United States Patent Application Publication	20250256916
Kind Code	A1
Publication Date	August 14, 2025
Inventor(s)	MATSUZAKI; Kana et al.

CONTAINER MODULE AND FUNCTIONAL UNIT

Abstract

A container module and a functional unit which can reduce the width of a transport container are provided. A container module includes a transport container and a plurality of functional units accommodated in the transport container, wherein the functional units are disposed in an array in the transport container. All the heights of the plurality of functional units are greater than their widths in a direction in which the functional units are arrayed. Also, the functional unit is used in such a manner that a plurality of the functional units are disposed at predetermined positions in an array, and the height of the functional unit is greater than the width of the functional unit in a lateral direction in which the functional units disposed at the predetermined positions are arrayed.

Inventors: **MATSUZAKI; Kana (Nagoya-shi, Aichi, JP), YABUHANA; Masaki (Nagoya-shi, Aichi, JP), FUNAHASHI; Yoshihiro (Nagoya-shi, Aichi, JP)**

Applicant: **Niterra Co., Ltd.** (Nagoya-shi, Aichi, JP)

Family ID: **1000008613101**

Assignee: **Niterra Co., Ltd. (Nagoya-shi, Aichi, JP)**

Appl. No.: **18/857071**

Filed (or PCT Filed): **April 25, 2023**

PCT No.: **PCT/JP2023/016257**

Foreign Application Priority Data

JP	2022-075610	Apr. 29, 2022
JP	2022-181783	Nov. 14, 2022

Publication Classification

Int. Cl.: **B65D88/74** (20060101); **B01D53/14** (20060101)

U.S. Cl.:

CPC **B65D88/741** (20130101); B01D53/14 (20130101); B01D2257/404 (20130101); B01D2257/504 (20130101); B01D2257/80 (20130101)

Background/Summary

TECHNICAL FIELD

[0001] The present invention relates to a container module in which a plurality of functional units are accommodated in a transport container, and to a functional unit.

BACKGROUND ART

[0002] Patent Literature 1 discloses a prior art related to a container module in which an engine and a generator (a plurality of functional units) are arrayed and accommodated in a transport container.

CITATION LIST

Patent Literature

[0003] Patent Literature 1: JP5925340B

SUMMARY OF INVENTION

Technical Problem

[0004] The prior art has a problem that, since the width of the functional units as measured in the direction in which the functional units are arrayed is greater than the height of the functional units, the width of the transport container in which the functional units are arrayed and accommodated becomes large.

[0005] The present invention has been accomplished so as to solve this problem, and an object of the invention is to provide a container module and a functional unit which can reduce the width of a transport container.

Solution to Problem

[0006] In order to achieve this object, a container module of the present invention comprises a transport container and a plurality of functional units accommodated in the transport container, wherein the plurality of functional units are disposed in an array in the transport container, and all heights of the plurality of functional units are greater than their widths in a lateral direction in which the functional units are arrayed.

[0007] A functional unit of the present invention is used in such a manner that a plurality of the functional units are disposed at predetermined positions in an array, wherein the functional unit has a height greater than the width of the functional unit in a lateral direction in which the functional units disposed at the predetermined positions are arrayed.

Advantageous Effects of Invention

[0008] According to a first mode, the heights of all the functional units are greater than their widths in the lateral direction in which the functional units are arrayed. Therefore, it is possible to reduce the width of the transport container which accommodates the functional unit, while securing the volumes of the functional units.

[0009] According to a second mode, in the first mode, the functional units are arrayed in a line in the transport container. Therefore, the functional units can be easily disposed in and removed from the transport container.

[0010] According to a third mode, in the first or second mode, pedestals on which the functional units are disposed are provided. This facilitates installation of the functional units in the transport container.

[0011] According to a fourth mode, in the third mode, a pipe extending in the lateral direction in which the functional units are arrayed is disposed under the pedestals. Accordingly, the pipe can be easily connected to the functional units installed in the transport container.
[0012] According to a fifth mode, in the fourth mode, first joints disposed on the transport container are connected to the pipe, and second joints disposed on the functional units are connected the first joints. Therefore, connection between the functional units and the pipe is facilitated.
[0013] According to a sixth mode, in the third mode, rolling elements disposed in a portion of each pedestal with which the functional unit comes into contact are moved upward and downward in relation to the pedestal by the lifter. As a result of rubbing against a moving functional unit, the rolling elements rotate, whereby the functional unit moves in the first direction intersecting the lateral direction in which the functional units are arrayed, and the functional unit is disposed on the pedestals. Therefore, the functional unit transported to the pedestals can be moved by using the rolling elements. When the rolling elements are moved downward by using the lifter, the functional unit can be disposed on the pedestals.
[0014] According to a seventh mode, in the sixth mode, a guide located between the functional units located adjacent to each other extends in the first direction. When the functional unit is moved by using the rolling elements, the functional unit can be positioned by the guide.
[0015] According to an eighth mode, in the seventh mode, friction reducing portions for reducing frictional force acting between the guide and the functional units are provided on the guide. This facilitates movement of the functional units along the guide.
[0016] According to a nineth mode, in the third mode, the pedestals are individually provided for each of the functional units. Therefore, the functional units can be disposed in place.
[0017] According to a tenth mode, in the nineth mode, the transport container has an air inlet opening and an air outlet opening. Spaces respectively provided under the pedestals are continuous in the lateral direction in which the functional units are arrayed. The spaces communicate with at least one of the air inlet opening and the air outlet opening. The interior of the transport container can be cooled by utilizing the flow of air under the pedestals.
[0018] According to an eleventh mode, in the tenth mode, a first partition for separating the spaces provided under pedestals from a residual space within the transport container other than the spaces is provided on the pedestals. The first partition can reduce leakage of air flowing under the pedestals and secure the flow of air under the pedestals.
[0019] According to a twelfth mode, in the tenth mode, a gap is present between the pedestals located adjacent to each other. Therefore, the air flowing under the pedestals can be caused to flow into the space between the functional units located adjacent to each other, through the gap between the pedestals.
[0020] According to a thirteenth mode, in the sixth mode, stoppers restrict movements of the functional units in the first direction. Since each of the stoppers restricts movements of two of the functional units located adjacent to each other, the number of stoppers can be reduced as compared with the case where a stopper is individually provided for each functional unit.
[0021] According to a fourteenth mode, in the sixth mode, a first stopper restricts movement of a functional unit in the first direction, and a second stopper restricts movement of the functional unit in a second direction opposite the first direction. First and second restricting portions are provided on the functional unit. The first stopper and the second stopper restrict upward movement of the functional unit via the first restricting portion and the second restricting portion. Therefore, the number of stoppers can be reduced as compared with the case where a stopper is provided for each direction in which movement is restricted.
[0022] According to a fifteenth mode, in the sixth mode, a value obtained by dividing the height of the functional units by a height to an upper end of an opening of the transport container from the pedestals falls in the range of 0.9 to 0.99. Since the height of the functional units can be increased

in a range in which the functional units can be accommodated in the transport container, it is possible to secure the volume of each functional unit whose width is small as compared with the height. Therefore, many devices can be installed in the functional unit. Also, when the functional unit is placed on the pedestals or removed from the pedestals, the functional unit can be tilted upward or downward by an amount corresponding to the gap formed between the functional unit and the upper end of the opening of the transport container. Therefore, movement of the functional unit becomes easy.

[0023] According to a sixteenth mode, in the sixth mode, an end portion of each of the functional units in the first direction decreases in width in the lateral direction (in which the functional units are arrayed) toward its end in the first direction. This facilitates insertion of a functional unit between already disposed functional units.

[0024] According to a seventeenth mode, in the sixth mode, end portions of the functional units in the second direction opposite the first direction have the same width in the lateral direction, in which the functional units are arrayed. Therefore, the functional units can be disposed in a well-arranged state.

[0025] According to an eighteenth mode, in the sixth or seventh mode, a guide disposed along the pedestals and extending in the first direction is provided, and each of the functional units has a third restricting portion which engages with the guide when the functional unit moves in the first direction. The functional units can be positioned by the guide and the third restricting portion.

[0026] According to a nineteenth mode, the heigh of the functional unit is greater than the width of the functional unit in the lateral direction in which the functional units disposed at the predetermined positions are arrayed. Therefore, it is possible to reduce the width of an area occupied by the plurality of functional units arrayed laterally, while securing the volumes of the functional units. Since movement in the lateral direction is restricted as a result of engagement of the third restricting portion with a member provided at a corresponding one of the predetermined positions, positioning of the functional units is possible.

[0027] According to a twentieth mode, the heigh of the functional unit is greater than the width of the functional unit in the lateral direction in which the functional units disposed at the predetermined positions are arrayed. Therefore, it is possible to reduce the width of the area occupied by the plurality of functional units arrayed laterally, while securing the volumes of the functional units. Since the width, in the lateral direction, of an end portion of the functional unit in the first direction intersecting the lateral direction decreases toward its end in the first direction, it becomes easy for a functional unit to enter between already disposed functional units.

[0028] According to a twenty-first mode, the heigh of the functional unit is greater than the width of the functional unit in the lateral direction in which the functional units disposed at the predetermined positions are arrayed. Therefore, it is possible to reduce the width of the area occupied by the plurality of functional units arrayed laterally, while securing the volumes of the functional units. Since movement in the first direction is restricted as a result of engagement of the first restricting portion with a member provided at a corresponding one of the predetermined positions, positioning of the functional units is possible.

Description

BRIEF DESCRIPTION OF DRAWINGS

[0029] FIG. **1** is a perspective view of a container module in a first embodiment.

[0030] FIG. **2** is a block diagram of a container module.

[0031] FIG. **3** is a perspective view of a base of a transport container.

[0032] FIG. **4** is a plan view of the base of the transport container.

[0033] FIG. **5**(*a*) is a sectional view of a container module in which a functional unit is disposed in

a transport container, and FIG. **5**(*b*) is a plan view of the functional unit.
[0034] FIG. **6** is a sectional view of a container module in a second embodiment.
[0035] FIG. **7**(*a*) is a plan view of a functional unit of a container module and a base of a transport container of the container module in a third embodiment, and FIG. **7**(*b*) is a plan view of the base on which the functional unit is disposed.
[0036] FIG. **8** is a perspective view of a functional unit of a container module in a fourth embodiment.
[0037] FIG. **9** is a perspective view of a base and a functional unit of a container module in a fifth embodiment.

DESCRIPTION OF EMBODIMENTS

[0038] Preferred embodiments of the present invention will now be described with reference to the attached drawings. FIG. **1** is a perspective view of a container module **10** in a first embodiment. The container module **10** includes a transport container **11** and a plurality of functional units **19** accommodated in a transport container **11**. In the present embodiment, eight functional units **19** are disposed in the transport container **11**.
[0039] The transport container **11** is a rectangular parallelepipedic larger container which is formed mainly of steel material and can be used for freight transport. The transport container **11** loaded with articles can be transported by means of a train, a truck, a ship, or the like, and can be used as a warehouse on land. An example of the transport container **11** is a maritime transport container designed and manufactured according to ISO standards. In general, the transport container **11** is a dry container. Examples of the transport container **11** include a reinforced dry container and a dry container with auxiliaries necessary for operating the container module **10**, which are attached to an external or internal portion of the dry container.
[0040] Since the functional units **19** are accommodated in the transport container **11**, which has a mechanical strength for enduring handling at the time of shipment and storage, it is possible to assemble the container module **10** at a plant, transport the assembled container module **10** to a site as it is, and install it at the site. Therefore, it becomes possible to eliminate the necessity of a large scale construction for installing the assembled container module **10** at the site. Also, the capacity of a facility can be increased easily by stacking container modules **10** or arraying them laterally.
[0041] The transport container **11** includes a base **12** having a rectangular shape as viewed from above, a rear wall **13** provided along a longer side of the base **12**, two side walls **14** provided along shorter sides of the base **12**, a roof **15** which connects the rear wall **13** and the side walls **14**, a front door (double doors) **16** provided along a longer side of the base **12** located opposite the rear wall **13**. A portion of the front door **16** is not shown. The container module **10** is usually operated in a state in which the front door **16** is closed. In the present embodiment, each of the rear wall **13** and the side walls **14** is composed of double doors. However, as a matter of course, each of the rear wall **13** and the side walls **14** can be formed of a plate which cannot be opened and closed.
[0042] Air outlet openings **17** and air inlet openings **18** are provided in the side walls **14**. The air outlet openings **17** are located at positions lower than the air inlet openings **18**. A blower (not shown) for introducing external air into the transport container **11** is provided for each air inlet opening **18**.
[0043] The functional unit **19** is a unit of an apparatus which plays a specific role. The container module **10** achieves a specific function by combined use of a plurality of functional units **19**. The plurality of functional units **19** are arrayed from one side wall **14** of the transport container **11** toward the other side wall **14** of the transport container **11**. The functional units **19** are elongated cuboids whose sizes are approximately equal to one another. In the present embodiment, the functional units **19** are arrayed in a line in the lateral direction of the transport container **11**.
[0044] FIG. **2** is a block diagram of a container module **10**. A container module **10** which recovers carbon dioxide contained in exhaust gas generated by an exhaust gas source **20** and produces a fuel by recycling the carbon dioxide as a carbon compound will be described below as one example. No

particular limitation is imposed on the exhaust gas source **20** so long as the exhaust gas source **20** generates exhaust gas containing carbon dioxide. Examples of the exhaust gas source **20** include an electric power plant, a factory, a waste treatment facility, a natural gas field, and an oil field.

[0045] Any one of the functional units **19** provided in the container module **10** contains one or more devices selected from a removal device for removing water from exhaust gas, a separation device for separating nitrogen oxides contained in exhaust gas, a recovery device for separating carbon dioxide contained in exhaust gas and condensing the separated carbon dioxide, an electrolytic device for producing hydrogen and oxygen by electrolysis of water, a production device for producing a fuel by reducing carbon dioxide with hydrogen, a power supply (not shown) for supplying power to each device, and a compressor (not shown) for compressing a gas, thereby increasing its pressure. The fuel produced by the production device is a combustible product. Examples of the combustible product include methane, carbon monoxide, methanol, and formaldehyde.

[0046] Examples of the method for removing water (vapor) from exhaust gas in the removal device include condensation, physical absorption, and chemical reaction. Examples of common methods for removing nitrogen oxides from exhaust gas in the separation device are a wet method using caustic soda or the like and a dry method using an NOx removal catalyst and a reducing agent to reduce nitrogen oxides to nitrogen. Removal of water of exhaust gas by the removal device and removal of nitrogen oxides from exhaust gas make it possible to secure an efficiency of condensation of carbon dioxide by the recovery device.

[0047] A first mixture gas containing carbon dioxide separated and recovered from exhaust gas in the recovery deice is supplied to the production device. In the production device, for example, a catalyst is used to reduce the activation energy, thereby proceeding a chemical reaction from carbon dioxide to fuel.

[0048] The first mixture gas may contain impurities other than carbon dioxide in an amount of 10 vol % or more of the first mixture gas. It is preferred that the amount of impurities contained in the first mixture gas is small because the purity of fuel contained in a second mixture gas discharged from the production device increases. However, this requires a complex device for separating impurities from the first mixture gas. Accordingly, from the viewpoint of simplification of the container module **10**, a certain degree of mixing of impurities is permissible.

[0049] Examples of the method for electrolyzing water in the electrolytic device include electrolysis of alkaline water, electrolysis of water by the mediation of a solid polymer electrolyte, and electrolysis of high-temperature steam by the mediation of a solid oxide electrolysis cell (SOEC). High-temperature steam electrolysis is preferable to alkaline water electrolysis and solid polymer electrolyte water electrolysis because it can produce a large amount of hydrogen with less power. In the case where the electrolytic device performs high-temperature steam electrolysis using SOEC and heat of chemical reaction generated by the production device is used to generate steam for the high-temperature steam electrolysis, the energy efficiency of the container module **10** increases. Therefore, high-temperature steam electrolysis is preferred.

[0050] In the container module **10**, the functional units **19** are disposed in such a manner that a functional unit which generates the largest amount of heat and a functional unit which generates the smallest amount of heat are located adjacent to each other. An example of the functional unit which generates the largest amount of heat is a functional unit containing the electrolytic device. Since the functional unit which generates the largest amount of heat and the functional unit which generates the smallest amount of heat are located adjacent to each other, thanks to exchange of heat between the two functional units, it is possible to promote the radiation of heat from the functional unit which generates the largest amount of heat or to preheat a raw material used by the functional unit which generates the smallest amount of heat.

[0051] Although the second mixture gas discharged from the production device is allowed to contain, in addition to fuel, hydrogen and the components of the first mixture gas, the amount of

gases which are contained in the second mixture gas and are other than fuel is preferably equal to or less than 45 vol % of the amount of the second mixture gas.

[0052] It is preferred that the second mixture gas produced by the container module **10** is utilized by a facility in the site which contains the exhaust gas source **20**, because the cost associated with transport of the gas can be reduced. Since the size of the container module **10** can be reduced by simplifying it, a space necessary for installing the container module **10** can be reduced. Since the container module **10** can be individually installed for each exhaust gas source **20**, carbon dioxide discharged from each exhaust gas source **20** can be individually recycled for the exhaust gas source **20** as a carbon source. The container module **10** can reduce emission of carbon dioxide, while producing a fuel of the minimum quality required for the use of the fuel by facilities in the site containing the exhaust gas source **20**, rather than producing a fuel for sale.

[0053] FIG. **3** is a perspective view of the base **12** of the transport container **11**. In FIG. **3**, a floor board **25** partially removed by a break line is shown. Here, the front door **16** side will be referred to as the front side, and the rear wall **13** side will be referred to as the rear side.

[0054] In the transport container **11**, a plurality of pedestals **21** extending in a front-rear direction intersecting the rear wall **13** are provided on the base **12** at predetermined intervals in the lateral direction. A plurality of connection portions **22** which connect the pedestals **21** are provided at predetermined intervals in the front-rear direction. The pedestals **21** and the connection portions **22** provided in a lattice pattern are supported by a plurality of legs **23** provided on the base **12** in a scattered manner. As a result, an under-pedestal space (a space under the pedestals) **24** is provided between the pedestals **21** and the base **12**. The floor board **25** is disposed on the connection portions **22**. The top surfaces of the pedestals **21** are located at a position higher than the floor board **25**. One functional unit **19** is disposed on a pair of pedestals **21**.

[0055] The under-pedestal spaces **24** provided under the pedestals **21** are continuous in the lateral direction in which the functional units **19** are arrayed. First partitions **25***a* are provided between the pedestals **21** and the front door **16** in a closed state (see FIG. **1**). The first partitions **25***a* close the front sides of the under-pedestal spaces **24**. First partitions **25***b* for closing the rear sides of the under-pedestal spaces **24** are provided between the rear wall **13** and the pedestals **21**. The first partitions **25***a* and **25***b* are successively provided in the lateral direction of the pedestals **21** and the connection portions **22** and separate the under-pedestal spaces **24** from an above-pedestal space **42** (see FIG. **5**(*a*)), which is a residual space in the transport container **11** other than the under-pedestal spaces **24**. The above-pedestal space **42** is a space within the transport container **11** above the pedestals **21**. The partitions **25***a* and **25***b* prevent flow of air between the above-pedestal space **42** and the under-pedestal spaces **24**.

[0056] A plurality of pipes **26** are provided between the base **12** and the pedestals **21**. The pipes **26** are pipes through which liquid and gas (raw materials and products of a chemical reaction and a purification process performed by the functional unit **19**) and coolant for colling the functional units **19** flow. Wiring (not shown) is provided along the pipe **26**. The wiring is composed of electric wires for supplying electric power to the functional units **19**. The pipe **26** and the wiring extend in the lateral direction in which the functional units **19** are arrayed. Pipes **27** branching from the pipes **26** extend forward along the pedestals **21**. The wiring is disposed along the pipes **27**. First joints **28** connected to the pipes **27** are disposed rearward of the first partitions **25***a* to be located near the first partitions **25***a*. Joints (not shown) connected to the wiring are also disposed near the first partitions **25***a*. Although the first joints **28** appear on the upper surface of the floor board **25**, they are provided at a position lower than the top surfaces of the pedestals **21**.

[0057] A plurality of rolling elements **29** are disposed on a portion (top surface) of each pedestal **21** with which a corresponding functional unit **19** contacts. The rolling elements **29** rotate in the front-rear direction when the functional unit **19** rubs against the rolling elements **29**. The rolling elements **29** are provided in a scattered manner over the entire length of the pedestal **21** in the front-rear direction. Examples of the rolling elements **29** include balls and rollers. The rolling elements **29** are

moved upward and downward in relation to the pedestal **21** by a lifter (not shown) disposed below the rolling elements **29**. An example of the lifter is an elastic tube to which a fluid such as air or oil is supplied. The tube is disposed below the rolling elements **29** to extend along the pedestal **21**.

[0058] When the fluid is supplied to the tube of the lifter, the tube expands so that the rolling elements **29** move upward and the rolling elements **29** partially protrude upward from the top surface of the pedestal **21**. When a transported functional unit **19** is placed on the pedestal **21** and is then pushed toward the rear side (first direction), the functional unit **19** rubs against the rolling elements **29**, whereby the rolling elements **29** rotate. Therefore, it is possible to move the functional unit **19** in the first direction along the pedestal **21** by applying a small force to the functional unit **19**.

[0059] Stoppers **30** are provided between the rear ends of the pedestals **21** and the rear wall **13**. Rubber and synthetic resins are examples of the material of the stoppers **30**. In the present embodiment, the stopper **30** are attached to the rear wall **13**. Each single stopper **30** is located rearward of two pedestals **21** located adjacent to each other. When the functional unit **19** moving in the first direction reaches the stopper **30**, the functional unit **19** hits against the stopper **30**, whereby movement of the functional unit **19** is restricted. The stopper **30** buffers the impact produced when the functional unit **19** hits against the stopper **30**. Since one stopper **30** restricts movements of two functional units **19** located adjacent to each other, the number of the stoppers can be reduced as compared with the case where a stopper is individually provided for each functional unit **19**.

[0060] A support portion **31** is provided between the pedestals **21** located adjacent to each other. The support portion **31** is a member extending in the front-rear direction along the pedestals **21** and is supported by legs **23**. A guide **32** is provided on the support portion **31**. The guide **32** includes a plurality of shafts **33** extending upward from the support portion **31** and rollers **34** provided on the shafts **33**. When the support portion **31** is viewed from above, a line connecting the shafts **33** sequentially from the front side toward the rear side of the support portion **31** has a zigzag shape. The rollers **34** are provided at a position higher than the rolling elements **29**. The guide **32** restricts movement of a corresponding functional unit **19** in the lateral direction when the rolling elements **29** rotate and the functional unit **19** moves forward or rearward. The guide **32** enables positioning of the functional unit **19** in the lateral direction.

[0061] When the rolling elements **29** rotate and the functional unit **19** moves, the functional unit **19** rubs against the rollers **34**, whereby the rollers **34** rotate around the shafts **33**. Since the rollers **34** function as friction reducing portions for reducing frictional forces acting between the guide **32** and the functional unit **19**, it becomes easier to move the functional unit **19** forward and rearward along the guide **32**.

[0062] When the fluid is removed from the tube of the lifter after the functional unit **19** having been moved in the first direction (rearward), the tube shrinks, whereby the rolling elements **29** move downward, and all the rolling elements **29** are located under the top surface of the pedestal **21**. As a result, the functional unit **19** comes into engagement with the pedestal **21**, and the functional unit **19** is fixed to the pedestal **21** by the frictional force between the functional unit **19** and the pedestal **21**. After having placed the functional unit **19** on the pedestal **21**, a fixture (not shown) for mechanically fixing the functional unit **19** may be attached to the pedestal **21**, the floor board **25**, and/or the support portion **31** so as to prevent the functional unit **19** from moving in the second direction (forward).

[0063] When the functional unit **19** fixed to the pedestal **21** is removed from the transport container **11**, the fluid is supplied to the tube of the lifter so as to expand the tube, thereby raising the rolling elements **29**. Since the rolling elements **29** rotate when the functional unit **19** rubs against the rolling elements **29**, the functional unit **19** can be moved forward (in the second direction) along the pedestal **2**. As a result, the functional unit **19** can be removed from the top of the pedestal **21**.

[0064] FIG. **4** is a plan view showing, on an enlarged scale, a portion of the base **12** of the transport container **11**. In the transport container **11**, gaps **36** are provided between each support portion **31**

and the pedestals **21** located adjacent to each other with the support portion **31** intervening therebetween. Air within the transport container **11** flows between the under-pedestal spaces **24** (see FIG. **3**) and the above-pedestal space **42** (see FIG. **5**(*a*)) through the gaps **36**.

[0065] FIG. **5**(*a*) is a sectional view of the container module **10** in which a functional unit **19** is disposed in the transport container **11**. FIG. **5**(*a*) shows the functional unit **19** partially removed by a break line. FIG. **5**(*b*) is a plan view of the functional unit **19** as viewed from above.

[0066] The functional unit **19** disposed in the transport container **11** has a rear face **38** which faces the rear wall **13** of the transport container **11**. Second partitions **39** projecting rearward are provided on the rear face **38** of the functional unit **19**. The second partitions **39** extends in the height direction along the rear face **38** of the functional unit **19**, excluding a region where the rear face **38** hits against the stopper **30**. In the present embodiment, the two second partitions **39** are provided on the rear face **38** such that they are separated from each other and extend along side faces **40** of the functional unit **19**.

[0067] The air inlet openings **18** (see FIG. **1**) are provided in the side wall **14** to be located at a position higher than the top surfaces of the pedestals **21**. When the blowers provided at the air inlet openings **18** are operated, air on the outside of the transport container **11** enters the above-pedestal space **42**. The air flows downward along the functional unit **19** and enters the under-pedestal spaces **24** through the gaps **36** (see FIG. **4**). The second partitions **39** prevents the wind flowing along the side faces **40** of the functional unit **19** from flowing toward the rear face **38** of the functional unit **19**. Since the wind can be blown against the side faces **40**, which are larger in area than the rear face **38** of the functional unit **19**, radiation of heat from the side faces **40** of the functional unit **19** can be promoted.

[0068] Sinc the first partitions **25***a* and **25***b* separate the under-pedestal spaces **24** and the above-pedestal space **42** from each other, the first partitions **25***a* and **25***b* can reduce leakage of air flowing under the pedestals **21** and secure the flow of air under the pedestals **21**. Since the under-pedestal spaces **24** are continuous in the lateral direction, the wind flows to the outside of the transport container **11** through the air outlet openings **17**. Also, since the first partitions **25***a* close the front sides of the under-pedestal spaces **24**, even in a state in which the front door **16** is opened, it is possible to reduce leakage of air flowing through the under-pedestal spaces **24** and cause wind to flow through the under-pedestal spaces **24**.

[0069] When a door (not shown) provided on a front face **41** of the functional unit **19** is opened, second joints **43** connected to the pipes used for supplying liquid and gas to the functional unit **19** and discharging liquid and gas from the functional unit **19** appear. Joints (not shown) connected to the wiring used for supplying electric power to the functional unit **19** and transmitting signals also appear. The second joints **43** are connected to the first joints **28** disposed on the transport container **11**. The joints connected to the wiring are also connected to the joints disposed on the transport container **11**. Thus, the connection between the functional unit **19** and the pipes **26** and the wiring can be easily established in a state in which the functional unit **19** is accommodated in the transport container **11**.

[0070] The distance between the two side faces **40** of each functional unit **19** (the width W of each functional unit **19**) is the same among all the functional units **19**. The distance between the two pedestals **21** on which each functional unit **19** is placed are the same among all the pedestals **21**. Since the dimensions are standardized, any functional unit **19** can be placed on any pedestals **21**. Accordingly, functional units **19** freely combined can be disposed at any position within the transport container **11**.

[0071] The height T**1** of all the functional units **19** is greater than the width W of the functional unit **19** in the direction in which the functional units **19** are arrayed (the lateral direction). Therefore, it is possible to reduce the width of the base **12** of the transport container **11** in which a plurality of functional units **19** are disposed, while securing the volumes of the functional units **19**. Accordingly, the area of a site necessary for installation of the container module **10** can be reduced.

[0072] The container module **10** is configured such that a value obtained by dividing the height T**1** of the functional units **19** by a height T**2** of an upper end **35** of the opening of the transport container **11**, as measured from the pedestals **21**, is 0.9 to 0.99. Since the height T**1** of the functional units **19** can be increased in a range in which the functional units **19** can be accommodated in the transport container **11**, it is possible to secure the volume of each functional unit **19** whose width is small as compared with the height T**1**. Therefore, it is possible to install an elongated device in the functional unit **19** and install many devices in the functional unit **19**. Also, when the functional unit **19** is placed on the pedestals **21** or removed from the pedestals **21**, the functional unit **19** can be tilted upward or downward by an amount corresponding to the gap formed between the functional unit **19** and the upper end **35** of the opening of the transport container **11**. Therefore, movement of the functional unit **19** becomes easy.

[0073] A second embodiment will be described with reference to FIG. **6**. In the first embodiment, there has been described the case where the stoppers **30** for restricting rearward movements of the functional units **19** are provided. In contrast, in the second embodiment, there will be described the case where stoppers **46** and **49** for restricting upward movements of the functional units **19** in addition to forward and rearward movements of the functional units **19** are provided. The stoppers **46** and **49** are provided on the pedestals **21** in place of the stoppers **30** in the first embodiment. Portions identical to the portions having been described in the first embodiment are denoted by the same reference signs and their descriptions will not be repeated.

[0074] FIG. **6** is a sectional view of the container module **10** in the second embodiment. Each functional unit **19** has a first restricting portion **44** provided on the rear face **38**. The first restricting portion **44** protrudes rearward (in the first direction). Each functional unit **19** has a second restricting portion **45** on the front face **41**. The second restricting portion **45** protrudes forward (in the second direction).

[0075] The first stopper **46** is disposed above a rear end portion of each pedestal **21**. The first stopper **46** has a first portion **47** which butts against the rear of the first restricting portion **44** when the first restricting portion **44** butts against the first stopper **46**, and a second portion **48** which engages with or comes close to the top of the first restricting portion **44** when the first restricting portion **44** butts against the first stopper **46**.

[0076] After the first restricting portion **44** having butted against the first stopper **46**, the second stopper **49** is attached to a front end portion of the pedestal **21**. The second stopper **49** has a first portion **50** which engages with or comes close to the front of the second restricting portion **45** and a second portion **51** which engages with or comes close to the top of the second restricting portion **45**.

[0077] Since the first stopper **46** and the second stopper **49** engage with the first restricting portion **44** and the second restricting portion **45**, thereby restricting the forward, backward, and upward movements of the functional unit **19**, the number of stoppers can be reduced as compared with the case where a stopper is provided for each direction in which movement is restricted.

[0078] In the second embodiment, the case where the first restricting portion **44** protrudes in the first direction, and the second restricting portion **45** protrudes in the second direction has been described. However, the present invention is not limited thereto. Of course, a first restricting portion **44** which is concave in the second direction may be provided on each functional unit **19** and a second restricting portion **45** which is concave in the first direction may be provided on each functional unit **19**. In this case, the first stopper **46** is formed to have a shape for engagement with the concave of the first restricting portion **44** and the second stopper **49** is formed to have a shape for engagement with the concave of the second restricting portion **45**.

[0079] A third embodiment will be described with reference to FIG. **7**. In the first embodiment, there has been described the case where each functional unit **19** has a rectangular shape as viewed from above. In contrast, in the third embodiment, a functional unit **19** having a non-rectangular shape will be described. Notably, portions identical to the portions having been described in the

first embodiment are denoted by the same reference signs and their descriptions will not be repeated.

[0080] FIG. **7**(*a*) is a plan view of a functional unit **19** of the container module **10** and the base **12** of the transport container **11** of the container module **10** in the third embodiment as viewed from above. The transport container **11** has stoppers **52** which are present between the rear ends of the pedestals **21** and the rear wall **13**. The stoppers **52** are members formed of rubber or synthetic resin. The stoppers **52** are attached to the rear wall **13**. Each stopper **52** is located rearward of two pedestals **21** located adjacent to each other. Each stopper **52** has two sloping surfaces **53**. Due to the sloping surfaces **53**, the width of the stopper **52** decreases toward its end in the second direction (toward the forward side).

[0081] An end portion **55** of the functional unit **19** in the first direction has two sloping surfaces **54** which connect the two side faces **40** and the rear face **38**. Due to the sloping surfaces **54**, the width of the end portion **55** decreases toward its end in the first direction (toward the rear side). The width W of an end portion **56** of the functional units **19** in the second direction is constant.

[0082] FIG. **7**(*b*) is a plan view of the base **12** on which a functional unit **19** is disposed. When the sloping surfaces **54** of the functional unit **19** moving in the first direction (rearward) on the pedestals **21** come to engagement with the sloping surfaces **53** of the stoppers **52**, movement of the functional unit **19** in the first direction is restricted. Since one stopper **52** restricts movements of two functional units **19** located adjacent to each other, the number of stoppers can be reduced, as compared with the case where a stopper is individually provided for each functional unit **19**.

[0083] Since the width of the end portion **55** of the functional unit **19** in the first direction decreases toward its end in the first direction, it becomes easier to insert the functional unit **19** between functional units **19** disposed on the pedestals **21** such that a space corresponding to one functional unit remains therebetween. Furthermore, since the sloping surfaces **54** of the functional unit **19** connect the side faces **40** and the rear face **38**, the volume of the functional unit **19** can be increased, as compared with the case where sloping surfaces connecting the front face **41** and the rear face **38** are provided.

[0084] A fourth embodiment will be described with reference to FIG. **8**. In the third embodiment, there has been described the case where the functional unit **19** has the end portion **55** having two sloping surfaces **54** connecting the side faces **40** and the rear face **38** of the functional unit **19**. In contrast, in the fourth embodiment, there will be described the case where an end portion **57** having two sloping surfaces **58** is provided on a functional unit **19**. Notably, portions identical to the portions having been described in the first embodiment are denoted by the same reference signs and their descriptions will not be repeated.

[0085] FIG. **8** is a perspective view of a functional unit **19** of a container module in the fourth embodiment. Arrow I of FIG. **8** shows the first direction of the container module, and arrow II shows the second direction of the container module. An end portion **57** of the functional unit **19** in the first direction is provided on a lower portion of the rear face **38** of the functional unit **19**. The end portion **57** has sloping surfaces **58** sloping such that the sloping surfaces approach each other while extending in the first direction. Since the sloping surfaces **58** are connected to the side faces **40** of the functional unit **19**. Therefore, the width of the end portion **57** of the functional unit **19** decreases toward its end in the first direction.

[0086] Since the width of the end portion **57** of the functional unit **19** decreases toward its end in the first direction, it becomes easier to insert the functional unit **19** between functional units **19** disposed on the pedestals **21** such that a space corresponding to one functional unit remains therebetween. Furthermore, since the end portion **57** of the functional unit **19** protrudes from the functional unit **19**, it is unnecessary to reduce the volume of the functional unit **19**, unlike the third embodiment.

[0087] A fifth embodiment will be described with reference to FIG. **9**, in the first to fourth embodiments, there has been described the case where, when each functional unit **19** is moved in

the first direction, the side faces of the functional unit **19** are guided by the guides **32**. In contrast, in the fifth embodiment, there will be described the case where third restricting portions **60** provided on each functional unit **19** are guided by guides **59**. Notably, portions identical to the portions having been described in the first embodiment are denoted by the same reference signs and their descriptions will not be repeated.

[0088] FIG. **9** is a perspective view of a functional unit **19** and the base **12** of the container module **10** in the fifth embodiment. Arrow I of FIG. **9** shows the first direction of the container module, and arrow II shows the second direction of the container module. Although one set of pedestals **21** disposed on the base **12** are shown in FIG. **9**, the connection portions **22**, the floor board **25**, etc. are not shown in the drawing.

[0089] The guides **59** are disposed on the base **12** to be located on the laterally inner side of the pedestals **21**. The guides **59** are a pair of rails extending in the front-rear direction. The height of the guides **59** is smaller than the height of the pedestals **21**, and the distance between the guides **59** in the lateral direction decreases toward their ends in the first direction.

[0090] The functional unit **19** has third restricting portions **60** which are provided on the bottom and are located on the laterally inner side of the guides **59** when the functional unit **19** is disposed on the pedestals **21**. The third restricting portions **60** are a pair of rails extending in the front-rear direction of the functional unit **19**. The distance between the two third restricting portions **60** in the lateral direction decreases toward their ends in the first direction.

[0091] Since the distance between the guides **59** in the lateral direction decreases toward their ends in the first direction and the distance between the third restricting portions **60** in the lateral direction also decreases toward their ends in the first direction, when the functional unit **19** is moved in the first direction and disposed on the pedestals **21**, the third restricting portions **60** can be easily disposed on the inner side of the guides **59**. Also, when the functional unit **19** is disposed on the pedestals **21**, the guides **59** engage with the third restricting portions **60**, whereby movement of the functional unit **19** in the lateral direction and movement of the functional unit **19** in the first direction are restricted. Furthermore, since the third restricting portions **60** protrude from the bottom of the functional unit **19**, it is unnecessary to reduce the volume of the functional unit **19**.

[0092] Notably, in the fifth embodiment, there has been described the case where the distance between the guides **59** in the lateral direction decreases toward their ends in the first direction, and the distance between the third restricting portions **60** in the lateral direction also decreases toward their ends in the first direction. However, the present invention is not limited thereto. It is of course possible to decrease the distance between the guides **59** in the lateral direction toward their ends in the second direction and also decrease the distance between the third restricting portions **60** in the lateral direction toward their ends in the second direction. In this case, the positions of the guides **59** and the third restricting portions **60** are set such that, when the functional unit **19** is disposed on the pedestals **21**, the third restricting portions **60** are located on the outer side of the guides **59** in the lateral direction and between the guides **59** and the pedestals **21**. In this case as well, when the functional unit **19** is moved in the first direction and disposed on the pedestals **21**, the third restricting portions **60** can be easily disposed between the guides **59** and the pedestals **21**.

[0093] In the fifth embodiment, the case where the guides **59** and the third restricting portions **60** are composed of rails has been described. However, the present invention is not limited thereto. It is of course possible to dispose guides **59** composed of rollers along the pedestals **21** in a scatter manner as in the case of the first embodiment, or to provide rollers on the guides **59** and the third restricting portions **60**. Third restricting portions **60** composed of rollers may be disposed on the functional unit **19** in a scattered manner.

[0094] In the fifth embodiment, the case where the guides **59** are disposed on the inner side of the pair of pedestals **21** in the lateral direction has been described. However, the present invention is not limited thereto. It is of course possible to decrease the spacing between the pair of pedestals **21** in the lateral direction without changing the width of the functional unit **19**, dispose the guides **59**

on the outer side of the pedestals **21** in the lateral direction, and provide the third restricting portions **60** on the functional unit **19** at positions corresponding to the guides **59**. In this case as well, the same action and effect as the container module in the fifth embodiment can be realized.

[0095] Although the present invention has been described on the basis of embodiments, it can be easily surmised that the present invention is not limited to the above-described embodiments, and various improvements and modifications can be made without departing from the purpose of the present invention.

[0096] In the embodiments, there has been described the container module **10** which produces combustible products by using, as raw materials, carbon dioxide obtained from exhaust gas and hydrogen obtained from water. However, the present invention is not limited thereto. It is of course possible to provide container modules **10** which play other roles. Examples of other container modules **10** include a module for producing hydrogen and oxygen by using water as a raw material and a module dedicated to purification of carbon dioxide from exhaust gas.

[0097] In the embodiments, there has been described the case where eight functional units **19** are installed in the transport container **11** having the pedestals **21** disposed therein and allowing installation of up to eight functional units **19**. However, the present invention is not limited thereto. The number of functional units **19** installed in the transport container **11** is freely set in the range of 2 to 8 in accordance with the purpose of the container module **10**. The transport container **11** may have vacancies on some pedestals **21**. The maximum number of functional units **19** that can be installed in the transport container **11** is not limited to 8 and may be set freely.

[0098] In the embodiments, there has been described the case where the rollers **34** are provided on the guide **32** located between the functional units **19**. However, the present invention is not limited thereto. It is of course possible to replace the guide **32**, having the rollers **34**, with a rail extending in the front-rear direction. In this case as well, it is possible restrict the position (in the lateral direction) of the functional unit **19** disposed on the pedestals **21** by the guide composed of the rail.

[0099] Furthermore, it is of course possible to provide, on at least portions of the side surfaces of the rail (the guide), portions (friction reducing portions) formed of a material which is small in the coefficient of friction with the functional unit **19** and is excellent in slipperiness. Examples of the material which is excellent in slipperiness include fluororesin, ultra high molecular weight polyethylene, and polyacetal resin. In this case as well, the friction reducing portions facilitate forward and rearward movements of the functional unit **19** along the guide. The rail may be formed of a material which is excellent in slipperiness.

[0100] In the embodiment, there has been described the case where the gaps **36** from which the air flowing through the under-pedestal spaces **24** flows out are provided between the pedestals **21** and the support portion **31**. However, the present invention is not limited thereto. It is of course possible to provide the gaps **36** between the floor board **25** and the pedestals **21** or to form holes in the floor board **25** or the support portion **31** and use the holes as the gaps **36**. The sizes and shapes of the gaps **36** and the holes can be freely set.

[0101] In the embodiments, there has been described the case where the air outlet openings **17** are formed in the side wall **14** of the transport container **11** at a position lower than the pedestals **21**. However, the present invention is not limited thereto. The air outlet openings **17** may be provided in the rear wall **13** or the front door **16**. The air outlet openings **17** may be provided in the side wall **14**, the rear wall **13**, or the front door **16** at a position higher than the pedestals **21**, or the air outlet openings **17** may be provided in the roof **15**.

[0102] In the embodiments, there has been described the case where the air inlet openings **18** are formed in the side wall **14** of the transport container **11** at a position higher than the top surfaces of the pedestals **21**. However, the present invention is not limited thereto. The air inlet openings **18** may be provided in the rear wall **13**, the front door **16**, or the roof **15**. Also, the air inlet openings **18** may be provided in the side wall **14**, the rear wall **13**, or the front door **16** at a position lower than the pedestals **2**.

[0103] In the embodiments, there has been described the case where blowers (not shown) are provided at the air inlet openings **18**. However, the present invention is not limited thereto. It is of course possible to provide blowers at the air outlet openings **17** so as to release the air within the transport container **11** to the outside of the transport container **11** through the air outlet openings **17**. The transport container **11** may be configured such that blowers for introducing external air are provided at the air inlet openings **18** and blowers for releasing air are provided at the air outlet openings **17**.

[0104] In the embodiments, there has been described the case where the first partitions **25***a* and **25***b* are disposed at the forward and reward ends of the pedestals **21**. However, the present invention is not limited thereto. Of course, a plurality of first partitions **25***a* and **25***b* continuous in the lateral direction can be provided at intermediate positions under the pedestals **21**, extending in the front-rear direction, such that a predetermined spacing in the front-rear direction is provided therebetween. In this case as well, under-pedestal spaces **24** which are sandwiched between the plurality of first partitions **25***a* and **25***b* and are continuous in the lateral direction can be formed under the pedestals **21** as in the case of the embodiments.

[0105] In the embodiments, there has been described the case where external air is introduced into the transport container **11** so as to air-cooling the functional units **19**. However, the present invention is not limited thereto. It is of course possible to dispose a radiator at each air inlet opening **18**. External air is introduced into the air inlet opening **18** so as to cool circulating water flowing through the radiator. The cooled circulating water is introduced to the functional units **19** so as to water-cool the functional units **19**. It is of course possible to use both water cooling and air cooling.

[0106] In the embodiments, there has been described the case where all the functional units **19** have the same height T**1**. However, the present invention is not limited thereto. The functional units **19** may have different heights T**1**, so long as the heights T**1** of the functional units **19** are greater than their widths W.

[0107] In the fourth embodiment, there has been described the case where the end portion **57** is provided at a lower portion of the rear face **38** of the functional unit **19**. However, the present invention is not limited thereto. It is of course possible to provide the end portion **57** at an upper portion of the rear face **38** of the functional unit **19** or provide the end portion **57** over the entire rear face **38**. It is of course possible to provide the end portion **57** at each of a plurality of positions on the rear face **38**.

[0108] In the embodiments, there has been described the case where the floor board **25** is disposed on the base **12**. However, the floor board **25** may be omitted because of the following reason. Even when the floor board **25** is not provided, when the functional unit **19** is disposed on the pedestals **21**, the gap (excluding the gaps **36**) between the pedestals **21** is closed by the functional unit **19**.

[0109] The present disclosure can be realized as the following modes.

Application Example 1

[0110] A container module comprising a transport container and a plurality of functional units accommodated in the transport container, wherein the plurality of functional units are disposed in an array in the transport container, and all heights of the plurality of functional units are greater than their widths in a lateral direction in which the functional units are arrayed.

Application Example 2

[0111] The container module described in application example 1, wherein the functional units are arrayed in a line in the transport container.

Application Example 3

[0112] The container module described in application example 1 or 2, further comprising pedestals on which the functional units are disposed.

Application Example 4

[0113] The container module described in application example 3, further comprising a pipe

disposed under the pedestals, wherein the pipe extends in the lateral direction.

Application Example 5

[0114] The container module described in application example 4, further comprising first joints which are disposed on the transport container and connected to the pipe, and second joints which are disposed on the functional units and are to be connected the first joints.

Application Example 6

[0115] The container module described in any of application examples 3 to 5, further comprising: rolling elements disposed in a portion of each pedestal with which a functional unit comes into contact, and a lifter for moving the rolling elements upward and downward in relation to the pedestal, wherein the functional unit moves in a first direction intersecting the lateral direction and is disposed on the pedestal, and the rolling elements rotate as a result of rubbing against the moving functional unit.

Application Example 7

[0116] The container module described in any of application examples 1 to 6, further comprising a guide located between the functional units located adjacent to each other, wherein the guide extends in the first direction.

Application Example 8

[0117] The container module described in application example 7, wherein friction reducing portions for reducing frictional force acting between the guide and the functional units are provided on the guide.

Application Example 9

[0118] The container module described in any of application examples 3 to 6, wherein the pedestals are individually provided for each of the functional units.

Application Example 10

[0119] The container module described in any of application examples 3 to 6, wherein the transport container has an air inlet opening and an air outlet opening, spaces respectively provided under the pedestals are continuous in the lateral direction, and the spaces communicate with the air inlet opening and the air outlet opening.

Application Example 11

[0120] The container module described in any of application examples 3 to 6, wherein a first partition for separating the spaces from a residual space within the transport container other than the spaces is provided on the pedestals.

Application Example 12

[0121] The container module described in any of application examples 3 to 6, wherein a gap is present between the pedestals located adjacent to each other.

Application Example 13

[0122] The container module described in any of application examples 1 to 12, further comprising stoppers for restricting movements of the functional units in the first direction, wherein each of the stoppers restricts movements of two of the functional units located adjacent to each other.

Application Example 14

[0123] The container module described in any of application examples 1 to 12, further comprising: a first stopper for restricting movement of a functional unit in the first direction, a second stopper for restricting movement of the functional unit in a second direction opposite the first direction, and first and second restricting portions provided on the functional unit, wherein the first stopper and the second stopper restrict upward movement of the functional unit via the first convex portion and the second convex portion.

Application Example 15

[0124] The container module described in any of application examples 3 to 6, wherein a value obtained by dividing the height of the functional units by a height to an upper end of an opening of the transport container from the pedestals falls in the range of 0.9 to 0.99.

Application Example 16
[0125] The container module described in any of application examples 6 to 9, wherein an end portion of each of the functional units in the first direction decreases in width in the lateral direction toward its end in the first direction.
Application Example 17
[0126] The container module described in any of application examples 6 to 9, wherein end portions of the functional units in the second direction opposite the first direction have the same width in the lateral direction.
Application Example 18
[0127] The container module described in any of application examples 6 to 9, further comprising a guide disposed along the pedestals and extending in the first direction, wherein each of the functional units has a third restricting portion which engages with the guide when the functional unit moves in the first direction.
REFERENCE SIGNS LIST
[0128] **10**: container module [0129] **11**: transport container [0130] **17**: air outlet opening [0131] **18**: air inlet opening [0132] **19**: functional unit [0133] **21**: pedestal [0134] **24**: space [0135] **25***a*, **25***b*: first partition [0136] **26**: pipe [0137] **28**: first joint [0138] **29**: rolling element [0139] **30**, **52**: stopper [0140] **32**, **59**: guide [0141] **34**: roller (friction reducing portion) [0142] **35**: upper end of opening [0143] **36**: gap [0144] **42**: space [0145] **43**: second joint [0146] **44**: first restricting portion [0147] **45**: second restricting portion [0148] **46**: first stopper [0149] **49**: second stopper [0150] **55**, **56**, **57**: end portion [0151] **60**: third restricting portion [0152] T**1**: height of functional unit [0153] W: width of functional unit

Claims

1. A container module comprising a transport container and a plurality of functional units accommodated in the transport container, wherein the plurality of functional units are disposed in an array in the transport container, and all heights of the plurality of functional units are greater than their widths in a lateral direction in which the functional units are arrayed.
2. A container module according to claim 1, wherein the functional units are arrayed in a line in the transport container.
3. A container module according to claim 1, further comprising pedestals on which the functional units are disposed.
4. A container module according to claim 3, further comprising a pipe disposed under the pedestals, wherein the pipe extends in the lateral direction.
5. A container module according to claim 4, further comprising: first joints which are disposed on the transport container and connected to the pipe, and second joints which are disposed on the functional units and are to be connected the first joints.
6. A container module according to claim 3, further comprising: rolling elements disposed in a portion of each pedestal with which a functional unit comes into contact, and a lifter for moving the rolling elements upward and downward in relation to the pedestal, wherein the functional unit moves in a first direction intersecting the lateral direction and is disposed on the pedestal, and the rolling elements rotate as a result of rubbing against the moving functional unit.
7. A container module according to claim 6, further comprising a guide located between the functional units located adjacent to each other, wherein the guide extends in the first direction.
8. A container module according to claim 7, wherein friction reducing portions for reducing frictional force acting between the guide and the functional units are provided on the guide.
9. A container module according to claim 3, wherein the pedestals are individually provided for each of the functional units.
10. A container module according to claim 9, wherein the transport container has an air inlet

opening and an air outlet opening, spaces respectively provided under the pedestals are continuous in the lateral direction, and the spaces communicate with at least one of the air inlet opening and the air outlet opening.

11. A container module according to claim 10, wherein a first partition for separating the spaces from a residual space within the transport container other than the spaces is provided on the pedestals.

12. A container module according to claim 10, wherein a gap is present between the pedestals located adjacent to each other.

13. A container module according to claim 6, further comprising stoppers for restricting movements of the functional units in the first direction, wherein each of the stoppers restricts movements of two of the functional units located adjacent to each other.

14. A container module according to claim 6, further comprising: a first stopper for restricting movement of a functional unit in the first direction, a second stopper for restricting movement of the functional unit in a second direction opposite the first direction, and first and second restricting portions provided on the functional unit, wherein the first stopper and the second stopper restrict upward movement of the functional unit via the first restricting portion and the second restricting portion.

15. A container module according to claim 6, wherein a value obtained by dividing the height of the functional units by a height to an upper end of an opening of the transport container from the pedestals falls in the range of 0.9 to 0.99.

16. A container module according to claim 6, wherein an end portion of each of the functional units in the first direction decreases in width in the lateral direction toward its end in the first direction.

17. A container module according to claim 6, wherein end portions of the functional units in the second direction opposite the first direction have the same width in the lateral direction.

18. A container module according to claim 6, further comprising a guide disposed along the pedestals and extending in the first direction, wherein each of the functional units has a third restricting portion which engages with the guide when the functional unit moves in the first direction.

19. A functional unit which is used in such a manner that a plurality of the functional units are disposed at predetermined positions in an array, wherein the functional unit has a height greater than a width of the functional unit in a lateral direction in which the functional units disposed at the predetermined positions are arrayed, and wherein the functional unit satisfies one of the following conditions: (A) the functional unit has a third restricting portion which restricts movement in the lateral direction as a result of engagement with a member provided at a corresponding one of the predetermined positions, (B) the functional unit moves in a first direction intersecting the lateral direction and is disposed at a corresponding one of the predetermined positions, and a width, in the lateral direction, of an end portion of the functional unit in the first direction decreases toward its end in the first direction, or (C) the functional unit moves in a first direction intersecting the lateral direction and is disposed at a corresponding one of the predetermined positions, and the functional unit has a first restricting portion which restricts movement in the first direction as a result of engagement with a member provided at a corresponding one of the predetermined positions, the functional unit has a third restricting portion which restricts movement in the lateral direction as a result of engagement with a member provided at a corresponding one of the predetermined positions.

20. (canceled)

21. (canceled)