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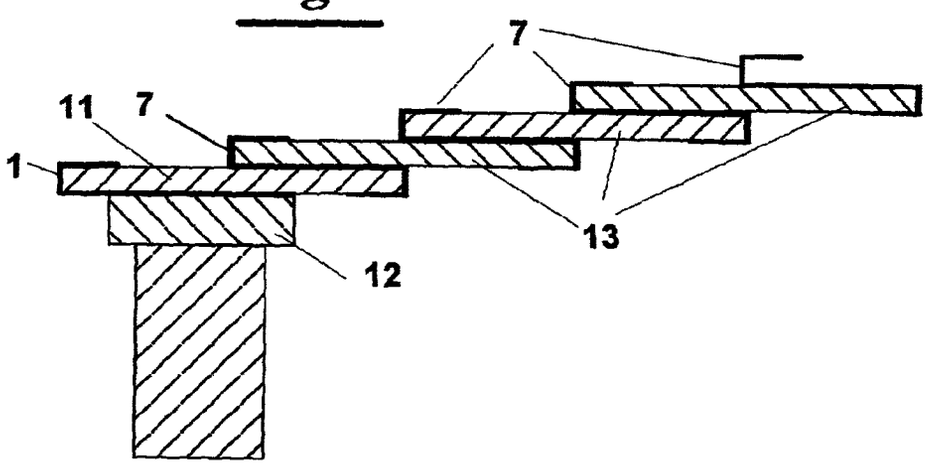
(54) Method for fixing tiles or the like to one another for covering a roof and gripping elements used to carry out this method

(57) The method comprises the steps of placing the tiles (11,13) on the roof (12) surface and overlapping the upper tiles on the lower ones; fixing the upper tiles to the lower tiles by a gripping element which has a sheet shape (1,7) and at least a C folded end. The gripping element may be S shaped, with two C folded ends in opposite planes, a lower C gripping the lower edge of upper tiles (13), an upper C gripping the upper edge of lower tiles (13). Instead, the element (1) has only one C folded end to fix the tiles near the roof gutter, the remaining sheet portion being extended to stay under the tile (11) and to be fixed to the roof (12). The gripping elements may be formed by more than one C folded end, to assure a more stable tiles grip. Each element may be covered by an insulating film, such as a plastic film, to improve the resistance to corrosion.

Fig. 5



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Description

Field of the invention

[0001] The present invention relates to a method for fixing tiles to one another, for example plane and curved tiles or bent tiles, etc. used to cover a roof, in order to avoid accidental shifting thereof.

[0002] The present invention relates also to gripping elements used to carry out such a method.

Description of the prior art

[0003] A tile shifting, in the case of bent tiles or plane tiles, can cause damaging water infiltration in every house roof.

[0004] Tile shifting may be caused also by bad weather, such as by wind, rain or hail, and also by traffic vibrations, especially when the roof is sloping.

[0005] Two main roof covering systems are at present known: the (so-called) Marseillais tiles (inter-locking tiles), and the (so-called) Tuscan plane tiles along with bent tiles.

[0006] In the first system identical modular tiles are used, which, once laid on the roof, overlap one another and hold their position due to their own weight.

[0007] In the second system rectangular plane tiles, or plain roofing tiles, are used to cover the roof surface, and bent tiles are used to cover the longitudinal groove between two adjacent plane tiles, without which it would be impossible to avoid water infiltration.

[0008] In both systems, usually, only the first tile, which is in contact with the roof gutter, is fixed by cement. In fact the other plane tiles hold their position due to friction on the roof caused by their own weight, whereas the bent tiles are placed overlapping the tile located downstream and are held by the tile located upstream. Therefore the fixing of the roof is based fundamentally on the particular tiles arrangement and to the weight thereof.

[0009] Sometimes such fixing method is not sufficient to assure the roofing stability.

[0010] In such cases cement is used to fix also other plane and bent tiles but it may cause water infiltration, because cement porosity allows moisture transport.

Summary of the invention

[0011] Therefore, the need of a new method to fix tiles is felt which is easy and cheap to carry out and which assures the durability and safety of the roof.

[0012] It is, hence, an object of the present invention to provide a new method to fix tiles, for example bent tiles, plane tiles and the like used to cover a roof, that is easy and cheap to carry out and that assures the durability and safety of the roof covering.

[0013] It is another object of the present invention to provide gripping elements used to carry out such a method.

[0014] These and other objects are achieved by the method to fix tiles, according to the present invention, comprising the steps of:

- placing the tiles on the roof surface and overlapping upper tiles on the lower ones;
- fixing said upper tiles to said lower tiles by a gripping element which has a sheet shape and at least a C folded end that grips said tile edges.

[0015] Preferably, the gripping element is a sheet substantially S shaped element, i.e. with two C ends folded in opposite planes, a lower C end gripping the lower edge of upper tiles, and an upper C end gripping the upper edge of lower tiles.

[0016] In order to fix the tiles close to the roof gutter the sheet gripping element may have only a C folded end, the remaining sheet portion extending under the tile so that it has a longer support surface.

[0017] In particular, these two gripping element types are used in case of roofs having plane and bent tiles.

[0018] The single-folded end element grips the first bent tile near the roof gutter; the sheet portion of this element has an extended end, which can be placed under the tiles, so that screws, nails and the like can be used to keep it in position. In order to fix the bent tiles more steadily to one another, the C folded end may be formed by at least two parallel wings, linked by a central crosspiece, whereby said element has a Y shaped top plan view.

[0019] The second gripping element is used to link together all bent tiles except that near the roof gutter; said sheet element has two C ends folded in opposite planes, whereby it has a S shaped cross section. In order to fix the bent tiles more steadily to one another, each C folded end may be formed by at least two parallel wings, linked by a central crosspiece, whereby said element has a H shaped top plan view.

[0020] In particular, the H and Y shape prevents the' elements edge either from shifting laterally or from rising or from sliding, and allows to keep the bent tiles aligned horizontally.

[0021] The gripping element may be made of copper, to avoid wear damage, or of another corrosion resistant and foldable material, so that said element can be adapted to the tile shape. Each element may be also coated by an insulating film, such as a plastic film, in order to improve its resistance to corrosion.

Brief description of the drawings

[0022] Further features and the advantages of the method according to the present invention for fixing tiles to one another, for example plane and curved tiles, or bent tiles, used to cover a roof, will be made clearer with the following exemplifying description, but not limitative, of one of its embodiments with reference to the attached

drawings, wherein:

- figure 1 shows a perspective view of a head element used to carry out the method to fix tiles to one another, according to the present invention;
- figures 2A, 2B and 2C show, respectively, a top plan view, a front and a side view of the head element of figure 1;
- figure 3 shows a perspective view of a gripping element used to carry out the method to fix tiles, according to the present invention;
- figures 4A, 4B and 4C show, respectively, a top plan view, a front and a side view of the gripping element of figure 3;
- figure 5 shows a schematic view of the method to fix tiles, according to the present invention;
- figure 6 shows a perspective view of a first phase of the method to fix tiles, according to the present invention;
- figure 7 shows a perspective view of the use of the head fixing element of the method for fixing tiles, according to the present invention.

Description of a preferred embodiment

[0023] With reference to figures 1 and 2A-2C, according to a first embodiment of the present invention, an element for carrying out the method for fixing tiles is a head element 1 comprising a sheet 2 with a C folded end 3. The end 3 can fix and support a tile edge whereas the other end 4 is elongated and holds its position by screws, not shown, which are fastened to the roof.

[0024] In the preferred embodiment of figure 1, the C folded end of element 1 is formed by two wings 5 which extend from a connecting portion 6 to the straight portion 2. This way element 1 has a Y shaped top plan view (figure 2A).

[0025] With reference to figures 3 and 4A-4C, according to a second embodiment of the invention, a gripping element 7 comprises two C folded ends, 8 and 9, C folded in opposite planes, whereby it has a S shaped cross section (figure 4C). In this embodiment element 7 comprises two parallel S shaped sheets, 8a and 8b, joined by a central crosspiece 10, whereby said element has a H shaped top plan view (figure 4A).

[0026] The gripping method, as shown in figure 5, comprises the steps of:

- placing the head elements 1 under the first row of lower tiles 11, such element being glued, screwed or nailed to the roof 12;
- positioning and anchoring the lower edge of a first tile 11, for example a bent tile, by means of said head gripping element 1;
- engaging the gripping element 7 with the upper edge of said lower tile 11 so that it is possible to fix, in sequence, other tiles using identical elements 7.

[0027] Considering, for example, a roof with plane and bent tiles, figure 6 shows a perspective view of a first phase of the method for fixing tiles, according to the present invention. In this first phase the steps are provided of placing plane tiles 11 on the roof surface and positioning the head element 1 under the contact line 14 between two tiles 11 where a bent tile must be arranged to avoid water infiltration.

[0028] Figure 7 shows a perspective view of the next steps. The head element 1 has the task of anchoring and supporting a first bent tile 15, which is the first of his row. The wings 5 of element 1 can be folded to assure a better tiles gripping.

[0029] The gripping element 7 is used to link together all the other bent tiles 16. In fact, his down turned grips 8 anchor the upper edge of the lower tile, whereas the up turned grips 9 anchor the lower edge of the upper tile.

[0030] Once all the bent tiles have been placed together, only the grips 9 of elements 7 are visible.

[0031] The method is very easy to carry out and it does not require more time than a standard roof laying.

[0032] Elements 1 and 7 may be made cheaply and of a suitable material, such as galvanised sheet iron or copper sheet, advantageously coated by a protective plastic film.

[0033] The foregoing description of specific embodiments will so fully reveal the invention according to the conceptual point of view, so that others, by applying current knowledge, will be able to modify and/or adapt for various applications such embodiments without further research and without departing from the invention, and it is therefore to be understood that such adaptations and modifications will have to be considered as equivalent to the specific embodiments. The means and the materials to realise the different functions described herein could have a different nature without, for this reason, departing from the field of the invention. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Claims

1. Method to fix tiles, such as bent tiles, plane tiles and the like used to cover a roof, comprising the steps of:

   - arranging the plane tiles on the roof surface and overlapping upper tiles on the lower ones,

   characterised in that it comprises the further step of

   - fixing said upper tiles to said lower tiles by a gripping element which has a sheet portion and at least a C folded end that grips the edges of said tile edges.

2. Method to fix tiles, such as bent tiles, plane tiles and the like used to cover a roof, comprising the steps of:

   - arranging the plane tiles on the roof surface;
   - placing head elements under the first row of the lower tiles;
   - positioning and anchoring, by means of said anchorage head elements, the lower edge of a first tile, for example a bent tile;
   - arranging a gripping element on the upper edge of said tile so that it is possible to fix other tiles;
   - **characterised in that** it uses a laminar shape element which has at least a C folded end.

3. Method according to claim 1 or 2, wherein the other end of said element can be folded, in use, to assure a steadier gripping of the tiles, whereby said element has a S shaped cross section.

4. Element for fixing tiles, such as bent tiles, plane tiles and the like used to cover a roof, **characterised in that** it comprises a sheet having at least a C folded end, so that said end can anchor and support an edge of said tiles.

5. Element according to claim 4, wherein said sheet has two C folded ends in opposite planes, whereby it has a S shaped cross section.

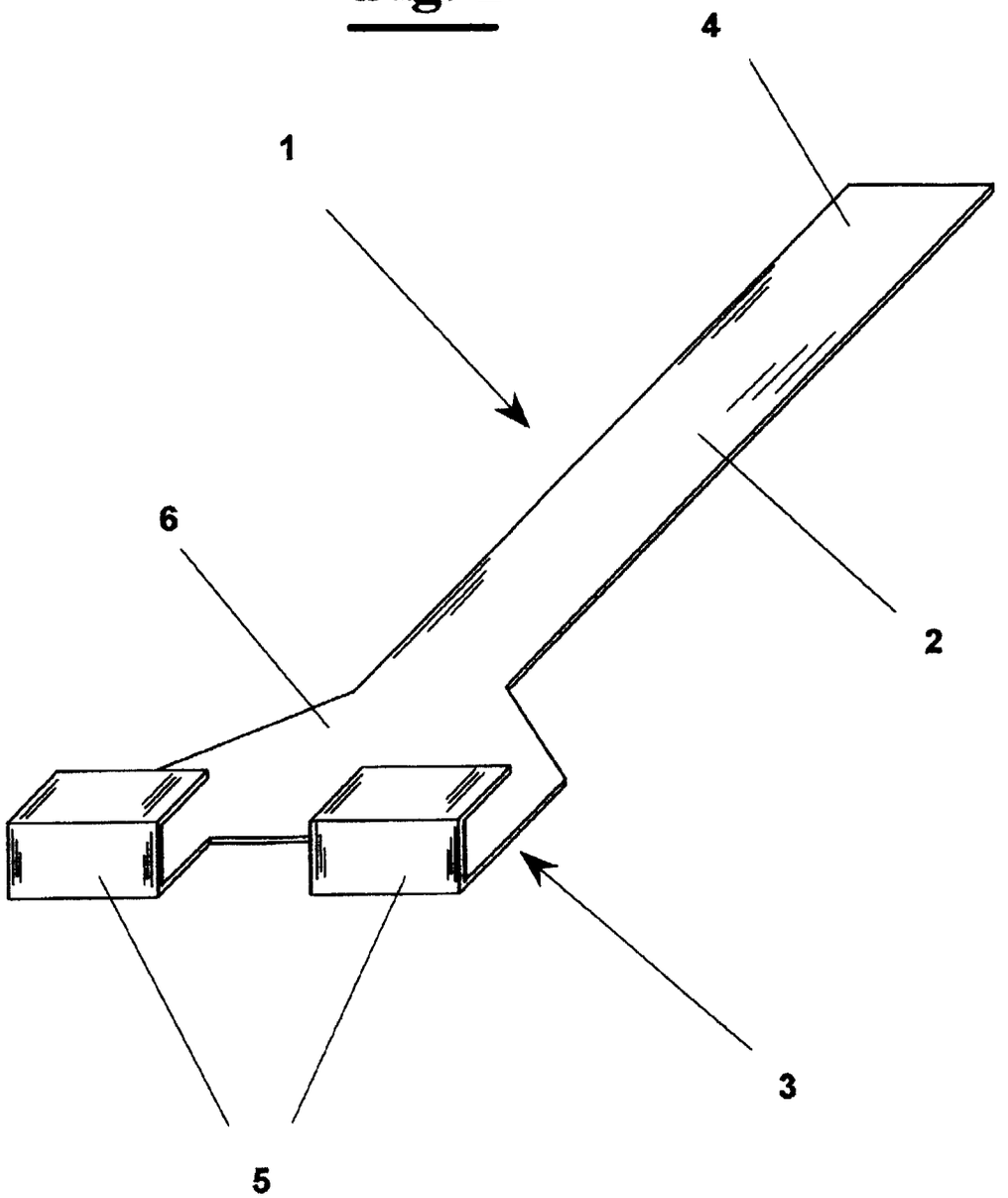
6. Element according to claim 4, wherein said C folded end is formed by two parallel wings, whereby said element has a Y shaped top plan view.

7. Element according to claim 4, wherein more parallel S shaped sheets joined by a central crosspiece are provided, whereby said element has a H shaped top plan view.

8. Element according to claim 4, characterised in that it is made with a corrosion resistant and foldable material.

9. Element according to claim 4, characterised in that it is coated a plastic film.

Fig. 1



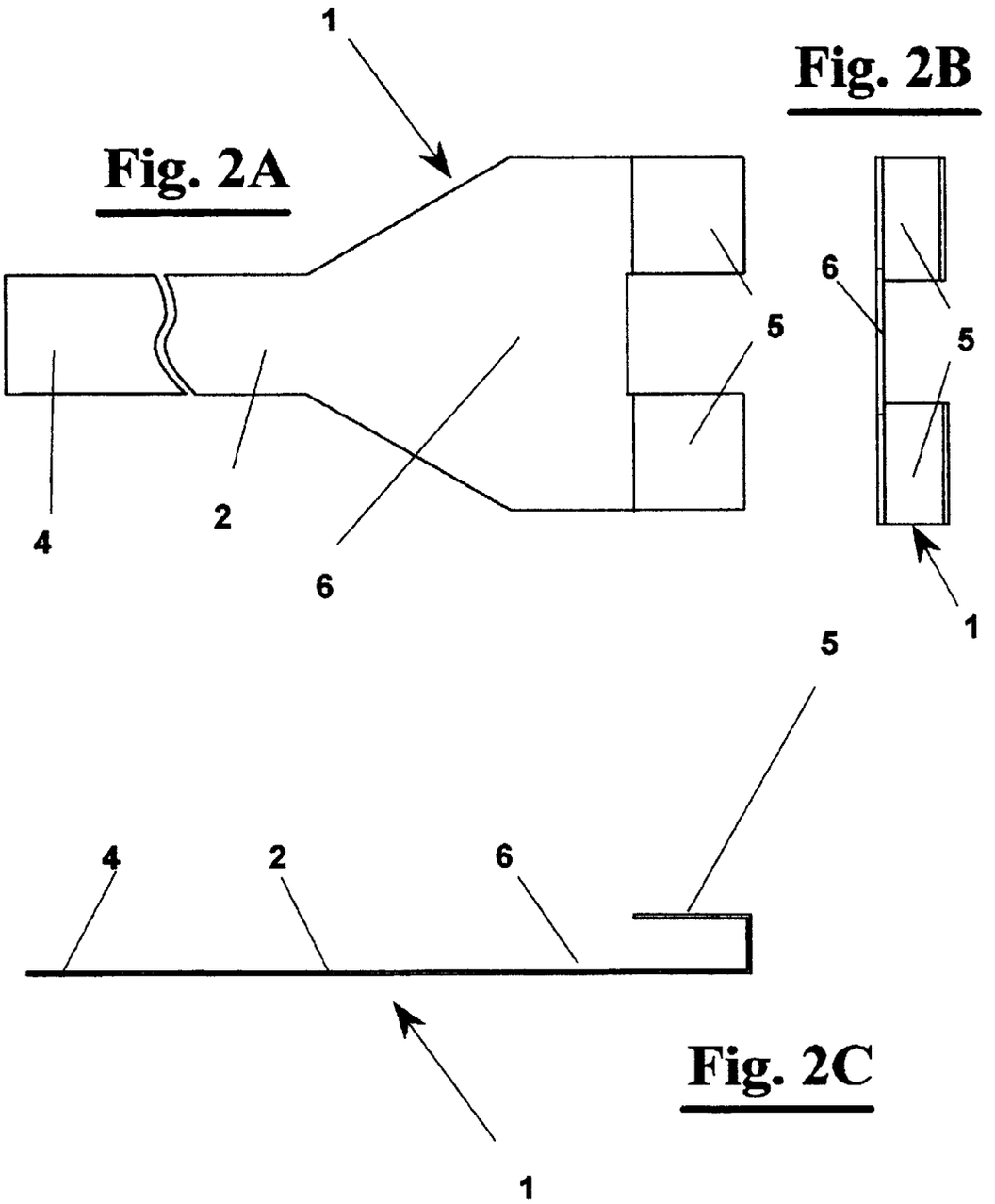


Fig. 2A

Fig. 2B

Fig. 2C

Fig. 3

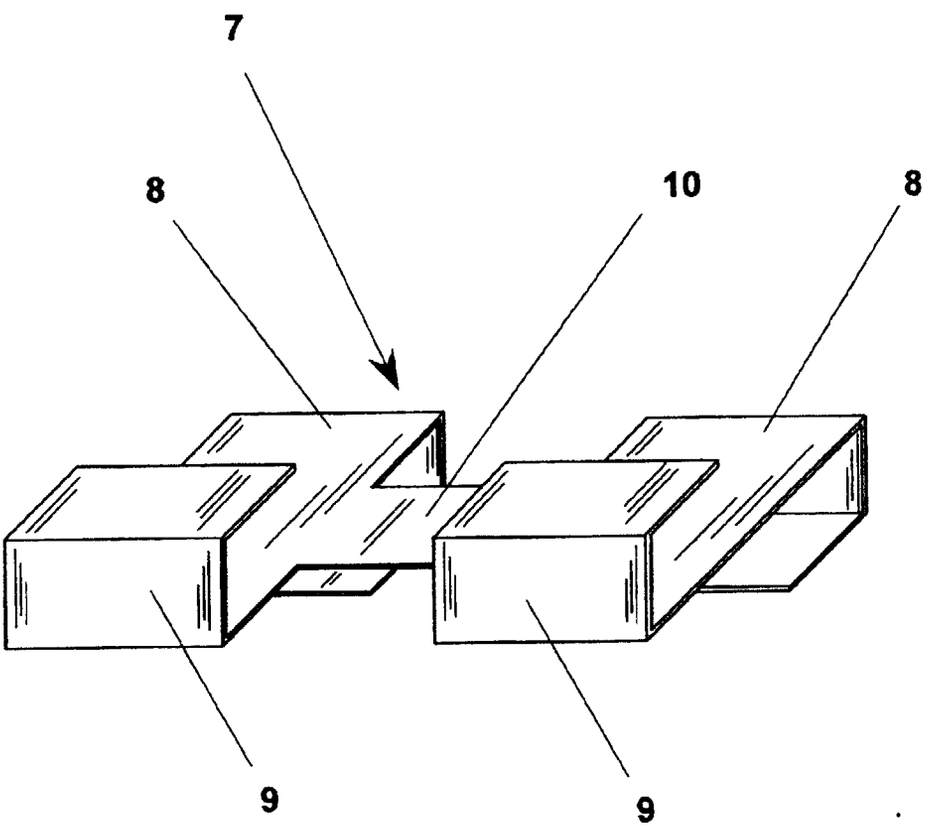


Fig. 4A

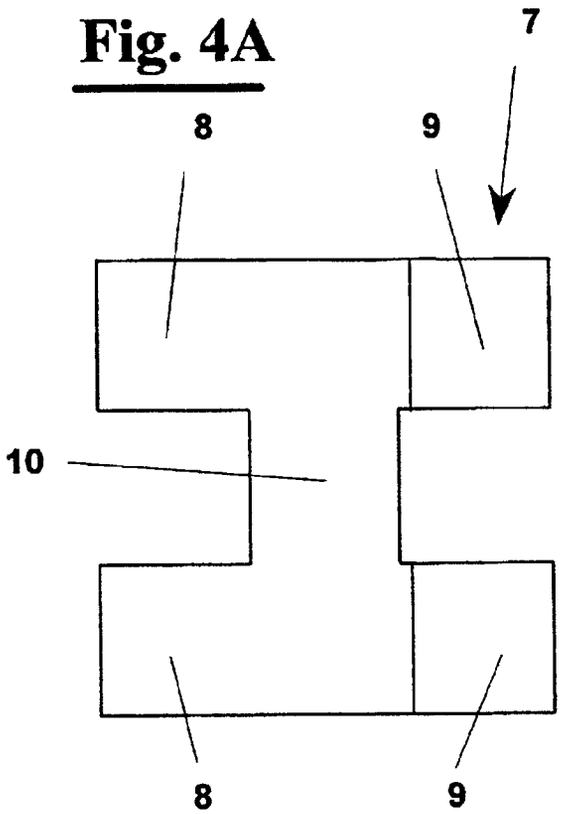


Fig. 4B

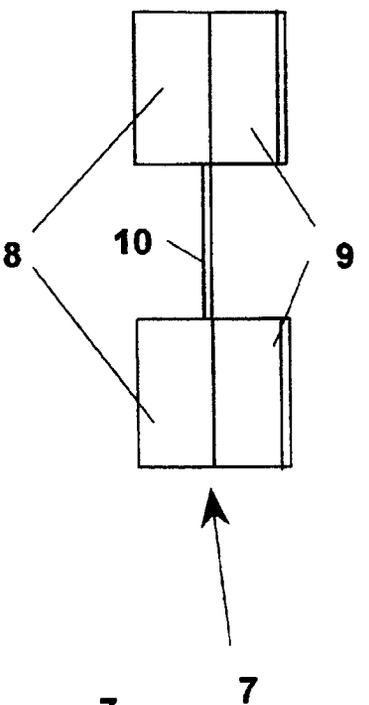


Fig. 4C

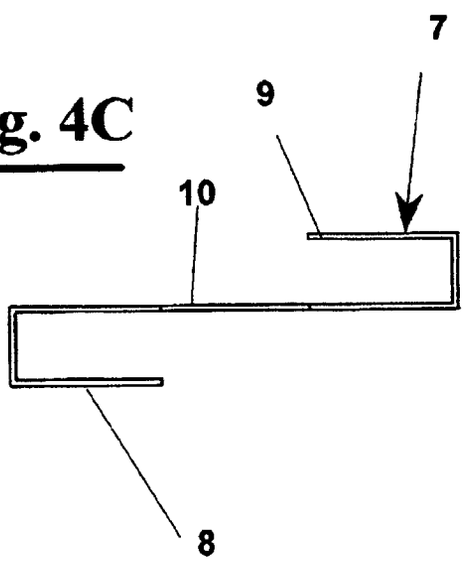


Fig. 5

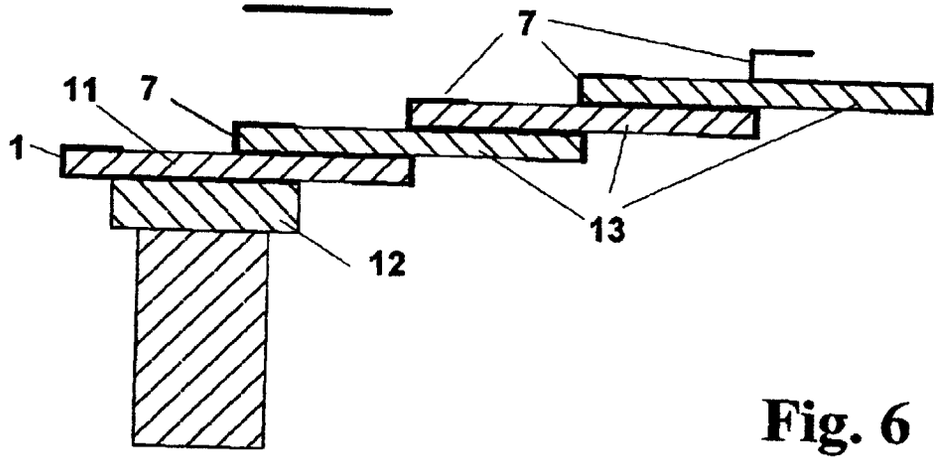


Fig. 6

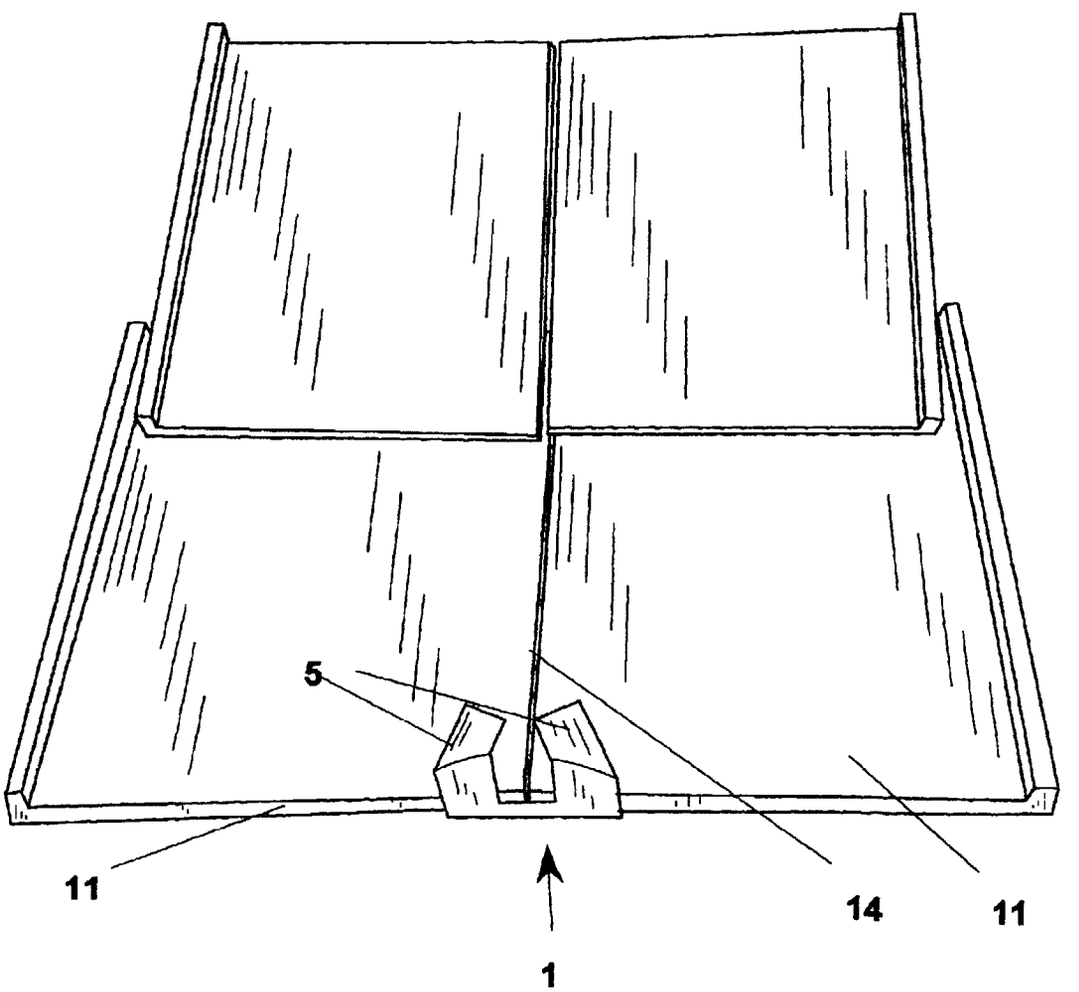
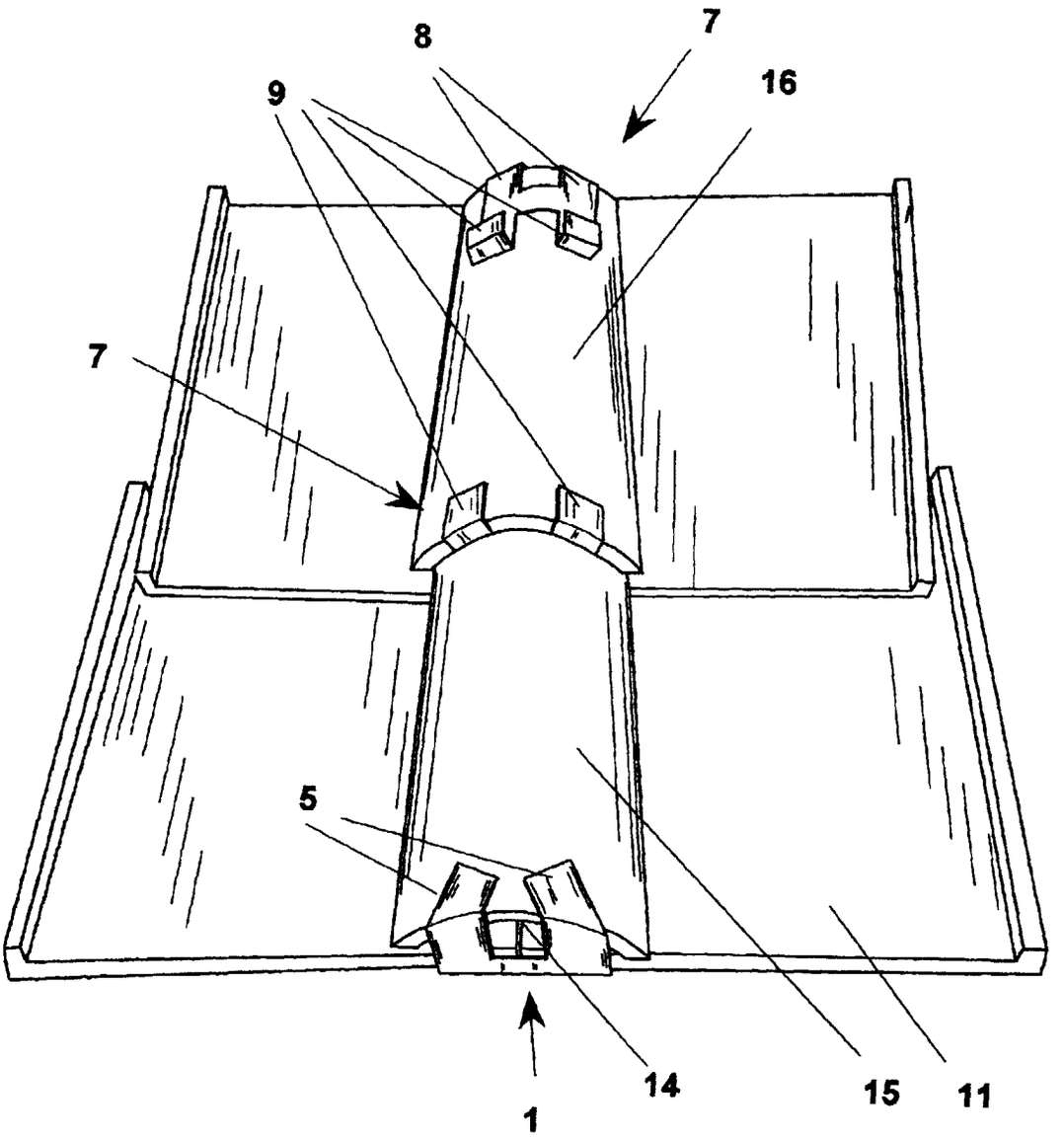


Fig. 7



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EUROPEAN SEARCH REPORT

Application Number
EP 98 11 2273

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y A	DE 39 41 216 A (FLECK) 21 June 1990 * column 3, last paragraph - column 6, paragraph 2; figures * ---	1-5,7,8 9 6	E04D1/34
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A	GB 110 965 A (TURNER BROTHERS) * the whole document * -----	1-3,6	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 July 1999	Righetti, R

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