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(54) **Assembled roof element particularly intended for a skylight barrel vault**

Montiertes Dachelement, insbesondere für ein Oberlichttonnengewölbe

Elément de toiture assemblé particulièrement pour lanterneau de toit voûté

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EP 1 852 561 B1

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Description

[0001] The present invention relates to a roof comprising an assembled roof element comprising at least one first profiled plate which is manufactured from a composite material and which serves as element supporting the assembled roof element.

[0002] In this paragraph a number of examples of known roof elements for skylight barrel vaults are described. A roof element which is common in Belgium is constructed from one or more profiled plates which are manufactured from a polyester resin reinforced with glass fibres. These are referred to as PRV (polyester renforcé de fibres de verre) skylight barrel vaults. In such skylight barrel vaults the U-value is relatively high. The U-value, or coefficient of heat transmission (W/m^2K), indicates how much heat is lost per second through $1 m^2$. Therefore, the lower the U-value, the better the roof element insulates.

[0003] BE 883519 discloses a roof according to the preamble of claim 1.

[0004] Another known skylight barrel vault is constructed from a combination of aluminium curved profiles for supporting multi-walled polycarbonate plates. Such a construction has the drawback that expensive aluminium profiles are necessary.

[0005] The present invention has for its object to propose a roof comprising an assembled roof element for which the desired U-value and rigidity can be obtained in simple manner with an inexpensive construction in which expensive aluminium supporting profiles are not necessary.

[0006] The invention is distinguished for this purpose in that the roof element comprises the features of the characterising part of claim 1.

[0007] The first plate of a composite material functions here as the supporting element, while the U-value can be brought to the desired value by a suitable choice of a multi-walled plate. The second plate is a flexible multi-walled plate.

[0008] The composite material is a resin from the group of: polyester resin or other thermoset resins. Glass fibres can optionally be added to further strengthen the material.

[0009] The plastic material of the second plate is a material from the group of: polycarbonate, acrylate, PET or other thermoplasts. These materials have the advantage that light-transmitting, flexible and light multi-walled plates can be manufactured, for instance by extrusion. The top side of the second plate must here preferably be given a UV-resistant form.

[0010] For an improved strength of the first profiled plate of composite resin, this plate can have a ribbed profile in longitudinal section. The profiled supporting plate preferably describes an arcuate form in transverse direction.

[0011] The multi-walled plates are preferably provided on two transverse sides with a connecting profile, where-

by the transverse sides of two adjacent second plates can be connected to each other. This can for instance be a protruding transverse part on a first transverse side and a transverse recess on the other transverse side, which can be mutually engaging.

[0012] According to a possible embodiment the multi-walled plate is bent close to the longitudinal side for mounting these longitudinal sides on an upstand. This can typically take place by means of a simple bending process.

[0013] According to another possible embodiment the first and second plate can be mounted on an upstand by means of a mounting profile, optionally with additional clamping profile.

[0014] The invention will be further elucidated on the basis of a number of non-limitative exemplary embodiments of the assembled roof element according to the invention, with reference to the accompanying figures, wherein:

figure 1 is a schematic cross-section of a roof according to the invention comprising an assembled roof element arranged on upstands; figures 2 (A), (B), (C), (D) show four possible variants for mounting of the roof element on the upstand; figures 3 (A), (B), (C) show three possible longitudinal sections of the ends of a multi-walled plate of an assembled roof element; figures 4 (A), (B) show two possible longitudinal sections of the first plate of composite resin of an assembled roof element.

[0015] The same components are designated in the figures with the same reference numerals.

[0016] The assembled roof element shown in cross-section in figure 1 comprises one first curved plate 1 manufactured from a composite resin and one second multi-walled plate 2 of a plastic material. The second multi-walled flexible plate is supported by the first rigid plate 1. This embodiment is typically used in so-called skylight barrel vaults, wherein a number of such assembled roof elements can be arranged adjacently of each other in longitudinal direction on upstands 3.

[0017] Figure 2(A) shows a first method of mounting the roof element on upstand 3. The supporting first plate 1 is pushed into a profile 4. Second plate 2 is fixed by means of a clamping profile 5. In the shown embodiment this clamping profile 5 engages behind a protruding rib 17 of profile 4 and in a recess 18 which is provided on the top side of plate 2, close to the longitudinal side thereof.

[0018] Figure 2(B) illustrates a second method of connecting the roof element to the upstand. First and second plates 1, 2 are herein mounted on upstand 3 by means of a mounting profile 4 fixed to the upstand and having two longitudinal channels for the respective longitudinal sides of plates 1, 2.

[0019] Figure 2(C) shows a third variant in which the

second plate is bent along a longitudinal seam 5 and connected to the upstand by means of a screw 6.

[0020] Figure 2(D) shows a fourth variant in which plate 1 is connected by means of a screw 8 to an upstand with an oblique top side and plate 2 is connected by means of a screw 7 to the first plate.

[0021] Note that these are only a number of examples and that any method known in the art suitable for the roof element can be employed.

[0022] Figures 3(A)-(C) show three examples of a second plate in longitudinal section.

[0023] According to a first variant, which is shown in figure 3(A), two adjacent second plates are mutually connected in longitudinal direction by an overlapping and snapping connection. In the shown embodiment a first transverse side of a second plate is provided for this purpose with a substantially gutter-like part 20 with a downward directed opening, and the other transverse side is provided with two flexible, upward directed ribs 21, 22. This gutter-like part 20 and ribs 21, 22 co-acting therewith are formed such that the ribs can be snapped into the gutter-like part. This gutter-like part 20 and ribs 21, 22 can be manufactured integrally with second plate 2.

[0024] A second variant, shown in figure 3(B), has a protruding transverse part 10 on a first transverse side thereof, and a transverse recess 9 on a second transverse side. In this manner adjacent second plates can be mutually connected in simple manner. According to a second variant, shown in figure 3(C), a transverse side is provided with a vertical flange 12, which can be arranged in a transverse gutter 11 on the other transverse side of an adjacent plate 2. Once again it is possible to envisage many other variants which are known to the skilled person.

[0025] Finally, figure 4 shows two examples of a first plate 1 in longitudinal section. According to a possible embodiment, strengthening ribs 13 are provided in transverse direction, wherein one transverse rib 13 overlaps in each case with a transverse rib 13' of an adjacent plate. According to another possibility shown in figure 4(B), the first curved plate is plane and a gutter-flange 15, 14 connection is used to mutually connect adjacent plates.

[0026] The invention is not limited to the above illustrated examples, and the scope of protection is defined solely by the appended claims.

Claims

1. Roof comprising:

- two upstands (3)
- an assembled roof element (1, 2) arranged on said upstands (3), said assembled roof element comprises
- at least one first light-transmitting rigid profiled plate (1) for the purpose of forming an element supporting the assembled roof element, this pro-

filed plate being manufactured from a composite material being a resin from the group of: polyester resin, thermoset resins; and

- at least one second multi-walled plate (2) of a flexible plastic material, wherein the plastic material of the second plate is a material from the group of: polycarbonate, acrylate and other thermoplasts **characterized in that** said second plate is laid over and supported by the at least one first plate.

2. Roof as claimed in claim 1, **characterized in that** the first plate is curved.

3. Roof as claimed in any of the foregoing claims, **characterized in that** the or each profiled plate is bent.

4. Roof as claimed in any of the foregoing claims, **characterized in that** the multi-walled plate is provided on both transverse sides with a connecting profile, whereby transverse sides of two adjacent second plates can be connected to each other.

5. Roof as claimed in any of the foregoing claims, **characterized in that** the second plate is bent close to each longitudinal side for mounting of this longitudinal side on an upstand.

6. Roof as claimed in any of the foregoing claims, **characterized in that** the first and second plate can be mounted on an upstand by means of a mounting profile.

7. Roof as claimed in any of the foregoing claims, **characterized in that** the first plate can be mounted on an upstand by means of a mounting profile and that the second plate can be connected to the first plate by means of a clamping profile.

8. Roof as claimed in any of the foregoing claims, **characterized in that** the top side of the second plate is UV-resistant.

9. Roof according to claim 1, wherein each upstand (3) is provided with a profile (4) and wherein the first plate (1) is fixed in the profiles (4).

Patentansprüche

1. Dach, enthaltend:

- zwei Stützen (3)
- ein zusammengesetztes Dachelement (1,2), das auf den Stützen (3) angeordnet ist, wobei das zusammengesetzte Dachelement enthält:

- wenigstens eine erste lichtdurchlässige,

steife, profilierte Platte (1) zu dem Zweck, ein Element zu bilden, das das zusammengesetzte Dachelement trägt, wobei diese profilierte Platte aus einem zusammengesetzten Material hergestellt ist, das ein Harz ist aus der Gruppe von: Polyesterharz, duroplastischen Harzen; und

- wenigstens eine zweite mehrwandige Platte (2) aus einem flexiblen Kunststoffmaterial, wobei das Kunststoffmaterial der zweiten Platte ein Material ist aus der Gruppe von: Polycarbonat, Acrylat und anderen Thermoplasten,

dadurch gekennzeichnet,

dass die zweite Platte über die wenigstens eine erste Platte gelegt und von dieser getragen ist.

2. Dach nach Anspruch 1, **dadurch gekennzeichnet,** **dass** die erste Platte gekrümmt ist. 20
3. Dach nach jedem der vorhergehenden Ansprüche, **dadurch gekennzeichnet,** **dass** die oder jede profilierte Platte gebogen ist. 25
4. Dach nach jedem der vorhergehenden Ansprüche, **dadurch gekennzeichnet,** **dass** die mehrwandige Platte an beiden Querseiten mit einem Verbindungsprofil versehen ist, wodurch die Querseiten von zwei benachbarten zweiten Platten miteinander verbunden sein können. 30
5. Dach nach jedem der vorhergehenden Ansprüche, **dadurch gekennzeichnet,** **dass** die zweite Platte nahe bei jeder Längsseite zur Befestigung dieser Längsseite an einer Stütze gebogen ist. 35
6. Dach nach jedem der vorhergehenden Ansprüche, **dadurch gekennzeichnet,** **dass** die erste und die zweite Platte mit Hilfe eines Befestigungsprofils an einer Stütze befestigt sein können. 40
7. Dach nach jedem der vorhergehenden Ansprüche, **dadurch gekennzeichnet,** **dass** die erste Platte an einer Stütze mit Hilfe eines Befestigungsprofils befestigt sein kann und dass die zweite Platte mit der ersten Platte mit Hilfe eines Klemmprofils verbunden sein kann. 50
8. Dach nach jedem der vorhergehenden Ansprüche, **dadurch gekennzeichnet,** **dass** die Oberseite der zweiten Platte UV-beständig ist. 55
9. Dach nach Anspruch 1,

wobei jede Stütze (3) mit einem Profil (4) versehen ist, und wobei die erste Platte in den Profilen (4) fixiert ist.

Revendications

1. Toiture comprenant :

deux montants (3),
un élément de toiture assemblé (1, 2) agencé sur lesdits montants (3), ledit élément de toiture assemblé comprend :

au moins une première plaque profilée rigide à transmission de lumière (1) afin de former un élément supportant l'élément de toiture assemblé, cette plaque profilée étant fabriquée à partir d'un matériau composite qui est une résine du groupe comprenant la résine polyester, les résines thermodurcissables ; et

au moins une deuxième plaque à plusieurs parois (2) réalisée avec une matière plastique souple, dans laquelle la matière plastique de la deuxième plaque est un matériau du groupe comprenant le polycarbonate, l'acrylate et les autres thermoplastiques, **caractérisée en ce que** la deuxième plaque est posée sur et supportée par la au moins une première plaque.

2. Toiture selon la revendication 1, **caractérisée en ce que** la première plaque est incurvée.

3. Toiture selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la ou chaque plaque profilée est fléchie.

4. Toiture selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la plaque à plusieurs parois est prévue sur les deux côtés transversaux avec un profil de raccordement, moyennant quoi les côtés transversaux des deux deuxièmes plaques adjacentes peuvent être raccordés entre eux.

5. Toiture selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la deuxième plaque est fléchie à proximité de chaque côté longitudinal pour monter ce côté longitudinal sur un montant.

6. Toiture selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les première et deuxième plaques peuvent être montées sur un montant au moyen d'un profil de montage.

7. Toiture selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la première plaque peut être montée sur un montant au moyen d'un profil de montage et **en ce que** la deuxième plaque peut être raccordée à la première plaque au moyen d'un profil de serrage. 5
8. Toiture selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le côté supérieur de la deuxième plaque est résistant aux UV. 10
9. Toiture selon la revendication 1, dans laquelle chaque montant (3) est prévu avec un profil (4) et dans laquelle la première plaque (1) est fixée dans les profils (4). 15

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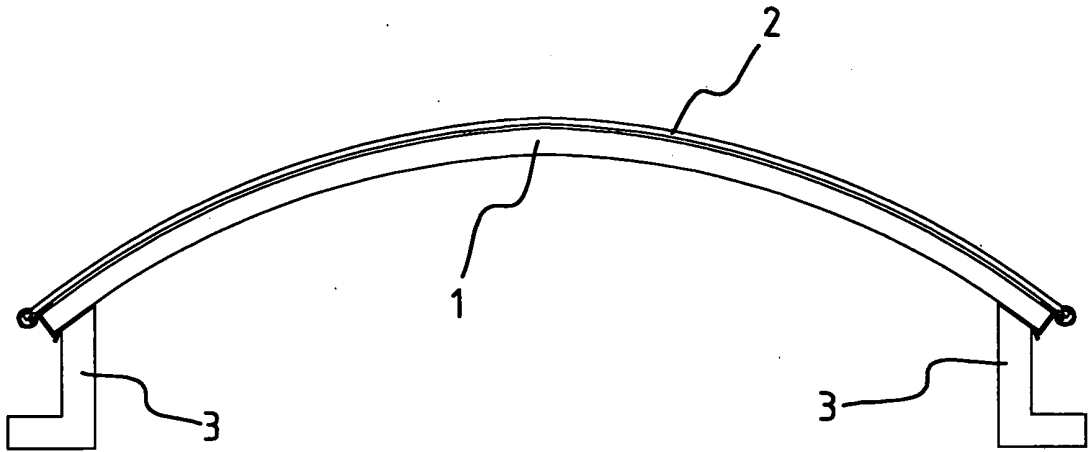


FIG. 1

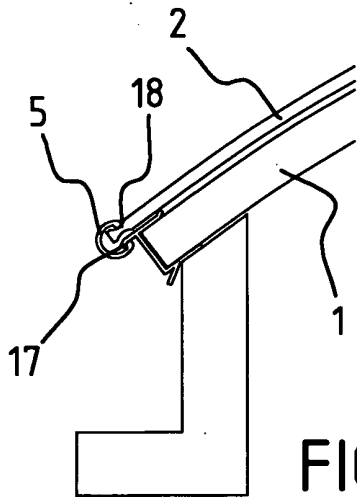


FIG. 2A

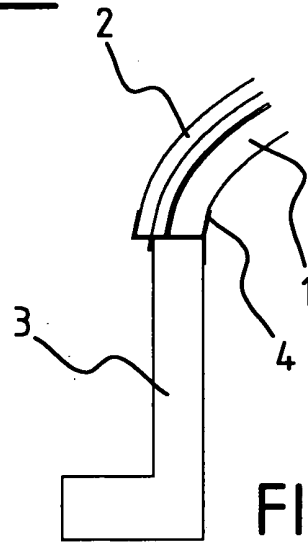


FIG. 2B

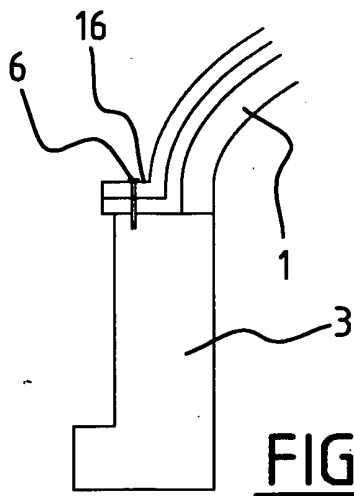


FIG. 2C

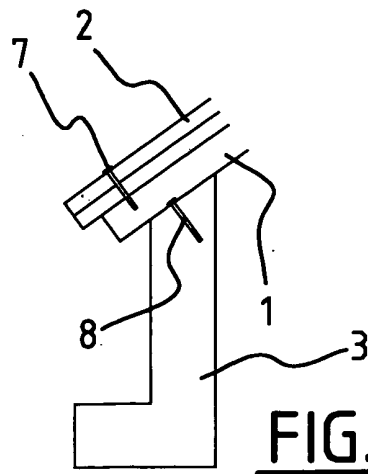


FIG. 2D

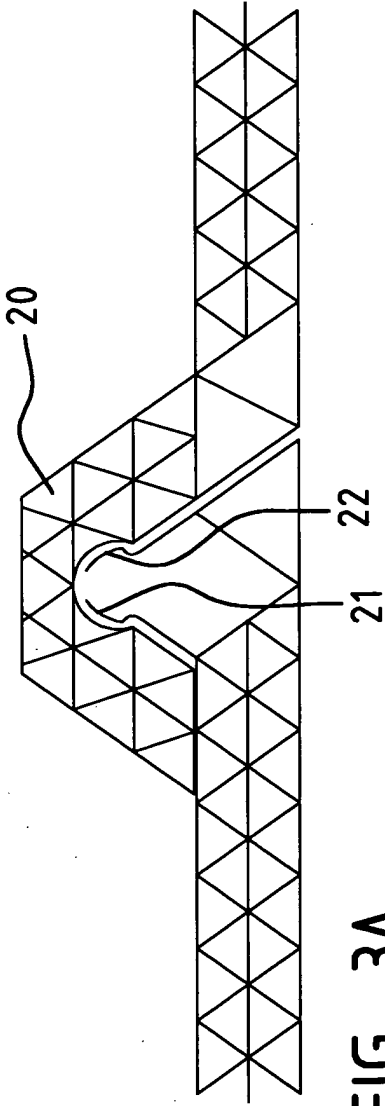


FIG. 3A

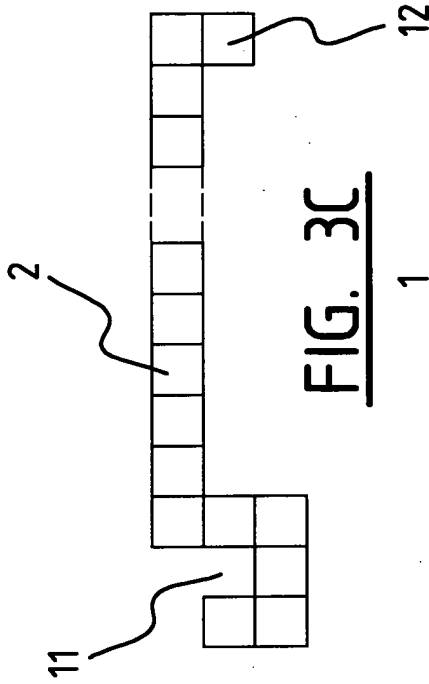


FIG. 3C

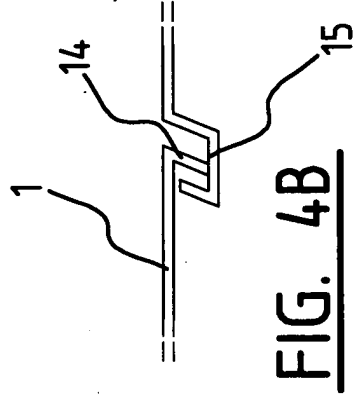


FIG. 4B

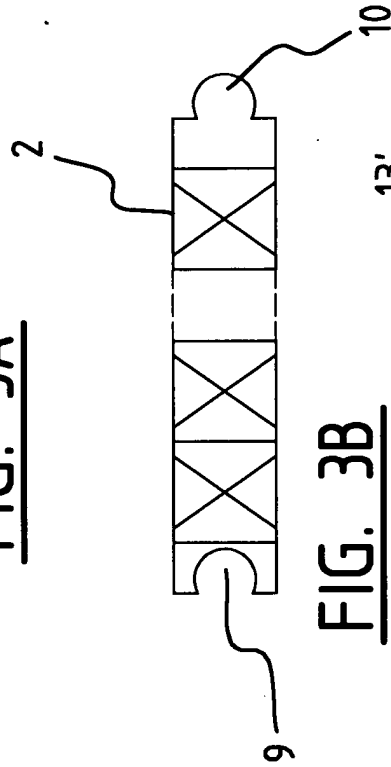


FIG. 3B

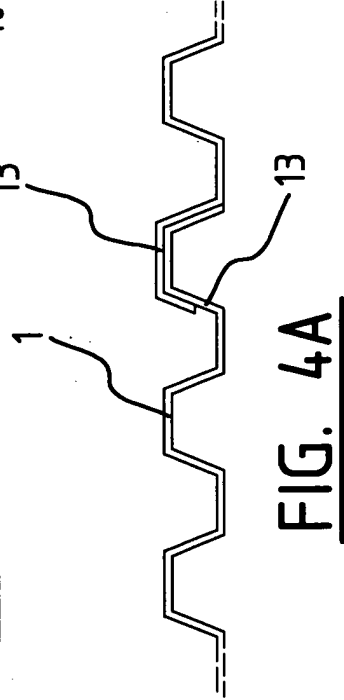


FIG. 4A

REFERENCES CITED IN THE DESCRIPTION

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