemplified operations which would give mechanical vibration or fluctuation in a voltage to the test unit 170 such as a work of opening the corresponding rear surface door 190 and the maintenance cover 192, a work of replacing the pin electronics 210 of the test unit 170 and the probe card 300, or other maintenance works.

B. Finding of the Cited Invention

According to the above, it is found that the Cited Document describes the Cited Invention (the aforementioned No. 2, 3(2)A) as found by the Present Decision, and there is no dispute over this point between the parties.

C. Comparison between the Present Invention and the Cited Invention

(a) According to the above, it is found that the differences between Present Invention 1 and the Cited Invention are as the Differences 1 and 2 (the aforementioned No. 2, 3(2)B) found by the Present Decision, and the differences between Present Invention

2 and the Cited Invention are as the Differences 3 and 4 (the aforementioned No. 2, 3(2)C) found by the Present Decision.

(b) Plaintiff asserts that, since the target to be maintained is different between the Present Invention and the Cited Invention, it cannot be considered that the "space where the probe card 300 is present" in the Cited Invention corresponds to the "maintenance space" in the Present Invention, and the finding of the Common Features 1 and 2 between the Present Invention and the Cited Invention in the Present Decision has errors.

However, the point asserted by Plaintiff that the targets to be maintained are different is found as the difference in Differences 1 and 3, and there are no errors in finding of Common Features 1 and 2 of the Present Decision that the "maintenance space to which the test head to be maintained is to be withdrawn" in the Present Invention and the "space where the probe card 300 withdrawn to the outside is present" in the Cited Invention are both the "maintenance space".

(2) Difference 1

A. Recitation in publicly-known document (Drawings in each document are as in each of the attached lists corresponding to the evidence numbers.)

(a) Exhibit Ko 2 document

a. The Exhibit Ko 2 document has the following recitation.

[0001] The present invention relates to a probe device.

[0010] At measurement of a body to be tested, the test head is placed on an upper surface, for example, of the probe device body facing the body to be tested, but during debugging of the probe device, replacement of the test head or maintenance of the test head is to be performed, test head holding means is moved to the neighborhood of the corresponding probe device body, and the test head is held by this holding means, removed from the probe device body, and raised. ...

[0016] In the enclosure 1, a wafer holding base 11 movable by a driving mechanism, not shown, in directions of X, Y, Z, and θ is installed, and on a side above this wafer holding base 11, a probe card 2 including a probe needle 21 is disposed so as to face the wafer holding base 11. The probe card 2 is fixed to a lower surface of an insert ring 22, and this insert ring 22 is fitted and held in a mounting ring 71.

[0017] On a head plate 10a forming an upper surface portion of the enclosure 10, a Z plate 72 elevated (moved in the Z direction) by an elevating mechanism, not shown, on a peripheral edge portion of a hole 23 is provided so that the insert ring 22 is elevated only by a stroke sufficient to bring/separate the insert ring 22 closer to/from

a pogo pin 13 on the test head 3 side, for example, and moreover, on this Z plate 72, a θ plate 73 rotatable in the θ direction for fine positioning between the probe needle 21 and the electrode pad on the wafer W in the θ direction (rotating direction around a vertical axis) is mounted. On a lower surface of this θ plate 73, a pair of L-shaped guide rails 74 and 75 are installed so as to extend horizontally outward through a withdrawal window 76 formed on a front surface of the enclosure 10, and the insert ring 22 is mounted to be guided while being held by the guide rails 74 and 75. ...

[0018] Subsequently, an action of the aforementioned embodiment will be described. ... Then, the probe needle 21 and the electrode pad are brought into contact, and measurement is conducted for an IC chip on the wafer W by a tester, not shown, connected to the test head 3.

[0019] Then, when the probe needle 21 is worn and the probe card 2 is to be replaced, for example, the Z plate 72 is lowered with the test head 3 attached onto the head plate 10a, the insert ring 22 is separated from the pogo pin 13 on the test head 3 side, and after that, the mounting ring 71 is made to slide by the worker along the guide rails 74 and 75 so as to be withdrawn to the outside through the window 76 of the enclosure 10, the probe card 2 is removed from the mounting ring 71, another new probe card 2 is fitted in the mounting ring 71, and the probe card is attached at a predetermined position (probing center) by a reverse operation. In this case, the operation of withdrawing the probe card 2 to the outside of the enclosure 10 from the probing center or of attaching it to the probing center in reverse may be automated by separately providing an operating mechanism and moreover, attachment/detachment of the probe card 2 to/from the mounting ring 71 may be performed by using a robot arm.

[0020] Moreover, when replacement of a performance board of the test head 3, maintenance of the test head 3, or the like is to be performed, the test head holding means 4 is moved to a position close to the test head 3, and the test head 3 is held as below and is separated from the probe device body 1. First, a ball screw 63 is rotationally moved by a motor M, for example, so as to lower arms 41 and 42 to positions facing both side surfaces of the test head 3, the holding means 4 body is moved by a caster 64 so as to adjust the positions of the arms 41 and 42 in X and Y directions, and the position in a Z direction is adjusted by the ball screw 63 and moreover, the arms 41 and 42 are positioned with respect to the test head 3 around X, Y, and Z axes, respectively, by adjusting the screws 51 and 53 and a rotational moving member 52.

[0021] Then, the ball screw 43 is driven manually or by a motor, not shown, so as

to close the arms 41 and 42, and a projecting portion 44 on the arms 41 and 42 side and a recess portion 34 on the test head 3 side are engaged, and only in this engagement or in a state where the both side surfaces of the test head 3 are further sandwiched, the test head 3 is held by the arms 41 and 42 and is separated from the device body 1 and raised. After that, the holding means 4 is moved to another place, for example, and maintenance of the test head 3, replacement of the performance board, and the like are performed. After the predetermined work is finished for the test head 3, the test head 3 is returned to the original position of the probe device body 1 by a reverse operation. At this time, by engaging a projecting portion 14 on an upper surface of the enclosure 10 with a recess portion 31 on a lower surface side of the test head 3, the test head 3 is automatically positioned with respect to the enclosure 10.

b. According to the above, the Exhibit Ko 2 document describes that, in the probe device, [i] the guide rail is provided from inside the probe device enclosure toward the outside, and when the probe card is to be replaced, the probe card is withdrawn along the guide rail; [ii] regarding the maintenance of the test head placed on the upper surface of the probe device body by facing the body to be tested and replacement of the performance board, the test head is separated from the probe device body, and raised and moved to another place, and there is no recitation that the test head is withdrawn from inside the test chamber to the maintenance space side.

(b) A publicly-known document at the time of filing of the present original application describes the following.

a. Exhibit Otsu 1 (Unexamined Patent Application Publication No. 1988-114229) describes such structure that, regarding the semiconductor wafer prober, the test head 5 is made slidable along the guide rail 13 between a measurement position (above the prober enclosure) and the test head storage portion 17 on the side surface of the prober enclosure.

b. Exhibit Otsu 2 (Unexamined Patent Application Publication No. 1996-64645) describes such structure that, regarding the probe device of a semiconductor wafer, the test head 5 is conveyed by conveying means 7 in a horizontal direction along the side surface of the device body 1 and retreated from above the device body 1, and the probing card 3 attached to the device body 1 is replaced or the test head 5 is reversed by a rotational driving mechanism 20 for inspection ([0001], [0024], [0025]).

c. Exhibit Otsu 3 (Unexamined Patent Application Publication No. 1997-148388) describes such a structure that, a probe device of a semiconductor wafer includes a moving mechanism 6 for moving a super-heavy test head 4 which exceeds 500 kg and

is installed above the device body 1 in a front-and-rear direction, an up-and-down direction, and θ direction, for example, on one side surface of the device body 1, and this moving mechanism 6 includes a horizontal moving mechanism 11 for reciprocally moving the test head 4 in the horizontal direction, whereby the test head 4 is retreated from the device body 1 horizontally following the guide rail 114 to a position where workability in maintenance or the like is excellent ([0001], [0005], [0007], [0011], [0021], [0024]).

B. How easily it could have been conceived of

According to the aforementioned A, the Exhibit Ko 2 document and Exhibits Otsu 1 to 3 have no recitation on the structure according to Difference 1 (the structure in which the test chamber includes the slide rail for withdrawing the test head to the maintenance space side, and the test head is withdrawn), and there are no other documents describing the aforementioned structure in view of the present evidences. Then, even if the matters described in the Exhibit Ko 2 document and Exhibits Otsu 1 to 3 are combined with the Cited Invention, the structure of the Present Invention is not reached.

Therefore, it cannot be considered that a person ordinarily skilled in the art could have easily conceived of the structure in Present Invention 1 according to Difference 1 by combining the matters described in the Exhibit Ko 2 document and Exhibits Otsu 1 to 3 with the Cited Invention.

C. Defendant's assertion

(a) Defendant asserts that, according to the recitations in the Exhibit Ko 2 document and Exhibits Otsu 1 to 3, to withdraw a maintenance target for maintenance and to have a structure that the withdrawal is carried out by a slide rail at that time are well-known arts.

As described in the aforementioned (1)A and the aforementioned A(a), the Cited Document and the Exhibit Ko 2 document have the recitation that, in the probe device, the probe card is withdrawn from the test chamber at the maintenance and the probe device has such a structure that the withdrawal is carried out along the guide rail at that time. However, at the time of filing of the present original application, test heads with weights from 25 kg to 300 kg or more were known ([0022] in the Present Description, [0003], [0043] in Exhibit Ko 5, [0014] in Exhibit Ko 6, Exhibit Ko 7, [0005] in Exhibit Otsu 3), and it is obvious that the test head and the probe card are different in weight and size. Therefore, it cannot be considered that to withdraw a maintenance target for maintenance and to have the structure that the withdrawal is made by the slide rail at that time were well-known arts for maintenance targets in

general including the test head from the aforementioned recitations on the probe card.

Moreover, Exhibits Otsu 1 to 3 do not disclose the structure of the test head stored in the test chamber, and the test head is not to be withdrawn and thus, they do not support the well-known arts asserted by Defendant.

According to the above, it cannot be considered that to withdraw a maintenance target for maintenance and to have such a structure that the withdrawal is made by the slide rail at that time were well-known arts from the recitation in each of the documents asserted by Defendant, and there are no other evidences sufficient to approve that.

(b) Defendant asserts that, as described in Exhibit Otsu 3 ([0024]), it is obvious that the withdrawal of the test head is more excellent in workability and thus, it is easy to conceive of the structure according to Difference 1 in the Cited Invention with motivation that the work is easier by withdrawing the maintenance target by the slide rail.

However, as described in the aforementioned A(b)c, Exhibit Otsu 3 does not disclose the probe device with the test head stored in the test chamber, and from the recitation in the same paragraph that "even in the case of a super-heavy test head, the test head 4 can be reversed safely and smoothly and moved front and rear or up and down, and the test head 4 can be moved to a position where workability in maintenance or the like is excellent.", it cannot be read that the withdrawal of the test head is more excellent in workability.

Moreover, the Cited Document describes that [i] replacement of the pin electronics performed in accordance with the specification of the test target and the test contents and other maintenance works of the test head are performed with the rear surface door of the storage chamber open ([0029], [0036], [0063], [0080], [0085]); [ii] replacement of the probe card in order to handle a wafer with a different layout and other maintenance works of the probe card are performed with the maintenance cover of the storage chamber open, and the probe card can be withdrawn to the outside of the storage chamber ([0028], [0029], [0030], [0037], [0080], [0085]); and [iii] the rear surface door is disposed at a position where the maintenance of the test head is easy, and the maintenance cover is disposed at a position where the maintenance of the probe card is easy ([0029]).

As described above, in the Cited Invention, the maintenance of the test head is supposed to be performed with the rear surface door open, and since the rear surface door is disposed at a position where the maintenance is easily performed, no motivation is found in employment of the structure that the test chamber includes the

slide rail for withdrawing the test head on the maintenance space side for withdrawing the test head.

(c) According to the above, Defendant's assertion cannot be employed.

(3) Difference 3

Regarding how easily the structure of the Present Invention according to Difference 3 could have been conceived of, the description of Difference 1 in the aforementioned (2) falls under that.

(4) Summary

Therefore, even without determining the remaining points, it cannot be considered that the Present Invention could have been easily made on the basis of the Cited Invention and the matters described in the Exhibit Ko 2 document and the like. Therefore, the determination of the Present Decision has errors, and the grounds for rescission have grounds.

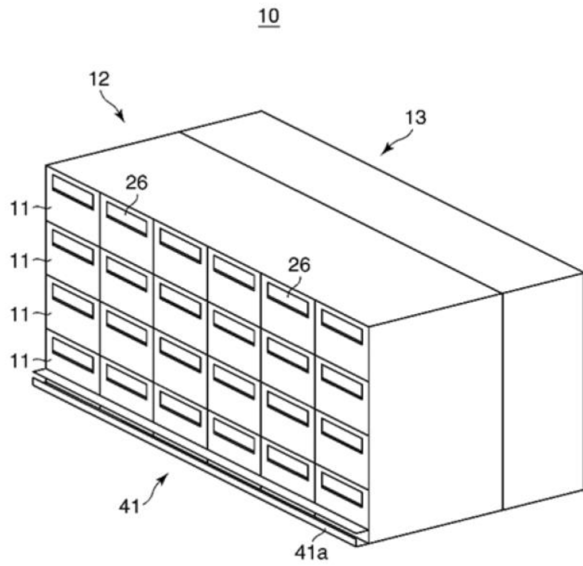
3. Conclusion

According to the above, since Plaintiff's claim has grounds, it shall be affirmed, and the judgment shall be rendered as in the main text.

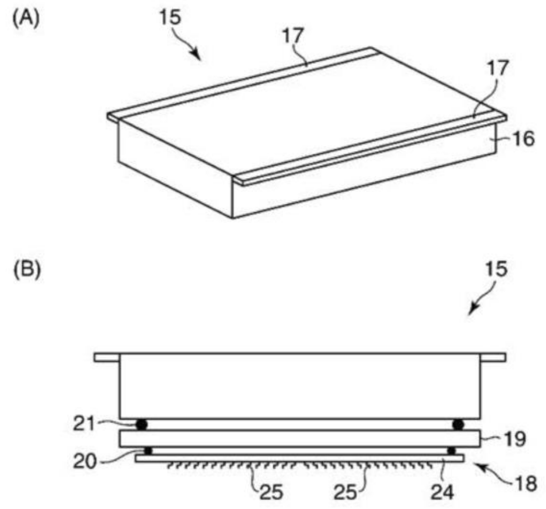
Intellectual Property High Court, First Division
Presiding Judge: TAKABE Makiko
Judge: KOBAYASHI Yasuhiko
Judge: TAKAHASHI Aya

Attachment: List of drawings of Present Description

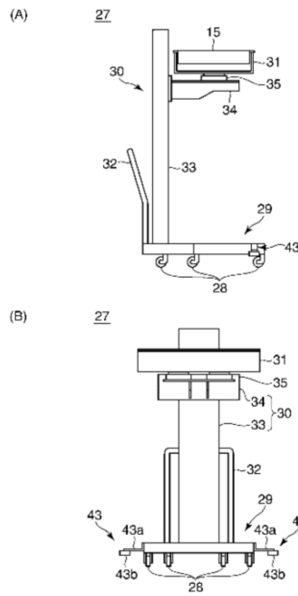
[FIG. 1]



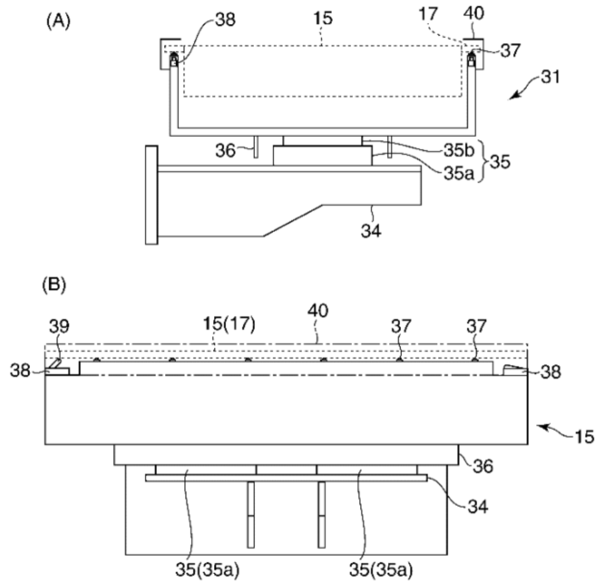
[FIG. 2]



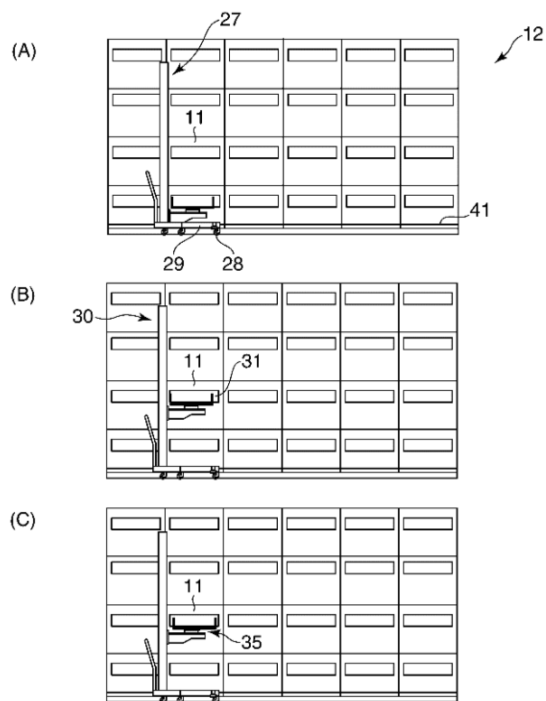
[FIG. 3]



[FIG. 4]

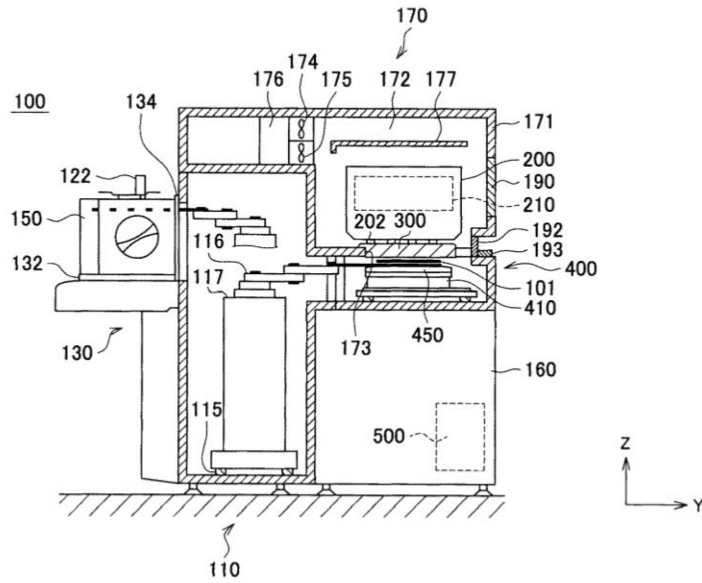


[FIG. 7]

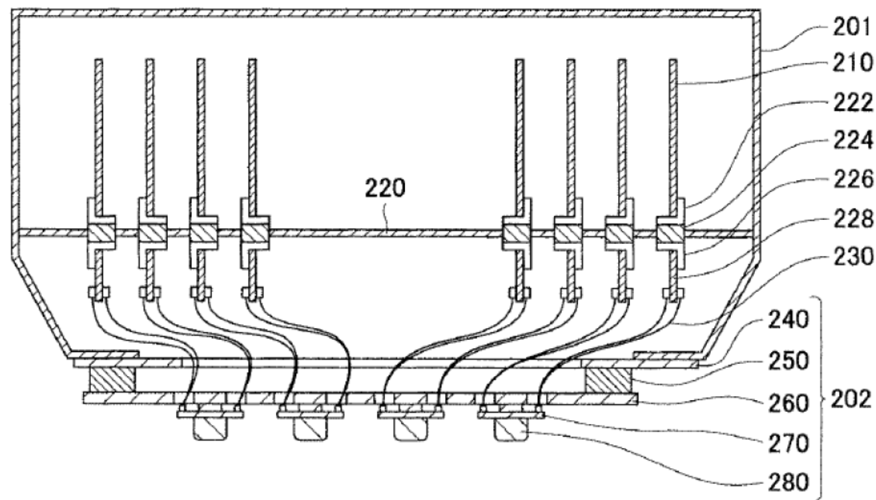


Attachment: List of drawings of Cited Document

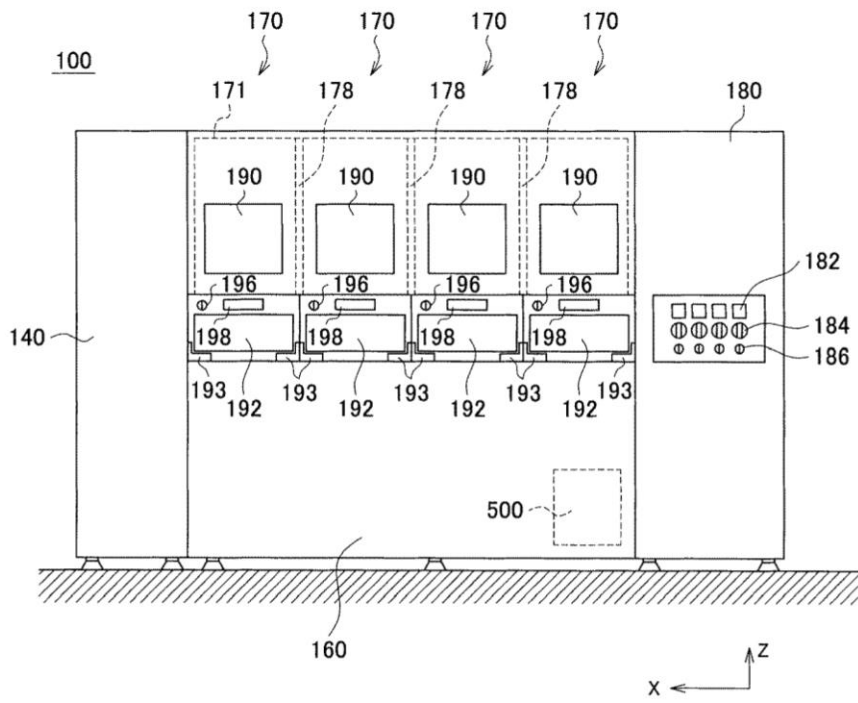
[FIG. 2]



[FIG. 5]

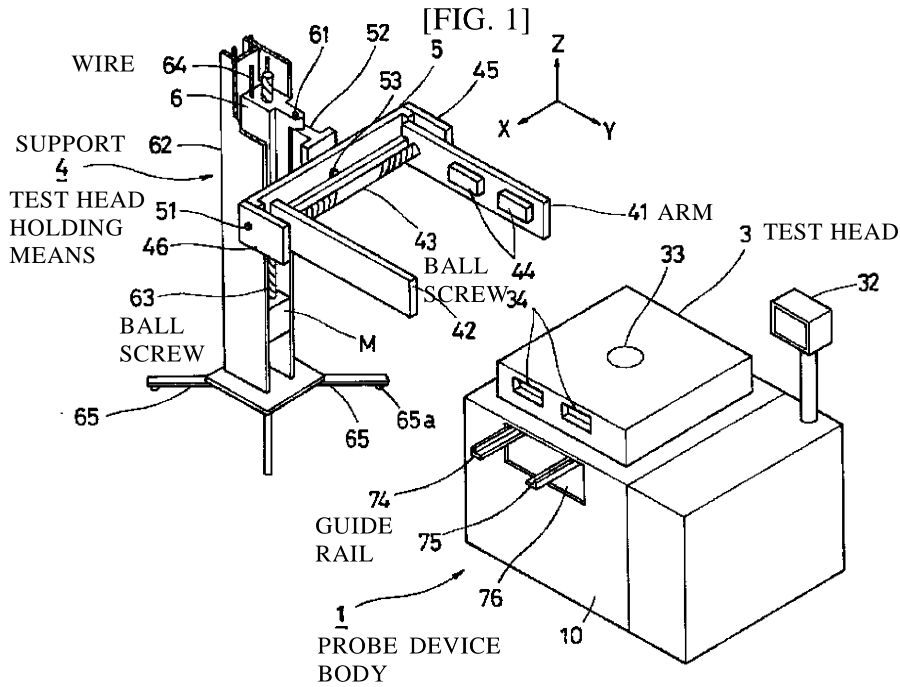


[FIG. 6]

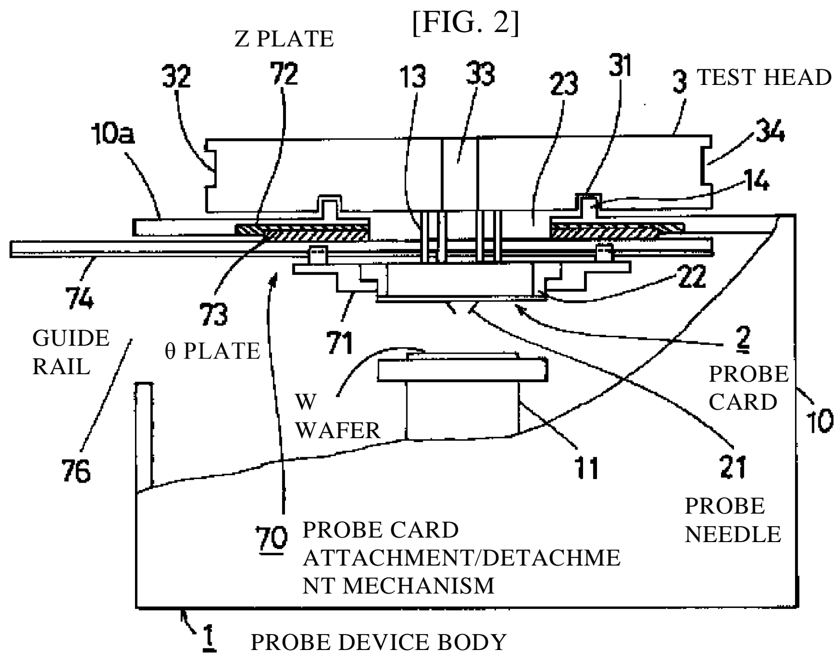


Attachment: List of drawings of Exhibit Ko 2 document

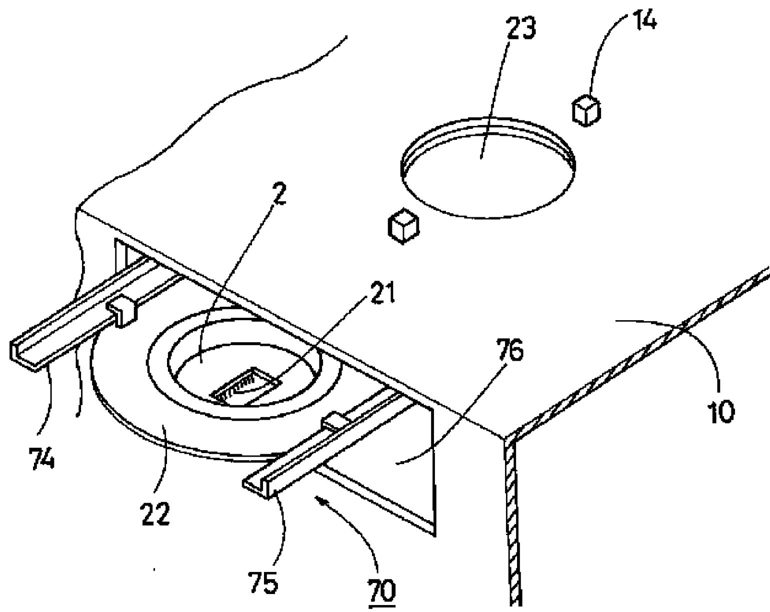
[FIG. 1]



[FIG. 2]



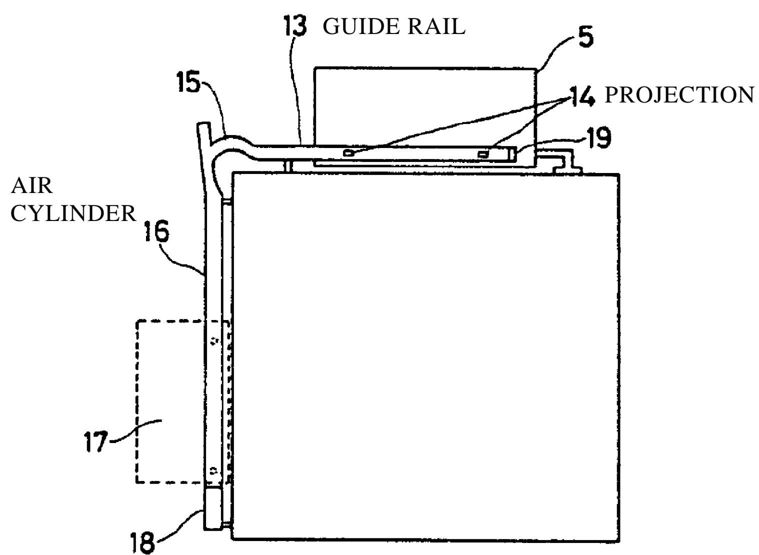
[FIG. 3]



PROBE CARD
ATTACHMENT/DETACHMENT
MECHANISM

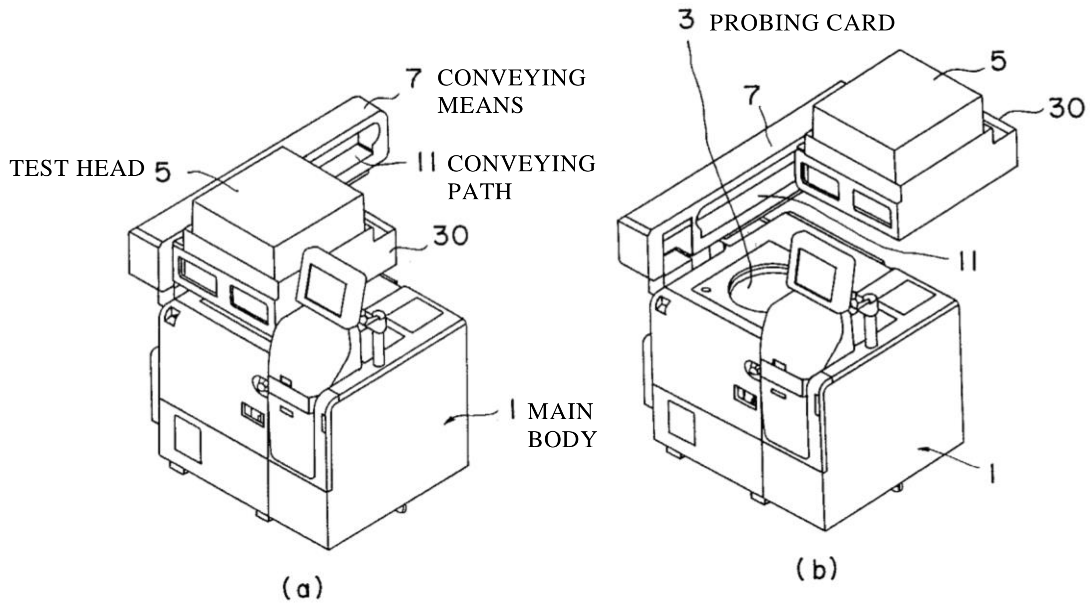
Attachment: List of Exhibit Otsu 1 drawings

[FIG. 3]

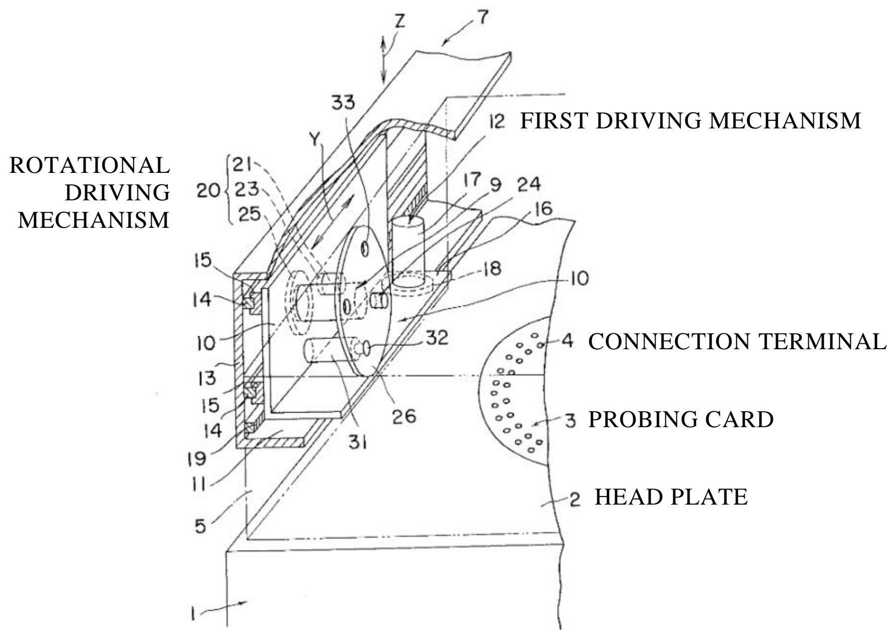


Attachment: List of Exhibit Otsu 2 drawings

[FIG. 1]

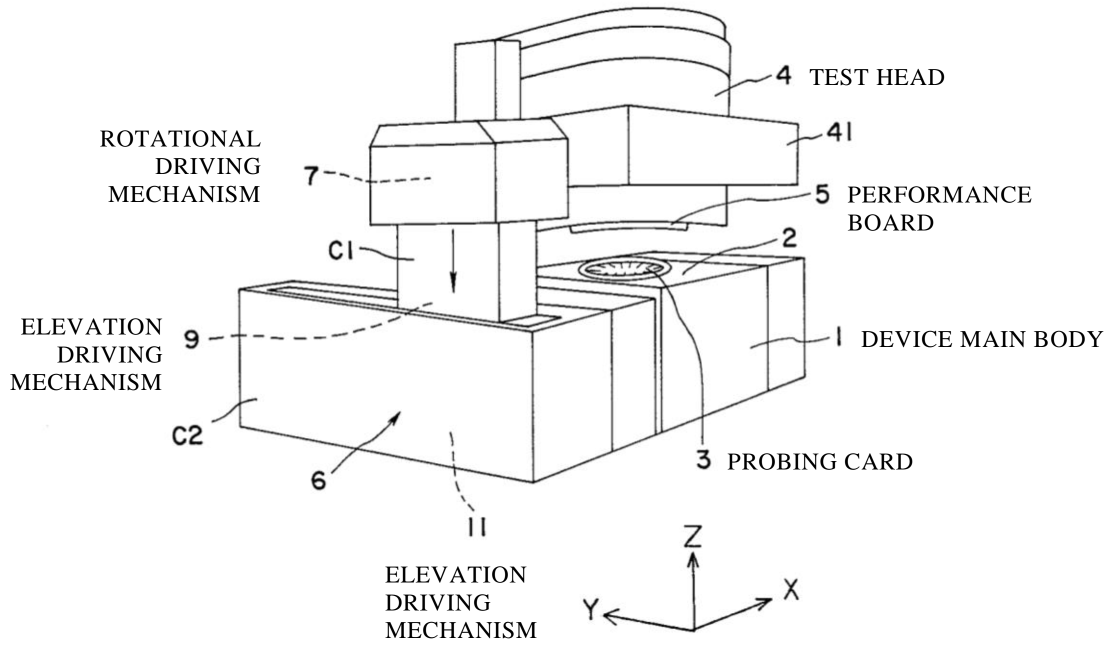


[FIG. 4]



Attachment: List of Exhibit Otsu 3 drawings

[FIG. 1]



[FIG. 6]