MULTI-LEVEL CONTAINER STORAGE SYSTEM AND HIGH-BAY CONTAINER STORAGE

FIELD OF THE INVENTION

The present invention relates in general to container storages. In particular, however not exclusively, the present invention concerns multi-level container storage systems and high-bay container storages or warehouses comprising such storage systems.

BACKGROUND

It is known to stack containers on top of each other, for example, in container terminals and container ships. In this case, retrieving one of the containers which is not the topmost container is difficult since the container on top must first be moved away. Furthermore, if a container from the stack surrounded by other stacks is to be retrieved, it can become complicated. It is furthermore known to utilize container storage in which containers can be stored in multiple levels, such as in plurality of shelves arranged in several level in the vertical direction. In known attempts, the retrieving of the containers by the crane of the system is slow.

SUMMARY

~~An objective~~Embodiments of the present invention ~~is to~~ provide a multi-level container storage system and a high-bay container storage. ~~Another objective of the present invention is that the~~The multi-level container storage system and the high-bay container storage according to embodiments of the present invention provide space-efficient storing of containers with fast and accurate storing and retrieving capabilities.

~~The objectives of the invention are reached by a multi-level container storage system and a high-bay container storage as defined by the respective independent claims.~~

According to a first aspect, a multi-level container storage system is provided. The multi-level container storage system comprises a storage module comprising racks in a vertical direction and a first horizontal direction for storing containers, wherein each one of the racks comprises a support for supporting at least one container and at least two first tracks arranged in a first distance from each other in the vertical direction and extending in a second horizontal direction, the second horizontal direction being perpendicular relative to the first horizontal direction, and at least one of the racks is adapted for receiving a plurality of containers stackable on top of each other.

and/or walls, at least partly surrounding the at least one multi-level container storage system.

Furthermore, the high-bay container storage may comprise a plurality of said multi-level container storage systems.

~~The~~Embodiments of the present invention provide~~s~~ a multi-level container storage system and a high-bay container storage. ~~The~~Embodiments of the present invention provide~~s~~ advantages over known solutions in that ~~it~~they provide~~s~~ space-efficient storing of containers with fast and accurate storing and retrieving capabilities.

Various other advantages will become clear to a skilled person based on the following detailed description.

The expression "a plurality of" may refer to any positive integer starting from two (2), that is being at least two.

The terms "first", "second", etc. are herein used to distinguish one element from another element, and not to specially prioritize or order them, if not otherwise explicitly stated.

The exemplary embodiments presented herein are not to be interpreted to pose limitations to the applicability of the appended claims. The verb "to comprise" is used herein as an open limitation that does not exclude the existence of also unrecited features. The features recited in ~~depending~~the dependent claims are mutually freely combinable unless otherwise explicitly stated.

The novel features which are considered as characteristic of embodiments of the present invention are set forth in particular in the appended claims. ~~The~~Embodiments of the present invention itself, however, both as to its construction and its method of operation, together with additional objectives and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF FIGURES

Some embodiments of the present invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings.

Figures 1A-1C illustrate schematically a high-bay container storage according to an embodiment.