



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 162 326 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.12.2001 Bulletin 2001/50

(51) Int Cl.7: **E04C 1/42**

(21) Application number: **01112948.3**

(22) Date of filing: **06.06.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Moschini, Giovanni**
38068 Rovereto (Prov. of Trento) (IT)
• **Moschini, Fabio**
38068 Rovereto (Prov. of Trento) (IT)

(30) Priority: **09.06.2000 IT VR000055**

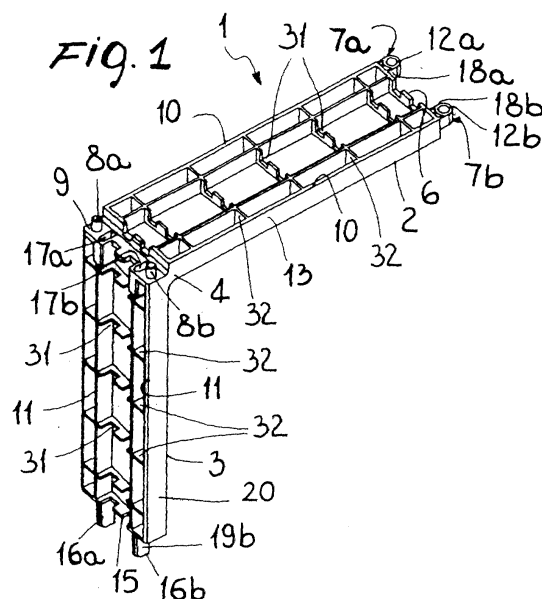
(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(71) Applicants:
• **Moschini, Giovanni**
38068 Rovereto (Prov. of Trento) (IT)
• **Moschini, Fabio**
38068 Rovereto (Prov. of Trento) (IT)

(54) Set of frame elements for glass blocks and method for installing them

(57) A set of frame elements for laying glass blocks, opaque bricks or the like, comprising a modular element, comprising at least one first wing (2) and at least one second wing (3) which are arranged at an angle to each other and have a common corner end (4), said first wing (2) having, at its longitudinal ends (6), coupling means (7a,7b,8a,8b) which are suitable to couple said first wing (2) of said modular element (1) to a first wing (2) of at least one adjacent modular element (1), and

further comprising engagement means both at the free longitudinal ends (6,15) of said first (2) and second (3) wings and at said corner end (4) in order to allow the coupling of said first wing (2) and of said second wing (3) of said modular element (1) respectively to a second wing (3) of at least one adjacent modular element (1) and to a first wing (2) of at least one other adjacent modular element (1) so as to form a lattice-like structure for supporting and containing said glass blocks.



Description

[0001] The present invention relates to a set of modular frame elements and to the method for installing them, particularly for building walls made of glass blocks, opaque bricks or the like.

[0002] Several technical solutions have already been proposed with the aim of simplifying and speeding up the on-site building of glass block walls. For example, mention can be made of procedures which use bricks already provided with a containment frame which covers the four perimetric faces of each brick and is provided with coupling means suitable to ensure the mutual fixing of contiguous bricks.

[0003] A procedure having currently a wider practical application entails providing glass block walls by installing on-site one or more prefabricated three-dimensional lattice-like structures or grids, made for example of compressed vibrated reinforced concrete, which delimit a plurality of modular cells or seats which are meant to accommodate a corresponding number of brick-like elements. The seating of each brick within a respective cell and its sealing on the grid complete the work.

[0004] The main drawback of glass block walls built by means of the above described methods relates to the high costs required for their installation.

[0005] In fact, besides requiring highly specialized and accordingly very expensive labor for their execution, these methods provide for the use of glass blocks provided with prefabricated lattice-like structures or containment frames which commercially have a scarcely competitive cost. In the case of glass blocks provided with a frame, for example, a significant fraction of the overall cost of the finished product is linked to the operation for applying the frame to each brick, which is usually is not performed by the makers of the bricks but by specialized laboratories. Since these laboratories are located in regions which are often remote from the glass block manufacturers, the continuous transfers, mostly performed by trucks, of semifinished and finished products can significantly affect the overall cost of each glass block.

[0006] Moreover, since there are glass blocks of different standard sizes, suppliers are compelled to stock considerable reserves of frames having different dimensions and decorative characteristics in order to be able to meet a broad and diversified demand, leading to high management and distribution costs which inevitably affect the final cost of the finished product.

[0007] Another drawback of glass blocks provided with a containment frame is that they are not suitable for building outside walls because of their poor resistance to atmospheric agents, and for building curved walls having satisfactory solidity and safety, since it is impossible to rigidly couple the frame of each brick to the frames of the adjacent bricks.

[0008] Another drawback of the current methods which use glass blocks provided with containment

frames is that once they are installed, two contiguous bricks are separated by two layers of surrounding material, each of which belongs to the frame of the respective brick, thus producing an excessive spacing between contiguous bricks and an excessive use of material and a corresponding increase in overall production costs.

[0009] The aim of the present invention is to provide a set of frame elements which is capable of eliminating or substantially reducing the above mentioned drawbacks related to conventional technical solutions.

[0010] Another object of the present invention is to allow, by means of said set of elements, to simplify the laying of glass blocks or the like, while making it faster and cheaper.

[0011] An important object of the present invention is to allow, by using the novel set of elements, the building of glass block walls to be a task which can be performed even by unskilled personnel, with a considerable saving in labor cost.

[0012] Another object of the present invention is to provide a set of elements which allows to build external glass block walls which are capable of withstanding the attack of atmospheric agents for a long time.

[0013] Another object of the present invention is to allow the supply of bricks to be independent of the supply of the set of frame elements, whose assembly is performed during construction work. In this way, the step of preliminary installation of the frame on each brick is eliminated, so as to be able to manage on-demand production of the glass blocks according to the requirements of demand and therefore reduce inventory with the consequent overall reduction in the cost of the finished products.

[0014] Another object of the present invention is to allow, by means of the novel set of elements, to build vertical walls which have any curved shape and at the same time to ensure firm coupling between the individual bricks and a solid and reliable lattice-like supporting structure.

[0015] Another object of the present invention is to eliminate, by virtue of the set of said elements, the need to have particular profiles which act as initial guides, since said elements can directly be adapted as border elements.

[0016] Yet another object of the present invention is to allow to build walls with said set of elements by using glass blocks of different sizes (for example cm 9-19 with 19-19 or 11.5-24 with 24-24) for customized aesthetic structures.

[0017] Still another object of the present invention is to provide a method which allows rapid laying of the bricks and of the respective set of frame elements, allowing the building of walls of glass blocks or the like to be a simple, rapid and above of all, low-cost operation.

[0018] According to a first aspect of the present invention, a set of elements for laying glass blocks, opaque bricks or the like is provided which comprises a modular element, characterized in that it comprises at least one

first wing and a second wing which are arranged at an angle to each other and have a common corner end, said first wing having, at its longitudinal ends, coupling means which are suitable to couple said first wing of said modular element to a first wing of at least one adjacent modular element, and in that it comprises engagement means both at the free longitudinal ends of said first and second wings and at said corner end in order to allow the coupling of said first wing and of said second wing of said modular element respectively to a second wing of at least one adjacent modular element and a first wing of at least one other adjacent modular element so as to form a lattice-like structure for supporting and containing said glass blocks.

[0019] Advantageously, said coupling means comprise at least one male element, which is formed at the free end of said first wing or at said corner end, and at least one female seat provided in said corner end or at the free end of said first wing.

[0020] Conveniently, the or each male element comprises a pin which protrudes from an outer face of said first wing which is directed away from said second wing, and the or each female seat is substantially eye-shaped and is suitable to accommodate a respective pin which belongs to a first wing of an adjacent modular element.

[0021] According to another aspect of the present invention, a method for building a wall of bricks, such as glass blocks, opaque bricks or the like, comprising the steps of:

arranging on the supporting surface a substantially horizontal initial guide;
 arranging, at one end of said horizontal initial guide, a substantially vertical initial guide;
 placing a first brick, without any border element, at said horizontal initial guide and adjacent to said vertical initial guide;
 applying a first modular element on said first brick so that said first wing and said second wing abut against a respective free face of the perimetric edge of said first brick;
 placing a second brick adjacent to said first brick;
 placing a second modular element on said second brick so that said coupling means delimited at the free end of said first wing of said second modular element mates with said coupling means provided in said corner end of said first wing which belongs to said first modular element.

[0022] Advantageously, said method entails laying a third brick on top of said first brick and placing a third modular element on top of said third brick so that said engagement means delimited at the free end of said second wing of said third modular element locks on said engagement means provided in said corner end of said first wing which belongs to said first modular element.

[0023] Further characteristics and advantages of the present invention will become better apparent from the

following detailed description of some currently preferred embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is an axonometric view of a modular element according to the invention, seen from the outer part;

Figure 2 is an axonometric view of the modular element of Figure 1, seen from the inner part;

Figure 3 is an enlarged-scale side elevation view of the modular element of Figure 1;

Figure 4 is a sectional view of the modular element, taken along the plane IV-IV of Figure 3 so as to show the inner face of a first wing;

Figure 5 is a plan view of the outer face of the wing of Figure 4;

Figure 6 is a plan view of a second wing of the modular element according to the invention, seen from its outer face;

Figure 7 is an axonometric view of a first wing obtained from the modular element by virtue of a cut performed along the plane VII-VII of Figure 1;

Figure 8 is an axonometric view of a second wing obtained from the modular element by virtue of a cut performed along the plane VIII-VIII of Figure 1;

Figure 9 is a side elevation view, with some parts shown in cross-section, of a portion of a wall made of glass blocks with a frame formed by virtue of modular elements according to the invention;

Figure 10 is a top view of a connecting element;

Figure 11 is a side elevation view of a connecting element; and

Figure 12 is a top view of a wall portion with a connecting element combined with modular elements coupled to glass blocks.

[0024] With reference to the above figures, a modular element according to the invention, designated by the reference numeral 1, is preferably L-shaped and composed of a first wing 2 and a second wing 3 which have a corner end 4 in common and act, during use, respectively as a stringer element and as an upright element for a frame 22 for containing, for example, glass blocks 5 (Figure 9).

[0025] As shown in Figure 1, both the stringer wing 2 and the upright wing 3 can be constituted by profiled elements, preferably made of rigid and lightweight material, such as for example wood or rigid plastics, which can have an internal structure having different shapes (for example cells) according to requirements.

[0026] Advantageously, the stringer wing 2 can have both at its free end 6 and at its corner end 4, coupling means by way of which it can couple to a stringer wing 2 which belongs to a contiguous corner element 1.

[0027] Preferably, the coupling means comprise a pair of eyes 7a and 7b, which act as a female seat and protrude longitudinally from the free end 6 of the stringer

wing 2, and a pair of pins 8a and 8b which protrude from a surface 9, see Figures 1, 3 and 5, which is substantially flat and is formed at the corner end 4 of the stringer wing 2, and are meant to act as male elements in the coupling with the respective eyes 7a and 7b of an adjacent corner element 1.

[0028] As shown in Figures 1 and 3, the surface 9 is advantageously recessed with respect to the upper face 10 of the stringer wing 2 and lies at a depth, with respect to it, which is equal to the thickness of the protruding eyes 7a and 7b, which are in turn thinner than the body 13 of the wing 2. In this manner it is therefore possible to obtain, after coupling the eyes 7a and 7b of one corner element 1 with the pins 8a and 8b of an adjacent corner element 1, the co-planar arrangement of the faces 10 of the two coupled stringer wings 2. Figures 2 and 3 show, in particular, that the difference in thickness between the wings 7a and 7b and the body 13 of the wing 2 forms, at the end 6 of the wing 2, a pair of shoulders 14a and 14b which are meant to abut against the surface 9 which lies at the base of the respective pins 8a and 8b of an adjacent wing 2.

[0029] Advantageously, a modular element 1 is furthermore provided with engagement means which are preferably located at the free ends 6 and 15, respectively, of the stringer wing 2 and upright wing 3 and the corner end 4 and are meant to provide a coupling, for example of the interlocking type, between two adjacent and superimposed modular elements 1.

[0030] Said engagement means can comprise, for example, a pair of protrusions or feet 16a and 16b which protrude longitudinally from the free end 15 of the upright wing 3 and a pair of insertion seats 17a and 17b which are formed at the abutment surface 9. Preferably, the feet 16a and 16b are shaped like a parallelepiped and are slightly thinner than the body 20 of the wing 3 (see Figure 2) while the insertion seats 17a and 17b are cavities (see Figures 1 and 5) whose cross-section corresponds to the transverse cross-section of the respective feet 16a and 16b and whose depth is greater than, or equal to, the length of said feet.

[0031] Furthermore, the eyes 7a and 7b of the free end 6 of the wing 2 also can be considered as engagement means, since they act as abutment elements during the insertion of the feet 16a and 16b of a stringer wing 3 within the respective cavities 17a and 17b of an adjacent wing 2 and as elements for locking them in the active position through the friction generated, during use, between the internal lateral surfaces 18a and 18b of the eyes 7a and 7b and the external lateral surfaces 19a and 19b of the feet 16a and 16b.

[0032] As shown in Figures 2 and 4, the wings 2 and 3 of a modular element 1 can have, on their respective internal faces 21 and 23, a longitudinal surface 25 which is slightly inclined and recessed with respect to the remaining portion 26 of the faces 21 and 23, so as to delimit a slot 24 which affects the entire length of the two wings. Thanks to the slots 24, the stringer wings 2 and

the upright wings 3 of each modular element 1 are capable of adhering perfectly to the perimetric faces of the respective brick 5, since they are provided so as to accommodate, during use, a respective continuous ridge (not shown in the figures) which is usually present on the perimetric faces of glass blocks 5.

[0033] In order to be able to associate a reinforcement frame (not shown in the figures) with a containment frame 22 (see Figure 9), each corner element 1 is advantageously provided with at least one pair of longitudinal seats 31 which are meant to accommodate a respective metal rod or wire whose cross-section corresponds to the transverse cross-section of the seats 31. As shown in Figures 1, 5 and 6, the seats 31 are preferably longitudinal slots which can be continuous, if the wings 2 and 3 are solid, or can be formed at a plurality of cross-members 32, thus delimiting spaced abutments which are meant to act as seats for the elements that constitute the frame.

[0034] As shown in Figures 7 and 8, the stringer wing 2 and the upright wing 3 that form a modular element 1 can be mutually separated, for example by means of a cut performed along section planes of Figure 3, so as to obtain respectively a stringer element 30a and an upright element 30b which are flat and can be used as starting elements or generally as finishing elements during the building of a wall 34. In particular, the stringer element 30a of Figure 7 is advantageously provided with the coupling means (i.e., the eyes 7a and 7b and the pins 8a and 8b) and with the engagement means, i.e., the cavities 17a and 17b and the shoulders 18a and 18b, while the upright element 30b of Figure 8 is provided with the feet 16a and 16b and the cavities 17a and 17b, which act as engagement means, and the pins 8a and 8b, which are suitable to act as coupling means for coupling, during use, to the respective eyes 7a and 7b of an adjacent module 1.

[0035] Figures 10 to 12 illustrate a connecting element 40 for building a wall, for example a corner wall, or for connecting various walls.

[0036] In particular, the element 40 has a substantially square edge; at at least two adjacent sides 41a and 41b, the element 40 has coupling means or advantageously engagement means for the coupling of said connecting element to the modular elements.

[0037] As shown more clearly in the above cited figures, the connecting element conveniently has, at the side 41a, engagement means, for example two protrusions or feet 16a and 16b, which protrude substantially at right angles to the plane of arrangement of the connecting element, and a pair of insertion seats 17a and 17b.

[0038] Furthermore, the sides 41b, 41c, 41d and 41e have coupling means for the coupling of the element 40 to modular elements: in particular, the coupling means consist of a pair of eyes 7a and 7b which act as a female seat for the coupling means located at the modular elements.

[0039] With modular elements 1 such as the ones described above it is thus possible to build a wall 34 made of glass blocks 5 or the like (see Figure 9) particularly rapidly and easily. The method for building the wall 34 in fact entails assembling on site the bricks 5 and the modular elements 1 according to a sequence of operations which can be performed even by unskilled personnel.

[0040] First of all it is necessary to arrange on the surface from which a wall 34 is meant to rise an initial guide (not shown in the figures), provided by laying a sequence of stringer elements 30a, for example, aligned one after the other and mutually coupled by virtue of the insertion of the pins 8a and 8b of a stringer element 30a within the eyes 7a and 7b of an adjacent stringer element 30a.

[0041] If one intends to build a wall 34 having a selected curvature, an initial guide is provided on the flat surface by arranging a sequence of stringer elements 30a which are coupled by means of a single pin 8 and a respective eye 7 so as to be able to set the preferred angle between two consecutive wings. The laying of a sequence of stringer elements 30a thus forms a continuous footing which acts as a supporting base and as an initial guide for building a vertical wall 34.

[0042] If one intends to start laying the bricks 5 for example from the left shoulder of the wall 34, it is necessary to arrange an upright element 30b in a vertical position, inserting its feet 16a and 16b within the cavities 17a and 17b of the first stringer element 30a on the left. One then proceeds with the laying of a first glass block 5, superimposing it on the first stringer element 30a on the left and arranging it adjacent to the upright element 30b placed earlier, after depositing an adhesive material on the perimetric faces of the glass block 5 and on the exposed faces of the stringer element 30a and of the upright element 30b.

[0043] In the point where one wishes to obtain two walls at a mutual angle of 90° (or for example a T), one arranges (continuing with the arrangement of the glass blocks along the directions and orientations indicated by the arrows 50, 51, 52 and 53), for each row of glass blocks, and therefore correspondingly for each modular element, a connecting element, coupling the engagement means 16a and 16b with respective coupling means of modular elements which lie along the direction indicated for example by the arrow 50.

[0044] If one is not interested in laying glass blocks along certain directions, it is sufficient to remove from the connecting elements the pairs of eyes 7a and 7b that are not used and then continue with the laying process along the directions of interest, coupling the coupling means present on the elements 40 to the engagement means of the modular elements.

[0045] Subsequently, adhesive material is also placed on the inner faces 21 and 23 of the stringer wing 2 and of the upright wing 3 of a modular element 1, which is then superimposed on the freshly laid brick 5 so as to

make the faces 21 and 23 of the element 1 adhere to the two perimetric faces of the brick 5 that are still free. The correct fixing of the modular element 1 is ensured by the interlocking of the feet 16a and 16b of the corner element 1 between the eyes 7a and 7b of the first stringer element 30a and by the insertion of its eyes 7a and 7b within the pins 8a and 8b of the upright element 30b. At this point one proceeds by laying the second brick 5, for example laterally to the first one, which is arranged so as to abut with a perimetric face against the outer face 11 of the upright element 30b of the previously applied modular element 1. Before arranging a second corner element 1 on the second brick 5, adhesive material is applied to the perimetric faces of the brick 5, to the internal faces 21 and 23 of the corner element 1 and at its coupling and engagement means, so as to make the coupling between two adjacent corner elements permanent. The next step consists therefore in applying the second corner element 1 on the second brick 5, so that the eyes 7a and 7b enter the pins 8a and 8b of the first corner element 1 until a co-planar arrangement is obtained between the upper edges 12a and 12b of the eyes 7a and 7b of the second corner element 1 and the upper face 10 of the stringer wing 2 of the first corner element 1.

[0046] Once the laying of a first row of bricks 5 has been completed, one proceeds by arranging at the left end of the wall 34 an upright element 30b which is superimposed on the first one and is interlocked therewith by virtue of the insertion of its feet 16a and 16b within the cavities 17a and 17b of the other element. The laying of the wall 34 then continues by following the same sequence of operations described above, arranging the bricks 5 one after the other until a row is completed and adequately arranging a respective corner element 1 on top of each one.

[0047] The building of the wall 34 continues until the intended height is reached, with the precaution of placing a rod, made for example of steel, in one of the two slots 31 every time a row of bricks 5 ends, leaving the other slot 31 free for the vertical rods so as to avoid crossing them with the previously applied horizontal ones.

[0048] With the above described modular elements it is thus possible to build curved walls without having to renounce stability and solidity of the containment frame 11 of the glass blocks 5.

[0049] The corner elements and the method for laying them as described above are susceptible of numerous modifications and variations within the scope of the protection defined by the content of the appended claims.

[0050] In practice, the materials used, as well as the dimensions, may be any according to requirements.

[0051] The disclosures in Italian Patent Application No. VR2000A000055 from which this application claims priority are incorporated herein by reference.

[0052] Where technical features mentioned in any claim are followed by reference signs, those reference

signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A set of frame elements for laying glass blocks, opaque bricks or the like, comprising a modular element (1), **characterized in that** it comprises at least one first wing (2) and at least one second wing (3) which are arranged at an angle to each other and have a common corner end (4), said first wing (2) having, at its longitudinal ends (6), coupling means (7a,7b,8a,8b) which are suitable to couple said first wing (2) of said modular element (1) to a first wing (2) of at least one adjacent modular element (1), and **in that** it comprises engagement means (16a,16b,17a,17b) at the free longitudinal ends of said first (2) and second (3) wings and at said corner end (4) in order to allow the coupling of said first wing (2) and of said second wing (3) of said modular element (1) respectively to a second wing (3) of at least one adjacent modular element (1) and to a first wing (2) of at least one other adjacent modular element (1) so as to form a lattice-like structure (22,34) for supporting and containing said glass blocks (5).
2. The set of elements according to claim 1, **characterized in that** said coupling means comprises at least one male element (8a,8b) formed at the free (6) end of said first wing (2) or of said corner end (4) and at least one female seat (7a,7b) provided in said corner end (4) or at the free end (6) of said first wing (2).
3. The set of elements according to claim 2, **characterized in that** the or each male element (8a,8b) is formed at said corner end (4) and **in that** the or each female seat (7a,7b) is provided at the free end (6) of said first wing (2).
4. The set of elements according to claim 2 or 3, **characterized in that** the or each male element comprises a pin (8a,8b) which protrudes from an outer face (9) of said first wing (2) which is directed away from said second wing (3), and **in that** the or each female seat (7a,7b) is substantially eye-shaped and is adapted to accommodate a respective pin (8a,8b) which belongs to a first wing (2) of an adjacent modular element (1).
5. The set of elements according to claim 4, **characterized in that** it comprises a pair of pins (8a,8b) which are arranged proximate to said corner end (6) and protrude from a substantially flat surface (9) which is recessed with respect to the upper face (10) of said first wing (2).
6. The set of elements according to any one of claims 2 to 5, **characterized in that** it comprises at least one tab which protrudes longitudinally from said free (6) end of said first wing (2) and delimits a respective eye (7a,7b), so as to space the or each female seat from said free end (6) of said first wing (2) and allow the coupling of two adjacent modular elements (1) which are at an angle to each other.
7. The set of elements according to claim 1, **characterized in that** said engagement means (16a,16b,17a,17b) are of the interlocking type.
8. The set of elements according to claim 7, **characterized in that** said engagement means comprise a plurality of recesses (17a,17b) formed at said free end (6) of said first wing (2) and at said corner end (4) and a plurality of protrusions (16a,16b) formed at said free end (15) of said second wing (3).
9. The set of elements according to claim 8, **characterized in that** said protrusions comprise at least one pair of feet (16a,16b) which protrude from said free end (15) of said second wing (3) and can each be coupled by interlocking to a respective recess (17a,17b) delimited at said free end or at said corner end (4) of said first wing (2) of an adjacent modular element.
10. The set of elements according to any one of the preceding claims, **characterized in that** said first wing (2) and said second wing (3) can be mutually separated in order to obtain a pair of flat modular elements which are meant to act respectively as initial stringer and initial upright for said lattice-like structure for supporting and containing said glass blocks (5).
11. The set of elements according to claim 10, **characterized in that** it comprises means for mutually coupling said first (2) and second (3) wings delimited at said corner end of said first (2) and second wings (3).
12. The set of elements according to claim 11, **characterized in that** said coupling means (16a,16b,17a,17b) are of the interlocking type.
13. The set of elements according to any one of the preceding claims, **characterized in that** it is made of a rigid and lightweight material, such as PVC, light alloys, wood and the like.
14. The set of elements according to any one of the pre-

ceding claims, **characterized in that** it comprises at least one slot (24) which runs along an inner face of said first wing (2) which is directed toward said second wing (3) and an inner face of said second wing (3) which is directed toward said first wing (2) and is meant to mate with a corresponding continuous ridge which affects the perimetric edge of each one of said bricks (5).

15. The set of elements according to any one of the preceding claims, **characterized in that** it comprises at least one slot (31) which runs longitudinally along said outer face of said first wing (2) and of said second wing (3) and is meant to accommodate, during use, a respective rod-like element which acts as a reinforcement tie for said frame.

16. The set of elements according to any one of the preceding claims, **characterized in that** it comprises a connecting element (40) which has a substantially square edge which comprises, at least two adjacent sides (41a,41b), coupling means (7a,7b) adapted to couple said connecting element (40) to said modular element.

17. The set of elements according to claim 16, **characterized in that** said connecting element (40) comprises, at least one side (41a), engagement means (16a,16b) suitable to couple to said coupling means (7a,7b) of said modular element.

18. A method for building a wall of bricks, such as glass blocks, opaque bricks or the like, by means of modular elements according to any one of the preceding claims, **characterized in that** it comprises the steps of:

laying a first brick on the supporting surface;
applying a first modular element on said first brick so that said first wing and said second wing abut against a respective free face of the perimetric edge of said first brick;
placing a second brick adjacent to said first brick;
placing a second modular element on said second brick so that said coupling means located at the free end of said first wing of said second modular element mates with said coupling means provided in said corner end of said first wing arranged beforehand on said first modular element; and
laying a third brick on top of said first brick and placing a third modular element on said third brick so that said engagement means delimited on said second wing of said third modular element interlocks with said engagement means delimited on said corner end of said first wing which belongs to said first modular element;

and
repeating the above operations, arranging a sequence of stacked rows of bricks and respective modular elements until said wall is completed.

19. The method according to claim 18, **characterized in that** it entails arranging on the supporting surface a substantially horizontal initial guide.

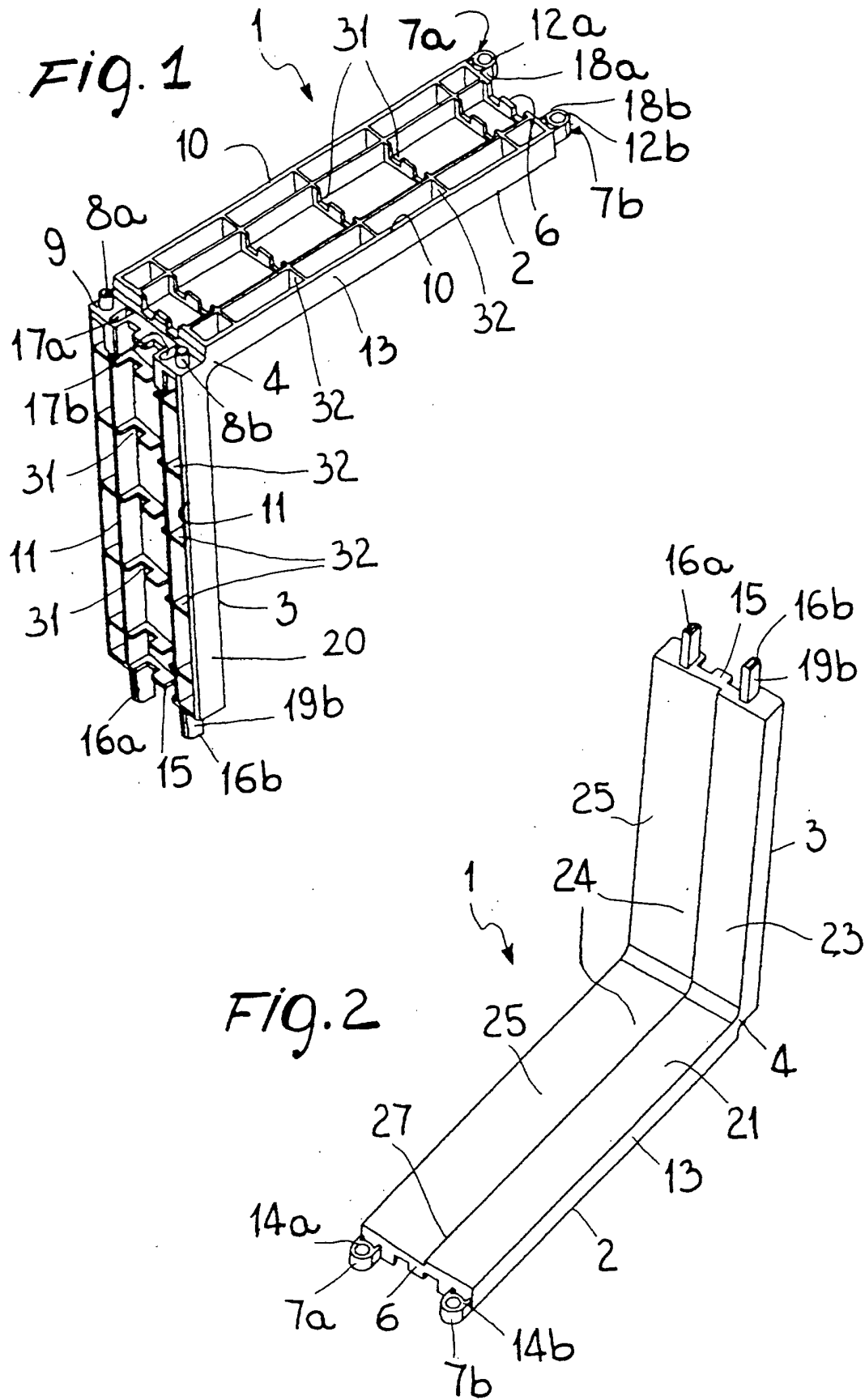
20. The method according to claim 19, **characterized in that** said substantially horizontal initial guide is provided by arranging sequentially a plurality of said initial stringer elements, each of which is rigidly coupled to the or each adjacent element through said coupling means.

21. The method according to any one of claims 18 to 20, **characterized in that** it entails arranging, at one end of said horizontal initial guide, a substantially vertical initial guide.

22. The method according to claim 21, **characterized in that** it provides said substantially vertical initial guide by superimposing a plurality of initial upright elements, each of which is rigidly coupled to the or each adjacent upright element and to the or each adjacent stringer element by virtue of said engagement means.

23. The method according to any one of claims 18 to 22, **characterized in that** it entails distributing adhesive material on the perimetric faces of said bricks and on the internal faces of the respective corner elements, so as to achieve permanent mutual bonding of said bricks and of said lattice-like containment structure.

24. The method according to any one of claims 18 to 23, **characterized in that** it provides the application of said adhesive material at said coupling means and at said means for engaging said modular elements in order to achieve safe and permanent mutual fixing of said modular elements that compose said lattice-like structure.



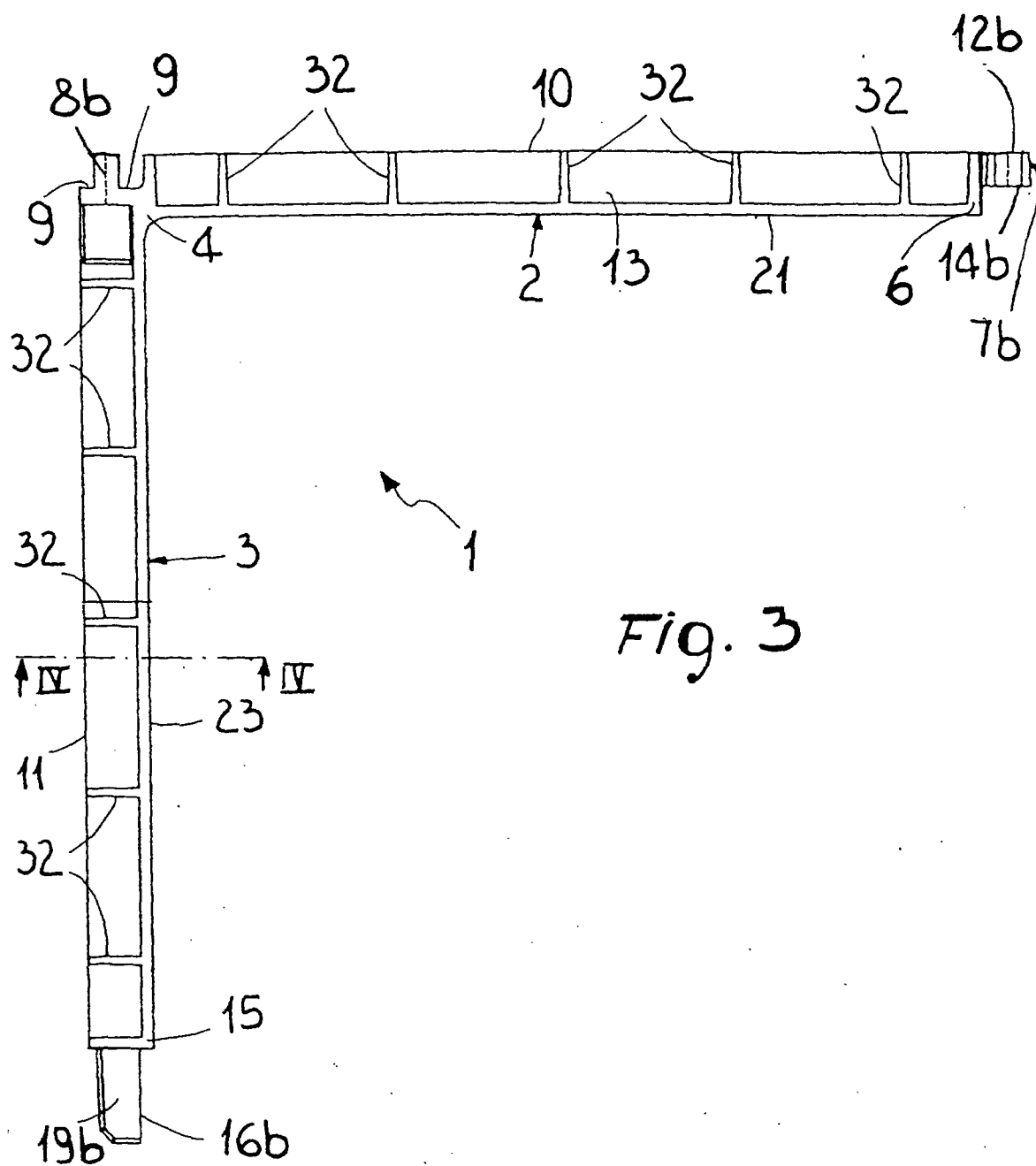


Fig. 3

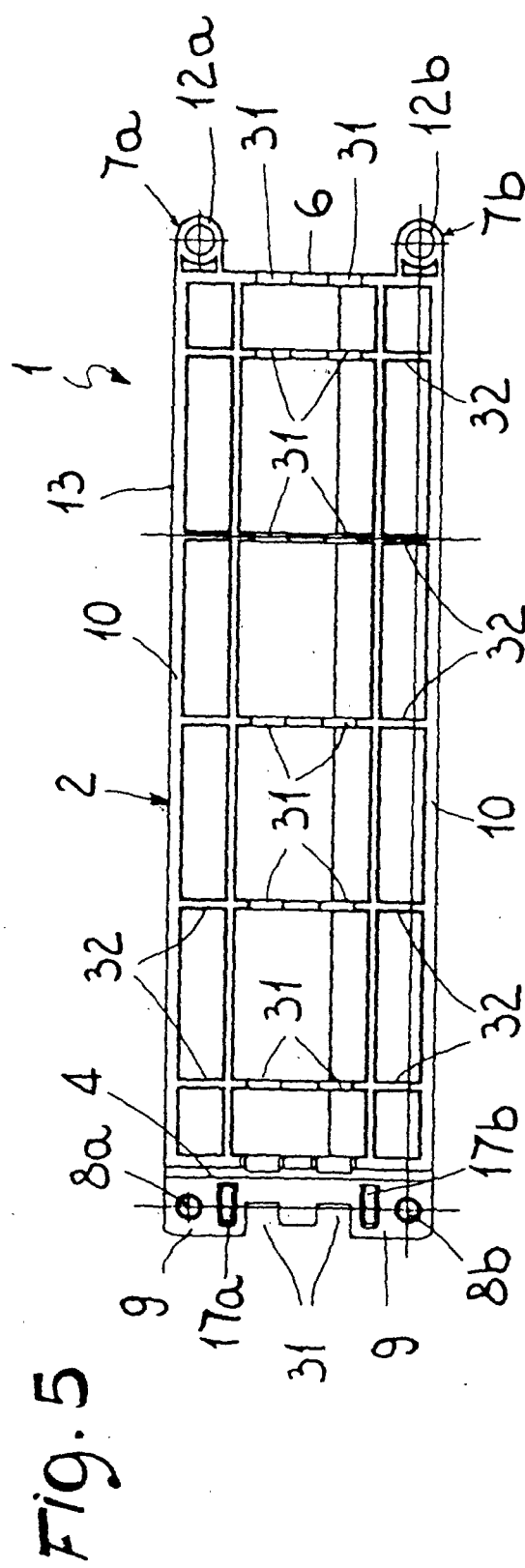
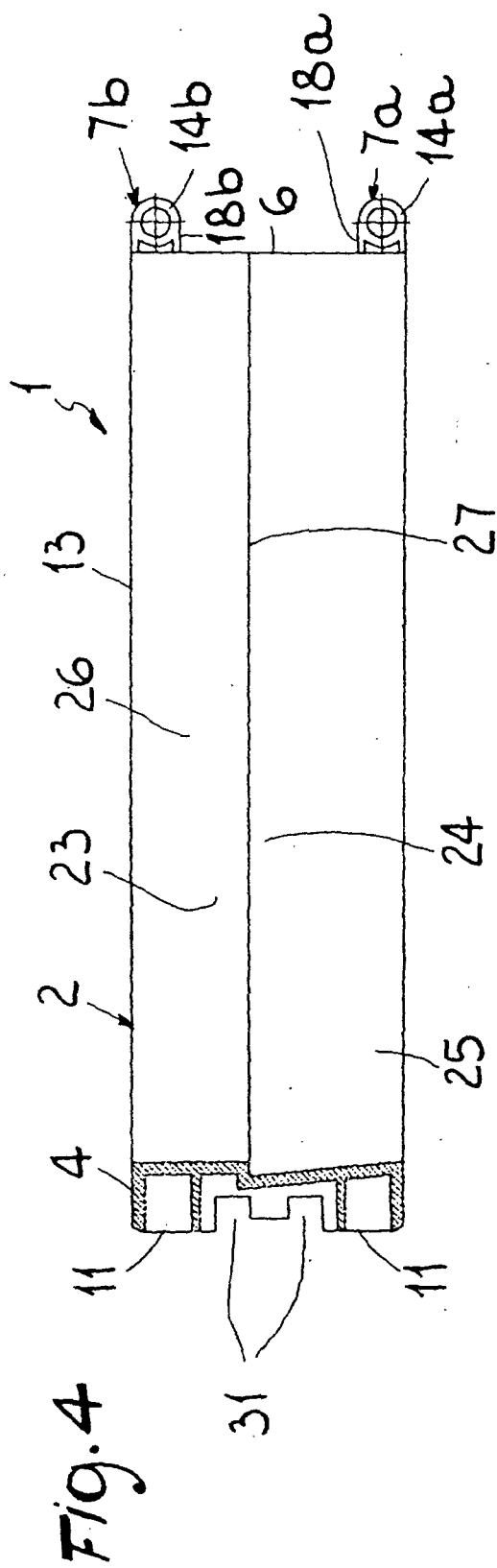
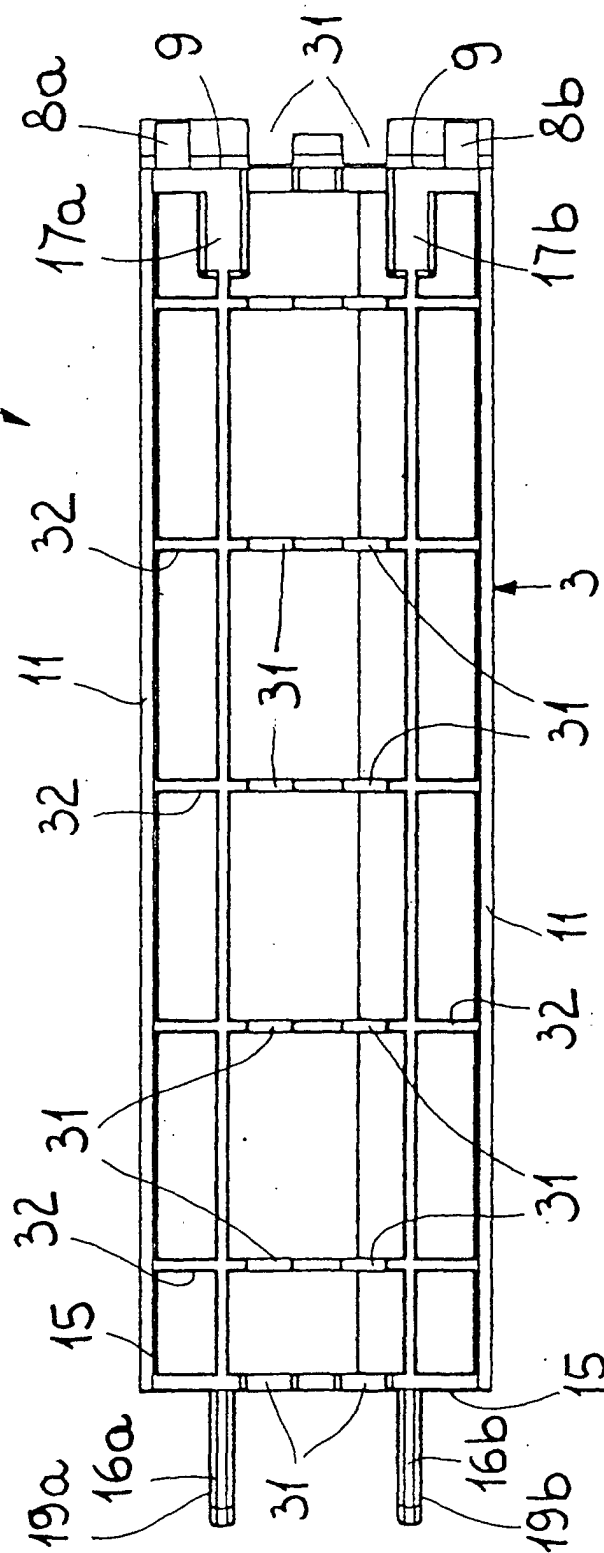
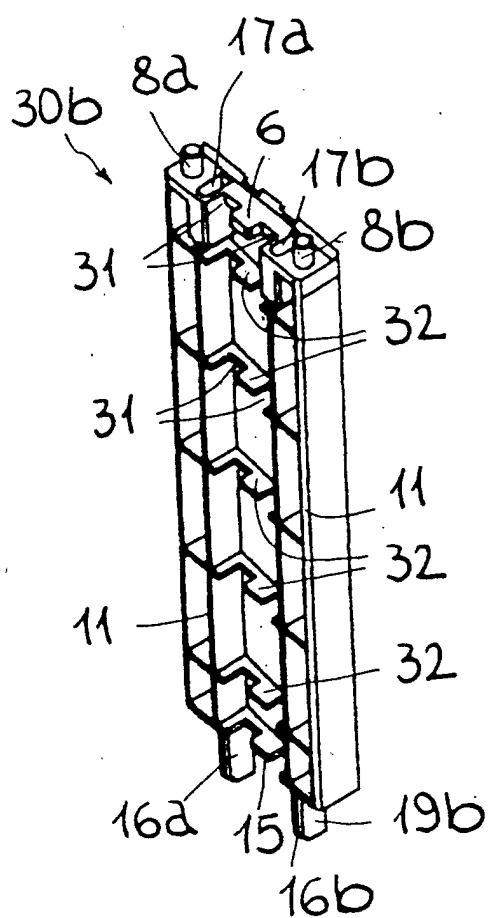
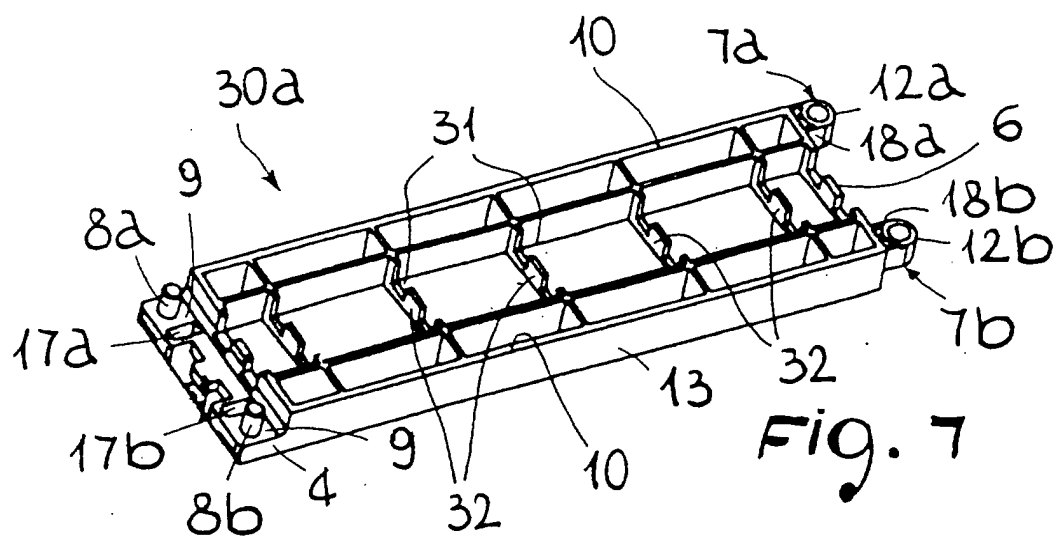
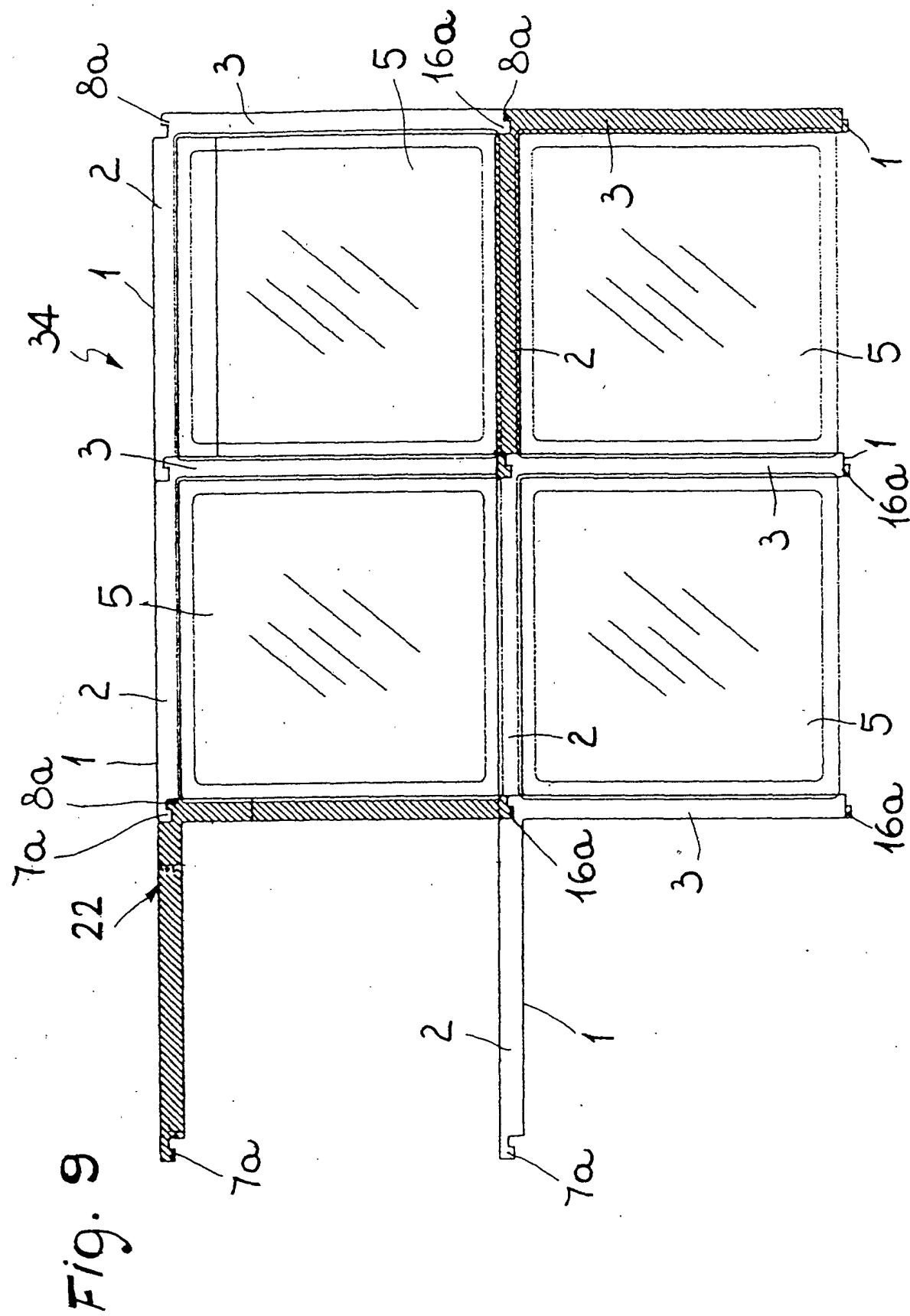
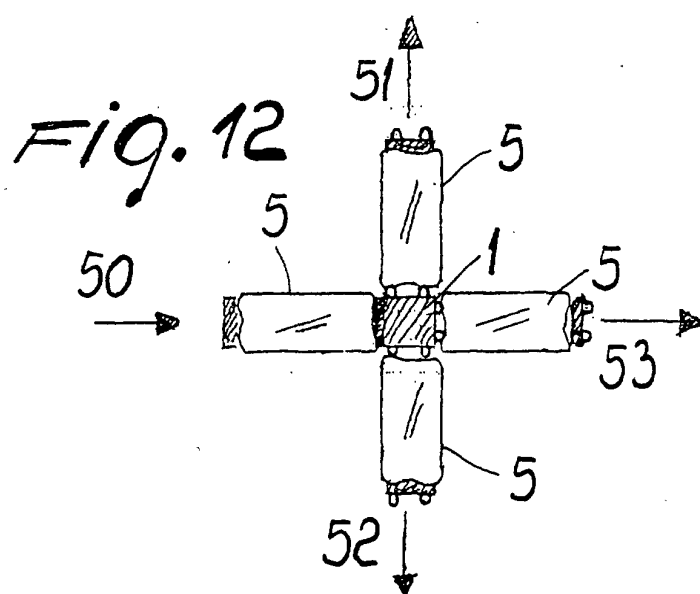
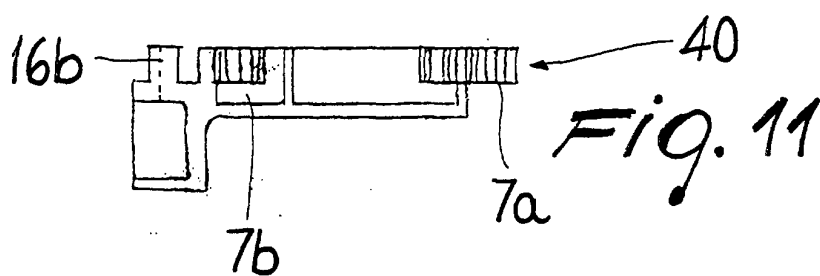
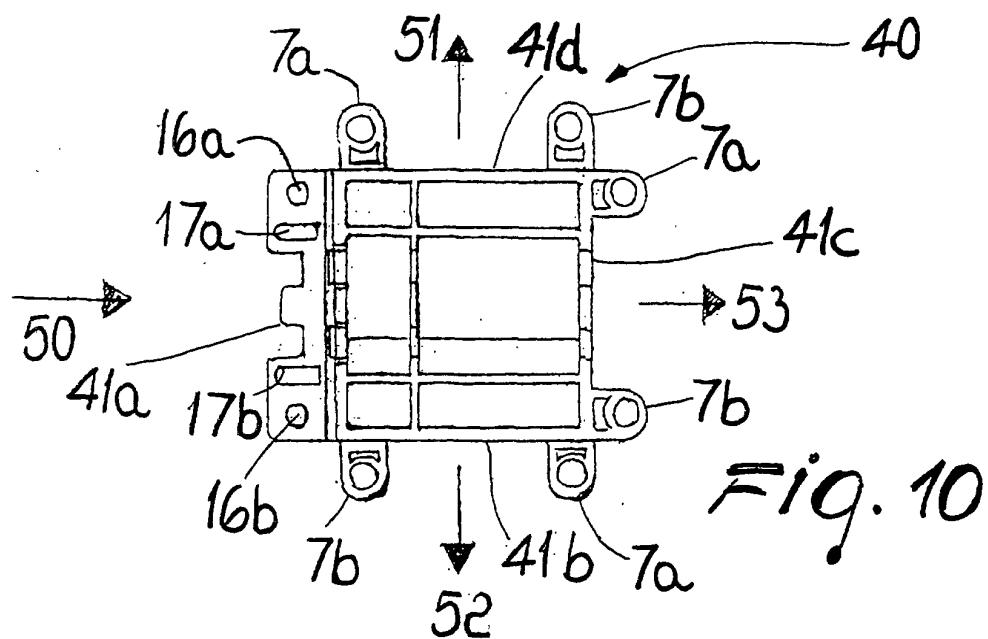


Fig. 6











European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 2948

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	EP 0 042 065 A (BORGHETTO) 23 December 1981 (1981-12-23) * page 14, line 10 - page 15, line 28; figures 8,11,14 * -----	1,18	E04C1/42
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E04C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 September 2001	Examiner Mysliwetz, W
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/02 (P04C01)

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

EP 01 11 2948

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

03-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 42065 A	23-12-1981	IT 1136411 B	27-08-1986
		AT 9019 T	15-09-1984
		CA 1177661 A	13-11-1984
		DE 3165532 D	20-09-1984
		US 4458464 A	10-07-1984

EPO FORM P0459

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