This invention relates to awnings of the rigid type employed as a canopy over windows to serve as a sun shade. The primary object of the invention is to provide a knock-down awning consisting of few pieces which may be readily assembled with the employment of simple tools and without the exercise of special skill and whereby the awning may be put together and mounted by the ordinary householder, thus obviating the necessity of employment of skilled labor for such purpose.

Another object is to provide an awning in which the parts thereof when unassembled are subject to being packaged in a shallow flat rectangular container so as to facilitate transportation and storage of the awning in its knock-down condition.

Another object is to provide an awning which, aside from its supporting structure is translucent so that while serving as a sun-shade in eliminating the glare of the sun will admit soft subdued light, thus avoiding darkening of rooms to the windows of which the awning is applied.

Another object is to provide an awning which when assembled will be characterized by the embodiment of a flexible or pliable translucent glass-like panel which extends on a reverse or ogee curvature from its inner to its outer end, and in which such curvature is attained by fastening the side margins of the panel to rigid longitudinally contoured side rails to which the panel is caused to conform by bending a normally flat panel to follow the curvatures of the side rails and securely clamping the side margins of the panel and the side rails together.

A further object is to provide a construction in the awning whereby its mounting on a supporting structure will be facilitated.

With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, the invention resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed, and illustrated by way of example in the accompanying drawing, in which:

Fig. 1 is a perspective view of the awning showing it as assembled and applied:

Fig. 2 is a view in side elevation of the awning structure shown in Fig. 1:

Fig. 3 is a perspective view depicting the parts of the awning as unassembled:

Fig. 4 is an isometric view of the upper corner portion of the assembled and mounted awning indicated by the arrow in Fig. 1:

Fig. 5 is a detail in section taken on the line 5–5 of Fig. 2; and

Fig. 6 is a detail in section taken on the line 6–6 of Fig. 1.

In carrying out the invention a flat rectangular pliable sheet or panel A of non-breakable fibrous glass is employed to form the canopy. The panel is contoured in effecting assemblage of the awning to have a reverse or ogee curvature leading downwardly from its upper margin so as to extend on a concave curvature from its inner end a portion of its length and to have a convex curvature leading to its outer end.

As a means for thus connecting the panel A and for holding it in its flexed shape, a pair of rigid complementary side rails 7 and 8 are provided which rails are formed of a length of bar stock metal curved longitudinally to provide rigid rails having the desired reverse curve or ogee longitudinal contour. The side margins of the panel A are applied to and rigidly affixed to the rails 7–8 by conventional stoved bolts 9 which are passed through registering openings 10 and 11 in the panel A and rails 7–8 respectively; the bolts 9 being equipped with the usual clamping nuts 12.

The fibrous glass panel A is reinforced against sagging by means of a stiff metallic angle bar 14 positioned to overlie the lower marginal portion or end edge of the panel A and fastened thereto by the bolt and nut assembly 9–12. The reinforcing bar 14 is co-extensive with the lower margin of the panel A and is formed with apertures 15 adjacent each end thereof arranged to register with the end apertures 10 and 11 of the panel A and brackets 7–8.

In assembling the panel A on the guide rails 7–8 one end of one of the side margins of the panel is initially fastened to an end of one of the side rails by the nut and bolt assembly whereupon the corresponding end of the other margin of the panel is likewise fastened by the bolt assembly to the associated end of the other side rail.

The panel A is then progressively flexed and affixed successively at suitably spaced intervals to the side rails 7 and 8 then positioned along the underside of the side margins of the panel. This flexing of the panel A being pliable the latter will be caused to conform to the longitudinally curved contour of the side rails 7–8 thereby producing an awning or canopy-top having the desired ogee contour. In thus mounting the panel A on the side rails the reinforcing end rail 14 is applied when the lower margin of the panel A is fastened to the side rails 7–8 whereby the bolt assembly 9–12 employed at the ends of the reinforcing rail is utilized in connecting the lower ends of the side rails and the ends of the reinforcing rail in clamping engagement on opposite sides of the lower corners of the panel A.

Each of the upper corners of the panel A is formed with a rectangular aperture or space 16 exposing upper end portion 17 of the adjacent side rail 7–8, which end portion is formed with a hole 18 to receive the shank of a bolt or screw 19 whereby the upper ends of the side rails are fastened to the supporting structure B such as a window frame, trim or wall of a building.

The upper margin of the panel A is fitted with a channelled resilient sealing strip 20 formed of rubber, rubber composition or the like, which strip is positioned astride the upper margin of the panel A and extends between the adjacent margins of the side rails 7–8. This strip serves as a weather-strip when the awning is applied, in that it closes a gap between the upper end of the panel and the adjacent supporting wall.

A pair of brackets C are provided for supporting the awning panel assembly in an outwardly and downwardly inclined position relative to the structure B to which the upper ends of the side rails 7–8 are fastened. The brackets C may be of any suitable construction but are preferably formed of wrought iron bars; each of the brackets comprising an intermediate straight shank portion 21 of suitable length and volute end portions 22 and 23 of which the end portion 22 is engaged by one of the bolts 9–12 at the lower portion of the side margins of the awning, while the other end portion is adapted to bear against the structure B and to be fastened thereto as by a bolt or screw 24. The
brackets C are preferably of such length that when applied they will extend upwardly and outwardly from the structure B at an angle of 45 degrees or thereabouts. It will be seen from the foregoing that the structure is capable of being marketed in its knock-down condition with the several pieces separated as illustrated in Fig. 3, and that the separated pieces may be readily packaged in a narrow flat container and thus take up little space as when stored or during shipment. It will also be manifest that because of the recited construction the awning structure may be readily assembled with the aid of simple tools such as an ordinary screw driver, and a nut wrench, since the only tools required in effecting the assemblage are those employed in applying the conventional stove bolt fasteners.

A feature of the invention not apparent from the foregoing is the fact that the fiber glass panel A is characterized by possessing the natural property of distorting laterally when being curved longitudinally in attaching it at its side margins to the side rails 7—8. This property of distortion of the fiber glass distinguishes it from sheet metal and pliable sheet material in general. This distortion is manifested by inward bowing of the upper marginal portion of the panel and outward bowing of the lower marginal portion thereof, resulting in unwanted deformation of the panel.

The end rail 14 serves as a means for remediying the deformation of the lower margin of the panel since the upper web a of the rail 14 in overlying the outwardly bowed margin presses the bow downward and straightens it in alignment with the end rail. This downward pressing of the bowed margin of the panel, places this portion under tension so that it will bear snugly against the underside of the web a thus obviating the need of fastenings intermediate the end fastenings 9—12 and thereby facilitating assemblage of the awning.

The downward bow of the upper marginal portion of the panel A is compensated for on mounting the upper ends of the side rails 7—7 on the wall B since the latter forms an abutment against which the sealing strip 20 on the upper edge of the panel seats throughout its length thereby aligning such edge with the surface of the wall B. When this occurs the upper edge of the panel in being pressed against the wall B will be placed under a state of tension such as to exert pressure along the length of the sealing strip to hold the latter snugly against the wall B under compression thus forming a tight joint and obviating the use of fastenings between the upper margin of the panel A and the wall B and thereby facilitating installation of the awning. By reason of this initial bowing of the upper margin of the panel and the utilization of the tension afforded by straightening the bow to seal the joint afforded by the sealing strip 20 it is only necessary to affix the awning to a wall by four connections comprising the two bolts or screws applied at the upper ends of the side rails 7—8 and the two bolts or screws applied to the lower ends of the brackets B.

By the employment of fiber glass in forming the panel A, several desirable and important advantages are attained; to wit:

1. The awning is translucent, thereby allowing the passage of light therethrough while screening out intense rays;
2. The panel is non-corrosive and will withstand exposure to weather indefinitely without the need of surface coatings;
3. The panel is not subject to breakage or denting by ordinary missiles to which awnings may be subjected;
4. The awning is heat and cold resistant, impervious to moisture, and insect proof; and
5. The panel is sound absorptive so as not to develop annoying sounds when subjected to rain.

While a specific embodiment of the invention is herein shown and described, it is not limited to the exact details of construction set forth, and the invention embraces such changes, modifications and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

I claim:

1. A knock-down awning comprising a single normally flat rectangular pliable fiber glass panel having straight flat sides and end margins, a pair of flat rigid side rails contours longitudinally on a reverse curve coextensively underlying the opposed side margins of said panel, a series of bolts detachably connecting said rails to said panel at spaced intervals along the lengths thereof whereby said panel is flexed longitudinally to conform to the curvatures of said rails, said rails having bolt receiving apertures at each end thereof, a rigid end rail of angle cross section abutting one end margin of said panel and overlying and seating on the upper face of said panel along said margin, a bolt extending through the bolt receiving aperture at one end of each of said side rails detachably securing the ends of said angle rail to said side rails, means engageable with the bolt holes at the other ends of said side rails for attaching the latter to a support, and a pair of rigid bracing brackets having outer ends abutting the undersides of said side rails and engaged with bolts connecting said rails and panel, said brackets having inner ends adapted to abut and be secured to a supporting wall.

2. The structure called for in claim 1 together with a resilient channelled sealing strip positioned astride and abutting the edge and opposed faces of the other margin of said panel and extending along the length thereof between said side rails.

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