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

(11) Publication number : **0 350 587 B1**

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification : **06.05.92 Bulletin 92/19**

(51) Int. Cl.^{5} : **E04D 1/18**

(21) Application number : **89108429.5**

(22) Date of filing : **10.05.89**

(54) **Modular roofing element.**

Consolidated with 89905655.0/0424401 (European application No./publication No.) by decision dated 26.08.91.

(30) Priority : **15.07.88 IT 6194288 U**

(43) Date of publication of application : **17.01.90 Bulletin 90/03**

(45) Publication of the grant of the patent : **06.05.92 Bulletin 92/19**

(84) Designated Contracting States : **AT BE CH DE ES FR GR IT LI NL SE**

(56) References cited :
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DE-C- 879 762
FR-A- 509 081
US-A- 2 830 546
US-A- 2 882 840

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Description

This invention relates to a modular roofing element.

Modular elements made of sheet metal of rooofing are well known. US-A 2 830 546 discloses a modular roofing shingle having a rectangular shape with one edge bent upwardly in a V-shape and is provided with an appendix at one extremity, the opposite edge is bent downwardly in a similar V-shape and the upper transverse edge is bent upwardly in a V-shape.

An object of the invention is to provide a metal modular roofing element which is extremely easy to mount.

A further object of the invention is to provide a modular element which gives high stability to the constructed roof.

A further object of the invention is to provide a modular element which offers a practically total seal against water, wind and atmospheric agents in general.

A further object of the invention is to provide a modular element which gives a resultant pleasant appearance.

A further object of the invention is to provide a modular element which allows the roof to adapt to thermal expansion of the individual elements.

A further object of the invention in to provide an element which allows effective natural roof ventilation to be obtained.

These and further objects which will be apparent from the description given hereinafter are attained according to the invention by a modular roofing element with a substantially rectangular shape, wherein one side edge is bent upwardly in a U-shape and is provided with an appendix at one extremity, the opposite edge is bent downwardly in a similar U-shape and the upper transverse edge is bent upwardly in a U-shape, characterised in that said appendix is located at the lower extremity of said one side edge and is bent downwardly in a U-shape so that it can engage the bend of said upper transverse edge.

The present invention is hereinafter further clarified with reference to the accompanying drawings in which:

figure 1 is an interrupted partly perspective view of a modular element according to the invention;

figure 2 is a plan view thereof;

figure 3 is a perspective view of a roof portion obtained using the elements according to the invention;

figure 4 is a detailed view of the connection between adjacent elements, taken in horizontal section on the line IV-IV of figure 3;

figure 5 is a detailed view of the connection between adjacent elements, taken in vertical section on the line V-V of figure 3 ;

figure 6 is a detailed cross-sectional view showing the engagement between two horizontal element bands at the ridge of a two-pitch roof, in a first embodiment ;

figure 7 is the same detailed view as figure 6, but in a second embodiment.

As can be seen from the figures, the modular element according to the invention, indicated overall by 1, consists of a sheet portion of electrolytically treated normal or stainless steel, copper, coloured or non-coloured aluminium, or another metal prepainted or pretreated for the particular use.

The element 1 is of overall rectangular shape, of which:

- the right hand edge 2 (with reference to figure 2) is bent frontwards to U-shape, ie towards the outer surface of the element 1, and comprises at its upper end a through hole 3. The lower portion of the outer flange of said lateral edge 2 is removed, whereas the inner flange is bent rearwards to U-shape to form a hooking appendix 4. The frontward bending of the right hand edge 2 is preceded by its bending in two opposing directions so that the two flanges of said edge 2 lie symmetrically about the general plane of the element 1;
- the left hand lateral edge 5 is bent rearwards to U-shape and is provided with a hole 6 corresponding to the hole 3 of the right hand lateral edge;
- the upper transverse edge 7 is bent frontwards to U-shape; although it is not strictly necessary to provide a continuous bend along the upper edge 7, it is preferable because as will be apparent hereinafter this ensures a good seal against water and against the force of the wind, and also gives greater freedom in the relative positioning of the various elements. However, the bending of the edge 7 does not include the right hand lateral edge 2 or the outer flange of the left hand lateral edge 5;
- the lower edge 8 has its ends slightly rounded and is given a slight rearward bend. As will be apparent hereinafter, this slight bend is provided both for aesthetic reasons and for functional reasons in that it contributes to the water and wind seal.

The element according to the invention is constructed from sheet metal strip, from which a portion corresponding to the developed element is punched out without the parts which are not present in the finished element, ie the lower portion of the outer flange of the left hand edge 2 and the ends of the lower edge 8.

The punched piece is then subjected to conventional bending operations to produce the element 1. This can then be surface-treated if the initial sheet metal strip had not been subjected to such treatment.

For mounting purposes a support lattice advantageously of wood or possibly metal is required comprising a plurality of longitudinal members 9 disposed parallel to each other at a distance apart substantially equal to the distance between those lines on the ele-

ments 1 about which the upper edge 7 and lower edge 8 are bent.

The lower left hand roofing element is then applied to this lattice and fixed to the corresponding longitudinal member 9 with screws screwed through the holes 3 and 6 provided in the two lateral edges 2 and 5. The horizontally adjacent element is then fitted to this element so that its rearwardly bent left hand lateral edge 5 engages in the frontwardly bent right hand edge 2 of this already fitted element, and is then fixed to the same longitudinal member 9 with further screws through the holes 3 and 6. When the horizontal row of elements is complete the overlying row is commenced. The first element is applied in imbricate arrangement between the two adjacent elements 1 positioned at the left hand end of the lower row, so that the hooking appendix 4 of the right hand edge 2 of the new element engages in the frontwardly bent upper transverse edge 7 of one of said elements of the first row. This procedure is then repeated for the adjacent element until the second row is complete, after which the third row is applied and so on until that roof pitch is complete.

If the roof has two pitches, the two upper rows of elements 1 are connected together by ridge elements 10 and 11 which engage in the two bent upper edges 7 of the elements of these two rows, the ridge elements 10, 11 then being joined together either directly (see figure 6) or by U-section elements 12 (see figure 7).

From the aforegoing it is apparent that the modular elements according to the invention are extremely advantageous in that:

- they are extremely easy to mount,
- they enable roofs of high mechanical stability to be constructed,
- they offer an excellent seal against water and wind,
- they have a resultant pleasant appearance,
- they render the roof virtually insensitive to thermal expansion by completely absorbing it,
- they enable roofs to be constructed having excellent natural ventilation.

Claims

1. A modular roofing element with a substantially rectangular shape, wherein one side edge (2) is bent upwardly in a U-shape and is provided with an appendix (4) at one extremity, the opposite edge (5) is bent downwardly in a similar U-shape and the upper transverse edge (7) is bent upwardly in a U-shape, characterised in that said appendix (4) is located at the lower extremity of said one side edge (2) and is bent downwardly in a U-shape so that it can engage the bend of said upper transverse edge (7).

2. An element as claimed in claim 1, characterised in that the two side edges (2, 5) extend upwardly beyond the bent transverse edge (7) to form two appendices for fixing the element to an underlying support lattice (9).

3. An element as claimed in claim 2, characterised in that the upper appendices of the two side edges (2, 5) comprises a hole (3, 6) through which members are passed for fixing the element to the lattice (9).

4. An element as claimed in claim 1, characterised in that its lower transverse edge (8) is slightly inclined downwardly.

5. An element as claimed in claim 1, characterised by comprising, in proximity to the upwardly bent side edge (2), two bends in opposing directions such that the two flanges of said bent edge (2) become disposed symmetrically about the general plane of the element.

6. An element as claimed in claim 1, characterised by being of sheet metal construction.

7. An element as claimed in claim 6, characterised by being of copper construction.

8. An element as claimed in claim 6, characterised by being of aluminium construction.

9. An element as claimed in claim 8, characterised by being of couloured aluminium construction.

10. An element as claimed in claim 1, characterised by being of prepainted sheet metal construction.

Patentansprüche

1. Modulares Dachelement von im wesentlichen rechtwinkliger Form, bei dem eine Seitenkante (2) U-förmig nach oben gebogen ist und an einem Ende einen Ansatz (4) hat, während die gegenüberliegende Seitenkante (5) in entsprechender Weise U-förmig nach unten gebogen ist, und bei dem die obere Querkante (7) U-förmig nach oben gebogen ist, dadurch gekennzeichnet, daß der ànsatz (4) am unteren Ende der einen Seitenkante (4) ausgebildet und U-förmig so nach unten gebogen ist, daß er in Eingriff mit der umgebogenen oberen Querkante (7) bringbar ist.

2. Dachelement nach Anspruch 1, dadurch gekennzeichnet, daß die beiden Seitenkanten (2,5) über die umgebogene Querkante (7) nach oben hinausragen und dadurch zwei Fortsätze für die Befestigung des Dachelementes an einem darunterliegender. Lattentragwerk (9) bilden.

3. Dachelement nach Anspruch 2, dadurch gekennzeichnet, daß die oberen Fortsätze der beiden Seitenkanten (2,5) eine Bohrung (3,6) zum Durchstecken von Elementen für die Befestigung des Dachelementes an dem Lattentragwerk (9) aufweisen.

4. Dachelement nach Anspruch 1, dadurch gekennzeichnet, daß dessen untere Querkante (8) leicht nach unten abgewinkelt ist.

5. Dachelement nach Anspruch 1, dadurch gekennzeichnet, daß dieses in Bereich der nach oben gebogenen Seitenkante (2) zwei Abwinklungen in entgegengesetzten Richtungen hat, so daß die beiden Schenkel der abgebogenen Seitenkante (2) symmetrisch zur Hauptebene des Dachelementes liegen.

6. Dachelement nach Anspruch 1, dadurch gekennzeichnet, daß dieses aus einer Metallblechkonstruktion besteht.

7. Dachelement nach Anspruch 6, dadurch gekennzeichnet, daß dieses aus Kupfer besteht.

8. Dachelement nach Anspruch 6, dadurch gekennzeichnet, daß dieses aus Aluminium besteht.

9. Dachelement nach Anspruch 8, dadurch gekennzeichnet, daß dieses aus farbigem Aluminium besteht.

10. Dachelement nach Anspruch 1, dadurch gekennzeichnet, daß dieses aus einer vorgefärbten Metallblechkonstruktion besteht.

Revendications

1. Un élément de couverture modulaire avec une forme sensiblement rectangulaire dans lequel une bordure de côté (2) est coudée vers le haut en une forme en U et est munie d'un appendice (4) à une extrémité, la bordure opposée (5) est coudée vers le bas en une forme similaire en U et la bordure transversale supérieure (7) est coudée vers le haut en une forme en U, caractérisé en ce que ledit appendice (4) est localisé à l'extrémité inférieure de ladite une bordure de côté (2) et est coudé vers le bas en une forme en U afin qu'il puisse s'engager dans le coude de ladite bordure transversale supérieure (7).

2. Un élément comme revendiqué dans la revendication 1, caractérisé en ce que les deux bordures de côté (2, 5) s'étendent vers le haut au delà de la bordure transversale coudée (7) pour former deux appendices pour fixer l'élément à un treillis support sous-jacent (9).

3. Un élément comme revendiqué dans la revendication 2, caractérisé en ce que les appendices supérieurs des deux bordures de côté (2,5) comprennent un trou (3,6) à travers lequel des pièces sont passées pour fixer l'élément au treillis (9).

4. Un élément comme revendiqué dans la revendication 1, caractérisé en ce que sa bordure transversale inférieure (8) est sensiblement inclinée vers le bas.

5. Un élément comme revendiqué dans la revendication 1, caractérisé en ce qu'il comprend, à proximité de la bordure de côté coudée vers le haut (2), deux coudes en directions opposées tels que les deux flancs de ladite bordure coudée (2) soient disposés symmétriquement par rapport au plan général de l'élément.

6. Un élément comme revendiqué dans la revendication 1, caractérisé en ce qu'il est conçu en métal en feuille.

7. Un élément comme revendiqué dans la revendication 6, caractérisé en ce qu'il est conçu en cuivre.

8. Un élément comme revendiqué dans la revendication 1, caractérisé en ce qu'il est conçu en aluminium.

9. Un élément comme revendiqué dans la revendication 1, caractérisé en ce qu'il est conçu en aluminium coloré.

10. Un élément comme revendiqué dans la revendication 1, caractérisé en ce qu'il est conçu en métal en feuille prépeint.

FIG. 1

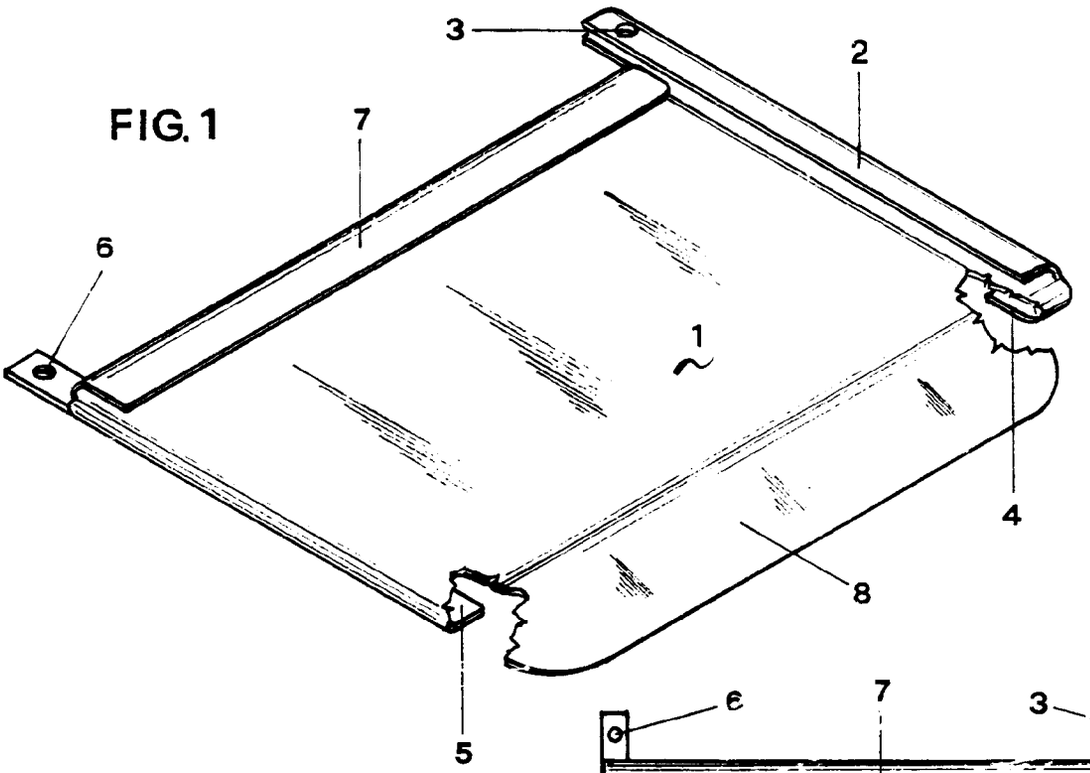
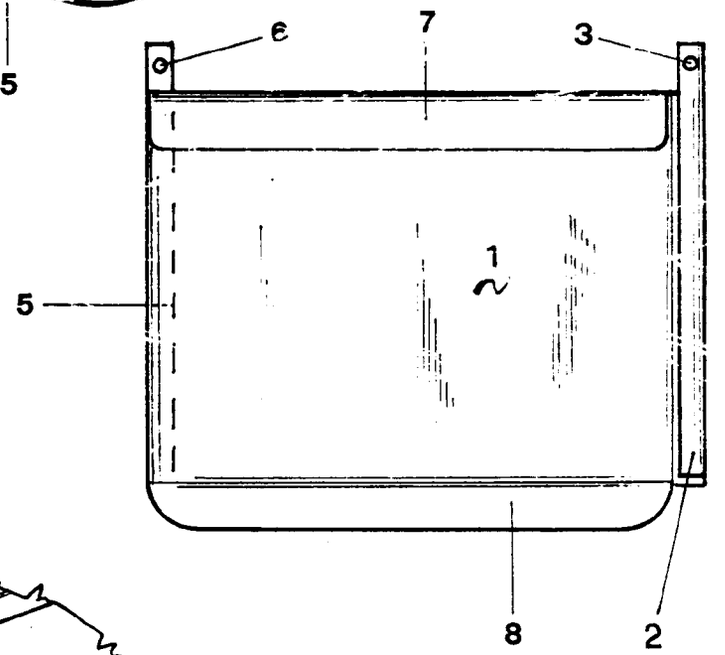


FIG. 2



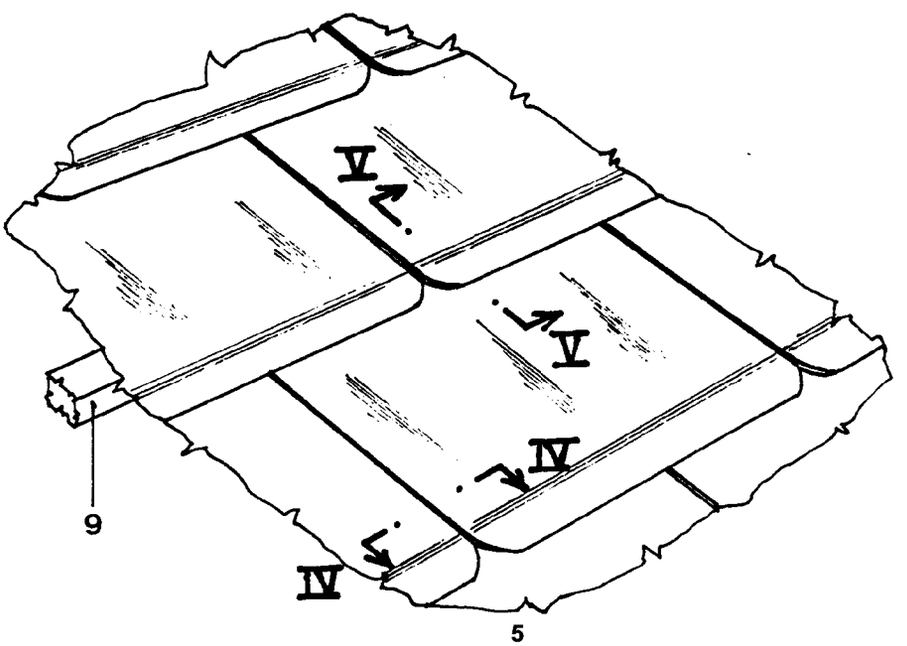


FIG.3

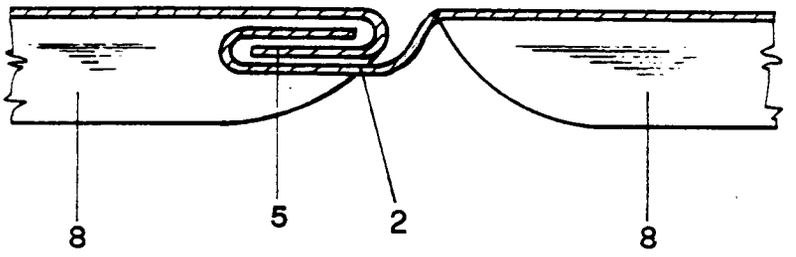


FIG.4

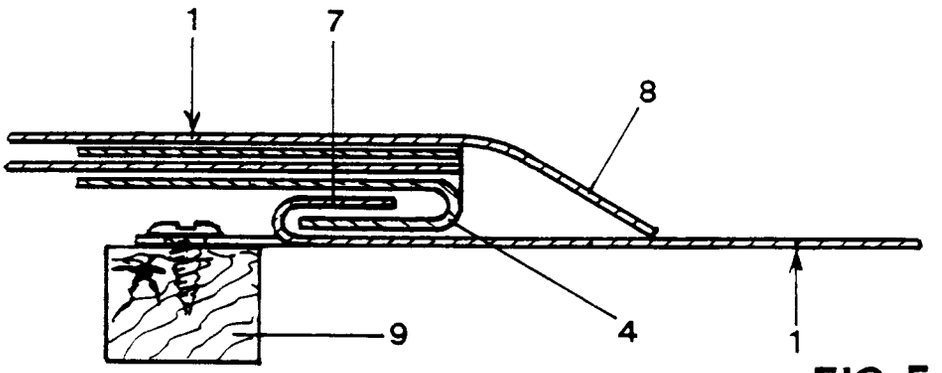


FIG.5

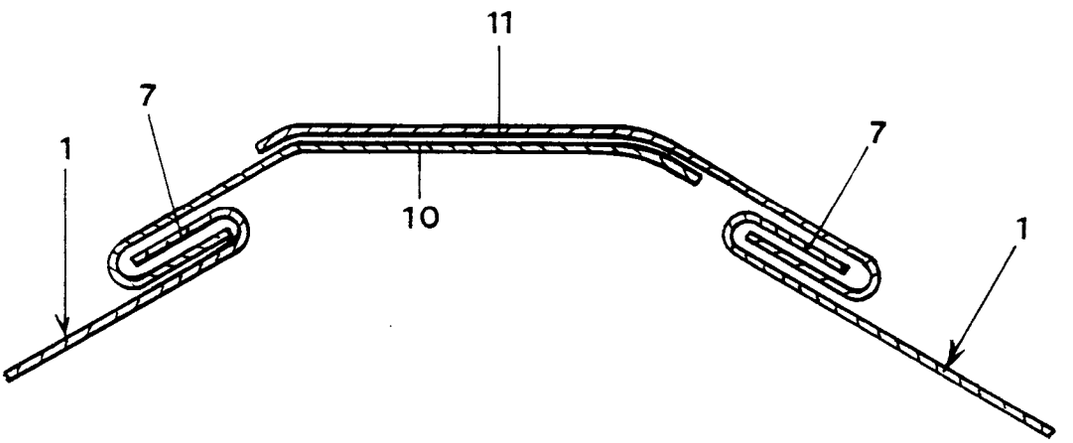


FIG.6

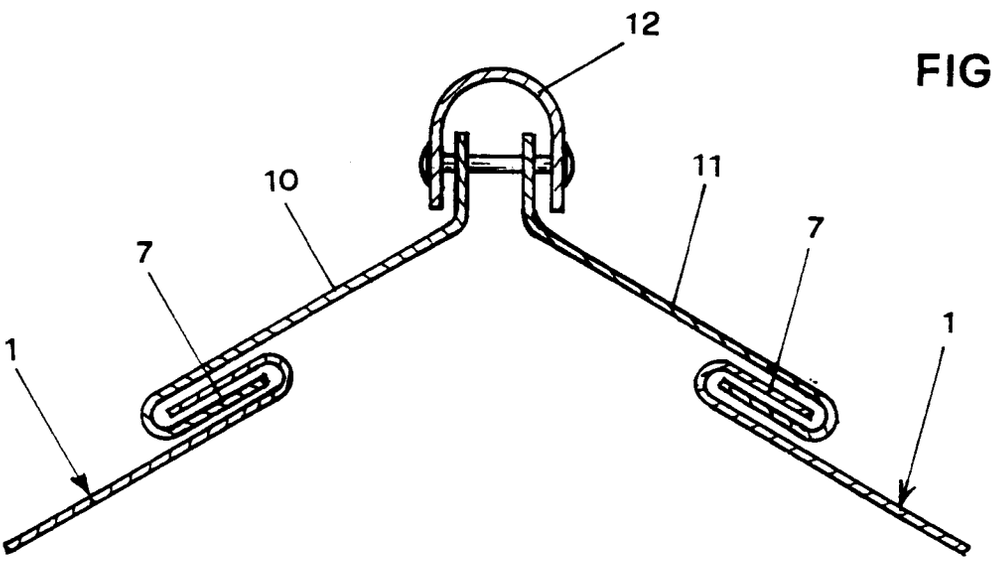


FIG.7