

A transportation carrier and enclosing structure of active area of mobile carrying platform thereof, and enclosing member

5 Field of the Invention

The present invention relates to the field of machinery, and in particular, to a transportation carrier and an enclosing structure for an active area of a mobile carrying platform and an enclosing member thereof.

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Background

Current technology, such as a relay type stairway conveying carrier disclosed in the invention patent application under publication number
15 CN101125622A, includes a carrier rack arranged along the slope direction of a stairway, the carrier rack is provided thereon with an upper rail, a lower rail, a railcar, a traction device, an enclosing device and a control system; the traction device drives the railcar to move; the railcar has a standing plate which is extended from the side of the carrier rack in a working state and moves along with the railcar for
20 carrying passengers; therefore, there is an area on the side of the carrier rack which facilitates the movement of a connection portion between the railcar disposed in the rack, and the standing plate extending out of the rack. This area is often open during operation of the conveying carrier, hence external objects may enter the interior of the rack through the area, in particular, some small animals may enter the rack
25 through the area, a child's arm may also extent into the interior of the rack through the area, therefore there is a potential high security risk.

Summary

An objective of the present invention is to provide an enclosing structure for an active area of a transportation carrier mobile carrying platform, which can effectively close the active area of a mobile carrying platform and thus improves safety.

The above technical objective of the present invention is achieved by the following technical solutions: an enclosing structure for an active area of a transportation carrier mobile carrying platform comprises a rack; a housing provided on the rack, the housing having a first housing part and a second housing part oppositely disposed with respect to the first housing part; a closure member operatively connected to a mobile carrying platform; and supporting members provided on the rack for supporting the closure member in the movement direction of the mobile carrying platform, there is a spacing between the first housing part and the second housing part, the spacing forms the active area of the mobile carrying platform.

The enclosing member is connected to the mobile carrying platform and is extendable and/or retractable along with the mobile carrying platform, so as to close the active area during the movement of the mobile carrying platform.

As one preferred embodiment of the present invention, the enclosing member comprises a first enclosing member and a second enclosing member; one end of the first enclosing member and one end of the second enclosing member are connected to a corresponding side of the mobile carrying platform, the other end of the first enclosing member and the other end of the second enclosing member are connected to each other to form a closed loop between the first enclosing member, the second enclosing member and the mobile carrying platform.

As one preferred embodiment of the present invention, the enclosing member is an extendable and retractable member having a first end connected to

the mobile carrying platform, and an another end connected to the supporting member, the supporting member is a connecting column fixedly connected to the rack.

5 As one preferred embodiment of the present invention, the supporting member is a winding roller rotatably connected to the rack, the enclosing member is a closed belt having one end connected to the mobile carrying platform and woundable around the winding roller.

10 As one preferred embodiment of the present invention, the transportation carrier is a stairway conveying carrier configured for inclined upward and downward transportation.

 The overall operation principle of the stairway conveying carrier may be
15 similar to that described in the background art.

 As a preferred embodiment of the present invention, the enclosing structure further comprises a first guide member assembly for guiding the movement of the first enclosing member, the first guide member assembly includes a pressing
20 member for exerting a downward pressure against the first enclosing member.

 This solution is particularly suitable for use in stairway conveying carriers that are configured for an inclined upward and downward transportation; the pressing member is located at the lower end of the transportation carrier.

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 As a preferred embodiment of the present invention, the supporting member comprises a first supporting member disposed corresponding to the first enclosing member and a second supporting member disposed corresponding to the second enclosing member, the pressing member is disposed on the first supporting
30 member.

As a preferred embodiment of the present invention, the enclosing structure further comprises a second guide member assembly for guiding the movement of the second enclosing member, the second guide member assembly includes a bearing member for generating an upward bearing force toward the second enclosing member.

This solution is particularly suitable for use in stairway conveying carriers that are configured for inclined upward and downward transportation; the bearing member is located at the higher end of the transportation carrier.

As a preferred embodiment of the present invention, the first guide member assembly includes an upper guide member disposed in the rack for providing guidance for the movement of the first enclosing member; and the upper guide member has a top wall for exerting a downward pressure against the first enclosing member.

As a preferred embodiment of the present invention, the second guide member assembly includes a lower guide member disposed in the rack for providing guidance for the movement of the second enclosing member; and the lower guide member has a bottom wall for exerting an upward bearing force against the second enclosing member.

Another object of the present invention is to provide an enclosing member suitable for the enclosing structure according to any one of the technical solutions illustrated above; the enclosing member comprises at least one connecting member and a plurality of strip members juxtaposedly arranged in parallel through the connecting member.

When the length direction of the strip members is not perpendicular to the moving direction of the mobile carrying platform, the strip members are rotatably connected to the connecting member.

A further object of the present invention is to provide a transportation carrier comprising an enclosing structure according to any one of the technical solutions illustrated above.

5 In summary of the above, the present invention has the following beneficial effects: The structure of the present invention is easy to implement and can effectively enclose the active area of mobile carrying platform, thus is useful for reducing potential safety hazards and improving the safety of use. The present invention used in transportation carrier is operationally stable, reliable, aesthetical,
10 and poised.

Brief description of drawings

 Figure 1 is a schematic diagram of a first embodiment;
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 Figure 2 is a schematic diagram of the connection between the enclosing member, the mobile carrying platform and the supporting member in the first embodiment;

20 Figure 3 is a schematic diagram of the connection between the enclosing member, the mobile carrying platform and the supporting member in a second embodiment;

 Figure 4 is a schematic diagram of the connection between the enclosing
25 member, the mobile carrying platform and the supporting member in a third embodiment;

 Figure 5 is a schematic diagram of a sixth embodiment;

30 Figure 6 is a schematic diagram of a first supporting member in the sixth embodiment;

Figure 7 is a schematic diagram of a second supporting member in the sixth embodiment;

Figure 8 is a schematic diagram of another form of the first supporting
5 member in the sixth embodiment;

Figure 9 is a schematic diagram of the connection between the enclosing member, the mobile carrying platform and the supporting member in the sixth
10 embodiment;

Figure 10 is a schematic diagram of another form of the second supporting member in the sixth embodiment;

Figure 11 is a schematic diagram of the upper guide member in the sixth
15 embodiment;

Figure 12 is a schematic diagram of the lower guide member in the sixth embodiment;

Figure 13 is a schematic diagram of the arc shaped transition portion in the
20 sixth embodiment;

Figure 14 is a schematic diagram of a second enclosing member in the sixth
25 embodiment;

Figure 15 is a schematic diagram of a first enclosing member in the sixth embodiment;

Figure 16 is a schematic diagram of the connection between the first
30 enclosing member and the second enclosing member in the sixth embodiment;

Figure 17 is a schematic diagram of a seventh embodiment.

Reference numbers used in the drawings and corresponding technical features in the specification:

	1, rack;
5	2, housing;
	21, first housing part;
	22, second housing part;
	23, active area;
	3, mobile carrying platform;
10	31, carrying platform;
	32, mobile rack;
	33, connecting portion;
	4, enclosing member;
	41, socket section;
15	431, first enclosing member;
	432, second enclosing member;
	441, connecting member;
	442, strip member;
	50, supporting member;
20	501, first supporting member;
	5011, roller wheel;
	50111, first step;
	502, second supporting member;
	5021, second step;
25	51, connecting column;
	512, upper guide member;
	5121, top wall;
	52, winding roller;
	521, lower guide member;
30	5211, bottom wall;
	531, arc shaped transition portion;
	61, tension roller.

Detailed Description

The present invention will be further described in detail below with reference to the accompanying drawings.

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The embodiments are merely an explanation of the present invention, which is not intended to limit the present invention. Those skilled in the art may make any modifications to the present embodiments after reading the present specification without creative contribution, however, any such act within the scope of the claims are protected by the patent law.

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Embodiment 1: As shown in FIG. 1-2, an enclosing structure for an active area of a transportation carrier mobile carrying platform comprises a rack, a housing 2 provided on the rack, the upper portion of the housing 2 has oppositely arranged first housing part 21 and second housing part 22; between the first housing part 21 and the second housing part 22 there is a spacing; the mobile carrying platform 3 includes a rotatable carrying platform 31 for transporting an object or a passenger, a mobile rack 32 disposed in the housing 2 for moving the carrying platform 31, a connecting portion 33 connected between the carrying platform 31 and the mobile rack 32, the carrying platform 31 is positioned above the first housing part 21 and the second housing part 22, the spacing between the first housing part 21 and the second housing part 22 forms the active area 23 of the connecting portion 33, that is, the active area 23 of the mobile carrying platform 3.

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Supporting members are disposed at two ends of the rack. The supporting members of this embodiment are in the form of winding rollers 52 on which the enclosing member 4 is wound, one end of the enclosing member 4 is connected to the mobile rack 32 via a tension roller 61; the enclosing member 4 is formed as a belt shape.

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Embodiment 2: The difference from Embodiment 1, as shown in FIG. 3, lies in that the enclosing member 4 and the mobile rack 32 form a closed-loop state,

and the supporting members are in the form of tension rollers 61 disposed at two ends of the rack for tensioning the enclosing member 4.

Embodiment 3: The difference from Embodiment 1, as shown in FIG. 4, is
5 that the enclosing member 4 is formed of a plurality of telescopically disposed
socket sections 41, the supporting members are in the form of connecting columns
51 disposed at two ends of the rack, the enclosing member 4 is connected to the
connecting columns 51 at one end, and to the mobile rack 32 at the other end, the
enclosing member 4 expands and contracts with the movement of the mobile rack
10 32; a limiting structure is provided in the socket sections 41 for pushing or pulling
the movement of an adjacent socket section 41.

Embodiment 4: The difference from Embodiment 3 is that the enclosing
member 4 is a resiliently expandable and compressible band.

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Embodiment 5: The difference from Embodiment 1-4 is that, the first housing
part 21 and the second housing part 22 are located on one side of the rack; and the
carrying platform 31 is also located on the same side of the rack.

20 Embodiment 6: As shown in FIGs. 5 to 16, an enclosing structure for an
active area of a transportation carrier mobile carrying platform comprises a rack 1,
a housing 2 provided on the rack 1. Positioned at one side of the rack 1, the housing
2 has a first housing part 21 positioned at an upper portion and a second housing
part 22 positioned at a lower portion, the region between the first housing part 21
25 and the second housing part 22 forms an active area of the mobile carrying platform
3.

The transportation carrier in this embodiment is a stairway conveying carrier
for inclined upward and downward transportation, and the operation principle is
30 similar to that described in the background art.

The enclosing member 4 is provided to prevent external objects from entering the rack 1. As shown in FIG. 14 or 15, the structure of the enclosing member 4 includes at least one connecting member 441 and a plurality of strip members 442 juxtaposedly arranged in parallel through the connecting member 441; the number of connecting members 441 in the present embodiment is two.

In this embodiment, the enclosing member 4 is provided as being formed by a first enclosing member 431 and a second enclosing member 432. One end of the first enclosing member 431 and one end of the second enclosing member 432 are connected to a corresponding side of the mobile carrying platform 3, and the other end of the first enclosing member 431 and the other end of the second enclosing member 432 are connected to each other to form a closed loop state.

In the stairway conveying carrier, in order to reduce the area occupied by the rack 1 in the stairway, the lower part of the enclosing member 4, that is, the strip members 442 of the first enclosing part 431 are arranged inclined to the moving direction of the mobile carrying platform 3, that is, the strip members 442 may be generally perpendicular to the horizontal plane, as shown in FIG. 15.

Two ends of the rack 1 are respectively provided with a corresponding supporting member 50 for supporting the enclosing members 4 along a moving direction of the mobile platform 3, the supporting member 50 is deemed to be the first supporting member 501 corresponding to the first enclosing member 431 and the second supporting member 502 corresponding to the second enclosing member 432.

For better operation, rack 1 is provided with a first guide assembly for guiding the movement of the first enclosing member 431, and a second guide assembly for guiding the movement of the second enclosing member 432.

The first guide assembly includes a pressing member for applying a downward pressure against the first enclosing member 431 to further improve the operational stability.

5 In this embodiment, the first supporting member 501 may be provided as an upper wheel set and a lower wheel set. As shown in FIG. 6, the pressing member may be disposed on the upper wheel set, more specifically provided as a first step 50111 on each wheel 5011 of the wheel set, the plane in which the first step 50111 is positioned, is parallel to the moving direction of the mobile carrying platform 3.

10 Further, it is also possible to provide on the lower wheel set a step for providing an upward bearing force for the first enclosing member 431, which step is not shown in the figures.

15 Further, the first guide assembly further includes an upper guide member 512, the upper guide member 512 is provided in a channel form, an upper end of the strip members 442 of the first enclosing member 431 are received within the groove of the upper guide member 512, further improving the operational stability, top wall 5121 of the groove can apply downward pressure toward the strip members
20 442.

The first step 50111 pressures downwardly toward the first enclosing member 431. The step surface of the first step 50111 may be in direct contact with the upper surface of the connecting member 441, or the step surface of the first
25 step 50111 may directly contact the upper surface of the strip members 442, or may be in other forms capable of serving the same purpose.

The length direction of the strip members 442 of the second enclosing member 432 may be perpendicular to the moving direction of the mobile platform 3,
30 as shown in FIG. 14; The second supporting member 502 may also be provided as an upper wheel set and a lower wheel set, as shown in FIG. 7; the second guide member assembly comprises a lower guide member 521, the lower guide member

521 is provided in a channel form, a lower end of the strip members 442 of the second enclosing member 432 are received within the groove of the lower guide member 521, the bottom wall 5211 of the groove can apply an upward bearing force against the strip members 442. To further improve the operational stability,
5 corresponding steps may be provided on the second supporting member 502 to provide support to the second enclosing member 432 at the location of the second supporting member 502.

For better operation, the upper guide member 512 may extend to the second
10 supporting member 502, and the lower guide member 521 may extend to the first supporting member 501, such that the lower end of the first enclosing member 431 may be received in the groove of the lower guide member 521, and the upper end of the second enclosing member 432 may be received in the groove of the upper guide member 512.

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As an equivalent variation, the first supporting member 501 may be in the form of a rotating roller, as shown in FIG. 8, and the second supporting member 502 may also be in the form of a rotating roller.

20 The relative position and connection schematic diagram between the first enclosing member 431, the second enclosing member 432 and the mobile platform 3, and between the first supporting member 501 and the second supporting member 502 are shown in FIG. 9.

25 The first enclosing member 431 and the second enclosing member 432 may be connected by springs, in ensuring suitable tension therebetween, as shown in FIG. 16.

An arc shaped transition portion 531 is also provided between the supporting
30 member 50, and the upper guide member 512 and the lower guide member 521. The arc shaped transition portion 531 is also provided in a channel shape and can be integrally connected to the guide member as shown in FIG. 13.

For better operation, roller wheels can also be provided at both ends of the strip members 442 to contact corresponding guide members, roller wheels are not shown in the figures.

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As another form, the length direction of the strip members 442 of the second enclosing member 432 may also be oblique to the moving direction of the mobile carrying platform 3, that is, disposed substantially perpendicular to the horizontal plane; in this form for better operation, the lower end of the second supporting member 502 may be provided with a bearing member 521 capable of providing an upward bearing force toward the second enclosing member 432, the bearing member 521 may be in the form of a second step 5021 provided on the second supporting member 502, a step surface of the second step 5021 is parallel to the moving direction of the mobile carrying platform 3, as shown in FIG. 10.

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As another form, the length direction of the strip member 442 of the first enclosing member 431 may also be perpendicular to the moving direction of the mobile carrying platform 3.

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Embodiment 7: An enclosing member, as shown in FIG. 17, wherein a connecting member 441 and a plurality of parallel strip members 442 are arranged in parallel with the connecting member 441; the connecting member 441 may be connecting blocks each having two ends rotatably connected to adjacent strip members 442.

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Embodiment 8: A transportation carrier comprising any one of embodiments 1 to 6; the transportation carrier is not limited to stairway conveying carrier but is particularly suitable as a stairway conveying carrier.

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CLAIMS

1. An enclosing structure for an active area of a transportation carrier mobile carrying platform, characterized in that, the enclosing structure comprising a rack (1); a housing (2) provided on the rack (1), the housing (2) having a first housing part (21) and a second housing part (22) oppositely disposed with respect to the first housing part (1); an enclosing member (4) operatively connected to a mobile carrying platform (3); and supporting members (50) provided on the rack (1) for supporting the enclosing member (4) in a movement direction of the mobile carrying platform (3), a spacing between the first housing part (21) and the second housing part (22) form the active area of the mobile carrying platform (3).
2. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 1, characterized in that, the enclosing member (4) comprising a first enclosing member (431) and a second enclosing member (432); one end of the first enclosing member (431) and one end of the second enclosing member (432) are connected to a corresponding side of the mobile carrying platform (3), an another end of the first enclosing member (431) and an another end of the second enclosing member (432) are connected to each other, to form a closed loop between the first enclosing member (431), the second enclosing member (432) and the mobile carrying platform (3).
3. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 1, characterized in that, the enclosing member (4) is an extendable and retractable member having a first end connected to the mobile carrying platform (3) and an another end connected to the supporting member (50), the supporting member (50) is a connecting column (51) fixedly connected to the rack (1).
4. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 1, characterized in that, the supporting member (50) is a winding roller (52) rotatably connected to the rack (1), the enclosing

member (4) is a closed belt having one end connected to the mobile carrying platform (3) and woundable around the winding roller (52).

5 5. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 1, characterized in that, the transportation carrier is a stairway conveying carrier configured for an inclined upward and downward transportation.

10 6. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 2, characterized in that, the enclosing structure further comprises a first guide assembly for guiding the movement of the first enclosing member (431), the first guide assembly includes a pressing member for exerting a downward pressure against the first enclosing member (431).

15 7. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 6, characterized in that, the supporting member (50) comprises a first supporting member (501) disposed corresponding to the first enclosing member (431) and a second supporting member (502) disposed corresponding to the second enclosing member (432), the pressing member is
20 disposed on the first supporting member (501).

8. The enclosing structure for an active area of a transportation carrier mobile carrying platform according to claim 2, characterized in that, the enclosing structure further comprises a second guide assembly for guiding the movement of the second
25 enclosing member (432), the second guide assembly includes a bearing member for generating an upward bearing force toward the second enclosing member (432).

9. An enclosing member, characterized in that, said enclosing member being suitable for use in an enclosing structure transportation carrier according to any of
30 the claims 1 to 8, the enclosing structure comprises at least one connecting member (441), a plurality of strip members (442) juxtaposedly arranged in parallel through the connecting member (441).

10. A transportation carrier, characterized in that, the transportation carrier comprises an enclosing structure according to any one of claims 1 to 8.

ABSTRACT

Disclosed are an enclosing structure of an active area of a mobile carrying platform of a transportation carrier and an enclosing member, wherein the enclosing structure comprises a rack (1), a housing (2) provided on the rack and having a first housing part (21) and a second housing part (22) which are oppositely arranged, an enclosing member (4) linked with the mobile carrying platform (3), and a support (50) provided on two sides of the rack for supporting the enclosing member in the moving direction of the mobile carrying platform, wherein a distance between the first housing part and the second housing part forms the active area of the mobile carrying platform. The enclosing structure and the enclosing member can effectively enclose the active area of the mobile carrying platform, thereby facilitating the improvement of safety.