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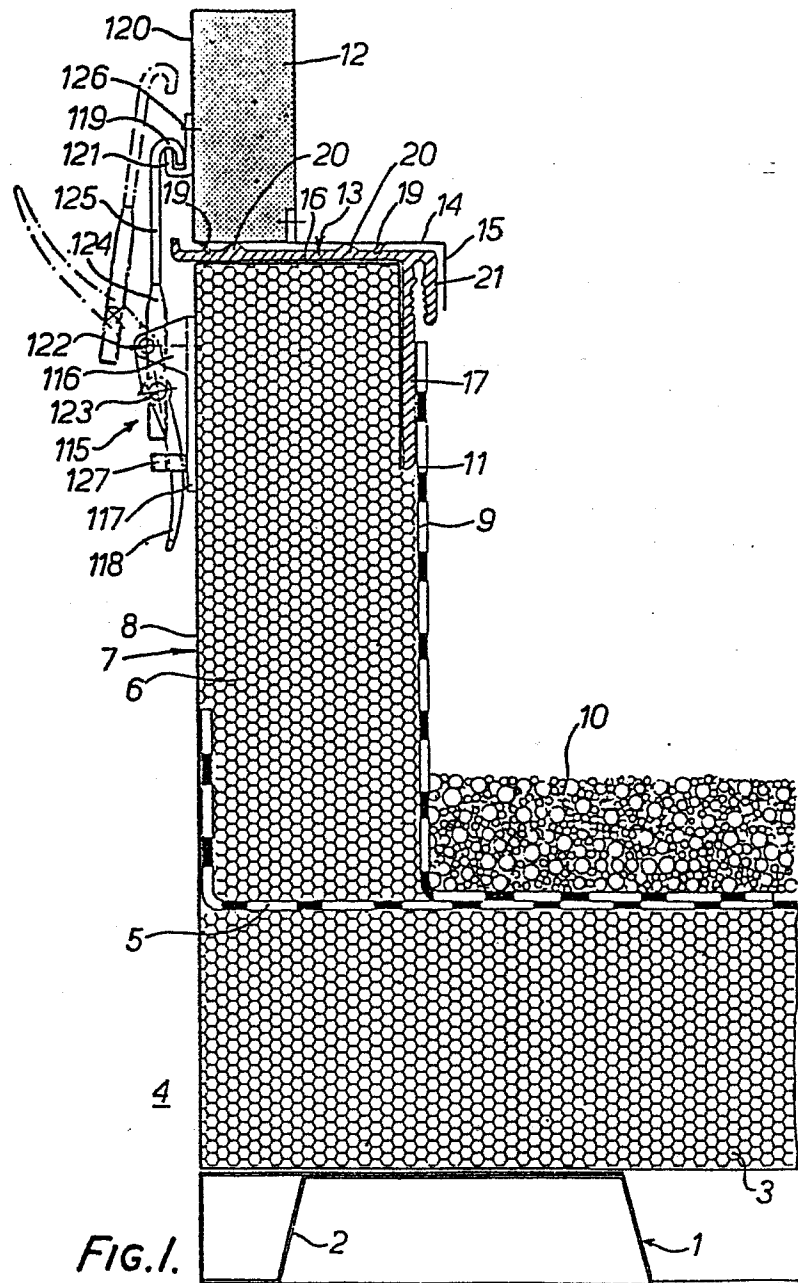
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Superimposed member for roof openings of buildings.

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.



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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, and a separate bar member is provided to secure a flashing which is raised out of the plane of the roof along the outside of the lower portion. This bar member which acts as a clamping device, is secured to the outside of the lower portion and comprises, for sealing of the flashing against the lower portion, a hollow section, a clamp strap with superimposed pieces and clamping screws, which can be introduced into a slot in the hollow section. In this case, the bar member is covered by an additional upper cover strip. With such a construction, the expenditure on materials and mounting is extremely high, while, furthermore, sealing and insulation problems continue to exist.

It is the object of the present invention to provide a superimposed member for a roof opening of a building which provides a reliable seal between an upper portion and a lower portion and between the

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lower portion and a flashing with reduced expenditure on material and mounting and which avoids cold bridges in the region between the lower portion to the upper portion.

5 According to the present invention, there is provided 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
10 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 by means of a sectional bar,
characterized in that disposed between the under side
15 of the upper portion and the upper side of the lower portion is a horizontal arm of an angle-section bar member which changes over into a downwardly directed arm for the securing of the flashing, the horizontal arm being held in sealing engagement with the under side
20 of the upper portion.

 With this construction, only a single angle-section bar member is provided along each of the four sides of the superimposed member, which is usually rectangular in cross-section, in the region of the
25 connection of the upper portion of the superimposed member to the lower portion and for its connection

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to the flashing, which angle-section bar member engages round and over the whole upper region of the lower portion, takes over the sealing between the lower portion and the upper portion of the superimposed member and at the same time serves for the connection of the lower portion to the flashing, at the outside, while avoiding cold bridges. In this case, the angle-section bar member forms an inverted frame which does not need any separate individual location on the lower portion. In this case, the expenditure on mounting and materials is low, while furthermore, the upper portion of the superimposed member can be mounted before the roofing work is carried out. As a result, damage to a roof already finished by the roofer, particularly to the upper watertight roof membrane, by subsequent mounting work during the fitting of the upper portion of the superimposed member for the particular roof opening is avoided.

The angle-section bar member may consist of a one-piece extruded plastics sectional member and its downwardly directed arm may offer an adhesion surface, at the outside, for direct adhesion to a plastics sheet-form flashing.

The flashing can be formed from a plastics sheet corresponding to the watertight upper skin used for the roof.

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Hard PVC may be considered, in particular, as a plastics material suitable for the angle-section bar member, to which high-polymer and PVC sheets can be stuck directly by means of a suitable adhesive.

5 Instead of such an adhesion, a simple clamping and covering of the flashing in a sealing manner may be effected at the outside of the downwardly directed facing arm of the angle-section bar member. Such a mounting would be considered, in particular, 10 if a bituminous sheet corresponding to the construction of the upper roof membrane is used as a flashing.

The horizontal arm of the angle-section bar member may be provided with soft sealing lips along its two longitudinal edges at the top and with distance 15 beads extending along the sealing lips at the inside.

According to a feature of 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 20 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 25 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
5 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
10 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.

15 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
20 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
25 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.

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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
5 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
10 distance bead adjacent to the sealing lips 19 at the inside causes a defined extent of the compression 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
15 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
20 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
25 action by a head end 25 shaped according to the section of the detent groove 23.

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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

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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
5 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,
10 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
15 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
20 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
25 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

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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
5 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
10 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 entrain-
15 ment 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
20 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
25 quick-acting toggle bolt 115. The interlocking mechanism 127 is secured to the base plate 117 and

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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
5 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 by means of a sectional bar,
10 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
15 the flashing, the horizontal arm being held in sealing engagement with the under side of the upper portion (6).

2. A superimposed member as claimed in claim 1, characterised in that the downwardly
20 directed 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 at a distance from the outside of the downwardly directed arm forming a cavity (22) which is open
25 downwards.

3. A superimposed member as claimed in claim 1 or 2, characterised in that the angle-section bar (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).

4. A superimposed member as claimed in claim 2 or claims 2 and 3, characterised in that the cavity (22) between the downwardly directed arm (17) and the marginal flange (21) of the angle-section bar member (13) is constructed, in its region adjacent to its opening, in the form of a detent groove (23) in which a cover strip (24) with a head end (25) shaped according to the section of the detent groove can be inserted with a gripping action.

5. A superimposed member as claimed in claim 4, characterised in that the cover strip (24) is provided with an attachment portion (26), offset outwards by a bend (27) from its head end (25), to receive mechanical attachment elements for a connection of a sheet of bitumen as a flashing (28, 29) to the downward facing arm (17) of the angle-section bar member (13).

6. A superimposed member as claimed in claim 4 or 5, characterised in that the cover strip (24) is

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formed from an aluminium sectional member.

7. A superimposed member as claimed in any preceding claim 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.

8. A superimposed member as claimed in any preceding claim characterised 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).

9. 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.

10. A superimposed member as claimed in claim 9 characterised in that the receiving member (121) of the upper portion (12) has a channel-shaped cross-section.

11. A superimposed member as claimed in claim 8, 9 or 10 characterised in that the tensioning lever (118) is constructed in the form of an eccentric lever and can be transferred into a self-
5 locking tensioning position.

12. A superimposed member as claimed in claim 8, 9, 10 or 11 characterised in that the tensioning lever (118) can be secured in its tensioning position by means of an interlocking
10 mechanism (127) secured to a base plate (217) of the bearing member (116).

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