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(54) A panel

(57) A rooflight comprising a profiled outer weather sheet 1 of translucent glass reinforced plastic and an internal sheet 2 of a translucent polycarbonate multi-wall material. The sheets 1, 2 define a void space therebetween. Spacers in the form of blocks 3 of a high density ethylene propylene diene monomer (EPDM) are provided at the ends of the panel. Spacer/filler blocks 3 are provided at the ends of the panel and, if necessary, intermediate the ends. Fixing to supports 10 is by valley fixing through the sheets and filler block.

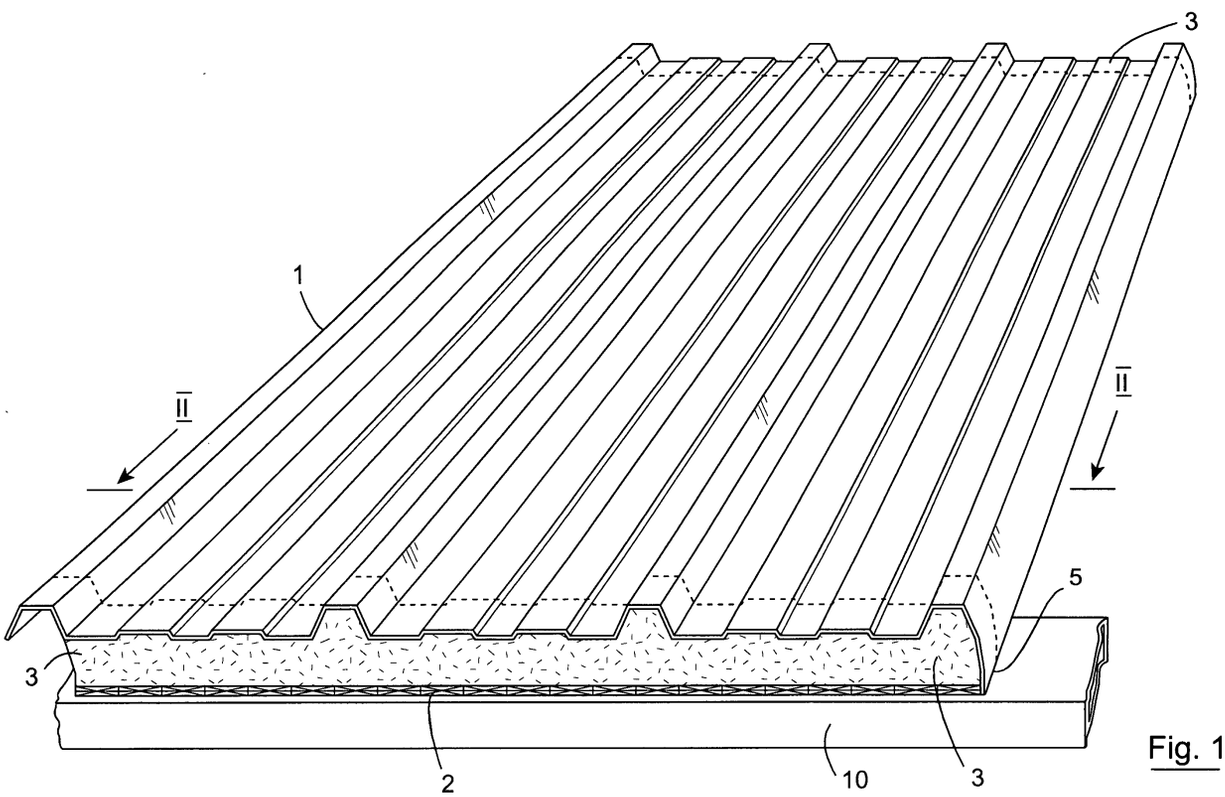

Fig. 1

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Description

Introduction

[0001] The invention relates to a translucent roof panel.

[0002] In general, translucent roof panels (also called rooflights) comprise an outer translucent weather sheet and an inner translucent liner sheet.

[0003] One of the problems with conventional rooflights is that they are not efficient insulators and the rate of heat loss through the rooflights is relatively high.

[0004] This invention is directed towards providing a translucent panel with enhanced insulation properties.

Statements of Invention

[0005] According to the invention there is provided a translucent panel comprising:-

a profiled outer weather sheet of translucent glass reinforced plastic;

an inner liner sheet of a translucent polycarbonate multi-wall material; and

spacer means between the inner and outer sheets.

[0006] In one embodiment the spacer is of an insulating polymeric material.

[0007] The spacer may be of ethylene propylene diene monomer.

[0008] In one embodiment the spacers extend transversely between the inner and outer sheets.

[0009] The spacer means may comprise at least two blocks of insulating material which are longitudinally spaced-apart along the panel.

[0010] In one embodiment the outer sheet comprises a free overlap portion for overlapping with an adjacent panel. The panel may comprise a support for the overlap portion. The support may comprise a support plate applied over the side marginal edge of the spacer means. In one arrangement the support plate is attached to the outer sheet and the inner sheet. The support plate may be attached by means of an adhesive tape.

[0011] The invention also provides a roof structure incorporating a panel of the invention.

Brief Description of the Drawings

[0012] The invention will be more clearly understood from the following description thereof given by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of a translucent panel according to the invention;

Fig. 2 is a cross sectional view in the direction of the arrows II - II in Fig. 1;

Fig. 3 is an enlarged perspective view of a detail of the panel;

Fig. 4 is a perspective view of portion of a filler/spacer block used in the panel; and

Fig. 5 is a cross sectional view of another translucent panel according to the invention.

Detailed Description

[0013] Referring to the drawings and initially to Figs. 1 to 4 thereof there is illustrated a rooflight according to the invention comprising a profiled outer weather sheet 1 of translucent glass reinforced plastic and an internal sheet 2 of a translucent polycarbonate multi-wall material. The sheets 1, 2 define a void space therebetween. Spacers in the form of blocks 3 of a high density ethylene propylene diene monomer (EPDM) are provided at the ends of the panel. Spacer/filler blocks 3 are provided at the ends of the panel and, if necessary, intermediate the ends. Fixing to supports 10 is by valley fixing through the sheets and filler block.

[0014] The external sheet 1 in this case is a 2.4kg/m2 Class 3, 35mm nominal depth profiled glass reinforced polyester (GRP) sheet. The external weather sheet 1 is protected using Dupont UV resistant polyester film. This material gives good UV and chemical protection. The GRP sheet has exaggerated underlap side profile 5 in order to fix to the internal liner 2.

[0015] The internal liner 2 in this case is a kg/m2 Class Lexan Thermoclear multi-wall polycarbonate sheet available from GE Structured Products. In this case it has a 10mm X-wall structure x 1000mm wide. This material is highly resistant to sheet covering discoloration, loss of light transmission and loss of strength due to weathering.

[0016] Referring in particular to Fig. 2, the panels are end sealed using the high density ethylene propylene diene monomer (EPDM) blocks 3 and silicone sealant. The GRP sheet 1 and the polycarbonate sheet 2 are also bonded using a VHB acrylic foam tape 6 supplied by 3M. The tape 6 is used on both the under lap and over lap sides of the panel.

[0017] A 0.9mm PVC support plate 7 is integrated into the panel to add deflection and fit to an insulated panel. 45mm vented and blocking tapes 15 are applied to either ends of the polycarbonate backing tray 2 to reduce the risk of condensation.

[0018] For fixing requirements an integrated 0.5mm steel fastening strip is fitted to the underlap crown of the panel along with integrated 0.5mm endlap fastening plates. A rivet fixed extruded PVC overlap support plate is also to be fitted to the panel.

[0019] The panel of Figs. 1 to 4 may have air space

gaps between the sheets of typically 28mm, 38mm or 48mm corresponding to panel thickness of 40mm, 50mm and 60mm.

[0020] Referring to Fig. 2 there is illustrated another rooflight according to the invention is which parts similar to those illustrated in Fig. 1 are assigned the same reference numerals. In this case the internal liner 2 is a 2.7 Kg/m^2 class 1Y Lexan Thermoclear multi-wall polycarbonate sheet available from GE Structured Products. It has a 16mm x 18mm wall structure x 1,000mm wide. The properties of this sheet include a light transmission of 64% with a U value of 2.4 stand alone. This panel construction may be used for thicker panels such as a panel thickness of 80mm.

[0021] The rooflights may be provided in a range of thicknesses such as 40mm/50mm/60mm/and 80mm with U-values in the range of 1.7 to 2.0 watts per square meter per degree Celsius/Kelvin ($Wm^{-2}K$).

[0022] The rooflights of the invention have excellent U-value ratings, do not suffer from the effects of thermal expansion and provide excellent light transmission properties.

[0023] The invention is not limited to the embodiments hereinbefore described which may be varied in detail.

Claims

1. A translucent panel comprising:-

   a profiled outer weather sheet (1) of translucent glass reinforced plastic;

   an inner liner sheet (2) of a translucent polycarbonate multi-wall material; and

   spacer means (3) between the inner and outer sheets (1,2).

2. A panel as claimed in claim 1 wherein the spacer (3) is of an insulating polymeric material.

3. A panel as claimed in claim 2 wherein the spacer (3) is of ethylene propylene diene monomer.

4. A panel as claimed in any of claims 1 to 3 wherein spacers (3) extend transversely between the inner and outer sheets (1,2).

5. A panel as claimed in any of claims 1 to 4 wherein the spacer means comprise at least two blocks (3) of insulating material which are longitudinally spaced-apart along the panel.

6. A panel as claimed in any preceding claim wherein the outer sheet (1) comprises a free overlap portion (5) for overlapping with an adjacent panel.

7. A panel as claimed in claim 6 wherein the panel comprises a support (7) for the overlap portion.

8. A panel as claimed in claim 7 wherein the support comprises a support plate (7) applied over the side marginal edge of the spacer means (3).

9. A panel as claimed in claim 8 wherein the support plate (7) is attached to the outer sheet (1) and the inner sheet (2).

10. A panel as claimed in claim 9 wherein the support plate (7) is attached by means of an adhesive tape (6).

11. A roof structure incorporating a panel as claimed in any preceding claim.

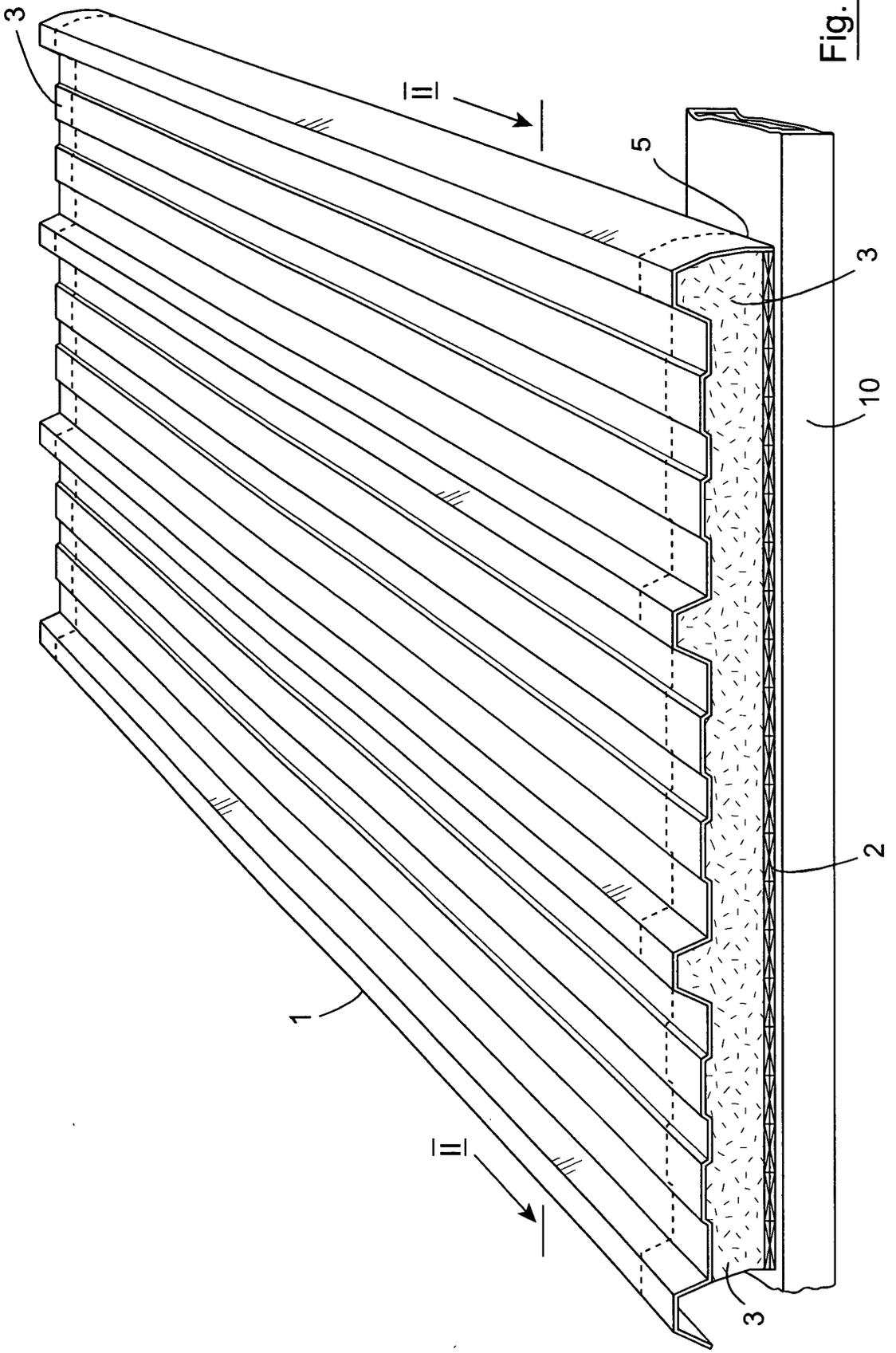

Fig. 1

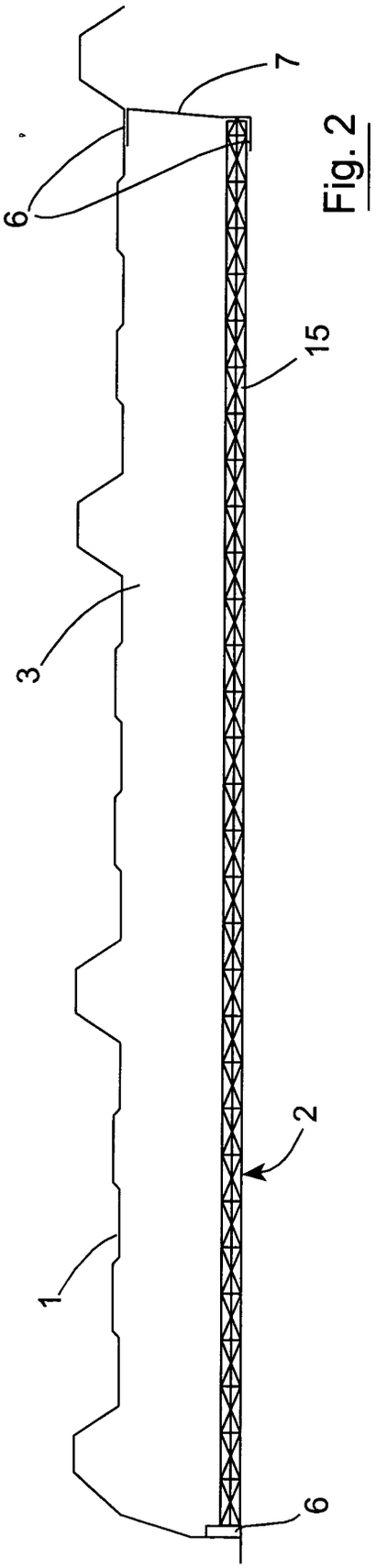

Fig. 2

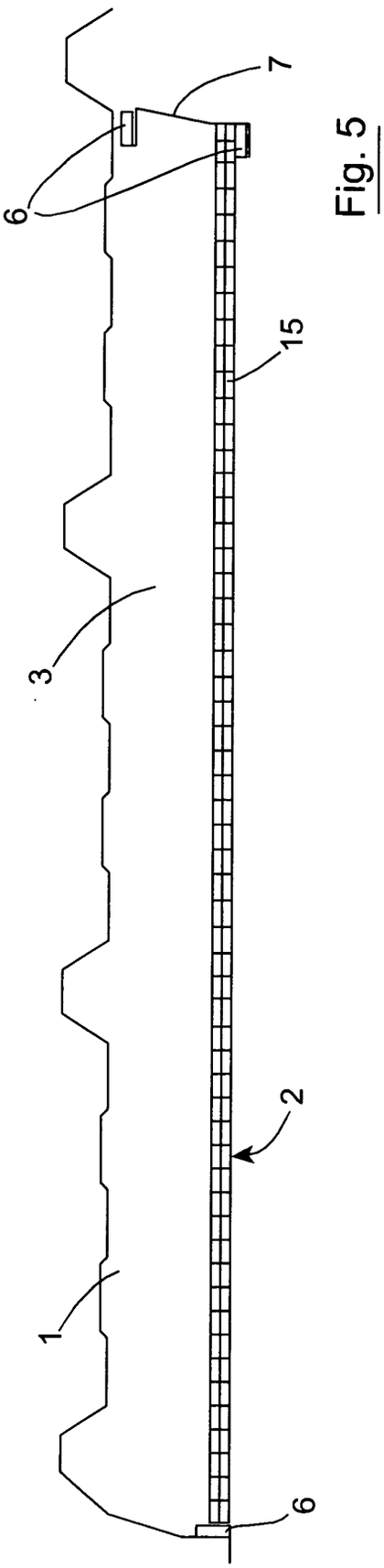

Fig. 5

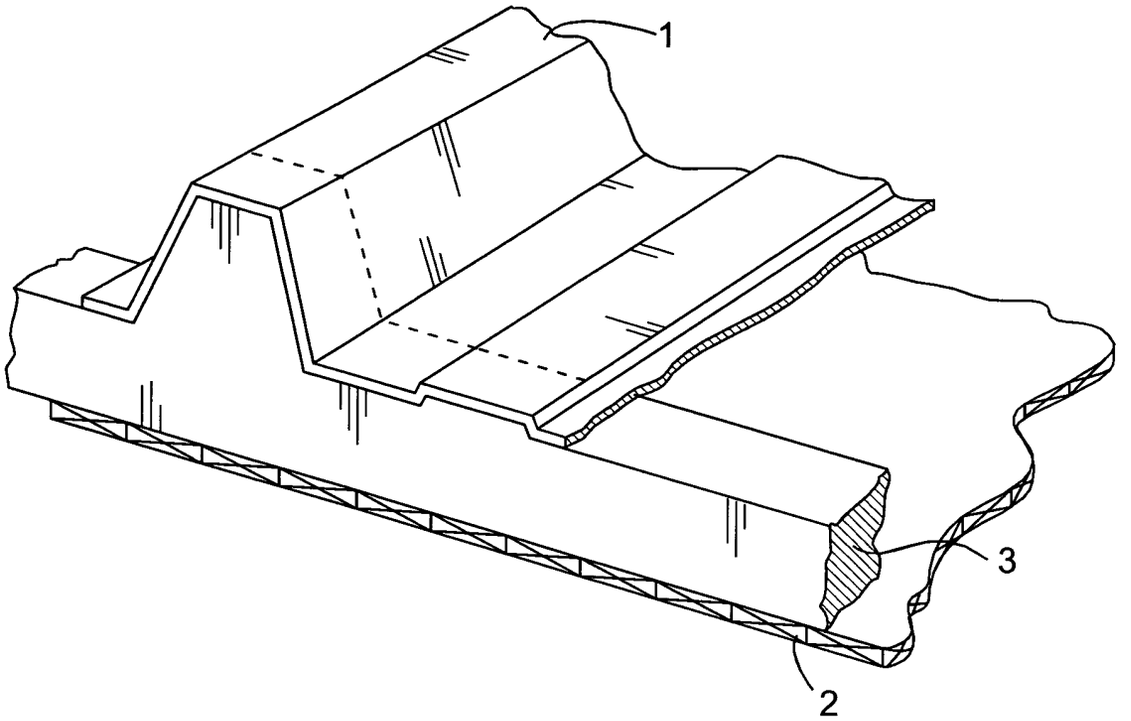

Fig. 3

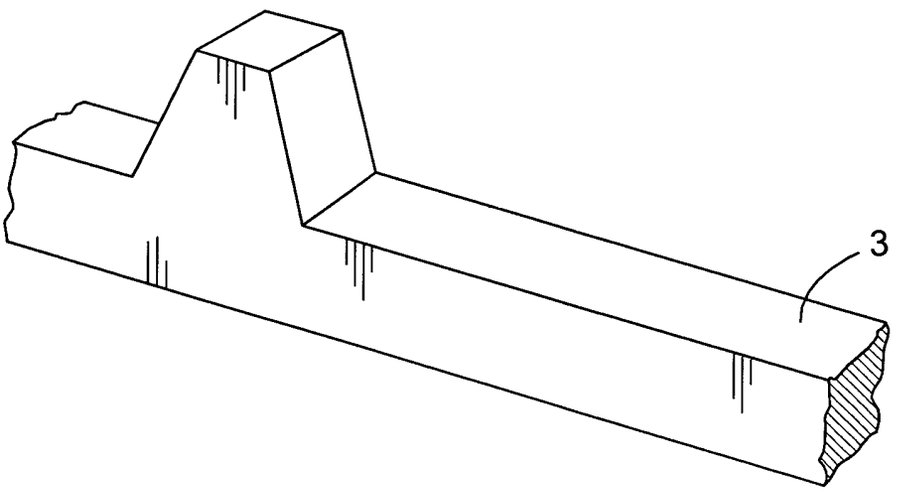

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 04 39 4021

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A	* column 2, line 41 - line 58; figures *	4	E04C2/54
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E04D
E04C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 July 2004	Righetti, R

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 39 4021

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29-07-2004

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