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(54) Roofing component and assembly

(57) A roofing component takes the form of a purlin support block (10) made of a material of low conductivity, for example nylon or polypropylene. The block tapers upwardly from a generally flat base (11) and has a slot (13), in the upper region of the block, extending generally parallel to the base of the block and beyond the mid point of the block. The block may form part of a roofing assembly comprising an inner layer of rigid sheeting (17), a number of the blocks secured on that layer, a number of purlins (15) mounted with a limb (16) of each purlin secured in the slots, an outer roofing layer of rigid sheeting (19) secured to the purlins, and a layer of heat-insulating material laid between the blocks.

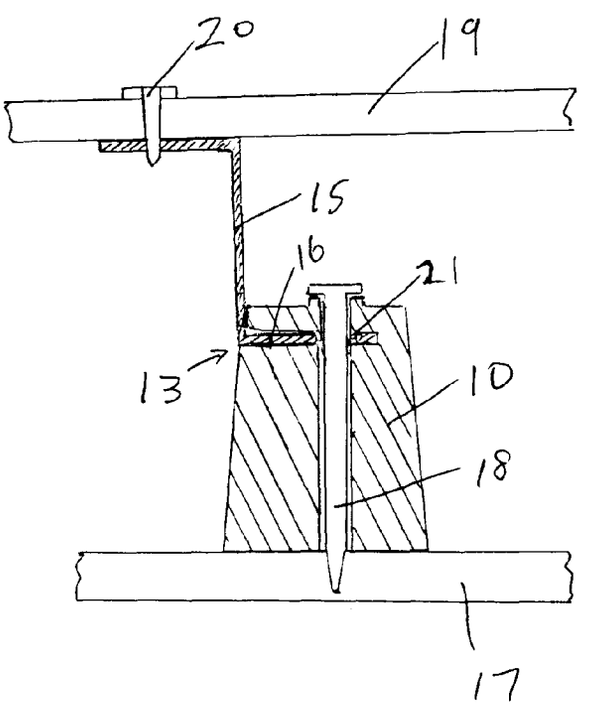

FIG.2.

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Description

The present invention is concerned with roofing assemblies of the so-called "twin skin" type, wherein an inner liner sheet and an outer sheet, each of steel or another rigid material, are supported at a predetermined space apart and a layer of insulating material is interposed between the two sheets.

Various such roofing assemblies are known and, while they display various disadvantages, in general they are satisfactory in use. However increasing concern for the conservation of energy has led to increasingly demanding standards of heat insulation in roofing. If the new standards are to be met solely by the provision of a greater thickness of insulating material, then the cost of adequately-insulated roofing will inevitably rise. There is therefore a greater incentive than ever to provide improved roofing systems whereby enhanced efficiency in the use of existing quantities of insulating material may be achieved.

In the laying of sheet insulating material provided in the form of a continuous roll, two methods have been adopted to deal with the situation where the roll of insulant encounters a transverse roof purlin. Ideally, the roll is cut so that the insulating material is fitted close up against the roof purlin on each side of the purlin. However this careful cutting and fitting of the insulating material may be difficult to carry out both satisfactorily and safely at roof level, particularly in adverse weather conditions, and the insulant is often therefore simply laid over the purlin, where, compressed by the outer roofing sheet laid over it, the insulant performs no useful insulating function and is therefore wasted.

In addition, in the common form of roofing assembly, the outer, usually metal, roof sheet is usually supported upon a transverse metal purlin which in turn is secured, directly or indirectly, upon the lining sheet, also usually of metal, by a metal screw. Thus a heat-conductive bridge is thereby formed between the outer and inner roofing sheets, whereby any heat insulation at those points is effectively by-passed. This bridge may therefore be a significant contributory source of heat loss.

Against the background of such disadvantages of such prior roofing assemblies, and in the context of statutory and/or financial requirements for improved insulation levels, it is an object of the present invention to provide an improved roofing component, and an assembly using that component, whereby some at least of such disadvantages may be reduced or eliminated.

The roofing component according to the invention comprises a purlin support block made of a material of low heat conductivity, which block tapers upwardly from a generally flat base, which block further has a slot therein, in the upper region of said block, extending generally parallel to said base to beyond the mid point of the block.

The roofing assembly according to the invention comprises an inner layer of rigid sheeting, a multiplicity of purlin support blocks of this above-defined type secured upon said inner layer of sheeting, a number of purlins mounted with a limb of each purlin secured in the slots of two or more said blocks, an outer roofing layer of rigid sheeting secured to said purlins, and a layer of heat-insulating material laid between the purlin support blocks.

The structure of the purlin support blocks according to the present invention affords two advantages in particular over prior roofing assemblies of this general type. Firstly, they allow the blocks to be disposed at greater intervals than alternative available supports and thereby allow the insulating material to be readily laid between them without cutting and without overlying the purlins. Secondly, they support the purlins in a way which makes it possible to avoid the forming of a heat-conductive bridge between the outer and inner roofing sheets.

The purlin support block, as described, tapers upwardly from a generally flat base. The base may be circular, rectangular or some other selected regular shape but it is particularly preferred that the base be square, in which case the block is pyramidal in form. Preferably the upper face of the block is also square and the block resembles a truncated pyramid.

A generally horizontal slot, that is a slot generally parallel to the base, is formed in the upper region of the block and extends beyond the middle of the block. When one of the purlins supporting the outer roof-layer has a cross-sectional shape somewhat resembling a squared letter "Z", that is having upper and lower horizontal limbs connected by a web, the lower limb may be inserted into the slots of two or more purlin support blocks. The limb of the purlin may be retained in each slot by a screw passed through the block in a generally axial direction of the block, for example in a bore extending generally axially through the block. Heat-insulation between the purlin and the screw may be provided in the form of a short tubular section of the purlin support block extending around the retaining screw where it passes through the purlin.

The purlin support blocks of the present invention are made of a material of low conductivity, most preferably of a synthetic polymeric material. Suitable such materials include polypropylene and nylon, of which virgin polypropylene is the preferred material.

The invention will now be further described with reference to the accompanying drawings which illustrate, by way of example only, one preferred form of purlin support block and roofing assembly according to the present invention and wherein:-

Fig. 1 is a perspective view of the purlin support block;

Fig. 2 is a vertical sectional view of the roofing assembly; and

Fig. 3 is an elevation of the assembly from the front.

The illustrated purlin support block 10 is generally

pyramidal, tapering upwardly from a flat, square base 11 towards a top 12 of similar shape. The block is formed by injection moulding in virgin polypropylene. A horizontal slot 13 extends, a short distance below the top 12, from one of the faces of the block a major part of the way towards the opposite face. A vertical bore 14 allows the passing of a self-tapping screw through the block.

When the roofing assembly employing a number of the support blocks 10 is to be installed, a steel purlin 15, of squared zed-shaped cross-section, is pre-assembled with its lower horizontal limb 16 extending into the slots 13 of the blocks 10 at intervals predetermined by the spacing of holes in the purlin along its length. Short tabs 21 within the slot 13 of each block 10 project into the holes in the purlins and hold the blocks in position while the assembly is being installed.

Insulating material (not shown) in sheet form is laid in place, to the required thickness, over sheeting 17 forming the roof lining and then the purlins 15 with the blocks 10 attached are placed in their desired final locations and secured to roof lining sheeting 17 by self-tapping screws 18. The tabs 21 in the slots of the blocks 10 provide heat insulation between each screw 18 and the adjacent purlin. The outer roofing layer 19 may now be secured to the purlins 15 by means of further self-tapping screws 20.

Claims

1. A roofing component, characterised in that it comprises a purlin support block (10) made of a material of low heat conductivity, which block tapers upwardly from a generally flat base (11), which block further has a slot (13) therein, in the upper region of the block, extending generally parallel to said base to beyond the mid point of the block.

2. A roofing component according to Claim 1, characterised in that the base (11) of the block (10) is square.

3. A roofing component according to Claim 1 or Claim 2, characterised in that the block (10) has a bore (14) extending generally axially through it.

4. A roofing component according to any of the preceding claims, characterised in that a short tubular section (21) extends from said block (10) into said slot (13).

5. A roofing component according to any of the preceding claims, characterised in that said block (10) is made of a synthetic polymeric material.

6. A roofing component according to Claim 5, characterised in that said synthetic polymeric material is polypropylene or nylon.

7. A roofing assembly, characterised in that it comprises an inner layer of rigid sheeting (17), a multiplicity of purlin support blocks (10) according to any of the preceding claims, said blocks being secured upon said inner layer of sheeting, a number of purlins (15) mounted with a limb (16) of each purlin secured in the slots (13) of two or more said blocks, an outer roofing layer of rigid sheeting (19) secured to said purlins, and a layer of heat-insulating material laid between the purlin support block.

8. A roofing assembly according to Claim 7, characterised in that said purlins (15) are of zed-shaped cross-section and a lower, generally horizontal limb (16) of said purlins is inserted into said slots (13) of said blocks (10).

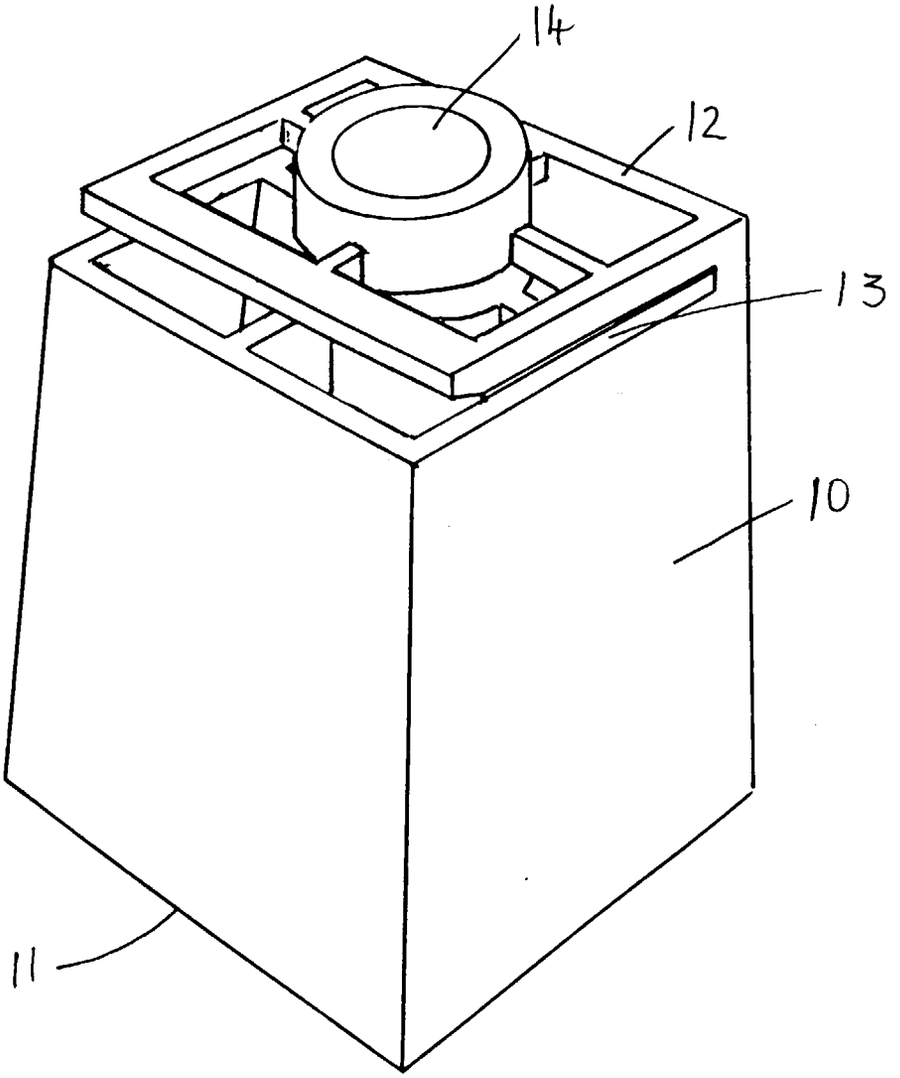

FIG. 1.

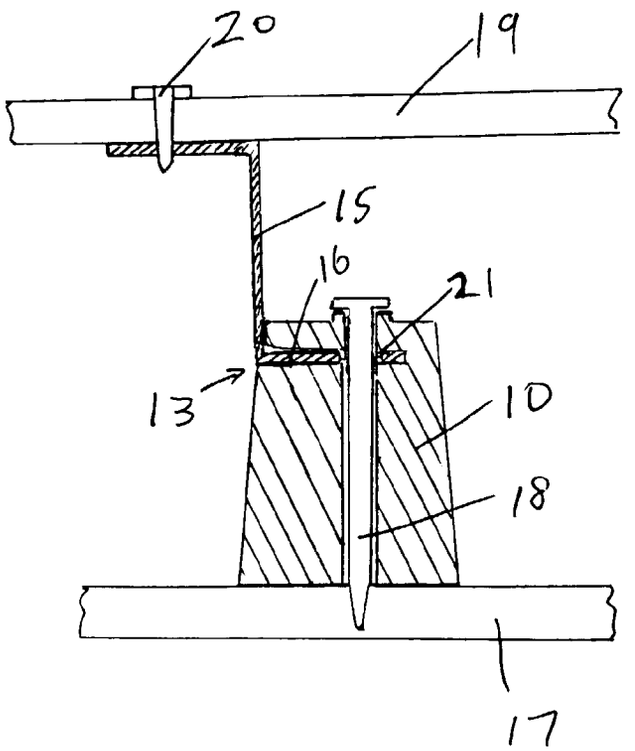

FIG. 2.

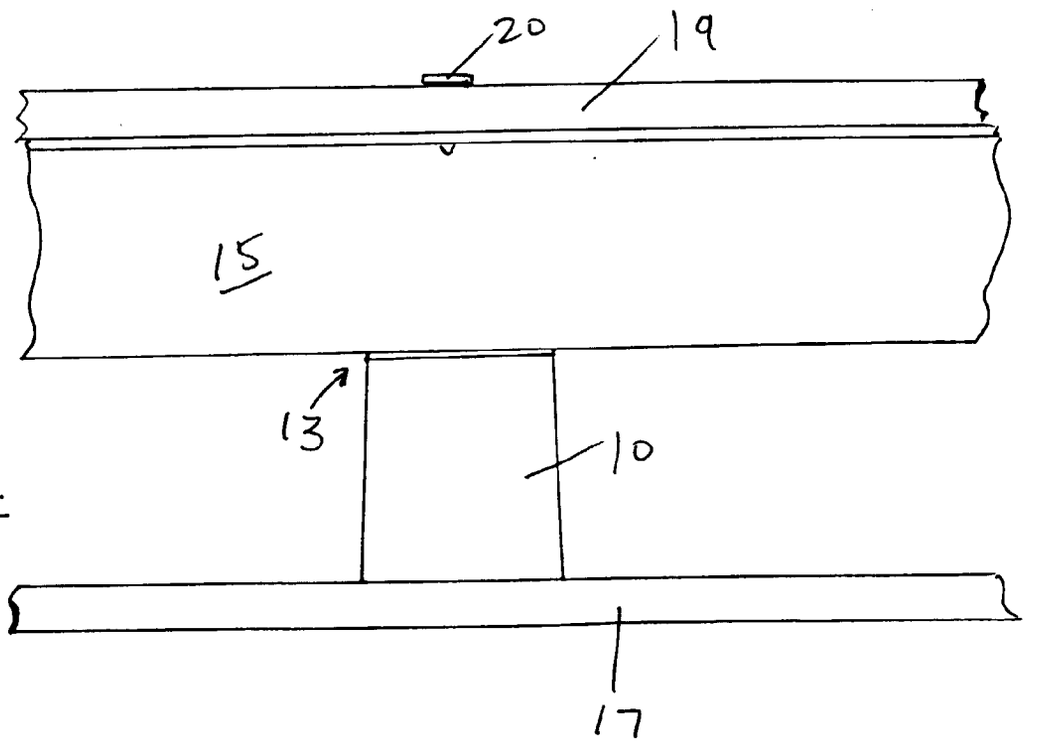

FIG. 3.

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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 7530

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.6)
A	GB 2 062 721 A (CONDER INTERNATIONAL) * page 1, line 101 - page 1, line 124 * * figures 1-3 *	1-3,5,7, 8	E04D3/36 E04D13/16
A	DE 40 19 149 A (TEMPERENZ-SYSTEM) * figure 1 *	1	
A	GB 2 148 975 A (ASH & LACY PLC) * figures 1-3 *	1	
A	GB 2 247 900 A (PRECISION METAL FORMING) * figures 1,2 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	6 February 1997	Hendrickx, X

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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