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Maloney, Jr. et al.

[11] **3,737,127**

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[54] GUTTER BRACKET

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[52] **U.S. Cl.**.....**248/48.2**, 287/103 A
[51] **Int. Cl.**.....**E04d 13/06**
[58] **Field of Search**.....248/48.2, 48.1; 287/20.92; 52/11; 287/103 A, 97

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[57] **ABSTRACT**

A gutter hanger bracket comprising a bracket body which engages with the opposite sides of an eaves trough, and has a strap quickly manually connectable therewith by means of a T-head on the strap fitting in an eye slot with which it is assembled and locked by a simple inserting and turning motion. Special reinforcement enhances use of low cost non-rusting metal such as aluminum. Installation is assisted by an efficient trough-gripping structure.

11 Claims, 5 Drawing Figures

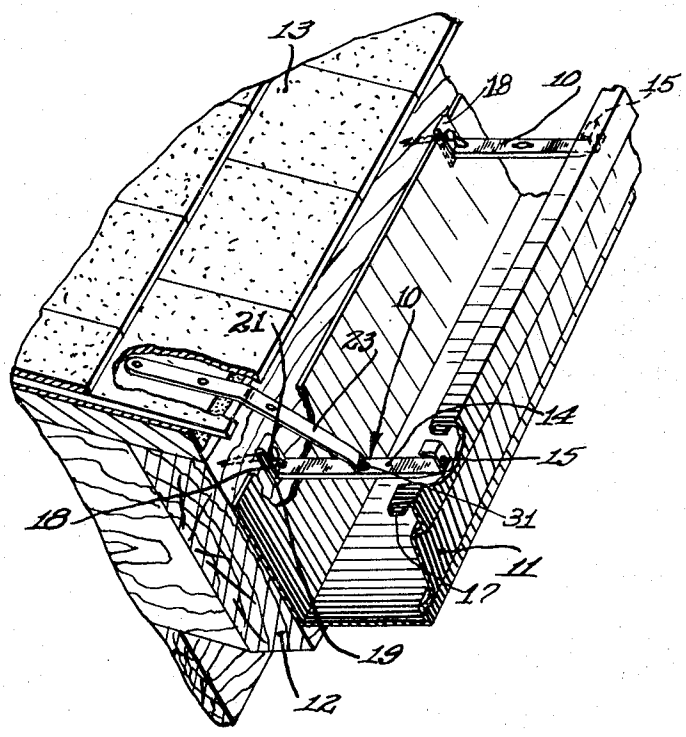


Fig. 1

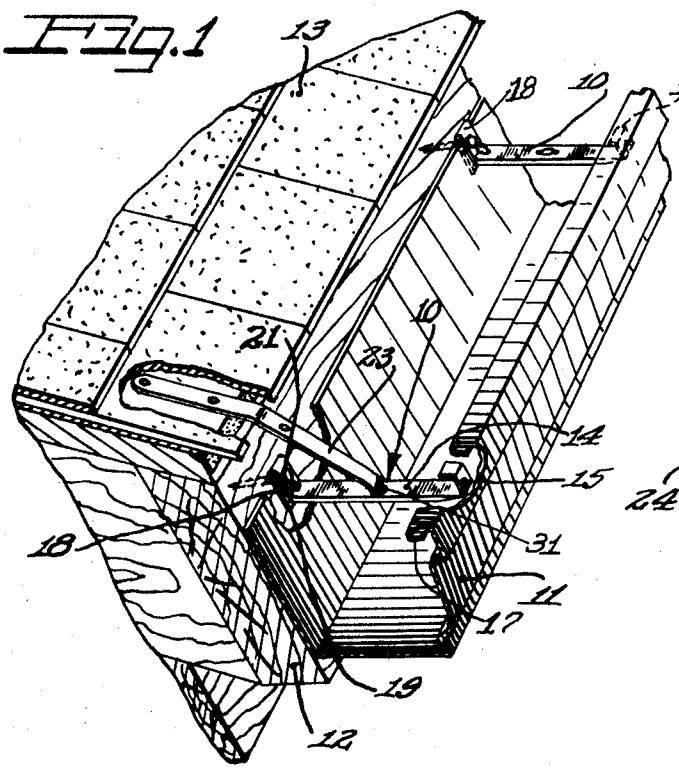


Fig. 2

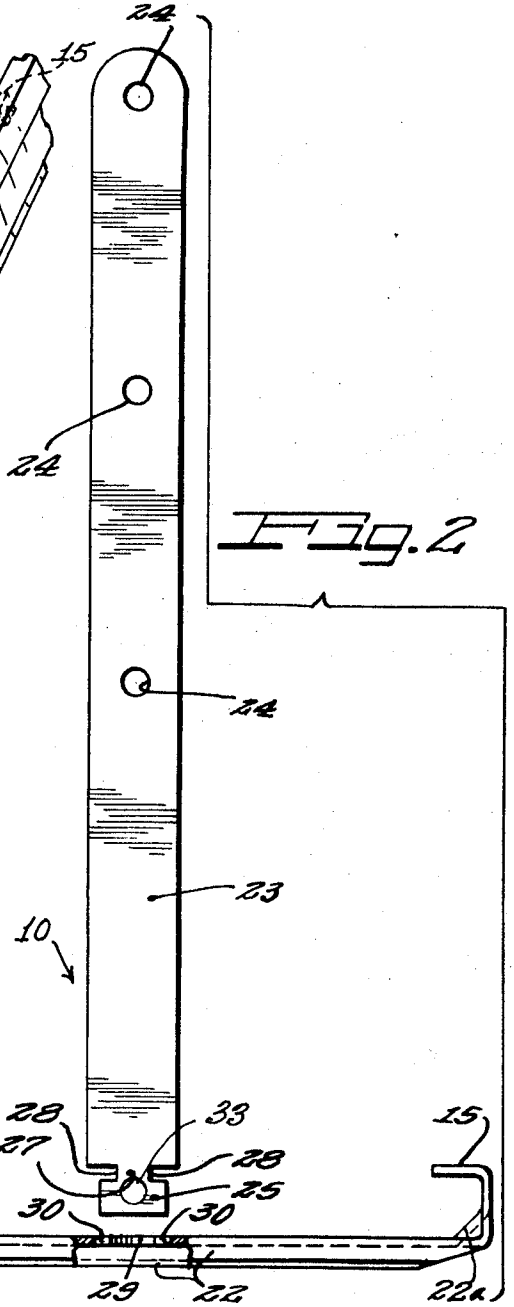


Fig. 3

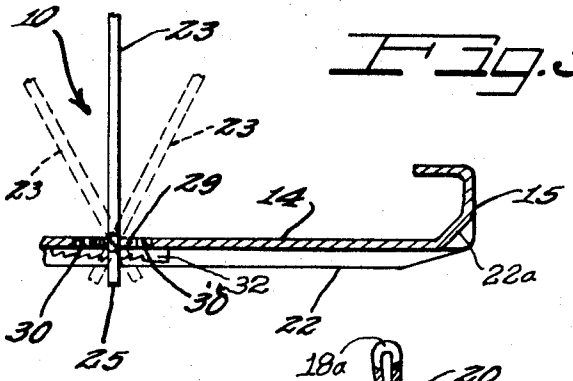


Fig. 4

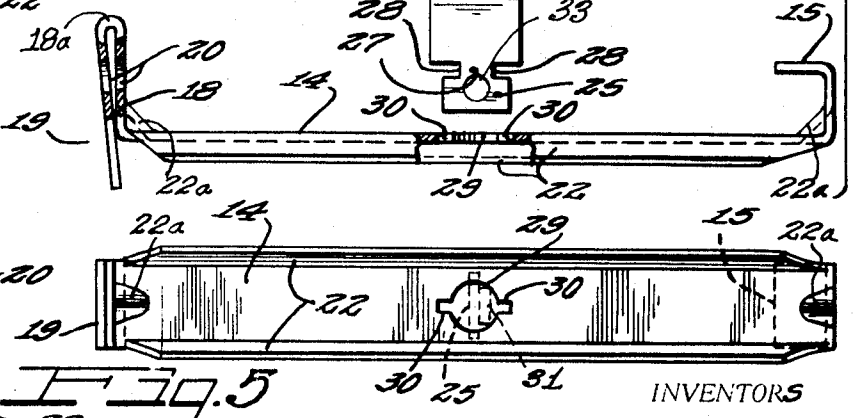
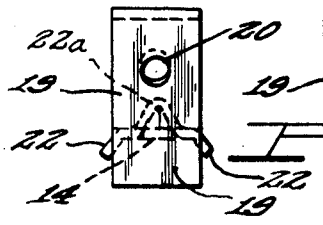


Fig. 5



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GUTTER BRACKET

This invention relates to gutter brackets and aims to improve and simplify the hanging of eaves troughs.

Eaves trough or gutter brackets have been constructed in which the bracket body and a hanger strap have been permanently secured together by means of a rivet. This is an awkward construction to handle because of the divergently related elements. Furthermore, it entails a machine assembly operation and involves a third element to effect assembly.

According to the present invention, the foregoing and other disadvantages, defects, inefficiencies, shortcomings and problems in respect to prior structures are overcome by the provision of a new and improved hanger bracket structure embodying the principles of the present invention as will be hereinafter more particularly described.

An important object of the present invention is to provide a gutter bracket assembly which is easily and quickly put together at the point of use, and which will effectively retain and remain in assembly with a gutter during assembly and in service.

Another object of the invention is to provide a new and improved gutter bracket and hanger strap construction enabling quick and easy assembly of the parts manually as gutter erection occurs.

A further object of the invention is to provide a new and improved gutter bracket assembly in which a gutter bracket body and a hanger strap are readily interlocked in assembly without the need for rivets or other connecting means.

Still another object of the invention is to provide a novel gutter bracket which may be used with or without a hanger strap and is efficiently reinforced against yielding under strain in service.

Other objects, features and advantages of the invention will be readily apparent from the following description of certain preferred embodiments thereof, taken in conjunction with the accompanying drawing, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts embodied in the disclosure, and in which:

FIG. 1 is a fragmentary, partially sectional isometric view of an illustrative eaves construction with a gutter hung by means of a bracket assembly embodying features of the invention;

FIG. 2 is an exploded assembly view of the bracket and strap;

FIG. 3 is a fragmentary longitudinal view showing how the elements are connected together;

FIG. 4 is an end elevational view of the bracket body; and

FIG. 5 is a bottom plan view of the bracket body.

FIG. 1 demonstrates the manner in which hanger bracket assemblies **10** embodying features of the invention are adapted to be employed in attaching a rain gutter or trough **11** under the eaves or at the roof dripline of a typical building structure including, in this instance, a facia board **12** and roofing shingles **13** which overhang and form the dripline of the roof.

A principal component of the hanger assembly **10** is a hanger member **14** in the form of a metal bar having a body length to extend between the opposite side walls of the gutter **11** within the trough or channel thereof. At one end, the member **14** has a return-bent upwardly and inwardly extending generally hook-shaped integral flange **15** which is engageable in interhooked relationship with an inwardly and underturned hook flange **17** along the upper edge of the outer wall of the gutter **11.** At its opposite end, the bar member **14** is constructed to fit over the edge of and straddle the inner wall of the gutter **11,** being provided for this purpose with an upwardly extending integral flange portion **18** and a return-bent spaced downwardly extending terminal flange portion **19** with the space therebetween sufficient to fit reasonably closely over the gutter wall. A friction grip lock for firmly engaging the gutter wall especially during initial assembly and for non-separating handling during gutter installation is provided by having the terminal portion **19** normally biased to extend obliquely from a spacing juncture **18***a* toward and extending beyond the simple right angle juncture bend of the portion **18** as best seen in FIGS. **2** and **5,** requiring the gutter wall to be wedged therebetween.

For securing the bracket bar member **14** and thus the gutter **11** to the facia board **12,** the flange portions **18** and **19** are provided with fastener openings **20** through which a fastener such as a nail **21** is adapted to be driven, penetrating through the gutter wall flange and into the facia board **12.** Desirably, the opening in the portion **19** is offset downwardly relative to the opening in the portion **18** to guide the nail for angular driving. If the gutter is to be mounted on eaves in spaced relation to or absent the facia board, a drive screw may be secured through the holes **20** and the intervening flange wall of the gutter.

To enable constructing the bracket bar **14** as a stamping from as lightweight sheet metal such as sheet aluminum, as practical, it is thoroughly reinforced by means including angular downturned reinforcing flanges **22** along the longitudinal edges of the bracket bar. At the opposite ends of the body portion of the bar **14** the flanges **22** are trimmed on chamfers to avoid damaging or interfering sharp corners. Adjacent the downward extension of the flange **19** this provides lead-in cam end edges directed toward the adjacent juncture bend and the extended free end portion of the flange portion **19** to guide the gutter wall edge into the gripping jaw of the flanges **18** and **19** during assembly. In addition, reinforcing means for the juncture bends between the body of the bar **14** and the end flanges **15** and **18** comprise respective substantially triangular, straight crested, indented integral struts **22***a* pressed to extend across the junctures between the opposite ends of the reinforcing flanges.

At their ends, the reinforcing flanges **22** extend toward the opposite ends of the body of the bar **14** substantially beyond the inward extension of the respective reinforcing struts **22***a*, whereby the bar body and the junctures reinforced by the struts are thoroughly stiffened against bending forces imposed thereon even where the metal of the bracket is thin gauge aluminum.

In order to enable hanging the gutter **11** either directly from the roof or eaves, or just to provide a brace against overload sagging of the gutter where principal reliance is on facia nailing, the bracket bar **14** is provided with a strap **23** which may optionally be used therewith and which is of a length to extend from an intermediate location such as midpoint, along the length of the bar to and in engagement with a substantial extent of the roof preferably under the shingles **13.** For this the strap **23** is provided with a longitudinally spaced series of nail holes **24** to enable secure, multi-

nail fastening to the roof from which the strap extends into supporting engagement with the hanger body bar **14.** For manual assembly of the hanger body bar **14** with the strap **23** easily and conveniently and without the need for any tools or machine operations, new and improved interlocking means are provided cooperatively on the bar and the strap. Therefore, the end portion of the strap **23** which is to be connected to the hanger bar **14** has a generally T-shaped interlock terminal **25** which is slightly narrower than the width of the strap **23** and is connected to the strap by a narrower neck **27** having at each opposite side thereof a laterally opening clearance notch **28** which is slightly wider than the thickness or gauge of the material of the hanger body bar **14.** To receive the terminal **25** interlockingly, the hanger bar **14** is provided intermediately along its length, and preferably centrally thereof, with an aperture in the form of an eye slot **29** which is generally of circular outline of a diameter slightly larger than the width of the neck **27** but smaller than the width of the terminal **25** and with at least one, and preferably a pair of diametrically opposite terminal-clearing notches **30** opening into the main area of the slot and oriented longitudinally of the body of the bar **14.** In width the notches **30** are slightly greater than the thickness or gauge of the terminal **25** and the length between the opposite ends of the notches **30** is slightly greater than the width of the terminal, but less than the adjacent width of the strap **23.** Thereby, assembly of the strap **23** with the bar **14** is readily and quickly effected by a relative manual assembly movement wherein the terminal **25** is preliminarily received through the notches **30** until the end edges of the strap **33** contiguous the notches **28** engage against the bar as a stop shoulder and wherein the notches **28** are aligned with the plane of the bar body. By turning the strap **23** through 90°, the margins defining the circular portion of the slot **29** are engaged within the strap notches **28** with interlocking effect, that is, the terminal **25** is moved into interlocking relation to the body of the bar **14.** It will be observed that in this interlocked relationship, the terminal **25** is received freely between the reinforcing flanges **22.**

Although it is desirable to afford adequate tolerances to enable easy assembly of the bar **14** and the strap **23** and to enable ready, strain-free adjustment of the angle of the strap **23** to the bar, as indicated generally schematically in FIG. **3** between the full line freshly assembled position and the dash outline positions of the strap, after installation has been completed it may be desirable to lock the parts against looseness or climatically induced relative shifting. For this purpose, optional locking means may be provided, such, for example, as respective wedges **31** (FIGS. **1** and **5**) which may be driven into the slot **29** to wedge between the edges defining the slot and the terminal **25** or at least the neck **27.** As a further alternative, or in addition, a wedge pin **32** may be driven into a pin hole **33** provided for this purpose in the terminal **25** so oriented with respect to the notches **28** as to effect drawing of the stop end edges of the strap **23** tightly against the engaged portion of the bar **14** when the pin **32** is driven home. Both the wedges **31** and the wedge pins **32** may be provided with suitable edge notches or locking teeth which will grip the respective edges of the apertures **29** or **33,** as the case may be, to resist unintentional displacement. While the wedges **31** or the wedge pins **32** may be made from metal, they may also be formed from a suitable synthetic resin plastic of adequate rigidity, durability and resistance to fracture to serve the purpose.

Not only is the readily manually assembled relationship of the bar **14** and the strap **23** advantageous by reason of simplicity and economy since the parts are thus readily constructed as simple sheet metal stampings without any need for rivets or other machine assembly operations, but assembly of the hanger with the gutter and installation on the building is facilitated by the ability to assemble the bracket bar **14** with the gutter **11** and more desirably attach the same to the facia board **12,** without hindrance or interference from the strap **23,** which may thereafter be assembled with the bracket bar **14** and attached to the roof. For some purposes it may be desirable to equip only certain or alternate ones of the bracket bars **14** in the installation with the strap **23,** or it may be desirable to equip all of the bracket bars with the strap, depending upon the load requirements of the installation. Sagging or deformation are effectively avoided by the efficiently reinforced structure of the bar **14.**

It will be understood that variations and modifications may be effected without departing from the spirit and scope of the novel concepts of this invention.

We claim as our invention:

1. A gutter bracket assembly including a member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls, and a strap member attachable to a roof and adapted for supporting said bar body member, the improvement comprising:

said strap member having a flat terminal portion of substantial width providing an interlock structure in the form of a flat terminal narrower than the adjacent width of the strap and connected to the strap by a narrower neck at each side of which is a laterally opening notch with the edges defining the strap side of the notch providing a shoulder along each notch facing toward said terminal;

said bar body having an aperture therein of a length and width to receive said terminal therethrough;

said aperture being shorter than the width of the strap so that said shoulders will engage the bar body as stops incident to assembly of the members by insertion of the terminal into the aperture;

marginal portions of the bar body along the aperture being engageable interlockingly in said notches incident to relative turning of the strap member after insertion of said terminal in said aperture engagement of the shoulders with the bar body;

said end structures including respective integral upstanding flanges joining the bar body on respective bend junctures; reinforcing flanges along opposite longitudinal edges of said bar body;

respective substantially triangular indented integral reinforcing struts extending across said juncture bends between the adjacent ends of said reinforcing flanges and which ends extend toward the respective opposite ends of the bar body substantially beyond the inward extension of the reinforcing struts whereby the bar body and the junctures are thoroughly stiffened against bending forces imposed thereon even where the bar body is thin gauge aluminum;

one of said end structures comprising a hook-like portion arranged to fit into engagement with a

complementary hook-like structure on one marginal portion of a gutter trough wall; and

the remaining end structure upstanding flange extending from the bar body at a simple right angular juncture bend and having an outwardly and reversely bent terminal flange portion normally biased from a spacing juncture toward said right angular juncture bend to provide a frictional gripping jaw to retain an engaged marginal portion of a gutter frictionally against separation and thereby at least during installation of a gutter retaining the bracket member assembled with the gutter.

2. In a gutter hanger bracket assembly including a member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls, and a strap member attachable to a roof and adapted for supporting said bar body member, said strap member having a flat terminal portion of substantial width providing an interlock structure in the form of a flat terminal narrower than the adjacent width of the strap and connected to the strap by a narrower neck at each side of which is a laterally opening notch with the edges defining the strap side of the notch providing a shoulder along each notch facing toward said terminal, said bar body having an aperture therein of a length and width to receive said terminal therethrough, said aperture being shorter than the width of the strap so that said shoulders will engage the bar body as stops incident to assembly of the members by insertion of the terminal into the aperture, marginal portions of the bar body along the aperture being engageable interlockingly in said notches incident to relative turning of the strap member after insertion of said terminal in said aperture and engagement of the shoulders with the bar body, the improvement comprising:

reinforcing formations along opposite longitudinal edges of the bar body;

said end structures on the bar body including respective integral upstanding flanges joining the body on respective juncture bends and including means engageable with respective opposite upper marginal portions of rain gutter trough walls; and

respective substantially triangular indented integral reinforcing struts extending across said juncture bends between the opposite ends of said reinforcing formations, the respective ends of said reinforcing formations and said reinforcing struts being cooperatively related to stiffen the body and juncture bends against bending forces imposed thereon even where the material of the bar body member is thin gauge aluminum.

3. A gutter hanger bracket assembly according to claim **2**, one of said end structures having on the distal end thereof an outwardly and reversely bent terminal flange portion spaced sufficiently therefrom to receive a marginal gutter wall portion therebetween and normally biased from a spacing juncture with said one flange toward the juncture bend of said one flange with said bar body whereby to provide a frictional gripping jaw to retain the engaged marginal gutter portion frictionally against separation and thereby at least during installation of a gutter retaining the bracket body assembled with the gutter.

4. In a gutter hanger bracket assembly including a member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls, and a strap member attachable to a roof and adapted for supporting said bar body member, said strap member having a flat terminal portion of substantial width providing an interlock structure in the form of a flat terminal narrower than the adjacent width of the strap and connected to the strap by a narrower neck at each side of which is a laterally opening notch with the edges defining the strap side of the notch providing a shoulder along each notch facing toward said terminal; said bar body having an aperture therein of a length and width to receive said terminal therethrough, said aperture being shorter than the width of the strap so that said shoulders will engage the bar body as stops incident to assembly of the members by insertion of the terminal into the aperture, marginal portions of the bar body along the aperture being engageable interlockingly in said notches incident to relative turning of the strap member after insertion of said terminal in said aperture and engagement of the shoulders with the bar body, the improvement comprising:

one of said end structures comprising a hook-like portion arranged to fit into engagement with a complementary hook-like structure on one of said gutter marginal portions; and

a return-bent integral flange formation comprising the end structure at the opposite end of said bar body including a first flange portion integral with the bar body and extending angularly thereto from a simple right angular juncture bend and including an outwardly and reversely bent terminal flange portion spaced from said first flange portion sufficiently to receive a marginal gutter wall portion therebetween, said terminal flange portion being normally biased from a spacing juncture with said first flange portion toward said juncture bend to provide a frictional gripping jaw to retain the engaged marginal portion frictionally against separation and thereby at least during installation of a gutter retaining the bar body assembled with the gutter.

5. A gutter bracket comprising a stamped sheet metal member having a bar body provided with end structures including respective integral upstanding flanges joining the body on respective bend junctures and including means engageable with respective opposite upper marginal portions of rain gutter trough walls, reinforcing formations along opposite longitudinal sides of said bar body, respective substantially triangular indented integral reinforcing struts extending across said juncture bends between the opposite ends of said reinforcing formation, the ends of said reinforcing formations extending toward the opposite ends of said bar body substantially beyond the inward extension of said reinforcing struts, whereby said bar body and said junctures are thoroughly stiffened against bending forces imposed thereon even where the metal of the bar body is thin gauge aluminum, an aperture in said bar body intermediate the length of the bar body, and a hanger strap member attachable to a roof and having a terminal engageable in said aperture, said aperture and said terminal being constructed to enable endwise assembly of the terminal in the aperture and interlocking by turning the strap member after the terminal has been engaged in the aperture, the improvement comprising:

said strap member having a flat terminal portion of substantial width providing said interlock structure

in the form of a flat terminal narrower than the adjacent width of the strap member and connected to the strap member by a narrower neck at each side of which is a laterally opening notch with the edges defining the strap member side of the notch providing a shoulder along each notch facing toward the head;

said aperture being of a length to receive said head therethrough but shorter than the width of the strap member so that said shoulders engage the bar body as stops incident to said assembly of the members; and

marginal portions of the bar body along the aperture being engageable interlockingly in said notches incident to said turning movement.

6. In a gutter bracket comprising a stamped sheet metal member having a bar body provided with end structures including respective integral upstanding flanges joining the body on respective bend junctures and including means engageable with respective opposite upper marginal portions of rain gutter trough walls, reinforcing formations along opposite longitudinal sides of said bar body, respective substantially triangular indented integral reinforcing struts extending across said juncture bends between the opposite ends of said reinforcing formations, the ends of said reinforcing formations extending toward the opposite ends of said bar body substantially beyond the inward extension of said reinforcing struts, whereby said bar body and said junctures are thoroughly stiffened against bending forces imposed thereon even where the metal of the bar body is thin gauge aluminum, the improvement comprising:

one of said upstanding flanges having a return-bent integral flange formation extending in reversely bent relation to said one flange from a juncture wherein it is substantially spaced from said one flange obliquely toward and into frictional gripping jaw relation to the juncture of said one flange with the bar body whereby to be engageable frictionally with a marginal portion of a gutter inserted between said one flange and said terminal flange portion.

7. In a gutter hanger bracket structure:

a stamped sheet metal member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls comprising:

a hook-like portion at one end of said bar body arranged to fit into engagement with complementary hook-like structure on one of said marginal portions;

a return-bent integral flange formation at the opposite end of said bar body including a first flange portion integral with the bar body and extending angularly thereto from a simple right angular juncture bend and an outwardly and reversely bent terminal flange portion spaced from said first flange portion sufficiently to receive a marginal gutter wall portion therebetween;

said terminal flange portion being normally biased from a spacing juncture with said first flange portion toward said juncture bend to provide a frictional gripping jaw to retain the engaged marginal portion frictionally against separation and thereby at least during installation of a gutter retaining the bracket member assembled with the gutter;

turned reinforcing flanges along the longitudinal edges of said body having lead-in cam end edges directed toward said jaw; and

said terminal flange portion extending beyond said juncture bend cooperative with said cam edges to receive the edge of the associated marginal portion of the gutter during assembly into said jaw.

8. In a gutter hanger bracket structure:

a stamped sheet metal member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls comprising:

a hook-like portion at one end of said bar body arranged to fit into engagement with a complementary hook-like structure on one of said marginal portions;

a return-bent integral flange formation at the opposite end of said bar body including a first flange portion integral with the bar body and extending angularly thereto from a simple right angular juncture bend and an outwardly and reversely bent terminal flange portion spaced from said first flange portion sufficiently to receive a marginal gutter wall portion therebetween;

said terminal flange portion being normally biased from a spacing juncture with said first flange portion toward said juncture bend to provide a frictional gripping jaw to retain the engaged marginal portion frictionally against separation and thereby at least during installation of a gutter retaining the bracket member assembled with the gutter;

reinforcing formations along opposite longitudinal sides of said bar body; and

a triangular indented integral reinforcing strut extending across said juncture bend between adjacent ends of said reinforcing formations and which ends extend toward said opposite end of the bar body substantially beyond the inward extension of said reinforcing strut whereby said bar body and said juncture bend are thoroughly stiffened against bending forces imposed thereon even where said sheet metal member is thin gauge aluminum.

9. A gutter bracket comprising a stamped thin gauge sheet metal member, having a flat upwardly facing elongated bar body provided with opposite end structures including respective integral upstanding flanges joining the body on respective bend junctures thereacross and provided with means engageable with respective opposite upper marginal portions of rain gutter trough walls, comprising:

longitudinal reinforcing formations extending along opposite longitudinal sides of said bar body to and between said bend junctures;

said bar body being entirely flat between said junctures considered longitudinally and between said reinforcing formations considered transversely and having an aperture intermediate its ends and centered between its sides to receive in assembly therewith a supporting hanger strap member attachable to a roof; and

respective indented integral substantially triangular, straight crested reinforcing struts extending across said juncture bends and located intermediate the adjacent ends of said reinforcing formations;

said struts terminating at the ends of said crests in said flanges and in said body a short distance in each direction beyond said juncture bends, with

the ends of the struts at said body spaced inwardly from said juncture bends, and in inwardly staggered relation to the ends of said reinforcing formations, to act with the reinforcing formations in mutually reinforcing relation to the body,

whereby the bracket is thoroughly stiffened against bending stresses.

10. In a gutter hanger bracket structure:

a stamped sheet metal member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls comprising:

a hook-like portion at one end of said bar body arranged to fit into engagement with a complementary hook-like structure on one of said marginal portions; and

a return-bent flange formation at the opposite end of said bar body including a first flange portion integral with the bar body and extending angularly thereto from a simple right angular juncture bend and an outwardly and reversely bent terminal flange portion spaced from said first flange portion sufficiently to receive a marginal gutter wall portion therebetween;

said terminal flange portion being normally biased from a spacing juncture with said first flange portion to extend obliquely toward said juncture bend to provide a frictional gripping jaw to retain the engaged marginal portion frictionally against separation and thereby at least during installation of a gutter retaining the bracket member assembled with the gutter;

turned reinforcing flanges along the longitudinal edges of said body having lead-in cam end edges directed toward said jaw; and

said terminal flange portion extending beyond said juncture bend cooperative with said cam edges to receive the edge of the associated marginal portion of the gutter during assembly into said jaw.

11. In a gutter hanger bracket structure:

a stamped sheet metal member having a bar body provided with end structures engageable with respective opposite upper marginal portions of rain gutter trough walls comprising:

a hook-like portion at one end of said bar body arranged to fit into engagement with a complementary hook-like structure on one of said marginal portions; and

a return-bent integral flange formation at the opposite end of said bar body including a first flange portion integral with the bar body and extending angularly thereto from a simple right angular juncture bend and an outwardly and reversely bent terminal flange portion spaced from said first flange portion sufficiently to receive a marginal gutter wall portion therebetween;

said terminal flange portion being normally biased from a spacing juncture with said first flange portion to extend obliquely toward said juncture bend to provide a frictional gripping jaw to retain the engaged marginal portion frictionally against separation and thereby at least during installation of a gutter retaining the bracket member assembled with the gutter;

reinforcing formations along opposite longitudinal sides of said bar body; and

a triangular indented integral reinforcing strut extending across said juncture bend between adjacent ends of said reinforcing formations and which ends extend toward said opposite end of the bar body substantially beyond the inward extension of said reinforcing strut whereby said bar body and said juncture bend are thoroughly stiffened against bending forces imposed thereon even where said sheet metal member is thin gauge aluminum.

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