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(54) **Device for aligning roof battens**

(57) A device for forming roofs comprising a plurality of tiles (9) of equal dimensions (F) resting on a plurality of first batten elements (4) fixed to a plurality of second batten elements (2), said first batten elements (4) being positioned at a predetermined distance (E) apart such as to enable the tiles (9) to be fixed to said first batten elements (4); said device comprises a plurality of spacer elements (1) of elongate form, to be fixed onto a visible face (2A) of at least two of said second batten elements

(2), said spacer element (1) having a length (L) greater than or equal to at least double said predetermined distance (E) between the first batten elements (4), each spacer element (1) comprising a plurality of elements (3; 6; 10) arranged to indicate the position in which said first batten elements (4) must be fixed to said second batten elements (2), said indicator elements (3, 6, 10) being all provided at an equal distance D apart, said equal distance (D) being equal to said predetermined distance (E) between the first batten elements (4).

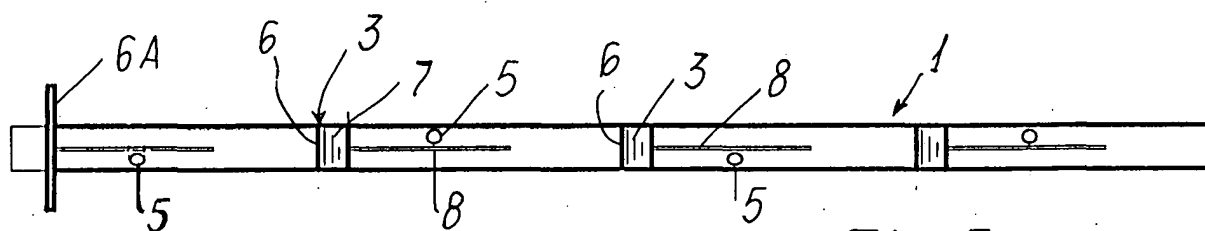


FIG. 5

Description

[0001] The present invention relates to a roof forming device in accordance with the precharacterising part of the main claim.

[0002] In the present context a tile means any known cover element in roofing.

[0003] In roofing, the battens on which the tiles rest and are retained are currently fixed to the under-battens after manually marking on the under-battens the position in which said battens are to be fixed, for example by nailing.

[0004] To manually mark the under-batten it is usual to use a rule or a template having a length equal to the predetermined distance required between one batten and the next to enable the tiles to rest thereon.

[0005] This marking of the under-battens is an operation which has to be carried out with extreme care and precision because an error in positioning even one batten negatively affects the positioning of the subsequent battens, which may have to be removed.

[0006] Marking the under-battens is hence an operation which requires a relatively long time and expert personnel, and hence considerably influences the overall cost and time involved in constructing a roof.

[0007] An object of the present invention is to provide a roof forming device which overcomes the aforesaid drawbacks and, in particular, enables the operations involved in fixing the battens to the under-battens to be accelerated and simplified.

[0008] A further object is to provide a device which is of low cost, is simple to construct, and is easy and quick to use.

[0009] These and further objects which will be apparent to an expert of the art are attained by a device in accordance with the characterising part of the main claim.

[0010] The present invention will be better understood from the accompanying drawings, which are provided by way of non-limiting example and in which:

Figures 1 and 2 are a schematic plan and side view respectively of a first embodiment of the invention; Figures 3 and 4 are a schematic plan and side view respectively of a second embodiment of the invention;

Figures 5 and 6 are a schematic plan and side view respectively of a third embodiment of the invention; Figures 7 and 8 are a schematic elevation and side view of a roof portion using a device according to the invention;

Figure 9 is a perspective view of a fourth embodiment of the invention;

Figure 10 shows a detail of the fourth embodiment of the invention with a control thread applied;

Figure 11 is a side elevation of the embodiment of the invention shown in Figure 9; and

Figure 12 is a side elevation of a fifth embodiment

of the invention.

[0011] With reference to Figures 1 and 2, in its first embodiment a device of the invention comprises a spacer element 1 of elongate form, to be fixed, for example nailed, to a visible face 2A of the roof under-battens 2.

[0012] The element 1 has a length L preferably equal to or slightly less than the length of the under-battens 2 to which it is fixed, and is formed in one piece to facilitate its fixing to the under-battens, as described hereinafter.

[0013] The element 1 is divided into alternate regions 1A, 1B having equal dimensions D but of different colour, in order to identify uniformly spaced-apart boundary positions 3 between one region and another of different colour.

[0014] The length D of the regions of different colour 1A, 1B, and consequently the distance between the boundary positions 3 between one region and another, is equal to the distance E between a face 4A of a batten 4 of the roof and the same face 4A of the next batten.

[0015] It should be noted that the distance E between the battens 4, equal to the distance D between the boundary positions 3, is such as to enable the particular type of tile 9 (Figure 8) chosen for the roof covering to be laid on the battens 4. Commercially available tiles have a length F (Figure 8) which differs one from another, consequently the distance E between the battens 4 and the distance D between the boundary positions 3 varies according to the type of tile selected. When the element 1 has been fixed to the under-batten 2, these boundary positions identify the position in which the batten 4 has to be fixed to the under-batten 2.

[0016] To facilitate the fixing of the element 1 to the under-battens 2, through holes 5 are provided for the passage of nails or screws.

[0017] As shown in the further embodiments of Figures 3-6, in correspondence with the positions 3 which identify the installation points of the battens 4, the element 1 can comprise walls 6 perpendicular to the element 1, to act as a contact wall for the battens, so further facilitating their installation.

[0018] The walls 6 can be stiffened by inclined walls 7 (Figures 5, 6), and the element 1 can comprise stiffening ribs 8.

[0019] The first wall 6A of the element 1 can have greater dimensions than the others, to identify the eaves of the roof.

[0020] The element 1 can be formed of any known flexible material, including ribbon-like material, able to be rolled up to facilitate transporting of the elements. The required elements for application to the under-battens 2 are cut from the roll on the basis of the length of the under-battens.

[0021] The element 1 can also be formed of rigid or partly flexible material, in which case as the element cannot be rolled up it is packaged in predefined lengths, for example of two or three metres, which are then cut to size to enable them to cover the under-battens.

[0022] According to the invention to form the roof the under-battens are firstly installed, after which the spacer elements 1 suitable for the type of tile chosen for the roof are fixed onto the upper face of the under-battens.

[0023] The operation of fixing the spacer elements 1 is quick and does not require expert personnel, it merely requiring the element 1 to be fixed to the upper face 2A of the under-batten 2 in correspondence with the eaves and as far as the roof ridge. When used in this manner the spacer element 1 must be of small thickness because the battens are fixed onto the spacer element, which remains installed. Consequently the material with which the spacer element is formed must be of low cost, and can be for example thin sheet metal or plastic.

[0024] The embodiments described hereinbefore are provided purely by way of example and numerous variants are possible, all falling within the same inventive concept. For example the spacer elements could have a length L greater than or equal to double the predetermined distance E between two battens. Alternatively, the positions 3 for fixing the battens could, instead of being in the form of graphic markings (Figures 1, 2) or resting walls (Figures 3, 6), be in the form of indicator elements 10 (Figure 9) removably connected to the spacer element 1. These removable indicator elements could for example be pegs 10 to be inserted into holes 11 provided in the body of the spacer element, or slides slidable in guides (not shown) provided in the element 1 and fixable thereto by bolts. In this manner, instead of having to provide a number of different spacer elements equal to the number of commercially available tiles of different lengths, a single spacer element could be provided presenting movable indicator elements fixable in different positions according to the tile dimensions.

[0025] Again according to the invention, the spacer element 1 need not be fixed to all the under-battens but only to some of them, and could be fixed not to the upper face 2A of the under-battens 2 but instead to their lateral faces 2B. In this variant, as the element 1 does not come into contact with the battens, it need not be flat and disposable.

[0026] Figures 9-11 show an embodiment of the device in which the spacer element 1 is U-shaped and provided with cut-away parts 11, and a stiffening rib 8 disposed laterally.

[0027] In detail, a first free (edge) portion 12 of the U-shaped element 1 is rested on a under-batten 2, while the opposite portion 13 is rested against the lateral wall 2a of the under-batten 2.

[0028] As shown in Figure 11, the element 1 presents elements 14 for indicating the position in which the battens have to be fixed to the under-battens 2; these elements 14 are in the form of cut-outs or cavities.

[0029] The device of Figure 11 is particularly suitable for fixing to the part 15 corresponding with the roof ridge (not shown); the battens 4 are consequently retained by those parts of the cut-outs 14 which lie lower when the device is applied to a roof.

[0030] The opposite end to that identified by the reference numeral 15 can be cut according to requirements.

[0031] Figure 10 shows a connected indicating thread 18 which provides coloured markings on the roof for positioning the tiles.

[0032] The thread 18 is fixed between two adjacent elements 1, after which it is plucked and allowed to elastically fly against the roof where it leaves a coloured mark.

[0033] The device of Figure 12 is particularly suitable for fixing to the part 16 lying in correspondence with the roof ridge (not shown), the battens 4 being consequently fixed to those sides of the cut-outs 14 which lie lower when the device is applied to a roof.

[0034] The end 16 in correspondence with the reference wall 16 can be cut according to requirements.

Claims

1. A device for forming roofs comprising a plurality of tiles (9) of equal dimensions (F) resting on a plurality of first batten elements (4) fixed to a plurality of second batten elements (2), said first batten elements (4) being positioned at a predetermined distance (E) apart such as to enable the tiles (9) to be fixed to said first batten elements (4), **characterised by** comprising a plurality of spacer elements (1) of elongate form, to be fixed onto a visible face (2A) of at least two of said second batten elements (2), said spacer element (1) having a length (L) greater than or equal to at least double said predetermined distance (E) between the first batten elements (4), each spacer element (1) comprising a plurality of elements (3; 6; 10) arranged to indicate the position in which said first batten elements (4) must be fixed to said second batten elements (2), said indicator elements (3, 6, 10) being all provided at an equal distance D apart, said equal distance (D) being equal to said predetermined distance (E) between the first batten elements (4).
2. A device as claimed in claim 1, **characterised in that** the spacer element (1) is of flat form.
3. A device as claimed in claim 2, **characterised in that** the spacer element (1) is fixed to that face (2A) of the second plurality of batten elements (2) to which the first plurality of batten elements (4) are also fixed.
4. A device as claimed in claim 1, **characterised in that** the spacer element (1) is in one piece or in several aligned pieces, and has a length substantially equal to or slightly less than that of the second batten elements (2).

5. A device as claimed in claim 1, **characterised in that** the indicator elements are graphic signs (3) provided on a visible face of the spacer element (1).
6. A device as claimed in claim 1, **characterised in that** the spacer element (1) presents, on its visible face, regions (1A, 1B) in series having different colours and a length (D) equal to the predetermined distance (E) between the first batten elements (4).
7. A device as claimed in claim 1, **characterised in that** the indicator elements are contact walls (6, 7) for a face of the first batten elements (4), and extend from the flat body of the spacer element (1).
8. A device as claimed in claim 1, **characterised in that** the indicator elements (10) are removably connected to the body of the spacer element (1) so that the distance between said indicator elements can be varied and the spacer element be adapted to tiles having different lengths.
9. A device as claimed in claim 1, **characterised in that** the spacer element (1) is flexible.
10. A device as claimed in claim 1, **characterised in that** the spacer element (1') can be rolled up.
11. A device as claimed in claim 1, **characterised in that** the spacer element (1) comprises stiffening ribs (8).
12. A device as claimed in one or more of the preceding claims, **characterised in that** said spacer element (1) is of U-shape and comprises at least one stiffening rib (8) disposed laterally.
13. A device as claimed in one or more of the preceding claims, **characterised in that** a first free portion (12) of said U-shaped element (1) is made to rest against a under-batten (2), an opposite portion (13) being made to rest against said lateral wall of the under-batten (2).
14. A device as claimed in one or more of the preceding claims, **characterised in that** said elements for indicating the position in which the battens (4) must be fixed to the under-battens (2) comprise cut-outs or recesses (14).
15. A spacer element (1) for facilitating the installation of a plurality of first batten elements (4) of a roof, tiles (9) of equal dimensions (F) being fixed onto said first batten elements (4), said first batten elements (4) being fixed to a plurality of second batten elements (2) and being positioned at a predetermined distance (E) apart, such as to enable the tiles (9) to be fixed to said first batten elements (4), **characterised by** presenting the characteristics claimed in one of the preceding claims.
16. A method for forming roofs comprising a plurality of tiles (9) of equal dimensions (F) resting on a plurality of first batten elements (4) fixed to a plurality of second batten elements (2), said first batten elements (4) being all positioned at a predetermined equal distance (E) apart such as to enable the tiles (9) to be fixed to said first batten elements (4), **characterised by** fixing to at least two of the second batten elements (2) a spacer element (1) in accordance with one of the preceding claims, in order to simplify and accelerate the fixing of the first batten elements (4) to the second.
17. A method a claimed in claim 12, **characterised by** fixing the spacer elements (1) to that face (2A) of the second batten elements (2) on which the first batten elements (4) also rest.
18. A method a claimed in claim 12, **characterised in that** the spacer element (1) is fixed substantially along the entire length (L) of the second batten elements (2).

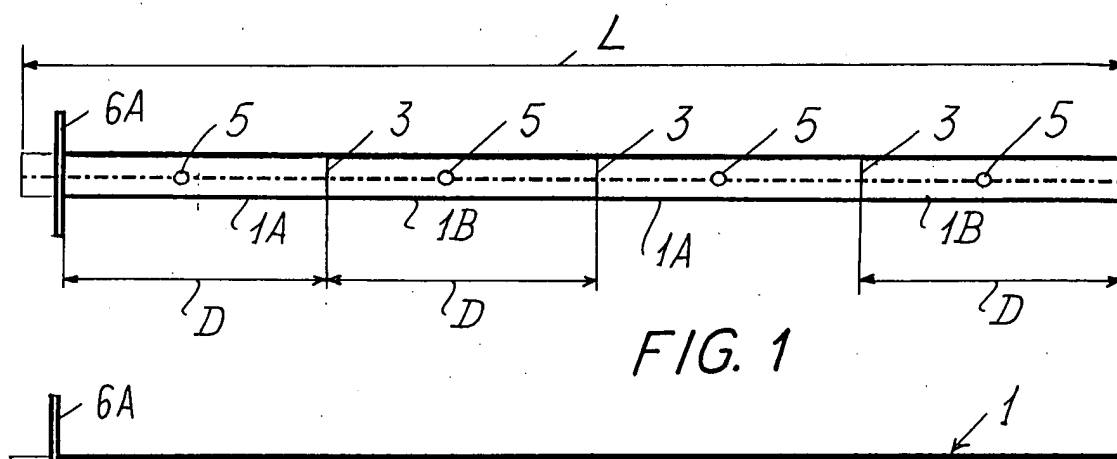


FIG. 2

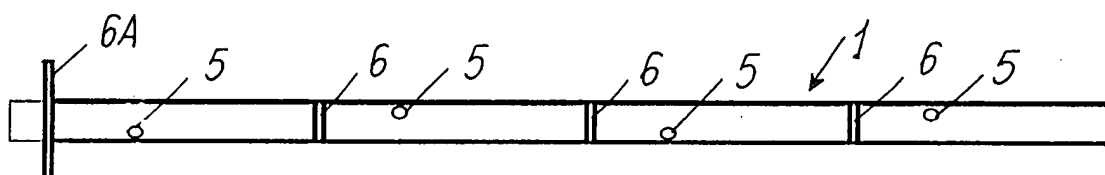


FIG. 3



FIG. 4

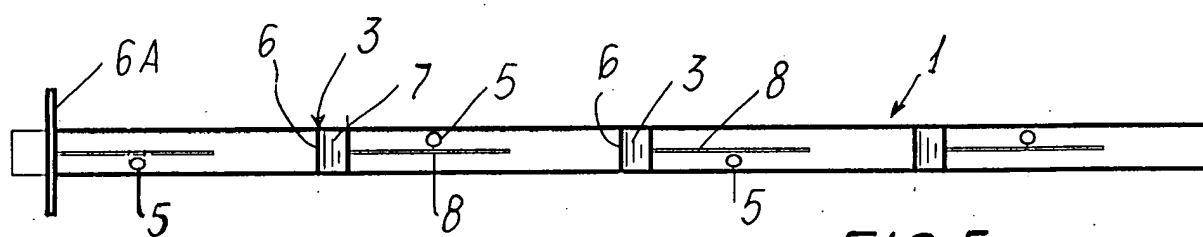


FIG. 5

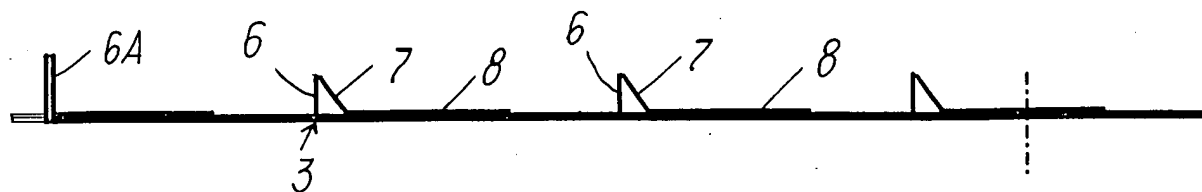


FIG. 6

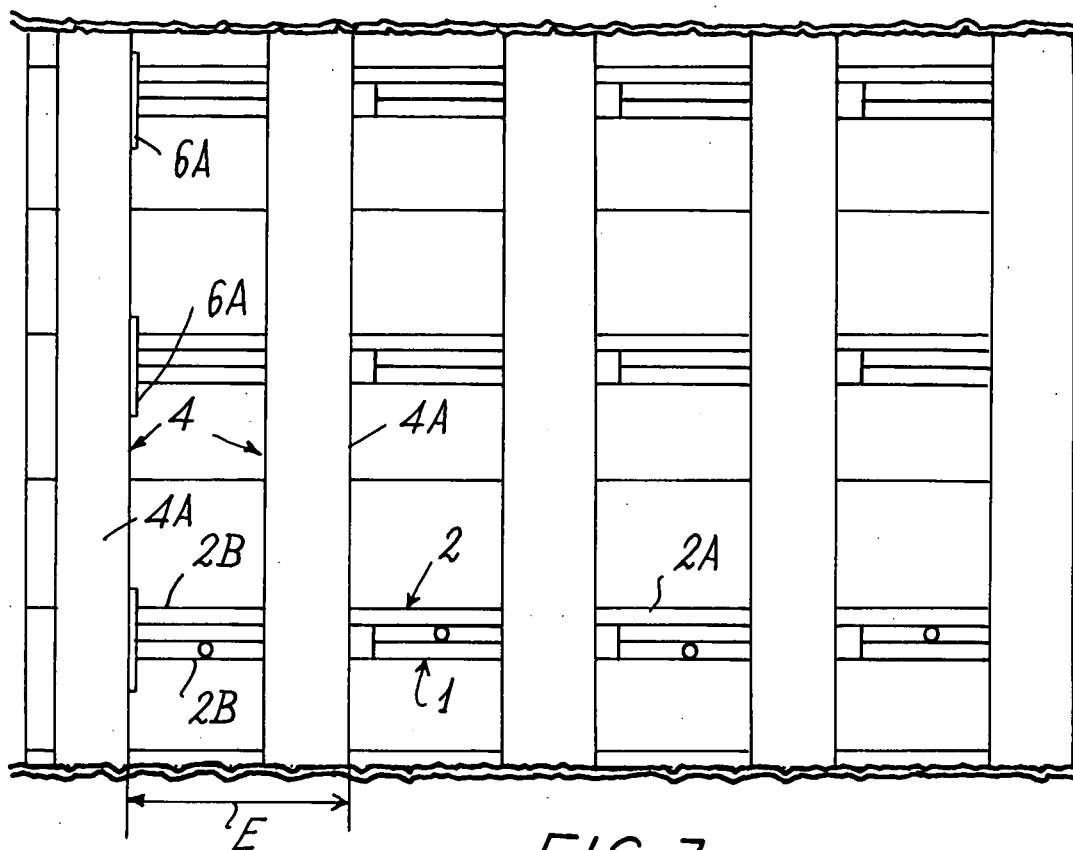


FIG. 7

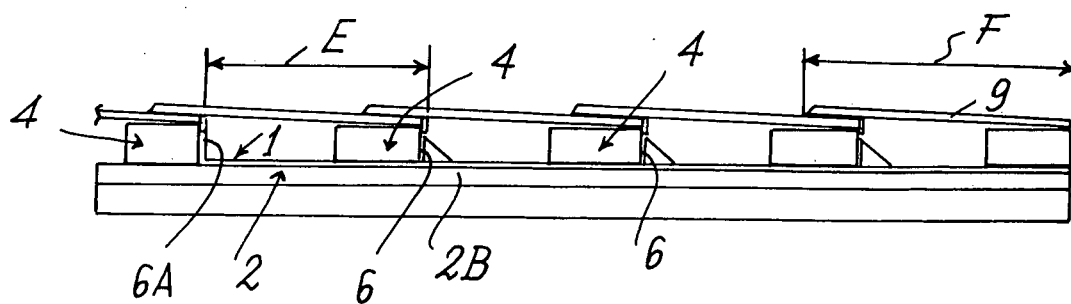


FIG. 8

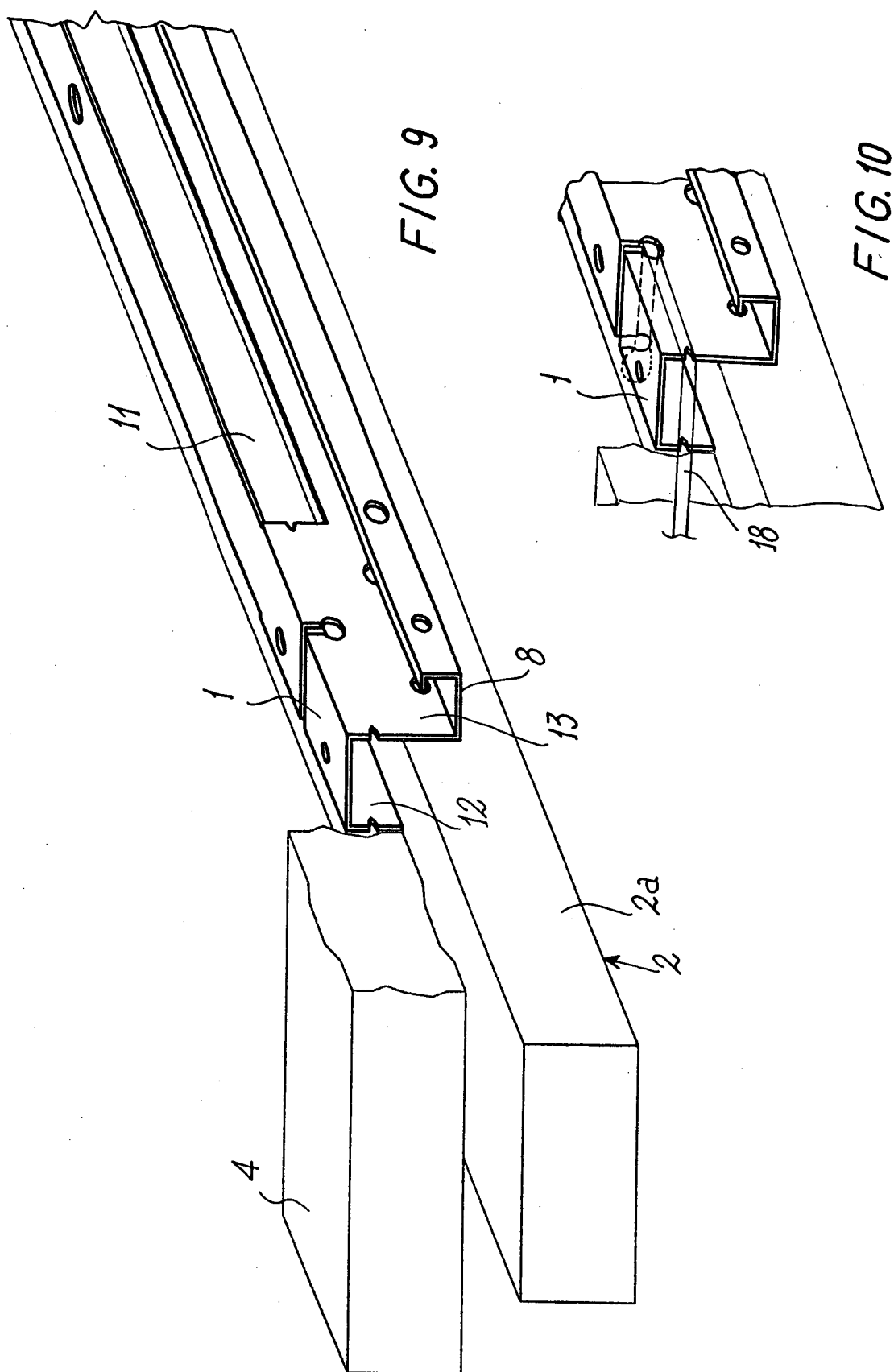




FIG. 11



FIG. 12



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EUROPEAN SEARCH REPORT

Application Number
EP 03 00 3377

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 June 2003	Examiner Demeester, J
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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