

[54] **ROOF LOCK ASSEMBLY WITH EAVE STRUCTURE**

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Related U.S. Application Data

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[52] **U.S. Cl.**..... **52/96, 52/74, 52/94**

[51] **Int. Cl.**..... **E04b 7/00**

[58] **Field of Search** **52/74, 75, 94, 95, 52/73, 222, 96**

[56] **References Cited**

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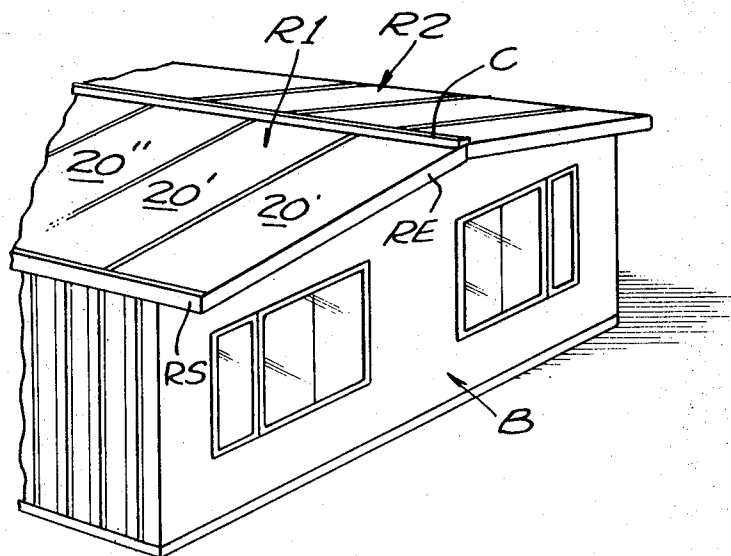
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[57] **ABSTRACT**

A method of roof construction in which a flexible roof cover sheet is placed over the upper surface of a roof frame and is attached to that upper surface at points spaced inwardly from its outer edge, an elongated roof lock member is positioned adjacent the outer edge of the roof frame, the cover sheet is extended out over the upper surface of the roof lock member, the cover sheet is attached to the upper surface of the roof lock member at various points spaced along the length of the member, the outer longitudinal edge of the member is rotated downwardly so as to stretch the cover sheet in a lateral direction, and then the roof lock member is rigidly fastened in its rotated position so as to maintain the lateral tension in the cover sheet.

Apparatus for carrying out the foregoing method, including a roof lock member which is formed as an aluminum extrusion, the outer surface of one longitudinal edge of the extrusion being rounded to provide a pivotal bearing upon the roof frame edge, and the extrusion being hollow adjacent its rounded edge so as to receive a wooden insert member for purpose of attachment of the cover sheet.

4 Claims, 9 Drawing Figures



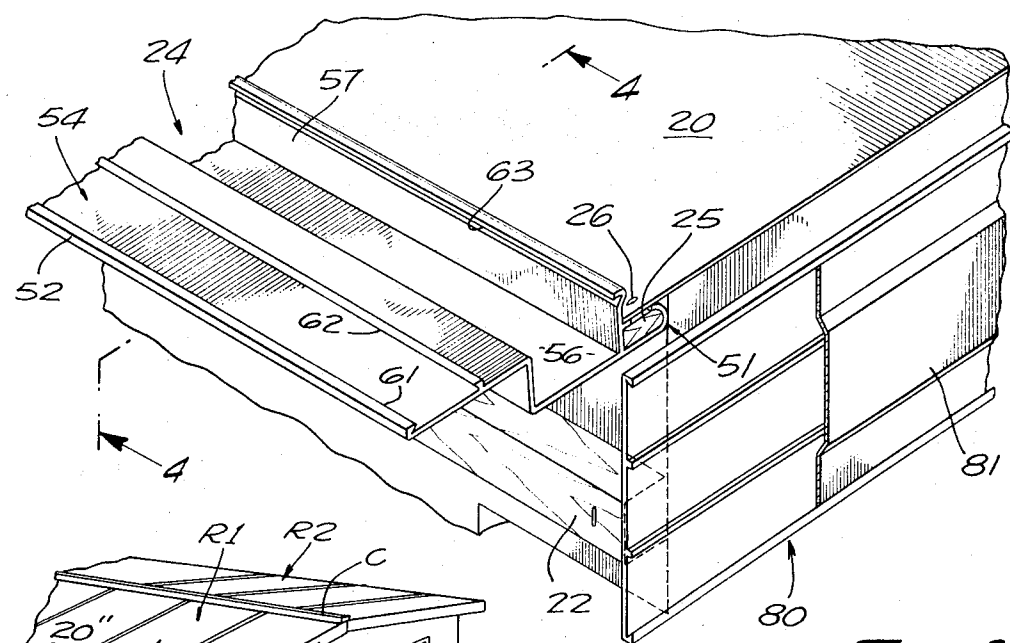


FIG. 2.

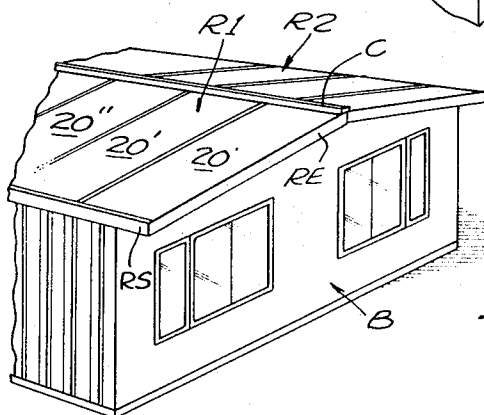


FIG. 1.

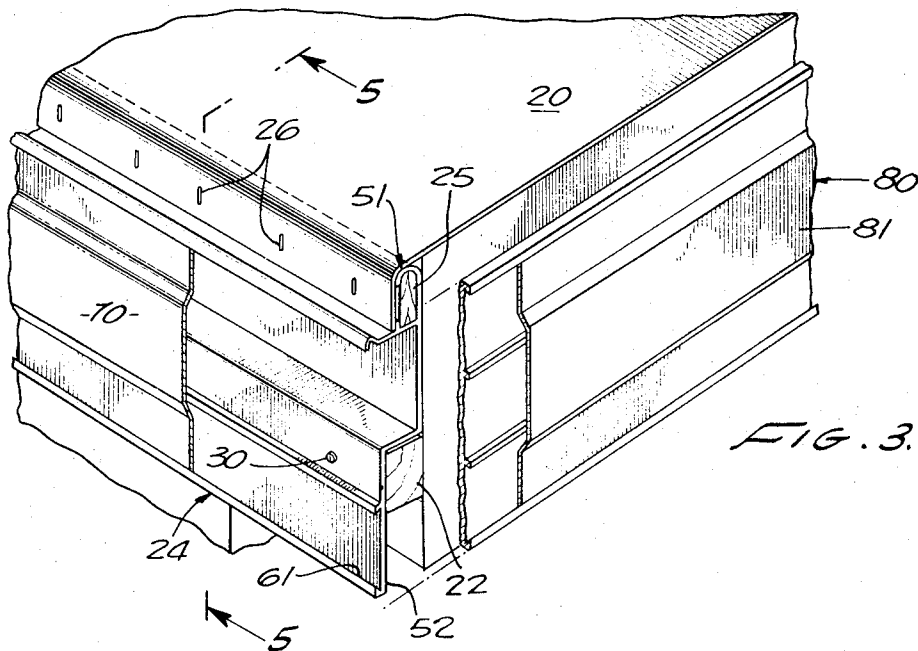


FIG. 3.

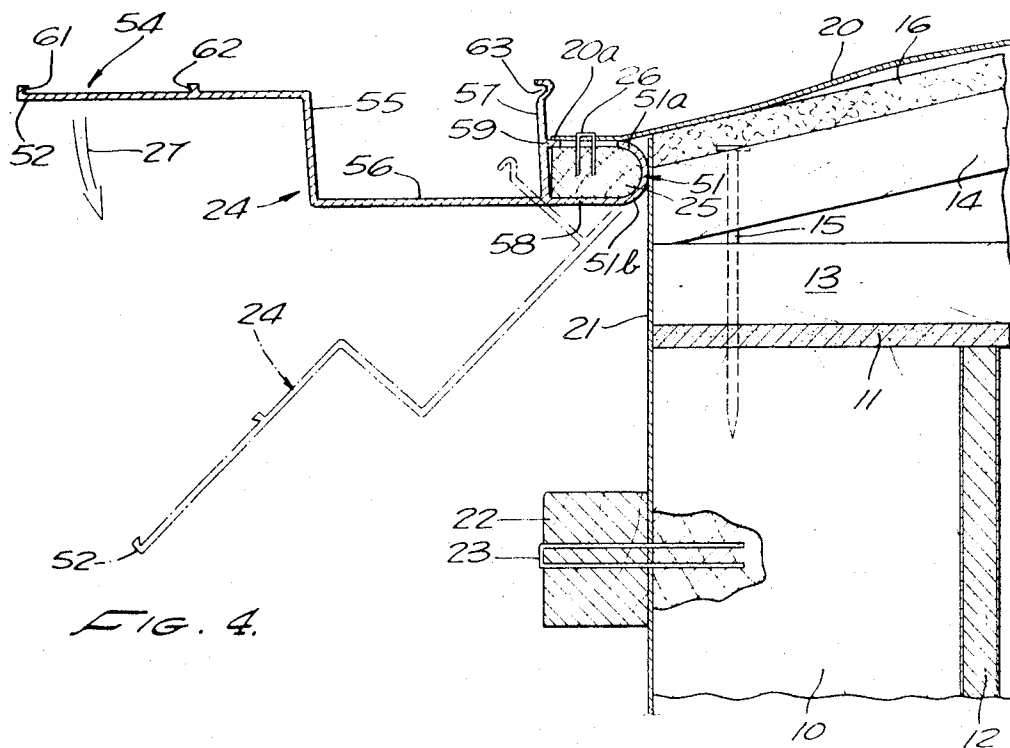


FIG. 4.

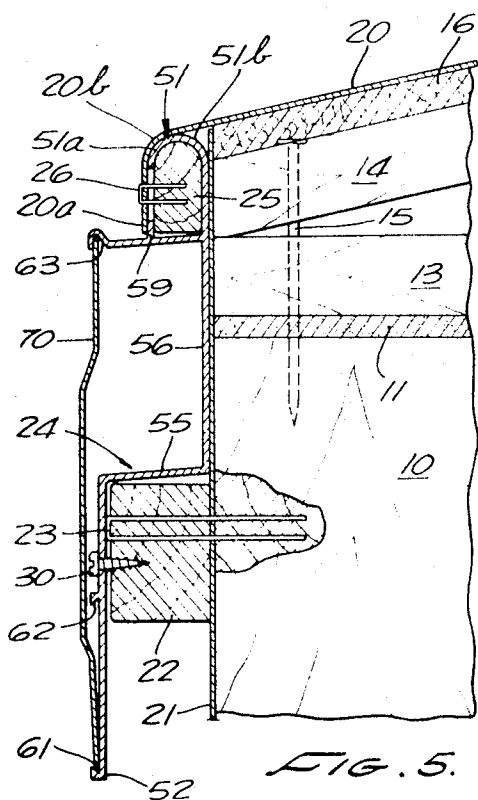


FIG. 5.

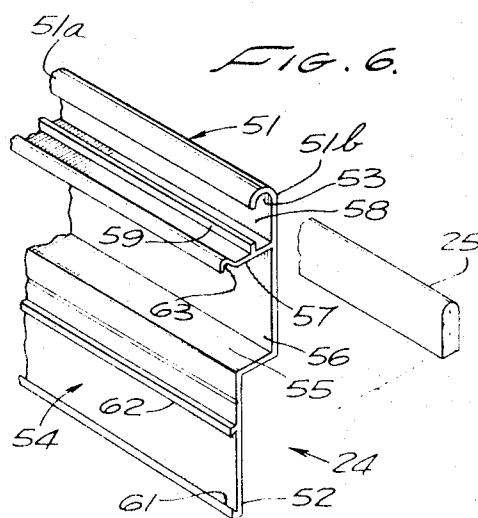


FIG. 6.

FIG. 7.

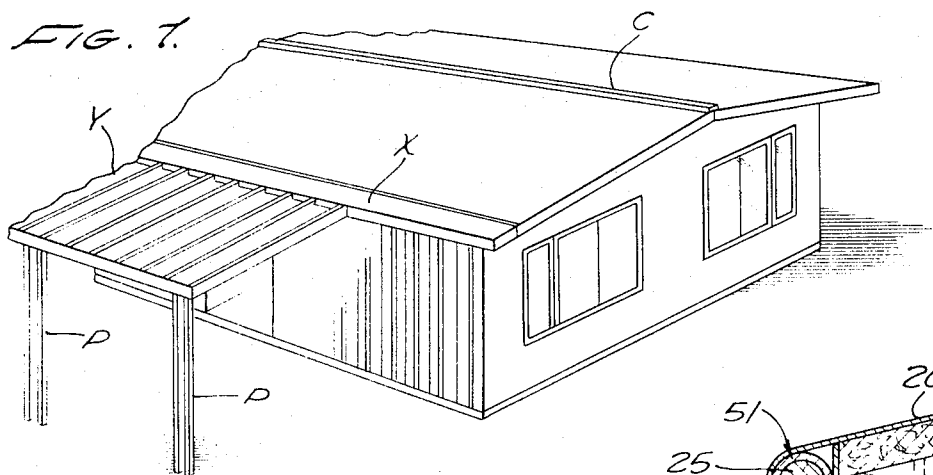


FIG. 9.

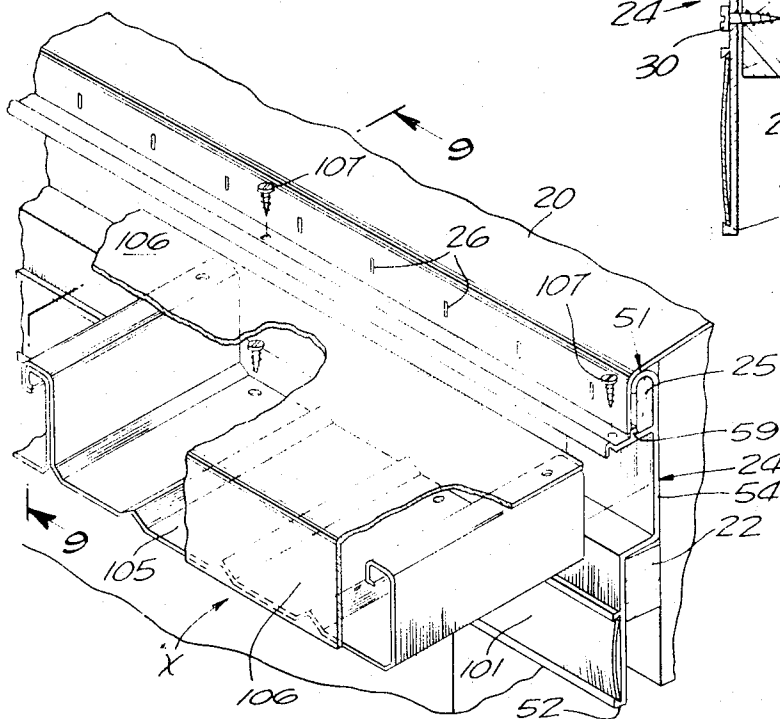
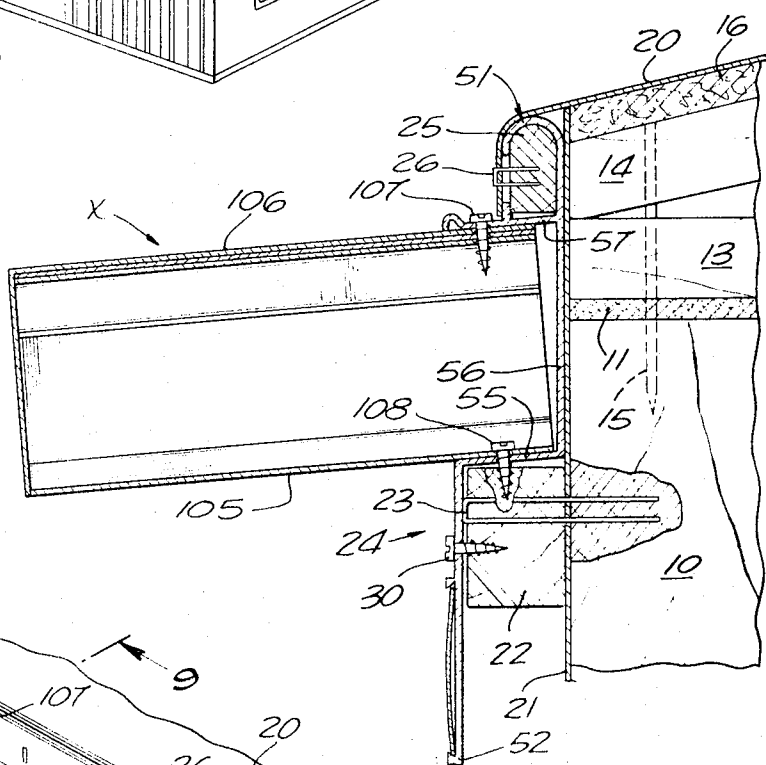


FIG. 8.

ROOF LOCK ASSEMBLY WITH EAVE STRUCTURE

This is a division of application Ser. No. 148,470 filed June 1, 1971 now U.S. Pat. No. 3,729,884.

BACKGROUND OF THE INVENTION

In certain types of building construction a roof is fabricated by first constructing a rigid roof frame, and then placing a flexible roof cover sheet over the upper surface of the frame and fastening it down. A problem resulting from this type of construction is that, unfortunately, the cover sheet may not be tightly drawn when first fastened down, or else it may subsequently stretch, and in either event it will have a tendency to rattle or vibrate as a result of strong winds or other causes.

Particularly in the building of trailer houses and other mobile homes, it is generally found desirable to construct a roof using a sheet metal cover. The cover sheet is relatively thin and hence flexible, and can be stretched to some extent and also can be bent to some extent. According to construction methods heretofore used the rattling or vibrating of the roof cover sheet was a commonplace problem which could not easily be remedied.

It is the object and purpose of the present invention to provide a novel method for tightening and then fastening a flexible roof cover sheet.

According to the presently preferred form of the invention the structural member which is utilized for stretching and tightening the roof cover sheet also forms a part of the final completed structure. More specifically, it forms a part of the interface between the exterior wall and the roof of the structure, being mechanically sound, economically feasible, and aesthetically desirable.

DRAWING SUMMARY

FIG. 1 is a perspective view of a mobile home constructed in accordance with the method and apparatus of the present invention;

FIG. 2 is an enlarged perspective view of one corner of the roof structure of FIG. 1, illustrated at a particular point during the construction process;

FIG. 3 is a view like FIG. 2 but shown at a later point in the construction process;

FIG. 4 is a cross-sectional elevational view taken on the line 4—4 of FIG. 2;

FIG. 5 is a cross-sectional elevational view taken on the line 5—5 of FIG. 3;

FIG. 6 is an exploded perspective view of the roof lock member and its wooden insert;

FIG. 7 is a perspective view of a mobile home like FIG. 1, but with both an eve and an awning added;

FIG. 8 is an enlarged perspective view, partially in cross-section, of the eve structure of FIG. 7; and

FIG. 9 is a cross-sectional elevational view taken on the line 9—9 of FIG. 8.

EMBODIMENT OF FIGS. 1 TO 6

Reference is now made to FIGS. 1 to 6, inclusive, of the drawings illustrating the presently preferred form of the invention.

As shown in FIG. 1 a building has two roof sections R1 and R2 which meet at the longitudinal center of the building and then slope downwardly as they extend out over the edges of the building. The juncture of the two roof sections is covered by a roof cap C. The roof sec-

tion R1 has a projecting end RE which extends over the end of building B, and a projecting side RS which extends over the side of the building.

Attention is now directed to the method of interior construction of the building, which is of no particular significance insofar as the present invention is concerned but will be described at this point simply in order that the illustration shown in the drawings may be clearly understood. Reference is made to FIGS. 4 and 5 for this purpose.

The exterior wall of the building includes a number of vertical studs 10 which are arranged in a conventional manner. Over the upper ends of the studs 10 there is placed a layer of acoustical tile 11, and tile 11 provides the ceiling surface for the interior of the building. The inner vertical edges of the studs 10 are covered by an acoustical wall board 12. Ceiling joists 13 are laid horizontally, and the end of each ceiling joist rests above the upper end of a corresponding one of the studs 10, but being separated therefrom by the layer of acoustical tile 11. Roof rafters 14 extend on a slope, the upper ends of the rafters being at the apex of the roof underneath the cap C, and the lower end of each rafter 14 resting upon the outer end of a corresponding joist 13. A large nail 15 is driven into the outer end of each roof rafter 14 and passed through the associated joist 13, tile layer 11, and into the upper end of stud 10. In this manner the frame structure of the roof is held together and supported upon the studs. A layer of insulating material 16 is placed across the upper edges of the roof rafters 14, so that the upper surface of the insulating material 16 provides a continuous flat surface which needs to be covered.

A flexible cover sheet 20 is used to cover the insulating material 16. Cover sheet 20 may, for example, be made from aluminum alloy or some other suitable metal. Cover sheet 20 is laid upon the upper surface of the roof frame so that it extends all the way from the apex of the roof and downward and outward to the edge of the roof frame, and also somewhat beyond the edge. As shown in FIG. 1 there are a number of the cover sheets designated as 20, 20 prime, 20 double prime, and so on, which are laid side-by-side so as to cover the entire roof section R1. After the cover sheets have been laid the cap C is placed in position and is fastened down, thus firmly securing the inner ends of all of the cover sheets 20.

It may be noted that for purposes of the present invention the flexible roof cover sheet may be stretched laterally by pulling it at the outer edge of the roof frame, so long as the cover sheet is fastened to the roof frame at a number of points which are located inwardly from that edge. The preferred method of fastening the cover sheet, however, is to fasten it along a single longitudinal line at the apex of the roof structure, underneath the cap C.

After the roof cover sheets 20 are placed in position the outer wall of the building is then covered. A side wall cover sheet 21 is placed over the outer edges of the studs 10 as well as the outer edges of the ceiling joists 13, roof rafters 14, and insulating material 16. The lower portion of wall sheet 21 is fastened to the studs 10 by means not shown. An exterior beam 22 is placed against the wall sheet 21 at a position somewhat below the roof, for example, about 8 to 16 inches below the roof. A staple gun is then used to drive staples 23 through the exterior beam 22, and hence through the

wall sheet 21 and into the corresponding studs 10. In this manner the exterior beam 22 is supported and the wall sheet 21 is also held in position.

At this point the background has been laid for the significantly new method of construction which is provided in accordance with the present invention. The present invention provides a novel method of stretching and tightening a flexible roof cover sheet and then fastening it in place. The present invention also provides a novel roof lock member which may be utilized in carrying out the method of construction.

Reference is now made to FIG. 6 which illustrates the presently preferred form of roof lock member 24 together with its associated wooden insert 25. Roof lock member 24 is preferably formed as an extrusion in order to provide the versatility that is desirable for its various functions while at the same time keeping the cost of manufacture low. The wooden insert 25 is not absolutely necessary but is preferably used as a matter of convenience, for reasons which will appear subsequently. Roof lock member 24 has one longitudinal edge 51 which is rounded, and may hereafter be referred to as the inner edge of the roof lock member. The outer edge of roof lock member 24 is designated as 52.

In its presently preferred configuration the roof lock member 24 has a hollowed portion 53 which is adjacent to and immediately inside of the rounded longitudinal edge 51. Hollowed portion 53 is adapted to receive, by longitudinal insertion therein, the wooden insert 25. As best seen in FIG. 4 the wooden insert 25, after insertion into the hollow portion 53 of roof lock member 24, has a considerable portion of its upper surface open or exposed.

In accordance with the method of the invention the wooden insert 25 is inserted into the roof lock member 24 and member 24 is placed in a horizontal position with its rounded edge 51 engaging the upper portion of side wall sheet 21. The upper side of member 24 in conjunction with wooden insert 25 then effectively forms a lateral extension of the upper surface of the roof frame. The roof cover sheet 20 was originally cut to sufficient length so that it extended some distance beyond the side wall sheet 21. The end of cover sheet 20 therefore extends over the upper side of member 24, including the exposed surface portion of wooden insert 25, as shown in FIG. 4. At this time staples 26 are driven through cover sheet 20 into the wooden insert 25 thus effectively attaching the outer end of cover sheet 20 to the upper side of roof lock member 24.

The next step of the process is to bend the outward edge 52 of roof lock member 24 in a downward direction, as shown by the arrow 27 in FIG. 4. Member 24 moves into the position shown in FIG. 4 in dotted lines, and then into the vertical position as shown in FIG. 5. During the course of this rotating or twisting movement of the member 24 the roof cover sheet 20 is stretched in a lateral direction relative to the longitudinal axis of the building. The end portion 20a of cover sheet 20 assumes a vertical position as shown in FIG. 5, while an intervening portion 20b is curved around the curved corner 51a of the roof lock member 24.

More specifically, the curved longitudinal edge 51 of the roof lock member 24 includes a curved upper corner 51a and a curved lower corner 51b. In the final position of rest of the roof lock member as shown in FIG. 5 the curved corner 51a provides support for the cover

member 20. While the member 24 is being rotated, however, the curved corner 51b both rotates and slides upon the surface of the side wall sheet 21. When roof lock member 24 reaches its final position it is rigidly fastened against the wall of the building so as to lock the roof cover 20 in place, in a state of lateral tension.

The presently preferred form of roof lock member 24 has certain specific characteristics which are utilized for reasons not heretofore explained. Reference is made to FIG. 4, 5, and 6 in order to explain in detail the specific configuration of the member 24.

Thus the greater part of the cross-section of member 24 is generally in the shape or configuration of a dipper. The handle of the dipper is designated as 54, the outer or base end of the handle being the longitudinal edge 52 of member 24. The first or inner wall of the dipper is designated as 55, the bottom wall as 56, and second or outer wall as 57. Beyond the second wall 57 of the dipper there is an additional bottom wall 58 which extends as a continuation of the bottom wall 56, and then merges into the curved portion 51. As previously explained, the lower corner of curved portion 51 is identified as 51b while the upper wall is identified as 51a. At about the vertical center of the wall 57 there is a rib 59 which projects laterally outward in the same plane as the edge of the curved corner 51a. A gap between rib 59 and curved corner 51a permits staples 26 to be driven into the wooden insert 25.

The roof lock member 24 on its upper surface also has three hooks which are used for retaining an ornamental cover member, when such is desired. A hook 61 rises up from the longitudinal edge 52, and faces inwardly of the member 24. At about two-thirds of the length of handle 54 away from hook 61, there is another raised hook 62 which faces back toward the hook 61. As later illustrated in FIG. 9 of the drawings, an ornamental cover member 101 may, if desired, be removably inserted between the hooks 61 and 62. A raised hook 63 is also formed at the upper extremity of wall 57, with the hook portion thereof facing toward the handle 54. As shown in FIGS. 3 and 5 an ornamental cover member 70 may, if desired, be removably inserted between the hooks 61 and 63.

In the presently preferred form of practicing the invention the location of exterior beam 22, and the length of bottom walls 56 and 58, are so arranged that the handle portion 54 of roof lock member 24 comes to rest upon the outer vertical surface of the exterior beam 22. This relationship is best seen in FIGS. 3 and 5. Screws 30 are then driven through the handle portion 54 into the beam 22 so as to rigidly maintain the member 24 in its final position. Thereafter the ornamental cover 70, if desired, is put in position, and will cover the screws 30 so that they cannot be seen.

Drawing FIGS. 2 and 3, while not specifically described, correspond respectively to FIGS. 4 and 5 which have been described in some detail. FIGS. 2 and 3 will therefore serve to supplement the illustrations provided in FIGS. 4 and 5.

As explained above the roof lock member 24 and ornamental cover sheet 70 are utilized to provide both a mechanical and an ornamental finish for the projecting roof side RS. The projecting roof end RE is covered in a different manner. As shown in FIGS. 1, 2 and 3 the roof end typically extends some distance beyond the end of building. Exterior beam 22 extends some distance beyond the end of its associated wall. A roof end

member 80 is attached to the forward end of the roof, being attached to the last one of the roof rafters 14 and also to the end of exterior beam 22. Then an ornamental cover 81 is removably snapped into the member 80. This completes the cover for the roof end RE. The ornamental cover 70 and 81 make a corner joint, not specifically shown.

EMBODIMENT OF FIGS. 7 TO 9

FIG. 7 shows in perspective the same building as FIG. 1, to which an eve structure X and an awning structure Y have been added. The ornamental cover member 70, previously shown, is omitted. The open cup of the dipper (walls 55 and 57 and the bottom wall 56) are then used to receive the upper end of the eve or awning as the case may be.

The eve structure X is made by utilizing a number of metal pans 105 (FIG. 8). Each metal pan has essentially a U-shaped cross-sectional configuration, and their abutting edges are interengaged to provide structural support. The pans 105 are generally conventional at this time and form no significant part of the present invention. A cover member 106 having an L-shaped cross-sectional configuration is placed over the upper edges of the pans 105 and also extending over the outer ends of the pans. Metal screws 107 are driven through the wall 57 and hence through the abutting portion of the cover 106 and the pans 105. A series of screws 107 are spaced down the length of wall 57 at each location where the side walls of two of the pans 105 are interengaged (see FIG. 8). In this manner the eve structure X is structurally supported from the roof lock member 24. The lower wall of each pan 105 may, if desired, be secured by metal screws 108. Screws 108 pass through the bottom wall of the pan 105, through wall 55 of the roof lock member 24, and hence into the upper flat surface of exterior beam 22. The screws 108 are, of course, inserted before the cover member 106 is placed in its position.

For the awning structure Y the same type of pans 105 are used, but they are of considerable length rather than being very short as shown for the eve structure. A cover member is placed over the inner ends of the pans but of course does not have the downwardly depending leg that is included in the cover member 106. The pans of the awning structure are fastened together at their outer ends and are supported by vertical posts P.

As will be understood by those skilled in the art, what has been described are preferred embodiments in

which modifications and changes may be made without departing from the spirit and scope of the accompanying claims.

What is claimed is:

1. A building construction comprising:

a frame defining a roof surface and also defining a vertical wall depending down from one edge of said roof surface;

an elongated member providing both roof locking and eve supporting functions, said member extending along the upper wall surface adjacent to the roof edge and being rigidly fastened to said vertical wall;

a flexible roof cover sheet disposed on said roof surface, extending outwardly from the roof surface and over the upper longitudinal edge of said composite member and then downward and being fastened to said composite member of the exterior surface thereof;

said composite member having a portion located beneath the edge of said roof cover sheet which provides a channel for receiving an eve structure;

an eve structure having one end thereof extending within said channel and rigidly fastened to said composite member and supported thereby;

said composite member being fastened to the vertical wall at points below said eve structure.

2. A building construction as claimed in claim 1 wherein said upper longitudinal edge of said composite member is convexly curved on the outer corner thereof, and said flexible roof cover sheet is bent around said convexly curved corner thereof.

3. The building construction defined in claim 1 wherein said eve structure includes a plurality of interlocking metal pans, said metal pans being fastened at their upper and lower edges, respectively, to the upper and lower walls of said eve receiving channel of said composite member.

4. The building construction claimed in claim 1 wherein said composite member extends vertically downward from the outer edge of the lower wall of said eve receiving channel, and which further includes an exterior beam fastened to said vertical wall immediately beneath said eve receiving channel, said downwardly depending portion of said member being fastened directly to the outer vertical surface of said exterior beam.

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