

Claims

[Claim 1]

An overhead transport system comprising: a traveling rail for overhead transport vehicles, including at least a straight segment and at least a curved segment connected to said straight segment; and the overhead transport vehicles for traveling on said traveling rail, being provided with a hoist for transferring articles, said overhead transport system further comprising:

a traveling rail for a local vehicle, provided below said traveling rail for the overhead transport vehicles, allowing the articles to pass upward and downward, having one end under said straight segment, extending straightly from said one end parallelly to an extended line of said straight segment, passing over a transfer position at a ground side, and further extending straightly to another end outside an area under said straight segment;

at least a buffer for supporting the articles, provided under said straight segment and also under said traveling rail for the local vehicle; and

at least one local vehicle, traveling on said traveling rail for the local vehicle, provided with a hoist, and for transferring the articles between said transfer position at the ground side and said buffer.

[Claim 2]

The overhead transport system according to claim 1, wherein said traveling rail for the local vehicle passes over said transfer position at the ground side.

[Claim 3]

The overhead transport system according to claim 1, wherein said another end is located under said curved segment and over said transfer position at the ground side.

[Claim 4]

The overhead transport system according to one of claims 1 to 3, wherein said buffer is configured to support a plurality of the articles and extends from said one end parallelly to and under said traveling rail for the local vehicle.

[Claim 5]

The overhead transport system according to one of claims 1 to 4, further comprising an inter-bay route comprising a plurality of additional traveling rails for the overhead transport vehicles such that the overhead transport vehicles travel on said additional traveling rails in a same direction,

wherein said straight segment is connected, via said curved segment, to at least one of said additional traveling rails.

[Claim 6]

The overhead transport system according to one of claims 1 to 5,

wherein said buffer is slidable along a direction in a horizontal plane perpendicular to a lengthwise direction of the traveling rail for the local vehicle,

said overhead transport system further comprising a second traveling rail for said overhead transport vehicles, passing over and being parallel to said straight segment,

wherein the overhead transport vehicles for traveling on said second traveling rail are provided with a lateral transfer apparatus for transferring said hoist along a direction in a horizontal plane perpendicular to a traveling direction of the overhead transport vehicles and are configured to transfer the articles between said buffer.

[Claim 7]

The overhead transport system according to one of claims 1 to 5,

wherein said buffer is slidable along a direction in a horizontal plane perpendicular to a lengthwise direction of the traveling rail for the local vehicle, and

said overhead transport system further comprising a second traveling rail for overhead transport vehicles, passing over said buffer when laterally slid, and being parallel to said straight segment.

[Claim 8]

An intermediate transport apparatus relaying articles between overhead transport vehicles and a transfer position at a ground side, wherein said overhead transport vehicles travel on a traveling rail having at least a straight segment and at least a curved segment connected to said straight segment and are provided with a hoist, and wherein said straight segment is outside an area over said transfer position, said intermediate transport apparatus comprising:

a traveling rail for a local vehicle, provided below said traveling rail for the overhead transport vehicles, allowing the articles to pass upward and downward, having one end under said straight segment, extending straightly from said one end parallelly to an extended line of said straight segment, passing over a transfer position at a ground side, and further extending straightly to another end outside an area under said straight segment; and

at least a buffer for supporting the articles, provided under said straight segment and also under said traveling rail for the local vehicle; and

at least one local vehicle, traveling on said traveling rail for the local vehicle, provided with a hoist, and for transferring the articles between said transfer position at the ground side and said buffer.

[Claim 9]

A transport method using a traveling rail for overhead transport vehicles in a ceiling space, including at least a straight segment and at least a curved segment connected to said straight segment, and the overhead transport vehicles traveling on said traveling rail and having a hoist for transferring articles;

said method using:

at least a local vehicle having a hoist for transferring the articles and for traveling on a traveling rail for the local vehicle, said traveling rail for the local vehicle being provided below said traveling rail for the overhead transport vehicles, allowing the articles to pass upward and downward, having one end under said straight segment, extending straightly from said one end parallelly to an extended line of said straight segment, passing over a transfer position at a ground side, and further extending straightly to another end outside an area under said straight segment;

and

at least a buffer for supporting the articles, provided under said straight segment and also under said traveling rail for the local vehicle, and

said method comprising:

transferring the articles by said overhead transport vehicles in said straight segment between said buffer; and

making said local vehicle transfer the articles between said buffer, travel on said traveling rail for the local vehicle, and transfer the articles between said transfer position at the ground side at a position outside said straight segment.