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Upton, Jr.

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[54] **BRACKET FOR MOUNTING AWNINGS AND THE LIKE**

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[52] **U.S. Cl.** **248/251**, 160/72

[51] **Int. Cl.** **E04f 10/06**

[58] **Field of Search** ..... 248/251, 273, 225; 160/74, 160/81, 82, 72, 73; 135/5 AT

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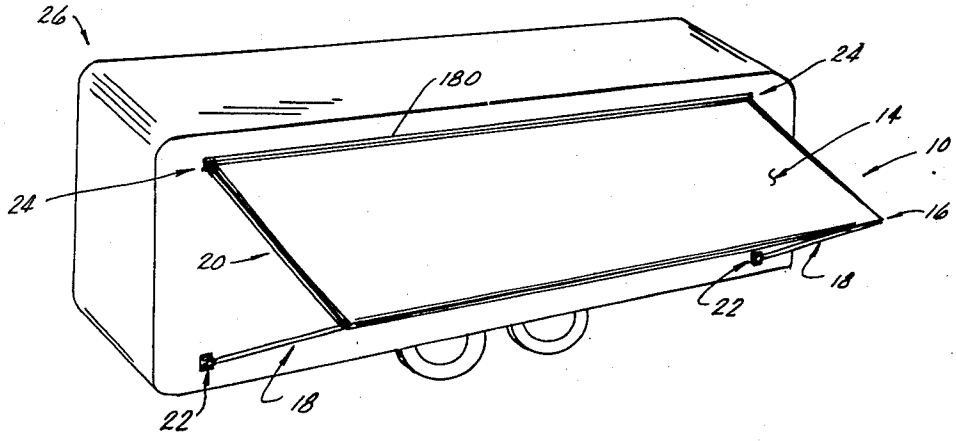
Primary Examiner—J. Franklin Foss

Attorney, Agent, or Firm—Burton, Crandell & Polumbus; Gary M. Polumbus

[57] **ABSTRACT**

This invention is an awning structure having an awning sheet securable on one edge to a surface, an awning sheet roller, a support arm for the roller, a first bracket securable to the surface and attached to the lower end of the supporting arm in pivotal relation therewith, a brace pivotally attached to a second bracket securable on the supporting surface, the brace being contractable with a mid-portion of the supporting arm when in an extended position. The first bracket receives and holds in juxtapositional relation the brace and the support arm when the awning structure is in a collapsed storage position. The first bracekt and the second bracket are formed by a new extrusion method and have a notch-like aperture therethrough for mounting a pin.

4 Claims, 16 Drawing Figures



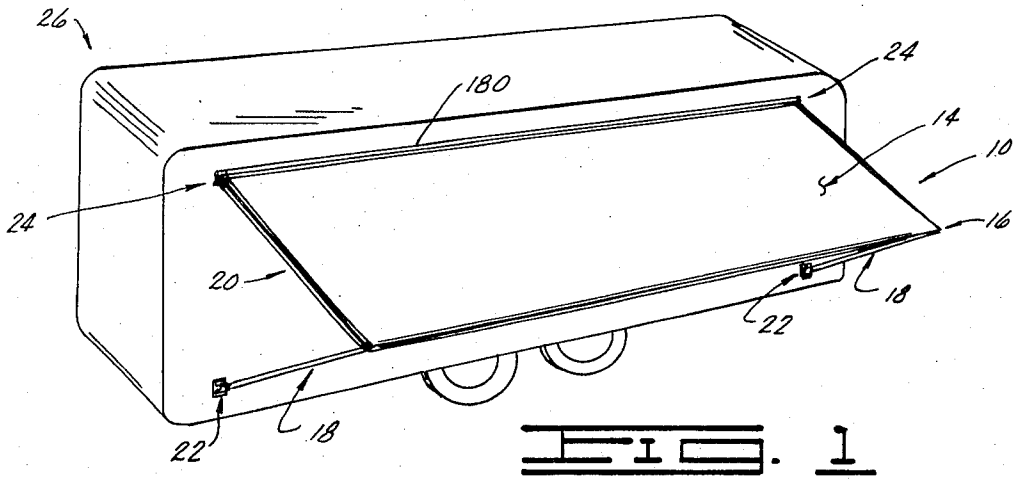


FIG. 1

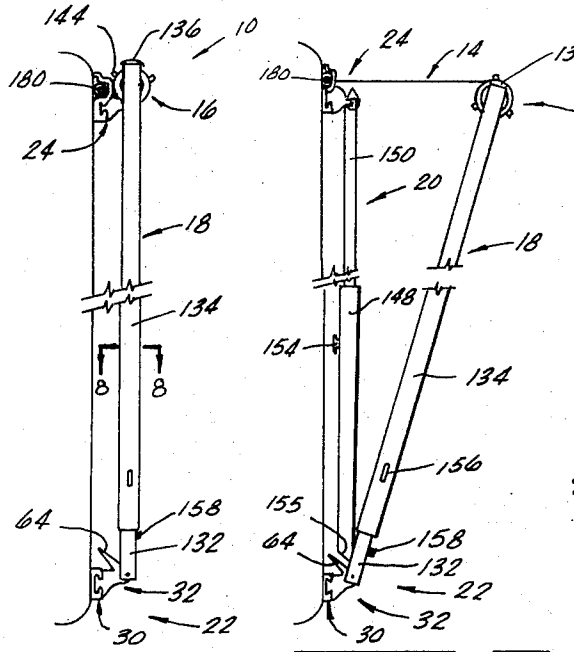


FIG. 2

FIG. 3

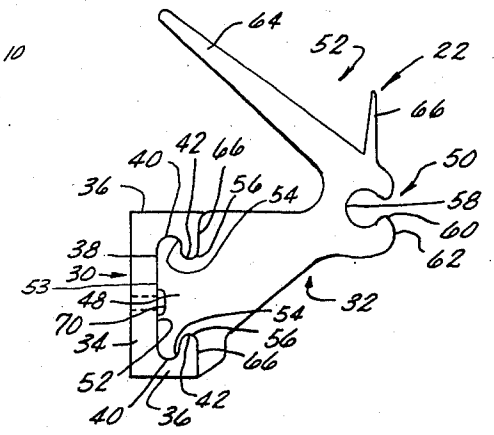


FIG. 4

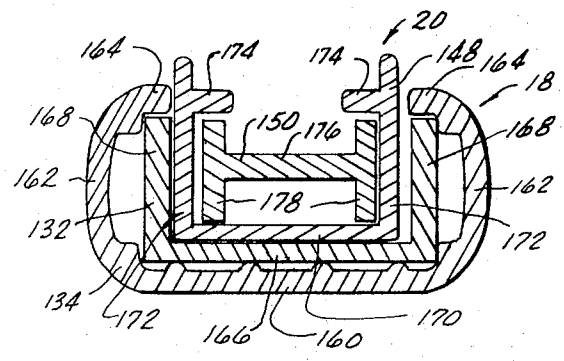


FIG. 6

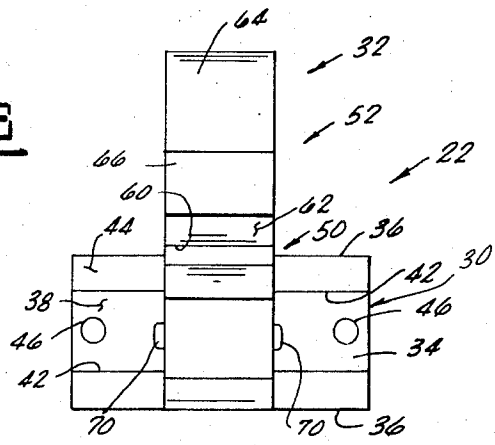


FIG. 5

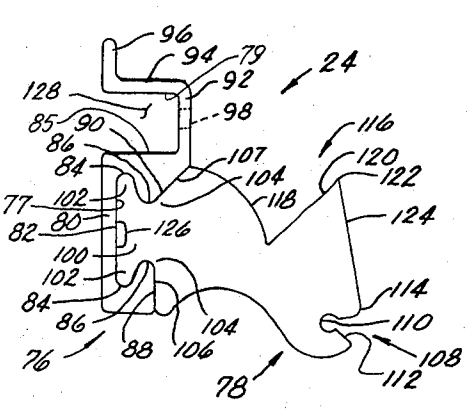


FIG. 6

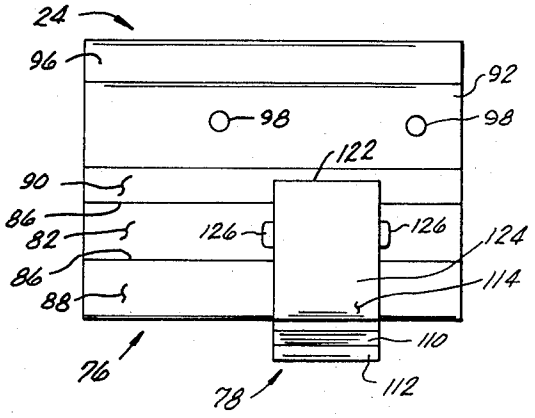


FIG. 7

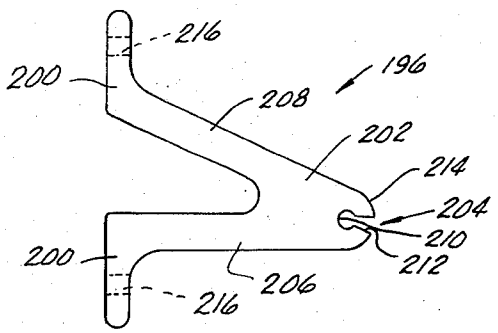


FIG. 12

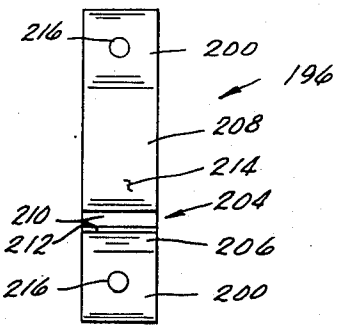


FIG. 13

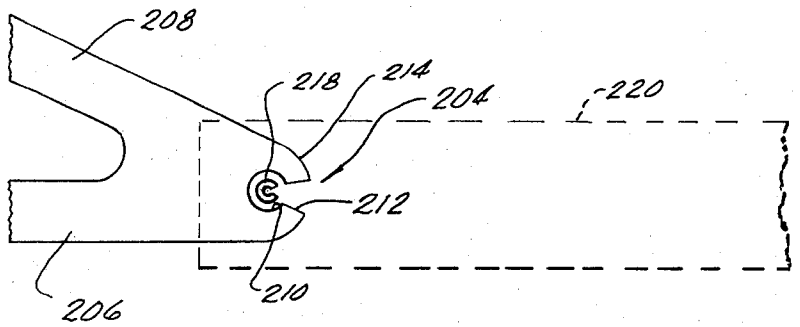


FIG. 14

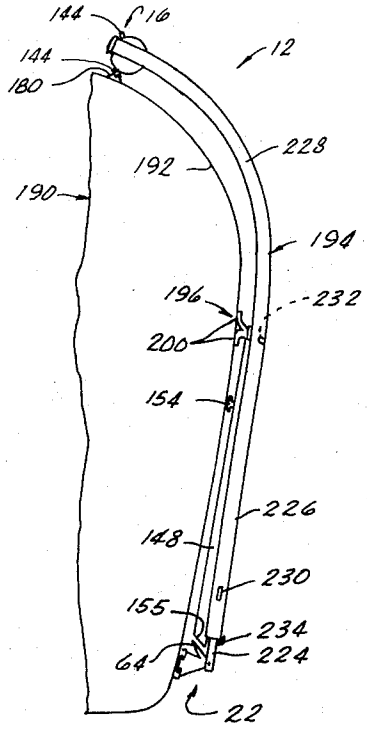


FIG. 9

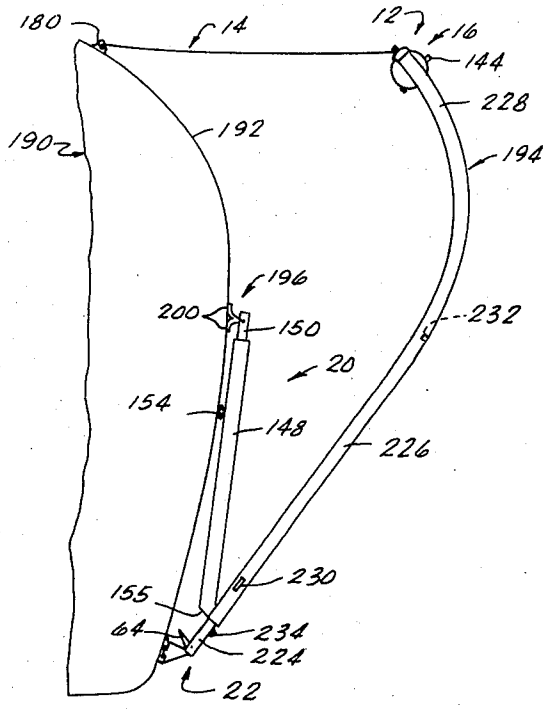


FIG. 10

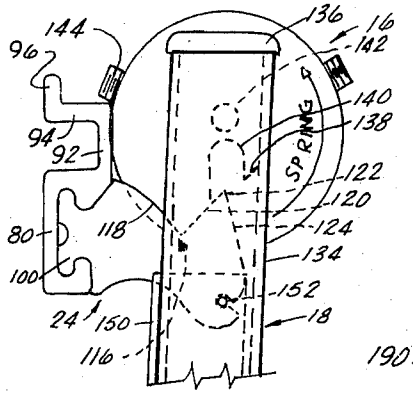


FIG. 15

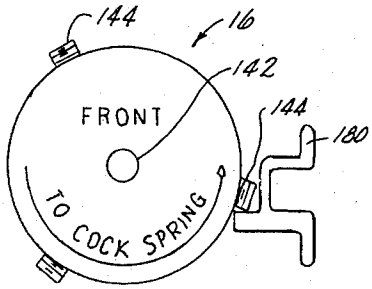


FIG. 16

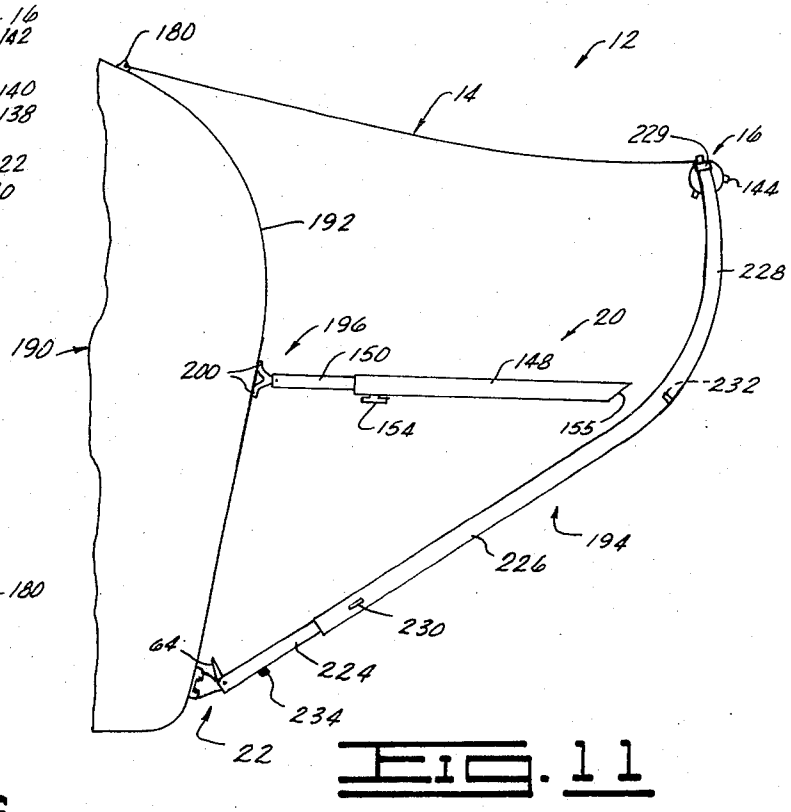


FIG. 11

BRACKET FOR MOUNTING AWNINGS AND THE LIKE

BACKGROUND OF THE INVENTION

Many types of awning structures known in the prior art which are mountable on a supporting surface can be extended for use then retracted to a storage position alongside the supporting surface. Of these prior art awning structures many of them are adapted for use with travel trailers or mobile homes or other similar vehicles which are exposed to on-the-road wind conditions. These awning structures which are devised for use with travel trailers and the like must either be completely disassembled and removed from the exterior structure of the trailer for storage inside the trailer or in a special compartment. Another type of awning structure usable with this type of vehicle has a compartment mounted on the upper portion of the vehicle from which the awning is pulled or unrolled when it is to be used. This device houses the awning sheet and the disconnectable awning supporting structure. None of the prior art devices have structures which enable the awning support arms, braces and so forth to be left in the mounted condition on the exterior of the vehicle when in storage. In regard to the specific structure of the brackets and related elements which accompany these prior art devices, they are generally cast articles or machined structures. The structural components of the prior art arms and braces are generally tubing or pipes. Assembly of these prior art awning structures is quite time consuming when it is desired to set up the awning as each of the arms and related elements must be individually joined with its cooperating elements then later taken apart when it is desired to put the awning away. The structure of the prior art devices is rather expensive due to the structure of the brackets and other elements which must be cast and then hand or machine finished to a proper fit.

SUMMARY OF THE INVENTION

In one preferred specific embodiment, of the present invention, an awning structure, includes an awning sheet, an awning roller, a roller support arm, a first bracket securable to a supporting surface and pivotally mounting the lower end of the roller support arm and, a brace member pivotally secured on its upper end to a second bracket which is also securable to the supporting surface. The brace member has the free end thereof contactable with the support arm when the awning structure is in the extended position. The first bracket is constructed to receive and hold in juxtapositional relation the brace member and the support arm when the awning structure is in a collapsed storaged position with the free end of the brace member in contact with the first bracket and the brace member positioned substantially within a portion of the supporting arm. The second bracket member has a notched portion to receive and hold in locked relation the upper end of the support arm. The awning structure of this embodiment is specifically adapted for use on planar supporting surfaces such as on travel trailers with rectangular box-like bodies or a planar surface. The brackets are constructed by an extrusion method and each have a notch-like aperture therethrough constructed and adapted to receive and hold a pin or the like for the pivotal mounting of the support arm and the brace member.

In another embodiment of the present invention, an awning structure includes the same general structural elements as the first described embodiment and is adapted for use with travel trailers having curved sides. The awning support arm is curved to match the curvature of the supporting surface and the second bracket is attachable to the supporting surface to support the brace so that it contacts a mid-point of the support arm when in the extended position and so that it can be substantially enclosed in juxtapositional relation to the support arm when in the storage position. The first bracket is the same as for the first described embodiment. The brackets are made by an extrusion method and have a notch-like aperture therethrough to receive and hold a pin or the like for mounting of the braces and support arms.

OBJECTS OF THE INVENTION

One object of this invention is to provide an awning structure and brackets and method of making awning brackets overcoming the before mentioned disadvantages of the prior art devices.

One other object of this invention is to provide awning structures having a rollable awning sheet supported by an arm and a brace which are each mounted with a supporting surface by brackets with the arm and the brace being movable between an extended position and a collapsed storage position wherein the arm and the brace are in a juxtapositional relation.

Still, another object of this invention is to provide an awning structure for use with a travel trailer or the like which has brackets to attach an awning roller support arm and a brace to the side of the trailer and which will allow the awning to be retracted into a collapsed storaged position and retained therein so as to not be affected by wind forces when pulling the travel trailer on the road.

Still, another object of this invention is to provide an awning structure which has awning support arm brackets therefor constructed by an extrusion method wherein the bracket produced has a notch-like aperture therethrough to receive and hold a pin or the like to pivotally mount members thereto.

Yet, another object of this invention is to provide an awning structure which can be secured to the side of a travel trailer or other structure having a planar side surface.

Yet, another object of this invention is to provide an awning structure which can be secured to a side of a travel trailer or other structure which has a curved side surface.

One further object of this invention is to provide brackets for an awning structure which are extruded and have a notch-like aperture therethrough to receive a pin or the like for mounting of support arms or the like.

One further object of this invention is to provide a method of making brackets for mounting support arms such as for awning structures, the method producing brackets having a longitudinal keyway therethrough for receiving a pin or the like for mounting the support arms.

Various other objects and advantages of the invention will become apparent to those skilled in the art from the following discussion, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a travel trailer having flat sides with the awning structure attached thereto and shown in the extended position;

FIG. 2 is a shortened end elevation view of the awning structure for the flat sided type trailers shown in the collapsed storaged position;

FIG. 3 is a shortened end elevation view of the awning structure shown in FIG. 2 having the support arm in a partially extended position;

FIG. 4 is a side elevation view of the first bracket or the bracket for mounting the lower end of the support arm;

FIG. 5 is an elevation view of the awning first bracket shown in FIG. 4 taken from the normally outer side thereof;

FIG. 6 is an end elevation view of the second bracket or the bracket for the brace as shown in FIGS. 1, 2 and 3;

FIG. 7 is an elevation view of the second bracket shown in FIGS. 6 taken from the normally outer side thereof;

FIG. 8 is a cross-sectional view of the support arm and bracket taken on line 8—8 of FIG. 2;

FIG. 9 is an end elevation view of a portion of a travel trailer having a curved exterior with the awning structure mounted thereon and shown in the collapsed storaged position;

FIG. 10 is an end elevation view of the travel trailer and awning structure shown in FIG. 9, having the support arm and brace in a partially extended position;

FIG. 11 is an end elevation view of the travel trailer and awning structure shown in FIGS. 9 and 10 with the awning structure shown in the extended position, and the brace being slightly removed from the support arm for clarity;

FIG. 12 is an elevation view of the second bracket or brace supporting bracket for the awning structure as shown in FIG. 9;

FIG. 13 is an elevation view of the bracket shown in FIG. 12, taken from the normally outer side thereof;

FIG. 14 is an enlarged end elevation view of the outer end portion of the bracket shown in FIG. 12 having a portion of the brace member attached thereto by a pin with the brace member shown in dashed lines for clarity;

FIG. 15 is an enlarged end elevation view of the second bracket, awning sheet roller upper end of the brace and support arm for the awning structure as shown in FIG. 2; and

FIG. 16 is an end elevation view of the awning support roller and awning rail for the awning structure as shown in FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following is a discussion and description of preferred specific embodiments of the awnings, brackets and extrusion method therefor of this invention, such being made with reference to the drawings whereupon the same reference numerals were used to indicate the same or similar parts and/or structure. It is to be understood that such discussion and description is not to unduly limit the scope of the invention.

The awning structure of this invention is shown in two embodiments thereof, with one embodiment thereof shown in detail in FIGS. 1, 2 and 3 and generally indicated at 10; and the other embodiment thereof shown in detail in FIGS. 9, 10 and 11 and generally indicated at 12. The awning structure in the first described embodiment which is generally indicated at 10 is adapted for a specific use with travel trailers or other structures having a flat side for mounting of the awning structure. The second described embodiment which is generally indicated at 12 is adapted to have a specific use of being mountable with travel trailers or other structures having a rounded exterior or a curved side on which the awning structure can be mounted. Certain portions of the two embodiments of the awning structure of this invention are the same and will be so noted hereinafter.

Referring to the drawings in detail and in particular in FIGS. 1–7, and 15, the first embodiment of the awning structure and brackets therefor of this invention is shown with the awning structure in complete form mounted on the side of a travel trailer and the brackets therefor are shown individually in FIGS. 4, 5, 6 and 7. The awning structure 10 includes an awning sheet 14 attached to an awning roller 16 and to the trailer, an awning support arm 18 attached to the roller 16, a brace 20, a first bracket 22 pivotally mounting the lower end of the support arm 18, and a second bracket 22 pivotally mounting the upper end of the brace 20. FIG. 1 shows the awning structure 10 in the extended position as it would appear when mounted on a travel trailer such as the one shown and generally indicated at 26. FIG. 2 shows a shortened end view of the awning structure 10 in the retracted or collapsed storage position wherein the awning support arm 18 is in locked relation with the second bracket 24 and the brace 20 is confined in juxtapositional relation within the support arm 18.

FIGS. 4 and 5 show in detail the structure of the first bracket or lower bracket 22. The first bracket includes a mount member, indicated at 30, which has attached thereto an extended or male bracket member, indicated at 32. The mount member 30 is a channel-like female member with a longitudinal groove therethrough having a flat back portion 34 with side portions 36 extending perpendicularly from the edges thereof. The interior of the mount or female bracket member 34 has a flat inner surface 38 on the inside of the back portion 34 with rounded corners 40 at the edges thereof and oppositely contoured other corner portions 42 adjacent to the open side surface of the member. The distance between the outer most corners 42 of the longitudinal groove is less than the distance between the innermost corners 40 as shown in FIG. 4. The open side of the mount member 30 has planar surfaces 44 extending from the corners 42 to the side portions 36. The particular shape of the female bracket member 30 attaches to a matingly shaped portion of the male bracket member 32. A pair of apertures 46 in the opposite end portions of the female bracket member 30 are used to secure it to the supporting surface or the side of a travel trailer or whatever. The extended member or male bracket member 32 of the first bracket 22 has a male portion 48 on a first side thereof to engage with the groove of the mount member 30, a notch-like aperture 50 on a second or opposite side thereof, and a notch portion 52 on the normally upward side thereof. The male portion 48 of the male bracket member engages with the groove in the female bracket member 30 as

shown. The male portion **48** has a flat surface **53** and oppositely turned corner portions **54** and **56** to match with the surface curvature of the interior of the mount member **30.** The notch-like aperture **50** is a keyway like aperture formed in the second side portion of the extended member **22** and as shown in FIG. **4** it has a large generally circular interior portion **58** and a smaller outer portion **60** connecting the interior portion **58** with the member's outer surface **62.** The large generally circular interior portion **58** is well within the interior of the member and in use is adapted to receive and hold a pin, bolt, or similar article for the pivotal mounting of the support arm **18.** On the upper portion of the extended member **32** is a notch, generally indicated at **52,** formed between an upwardly inclined portion **64** and an upright portion **66.** In use the notch **52** receives and holds in storage position the lower end of the brace **20.**

In the production of the second bracket **22,** both the mount member **30** and the extended member **32** are continually extruded by the new bracket producing method of my invention in an elongated form then cut to the appropriate and desired length before being joined together. The female bracket member **30** is extruded through an extrusion die which forms along extrusion having the cross-sectional shape shown in FIG. **4** and described above. The die has a shape corresponding to the shape of the extrusion (FIG. **4**). After extrusion, the mount or female bracket member **30** is cut to the desired length and the holes **46** punched therethrough. The extended or male bracket member **32** is extruded through a corresponding die in the shape as shown in FIG. **4** and as described above. As the member is extruded the notch-like aperture **50** is formed by a boss-like projection in the wall of the extrusion die and the notch defining portions **64** and **66** are formed by recesses in the die wall. After extrusion, the piece forming the extended member **32** is cut to the size needed then joined with the female bracket member **30.** The male portion of the extended or male bracket member **32** is sized so as to fit inside the groove of the female bracket or mount member **30** in an interference fit so the extended member **32** when engaged with the mount member **30** will retain its position therein. Once the male bracket member **32** is joined with the female bracket member **30** the flat surface **34** of the female bracket member **30** can be swedged to raise the bump portions **70** on opposite sides of the male bracket member and thereby lock the position of the members which prevents sliding of the extended or male bracket member **32** within the mount or female bracket member **30.**

The notch-like aperture **59** through the bracket outer extended member **32** is an important feature of the bracket **22** and of the other similar brackets of this invention. A similar notch-like aperture is included in the other brackets of this invention. The bracket extrusion by virtue of the particular notch-like aperture **50** allows the quick and easy mounting of another member to the bracket without the necessity of drilling or punching a hole through the bracket once it is assembled. The preformed notch-like aperture is a feature of this invention which provides a considerable savings in production costs and assembly time. The brackets with the notch-like apertures are designed to compensate for the structural weakness opening in the outer portion of the bracket. The particular size of the notch-like aperture of course will depend upon the size of the pin, bolt or whatever is to be passed through the bracket. Although the extrusion of material for making brackets is shown and described herein in conjunction with brackets for awnings; it is to be understood that this method of extruding and making brackets can be applied to other fields wherein similar extruded structure can be used.

FIGS. **6** and **7** show in detail the structure of the second bracket **24,** such includes a mount member **76** and an attached extended member **78.** The mount member is a female bracket member and has a groove **77** open on one side thereof and an oppositedly turned channel portion with another groove **79** adjacent thereto. The extended member is a male bracket member having a male portion on one side thereof to engage with the groove **77** of the mount member **76,** a notch-like aperture on the opposite side thereof and another notch on the top thereof. The mount member **76** has a flat side **80** which in use is adjacent to the supporting surface and which forms the normally rear portion of the member. The interior of the mount or female bracket member has a flat surface **82** with rounded corners **84** on the opposite ends thereof which join oppositedly turned corner portions **86** on the open side of the member. The distance between the innermost corners **84** is greater than the distance between the outermost corners **86** as is shown clearly. On the outer surface of the mount member **76** a normally lower surface **88** joins the lower corner **84** and is parallel to the back side of the member. Another surface on the opposite side of the groove **77** is indicated at **90** and joins the other outer corner portion **86** and is inclined relative to the back side of the member. The rear side of the bracket member **76** has the opening of the groove **79.** The groove **79** is formed in a portion of the bracket extending upward from the portion containing the groove **77.** The groove **79** has a wall portion **92** which is on the normally forward side of the bracket member, one side wall formed by the normally upper side wall **85** of the portion containing the groove **77,** and another side wall **94** extending rearwardly from the bottom portion **92.** A flange **96** extends upward from the side **94** on the rear side of the bracket member **76.** The groove **79** defines a space **128** therein which can be used to enclose an awning rail. A pair of apertures **98** are provided through the forward portion **92** for mounting of the bracket **24** on a supporting surface.

The extended member or male bracket member **78** is constructed to be slid into the groove **77** of the mount member **76** and retained therein in the position shown in FIGS. **6** and **7.** The extended member **78** has a male portion on one side thereof with a flat edge surface, rounded adjacent corners **102** and oppositedly turned adjacent corners **104** to match corresponding corners of the mount members. Other surfaces adjacent to the inwardly turned corners **104** are indicated at **106** and **107** to engage with the outer surfaces **88** and **90** of the mount member **76.** On a second side of the extended member **78** is the notch-like aperture, indicated at **108.** The notch-like aperture **108** has a circular inner portion **110** in the interior of the extended member and a narrow portion **112** opening the aperture to the outer surface **114** on the second side of the member. On the normally upper side of the extended member **78** is the notch portion indicated at **116** formed by intersecting surfaces **118** and **120.** A peak is formed and indicated at **122** at the juncture of the

surface **120** and another surface **124** on the second side and extending upward from the area of the notch-like aperture **108.** The notch **116** and the peak **120** are used in securing the upper end of the support arm **18** with the bracket **24** as will be described hereinafter.

The second bracket **24** is constructed by the previously described extrusion method in regard to bracket **22,** and is preferably constructed in the specific shapes shown in FIGS. **6** and **7.** As with bracket members **30** and **32,** the bracket members **76** and **78** are preferably extruded and cut from aluminum alloy. Any other suitable material can be used, for example, plastic or plastic reinforced materials. It is to be noted that the mount member **78** is considerably wider than the extended member **78** so as to provide stability in mounting. Once the mount member **76** and extended member **78** have been cut to the correct and desired sizes they are forced together in the interference fit and the mount member **76** can be swedged as indicated at **126** to lock the members together. When the members **76** and **78** are pressed together the adjacent surfaces in the male portion and groove **77** are brought into a frictional engagement. It is to be noted that the extended member **78** can be positioned anyplace in the groove portion of the mount members **76,** however, in practice it has been found advantageous to position same in the off-center position as shown in FIG. **7.** A pair of brackets **24** having the mount members **76** and the extended member **78** in opposite off-center positions allows the space indicated at **128** in the channeled portion of the mount member **76** to be used to receive and hold the end portion of the awning sheet retaining railing with one bracket holding each end of the awning railing. The awning sheet retaining railing is a separate member used to attach one edge of the awning sheet **14** to the side of a trailer or a supporting surface and is generally a C-shaped member to receive a bead or an enlarged edge portion of an awning sheet.

FIG. **2, 3** and **15** show in detail the structure of the awning support arm **18** and the brace **20.** The awning support arm **18** is a telescopic member with interconnecting channel-like members which is mounted with the first bracket **22** and is used to support the roller **16.** The support arm **18** has an inner channel member **132** adapted to be pivotally attached to the first bracket **22** and an outer channel member **134** connected to the awning roller **16** by a top plug **136.** The awning roller **16** is spring urged roller apparatus adapted to pull the awning sheet to roll therearound. The roller **16** is tensioned to have a pulling force on the awning sheet **14** at all times. FIG. **8** shows in detail the features of the interlocking slidable channel members **132** and **134.** The top plug **136** fits in the upper end of the outer channel member **134** and is shown in detail in FIG. **15.** The top plug, **136** fits inside the outer support arm member **134** and has an inclined surface **138** on its inner surface which is shaped as shown in FIG. **15.** A notch **140** is provided in the center portion of the inclined surface. The awning roller **16** has the axle thereof mounted in the top plug **136** as indicated at **142.** When in the storaged position the innermost side of the inclined surface **138** engages the notch **116** of the second bracket **24** to lock the support arm **18** and roller **16** into position shown in FIGS. **2** and **15.** With the awning in this position the peak **122** on the upper portion of the second bracket **24** is within the space of the notch **140** in the top plug member **136.** Additionally, it is to be noted that the awning roller **16** has several lugs **144** extending therefrom which are spaced to come into contact with the upper portion of the second bracket **24** at the juncture of the portions **92** and **94** thereof to further prevent rotation of the awning roller when in the locked and collapsed storage position. This anti-billow feature has been found very advantageous, and the trailer with awning can be trailed at high speed without the awning sheet **14** billowing.

The brace **20** is constructed similarly to the support arm **18** with interlocking members as shown in detail in FIG. **8.** The brace includes an outer generally U-shaped channel member **148** and an H-shaped inner member **150** with the inner member **150** being adapted to freely slide within the outer member **148.** The upper end of the brace inner member **150** is connected with the extended member **78** of the upper or second bracket **24** by a pin **152** so it will pivot relative to the second bracket. The brace outer member **148** comprises the outer end portion of the brace and has an inclined surface **154** on the end thereof. When in the storaged position the inclined surface **154** of the brace outer member **148** rests on the first bracket **22** in the notch **52** thereof on the inclined portion **46** and against the upright portion **66** to secure the brace **22.** When the awning structure **10** is in the extended assembled position, the inclined surface **54** rests on the inner portion of the support arm outer member **134** and against the inclined surface **138** of the top plug member **136.** The brace **20** and the support arm **18** are provided with locking screws **154** and **156** respectively which are used to lock or temporarily fix the length of the members. The brace locking screw **154** is threaded through the inner H-shaped member **150** to press against the inside of the outer member **148** as shown generally in FIG. **3.** The locking screw **156** on the support arm **18** attaches through an outer side of the outer member **134** and presses against the inner member **132** as shown generally in FIG. **3.** When the awning structure **10** is in the storage position, as shown in FIG. **2,** the locking screws **154** and **156** are used to secure the members in a rigid relation. In the storage position the brace **20** is secured, with the outer member **148** having the outer end thereof coming in contact with the first bracket **22.** The support arm **18** is secured with the top part thereof held in firm connection with the second bracket **24.** To prevent the support arm **18** from damaging the second bracket **24** by being forced downward the stop lug **158** is provided through a lower support arm member **132** as shown in FIG. **2** and FIG. **3.** The stop lug **158** can be a bolt or the like placed through the inner member **132** in a position so the other support arm member **134** will rest thereon when in the storage position.

FIG. **8** shows in detail the preferred specific structure of the awning support arm **18** and brace **20** in the juxtapositional relation which they assume when in the storaged position. The support arm outer member **134** is a generally cross-sectionally C-shaped member having a flat outer portion **160** rounded and curved ends **162** with ends **164** on the normally inner side thereof disposed in a plane parallel to the outer surface **160.** The support arm inner member **132** is in cross-section a generally U-shaped member having a flat outer surface **166** and integral sides **168** perpendicular thereto. The sides **168** of the support arm inner member **132** fit within the confines of the outer support arm member **134** and are sized so as to freely slide through it. The

brace outer member **148** is also a generally cross-sectionally rectangular U-shaped member having a flat outer side **170** with parallel sides **172** perpendicular to the flat side **170** and additionally having inwardly extending ridges **174** on the normally inner portion thereof partially closing the gap between the sides **172**, as shown. The brace inner member **150** is a generally cross-sectionally H-shaped member having a center portion **176** and integral parallel ends **178** perpendicular to the center portion **176.** The brace inner member **150** is positioned within the brace outer member **148** and is sized so as to freely slide therin and be retained therein. It is to be noted that the brace **20** and the support arm **18** including the several members thereof are preferably constructed of extrusions in order to produce members which are uniformly shaped and economical to manufacture. The length of the several members will depend upon the specific travel trailer or other structure to which the awning structure **10** is to be used as the support arms and the braces must be sized by length accordingly.

The awning structure **10** and brackets of the embodiment of this invention are designed to be attached to a planar supporting surface such as the side of a travel trailer having a flat side surface or a mobile home or a building structure or other structures where it may be desired to install and use an awning that can be extended and retracted. In the use of the awning structure **10** and brackets attached to the upper portion of the trailer **26** or similar structure. An edge of the awning sheet **14** is secured in an awning railing **180** between the second brackets **24.** The first brackets or the lower brackets **22** are mounted directly below the second brackets **24** so the support arms **18** and braces **20** will be in a vertically oriented position. The awning sheet **14** is wound on the awning roller **16** so it will be pulled to a normally retracted position by a spring in the awning roller. In the retracted storage position the support arms **18** and braces **20** are locked with the first and second brackets as shown in FIG. **2.** In this locked and collapsed storaged position a travel trailer can be pulled on the road and wind will not affect the awning structure or pull it loose from the brackets. The tightly wound awning sheet **14** on the awning roller **16** in the position adjacent to the side of the trailer and the awning rail prevents billowing and puffing up of the awning sheet along the roller when being pulled on the road. To extend the awning structure **10** to the position shown in FIG. **1** the locking screws **154** and **156** are released. The awning support arms **18** are lifted from the second brackets **24** and pulled to the desired extended position by being telescoped outward and raised upward. Once the support arms **18** are in the desired position the locking screws **156** are used to prevent the length from changing. The braces **20** are extended and locked in the outer end portion of the support arm below the top plug member **136** and the locking screws **154** are tightened to prevent the length from changing. Retraction of the awning structure **10** is accomplished by reversing of the described proceedure.

Another preferred embodiment of the awnings, and and brackets, and extrusion method therefor of this invention such is the awning structure illustrated in FIGS. **4–14** and FIG. **16.** This second embodiment, (2), awning structure is generally indicated at **12** is constructed and adapted for use on travel trailers or the like having a curved surface on which the awning structure is to be mounted. FIGS. **9, 10** and **11** show a travel trailer generally indicated at **190** which has a curved outer side surface **192** on which the awning structure **12** is mounted.

Certain portions of the awning structure **12** utilizes the same elements as the first described embodiment, (1), of this invention. These elements are the lower bracket or first bracket **22,** the brace **20,** the awning roller **16** and the awning sheet **14** and the awning support rail **180.** The similar portions of the awning structure **12** have the same reference numerals as they do in the first described embodiment for clarity.

The awning structure includes an awning support arm **194** secured on its lower end to the first bracket or lower bracket **22,** and having on its upper end the awning roller **16,** the brace **20** is secured by a second bracket **196** to a mid-portion of the curved side surface **192** and depends therefrom. The awning support arm **194** is curved on the upper end portion thereof to match the curvature of the surface **192.** As is the case on most travel trailers such as the one shown and indicated at **190** the door thereof opens on the side thereof and has a portion extending into the curvature of the upper part of the trailer thereby making it necessary for the awning sheet **14** to be attached well above the door so it can be opened without interfering with the awning fabric. These preferred specific shapes of the awning support arm **194** and brace **120** are the same as shown and described in FIG. **8** with the first described embodiment. The awning roller **16,** awning sheet **14** and awning railing **180** are also the same as previously described. The brace **20** is the same as previously described, however, such is slightly shorter in length due to its mounting at a point below the upper most part of the awning structure. The second bracket **196** is shown in detail in FIGS. **12, 13** and **14** and functions in this embodiment of the awning structure only as a support for the brace **20.** The first bracket or lower bracket **22** is the same as previously described and functions similarly.

FIGS. **12, 13** and **14** show in detail the structure of the second bracket or brace attaching upper bracet **196.** The second bracket **196** has a first side portion with a pair of flanges **200** extending outward therefrom for mounting the bracket on the supporting surface and an opposite side portion **202** having a notch-like aperture therethrough generally indicated at **204.** The bracket as shown has a normally lower portion **206** extending generally perpendicular to flanges **200** and an inclined upper portion **208** inclined outward and downward to the notch-like aperture **204.** The notch-like aperture **204** has a generally circular inner portion **210** on the interior of the brackets outer portion **202** and a narrower portion **212** connecting the inner portion **210** with the brackets outer surface **214.** The inner portion **210** of the notch-like aperture **208** is adapted to receive and hold therein a pin or the like as is shown in the enlarged view of the brackets end portion in FIG. **14.** A pair of apertures **216** through the flanges of **200** are provided for mounting of the second bracket **196** with a supporting surface.

FIG. **14** shows an enlarged detail of the structure of the notch-like aperture of the second bracket **196.** The structure shown has a shoulder pin **218** within the interior portion **210** of the aperture **204** and a portion of the brace member indicated at **220** and shown in dashed lines attached to the bracket. The brace portion

220 illustrates one manner of connecting the brace and the bracket. The general shape of the notch-like aperture 204 is the same for the second bracket 196 and the other brackets 22 and 24 of this invention. The configuration of the notch-like aperture 204 is such that a pin, as the pin 218, can be passed through the aperture in the inner portion thereof and retained to support another member, indicated by the brace portion 220, in a pivotal relation. In practice in using the new described bracket producing extrusion method of this invention, the notch-like apertures in the brackets produced for the awning structures by the described method can be sized to receive pins, bolts, or other fasteners as desired. In making the second bracket 196 as shown in the drawings, it is extruded through a die having a shape corresponding to the shape of the extrusion, (FIG. 12). Once the elongated extrusion is formed it is cut to the proper and desired width. As the notch-like aperture 204 is formed in the bracket in the extrusion process, it is not necessary to drill or punch a hole through the outer portion 202 thereof for the mounting of the brace 20 or for the mounting of any other article.

The brace 20 which attaches to the second bracket 196 is structurally the same as previously described and includes an inner member 150 pivotally attached to the notch-like aperture 204 of the second bracket 196, an outer member slideable over the inner member 150 having a locking screw 154 to fix the length of the brace and having a bevelled end portion 154 on the outer end thereof for engagement with the first bracket 22 and the awning support arm 194.

FIGS. 9, 10 and 11 show in detail the structure of the curved awning support arm 194. The awning support arm 194 has an inner member 224 pivotally attached to the first bracket 22 on its lower end and an outer member 226 comprising the remainder of the arm. The outer arm 226 is straight on its lower end portion and curved as shown on its upper end portion 228 so as to match or correspond to the curvature of the travel trailer or supporting surface when in the collapsed storaged position as shown in FIG. 9. The lower end straight portion of the awning support arm outer member 226 encloses the support arm inner member 224. The awning roller 16 is attached to the uppermost end of the supoort arm outer member 228 by a top plug member 229 inserted within the cavity of the interior of the member 226. A locking screw 230 is provided in the lower end portion of the support arm 226 as shown for locking the support arm 194 in a fixed length position. On the upper curved end portion 228 of the outer arm member 226, a lug 232 is provided. This lug 232 is for the purpose of engaging with the end of the brace end member 148 to fix the position thereof relative to the support arm when the awning structure 12 is in the extended position. FIG. 11 shows the awning structure in the substantially extended position with the lug 232 adjacent to the brace end 155. The support arm inner member 224 has a lug 234 on the lower end thereof as shown which is a support for the outer arm member 226 when in the collapsed storaged position as shown in FIG. 9. The lug 234 functions as a downward motion limit stop for the outer member 226 on the inner member 224.

The awning structure and brackets 12 of this embodiment of this invention are used in the same manner as hereinbefore described and are attached to a trailer or other structure in a similar fashion. The awning rail 180 must be positioned on the side of the trailer on the curved surface thereof substantially above the door opening as shown in FIGS. 9, 10 and 11 so the awning sheet 14 will clear the door when it is opened. FIG. 16 shows in detail the position of the awning roller 16 at the awning rail 180 when in the retracted position. In this retracted position the awning roller 16 is adjacent to the awning railer 180 with the brace 20 and awning support arm 194 in the juxtapositional position as generally shown in FIG. 9. When in the storage position the brace 20 is held in position against the trailer by its being extended having the lower end thereof in contact with the notch portion 52 of the first bracket 22. The awning support arm 194 is held in the fixed position shown in FIG. 9 by having the support arm's outer members 226 pulled down so the lug 144 of the roller 16 is in firm contact with the awning rail 180 as shown in FIG. 16 and further the locking screw 230 is tightened to rigidly connect the inner member 224 with the other member 226. The roller 16 is prevented from turning by a lug 144 in contact with rail 180, in turn preventing awning sheet 14 from billowing in the air through which the trailer is moved.

In the manufacture of the awning and brackets of this invention, it is seen that same can be produced by a new extrusion method and joined together in the shown forms of the embodiments thereof to achieve the end products. The particular extrusion method disclosed herein is disclosed with the manufacture of the shown awning brackets and is unique in the formation of the notch-like aperture in the portions of the brackets used for mounting the braces and support arms. In the practice of the invention the extrusion method has been found to be the most practical and economical process of manufacturing the awning brackets. Additionally, the use of extrusions in forming the brace and the support arm portions of the awning structures has also been found to be advantageous due to the necessary interlocking construction of the members.

In the use and operation of the awning structures, brackets and extrusion method therefor of this invention, it is seen that same provides a simply operated, easily mountable and easily operatable awning structure which can be used with travel trailers and similar structures. The awning structures of this invention are adapted to be lockable in the retracted collapsed storage position adjacent the supporting surface and easily extendable therefrom. When the awning structures are in the locked storage position their use with a travel trailer will not be disturbed by wind forces encountered when pulling the trailer on the road. In the practice of the therein described extrusion method of forming the brackets, it is obvious that the new method provides a simple manner of making the brackets as it requires only cutting of the extrusions and assemblying the brackets. As disclosed, the awning structure of this invention in one embodiment is for use with travel trailers having straight or planar sides and in another embodiment is for other travel trailers having a curved side.

As is apparent from the foregoing description of applicant's awnings, brackets, and extrusion method therefor, a simple and inexpensive method has been provided to produce brackets for the awning structures. The brackets themselves are economical and simple to produce by using the herein described new extrusion method of making them. The awning struc-

ture is a unit light in weight, simple to use, economical to manufacture and provides an awning support structure that rolls up the awning sheet in a condition that will permit use of the awnings with travel trailers which are pulled on the road extensively. The awning structures are constructed so they will lock in a storage position adjacent to the supporting surface on which the awning structure is mounted thereby protecting the rolled awning sheet and securing the supporting structure.

While the invention has been described in conjunction with preferred specific embodiments thereof, it will be understood that this description is intended to illustrate and not limit the scope of the invention which is defined by the following claims.

I claim:

1. Bracket means for mounting and supporting retractable awnings on a supporting surface comprising:

a. a portion of said bracket means having means for mounting said bracket means on said supporting surface,

b. another portion of said bracket means having means for mounting a rigid support member, and

c. said means for mounting a support member having an aperture therethrough constructed and adapted to receive and hold a pin or the like,

d. said bracket member having on a normally upper surface thereof a notched portion formed by an inclined portion and an upright portion.

2. The bracket means of claim 1, wherein:

said aperture having a generally circular inner portion spaced inwardly from an edge of said another portion of the bracket means, an outer portion opening through said edge of said another portion and defining a connecting passage between said inner portion and said edge of said opposite portion, said outer portion intersecting said circular inner portion at spaced locations and having side walls which diverge outwardly from each other commencing at the intersecting locations with said inner portions.

3. Bracket means for mounting supporting retractable awnings on a supporting surface, comprising:

a. a female bracket member having a groove therealong and means for mounting the bracket means on a support structure,

b. a male bracket member, having a male portion and a notch-like aperture therethrough constructed and adapted to receive and hold a pin or the like, said aperture having a generally circular inner portion and an outer portion diverging from said inner portion, said inner and outer portion being connected through a notch which is smaller than said inner portion,

c. said female bracket member having an outer flat side mountable on said supporting surface with said groove on the opposite side thereof,

d. said groove having a flat inner side and a convergent outer portion joining said inner side with the outer surface of said female bracket member,

e. said male bracket member having said male portion thereof shaped to cooperatively engage said groove to be held therein, and having surfaces adjacent said male portion to engage said surface of said female bracket member, and

f. said male bracket member having on a normally upper surface thereof a notched portion formed by an inclined portion and an upright portion.

4. Bracket means for mounting supporting retractable awnings on a supporting surface, comprising:

a. a female bracket member having a groove therealong and means for mounting the bracket means on a support structure,

b. a male bracket member, having a male portion and a notch-like aperture therethrough constructed and adapted to receive and hold a pin or the like, said aperture having a generally circular inner portion and an outer portion diverging from said inner portion, said inner and outer portions being connected through a notch which is smaller than said inner portion,

c. said female bracket member having a flat side mountable on said supporting surface, said groove being on the opposite side of said bracket member from said flat side, and a second groove on the side thereof opposite said first named groove,

d. said first named groove having a flat inner side and a convergent outer portion joining said inner side with the outer surface of said female bracket member,

e. said male bracket member having said male portion thereof shaped to cooperatively engage said first named groove to be held therein, and having surfaces adjacent said male portion to engage said surface of said female bracket member, and

f. said male bracket member having in a normally upper surface thereof a notch formed by two inclined portions.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,866,874 Dated February 18, 1975

Inventor(s) Albert Upton, Jr.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Abstract, lines 12 & 13 "bracekt" should read --bracket--.
Column 5, line 53 "59" should read --50--.
Column 9, line 12 "therin" should read --therein--.
Column 9, line 61, delete "and".
Column 9, line 62, delete "and" (first occurrence).
Column 9, line 63, delete "such".
Column 9, line 63, delete "the awning structure".
Column 9, line 64, delete ",(2)," and substitute therefore --of the--.
Column 9, line 65 after "12" insert --and--.
Column 9, line 66, delete "and adapted".
Column 10, line 5, change "utilizes" to --utilize--.
Column 10, line 7, delete ",(1),".
Column 10, line 9, delete "and" and insert a comma (,) after "16".
Column 10, line 16, after "16" delete the comma (,) and insert a period (.)
Column 10, line 16, change "the" to --The--.
Column 10, line 42, change "bracet" to --bracket--.
Column 11, line 9, after practice, insert a comma (,) and delete "in" (second occurrence).
Column 11, lines 9 & 10, delete "described".
Column 11, line 45, change "supoort" to ---support--.

Signed and sealed this 10th day of June 1975.

(SEAL)
Attest:

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