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Merkin et al.

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[54] **COMBINED GUTTER, FASCIA, SOFFIT ARRANGEMENT**

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[52] **U.S. Cl.** **52/11,** 52/94

[51] **Int. Cl.** **E04d 13/00**

[58] **Field of Search** 52/11, 15, 94, 95, 96; 61/14, 15; 248/48.1, 48.2

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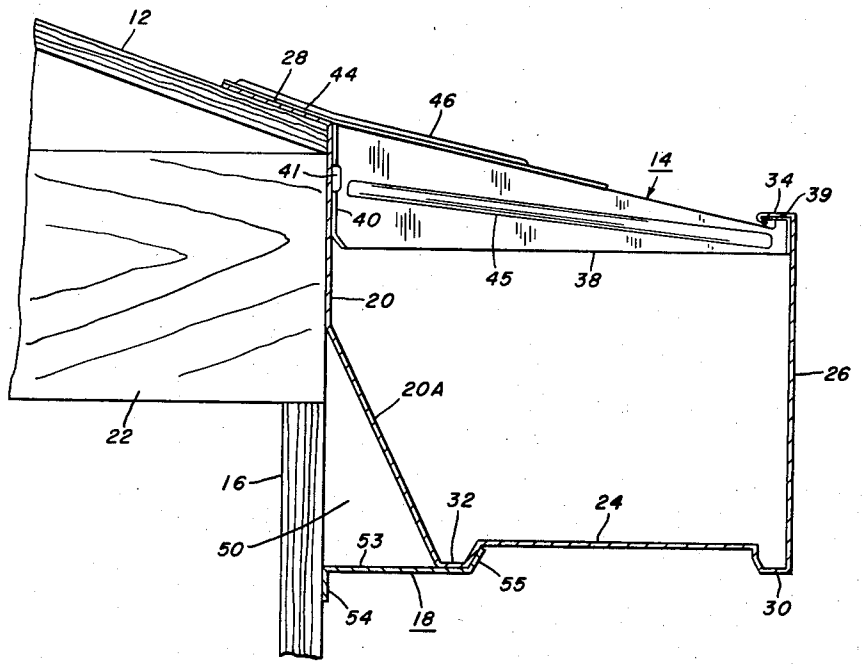
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[57] **ABSTRACT**

An arrangement and combination in which an elongated unitary gutter, fascia and soffit structure is provided in the form of a structural eave for a building, such as a dwelling house, originally constructed without the customary eave overhang. The unitary gutter, fascia and soffit structure comprises a rear wall having means for attaching the structure to the roof, a horizontal bottom wall forming the soffit, and a front wall forming the fascia, the rear, bottom and fascia walls, in turn, forming the gutter. This eave structure is attached to the roof by unitary, high strength brackets each having a main body portion extending in a vertical plane and traversing the structure, a forward end portion adapted to engage the front fascia wall of the eave, and a roof anchoring portion extending from the rear of the bracket, and integral with the main body portion. Along the front and rear edges of the soffit wall are provided elongated downwardly directed steps.

1 Claim, 5 Drawing Figures



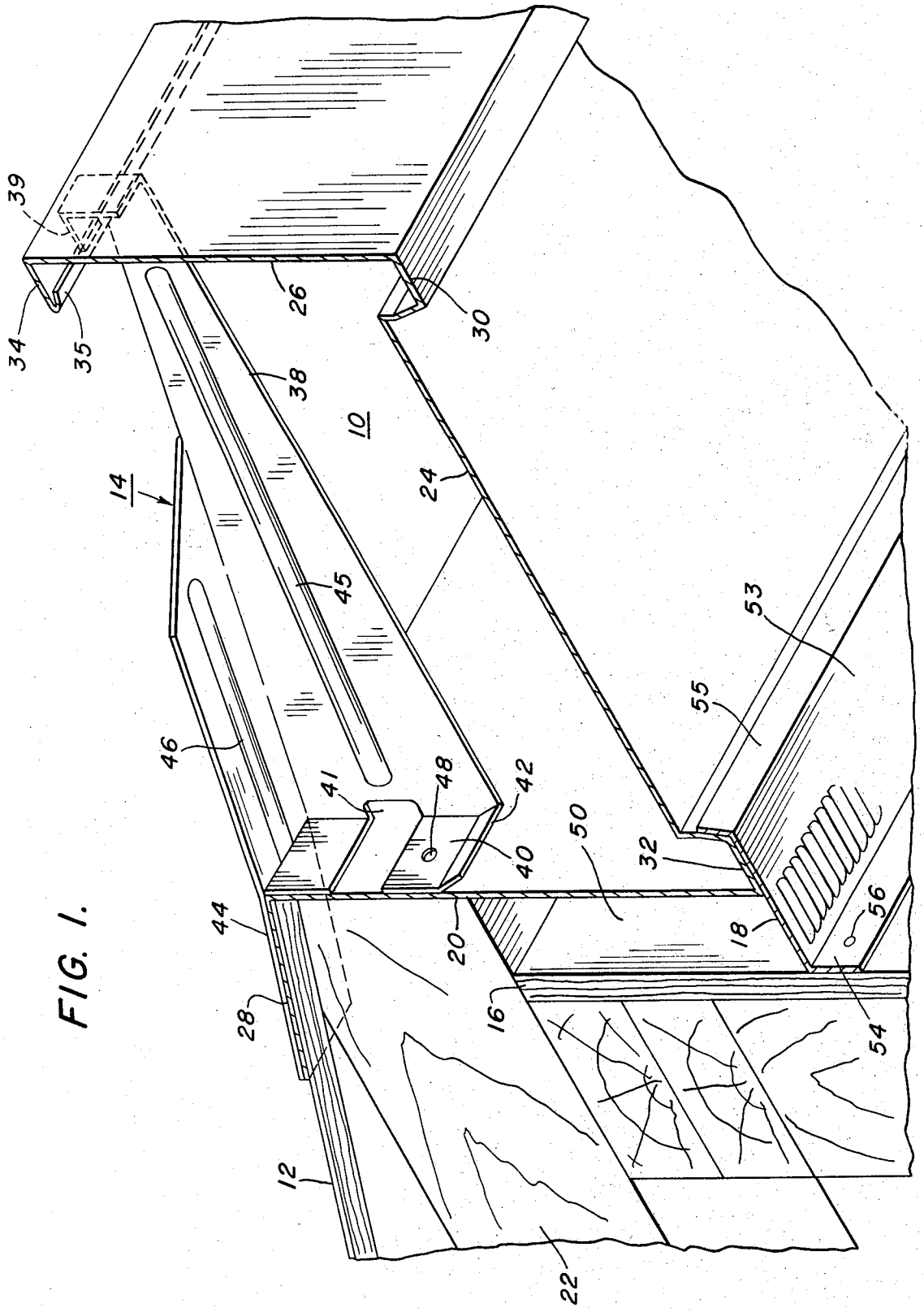

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FIG. 1.

FIG. 2.

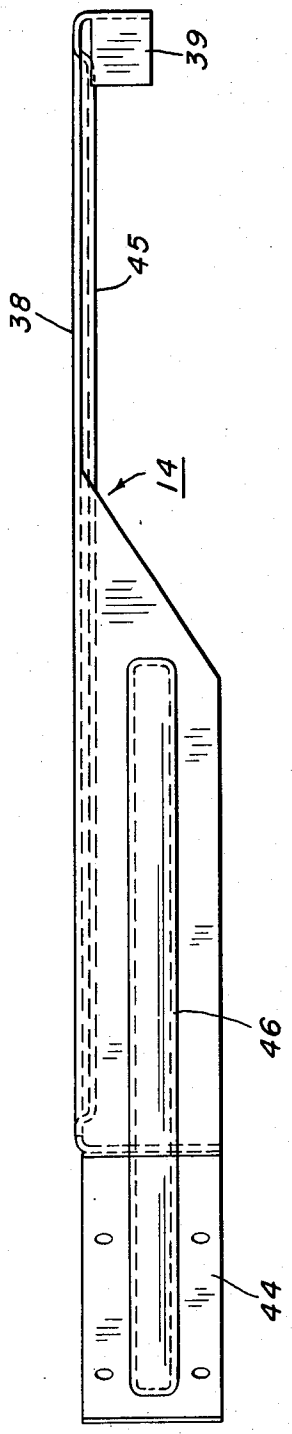


FIG. 3.

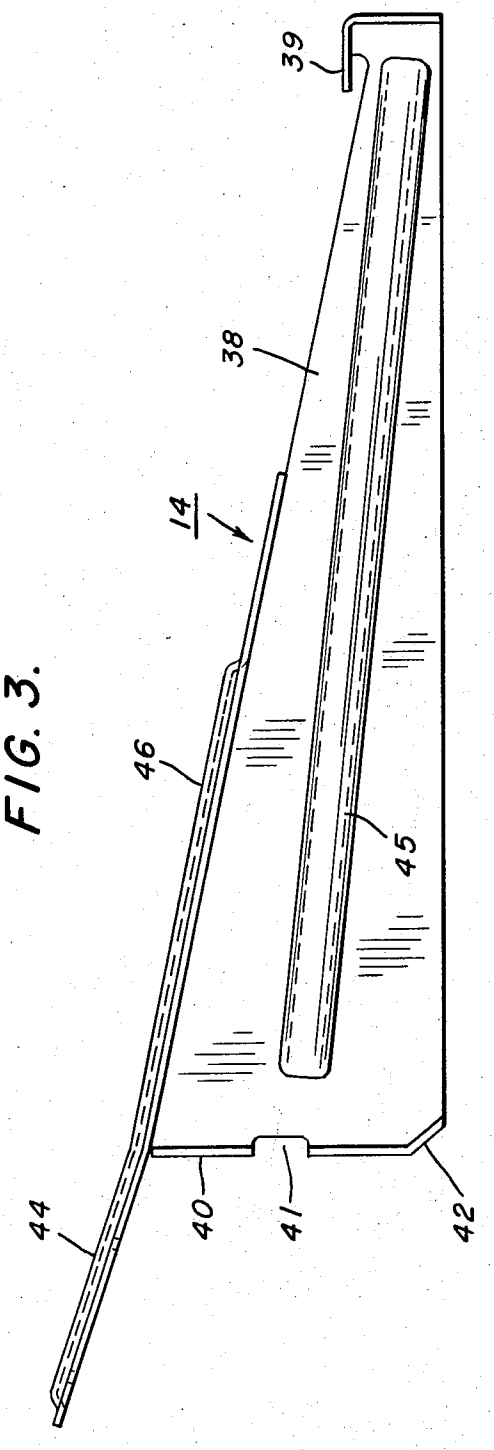
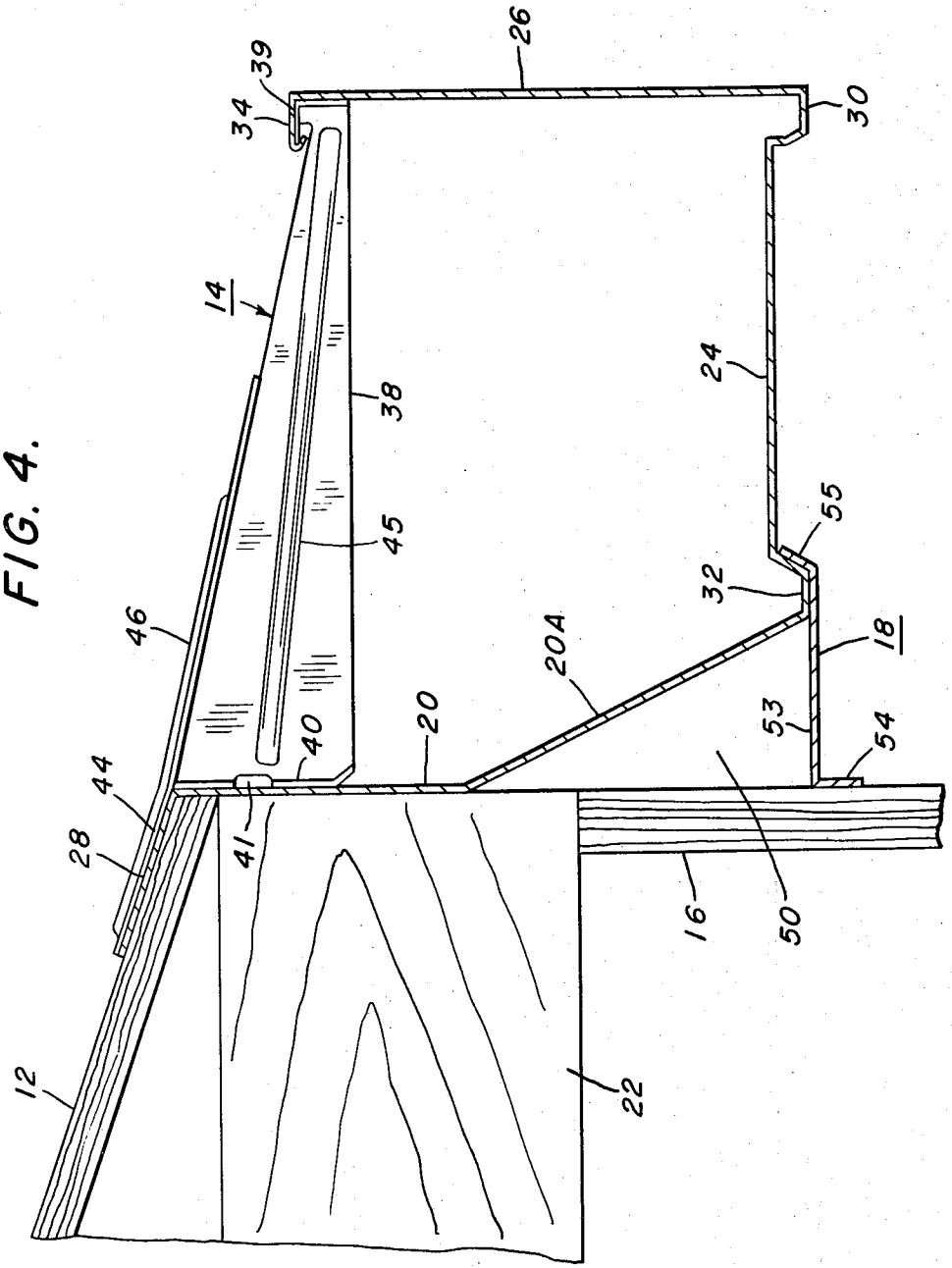


FIG. 4.



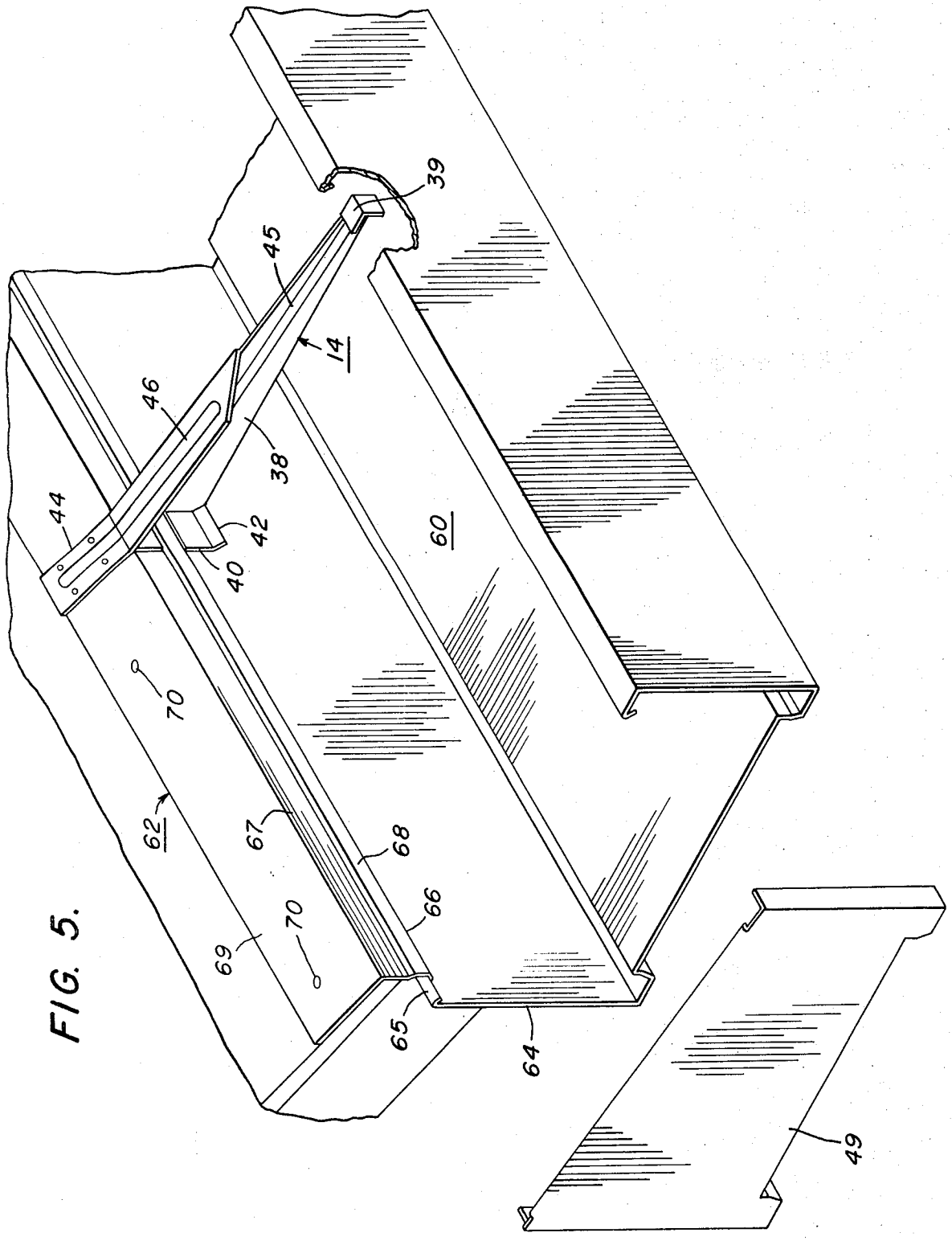


FIG. 5.

COMBINED GUTTER, FASCIA, SOFFIT ARRANGEMENT

BACKGROUND OF THE INVENTION

The present invention relates to an aesthetically pleasing, combined gutter, soffit and fascia structure supported on high strength brackets traversing the structure and attached to the roof of a building, the brackets and combined structure providing a unitary structural eave that is economical to produce and install.

The fabrication of dwelling houses and other types of building structures, and portions thereof, at a factory location, has provided known economies for builders and home owners through standardization and mass production techniques. The eave portion of wooden truss roofs of factory made houses, depending upon the extent of the overhang, can involve a substantial amount of lumber and roof structure, and thus substantial costs despite such standardization and mass production techniques. In shipping prefabricated roof trusses or prefabricated roof structures of modular house constructions, the over-all size of the trusses or modular roof structures is often limited by wide load regulations for highways as well as the widths of tunnels and bridges, and the location of railroad platforms that the structures must clear on their way to building sites.

In order not to unduly limit the size of the building structure because of the above clearance and shipping problems, one practice has been to fabricate the eave portions of wooden roofs separately from the main roof structure, and then pivotally attach the separately fabricated eave portions to the edges of the roof. In this manner, the eave portions can be folded back upon the roof for shipping purposes thereby allowing full utilization of available clearances along the travel route for the roof and thus for the building itself. After the structures have arrived at the building site, the eaves are rotated into place and rigidly fastened to the main roof structure.

Such folded eaves solve the shipping clearance problem but adds costs to the roof structure since two attaching processes are involved, i.e., the pivoted attachment at the factory site, and the rigid attachment at the building site.

BRIEF SUMMARY OF THE INVENTION

The present invention is directed to a unitary structural eave that reduces the cost of building roof structures and gutter systems while simultaneously providing larger buildings to be transported in modular form, or roof trusses to be prefabricated and shipped for larger buildings. This is accomplished by separately fabricating the eave in the form of an elongated, combined gutter, soffit and fascia arrangement and structure that is easily and quickly attached to the lower edges of a roof of a building that is constructed initially without eaves. The combined, unitary eave arrangement comprises a vertical rear wall that is attached to the roof, an integral horizontal bottom wall forming the soffit, and an integral front vertical wall forming the fascia, the combination of these walls forming an open gutter. The configuration of the walls are such that they provide an aesthetically pleasing overhang and eaves structure that is, in addition, economical to manufacture and to fasten to the building. Further, the structure

of the invention has a high strength characteristic that makes it highly resistant to live loads and high velocity wind conditions. This is accomplished by the use of strong, unitary mounting and support brackets that are economical to make and conveniently disposed to engage the eave structure and to fasten to the roof and building. Since the eave structure of the invention can be easily attached to the building at the building site it eliminates the cost of the lumber and/or other materials employed to make the eaves of roofs, and permits roof trusses and roof structures of modular units to be prefabricated and shipped without eaves thereby allowing an increase in the size of the units shipped, while simultaneously providing the finished building with a gutter system that would otherwise have to be provided, thereby saving the cost thereof.

THE DRAWINGS

The invention, along with its objectives and advantages, will be better understood from consideration of the following detail description in connection with accompanying drawings in which:

FIG. **1** is a perspective view of a combined gutter, soffit and fascia structure attached to a side wall and roof of a building by a supporting bracket and a ventilated anchoring strip in accordance with the principles of the present invention;

FIG. **2** is a top plan view of the bracket shown in FIG. **1**;

FIG. **3** is a side elevation view of the bracket of FIG. **2**;

FIG. **4** is an end view of an alternative embodiment of the invention; and

FIG. **5** is a perspective view of yet another embodiment of the invention.

PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to the drawings, FIG. **1** shows in perspective, as viewed from beneath the structure, an elongated, combined and unitary gutter, soffit and fascia structure **10,** forming a structural eave, extending along and supported at the edge of a slanted roof deck **12** of a building by brackets **14** (only one of which is shown in FIG. **1**), and secured to a side wall **16** of the building by an elongated, vented anchoring strip **18.** The combined eave structure **10,** when attached to a building roof, comprises an essentially vertically extending rear wall **20** disposed against the ends of roof beams or trusses **22,** a horizontally extending wall **24** and a front, vertically extending wall **26.** An inclined wall or flange portion **28** integral with and extending rearwardly from the upper edge of the rear wall **20** is provided for attaching the eave structure to the roof **12.**

The horizontal wall **24** of the elongated eave structure **10** forms the soffit of the structure while the front vertical wall forms the fascia of the structure and building roof to which it is attached. Together, the rear, horizontal and front wall portions of the structure forms a gutter for the roof.

Primarily for aesthetic purposes, the front edge of the horizontal soffit portion **24** is provided with a downwardly directed structural step **30** extending along the length of the soffit. In a similar manner, the rear of the soffit is provided with a downwardly directed step **32** for purposes explained hereinafter.

The upper edge of the fascia wall portion **26** terminates in inwardly directed wall or flange **34** having an inclined return bend portion **35.**

The eave **10** is preferably made and formed from sheet metal material, and the configuration of the eave is relatively simple, as seen in FIG. **1,** so that the eave can be economically produced by known forming techniques.

The structure of the invention, as thus far described, is secured to the roof **12** in a high strength manner by a plurality of the brackets **14.** Each bracket, as best seen in FIGS. **3** and **4,** is a unitary, single-piece structure comprising a main body portion **38** having a substantially planar configuration that terminates at the front end thereof in an integral hooked flange **39** dimensioned to seat in interlocking engagement with the inwardly directed wall and return bend portions **34** and **35** of the fascia wall **26** (of the eave structure **10**). The hooked flange is shown comprising two structural portions that extend laterally of and generally in planes normal to the plane of the main body portion **38** and in planes normal to each other. The rear of the main body portion terminates in a laterally directed, integral flange **40** extending in a plane generally normal to that of the main body **38.** For the embodiment of the invention shown in FIG. **5** the flange **40** can be slotted at **41,** and provided with an inwardly inclined lip **42.** The over-all length of the main body portion of the bracket corresponds to the open distance between the rear and front walls of the eave structure.

Beginning at a location rearwardly of the front of the bracket **14,** and extending beyond the rear flange **40** thereof (at an angle thereto), and in a plane substantially normal to that of the main body **38,** a portion of the upper edge of the main body terminates in an upwardly inclined, integral roof anchoring wall portion **44.** The angle of incline of the roof anchoring portion **44** extending beyond the location of the rear flange **40** may be slightly greater than that of the portion lying between the front and rear of the bracket, as shown in FIG. **3.**

As further shown in FIGS. **2** and **3,** the main body and roof anchoring portions of the bracket **14** can be provided with longitudinally extending strengthening ribs **45** and **46** respectively.

The elongated eave **10** and the bracket **14** of the invention are rapidly and easily attached to a building thereby providing savings in the installation thereof. Installation accomplished by first disposing the brackets in the eave, in a suitably spaced apart manner therealong, by locating the hooked flange **39** of each bracket behind the return bend **35** of the fascia wall **26,** and rotating the brackets downwardly until the roof anchoring portions **44** thereof come to rest on the inclined rear wall extension **28** of the eave. The eave is then located and held against the lower edge of a building roof, i.e., against the ends of trusses **22,** for example, with the rearwardly inclined wall portion **28** of the eave structure resting on the surface of the roof deck. The inclined wall portion is then quickly nailed or otherwise fastened to roof deck. The brackets are then fastened to the deck over the inclined wall of the eave by driving fasteners through the roof anchoring portion **44** of the bracket. The bracket and the eave are further anchored to the roof by driving a fastening means through the flange **40** and into the truss ends. A hole **48,** as shown in FIG. **1,** can be provided in lower portion of the rear flange **40** for this purpose.

To close each end of each eave structure of the invention, an end cap **49** is provided, as shown in FIG. **5.**

If the attic of a building is vented at the gable ends thereof, for example, the essentially rectangular shaped eave structure of FIG. **1** can be mounted flush against the side of the building, with the roof joist or truss ends **22** being essentially flush with the outside surface of the building side wall **16.** Where a building is not otherwise ventilated, or where additional venting might be desired or necessary, the rectangular shaped eave structure of the invention may be blocked away from the building side and truss ends when it is attached to the building, or the trusses can be extended a short distance beyond the side wall of the building, as shown in FIG. **1.** In either case, a space **50** is provided between the wall **16** of the building and rear wall **20** of unitary eave for air to flow into and out of the attic area.

FIG. **4** shows an embodiment of the invention where it is not necessary to block or extend the truss ends to provide a space **50** for ventilation purposes. Rather, the lower portion of the rear wall **20** of the eave inclines or slants (at **20A**) from the step **32,** spaced from the building wall **16,** to an upper vertical portion of the rear wall at a location above the building wall **16** and against the truss ends. In this manner a triangular space **50** is provided to permit air flow behind the eave and between the trusses.

To close space **50** at the bottom thereof, and to extend the soffit **24** to the wall **16** of the building, as well as to anchor the eave to the wall **16,** the elongated, vented strip **18** is provided. The strip comprises a main, essentially horizontal wall portion **53,** a downwardly depending flange **54** terminating the rear edge of the horizontal wall, and a generally upwardly extending flange **55** terminating the front edge of the horizontal wall. The eave **10** is anchored to the side of the building, by strip by first locating the horizontal wall portion thereof against the bottom, horizontal wall portion of the rear step **32** of the soffit, with the upwardly extending flange of the strip positioned in front of the step to engage the same. The rear, downwardly depending flange of the strip is then attached to the wall **16** of the building by fasteners driven through the flange and into the wall. In FIG. **1,** the flange is shown provided with holes **56** to receive the fasteners. To provide the venting function, the horizontal wall **53** of the strip **52** is provided with openings **56** at a location beneath the space **50,** the openings, as shown in FIG. **1,** being in the form of transversely extending louvers.

The anchoring of the eave **10** in the manner just described restrains the eave against lifting forces exerted thereon under high wind conditions, while large, downwardly exerted loads and forces on the eave are resisted by the brackets **14.** The bracket structure of the invention, with its main body **38** extending in a vertical plane when employed to mount the eave **10** on a roof structure, and the roof anchoring portion **44** being an integral part thereof, is inherently very strong, and is therefore capable of imparting this strength to the eave structure **10** without the necessity of using heavy gauge materials.

Further, in addition to its high strength, the bracket of the invention, being a single-piece structure, is economical to produce since it can be readily punched

from sheet stock on a mass production basis in the form of a planar blank, with wall and flange portions **39, 40** and **44** easily folded into the positions shown in FIGS. **2** and **3** to complete its fabrication.

An alternative embodiment of the invention is shown in FIG. **5** in which an elongated unitary structural eave **60** is secured to a roof deck by an elongated mounting strip **62** fastened to the deck and disposed in interlocking engagement with a rear wall **64** of the eave. More particularly, the eave comprises a rear wall **64** terminating at its upper edge by a return bend portion **65,** and engages a similar return bend portion **66** when disposed in the manner shown in FIG. **5,** terminating at the lower edge of a downwardly depending wall portion **67** of the mounting strip. The lower portion of depending wall **67** is offset inwardly at **68** to accommodate the return bend portion **65.** Further, the upper edge of wall portion **67** merges into a rearwardly extending, inclined wall portion **69** shown secured to the roof deck, in FIG. **5,** by suitable fasteners at **70.**

The remainder of the unitary eave **60** is essentially the same as that described above in connection with embodiment of FIG. **1,** the eave **60** being mounted on a roof in a high strength manner by a plurality of brackets **14** suitably spaced apart along and engaging the eave. The inclined lip **42** of the rear flange **40** of each bracket assists in directing the lower part of the flange past the offset **68** in the eave mounting strip, which offset protrudes slightly into the open area of the eave. The slot **41** provided in the rear flange **40** functions to accommodate the offset after the bracket is properly located in place in the eave.

From the foregoing description it should now be apparent that a new and useful, separately fabricated and unitary eave structure is provided in which gutter, soffit and fascia portions are combined. Such a structure is quickly and economically installed on the lower roof edges of buildings, and has a high strength characteristic provided by brackets **14** extending traversely of and disposed in interlocking engagement with the structure. Such eave structures allow buildings to be initially fabricated without overhanging eave portions thereby reducing the cost of the roof while simultaneously permitting increased size trusses and modular roof structures to be prefabricated and transported to building sites.

While the invention has been described in terms of preferred embodiments, the claims appended hereto are intended to encompass all embodiments which fall within the spirit of the invention.

Having thus described our invention and certain embodiments thereof, we claim:

1. In combination, an elongated unitary gutter, soffit and fascia structure having a generally rectangular shape in cross section and providing an eave and gutter structure for a building originally constructed without an eave and gutter comprising:

a. an elongated, planar, rear wall portion provided with means attaching said structure to the roof of said building, a substantially horizontal, planar, elongated bottom wall portion serving as a soffit and provided with downwardly extending steps respectively adjacent the front and the rear edges thereof, and a substantially vertical, planar and upwardly extending elongated front wall portion spaced forwardly from said rear wall portion serving as a fascia and terminating at its upper edge in an inwardly projecting wall provided with a return bend extending lengthwise of said front wall, said elongated rear, bottom and front walls, in combination, being integrally formed and providing the gutter of said unitary structure,

b. a single piece mounting and supporting bracket for said eave and gutter structure having a vertically positioned planar main body portion disposed transversely of said eave and gutter structure, said main body portion terminating at the front thereof with two flange portions located respectively in two planes substantially normal to said main body portion and to each other for interlocking engagement within the return bend of said fascia portion, said flanges being located on one side of the main body portion of said mounting bracket, said main body portion terminating at the rear thereof with at least one integral flange disposed in a plane substantially normal to that of said main body portion, and an integral, roof anchoring portion located in a plane substantially normal to the plane of said main body portion and extending rearwardly of said integral flange and main body portion, said roof anchoring portion being in overlying, secured relation to the portion of the roof adjacent the edge thereof, and

an elongated anchoring strip for said eave structure comprising a horizontal main body portion terminating at its rear edge with a downwardly depending flange for securing said strip to the wall of said building, and terminating at its front end with a generally upwardly extending flange for placement in front of the downwardly extending step adjacent the rear of the horizontal soffit portion.

* * * * *