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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**

Dachpfanne mit nichteingreifenden Rändern und geneigtes Dach mit solchen Dachpfannen

Tuile sans attachement mutuel et toit incliné comprenant ces tuiles

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(56) References cited:
EP-B- 0 687 337 DE-C- 89 924
FR-A- 2 214 026

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Description

[0001] In the first instance, the invention relates to a roofing tile without end nor side interlock, in particular of the "old hollow pan tile" type, which tile has two bevelled comers, which are situated diagonally opposite one another.

[0002] Roofing tiles of this kind are generally known, and are referred to in Germany by the term "hol-ländische Pfanne", in England by the term "pantile" and in France by the term "tuile flamande".

[0003] 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.

[0004] A roofing tile having two bevelled corners, which are situated diagonally opposite one another, is known from document DE 89924-A. This roofing tile is also fixed with a tile hook.

[0005] According to the invention, the roofing tile referred to in the preamble has 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.

[0006] In order moreover to increase the resistance of a roof covering made of tiles of this kind against being blown off, the tile is provided with a thickened section in the region of the unbevelled top corner point, which is intended to rest on a shoulder of a tile hook.

[0007] 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.

[0008] 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 as the first shank part 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 comer 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

er between the said tile hook shoulder and the said bent-off tile hook parts.

[0009] 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.

[0010] 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 "pan-tile";

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

[0011] 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].

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] Two stacking projections 14, which are not important for the present invention, are also situated on the underside of each tile.

[0019] 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.

[0020] 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. The strong connection is achieved as a result of the thickened sections 6 which rest against the shoulders 11.

Claims

1. Roofing tile (A, B, C) without end nor side interlock, in particular of the "old hollow roofing tile" type, which roofing tile (A, B, C) has two bevelled corners (1, 2), which are situated diagonally opposite one another, wherein a notch (12, 13) is formed in the top side of the roofing tile (A, B, C) in the region of each of the two abovementioned bevelled corners (1, 2), which notches (12, 13) are intended to accommodate a bent tile hook (8a, 8b), the roofing tile

(A, B, C) being provided with a thickened section (6) in the region of a unbevelled top corner point, which thickened section is on the underside of the roofing tile, **characterised in that** the thickened section is intended to rest on a shoulder of said tile hook.

2. Pitched roof provided with a covering of roofing tiles (A, B, C) according to claim 1, which roofing tiles (A, B, C) 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), **characterised in that** the tile hooks (5) are provided with a first shank part (7), a second shank part (9) extending in the same direction as the first shank part (7) and a shoulder (11) which extends essentially perpendicular to the two shank parts (7, 9) between the said shank parts (7, 9), **in that** the said first shank part (7) has two bent-off parts (8a, 8b), which respectively latch in the notch (12) in the region of the bevelled corner (2) at the bottom edge of the roofing tile (C) and in the notch (13) in the region of the bevelled corner (1) at the top edge of the roofing tile (A), the bevelled corners (2, 1) being at the bottom and top edge, respectively, of which said roofing 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** the thickened section (6) of the roofing tile (B) rests against the shoulder (11) of the said tile hook (5) and rests beneath the roofing tile (C), which thickened section (6) is integrally moulded on the underside of the roofing tile (B) in the region of its top edge, all this in such a manner that those parts of the said roofing tiles (C and A) which adjoin one another at the oblique edges (2) and (1) and that part of the said roofing 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).

Patentansprüche

1. Dachpfanne (A, B, C) ohne End- noch Seitenfalz, insbesondere nach Art der "alten hohlen Dachpfanne", wobei die Dachpfanne (A, B, C) zwei abgeschrägte Ecken (1, 2) aufweist, die diagonal gegenüber zueinander angeordnet sind, wobei eine Aussparung (12, 13) auf der Oberseite der Dachpfanne (A, B, C) im Bereich jeder der beiden oben genannten abgeschrägten Ecken (1, 2) gebildet ist, wobei die Aussparungen (12, 13) dazu dienen, einen gebogenen Ziegelhaken (8a, 8b) aufzunehmen, wobei die Dachpfanne (A, B, C) mit einem verstärkten Bereich (6) in dem Bereich eines nicht abgeschrägten

oberen Eckpunkts versehen ist, wobei der verstärkte Abschnitt auf der Unterseite der Dachpfanne ist, **dadurch gekennzeichnet, dass** der verstärkte Abschnitt dazu dient, auf einer Schulter des Ziegelhakens zu ruhen.

2. Geneigtes Dach, das mit Dachpfannen (A, B, C) nach Anspruch 1 eingedeckt ist, wobei die Dachpfannen (A, B, C) einander in zwei Richtungen überlappen, durch Tragvorsprünge (3) auf Dachlatten (4) ruhen und durch Ziegelhaken (5) an den Dachlatten (4) befestigt sind, **dadurch gekennzeichnet, dass** die Ziegelhaken (5) mit einem ersten Schafteil (7) und mit einem zweiten Schafteil (9) versehen sind, der sich in dieselbe Richtung erstreckt wie der erste Schafteil (7), und mit einer Schulter (11), die sich im Wesentlichen senkrecht zu den zwei Schafteilen (7, 9) zwischen den Schafteilen (7, 9) erstreckt, dass der erste Schafteil (7) zwei abgebogene Teile (8a, 8b) aufweist, die jeweils in die Aussparung (12) im Bereich der abgeschrägten Ecke (2) an der Unterkante der Dachpfanne (C) und in die Aussparung (13) im Bereich der abgeschrägten Ecke (1) an der Oberkante der Dachpfanne (A) einrasten, wobei sich die abgeschrägten Ecken (2, 1) an der jeweils unteren und oberen Kante befinden, wo die Dachpfannen (A und C) im Wesentlichen aneinander stoßen, dass der zweite Schafteil (9) mit Befestigungsmitteln (10) versehen ist, durch welche der Ziegelhaken (5) an einer Dachlatte (4) befestigt ist, und dass der verstärkte Abschnitt (6) der Dachpfanne (B) an der Schulter (11) des Ziegelhakens (5) anliegt und unter der Dachpfanne (C) ruht, wobei der verstärkte Abschnitt (6) integral an die Unterseite der Dachpfanne (B) in dem Bereich ihrer oberen Kante angeformt ist, all dies in einer Weise, dass die Teile der Dachpfannen (C und A), welche an den abgeschrägten Kanten (2) und (1) aneinander stoßen, und der Teil der Dachpfanne (B), der mit dem verstärkten Abschnitt (6) versehen ist, zwischen der Schulter (11) des Ziegelhakens und den abgebogenen Teilen (8a, 8b) des Ziegelhakens miteinander befestigt werden.

Revendications

1. Tuile de toiture (A, B, C) sans accrochage d'extrémité ni latéral, en particulier le type de « vieille tuile creuse », laquelle tuile de toiture (A, B, C) a deux coins biseautés (1, 2) qui sont situés de manière diagonalement opposée entre eux, dans laquelle une encoche (12, 13) est formée dans le côté supérieur de la tuile de toiture (A, B, C) dans la région de chacun des deux coins biseautés (1, 2) susmentionnés, lesquelles encoches (12, 13) sont prévues pour loger un crochet de tuile recourbé (8a, 8b), la

tuile de toiture (A, B, C) comportant une section épaissie (6) dans la région d'un point de coin supérieur non biseauté, laquelle section épaissie se trouve au dessous de la tuile de toiture, **caractérisée en ce que** la section épaissie est prévue pour reposer sur un épaulement dudit crochet de tuile.

2. Toit incliné comprenant une couverture de tuiles de toiture (A, B, C) selon la revendication 1, lesquelles tuiles de toiture (A, B, C) se chevauchent entre elles dans deux directions, reposent sur des liteaux (4) de tuiles au moyen de saillies de support (3) et sont fixées aux liteaux (4) de tuiles au moyen de crochets de tuile (5), **caractérisé en ce que** les crochets de tuile (5) sont prévus avec une première partie de tige (7), une seconde partie de tige (9) s'étendant dans la même direction que la première partie de tige (7) et un épaulement (11) qui s'étend essentiellement perpendiculairement aux deux parties de tige (7, 9) entre lesdites parties de tige (7, 9), **en ce que** ladite première partie de tige (7) possède deux parties recourbées (8a, 8b), qui se verrouillent respectivement dans l'encoche (12) située dans la région du coin biseauté (2) au bord inférieur de la tuile de toiture (C) et dans l'encoche (13) située dans la région du coin biseauté (1) au bord supérieur de la tuile de toiture (A), les coins biseautés (2, 1) étant sur les bords inférieur et supérieur, respectivement, auxquels lesdites tuiles de toiture (A et C) sont essentiellement contiguës entre elles, **en ce que** la seconde partie de tige (9) comporte des moyens d'accrochage (10), au moyen desquels le crochet de tuile (5) est accroché à un liteau (4) de tuiles, et **en ce que** la section épaissie (6) de la tuile de toiture (B) repose contre l'épaulement (11) dudit crochet de tuile (5) et repose au dessous de la tuile de toiture (C), laquelle section épaissie (6) est moulée d'un seul tenant sur le dessous de la tuile de toiture (B) dans la région de son bord supérieur, tout ceci de sorte que les parties desdites tuiles (C et A) qui sont contiguës entre elles aux bords obliques (2) et (1), et la partie de ladite tuile de toiture (B) qui comporte la section épaissie (6), sont bloquées ensemble entre ledit épaulement (11) du crochet de tuile et lesdites parties (8a, 8b) de crochet de tuile recourbées.

fig-1

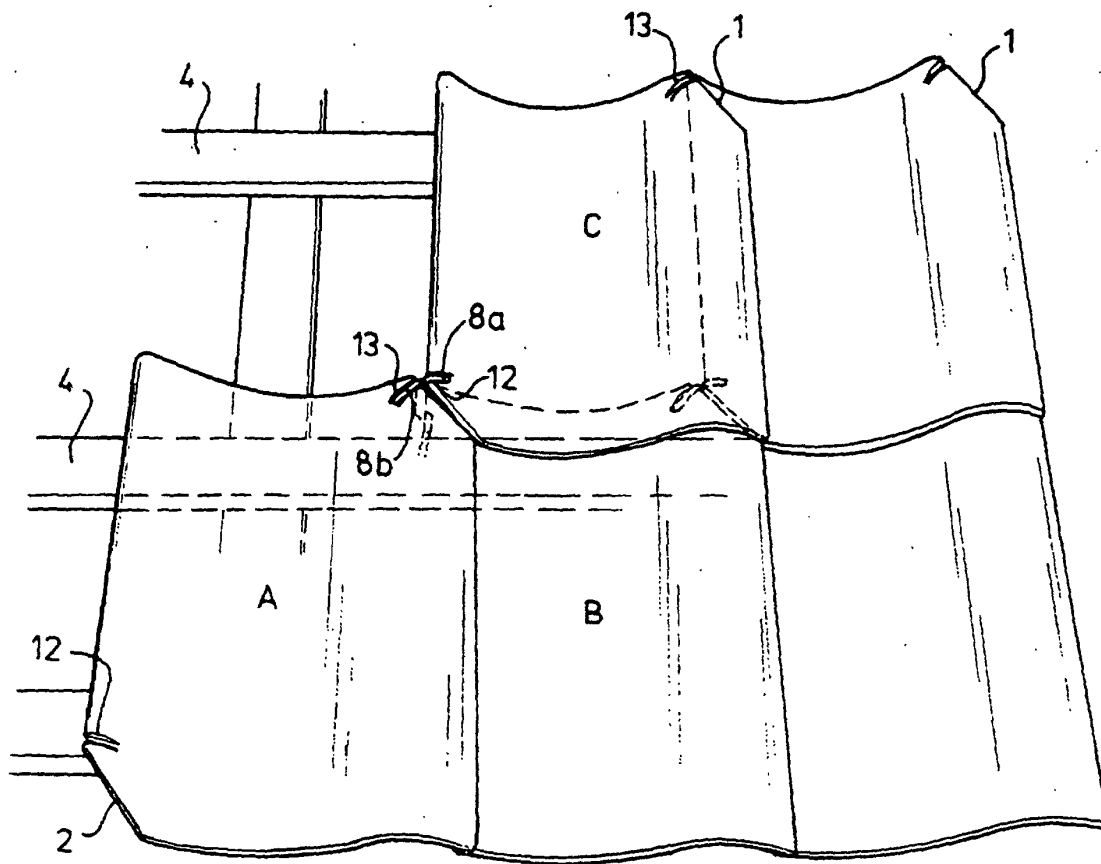


fig-2

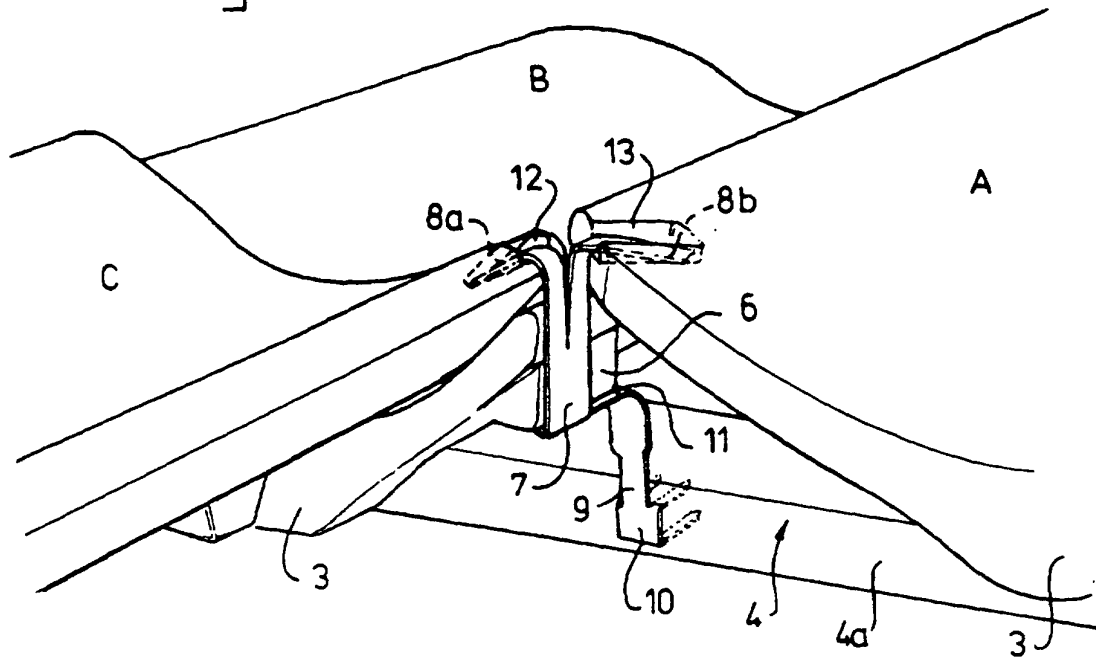


fig-3

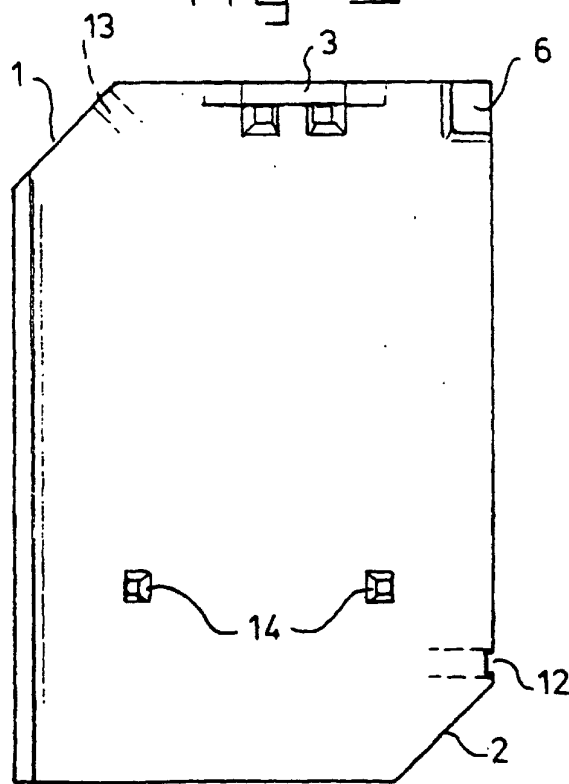


fig - 4

