ANTI-COLLISION CONNECTION STRUCTURE AND CARRIER BOARD HAVING THE ANTI-COLLISION CONNECTION STRUCTURE

BACKGROUND

[0001] The present invention relates to an anti-collision connection structure and carrier board with the same.

[0002] In recent years, with the growth of logistics technology, the plastic carrier boards are increasingly and widely used. However, most of the present plastic carrier boards are of a non-removable structure which is bulky, difficult to produce, and expensive to manufacture, and a connection base between the upper and lower boards is apt to be crashed by while forking by the forklift. Moreover, when the carrier board is partially damaged, the entire carrier board becomes useless since it cannot be removed and replaced, resulting in greater economic loss and energy waste.

SUMMARY

[0003] In this section, a series of simplified concepts are introduced, which will be described in further detail in the DETAILED DESCRIPTION section. The section of the present invention does not intend to define the critical features or the essential technical features of the claimed technical solution, nor intend to determine the protection scope of the claimed technical solution.

[0004] To at least partially solve the above problem, the present invention discloses an anti-collision connection structure characterized in that the anti-collision connection structure includes a rib assembly provided on a connection leg of a carrier board, and one end of the rib assembly is connected with an anti-collision fixture that is fixed onto the carrier board and cooperates with the rib assembly to reinforce its anti-collision ability.

[0005] Preferably, the rib assembly is provided with at least three or more transverse ribs arranged in a transverse array for reinforcing its transversal anti-collision ability, and longitudinal ribs arranged in a longitudinal array for reinforcing its longitudinal anti-collision ability. The anti-collision fixture comprises transversal anti-collision grooves for fixing the transverse ribs and longitudinal anti-collision grooves for fixing the longitudinal ribs.

[0006] Preferably, numbers of the transverse ribs and the longitudinal ribs are four.

[0007] Preferably, the transverse ribs and the longitudinal ribs are interconnected.

[0008] Preferably, the transverse ribs comprise a first transverse rib, a second transverse rib, a third transverse rib and a fourth transverse rib. The longitudinal ribs comprise a first longitudinal rib, a second longitudinal rib, a third longitudinal rib and a fourth longitudinal rib. The second and third transverse ribs are intermediately disposed between the first and fourth transverse ribs. The second and third longitudinal ribs are intermediately disposed between the first and fourth longitudinal ribs.

[0009] The present invention also discloses an carrier board with the above mentioned anti-collision connection structure, comprising an upper board and a lower board, characterized in that, a connection base is provided between the upper board and the lower board, and the connection base is provided with the rib assembly to reinforce its anti-collision ability, both the upper board and the lower board are provided with anti-collision fixtures that can extend into the connection base and mate with the rib assembly.

[0010] Preferably, a height of the connection base is 80 to 100mm.

[0011] Preferably, an extension of the anti-collision fixture into the connection base is 8 to 20 mm.

[0012] Preferably, an extension of the anti-collision fixture into the connection base is 12 to 15 mm.

[0013] Preferably, the upper board is provided with an upper lock hole, the lower board is provided with a lower lock hole, and the connection base is provided with a connection hole. The upper lock hole, the lower lock hole, and the connection hole are provided with a connector passing therethrough to press the upper board and the lower board to each other. A connection snap-lock structure is provided between the connector and the lower board.

[0014] Based on the above technical solutions, the present invention presents beneficial effects over the prior art as below:

[0015] The anti-collision connection structure and the carrier board with the same according to the present disclosure are simple in structure, easy to produce, manufactured at a low cost; and the connection base between the upper and lower boards may withstand the

collision from the forklift without damage, and may be conveniently removed and replaced when being damaged without damaging the upper and lower boards, reducing economic loss. The connection base of the present invention is easy to produce, manufactured at a low cost, provided with multiple ribs and thus may not be easily damaged by collision. At the same time, the connection end of the upper and lower boards with the connection base can avoid direct collision from the forklift, and has no impact upon the upper and lower boards when the connection base is damaged.

[0016] Disclosed herein is an anti-collision connection structure comprising a rib assembly provided on a connection leg of a carrier board, characterized in that, one end of the rib assembly is connected with an anti-collision fixture that is fixed onto the carrier board and cooperates with the rib assembly to reinforce its anti-collision ability; the rib assembly is provided with at least three or more transverse ribs arranged in transverse array for reinforcing its transversal anti-collision ability, and at least three or more longitudinal ribs arranged in longitudinal array for reinforcing its longitudinal anti-collision ability; and the anti-collision fixture comprises at least three or more transversal anti-collision grooves for fixing the transverse ribs and at least three or more longitudinal anti-collision grooves for fixing the longitudinal ribs; wherein the transverse ribs and the longitudinal ribs are interconnected, and the transversal anti-collision grooves and the longitudinal anti-collision grooves are interconnected, shapes of the transversal anti-collision grooves and the longitudinal anti-collision grooves totally mate with shapes of the transversal ribs and the longitudinal ribs in use, so that each rib can be protected by each anti-collision groove.

[0017] Also disclosed herein is a carrier board with the anti-collision connection structure as described above, comprising an upper board and a lower board, characterized in that, a connection base is provided between the upper board and the lower board, the connection base being provided with the rib assembly to reinforce its anti-collision ability, both the upper board and the lower board being provided with anti-collision fixtures that can extend into the connection base and mate with the rib assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The following drawings of the embodiments of the present invention are

hereby incorporated as part of the present invention to understand the present invention. The drawings which illustrate and depict the embodiments of the present invention are used to explain the principle of the present invention, in which:

[0019] Fig.1 is a perspective view of the present invention;

[0020] Fig.2 is a partial exploded view of the present invention;

[0021] Fig.3 is a partial structural schematic view of the present invention; and

[0022] Fig. 4 is a partial structural schematic view of the present invention.

REFERENCE NUMERALS

[0023] 4: upper board 401: upper lock hole

[0024] 5: lower board 501: lower lock hole

[0025] 6: connection base 601: connection hole

[0026] 7: rib assembly 701: transverse rib

[0027] 702: longitudinal rib 8: anti-collision fixture

[0028] 801: transversal anti-collision groove

[0029] 802: longitudinal anti-collision groove

[0030] 100: connector

DETAILED DESCRIPTION

[0031] In the following description, numerous specific details are set forth in order to provide a more thorough understanding of the present invention. However, as obvious to the skilled in the art, the present invention may be implemented without one or more of these details. Some of the technical features well-known in the art are not described so as not to obscure the embodiments of present invention.

[0032] A structure would be described in detail in the following description for the purpose of thorough understanding the embodiment of present invention. Apparently, the implementations of the embodiments of present invention are not limited to special details known by the skilled in the art.

[0033] First, the embodiments of present invention are described with reference to Figs. 1 to 3.

[0034] An anti-collision connection structure includes a rib assembly 7 provided on a connection leg of a carrier board. One end of the rib assembly 7 is connected with an anti-collision fixture 8 that is fixed to a carrier board and cooperates with the rib assembly 7 to reinforce its anti-collision ability.

[0035] The rib assembly 7 is provided with at least three or more transverse ribs 701 arranged in transverse array for reinforcing the transversal anti-collision ability, and longitudinal ribs 702 arranged in longitudinal array for reinforcing the longitudinal anti-collision ability. The anti-collision fixture 8 includes transversal anti-collision grooves 801 for fixing the transverse ribs 701 and longitudinal anti-collision grooves 802 for fixing the longitudinal ribs 702. With the above structures, some advantages that the structure is steady and not easily damaged after several collisions are achieved.

[0036] The numbers of the transverse ribs 701 and the longitudinal ribs 702 are four, which has the advantage that the anti-collision ability is enhanced.

[0037] The transverse ribs 701 and the longitudinal ribs 702 are interconnected, which has the advantage that the anti-collision ability is enhanced.

[0038] The transverse ribs 701 include a first transverse rib, a second transverse rib, a third transverse rib and a fourth transverse rib. The longitudinal ribs 702 include a first longitudinal rib, a second longitudinal rib, a third longitudinal rib, and a fourth longitudinal rib. The second and third transverse ribs are intermediately disposed between the first and fourth transverse ribs. The second and third longitudinal ribs are intermediately disposed between the first and fourth longitudinal ribs. With the above structures, the advantage that the anti-collision ability is enhanced is achieved.

[0039] As shown in Fig.4, a carrier board to which the above mentioned anti-collision connection structure is applied includes an upper board 4, a lower board 5 and a connection base 6 therebetween. The connection base 6 is provided with the rib assembly 7 to reinforce its anti-collision ability. Both the upper board 4 and the lower board 5 are provided with anti-collision fixtures 8 that can extend into the connection base 6 and mate with the rib assembly 7.

[0040] The height of the connection base 6 is 80 to 100mm, which has the advantage that the upper and lower boards may not easily fall down when the forklift is applied to the

carrier board.

[0041] The extension of the anti-collision fixture 8 into the connection base 6 is 8 to 20 mm, which has the advantage that the anti-collision fixture is prevented from collisions as much as possible, causing the improvement of the anti-collision ability of the connection base without damaging the upper and lower boards, while reducing the scraping cost.

[0042] The extension of the anti-collision fixture 8 into the connection base 6 is 12 to 15 mm, which has the advantage that the anti-collision fixture is prevented from collisions as much as possible, causing the improvement of the anti-collision ability of the connection base without damaging the upper and lower boards, while reducing the scraping cost.

[0043] The upper board 4 is provided with an upper lock hole 401, the lower board 5 is provided with a lower lock hole 501, and the connection base 6 is provided with a connection hole 601. The upper lock hole 401, the lower lock hole 501 and the connection hole 601 are provided with a connector 100 (as shown in Fig.1) passing therethrough to press the upper board 4 and the lower board 5 to each other. A connection snap-lock structure is provided between the connector 100 and the lower board 5. With the above structures, the advantages that the structure is simple, the position is secured by the snap-lock structure, any disengagement is prevented while being used are achieved.

[0044] The operation principle of the present invention is listed as below:

[0045] Installation: the connection base 6 is placed between the upper board 4 and the lower board 5, and then the upper board is secured to the lower board by the connector 100. The transverse ribs 701 and the longitudinal ribs 702 cooperate with the transversal anti-collision grooves 801 and the longitudinal anti-collision grooves 802 respectively, resulting in a powerful anti-collision force, such that the base 6 may not be easily damaged after collisions.

[0046] Based on the above technical solutions, the present invention presents beneficial effects over the prior art listed as below:

[0047] The anti-collision connection structure and the carrier board with the same according to the present disclosure are simple in structure, easy to produce, manufactured at a low cost; and the connection base between the upper and lower boards may withstand the collision from the forklift without damage, and may be conveniently removed and replaced

when being damaged without damaging the upper and lower boards, reducing economic loss. The connection base of the present invention is easy to produce, manufactured at a low cost, provided with multiple ribs and thus may not be easily damaged by collision. At the same time, the connection end of the upper and lower boards with the connection base can avoid direct collision from the forklift, and has no impact upon the upper and lower boards when the connection base is damaged.

[0048] Unless defined otherwise, the technical and scientific terms used herein have the same meaning as commonly construed by those skilled in the art to which this invention pertains. The terms as used herein merely intend to describe specific implementation purpose, rather than restricting the present invention. The terms such as "provide" and the like appeared herein may indicate that one component is directly attached to another component, or that one component is attached to another component through an intervention element. The features described herein in one embodiment may be applied individually or in combination with other features to another embodiment, unless the feature is not applicable or otherwise described in this further embodiment.

[0049] The present invention has been described by way of the above embodiments, but it is to be understood that the above-described embodiments are for illustrative and explanatory purposes only and are not intended to limit the invention to the scope of the described embodiments. It will be appreciated by those skilled in the art that various modifications and variations can be made in accordance with the teaching of the present invention, all of which fall within the scope of the claims.

[0050] Throughout this specification, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

[0051] The reference to any prior art in this specification is not, and should not be taken as, an acknowledgment or any form of suggestion that the prior art forms part of the common general knowledge in Singapore.

WHAT WE CLAIMED IS:

1. An anti-collision connection structure comprising a rib assembly provided on a connection leg of a carrier board, characterized in that, one end of the rib assembly is connected with an anti-collision fixture that is fixed onto the carrier board and cooperates with the rib assembly to reinforce its anti-collision ability；

the rib assembly is provided with at least three or more transverse ribs arranged in transverse array for reinforcing its transversal anti-collision ability, and at least three or more longitudinal ribs arranged in longitudinal array for reinforcing its longitudinal anti-collision ability; and the anti-collision fixture comprises at least three or more transversal anti-collision grooves for fixing the transverse ribs and at least three or more longitudinal anti-collision grooves for fixing the longitudinal ribs；

wherein the transverse ribs and the longitudinal ribs are interconnected, and the transversal anti-collision grooves and the longitudinal anti-collision grooves are interconnected, shapes of the transversal anti-collision grooves and the longitudinal anti-collision grooves totally mate with shapes of the transversal ribs and the longitudinal ribs in use, so that each rib can be protected by each anti-collision groove.

2. The anti-collision connection structure according to claim1, characterized in that, numbers of the transverse ribs and the longitudinal ribs are four.

3. The anti-collision connection structure according to claim 2, characterized in that, the transverse ribs comprise a first transverse rib, a second transverse rib, a third transverse rib and a fourth transverse rib; and the longitudinal ribs comprise a first longitudinal rib, a second longitudinal rib, a third longitudinal rib and a fourth longitudinal rib, the second and third transverse ribs being intermediately disposed between the first and fourth transverse ribs, the second and third longitudinal ribs being intermediately disposed between the first and fourth longitudinal ribs.

4. A carrier board with the anti-collision connection structure according to any one of claims 1 to 3, comprising an upper board and a lower board, characterized in that, a connection base is provided between the upper board and the lower board, the connection base being provided with the rib assembly to reinforce its anti-collision ability, both the upper

board and the lower board being provided with anti-collision fixtures that can extend into the connection base and mate with the rib assembly.

5. The carrier board according to claim 4, characterized in that, a height of the connection base is 80 to 100mm.

6. The carrier board according to claim 4, characterized in that, an extension of the anti-collision fixture into the connection base is 8 to 20 mm.

7. The carrier board according to claim 4, characterized in that, an extension of the anti-collision fixture into the connection base is 12 to 15 mm.

8. The carrier board according to claim 4, characterized in that, the upper board is provided with an upper lock hole, the lower board is provided with a lower lock hole, and the connection base is provided with a connection hole; the upper lock hole, the lower lock hole and the connection hole are provided with a connector passing therethrough to press the upper board and the lower board to each other, and a connection snap-lock structure is arranged between the connector and the lower board.