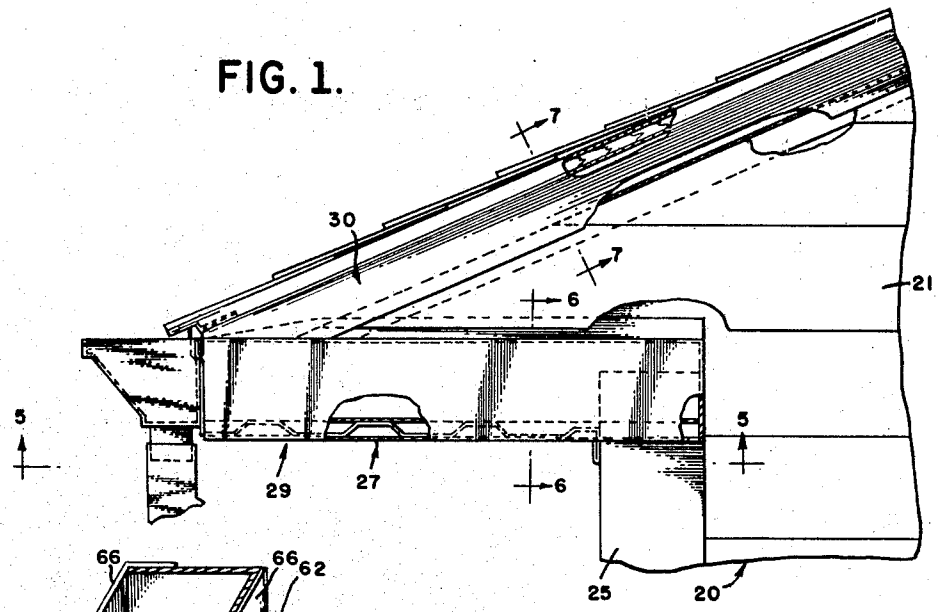
Oct. 3, 1967 R. T. MILES ET AL 3,344,563

ASSEMBLY FOR USE IN BUILDING STRUCTURES

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FIG. 1.



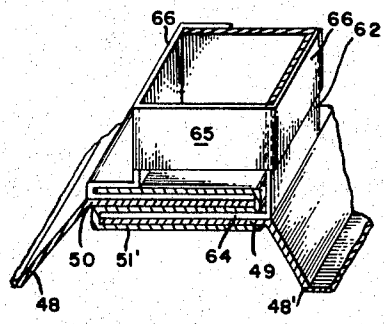


FIG. 3.

FIG. 2.

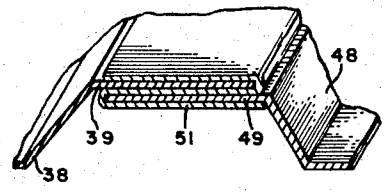


FIG. 4.

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ASSEMBLY FOR USE IN BUILDING STRUCTURES

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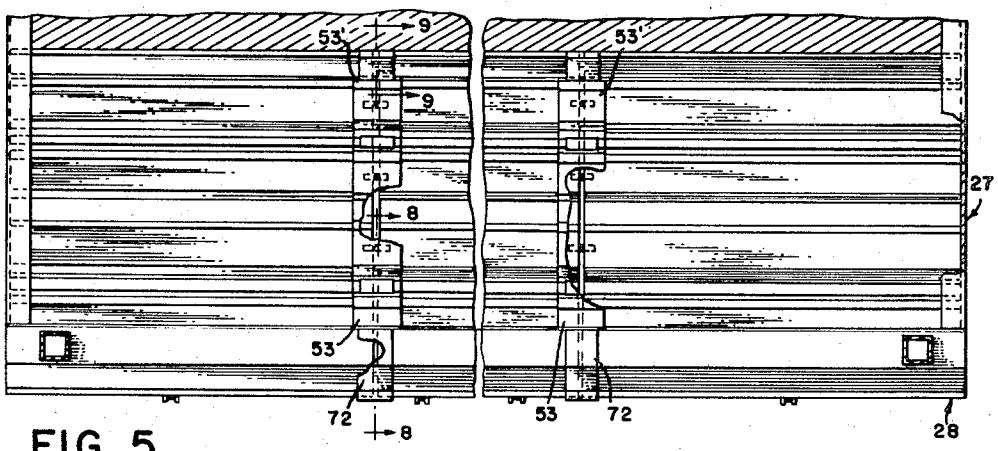


FIG. 5.

FIG. 8.

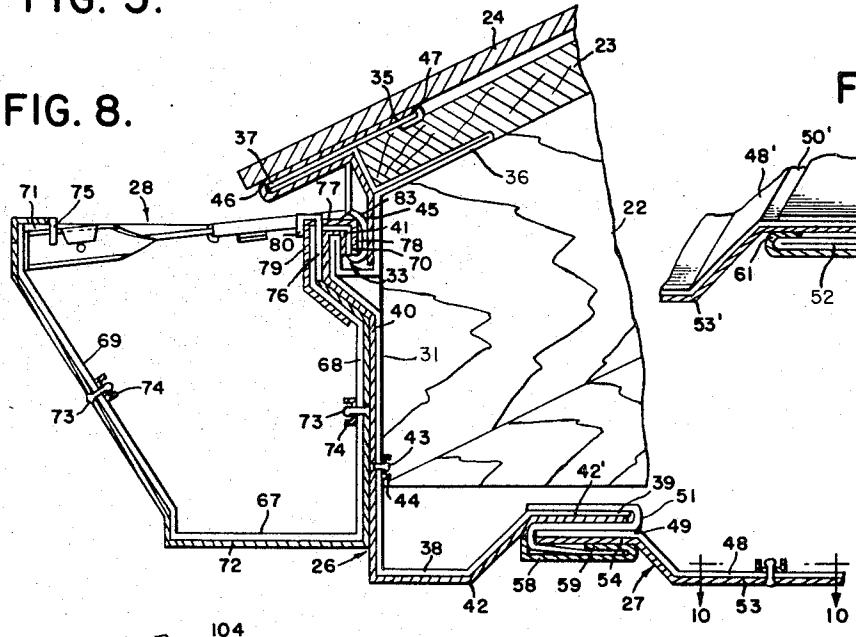


FIG. 9.

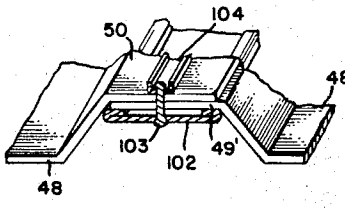


FIG. 15.

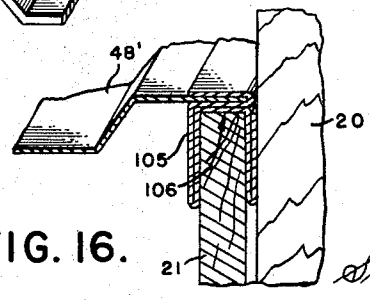
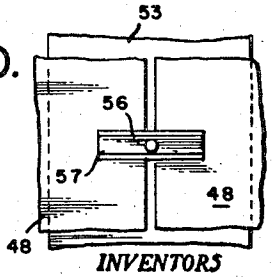


FIG. 16.

FIG. 10.



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ASSEMBLY FOR USE IN BUILDING STRUCTURES

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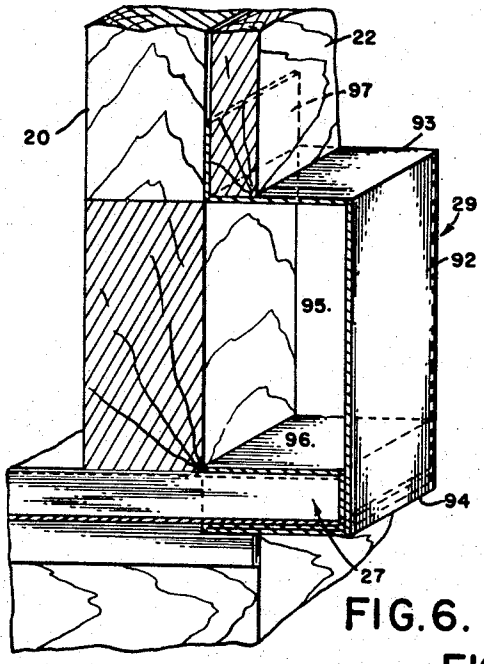


FIG. 6.

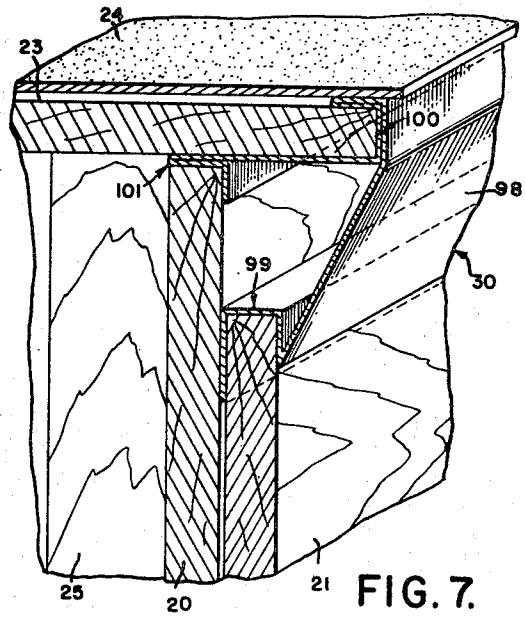


FIG. 7.

FIG. 11.

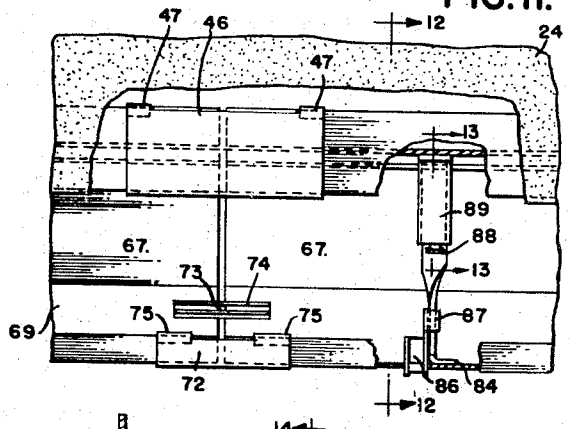
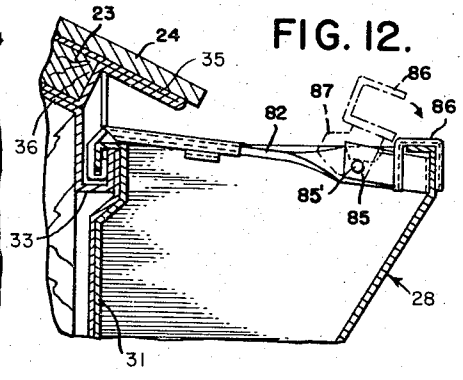


FIG. 12.



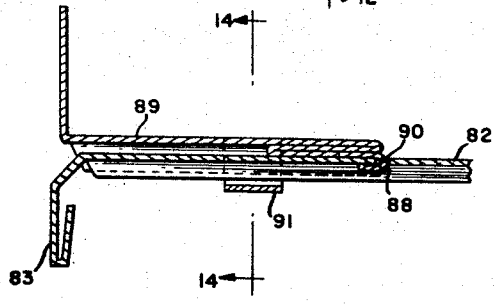


FIG. 13.

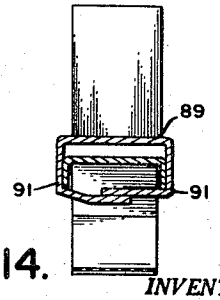


FIG. 14.

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United States Patent Office 3,344,563 Patented Oct. 3, 1967

3,344,563

ASSEMBLY FOR USE IN BUILDING STRUCTURES

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Filed Nov. 10, 1964, Ser. No. 410,214
4 Claims. (Cl. 52—11)

This application is a continuation-in-part of application Ser. No. 95,901, filed Mar. 15, 1961, which is assigned to a common assignee.

This invention relates to an assembly for use in building structures and more particularly to a combination sheathing edge protection pocket, drip edge, cornice facing, gutter support pocket, gutter unit, soffit, soffit closing box, rake mold bar and joining and fastening devices therefor.

It is an object of this invention to provide a combination sheathing edge protection pocket, drip edge, cornice facing, gutter support pocket, gutter unit, soffit, soffit closing box, rake mold bar and joining and fastening devices which may be fabricated from lightweight materials and readily and easily installed in a minimum of time without the use of special or unusual tools.

Other objects are to provide an assembly of the character described, the component parts of which may be interconnected in whole or in part on the job, which parts are engageable as a unit to a fixed part of the building structure; to provide a cornice facing including sheathing pockets for the reception of the eave and rake ends of the sheathing and having a drip or wall edge above the sheathing pocket to conduct roof drainage into a gutter beyond the sheathing pocket and to prevent curling down of roof material edges; to provide a gutter unit which may be detachably engaged with a supporting cornice facing, the gutter unit including means for clamping and locking the latter in assembled position without the use of tools; to provide a soffit comprising undulated plates of predetermined length and width secured to the cornice facing, connector means being provided for interengaging terminals of adjacent plates to provide a soffit of the desired length and width; to provide a closure box adapted to interfit with the rake of the soffit and cornice; and to provide a rake bar engageable with the rake end of the building structure, the lower portion of said rake being in contiguous relation with the cornice facing, a portion of the rake bar including sheathing and siding pockets adapted to receive and protect the edges of the sheathing and siding materials of the building structure, and having a formed top spacing edge.

Other objects of the invention will be manifest from the following description of the present preferred forms of the invention taken in connection with the accompanying drawings, wherein:

FIGURE 1 is a fragmentary side elevational view of a building structure showing the application of the present invention, portions thereof being broken away to disclose details of construction;

FIGURE 2 is a fragmentary transverse sectional view of the same;

FIGURE 3 is an enlarged fragmentary sectional view taken through the soffit of a part of the present invention illustrating the manner of connecting a hanger thereto;

FIGURE 4 is an enlarged fragmentary sectional view taken through the soffit illustrating the manner of connecting adjacent soffit plates;

FIGURE 5 is a sectional view taken along the line 5—5 of FIGURE 1 looking in the direction of the arrows;

FIGURE 6 is an enlarged sectional view taken along the line 6—6 of FIGURE 1 looking in the direction of the arrows and showing in perspective the manner of engaging the closing box forming a part of the invention with the building structure;

FIGURE 7 is a similar view taken along the line 7—7 of FIGURE 1 looking in the direction of the arrows and illustrating in perspective the manner of engagement of the rake bar with the building structure;

FIGURE 8 is an enlarged sectional view taken along the line 8—8 of FIGURE 5 looking in the direction of the arrows;

FIGURE 9 is an enlarged sectional view taken along the line 9—9 of FIGURE 5 looking in the direction of the arrows;

FIGURE 10 is an enlarged fragmentary sectional view taken along the line 10—10 of FIGURE 8 looking in the direction of the arrows and illustrating the manner of connecting adjacent soffit plates forming a part of the invention;

FIGURE 11 is a fragmentary top plan view of the gutter unit forming a part of the present invention, portions thereof being removed to disclose details of construction;

FIGURE 12 is a sectional view taken along the line 12—12 of FIGURE 11 looking in the direction of the arrows;

FIGURE 13 is an enlarged sectional view taken along the line 13—13 of FIGURE 11 looking in the direction of the arrows;

FIGURE 14 is a sectional view taken along the line 14—14 of FIGURE 13 looking in the direction of the arrows and showing to advantage the manner of engaging the switch lock bar of the gutter unit with the hanger clamp;

FIGURE 15 is a sectional view similar to FIGURE 4 illustrating a modified form of soffit plate connectors; and

FIGURE 16 is a sectional view similar to FIGURE 9 illustrating a modified form of soffit angle bar.

Referring now in greater detail to the drawings there is illustrated a building structure including vertical walls 20 to which is applied siding material 21. Roof trusses or rafters are indicated at 22 to the uppermost of which is applied sheathing 23. A suitable roofing material is indicated at 24. Vertical structural supports are indicated at 25.

The stuctural eaves covering assembly of the present invention may be fabricated from suitable lightweight material, such as aluminum, iron, stainless steel, copper, plastic or the like, and may be fabricated from sheets or be extruded shapes. The assembly generally includes a cornice facing 26 supported by the building framework to the lower terminal of which is attached a soffit 27 which extends beneath the eaves to wall 20 of the building and constitutes a unitary cover or enclosure unit for the eave and rake ends of the sheathing and the rafter portions extending forwardly of the building wall 20. The assembly further includes a gutter unit 28 adapted to be supported by cornice facing 26. A closing or return box 29 is positioned at each lateral extremity or soffit 27. The assembly of the present invention additionally includes a rake bar 30 adapted for application to the rake end of the building structure. Referring now particularly to FIGURES 2 and 8 of the dawing the cornice facing 26 preferably comprises a plurality of connected sections each of which includes a facing wall or fascia 31 of elongated substantially rectilinear shape adapted for contiguous engagement with the front edges of roof trusses or rafters 22, an intermediate pat of which is provided with an outwadly and upwardly extending lip 32 forming a gutter attachment pocket and stiffener 33 between lip 32

and wall 31. Near its upper terminal edge, the wall 31 is provided with a double reverse bend, a wall segment 32 and a second double reverse bend to define a U-shaped channel or sheathing pocket 34 having spaced top and bottom parallel wall members 35 and 36 which are connected by the wall segment 32'. It will be noted that members 35 and 36 are angularly disposed to complement and self-adjust to the slant of the building structure roof so that sheathing pocket 34 is positioned to receive the lower edge terminal of sheathing 23, affording a protective covering for the latter from the elements. Lower member 36 additionally serves as a tempoary or permanent securing edge through which nails, screws or staples are driven to secure cornice facing 26 to roof trusses 22. Upper angular member 35 is extended forwardly of wall 31 to provide a drip edge 37 to insure deposit of water into the gutter, members 35 and 37 additionally serving as a supporting surface for roofing material 24 to prevent curling down of the lower edges. The lower terminal edge of wall 31 is bent rearwardly at a right angle at a point below the eaves of the roof to form an undulating connecting flange section 38, the extreme longitudinal edge of which section is horizontally disposed for a predetermined distance as indicated at 39 for facile connection with soffit 27.

In order to join together sections comprising cornice facing 26, the sections to be joined are positioned with their adjacent lateral extremities approximately one-half inch apart. A joining plate 40 is placed over the joint in overlapping relation to the section terminals. As shown in FIGURE 8, joining plate 40 complements the contour of wall 31 of cornice facing 26 the upper terminal of which is bent rearwardly and downwardly to form a hook 41 adapted to be received in gutter pocket 33. The lower terminal of joining plate 40 is bent to form an undulating section 42 complementing and lying in flush engagement with connecting section 38 of the cornice facing. The longitudinal edge of undulating section 42 terminates in a horizontal section 42'. Joining plate 42 is secured in position by means of a pressure pin 43 to which is connected a pressure bar 44 of half-round or horseshoe shape, the latter being placed in operative position by hand. To join the upper terminals of wall 31 which form sheathing pocket 34 and drip edge 37 there is provided a sheathing pocket joining plate 45 the lower terminal of which is positioned in gutter pocket 33. The upper terminal of plate 45 is bent forwardly and rearwardly to form an envelope 46 to receive the lateral terminals of adjacent sheathing pocket sections. Joining plate 45 is secured in position by means of tabs 47 extending in spaced relation from the upper terminals of envelope 46 which are adapted to be bent down and under the upper edge of member 35.

The one-piece cornice facing of the present invention decoratively covers the ends of rafters or trusses, provides sheathing end protection, roofing starter and roofing droop protection, gutter attachment provision, fascia stiffness to permit elimination of facing board, facing drip edge to prevent water return to the soffit connection strip to attach to the soffit assembly and is designed to obviate nailing or fastening on the vertical or front surface, thus minimizing shimming or straightening.

Soffit 27 includes one or more radially disposed elongated soffit plates of rectangular or other shapes, the particular number of plates employed depending upon the width and length of the soffit. There is illustrated in FIGURE 2 a soffit comprising two soffit plates designated 48 and 48', which are of undulated shape for increased strength and as shown, may be of different width and length if desired. The longitudinal edges of plates 48 and 48' lie in horizontal planes in the same manner as flange section 39 of cornice facing 26. These horizontal sections are indicated at 49, 50 and 49', 50'. Connection of cornice facing section 39 and soffit plate section 49 and of soffit plate sections 50 and 49' is effected by means of S-shaped connectors designated 51 and 51', respectively. As shown to advantage in FIGURE 4, these connectors frictionally engage and hold the sections inserted therein against accidental disengagement. Rear wall edge section 50' of plate 48' is inserted in a soffit angle bar 52, to frictionally engage and hold the plate against accidental disengagement, the lower portion of angle bar 52 constitutes a vertical flange section which is adapted for engagement with wall 20.

A plurality of soffit plates 48 and 48' are positioned longitudinally throughout the length of the soffit. Referring to FIGURES 2, 5 and 8 it will be seen that plates 48, 48 and 48', 48' are located approximately one-half inch apart, beneath which joint are soffit joining plates 53 and 53', the shape of which complements the undulating contour of plates 48 and 48'. The longitudinal edges of the joining plates are horiozntal as indicated at 54, 55 and 54' and 55' for insertion into S-shaped connectors 51 and 51'. Intermediate connectors 51 and 51' soffit joining plates 53 and 53' are secured in contiguous relation with plates 48, 48 and 48', 48' by pressure pins 56, 56' and pressure bars 57, 57'. As shown in FIGURE 8 the joints between adjacent connectors 51 and 51' are spanned by plates 58 and 58' which are of substantially channel shape one terminal of each of which is bent inwardly to provide a connector engaging flange designated 59, 59'. The joint between adjacent soffit angle bars 52 is spanned in like manner by an angle joining plate 60 the upper terminal 61 of which is bent rearwardly for frictional engagement with the soffit angle bar in a manner shown in FIGURE 9.

Referring to FIGURE 2, soffit 27 is supported intermediate its length by a plurality of hanger bars 62 of angle shape each of which is secured to roof trusses 22 by suitable means 63. The lower terminal of one face of bar 62 is extended and bent at a right angle thereto to provide a supporting flange 64 adapted for insertion into S connector 51' (see FIG. 3). In conjunction with bar 62, there is provided a lock clamp 65 including a lower bent terminal adapted for insertion under the top leaf of connector 51'. The upper terminals of clamp 65 are provided with spaced legs 66 adapted to be wrapped around the lower portion of hanger bar 62. By means of this structure no piercing of any section of the soffit or cornice facing is necessary. No outlook or horizontal rafter return structure is necessary and the entire unit may be installed from the top, thus eliminating the necessity of scaffolding.

Gutter unit 28 comprises a plurality of sections including a bottom 67, a rear wall 68 and an outwardly and upwardly sloping from wall 69. Rear wall 68 lies in flush engagement with facing wall 31 and the upper terminal thereof is bent rearwardly and downwardly to form a hooked portion 70 adapted for engagement over lip 32 into gutter pocket 33 of cornice facing 26. The upper terminal of sloping wall 69 is squared off to provide a gutter bead 71.

As shown in FIGURE 8 adjacent sections of gutter unit 28 are positioned approximately one-half inch apart and are connected by a trough shaped gutter joining plate 72 which complements and is adapted to embrace the outer faces of the gutter unit sections at their adjacent longitudinal extremities. Securement of joining plate 72 is effected by pressure pins 73 and pressure bars 74. Portions of the upper and outer terminal of joining plate 72 are extended to provide tabs 75 adapted to be bent downwardly into engagement with gutter bead 71. The rear face of gutter joining plate 72 extends to a point in spaced relation to the upper terminal of the gutter section at which point a central finger 76 extends upwardly through an opening in a top plate 77 of substantially inverted U-shape. One terminal of top plate 77 is receive in gutter pocket 33 as indicated at 78. The opposite terminal of top plate 77 designated 79 extends downwardly in flush engagement with rear wall 68 of the gutter. Finger terminal 80 is bent over terminal 79 of top plate 77.

As illustrated in FIGURES 2, 8, 11, 12, 13 and 14 it is further within the contemplation of the present invention to provide a gutter hanger bar **82** preferably of U-shape in cross-section, the central connecting portion of which is extended to provide a bill **83** adapted to be set in gutter pocket **33** and held by hook **70** of the gutter. Intermediate its length bar **82** is twisted through an angle of 90° to insure deposit of water on the hanger bar into gutter **28**. The outer central section of bar **82** is extended and bent at a right angle to the bar to form a flange **84** which abuts the inner face of gutter bead **71**. Adjacent the outermost extremity of the bar **82**, there is provided a clamp unit including a body section **85** pivoted at **85'** to bar **82**. An inverted U-shaped clamp **86** is affixed to an extremity of body section **85**, which clamp, is adapted to be pivoted into engagement with gutter bead **71** in the manner illustrated in FIGURE 12. The upper terminal of body section **85** is extended to provide a lock tab **87** which is bent over the outer terminal of bar **82** to retain clamp **86** in operative position. At a point rearwardly of the 90° twist, the intermediate section of hanger bar **82** is cut out at **88**.

To lock hanger bar **82** in position, there is additionally provided a right angle wedge lock **89** of U-shape cross-section, the upper terminal of which is wedged under drip edge **37** of cornice facing **26**. The lower horizontal portion of wedge lock **89** is superimposed on hanger bar **82** and is provided with an extension or jack piece **90** adapted to be trained through cut out portion **88** of hanger bar **82**. The lateral edges of wedge lock **89** are extended at points intermediate the length thereof to provide dependent legs **91** which are bent under hanger bar **82** to insure that the two pieces are held in fixed relationship. (See FIGS. 13 and 14.)

Closing or return box **29** is disclosed in FIGURES 1 and 6 and includes an outer wall **92**, a top wall **93**, a bottom wall **94** and an end wall **95**. There is additionally provided an internal wall **96** in predetermined parallelly spaced relation to bottom wall **94** providing a pocket into which the lateral terminals of soffit **27** are received, the length of box **29** depending upon being coextensive with the width of soffit **27**. As shown in FIGURE 6, a flashing piece or water shed edge **97** extends upwardly from the inner terminal of top wall **93** and is adapted for flush engagement with wall **20**. Sheating **22** is laid over water shed edge **97**.

Rake bar **30** includes a slanted wall **98** the lower terminal of which is bent to provide a siding pocket **99**, the wall side of the bar forming the pocket being a nailing edge for securing the rake bar to wall **20**. The upper terminal of wall **98** is bent to form a sheathing pocket **100**, the lower terminal of the member comprising the pocket being extended to the wall where it again is bent to form a wall pocket **101**.

In erecting the present building assembly cornice facing **26** is placed in correct position over the ends of roof trusses **22** and is nailed, screwed or stapled to the same through nailing edge member **36**. Sheathing pocket joining plate **45** is inserted into gutter pocket **33** between adjacent sheathing pocket sections, tabs **47** being bent downwardly under the edge of each member **35** to lock plate **45** in position. Cornice facing sections are next connected by securing joining plate **40** in place with pressure pin **43** and pressure bar **44**.

Connectors **51** and **51'** are slid over the longitudinal edges of section **38** of cornice facing **26** and the longitudinal edges of soffit plates **48** and **48'**. Soffit angle bar **52** is then slid over the wall edge of soffit plate **48'**. Soffit plates **48**, **48** and **48'**, **48'** are connected by soffit joining plates **53**, **53'**, the latter being firmly held by pressure pins **56**, **56'** and pressure bars **57**, **57'**.

Hanger bars **62** are positioned by first inserting supporting flange **64** of each bar into connector **51'**. Lock clamp **65** is inserted into connector **51'** from the opposite direction and legs **66** thereof bent around bar **62**.

Hanger bar **62** is then secured in proper position by fastening the same to a roof truss **62**.

Return box **29** is placed in position at the ends of soffit **27** with the terminals of soffit plates **48**, **48'** in the pocket formed between walls **94** and **96**, and flashing piece **97** is secured to the gable construction members. Rake bar **30** is next fixed to the gable construction members.

Each gutter hanger bar **82** is hung over hook **41** of the gutter with clamp **86** turned down over gutter bead **71** and lock tab **87** bent over bar **82**. Wedge lock **89** is placed over hanger bar **82** with a portion wedge under drip edge **37** and jack piece **90** through cut out portion **88** of the hanger bar. Wedge lock **89** is pressed down firmly against hanger bar **82** which causes jack piece **90** to drive wedge lock **89** rearwardly and to lift the wedge piece into position. Legs **91** are then bent around hanger bar **82**, locking wedge lock **89** firmly in place.

To assemble gutter unit **28**, the upper face of each gutter joining plate **72** is thinly buttered or covered with a suitable adhesive sealant, then placed over adjoining ends of gutter sections. Pressure pins **73** and pressure bars **74** are inserted through the spaces between adjacent gutter sections. Tabs **75** are then bent over gutter bead **71**. Top plate **77** is next placed over rear portion **70** with finger **76** inserted through the opening in the top plate. Finger **76** is turned down, locking pieces **72** and **77**. Pressure bars **74** are turned to the proper position to hold adjacent gutter section edges against joining plate **72**. Void space between adjoining edges of the gutter sections is then filled with proper adhesive sealant making a water tight joint.

In FIGURE 15 there is illustrated an alternate means of connecting adjacent soffit plates. In this form, there is provided a flat connector **102**, the lateral edges of which are bent upwardly and inwardly, the connector being subjacent sections **50** and **49'** of soffit plates **48** and **48'**. The members are retained in position by pressure pins **103** and pressure bars **104**.

In FIGURE 16 there is shown a modified form of soffit angle bar designated **105**, the lower terminal of which is bent to form a siding or soffit plate pocket **106**.

The building assembly of the present invention may be readily and easily installed in a minimum of time, from the top down or bottom up, portions thereof being assembled with no tools at all and other parts thereof assembled with simple tools such as hammers, saws and screw drivers.

The assembly of the present invention is shown as applied to a conventional pitched roof. However, it is to be understood that it is suitable for all types of building and roof construction, both pitched and flat. It is further readily apparent that certain sections and features of this invention may be used separately, or in conjunction with one or more other sections or features, for the purpose of adapting such sections or features to the various types of building construction forms and needs. Also, with little or no modification certain joining, hanging and fastening devices of the invention may be adapted for use on items of a similar nature and purpose now in use.

Various other changes may be made within the scope of the claims hereto appended.

What is claimed is:

1. A supporting and locking assembly for securing a gutter to a building, comprising a hanger bar for spanning the gutter, and a pivotable clamp unit adjacent the outer terminal of the hanger bar engageable with the front wall of the gutter, said clamp unit including a body portion in pivotable connection with said hanger bar, an inverted U-shaped clamp fixed to said body portion at the end thereof and engageable over the front wall of the gutter, and a lock tab connected to said body portion and spaced from said U-shaped clamp and positioned to be bent over said hanger bar to lock the U-shaped clamp in operative position, and the rear terminal

of said hanger bar having means for engagement with a stationary part of the building.

2. The assembly of claim 1 with the addition of a wedge lock for said clamp unit including an angle member, the lower portion of which is detachably secured to said hanger bar, the upper terminal of said angle member being wedged beneath a stationary part of the building.

3. In combination with a building having a vertical wall and a sloping roof and a covering therefor, the provision of a structural eaves covering, and a gutter supported thereby, said eaves covering being formed from sheet metal having a plurality of longitudinally disposed, generally parallel bends extending from end to end, the eaves covering comprising a plurality of elongated, juxtaposed panel sections including, a relatively narrow vertical flange section along the lower edge engaging said vertical wall, and three wider panel sections including a horizontal soffit section, a fascia section, both at substantially right angles to each other, and an upwardly and diagonally inclined shething pocket section secured to said fascia section and underlying the lower portion of said roof covering, the fascia section having an upwardly opening substantially U-shaped channel adjacent the juncture between the two latter sections, the juncture with the fascia section being below the edge of the sheathing pocket section, said gutter being provided with a flange receivable in said channel and being removable therefrom, a first means removably securing the horizontal soffit section to the vertical flange section, a second means removably securing the soffit section to the fascia section, and a rake bar secured to the rake end of the building and comprising a facing wall, means defining a pocket secured along the upper edge of said facing wall, said pocket receiving an edge of the roof sheathing of the building, and means secured to the lower edge of said facing wall to define a pocket for receiving an adjacent edge of the siding of the building.

4. In combination with a building having a vertical wall and a sloping roof and covering therefor, the provision of a structural eaves covering, and a gutter supported thereby, said eaves covering being formed from sheet metal having a plurality of longitudinally disposed, generally parallel bends extending from end to end and, the eaves covering comprising a plurality of elongated, juxtaposed panel sections including, a relatively narrow vertical flange section along the lower edge engaging said vertical wall,

and three wider panel sections including a horizontal soffit section, a fascia section, both at substantially right angles to each other, and an upwardly and diagonally inclined sheathing pocket section secured to said fascia section and underlying the lower portion of said roof covering, the fascia section having an upwardly opening substantially U-shaped channel adjacent the juncture between the two latter sections, the juncture with the fascia section being below the edge of the sheathing pocket, said gutter being provided with a flange receivable in said channel and being removable therefrom, a first means removably securing the horizontal soffit section to the vertical flange section, a second means removably securing the soffit section to the fascia section, a plurality of downwardly extending hanger bars, each of said hanger bars being secured to a rafter of the building and having a depending lower end, and means provided at each of said lower ends for engaging and supporting said soffit section.

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