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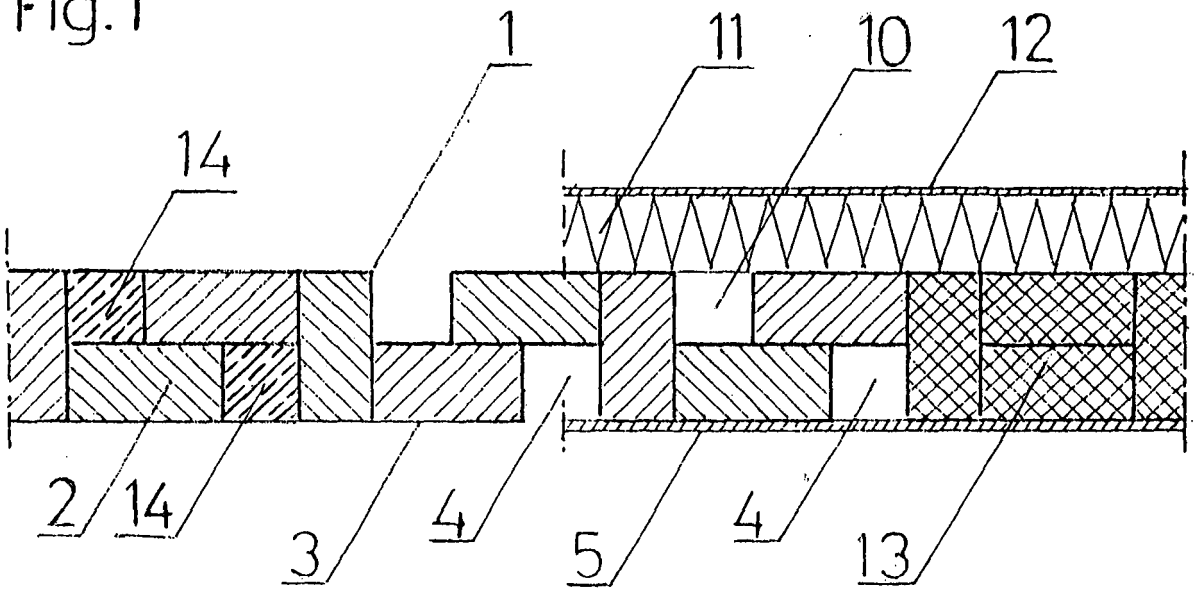
(54) **Load bearing building wall comprising small wall members**

(57) The load bearing wall is provided with a vertical bent panel (1) constructed of cuboidal blocks (2) and shaped into a set of separated pillars (3) combined in strips between the axes of vertical grooves (4) which, being covered by the internal finishing layer (5), function as service ducts running to the upper storeys between the tongues (6) of the narrowed ring beam (7). On the external side of the wall with vertical grooves (10), an insulating material layer (11) provided with a textural facade surface (12) is mounted. At the points of exceeded load bearing capacity of the separated pillars (3), a complete wall (13) or a ferroconcrete reinforcement (14) in the vertical grooves (4, 10) are constructed.

Fig.1



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Description

[0001] The invention refers to a load bearing building wall comprising the fine wall members.

[0002] The Polish patent description no. 168290 referred to a building wall comprising the fine wall members forming two-armed corner. The load bearing part of the wall is constructed in the form of a vertical panel with small pillars to which textural layers are attached. On the external side of the building wall, an insulating material layer is laid. The arm of the wall member located in the panel pillars is provided with an advantageous recess enabling connection with the pillars of the textural layer.

[0003] The familiar external load bearing walls comprising the fine wall members, as one-layer walls, are characterised by large thickness, therefore, good thermal and acoustic parameters, nevertheless, their scope of structural application is minor. The porous structure and hollows of the wall forming materials used in one-layer walls enable their application in construction of heating and ventilation ducts. The two-layer wall is characterised by a more efficient load bearing section. However, apart from the strips located near the openings, where the headers with the ceiling are based, long sections of walls, particularly those not carrying the ceilings load, retain a considerable resistance excess. The known brick load bearing walls with service ducts, particularly those used for heating and ventilation of compartments, are characterised by a complex structure and their construction is labour-consuming, therefore, the number of service ducts is limited to a necessary minimum which entails worsening of service conditions and impairing correct operation of the installation.

[0004] The specificity of the load bearing wall, as provided in the invention, consists in the assumption that wall is provided with a vertical bent panel made of cuboidal blocks shaped into a set of separated pillars combined in strips between the axes of vertical grooves which, being covered by the internal finishing layer, function as service ducts running to the upper storeys between the tongues of the narrowed ring beam. On the external side of the wall with grooves, there is a layer of insulating materials provided with a textural façade layer.

[0005] At the points of exceeded load bearing capacity of the separated pillars, a full wall or a ferroconcrete reinforcement in the vertical grooves are constructed.

[0006] It is advantageous that the cuboidal block has at least one corner groove in which the internal finishing layer of the vertical grooves may be recessed as well as that, in parallel to the corner groove, an oblique slit may be formed in which anchors are set.

[0007] In the walls thicker than one cuboidal block, the vertical grooves may run to the upper storeys through the internal openings of the traditional ring beam. The internal finishing layer advantageously made of plastercardboard panels may be laid on both sides of the vertical bent panel.

[0008] The load bearing building wall in the form of a vertical bent panel comprising the cuboidal blocks, in the configuration as provided in the invention, is characterised by simple construction procedure and efficient load bearing section, properly diversified according to loads which may occur. Reinforcement of the load bearing wall with a full wall or a ferroconcrete reinforcement in vertical grooves does not result in a change of its thickness. One of the advantages of the invention is application of densely arranged vertical grooves used for distribution and hiding of various installations. The option of separate connection of the heating and ventilation system in each compartment creates conditions for attaining high operational comfort in the scope of health as well as more reasonable and energy saving operation of the heating and ventilating devices.

[0009] The object of the invention in practical application is shown in the drawing, with figure 1 showing the load bearing building wall comprising the fine wall members in the horizontal section with a vertical bent panel of the thickness corresponding to the thickness of one cuboidal block, with separated pillars of the face width equalling 1 ½ of the block width and vertical grooves of the section of ½ x ½ of a block, covered with the internal finishing layer, external insulating layer and the textural façade layer, as well as an example of the wall reinforcement with a full wall and a ferroconcrete reinforcement in vertical grooves; figure 2 shows the load bearing building wall comprising the fine wall members of the thickness corresponding to the thickness of one cuboidal block with examples of pillars of the face width equalling 2 blocks width and vertical grooves of the section of 1 x ½ and ½ x ½ of a block; figure 3 shows the external building wall of the thickness corresponding to the thickness of 1 ½ cuboidal block with separated pillars of the face width equalling 1 ½ of the block width and examples of vertical grooves of the section of ½ x 1 and 1 x 1 of a block; figure 4 shows a narrowed ring beam with tongues for the wall of the thickness of 1 block with separated pillars of the face width of 1 ½ block and vertical grooves of the section of ½ x ½ of a block; figure 5 shows a narrowed ring beam for the wall of the thickness corresponding to the thickness of 1 block with separated pillars of the face width of 2 blocks and vertical grooves of the section of 1 x ½ and ½ x ½ of a block; figure 6 shows a narrowed ring beam with tongues for the wall of the thickness corresponding to the thickness of 1 ½ block with separated pillars of the face width of 1 ½ block and examples of vertical grooves of the section of ½ x 1 and 1 x 1 of a block; figure 7 shows a traditional ring beam for the wall of the thickness corresponding to the thickness of 1 ½ block with separated pillars of the face width of 1 ½ block and examples of vertical grooves of the section of ½ x 1 and 1 x 1 of a block; figure 8 shows a cuboidal block with one corner groove and an oblique slit; figure 9 shows the load bearing building wall comprising cuboidal blocks with one corner groove and an oblique slit.

Example 1

[0010] The load bearing building wall, comprising the fine wall members, of which the vertical bent panel (1) is constructed, as well as cuboidal blocks (2), is formed into separated pillars (3) constituting the ceiling support and carries the upper storeys load falling on the strip between the vertical grooves (4). The vertical grooves (4) covered with the internal finishing layer (5) constitute service ducts running to the upper storeys between the tongues (6) of the narrowed ring beam (7). On the external layer of the building wall, the vertical grooves (10) are covered with the insulating material layer (11) with a textural façade layer (12). Furthermore, at the points of exceeded load bearing capacity of the pillars (3), a full wall (13) or a ferroconcrete reinforcement (14) in the vertical grooves are constructed. The wall in a horizontal section is depicted on fig. 1, and the narrowed ring beam for this wall, as presented in fig. 4, is provided with a vertical bent panel (1) of a thickness corresponding to the thickness of one block (2) with separated pillar (3) of a face width of 1 ½ block (2) with examples of the wall reinforcement with a full wall (13) and a ferroconcrete reinforcement (14) in the vertical grooves (4, 10).

Example 2

[0011] The load bearing building wall comprising the fine wall members is constructed as provided in example one with the difference that it is provided with a vertical bent panel (1) made of cuboidal blocks (2), each having one corner groove (15) in which the internal finishing layers (5) for the vertical grooves (4) are set, as provided in fig. 8 showing the cuboidal block (2) in the top view, and fig. 9 showing a horizontal section of the wall and examples of the finishing layer (5).

Example 3

[0012] The load bearing building wall comprising the fine wall members is constructed as provided in example two with the difference that in parallel to the corner groove (15) of the cuboidal block (2), there is an oblique slit (16) in which anchors for mounting the insulating material layer (11) and various installations inside the vertical grooves (4) are set.

Example 4

[0013] The load bearing building wall comprising the fine wall members is constructed as provided in example one or two with the difference that it is provided with a vertical bent panel (1) made of cuboidal blocks (2) of the thickness corresponding to the thickness of one block with separated pillars (3) of a face width of 2 blocks, vertical grooves (4) of the section of 1 ½ and ½ x ½ of a block depicted in fig. 2 and a narrowed ring beam (7) with tongues (6) depicted in fig. 5.

Example 5

[0014] The load bearing building wall comprising the fine wall members is constructed as provided in example one or two with the difference that it is provided with a vertical bent panel (1) made of cuboidal blocks (2) of the thickness corresponding to the thickness of 1 ½ block with separated pillars (3) of the face width of 1 ½ block and vertical grooves (4) of the section of ½ x 1 and 1 x 1 of a block depicted in fig. 3 and a narrowed ring beam (7) with tongues (6) depicted in fig. 6.

Example 6

[0015] The load bearing building wall comprising the fine wall members is constructed as provided in example five with the difference that it is provided with a traditional ring beam (9) with internal openings (8) depicted in fig. 7.

Example 7

[0016] The load bearing building wall comprising the fine wall members is constructed as provided in example one with the difference that, as an internal load bearing building wall, it is provided with an internal finishing layer (5) on both sides of the panel (1).

[0017] Load bearing building walls comprising fine wall members are made of cuboidal blocks (2), but they can also be constructed with application of such substitutive or supplementary materials as brick or two-arm corner shaped blocks. Reinforcement of the load bearing wall at the points of exceeded load bearing capacity of the separated pillars (3) is attained by construction of a full wall (13) or by application of a ferroconcrete reinforcement (14) in the vertical grooves (4, 10), nevertheless, it is also possible that another familiar solution be applied, namely the application of higher class wall materials or reinforcement of horizontal joints by means of a steel mesh. The internal finishing layer (5) based on gypsum-cardboard panels may be limited to covering only the vertical grooves (4), and on the surface of the separated pillars (3), a plaster finishing coat is laid or only the joints are levelled.

Claims

1. The load bearing building wall comprising the fine wall members is distinctive for its vertical bent panel (1) made of cuboidal blocks (2) and shaped into a set of separated pillars (3) combined in strips between the axes of vertical grooves (4) which, being covered by the internal finishing layer (5), function as service ducts running to the upper storeys between the tongues (6) of the narrowed ring beam (7), whereas on the external side o the building wall provided with vertical grooves (10), an insulating material layer (11) is mounted with a textural façade layer

(12).

2. The wall as claimed in claim 1, **characterised in that** at the points of exceeded load bearing capacity of the separated pillars (3), a full wall is constructed.

3. The wall as claimed in claim 1, **characterised in that** at the points of exceeded load bearing capacity of the separated pillars (3), inside the vertical grooves (4, 10), a ferroconcrete reinforcement is constructed (14).

4. The wall as claimed in claim 1, **characterised in that** the cuboidal block (2) has the advantage of being provided with at least one corner groove (15) in which the internal finishing layer (5) for the vertical grooves (4, 10) is set.

5. The wall as claimed in claim 1 **characterised in that** parallel to the corner groove (15) of the cuboidal block (2), there is an advantageous oblique slit (16) in which anchors are set.

6. The wall as claimed in claim 1 **characterised in that** in the walls thicker than one cuboidal block (2), the vertical grooves (4, 10) run to the upper storeys through the internal openings (8) of the traditional ring beam (9).

7. The wall as claimed in claim 1 **characterised in that** the internal finishing layer (5) is laid on both sides of the panel (1).

Fig.1

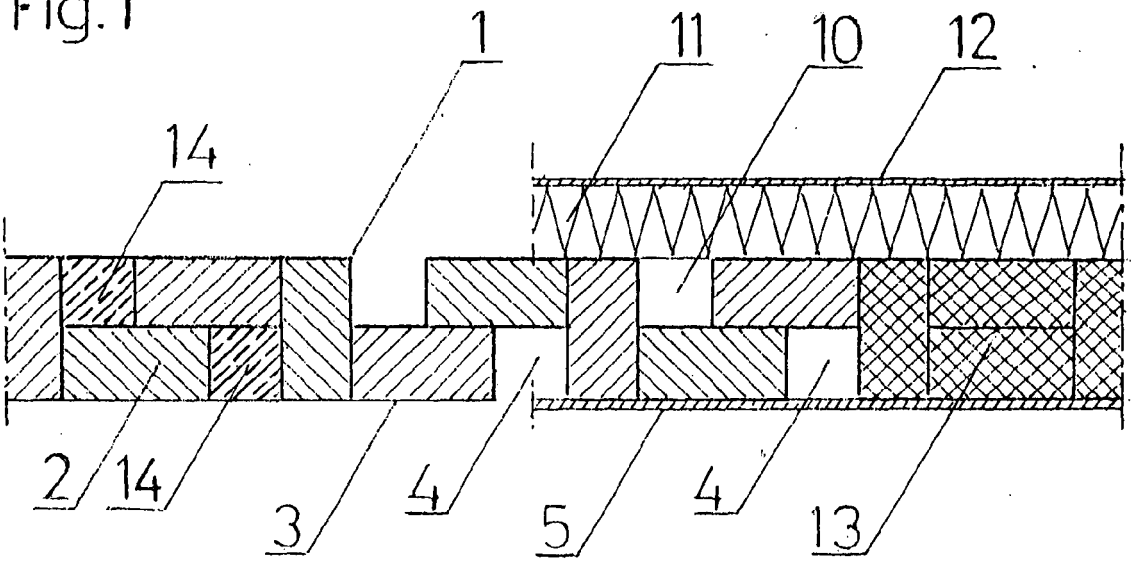


Fig.2

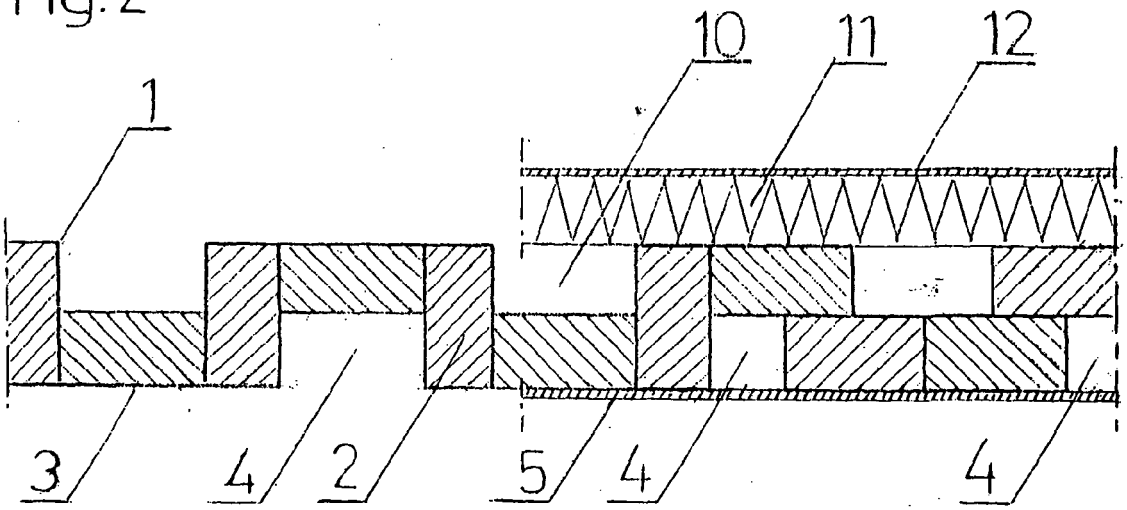


Fig. 3

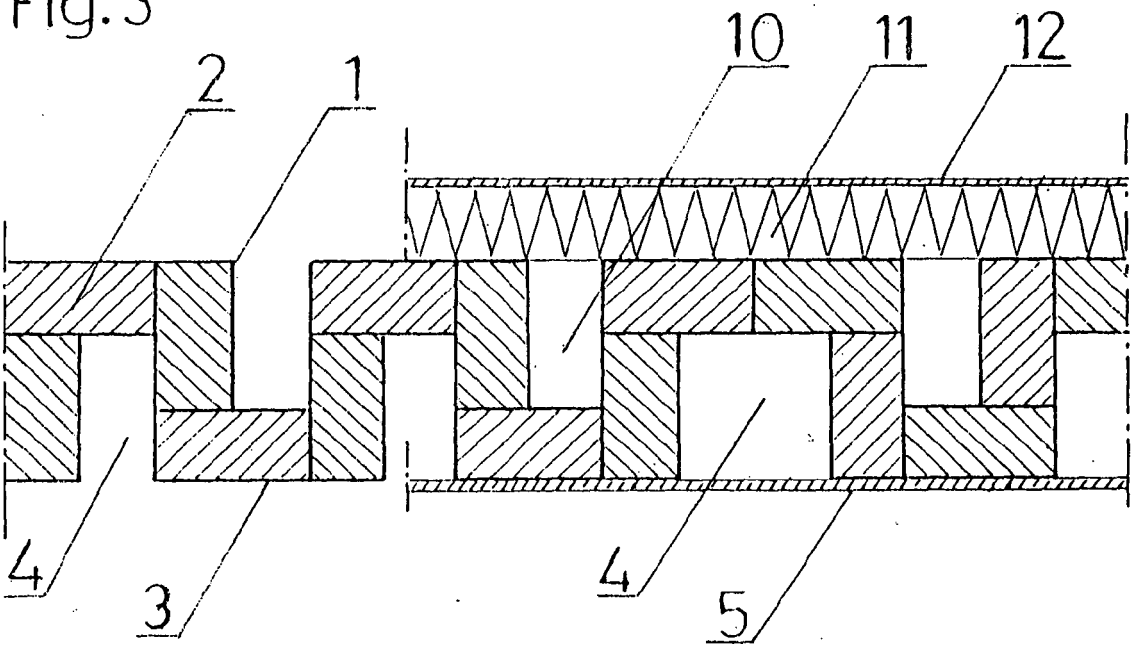


Fig. 4

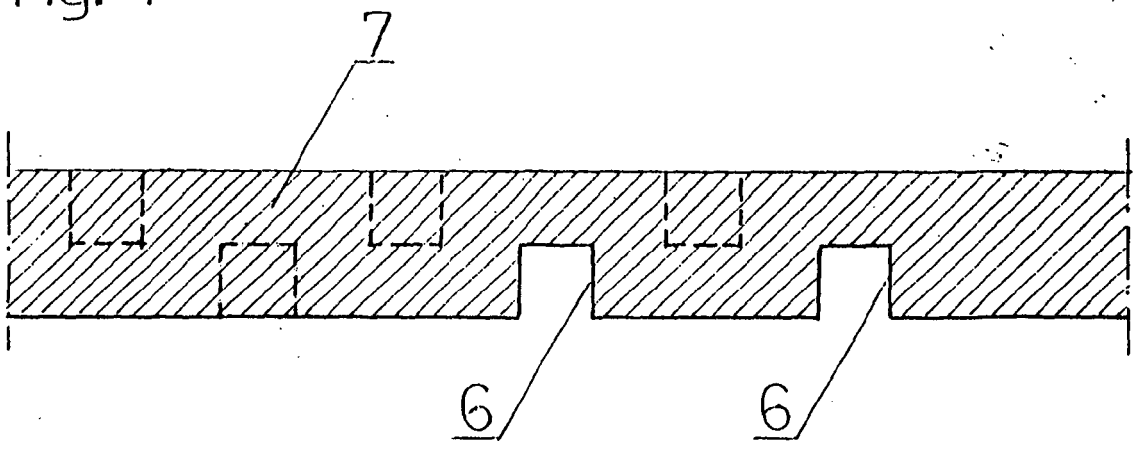


Fig. 5

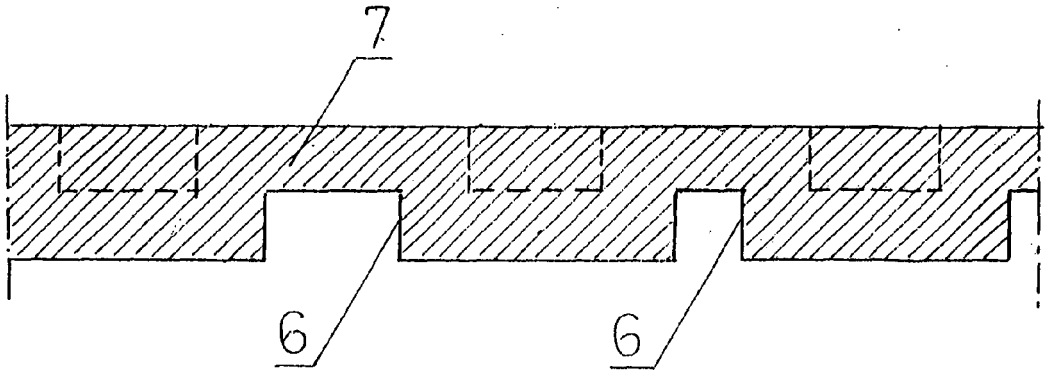


Fig. 6

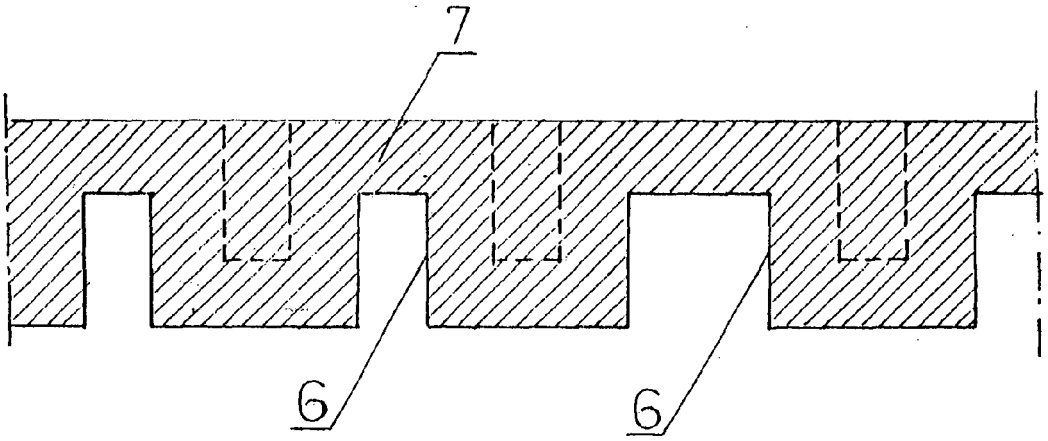


Fig. 7

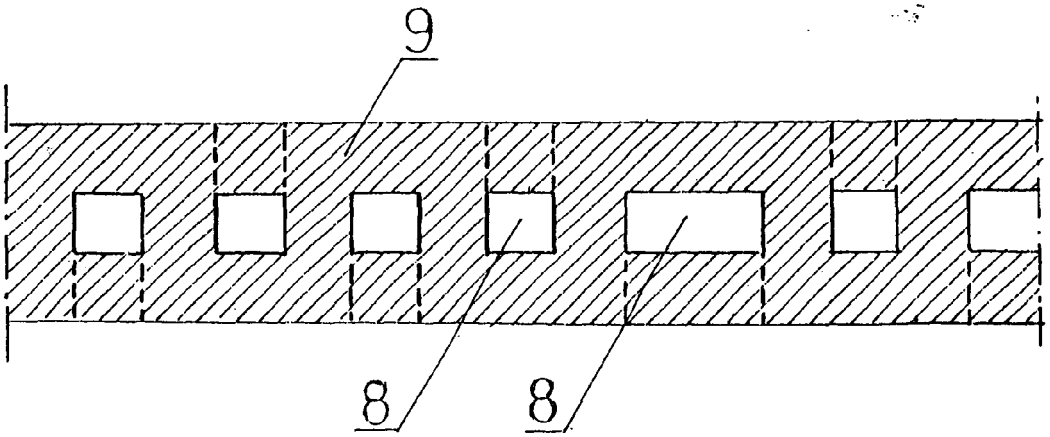


Fig. 8

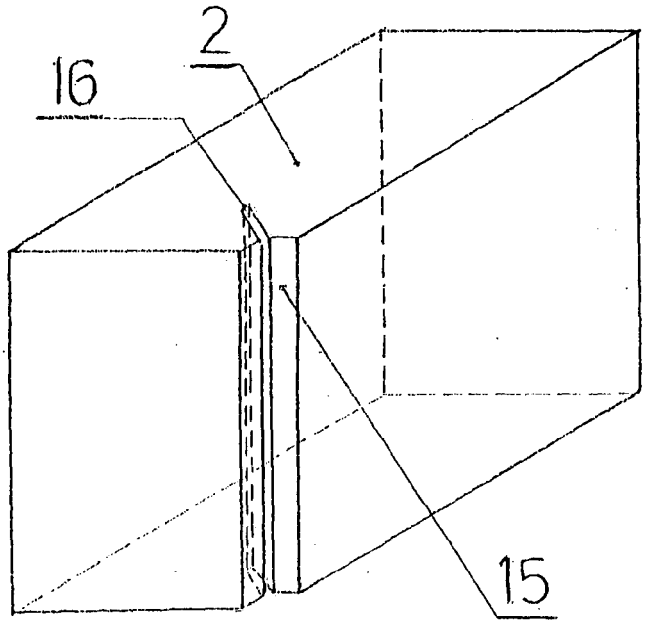
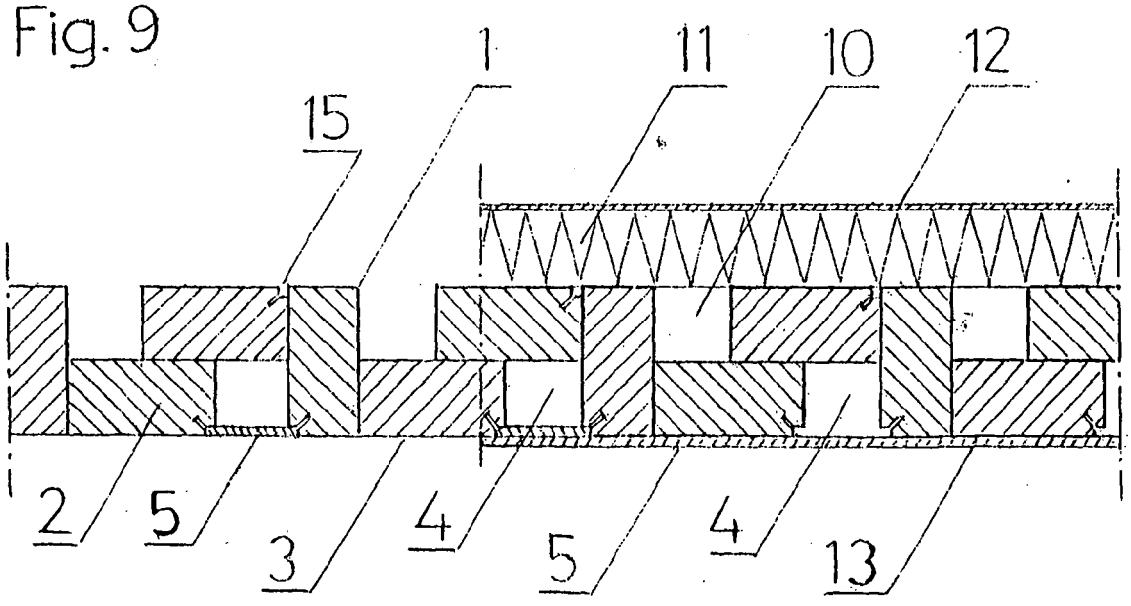


Fig. 9



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EUROPEAN SEARCH REPORT

Application Number
EP 06 02 6883

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	PL 168 290 B1 (DEPKA STANISLAW BOGUMIL [PL]) 31 January 1996 (1996-01-31) * the whole document *	1-7	INV. E04B2/28 ADD. E04B2/02
A	US 2 129 369 A (ALFRED FABER HERBERT) 6 September 1938 (1938-09-06) * figure 1 *	1-7	
P,A	EP 1 712 692 A (CANDERLE GIAMPIETRO [IT]) 18 October 2006 (2006-10-18) * paragraph [0070]; figure 1 *	1-7	
A	US 3 780 484 A (MUSE G) 25 December 1973 (1973-12-25) * figures 14,15 *	4	

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	7 May 2007	Rosborough, John

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07-05-2007

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US 2129369 A	06-09-1938	NONE	
EP 1712692 A	18-10-2006	NONE	
US 3780484 A	25-12-1973	NONE	

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

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