(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 740 854 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
**11.06.2014 Bulletin 2014/24**

(51) Int Cl.:
***E04D 13/147*** *(2006.01)* ***E04D 13/14*** *(2006.01)*

(21) Application number: **13195976.9**

(22) Date of filing: **06.12.2013**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
**BA ME**

(30) Priority: **07.12.2012 GB 201222071**

(71) Applicant: **Enviroform Solutions Limited**
**Warrenpoint Down BT34 3PN (GB)**

(72) Inventor: **Brown, Liam**
**Warrenpoint, Down BT34 3PN (GB)**

(74) Representative: **Waller, Stephen**
**FRKelly**
**4 Mount Charles**
**Belfast, Northern Ireland BT7 1NZ (GB)**

(54) **Insulated flashing construction**

(57) A flashing construction for forming a weather-proof seal at the junction of a wall and a roof comprising a first layer (14) formed from a sheet of deformable weatherproof material, and a second layer (12) formed from a thermally insulating material, said first layer (14) defining an outer layer of the flashing construction and at least a portion of said first layer being bonded to the second layer (12), wherein said first layer (14) extends beyond said second layer (12) at an upper edge (16) thereof to enable said first layer (14) to be anchored to a wall.

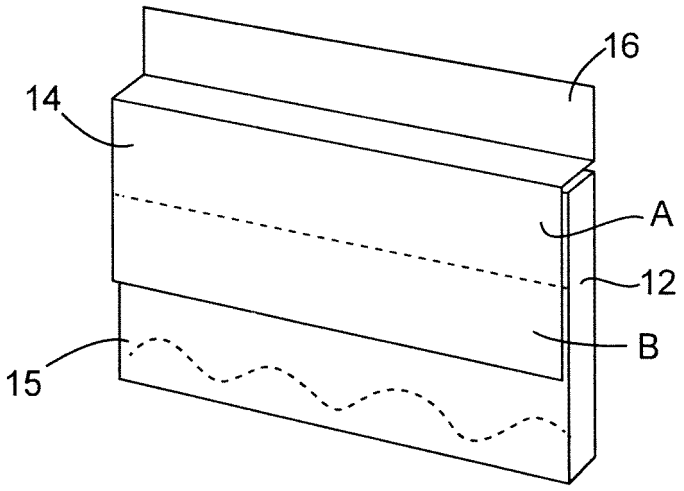


Figure 3

EP 2 740 854 A1

## Description

**[0001]** This invention relates to a flashing construction for forming a weatherproof seal at the junction of a wall and a roof and in particular to an insulated flashing construction providing thermal insulation as well as forming a weatherproof seal at the junction of a wall and a roof.

**[0002]** Flashings are used when a roof of abuts against an adjacent wall to inhibit water ingress at the junction of the two. Traditionally, where a pitched roof abuts a wall of coursed brickwork, a lead flashing is provided. The flashing extends along the top edge of a roof where it abuts an upstanding wall. The flashing has a portion which is angled down the roof and which is moulded into configuration with the tile contours. A flashing tends to be of a width to cover a number of tiles as there is no requirement for the flashing to be overlapped except at its side edges where it may overlap with an adjacent flashing. One or more sheets of lead may be provided, each having a lip formed along its upper edge to be received in a chased groove in the brickwork of the wall. Where the wall comprises a rendered wall, the upper edge of the flashing may be anchored to the wall by a render or suitable adhesive applied thereover to provide a seal.

**[0003]** Insulation is often added to buildings to conserve energy by preventing heat loss through floors, walls, ceilings and lofts. With ever increasing fuel and energy costs there is a continuous drive to improve the thermal efficiency of both old and new build buildings.

**[0004]** It is known to attach composite insulated panels to the exterior walls (facades) of a building to improve the thermal efficiency and appearance of the building, such insulated boards typically comprising a core of thermally insulating material sandwiched between substantially rigid outer layers. A weatherproof render or other substantially weatherproof layer may be applied to or may be provided on an outer face of at least one side of the panel, preferably the side forming an exposed face of the panel.

**[0005]** Insulation by such external panelling is especially done in the field of modernising buildings. This solution leads to excellent heat insulation with a non-destructive intervention, which is relatively rapid and economically advantageous. Further, installation is done outside of the building and therefore does not interfere with normal activities inside the building and does not reduce the internal area of the building, unlike panelling applied to the interior walls.

**[0006]** However, where traditional flashing is used to form a weatherproof seal between an insulated wall and an adjacent section of roof abutting the wall, such flashing can define gaps in the insulation, leading to cold bridging through such gaps. As far as is known, none of the existing heat insulating building wall and window systems proposed or constructed have included a flashing member, which itself is provided with a thermal barrier for reducing heat losses and preventing the formation of condensation or frost on the interior portion of the flashing. In contrast, most known flashing materials comprises metals, such as lead or copper, having a high thermal conductivity.

**[0007]** According to a first aspect of the present invention there is provided a flashing construction for forming a weatherproof seal at the junction of a wall and a roof comprising a first layer formed from a sheet of deformable weatherproof material, and a second layer formed from a thermally insulating material, said first layer defining an outer layer of the flashing construction and at least a portion of said first layer being bonded to the second layer, wherein said first layer extends beyond said second layer at an upper edge thereof to enable said first layer to be anchored to a wall.

**[0008]** Preferably at least a portion of said first layer, preferably adjacent a lower edge thereof, is not bonded to said second layer to enable a further sheet of deformable weatherproof material to be inserted between said first and second layers. Preferably said further sheet of deformable weatherproof material comprises an apron adapted, in use, to be located over the top edge of a roof where it abuts an upstanding wall.

**[0009]** Said second layer may extend below the lower edge of said first layer, such that a lower edge of said second layer may be cut or otherwise shaped to conform to the shape of an adjacent roof covering (e.g. tiles).

**[0010]** Preferably said second layer is formed from a sheet of thermally insulating material having a thickness greater than that of the first layer.

**[0011]** Preferably said insulating material defining said second layer comprises one of Aerogel, PIR (polyisocyanurate) or phenolic resin.

**[0012]** According to a further aspect of the present invention there is provided a method of forming a weatherproof seal at the junction of a wall and a roof wherein composite insulated panels are applied to said wall, said method comprising the steps of providing a flashing construction comprising a first layer formed from a sheet of deformable waterproof material, and a second layer formed from a thermally insulating material, at least a portion of said first layer being bonded to the second layer, wherein said first layer extends beyond said second layer along an upper edge of said second layer, applying the flashing construction to the wall adjacent the junction of the wall with the roof, and chasing in or otherwise fixing the upper edge of the first layer to the wall.

**[0013]** The method may comprise the further step of shaping a lower edge of the second layer to conform to the shape of a profiled roof covering against which it is applied.

**[0014]** The method may comprise the further step of applying an apron flashing to the roof covering adjacent the wall, an upper end of the apron flashing being returned up under the first layer to be located between the first layer and the second layer to form a weatherproof seal therebetween.

**[0015]** An embodiment of the present invention will

now be described, by way of example only, with reference to the accompanying drawings, in which :-

Figure 1 is a perspective view of a junction of a wall and a tiled roof incorporating an insulated flashing construction in accordance with an embodiment of the present invention;

Figure 2 is a sectional view of the wall/roof junction of Figure 1;

Figure 3 is a perspective view of a section of insulated flashing in accordance with an embodiment of the present invention;

Figure 4 is a sectional view of a junction of a wall and a flat roof incorporating an insulated flashing construction in accordance with an embodiment of the present invention; and

Figure 5 is a sectional view of a junction of a wall and a flat roof incorporating an insulated flashing construction in accordance with an embodiment of the present invention, insulated panels being affixed to the wall.

**[0016]** Figures 1 and 2 illustrate a building having a pitched tiled roof 2 abutting a wall 4. Sections of insulated flashing 10 constructed in accordance with an embodiment of the present invention are applied to the junction between the roof 2 and the wall 4.

**[0017]** Each section of insulated flashing 10 comprises a sheet of thermally insulating material 12, formed from Aerogel, PIR (polyisocyanurate) or phenolic resin, to which is bonded a sheet of deformable weatherproof material (flashing) 14, for example a lead sheet or any suitable natural or synthetic material as is known in the art, to define an outer surface of the flashing construction 10.

**[0018]** The weatherproof flashing material 14 is bonded to an upper edge of the sheet of thermally insulating material 12 and to a front face of the sheet of thermally insulating material 12 over approximately an upper half or upper third A of the sheet 12. A lower region B of the deformable weatherproof flashing material 14 remains unbonded to the insulating material 12 so that a further layer of material, such as apron flashing 6 or soakers, can be returned up under the deformable weatherproof material to be located between the flashing material 14 and the insulating material 12 to form a weatherproof seal therebetween.

**[0019]** An upper edge 16 of the flashing material 14 extends beyond the insulating material 12 so that it can be received in a chased groove 8 in the brickwork of the wall 4 or can be anchored and sealed to the wall 4 by suitable adhesive to form a watertight seal against the wall 4.

**[0020]** As shown in Figure 3, the lower portion 15 of the sheet of thermally insulating material 12 may extend beyond the lower edge of the flashing material 14. Such lower portion 15 may be cut to conform to the shape of profiled tiles or other profiled roof coverings so enable the sheet of thermally insulating material 12 to form a close fit against the profiled roof covering to prevent thermal bridging. Where the flashing is intended to be used with a flat roof, the bottom edge of the flashing material 14 may terminate flush with the bottom edge of the insulating material 12.

**[0021]** Figure 4 illustrates the insulated flashing constructed in accordance with the present invention in use to form a weatherproof seal at the junction of a flat roof 2B and a wall 4. Again, a further sheet of flashing material (apron) 6 is returned up under the flashing material 14 to be located between the flashing material 14 and the sheet of thermally insulating material 12.

**[0022]** Figure 5 illustrates the flashing construction in use with composite insulated panels 22 applied to the exterior walls of a building. The flashing construction 10 would be fitted to the wall 4 adjacent the roof 2B, the upper edge 16 of the flashing material 14 being chased in or sealed against the wall with a silicon "Lead sealant", before a base rail 20 is fitted to the wall, prior to installing insulated panels. When fitted, the base rail 20 overlaps the flashing material 14 so as to form a weather tight seal behind the insulation. An apron flashing or soaker 6 may be returned up under the flashing material 14 to be located between the flashing material 14 and the insulating material 12 to form a weatherproof seal therebetween.

**[0023]** The thickness of the insulated material 12 may be selected to suit the thickness of the insulating panels 22 being used and to alter the projection of the flashing.

**[0024]** Further sections of insulated flashing constructed in accordance with the invention may be installed over existing lead on bay windows or porch roofs as an insulated roof covering indistinguishable from the original. As is best practice, no section of flashing would be supplied more than 1500mm long.

**[0025]** The invention is not limited to the embodiment(s) described herein but can be amended or modified without departing from the scope of the present invention.

## Claims

1. A flashing construction for forming a weatherproof seal at the junction of a wall and a roof comprising a first layer (14) formed from a sheet of deformable weatherproof material, and a second layer (12) formed from a thermally insulating material, said first layer (14) defining an outer layer of the flashing construction and at least a portion of said first layer being bonded to the second layer (12), wherein said first layer (14) extends beyond said second layer (12) at an upper edge (16) thereof to enable said first layer (14) to be anchored to a wall.

2. A flashing construction as claimed in claim 1, wherein at least a portion (B) of said first layer (14) is not bonded to said second layer (12) to enable a further sheet of deformable weatherproof material to be in-

serted between said first and second layers.

3. A flashing construction as claimed in claim 2, wherein said non-bonded portion (B) is adjacent a lower edge of the first layer (14).

4. A flashing construction as claimed in claim 3, wherein said further sheet of deformable weatherproof material comprises an apron (6) adapted, in use, to be located over the top edge of a roof where it abuts an upstanding wall.

5. A flashing construction as claimed in any preceding claim, wherein said second layer (12) extends below the lower edge of said first layer (14), such that a lower edge (15) of said second layer (12) may be cut or otherwise shaped to conform to the shape of an adjacent roof covering.

6. A flashing construction as claimed in any preceding claim, wherein said second layer (12) is formed from a sheet of thermally insulating material having a thickness greater than that of the first layer (14).

7. A flashing construction as claimed in claim 6, wherein said insulating material defining said second layer (12) comprises one of Aerogel, PIR (polyisocyanurate) or phenolic resin.

8. A method of forming a weatherproof seal at the junction of a wall and a roof wherein composite insulated panels are applied to said wall, said method comprising the steps of providing a flashing construction comprising a first layer (14) formed from a sheet of deformable waterproof material, and a second layer (12) formed from a thermally insulating material, at least a portion of said first layer (14) being bonded to the second layer (12), wherein said first layer (14) extends beyond said second layer (12) along an upper edge (16) of said second layer (14), applying the flashing construction to the wall adjacent the junction of the wall with the roof, and chasing in or otherwise fixing the upper edge (16) of the first layer (14) to the wall.

9. A method as claimed in claim 8, comprising the further step of shaping a lower edge (15) of the second layer (12) to conform to the shape of a profiled roof covering against which it is applied.

10. A method as claimed in claim 8 or claim 9, comprising the further step of applying an apron flashing (6) to the roof covering adjacent the wall, an upper end of the apron flashing being returned up under the first layer (14) to be located between the first layer (14) and the second layer (12) to form a weatherproof seal therebetween.

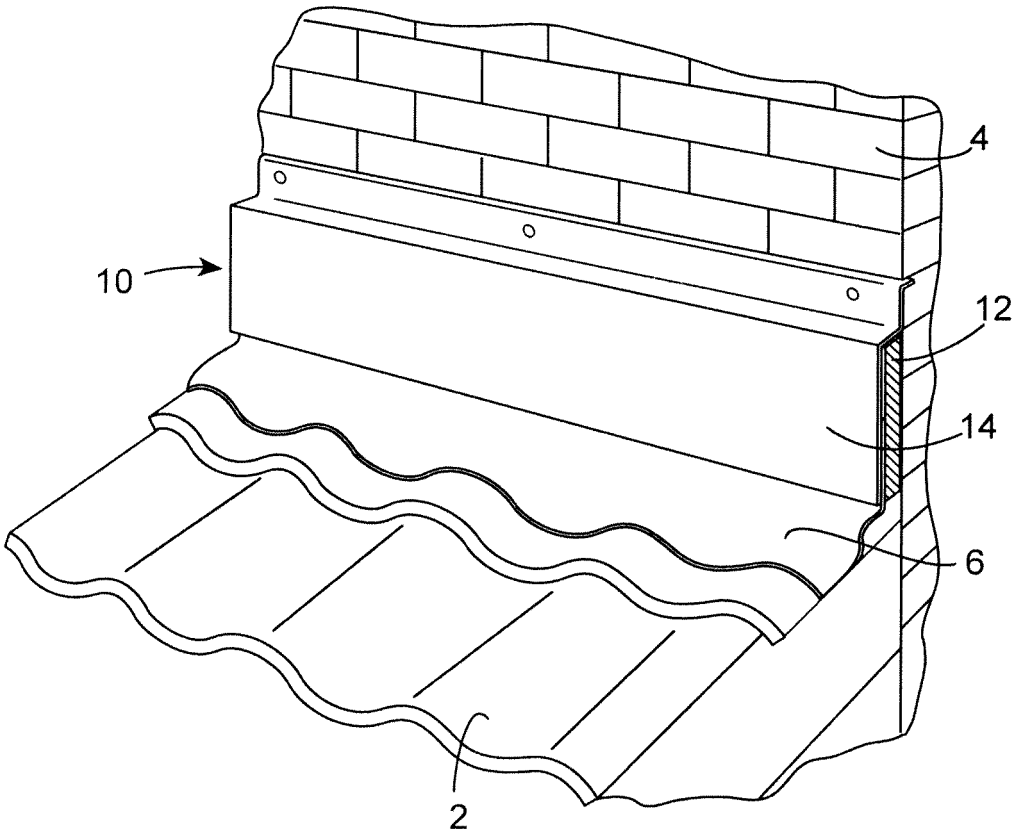


Figure 1

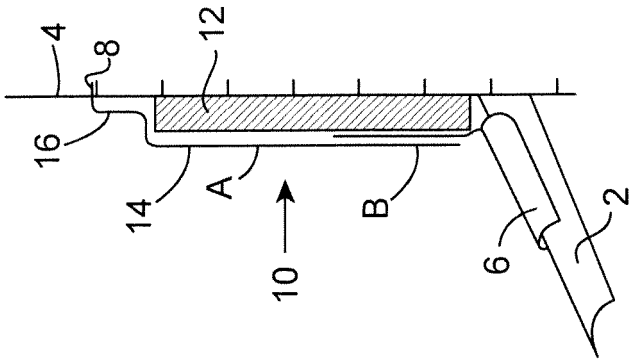


Figure 2

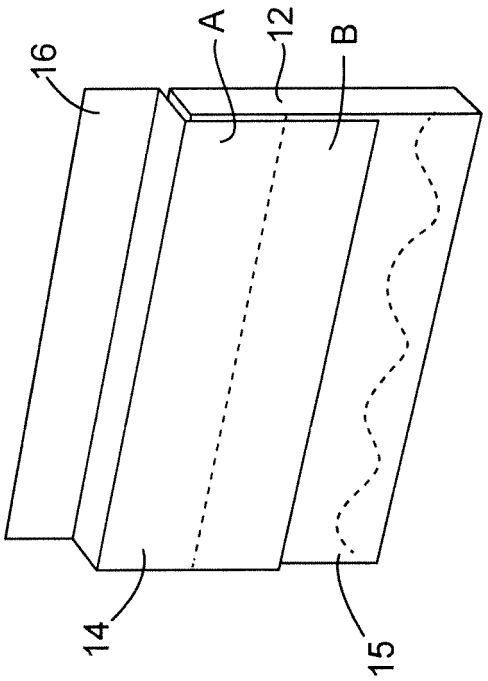


Figure 3

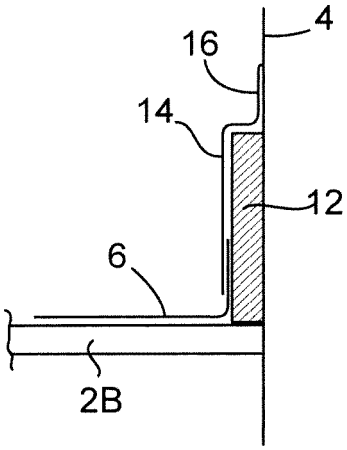


Figure 4

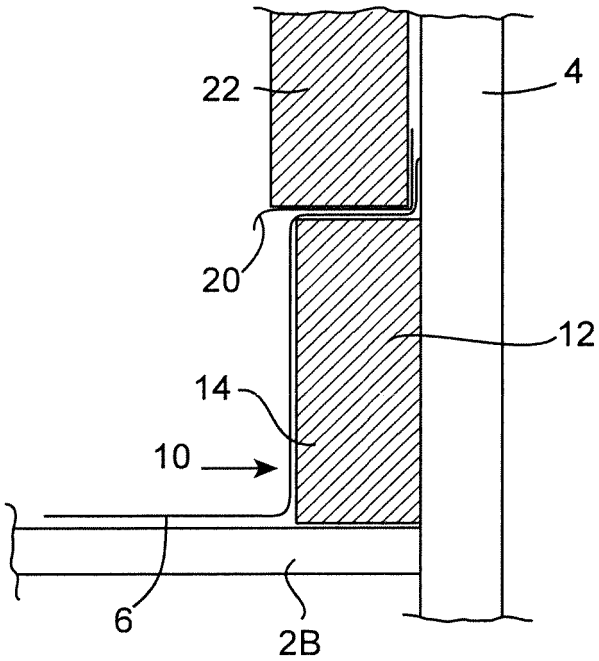


Figure 5

Europäisches Patentamt
European Patent Office
Office européen des brevets

# EUROPEAN SEARCH REPORT

Application Number
EP 13 19 5976

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| X<br><br>Y | DE 195 17 533 A1 (SOMMER METALLBAU STAHLBAU GMBH [DE])<br>14 November 1996 (1996-11-14)<br>* column 3, lines 45-66; figure 2 *<br>* column 2, lines 4-7 * | 1-6,8-10<br><br>7 | INV.<br>E04D13/147<br>E04D13/14 |
| X | DE 91 10 031 U1 (NEU, MANFRED)<br>26 September 1991 (1991-09-26)<br>* figure 2 * | 1-4,6,8,9 | |
| X | US 2 203 312 A (SWENSON GEORGE E)<br>4 June 1940 (1940-06-04)<br>* page 1, column 1, line 23 - column 2, line 8; figure 1 * | 1,6,8,10 | |
| X | EP 0 957 215 A2 (LAMBERTI ERHARD [DE])<br>17 November 1999 (1999-11-17)<br>* figure 4 * | 1,6,8,10 | |
| Y | WO 2011/073535 A1 (RAUTARUUKKI OYJ [FI]; NAERHI ERKKI [FI]; ROIVIO PEKKA [FI]; MONONEN TA) 23 June 2011 (2011-06-23)<br>* page 7, line 5 * | 7 | |

TECHNICAL FIELDS SEARCHED (IPC)

E04D

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 21 March 2014 | Leroux, Corentine |

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

1

EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 19 5976

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-03-2014

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| DE 19517533 A1 | 14-11-1996 | NONE | |
| DE 9110031 U1 | 26-09-1991 | DE 4222199 A1 | 18-02-1993 |
| | | DE 9110031 U1 | 26-09-1991 |
| US 2203312 A | 04-06-1940 | NONE | |
| EP 0957215 A2 | 17-11-1999 | NONE | |
| WO 2011073535 A1 | 23-06-2011 | NONE | |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82