

FOAM CEMENT COMPOSITE BOARD WITH DOVETAIL GROOVE TYPE STEEL BOUNDARY RIB STRUCTURE AND CONNECTION METHOD THEREOF

TECHNICAL FIELD

The present disclosure relates to the field of buildings and more particularly to a foam cement composite board with a dovetail groove type steel boundary rib structure and a connection method thereof.

BACKGROUND

At present, conventional wall boards used in the building field are typically connected through welding or hitching. These connection ways have the following disadvantages: welding requires complicated process and equipment and usually causes environmental pollution and noise emission, and post-welding secondary anti-corrosion treatment is complicated and cumbersome, resulting in low working efficiency. However, additional tooling is needed to guarantee the strength of hitching.

SUMMARY

The present disclosure is intended to overcome the defects of the prior art by providing a foam cement composite board with a dovetail groove type steel boundary rib structure and a connection method thereof. In the present disclosure, the foam cement composite boards can be mechanically connected with each other quickly and easily by means of the dovetail groove type steel boundary rib structures arranged therein, thus greatly improving working efficiency and avoiding the environmental pollution and noise emission caused by the conventional welding.

A technical solution of the present disclosure is as follows:

The foam cement composite boards with a dovetail groove type steel boundary rib structure may be assembled into various buildings in such a way as building blocks are piled up, such as a low-rise building, a prefabricated integrated bathroom, a prefabricated container building, a prefabricated integrated building, and a prefabricated hexahedron and other spatial structure building. In the present disclosure, the foam cement composite boards may be connected with each other by embedded parts which are respectively placed in grooves of the dovetail groove type steel boundary ribs arranged in the foam cement composite boards and are matched in shape with the grooves, where the embedded parts may be pre-placed in the grooves of the dovetail groove type steel boundary ribs, or placed in the grooves of the dovetail groove type steel boundary ribs when the boards are installed and connected. Thus, different boards may be connected quickly with each other by connecting pieces.

A foam cement composite board with a dovetail groove type steel boundary rib structure may include any one of the following boards: a foam cement composite bottom board, a foam cement composite wall board and a foam cement composite top board, where a dovetail groove type steel frame boundary rib is arranged in the foam cement composite bottom board or the foam cement composite wall board or the foam cement composite top board; the dovetail groove type steel frame boundary rib may include upper and lower flanges and a dovetail groove type boundary rib groove; and an embedded component, for example, a wedge block, may be arranged in the dovetail groove type boundary rib groove.

The connection between the foam cement composite wall board and the foam cement composite bottom board may be carried out by connecting and fixing bolts, a connecting piece and the wedge blocks arranged in the dovetail groove type boundary rib grooves of the boards.

The connection between the foam cement composite wall boards may be carried out by connecting and fixing bolts, a connecting piece and the wedge blocks arranged in the dovetail groove type boundary rib grooves of the boards.

The connection between the foam cement composite wall board and the foam cement composite top board may be carried out by connecting and fixing bolts, a connecting piece and the wedge blocks arranged in the dovetail groove type boundary rib grooves of the boards.

The foam cement composite bottom board is composited with a steel frame, a reinforcement

truss, a steel wire mesh, an inorganic foam cement core material and upper and lower cement mortar surface layers, where the steel wire mesh is connected and fixed to the steel frame, and also the steel wire mesh may be entirely or partially paved according to a design requirement. The foam cement composite bottom board herein may also be a floor board.

The foam cement composite wall board is composited with a steel frame, upper and lower steel wire meshes, a plurality of steel rings tied to the upper and lower steel wire meshes, an inorganic foam cement core material and upper and lower cement mortar surface layers, where the steel wire mesh is connected and fixed to the steel frame, and also the steel wire mesh may be entirely or partially paved according to a design requirement.

The foam cement composite wall board may be of another structure. For example, the foam cement composite wall board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material and upper and lower cement mortar surface layers, where the steel wire mesh is connected and fixed to the steel frame, and also the steel wire mesh may be entirely or partially paved according to a design requirement.

The foam cement composite top board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material and upper and lower cement mortar surface layers, where the steel wire mesh is connected and fixed to the steel frame, and also the steel wire mesh may be entirely or partially paved according to a design requirement.

A connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure may include the following steps:

manufacturing a foam cement composite bottom board or a foam cement composite wall board or a foam cement composite top board according to a design requirement, where a dovetail groove type steel frame boundary rib is arranged in the foam cement composite bottom board or the foam cement composite wall board or the foam cement composite top board, the dovetail groove type steel frame boundary rib may include upper and lower flanges and a dovetail groove type boundary rib groove; and an embedded component, for example, a wedge block, may be arranged in the dovetail groove type boundary rib groove.

A method of connecting the foam cement composite bottom board with the foam cement composite wall board may include the following steps: first, placing the foam cement composite bottom board on a horizontal base plane, and vertically placing the foam cement composite wall board at a corresponding position of the foam cement composite bottom board according to a design requirement; then, placing a wedge block in which a nut is placed in the dovetail groove type boundary rib groove arranged in each of the foam cement composite bottom board and the foam cement composite wall board; and running bolts through a connecting piece respectively and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect and fix the foam cement composite bottom board with the foam cement composite wall board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs.

A method of connecting the foam cement composite wall board with another foam cement composite wall board may include the following steps: according to a design requirement, respectively placing a wedge block in which a nut is placed in the dovetail groove type boundary rib groove arranged in each of the foam cement composite wall board and the another foam cement composite wall board; and then running bolts through a connecting piece respectively and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect the foam cement composite wall board with the another foam cement composite wall board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs.

A method of connecting the foam cement composite wall board with the foam cement composite top board may include the following steps: according to a design requirement, placing the foam cement composite top board on the foam cement composite wall board, and respectively placing a wedge block in which a nut is placed in the dovetail groove type boundary rib groove arranged in each of the foam cement composite top board and the foam cement composite wall board; and then, running bolts through a connecting piece respectively and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect the foam cement composite wall board with the foam cement composite top board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs.

The wedge block arranged in the dovetail groove type boundary rib groove is slidable so that it can be installed quickly at a correct position.

The wedge block is matched in shape with the groove.

The wedge block may be pre-placed in the groove of the dovetail groove type boundary rib, or placed in the groove of the dovetail groove type boundary rib during installation.

A hole matched with a bolt is arranged in the wedge block, and a slot for placing a nut is also arranged in the wedge block.

The wedge block may be of another structure in which a threaded hole matched with a bolt is arranged in the wedge block.

The wedge block may be of still another structure in which a bolt matched with a nut is arranged in the wedge block.

The connecting piece is a right-angled connecting piece, and a via hole matched with a bolt is arranged on the connecting piece.

A rib plate is added on the right-angled connecting piece so as to meet a requirement of board connection strength by increasing the strength of the connecting piece.

A reinforcing rib is respectively arranged in the upper and lower flanges of the dovetail groove type boundary rib so as to meet a requirement of board connection strength.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1-1 is a schematic diagram illustrating a structure of a foam cement composite bottom board according to an example of the present disclosure.

FIG. 1-2 is a schematic diagram illustrating a structure of a foam cement composite wall board according to an example of the present disclosure.

FIG. 1-3 is a schematic diagram illustrating a structure of a foam cement composite top board according to an example of the present disclosure.

FIG. 1-4 is a schematic diagram illustrating a section of a dovetail groove type boundary rib in a foam cement composite board according to an example of the present disclosure;

FIG. 2-1, FIG. 2-2 and FIG. 2-3 are schematic diagrams illustrating a structure of a wedge block according to an example 1 of the present disclosure;

FIG. 3 is a schematic diagram illustrating a structure of a connection node of a foam cement composite wall board and a foam cement composite bottom board according to an example 1 of the present disclosure;

FIG. 4 is a schematic diagram illustrating a structure of a connection node of a foam cement composite wall board and a foam cement composite wall board according to an example 1 of the present disclosure;

FIG. 5 is a schematic diagram illustrating a structure of a connection node of a foam cement composite wall board and a foam cement composite top board according to an example 1 of the present disclosure;

FIG. 6-1 and FIG. 6-2 are schematic diagrams illustrating a structure of a wedge block according to an example 2 of the present disclosure;

FIG. 7 is a schematic diagram illustrating a structure of a connection node of a foam cement composite wall board and a foam cement composite bottom board according to an example 2 of the present disclosure;

FIG. 8-1 and FIG. 8-2 are schematic diagrams illustrating a structure of a wedge block according to an example 3 of the present disclosure;

FIG. 9 is a schematic diagram illustrating a structure of a connection node of a foam cement composite wall board and a foam cement composite bottom board according to an example 3 of the present disclosure; and

FIG. 10-1 and FIG. 10-2 are schematic diagrams illustrating a structure of a wedge block according to an example 4 of the present disclosure.

Descriptions of reference numerals in accompanying drawings:

- 1: a foam cement composite bottom board;
- 2 and 2': foam cement composite wall boards;
- 3: a foam cement composite top board;
- 101: a steel frame;
- 102: a reinforcement truss;
- 103: an inorganic foam cement core material;
- 104: upper and lower cement mortar surface layers;
- 105: a steel wire mesh;

106: a connecting piece;
6: a dovetail type boundary rib;
61: a groove;
62: a reinforcing rib;
7: a wedge block;
70: a hole;
71: a slot;
72: a threaded hole;
73: a nut;
74: a bolt;
75: a bolt sleeve pipe;
76: a cover plate;
8: a right-angled connecting piece;
81: a via hole; and
82: a rib plate.

DETAILED DESCRIPTION

Example 1

As shown in FIG. 1-1 to FIG. 1-4, FIG. 2-1 to FIG. 2-3 and FIG. 3 to FIG. 5, the present disclosure may include: a foam cement composite bottom board 1, a foam cement composite wall board 2 and a foam cement composite top board 3. A dovetail groove type steel frame boundary rib 6 is arranged in the foam cement composite bottom board 1 or the foam cement composite wall board 2 or the foam cement composite top board 3; the dovetail groove type steel frame boundary rib 6 may include upper and lower flanges and a dovetail groove boundary rib groove 61; and an embedded component, for example, a wedge block 7, is arranged in the dovetail groove boundary rib groove 61; and a hole 70 matched with a bolt 74 and a slot 71 in which a nut 73 may be placed are arranged in the wedge block 7.

The connection between the foam cement composite bottom board 1 and the foam cement composite wall board 2 is carried out by respectively running the bolts 74 through a right-angled connecting piece 8 and connecting and fixing the bolts 74 to the nuts 73 placed in the wedge blocks 7.

The connection between the foam cement composite wall boards 2 and 2' is carried out by running the bolts 74 through the right-angled connecting piece 8 and connecting and fixing the bolts 74 to the nuts 73 placed in the wedge blocks 7.

The connection between the foam cement composite wall board 2 and the foam cement composite top board 3 is carried out by running the bolts 74 through the right-angled connecting piece 8 and connecting and fixing the bolts 74 to the nuts 73 placed in the wedge blocks 7.

A via hole 81 matched with a bolt is arranged on the right-angled connecting piece 8.

In an example of the present disclosure, the foam cement composite bottom board 1 is composited with a steel frame 101, a reinforcement truss 102, a steel wire mesh 105, an inorganic foam cement core material 103 and upper and lower cement mortar surface layers 104, where the steel wire mesh 105 is connected and fixed to the steel frame 101, and the steel wire mesh 105 may be entirely or partially paved according to a design requirement.

The foam cement composite wall board 2 or 2' is composited with a steel frame 101, a reinforcement truss 102, an inorganic foam cement core material 103, upper and lower steel wire meshes 105, a plurality of connecting pieces 106 tied to the upper and lower steel wire meshes 105 and upper and lower cement mortar surface layers 104, where the steel wire mesh 105 is connected and fixed to the steel frame 101, and the steel wire mesh 105 may be entirely or partially paved according to a design requirement.

The foam cement composite top board 3 is composited with a steel frame 101, a steel wire mesh 105, a reinforcement truss 102, an inorganic foam cement core material 103 and upper and lower cement mortar surface layers 104, where the steel wire mesh 105 is connected and fixed to the steel frame 101, and the steel wire mesh 105 may be entirely or partially paved according to a design requirement.

The wedge block 7 arranged in the dovetail groove boundary rib groove 61 is slidable so that it

can be installed quickly at a correct position.

The wedge block 6 is matched in shape with the groove 61.

The wedge block 7 may be pre-placed in the groove 61 of the dovetail groove type boundary rib 6, or placed in the groove 61 of the dovetail groove type boundary rib 6 during installation.

According to the example 1 of the present disclosure, a method of installing and connecting a foam cement composite board may include the following steps:

manufacturing a foam cement composite bottom board 1 or a foam cement composite wall board 2 or a foam cement composite top board 3 according to a design requirement, where a dovetail groove type steel frame boundary rib 6 is arranged in the foam cement composite bottom board 1 or the foam cement composite wall board 2 or the foam cement composite top board 3; the dovetail groove type steel frame boundary rib 6 may include upper and lower flanges and a dovetail groove boundary rib groove 61; an embedded component, for example, a wedge block 7, is arranged in the dovetail groove boundary rib groove 61; and a hole 70 matched with a bolt 74 and a slot 71 in which a nut 73 may be placed are arranged in the wedge block 7.

A method of installing and connecting the foam cement composite bottom board 1 with the foam cement composite wall board 2 may include the following steps: first, placing the foam cement composite bottom board 1 on a horizontal base plane, then vertically placing the foam cement composite wall board 2 at a corresponding position of the foam cement composite bottom board 1 according to a design requirement; then respectively placing the wedge block 7 in which the nut 73 is placed in the dovetail groove type boundary rib groove 61 arranged in each of the foam cement composite bottom board 1 and the foam cement composite wall board 2; and running the bolts 74 through a right-angled connecting piece 8 respectively and connecting and fixing the bolts 74 to the nuts 73 in the wedge blocks 7 so as to connect the foam cement composite bottom board 1 with the foam cement composite wall board 2 by fastening the wedge blocks 7 with the dovetail groove type steel frame boundary ribs 6.

A method of installing and connecting the foam cement composite wall board 2 with another foam cement composite wall board 2' may include the following steps: according to a design requirement, respectively placing the wedge block 7 in which the nut 73 is placed in the dovetail groove type boundary rib groove 61 arranged in each of the foam cement composite wall board 2 and the another foam cement composite wall board 2'; and then running the bolts 74 through the right-angled connecting piece 8 respectively and connecting and fixing the bolts 74 to the nuts 73 in the wedge blocks 7 so as to connect and fix the foam cement composite wall board 2 with the another foam cement composite wall board 2' by fastening the wedge blocks 7 with the dovetail groove type steel frame boundary ribs 6.

A method of installing and connecting the foam cement composite wall board 2 with the foam cement composite top board 3 may include the following steps: according to a design requirement, placing the foam cement composite top board 3 on the foam cement composite wall board 2, and respectively placing the wedge block 7 in which the nut 73 is placed in the dovetail groove type boundary rib groove 61 arranged in each of the foam cement composite top board 3 and the foam cement composite wall board 2; and then, running the bolts 74 through the right-angled connecting piece 8 respectively and connecting and fixing the bolts 74 to the nuts 73 in the wedge blocks 7 so as to connect and fix the foam cement composite wall board 2 with the foam cement composite top board 3 by fastening the wedge blocks 7 with the dovetail groove type steel frame boundary ribs 6 respectively.

Example 2

As shown in FIG. 1-1 to FIG. 1-4, FIG. 6-1 to FIG. 6-2 and FIG. 7, the present disclosure may include: a foam cement composite bottom board 1, a foam cement composite wall board 2 and a foam cement composite top board 3, as described in example 1. A dovetail groove type steel frame boundary rib 6 is arranged in the foam cement composite bottom board 1 or the foam cement composite wall board 2 or the foam cement composite top board 3; the dovetail groove type steel frame boundary rib 6 may include upper and lower flanges and a dovetail groove boundary rib groove 61; and an embedded component, for example, a wedge block 7, is arranged in the dovetail groove boundary rib groove 61; and a threaded hole 72 matched with a bolt 74 is arranged in the wedge block 7.

The connection between the foam cement composite bottom board 1 and the foam cement

composite wall board 2 is carried out by respectively running the bolts 74 through a right-angled connecting piece 8 and connecting and fixing the bolts 74 to the wedge blocks 7 arranged in the dovetail groove boundary rib grooves 61 of the boards.

The connection between the foam cement composite wall board 2 and a foam cement composite wall board 2' is carried out by running the bolts 74 through the right-angled connecting piece 8 and connecting and fixing the bolts 74 to the wedge blocks 7 arranged in the dovetail groove boundary rib grooves 61 of the boards.

The connection between the foam cement composite wall board 2 and the foam cement composite top board 3 is carried out by running the bolts 74 through the right-angled connecting piece 8 and connecting and fixing the bolts 74 to the wedge blocks 7 arranged in the dovetail groove boundary rib grooves 61 of the boards.

A via hole 81 matched with a bolt is arranged on the right-angled connecting piece 8.

The wedge block 7 arranged in the dovetail groove boundary rib groove 61 is slidable so that it can be installed quickly at a correct position.

The wedge block 6 is matched in shape with the groove 61.

The wedge block 7 may be pre-placed in the groove 61 of the dovetail groove type boundary rib 6, or placed in the groove 61 of the dovetail groove type boundary rib 6 during installation.

According to the example 2 of the present disclosure, a method of installing and connecting a foam cement composite board may include the following steps:

manufacturing a foam cement composite bottom board 1 or a foam cement composite wall board 2 or a foam cement composite top board 3 according to a design requirement, where a dovetail groove type steel frame boundary rib 6 is arranged in the foam cement composite bottom board 1 or the foam cement composite wall board 2 or the foam cement composite top board 3; the dovetail groove type steel frame boundary rib 6 may include upper and lower flanges and a dovetail groove boundary rib groove 61; an embedded component, for example, a wedge block 7, is arranged in the dovetail groove boundary rib groove 61; and a threaded hole 72 matched with a bolt 74 is arranged in the wedge block 7.

A method of installing and connecting the foam cement composite bottom board 1 with the foam cement composite wall board 2 may include the following steps: first, placing the foam cement composite bottom board 1 on a horizontal base plane, and vertically placing the foam cement composite wall board 2 at a corresponding position of the foam cement composite bottom board 1 according to a design requirement; then, respectively placing the wedge block 7 in which the nut 73 is placed in the dovetail groove type boundary rib groove 61 arranged in each of the foam cement composite bottom board 1 and the foam cement composite wall board 2; and running the bolts 74 through a right-angled connecting piece 8 respectively and connecting and fixing the bolts 74 to the threaded holes 72 in the wedge blocks 7 so as to connect and fix the foam cement composite bottom board 1 with the foam cement composite wall board 2 by fastening the wedge blocks 7 with the dovetail groove type steel frame boundary ribs 6 respectively.

A method of installing and connecting the foam cement composite wall board 2 with another foam cement composite wall board 2' may include the following steps: according to a design requirement, respectively placing the wedge block 7 in which the nut 73 is placed in the dovetail groove type boundary rib groove 61 arranged in each of the foam cement composite wall board 2 and the another foam cement composite wall board 2'; and then, running the bolts 74 through the right-angled connecting piece 8 respectively and connecting and fixing the bolts 74 to the threaded holes 72 in the wedge blocks 7 so as to connect and fix the foam cement composite wall board 2 with the another foam cement composite wall board 2' by fastening the wedge blocks 7 with the dovetail groove type steel frame boundary ribs 6.

A method of installing and connecting the foam cement composite wall board 2 with the foam cement composite top board 3 may include the following steps: according to a design requirement, placing the foam cement composite top board 3 on the foam cement composite wall board 2, and respectively placing the wedge block 7 in which the nut 73 is placed in the dovetail groove type boundary rib groove 61 arranged in each of the foam cement composite top board 3 and the foam cement composite wall board 2; and then, running the bolts 74 through the right-angled connecting piece 8 respectively and connecting and fixing the bolts 74 to the threaded holes 72 in the wedge blocks 7 so as to connect and fix the foam cement composite wall board 2 with the foam cement composite top board 3 by fastening the wedge blocks 7 with the dovetail groove type steel frame boundary ribs 6 respectively.

Example 3

As shown in FIG. 1-1 to FIG. 1-4, FIG. 8-1 to FIG. 8-2 and FIG. 9, the example 3 is different from the example 1 in two aspects: in the aspect 1: the wedge block 7 is of another structure in which a bolt 74 matched with a nut 73 is arranged in the wedge block 7; and in the aspect 2: a rib plate 72 is added on the right-angled connecting piece 8 so as to meet a requirement of board connection strength by increasing the strength of the connecting piece. The other features of example 3 are identical to those of the above example 1 and are therefore not redundantly described.

Example 4

As shown in FIG. 1-1 to FIG. 1-4, FIG. 10-1 and FIG. 10-2, the example 4 is different from the example 1 in that a reinforcing rib 62 is respectively arranged in the upper and lower flanges of the dovetail groove type boundary rib 6 so as to meet a requirement of board connection strength. The other features of the example 4 are identical to those of the above example 1 and are therefore not redundantly described.

Those skilled in the art may combine different connecting manners of the foam cement composite boards freely based on different design requirements in an example of the present disclosure. The foregoing examples are merely preferred examples of the present disclosure but not intended to limit the present disclosure, and any modifications, equivalent substitutions, improvements thereof made within the spirit and principles of the present disclosure shall be encompassed in the scope of protection of the present disclosure.

INDUSTRIAL APPLICABILITY

Since the foam cement composite board with a dovetail groove type steel boundary rib structure disclosed herein may be industrially prefabricated and may be mechanically assembled at a construction site in such a way as building blocks are piled up, it is simple and easy to mount and operate the foam cement composite board with a dovetail groove type steel boundary rib structure firmly and quickly, thereby greatly reducing the wet operations that are to be carried out at a construction site and lowering the environmental pollution and noise emission caused by construction. The foam cement composite board disclosed herein can be able to resist fire for four hours or more and insulate sound of 42 decibels or higher, and the composition materials thereof are inorganic and inflammable, thus, the foam cement composite board disclosed herein has performances such as weight bearing, heat preservation, heat insulation, durability, earthquake resistance, light weight and excellent fireproofing and sound-insulating performances. An energy-saving, environment-friendly green building product is provided in the present disclosure.

Claims

1. A foam cement composite board with a dovetail groove type steel boundary rib structure, comprising any one of the following boards: a foam cement composite bottom board, a foam cement composite wall board, and a foam cement composite top board, wherein a dovetail groove type steel frame boundary rib is arranged in the foam cement composite bottom board, or the foam cement composite wall board or the foam cement composite top board; the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove; and a wedge block is arranged in the dovetail groove type boundary rib groove.

2. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein the connection between the foam cement composite wall board and the foam cement composite bottom board is carried out by fixedly connecting bolts, a connecting piece, and the wedge blocks arranged in the dovetail groove type boundary rib grooves of the boards.

3. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein the connection between the foam cement composite wall boards is carried out by fixedly connecting bolts, a connecting piece, and the wedge blocks arranged in the dovetail groove type boundary rib grooves of the boards.

4. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein the connection between the foam cement composite wall board and the foam cement composite top board is carried out by fixedly connecting bolts, a connecting piece, and the wedge blocks arranged in the dovetail groove type boundary rib grooves of the boards.

5. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein

the foam cement composite bottom board is composited with a steel frame, a reinforcement truss, a steel wire mesh, an inorganic foam cement core material, and upper and lower cement mortar surface layers,

the steel wire mesh is fixedly connected to the steel frame, and

the steel wire mesh is entirely or partially paved according to a design requirement.

6. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein

the foam cement composite wall board is composited with a steel frame, upper and lower steel wire meshes, a plurality of steel rings tied to the upper and lower steel wire meshes, an inorganic foam cement core material, and upper and lower cement mortar surface layers,

the steel wire mesh is fixedly connected to the steel frame, and

the steel wire mesh is entirely or partially paved according to a design requirement.

7. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein

the foam cement composite wall board has another structure in which the foam cement composite wall board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers,

the steel wire mesh is connected and fixed to the steel frame, and

the steel wire mesh is entirely or partially paved according to a design requirement.

8. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1, wherein

the foam cement composite top board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers,

the steel wire mesh is connected and fixed to the steel frame, and

the steel wire mesh is entirely or partially paved according to a design requirement.

9. A connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure, comprising the following steps:

manufacturing a foam cement composite bottom board or a foam cement composite wall board or a foam cement composite top board according to a design requirement,

wherein a dovetail groove type steel frame boundary rib is arranged in the foam cement composite bottom board or the foam cement composite wall board or the foam cement composite top board,

the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove, and

a wedge block is arranged in the dovetail groove type boundary rib groove.

10. The connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein a method of connecting the foam cement composite bottom board with the foam cement composite wall board comprises the steps of:

first, placing the foam cement composite bottom board on a horizontal base plane, and vertically placing the foam cement composite wall board at a corresponding position of the foam cement composite bottom board according to a design requirement;

then respectively placing the wedge block, in which a nut is placed, in the dovetail groove type boundary rib groove arranged in each of the foam cement composite bottom board and the foam cement composite wall board; and

running bolts through a connecting piece respectively and fixedly connecting the bolts to the nuts in the wedge blocks so as to fixedly connect the foam cement composite bottom board with the foam cement composite wall board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs.

11. The connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein a method of connecting the foam cement composite wall board with another foam cement composite wall board comprises the steps of:

according to a design requirement, placing the wedge block, in which a nut is placed, in the dovetail groove type boundary rib groove arranged in each of the foam cement composite wall board and the another foam cement composite wall board; and then

running bolts through a connecting piece respectively and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect the foam cement composite wall board with the another foam cement composite wall board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs.

12. The connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein a method of connecting the foam cement composite wall board with the foam cement composite top board comprises the steps of:

according to a design requirement, placing the foam cement composite top board on the foam cement composite wall board, and placing the wedge block, in which a nut, is placed in the dovetail groove type boundary rib groove arranged in each of the foam cement composite top board and the foam cement composite wall board; and

then, running bolts through a connecting piece respectively and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect the foam cement composite wall board with the foam cement composite top board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs.

13. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the wedge block arranged in the dovetail groove type boundary rib groove is slidable so that the boards are installed quickly at a correct position.

14. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the wedge block has a shape

matched with the groove.

15. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the wedge block is pre-placed in the groove of the dovetail groove type boundary rib, or placed in the groove of the dovetail groove type boundary rib during installation.

16. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the wedge block includes a hole matched with a bolt, and a slot for placing a nut.

17. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the wedge block has another structure in which the wedge block includes a threaded hole matched with a bolt.

18. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the wedge block has another structure in which the wedge block includes a bolt matched with a nut.

19. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, wherein the connecting piece is a right-angled connecting piece, and includes a through hole matched with a bolt.

20. The foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 1 or the connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure according to claim 9, further comprising a rib plate on the right-angled connecting piece to obtain an increased board connection strength by increasing the strength of the connecting piece; and/or a reinforcing rib arranged in each of the upper and lower flanges of the dovetail groove type boundary rib so as to obtain an increased board connection strength.

21. A connection method of a foam cement composite board with a dovetail groove type steel boundary rib structure, wherein

the foam cement composite boards are connected with each other by embedded parts,
the embedded parts are respectively placed in grooves of dovetail groove type steel boundary ribs arranged in the foam cement composite boards and are matched in shape with the grooves, and
the embedded part is pre-placed in the groove of the dovetail groove type steel boundary rib, or placed in the groove of the dovetail groove type steel boundary rib when the boards are installed and connected; and then the boards are connected quickly through the connecting piece.