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(54) **A METHOD FOR REALISING A PREFABRICATED WALL FOR A COLUMN AND BEAM CONSTRUCTION MADE OF REINFORCED CONCRETE, AND A METHOD FOR REALISING THE CONSTRUCTION**

(57) A method for realising a prefabricated wall (1) for a column and beam construction (100) made of reinforced concrete and a relative prefabricated wall (1). The method comprises steps of: arranging, resting on a horizontal plane, a frame (2) which comprises a first portion (3) comprising a first wall (3a), a second wall (3b), a third wall (3c) and a fourth wall (3d) which form a quadrilateral and which define a frame volume (200); connecting, to the first portion (3) of the frame (2), reinforcing means (4) for reinforcing a layer of concrete (5) so that the reinforcing means (4) are borne by the frame (2) and comprise a first part (4a) arranged

internally of the first portion (3) of the frame (2) and which partly occupies the frame volume (200); and comprising a second part (4b) which projects externally from the first portion (3) of the frame (2); casting a layer of concrete (5) internally of the first portion (3) of the frame (2) so as to sink the first part (4a) of the reinforcing means (4) and so as to fill a first part (201) of the frame volume (200); arranging a layer of material (12) facing the layer of concrete (5) and internally of the first portion (3) of the frame (2) so as to occupy a second part (202) of the frame volume (200).

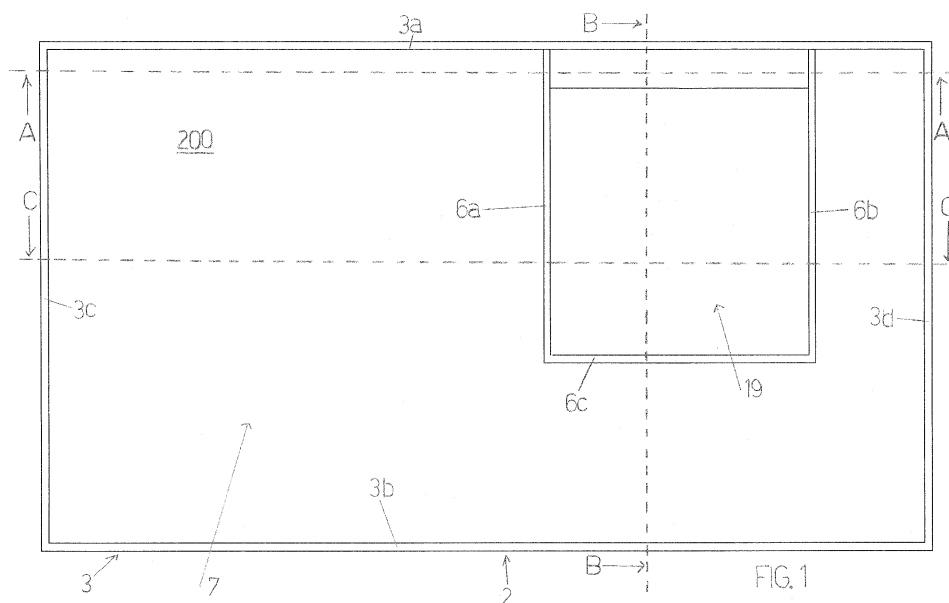


FIG. 1

Description

[0001] The present invention relates to the technical sector concerning buildings having columns and beams made of reinforced concrete. In particular, the invention relates to a method for realising a prefabricated wall for a column and beam construction made of reinforced concrete and a relative prefabricated wall for a column and beam construction made of reinforced concrete. Further, the invention relates to a method for realising a prefabricated wall for a column and beam construction made of reinforced concrete, and a relative column and beam construction made of reinforced concrete.

[0002] A column and beam construction is a construction the bearing structure whereof, having the task of supporting the weight of the construction, comprises beams, columns and floors.

[0003] With the aim of realising a traditional column and beam construction, first reinforced concrete foundation is built, i.e. the part of the construction that is usually buried in the ground. Once the step of realising the foundation has been completed, the structure of the construction is proceeded with; this constitutes the true and proper plan of the construction.

[0004] In particular, to realise each external plane of the construction, the columns are built using reinforced concrete, with the reinforced concrete beams connecting the columns and the floor to one another.

[0005] For example, supposing the first floor of a construction is to be built, works are carried out in the following way: positioning the reinforcement for reinforcing the reinforced concrete columns; positioning the woodwork for realising the moulding forms (these give shape and containment) of the columns; casting concrete into the forms so as to sink the reinforcement and to create columns that are appropriately reinforced; removing the woodwork after 48 hours. Thereafter the beams and the floor of the first floor are built, in a like way to what is described in the foregoing for the columns, thus obtaining the first floor.

[0006] Realising the upper floors is done in the same way, taking care to wait at least 28 days before removing the wood forms used in realising the beams and the floor; in this way, the concrete of the lower storey will be adequately hardened.

[0007] With the aim of completing the realisation of the construction, the walls are built following the completion of the foundation and the bearing structure (beams, columns and floors).

[0008] To do this blocks of masonry fixed to one another by mortar are positioned in the space between one column and another.

[0009] However, this last operation is very laborious for the builder. The builder has in fact to position all the necessary material (very heavy blocks) in the vicinity of the zone in which the wall is to be built and, thereafter, has to proceed to the realising of the wall by lifting and positioning one block of masonry at a time. It is further

specified that the walls reach heights of 3 metres, so the builder can find that he or she has to realise scaffolding on which the masonry blocks have to be arranged; this is potentially dangerous for the builder, extremely laborious and necessarily takes much time to achieve. The working times are further lengthened depending on the height of the floor at which the wall is to be built.

[0010] Working times for the wall are further dependent on meteorological conditions; this might result in a further lengthening of work-times for the wall and therefore for the construction.

[0011] Clearly any lengthening in work times leads to an increase in production costs.

[0012] In the light of the above, the aim of the present invention consists in obviating the above-mentioned drawbacks.

[0013] The above aim is attained with a method for realising a prefabricated wall for a column and beam construction made of reinforced concrete according to claim 1, and a relative prefabricated wall according to claim 7.

[0014] The proposed method and the prefabricated wall advantageously enable significantly reducing times for realising a column and beam construction. The prefabricated wall of the invention is not realised on the work-site and is constructed in a horizontal position, which enables the builder's labour to be reduced to a minimum; consequently build times are also minimised and work can be carried out in absolute safety. Further, as the prefabricated wall of the invention is not realised on-site, the build times are independent of meteorological conditions.

[0015] Further, the above aims are attained with a method for realising a column and beam construction made of reinforced concrete according to claim 12, and a relative column and beam construction made of reinforced concrete according to claim 14.

[0016] With the hypothesis of realising a column and beam construction of reinforced concrete using the method of the invention, it is possible to realise the columns and connect the columns to the prefabricated wall with a single concrete casting. This is extremely rapid and enables a significant reduction in building times for the whole construction. The cost of the construction process will therefore be reduced.

[0017] Specific embodiments of the invention will be described in the following part of the present description, according to what is set down in the claims and with the aid of the accompanying tables of drawings, in which:

- figure 1 is a view from above of a first embodiment of a frame of a prefabricated wall that is the object of the present invention;
- figures 2A and 2B illustrate respective section views of figure 1, respectively along section A-A and section B-B;
- figures 3A to 5A are similar views to that of figure 2A at different steps of construction of the prefabricated

wall;

- figures 6A to 10A are similar views to that of figure 2A along section C-C of figure 1, at different steps of construction of the prefabricated wall;
- figures 3B to 10B are similar views to that of figure 2B at different steps of construction of the prefabricated wall;
- figures 11 and 12 are perspective views of respective embodiments of the frame of the prefabricated wall of the present invention;
- figure 13 is a view in cross section of an embodiment of the column and beam construction in reinforced concrete of the present invention.

[0018] With reference to the appended tables of drawings, reference numeral (1) denotes a prefabricated wall for a construction (including a multi-storey construction) having beams and columns made of reinforced concrete that is the object of the present invention and reference numeral (100) denotes a column and beam construction made of reinforced concrete.

[0019] The method for realising a prefabricated wall (1) for a column and beam construction (100) made of reinforced concrete of the present invention comprises steps of: arranging, resting on a horizontal plane, a frame (2) which comprises a first portion (3) comprising a first wall (3a), a second wall (3b), a third wall (3c) and a fourth wall (3d) which form a quadrilateral and which define a frame volume (200); connecting, to the first portion (3) of the frame (2), reinforcing means (4) for reinforcing a layer of concrete (5) so that the reinforcing means (4) are borne by the frame (2); these comprise a first part (4a) arranged internally of the first portion (3) of the frame (2) and which partly occupies the frame volume (200); and comprise a second part (4b) which projects externally from the first portion (3) of the frame (2); casting a layer of concrete (5) internally of the first portion (3) of the frame (2) so as to sink the first part (4a) of the reinforcing means (4) and so as to fill a first part (201) of the frame volume (200); casting a layer of acoustically insulating material concrete (12) facing the layer of concrete (5) and internally of the first portion (3) of the frame (2) so as to occupy a second part (202) of the frame volume (200). The layer of acoustically insulating material (12) can be glass or rock wool. The fact of having the layer of acoustically insulating material (12) available internally of the frame volume (200) is advantageous, due to the fact that the first wall (3a), the second wall (3b), the third wall (3c) and the fourth wall (3d) protect the layer of acoustically insulating material (12) from any impacts during the movement of the prefabricated wall (1) in the worksite.

[0020] The above method advantageously enables using a prefabricated wall (1) for realising a column and beam construction (100) made of reinforced concrete

and this enables significantly reducing times for realising the construction. The height of the first portion (3) of the frame (2), i.e. the height of the first wall (3a), the second wall (3b), the third wall (3c) and the fourth wall (3d), the step of casting the layer of concrete (5) and the layer of acoustically insulating material (12) are preferably such that a third part (203) of the frame volume (200) is defined, which is adjacent to the second part (202) of the frame volume (200). There advantageously remains a space available internally of the frame volume (200), which for example can be exploited for the passage of electric cables and/or water and/or gas (not illustrated).

[0021] Before casting the layer of concrete (5), the method can comprise a step of arranging a plastic material (for example a nylon sheet) internally of the first portion (3) of the frame (2). It will advantageously be simple to raise the prefabricated wall (1).

[0022] The reinforcing means (4) (preferably made of a metal material) can comprise a reinforcement (40) (for example formed as an electro-welded double mesh) and a plurality of support and connecting elements (41).

[0023] The step of connecting the reinforcing means (4) to the first portion (3) of the frame (2) can comprise steps of: making a plurality of holes (18) at the first portion (3) of the frame (2); arranging the support and connecting elements (41) so that each thereof crosses a hole of the plurality of holes (18); restingly arranging the reinforcement (40) on the support and connecting elements (41). The first wall (3a) of the first portion (3) of the frame (2) is preferably opposite and parallel to the second wall (3b) of the first portion (3) of the frame (2) and the third wall (3c) of the first portion (3) of the frame (2) is opposite and parallel to the fourth wall (3d) of the first portion (3) of the frame (2). In particular, the frame (2) can be made of wood; in still greater detail, the frame (2) can be constituted by "armo" type wood panels.

[0024] The plurality of holes (18) is preferably made at least at two of the walls of the first portion (3) of the frame (2). Still more preferably, the plurality of holes (18) is fashioned at the first wall (3a) of the first portion (3) of the frame (2), of the third wall (3c) of the first portion (3) of the frame (2) and of the fourth wall (3d) of the first portion (3) of the frame (2).

[0025] In this way, the prefabricated wall (1) in use can advantageously be fixed to one or two columns and a beam (by means of a single casting of concrete).

[0026] The frame (2) can comprise a second portion (6). In this case, the method preferably comprises a step of arranging the second portion (6) of the frame (2) internally of the first portion (3) of the frame (2) so that a region (7) is defined between them. In this embodiment, the step of connecting the reinforcing means (4) to the frame (2) includes arranging the reinforcing means (4) in such a way that the first part (4a) is arranged in the region (7); the step of casting the layer of concrete (5) internally of the first portion (3) of the frame (2) includes casting the layer of concrete (5) internally of the region (7); and the step of arranging the layer of acoustically insulating ma-

terial (12) facing the layer of concrete (5) including arranging the layer of acoustically insulating material (12) internally of the region (7).

[0027] This embodiment of the method advantageously enables obtaining a prefabricated wall (1) with an opening (19): the opening (19) can form a housing for a window or a window frame.

[0028] With reference to figures 11 and 12, the second portion (6) of the frame (2) can have a U-shape and comprises a first wall (6a), a second wall (6b), parallel to the first wall (6a), and a third wall (6c), transversal to the first wall (6a) and to the second wall (6b). In this case the method comprises a step of fixing the first wall (6a) and the second wall (6b) of the second portion (6) of the frame (2) to the first wall (3a) of the first portion (3) of the frame (2) (this step is preferably carried out before arranging the frame (2) resting on the horizontal plane).

[0029] Therefore, the second portion (6) of the frame (2) can be formed so as to obtain a prefabricated wall (1) so as to receive a window or a window frame. The method preferably comprises steps of: after having cast the layer of concrete (5), raising the prefabricated wall (1) into a vertical position; after having raised the prefabricated wall (1) into the vertical position, fixing a threshold/bench (8) (i.e. a slab of stone or marble or another material) to the third wall (6c) of the second portion (6) of the frame (2) and fixing guide means (9) for a shutter (10) and/or a mosquito net (11) to the first wall (6a) of the second portion (6) of the frame (2) and to the second wall (6b) of the second portion (6) of the frame (2).

[0030] This embodiment of the method advantageously enables obtaining a prefabricated wall (1) already provided with a threshold/bench (8) and guide means (9). This advantageously enables further reducing times for realising a column and beam construction (100) using the prefabricated wall (1).

[0031] The guide means (9) can be a steel support predisposed for receiving a shutter (10) and a mosquito net (11), with the relative guides.

[0032] The step of fixing a threshold/bench (8) to the third wall (6c) of the second portion (6) of the frame (2) can comprise a step of arranging glue at the threshold/bench (8) and/or at the third wall (6c) of the second portion (6) of the frame (2), the third wall (6c) of the second portion (6) of the frame (2) can be inclined with respect to the horizontal so that the threshold/bench (8) arranged on the third wall (6c) is such as to facilitate the running of the water.

[0033] The method can further comprise a step of fixing a shutter (10) to the second portion (6) of the frame (2). In particular, the shutter (10) can be fixed to the first wall (6a) and to the second wall (6b) of the second portion (6) of the frame (2).

[0034] Further, the method can comprise the step of fixing a mosquito net (11) to the guide means (9).

[0035] Further, the method can comprise the step of fixing structures (25) of a window or window frame (the structures (25) can be fixed to the guide means (9)). The

prefabricated wall (1) is advantageously totally equipped and ready to be fixed on-site.

[0036] The method preferably comprises a step of fixing a plurality of support and fixing elements (13) to the first portion (3) of the frame (2) for a covering panel (14) (for example, a plasterboard or fibreboard panel which has the function of finishing/closing), so that when the covering panel (14) is fixed to the plurality of support and fixing elements (13), the covering panel (14) is opposite and parallel to the layer of concrete (5). When included, the third part (203) of the frame volume (200) is interposed between covering panel (14) and the layer of acoustically insulating material (12).

[0037] The method can include fixing a plurality of support and fixing elements (13) for a covering panel (14) to the first portion (3) of the frame (2).

[0038] In a case where the frame (2) comprises the second portion (6), the plurality of support and fixing elements (13) is arranged at the region (7) defined between the first portion (3) of the frame (2) and the second portion (6) of the frame (2). In this case, the plurality of support and fixing elements (13) can also be fixed to the second portion (6) of the frame (2).

[0039] In the following a description is made of the prefabricated wall (1) of the present invention. It comprises: a frame (2) which comprises a first portion (3) comprising a first wall (3a), a second wall (3b), a third wall (3c) and a fourth wall (3d) which form a quadrilateral (for example a square or a rectangle) and which define a frame volume (200); reinforcing means (4) for reinforcing a layer of concrete (5), which reinforcing means (4): are borne by the frame (2); and comprise a first part (4a) which is arranged internally of the first portion (3) of the frame (2) and which partly occupies the frame volume (200); and comprises a second part (4b) projecting externally from the first portion (3) of the frame (2); a layer of concrete (5) arranged internally of the first portion (3) of the frame (2) and which sinks the first part (4a) of the reinforcing means (4) so as to fill a first part (201) of the frame volume (200); a layer of acoustically insulating material concrete (12) which faces the layer of concrete (5) and which is arranged internally of the first portion (3) of the frame (2) so as to occupy a second part (202) of the frame volume (200). The fact of having the layer of acoustically insulating material (12) available internally of the frame volume (200) is advantageous, due to the fact that the first wall (3a), the second wall (3b), the third wall (3c) and the fourth wall (3d) protect the layer of acoustically insulating material (12) from any impacts during the movement of the prefabricated wall (1) in the worksite. The layer of acoustically insulating material (12) can be fixed to the layer of concrete (5).

[0040] The prefabricated wall (1) advantageously enables rapid realisation of a column and beam construction (100) (which could be multi-storey) made of reinforced concrete. The height of the first portion (3) of the frame (2), the layer of concrete (5) and the thickness of the layer acoustically insulating material (12) are prefer-

ably such that a third part (203) of the frame volume (200) is defined, which is adjacent to the second part (202) of the frame volume (200). There advantageously remains a space available internally of the frame volume (200), which for example can be exploited for the passage of electric cables and/or water and/or gas (not illustrated).

[0041] The frame (2) can be made of wood; in particular, the frame (2) can be constituted by "armo" type wood.

[0042] The reinforcing means (4) (preferably made of a metal material) can comprise a reinforcement (40) and a plurality of support and connecting elements (41) for supporting the reinforcement (40) and connecting the reinforcement (40) to the frame (2). The reinforcement (40) can be constituted by a plurality of longitudinal members welded to one another in such a way as to form a mesh (in particular, an electro-welded double mesh; alternatively they might not be welded to one another or not be arranged in a mesh). The longitudinal members can have a circular transversal section; further, the support and connecting elements (41) can also have a tubular conformation, with a circular transversal section (these are commonly in sections).

[0043] In particular, the first part (4a) of the reinforcing means (4) can comprise the reinforcement (40) and a part of the support and connecting elements (41); the second part (4b) of the reinforcing means (4) can comprise a part of the support and connecting elements (41).

[0044] The reinforcing means (4) can be fixed to the frame (2) by means of fixing the plurality of support and connecting elements (41) to the first portion (3) of the frame (2).

[0045] The frame (2) preferably comprises a second portion (6) that is arranged internally of the first portion (3) of the frame (2) so that a region (7) is defined between the first portion (3) and the second portion (6). In this case, the reinforcing means (4), the layer of concrete (5) and the layer of acoustically insulating material (12) are contained in the region (7).

[0046] The prefabricated wall (1) advantageously comprises an opening (19) at which a window or a window frame can be arranged. The second portion (6) of the frame (2) has a U-shape and preferably comprises a first wall (6a), a second wall (6b), parallel to the first wall (6a), and a third wall (6c), transversal to the first wall (6a) and to the second wall (6b). The first wall (6a) and the second wall (6b) of the second portion (6) of the frame (2) can be fixed to the first wall (3a) of the first portion (3) of the frame (2).

[0047] In this case, the prefabricated wall (1) can comprise a threshold/bench (8) (i.e. a slab of stone, marble or another material) fixed to the third wall (6c) of the second portion (6) of the frame (2). Further, the prefabricated wall (1) can comprise guide means (9) for a shutter (10) and/or a mosquito net (11) to the first wall (6a) of the second portion (6) of the frame (2) and to the second wall (6b) of the second portion (6) of the frame (2).

[0048] The guide means (9) can be a steel support

predisposed for receiving a shutter (10) and a mosquito net (11), with the relative guides.

[0049] The prefabricated wall (1) can further comprise a shutter (10) fixed to the second portion (6) of the frame (2) (in particular, fixed to the first wall (6a) and to the second wall (6b) of the second portion (6) of the frame (2)). Further, the prefabricated wall (1) can comprise a mosquito net (11) fixed to the guide means (9). The prefabricated wall (1) can further comprise structures (25) for a window or a window frame.

[0050] Further, the prefabricated wall (1) can comprise a plurality of support and fixing elements (13) for a covering panel (14), which plurality of support and fixing elements (13) is fixed to the first portion (3) of the frame (2) so that when the covering panel (14) is fixed to the support and fixing element (13), said covering panel (14) is opposite and parallel to the layer of concrete (5). When included, the third part (203) of the frame volume (200) is interposed between the covering panel (14) and the layer of acoustically insulating material (12).

[0051] The plurality of support and fixing elements (13) can be made of wood.

[0052] In particular, each support and fixing element of the plurality of support and fixing elements (13) can comprise a support portion (13a) which is fixed to the frame (2) and on which the covering panel (14) will be fixed. Further, each support and fixing element (13) can comprise a support portion (13b) arranged transversally (preferably perpendicularly) with respect to the support portion (13a) so as to stiffen the covering panel (14).

[0053] In a case where the frame (2) comprises the second portion (6), the plurality of support and fixing elements (13) is arranged at the region (7). In this case, the plurality of support and fixing elements (13) can also be fixed to the second portion (6) of the frame (2).

[0054] The covering panel (14) can be a fibreboard or plasterboard panel.

[0055] In the following a method is described for realising a column and beam construction (100) made of reinforced concrete which is also an object of the present invention.

[0056] The method comprises steps of: predisposing a reinforcement for reinforcing a concrete column (16); arranging a prefabricated wall (1) flanked to the reinforcement according to any one of the above-described embodiments; enclosing the reinforcement and the second part (4b) of the reinforcing means (4) of the prefabricated wall (1) in a chamber (i.e. realising a forming mould); casting concrete into the chamber so as to sink the reinforcement and the second part (4b) of the reinforcing means (4) of the prefabricated wall (1) realising the column (16). The proposed method advantageously enables reducing times for realising a column and beam construction (100). The method can comprise a step of transporting the prefabricated wall to the worksite (1). In a case where the prefabricated wall (1) comprises a plurality of support and fixing elements (13) for a covering panel (14), which plurality of support and fixing elements

(13) is fixed to the first portion (3) of the frame (2), the method preferably comprises a step of fixing a covering panel (14) to the plurality of support and fixing elements (13) so that the covering panel (14) is opposite and parallel to the layer of concrete (5).

[0057] Further, the method can comprise a step of fixing a thermally-insulating layer of material (20) adjacent to the layer of concrete (5) of the prefabricated wall (1) and to the column (16). The thermally-insulating layer (20) is fixed to the external side of the column and beam construction (100).

[0058] A column and beam construction (100) made of reinforced concrete object of the present invention, comprises: a prefabricated wall (1) according to any one of the above-described embodiment; a reinforcement for reinforcing a concrete column (16); a column (16) made of concrete internally of which the reinforcement and the second part (4b) of the reinforcing means (4) of the prefabricated wall (1) are sunk.

[0059] The column and beam construction (100) preferably comprises a covering panel (14) opposite and parallel to the layer of reinforced concrete (5).

[0060] Further, the construction can further comprise a layer of thermally-insulating material (20) adjacent to the layer of concrete (5).

[0061] In a case where the prefabricated wall (1) comprises the support and fixing element (13), the covering panel (14) of the column and beam construction (100) can be fixed thereto.

[0062] With reference to figure 13, the column and beam construction (100) comprises a first prefabricated wall (1a), a second prefabricated wall (1b) and the column (16) between the first prefabricated wall (1a) and the second prefabricated wall (1b). With the aim of realising the column and beam construction (100), following steps were carried out: predisposing the reinforcement for reinforcing the column (16); predisposing the first prefabricated wall (1a) and the second prefabricated wall (1b) flanked to the reinforcement; realising the chamber (i.e. the casting form) for closing the reinforcement, the second part (4b) of the reinforcing means (4) of the first prefabricated wall (1a) and the second part (4b) of the reinforcing means (4) of the second prefabricated wall. The chamber is defined by: the fourth wall (3d) of the first portion (3) of the frame (2) of the first prefabricated wall (1a); the third wall (3c) of the first portion (3) of the frame (2) of the second prefabricated wall (1b); connecting elements (made of wood) for connecting the fourth wall (3d) of the first portion (3) of the frame (2) of the first prefabricated wall (1a); the third wall (3c) of the first portion (3) of the frame (2) of the second prefabricated wall (1b).

[0063] Following the step of defining the chamber, concrete is cast into the chamber so as to sink the reinforcement and the second part (4b) of the reinforcing means (4) of the first prefabricated wall (1a) and the second prefabricated wall (1b).

[0064] Subsequently, the connecting elements con-

necting the fourth wall (3d) of the first portion (3) of the frame (2) of the first prefabricated wall (1a) and the third wall (3c) of the first portion (3) of the frame (2) of the second prefabricated wall (1b) can be removed; in this way, they can be recycled.

Claims

1. A method for realising a prefabricated wall (1) for a column and beam construction (100) made of reinforced concrete, **characterised in that** it comprises steps of:

arranging, resting on a horizontal plane, a frame (2) which comprises a first portion (3) comprising a first wall (3a), a second wall (3b), a third wall (3c) and a fourth wall (3d) which form a quadrilateral and which define a frame volume (200); connecting, to the first portion (3) of the frame (2), reinforcing means (4) for reinforcing a layer of concrete (5) so that the reinforcing means (4) are borne by the frame (2); and comprise a first part (4a) which is arranged internally of the first portion (3) of the frame (2) and which partly occupies the frame volume (200); and which comprises a second part (4b) that projects externally from the first portion (3) of the frame (2); casting a layer of concrete (5) internally of the first portion (3) of the frame (2) so as to sink the first part (4a) of the reinforcing means (4) and so as to fill a first part (201) of the frame volume (200); casting a layer of acoustically insulating material (12) facing the layer of concrete (5) and internally of the first portion (3) of the frame (2) so as to occupy a second part (202) of the frame volume (200).

2. The method of the preceding claim, wherein the height of the first portion (3) of the frame (2), the step of casting the layer of concrete (5) and the thickness of the layer of acoustically insulating material (12) are such that a third part (203) of the frame volume (200) is defined, which is adjacent to the second part (202) of the frame volume (200).

3. The method of claim 1 or 2, wherein the frame (2) comprises a second portion (6) and wherein the method comprises a step of arranging the second portion (6) of the frame (2) internally of the first portion (3) of the frame (2) so that a region (7) is defined between them; the step of connecting the reinforcing means (4) to the first portion (3) of the frame (2) including arranging the reinforcing means (4) in such a way that the first part (4a) is arranged in the region (7); the step of casting the layer of concrete (5) internally

of the first portion (3) of the frame (2) including casting the layer of concrete (5) internally of the region (7);

the step of arranging a layer of acoustically insulating material (12) facing the layer of concrete (5) including arranging the layer of acoustically insulating material (12) internally of the region (7).

4. The method of the preceding claim, wherein the second portion (6) of the frame (2) has a U-shape and comprises a first wall (6a), a second wall (6b), parallel to the first wall (6a), and a third wall (6c), transversal to the first wall (6a) and to the second wall (6b), and wherein the method comprises a step of fixing the first wall (6a) and the second wall (6b) of the second portion (6) of the frame (2) to the first wall (3a) of the first portion (3) of the frame (2).

5. The method of the preceding claim, comprising steps of: after having cast the layer of concrete (5), raising the prefabricated wall (1) into a vertical position; after having raised the prefabricated wall (1) into the vertical position, fixing a threshold/bench (8) to the third wall (6c) of the second portion (6) of the frame (2) and fixing guide means (9) for a shutter (10) and/or a mosquito net (11) to the first wall (6a) of the second portion (6) of the frame (2) and to the second wall (6b) of the second portion (6) of the frame (2).

6. The method of any one of the preceding claims, comprising a step of fixing a plurality of support and fixing elements (13) for a covering panel (14) to the first portion (3) of the frame (2), so that when the covering panel (14) is fixed to the plurality of support and fixing elements (13), said covering panel (14) is opposite and parallel to the layer of concrete (5).

7. A prefabricated wall (1) for a column and beam construction (100) made of reinforced concrete, comprising:

a frame (2) which comprises a first portion (3) comprising a first wall (3a), a second wall (3b), a third wall (3c) and a fourth wall (3d) which form a quadrilateral and which define a frame volume (200); reinforcing means (4) for reinforcing a layer of concrete (5), which reinforcing means (4) are borne by the frame (2); and comprise a first part (4a) which is arranged internally of the first portion (3) of the frame (2) and which partly occupies the frame volume (200); and comprise a second part (4b) projecting externally from the first portion (3) of the frame (2);

a layer of concrete (5) arranged internally of the first portion (3) of the frame (2) and which sinks the first part (4a) of the reinforcing means (4) so as to fill a first part (201) of the frame volume (200); a layer of acoustically insulating material

concrete (12) which faces the layer of concrete (5) and which is arranged internally of the first portion (3) of the frame (2) so as to occupy a second part (202) of the frame volume (200).

8. The prefabricated wall (1) of the preceding claim, wherein the height of the first portion (3) of the frame (2), the layer of concrete (5) and the thickness of the layer acoustically insulating material (12) are such that a third part (203) of the frame volume (200) is defined, which is adjacent to the second part (202) of the frame volume (200).

9. The prefabricated wall (1) of claim 7 or 8, wherein the frame (2) comprises a second portion (6) that is arranged internally of the first portion (3) of the frame (2) so that a region (7) is defined between the first portion (3) and the second portion (6); the reinforcing means (4) and the layer of concrete (5) and the layer of acoustically insulating material (12) being contained in the region (7).

10. The prefabricated wall (1) of the preceding claim, wherein the second portion (6) of the frame (2) has a U-shape and comprises a first wall (6a), a second wall (6b), parallel to the first wall (6a) and a third wall (6c), transversal to the first wall (6a) and to the second wall (6b); the first wall (6a) and the second wall (6b) of the second portion (6) of the frame (2) being fixed to the first wall (3a) of the first portion (3) of the frame (2).

11. The prefabricated wall (1) of any one of claims from 7 to 10, comprising a plurality of support and fixing elements (13) for a covering panel (14), which plurality of support and fixing elements (13) is fixed to the first portion (3) of the frame (2) so that when the covering panel (14) is fixed to the plurality of support and fixing elements (13), the covering panel (14) is opposite and parallel to the layer of concrete (5).

12. A method for realising a column and beam construction (100) made of reinforced concrete, comprising steps of:

predisposing a reinforcement for reinforcing a concrete column (16);

arranging a prefabricated wall (1) flanked to the reinforcement according to any one of claims from 7 to 11;

enclosing the reinforcement and the second part (4b) of the reinforcing means (4) of the prefabricated wall (1) in a chamber;

casting concrete into the chamber so as to sink the reinforcement and the second part (4b) of the reinforcing means (4) of the prefabricated wall (1) realising the column (16).

13. The method of the preceding claim, wherein the prefabricated wall (1) comprises a plurality of support and fixing elements (13) for a covering panel (14), which plurality of support and fixing elements (13) is fixed to the first portion (3) of the frame (2), and wherein the method comprises a step of fixing a covering panel (14) to the plurality of support and fixing elements (13), so that the covering panel (14) is opposite and parallel to the layer of concrete (5).
14. A column and beam construction (100) made of reinforced concrete, comprising:
- a prefabricated wall (1), according to any one of claims from 7 to 11;
 - a reinforcement for reinforcing a concrete column (16);
 - a column (16) made of concrete internally of which the reinforcement and the second part (4b) of the reinforcing means (4) of the prefabricated wall (1) are sunk.
15. The column and beam construction (100) made of reinforced concrete according to the preceding claim, comprising a covering panel (14) opposite and parallel to the layer of concrete (5).

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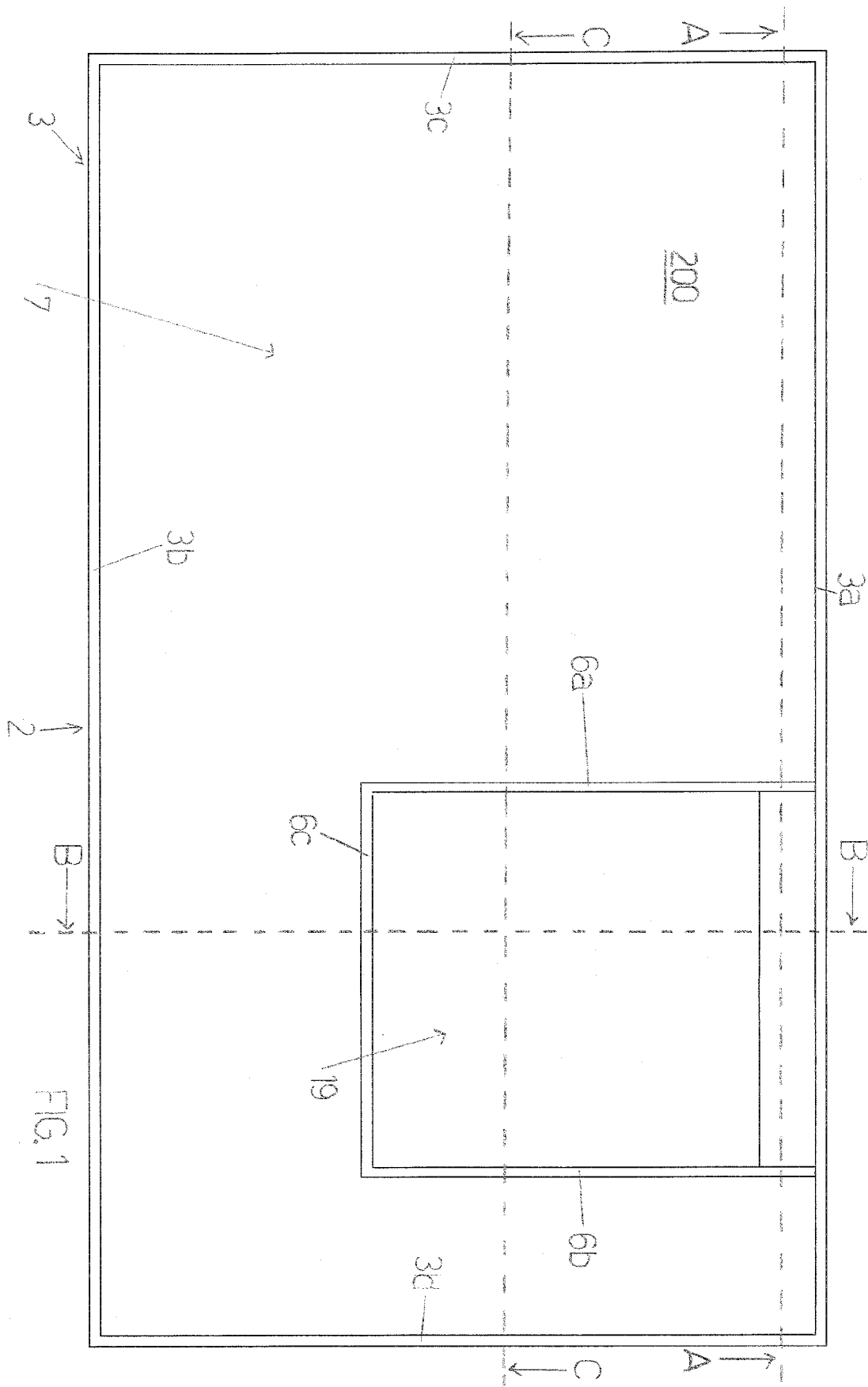
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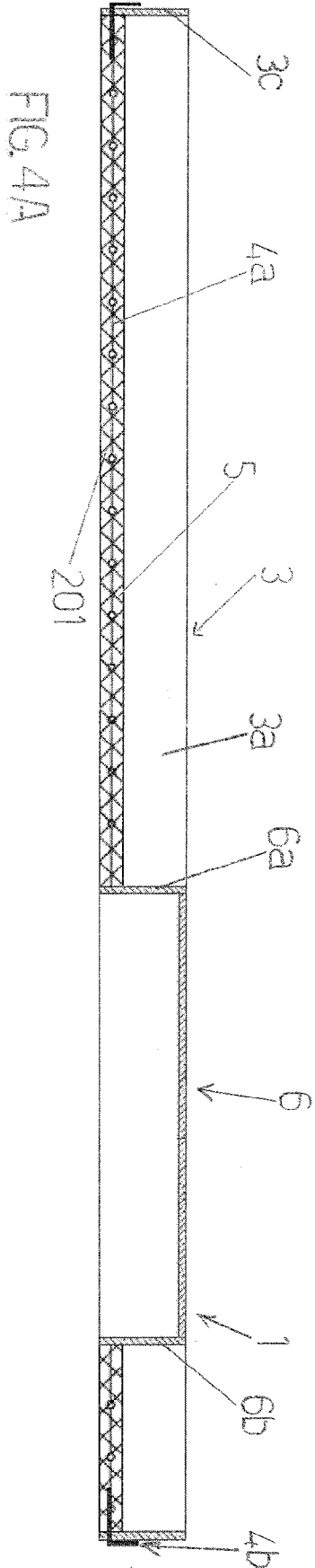
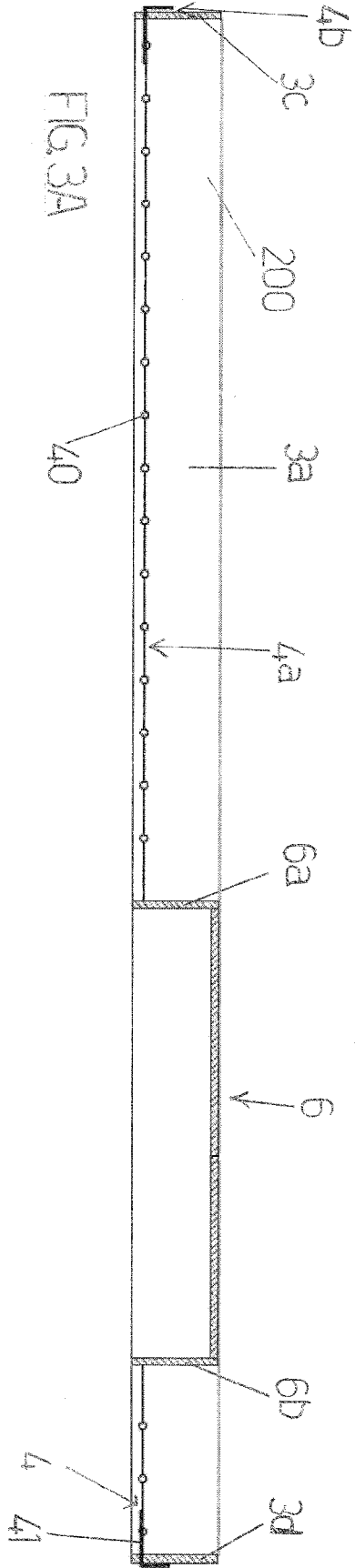
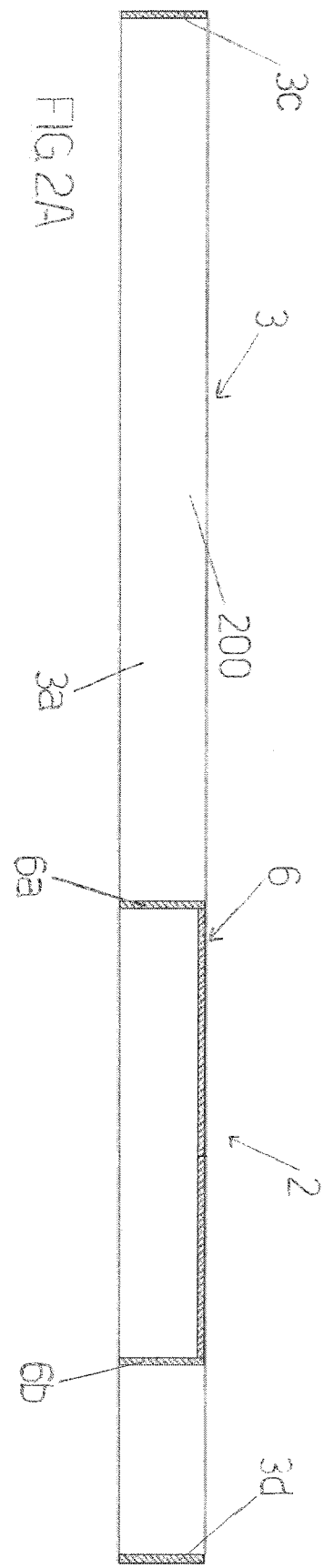
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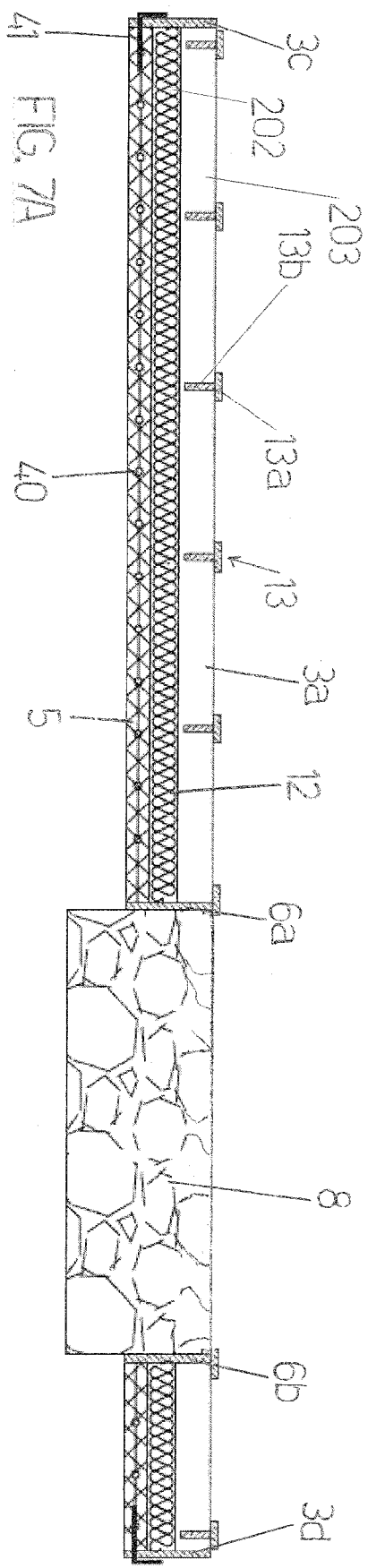
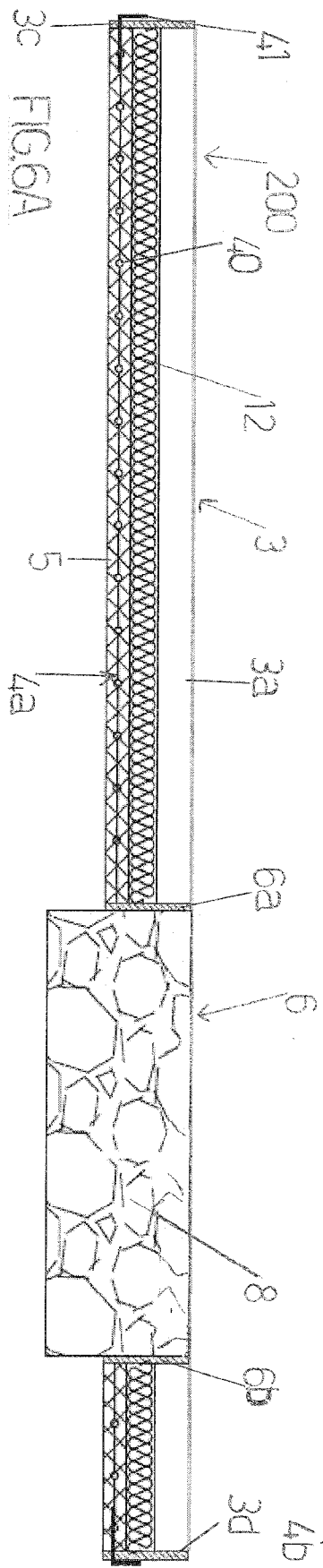
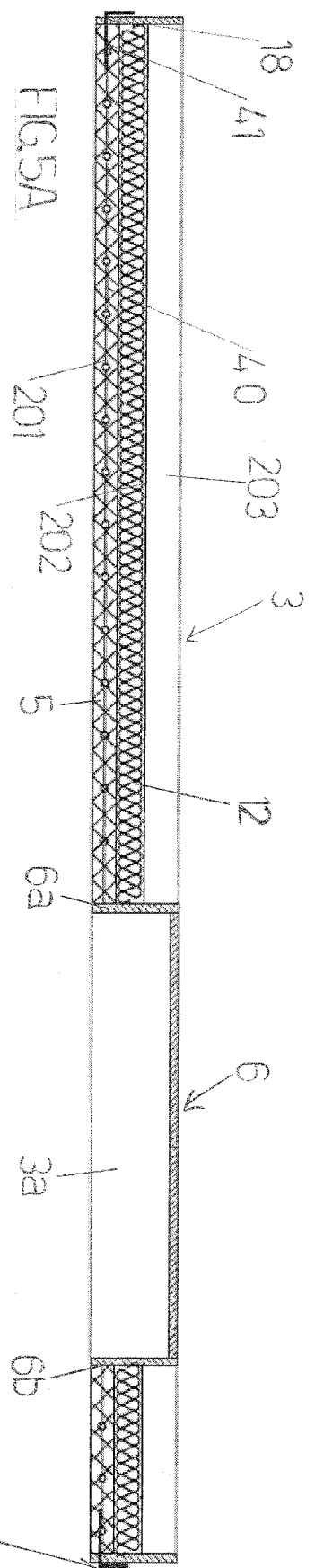


FIG. 2B

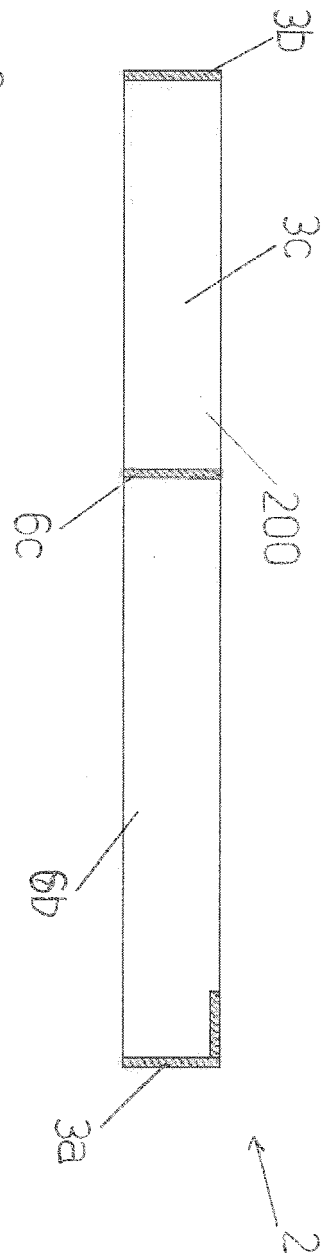


FIG. 3B

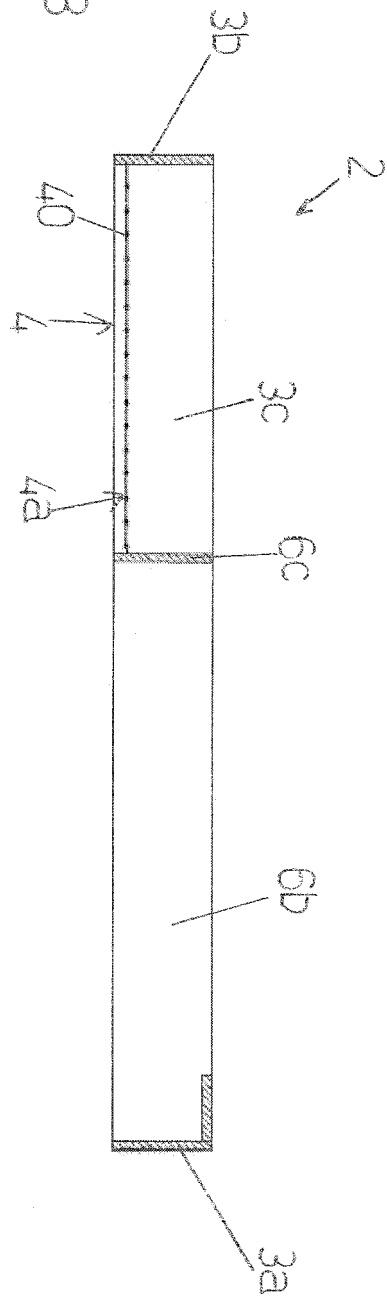
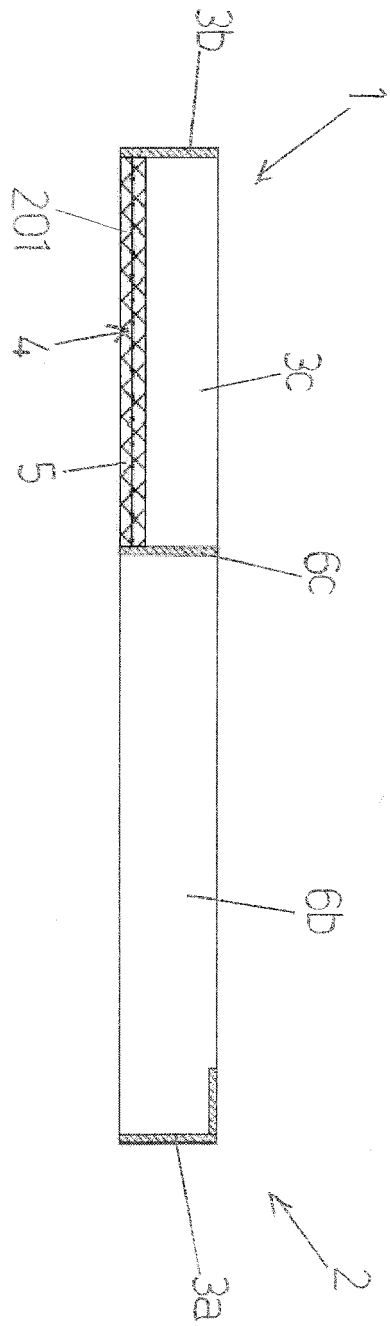
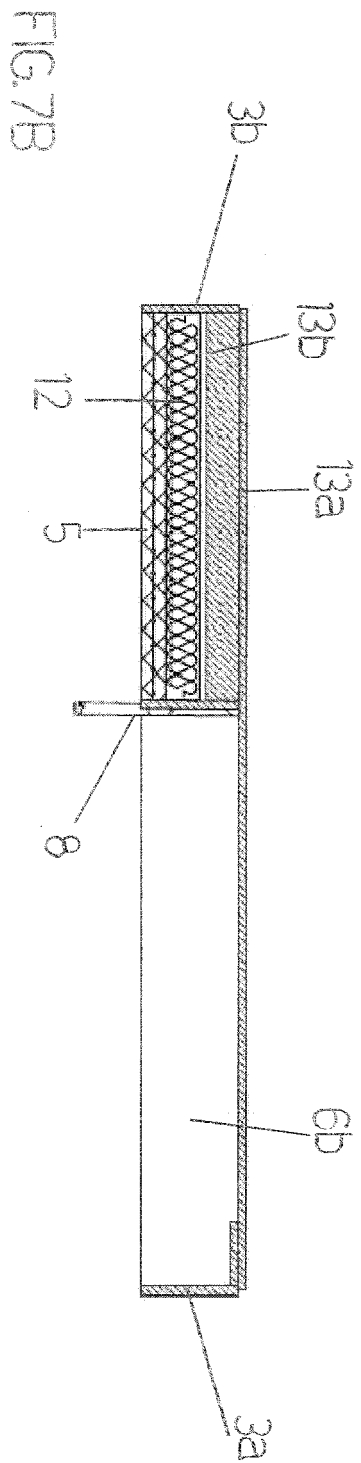
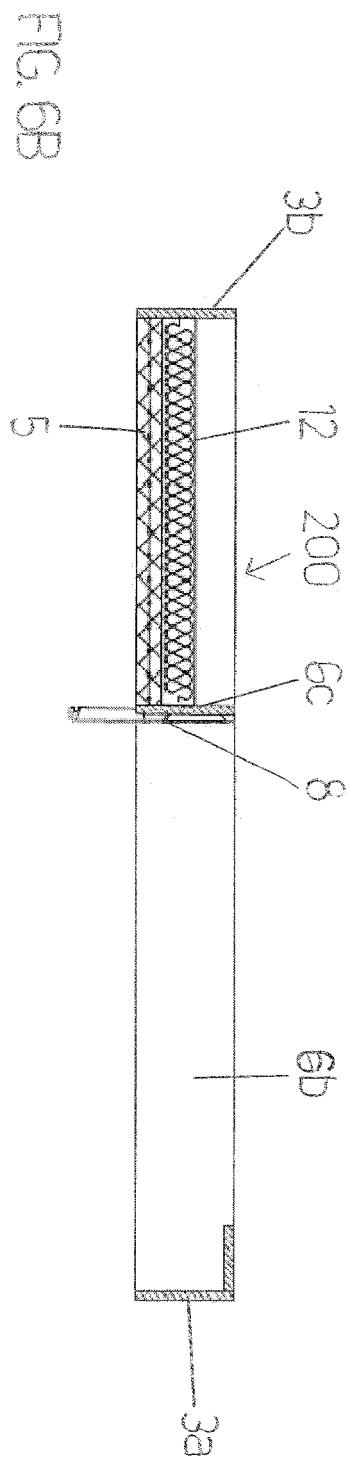
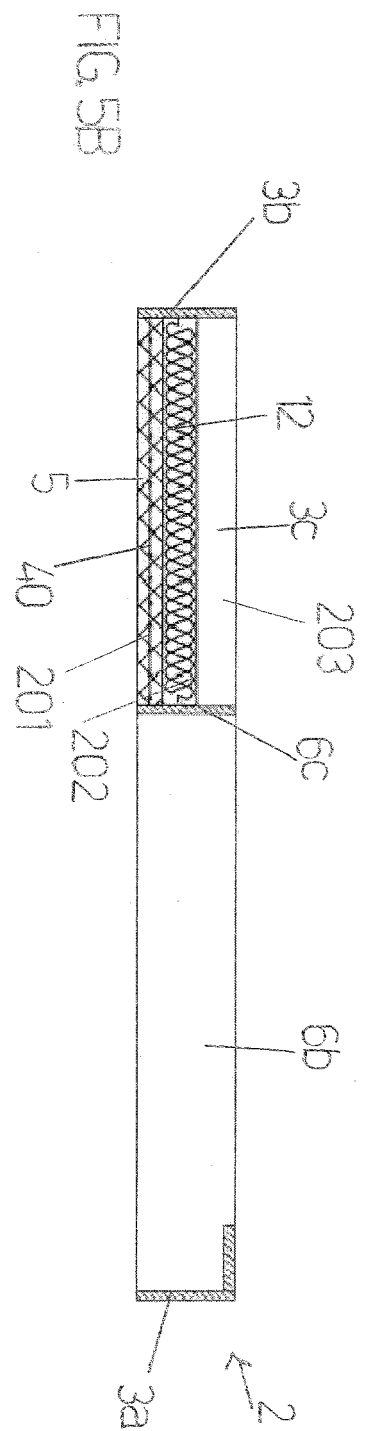
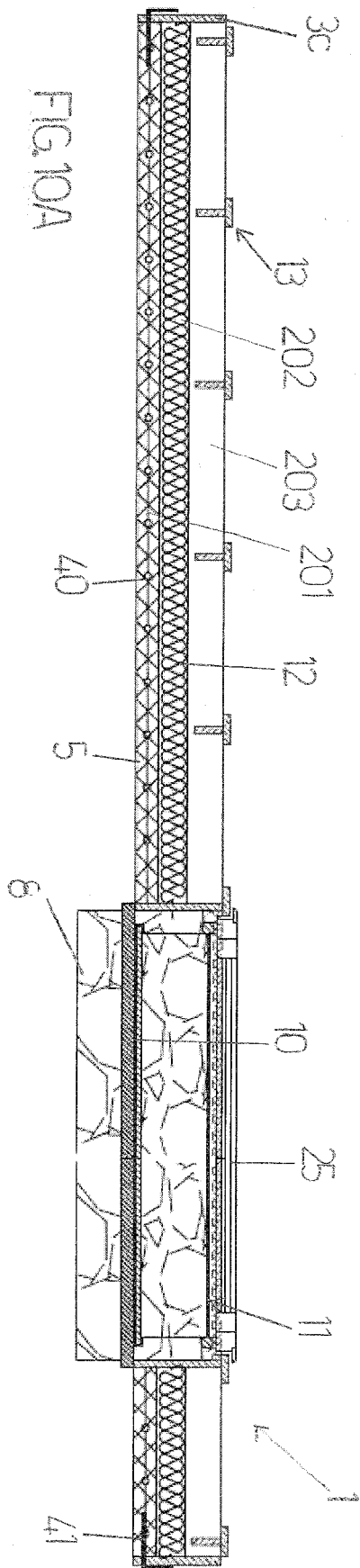
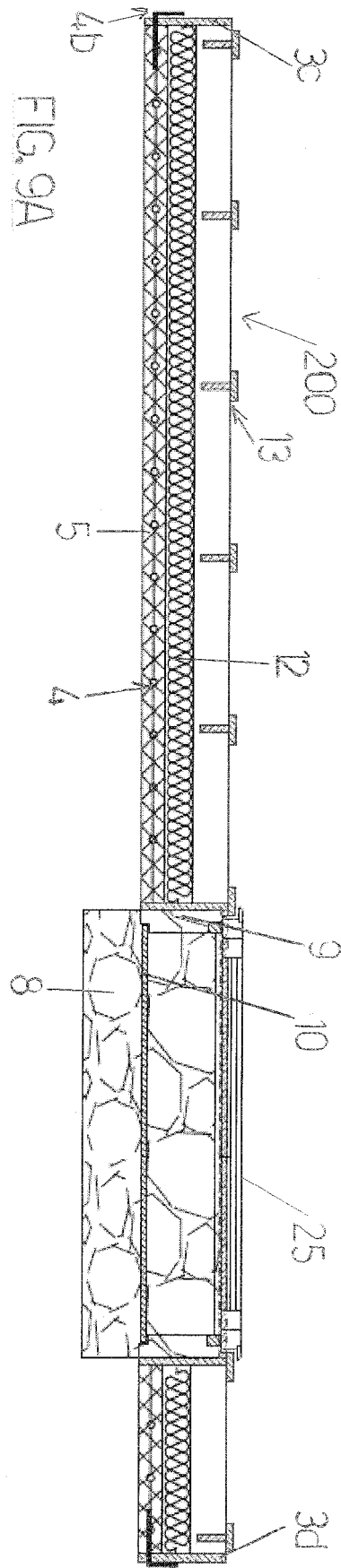
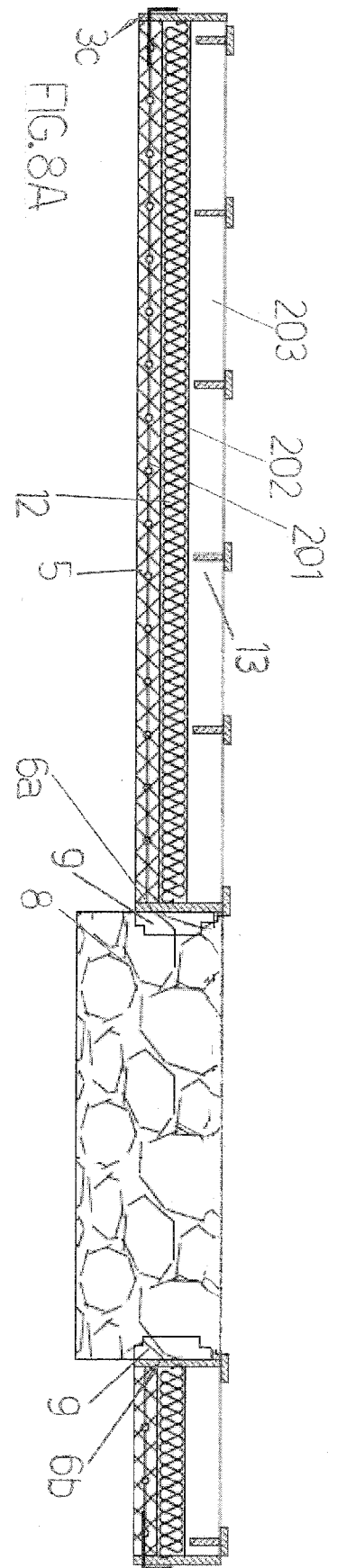
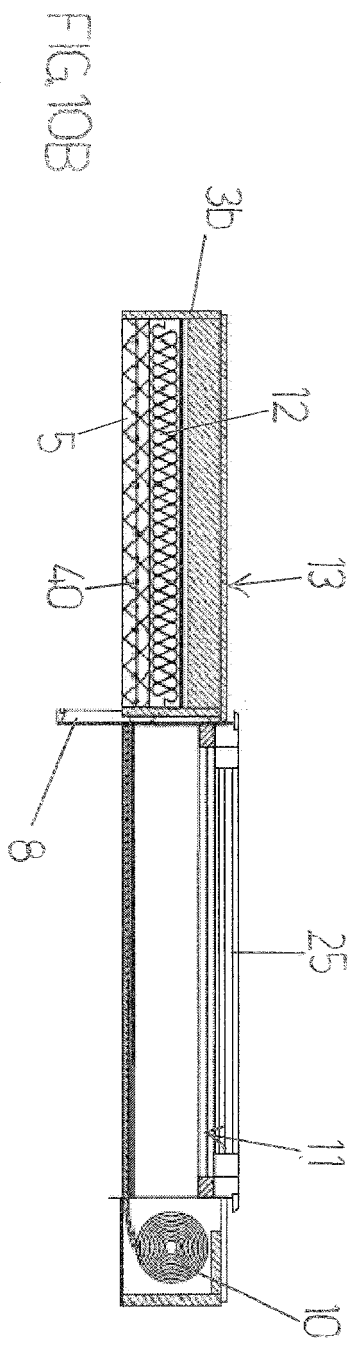
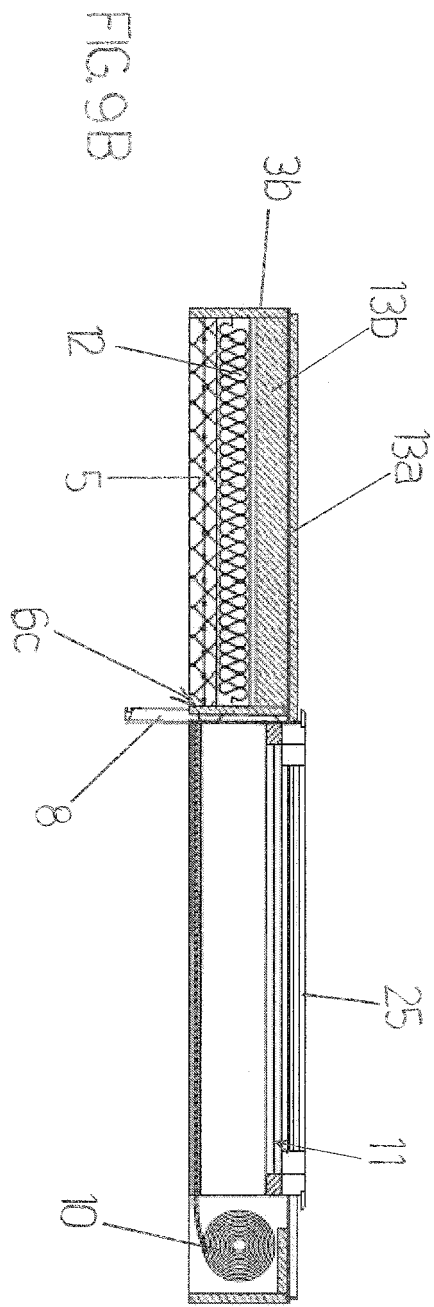
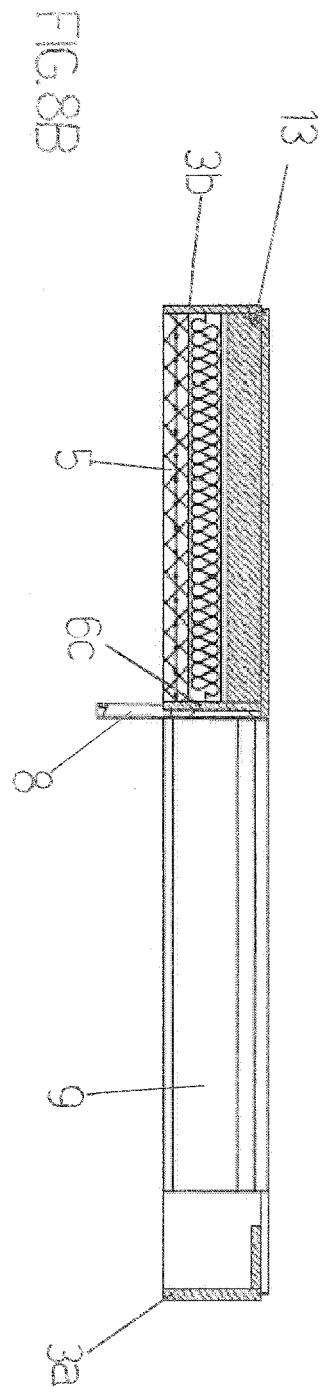


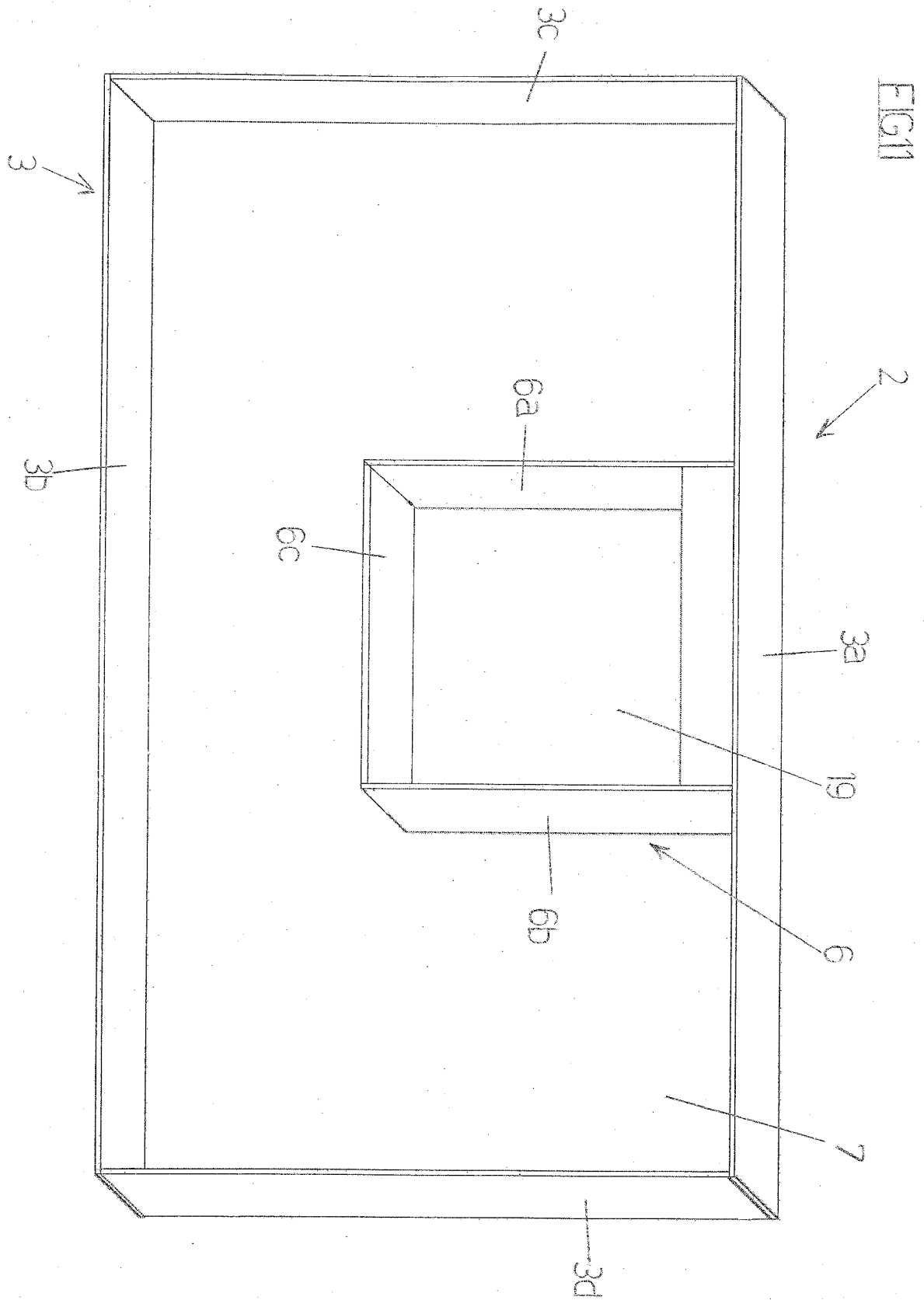
FIG. 4B

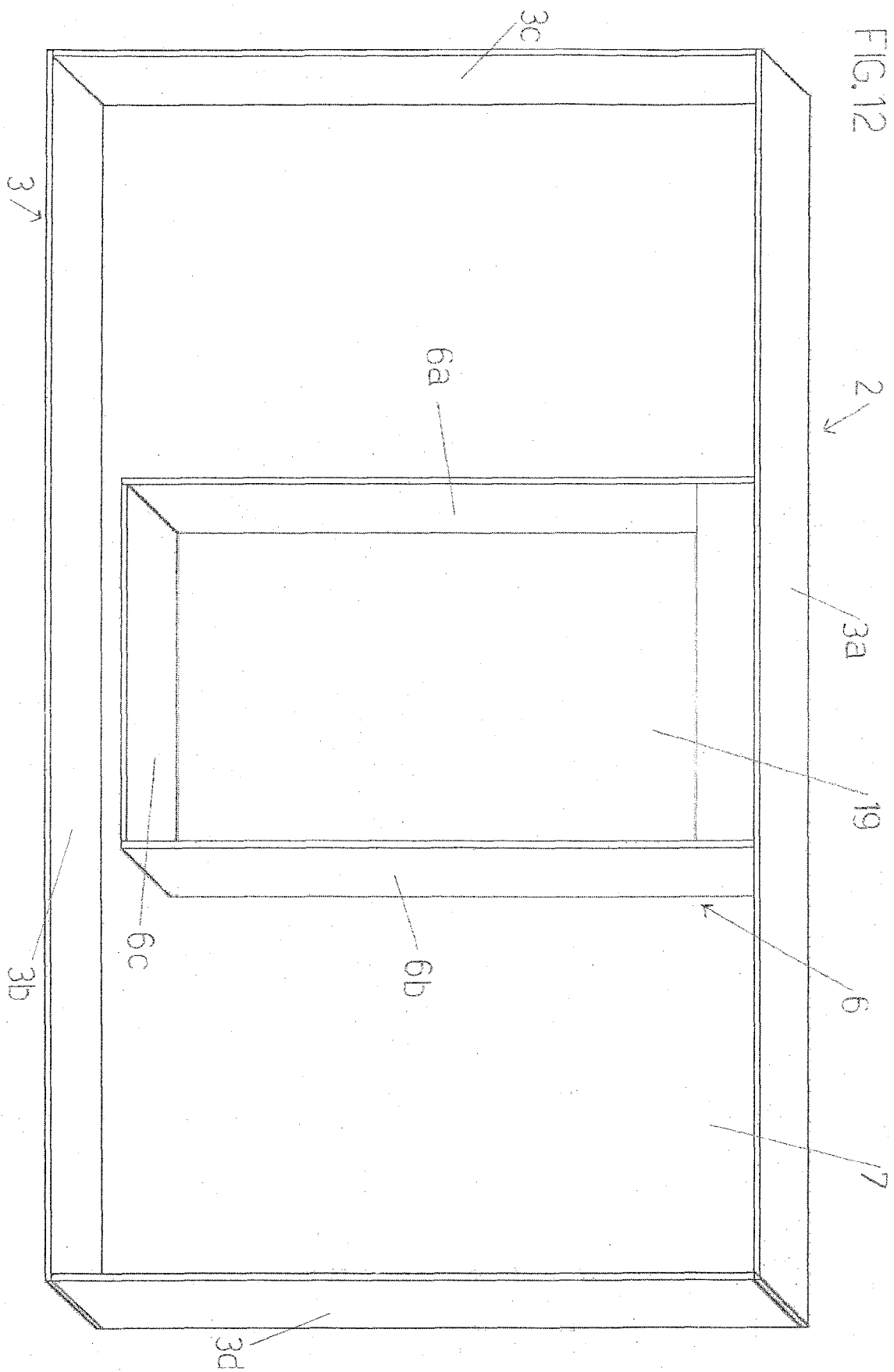


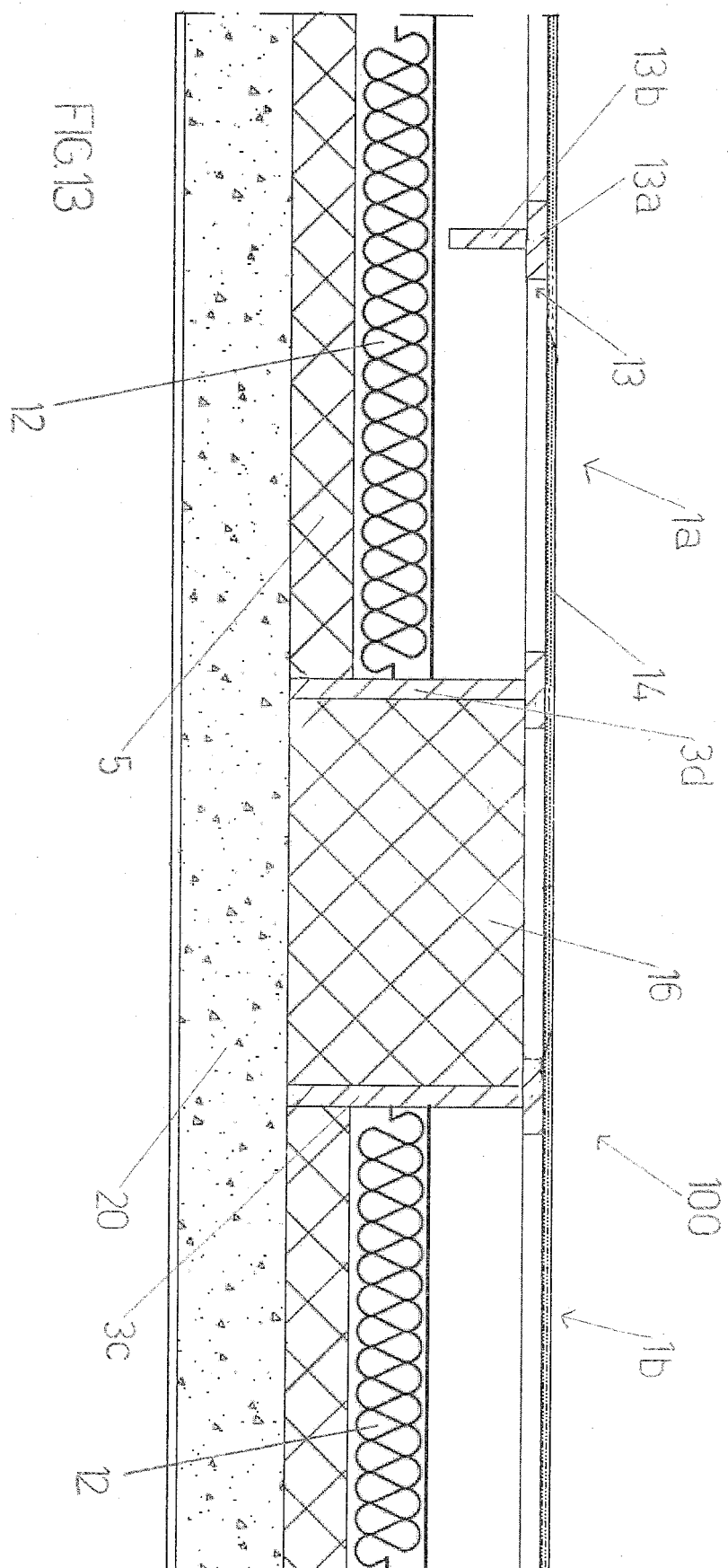














EUROPEAN SEARCH REPORT

Application Number
EP 17 20 6042

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 260 329 B1 (MILLS BRENT P [US]) 17 July 2001 (2001-07-17) * column 3, line 62 - column 6, line 12; figures 2A-6 *	1,2,6-8, 11	INV. E04B1/04 E04C2/38 B28B7/18
X	US 5 033 248 A (PHILLIPS CHARLES N [US]) 23 July 1991 (1991-07-23) * column 2, line 65 - column 5, line 30; figures 2-13 *	7-15	
X	US 2 940 295 A (POST DAVID C) 14 June 1960 (1960-06-14) * column 2, line 46 - column 5, line 26; figures 1-6 *	1-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04B E04C B28B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 May 2018	Examiner Melhem, Charbel
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			

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The members are as contained in the European Patent Office EDP file on
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24-05-2018

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