tags in logistics work, “Nikkei BP Mook, All of wireless IC tag”, Nikkei BP Inc., April 20, 2004, p.70-71.

SUMMARY OF INVENTION

[Technical Problem]

[0005]

In the technique of Patent Literature 1 described above, a technique for reading ID information of an RFID tag attached to a container when a forklift inserts a fork-shaped arm into the container is disclosed. Further, the same technique is also described in Non-Patent Literature 1.

However, it may be difficult to determine a carrying-in source or a carrying-out destination. For example, when hydraulic pressure information indicating raising and lowering of the fork of the forklift is not acquired in transport of the container, a place where the transport vehicle such as the forklift performs carrying-in and carrying-out of the cargo may not be able to be accurately specified.

[0006]

Accordingly, embodiments of the present invention seek to provide a cargo management device, a cargo management method and a program that may solve the above-described problems.

[Solution to Problem]

[0007]

According to a first aspect of the present invention, a cargo management device includes a cargo management unit configured to: determine whether or not a cargo identifier (ID) transmitted from a cargo ID transmission device attached to a cargo has been detected by a first antenna provided in a cargo gripping mechanism of a transport

vehicle; determine whether or not the cargo ID is detected by a second antenna provided in the transport vehicle in advance to be located near the first antenna when the cargo gripping mechanism is lifted up to a predetermined height; and determine a carrying-in source or a carrying-out destination of the cargo based on a detection situation in which the cargo ID is detected by each of the first antenna and the second antenna.

[0008]

According to a second aspect of the present invention, a cargo management method includes determining whether or not a cargo ID transmitted from a cargo ID transmission device attached to a cargo has been detected by a first antenna provided in a cargo gripping mechanism of a transport vehicle, determining whether or not the cargo ID is detected by a second antenna provided in the transport vehicle in advance to be located near the first antenna when the cargo gripping mechanism is lifted up to a predetermined height, and determining a carrying-in source or a carrying-out destination of the cargo based on a detection situation in which the cargo ID is detected by each of the first antenna and the second antenna.

[0009]

According to a third aspect of the present invention, a program causes a computer of a cargo management device to function as a cargo management means configured to: determine whether or not a cargo ID transmitted from a cargo ID transmission device attached to a cargo has been detected by a first antenna provided in a cargo gripping mechanism of a transport vehicle; determine whether or not the cargo ID is detected by a second antenna provided in the transport vehicle in advance to be located near the first antenna when the cargo gripping mechanism is lifted up to a predetermined height; and determine a carrying-in source or a carrying-out destination of the cargo based on a detection situation in which the cargo ID is detected by each of the first antenna and the second antenna.

[Advantageous Effects of Invention]

[0010]

According to embodiments of the present invention, it is possible to determine a carrying-in source or a carrying-out destination of a cargo that a transport vehicle transports without obtaining hydraulic pressure information of a cargo gripping mechanism of the transport vehicle.

BRIEF DESCRIPTION OF DRAWINGS

[0011]

Fig. 1 is a diagram showing a relationship between a forklift and a container

CLAIMS

1. A cargo management device comprising a cargo management unit configured to:

determine whether or not a cargo identifier (ID) transmitted from a cargo ID transmission device attached to a cargo is detected by a first antenna provided in a cargo gripping mechanism of a transport vehicle;

determine whether or not the cargo ID is detected by a second antenna provided in the transport vehicle in advance to be located near the first antenna when the cargo gripping mechanism is lifted up to a predetermined height; and

determine a carrying-in source or a carrying-out destination of the cargo based on a detection situation in which the cargo ID is detected by each of the first antenna and the second antenna.

2. The cargo management device according to claim 1 further comprising

a transport state determination unit configured to determine a cargo transport state of the transport vehicle based on the situation in which the cargo ID is detected by each of the first antenna and the second antenna.

3. The cargo management device according to claim 1 or 2, wherein

the cargo management unit is further configured to:

determine whether or not a placement position ID transmitted from a placement

position ID transmission device installed at the carrying-out destination is detected by at least one of the first antenna and the second antenna; and

determine the carrying-in source or the carrying-out destination based on the detection of the placement position ID.

4. The cargo management device according to claim 3, wherein

the cargo management unit is further configured to determine the carrying-in source or the carrying-out destination based on a signal intensity including the placement position ID.

5. A cargo management method comprising:

determining whether or not a cargo ID transmitted from a cargo ID transmission device attached to a cargo is detected by a first antenna provided in a cargo gripping mechanism of a transport vehicle;

determining whether or not the cargo ID is detected by a second antenna provided in the transport vehicle in advance to be located near the first antenna when the cargo gripping mechanism is lifted up to a predetermined height; and

determining a carrying-in source or a carrying-out destination of the cargo based on a detection situation in which the cargo ID is detected by each of the first antenna and the second antenna.

6. A program that causes a computer of a cargo management device to function as a cargo management means configured to:

determine whether or not a cargo ID transmitted from a cargo ID transmission device attached to a cargo is detected by a first antenna provided in a cargo gripping mechanism of a transport vehicle;

determine whether or not the cargo ID is detected by a second antenna provided in the transport vehicle in advance to be located near the first antenna when the cargo gripping mechanism is lifted up to a predetermined height; and

determine a carrying-in source or a carrying-out destination of the cargo based on a detection situation in which the cargo ID is detected by each of the first antenna and the second antenna.