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NL-5600 AP Eindhoven (NL)**(54) **A light-transmitting element for a roof construction.**

(57) The invention relates to a light-transmitting element for a roof construction made of a polymeric material which transmits light, which element has a substantially even surface at its bottom side and which is provided with trapezoidal or corrugation-shaped parts at its upper side, whereby the element is built up of two parts, that is an upper plate (2),

which is open at its bottom side and which is provided with trapezoidal or corrugation-shaped parts (4), and a double-walled bottom plate (3) comprising channels (6), which bottom plate (3) is secured against the upper plate (2). The invention also relates to the roof construction and the upper plate and/or bottom plate according to the invention.

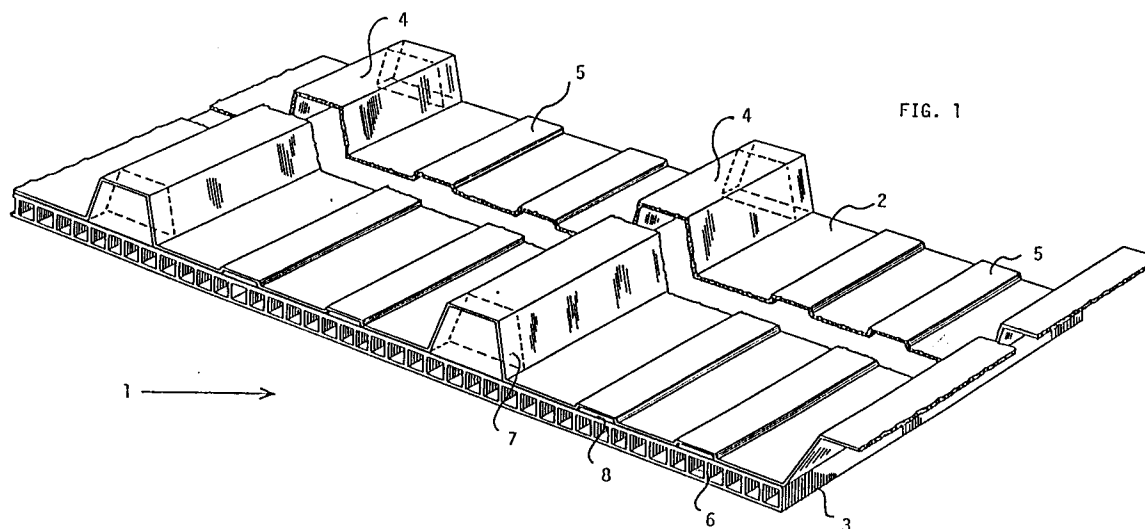


FIG. 1

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The invention relates to a light-transmitting element for a roof construction made of a polymeric material which transmits light, said element being built up of an upper plate provided with trapezoidal or corrugation-shaped parts and a double-walled bottom plate, whose two walls are interconnected by cross partitions so as to form channels, the upper plate being secured to the bottom plate.

Such an element is known from DE-U-9115940. In this known construction the channels formed between the two walls of the bottom plate are open at their ends, as are the ends of the trapezoidal or corrugation-shaped parts. As a result of this dirt and moisture can easily penetrate these spaces, which harms the appearance of the elements and which has a negative effect on their light-transmitting capacity.

According to the invention the ends of the channels in the bottom plate and of the trapezoidal or corrugation-shaped parts of the upper plate are closed and the upper plate is made of a polycarbonate. In this manner dirt and moisture are prevented from penetrating into the channels. Since the polycarbonate is permeable to moisture to a certain extent and said permeability increases as the temperature rises, the effect of using an upper plate of polycarbonate is that the condensate which is possibly formed in the trapezoidal or corrugation-shaped parts of the upper plate at low temperatures (for example during the night), will disappear in the shape of water vapour exhausting from said trapezoidal or corrugation-shaped parts. Since the permeability to water vapour of the polycarbonate decreases when subsequently temperatures become lower, the risk that a comparatively great deal of water vapour will accumulate in the trapezoidal or corrugation-shaped parts again is small.

By using the construction according to the invention it is therefore possible to achieve in a simple manner that the interior of the light-transmitting element will remain clean and practically free from condensate.

The invention will be explained in more detail hereafter in the following description, wherein reference is made to the appended drawing, in which:

Figure 1 is a perspective view of the light-transmitting element according to the invention.

Figure 1 shows the light-transmitting element 1 according to the invention, built up of an upper plate 2, which is provided with trapezoidal or corrugation-shaped parts 4, and a double-walled bottom plate 3, in which open channels 6 are provided. Such an upper plate is easy and cheap to manufacture, particularly in comparison with the box-like construction that has been used so far. Also the double-walled bottom plate 3 is easy to manufacture as a single part. Furthermore these

two parts, that is the bottom plate 3 and the upper plate 2 can readily be detachably secured together by applying a double-sided adhesive tape 8, or the two plates can be fastened together by means of an adhesive or a cement. Such an adhesive or cement will provide a more permanent connection between the bottom plate and the upper plate.

With a view to improving the mechanical characteristics of the construction and regulating the permeability to vapour the upper plate 2 may also be provided with relatively low elevations 5, which are preferably closed at the outside. These elevations 5 provide a good fit with other elements.

Furthermore it is preferred that the trapezoidal or corrugation-shaped parts 4 are closed at the outside with coverings 7. These coverings may be made of a material other than a polycarbonate.

The channel-shaped means 6 in the double-walled bottom plate 3 preferably extend parallel to the trapezoidal or corrugation-shaped parts 4, and they are open. The double-walled bottom plate 3 provides a good thermal insulation and it is possible to obtain diffuse light in the space which is closed by a roof construction according to the invention.

Furthermore it is possible with the light-transmitting element according to the invention to obtain a desired regulation of the water vapour in the space which is closed in this manner.

When such a light-transmitting element according to the invention is used in an atmosphere with an elevated content of contaminations, it is possible to close the channels 6 on one side or close them partially.

Such a light-transmitting element according to the invention provides an optimum, inexpensively and readily produced roof construction. The invention also relates to the individual parts, that is the upper plate 2 and the bottom plate 3, which are used for manufacturing a light-transmitting element according to the invention.

It will be possible for a person skilled in this field of the art to provide modifications in the above-described construction as regards configuration or choice of materials, any such modifications must be considered to fall within the scope of that which has been described above, however.

## Claims

1. A light-transmitting element for a roof construction made of a polymeric material which transmits light, said element being built up of an upper plate (2) provided with trapezoidal or corrugation-shaped parts (4) and a double-walled bottom plate (3), whose two walls are interconnected by cross partitions so as to form channels (6), the upper plate (2) being

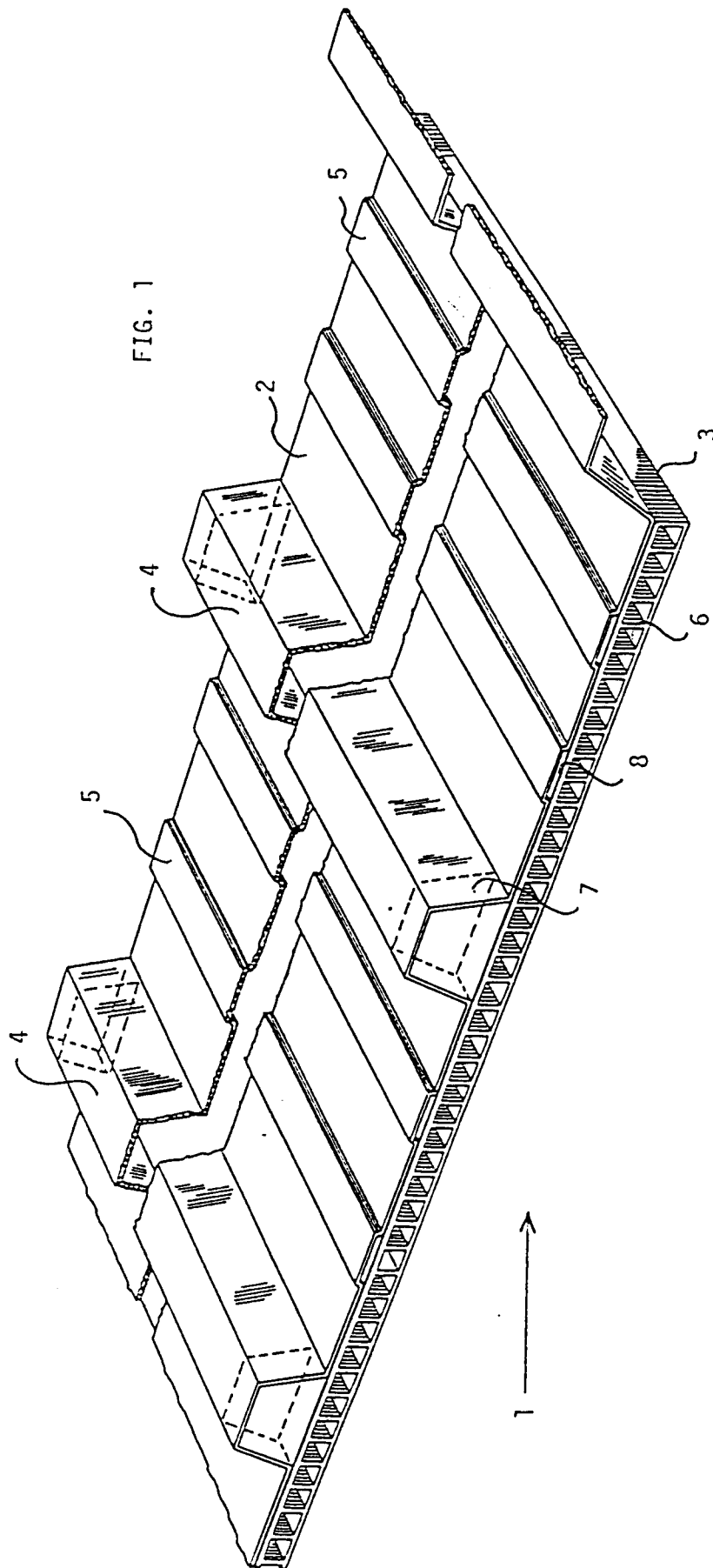
secured to the bottom plate (3), characterized in that the ends of the channels (6) in the bottom plate (3) and of the trapezoidal or corrugation-shaped parts (4) of the upper plate (2) are closed and that the upper plate is made of a polycarbonate. 5

2. A light-transmitting element according to claim 1, characterized in that said bottom plate (3) is made of a polycarbonate. 10
3. A light-transmitting element according to claim 1 or 2, characterized in that said bottom plate (3) and said upper plate (2) are secured together by means of double-sided adhesive tape (8). 15
4. A light-transmitting element according to claim 3, characterized in that said bottom plate (3) and said upper plate (2) are secured together by means of an adhesive or a cement. 20
5. A light-transmitting element according to any one of the preceding claims, characterized in that said upper plate is provided with trapezoidal or corrugation-shaped parts (4 and 5) of different heights. 25
6. A light-transmitting element according to any one of the preceding claims, characterized in that the channels (6) in the bottom plate (3) extend parallel to the trapezoidal or corrugation-shaped parts (4) of the upper plate. 30
7. An upper plate and/or a bottom plate obviously intended for being used in composing a light-transmitting element according to any one of the claims 1 - 6. 35
8. A roof construction provided with a light-transmitting element according to any one of the claims 1 - 6. 40

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## EUROPEAN SEARCH REPORT

Application Number

EP 93 20 1640

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.5)
Y,D	DE-U-9 115 940 (RÖHM) * page 3, paragraph 2-3 * * page 5, paragraph 3 - page 6, paragraph 1 * * figure 1 * ---	1,2,5-8	E04D3/28
Y	DE-A-3 530 385 (RIEMER) * column 2, line 17 - column 2, line 37 * * figures 1-3 * ---	1,2,6-8	
Y	GB-A-2 069 036 (ROBERTSON) * page 1, line 110 - page 2, line 13 * * page 2, line 61 - page 2, line 70 * * figures 1-3 * ---	1,2,5	
A	US-A-4 102 099 (GROSS) * column 2, line 23 - column 3, line 13 * * figures 1,3,5A * ---	3,4	
A	US-A-5 052 164 (SANDOW) * claim 1; figures 1-4,10 * ---	1	
A	EP-A-0 101 283 (EVERLITE A/S) * claim 1; figures 1-2 * ---	1	
A	DE-B-1 102 372 (BIERBRAUER) * claim 1; figure 1 * -----	3	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 01 OCTOBER 1993	Examiner HENDRICKX X.
<b>CATEGORY OF CITED DOCUMENTS</b> 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			