

【DESCRIPTION】

【Invention Title】

STOREHOUSE IN WHICH CONTAINERS ARE TO BE LOADED

【Technical Field】

5 The present invention relates to a containment for loading
a container, which is used for loading and storing a plurality
of containers, and more particularly, to a containment for
loading a container, in which a plurality of containers are
stacked and stored in a containment section forming a line, a
10 row, and a storey, the containment section is divided into a
plurality of container containment parts according to the line,
the row, a tier (stack), a bay, and the storey, each of the
container containment parts is assigned with a unique number,
and the container to be stored is moved and stored in a
15 container containment part assigned with a predetermined unique
number by using an elevation device, a loading crane, and a
transfer vehicle.

【Background Art】

Transporting goods through a container is a cost-effective
20 way of transporting products worldwide.

In general, a large number of containers are transported
by a vessel at a harbor. The containers are then transported to
a storage place by a trailer and stored in the storage place.
The containers are generally stacked and stored one upon
25 another. While six to seven containers are generally stacked, a

height of each stack is limited by a weight of the container, strength of the container, and a climatic condition.

In addition, retrieving each of the containers involves checking a position of a target container in the stack, and, if
5 necessary, transferring a container disposed at a top of the stack to retrieve the target container which will be loaded on a truck.

In addition, containers in which goods are not accommodated are stored for reuse such that a plurality of
10 containers that are simply classified based on similarity of the size thereof are generally stacked on a ground, so that a large open storage yard is required, which leads to a low loading capacity per unit area.

The following is the representative related art about a
15 containment scheme for storing a container.

Korean Patent No. 10-0329819 discloses a three-dimensional containment, in which a containment room row where containment rooms are stacked in a vertical direction is provided adjacent to an elevation space, and an incoming/outgoing room is
20 provided on a ground level of the containment room row, thereby forming a passage which allows transfer.

Further, according to the three-dimensional containment having the above configuration, when a vehicle cannot be put into the incoming/outgoing room through a predetermined
25 passage, a vehicle can be put into the incoming/outgoing room

through a separate path after passing through the passage.
However, it is somewhat difficult to collectively store a large
number of containers.

Meanwhile, European Patent No. 2,213,596 B1 discloses a
5 container warehouse, in which a container has to be moved in
such a manner that a trailer on which the container is loaded
simply moves up and down through a plurality of storeys, so
that research and development are required to solve this
problem.

10

【Disclosure】

【Technical Problem】

The present invention is a technique provided to solve the
problems caused by the related art associated with storage of a
15 container. According to the conventional general container
storage method, a plurality of containers that are simply
classified based on similarity of the size thereof are
generally stacked on a ground, so that a large open storage
yard is required, which leads to a low loading capacity per
20 unit area.

In addition, when a container is stored in a building or
structure having a plurality of storeys, a ramp way is required
for allowing a trailer on which the container is loaded to move
up and down through a plurality of storeys, and a wide trailer
25 transfer road is required on the storeys, so that a container

loading space is significantly reduced, and a construction cost for the ramp way is additionally added. Therefore, a main object of the present invention is to provide a solution to the above problems.

5 **【Technical Solution】**

To achieve the objects described above, according to the present invention,

there is provided a containment for loading a container, the containment including: a containment section where a
10 plurality of containers are loaded while forming a plurality of lines, rows, tiers (stacks), bays, and storeys; a trailer moving path formed at an outer periphery of the containment section to allow a trailer on which the container is loaded to move therethrough, and having a plurality of container
15 loading/unloading places; and a loading crane provided on an upper portion of the containment section to move each of the containers such that the containers are loaded in line, row, and height directions of the containment section, wherein a container containment part obtained by dividing the containment
20 section by the lines, the rows, the tiers (stacks), the bays, and the storeys is assigned with a unique number for management.

【Advantageous Effects】

According to the containment for loading the container of
25 the present invention, container inspection, container number

recognition, vehicle number recognition, automatic traffic control within an area, crane automation, elevation device automation, and vehicle automation are implemented from the entry to the exit of the container and a trailer, so that
5 management and operation personnel can be remarkably reduced.

Container management can be automatically performed through perfect information processing.

The number of containers that can be loaded per land area can be maximized while minimizing a construction cost per a
10 container.

A ramp that unnecessarily occupies land and an area, a trailer road for a plurality of storeys and the like are not required.

A risk of an accident due to dangerous stunt driving up to
15 the storeys and driving up and down by a long distance can be reduced for a trailer driver, a traffic jam due to unnecessary congestion of the driver and the trailer at an upper storey can be eliminated, and air pollution due to gas emission of a vehicle can be reduced.

20 【Description of Drawings】

FIG. 1 is a plan view showing a containment for loading a container (first containment section storey) according to a preferred embodiment of the present invention.

FIG. 2 is a plan view showing the containment for loading
25 the container (second containment section storey) according to

the preferred embodiment of the present invention.

FIG. 3 is a plan view showing the containment for loading the container (third containment section storey) according to the preferred embodiment of the present invention.

5 FIG. 4 is a sectional view showing the containment for loading the container taken along line B-B according to the preferred embodiment of the present invention.

FIG. 5 is a sectional view showing the containment for loading the container taken along line A-A according to the
10 preferred embodiment of the present invention.

FIG. 6 is a plan view showing the containment for loading the container (when a warehouse is provided in the first containment section storey) according to another preferred embodiment of the present invention.

15 FIG. 7 is a sectional view showing the containment for loading the container taken along line A-A (when a warehouse is provided in the first containment section storey) according to another preferred embodiment of the present invention.

FIGS. 8 to 10 are a plan view and sectional views showing
20 the containment for loading the container according to still another preferred embodiment of the present invention.

FIG. 11 is a plan view showing a cell guide of the containment for loading the container according to the preferred embodiment of the present invention.

25 FIGS. 12 to 15 are plan views and sectional views showing

the containment for loading the container according to still another preferred embodiment of the present invention.

FIG. 16 is a sectional view showing the containment for loading the container taken along line A-A according to still another preferred embodiment of the present invention.

【Best Mode】

【Mode for Invention】

The present invention relates to a containment for loading a container, which is used for loading and storing a plurality of containers, the containment including: a containment section 10 where a plurality of containers are loaded while forming a plurality of lines, rows, tiers (stacks), bays, and storeys; a trailer moving path 20 formed at an outer periphery of the containment section 10 to allow a trailer on which the container is loaded to move therethrough, and having a plurality of container loading/unloading places 21; and a loading crane 30 provided on an upper portion of the containment section 10 to move each of the containers such that the containers are loaded in line, row, and height directions of the containment section 10, wherein a container containment part obtained by dividing the containment section 10 by the lines, the rows, the tiers (stacks), the bays, and the storeys is assigned with a unique number for management.

Hereinafter, the present invention will be described in

detail with reference to FIGS. 1 to 15 showing embodiments of the present invention.

First, the container stored in the containment for loading the container according to the present invention is
5 manufactured in a standardized size, loaded and transported on a transfer device such as a trailer, a train, or a vessel, and configured to protect goods accommodated therein.

In addition, the container stored in the containment for loading the container according to the present invention may be
10 a container accommodated therein with the goods and temporarily stored before the container is loaded on the transfer device, or a container with no goods that is stored before the accommodation of the goods.

In detail, the containment section 10 is configured such
15 that the containers are loaded while forming the lines, the rows, the tiers (stacks), the bays, and the storeys, and is configured to form a space in which the container can be loaded three-dimensionally.

In this case, as shown in FIG. 1, when a plane of the
20 containment section 10 have a rectangular shape, the line corresponds to a transverse line, the row corresponds to a longitudinal line, the tier (stack) corresponds to a height of the line and the row, the bay corresponds to a unit area formed by the line, the row, and the tier, and the storey corresponds
25 to a unit area which is defined with a plurality of storeys in

a height direction of the tier or the bay.

In addition, the line, the row, and the tier of the containment section 10 may be classified by an area and a height required for the container, the area and the height may correspond to a standard of a typical container, and the containers may be standardized to different sizes, so that the container containment part obtained by dividing the containment section 10 by the lines, the rows, the tiers (stacks), the bays, and the storeys may include a plurality of groups having an identical size.

Further, the container containment part is a space having an area formed by one line and one row, which has a width and a length slightly longer than a width and a length of the container to be stored, so that the container may be seated.

In this case, the height of the containment part corresponds to a height of the container, and the height of the containment parts corresponds to the height of the tier of the containment section 10. In addition, the containers stored in one of the containment parts are configured such that an upper container is stacked on a top of a lower container.

In one embodiment, when the containment section 10 is divided into the lines, the rows, and the tiers, and the lines, the rows, and the tiers are described in an order of (line, row, tier), a containment part of a first line, a first row, and a first tier may be assigned with a unique number of (1, 1,

1) for management, a containment part of the first line, a second row, and the first tier may be assigned with a unique number of (1, 2, 1) for management, and a containment part of the first line, the first row, and a second tier may be
5 assigned with a unique number of (1, 1, 2) for management. Further, a plurality of containment parts having the above configuration are grouped into the containment section 10.

In addition, the containment section 10 may not be formed at a top thereof with a roof, may be configured as a space
10 divided by a plurality of pillars supporting the roof when the roof is provided, may be configured as a structure formed by a frame provided to position the loading crane 30, which will be described below, at a predetermined height, or may be configured such that a plurality of frames for dividing the
15 containment section 10 is provided on the outer periphery of each of the containment section 10 to set an independent containment section 10.

Further, the containment section 10 may be provided therein with a plurality of cell guides 120 such that the
20 container loaded in the containment section 10 is loaded in a vertical direction while forming a straight line.

In other words, the cell guide 120 has a predetermined length in the height direction, which is an arrangement direction of the tier (stack) as shown in FIG. 11, and has a
25 plurality of protrusion guides having a length in the height

direction at an outer side such that a corner portion of the container which is stacked in the height direction may be inserted downward or drawn out upward.

In this case, when the protrusion guide is formed on the
5 cell guide 120 disposed inward of the containment section 10, the protrusion guide may guide four corners of the container to be loaded.

Further, the roof may be provided with a photovoltaic power generation device to produce a part or all of power
10 required for operating the containment for loading the container according to the present invention.

In addition, the trailer moving path 20 is formed at the outer periphery of the containment section 10 to allow the trailer on which the container is loaded to move therethrough,
15 and has the container loading/unloading places 21, and the trailer moving path 20 is a space for allowing the trailer on which the container stored in the containment section 10 is loaded and the trailer for carrying out the container stored in the containment section 10 to move.

20 In this case, the trailer moving path 20 is preferably formed at the outer periphery of the containment section 10 as shown in FIG. 1 so that the trailer may move only outside the containment section 10, and a plurality of lanes of the trailer moving path 20 may be provided so that a plurality of trailers
25 may approach the outer periphery of the containment section 10

to simultaneously unload the containers at different container containment parts.

In addition, the container loading/unloading place 21 is a part for loading or unloading the container at the trailer, and
5 a predetermined section obtained by partitioning the trailer moving path 20 may be configured as the container loading/unloading place 21, or a separate space may be provided on left or right side of the trailer moving path 20 to form the container loading/unloading place 21.

10 In this case, when the container loading/unloading place 21 is provided separately from the trailer moving path 20, a course of another trailer which is moved to the trailer moving path 20 by the trailer stopped at the container loading/unloading place 21 is not obstructed.

15 Further, the container loading/unloading place 21 may be provided with a trailer stop position detection device (not shown) to recognize an accurate stop position of the trailer stopped at the container loading/unloading place 21.

In other words, the trailer stop position detection device
20 may include a sensing unit for recognizing a number plate of the trailer and a display unit for confirming the recognized number plate of the trailer.

In detail, the trailer stop position detection device recognizes the number plate of the trailer entering the
25 container loading/unloading place 21 through the sensing unit,

trailer number plate information recognized by the sensing unit is transmitted to a central control room, the central control room determines whether the trailer on which the container assigned with a container unique number (detailed description
5 thereof will be given below) is loaded correctly stops at the container loading/unloading place 21, and a determination result is transmitted to the display unit, so that the trailer driver may determine whether the trailer driver has stopped at a correct container loading/unloading place 21.

10 In addition, the trailer stop position detection device may further include a position detection sensor for sensing a stop position of the trailer stopped within the container loading/unloading place 21, so that the trailer driver may confirm the accurate stop position of the trailer stopped
15 within the container loading/unloading place 21.

In other words, when the position of the trailer stopped at the container loading/unloading place 21 is accurately sensed by the position detection sensor, the trailer driver may be assisted so that the trailer may accurately stop within an
20 operating radius of a loading/unloading crane 70 which will be described below.

In more detail, the position detection sensor continuously senses the position of the trailer entering the container loading/unloading place 21 and transmits sensed position
25 information of the trailer to the central control room, and the

central control room transmits trailer stop information to the display unit when the trailer correctly enters within the operating radius of the loading/unloading crane 70, so that the trailer driver may confirm the trailer stop information
5 realized in the display unit and complete the entry of the trailer into the container loading/unloading place 21.

An automatic inspection device 40 provided in the trailer moving path 20 may inspect a damaged area, which may occur at an exterior of the container, according to ISO regulations and
10 may determine whether repair is required.

In detail, the automatic inspection device 40 is located at a position away from an entrance portion of the trailer moving path 20 by a predetermined distance, and is preferably provided at a predetermined portion of the trailer moving path
15 20 before a first container loading/unloading place 21.

In addition, since the automatic inspection device 40 is configured to inspect the container loaded on the trailer, a camera is positioned at a front side, a rear side, both lateral sides, and an upper side of the trailer moving path 20, so
20 that, when the trailer on which the container is loaded enters a predetermined portion of the trailer traveling path 20 where the camera is located, the trailer is photographed by the camera in a slow-moving state (nonstop state) so as to determine whether the repair is required by performing image
25 storage and analysis by an image processing device.

Further, the trailer moving path 20 may be formed to surround the outer periphery of the containment section 10, and it will be apparent that at least one point of the trailer moving path 20 may be formed with an entrance which may be used
5 to enter the trailer moving path 20 from the outside, used as a waiting place for a short time, used to inspect an inside of the container, or used to exit from the trailer moving path 20 to the outside.

In addition, the trailer moving path 20 having the above
10 configuration may be provided on at least one part thereof with a cleaning/disinfecting device (not shown) for cleaning and disinfecting the container loaded on the trailer.

Further, the loading crane 30 is provided on the upper portion of the containment section 10 to move each of the
15 containers such that the containers are loaded in the line, row, and height directions of the containment section 10, and the loading crane 30 is configured to unload the container from the trailer, which is moved through the trailer moving path 20, to move the container to the containment part, or to load the
20 container loaded in the containment part into the trailer.

In this case, the loading crane 30 may be a crane generally known as an 'overhead crane', and may be provided in a structure formed of a plurality of frames provided to position the pillars or the loading crane 30, which is arranged
25 in the containment section 10 at a predetermined interval, at a

predetermined height.

In addition, the loading crane 30 may move to a part of the containment section 10 and the trailer moving path 20. In a case where the loading crane 30 is movable only in the
5 containment section 10, it is necessary to further include a separate intermediate loading/unloading crane for moving the container loaded or unloaded at the container loading/unloading place 21 formed in the trailer moving path 20 into the containment section 10. Hereinafter, the loading/unloading
10 crane 70, which is one type of the intermediate loading/unloading crane, will be described in detail below.

In connection with the above configuration, a single loading crane 30 may be provided to take in or out the containers in the containment section 10 while moving in
15 travelling, traversing, and hoist directions of an entire containment section 10. More preferably, a plurality of loading cranes 30 which are horizontally movable in the line direction (transverse direction) or the row direction of the containment section 10 may be provided, such that the loading cranes 30 are
20 respectively movable in a part of the lines or a part of the rows of the containment section 10, and are movable in the height direction of the container through a hoisting device provided on the loading crane 30.

In this case, when the loading cranes 30 are respectively
25 movable in a part of the lines or a part of the rows of the

containment section 10 as described above, the container loading/unloading places 21 are formed in the trailer moving path 20 adjacent to the loading cranes 30, so that the container loaded on the trailer may be directly moved by the loading crane 30 located in the containment part where the container is to be stored.

In addition, according to the present invention, the containment section 10 is divided into the container containment parts according to the line, the row, the tier (stack), the bay, and the storey, and each of the container containment parts is assigned with the unique number. According to the present invention, the unique number may be assigned to only the containment part to take in or out the container stored in the containment part through the management of the unique number of the containment part, or the container unique number may be assigned to the container stored in the containment part so that information such as standard information, owner information, management information, or cost information of the container may be managed together.

In other words, when the container unique number is assigned to the container for the management, the containment part suitable for storing the container may be easily determined according to specification of the container, and an owner of the container may be prevented from being mistaken.

In addition, the plurality of rows of the containment

section 10 may include a unit row 11 having one to five rows,
and a plurality of unit rows 11 may form a plurality of rows of
a containment area, and the loading crane 30 may move the
container within the lines and the unit row 11 of the
5 containment section 10.

In other words, as shown in FIG. 2, the containment
section 10 having the above configuration is configured such
that the loading crane 30 is movable within the unit rows 11
divided into the plurality of rows formed in the containment
10 section 10 and the lines divided together with the unit rows
11.

In this case, the unit row 11 is one unit having one to
five rows in the containment part, the structure supporting the
loading crane 30 is provided with a transverse rail 13 so that
15 the loading crane 30 may move in the row direction (traversing
direction) within the unit row 11 having one to five rows, and
provided with a travelling rail 14 so that the loading crane 30
may move in the direction of the lines (traveling direction)
included in the unit row 11.

20 In detail, the loading crane 30 which is movable within
the unit row 11 and the lines may move to the trailer moving
path 20 as shown in FIG. 1, grab the container from in the
trailer stopped at the container loading/unloading place 21
formed in the trailer moving path 20, and move the grabbed
25 container to a predetermined containment part belonging to the

unit row 11 and the lines to store the container.

In this case, the unit row 11 may be controlled to have various numbers of rows according to a scale of the container for loading the container of the present invention or the
5 number of lines of the containment section 10. However, it is preferable to configure one to five rows as one unit as described above for rapid distribution.

In connection with the above configuration, when the plurality of rows of the containment section 10 are divided
10 into the unit rows 11 as described above, and the loading crane 30 is movable within the lines and the unit row 11 of the containment section 10, the plurality of lines of the containment section 10 may include a unit line 12 having 15 to 30 lines, and a plurality of unit lines 12 may form a plurality
15 of lines of the containment area.

In this case, when the plurality of lines and the plurality of rows forming the containment section 10 are defined by the unit lines 12 and the unit rows 11 including a predetermined number of lines and rows, respectively, the
20 containment section 10 may form a unit tier by stacking the containers in the unit lines 12 and unit rows 11, a plurality of unit tiers may be grouped into a unit bay, and a plurality of unit bays may be set as a large-scale containment section.

In addition, a plurality of loading cranes 30 may be
25 provided within the unit row 11 (which may correspond to the

unit bay) as shown in FIG. 1.

In other words, when one small-scale containment section 10 and another small-scale containment section 10 have an identical unit row 11 (first row and second row, i.e. unit bays 130 and 140 in FIG. 14) and different unit lines 12 (1 to 20 lines, and 21 to 40 lines), a corresponding loading crane 30 is movable within the identical unit row 11 (first row and second row, i.e. unit bays 130 and 140 in FIG. 14) and the different unit lines 12 (1 to 20 lines, and 21 to 40 lines), and the corresponding loading crane 30 is provided in plural, in which a loading crane 30 located at an outer side of the containment section 10 takes in and move the container from the trailer stopped at the container loading/unloading place 21, and a loading crane 30b located at an inner side of the containment section 10 moves the container loaded in a temporary containment part by the loading crane 30 located at the outer side of the containment section 10 back to the predetermined containment part.

In addition, when the unit rows 11 are provided as described above, a lift vehicle, which passes through the lines in the line direction and is movable horizontally, may be provided between one unit row 11 (hereinafter referred to as "unit bay 130") and an adjacent unit row 11 (hereinafter referred to as "unit bay 140") among the unit rows 11.

In other words, when the container is taken in to the

containment, the lift vehicle provided between one unit bay 130 and an adjacent unit bay 140 may be disposed at the container loading/unloading place 21 to receive the container unloaded from the trailer by the loading/unloading crane 70, and
5 transfer the container from one unit bay 130 to the adjacent another unit bay 140.

In detail, the lift vehicle may be used as a temporary device for taking in the container, which is unloaded at one of the container loading/unloading places 21, into the unit bay
10 130 in which a corresponding container loading/unloading place 21 is located, or the lift vehicle may transfer the container, which is unloaded at one of the container loading/unloading places 21, to another unit bay 140 where the container loading/unloading place 21 is not positioned or another unit
15 bay 140 where the container loading/unloading place 21 is positioned while an amount of transferred containers is large.

In addition, the lift vehicle may be classified into a ground storey lift vehicle 90 positioned on the ground level and an upper storey lift vehicle 91 positioned on a second
20 storey or above.

In this case, the ground storey lift vehicle 90 may receive the container unloaded from the loading/unloading crane 70 positioned at a lowest storey on the ground (when the container is taken into the containment), or receive the
25 container unloaded from the loading crane 30 (when the

container is taken out).

In addition, as shown in FIG. 15, the upper storey lift vehicle 91 may be placed in the second storey or above to receive the container unloaded from by the loading crane 30 or
5 an elevation device 60 provided in a corresponding storey.

Further, when the lift vehicle is provided in the containment according to the present invention as described above, a ground storey buffer zone 100 through which the ground storey lift vehicle 90 moves may be formed in the lowest storey
10 of the containment section 10, and an upper storey buffer zone 110 through which the upper storey lift vehicle 91 moves may be formed in each of the second storey or above of the containment section 10.

In addition, when the unit lines 12 are provided as
15 described above, a transfer vehicle 50, which passes through the rows in the row direction and is movable horizontally, may be provided between one unit line 12 and an adjacent unit line 12 among the unit lines 12.

In other words, an empty space is formed between one unit
20 line 12 and the adjacent unit line 12 so that the transfer vehicle 50 may move in the row direction, and the transfer vehicle 50 may pass through the rows within the empty space and may be movable in the row direction.

In this case, it is preferable that the empty space is
25 formed through the unit rows 11 forming the plurality of rows

of the containment section 10, and the empty space is provided with a rail having a length in the row direction so that the transfer vehicle 50 is moved on the rail.

In addition, the transfer vehicle 50 has a size suitable
5 for loading the container, and may be provided with a driving device such as a driving motor so as to be moved. In this case, mobility of the transfer vehicle 50 may be ensured by an instruction from an operator of the central control room or a central server provided in the central control room.

10 In addition, if at least one loading crane 30a among the loading cranes 30 provided in one unit row 11a among the unit rows 11 is inoperable due to failure or repair, the transfer vehicle 50 takes in the container from the container loading/unloading place 21 by using one loading crane 30b
15 provided in another unit row 11b adjacent to a corresponding unit row 11a in which the loading crane 30a that is in a failed state or under a repair work is located, the transfer vehicle 50 moves the corresponding container in front of the corresponding unit row 11a where the loading crane 30a that is
20 in the failed state or under the repair work is located when one loading crane 30b provided in another unit row 11b loads the corresponding container on the transfer vehicle 50, and the container moved in front of the corresponding unit row 11a may be taken into a predetermined containment part by using another
25 loading crane 30a' provided in the corresponding unit row 11a.

In other words, if at least one loading crane 30a among the loading cranes 30 provided in one unit row 11a among the unit rows 11 is inoperable due to failure or repair, the loading crane 30b of adjacent another unit row 11b and the transfer vehicle 50 are used to take in the container at a predetermined containment part in the corresponding unit row 11a where the inoperable loading crane 30a is located.

In addition, the containment section 10 may include a plurality of storeys, and the containment may further include the elevation device 60 provided at the outer periphery of the containment section 10 including the storeys to move up and down through the storeys.

In other words, when the containment section 10 includes the storeys, the containment section 10 where the containers described above in detail may be loaded while forming the lines, the rows, and the tiers includes the storeys, in which the roof is formed only in an uppermost storey of the containment section 10, and sides formed by the storeys of the containment section 10 are closed or opened.

In detail, when the containment section 10 includes the storeys, as shown in FIG. 3, the first containment section storey, the second containment section storey, the third containment section storey, ..., and an n^{th} containment section storey may be sequentially provided.

In this case, the elevation device 60 for moving up and

down through the storeys may be provided at the outer periphery of the containment section 10 including the storeys, so that the container may be moved up and down between the storeys.

In other words, the elevation device 60 may load the
5 container and move the loaded container up and down, the trailer moving path 20 is formed at one storey of the containment section 10 among the storeys of containment section 10, and the container may be moved from the trailer moving path 20 to another storey of the containment section 10 the through
10 the elevation device 60 so as to be taken into the containment part, or may be moved reversely so as to be taken out.

In this case, the elevation device 60 is preferably provided at a predetermined outer peripheral portion of the containment section 10 where the container loading/unloading
15 place 21 is located, and the elevation device 60 is preferably provided at one end portion of the containment section 10 in the line direction when the loading crane 30 moves by taking the line direction as a main axis.

In addition, the trailer moving path 20 may be formed at
20 the outer periphery of the lowest storey of the containment section 10 among the storeys of containment section 10, and the containment may further include the loading/unloading crane 70 provided on an upper portion of the lowest storey of the containment section 10 to move the container loaded on the
25 trailer to the elevation device 60.

In other words, the trailer moving path 20 having the above configuration is formed at the outer periphery of the lowest storey of the containment section 10 among the storeys of containment section 10, so that a load caused by the trailer
5 travelling on the trailer moving path 20 may be prevented from being applied to the upper portion of the containment section 10, and more preferably, the lowest storey of the containment section 10 may be located on the ground.

In addition, the loading/unloading crane 70 is configured
10 to move the container, which is loaded on the trailer stopped at the container loading/unloading place 21 of the trailer moving path 20, to the elevation device 60, and a movement path of the loading/unloading crane 70 is preferably formed in a direction from the container loading/unloading place 21 to the
15 elevation device 60 as shown in FIG. 5.

In other words, it will be apparent that the loading/unloading crane 70 having the above configuration may move the container loaded on the trailer to the elevation device 60, and move the container from the elevation device 60
20 to the trailer.

In addition, when the containment section 10 includes the storeys, the elevation device 60 is further provided on the outside of the containment section 10 including the storeys, and the loading/unloading crane 70 is further provided between
25 the elevation device 60 and the container loading/unloading

place 21 in the lowest storey of the containment section 10, the trailer moving path 20 may include a plurality of lines, at least one of a plurality of trailer moving paths 20 is formed with the container loading/unloading place 21, and at least one
5 of remaining trailer moving paths 20 is formed with a container elevation loading/unloading place 22 adjacent to the elevation device 60.

In other words, when at least one of the trailer moving paths 20 among the trailer moving paths 20 including the lines
10 and having the above configuration is formed with a separate container elevation loading/unloading place 22, it is possible to solve a problem that a rear trailer of a corresponding trailer may not travel because of an increased operation time required for a process of moving the container, which is moved
15 to the upper storey of the containment section 10 and stored in a predetermined containment part, by using the loading/unloading crane 70, so that a rapid distribution property may be prevented from being degraded.

In this case, it will be apparent that the
20 loading/unloading crane 70 is configured to move the container while reciprocating between the container elevation loading/unloading place 22 and the elevation device 60.

In addition, one of the containers stored in the containment for loading the container according to the present
25 invention has to be taken out from the containment part. In

this case, when another container is stacked on a top of the take-out container, at least one loading crane 30 among the loading cranes 30 temporarily holds the container stacked on the top of the take-out container or temporarily moves the
5 container to an adjacent empty containment part, another loading crane 30 grabs the take-out container to load the take-out container to the trailer waiting in the container loading/unloading place 21, and the container that is temporarily held or temporarily moved to the empty containment
10 part may be taken into the empty containment part in which the take-out container has been stored or may be stored in a storage position which is changed to the empty containment part.

Further, as shown in FIGS. 6 and 7, a part of the
15 containment section 10 according to the present invention is not formed with the containment part for loading the container and is provided with a warehouse 80, which may be used as a space for loading the goods on the container or unloading the goods from the container. In this case, the warehouse 80 is
20 preferably configured to allow the trailer to enter, and may be used as a parking lot for the trailer if necessary.

In addition, when the containment section 10 includes the storeys, the warehouse 80 is preferably formed in a part of the lowest storey of the containment section 10.

25 In addition, according to the present invention, the

automatic inspection device 40, the cleaning/disinfecting device, the loading crane 30, the transfer vehicle 50, the elevation device 60, and the loading/unloading crane 70 may be remotely controlled by the operator working in the central control room, or may be automatically adjusted in an unmanned scheme by control of the central server provided in the central control room.

Further, assignment of the container unique number, recognition of the container unique number, or determination of the containment part may be manually performed by the operator working in the central control room, or may be automatically performed by a logical decision of the central server provided in the central control room.

In addition, the central control room provided at a separate plate may control traffic control from entry to exit of the trailer, vehicle number recognition, and automatic operations of the cleaning/disinfecting device, the trailer stop position detection device, the automatic inspection device, the loading crane 30, the lift vehicle, the transfer vehicle 50, the elevation device 60, and the loading/unloading crane 70.

The following is a preferred embodiment showing a process of taking a container in which goods are not accommodated into the containment for loading the container according to the present invention.

First, when the trailer on which the container is loaded enters the entrance of the trailer traveling path 20 which is formed at the outer periphery of the containment section 10, and the trailer travels along the trailer moving path 20 by a predetermined distance, the trailer is photographed by the camera in the slow-moving state so as to determine whether the repair is required by performing the image storage and analysis by the image processing device.

In this case, the central control room confirms the container unique number of the container loaded on the trailer, assigns the unique number of the containment part where the container is to be stored and an unloading position, and informs the trailer driver of the unloading position. In addition, when container information such as the standard information or the owner information of the container to be loaded is not collected by the central control room, the driver or the owner notifies the central control room of the container information to receive the unique number of the containment part where the container is to be stored from the central control room.

Then, when the trailer travels further along the trailer moving path 20 by a predetermined distance, cleaning water and a disinfectant are sequentially sprayed from spray nozzles fixed to a guide bar such that the spray nozzles are disposed on both sides and an upper portion of the trailer moving path

20 to clean and disinfect the container, and dry air is blown from a dryer provided at a rear side of the spray nozzles to remove moisture from the container.

Thereafter, the trailer stops at the container
5 loading/unloading place 21 or the container elevation loading/unloading place 22 where the assigned unique number of the containment part is displayed while traveling along the trailer moving path 20, and the loading crane 30 or the loading/unloading crane 70 approaches the stopped trailer to
10 move and store the container in the containment part assigned with a predetermined unique number.

In this case, when the container is assigned to the containment part at the second storey or above of the containment section 10, or the container is assigned to the
15 containment part of the adjacent another unit bay 140 where the container loading/unloading place 21 is located, the loading/unloading crane 70 moves the container from the trailer to the ground storey lift vehicle 90, and the ground storey lift vehicle 90 moves toward the elevation device 60 or the
20 another unit bay 140, so that the loading crane 30 located in the elevation device 60 or the another unit bay 140 moves the container to the corresponding containment part.

In other words, in the case where the container is assigned to the containment part at the second storey or above
25 of the containment section 10, when the elevation device 60

moves the container loaded on the ground storey lift vehicle 90 up and down to a corresponding storey of the containment section 10, the loading crane 30 provided in the corresponding storey of the containment section 10 may move the container placed on the elevation device 60 to the containment part assigned with a predetermined unique number in the corresponding unit bay 130 and store the container, or the loading crane 30 provided in the corresponding storey of the containment section 10 may move the container placed on the elevation device 60 to the upper storey lift vehicle 91 to move the container to the adjacent another unit bay 140, and another loading crane 30 provided in the unit bay 140 may move and store the container in the containment part assigned with a predetermined unique number.

15 In addition, when the container is assigned to the containment part of the adjacent another unit bay 140 where the container loading/unloading place 21 is located, the ground storey lift vehicle 90 may move toward the another unit bay 140 to move and store the container placed on the ground storey lift vehicle 90 by the loading crane 30 provided in the unit bay 140 in the containment part assigned with a predetermined unique number in the unit bay 140.

Further, in a case where the containment section 10 is divided into the unit lines 12 and unit rows 11, and the transfer vehicle 50 is provided between one unit line 12 and

the adjacent unit line 12 among the unit lines 12, when the loading crane 30a located on the trailer moving path 20 among the loading cranes 30 provided at the upper portion of the predetermined containment part is in the failed state, the trailer travels to the container loading/unloading place 21 where the unit row 11a before (or after) the predetermined containment part is located, and the loading crane 30a located at the container loading/unloading place 21 holds the container loaded on the trailer to move the container to the transfer vehicle 50.

Next, the transfer vehicle 50 is moved to the front of the unit row 11b where the containment part assigned with a predetermined unique number is located by an operation of the driving device, and another operable loading crane 30 (loading crane 30 located at an inner side of the loading crane 30 in the failed state) provided in a corresponding unit row 11b grabs the container loaded on the transfer vehicle 50 so as to move and store the container in the containment part assigned with a predetermined unique number.

Thereafter, when the stored container is taken out from the containment, the container may be taken out from the containment part to the trailer by performing the above process in a reverse order.

Although the preferred embodiment of the present invention has been described for illustrative purposes, the present

invention is not limited thereto. It is understood that various changes and modifications can be made by those skilled in the art without departing from the spirit and scope of the present invention.

CLAIMS

1. A containment for loading a container, the containment comprising:

5 a containment section where a plurality of containers are loaded while forming a plurality of lines, rows, tiers (stacks), bays, and storeys, in which the plurality of rows of the containment section include a unit row having one to five rows so that a plurality of rows of a containment area
10 are formed by a plurality of unit rows, the plurality of lines of the containment section include a unit line having 15 to 30 lines so that a plurality of lines of the containment area are formed by a plurality of unit lines, and a container containment part obtained by dividing the
15 containment section by the lines, the rows, the tiers (stacks), the bays, and the storeys is assigned with a unique number for management;

a trailer moving path formed at an outer periphery of the containment section as a plurality of lanes to allow a
20 trailer on which the container is loaded to move therethrough, in which a plurality of container loading/unloading places are formed in a separate space of inner lanes of the plurality of lanes, and a plurality of container elevation loading/unloading places are formed in
25 outer lanes of the plurality of lanes;

an 'overhead crane' type loading crane provided on an upper portion of the containment section, in which the 'overhead crane' type loading crane is configured to move in a row direction along a transverse rail installed in the
30 unit row of the containment section and to move in a direction of the plurality of lines included in the unit

row along a travelling rail to move the containers, and a plurality of 'overhead crane' type loading cranes are provided in the unit row to load the containers in line, row, and height directions of the containment section by
5 moving each of the plurality of containers;

a transfer vehicle provided between one unit line and an adjacent unit line among the unit lines, in which transfer vehicle passes through the plurality of rows in the row direction and is movable horizontally on a rail;
10 and

an elevation device provided at the outer periphery of the containment section including the storeys to move up and down through the storeys by loading the containers thereon.

15

2. The containment of claim 1, wherein the trailer moving path is provided on at least one part thereof with an automatic inspection device for inspecting the container loaded on the trailer.

20

3. The containment of claim 1, wherein the trailer moving path is formed at the outer periphery of a lowest storey of the containment section among the storeys of containment section, and

25

the containment further comprises a loading/unloading crane provided on an upper portion of the lowest storey of the containment section to move the container loaded on the trailer to the elevation device.

30

4. The containment of claim 1, wherein the containment section is provided therein with a plurality of

cell guides such that the container loaded in the containment section is loaded in a vertical direction while forming a straight line.

5 5. The containment of claim 1, wherein the plurality of rows of the containment section include a unit row having one to five rows, and a plurality of unit rows form a plurality of rows of a containment area, and
a lift vehicle, which passes through the lines in the
10 line direction and is movable horizontally, is provided between one unit row and an adjacent unit row among the unit rows.

6. The containment of claim 1, wherein a roof is
15 further provided on the upper portion of the containment section, and
the roof is provided with a photovoltaic power generation device to produce a part or all of power required for operating the containment.

20

7. The containment of claim 1, wherein the container loading/unloading place is provided with a trailer stop position detection device to recognize an accurate stop position of the trailer stopped at the container
25 loading/unloading place.