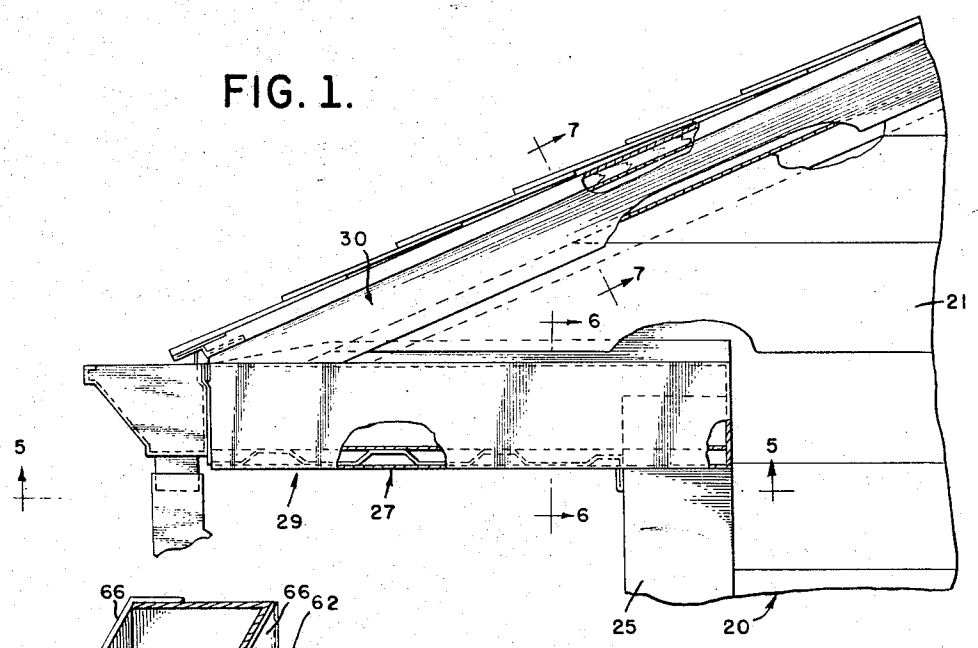
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ASSEMBLY FOR USE IN BUILDING STRUCTURES

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FIG. 1.



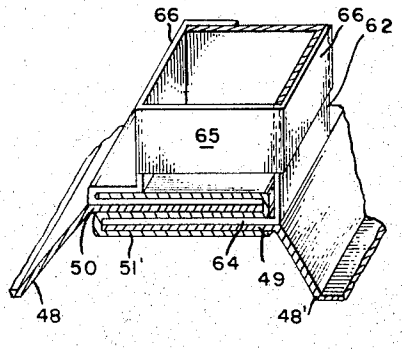


FIG. 3.

FIG. 2.

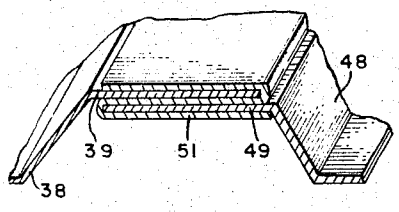


FIG. 4.

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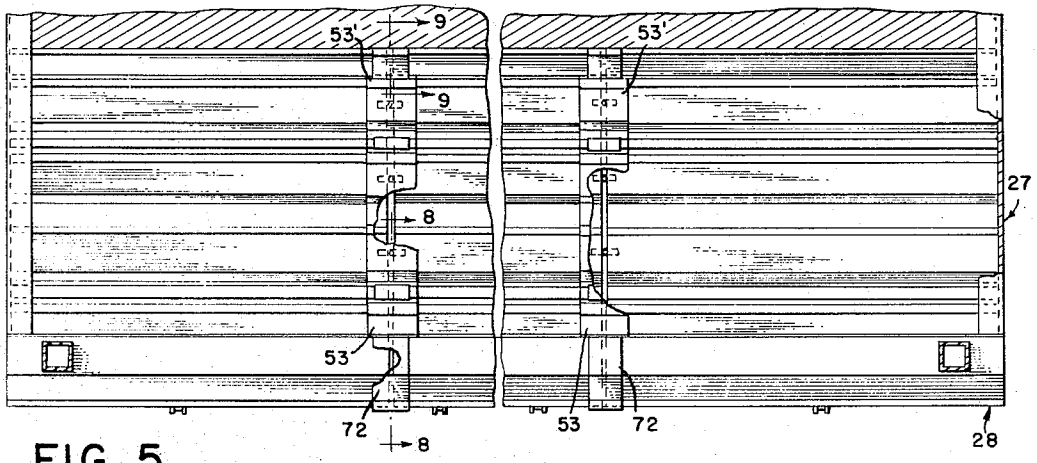


FIG. 5.

FIG. 8.

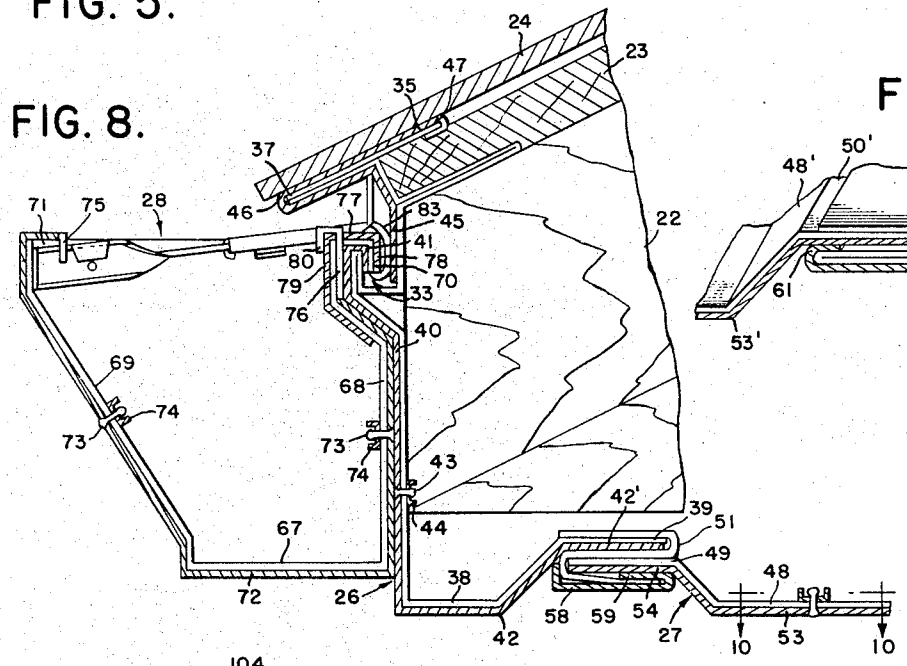


FIG. 9.

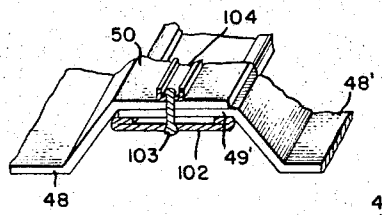


FIG. 15.

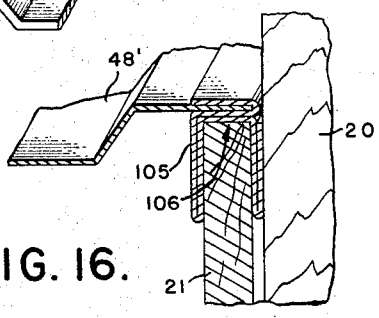


FIG. 16.

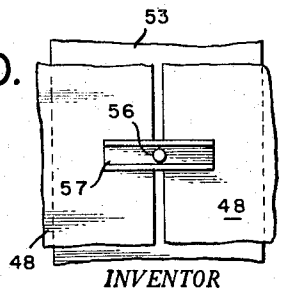


FIG. 10.

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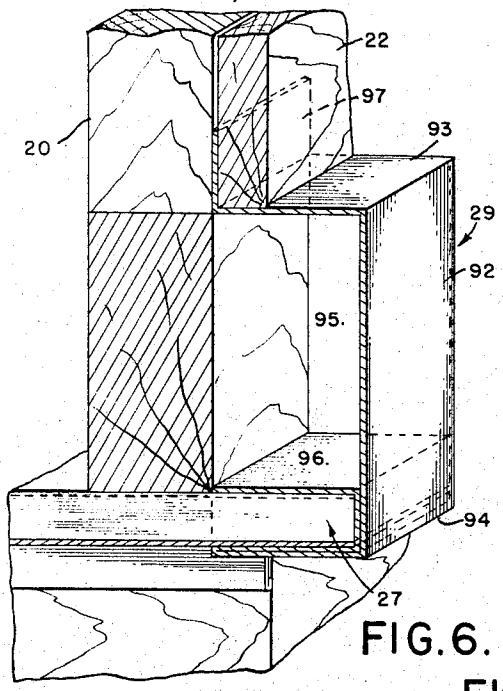


FIG. 6.

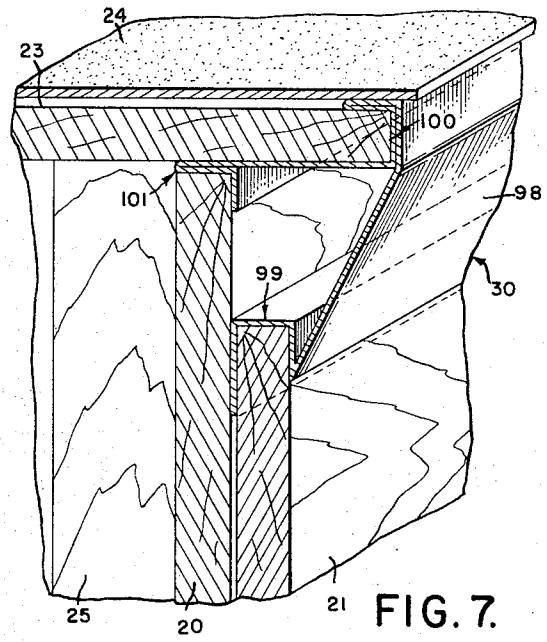


FIG. 7.

FIG. 11.

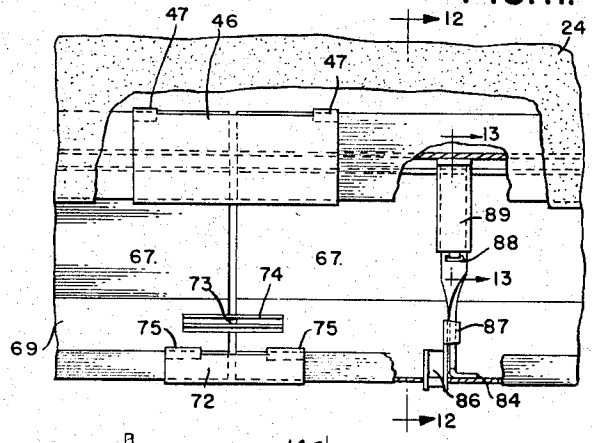
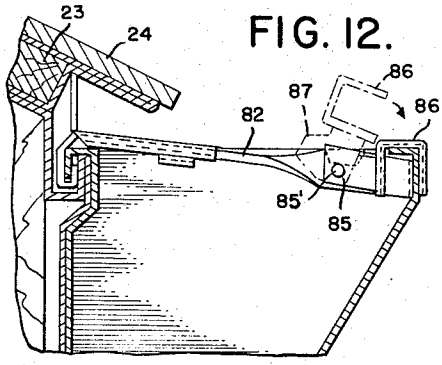


FIG. 12.



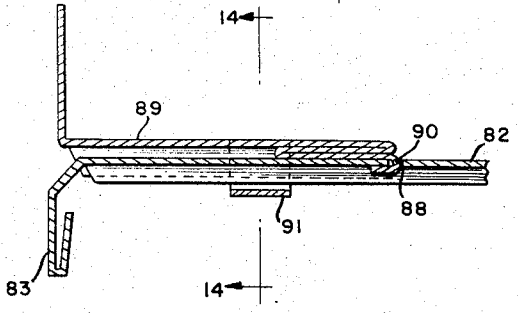


FIG. 13.

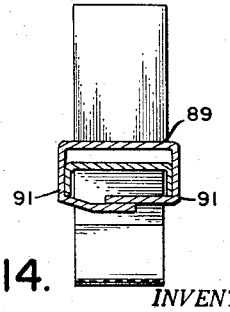


FIG. 14.

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United States Patent Office 3,344,561 Patented Oct. 3, 1967

3,344,561 ASSEMBLY FOR USE IN BUILDING STRUCTURES

Philip R. Anderson, Easton, Md., assignor to Corinthian Cornice Systems, Inc., a corporation of Maryland

Filed Mar. 15, 1961, Ser. No. 95,901
5 Claims. (Cl. 52—11)

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.

This application contains unclaimed subject matter which is disclosed and claimed in application Ser. No. 410,214, filed Nov. 10, 1964, for Assembly for Use in Building Structures, by Russel T. Miles and Philip R. Anderson.

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:

FIG. 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;

FIG. 2 is a fragmentary transverse sectional view of the same;

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

FIG. 4 is an enlraged fragmentary sectional view taken through the soffit illustrating the manner of connecting adjacent soffit plates;

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

FIG. 6 is an enlarged sectional view taken along the line 6—6 of FIG. 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;

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

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

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

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

FIG. 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;

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

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

FIG. 14 is a sectional view taken along the line 14—14 of FIG. 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;

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

FIG. 16 is a sectional view similar to FIG. 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 building structure 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 FIGS. 2 and 8 of the drawing the cornice facing **26** preferably comprises a plurality of connected sections each of which includes a facing wall **31** of elongated substantially rectilinear shape adapted for contiguous engagement with the front edges of roof trusses or rafters **22**, an intermediate part of which is provided with an outwardly 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 temporary 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 FIG. 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, facia 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 FIG. 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 advatage in FIG. 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 angle bar 52 of which provides a finish or mold 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 FIGS. 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 horizontal as indicated at 54, 55 and 54' and 55, for insertion into S-shaped connectors 51 and 51'. Intermediate connectors 51 and 51' and 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 FIG. 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 FIG. 9.

Referring to FIG. 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 front 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 FIG. 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 received 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 FIGS. 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 FIG. 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 FIGS. 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 FIG. 6, a flashing piece or watershed edge **97** extends upwardly from the inner terminal of top wall **93** and is adapted for flush engagement with wall **20**. Sheathing **22** is laid over watershed 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 roofs 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 **22**.

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 wedged 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 **76** 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 FIG. 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 FIG. 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. In combination with a building having a vertical wall and a sloping roof and covering therefor,

the provision of a structural eaves covering formed from elongated sheet metal,

having a plurality of longitudinal bend lines forming a plurality of juxtaposed panel sections having an angular relation to each other and including,

a lower vertical flange section engaging said vertical wall,

a horizontal soffit section at generally right angles to the flange section,

an upwardly extending vertical facia section,

and a flashing section extending diagonally upwardly from the facia section and underlying the lower section of said roof covering,

the eaves covering having an upwardly opening substantially U-shaped narrow channel forming the juncture between the facia section and the flashing section,

the leg portions of said channel being in close alignment with each other and defining a flange receiving support, the juncture with the facia section being below the edge of the flashing section.

2. In combination with a building having a vertical wall and a sloping roof and covering therefor,

the provision of a structural eaves covering,

and an eaves trough 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 dividing the eaves covering into 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 facia section,

both at substantially right angles to each other,

and an upwardly and diagonally inclined flashing section underlying the lower portion of said roof covering,

the eaves covering having an upwardly opening substantially U-shaped channel forming the juncture between the two latter sections, the juncture with the facia section being below the edge of the flashing section,

said eaves trough provided with a flange receivable in said channel and being removable therefrom.

3. In combination, a structural sheet metal eaves covering and an eaves trough supported thereby,

said eaves covering having a plurality of longitudinally disposed generally parallel bends extending from end to end and dividing the eaves covering into a plurality of elongated juxtaposed panel sections including,

a relatively narrow vertical depending flange section,

and three wider panel sections including a horizontal soffit section extending forwardly from the vertical flange section,

a facia section extending upwardly from the horizontal soffit section,

and a flashing section extending upwardly and diagonally inwardly from the facia section,

the facia section having an upwardly opening substantially U-shaped channel below diagonal flashing section,

said eaves trough being provided with a flange receivable in said U-shaped channel and being removable therefrom.

4. A one-piece cornice facing for application to a building structure comprising a facing wall, an intermediate part of the facing wall being formed to provide an upwardly facing gutter pocket, an upper portion of the facing wall being bent to provide double reversed bends connected by a wall portion, the reversed bends defining parallel walls extending rearwardly to form a sheathing pocket, the upper wall of the sheathing pocket having a portion extending forwardly beyond the gutter pocket to provide a drip edge.

5. A one-piece cornice facing, as set out in claim 4, wherein the lower terminal of the facing wall is bent rearwardly below the eaves of the building structure's roof.

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