(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 498 554 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
19.01.2005 Bulletin 2005/03

(51) Int Cl.[7]: **E04B 1/04**, E04B 1/61

(21) Application number: **04380152.1**

(22) Date of filing: **19.07.2004**

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

(30) Priority: **18.07.2003 ES 200301729 U**
23.12.2003 ES 200302938 U

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(54) Arrangement for the improved construction of buildings

(57) An arrangement for the improved construction of buildings (1), of those constituted of pieces (3) prefabricated in concrete reinforced with a metal structure. The concrete pieces (3) are provided with anchoring means and recesses, the elements constituting the female elements (4) having openings (5), whereas the male elements (6) have projections (7) for the incorporation inside the openings (5), the pieces (3) having female elements situated on their sides or flanks, where the projections (7) projecting from the pieces (3) are introduced. The arrangement has as elements constituting the double sloping gable roof, pieces (8) connected to rectangular plan pieces (12), likewise manufactured in concrete, which are connected to each other through a threaded stud (10), on which a butterfly nut (11) or the like is coupled through perforations (13) existing in the pieces (8).

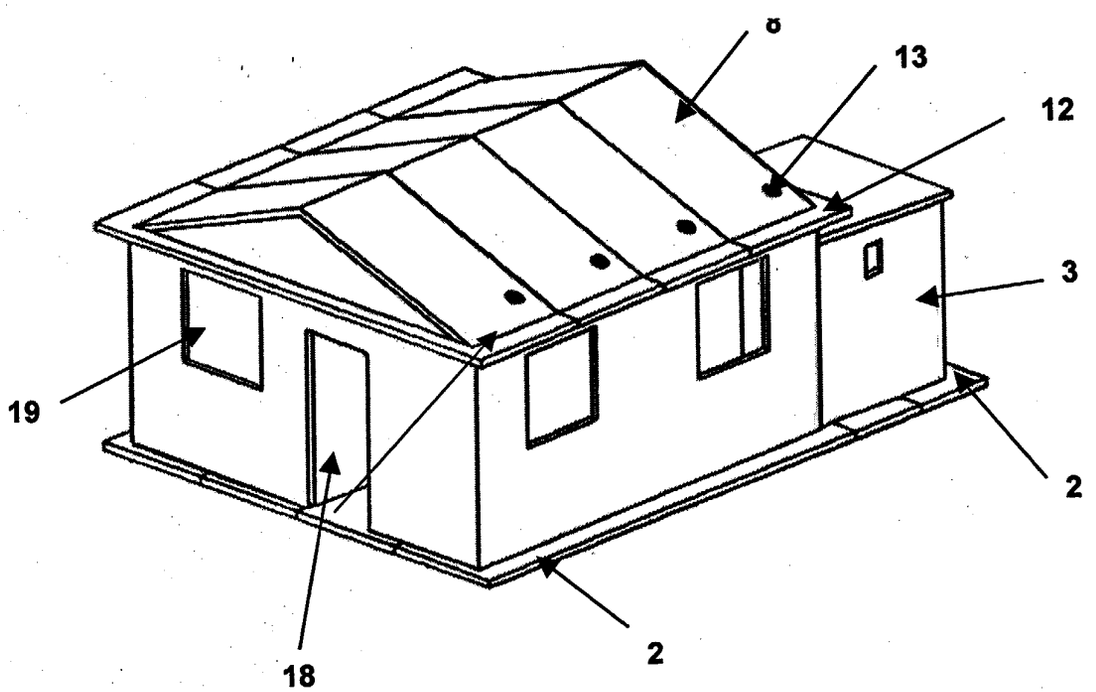


FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention has its application within the industry dedicated to the manufacture and assembly of prefabricated elements for the construction of prefabricated buildings.

[0002] More specifically, the present invention refers to an arrangement for the construction of prefabricated buildings, the purpose of which lies in allowing the formation of different types of constructions, including duly compartmentalized dwellings, warehouses or the like, with the incorporation of bathrooms, balconies and the like, from the incorporation of pieces constituting the floor formed by suitably aligned and leveled slabs on which the elements constituting the external walls, internal partition walls and other vertical support elements are situated, being aided to that end on one hand by a quick connection which allows for the assembly of houses from the prefabricated elements in a quick, reliable, and versatile manner, and being able to be carried out, and on the other hand, with pieces constituting the roof having a double sloping in the external area, assembled subsequent to the assembly of the base construction.

BACKGROUND OF THE INVENTION

[0003] Currently, the assembly of prefabricated constructions is carried out by means of a simple connection of the constituent elements with different glues, without any reliable connecting device, or using complex devices based on nuts and bolts, flat bars, drums or other elements obliging the use of special tools.

[0004] In the same manner, the current assembly systems of the prefabricated elements constituting the roof of the prefabricated constructions, specifically in gable-type roofs, pose drawbacks in their positioning and in the connection itself.

[0005] For the purpose of facilitating the construction of multipurpose buildings, it would be desirable to have an arrangement which allowed for the construction of buildings in a simplified manner from the pieces situated on the previously levelled ground surface, acting as a construction floor, on which pieces the appropriate elements constituting the external and internal partition walls would be situated, with or without the addition of projecting bodies constituting restrooms or bathrooms.

[0006] Therefore, the necessity of minimizing said drawbacks has been detected, proposing a quick, reliable and versatile connecting system among prefabricated elements of different measurements, which in turn provides the accurate positioning among them, achieving a greater strength in the connection, and simplifying the assembly operation, in addition to the use of prefabricated pieces constituting the gable roof in a single piece, as a replacement of two flat pieces, having means for directly connecting them to the slabs constituting the construction.

[0007] This objective is achieved by means of the invention as it is defined in claim 1; preferred embodiments of the invention are defined in the dependant claims.

DESCRIPTION OF THE INVENTION

[0008] The present invention refers to an arrangement for the improved construction of buildings, of those constituted of pieces prefabricated in concrete reinforced with a metal structure constituting external walls and internal partition walls, with openings constituting windows and openings constituting doors, characterized in that the concrete pieces are provided with anchoring means and recesses, the elements constituting the female piece having openings, whereas the male elements have projections for the incorporation of said openings inside, the pieces having female elements situated on their sides or on their flanks, where the projections projecting from the pieces are introduced. On the other hand, the arrangement for the construction of buildings proposed by the present invention and uses as concrete pieces, of rectangular plan and of parallelepiped shape, adjacently situated on the leveled ground surface, having as elements constituting the double sloping gable roof pieces connected to rectangular plan pieces, likewise manufactured in concrete, which are connected to each other through a threaded stud, in which a butterfly nut or the like is coupled through perforations existing in the pieces.

[0009] The construction of prefabricated buildings of different shapes and sizes is thus achieved in a strong and safe manner, reducing the assembly time.

[0010] The male elements have prolongations in their own plane, whereas the openings are situated on the structure of the building. Specifically, the recesses are arranged on the sides and flanks of the concrete pieces.

[0011] The versatile assembly of two pieces which are either parallelly or perpendicularly placed is thus achieved, different types of buildings for diverse uses being able to be constructed.

[0012] For the connecting of the constituent pieces, an adhesive is used in the connection areas and along the entire length of the joints.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] A series of drawings helping to better understand the invention and especially related with embodiments of said invention shown as illustrative and non-limiting examples thereof, are very briefly described below.

Figure 1 shows a perspective view of a construction obtained by means of the arrangement for the improved construction of buildings object of the present invention.

Figure 2 shows a perspective view of the anchoring means between concrete pieces.

Figure 3 shows a perspective view of two pieces with the anchoring means arranged for a perpendicular connection.

Figure 4 shows a perspective view of two pieces with the anchoring means arranged for longitudinal connections.

Figure 5 shows a perspective view of one of the pieces constituting the roof.

Figure 6 shows a perspective view of the anchoring element of the piece shown in Figure 5.

Figure 7 shows a perspective view of a concrete piece provided with connectors.

Figure 8 shows a view of a connector for fixed connections during the setting.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

[0014] In view of these Figures, it can be observed how the construction (1) prefabricated with a quick connection is constituted of pieces (3), preferably of concrete, reinforced with a metal mesh-type structure with different sizes and shapes, generally rectangular, trapezoidal or triangular which, once connected, form the construction (1) and have displacement elements (not shown), formed by a concave recess on their surface, from the center of which a spherical body projects, forming the anchor for the displacement with the suitable tool.

[0015] More specifically, the arrangement for the improved construction of buildings object of the invention is constituted of parallelepipedic-shaped and rectangular plan pieces (2), manufactured in concrete, which are situated duly adjacent and aligned on the previously leveled ground surface, forming the supporting floor for the body of the construction.

[0016] Obviously, the number of pieces (2) to be incorporated as floor will be according to the dimensions of the construction to be carried out, a greater number of these pieces (2) constituting the floor being able to be incorporated in order to obtain areas constituting balconies, or for the incorporation of projections of the building itself in which washrooms, restrooms or bathrooms will be installed.

[0017] As seen in Figure 1, once the pieces constituting the floor are situated, the pieces (3) constituting the external walls of the construction with the appropriate openings for the incorporation of the door frames (18) and window frames (19) will be gradually incorporated, and once the vertical pieces (3) are situated, the divisional partition walls (not shown) of the rooms to be formed inside will be situated in the interior.

[0018] Recesses and frames for doors and windows are arranged in the suitable areas of the pieces (3). Likewise, by arranging the necessary elements, the house can be provided with a double covering forming a chamber above the ceiling. Each piece (3) has male elements (6) and female elements (4) for their connection, perimetrically arranged in a suitable position in order to fit with each other in different pieces (3). The female elements (4) are constituted of a hollow, preferably metal, prismatic body of a square base, having an opening (5) occupying the lower half of one of its side faces. The male elements (6) are constituted of an also preferably metal sheet (14) from which a projection (7) perpendicularly projects, specifically a rod bent like a hook, which can be fitted to the female element (4) at the opening (5) the female element has. Both elements (4, 6) are inserted in the suitable areas of the pieces (3) before the setting. The male elements (6) are always arranged on the edge of the piece (3), the hook extending in its own plane, whereas the female elements (4) are arranged such that the opening (5) is on the same edge, as seen in Figure 4, or on the side surface of the piece (3), as seen in Figure 3, which allows for the assembly of two pieces in a longitudinal or perpendicular arrangement, respectively.

[0019] Once the perimetral and internal construction is completed, pieces (8) with slopes on their ends will be situated on the upper portion, which, by being adjacently situated, will form the double sloping gable roof of the construction.

[0020] The upper pieces (8), connected to rectangular plan pieces (12) on which the projection constituting the double sloping is situated, are connected by a connection link formed by a metal piece constituting a projecting threaded stud (10), which is connected to the piece (8) with the collaboration of a butterfly nut (11), which is coupled on the perimetral thread of the projecting screw rod (10), the introduction of the butterfly nut or similar element being carried out through a perforation (13) in the area with the double sloping of the piece (8).

[0021] Subsequently, the upper area can be covered with roofing tiles, slates or any other element considered appropriate.

[0022] All the connections are completed with a suitable glue filling in the joints in their entire length. Obviously, the joints will be sealed by the means which are considered most appropriate, using, for example, the material used for the connecting of the pieces constituting the partition walls and walls, achieving the hermetic closure of the connection of the upper pieces constituting the roof.

[0023] For small-size houses (16), such as that shown in Figure 1, which can be transported completely assembled, a series of connectors (15), shown in Figures 7 and 8, is used for the connections, perimetrically arranged on the pieces (3), assuring the connecting during the setting. These houses can be provided with a floor forming a whole with the house.

[0024] In cabinet-type houses for an electric meter, a wide base can be provided in order to situate it at a suitable height.

Claims

1. An arrangement for the improved construction of buildings (1), of those constituted of pieces (3) prefabricated in concrete, reinforced with a metal structure, constituting external walls and internal partition walls, with openings (5) constituting windows (19) and openings constituting doors (18), **characterized in that** the concrete pieces (3) are provided with anchoring means and recesses, the elements constituting female elements (4) having openings (5), whereas the male elements (6) have projections (7) for the incorporation inside the openings (5), the pieces (3) having female elements situated on their sides or flanks where the projections (7) projecting from the pieces (3) are introduced, and **in that** parallelepipedic-shaped and rectangular plan concrete pieces (2) are used as a floor, which pieces are adjacently situated on the leveled ground surface, having as elements constituting the double sloping gable roof, pieces (8) connected to rectangular plan piece (12), likewise manufactured in concrete, which are connected to each other through a threaded stud (10), on which a butterfly nut (11) or the like is coupled through perforations (13) existing in the pieces (8).

2. An arrangement for the improved construction of buildings according to claim 1, **characterized in that** the male elements have projections (7) in their own plane, whereas the openings (5) are situated on the structure of the building (1).

3. An arrangement for the improved construction of buildings according to claim 1, **characterized in that** for the connecting of the constituent pieces (3), an adhesive is used in the connection areas and along the entire length of the joints.

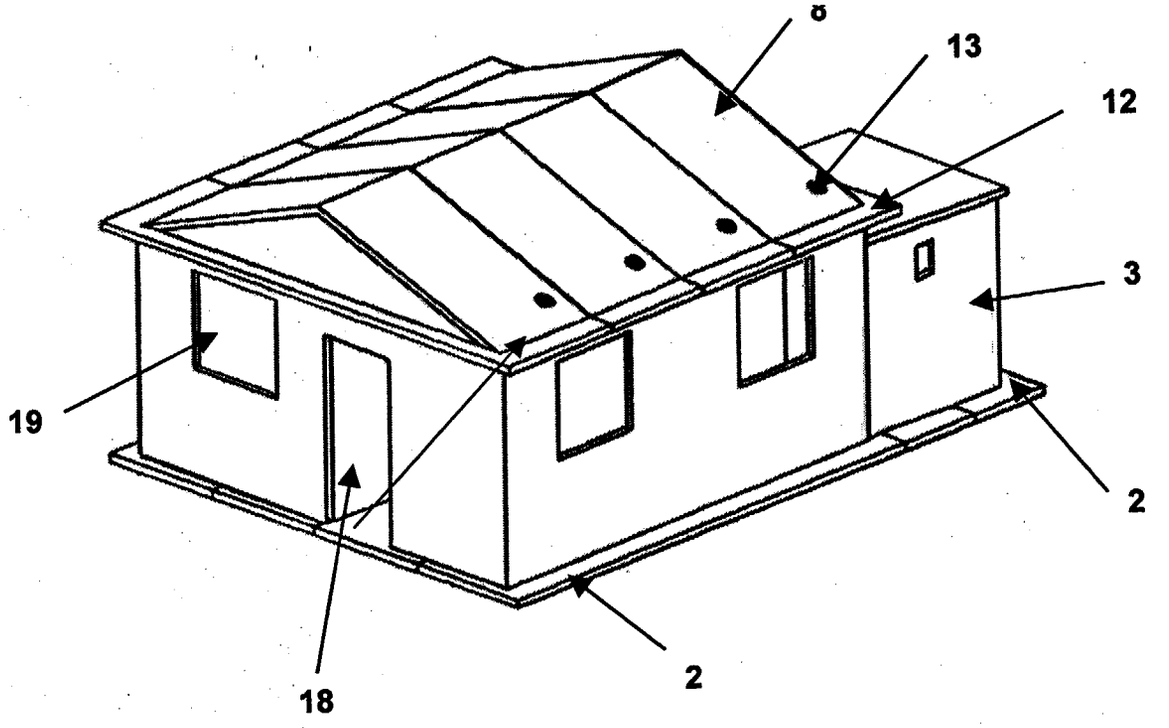


FIG. 1

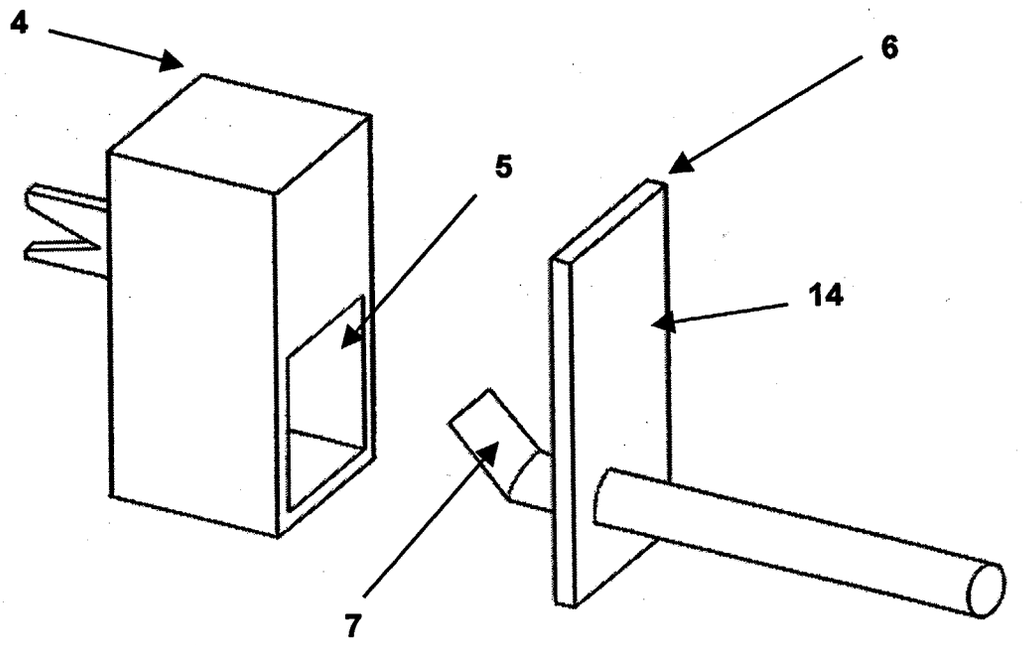


FIG. 2

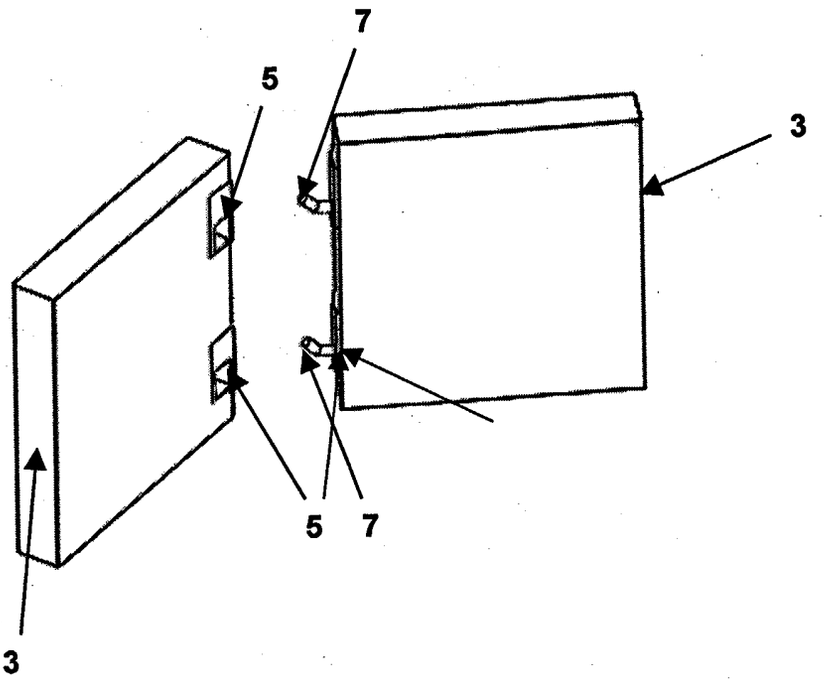


FIG. 3

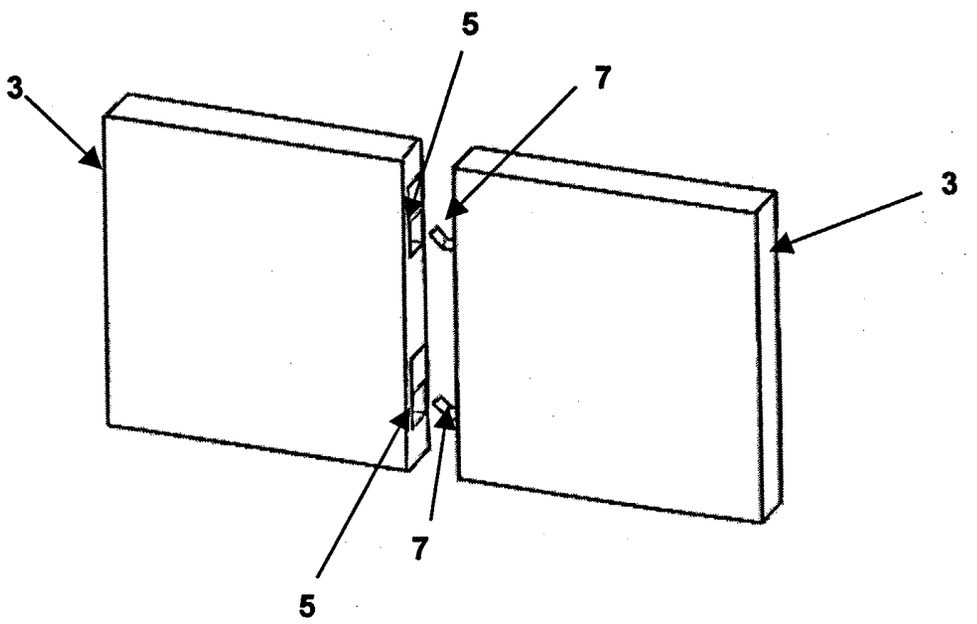


FIG. 4

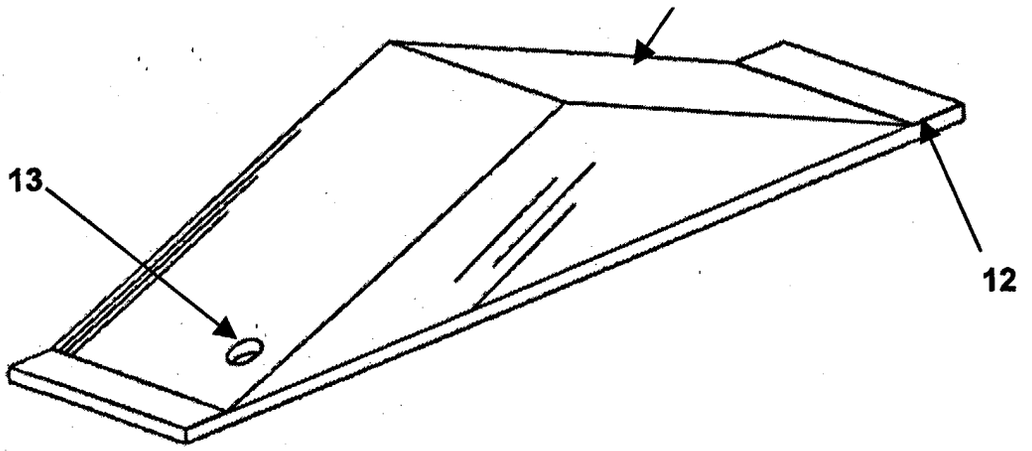


FIG. 5

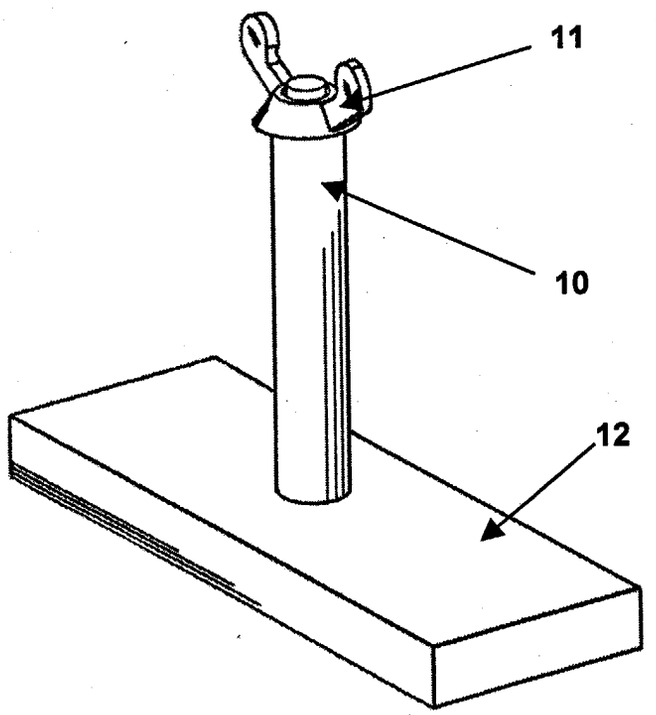


FIG. 6

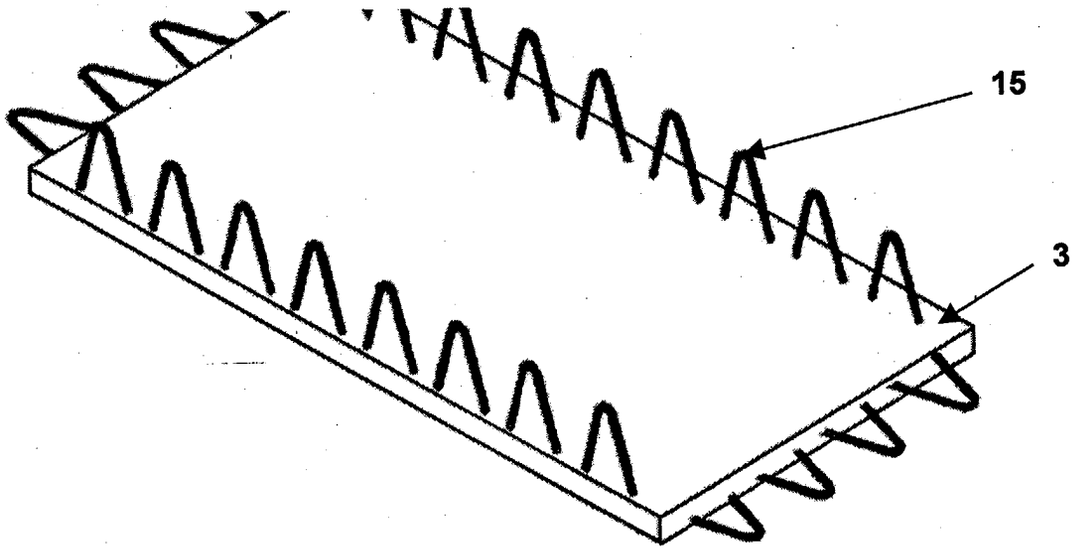


FIG. 7

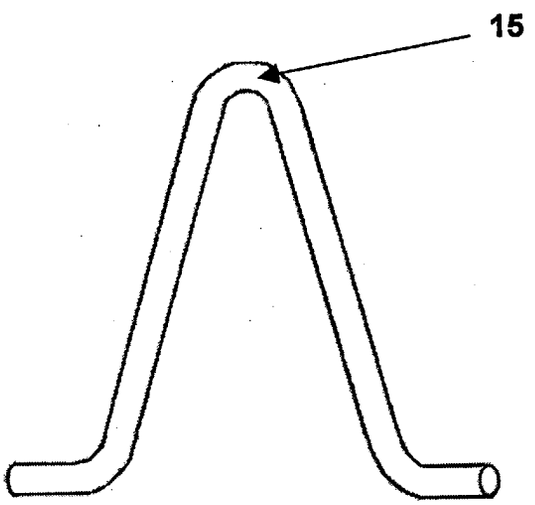


FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 04 38 0152

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)
Y	WO 99/42671 A (GAROFOLI FERNANDO ; GAROFOLI SPA (IT)) 26 August 1999 (1999-08-26) * page 2, line 8 - page 3, line 13; figures 4,5 *	1-3	E04B1/04 E04B1/61
Y	US 5 487 241 A (GORRELL JAMES E ET AL) 30 January 1996 (1996-01-30) * claim 1; figures 1,3 *	1-3	
A	US 6 367 215 B1 (LAING GORDON G) 9 April 2002 (2002-04-09) * column 6, lines 39-43; figure 13 *	3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E04B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	16 September 2004	Rosborough, J

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 38 0152

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16-09-2004

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