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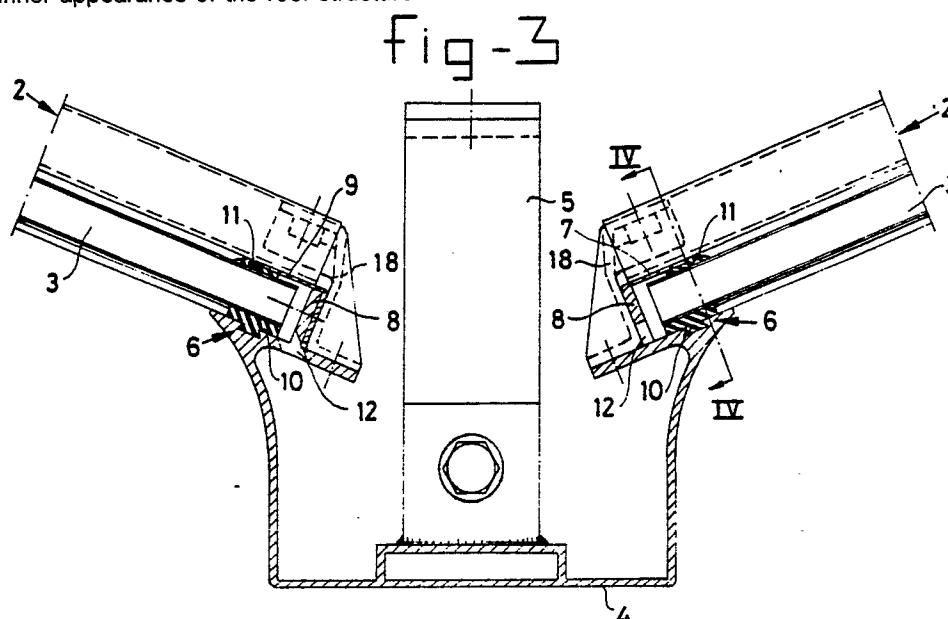
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54 Roof structure.

57 The roof structure comprises at least two longitudinal sections (4) with roof elements extending crosswise between them. Each roof element consists of two transverse sections (2) with a panel (3) between them, and adjacent transverse sections mate in a sealing fashion. Furthermore the transverse sections are provided with reinforcement parts which are lying on the outside of the roof, thus providing a smooth neat inner appearance of the roof structure.



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Roof structure

The invention relates to a roof structure comprising two longitudinal sections with roof elements which extend crosswise between them, and each of which comprises two transverse sections with a panel between them, two adjacent transverse sections always mating in sealing fashion, and said transverse sections in cross section consisting of a groove-type nesting part for a panel edge and a bearing reinforcement part.

Such a roof structure described in German Utility Model DE-U-86 01 903, which is not a prior publication, is used for roofing illuminated passages such as, for example, pedestrian subways, external passages and the like. The panels are made of transparent material, and for the sake of insulation are generally produced in the form of double walls with transverse bars between them.

Panels and their transverse sections curve outwards between the longitudinal sections, for the purpose of rainwater drainage. The size of the arch over which the panels and transverse sections are curved can be up to 180 degrees.

As described in the above-mentioned Utility Model, the reinforcement part of each transverse section is on the inside relative to each nesting part.

The disadvantage of this design is that the external appearance of the inside of the roof is unattractive, in view of the projecting interruptions formed by the reinforcement parts of the transverse sections.

In addition, where the panels join the longitudinal sections the reinforcement parts thus fitted form interruptions which mean that it is not possible for the panels to flow smoothly into the lengthwise walls.

Besides, dirt can easily collect in the projecting and/or recessed parts of this roof structure, with the result that the external appearance deteriorates even further.

The object of the invention is therefore to produce a roof structure of the type mentioned in the preamble, which does not have these disadvantages.

This object is achieved according to the invention in that the reinforcement part relative to the nesting part is always on the outside of the roof structure, and at the section ends in the lengthwise direction of the transverse section projects relative to the nesting part, the transverse sections resting with these projecting ends of the reinforcement parts on the longitudinal sections.

Since the nesting part of the transverse sections projects only slightly below the panels, a roof

structure which is very flat-looking on the underside is obtained. Besides, the panels can now be joined in a smooth-flowing transition to the lengthwise walls. The largely smooth roof structure thus formed is considerably less prone to soiling through the collection of dust and the like. Moreover, it is easy to clean with a strong jet of water, since the smooth finish makes all parts of the roof structure easy to reach.

In the above-mentioned utility model the concerted sealing action of the adjacent sections is ensured by the fact that one of two adjacent sections in cross section always has a groove which is open to the outside, while the other has an inwardly directed flange which slots into it. In view of the reinforcement parts of the sections lying on the inside of the structure, these slot-in parts must be located on the parallel sides of the transverse sections facing each other. This means that quite a large groove remains between the reinforcement parts visible from the inside.

A further improvement in this respect can be obtained according to the invention through the fact that the groove and the slot-in flange are always disposed on the outside of the transverse sections relative to the appropriate nesting part, and the slot-in groove is a recess in the appropriate reinforcement part. Through this positioning of the slot-in parts, the distance between the sections can be reduced to a narrow slit. This improves the tightness of the roof structure and is also beneficial for obtaining a smooth external appearance in the roof structure.

In order to obtain close fitting of the panels on the side walls, these panels can be accommodated at their edges facing the side walls in a groove which is always provided in the longitudinal sections.

In this connection, a particularly simple structure is obtained through the projecting end of the reinforcement parts being attached to the outermost groove wall.

If, as already mentioned, the roof elements are in the shape of an arch of 180 degrees, i.e. are semi-circular, the panel edges facing the side walls can simply be pushed into the corresponding grooves in the longitudinal sections.

However, this is not possible where the arch of the roof elements deviates from 180 degrees. When one panel edge is pushed into the matching groove the roof element in question would have to be greatly deformed to slide the other panel edge into the appropriate groove. The roof elements are too stiff for this, in particular on account of the reinforcement parts of the transverse sections.

According to the invention, the roof elements with an arch deviating from 180 degrees can still be fitted easily due to the fact that at least one of the outermost groove walls of the two longitudinal sections is detachable, in such a way that the panels can be placed freely on the appropriate opposite groove wall and can be fixed by means of the detachable groove wall. The detachable groove wall can be fixed on the longitudinal section, for example by means of screws, after the roof elements are in position.

The invention will be explained further below with reference to the figures.

Fig. 1 shows a first embodiment of the roof structure in perspective.

Fig. 2 shows a second embodiment of the roof structure in perspective.

Fig. 3 shows a detail of Fig. 1.

Fig. 4 shows a cross section along the line IV-IV in Fig. 3.

Fig. 5 shows a cross section along the line V-V in Fig. 1.

Fig. 6 shows a detail of Fig. 2 along the line VI-VI.

Fig. 7 shows a detail of Fig. 2 along the line VII-VII.

Fig. 1 shows a roof structure comprising roof elements 1, each comprising transverse sections 2 and panels 3 lying between them, longitudinal sections 4 to support the roof elements 1, and supports such as suspension uprights 5 which are fixed to the longitudinal sections 4.

Fig. 2 shows a different roof structure, also comprising roof elements 1 with transverse sections 2, panels 3, and longitudinal sections 4. This roof structure rests on two parallel side walls 5.

Fig. 3 shows a detail of Fig. 1 on a larger scale. The longitudinal section 4 shown has a groove on either side to take the edges of the panels 3. This groove is formed by in each case a fixed bottom wall 6 and a wall 7 which is provided above it and parallel to it, and which is either also fixed to the longitudinal section by means of groove bottom 8 (on the right in Fig. 3) or there is a wall 9 which is detachably connected to the groove bottom 8 (on the left in Fig. 3). In the case of the groove with fixed wall 7 the panel can be pushed in, while in the case of the other groove it is possible to fit the panel freely and then to fix the detachable wall 9. For sealing purposes, the edges of the panels rest on sealing sections 10, 11.

Finally, there is a drainage hole 12 in each groove bottom 8.

Figs. 4 and 5 show how two adjacent transverse sections 2 and 13 mate. Transverse section 2 has an inward-facing slot-in flange 14, while transverse section 13 has an outward-facing slot-in

groove 15. As shown, flange 14 and groove 15 are at a certain distance from each other, so that any manufacturing tolerances and expansion movements can be absorbed. However, good tightness against raining in is ensured at the same time. Any water still penetrating between the sides of the transverse sections 2 and 13 facing each other (for example, due to jet cleaning of the inside of the roof structure) can be drained off through the drainage hole 12 and through the groove 15. These figures also show that the transverse sections 2, 13 each comprise a groove-type nesting part 16 for the edges of the panels 3, and a bearing closed reinforcement part 17. At the ends (see Fig. 3) these reinforcement parts 17 run a little further on than the nesting parts 16, and with these projecting ends are fixed to the longitudinal section by means of mounting brackets 18.

Figs. 6 and 7 show a variant of the positioning of the roof elements 1 on the longitudinal sections 4, which are supported by a side wall 5. This variant also has a longitudinal section 4 with a detachable wall 19. This wall 19 can be fixed by means of a screw 20 to longitudinal section 4 after the roof element is in position; stop projection 21 here ensures correct positioning of roof element 1. Sealing section 11 ensures a good seal and confinement of the panel 3.

Fig. 7 shows that the projecting end of the reinforcement part 17 of transverse section 2 is not fixed directly to the longitudinal section 4, but by means of the detachable wall 19. For this purpose, an insert 22, into which the fixing screws 23 are screwed, is provided in the cavity of the reinforcement part 17. In this way, two transverse sections 2 can always be fixed first of all on either side to a section of the wall 19 with the length of one roof element, one panel 3 also being fitted in the nesting part of the transverse sections 2. The roof element thus formed is then placed in its entirety on the longitudinal sections 4 and fixed by means of screws 20.

Claims

1. Roof structure comprising two longitudinal sections with roof elements which extend crosswise between them, and each of which comprises two transverse sections with a panel between them, two adjacent transverse sections always mating in sealing fashion, and said transverse sections in cross section consisting of a groove-type nesting part for a panel edge and a bearing reinforcement part, characterized in that the reinforcement part relative to the nesting part is always on the outside of the roof structure, and at the section ends in the lengthwise direction of the transverse section pro-

jects relative to the nesting part, the transverse sections resting with these projecting ends of the reinforcement parts on the longitudinal sections.

2. Roof structure according to Claim 1, in which one of two adjacent sections in cross section always has a groove which is open to the outside, while the other has an inward-directed flange which slots into it, characterized in that the slot-in groove and the slot-in flange are always disposed on the outside of the transverse sections relative to the appropriate nesting part, and the slot-in groove is a recess in the appropriate reinforcement part, in such a way that there is only a narrow slit between two adjacent sections.

3. Roof structure according to Claim 2, in which the panels at their edges facing the longitudinal sections can be accommodated in grooves located in the longitudinal sections, characterized in that the projecting end of the reinforcement parts is fixed to the outermost groove wall.

4. Roof structure according to Claim 4, characterized in that at least one of the outermost groove walls of the two longitudinal sections is detachable, in such a way that the panels can be placed freely on the appropriate opposite groove wall and can be fixed by means of the detachable groove wall.

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fig-1

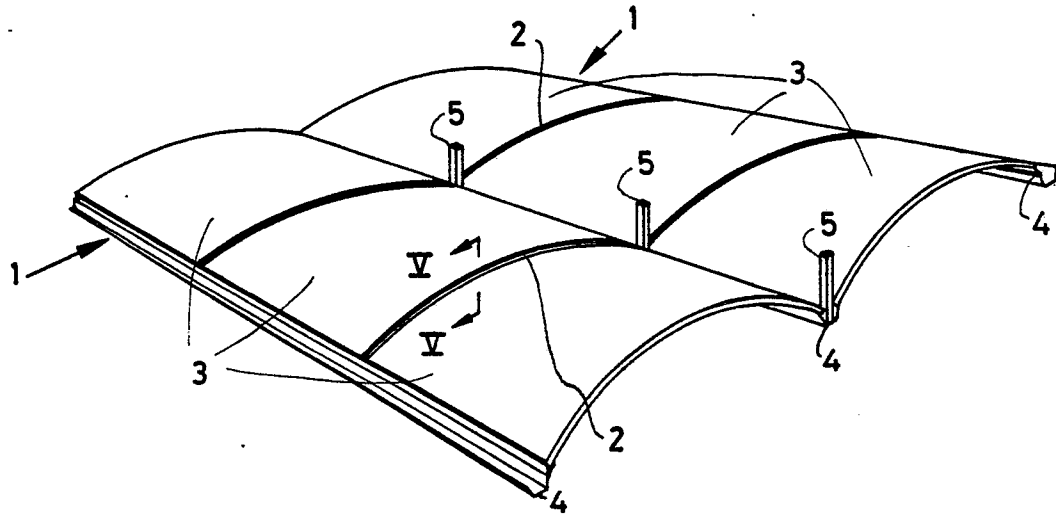


fig-2

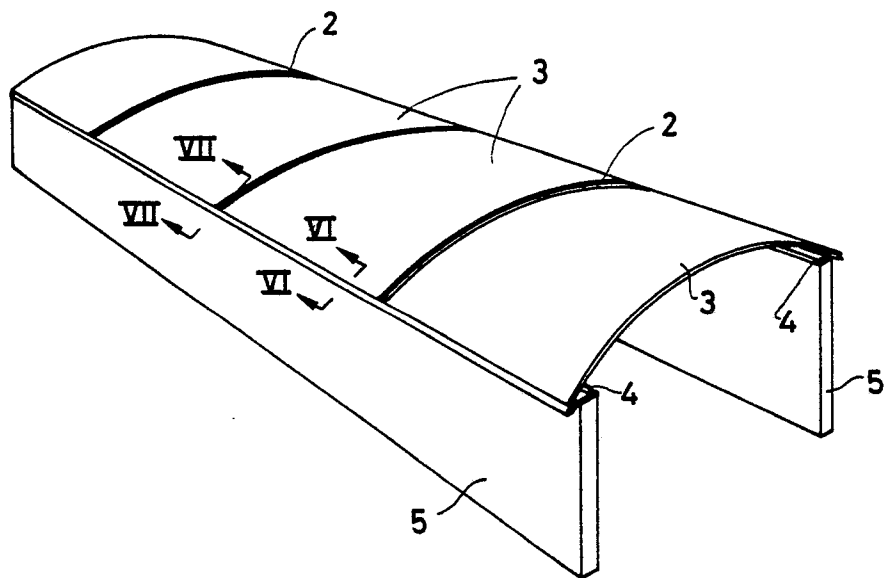


fig-3

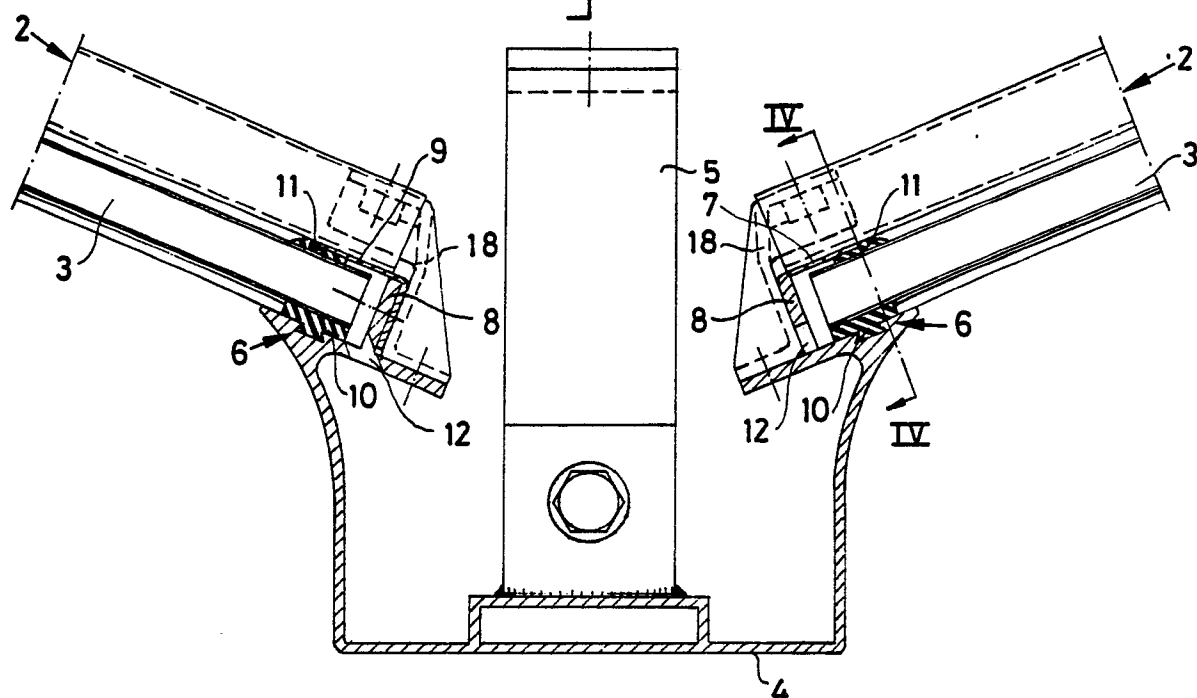


fig-4

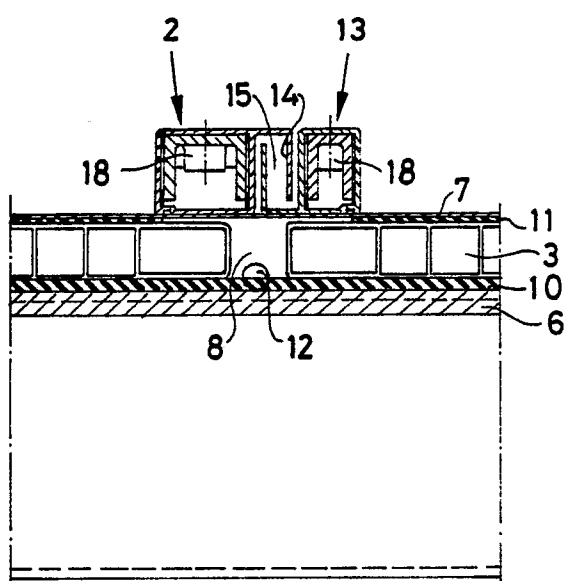


fig-5

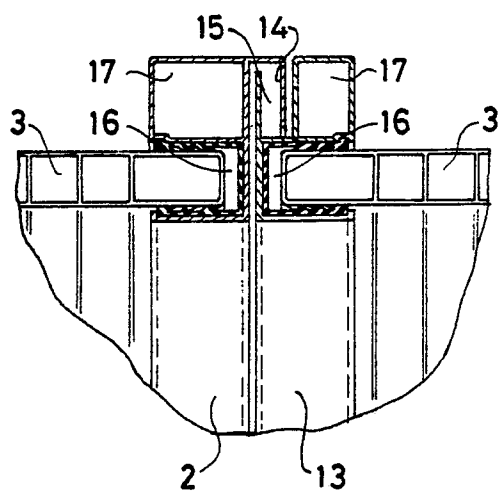


fig-6

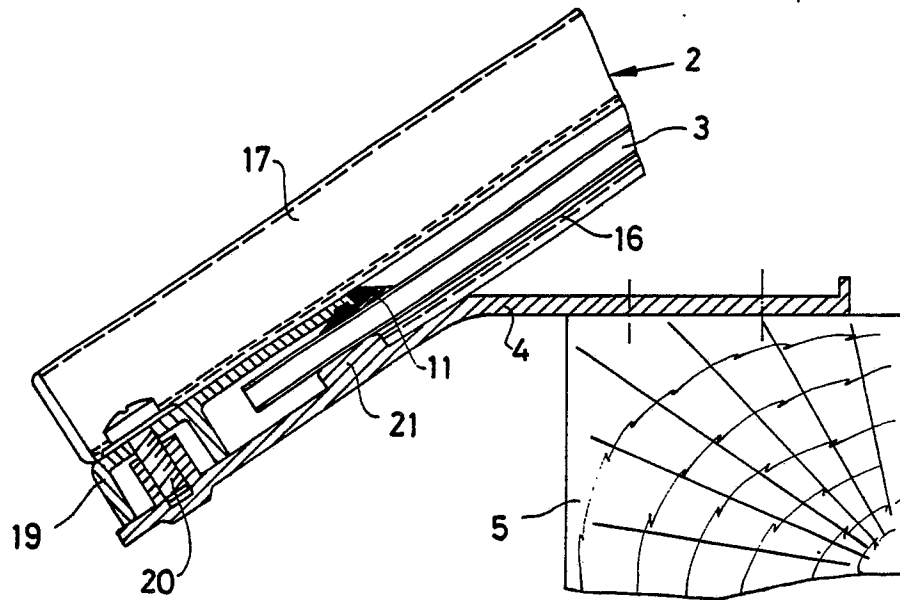
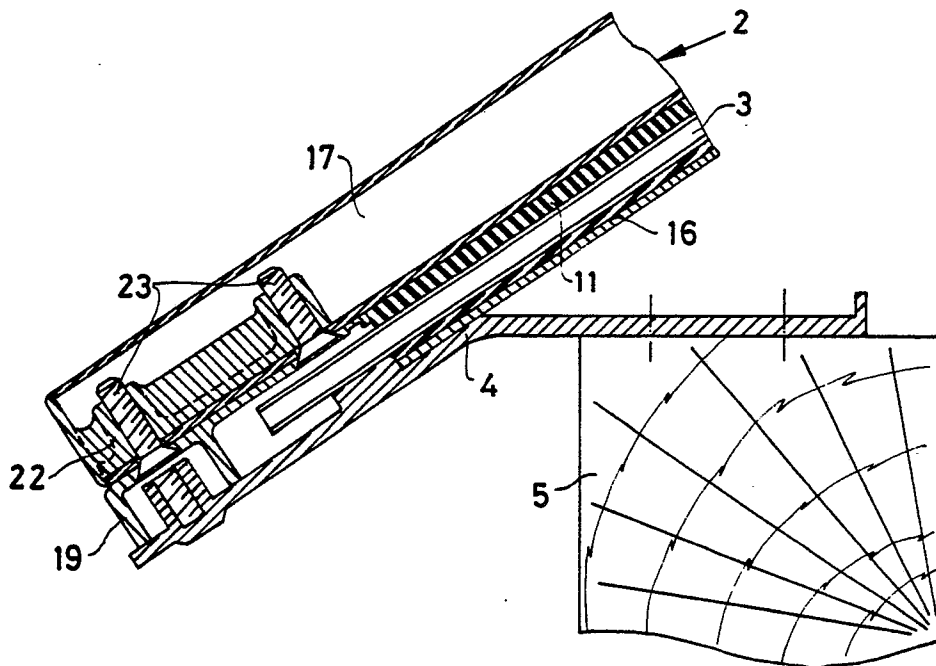


fig-7





European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 88 20 2307

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.4)
A, D	DE-U-8 601 903 (COLT INTERNATIONAL) ---		E 04 D 13/03
A	FR-A-2 487 451 (STAUB) ---		
A	GB-A-2 145 456 (NORCROS) ---		
A	FR-A-1 564 025 (NOEL) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			E 04 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23-12-1988	Examiner HENDRICKX X.
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	