Claims

1. A movable ray inspection system used to be mounted in a container yard to inspect an object within a container, the movable ray inspection system comprising:

a ray generator device configured to emit a ray, a ray receiving device configured to receive the ray, at least one chamber for receiving the ray generator device and the ray receiving device therein, and a moving device for the movable ray inspection system, wherein

the moving device comprises a guide wheel arranged on a bottom surface of the chamber and a guide rail arranged on ground, and the guide wheel is movably fitted on the guide rail; or, the moving device comprises a moving wheel mounted on the bottom surface of the chamber, and wherein

a height of the moving device is equal to a difference between a height of a high container and a height of a standard container,

the movable ray inspection system being configured to define a scanning passage, characterized in that:

each of the at least one chamber is configured to be a standard container or a chamber which has a same shape, a same size and a same structure as a standard container, such that the movable ray inspection system is adapted to be stacked in the container yard, and the moving device is configured to allow the movable ray inspection system to move in a preset direction so as to inspect the object within the container.

2. The movable ray inspection system according to claim 1, wherein each of the at least one chamber is provided with a hoisting coupling, which is the same as that of the standard container, so as to be hoisted by a container transfer apparatus.

3. The movable ray inspection system according to any one of claims 1-2, further comprising a driving device configured for driving the movable ray inspection system to move.

4. The movable ray inspection system according to any one of claims 1-3, wherein the movable ray inspection system includes a first chamber, a second chamber and a third chamber, the first chamber is arranged at a side of the scanning passage in the container yard, and the second chamber and the third chamber, stacked up-down with each other, are arranged at the other side of the scanning passage, and

the first chamber is provided with the ray generator device therein, and each of the second chamber and the third chamber is provided with the ray receiving device therein, and the ray generator device and the ray receiving devices are substantially aligned with one another in a second direction perpendicular to a first direction along which the scanning passage extends,

preferably, the first chamber and the third chamber located downside are both provided with the moving devices on their bottom surfaces respectively.

5. The movable ray inspection system according to any one of claims 1-3, wherein the movable ray inspection system comprises a first chamber, a second chamber, a third chamber and a fourth chamber, the second chamber and the first chamber, stacked up-down with each other, are arranged at a side of the scanning passage in the container yard, and the third chamber and the fourth chamber, stacked up-down with each other, are arranged at the other side of the scanning passage, and wherein,

each of the first chamber located downside and the fourth chamber located downside is provided with the ray generator device and the ray receiving device

therein, and each of the second chamber located upside and the third chamber located upside is provided with the ray receiving device, wherein the ray generator device and the ray receiving device provided in each of the first chamber and the fourth chamber are arranged to space away from each other in the first direction along which the scanning passage extends, and the ray generator device in the first chamber is substantially aligned with the ray receiving devices in the third chamber and the fourth chamber in the second direction perpendicular to the first direction, and the ray receiving devices in the first chamber and the second chambers are substantially aligned with the ray generator device in the fourth chamber in the second direction perpendicular to the first direction;

preferably, the first chamber located downside and the fourth chamber located downside are both provided with the moving devices on their bottom surfaces respectively.

6. The movable ray inspection system according to claim 4 or 5, wherein the movable ray inspection system further comprises a rigid connection device configured to connect the chambers at either side of the scanning passage.

7. The movable ray inspection system according to any one of claims 1-3, wherein the movable ray inspection system comprises a chamber arranged at a side of the scanning passage in the container yard and provided with the ray generator device and the ray receiving device.

8. The movable ray inspection system according to any one of claims 1-3, wherein the movable ray inspection system comprises a chamber arranged at a side of the scanning passage in the container yard and, the ray generator device is disposed within the chamber and comprises a plurality of detectors arranged in a

shape of “L”, wherein a part of the plurality of detectors are arranged on an inner wall of the chamber and the other part of the plurality of detectors are arranged on a cross bracket perpendicular to the inner wall.

9. The movable ray inspection system according to any one of claims 1-3, wherein the movable ray inspection system includes a first chamber and a second chamber, the first chamber is arranged at a side of the scanning passage in the container yard, and the second chamber is arranged at the other side of the scanning passage, the second chamber is provided with the second ray generator device and the second ray receiving device and the first chamber and the second chamber are provided with the moving devices on their bottom surface.

10. The movable ray inspection system according to any one of claims 1-3, wherein the movable ray inspection system includes a first chamber, a second chamber and a third chamber, the first chamber is arranged at one side of the scanning passage in the container yard, the second chamber is arranged at the other side of the scanning passage in the container yard, and the third chamber is arranged under the scanning passage in the container yard, and wherein the first chamber is provided with the first ray generator device and the first ray receiving device therein, the second chamber is provided with the second ray generator device and the second ray receiving device therein, the third chamber is provided with the third ray generator device and the third ray receiving device therein, and the first, second and third chambers are all provided with the moving devices on their bottom surface.

11. The movable ray inspection system according to claim 3, further comprising a control device that is in communication with a control system in the container yard and/or a database in the container yard, and the control device is

electrically connected with the driving device so as to control the driving device;

preferably, the movable ray inspection system further comprising a photoelectric conversion device configured to convert the ray received by the ray receiving device to a digital signal, the photoelectric conversion device being in communication with the control device so as to transmit image information as the digital signal to the control device;

further preferably, the movable ray inspection system further comprising a container symbol identification device configured to identify contain symbol and be in communication with the control device so as to transmit the identified container symbol information to the control device, the control device being configured to, according to the identified container symbol, read corresponding container information from the control system of the container yard and/or a database of the container yard and to bond the container information to the image information.

12. A ray inspection method for inspecting a container in a container yard using the movable ray inspection system according to any one of claims 1-11, characterized in that, the method comprises:

stacking the movable ray inspection system in the container yard by using a container transfer apparatus in the container yard, such that the movable ray inspection system defines a scanning passage; and

when the container transfer apparatus performs stacking operation to the container in the container yard, turning on the ray generator device of the movable ray inspection system and controlling the movable ray inspection system to move along the scanning passage in the container yard at a preset velocity, so as to scan the container to be inspected along a length direction of a container;

preferably, further comprising:

after completing the scanning to a first stack of containers in the container yard, driving the movable ray inspection system to move to a second stack of containers which are located at different position from the first stack of containers in the container yard, so as to scan the second stack of containers.

13. The ray inspection method according to claim 12, further comprising:

when the container transfer apparatus is in an idle state where no stacking operation is performed, turning on the ray generator device of the movable ray inspection system and controlling the movable ray inspection system to move along the scanning passage in the container yard at a preset velocity, so as to scan the container to be inspected along a length direction of a container;

preferably, further comprising:

after completing the scanning to a first stack of containers in the container yard, driving the movable ray inspection system to move to a second stack of containers which are located at different position from the first stack of containers in the container yard, so as to scan the second stack of containers.