

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11)

Publication number:

0 269 969
A2

(12)

EUROPEAN PATENT APPLICATION

(21)

Application number: **87117202.9**

(51)

Int. Cl.4: **E04D 13/03 , E04D 13/14**

(22)

Date of filing: **09.11.84**

(30)

Priority: **11.11.83 DE 3340860**
11.11.83 DE 8332453 U

(43)

Date of publication of application:
08.06.88 Bulletin 88/23

(60)

Publication number of the earlier application in
accordance with Art.76 EPC: **0 142 965**

(84)

Designated Contracting States:
AT BE CH DE FR GB LI NL

(71)

Applicant: **COLT INTERNATIONAL HOLDINGS**
A.G.
Alpenstrasse 14
CH-6300 Zug(CH)

(84)

BE CH DE FR LI NL AT

(71)

Applicant: **COLT INTERNATIONAL LIMITED**
New Lane
Havant Hampshire PO9 2LY(GB)

(84)

GB

(72)

Inventor: **Riddermann, Peter**
Kervenheimer Strasse 48
D-4182 Uedem(DE)

(74)

Representative: **Slight, Geoffrey Charles et al**
Graham Watt & Co. Riverhead
Sevenoaks Kent TN13 2BN(GB)

(54)

Superimposed member for roof openings of buildings.

(57)

A superimposed member for roof openings of buildings consists of an upper portion (12) and a lower portion (6) which is connected to this and surrounds a horizontal or inclined roof opening (4) and which is in the form of a base bounding the roof opening by its inside. Disposed between the under side of the upper portion and the upper side of the lower portion is a horizontal arm (16) of an angle-section bar member (13) which changes over into a downwardly directed arm (17) for securing a flashing (9) raised out of the plane of the roof to the outside of the lower portion (6) in a sealing manner. The horizontal arm (16) is simultaneously held in sealing engagement with the under side of the upper portion (12). A reliable sealing between upper portion (12) and lower portion (6) and between lower portion (6) and the flashing (9) is achieved with reduced expenditure on material and mounting and cold bridges in the transition region from the lower portion (6) to the upper portion (12) are avoided.

EP 0 269 969 A2

SUPERIMPOSED MEMBER FOR ROOF OPENINGS OF BUILDINGS

The invention relates to a superimposed member for roof openings of buildings.

In such a superimposed member which is known, an upper portion, which is formed by a domelight, is connected to a lower portion of the superimposed member by means of a mounting device.

According to the present invention, the upper portion of the superimposed member is located on the lower portion of the superimposed member by toggle bolts or the like disposed at the inside of the upper portion of the superimposed member.

With this construction, drilling through an outer assembly arm of the upper portion is avoided so that to this extent the source of danger for the penetration of rainfall from the outside through the roof opening into the interior of the building is fundamentally eliminated. The arrangement of the toggle bolts or the like at the inside of the lower portion, provided according to the invention, is free of any sealing problems with regard to their securing. In addition, the securing of the upper portion to the lower portion by means of the quick-acting toggle bolts or the like can be carried out in the shortest time and in the simplest manner conceivable.

Any desired form of toggle bolts such as so-called quick-acting tensioners or eccentric snap closures, including those of ordinary commercial construction, may be used in connection with the location of the upper portion of the superimposed member on the lower portion according to the invention.

Specific embodiments of the present invention will now be described by way of example, and not by way of limitation, with reference to the accompanying drawings in which:-

FIG. 1 shows a cross-section through a marginal region of a superimposed member in accordance with the present invention with an angle-section bar member disposed between the upper portion and lower portion of the superimposed member;

FIG. 2 is an illustration corresponding to Figure 1, to illustrate a further embodiment of the present invention;

FIG. 3 shows an enlarged end view of the angle-section bar member; and

FIG. 4 shows an enlarged end view of a cover strip which can be used selectively with the angle-section bar member.

With reference now to the accompanying drawings, a rectangular roof opening 4 is formed in a horizontal or slightly inclined roof 1, which is represented by an upper layer of trapezoidal plates 2

and an insulating layer 3. On the insulating layer 3, there is a roof membrane 5 in the form of a plastics sheet, such as a high-polymer or PVC sheet, and placed on this is a lower portion 6 of a superimposed member which is designated as a whole by 7. The lower portion 6 has the form of a base which surrounds the roof opening 4 on all sides and bounds this by its inside 8 and extends it upwards according to its height. Like the insulating layer 3, the lower portion 6 consists essentially of heat-insulating material in which a bent-up end piece of the roof membrane 5 is included. Over the roof membrane 5 there is a flashing 9 which is formed from a plastics sheet corresponding to the roof membrane 5 and on which there is also gravel ballasting 10. The flashing 9 is pulled up, by its end region, at the outside 11 of the lower portion 6.

The superimposed member 7 further comprises an upper portion 12 in the form of a housing which is placed over an angle-section bar member, designated as a whole by 13, with its under side on the upper side of the lower portion 6, adjacent to its inside 8, and engages with an outer arm 14 with a marginal flange 15 bent down at an angle, in a protective manner over the upper outer marginal region of the angle-section bar member 13.

The sectional shape of the angle-section bar member 13 can be seen, in particular, from Figure 3. According to this, the angle-section bar member 13 has two section arms 16 and 17 which are disposed at right angles to one another and of which the sectional arm 16 forms a horizontal arm and the sectional arm 17 a vertical or downwardly extending arm in the installed state of the member 13. The horizontal arm 16 is provided with an upright marginal strip 18 at its inner longitudinal edge adjacent to the roof opening 4 and otherwise comprises sealing lips 19 extending along its two longitudinal edges. Distance beads 20 are disposed along the sealing lips 19, towards the middle of the sectional arm 16. The sealing lips 19 consist of a softer material than the other material of the angle-section bar member 13 and can be formed on the sectional arm by co-extrusion during the production of the one-piece extruded plastics sectional member forming the member 13. In the example illustrated, the angle-section bar member 13 consists of hard PVC while the sealing lips 19 consist of soft PVC.

The sealing lips 19 have the oblique alignment outwards towards the particular adjacent longitudinal edge of the sectional arm 16, which can be seen in particular from Figure 3, while the height of the distance bead adjacent to the sealing lips 19 at the inside causes a defined extent of the compres-

sion of the sealing lips 19 by the superimposed upper portion 12 and at the same time prevents a complete compression of the sealing lips 19 which could otherwise lead to a destruction of the sealing material.

The vertical arm 17 of the angle-section bar member 13 is engaged over, in its upper end region, by an outer marginal flange 21 which is disposed with spacing from the outside of the vertical arm 17 in such a manner that a cavity 22 is formed which is open at the bottom. The cavity 22 is constructed, in its region adjacent to its lower opening, in the form of a detent groove 23 in which a cover strip 24, which can be seen from Figure 4, can be inserted with a gripping action by a head end 25 shaped according to the section of the detent groove 23.

The cover strip 24 consists of metal and is formed from an aluminium sectional member in the example illustrated. It comprises an attachment portion 26 which is offset outwards by a bend 27 following on the head end. The attachment portion 26 serves to receive mechanical attachment elements, particularly screws, for a clamping connection of a pent course to the vertical arm 17 of the angle-section bar member 13.

Figure 1 shows a connection of the flashing 9 to the vertical arm 17 of the angle-section bar member 13 by a direct adhesion of the flashing 9 to an adhesion surface offered by the outside of the sectional arm 17. The sectional arm 17 bears with its inside against the lower portion 6 and has a course facing downwards in accordance with its outside.

Figure 2 illustrates an embodiment wherein the insulating layer 3 extends obliquely upwards at the inside. In this case, the lower portion 6 of the superimposed member 7 extends correspondingly obliquely upwards in its region adjacent to the insulating layer 3 and ends in a vertical head portion. Otherwise, the construction is the same as in Figure 1 except that instead of a single flashing 9, two flashings 28 and 29 are provided. In the Figure 2 embodiment, the flashings 28 and 29 consist of pieces of bituminous sheet corresponding to the upper skin of the roof 1, which are clamped to the outside of the vertical arm 17 of the angle-section bar 13 by means of the cover strip 24.

In order to form this clamping connection, the cover strip 24 is inserted by its head end 25 in the detent groove 23 with a gripping action, as can be seen from figure 2. Then the correspondingly raised ends of the flashings 28 and 29 are clamped on, in their end region engaged over by the cover strip 24, by means of screws which, as indicated at 30, are screwed through the cover strip 24, the two flashings 28 and 29 and through the vertical arm

24. In this case, the bend 27 forms a secure covering of the upper edges of the flashings 28 and 29 so that the penetration of water through rainfall is reliably prevented. In order to improve the clamping of the flashings 28 and 29 between the cover strip 24 and the vertical arm 17, the latter can be provided with a roughening 31 (Figure 3) at its outside, while the cover strip 24 has corresponding roughening 32 (Figure 4) at its inside.

In order to locate the upper portion 12 on the lower portion 6, quick-acting toggle bolts 115 are provided which are secured, for example screwed, to the inside 8 of the lower portion 6 in a number and distribution corresponding to the size of the roof opening 4 or of the superimposed member 11.

Each quick-acting toggle bolt 115 comprises a bearing member 116 which is secured to the inside 8 of the lower portion 6, and has a base plate 117 directed downwards towards the roof opening 4, as well as a locking hook 119 which can be actuated by means of a tensioning lever 118 and which can be brought into locking engagement with a receiving member 121 provided on the inside 120 of the upper portion 12 in order to locate the latter.

The tensioning lever 118 is pivotally mounted, by means of a pivot pin 122, in the bearing member 116 and is constructed in a manner known per se in the form of an eccentric lever in that a shank 124 is pivotally and eccentrically connected to the tensioning lever 118 by means of a swivel axis 123 and receives, at one end, a rod 125 comprising the hook 119 at the end. The rod 125 is adjustable in height in the shank 124, in that it can, for example, be screwed more or less deep into the shank 124 by means of a threaded connection. In this manner, the correct amount of spacing of the locking hook 119 can be produced for its co-operation with the receiving member 121 of the upper portion 12.

The receiving member 121 of the upper portion 12 consists of a sectional member which offers a channel-shaped receiving cross-section for the locking hook 119 and which can be formed from a corresponding integral sectional shaping of the inner wall of the upper portion 12. Instead of this, this sectional member may be formed from a separate added piece which is screwed or riveted onto the inside 120 of the upper portion 12 as indicated at 126.

In the drawing, the quick-acting toggle bolt 115 illustrated is shown in chain lines in its position out of engagement and in full lines in its locking position in which the tensioning lever 118 is beyond the dead centre position. As can be seen, as a result of pivoting the tensioning lever 118 about its pivot axis 122 in counter-clockwise direction, the entrainment of the locking hook 119 guided in the receiving member 121 and connected eccentrically to the tensioning lever 118 at 123 is effected as is its

clamping on the receiving member 121 with the tensioning lever 118 pivoted by the pivot axis 123 via the pivot axis 122 inwards towards the inside 8 of the lower portion 6, to beyond the dead centre position. The tensioning lever 118 can be locked in this tensioning position by means of an interlocking mechanism 127 as a safety device against unauthorized opening of the quick-acting toggle bolt 115. The interlocking mechanism 127 is secured to the base plate 117 and comprises a receiving member for the tensioning lever 118 and a cover portion which can be locked by means of a lock.

Claims

1. A superimposed member for roof openings of buildings, consisting of an upper portion and a lower portion which is connected to this and surrounds a horizontal or inclined roof opening and which is in the form of a base bounding the roof opening with its inside and to the outside of which a flashing, raised out of the plane of the roof, can be secured in a sealing manner characterized in that the upper portion (12) can be located on the lower portion (6) by means of toggle bolts (115) or the like disposed at its inside (117).

2. A superimposed member as claimed in claim 8 characterised in that the toggle bolts (115) each comprise a bearing member (116) secured to the inside (8) of the lower portion (6) and a locking hook (119) which can be actuated by means of a tensioning lever (118) and which can be brought into locking engagement with a receiving member (121) provided on the inside (120) of the upper portion (12) in order to locate the latter.

3. A superimposed member as claimed in claim 2 characterised in that the receiving member (121) of the upper portion (12) has a channel-shaped cross-section.

4. A superimposed member as claimed in claim 1, 2 or 3 characterised in that the tensioning lever (118) is constructed in the form of an eccentric lever and can be transferred into a self-locking tensioning position.

5. A superimposed member as claimed in claim 1, 2, 3 or 4 characterised in that the tensioning lever (118) can be secured in its tensioning position by means of an interlocking mechanism (127) secured to a base plate (17) of the bearing member (116).

6. A superimposed member as claimed in any preceding claim characterised in that disposed between the under side of the upper portion (12) and the upper side of the lower portion (6) is a horizontal arm (16) of an angle-section bar member (13) which changes over into a downwardly directed arm (17) for the securing of the flashing with adhe-

sive, the horizontal arm being held in sealing engagement with the under side of the upper portion (6).

7. A superimposed member as claimed in claim 6 characterised in that the angle-section bar member (13) consists of a one-piece extruded plastics sectional member and its downwardly directed arm (17) offers an adhesion surface, at the outside, for direct adhesion to a plastics sheet as a pent course (9).

8. A superimposed member as claimed in claim 6 or 7 characterised in that the horizontal arm (16) of the angle-section bar member (13) is provided with soft sealing lips (19) along its two longitudinal edges at the top and with distance beads (20) extending along the sealing lips at the inside.



