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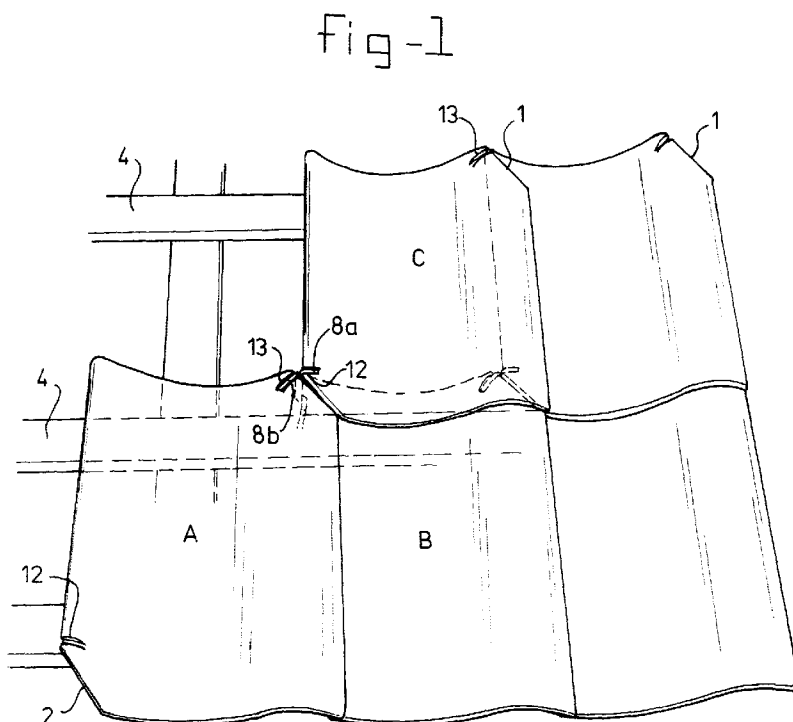
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(54) **Roofing tile without end and side interlock and pitched roof provided with a covering of roofing tiles of this kind**

(57) A pantile without end and side interlock has two bevelled corners (1, 2), which are situated diagonally opposite one another, a thickened section (6) on the underside in the region of the unbevelled top corner point of the tile, and notches (12 and 13) in the top side of the

tile, in the region of the two bevelled corners (1, 2). These notches are intended to accommodate bent-off parts (8a and 8b, respectively) of a tile hook which is provided with a shoulder (11) which extends perpendicular to and between two shank parts (7, 9).



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Description

In the first instance, the invention relates to a roofing tile without end and side interlock, in particular of the "old hollow pan tile" type, which tile has two bevelled corners, which are situated diagonally opposite one another.

Roofing tiles of this kind are generally known, and are referred to in Germany by the term "holländische Pfanne", in England by the term "pantile" and in France by the term "tuile flamande".

It is aimed to improve a tile of this kind in such a manner that, when using a tile hook which is essentially known per se (cf. Figure 5a of EP-B-0,687,337), the watertightness of the roof covering is improved and the roof covering acquires a pleasant, tight appearance.

According to the invention, the roofing tile referred to in the preamble is to this end characterized in that a notch is formed in the top side of the tile in the region of the two abovementioned bevelled corners, which notches are intended to accommodate a tile hook bend.

In order moreover to increase the resistance of a roof covering made of tiles of this kind against being blown off, the tile is preferably provided with a thickened section in the region of the unbevelled top corner point.

The invention also relates to a pitched roof provided with a covering of the abovementioned roofing tiles with notches and thickened section, which roofing tiles overlap one another in two directions, rest on tiling battens by means of support projections and are attached to tiling battens by means of tile hooks.

A pitched roof of this kind is characterized in that the tile hooks are provided with a first shank part, a second shank part extending in the same direction and a shoulder which extends essentially perpendicular to the two shank parts, between the said shank parts, in that the said first shank part has two bent-off parts, which respectively latch in a notch in the region of a bevelled corner at the bottom edge of a tile C and in a notch in the region of a bevelled corner at the top edge of a tile A, the bevelled corners at the bottom and top edge, respectively, of which tiles C and A essentially adjoin one another, in that the second shank part is provided with attachment means, by means of which the tile hook is attached to a tiling batten, and in that a thickened section rests against the shoulder of the said tile hook, which thickened section is integrally moulded on the underside of a tile B in the region of its top edge, the upper part of which tile B rests beneath the tile C, all this in such a manner that those parts of the said tiles C and A which adjoin one another at the oblique edges and that part of the said tile B which is provided with the thickened section are clamped together between the said tile hook shoulder and the said bent-off tile hook parts.

On the one hand, it is important that the hook-like bent-off parts of the tile hooks latch in notches in the top side of the tiles, so that the tiles do not come apart at those locations. On the other hand, the said thickened

section will cause the tiles to be clamped together as a result of the tile hooks which are essentially known per se.

The invention will be explained in more detail with reference to the figures, in which:

Figure 1 shows a perspective view of part of the roof covering according to the invention;

Figure 2 shows a perspective view of parts of the said three tiles which are attached by one single tile hook;

Figure 3 shows a view of the underside of a "pantile";

Figure 4 shows a perspective view of a tile hook used.

The roof covering shown in Figures 1 and 2 comprises curved tiles without end and side interlock. In the Netherlands, such tiles are known as "oude holle pan" [old hollow tile].

When viewed from above, each tile has a chamfer 1 and 2, respectively, in the top right and bottom left, and when seen from below (cf. Figure 2), each tile has a supporting projection 3 in the region of the top edge, by means of which projection the tile can rest on a tiling batten 4, and also a thickened section 6 at the top edge in the region of the unbevelled corner point.

The top section of each tile lies over a tiling batten 4 in such a manner that the supporting projection 3 is supported on the top edge 4a of the tiling batten. The tiles overlap one another in the direction of the pitch of the roof in such a manner that the bottom section of each tile lies on the top section of a subsequent tile. Moreover, the tiles overlap one another in the horizontal direction, in which case a straight edge part, which runs obliquely downwards, of a left-hand tile A always rests on a left-hand edge part, which runs obliquely upwards, of a right-hand tile B. It can be seen in Figures 1 and 2 that the chamfer 1 at the top right of a tile A engages on, or at least is situated very close to, a chamfer 2 of a tile C whose bottom edge rests on the top edge of a tile B. In each case, three tiles, A, B and C are joined together and also to the tiling batten 4 by means of a tile hook 5.

The tile hook 5 has a first shank part 7, with two parts 8a, 8b bent off in the form of a hook at the free end, a second shank part 9, which runs parallel to the first shank part and at the free end has an attachment part 10 with four projecting pins, and a shoulder 11, which is arranged between the two shank parts 7, 9 and extends perpendicular to the shank parts 7, 9.

Two notches are formed in the top side of each tile: a notch 12 in the region of the left-hand bottom edge of the chamfer 2 and a notch 13 in the region of the right-hand top edge of the chamfer 1.

Figure 2 shows how a tile hook 5 in each case joins together three tiles and a tiling batten 4. The hook-like bent-off section 8a rests in the notch 13 of roofing tile C, and the hook-like bent-off section 8b rests in the

notch 12 in roofing tile A, the thickened section 6 on the underside of tile C rests on the shoulder 11 of the tile hook 5, the distance between this shoulder 11 and the bent-off sections 8a and 8b being selected in such a manner that the tiles A, B and C are clamped together between the bent-off sections 8a, 8b and the shoulder 11. In this case, part of tile C and part of tile B, including the thickened section 6, are situated between the bent-off section 8a and the shoulder 11, and part of tile A and part of tile B, including the thickened section thereof, are situated between the bent-off section 8b and the shoulder 11.

The attachment part 10 of the second shank part 9 is driven into the top side 4a of the tiling batten 4 by means of its four points.

Two stacking projections 14, which are not important for the present invention, are also situated on the underside of each tile.

Due to the fact that the bent-off sections 8a, 8b of the tile hook 5 lie in the notches 13, 12 in the tiles C and A and do not protrude, there are no chinks and gaps, and the surface of the roof covering of the pitched roof is of pleasant and essentially tight appearance. Due to the fact that there are always three tiles clamped between the parts 8a, 8b and the shoulder 11, the resistance against being blown off is very high. The presence of the thickened section 6 is of essential importance for the clamping action.

In fact, the invention should be summarized, on the one hand, as a pantile which has been adapted by new inventive measures but otherwise is known per se, and, on the other hand, as a pitched roof, in which as a result of using tiles of this kind and special tile hooks, a strong connection between the tiles is achieved without unnecessary chinks. In fact, if the tiles are provided with the said notches 12, 13 but not with the thickened section 6, an important advantage is already achieved, namely that the tiles do not come apart at the location of the bent-off tile tile hooks, owing to the thickness of the said bent-off sections. The latter latch into the notches 12, 13 and do not protrude or scarcely protrude, at the top of the tiles. The strong connection is achieved as a result of the thickened sections 6 which rest against the shoulders 11. These thickened sections are not essential to the basic idea underlying the invention, but if they are used they do provide an advantage.

Claims

1. Roofing tile without end and side interlock, in particular of the "old hollow roofing tile" type, which tile has two bevelled corners (1, 2), which are situated diagonally opposite one another, characterized in that a notch (12 and 13, respectively) is formed in the top side of the tile in the region of the two above-mentioned bevelled corners (1, 2), which notches are intended to accommodate a tile hook bend (8a

and 8b, respectively).

2. Roofing tile according to Claim 1, characterized in that the tile is provided with a thickened section (6) in the region of the unbevelled top corner point.
3. Pitched roof provided with a covering of roofing tiles according to Claim 2, which roofing tiles overlap one another in two directions, rest on tiling battens (4) by means of support projections (3) and are attached to tiling battens (4) by means of tile hooks (5), characterized in that the tile hooks (5) are provided with a first shank part (7), a second shank part (9) extending in the same direction and a shoulder (11) which extends essentially perpendicular to the two shank parts, between the said shank parts, in that the said first shank part (7) has two bent-off parts (8a, 8b), which respectively latch in a notch (13) in the region of a bevelled corner (2) at the bottom edge of a tile (C) and in a notch (12) in the region of a bevelled corner (1) at the top edge of a tile (A), the bevelled corners (2, 1) at the bottom and top edge, respectively, of which tiles (A and C) essentially adjoin one another, in that the second shank part (9) is provided with attachment means (10), by means of which the tile hook (5) is attached to a tiling batten (4), and in that a thickened section (6) rests against the shoulder (11) of the said tile hook (5), which thickened section is integrally moulded on the underside of a tile (B) in the region of its top edge, the upper part of which tile (B) rests beneath a tile (C), all this in such a manner that those parts of the said tiles (C and A) which adjoin one another at the oblique edges (2) and (1) and that part of the said tile (B) which is provided with the thickened section (6) are clamped together between the said tile hook shoulder (11) and the said bent-off tile hook parts (8a, 8b).

fig-1

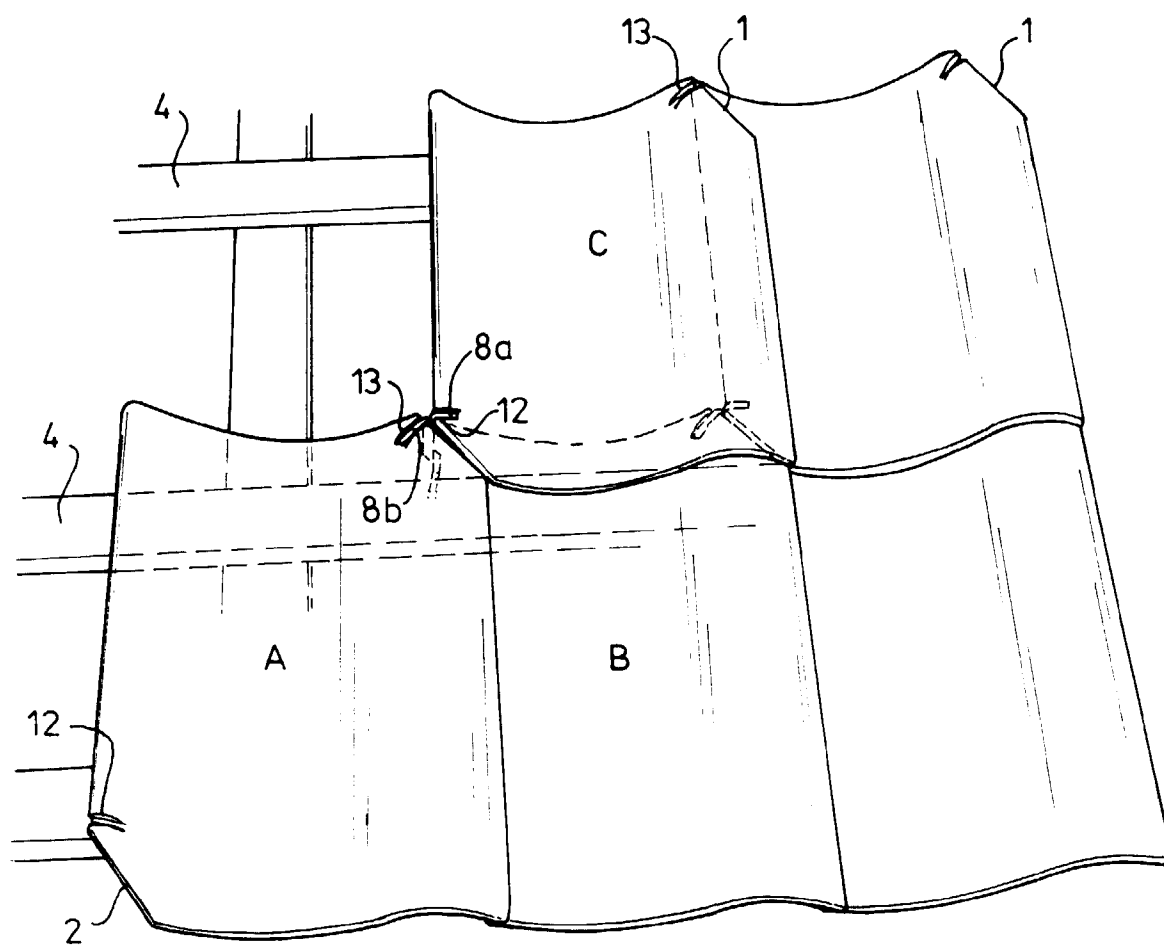


fig - 2

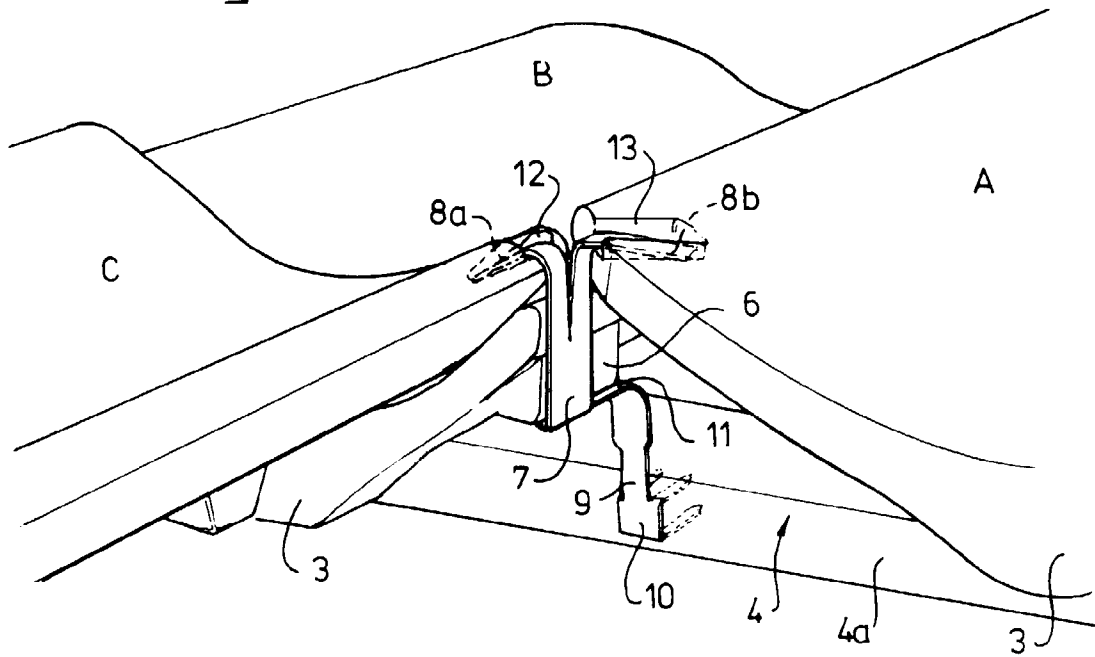


fig - 3

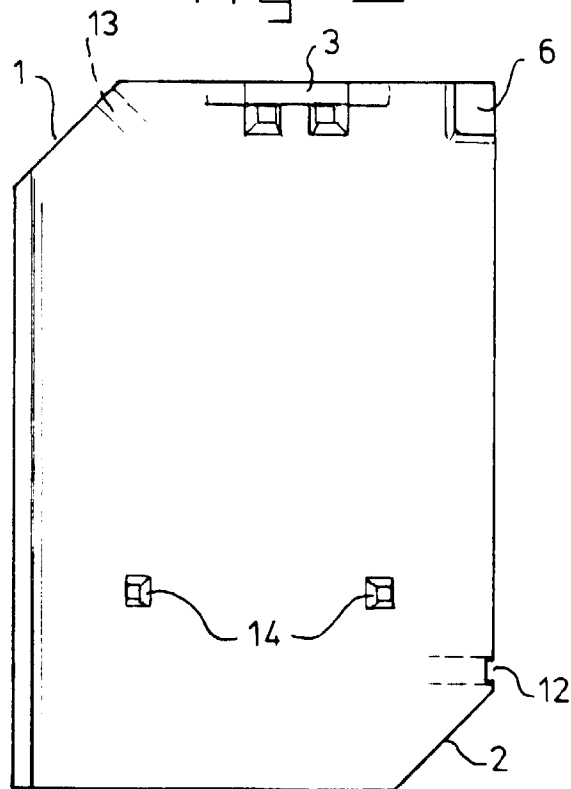
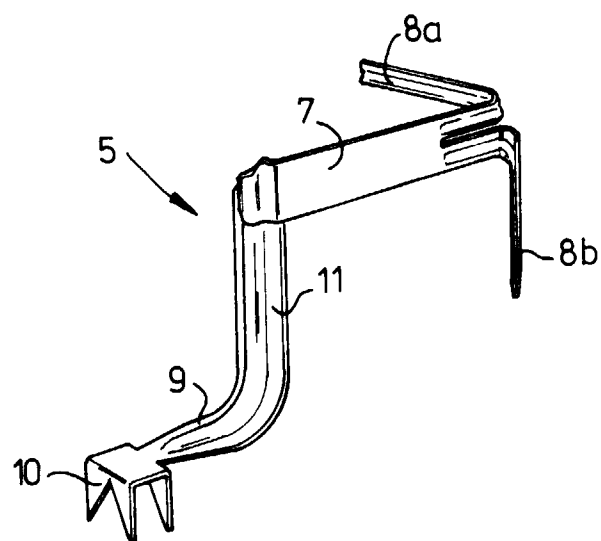


fig - 4





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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 1145

| 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.6) |
| A | FR 2 214 026 A (CAMPBELL) 9 August 1974 * page 5, line 7 - line 34; figures 3A-D * | 1 | E04D1/04 E04D1/34 |
| A | DE 89 924 C (WICKE) 24 December 1896 * the whole document * | 1 | |
| A,D | EP 0 687 337 B (BOVE DRAADPRODUKTEN B.V.) 5 June 1996 * figure 5B * | 3 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.6) |
| | | | E04D |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 21 July 1998 | Examiner Mysliwetz, W |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> <p>& : member of the same patent family, corresponding document</p> | | | |

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