Sept. 15, 1964 M. V. NOECKER 3,148,418

AWNING CONSTRUCTION

Filed Sept. 18, 1961 2 Sheets-Sheet 1

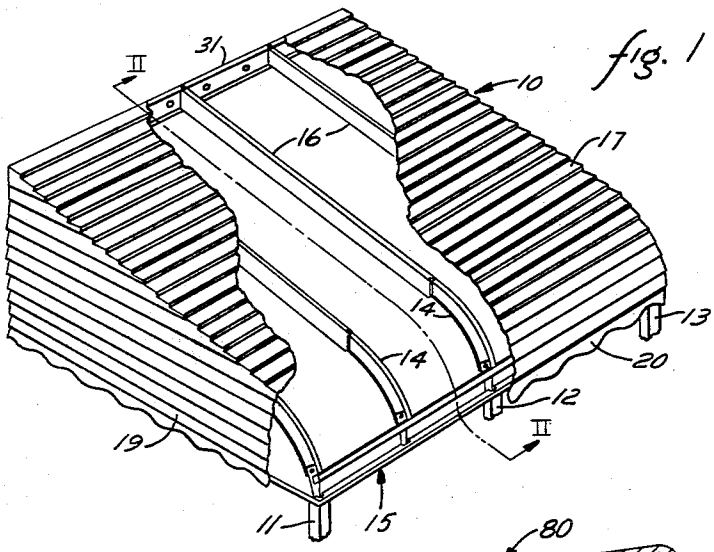


fig. 1

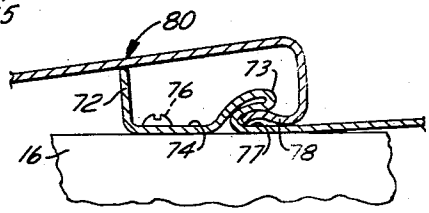


fig. 8

fig. 2

fig. 3

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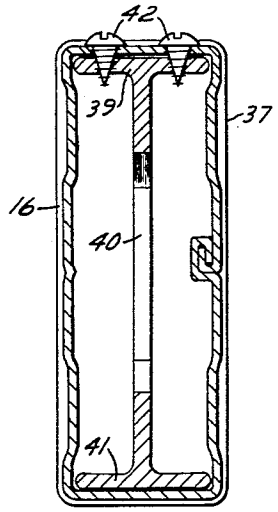


fig. 4

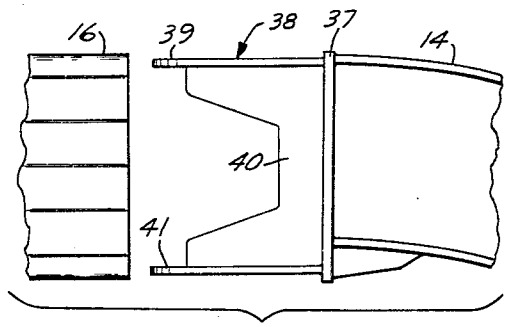


fig. 5

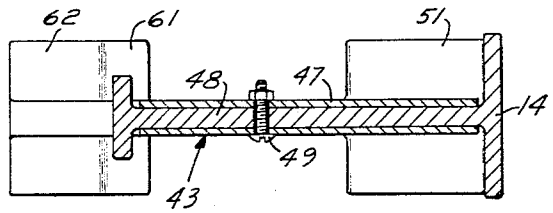


fig. 6

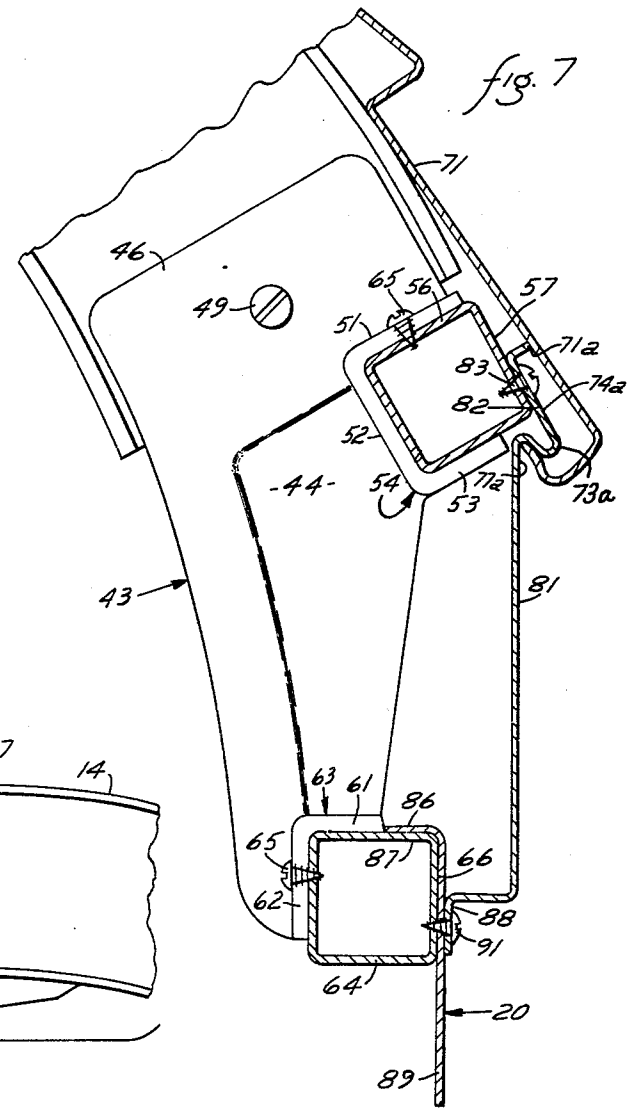


fig. 7

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AWNING CONSTRUCTION

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Filed Sept. 18, 1961, Ser. No. 138,718
7 Claims. (Cl. 20—57.5)

This invention relates to an improved awning construction and, more particularly, relates to an improved rafter and frame structure for stationarily supported awning sheets. This application is a continuation-in-part of my copending application, Serial No. 41,643, filed July 8, 1960, now U.S. Patent No. 3,103,715.

It is common practice to cover porches, patios and similar places with various types of awning constructions. One popular form of an awning structure comprises a plurality of upstanding supports upon which rafters are mounted. Awning sheets formed of a suitable material, such as aluminum, are mounted upon the rafters. Some of these awnings are substantially planar throughout their extent and, hence, the rafters can be formed merely as elongated, straight beams. Others, however, have downwardly curved portions at their lower edges and these have in the past presented certain constructional problems which it is the object of the present invention to solve.

Accordingly, the objects of the invention include:

(1) To provide awning components which will be useable with a standard hollow awning rafter for providing a downwardly curved portion at the outer and lower edge of the awning.

(2) To provide awning components, as aforesaid, which will not require any modification of the parts of the awning cover structure except at the curved end portion thereof, and hence will minimize the need at both the manufacturing and distribution levels for special parts.

(3) To provide awning components, as aforesaid, which will be extremely simple in their design so as to facilitate low cost in manufacturing, assembly and maintenance.

(4) To provide awning components, as aforesaid, which will be strong and sturdy and capable of satisfactorily supporting the sheet material constituting the awning cover.

(5) To provide awning components, as aforesaid, which will be capable of substantial changes to meet various requirements so that varying degrees of curvature can be provided in the lower end of the awning whereby the awning can be accurately adapted to a given location of use and to the user's wishes.

Other objects and purposes of the invention will be apparent to persons acquainted with equipment of this general type upon reading of the following disclosure and an inspection of the accompanying drawings.

In the drawings:

FIGURE 1 is a partially broken away, oblique view of an awning construction of the type to which the invention relates.

FIGURE 2 is an enlarged, fragmentary, sectional view taken along the line II—II of FIGURE 1.

FIGURE 3 is a sectional view taken on the line III—III of FIGURE 2.

FIGURE 4 is a sectional view taken on the line IV—IV of FIGURE 2.

FIGURE 5 is an exploded side view of the parts shown in FIGURE 4.

FIGURE 6 is a sectional view taken on the line VI—VI of FIGURE 2.

FIGURE 7 is a side view on an enlarged scale of the structure shown at the right-hand end of FIGURE 2.

FIGURE 8 is a side broken view of one typical awning cover sheet useable with the awning structure of the invention, the figure showing the essential details of the awning cover on an enlarged scale as compared to the corresponding showing in FIGURE 2.

Referring to FIGURE 1, there is illustrated the general form of an awning structure 10 to which the invention relates. The awning structure 10 includes a plurality of vertical support posts 11, 12 and 13 which are mounted on any suitable support, such as a concrete slab (not shown). A front frame structure 15 is supported upon the upper ends of posts 11, 12 and 13. A plurality of straight rafters 16 are provided and each is secured at its lower and forward end to a curved rafter extension 14 which is secured to the front frame structure 15 and extends upwardly and inwardly therefrom. The rafter extensions 14 are secured to the front frame structure 15 in a manner to be described in greater detail hereinbelow. A cover 17 comprised of awning cover sheets of any suitable construction, such as that disclosed in my copending application Serial No. 41,644, filed July 8, 1960 and now abandoned, assigned to the assignee of this invention, is mounted upon the rafters 16 and rafter extensions 14. End sheets, of which one appears at 19, are secured to the ends of the awning structure and a decorative front sheet or fringe 20 is secured to the front frame structure 15 as described in greater detail hereinbelow.

As shown in FIGURES 3 and 4, each of the rafters 16 is tubular and substantially rectangular in cross section. The side walls 21 and 22 of the rafter 16 have two pairs of indented portions 23 and 24 adjacent the upper and lower ends thereof, respectively. The indented portions 23 and 24 serve to strengthen the rafter against collapse.

The rafter 16 is formed of a suitable material, desirably aluminum, and, while the rafter 16 may be formed by extrusion techniques, in the preferred embodiment of the invention disclosed in the drawings the rafter is formed by roll forming a flat sheet to the appropriate shape and interlocking the edges of the sheet as indicated at 26. The upper wall 27 of the rafter 16 on which the awning cover sheets are mounted is one of the walls of minor dimension and this will provide a greater strength for the assembled structure under loads, such as snow or wind loads, applied on the cover 17.

The upper end of the rafter is received within a bracket 31. The bracket is substantially channel-shaped and includes a pair of substantially parallel, horizontally extending, downwardly inclined legs 32 and 33 which are connected by a transversely extending vertical web 34. Openings for fasteners are provided in the web 34 whereby fastening means 30 may be extended therethrough to secure same to a suitable support, such as the wall W of a building. Similar openings are provided through the legs 32 and 33 and fastening means 35 extend therethrough to secure same to the rafter 16. The bracket 31 may extend along the entire length of the awning structure so that all of the rafters can be mounted thereon. Alternatively, separate, spaced bracket sections corresponding in cross-sectional shape to bracket 31 may be used.

Initially the legs 32 and 33 may have a slight convergence toward the free ends thereof but the legs are otherwise spaced from each other a sufficient distance that the top and bottom walls of the rafter 16 can closely and slidably fit therebetween. Thus, to fit the rafter between the legs 32 and 33, the free ends of the legs 32 and 33 may be slightly sprung apart and the rafter 16 then slid therebetween. The legs 32 and 33 will then firmly but releasably grip the end of the rafter 16 received therebetween. This provides a temporary support for the rafter 16 during assembly thereof. After the rafter is mounted in this fashion, the fastening means 35 may be extended through

the openings in the legs 32 and 33 to effect a firm connection therebetween.

The curved rafter extensions 14 are identical and each is I-shaped in cross section. Each rafter extension 14 has a transversely extending flange 37 adjacent the upper end thereof, said flange being larger in cross section than the rafter 16 and abutting against the lower end of said rafter. The rafter extension 14 has a prolongation 38 which is of such lateral and vertical dimension that it fits snugly within the rafter 16. The prolongation 38 is comprised of a pair of flanges 39 and 41 and a connecting web 40. The flanges 39 and 41 of said prolongation 38 are preferably bevelled at their outer corners for ease of insertion into said rafter. The rafter extension 14 is secured to the rafter 16 in any suitable manner, such as by screws 42.

The rafter extension 14 curves through a suitable arc, usually less than 90 degrees. A fitting 43 is secured to the lower end of the rafter extension 14. The fitting 43 is comprised of a plate-like body section 44 having at its upper end a pair of flanges 46 and 47 which flanges snugly embrace the web 48 of the rafter extension 14 and which are secured thereto by a bolt 49.

Flanges 51, 52 and 53, are provided on the body section 44 and they define a substantially rectangular saddle or receptacle 54 in the forward edge of the fitting 43 adjacent the lower end of extension 14. An upper cross member or stringer 56, which here is a square tube, is received in and extends between the saddles 54 of the rafter extensions 14 along the front edge of the awning structure. It is to be noted that the forward wall 57 of said cross member 56 extends at a relatively large angle, such as 30 degrees, to the vertical.

The fitting 43 has a pair of transverse flanges 61 and 62 at its lower end which flanges define a lower, substantially rectangular saddle or receptacle 63. A lower cross member or stringer 64, which is preferably identical with the upper cross member 56, is received in and extends between the saddles 63 of the rafter extensions along the front edge of the awning structure. The cross members 56 and 64 define the front frame structure 15 of the awning.

The flanges 61 and 62 correspond to the flanges 51 and 52 but are rotated through an angle of about 30 degrees with respect thereto. Thus, the front surface 66 of the lower cross member 64 extends substantially vertically.

The cross members 56 and 64 are fastened to the end fitting 43 by suitable fastening means, such as screws 65, which extend through any convenient ones of the flanges 51, 52, 53, 61 and 62 into said cross members.

The cover 17 is preferably comprised of a plurality of awning cover sheets 71 which are constructed and secured to the rafters 16 and to the extensions 14 as shown in application Serial No. 41,644, filed July 8, 1960 and now abandoned. The sheets (FIGURES 2 and 8) are formed of a suitable metal, such as aluminum, and are sufficiently thin that they can easily be bent as needed without damage. Each sheet includes an upstanding flange 72 at the upper end thereof and a reversely curved portion 73 close to, but spaced from, said flange and defining therewith a channel 74 through which a fastener 76 extends for securing the sheet to the rafter 16 or extension 14.

The reversely curved portion 73 defines a groove 77 into which a flange 78 at the lower end of the adjacent upper sheet 80 is received. The lower end of the adjacent upper sheet 80 overlies the portion 73, channel 74, the fastener 76 and the flange 72 so that the adjacent ends of the sheets are overlapped and interlocked and the fastening means 76 are concealed.

A front style panel 81 is overlapped and interlocked with the lower end of the lowermost awning sheet 71*a*. The upper end of the front style panel 81 is formed in the same manner as the upper end of the awning sheets 71 and, thus, it has a flange 71*a*, a reversely curved portion 73*a* and a channel 74*a*. However, in this case the bending at the groove 77*a* part of the reversely curved portion

73*a* is somewhat less than it is at the groove 77 of the cover sheets so that the web 82 lies at a suitable angle with respect to the panel 81. Thus, the web 82 of the panel is enabled to lie flat against the front wall 57 of the cross member 56 and it is secured thereto by a fastener 83. The flange 78 on the adjacent awning sheet 71*a* is received in groove 77*a* in the style panel 81.

The fringe 20 is substantially L-shaped in cross-section and the flange 86 thereof is hooked over the upper wall 87 of the cross member 64. The style panel 81 has a flat portion 88 disposed against the leg 89 of fringe 20 and said style panel and said fringe are secured to cross member 64 by fasteners 91 which extend through said portion 88 and leg 89.

It will be observed that the style panel 81 corresponds in shape to the upper half of the awning sheets 71. Thus, the same apparatus can be used to form the style panel 81 as is used to form the awning sheets 71. This minimizes the cost of manufacturing the product. While it may be necessary to flex the awning sheets and style panel to a relatively minor extent to mount them on the rafter extension 14 and fitting 43, this is easily done without using any tools because of the flexibility of the awning sheets and style panel.

The described construction provides an awning sheet support structure which easily may be adapted to meet various length, inclination or width requirements for awnings. The length is determined primarily by the length of the rafter and such can be selected by cutting stock size rafters to the appropriate length. The legs 32 and 33 are flexible and can yield sufficiently to enable the inclination of the rafters to be changed to some extent. The rafter extension 14 can be cut to the appropriate length to provide the desired curvature for the front end of the awning structure.

While a particular preferred embodiment of the invention has been described hereinabove, the invention contemplates such changes or modifications therein as lie within the scope of the appended claims.

What is claimed is:

1. In a rafter for supporting an awning having a straight section and a downwardly curving end section and including a plurality of stringers at the downwardly curved end thereof, the combination comprising:

a substantially straight, tubular rafter of rectangular cross-section;

a second member comprising a first I-shaped and a second I-shaped section with flange means between said sections, said second section being snugly and slidably received within said rafter with said flange means abutting against the end of said rafter; and

an end fitting having a pair of flanges snugly embracing the web of said first section and having other sidewardly extending flanges defining at least one receptacle into which a stringer is received.

2. The structure defined in claim 1 wherein the upper surface of the flange means on said second member is substantially coplanar with the upper surface of said rafter whereby to provide a substantially smooth surface for the mounting of an awning cover sheet thereon.

3. The structure defined in claim 1 wherein said end fitting has three sidewardly extending flanges which are arranged perpendicularly to each other to provide a first receptacle for a stringer and at least two sidewardly extending flanges are arranged perpendicularly to each other and spaced from said previously named three flanges to provide a second receptacle for a second stringer.

4. An awning construction comprising:

rafter means having a curved lower end;

an end fitting secured to said rafter means at said lower end thereof;

said end fitting having means defining a pair of vertically spaced receptacles;

a pair of elongated stringers disposed in said receptacles and extending transverse to said rafter means;

flexible awning cover sheet means mounted on the upper surface of said rafter means;

a flexible style panel disposed in front of said end fitting and interengaging means on said awning cover sheet means and said style panel for releasably securing same together;

means securing said style panel to said stringers;

wherein said receptacles are substantially rectangular and said stringers are rectangular tubes, the front surface of the upper one of said tubes being inclined at a substantial angle to the vertical and said front surfaces lie essentially tangent to a continuation of the curve of said rafter means and the front surface of the lower one of said tubes being substantially vertically disposed.

5. An awning construction according to claim 4 wherein said style panel has an upstanding flange at the upper end thereof and has a reversely curved portion close to but spaced from said upper end and defining a groove opening toward its lower end, said flange and said reversely curved portion defining a channel having a web disposed against and secured to the front surface of said upper stringer;

the awning sheet means having a downturned portion at its lower end with a flange extending therefrom into said groove.

6. An awning construction according to claim 5 wherein said awning sheet means is comprised of a plurality of substantially identical, interlocked and overlapped awning sheets arranged in series along said rafter means, the upper ends of said awning sheets being shaped the same as the upper end of said style panel and the lower ends of said awning sheets are substantially identical.

7. An awning construction according to claim 6 including a decorative fringe overlapped with the lower end of said style panel and means securing said fringe and said style panel to said lower stringer.

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