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(54) **APPARATUS AND METHOD FOR INSPECTING AN INSPECTION OBJECT**

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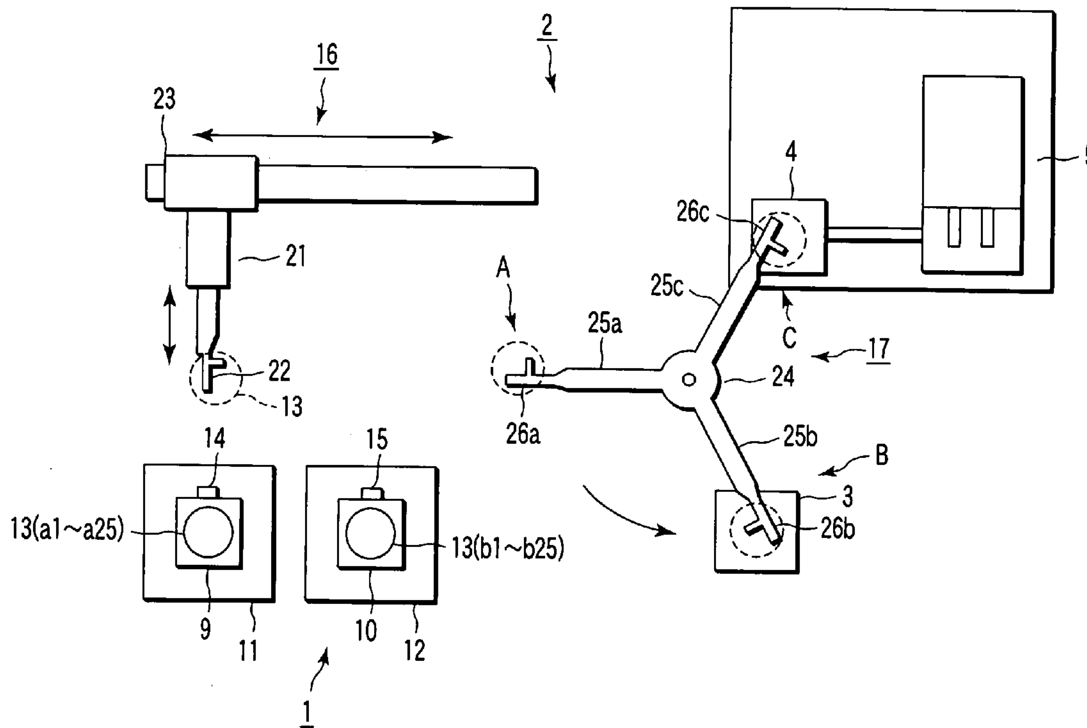
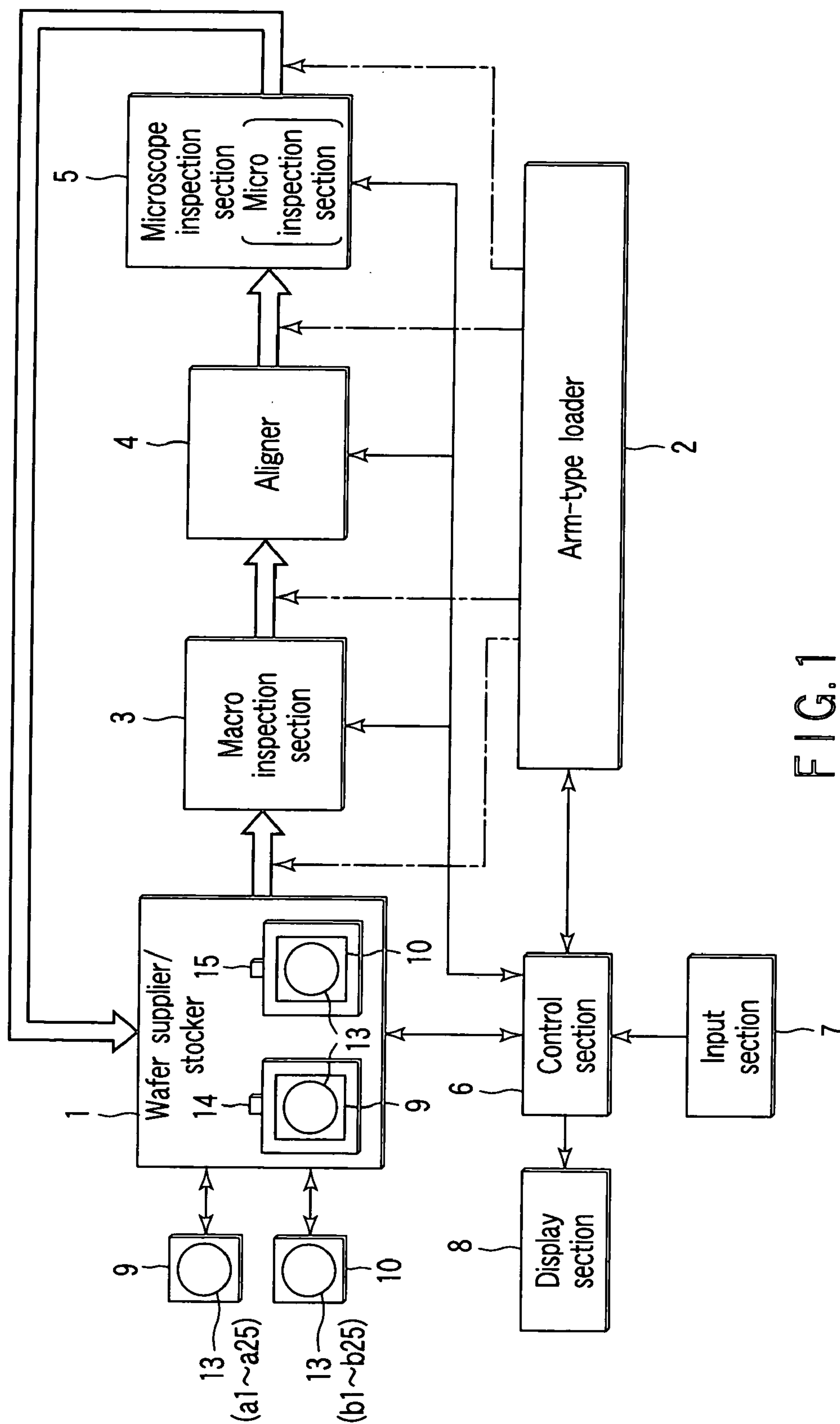
(57) **ABSTRACT**

The present invention provides apparatus and method for inspecting an inspection object. When a first cassette receiving several inspection objects is placed on several placement tables, mapping is made to confirm the number of the inspection objects and the state. According to a set inspection item (recipe), the inspection objects are successively taken out and inspected. A cassette receiving inspection objects for the next inspection is placed when the final inspection object of the first cassette is taken out and at timing when mapping and inspection item setup are completed. Following the final inspection object of the first cassette, a first inspection object of the next cassette is continuously taken out and inspected.





F I G. 1

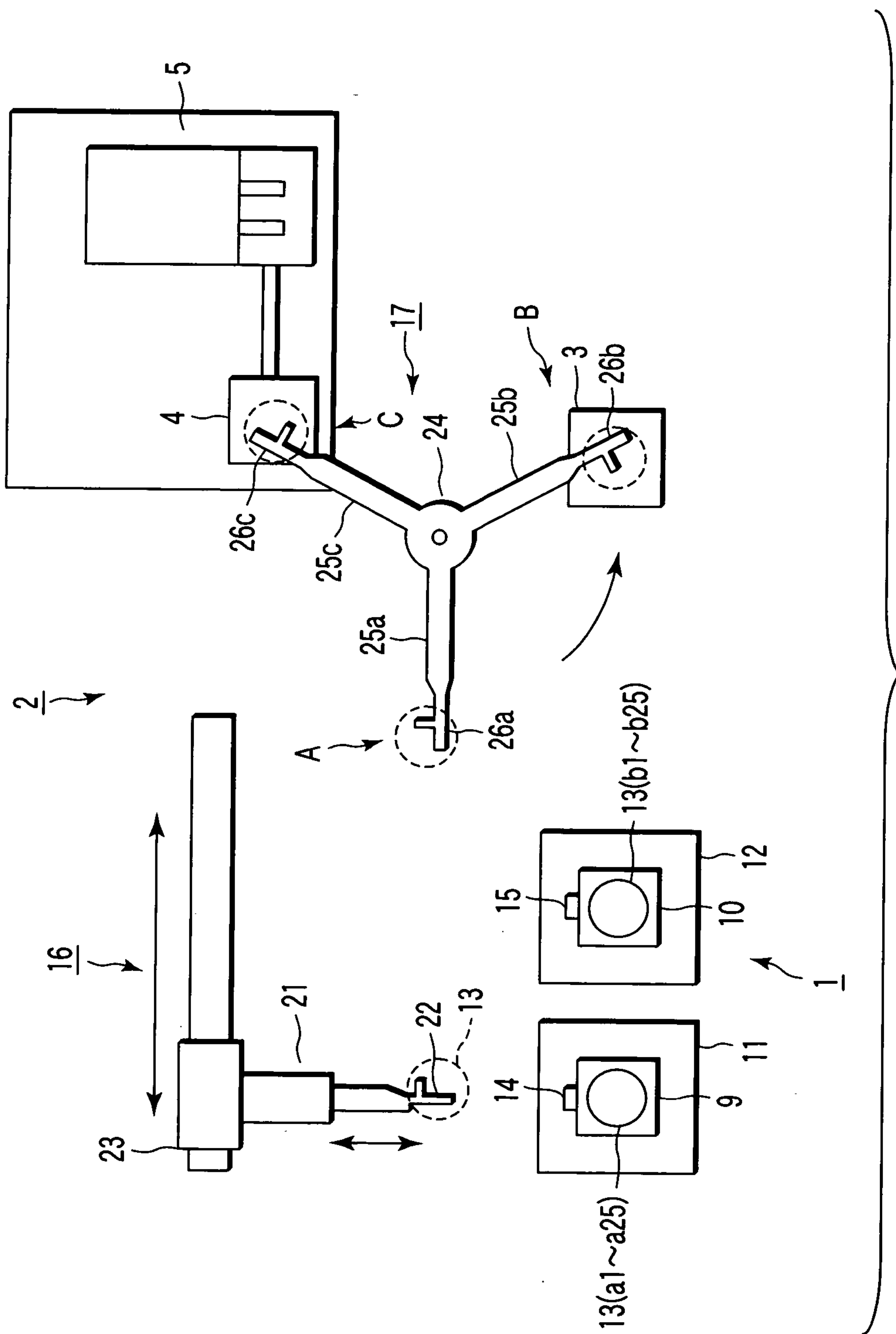


FIG. 2

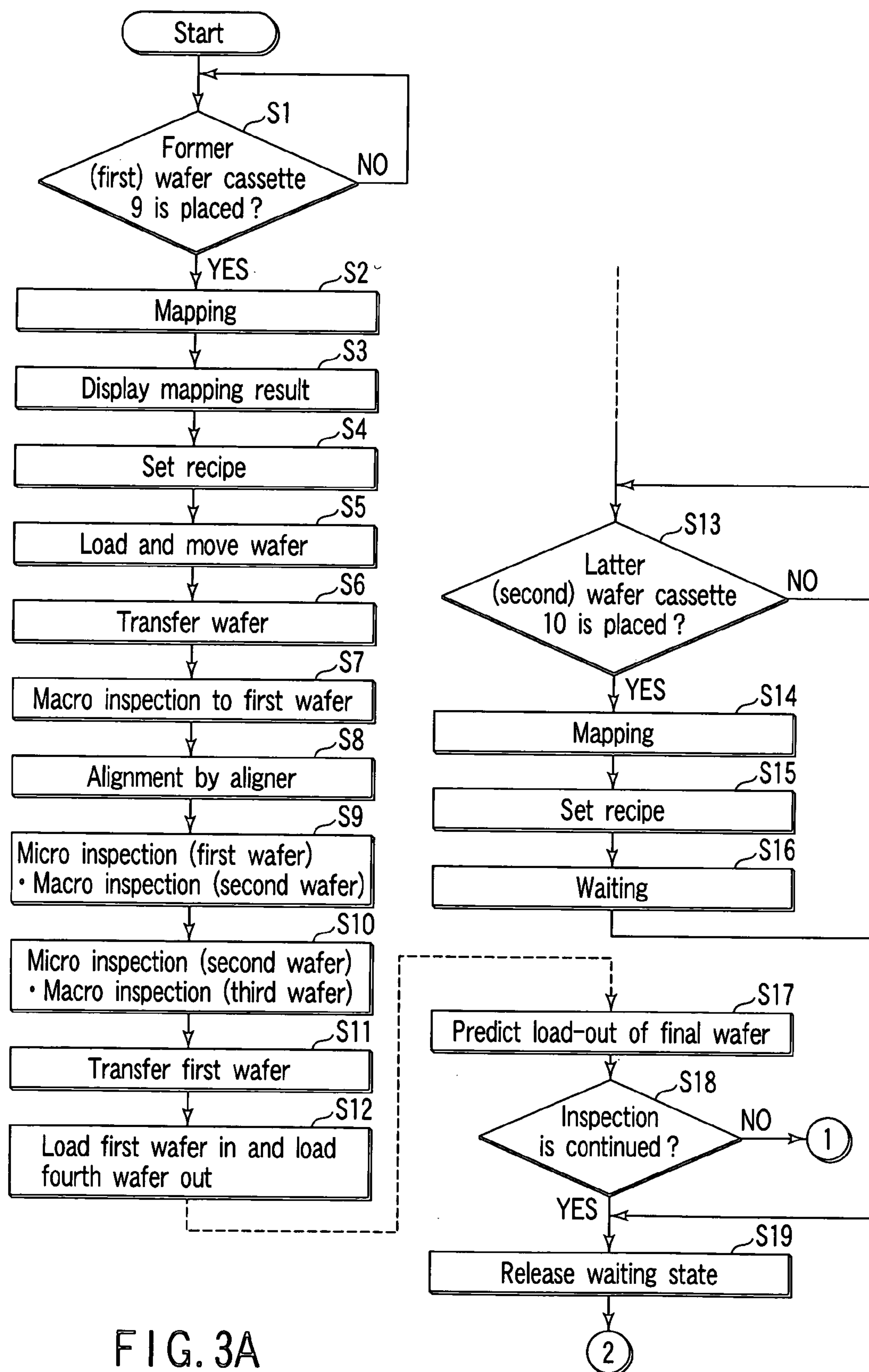
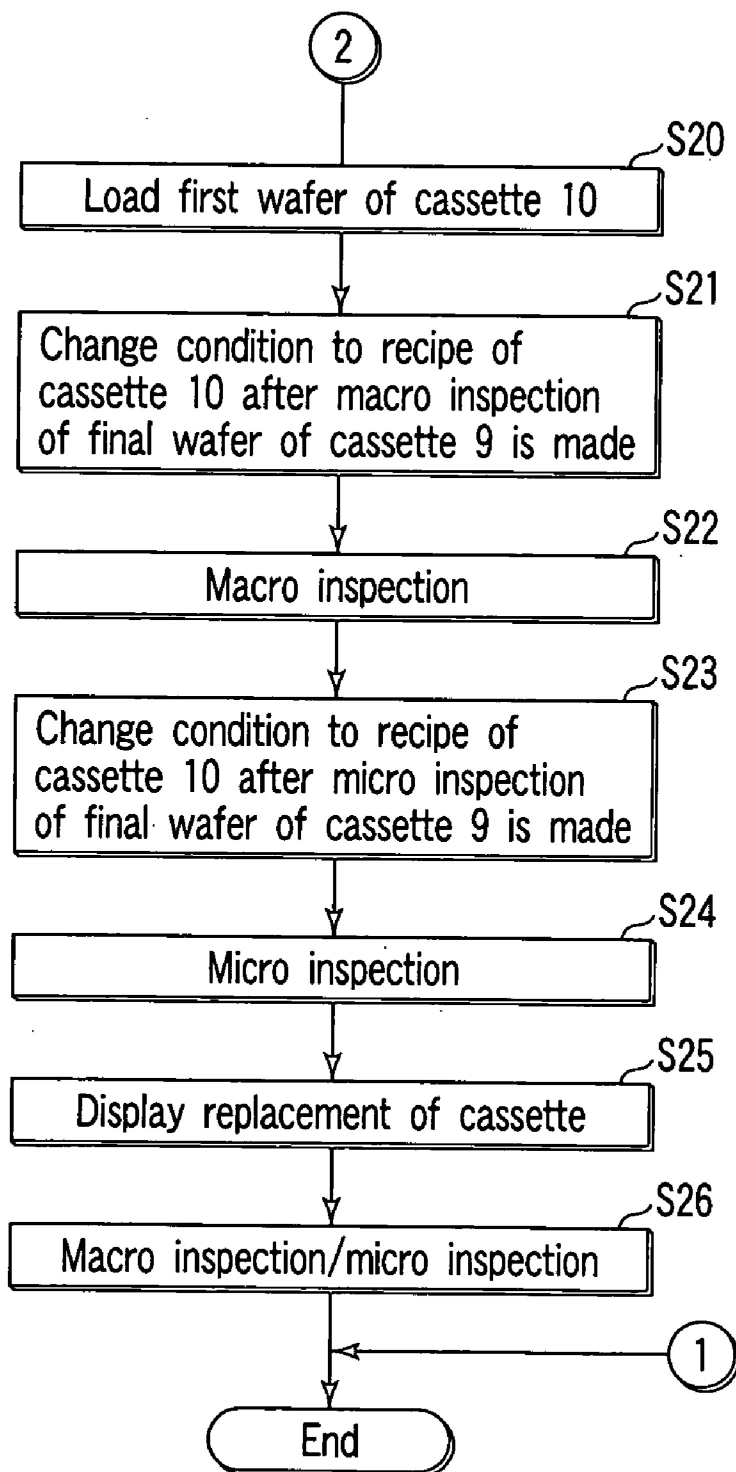


FIG. 3A



F I G. 3B

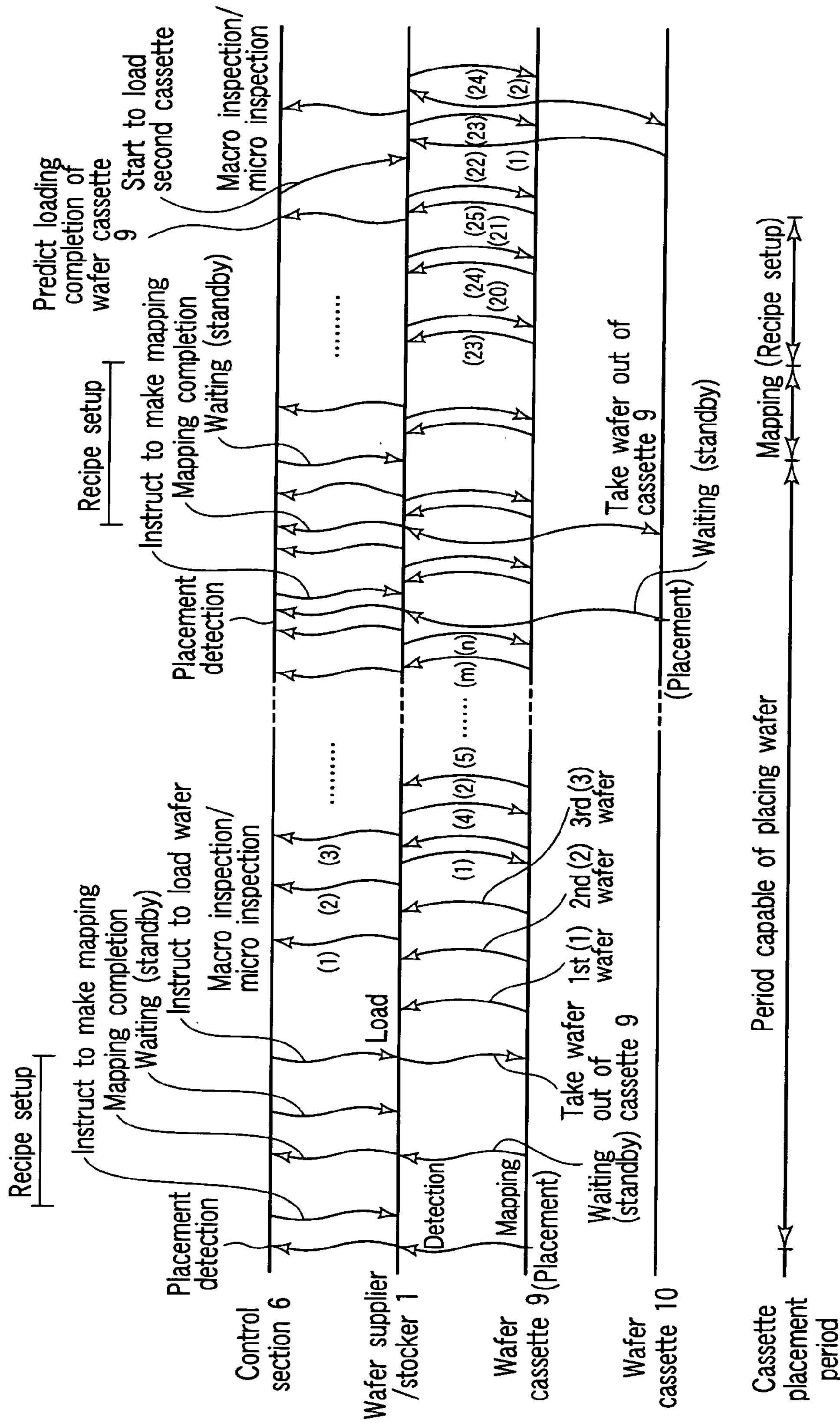


FIG. 4

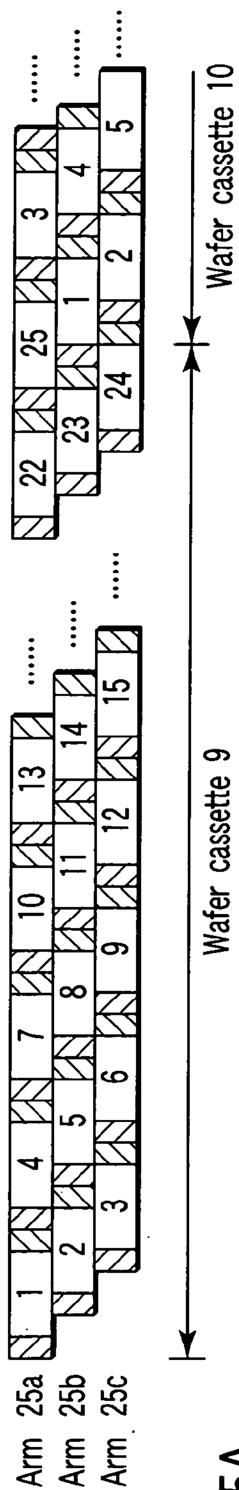


FIG. 5A

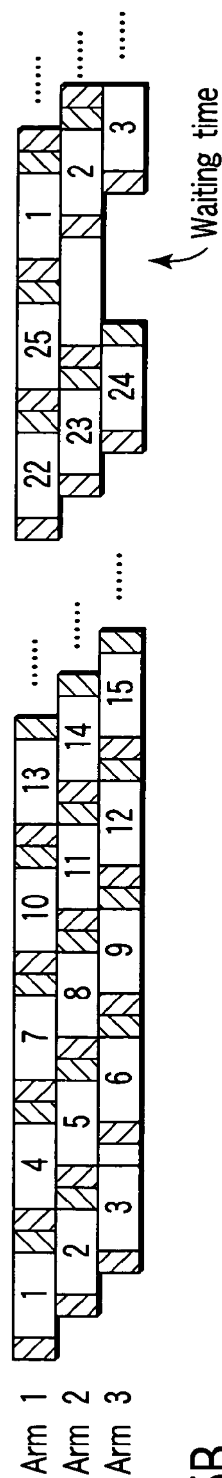


FIG. 5B

APPARATUS AND METHOD FOR INSPECTING AN INSPECTION OBJECT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is based upon and claims the benefit of priority from prior Japanese Patent Application No. 2004-085650, filed Mar. 23, 2004, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to an apparatus for inspecting an inspection object such as semiconductor wafer. In particular, the present invention relates to wafer inspection apparatus and method, which can shorten time spent for inspection when continuously inspecting several inspection objects at a cassette unit.

[0004] 2. Description of the Related Art

[0005] Conventionally, the appearance of manufacturing semiconductor wafer (hereinafter, referred to as wafer) has been inspected in the process of manufacturing a semiconductor device. An inspection apparatus is provided with a wafer loader for successively supplying an inspection object, that is, wafer from a cassette to an inspection section. A wafer cassette receiving several wafers is set on a cassette placement table of the wafer loader. These several wafers received in the wafer cassette are taken out one by one using a robot arm, and then, a predetermined inspection is made. Thereafter, the wafers are recovered to the wafer cassette using the robot arm again. The wafer placement table of the inspection apparatus has a structure capable of placing at least two wafer cassettes to enhance an efficiency of the inspection work.

[0006] According to the foregoing structure, inspection is made with respect to all wafers received in the first wafer cassette, and then, these all wafers are recovered to the cassette. Thereafter, inspection is continuously made with respect to all wafers received in the second wafer cassette.

[0007] The flow of wafer when two wafer cassettes are used in the inspection apparatus is as follows. More specifically, all wafers received in the first wafer cassette are inspected and recovered. Thereafter, wafers received in the next wafer cassette are taken out using robot, and then, carried to the inspection section.

[0008] Thus, wafer inspection is made every wafer cassette unit. In other words, wafer is not taken out of the second wafer cassette until the wafer inspected finally in the first wafer cassette is recovered to the first wafer cassette. For this reason, inspection standby (waiting) time is given, that is, time is taken to start macro inspection of the first wafer received in the second wafer cassette.

[0009] JPN. PAT. APPLN. KOKAI Publication No. 9-181144 discloses the method of shortening time spent for the replacement work of inspected cassettes. According to the method disclosed in the foregoing Publication 9-181144, it is impossible to shorten time spent for the inspection itself. However, according to an unmanned system performing the work from wafer supply to wafer processing, the processing completion time is calculated to give cassette replacement information to the worker. By doing so, it is possible to shorten time spent for the cassette replacement work.

BRIEF SUMMARY OF THE INVENTION

[0010] According to one aspect of the present invention, there is provided an apparatus for inspecting an inspection object, comprising:

[0011] several cassettes receiving several inspection objects;

[0012] a loader including a placement table for placing the cassettes, and an arm-type loader for loading in and out the inspection object received in each of the cassette; and

[0013] a control section controlling an inspection section for inspecting the inspection object and loading by the loader, and setting an inspection item in the inspection section,

[0014] an inspection object received in a former placed cassette being loaded, and thereafter, when a latter cassette is placed, an inspection object received in the latter placed cassette being continuously loaded and inspected.

[0015] According to another aspect of the present invention, there is provided a method of inspecting an inspection object, comprising:

[0016] continuously loading out several objects received in several cassette at a cassette unit, and using the object received in the original cassette in the next inspection after a predetermined inspection is made; and

[0017] setting a first inspection item of the first cassette, and thereafter, setting a second inspection item of the next cassette within a period when received objects are successively loaded out and inspected; and

[0018] loading out a final object of the first cassette, and thereafter, continuously loading out an object received in the next cassette, and making a change from the first inspection item to the second inspection item after the final object is inspected, and continuously inspecting the object.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0019] **FIG. 1** is a schematic view to explain the configuration of a loader of an inspection apparatus, that is, wafer visual inspection apparatus according to one embodiment of the present invention;

[0020] **FIG. 2** is a view to explain the structure (of the wafer loader) in the wafer appearance inspection apparatus according to one embodiment;

[0021] **FIGS. 3A and 3B** are flowcharts to explain the flow of wafer loading in the inspection according to the embodiment;

[0022] **FIG. 4** is a timing chart to explain the wafer loading in the inspection according to the embodiment; and

[0023] **FIG. 5A** is a view to explain wafer loading and inspection timing in the wafer appearance inspection apparatus according to one embodiment, and **FIG. 5B** is a view to explain conventional wafer loading and inspection timing.

DETAILED DESCRIPTION OF THE INVENTION

[0024] One embodiment of the present invention will be described below with reference to the accompanying drawings.

[0025] **FIG. 1** is a schematic view to explain the configuration of a loader of an inspection apparatus, that is, wafer visual inspection apparatus according to one embodiment of the present invention.

[0026] The wafer visual inspection apparatus is composed of loading, inspection and control sections, which are largely classified. The loading section is composed of wafer supplier/stocker **1** and arm-type loader **2**. The inspection section is composed of macro inspection section **3**, aligner **4** and microscope inspection section (micro inspection section) **5**. The control section **6** is connected with input section **7** and display section **8**.

[0027] The wafer supplier/stocker **1** includes placement tables **11** and **12** capable of placing at least two wafer cassettes **9** and **10**. The wafer supplier/stocker **1** has a vertically movable function to transfer and receive an inspection object, that is, semiconductor wafer (hereinafter, referred o as wafer) **13** with respect to the arm-type loader **2**. These wafer cassettes **9** and **10** can each receive several, for example, **25** wafers **13**. The wafer cassettes **9** and **10** are provided with sensors **14** and **15**, which make a mapping detection for sensing the presence of wafer placed and received in each slot of the cassettes, respectively.

[0028] In this embodiment, mapping is detected in a manner of relating the number of wafers received in the wafer cassette with the slot in which the wafer is received, and then, stored in the control section **6**. The inspected wafer is received in the original slot of the wafer cassette according to the mapping result.

[0029] The arm-type loader **2** is composed of cassette arm mechanism **16** (described later) for loading the wafer **13** in and out of the wafer cassettes **9** and **10**, several arms and inspection arm mechanism **17**. The inspection arm mechanism **17** loads the wafer **13** in the inspection section, that is, transfers it among macro inspection section **3**, aligner **4** and cassette arm mechanism **16** using a rotary mechanism.

[0030] The macro inspection section **3** makes macro inspection after the wafer is transferred from the inspection arm mechanism **17** to a macro inspection table. The aligner **4** makes alignment for micro inspection by the next microscope inspection section **5**. More specifically, the aligner **4** makes positioning (or alignment) based on orientation flat of the wafer **13**. Of course, the alignment may use an alignment mark given on the wafer for photolithography and dicing processes, in addition to the orientation flat.

[0031] The control section **6** controls the foregoing arm-type loader **2**, macro inspection section **3**, aligner **4** and microscope inspection section **5**. The control section **6** executes the entire sequence including loading and inspection and instructs inspection conditions. The input section **7** comprises a control panel and several keys. The input section **7** sets inspection conditions (recipe) and inputs inspection and loading instructions. The display section **8** comprises a liquid crystal display device, and displays inspection state, condition and result.

[0032] **FIG. 2** is a view to explain the structure of the wafer loader in the wafer visual inspection apparatus according to one embodiment. The arm-type loader **2** is composed of cassette arm mechanism **16** and inspection arm mechanism **17**.

[0033] The cassette arm mechanism **16** has an extensible arm **21**. The distal end of the extensible arm **21** is attached with an L-shaped fork **22** having a vacuum chuck function. The fork **22** is intruded into the wafer cassette **9** or **10** to chuck the backside of the wafer **13**. Then, the fork **22** loads the wafer **13** out of the cassette **9** or **10** to transport it to the inspection arm mechanism **17**. Moreover, the cassette arm mechanism **16** receives the inspected wafer **13** from the inspection arm mechanism, and load it in the received position (slot) of the original wafer cassette **9** or **10**. In this case, placement tables **11** and **12** each have a vertically movable function for mapping. Thus, placement tables **11** and **12** are vertically movable to the take-out position of the fork **22** in wafer cassettes **9** and **10** when the cassette arm mechanism **16** loads the wafer in and out. In place of the foregoing configuration, the arm **21** may has a vertically movable function. More specifically, when the arm **21** loads the wafer in and out of wafer cassette **9** or **10**, the fork **22** may be vertically moved in a state of fixing these wafer cassettes **9** and **10**.

[0034] If the vertically movable cassette arm mechanism **16** is used, the tip of the fork **22** is provided with a mapping sensor. The fork **22** is vertically moved, and thereby, mapping is achieved.

[0035] The cassette arm mechanism **16** further has a movable section **23** comprising linear motor and gear mechanism driven by a motor. The movable section **23** is used to move the fork **22** to the front (take-out position) of each wafer cassette **9**; **10** and to horizontally move the arm **21** to a wafer transfer position A of the inspection arm mechanism **17**.

[0036] A rotary member **24** is arranged on the intermediate position among the following positions. One is the wafer transfer position A, and another is a macro inspection position (macro inspection section) B. Another is a micro inspection position (aligner **4** arranged at the position for transferring the wafer **13** to microscope inspection section **5**) C. The rotary member **24** has a rotary function and a vertically movable function. The rotary member **24** is further provided with three arms **25*a*** to **25*c***.

[0037] These arms **25*a*** to **25*c*** are attached with forks **26*a*** to **26*c*** having a vacuum chuck function for chucking the wafer, respectively. The rotary member **24** is rotated in a state that these forks **26*a*** to **26*c*** hold the wafer **13**. By doing so, the wafer **13** held by each of the arms **25*a*** to **25*c*** is loaded while being circulated among the foregoing wafer transfer position A, macro and micro inspection positions B and C.

[0038] The foregoing macro and microscope inspection sections **3** and **5** inspect the wafer **13** one by one. The wafer **13** loaded by the cassette arm mechanism **16** is pre-aligned

when being transferred to the inspection arm mechanism **17**. In this case, the pre-alignment is lower in its accuracy as compared with the alignment by the aligner **4**. The pre-aligned **13** is loaded to the macro inspection section **3** to make macro inspection, and thereafter, loaded to the aligner **4** using the inspection arm mechanism **17**. Then, the aligner **4** aligns the wafer **13** in a predetermined direction based on the orientation flat of the wafer **13**, and thereby, a positioning error of the wafer **13** is corrected. The wafer **13** thus aligned is loaded to an observation position of the microscope inspection section **5** to make micro inspection.

[**0039**] Wafer loading in the inspection according to the embodiment will be described below with reference to a flowchart shown in **FIGS. 3A and 3B** and a timing chart shown in **FIG. 4**. In this case, inspection is continuously made using two wafer cassettes. In this embodiment, wafer cassettes **9** and **10** are each capable of receiving 25 wafers **13**.

[**0040**] First, when a worker places the wafer cassette **9** (former placing cassette) on the placement table **11** of the wafer supplier/stocker **1**, the sensor of the placement table **11** makes detection that the wafer cassette **9** is placed thereon (step S1). A detection signal (YES) is outputted to the control section **6**, and then, the control section **6** instructs mapping to the wafer supplier/stocker **1**. According to the instruction, the wafer supplier/stocker **1** makes mapping using the sensor **14**, and detects a received state of the wafer **13** in the wafer cassette **9** (step S2). Thereafter, the control section **6** gives the information to the control section **6**.

[**0041**] The control section **6** controls the display section **8** to display the mapping result (step S3). According to the display method, **25** slots of the wafer cassette are displayed, and a state of wafers received in these slots is displayed. The foregoing display state is given, and thereby, it is possible to determine a state of the slot in which the wafer received in addition to the number of received wafers at the first glance. According to this embodiment, mapping is started based on the instruction from the control section **6**; in this case, the following sequence may be employed. More specifically, the wafer supplier/stocker **1** makes detection that wafer cassettes **9** and **10** are placed, and thereafter, makes mapping immediately without waiting the instruction from the control section **6**. The wafer supplier/stocker **1** outputs the placement and the mapping result to the control section **6**.

[**0042**] The mapping information is given, and thereafter, the placement table **11** is vertically moved so that a first taken wafer **13*a*1** is positioned to the load-in position of the fork **22** of the cassette arm mechanism **16**.

[**0043**] The worker confirms on the apparatus side that the cassettes are placed, and thereafter, sets a predetermined recipe using the input section to instruct the inspection start (step S4).

[**0044**] According to the instruction, the cassette arm mechanism **16** inserts the fork **22** of the arm **21** into the wafer cassette **9** to chuck the backside of the first wafer **13*a*1**, and thereafter, to take it out. The first wafer **13*a*1** thus taken out is moved to the transfer position A of the inspection arm mechanism **17** using the movable section **23** (step S5). During the movement, the placement table **11** is moved down to a position for taking an inspection object, that is, second wafer **13*a*2**. In this case, the sensor **14** always detects the presence of the next wafer **13**, and if the detection different from the mapping result is made, an error display is made. By doing so, the drive of the apparatus is temporarily stopped inclusive of wafer loading.

[**0045**] The wafer **13*a*1** held by the fork **22** of the cassette arm mechanism **16** is transferred to the inspection arm mechanism in the transfer position A (step S6). When receiving receives the wafer **13*a*1** using the fork **26*a***, the inspection arm mechanism **17** rotates the rotary member **24** to transfer the wafer **13*a*1** to the inspection position B of the macro inspection section **3**. In the inspection position A, the wafer **13*a*1** is transferred from the fork **26*a*** to the macro inspection table to make macro inspection (step S7). In this case, the cassette arm mechanism **16** is returned to the front of the wafer cassette **9** via the movable section **23**. Then, the next wafer **13*a*2** is loaded out of the wafer cassette **9** like the foregoing case, and transferred to the fork **26*b*** of the inspection arm mechanism **17**.

[**0046**] Macro inspection is completed with respect to the first wafer **13*a*1**, and thereafter, the wafer **13*a*1** is loaded to the aligner by the inspection arm mechanism **17** (step S8). The aligner **4** rotates a rotary stage such as X, Y and θ-stages in the microscope inspection section **5** in a state of chucking and holding the wafer **13*a*1** on the rotary stage. In this state, the aligner **4** detects the edge coordinates of the wafer **13*a*1**, and further, detects to orientation flat position and positioning error.

[**0047**] The aligner **4** controls the X, Y and θ-stages to correct the foregoing orientation flat position and positioning error. The wafer **13*a*1** thus corrected is moved to the observation position of the microscope inspection section **5**, and then, the micro inspection section **5** makes micro inspection (step S9). Simultaneously, the wafer **13*a*2** held by the fork **26*b*** is loaded to the macro inspection section **3** to make macro inspection. During macro and micro inspections, a third wafer **13*a*3** is transferred from the cassette arm mechanism **16** to the fork **26*c*** of the inspection arm mechanism **17** (step S10).

[**0048**] The wafer **13*a*1** (micro inspection is already completed) is returned to the fork **26*a*** of the inspection arm mechanism **17**, and thereafter, rotated and moved to the transfer position A (step S11). In the transfer position A, The wafer **13*a*1** (micro inspection is already completed) is transferred from the fork **26*a*** to fork **22** of the cassette arm mechanism **16**. The fork **22** returns the wafer **13*a*1** to the wafer cassette **9**, and thereafter, takes out a fourth wafer **14*a*4** to transfer it to a currently empty fork **26*a*** of the inspection arm mechanism **17** (step S12). The same loading and inspection as described above are repeated after that. By doing so, the wafer **13** is continuously loaded to the transfer position of the inspection arm mechanism **17** according to the mapping-designated sequence.

[**0049**] In step S13, it is detected whether or not the wafer cassette **10** (latter placed cassette) for the next inspection is placed on the placement table **12**. According to this embodiment, in order to continuously make inspection, timing of placing the wafer cassette **10** for the next inspection is given as shown in **FIG. 4**. More specifically, any other timing may be given so long as mapping of the next inspection object cassette **10** is completed until the final wafer **13** is taken out of the wafer cassette **9** after the inspection of the wafer cassette **10**. The same timing as above is given if a new recipe is set.

[**0050**] In step S**13**, if the sensor **15** makes detection that the wafer cassette **10** is placed on the placement table **12** (YES), a detection signal is outputted to the control section **6** as an interrupt signal. When receiving the signal, the control section **6** gives an instruction to make mapping to the wafer supplier/stocker **1**. According to the instruction, the wafer supplier/stocker **1** makes mapping. Then, the wafer supplier/stocker **1** gives information relevant to a received state of the wafer **13** in the detected wafer cassette **10** to the control section **6** as mapping completion (step S**14**).

[**0051**] The worker sets inspection items relevant to the wafer received in the wafer cassette **10**, that is, recipe using the input section **7** (step S**15**). If the wafer inspected in this case has the same lot and the same specifications, the inspection is continued. The recipe is set, and thereafter, the placement table **12** is moved up. Then, the wafer cassette **10** is moved to the position of taking out a first wafer **13***b***1**, and is waiting (step S**16**).

[**0052**] The fork **22** takes out the final wafer **13***a***25** of the wafer cassette **9**, and then, the display section **8** makes a wafer cassette loading completion prediction display (step S**17**). When the wafer **13***a***25** is moved from the transfer position A to the macro inspection position B, the inspected wafer **13***a***23** is recovered to the wafer cassette **9**. In this case, it is determined whether or not the next wafer cassette **10** is placed on the placement table **12** until the foregoing completion prediction is displayed after the final wafer **13***a***25** is taken out (step S**18**). As a result, if the wafer cassette **10** is no placed (NO), the inspection ends when the final wafer **13***a***25** of the wafer cassette **9** is recovered.

[**0053**] If it is determined in step S**18** that the wafer cassette **10** is placed (YES), the waiting state of the wafer cassette **10** in step S**16** is released in the wafer supplier/stocker **1** (step S**19**). The control section **6** instructs the wafer supplier/stocker **1** to recover the final wafer **13***a***25** of the former cassette **9** and to take a first wafer **13***b***1** out of the next inspection object wafer cassette **10**. The wafer **13***b***1** is taken out by the cassette arm mechanism **16**, and chucked and held by the fork **26***b* of the inspection arm mechanism **17** (step S**20**). At this time, macro inspection is made with respect to the wafer **13***a***25** held by the fork **26***a* while micro inspection is made with respect to the wafer **13***a***24** held by the fork **26***c*. When the foregoing inspections are completed, the inspection arm mechanism **17** rotates. The control section **6** changes from the recipe for the cassette **9** into the recipe set to the wafer cassette **10** in the next macro inspection (step S**21**). Thereafter, the macro inspection is made with respect to the wafer **13***b***1** (step S**22**).

[**0054**] Micro inspection with respect to the wafer **13***a***25** is completed, and thereafter, the control section **6** changes from the recipe for the cassette **9** into the recipe set to the wafer cassette **10** in the next micro inspection (step S**23**). Thereafter, the micro inspection is made with respect to the wafer **13***b***1** (step S**24**). After that, the wafer **13** received in the wafer cassette **10** is continuously loaded to the cassette arm mechanism **16** according to mapping-designated sequence. Then, macro and micro inspections are repeated until the final wafer **13***b***25** is taken out of the cassette **10**.

[**0055**] When the wafer **13***a***25** is received in the wafer cassette **9**, the control section **6** controls the display section **8** to display information that the inspection object is transferred from the wafer cassette **9** to the wafer cassette **10** (step S**25**). Of course, buzzer sound may be used in addition to the foregoing display. According to the display, the worker removes the wafer cassette **9** from the placement table **11** and places a wafer cassette receiving the next inspection object wafers if the inspection is continued.

[**0056**] As described above, the first wafer **13***b***1** received in the second wafer cassette **10** is continuously inspected following the inspection of the final wafer **13***a***25** received in the first wafer cassette **9**. After that, the inspected wafer cassette is replaced with a non-inspected wafer cassette, and thereby, inspection is continuously carried out.

[**0057**] **FIG. 5A** shows loading and inspection timing for each arm in the wafer visual inspection apparatus of this embodiment. Arms **25***a* to **25***c* continuously hold the wafer **13** every third wafer while three wafers are loaded. For example, when loading wafers **13** of the wafer cassettes **9** and **10**, the arm **25***b* continuously holds the wafers **13** every third wafer with respect to two wafer cassettes, that is, wafer **13***a***2**, wafer **13***a***5**, wafer **13***a***8**, . . . wafer **13***a***23**, wafer **13***b***1**, wafer **13***b***4**, ...

[**0058**] On the contrary, if inspection is completed every cassette like the conventional case, a state shown in **FIG. 5B** occurs when the inspection is transferred to the next wafer cassette. More specifically, other arms **25***b* and **25***c* can not receive the wafer **13** until the wafer **13***a***25** held by the arm **25***a* is received in the wafer cassette **9**. According to the conventional method, when the inspection is transferred to the next wafer cassette **10**, wafers **13***a***23**, **13***a***24** and **13***a***25** of the former wafer cassette **9** are removed from arms **25***a* to **25***c*. Thereafter, the wafer **13***b***1** of the next wafer cassette **10** is taken out, and then, held by the fork **26***a*. After that, wafers **13***b***2** and **13***b***3** are taken out, and then, loading and inspection are carried out in the same manner as above.

[**0059**] As seen from the foregoing description, one-cycle inspection time (inspection time relevant to three wafers) of this embodiment is reduced as compared with the conventional technique. The present embodiment relates to the wafer visual inspection apparatus for performing two inspection items. Thus, the wafer visual inspection apparatus has the configuration that three wafers are loaded into the apparatus, and successively inspected. If the inspection item is more than three, or if the number of wafers stocked in the apparatus increases, reduced time increases with respect to time spent for the inspection; therefore, this is very effective.

[**0060**] According to the embodiment, when several wafer cassettes are continuously placed to inspect wafers, there is no need of waiting recovery of the final wafer of the former wafer cassette unlike the conventional case. Even if the inspection condition (recipe) is different, wafers are continuously loaded and inspected in the inspection apparatus. Therefore, it is possible to omit waiting time spent only for wafer recovery, and thus, to effectively perform the inspection. With an increase of the number of inspection wafers, the effect of reducing the work time is obtained more and more.

[**0061**] In the embodiment, both macro and micro inspections are made in the inspection section; however, the present invention is not limited to this embodiment. One of macro and micro inspections may be made, and in the micro inspection, an inspection object may be enlarged using optical microscope and electron microscope. Moreover, an

edge inspection apparatus for inspecting edge defect may be arranged. In one wafer cassette, recipe may be set so that the inspection condition is changed from a 15th wafer.

[0062] In the embodiment, the semiconductor wafer is given as the inspection object; however, the present invention is not limited to this embodiment. Various substrates such as glass substrate, crystal liquid substrate and mask substrate may be used so long as they are received in the cassette.

[0063] In the embodiment, time difference is given between timings of placing former (first) and latter (second) cassettes. For example, if two cassettes are simultaneously placed, priority is previously given to the placement table. By doing so, wafers are loaded without hindrance. Moreover, mapping is concurrently made if the control section can do it. If inspection wafers are shared into several cassettes in the same recipe setup, the number of inspection wafers are previously set, the cassette on the placement table is replaced after the number of wafers thus set is inspected. By doing so, inspection is continuously made.

[0064] According to the present invention, when the inspection object received in several cassettes is continuously inspected, the sequence is changed to reduce time spent for transfer between cassettes. Therefore, it is possible to provide an inspection apparatus, which can shorten the entire inspection time.

What is claimed is:

1. An apparatus for inspecting an inspection object, comprising:

several cassettes receiving several inspection objects;

a loader including a placement table for placing the cassettes, and an arm-type loader for loading in and out the inspection object received in each of the cassette; and

a control section controlling an inspection section for inspecting the inspection object and loading by the loader, and setting an inspection item in the inspection section,

an inspection object received in a former placed cassette being loaded, and thereafter, when a latter cassette is placed, an inspection object received in the latter placed cassette being continuously loaded and inspected.

2. The apparatus according to claim 1, wherein the arm-type loader has an inspection arm mechanism, which includes several arms for holding the inspection object and load it using a rotary mechanism in the inspection section.

3. The apparatus according to claim 2, wherein when the inspection object received in the latter cassette is continuously loaded and inspected, all arms of the inspection arm mechanism continuously hold and load the inspection object.

4. The apparatus according to claim 1, wherein the inspection section comprises:

a macro inspection section making macro visual inspection with respect to the inspection object; and

a microscope observation section receiving the inspection object after the inspection by the macro inspection section, and making micro visual inspection.

5. The apparatus according to claim 1, wherein the arm-type loader comprises the inspection arm mechanism and a cassette arm mechanism, and the cassette arm mechanism loads the inspection object in and out of the cassette.

6. The apparatus according to claim 1, wherein the placement table is provided with a sensor for making mapping detection, and makes mapping of several inspection objects received in the cassette placed on the placement table.

7. A method of inspecting an inspection object to be processed, comprising:

continuously loading out several objects to be processed received in several cassette at a cassette unit, and using the object to be processed received in the original cassette in the next inspection after a predetermined inspection is made; and

setting a first inspection item of the first cassette, and thereafter, setting a second inspection item of the next cassette within a period when received objects to be processed are successively loaded out and inspected; and

loading out a final object of the first cassette, and thereafter, continuously loading out an object to be processed received in the next cassette, and making a change from the first inspection item to the second inspection item after the final object is inspected, and continuously inspecting the object to be processed.

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