(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 620 587 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
24.11.2021 Bulletin 2021/47

(21) Application number: **18794808.8**

(22) Date of filing: **28.04.2018**

(51) Int Cl.:
E04C 1/00 *(2006.01)* ***E04B 2/46*** *(2006.01)*
E04B 2/50 *(2006.01)* ***E04B 2/52*** *(2006.01)*
E04C 1/39 *(2006.01)*

(86) International application number:
PCT/CN2018/085116

(87) International publication number:
WO 2018/202011 (08.11.2018 Gazette 2018/45)

(54) **CORNER BLOCK AND BLOCK KIT COMPRISING SAME**

ECKBLOCK UND BLOCKKIT DAMIT

BLOC D'ANGLE ET KIT DE BLOC LE COMPRENANT

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **02.05.2017 CN 201720471364 U**
27.07.2017 CN 201720967874 U

(43) Date of publication of application:
11.03.2020 Bulletin 2020/11

(73) Proprietor: **Shenzhen MYX PC Blocks Co Ltd.**
Shenzhen, Guangdong 518000 (CN)

(72) Inventor: **HON, Man Ching**
Shenzhen
Guangdong 518000 (CN)

(74) Representative: **de Arpe Fernandez, Manuel**
Arpe Patentes y Marcas
Alcalá, 26, 5a Planta
28014 Madrid (ES)

(56) References cited:
WO-A1-2016/061167
CN-A- 1 293 293
CN-U- 2 074 329
CN-U- 203 947 664
CN-U- 204 225 340
CN-U- 204 728 562
CN-U- 204 826 374
CN-U- 205 577 165
CN-U- 205 653 972
CN-Y- 2 641 186
JP-A- H11 343 686
KR-A- 20110 090 520

EP 3 620 587 B1

Description

Technical Field

[0001] The present disclosure relates to building material, and more particularly to a corner block and a block kit comprising the same.

BACKGROUND

[0002] Generally, a solid waste involved in the present world includes: industrial solid wastes, domestic wastes, construction wastes, urban sludge, and crop straw wastes. The industrial wastes include, but not limited to, a waste slag, a slag and corner wastes of industrial products. The domestic wastes include, but not limited to, waste papers, waste furniture, used plastic, packaging materials and surplus deteriorating foods, which are produced in daily life. The construction wastes include, but not limited to, cement blocks, bricks and decoration materials produced while old buildings are demolished. The urban sludge includes, but not limited to, sludge produced by sewage treatment, sludge excavated in urban underground projects, and sludge deposited in urban sewage all year round. The crop straw wastes include, but not limited to, rice straw, wheat straw, corn stalk, sorghum stalk, cotton straw, peanut straw, sesame straw, and rape straw. At present, there are many methods to deal with these various types of wastes. However, with the continuous development of the society, the various types of wastes have not been handled well and become increasingly serious social problems and continue to cause harm to the human living environment. At the same time, various methods for constructing walls are using cement mortar to block bricks into walls, or after the frame structure is built, the wall plates are fixed to the frame structure. Only professional staff can implement these methods by using professional tools and equipment. The built walls are all base blank walls without any decoration. After the wall is built, if it needs to be renovated and decorated, the building material used for building the wall cannot be used repeatedly for construction and demolition. As a result, a large amount of building materials is wasted, and the disassembled construction waste cannot be decomposed and become new solid wastes, causing environmental pollution. In addition, a large number of skilled building workers are needed in a traditional wall building process, therefore causing a serious shortage of skilled building workers. A corner block according to the preamble of claim 1 is known from CN 205653972U.

[0003] An existing recyclable block is provided with a concave-convex matching structure, all of the protruding structures of the blocks are discontinuous protruding portions configured on a top face of the block, and the protruding portions are all perpendicular to the top face. Thus, water may easily enter the block when the block is used in the environment with rainfall, therefore reducing the service life of the block, and further reducing the quality of the building.

[0004] Therefore, a block structure, which can prevent water from flowing into the block, needs to be provided.

Summary

[0005] One of the objectives of the present disclosure is to provide a corner block capable of preventing water from flowing into the block and a block kit using the corner block.

[0006] The technical solution is according to appended claims 1 and 11.

[0007] According to the invention, the corner block includes an upper convex structure arranged on a top face of the corner block and a lower concave structure arranged on a bottom face of the corner block, the upper convex structure extends along a length direction of the top face, and a length of the upper convex structure is the same as a length of the top face; and the lower concave structure is configured for receiving the upper convex structure; wherein the upper convex structure includes a pair of guiding faces extending inclined from the top face and a connecting face connecting with the guiding faces.

[0008] Preferably, the corner block includes a first straight edge portion, a second straight edge portion and a corner portion connecting the first straight edge portion with the second straight edge portion, and the upper convex structure extends from a top face of the first straight edge portion to a top face of the second straight edge portion through a top face of the corner portion, the lower concave structure extends from a bottom face of the first straight edge portion to a bottom face of the second straight edge portion through a bottom face of the corner portion.

[0009] In this embodiment, both an end of the first straight edge portion away from the corner portion, and an end of the first straight edge portion away from the corner portion, may be recessed to form a concave structure.

[0010] The corner block may further include a positioning groove formed by removing the upper convex structure at the corner portion, and the positioning groove is configured for receiving a bottom face of another corner block stacked on the corner block.

[0011] In the embodiment, the positioning groove includes a first positioning groove adjacent to the first straight edge portion and a second positioning groove adjacent to the second straight edge portion.

[0012] In this embodiment, the upper convex structure may further include a pair of arc-shaped faces, and each arc-shaped face is connected between the connecting face and the guiding face.

[0013] In an embodiment, the corner block includes a plurality of positioning holes extending from the connecting face of the upper convex structure to the bottom face of the corner block, and a plurality of power cable holes which are formed in two opposite sides of the upper con-

vex structure, each line pipe hole extending from the top face of the corner block to the bottom face of the corner block.

[0014] In this embodiment, an internal sleeve may be embedded in the positioning holes and/or the power cable holes.

[0015] According to the invention, the corner block includes a block body, a core embedded in the block body and a waterproof layer wrapping the core, with the waterproof layer located between the block body and the core.

[0016] According to the invention, the corner block further includes a supporting member fixedly connected with the waterproof layer, and a thermal insulating layer located between the waterproof layer and the core, with the supporting member embedded in the block body.

[0017] In another aspect, the present disclosure further provides a block kit for constructing a building, the block kit includes a first block, a corner block and an adjusting block, which are stacked and interlocked to construct the building, each of the first block, the corner block and the adjusting block includes:

an upper convex structure arranged on a top face, wherein the upper convex structure extends along a length direction of the top face, and a length of the upper convex structure is the same as a length of the top face; and

a lower concave structure arranged on a bottom face, wherein the lower concave structure is configured for receiving the upper convex structure.

the upper convex structure including a pair of guiding faces extending inclined from the top face and a connecting face connecting with the guiding faces;

when the plurality of first blocks, the adjusting blocks and the corner blocks are matched to construct the building, the plurality of blocks are stacked with each other, wherein the upper convex structure of one block is mutually interlocked with the lower concave structure of an adjacent other block.

[0018] Preferably, the corner block includes a first straight edge portion, a second straight edge portion and a corner portion connecting the first straight edge portion with the second straight edge portion, and the upper convex structure extends from a top face of the first straight edge portion to a top face of the second straight edge portion through a top face of the corner portion, the lower concave structure extends from a bottom face of the first straight edge portion to a bottom face of the second straight edge portion through a bottom face of the corner portion.

[0019] Both an end of the first straight edge portion away from the corner portion, and an end of the first straight edge portion, away from the corner portion, can be recessed to form a concave structure.

[0020] In an embodiment, the corner block further includes a positioning groove formed by removing the upper convex structure at the corner portion, and the positioning groove is configured for receiving the bottom face of another corner block stacked on the corner block.

[0021] In this embodiment, the positioning groove may include a first positioning groove adjacent to the first straight edge portion and a second positioning groove adjacent to the second straight edge portion.

[0022] Each of the first block, the corner block and the adjusting block can include a plurality of positioning holes extending from the connecting face of the upper convex structure to the bottom face, and a plurality of power cable holes which are formed in two opposite sides of the upper convex structure, each line pipe hole extending from the top face to the bottom face.

[0023] Each of the first block, the corner block and the adjusting block can include an internal sleeve embedded in the power cable holes and/or the positioning holes.

[0024] According to the other aspect of the invention, each of the first block, the corner block and the adjusting block includes a block body, a core embedded in the block body and a waterproof layer wrapping the core, with the waterproof layer located between the block body and the core.

[0025] In this embodiment, each of the first block, the corner block and the adjusting block includes a supporting member fixedly connected with the waterproof layer, and a thermal insulating layer located between the waterproof layer and the core, with the supporting member embedded in the block body.

[0026] Each of the first block, the corner block and the adjusting block can include a decorative layer connected to at least one side of the blocks.

[0027] Compared with the related art, the corner block and the block kit including the corner block in the present disclosure have the beneficial effects that, in the corner block, the first block, and the adjusting block of the block kit, the upper convex structures extend along the whole top face of the block to form an integrally non-interrupted structure, and the guiding face of the upper convex structure extends inclined from the top face, thus preventing the water from flowing into the block through the top face, and further realizing the waterproof effect of the block.

Brief Description of the Drawings

[0028]

FIG. 1 illustrates a building constructed by using the block kit provided by the present disclosure.

FIG. 2 illustrates a perspective view of a corner block included in the block kit in FIG. 1 according to one embodiment of the present disclosure.

FIG. 3 illustrates a perspective view of the corner block according to another embodiment of the present disclosure.

FIG. 4 illustrates a perspective view of a first block included in the block kit in FIG. 1 according to one embodiment of the present disclosure.

FIG. 5 illustrates a perspective view of a first block according to another embodiment of the present disclosure.

FIG. 6 illustrates a perspective view of an adjusting block included in the block kit in FIG. 1 according to one embodiment of the present disclosure.

FIG. 7 illustrates a schematical diagram of an internal structure of any one of the adjusting block, the corner block and the first block.

FIG. 8 illustrates a structural diagram of two corner blocks when stacked.

FIG. 9 illustrates a dimensional relations between each block in the block kit.

Description of Embodiments

[0029] Technical solutions in embodiments of the present invention will be further clearly and completely illustrated below with reference to the attached drawings of the embodiments. Obviously, the described embodiments are merely a part of embodiments of the present invention, rather than all embodiments.

[0030] Referring to FIG. 1, a building 900 constructed by a block kit provided by the present disclosure is illustrated in FIG. 1. The block kit includes a first block 100 for building a wall body of the building 900, a corner block 200 for being used at a corner position of the building 900, an adjusting block 300 for constructing a wall body at a position of doors, windows or the like, or for filling uneven gaps created at positions of one or more points of termination, and a reinforcement positioning rod 400 detachably inserted in the blocks when they are stacked upon each other. A plurality of corner blocks, first blocks and the adjusting blocks are stacked and interlocked so as to construct a stable building. The reinforcement positioning rod 400 is made of hollow metal, plastic or composite material, and may be used as a water supply pipe, a gas supply pipe, a power cable pipe, a communication cable pipe, and so on. The reinforcement positioning rod 400 may be a rod-like object in shape of circular, rectangular or other geometrical shape. When constructing the building, waterproof glue, fastening glue, structural glue, cement or other adhesive may be applied between each of the blocks to enhance the interlocking strength between the blocks. The block kit further includes a sealing gasket 500 sandwiched between two stacked blocks, and the stacked blocks can be any one of first block, corner block and adjusting block.

[0031] Referring to FIGS. 2-3, the corner block 200 is generally L-shaped and includes a first straight edge portion 201, a second straight edge portion 202 and a corner portion 203 connected between the first straight edge portion 201 and the second straight edge portion 202. The corner portion 203 is formed by connecting two edges with an angle of approximately 90° therebetween. Therefore, the first straight edge portion 201 extends in a direction perpendicular to an extension direction of the second straight edge portion 202. A concave structure 10 is concaved from one end of the first straight edge portion 201 away from the corner portion 203. The concave structure 10 is also formed at an end of the second straight edge portion 202 away from the corner portion 203 and recessed inwards, and the concave structure 10 is configured for forming an interlocking structure when being latched with other blocks.

[0032] The corner block 200 includes an upper convex structure 11 arranged on a top face of the corner block 200 and a lower concave structure 12 arranged on a bottom face of the corner block 200. The upper convex structure 11 extends along a length direction of the top face, with a length of the upper convex structure equal to a length of the top face. Specifically, the upper convex structure 11 extends from the top face of the first straight edge portion 201 to the top face of the second straight edge portion 202 through the top face of the corner portion 203, namely, the upper convex structure 11 extends along the length direction of the top face of the whole corner block 200 to form an integrally non-interrupted structure. Accordingly, the lower concave structure 12 is a groove extending along the length direction of the bottom face of the whole corner block 200, by recessing from the bottom face to the top face, and specifically, the lower concave structure 12 extends from the bottom face of the first straight edge portion 201 to the bottom face of the second straight edge portion 202 through the bottom face of the corner portion 203. When the two blocks are stacked, the upper convex structure 11 is received in the lower concave structure 12 of the adjacent block, so as to realize the interlocking of the two blocks. It can be understood that, referring to FIG. 8, in other embodiments, a height H of the upper convex structure 11 is smaller than a depth D of the lower concave structure 12, so that when the upper convex structure 11 is received in the lower concave structure 12, so as to form a gap between the upper convex structure 11 and the lower convex structure 12, and the gap forms a horizontal line pipe slot 8 for receiving water supply pipes, electric wires, communication cables and the like, in the horizontal direction.

[0033] The upper convex structure 11 includes a pair of guiding faces 111 extending and inclined from the top face of the corner block 200, and a connecting face 112 connected between the pair of guiding faces. The pair of guiding faces 111 extend towards each other, each guiding face 111 connected with the top face at an inclined angle, wherein the inclined angle is greater than 90 degrees and smaller than 180 degrees. In the present disclosure, as the integrally non-interrupted upper convex structure is adopted, and the guiding face of the upper convex structure is inclined to the top face, it can be effectively achieved to prevent water from entering the block from the top face. In addition, since the guiding face is an inclined face, a better cooperation with the lower concave structure can be realized, so as to obtain effects of guiding and positioning.

[0034] In another embodiment, the corner block 200

further includes a positioning groove formed by removing the upper convex structure 11 on the top face of the corner portion 203. The positioning groove is configured for accommodating the bottom face of another corner block stacked on the corner block, in particular the bottom face of the corner portion, so as to facilitate mutual cooperation and avoid a mutual interference when the two corner blocks are stacked. The positioning groove includes a first positioning groove 161 adjacent to the first straight edge portion 201 and a second positioning groove 162 adjacent to the second straight edge portion 202, and the first positioning groove 161 and the second positioning groove 162 are configured at intervals.

[0035] In another embodiment, the upper convex structure 11 further includes a pair of arc-shaped faces 113 connected between the connecting face 112 and the guiding face 111, so that the connecting face 112 is smoothly transited to the connecting face 111 to reduce stress concentration, further to prevent the upper convex structure from being damaged in the transportation process. Typically, the connecting face 113 has a cross section in shape of 1/4 arc. Accordingly, the shape of the lower concave structure 12 is matched with the shape of the upper convex structure 11 so as to better receive the upper convex structure.

[0036] The corner block 200 further includes a plurality of positioning holes 7 and power cable holes 6 formed in the upper convex structure 11. The plurality of positioning holes 7 and the power cable holes 6 extend from the connecting face 112 of the upper convex structure 11 to the bottom face of the corner block. The plurality of positioning holes 7 and the power cable holes 6 are configured at intervals, and each line pipe hole 6 is located between two adjacent positioning holes 7. The power cable holes 6 are generally circular, rectangular and the like. The positioning holes 7 are generally circular, rectangular and the like, with an inner diameter of the positioning hole 7 larger than an inner diameter of the line pipe hole 6. The positioning hole 7 is configured for receiving the reinforcing positioning rod 400, and the reinforcing positioning rod 400 is movable and can be pulled out from the positioning hole 7 when needed. The power cable holes 6 are configured for receiving electric wires, water supply pipes, communication cables and the like.

[0037] The corner block 200 further includes thermal insulating holes 17 formed in the top face and located on two opposite sides of the upper convex structure 11. The thermal insulating holes 17 are configured to be filled with thermal insulation and sound insulation materials. The thermal insulating holes 17 extend from the top face of the corner block 200 to the bottom face of the corner block 200.

[0038] In another embodiment, the corner block 200 is not provided with the thermal insulating hole, while the line pipe hole 6 is configured on the top face of the corner block 200, and extends from the top face to the bottom face. The plurality of power cable holes 6 are configured on the two sides of the upper convex structure 11.

[0039] Referring to FIG. 7, the corner block 200 includes a block body 2001, a core 2002 embedded into the block body 2001, and a waterproof layer 2003 between the block body 2001 and the core 2002, a thermal insulating layer 2004 between the waterproof layer 2003 and the core 2002, and a supporting member 2005 fixedly connected with the waterproof layer 2003, wherein the supporting member 2005 is embedded in the block body 2001. The waterproof layer 2003 can be a waterproof film and is configured to warp the core 2002; and the supporting member 2005 is configured for supporting the waterproof layer 2003. The supporting member 2005 can be a claw-shaped element made of metal, so as to support the waterproof layer 2003 in a large area, and a stretching rib is provided inside the supporting member 2005, so that the waterproof layer 2003 may flatly warp the outer peripheral surfaces of the core 2002 and the thermal insulating layer 2004 under the support of the supporting member 2005. In addition, the supporting member can be formed in mixing with the block body, so as to enhance the strength of the block. The thermal insulating layer 2004 is configured inside the waterproof layer 2003, to achieve a better thermal insulating effect. An internal sleeve penetrates through the block body 2001 and the core 2002 of the corner block 200, and a through hole is accordingly formed in the waterproof layer 2003, the waterproof layer 2003 extends inclined in a direction towards the block body 2001 from the through hole, so as to further enhance the waterproof effect. The thermal insulating layer 2004 is made of a thermal insulation material such as sponge. The core 2002 can be made of a thermal insulation material, or can also be made of a bulletproof material with relatively high strength, such as high-strength ceramic and the like. In addition, the core 2002 can be made of the same material as the block body 2001.

[0040] The corner block 200 further includes an internal sleeve 207 embedded in the line pipe hole 6 and/or the positioning hole 7. The internal sleeve 207 may keep the inner face of the line pipe hole or the positioning hole smooth, to facilitate the insertion or disassembly of the line pipe or the reinforcement positioning rod.

[0041] A decorative layer 13 can be connected to one side or two sides of the corner block 200, wherein colors, and patterns of the decorative layer 13 may be integrally formed with the blocks, or being jointed together with the blocks into a whole after being manufactured separately, and may be only single-side decoration.

[0042] Referring to FIGS. 4-5, the structure of the first block 100 is similar to that of the corner block 200. The difference is that the structure of the first block 100 is substantially in straight line, and one end of the first block 100 is a convex structure 9, and the other end of the front convex structure is a concave structure. The convex structure is configured for matching with the concave structure of the adjacent block to form an interlocking structure during stacking. Similar to the corner block 200, the first block 100 also has an integrally non-interrupted

upper convex structure 11 and a lower concave structure 12, the upper convex structure 11 also has a pair of guiding faces 111 which extend inclined to the top face of the first block, a connecting face 112 and an arc-shaped face 113. The first block 100 also includes a plurality of positioning holes 7 and power cable holes 6, and the power cable holes 6 can also be configured on the two sides of the upper convex structure 11. An internal sleeve 207 is provided in the line pipe hole 6 and/or the positioning hole 7, and the first block 100 also includes a block body 2001, a core 2002, a waterproof layer 2003 located between the core 2002 and the block body 2001, a thermal insulating layer 2004 located between the waterproof layer 2003 and the core 2002, and a supporting member 2005 fixedly connected with the waterproof layer 2003. A decorative layer 13 can be connected to one side or two sides of the first block 100, wherein colors and patterns of the decorative layer 13 may be integrally formed with the blocks, or being jointed together with the blocks into a whole after being manufactured separately, and may be only single-side decoration.

[0043] Referring to FIG. 6, the structure of the adjusting block 300 is similar to that of the corner block 200. The difference is that the structure of the adjusting block 300 is substantially in straight line, and one end of the adjusting block 300 is a planar face 301, while the other end is a concave structure 10. The concave structure 10 is configured for matching with the convex structure 9 of an adjacent block to form an interlocking structure during stacking. Similar to the corner block 200, the adjusting block 300 also has an integrally non-interrupted upper convex structure 11 and a lower concave structure 12, the upper convex structure 11 is also provided with a pair of guiding faces 111 which extend inclined to the top face of the adjusting block, a connecting face 112 and an arc-shaped face 113. The adjusting block 300 also includes a plurality of positioning holes 7 and power cable holes 6, and the power cable holes 6 are also configured on the two sides of the upper convex structure 11. An internal sleeve 207 is provided in the line pipe hole 6 and/or the positioning hole 7, and the block 300 also includes a block body 2001, a core 2002, a waterproof layer 2003 located between the core 2002 and the block body 2001, a thermal insulating layer 2004 located between the waterproof layer and the core, and a supporting member 2005 fixedly connected with the waterproof layer 2003. A decorative layer can be connected to one side or two sides of the adjusting block 300, wherein colors and patterns of the decorative layer 13 may be integrally formed with the blocks, or being jointed together with the blocks into a whole after being manufactured separately, and may be only single-side decoration.

[0044] Referring to FIG. 9, the dimensional relation between each block in the block kit is as follows. A length of the first block 100 is denoted by L, a width of the first block 100 is denoted by W, and the length L is the integral multiple N of the width W, namely L = W×N. An outer length of the corner block 200 is L + W, an inner length of the corner block 200 is L, an outer width is 1/2L + W, an inner width is 1/2L, and the adjusting block 4300 has a length of 1/2L, and a width of W. The main dimensions of other blocks corresponding to the first blocks with different widths and different lengths can be obtained based on the above calculation formulas, and the related dimensions allow a tolerance of ± 50 mm when the blocks are actually manufactured, so as to realize a complete matching of the blocks.

Claims

1. A corner block (200), comprising: an upper convex structure (11) arranged on a top face of the corner block, the upper convex structure extending along a length direction of the top face, with a length of the upper convex structure the same as a length of the top face; and

   a lower concave structure (12) arranged on a bottom face of the corner block, the lower concave structure configured for receiving the upper convex structure of another corner block (200); wherein the upper convex structure includes a pair of guiding faces (111) extending inclined from the top face, and a connecting face (112) connecting with the guiding faces; wherein the corner block comprises a block body (2001), **characterized in that** the corner block further comprises a core (2002) embedded in the block body and a waterproof layer (2003) wrapping the core, with the waterproof layer located between the block body and the core;
   and a supporting member (2005) fixedly connected with the waterproof layer, and a thermal insulating layer (2004) located between the waterproof layer and the core, with the supporting member embedded in the block body.

2. The corner block according to claim 1, wherein, the corner block comprises a first straight edge portion (201), a second straight edge portion (202) and a corner portion (203) connecting the first straight edge portion with the second straight edge portion, the upper convex structure extending from a top face of the first straight edge portion to a top face of the second straight edge portion through a top face of the corner portion, the lower concave structure extending from a bottom face of the first straight edge portion to a bottom face of the second straight edge portion through a bottom face of the corner portion.

3. The corner block according to claim 2, wherein, both an end of the first straight edge portion away from the corner portion, and an end of the first straight edge portion away from the corner portion, are recessed to form a concave structure.

4. The corner block according to claim 3, wherein, the corner block further comprises a positioning groove (161, 162) formed by removing the upper convex structure at the corner portion, and the positioning groove is configured for receiving a bottom face of another corner block when stacked on the corner block.

5. The corner block according to claim 4, wherein, the positioning groove comprises a first positioning groove (161) adjacent to the first straight edge portion and a second positioning groove (162) adjacent to the second straight edge portion.

6. The corner block according to any one of claims 1-5, wherein, the upper convex structure further comprises a pair of arc-shaped faces (113), and each arc-shaped face is connected between the connecting face and the guiding face.

7. The corner block according to any one of claims 1-5, wherein, the corner block comprises a plurality of positioning holes (7) extending from the connecting face of the upper convex structure to the bottom face of the corner block, and a plurality of line pipe holes (6) which are formed in two opposite sides of the upper convex structure, each line pipe hole extending from the top face of the corner block to the bottom face of the corner block.

8. The corner block according to claim 7, comprising an internal sleeve (207) embedded in the positioning holes and/or the line pipe holes.

9. The corner block according to any one of claims 1-5, wherein an internal sleeve penetrates through the block body ((2001) and the core (2002) of the corner block (200), and a through hole is accordingly formed in the waterproof layer.

10. The corner block according to claim 9, wherein, the waterproof layer extends inclined in a direction towards the block body from the through hole.

11. A block kit, for constructing a building, the block kit comprising a first block (100), a corner block (200) according to claim 1 and an adjusting block (300), which are stacked and interlocked to construct the building, wherein, each of the first block and the adjusting block comprises:

an upper convex structure configured on a top face, the upper convex structure extending along a length direction of the top face, with a length of the upper convex structure the same as a length of the top face; and
a lower concave structure configured on a bottom face, the lower concave structure configured for receiving the upper convex structure of another of such block;
the upper convex structure comprising a pair of guiding faces extending and inclined from the top face and a connecting face connecting with the guiding faces; wherein
when a plurality of the first blocks, the adjusting blocks and the corner blocks are interlocked to construct the building, the plurality of blocks are stacked with each other, and the upper convex structure of one of the blocks is mutually interlocked with the lower concave structure of an adjacent other block;
wherein each of the first block and the adjusting block comprises a block body, a core embedded in the block body and a waterproof layer wrapping the core, with the waterproof layer located between the block body and the core;
wherein each of the first block and the adjusting block further comprises a supporting member fixedly connected with the waterproof layer, and a thermal insulating layer located between the waterproof layer and the core, with the supporting member embedded in the block body.

12. The block kit according to claim 11, wherein, the corner block includes a first straight edge portion, a second straight edge portion and a corner portion connecting the first straight edge portion with the second straight edge portion, the upper convex structure extends from a top face of the first straight edge portion to a top face of the second straight edge portion through a top face of the corner portion, and the lower concave structure extends from a bottom face of the first straight edge portion to a bottom face of the second straight edge portion through a bottom face of the corner portion.

13. The block kit according to claim 12, wherein, the corner block further comprises a positioning groove formed by removing the upper convex structure at the corner portion, and the positioning groove is configured for receiving the bottom face of another corner block stacked on the corner block.

14. The block kit according to claim 13, wherein, the positioning groove comprises a first positioning groove adjacent to the first straight edge portion and a second positioning groove adjacent to the second straight edge portion.

15. The block kit according to claim 11, wherein, dimensional relations between the first block, the corner block and the adjusting block are defined as following:

$L=W\times N$; Wherein, L is a length of the first block; W is a width of the first block; N is an integral

number;
an outer length of the corner block is L + W, an inner length of the corner block is L; an outer width of the corner block is 1/2L + W, an inner width of the corner block is 1/2L; and
the adjusting block has a length of 1/2L, and a width of W.

Patentansprüche

1. Ein Eckblock (200), der eine obere, konvexe Struktur (11) umfasst, die an der der Oberseite des Eckblocks angeordnet ist, wobei die obere, konvexe Struktur sich über eine Längsrichtung der Oberseite erstreckt, mit einer Länge der oberen, konvexen Struktur, die gleich der Länge der Oberseite ist; und eine untere, konkave Struktur (12), die an der Unterseite des Eckblocks angeordnet ist, wobei die untere, konkave Struktur konfiguriert ist, um die obere, konvexe Struktur eines anderen Eckblocks (200) aufzunehmen,

   wobei die obere, konvexe Struktur ein Paar Führungsflächen (111) aufweist, die sich geneigt ab der Oberseite erstrecken, und eine Verbindungsfläche (112), die mit den Führungsflächen verbunden sind;
   wobei der Eckblock einen Blockkörper (2001) umfasst, **dadurch gekennzeichnet, dass** der Eckblock weiter einen Kern (2002) umfasst, der im Blockkörper eingebaut ist, und eine wasserdichte Schicht (2003), die den Kern umhüllt, wobei die wasserdichte Schicht zwischen dem Blockkörper und dem Kern angeordnet ist;
   und ein Stützglied (2005), das fest mit der wasserdichten Schicht verbunden ist, und eine wärmeisolierende Schicht (2004), die zwischen der wasserdichten Schicht und dem Kern angeordnet ist, wobei das Stützglied im Blockkörper eingebaut ist.

2. Der Eckblock gemäss Anspruch 1, bei dem der Eckblock einen ersten, geraden Kantenabschnitt (201), einen zweiten, geraden Kantenabschnitt (202) und einen Eckteil (203) umfasst, der den ersten, geraden Kantenabschnitt mit dem zweiten, geraden Kantenabschnitt verbindet, die obere, konvexe Struktur sich ab einer Oberseite des ersten, geraden Kantenabschnittes bis zu einer Obberseite des zweiten, geraden Kantenabschnittes über eine Oberseite des Eckteils ertreckt, die untere, konkave Struktur sich ab einer Unterseite des ersten, geraden Kantenabschnitts bis zu einer Unterseite des zweiten, geraden Kantenabschnitts über eine Unterseite des Eckteils erstreckt.

3. Der Eckblock gemäss Anspruch 2, bei dem sowohl ein Ende des ersten, geraden Kantenabschnitts abgewandt vom Eckteil als auch ein Ende des ersten, geraden Kantenabschnitts, abgewandt vom Eckteil zwecks Formen einer konkaven Struktur ausgespart sind.

4. Ein Eckblock gemäss Anspruch 3, bei dem der Eckblock weiter eine Positionierungsnut (161, 162) aufweist, die durch das Weglassen der oberen, konvexen Struktur am Eckteil geformt wird, und die Positionierungsnut konfiguriert ist, um eine Unterseite eines anderen Eckblocks beim Stapeln auf dem Eckblock aufzunehmen.

5. Der Eckblock gemäss Anspruch 4, bei dem die Positionierungsnut eine erste Positionierungsnut (161) einschliesst, die an den ersten, geraden Kantenabschnitt angrenzt und eine zweite Positionierungsnut (162), die an den zweiten, geraden Kantenabschnitt angrenzt.

6. Der Eckblock gemäss irgendeinem der Ansprüche 1-5, bei dem die obere, konvexe Eckstruktur weiter ein Paar bogenförmiger Flächen (113) umfasst,
   und jede bogenförmige Fläche zwischen der Verbindungsfläche und der Führungsfläche angeschlossen ist.

7. Der Eckblock gemäss irgendeinem der Ansprüche 1-5, wobei der Eckblock eine Vielzahl an Positionierungslöchern (7) umfasst,
   die sich ab der Verbindungsfläche der oberen, konvexen Struktur bis zur unteren Fläche des Eckblöcke erstrecken, und eine Vielzahl an Löchern für Rohrleitungen (6) umfasst, die in zwei gegenüberliegenden Seiten der oberen, konvexen Struktur geformt sind, wobei jedes Loch für Rohrleitungen sich von der Oberseite des EckBlöcken zur Unterseite des Eckblocks erstreckt.

8. Der Eckblock gemäss Anspruch 7, der eine interne, in den Positionierungslöchern und/oder den Löchern für die Rohrleitungen eingebaute Umhüllung umfasst.

9. Der Eckblock gemäss irgendeinem der Ansprüche 1-5, bei dem eine interne Umhüllung durch den Blockkörper (2001) und den Kern (2002) des Eckblocks (200) dringt und dementsprechend ein Durchgangsloch in der wasserdichten Schicht geformt wird.

10. Der Eckblock gemäss Anspruch 9, bei dem die wasserdichte Schicht sich geneigt in einer Richtung ab dem Durchgangsloch zum Blockkörper erstreckt.

11. Ein Blockenatz für den Bau eines Gebäudes, wobei der Blocksatz einen ersten Block (100), einen Eck-

block (200 gemäss Anspruch 1 und einen Justierblock (300) umfasst,
die gestapelt und fest zusammengefügt werden, um das Gebäude zu konstruieren, wobei jeder von beiden, der erste Block und der Justierblock, Folgendes umfasst:

Eine obere, konvexe Struktur, die an einer Oberseite konfiguriert ist, wobei sich die obere, konvexe Struktur längs in Richtung der Oberseite erstreckt, mit einer Länge der oberen, konvexen Struktur, die dieselbe ist wie eine Länge der Oberseite; und
eine untere, konkave Struktur, die an einer Unterseite konfiguriert ist, wobei die untere, konkave Struktur für die Aufnahme der oberen, konvexen Struktur eines anderen solchen Block konfiguriert ist;
die obere, konvexe Struktur ein Paar Führungsflächen umfasst, die sich ab der Oberseite geneigt erstrecken und eine Verbindungsfläche, die mit dem Führungsflächen verbunden ist;
wobei wenn eine Vielzahl an ersten Blöcken, Justierblöcken und Eckblöcken verblockt wird, um ein Gebäude zu konstruieren, wird die Vielzahl an Blöcken aufeinander gestapelt und die obere, konvexe Struktur von einem der Blöcke wird mit der unteren, konkaven Struktur eines anliegenden anderen Blocks gegenseitig verblockt;
wobei jeder Block, von den ersten Blöcken und Justierblöcken einen Blockkörper, einen in dem Blockkörper eingebauten Kern und eine wasserdichte, den Kern umwickelnde Schicht umfasst, und die wasserdichte Schicht zwischen dem Blockkörper und dem Kern angeordnet ist;
wobei jeder, der ersten Blöcke und der Justierblöcke weiter ein Stützglied aufweist, das fest mit der wasserdichten Schicht verbunden ist, und eine wärmeisolierende Schicht, umfasst, die zwischen der wasserdichten Schicht und dem Kern angeordnet ist, wobei das Stützglied im Blockkörper eingebaut ist.

12. Der Blocksatz gemäss Anspruch 11, bei dem der Eckblock einen ersten, gerade Kantenabschnitt, einen zweiten, geraden Kantenabschnitt und einen Eckteil umfasst, der den ersten, geraden Kantenabschnitt mit dem zweiten, geraden Kantenabschnitt verbindet, die obere, konvexe Struktur sich ab der Oberseite des ersten, geraden Kantenabschnitts bis zur Oberseite des zweiten, geraden Kantenabschnitts über eine Oberseite des Eckteils erstreckt, und die untere, konkave Struktur sich ab einer Unterseite des ersten, geraden Kantenabschnitts zu einer Unterseite des zweiten, geraden Kantenabschnitts über eine Unterseite des Eckteils erstreckt.

13. Der Blocksatz gemäss Anspruch 12, bei dem der Eckblock weiter eine Positionierungsnut umfasst, die durch die Weglassen der oberen, konvexen Struktur am Eckteil geformt wird, und bei dem die Positionierungsnut konfiguriert ist, um die Unterseite eines anderen auf dem Eckblock gestapelten Eckblock aufzunehmen.

14. Der Blocksatz gemäss Anspruch 13, bei dem die Positionierungsnut eine erste Positionierungsnut umfasst, die am ersten, geraden Kantenabschnitt angrenzt und eine zweite Positionierungsnut, die am zweiten, geraden Kantenabschnitt angrenzt.

15. Der Blocksatz gemäss Anspruch 11, bei dem die dimensionalen Verhältnisse zwischen dem ersten Block, dem Eckblock und dem Justierblock wie folgt definiert sind:

L=WxN; wobei L die Länge des ersten Blocks ist; W die Breite des ersten Blocks ist; N eine ganze Zahl ist;
eine Aussenlänge des Eckblocks ist L+W, eine Innenlänge des Eckblocks ist L;
eine Aussenbreite des Eckblocks ist 1/2L + W, eine Innenbreite des Eckblocks ist 1/2L; und
der Justierblock weist eine Länge von 1/2L und eine Breite von W auf.

Revendications

1. Un bloc d'angle (200) comprenant: une structure convexe supérieure (11) disposée sur la surface du dessus du bloc d'angle; la structure convexe supérieure s'étendant sur une direction en longueur sur la surface du dessus, la longueur de la structure convexe supérieure étant la même que la longueur de la surface du dessus; et une structure concave inférieure (12) disposée sur la surface du dessous du bloc d'angle; la structure concave inférieure étant configurée pour recevoir la structure convexe supérieure d'un autre bloc d'angle (200);

où la structure convexe supérieure comprend une paire de surfaces de guidage (111) qui s'étendent en inclinaison à partir de la surface du dessus et une surface de connexion (112) qui relie aux surfaces de guidage;
où le bloc d'angle comprend le corps de bloc (2001), **caractérisé en ce que** le bloc d'angle comprend en outre un noyau (2002) incrusté dans le corps de bloc et une couche imperméable (2003) revêtant le noyau; la couche imperméable étant située entre le corps de bloc et le noyau; et un élément de support (2005) relié de manière fixe à la couche imperméable; et une couche d'isolation thermique (2004) située entre

la couche imperméable et le noyau, l'élément de support étant incrusté dans le corps de bloc.

2. Le bloc d'angle conformément à la revendication 1, où le bloc d'angle comprend une première portion à bord rectiligne (201), une deuxième portion à bord rectiligne (202) et une portion d'angle (203) reliant la première portion à bord rectiligne à la deuxième portion à bord rectiligne; la structure convexe supérieure s'étendant à partir de la surface du dessus de la première portion à bord rectiligne vers la surface du dessus de la deuxième portion à bord rectiligne au travers de la surface du dessus de la portion d'angle; la structure concave inférieure s'étendant à partir de la surface du dessous de la première portion à bord rectiligne vers la surface du dessous de la deuxième portion à bord rectiligne au travers de la surface du dessous de la portion d'angle.

3. Le bloc d'angle conformément à la revendication 2, où, aussi bien une extrémité de la première portion à bord rectiligne, éloignée de la portion d'angle, qu'une extrémité de la première portion à bord rectiligne, éloignée de la portion d'angle, sont montées pour former une structure concave.

4. Le bloc d'angle conformément à la revendication 3, où le bloc d'angle comprend en outre une rainure de positionnement (161, 162) formée en retirant la structure convexe supérieure de la portion d'angle, et la rainure de positionnement est configurée pour recevoir la surface du dessous d'un autre bloc d'angle lorsqu'elle est posée sur le bloc d'angle.

5. Le bloc d'angle conformément à la revendication 4, où la rainure de positionnement comprend une première rainure de positionnement (161) adjacente à la première portion à bord rectiligne et une deuxième rainure de positionnement (162) adjacente à la deuxième portion à bord rectiligne.

6. Le bloc d'angle conformément à l'une quelconque des revendications 1 à 5, où la structure convexe supérieure comprend en outre une paire de surfaces en forme d'arc (113), et chaque surface en forme d'arc est reliée entre la surface de connexion et la surface de guidage.

7. Le bloc d'angle conformément à l'une quelconque des revendications 1 à 5, où le bloc d'angle comprend une série de trous de positionnement (7) qui s'étendent à partir de la surface de connexion de la structure convexe supérieure vers la surface du dessous du bloc d'angle, et une série de trous des conduites (6) qui sont formés sur deux côtés opposés de la structure convexe supérieure; chaque trou de conduite s'étendant à partir de la surface du dessus du bloc d'angle vers la surface du dessous du bloc d'angle.

8. Le bloc d'angle conformément à la revendication 7, comprenant un manchon interne (207) incrusté dans les trous de positionnement et/ou les trous des conduites.

9. Le bloc d'angle conformément à l'une quelconque des revendications 1 à 5, où un manchon interne pénètre au travers du corps de bloc (2001) et du noyaux (2002) du bloc d'angle (200), et un trou débouchant se formant, de manière correspondante, dans la couche imperméable.

10. Le bloc d'angle conformément à la revendication 9, où la couche imperméable s'étend en inclinaison dans une direction vers le corps de bloc à partir du trou débouchant.

11. Un kit de blocs de construction d'édification, le kit comprenant un premier bloc (100), un bloc d'angle (200), conformément à la revendication 1, et un bloc d'ajustement (300), qui sont posés et étroitement liés pour construire l'édification, où chaque premier bloc et le bloc d'ajustement comprennent les éléments suivants:

une structure convexe supérieure, configurée sur la surface du dessus; la structure convexe supérieure s'étendant sur une direction en longueur sur la surface du dessus, avec une longueur de la surface convexe supérieure qui est égale à la longueur de la surface du dessus; et une structure concave inférieure, configurée sur la surface du dessous, la structure concave inférieure étant configurée pour recevoir la structure convexe supérieure d'un autre bloc d'angle; la structure convexe supérieure comprenant une paire de surfaces de guidage qui s'étendent en inclinaison à partir de la surface du dessus et une surface de connexion qui relie aux surfaces de guidage;

où, quand une série de premiers blocs, de blocs d'ajustement et de blocs en angle sont étroitement liés pour construire l'édification, la série de blocs sont posés l'un sur l'autre, et la structure convexe supérieure de l'un des blocs est mutuellement liée à la structure concave inférieure d'un autre bloc adjacent;

où chaque premier bloc et le bloc d'ajustement comprennent un corps de bloc, un noyau incrusté dans le corps de bloc et une couche imperméable revêtant le noyau; la couche imperméable étant située entre le corps de bloc et le noyau;

où chaque premier bloc et le bloc d'ajustement comprennent en outre un élément de support relié de manière fixe à la couche imperméable,

et une couche d'isolation thermique située entre la couche imperméable et le noyau, l'élément de support étant incrusté dans le corps de bloc.

12. Le kit de blocs conformément à la revendication 11, où le bloc d'angle comprend une première portion à bord rectiligne, une deuxième portion à bord rectiligne et une portion d'angle reliant la première portion à bord rectiligne à la deuxième portion à bord rectiligne; la structure convexe supérieure s'étendant à partir de la surface du dessus de la première portion à bord rectiligne vers la surface du dessus de la deuxième portion à bord rectiligne au travers de la surface du dessus de la portion d'angle; et la structure concave inférieure s'étend à partir de la surface du dessous de la première portion à bord rectiligne vers la surface du dessous de la deuxième portion à bord rectiligne au travers de la surface du dessous de la portion d'angle.

13. Le kit de blocs conformément à la revendication 12, où le bloc d'angle comprend en outre une rainure de positionnement formée en éliminant la structure convexe supérieure sur la portion d'angle; et la rainure de positionnement étant configurée pour recevoir la surface du dessous d'un autre bloc d'angle posé sur le bloc d'angle.

14. Le kit de blocs conformément à la revendication 13, où la rainure de positionnement comprend une première rainure de positionnement adjacente à la première portion à bord rectiligne et une deuxième rainure de positionnement adjacente à la deuxième portion à bord rectiligne.

15. Le kit de blocs conformément à la revendication 11, où les relations dimensionnelles entre le premier bloc, le bloc d'angle et le bloc d'ajustement sont définies comme suit:
L= WxN ; où L est la longueur du premier bloc; W est la largeur du premier bloc; et N est un nombre entier; la longueur extérieure du bloc d'angle est L + W; la longueur intérieure du bloc d'angle est L; la largeur extérieure du bloc d'angle est 1/2L + W; la largeur intérieure du bloc d'angle est 1/2L; et le bloc d'ajustement a une longueur de 1/2L, et une largeur de W.

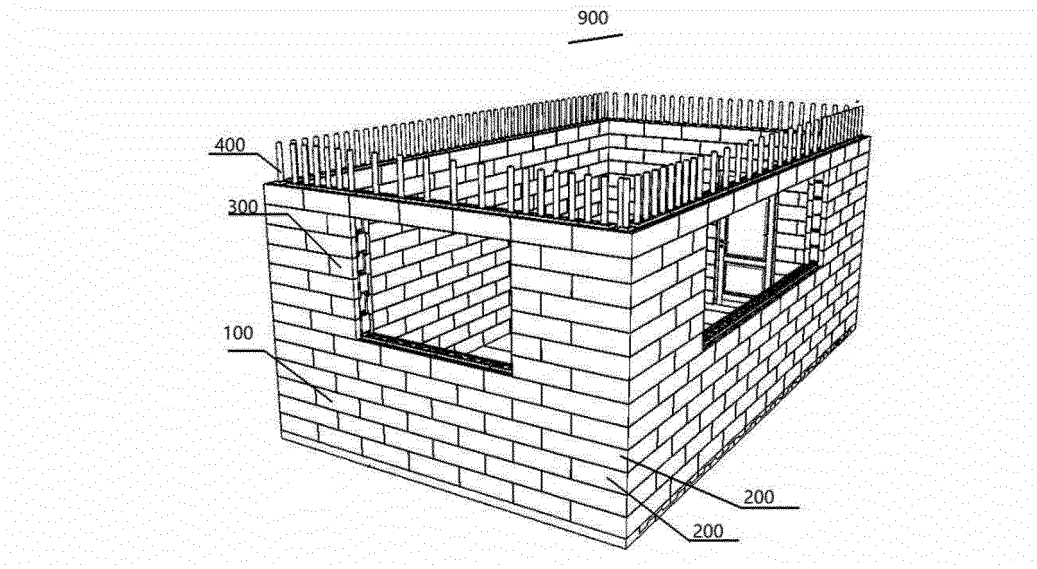
900
400
300
100
200
200

Fig. 1

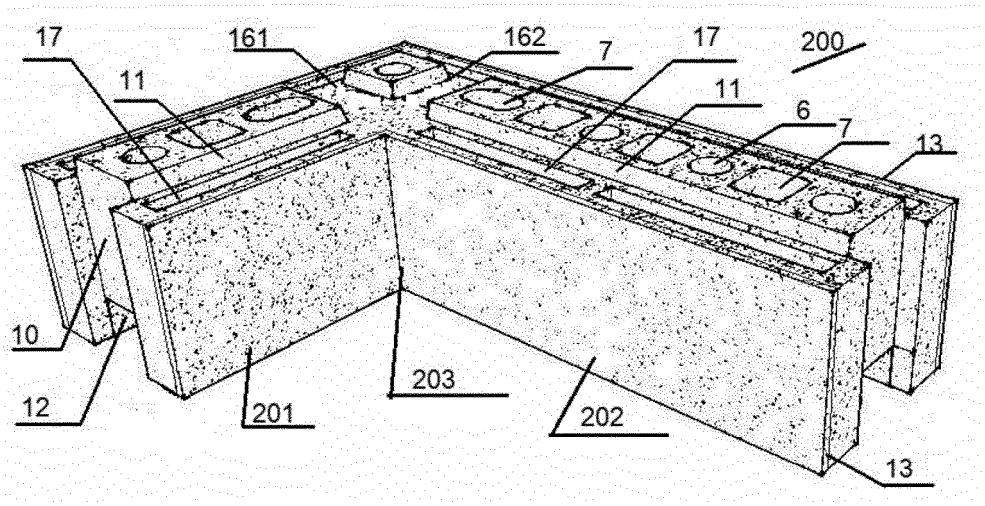
17
161
162
7
17
200
11
11
6
7
13
10
12
201
203
202
13

Fig. 2

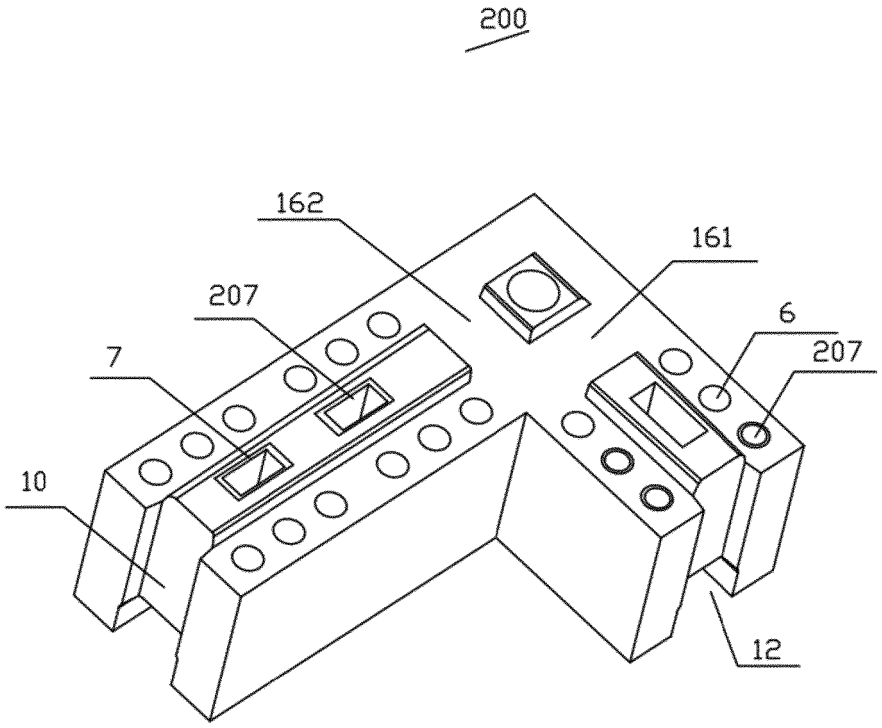

Fig. 3

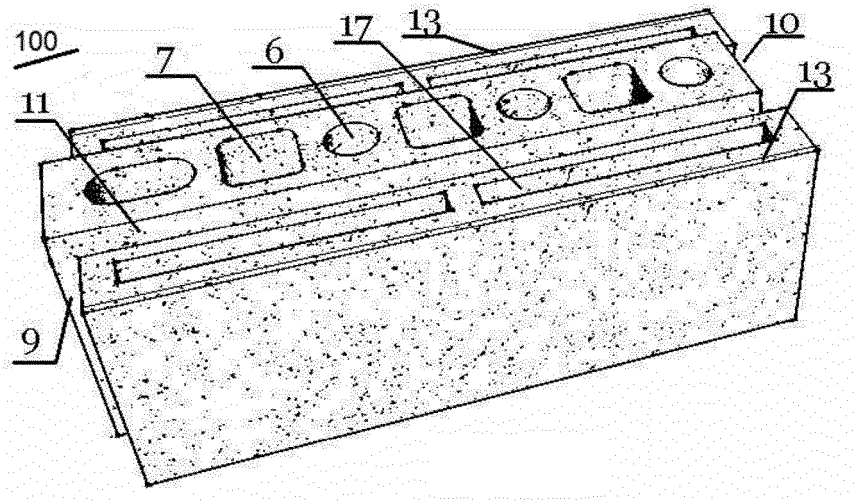

Fig. 4

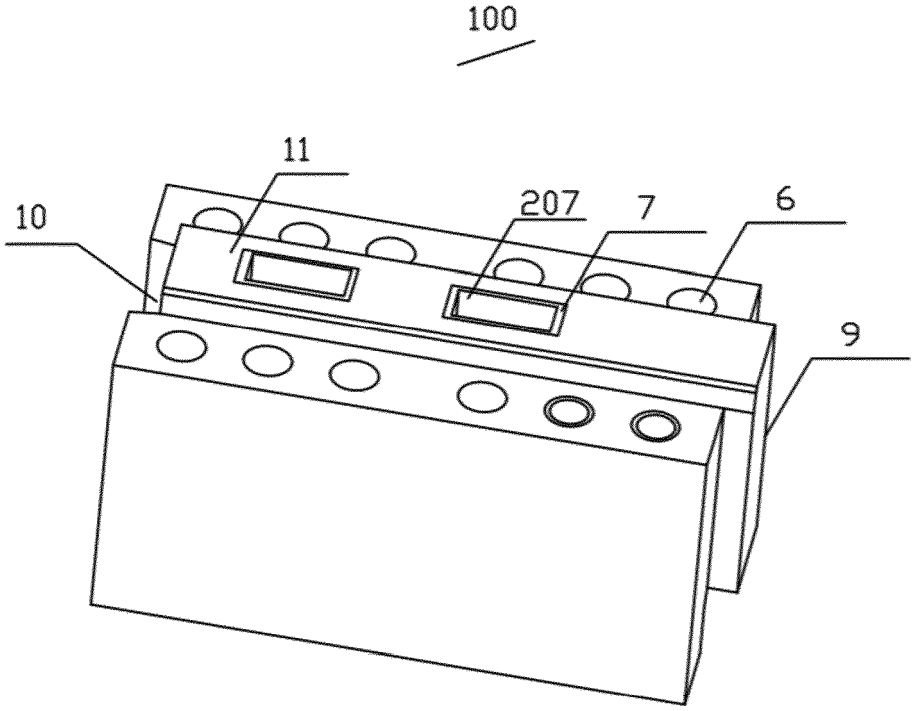

Fig. 5

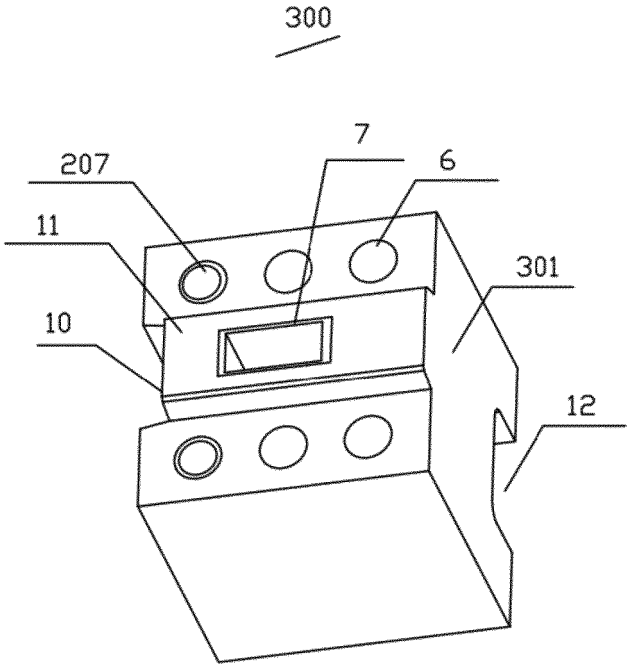

Fig. 6

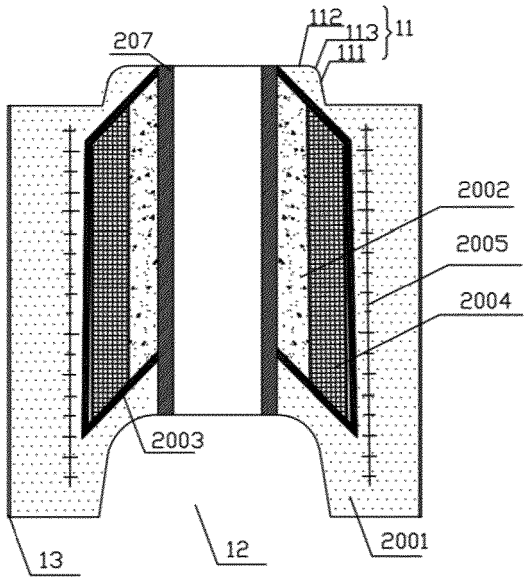
207
112
113
111
11
2002
2005
2004
2003
13
12
2001

Fig. 7

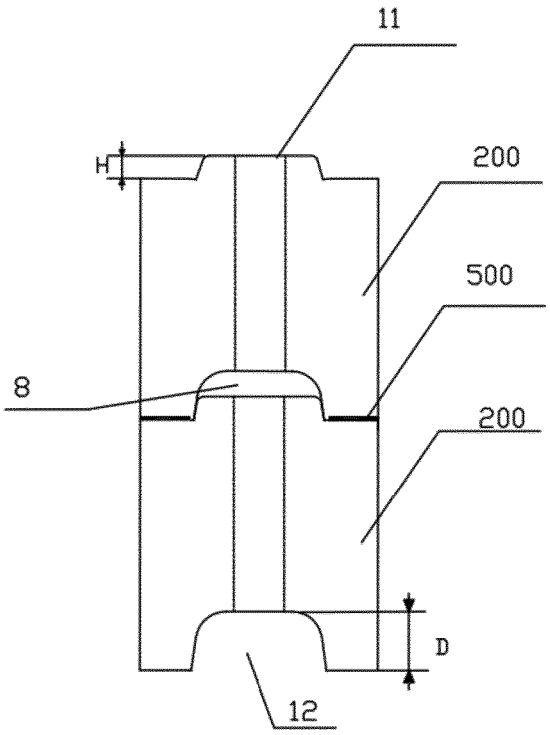
11
H
200
500
8
200
D
12

Fig. 8

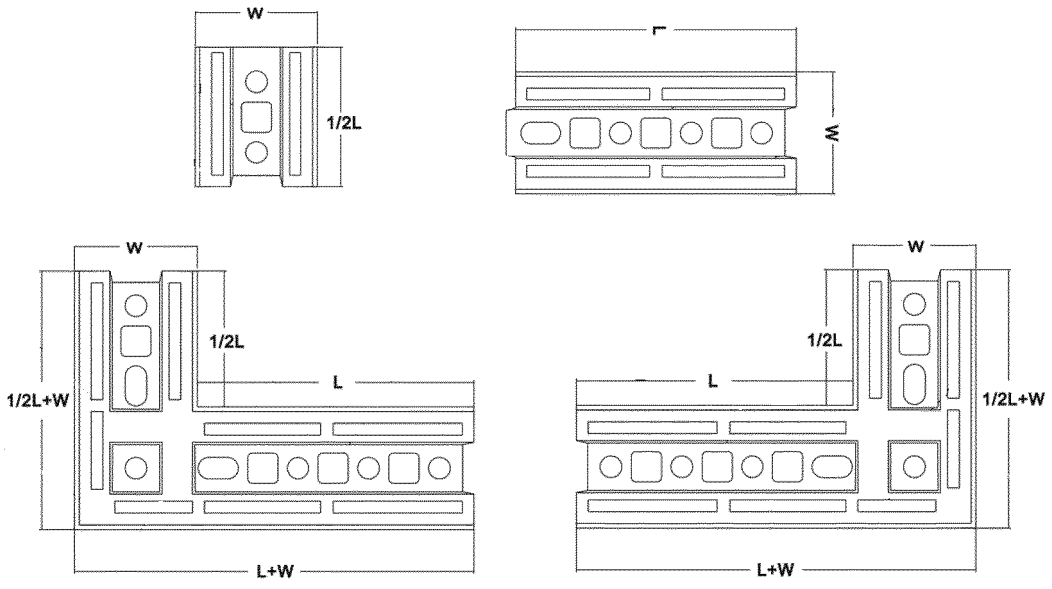

Fig. 9

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 205653972 U **[0002]**