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(71) Applicant: **HXH OÜ**
76912 Harku Vald Harju Maakond (EE)

(72) Inventor:
• **The inventors have waived their right to be thus mentioned.**

(74) Representative: **Koitel, Raivo**
Koitel Patent & Trademark Agency
Tina 26-2
10126 Tallinn (EE)

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(54) **STRUCTURE FROM A SET OF PREFABRICATED CONCRETE ELEMENTS**

(57) The corresponding structure of the invention is made from a set of prefabricated concrete elements. The concrete elements are variously sized rectangular prisms, long and narrow beams. The concrete elements serve different purposes: roof end and continuation elements are used to create roofs or ceilings, floor end and

floor continuation elements are used to form floors or foundations, wall corner and wall continuation elements are used to construct walls. The entire structure is assembled solely from prefabricated concrete elements, and the construction does not require heavy machinery.

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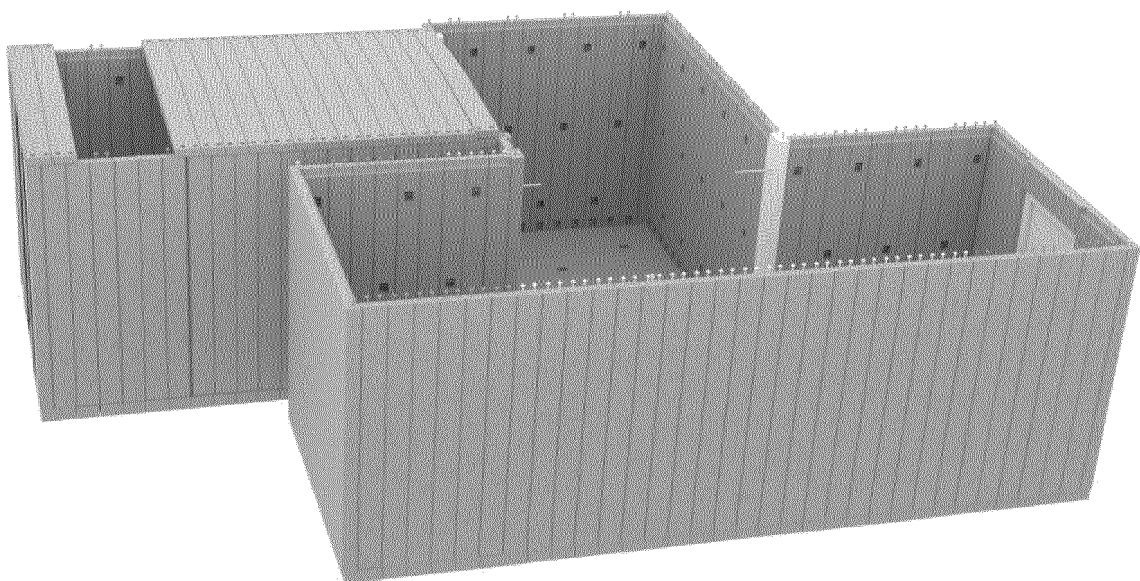


FIG 69

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Description

Field of technology

[0001] The invention belongs to the field of construction and specifically relates to a structure made from a set of prefabricated concrete elements, which can also be used as an underground structure in civil engineering (e.g. a root cellar) as well as in the construction of protective structures (e.g. a (civil defense) shelter).

Prior Art

[0002] The closest technical equivalent is the solution (CH649121A5, MAYREDER KRAUS & CO ING, published on 30.04.1985), comprising a set of prefabricated concrete elements for the production of a shelter, primarily intended for forming walls and, if necessary, other load-bearing structures. To form the wall, straight beams are used, which can be placed on top of each other (a horizontal arrangement). The wall beams have recesses at a certain distance from the ends to accommodate the beams (mortise joint), as well as insertion holes for pins and fastening elements. The drawback of this solution is that the beams are placed horizontally on top of each other to form a wall (a log-house-type construction method), which is a time-consuming building method for achieving the required height for the structure.

Summary of invention

[0003] The aim of the invention is to construct a structure, which can also be used as an underground structure in civil engineering or in the construction of protective structures (e.g. a shelter) from concrete elements quickly and without the use of heavy machinery.

[0004] A structure made from a set of prefabricated concrete elements is presented, which includes beam-shaped concrete elements that can be interconnected. The set comprises rectangular concrete elements of different purposes and dimensions for constructing the roof, ceiling, floor, foundation, and walls of the structure:

- roof end element 1A and 1B, which are designed for either starting or ending the roof or ceiling;
- roof continuation element 2, which is designed for continuing the roof or ceiling and connects to the next roof continuation element 2 or to the roof end elements 1A and 1B;
- floor end elements 3A and 3B ending or starting the floor or foundation in one direction;
- floor continuation elements 4A, 4B, 4C, and 4D, which are designed to connect to the next floor continuation element or to the floor end elements 3A or 3B for continuing the floor or foundation;

- wall corner element with a right turn 5, designed to continue the wall inward with the wall continuation element 7A or 7B;

- wall corner element with a left turn 6, designed to continue the wall inward with the wall continuation element 7A or 7B;

- wall continuation elements 7A, 7B, 7C, which are designed for continuing the structure and can be connected to each other or by using the wall corner elements 5, 6, 8, and 9 to the wall continuation elements 7A, 7B, 7C;

- wall corner elements with a right turn 8, designed to continue the wall outward with the wall continuation element 7A or 7B;

- wall corner elements with a left turn 9, designed to continue the wall outward with the wall continuation element 7A or 7B.

[0005] The concrete elements are secured to each other using fastening elements, which are threaded protruding parts (bolts and threaded rods of various lengths), sleeves, stoppers, anchors, nuts.

[0006] The concrete elements have additional openings for access points and communication channels, as needed. The structure has an additional roof reinforcement element, if needed. A seal (flexible, preferably waterproof) is placed between adjacent concrete elements (side by side or end to end).

List of drawings

[0007]

Figures 1 to 4 depict the roof end elements 1A from different perspectives;

figures 5 to 8 depict the roof end elements 1B from different perspectives;

figures 9 to 12 depict the roof continuation element 2 from different perspectives;

figures 13 to 16 depict the floor end element 3A (with a recess) from different perspectives;

figures 17 to 20 depict the floor end element 3B (with a projection) from different perspectives;

figures 21 to 24 depict the floor continuation element 4A from different perspectives;

figures 25 to 28 depict the floor continuation element 4B from different perspectives;

figures 29 to 32 depict the floor continuation element 4C from different perspectives;

figures 33 to 36 depict the floor continuation element 4D from different perspectives;

figures 37 to 40 depict the wall corner element with a right turn 5 (viewed from outside the structure) for continuing inward;

figures 41 to 44 depict the wall corner element with a left turn 6 (viewed from outside the structure) for continuing inward;

figures 45 to 48 depict the wall continuation element 7A (with a recess-projection, opening for the fastening element at the bottom) from different perspectives;

figures 49 to 52 depict the wall continuation element 7B (with a projection-projection, opening for the fastening element on top) from different perspectives;

figures 53 to 56 depict the wall continuation element 7C (with a projection-projection, opening for the fastening element at the centre) from different perspectives;

figures 57 to 60 depict the wall corner element with a right turn 8 (viewed from inside the structure) for continuing outward;

figures 61 to 64 depict the wall corner element with a left turn 9 (viewed from inside the structure) for continuing outward;

figure 69 illustrates a structure corresponding to the prototype of the invention, consisting of two interconnected modules.

Embodiment of invention

[0008] The corresponding structure of the invention is made from a set of prefabricated concrete elements. The concrete elements serve various purposes, from which the roof or ceiling, floor or foundation, and walls of the structure are constructed. All concrete elements are rectangular in shape, , long and narrow beams, varying in dimensions. The entire structure - roof, walls, and floor - is assembled solely from prefabricated concrete elements, and the construction from these elements does not require heavy machinery. This increases construction speed and allows the structure to be built in challenging conditions where access to heavy machinery is unavailable. The concrete elements are secured together using fastening elements - bolts, threaded rods, sleeves, stoppers, anchors, nuts - through the corresponding holes and openings. A seal (flexible, preferably waterproof) is

placed between adjacent concrete elements (side by side or end to end). The concrete elements are manufactured using custom-made formwork. Various diameters, lengths, and shapes of beams are used as elements in the set, with different fastening elements employed for various elements and different holes and openings located in various positions.

[0009] Depending on the purpose of the concrete element, different prefabricated concrete elements are produced for the structure.

[0010] There are two types of roof elements - the roof end element for starting or ending the roof and the roof continuation element. The roof elements also serve the function of a ceiling.

[0011] The roof end elements 1A and 1B, which respectively end or start the roof or ceiling in one direction, connect to the roof continuation element 2. The approximate dimensions of the roof end elements 1A and 1B are as follows: length 2400 to 2800 mm, width 215 to 240 mm, and height (thickness) 160 to 200 mm.

[0012] The roof continuation element 2 connects to the next roof continuation element 2 or to the roof end elements 1A or 1B, allowing for the extension of the structure. The approximate dimensions of the roof continuation element 2 are: length 2400 to 2800 mm, width 180 to 215 mm, and height (thickness) 160 to 200 mm.

[0013] The roof end elements 1A and 1B can be either lifted at the centre (sloped roof) or flat (ceiling, flat roof). In the center of the lower surface of the roof end elements 1A and 1B, there is a projection that does not cover the entire width and length (at the ends) of the lower surface of the roof end elements 1A and 1B. In the center of the inner edge of the projection, there are holes for fastening elements (threaded rods for securing and tightening to the roof continuation element 2) to connect with the roof continuation element 2. The roof end elements 1A and 1B rest on the wall elements at both ends and the front side. The outer edge of the roof end elements 1A and 1B has holes for fastening elements (threaded rods and nuts) that connect the roof end elements 1A and 1B to the wall elements. The outer edge of the roof end elements 1A and 1B is smooth, while the inner edge of the roof end element 1A features a stepped and grooved projection extending upward, and the inner edge of the roof end element 1B has a stepped and grooved projection extending downward.

[0014] The roof continuation element 2 can be optionally lifted at the centre (sloped roof) or flat (smooth ceiling, flat roof). In the center of the lower surface of the roof continuation element 2, there is a projection that does not cover the entire width and length (at the ends) of the lower surface of the roof continuation element 2. In the center of the inner edge of the projection, there are holes for fastening elements to connect the second roof continuation element 2 or the roof end elements 1A or 1B (threaded rods for securing and tightening to the roof continuation element 2 or the roof end element 1). The roof continuation element 2 rests on the wall elements at

both ends. The ends of the roof continuation element 2 have holes for fastening elements (threaded rods and nuts) that connect the roof continuation element 2 to the wall elements. One edge of the roof continuation element 2 has a stepped and grooved projection extending upward, while the other edge has a stepped and grooved projection extending downward.

[0015] There are two types of floor elements - the floor end element for starting or ending the floor and the floor continuation elements. The floor elements also serve the function of a foundation.

[0016] The floor end elements 3A and 3B, which end or start the floor or foundation in one direction, connect to the floor continuation elements 4A, 4B, 4C or 4D. The approximate dimensions of the floor end elements 3A and 3B are as follows: length 2400 to 2800 mm, width 280 to 330 mm, and height (thickness) 110 to 130 mm.

[0017] The floor end elements 3A and 3B are flat. The outer edge of the floor end elements 3A and 3B is smooth. The inner edge of the floor end element 3A has a recess, while the inner edge of the floor end element 3B has a projection that does not cover the entire width and length (at the ends) of the inner edge of the floor end elements 3A and 3B. The inner edges of the floor end elements 3A and 3B have at least one hole for a threaded sleeve, anchor, or nut, into which a threaded rod is screwed. This rod is used to secure and tighten one of the floor continuation elements 4A to 4D to the floor end elements 3A and 3B. Preferably, there are three such holes - one in the center and two at the ends. The outer edge and ends of the upper surface of the floor end elements 3A and 3B are permanently fitted with short threaded protruding parts (rods or bolts). These protruding parts (rods or bolts) are not present at the corners of the outer edge of the upper surface.

[0018] The floor continuation elements 4A, 4B, 4C and 4D connect to the next floor continuation element or to the floor end elements 3A or 3B, facilitating the extension of the structure. The approximate dimensions of the floor continuation elements 4A to 4D are as follows: length 2400 to 2800 mm, width 280 to 330 mm, and height (thickness) 110 to 130 mm.

[0019] The floor continuation elements 4A, 4B, 4C and 4D differ from each other based on the presence or absence of a square opening for a fastening element and, if present, its location. Preferably, each floor continuation element has at least one square opening for a fastening element or none at all. In floor continuation elements 4A and 4C, the square opening is located at the end of the element (either on the left or right side, respectively), while in 4B, it is positioned in the center, and in 4D, it is absent. The inner edges of the floor continuation elements 4A to 4D contain at least one penetrating hole for the continuation element. Preferably, there are three such holes - one in the center and two at the ends. The location of the square opening for the fastening element in the floor continuation element corresponds to the locations of the holes in the inner edges of

the floor end elements 3A and 3B. A threaded rod is inserted into the penetrating hole of the floor continuation element. If there is a fastening element opening, a threaded sleeve or nut can be added there. This setup allows the floor continuation elements 4A to 4D to be securely fastened and tightened to one another, as well as to the end elements 3A and 3B.

[0020] The upper surface of the floor continuation elements 4A to 4D has short threaded protruding parts (rods or bolts) permanently secured at both ends.

[0021] One edge of the floor continuation elements 4A to 4D has a recess, while the other edge has a projection that does not cover the entire width and length (at the ends) of the floor continuation elements 4A to 4D.

[0022] There are four types of wall elements: two different types of wall corner elements and two different types of wall continuation elements. The approximate dimensions of the wall elements are: length 2200 to 2550 mm, width 185 to 240 mm, and height (thickness) 110 to 130 mm.

[0023] At the upper end of each wall element, there are two short threaded rods that are permanently secured. These rods are designed to be inserted into the corresponding holes of the roof end elements 1A and 1B, as well as the roof continuation element 2, where they are fastened with a threaded sleeve or nut. The wall elements have penetrating holes at the edges, which are intended for securing and tightening them together. Preferably, there are three such holes in each edge - one in the center and two at the ends.

[0024] The wall corner element with a right turn 5 (viewed from the outside front of the structure) is designed for continuing the wall inward, connecting to the wall continuation element 7A or 7B (for connecting one longitudinal wall to another). The wall corner element with a right turn 5 is a rectangular prism, where the outer longer side and the narrower side at a right angle are conditionally rectangular. The edge of the outer longer side has a recess, while the edge of the narrower side is smooth. On the inner surface of the wall corner element with a right turn 5, there is a recess on the right edge and a projection on the left edge. At the top of the projection, there is a step that supports the roof end element 1A or 1B.

[0025] The wall corner element with a left turn 6 (viewed from the outside front of the structure) is designed for continuing the wall inward, connecting to the wall continuation element 7A or 7B (for connecting one longitudinal wall to another). The wall corner element with a left turn 6 is a rectangular prism, where the outer longer side and the narrower side at a right angle are conditionally rectangular. The edge of the outer longer side has a projection, while the edge of the narrower side is smooth. On the inner surface of the wall corner element with a left turn 6, there is a recess on the left edge and a projection on the right edge. At the top of the projection, there is a step that supports the roof end element 1A or 1B.

[0026] The wall continuation elements 7A to 7C are

used to extend the structure. The wall continuation elements 7A to 7C are connected to each other or to the wall corner elements 5, 6, 8 and 9.

[0027] At the bottom of the wall continuation elements 7A to 7C, there is a hole where the corresponding short protruding parts (rods or bolts) of the floor end elements 3A and 3B and the floor continuation elements 4A to 4D are inserted, and on the inner lower edge of the wall continuation elements 7A to 7C, there is a square opening for a fastening element through which the corresponding short protruding parts (rods or bolts) of the floor end elements 3A and 3B and the floor continuation elements 4A to 4D are secured using a threaded sleeve or nut.

[0028] At the upper end of the wall continuation elements 7A to 7C, there are permanently secured short threaded protrusions (rods or bolts) that are inserted into the corresponding holes of the roof end elements 1A, 1B, and the roof continuation element 2, and are fastened with either a threaded sleeve or a nut.

[0029] The inner upper edge of the wall continuation elements 7A to 7C have a step that partially supports the roof end elements 1A or 1B and the roof continuation element 2.

[0030] Additionally, the wall continuation elements 7A to 7C have at least one additional square opening for a fastening element, preferably located either at the bottom or top of the wall continuation element or in the middle. To ensure better stability in the construction of the structure's walls, wall continuation elements with different fastening element positions are used so that the same fastening element position recurs at every third wall continuation element.

[0031] The inner edges of the wall continuation element 7A to 7C have at least one hole penetrating the wall continuation element. Preferably, there are three such holes - one in the center and two at the ends. The square opening for the fastening element in the wall continuation element corresponds to the location of the penetrating hole in the wall continuation element. A threaded rod is inserted into the hole penetrating the wall continuation element 7A to 7C. If there is a square opening for the fastening element, a threaded sleeve or nut can be added there. This setup allows for the fastening and tightening of the wall continuation elements 7A to 7C, as well as the wall corner elements 5, 6, 8, 9.

[0032] The wall continuation elements 7A to 7C have differently configured inner edges. They have either two projections or one edge has a projection and the other a recess.

[0033] The wall corner element with a right turn 8 (viewed from outside the structure) is intended for extending the wall outward, connecting with wall continuation elements 7A or 7B (to join one longitudinal wall with another, e.g. for constructing an adjacent module). At one end of the wall corner element with a right turn 8, there is a recess and an angular step at the top (on the outer side), while the other end is smooth. One side edge has a

recess, and the other side edge is smooth. The angular step supports the roof continuation element 2 or a separate slab (not shown in the invention, not a concrete element of the invention, commercially available standard slab).

[0034] The wall corner element with a left turn 9 (viewed from the outside of the structure) is used for extending the wall outward with wall continuation element 7A or 7B. One end of the wall corner element with a left turn 9 has a recess and an angular step at the top (on the outer side), while the other end is smooth. One side edge has a recess, and the other side edge is smooth. The angular step supports the roof continuation element 2 or a separate slab (not shown in the invention, not a concrete element of the invention, commercially available standard slab).

[0035] The structure can also be installed underground. If the structure experiences a heavy load from above (e.g. the weight of the ground), an additional roof reinforcement element is used, which consists of a truss-like support frame that rests on the central square openings of the wall continuation elements 4A to 4D and is attached to the lower surfaces of the roof end panels 1A and 1B and the roof continuation panels 2 (not shown in the figure).

[0036] The invention utilizes threaded rods of various lengths.

[0037] The concrete elements of the invention can be produced in different lengths. Additionally, extra openings (for passage and communication channels) can be made as needed, and door openings, ventilation holes, etc. can be installed in the structure.

[0038] One of the advantages of the proposed solution is that the structure does not require a traditional foundation. The structure itself has a base in the form of a floor. The entire structure can be assembled and disassembled without the use of heavy machinery.

[0039] The structure is assembled from a set of prefabricated concrete elements as follows:

- the floor end element is installed along with at least three floor continuation elements, which are connected to each other using threaded rods of various lengths and nuts, sleeves, anchors;
- the floor continuation elements are installed, ensuring that the "pattern" does not repeat until each type of floor extension element has been placed on the floor once;
- in the corners of the floor end element, wall corner elements are installed, along with at least three wall continuation elements, which are connected to each other using threaded rods of various lengths, nuts, sleeves, and anchors; additionally, the wall corner elements and wall continuation elements are connected to the floor end elements and the floor continuation elements;

- to ensure better stability in the construction of the structure's walls, wall continuation elements with different fastening element positions are used so that the same fastening element position recurs at every third wall continuation element; 5
- roof end elements and roof continuation elements are installed on the wall corner elements and wall continuation elements, and they are interconnected using threaded rods; additionally, the roof end elements and roof continuation elements are connected to the wall corner elements and wall continuation elements; 10
- each concrete element is fitted with a seal between them; 15
- the process continues until the required length and width of the structure are achieved; 20
- the construction is completed with the floor and roof end element; 25
- if necessary, a door opening is left in some walls or another type of opening is created (e.g. a ventilation opening); 30
- multiple-room structures can also be constructed using wall corner elements. 35

List of technical features

[0040]

- 1A, 1B - roof end elements 35
- 2 - roof continuation element
- 3A, 3B - floor end elements
- 4A, 4B, 4C, 4D - floor continuation elements
- 5 - wall corner element with a right turn for continuation of the wall inwards 40
- 6 - wall corner element with a left turn for continuation of the wall inwards
- 7A, 7B, 7C - wall continuation elements
- 8 - wall corner element with a right turn for continuation of the wall outwards 45
- 9 - wall corner element with a left turn for continuation of the wall outwards

Claims

1. A structure made from a set of prefabricated concrete elements, which comprises interconnecting beam-shaped concrete ceiling, wall, and floor elements, **characterized in that** in the set included concrete elements are rectangular prism-shaped elements serving various purposes and with different dimensions for the construction of the structure's 55

roof, ceiling, floor, foundation and walls:

- the roof end element (1A) and (1B) with a protrusion at the center of their lower surface, partially covering the underside of the roof end elements (1A) and (1B) in width and length; in the center of the inner edge of the protrusion, there are holes for securing the connecting element to the roof continuation element (2); the roof end elements (1A) and (1B) are supported by wall elements at both ends and the front side; the outer edge of the roof end elements (1A) and (1B) has holes for connecting the roof end elements (1A) and (1B) to the wall elements; the outer edge of the roof end elements (1A) and (1B) is smooth; the inner edge of the roof end element (1A) is stepped and grooved with a protruding step from bottom to top, while the inner edge of the roof end element (1B) is stepped and grooved with a protruding step from top to bottom;
- the roof continuation element (2) with a protrusion at the center of its lower surface, which partially covers the underside of the roof continuation element (2) in both width and length; in the center of the inner edge of the protrusion, there are holes for securing the connecting element to another roof continuation element (2) and to the roof end elements (1A) and (1B); the roof continuation element (2) is supported by wall elements at both ends; there are holes at the ends of the roof continuation element (2) for connecting elements, allowing it to be joined to the wall elements; one edge of the roof continuation element (2) is stepped and grooved with a protruding step from bottom to top, while the other edge is stepped and grooved with a protruding step from top to bottom;
- the floor end elements (3A) and (3B) are flat and connect with the floor continuation elements (4A), (4B), (4C) and (4D); the outer edge of the floor end elements (3A) and (3B) is smooth, while the inner edge of the floor end element (3A) has a recess, and the inner edge of the floor end element (3B) has a protrusion that partially covers the edges of both floor end elements (3A) and (3B) in width and length; each inner edge of the floor end elements (3A) and (3B) have at least one hole for a threaded fastening element, into which a rod-shaped threaded fastening element is screwed, securing and tightening the floor continuation element (4A), (4B), (4C), (4D) to the floor end elements (3A) and (3B); at the outer edge and ends of the upper surface of the floor end elements (3A) and (3B), short protruding parts with threads are permanently fixed;
- the floor continuation elements (4A), (4B), and (4C) differ from each other in terms of the pre-

sence and location of the square fastening element hole, while the floor continuation element (4D) is a solid concrete element,

- the floor continuation elements (4A) and (4C) have a square hole located at one end of the element, on the left and on the right side, respectively,
- the floor continuation element (4B) has a square hole in the center of the element;
- the inner edges of the floor continuation elements (4A), (4B), (4C), (4D) each contain at least one hole penetrating the floor continuation element; the location of the square fastening element hole and the penetrating hole of the floor continuation element corresponds to the holes located on the inner edges of the floor end elements (3A) and (3B); a rod-shaped threaded fastening element is inserted into the penetrating hole of the floor continuation element, and if there is a fastening element hole, a threaded sleeve and nut are added to it; both ends of the upper surface's inner side of the floor continuation elements (4A), (4B), (4C), (4D) have permanently attached short protruding parts with threads; one edge of the floor continuation elements (4A), (4B), (4C), (4D) is recessed, while the other has a protrusion that partially covers the edge of the floor continuation elements (4A), (4B), (4C), (4D) in width and length;
- the wall corner element with a right turn (5) is a rectangular prism, where the outer longer side and the narrower side at a right angle form a conditional rectangle; there is a recess on the edge of the outer longer side, while the edge of the narrower side is smooth; on the inner surface of the wall corner element with a right turn 5, there is a recess on the right edge and a protrusion on the left, with a step on top of the protrusion that supports the roof end elements (1A) and (1B);
- the wall corner element with a left turn (6) is a rectangular prism, where the outer longer side and the narrower side at a right angle form a conditional rectangle; there is a projection on the edge of the outer longer side, while the edge of the narrower side is smooth; on the inner surface of the wall corner element with a left turn (6), there is a recess on the left edge and a protrusion on the right, with a step on top of the protrusion that supports the roof end elements (1A) and (1B);
- the lower ends of the wall continuation elements (7A), (7B), (7C) have openings into which the corresponding short protruding parts of the floor end elements (3A) and (3B) and the floor continuation elements (4A), (4B), (4C), (4D) are

inserted; on the inner lower edge of the wall extension elements (7A), (7B), (7C), there is a square opening for the fastening element, through which the corresponding short protruding parts of the floor end elements (3A) and (3B) and the floor continuation elements (4A), (4B), (4C), (4D) are secured using a threaded sleeve and nut; at the upper ends of the wall continuation elements (7A), (7B), (7C), there are permanently fixed short threaded protrusions, which are inserted into the corresponding openings of the roof end elements (1A), (1B) and the roof continuation element (2) and are secured with a threaded sleeve and nut; on the inner upper edge of the wall continuation elements (7A), (7B), (7C), there is a step that partially supports the roof end elements (1A), (1B) and the roof extension element (2); each wall continuation element (7A), (7B), (7C) has at least one additional square opening for the fastening element - preferably located at the bottom, top, or center of the wall continuation element; there is at least one penetrating hole in the inner edges of the wall continuation elements (7A), (7B), (7C); the locations of the fastening element's square hole and the penetrating hole of the wall continuation element correspond to each other; a threaded fastening element is inserted into the penetrating hole of the wall continuation element (7A), (7B), (7C), and if the fastening element has a square opening, a threaded sleeve and nut are added there;

- the wall continuation elements (7A), (7B), (7C) have differently configured inner edges, specifically with two protrusions and one edge having a protrusion while the other has a recess;

- the wall corner element with a right turn (8) has a recess at the edge of one end and a corner step on the outer side at the top; the other end edge is smooth; one side edge has a recess while the other side edge is smooth; the corner step supports the roof extension element 2 and a separate beam;
- the wall corner element with a left turn (9) has a recess at the edge of one end and a corner step on the outer side at the top; the other end edge is smooth; one side edge has a recess while the other side edge is smooth; the corner step supports the roof extension element (2) and a separate beam;
- at the upper end of each wall element, there are two short threaded rods that are permanently secured, the rods are designed to be inserted into the corresponding holes of the roof end elements (1A) and (1B), as well as the roof

- continuation element (2), where they are fastened with a threaded sleeve and a nut;
 - the wall elements have penetrating holes at the edges;
 - a seal is designed to be placed between side by side and one above the other adjacent concrete elements.
2. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the roof end element (1A) and (1B) and the roof continuation element (2) are lifted from the centre.
3. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the roof end element (1A) and (1B) and the roof continuation element (2) have a flat centre.
4. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the fastening elements are threaded protruding parts, sleeves, stoppers, anchors, nuts.
5. A structure from a set of prefabricated concrete elements according to claim 4, **characterized in that** the threaded protruding parts are bolts and threaded rods of various lengths.
6. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the edges of the floor end elements (3A), (3B), the floor continuation elements (4A), (4B), (4C), (4D), as well as the wall elements, have three holes - one in the center and two at the ends.
7. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the dimensions of the roof end elements (1A) and (1B) are: length 2400 to 2800 mm, width 215 to 240 mm, height 160 to 200 mm.
8. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the dimensions of the roof continuation element (2) are: length 2400 to 2800 mm, width 180 to 215 mm, height 160 to 200 mm.
9. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the dimensions of the floor end elements (3A) and (3B) are: length 2400 to 2800 mm, width 280 to 330 mm, height 110 to 130 mm.
10. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the dimensions of the floor continuation elements (4A), (4B), (4C), (4D) are: length 2400 to 2800 mm, width 280 to 330 mm, height 110 to 130 mm.
11. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the dimensions of the wall corner elements (5), (6), (8), (9) and the wall continuation elements (7A), (7B), (7C) are: length 2200 to 2550 mm, width 185 to 240 mm, height 110 to 130 mm.
12. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the seal is flexible.
13. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the seal is watertight.
14. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** the concrete elements have additional openings for access points and communication channels.
15. A structure from a set of prefabricated concrete elements according to claim 1, **characterized in that** an additional roof reinforcement element is used, which consists of a truss-like support frame that rests on the central square openings of the wall continuation elements (4A), (4B), (4C), (4D) and is attached to the lower surface of the roof end panels (1A) and (1B) and the roof continuation panels (2).

1A



FIG 1

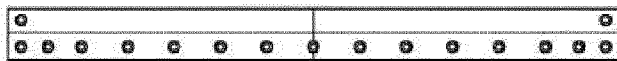


FIG 2



FIG 3

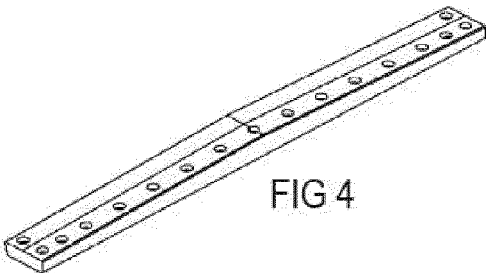


FIG 4

1B



FIG 5

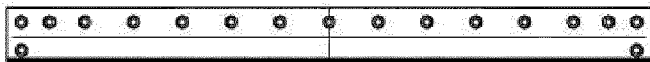


FIG 6



FIG 7

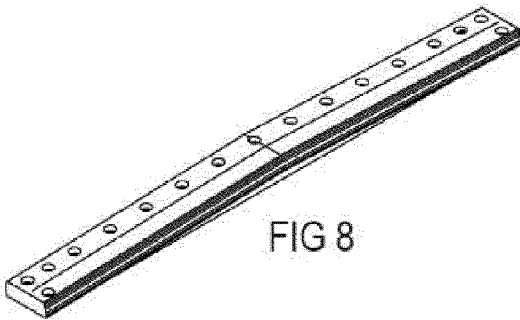


FIG 8

2



FIG 9



FIG 11



FIG 10

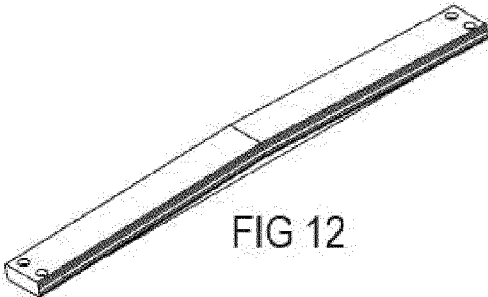


FIG 12

3A



FIG 13

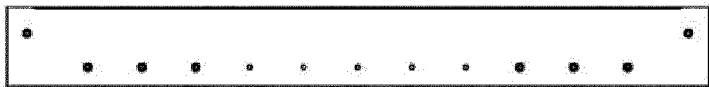


FIG 14



FIG 15

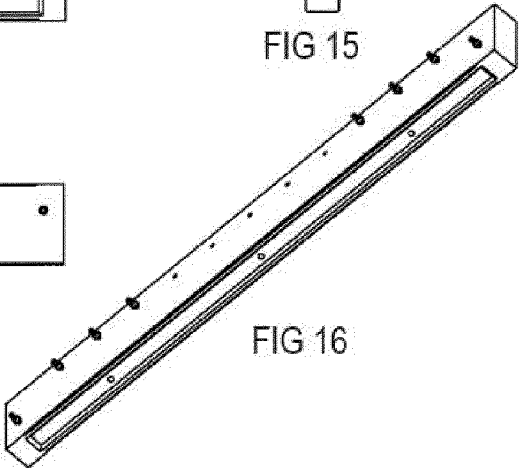


FIG 16

3B



FIG 17



FIG 18



FIG 19

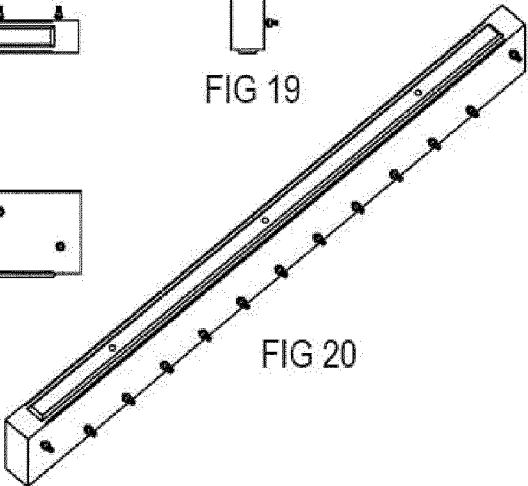


FIG 20



FIG 23

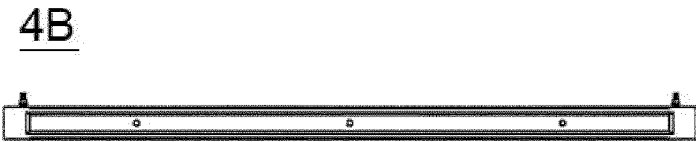
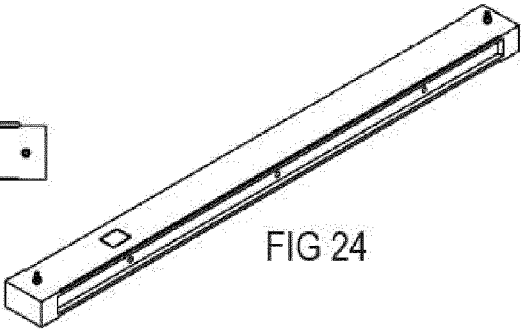
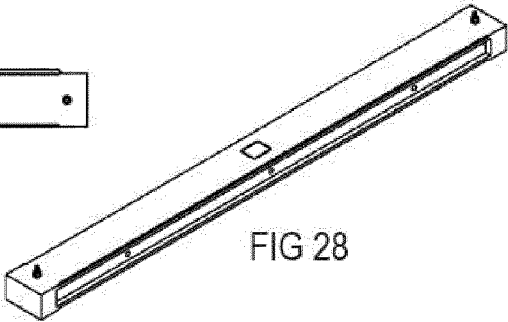
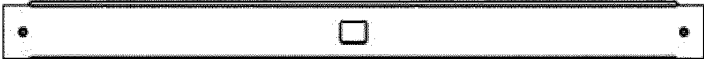


FIG 27



4C



FIG 29



FIG 31



FIG 30

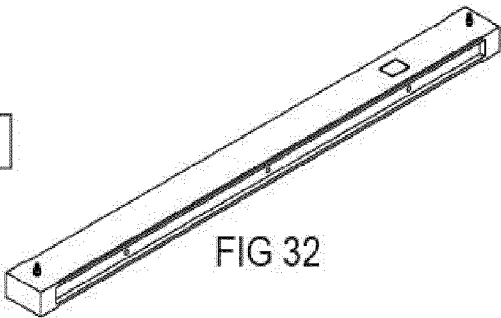


FIG 32

4D



FIG 33



FIG 35



FIG 34

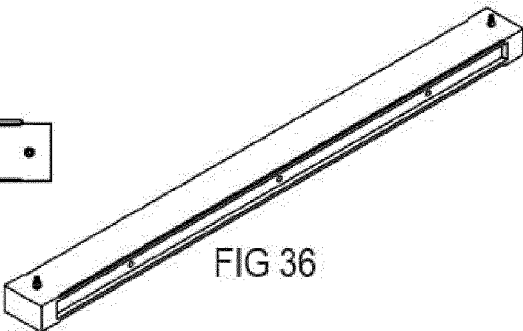


FIG 36

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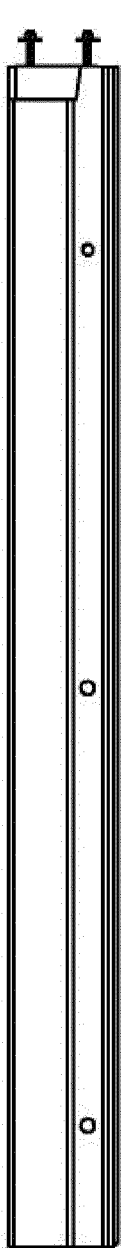


FIG 37



FIG 38

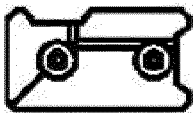


FIG 39

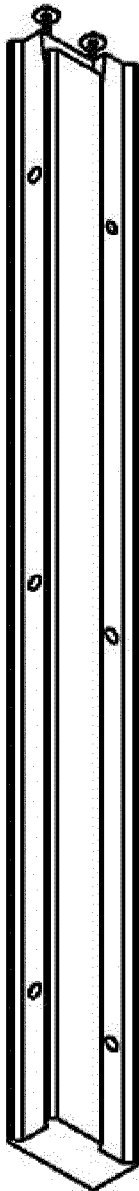


FIG 40

6

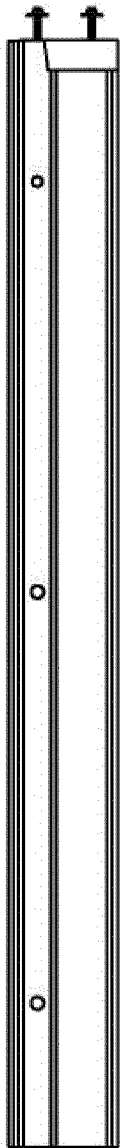


FIG 41



FIG 42



FIG 43



FIG 44

7A

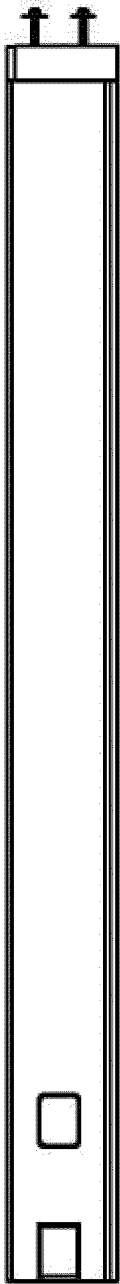


FIG 45



FIG 46



FIG 48



FIG 47

7B

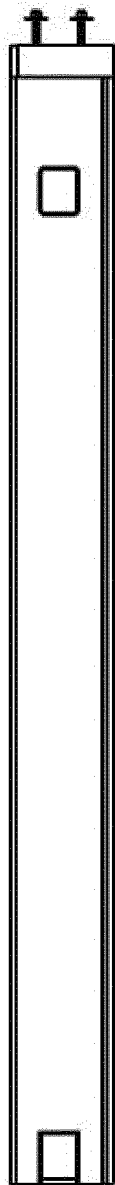


FIG 49

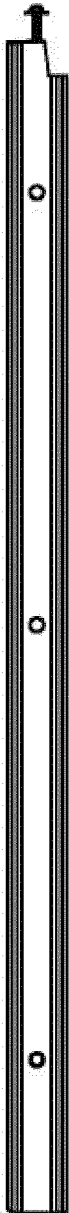


FIG 50

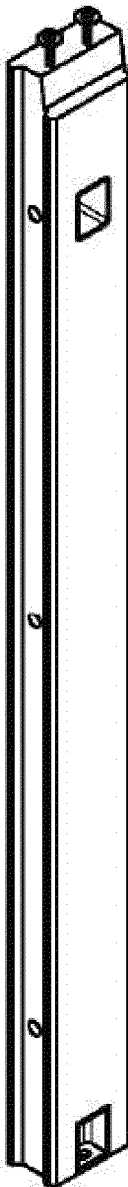


FIG 52



FIG 51

7C

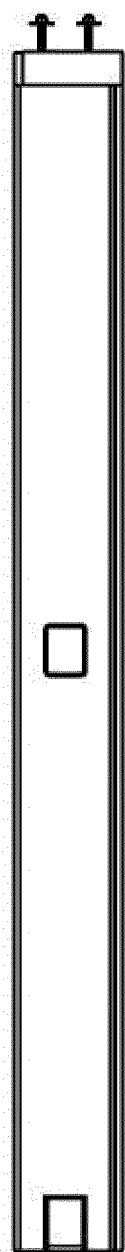


FIG 53



FIG 54

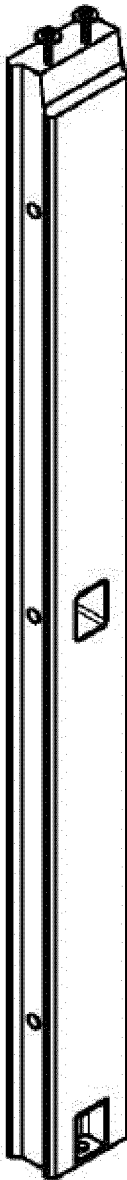


FIG 56

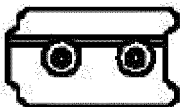


FIG 55

7D

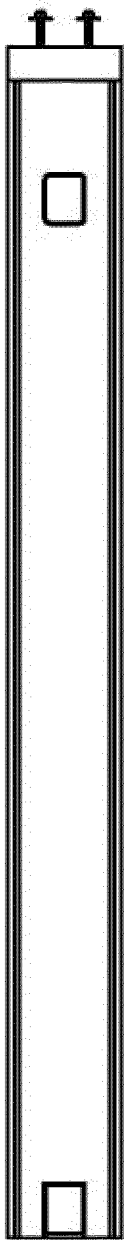


FIG 57

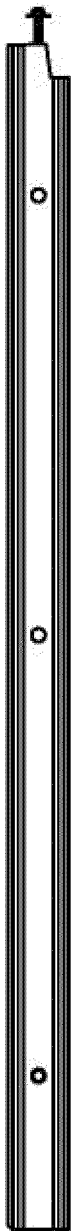


FIG 58



FIG 60



FIG 59

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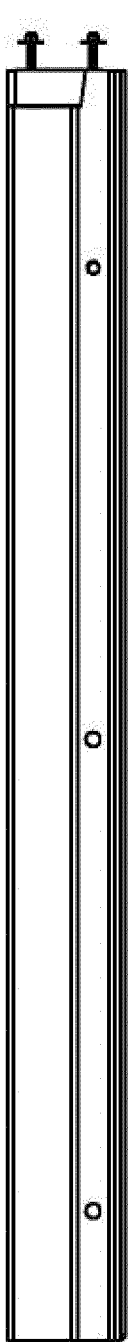


FIG 61

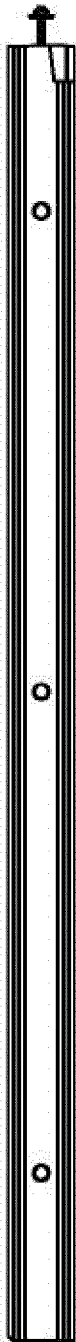


FIG 62

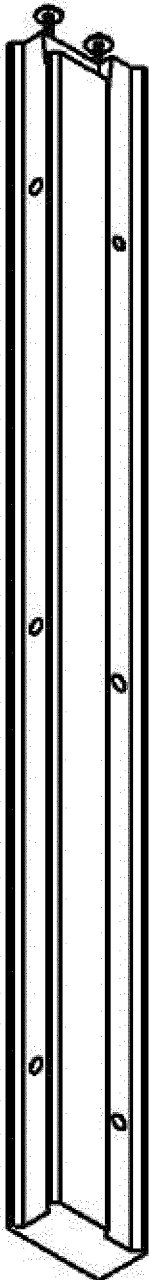


FIG 64

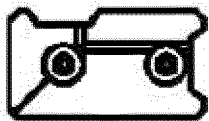
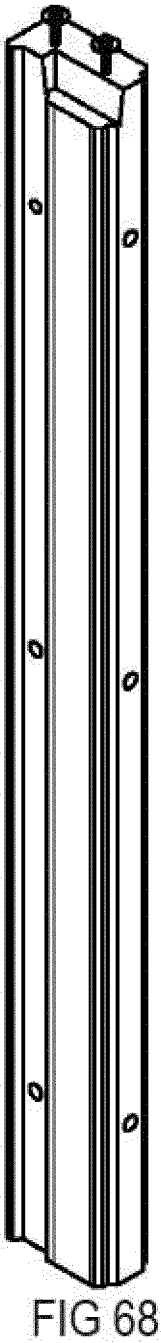
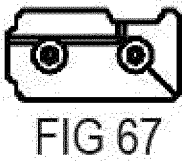
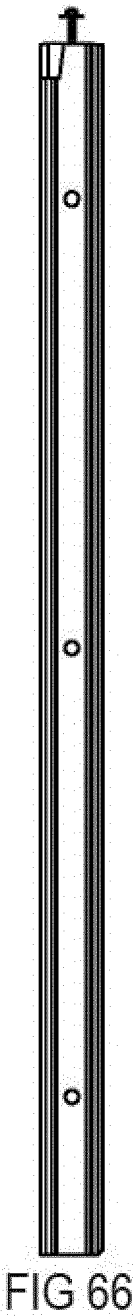
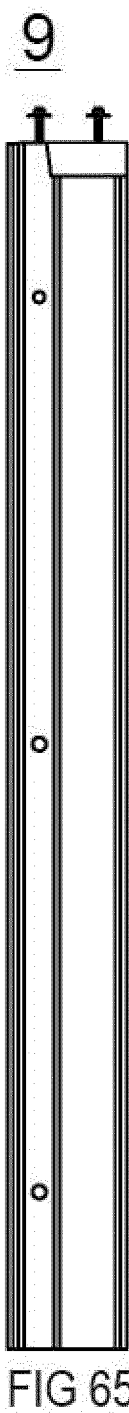


FIG 63



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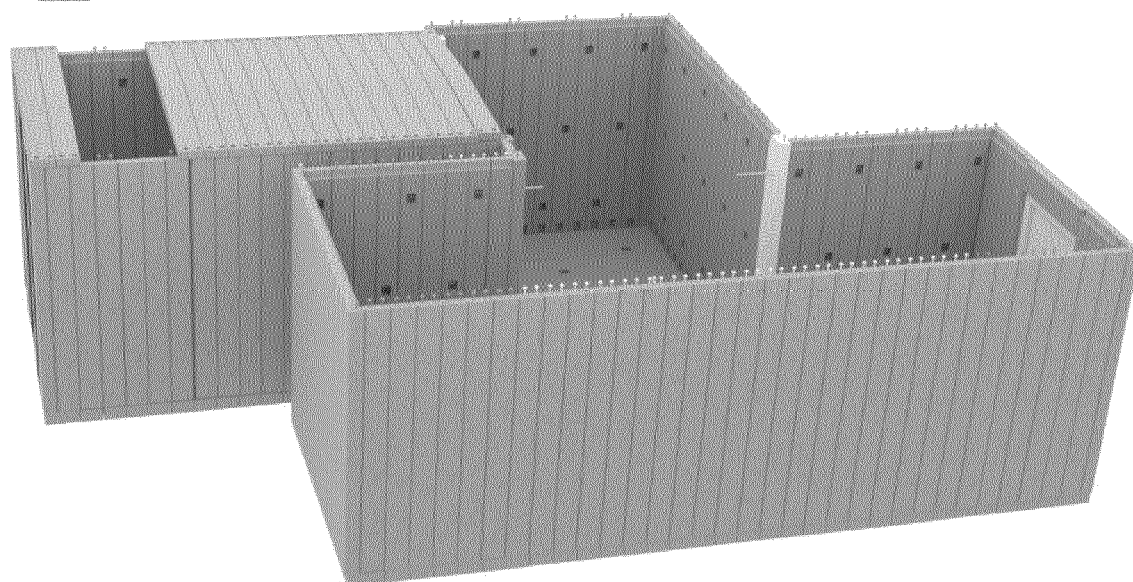


FIG 69



EUROPEAN SEARCH REPORT

Application Number

EP 24 19 4165

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| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
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| A | CH 649 121 A5 (MAYREDER KRAUS & CO ING) 30 April 1985 (1985-04-30) * the whole document * | 1 - 15 | INV. E04B1/00 E04B1/343 E04B2/66 E04H9/12 |
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| | | | TECHNICAL FIELDS SEARCHED (IPC) |
| | | | E04B E04H |
| The present search report has been drawn up for all claims | | | |
| Place of search | | Date of completion of the search | Examiner |
| The Hague | | 19 November 2024 | Demeester, Jan |
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| | US 1501288 A | 15-07-1924 | NONE | |
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