

(19)



(11)

EP 4 826 180 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

21.10.2026 Bulletin 2026/43

(51) International Patent Classification (IPC):

E04B 2/16 ^(2006.01) **E04B 2/02** ^(2006.01)

(21) Application number: **26172361.3**

(52) Cooperative Patent Classification (CPC):

E04B 2/16; E04B 2002/0243; E04B 2002/0247

(22) Date of filing: **14.04.2026**

(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 ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**

Designated Extension States:

BA

Designated Validation States:

GE KH LA MA MD TN

(71) Applicant: **Finocchi, Roberto**

62010 Morrovalle (MC) (IT)

(72) Inventor: **Finocchi, Roberto**

62010 Morrovalle (MC) (IT)

(74) Representative: **Fiume, Orazio et al**

Praxi Intellectual Property S.p.A.

Corso Vittorio Emanuele II, 3

10125 Torino (IT)

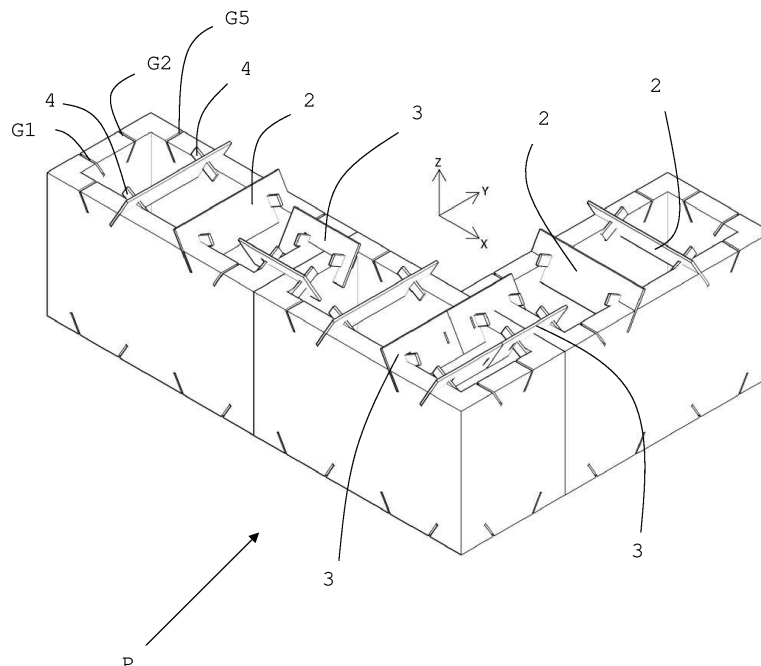
(30) Priority: **17.04.2025 IT 202500008655**

(54) **DRY ASSEMBLY SYSTEM FOR THE CONSTRUCTION OF INTERLOCKING WALLS AND METHOD FOR ITS OBTAINMENT**

(57) The invention describes a building block configured for creating interlocking dry-assembled walls for structural, infill, or partition purposes using plates in-

serted into grooves cut into the block. The invention also relates to a wall obtained with this assembly system and a method for producing said wall.

FIG. 10



EP 4 826 180 A1

Description**TECHNICAL FIELD**

5 **[0001]** The present invention relates to the construction industry and more specifically concerns a dry assembly system comprising a building block configured to create dry interlocking walls for structural, infill, or partition purposes using plates inserted into grooves made in said block. The invention also relates to a wall obtained with this assembly system and a method for obtaining said wall.

10 **STATE OF THE ART**

[0002] As is known, the construction of building walls occurs through the union of prismatic elements, also defined as bricks or blocks, in wood, clay, plaster or concrete placed in place through the interposition of mortar or an equivalent binding medium, such as glue.

15 **[0003]** In particular, for the construction of load-bearing and non-load-bearing walls, the blocks are laid using different types of mortar, such as gypsum mortar, air-lime mortar, hydraulic mortar, cement mortar, mortar with plastic cementitious agglomerates, bastard mortar (so called because it includes multiple binders in the mix at the same time) or even a special mortar in which products of different nature are incorporated into the base compound in order to give the mortar particular characteristics for specialized uses.

20 **[0004]** The known shape of building blocks is that of a parallelepiped with possible protrusions for interlocking with neighboring elements.

[0005] Furthermore, the standard method of installing building blocks requires that the vertical joints be offset from one row of blocks to the next. The joints must be staggered to ensure uniform stress distribution along the wall, avoiding weak points that could compromise the wall's overall strength.

25 **[0006]** The interlocking joints with which some building blocks are equipped are able to prevent sliding on the horizontal plane between the blocks, but in no case do these interlocking joints ensure the stabilization of the elements even in the event of vertical movements.

[0007] The tensile strength of masonry walls can be increased by using plaster reinforced with metal or polymer mesh, but this solution is conceptually unsuitable for building blocks since these techniques are not used in new masonry but only in renovation projects; furthermore, this solution is technically complex and irreversible.

30 **[0008]** None of the solutions known in the state of the art are able to prevent the simultaneous detachment between the elements of a wall structure in any direction while guaranteeing ease of installation and total reversibility.

[0009] The masonry walls known to the state of the art have the following disadvantages:

- 35
- lengthy construction times, as installing the blocks and applying the mortar requires time and precision;
 - limited mortar joint strength;
 - low resistance to both shear stress and out-of-plane wall stress; and
 - ineffective connection to the frame in the case of infill walls.

40 **[0010]** Therefore, none of the solutions examined so far are able to create a reversible connection system while guaranteeing absolute stability of the structure and maximum ease of assembly.

PURPOSES AND SUMMARY OF THE INVENTION

45 **[0011]** The purpose of the present invention is to provide a dry assembly system comprising a building block, a first plate, a second plate and a third plate configured to form a reversible wall that allows the joining of two or more blocks while ensuring the stability of the structure with respect to any relative displacement between the elements themselves. Another purpose of the present invention is to provide a dry assembly system that is versatile, practical and easy to apply.

50 **[0012]** These purposes are achieved by means of a dry assembly system according to claim 1, a wall obtained with such assembly system according to claim 10 and a method for obtaining the latter according to claim 11.

[0013] The dry assembly system which is the subject of this patent application presents a uniquely shaped building block, which allows for effective and reversible interconnection between adjacent blocks. This increases both the resistance to in-plane and out-of-plane loads, which are also essential for resisting seismic loads.

55 **[0014]** The building block of the assembly system covered by this patent application allows for the construction of a highly resistant drywall without the need for mortar between the blocks. This allows for rapid construction, eliminating the need for mortar placement and curing times, resulting in savings in both labor and materials.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Further features and advantages of the invention will emerge from the description of a preferred but not exclusive embodiment, illustrated by way of example but not of limitation in the drawings in which:

- figure 1 shows a top view (Fig. 1A) and a sectioned side view (Fig. 1B/1C) of a first plate of the dry assembly system;
- figure 2 shows a top view (Fig. 2A) and a sectioned side view (Fig. 2B/2C) of a second plate of the dry assembly system;
- figure 3 shows a top view (Fig. 3A) and a sectioned side view (Fig. 3B/3C) of a third plate of the dry assembly system;
- figure 4 shows a top view (Fig. 4A) and a sectioned side view (Fig. 4B/4C) of a building block of the dry assembly system;
- figure 5 shows an axonometric view of the building block of figure 4;
- figure 6 shows a "header-header" installation method of at least two building blocks placed side by side in a linear configuration;
- figure 7 shows a "header-stretcher" installation method of at least two building blocks placed side by side in an angular configuration;
- figure 8 shows an axonometric view of an example of a wall comprising at least one building block in which each of said blocks is aligned and superimposed on the previous one according to a simultaneous "header-header" and "header-stretcher" configuration and with staggered joints;
- figure 9 represents an axonometric view of an example of a wall comprising at least one building block in which each of said blocks is aligned and superimposed on the previous one according to a simultaneous "header-header" and "header-stretcher" configuration and with aligned joints;
- figure 10 shows an axonometric view of an example of a wall in fig. 9 in which the upper row of blocks placed side by side is aligned with the row below and in which the first plates, the second plates and the third plates are inserted into the various grooves to allow the blocks of the upper row to be joined with the one below;
- figure 11 shows an axonometric view of an example of a wall in fig. 8 in which the upper row of blocks placed side by side is staggered with the row below and in which only the first plates and the third plates are inserted into the various grooves to allow the blocks of the upper row to be joined with the one below;
- figure 12 shows in sectional view the arrangement and dimensions of the holes in the longitudinal and transverse walls configured to receive a dowel pin;
- figure 13 shows an exploded axonometric view of the transverse and longitudinal walls of a building block in which the holes for inserting the dowel pin are visible;
- figure 14 represents a lateral view and section of the fourth plate inserted inside one of the openings of the first plate.

DETAILED DESCRIPTION OF THE INVENTION

[0016] According to a preferred - but not limiting - embodiment, the present invention concerns a building block, also defined as a "brick", according to a preferred embodiment and denoted overall by the reference 1.

[0017] The building block 1 in Fig. 4 is configured for the construction of interlocking dry-assembled walls with a structural, infill, or partition function. An example of a wall P constructed using a plurality of blocks 1 according to a simultaneous "header-header" and "header-stretcher" configuration is shown in Figures 8-9, which will be described in more detail later in the description.

[0018] With reference to Fig. 4, the geometry of the building block 1 is defined starting from the height H of the block 1 itself.

[0019] Block 1 in plan has a rectangular section with dimensions "**B x L**" and height "H", hollow internally and with walls of thickness "p"; the length "L" of the element is double the width "B", while the height "H" is independent of the base dimensions.

[0020] As shown in Fig. 5, assume a reference system with the X axis longitudinal to the plane of the wall, i.e. along the dimension "L" of block 1, the Z axis vertical, i.e. along the height "H" of block 1, and the Y axis orthogonal to the plane of the wall, i.e. along the dimension "B".

[0021] Building block 1 essentially has the shape of a parallelepiped and comprises:

- a first pair of walls, defined as longitudinal walls, opposite each other and denoted 1A/1B respectively;
- a second pair of walls, defined as transverse walls or end walls, opposite each other and denoted 1C/1D respectively;

- a cavity C defined by the first pair of longitudinal walls 1A/1B and the second pair of transverse walls 1C/1D.

[0022] These longitudinal and transverse walls have a substantially rectangular shape.

[0023] Said block 1 has a portion of a shape that makes it suitable to constitute a lateral end or corner part of the wall itself.

[0024] Each of the longitudinal walls 1A/1B is configured to define an external lateral surface and an internal lateral surface of the wall to be built, respectively. Each of the transverse walls 1C/1D is configured to contact the transverse wall of the adjacent building block 1.

[0025] Block 1 is obtained by assembling two longitudinal walls 1A/1B and two transverse walls 1C/1D. The longitudinal walls 1A/1B have a dimension " $L \times H$ " and thickness " p " while the transverse walls 1C/1D have a dimension " $(B-2p) \times H$ " and thickness " p ".

[0026] Block 1 also comprises a plurality of coupling regions with adjacent and/or overlapping blocks 1, in the present case there are twelve coupling regions denoted by R1-R12.

[0027] The coupling regions R1-R12 are two for each transverse wall 1C/1D of building block 1 while they are four for each longitudinal wall 1A/1B of building block 1.

[0028] Each coupling region R1-R12 has a substantially groove G1-G24 conformation where each coupling region R1-R12 comprises a pair of grooves.

[0029] Specifically, in the end wall 1C/1D there are two grooves in the upper part G1-G2 and two in the lower part G3-G4. These grooves of the end wall cover the entire thickness of the transverse wall 1C/1D, are symmetrical with respect to a vertical axis central to the dimension of the wall and are spaced from each other by a distance equal to the measurement " f ". The grooves are inclined by 30° with respect to a local axis parallel to the Z axis, the upper ones converge towards said axis parallel to the Z axis while the lower ones diverge with respect to this axis. The local axis parallel to the Z axis and also the Z axis are to be understood as vertical axes of height development of the wall P.

[0030] By superimposing a second block 1 on the first block 1, the lower groove of the second block 1 is to be understood as an extension of the upper groove of the first block 1.

[0031] The length of the grooves is equal to $h/2$ where h is the height of the first rectangular plate 2.

[0032] In the longitudinal wall 1A/1B there are four grooves in the upper part G5-G6-G7-G8 and four in the lower part G9-G10-G11-G12 where each pair of grooves in the upper part converges towards the axis parallel to the Z axis and each pair of grooves in the lower part diverges towards the axis parallel to the Z axis.

[0033] Therefore, considering that block 1 includes two longitudinal walls 1A/1B and two transverse walls 1C/1D, overall the grooves of both transverse walls are eight while the grooves of both longitudinal walls are sixteen.

[0034] The arrangement of the grooves in the longitudinal wall is the same as that of the transverse wall considering that the longitudinal wall is double the transverse wall.

[0035] The plurality of grooves G1-G24 is configured to receive at least a first plate 2 and at least a second plate 3 suitable for creating the connection with the adjacent block 1 and the upper block.

[0036] The length of the grooves and their inclination can vary without substantially changing their functionality. The preferred inclination is 30° as it optimizes the resistance of block 1 to horizontal forces compared to vertical ones; this inclination can have a tolerance of $\pm 5^\circ$ without affecting the performance of building block 1. The length of the grooves, equal to $h/2$, derives from the need to ensure a interlocking masonry bond between the first plate 2 and the second plate 3 in block 1 without weakening the resistant part of block 1 itself. If plates 2 and 3 were too short, the block would be underutilized, having little resistant surface, while if the second plates were too long, there is a risk of creating grooves that would be too close at the point of convergence, compromising the resistance of the parts of the block itself.

[0037] The distance f between the grooves can vary depending on the need to ensure adequate ease of assembly of the second plates 3.

[0038] Preferably, the distance f is equal to 50%-60% of $(B-2p)$.

[0039] As shown in Fig. 13, on each of the faces of dimension " $L \times H$ " of each of the longitudinal walls 1A/1B, four holes of diameter ϕ are made, distant from the center of the hole to the edge of block 1 by a distance equal to $p/2$, i.e., half the thickness of the wall itself. The depth of the holes is approximately equal to $p/2$ but it is possible to establish different values depending on the resistance of the materials. The resistance of the wall is inversely proportional to the depth of the holes. Therefore, the lower the resistance of the wall, the greater the depth of the holes will be to distribute the stresses. The distance between the holes can be assumed to be equal to half the height of the wall; this value can be varied as it is not binding.

[0040] Furthermore, as shown in Fig. 13, on each of the faces of dimension " $H \times p$ " (also defined as the side) of each of the transverse walls 1C/1D, two holes of diameter ϕ are made such as to correspond with the two holes of diameter ϕ on the faces of dimension $L \times H$ of the longitudinal walls 1A/1B. The distance between the two holes of the transverse wall is the same as that of the two holes of the longitudinal wall 1A/1B. Similarly to the first holes, the second holes also have a depth equal to $p/2$.

[0041] The transverse walls 1C/1D and the longitudinal walls 1A/1B of block 1 can be assembled by joining the sides of the transverse walls 1C/1D with the longitudinal walls 1A/1B by inserting at least one dowel pin 5 of diameter ϕ and length p into the above holes to create a mechanical connection. The connection between the longitudinal and transverse walls can be further reinforced with epoxy glue.

[0042] The pins 5 are preferably made of wood such as beech, oak or birch, to ensure good mechanical resistance but they can also be made of recycled wood to increase their durability.

[0043] The dowel pins 5 are generally cylindrical, with a diameter varying according to requirements, but typically range from 6 mm to 12 mm. These pins 5 may also have notches or grooves along the surface to improve adhesion with the glue. The hole must have a diameter slightly smaller than the diameter of the dowel pin to allow for adequate pressure and ensure a strong hold. The depth of the hole depends on the length of the pin and the type of joint. The depth must be equal to or slightly greater than the length of the pin to ensure a solid joint. In this specific case, as shown in Fig. 12, the dowel pin 5 has a dimension equal to " p " and is inserted halfway into the side of the transverse wall and the remaining half into the longitudinal wall. The depth of the hole coincides with the length of the dowel pin 5.

[0044] Glue is applied to both the holes and to pin 5 to ensure a stronger hold. Pin 5 is then inserted into the hole, and the longitudinal and transverse walls of block 1 are joined. In some cases, a hammer is used to firmly insert the pin, which remains invisible once the joint is complete.

[0045] In this way the blocks 1 can be prepared both in the factory and on site since the assembly of the various longitudinal walls 1A/1B and transverse walls 1C/1D is simple from a geometric point of view and error-free from the point of view of assembly precision since the pins 5 guarantee the necessary precision.

[0046] The assembly of a wall P consists of placing the building blocks 1 side by side on the same level and then on multiple levels until the desired height of the wall P is reached and inserting for each level at least a first plate 2 and a second plate 3 in the first grooves and second grooves according to the provided patterns and finally inserting at least a third plate 4 to give monolithic nature to the entire system.

[0047] In the case of perfectly overlapping blocks (see fig. 9) the joints are aligned vertically and therefore the grooves of the transverse walls 1C/1D are configured to receive the second plates 3 (see fig. 10), while the grooves of the longitudinal walls 1A/1B are configured to receive the first plates 2. In the corner joints the connection of two blocks occurs by means of four second plates 3 (see fig. 10).

[0048] In the case of vertically staggered blocks (see fig. 8), the joints are not vertically aligned, so the second plates 3 are not used to join the blocks, but only the first plates 2 (see fig. 11), which are configured to be inserted into the grooves of the longitudinal walls 1A/1B. Therefore, in the case of staggered blocks, only the first plates 2 are used, even in the corners.

[0049] As shown in Fig. 1, the first plate 2 is a rectangular element with dimensions $b \times h$ and thickness " s ", where $b > h$ and where " b " is the base and " h " the height. Said first plate 2 is provided with two first openings 01-02 with dimensions $c \times d$ with $d > c$ where " c " is the base and " d " the height; the first openings 01-02 are arranged with the side of dimension equal to " c " parallel to the base " b " of the first plate 2 and are symmetrical with respect to the axes of symmetry of said first plate 2. Furthermore, the side of dimension equal to " d " of the opening is distant from the side of the first plate 2, of dimension equal to " h ", by a distance equal to " p ", a distance equal to the thickness of the walls of block 1.

[0050] As shown in Fig. 2, the second plate 3 is a rectangular element of dimensions $e \times h$ provided with three second openings 03-04-05 of dimensions $c \times d$ with $d > c$ where " c " is the base and " d " is the height; the three second openings 03-04-05 are arranged with the side of dimension " c " parallel to the base of the second plate 3, they are symmetrical with respect to an axis of symmetry parallel to the side " e " while they are not symmetrical with respect to an axis parallel to the side " h ".

[0051] Taking as reference a side of dimension " h " of the second plate 3, the side of dimension " d " of the three second openings 03-04-05 is distant from the side of dimension h of the second opening 04 of the group of three second openings of an equal measure " p , q and r " calculated as follows. Consider " x " as a distance between the side " d " of the last opening 05 and the side " h " of the second plate 3 (opposite to the one from which the distances of the holes are measured), this distance " x " is defined in such a way as to give the second plate 3 adequate resistance to shear and bearing stress. The dimension " x " is inversely proportional to the dimension " t ", therefore if " x " is large " t " will be smaller.

[0052] With reference to Fig. 10, specifically with reference to the corner portion where the grooves engage with four second plates 3 to join the blocks, the equation $2e + 0,5 \text{ mm} = B + p + c + x$ is imposed, where 0.5 mm is a safety distance between the second plates 3 for their positioning. Assuming $c = 4 \text{ mm}$ and $x = 18,5 \text{ mm}$, we obtain that " e " is equal to $e = 156 \text{ mm}$. Having defined the length of the second plate 3, a first distance of the first opening 03 from the edge of the second plate 3 is equal to " p ".

[0053] Therefore, the distance " r " of the third opening 05 from the edge of the second plate 3 is equal to $r = e - x - c = 156 \text{ mm} - 18,5 \text{ mm} - 4 \text{ mm} = 133,5 \text{ mm}$

The distance " q " of the second opening 04 from the edge of the second plate 3 is equal to:

$$q = r - 2p - 4mm = 133,5 \text{ mm} - 80 \text{ mm} - 4 \text{ mm} = 49,5 \text{ mm}$$

[0054] The distance "t" between the two closest openings is equal to:

$$t = q - p - c = 49,5 \text{ mm} - 40 \text{ mm} - 4 \text{ mm} = 5,5 \text{ mm}$$

[0055] The value of "x" can be modified to optimize the value of "t" according to the resistance requirements of the second plate 3.

[0056] The creation of three second openings O3-O4-O5 on the second plate 3 allows it to be used for connections between the various blocks 1 both "header-header" and "header-stretcher". In the case of "header-header" connections, the openings O4-O5 are used, while in the case of "header-stretcher" connections, the opening O3 is used on the first plate of the two plates 3 and the openings O4-O5 on the second of the two plates 3.

[0057] In order to better understand and in greater detail the overall conformation of a P wall, the phases for obtaining the latter will be described in sequence below.

[0058] Two parallelepiped elements also defined as building blocks 1 are placed on the same level according to the two different configurations "header-header" (see Fig. 6) and "header-stretcher" (see Fig. 7) where the "header-stretcher" configuration describes a laying technique in which the blocks are arranged in such a way that the narrow part of dimensions $B \times H$ (the "header") of a first block 1 is oriented perpendicularly to the long part of dimensions $L \times H$ (the "stretcher") of a second block 1, creating an angular arrangement between said first block 1 and second block 1.

[0059] In the walls P of Fig. 9 with aligned joints, in order to join said first block 1 with said second block, the first plate 2 must be inserted by sliding simultaneously on a first groove placed on a longitudinal wall 1A and on a second groove placed on a longitudinal wall 1B in which said first groove is opposite said second groove.

[0060] Once the first plate 2 is inserted into said grooves, to block the assembly system a third plate 4 is used, configured to be inserted inside the first openings O1-O2 of the first plate 2.

[0061] In the walls P of Fig. 8 with staggered joints, once the first plate 2 is inserted into the grooves of the longitudinal walls and the second plate 3 is inserted into the grooves of the transverse walls, to block the assembly system we resort to the use of a third plate 4 configured to be inserted both inside the first openings O1-O2 of the first plate 2 and inside the second openings O3-O5 of the second plate 3.

[0062] More specifically, in the case of joining two adjacent blocks 1, the third plates 4 are configured to be inserted into the openings O4-O5, while in the case of corner joints of two blocks 1, two second plates 3 are used, therefore the third plate 4 is configured to be inserted inside the opening O3 of the first of the two second plates 3 and inside the openings O4-O5 of the second of the two second plates 3.

[0063] The third plate 4 is a rectangular element with dimensions $a \times d$ where $a > d$ and thickness "c". The third plate 4 comprises, approximately halfway along the height "a" and on only one face of the two, a stopper 4A that may include either a screw or a welding tip to prevent the element from sliding into the various openings O1-O2-O3-O4-O5 beyond a certain position. Stopper 4A serves to prevent the third plate 4 from sliding due to gravity inside the openings O1-O2-O3-O4-O5.

[0064] Once the first plate 2 and the second plate 3 have been arranged in the various grooves G1-G24 and the third plates 4 have been inserted to create a locking element, a complete constraint is created between the elements themselves. In fact, the insertion of the first and second plates 2, 3 in the grooves G1-G24 creates a constraint such that the only possible relative movement is translation in the plane of the plate parallel to its long side. This kinematic mechanism, however, is cancelled out by at least one third plate 4 which gives monolithic nature to the entire system.

[0065] According to a preferred embodiment, the first plate 2 is made of metal, such as steel/aluminum, the second plate 3 is made of metal, such as steel/aluminum, and the third plate 4 is made of metal, such as steel/aluminum, or plastic, while the building block 1 is made of wood, concrete, or plastic. When the blocks 1 are made of wood, they are assembled mechanically using pins and chemically using epoxy resin, similarly to what happens with structural laminated wood products. Wooden panels of the required thickness are commercially available pre-ground, and the cutting and groove-making operations can be carried out using common machinery available in any carpentry shop, even those not numerically controlled.

[0066] Alternatively, blocks 1 can be made of autoclaved aerated concrete (i.e., lightweight concrete) because the ground blocks are lightweight, strong, and dimensionally accurate.

[0067] Concrete blocks 1 can be precisely cut to create grooves without splintering.

[0068] Finally, the blocks 1 can be made of plastic by molding similarly to toy "Lego" bricks.

[0069] Preferably, the first plate 2 and the second plate 3 are made from commercially available sheet metal and subsequently laser cut both to obtain the dimensions mentioned above but also to obtain the various openings O1-O5.

[0070] This dry assembly system offers the following advantages:

- 1) the walls can be constructed entirely dry, and the system is completely reversible and modifiable;
- 2) the walls can be constructed with either aligned or staggered blocks;
- 3) the two plates 2 and 3 allow for any possible configuration;
- 4) the system is completely non-deformable;
- 5) the system does not allow for assembly errors;
- 6) the choice of materials allows for both load-bearing and non-load-bearing structures.

[0071] The materials and dimensions of the invention as described above, illustrated in the attached drawings, and claimed below, may be any according to requirements. Furthermore, all details may be replaced with technically equivalent ones, without thereby departing from the protective scope of this patent application.

LEGEND

[0072]

- 1 Building block
- 1A/1B Longitudinal walls
- 1C/1D Transverse walls
- C Cavity
- 2 First plate
- 3 Second plate
- 4 Third plate
- 4A Stopper
- G1-G24 Grooves
- G1-G4 First grooves
- G5-G6 Second grooves
- O1-O2 First openings
- O3-O4-O5 Second openings
- R1-R12 Coupling region
- 5 Dowel pin

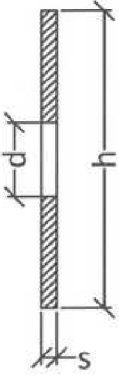
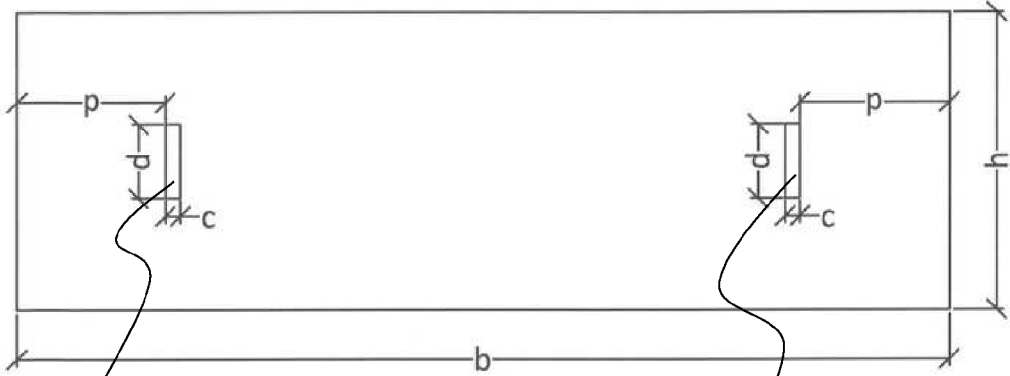
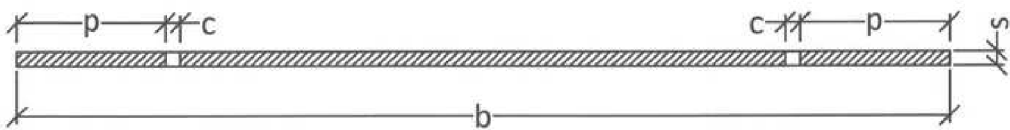
Claims

1. Dry assembly system, in particular for the construction of interlocking dry-assembled walls (P) with a structural, infill, or partition function, comprising:
 - a construction block (1) comprising:
 - a first pair of opposed longitudinal walls (1A/1B);
 - a second pair of opposed transverse walls (1C/1D);
 - a cavity (C) defined by the first pair of longitudinal walls (1A/1B) and the second pair of transverse walls (1C/1D);
 - a plurality of coupling regions (R1-R12) with adjacent and/or overlapping blocks, wherein the coupling regions are two for each transverse wall (1C/1D) and four for each longitudinal wall (1A/1B), and wherein each coupling region (R1-R12) includes a pair of grooves each inclined at 30° relative to a vertical axis of height development of the wall (P) itself;
 - a first plate (2) comprising first openings (O1-O2) and configured to be inserted into the grooves of the longitudinal walls (1A/1B);
 - a second plate (3) comprising second openings (O3-O4-O5) and configured to be inserted into the grooves of the transverse walls (1C/1D);
 - a third plate (4) comprising a stopper (4A) configured to be inserted into the first and second openings (O1-O5) respectively of the first plate (2) and the second plate (3) .
2. Dry assembly system according to claim 1, wherein the longitudinal walls (1A/1B) and the transverse walls (1C/1D) are substantially rectangular in shape.

3. Dry assembly system according to claim 1, wherein the grooves of the transverse wall (1C/1D) and of the longitudinal wall (1A/1B) extend through the entire thickness of the wall itself, are symmetrical with respect to a vertical axis centered along the dimension of the wall, and are spaced apart by a distance equal to the measurement "f".
- 5 4. Dry assembly system according to the preceding claims, wherein in the transverse wall (1C/1D) there are two grooves at the top (G1-G2) and two at the bottom (G3-G4), and the top grooves converge toward said vertical axis while the bottom grooves diverge from said vertical axis.
- 10 5. Dry assembly system according to claim 1, wherein each longitudinal wall (1A/1B) has four grooves at the top (G5-G6-G7-G8) and four at the bottom (G9-G10-G11-G12), and each pair of top grooves converges toward said vertical axis while each pair of bottom grooves diverges from said vertical axis.
- 15 6. Dry assembly system according to claim 1, wherein the construction block (1) is formed by joining the transverse walls (1C/1D) with the longitudinal walls (1A/1B) by inserting at least one dowel pin (5) into holes simultaneously made at the same point on the sides of the transverse walls (1C/1D) and on the longitudinal walls (1A/1B).
7. Dry assembly system according to claim 1, wherein when a second block (1) is placed on top of a first block (1), the lower groove of the second block is the extension of the upper groove of the first block.
- 20 8. Dry assembly system according to claims 6-7, wherein the block (1) comprises:
 - a portion shaped to make the block suitable to form a lateral end or corner part of the wall; and
 - a plurality of coupling regions (R1-R12), each comprising a pair of grooves inclined at 30° relative to a vertical axis of height development of the wall (P),25 in such a way that the block can be coupled to one or more blocks.
9. Dry assembly system according to claim 1, wherein the first plate (2), the second plate (3), and the third plate (4) are made of metal selected from steel or aluminium, while the construction block (1) is made of wood, concrete, or plastic.
- 30 10. Wall (P), preferably dry-assembled, formed by placing multiple construction blocks (1) side by side according to at least one of the preceding claims, wherein the assembly occurs both on the same level and on multiple levels, and for each level at least one first plate (2), one second plate (3), and at least one third plate (4) are inserted to provide monolithic stability.
- 35 11. Method for constructing an interlocking dry-assembled wall (P) with a structural, infill, or partition function, wherein the method includes the use of a plurality of construction blocks (1) and their coupling at a plurality of coupling regions (R1-R12), wherein each coupling region comprises a pair of grooves each inclined at 30° with respect to a vertical axis of height development of the wall (P), wherein said grooves are configured to receive at least one first plate (2), at least one second plate (3), and at least one third plate (4), said method employing an assembly system according to any of claims 1 to 9.
- 40
- 45
- 50
- 55

FIG. 1

FIG. 1C



O1

FIG. 1A

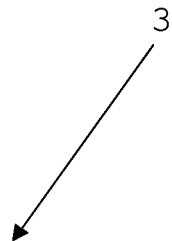
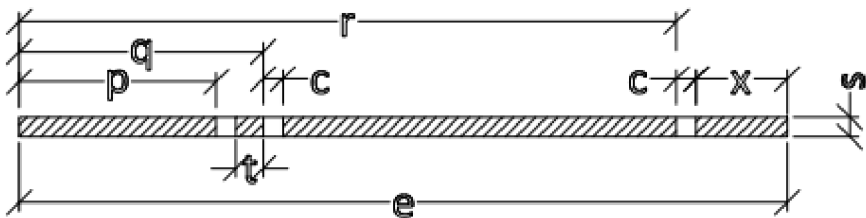
O2

2

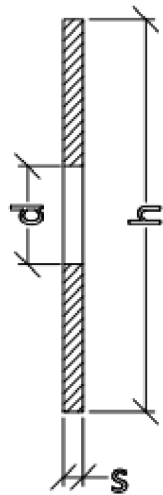
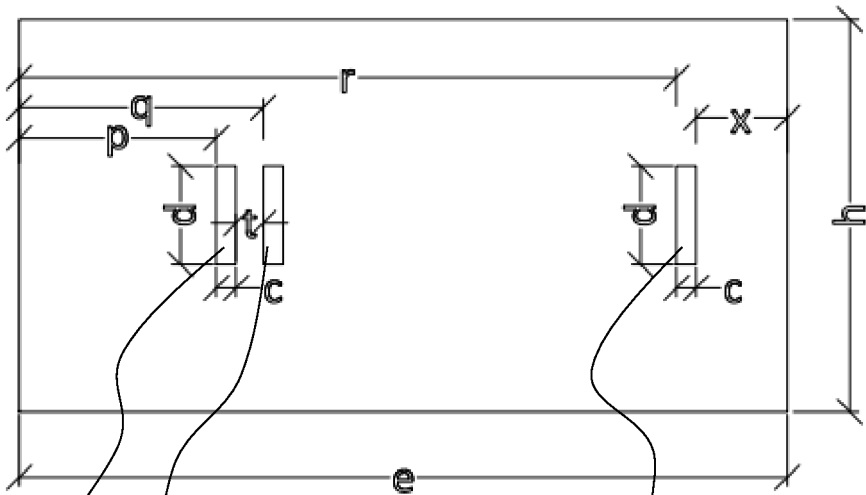
FIG. 1B

FIG. 2

FIG. 2C



3



03

04

05

FIG. 2A

FIG. 2B

FIG. 3

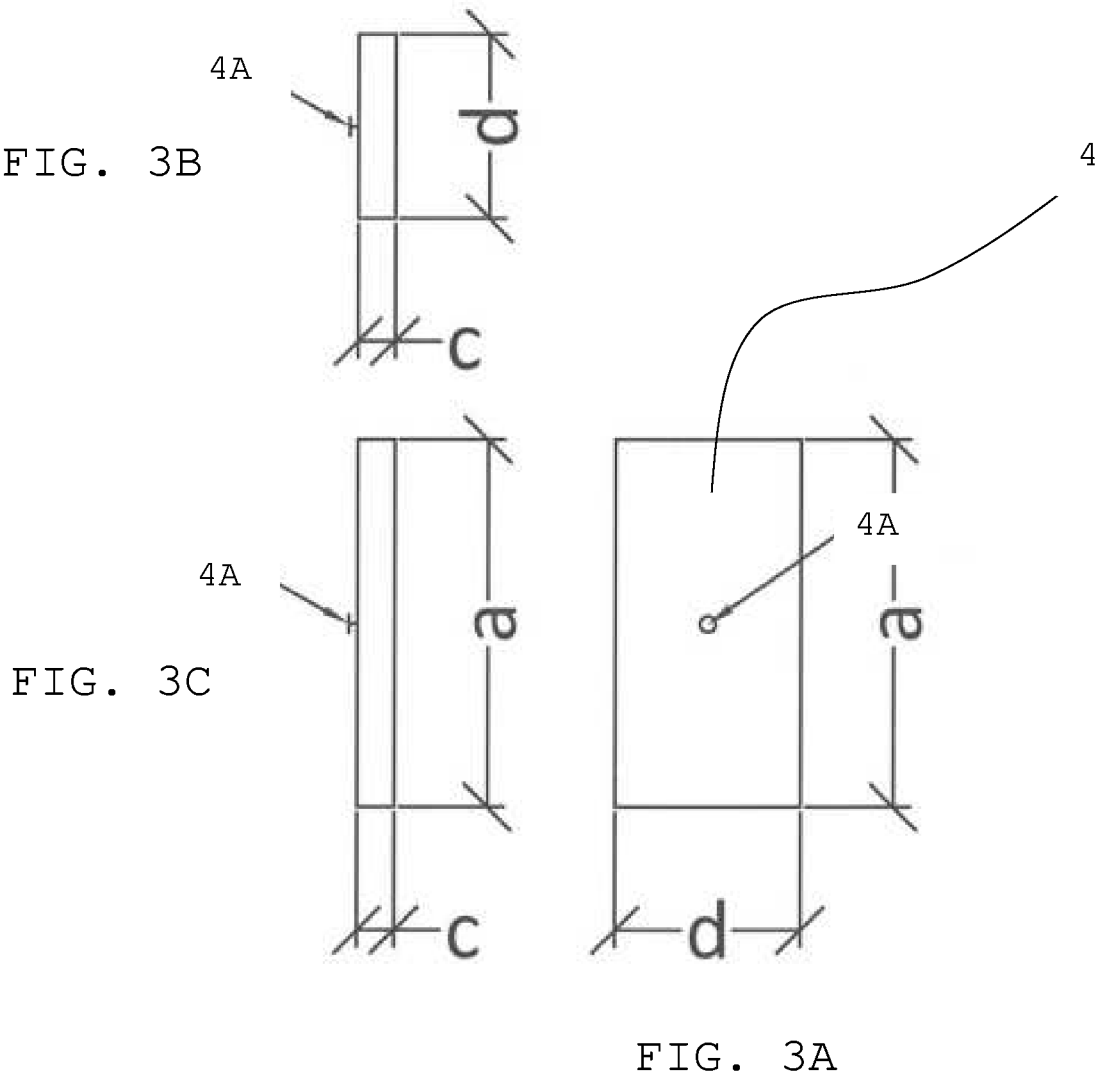


FIG. 4

FIG. 4A

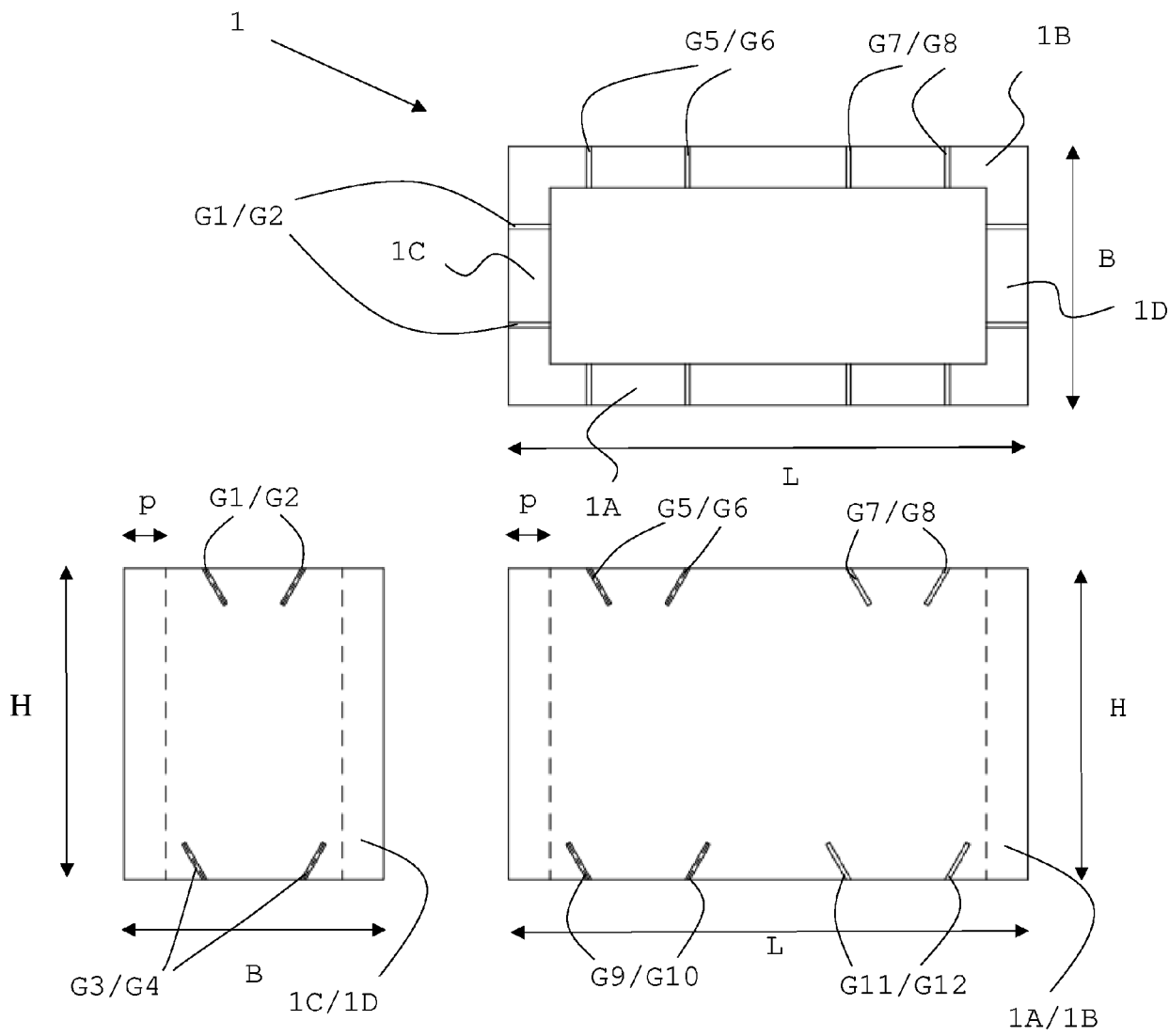


FIG. 4B

FIG. 4C

FIG. 5

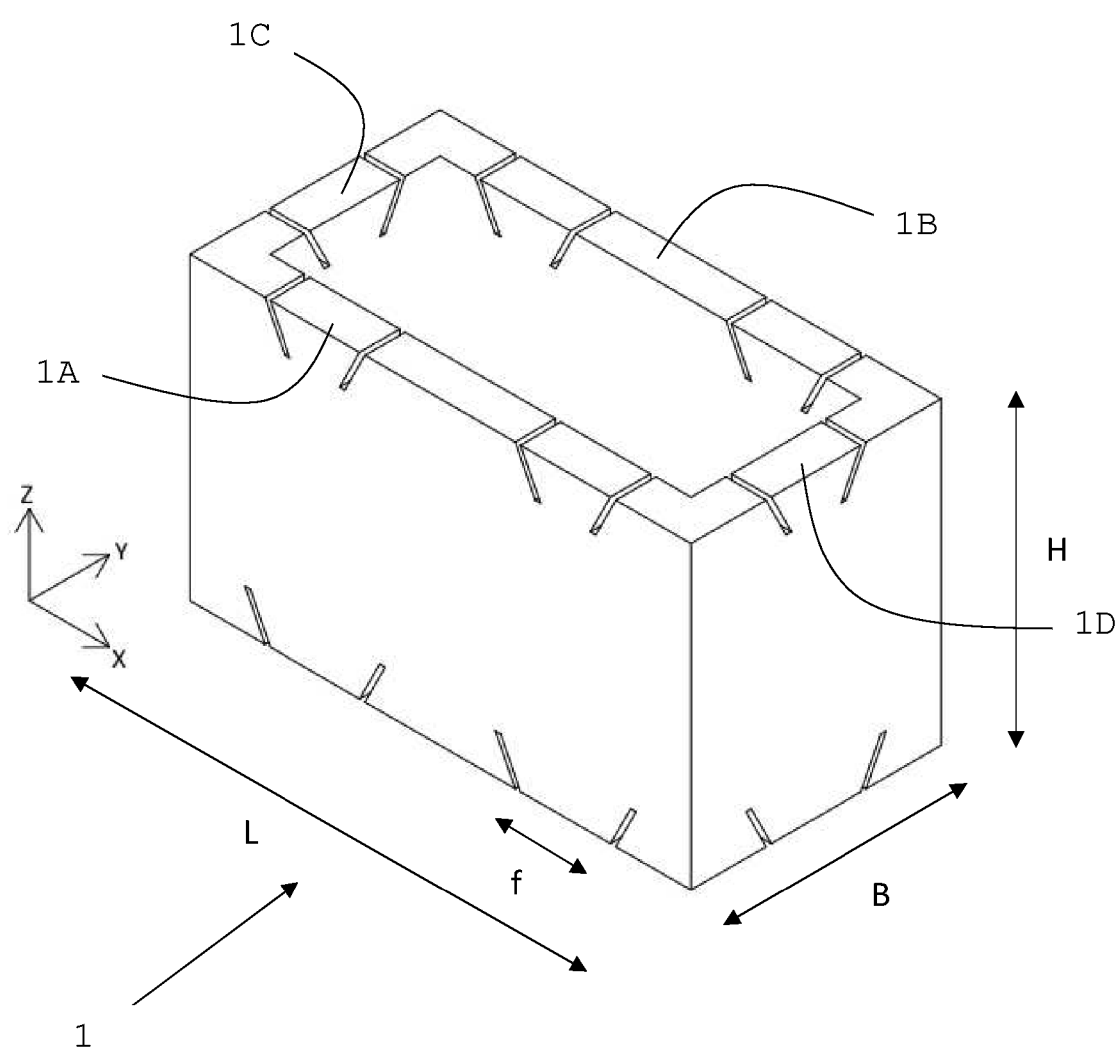


FIG. 6

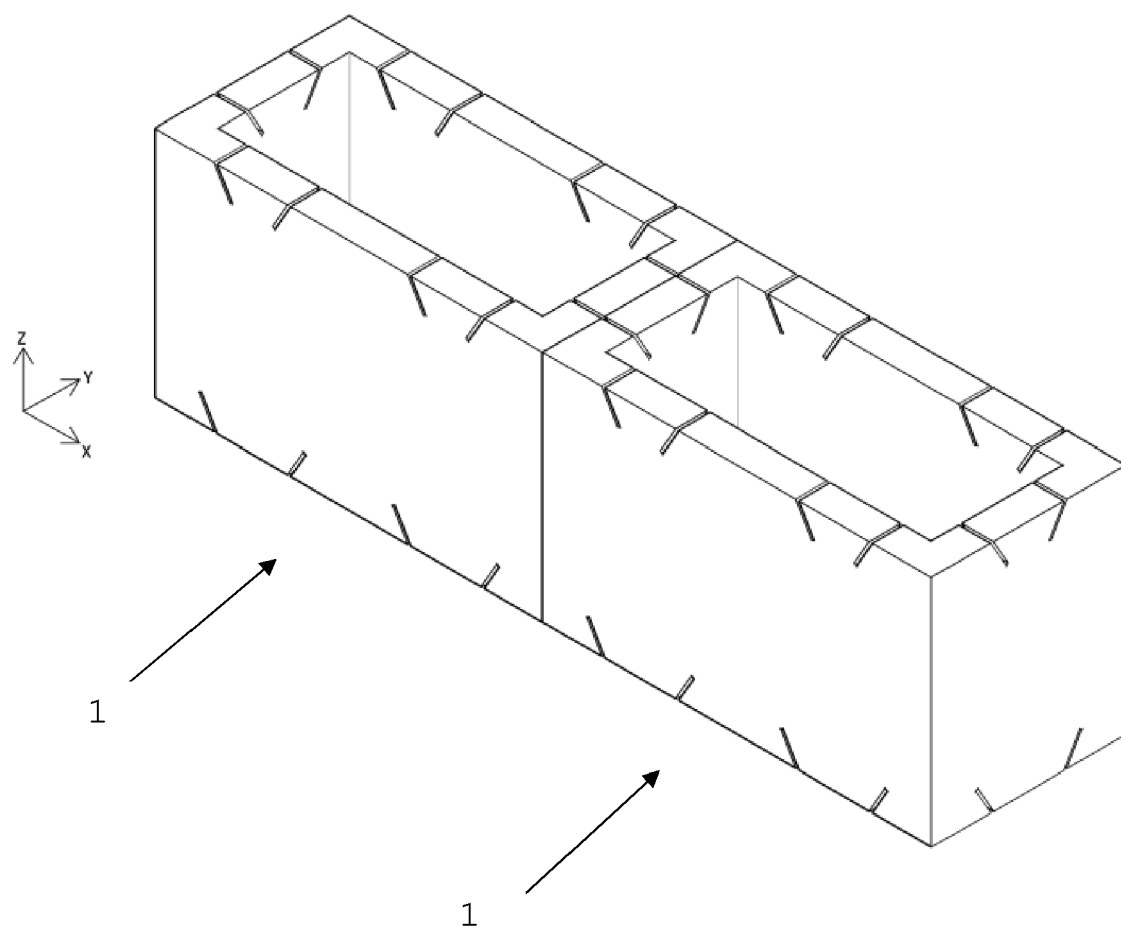


FIG. 7

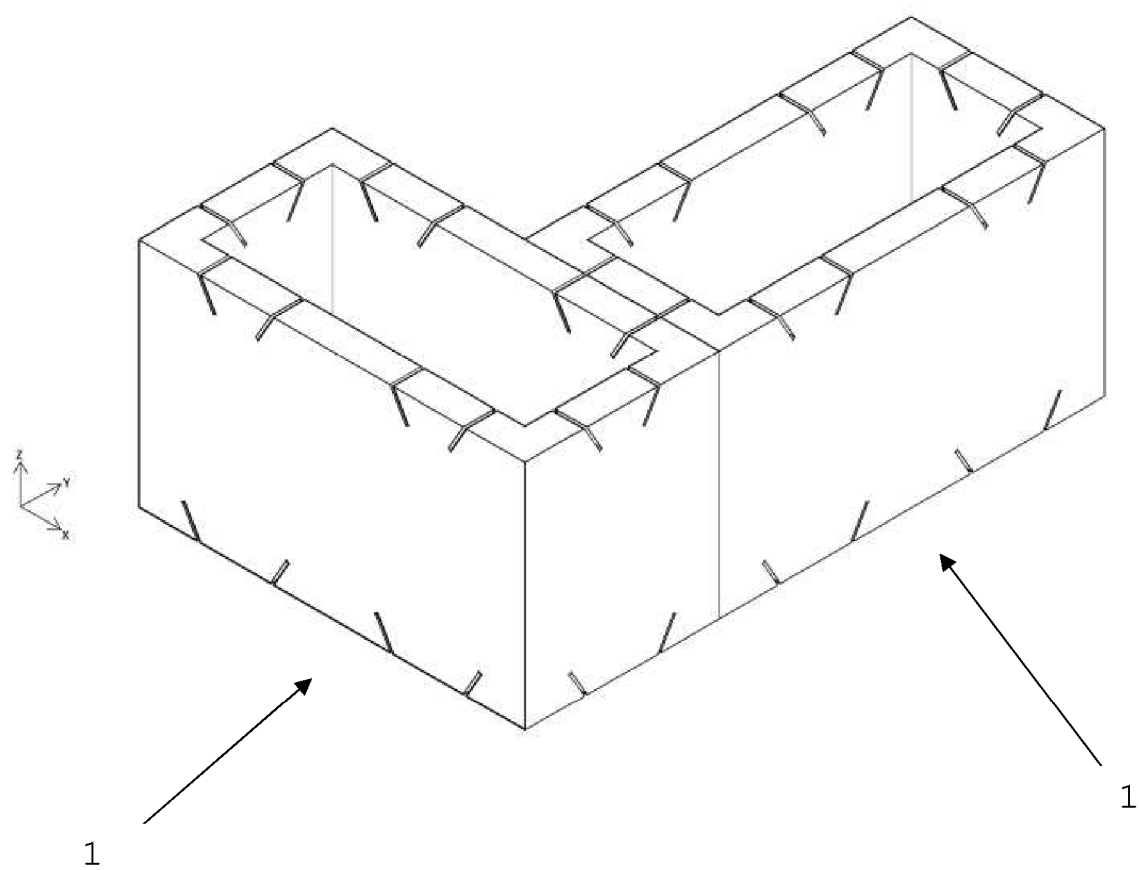


FIG. 8

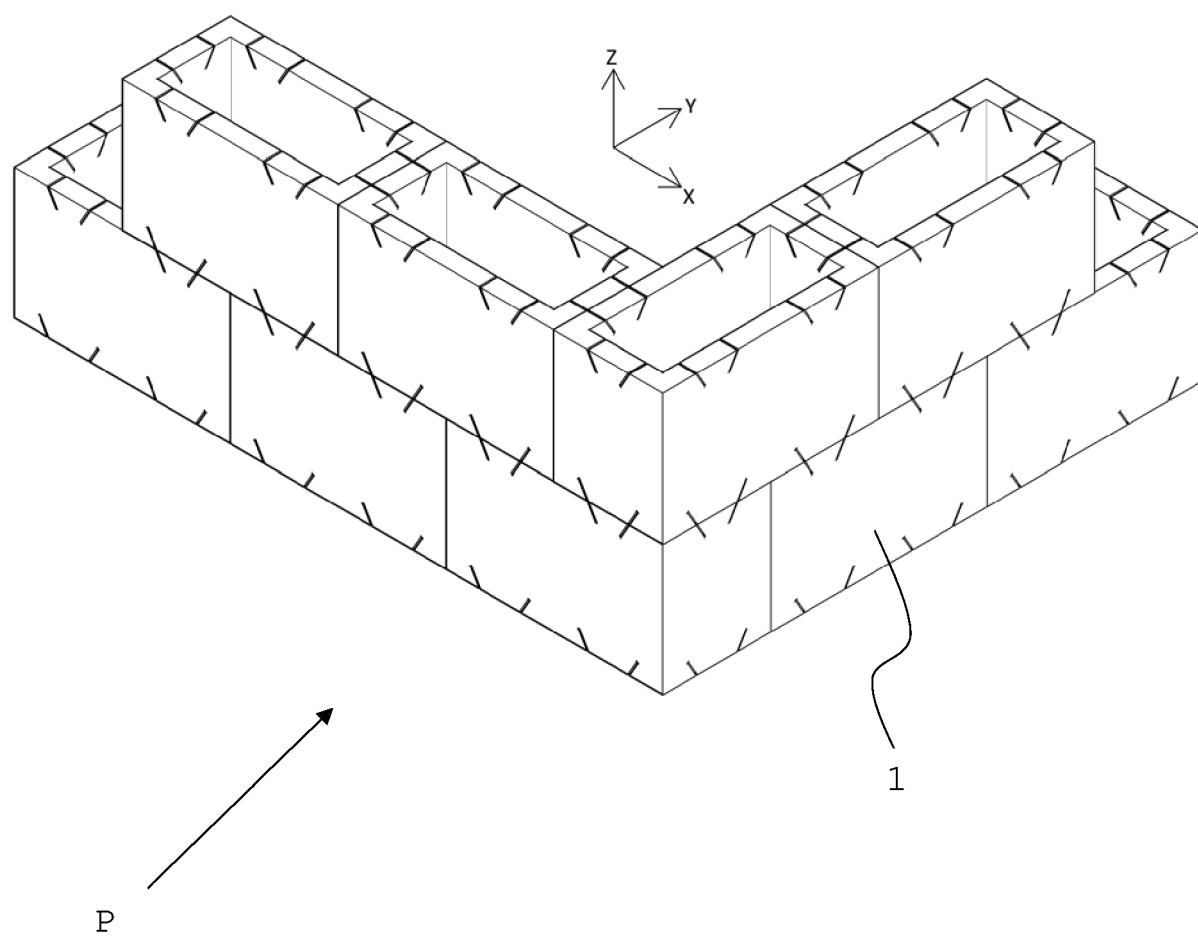


FIG. 9

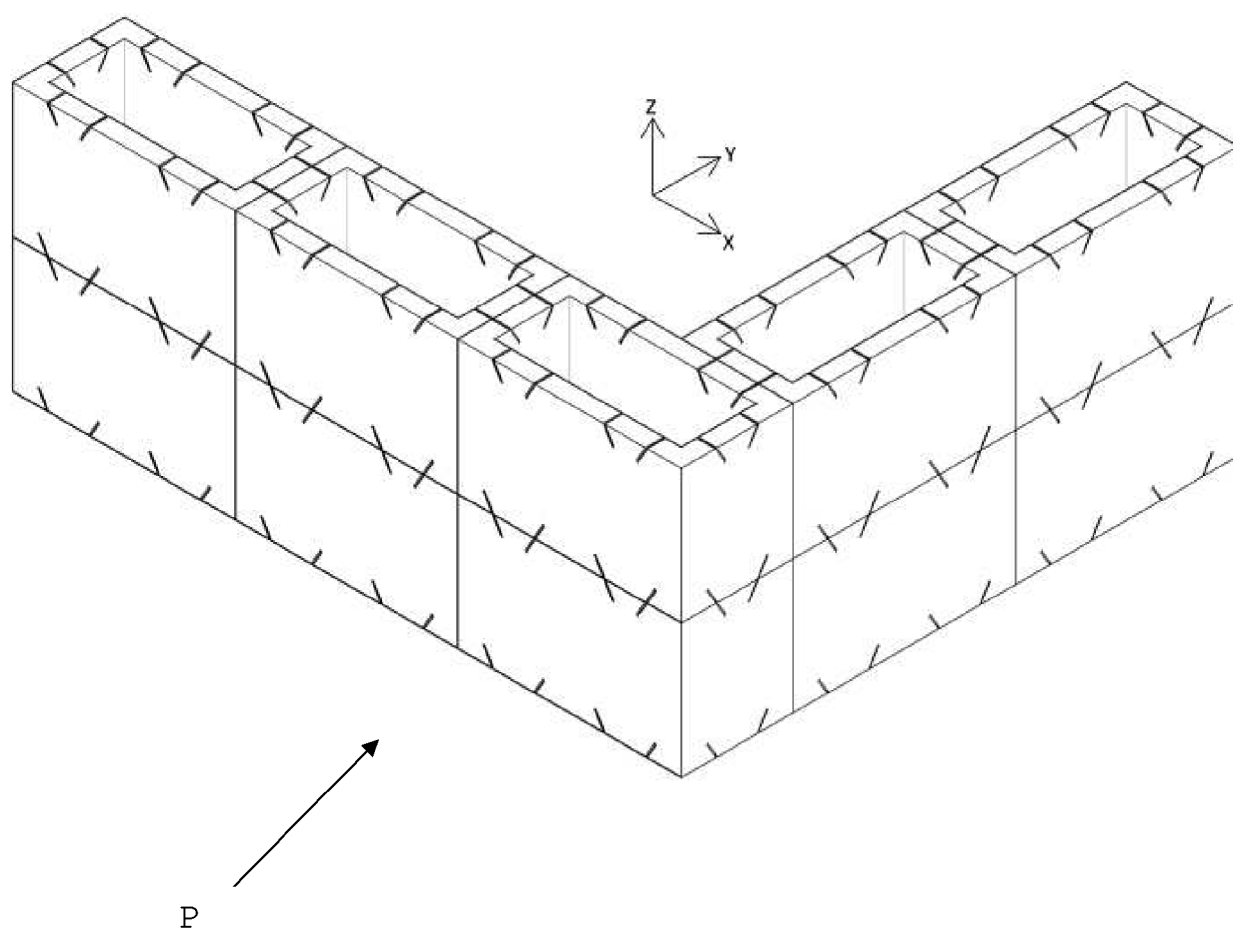


FIG. 10

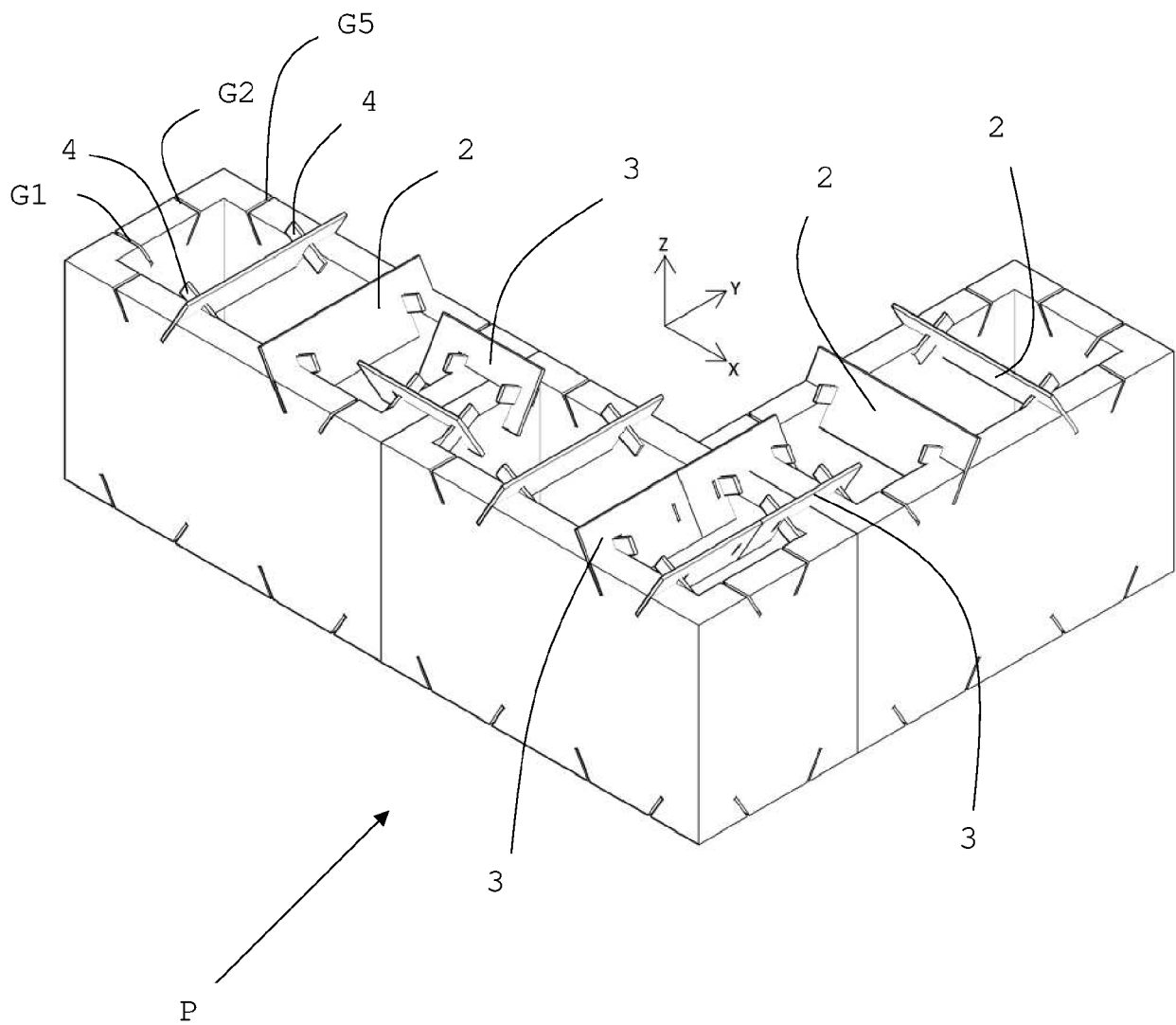


FIG. 11

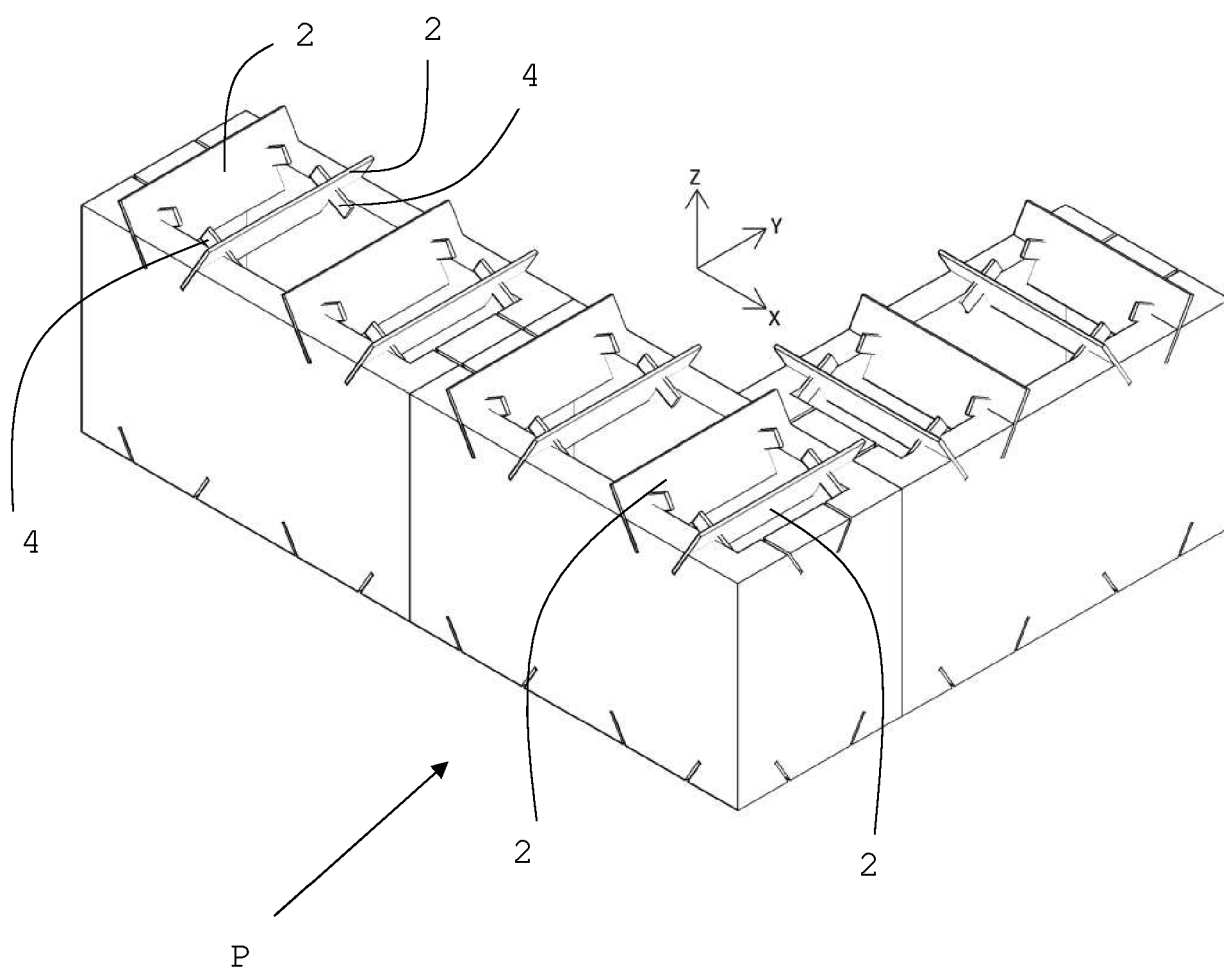


FIG. 12

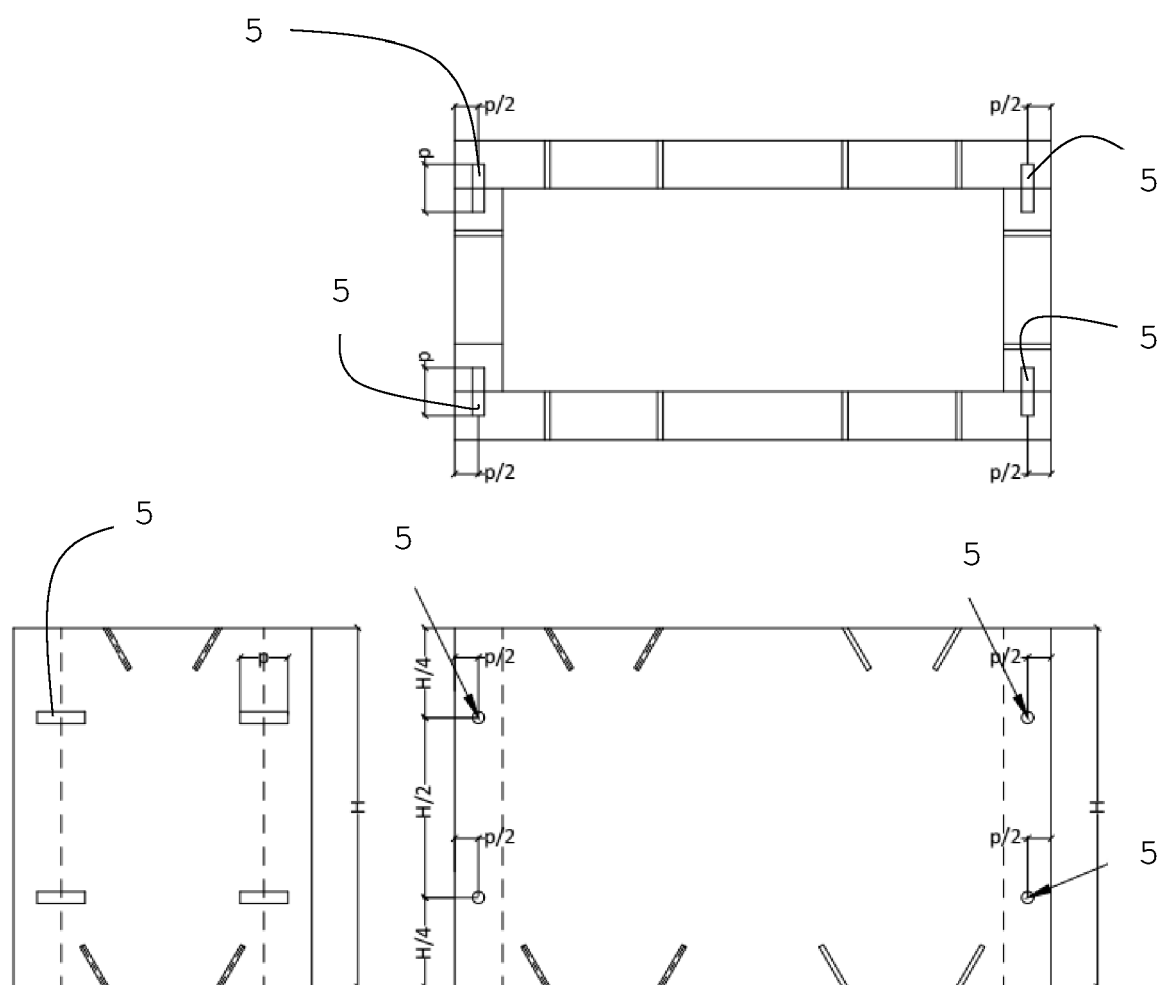


FIG. 13

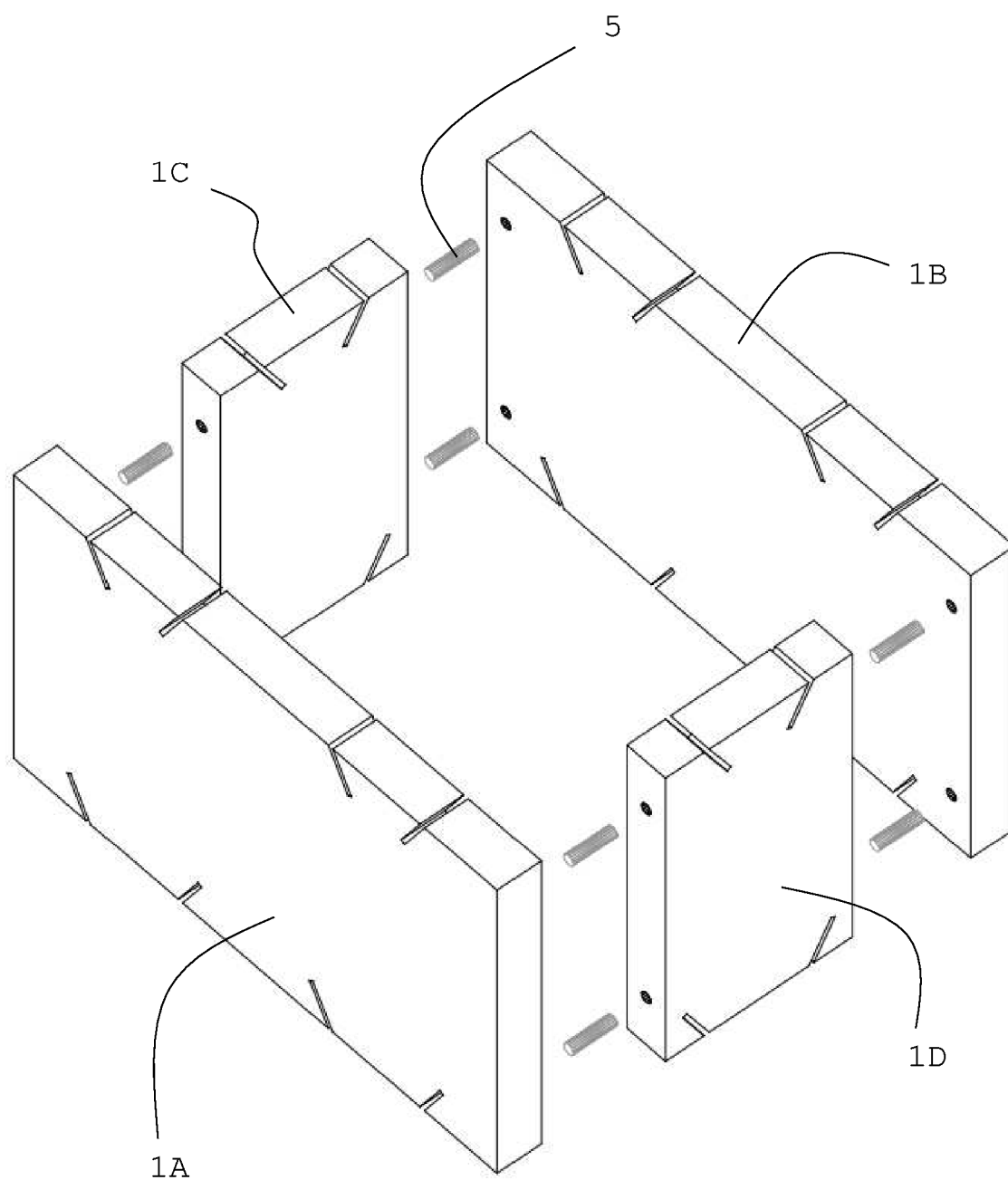
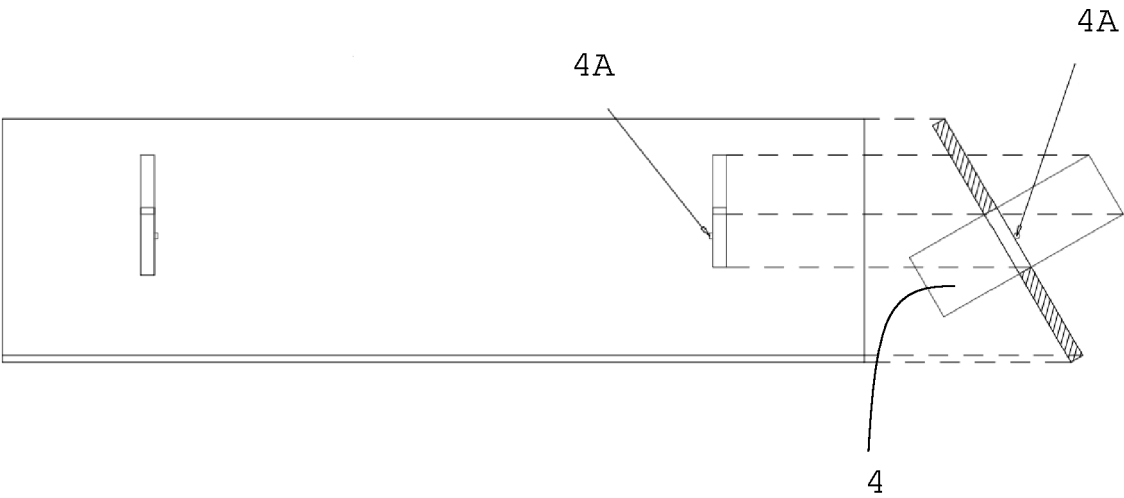


FIG. 14





EUROPEAN SEARCH REPORT

Application Number

EP 26 17 2361

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	IT 2019 0001 9736 A1 (FINOCCHI ROBERTO [IT]) 24 April 2021 (2021-04-24) * figures 6-9 *	1-11	INV. E04B2/16
A	GB 2 489 602 A (DUMITRESCU MIHAIL-FELIX [RO]; DUMITRESCU LIVIA [RO]) 3 October 2012 (2012-10-03) * the whole document *	1-11	ADD. E04B2/02
			TECHNICAL FIELDS SEARCHED (IPC)
			E04B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		3 September 2026	Saretta, Guido
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P24C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 26 17 2361

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-09-2026

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
IT 201900019736 A1	24-04-2021	-----	-----
GB 2489602 A	03-10-2012	GB 2489602 A	03-10-2012
		LU 91804 B1	01-10-2012
		RO 127668 B1	29-05-2015
		-----	-----

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82