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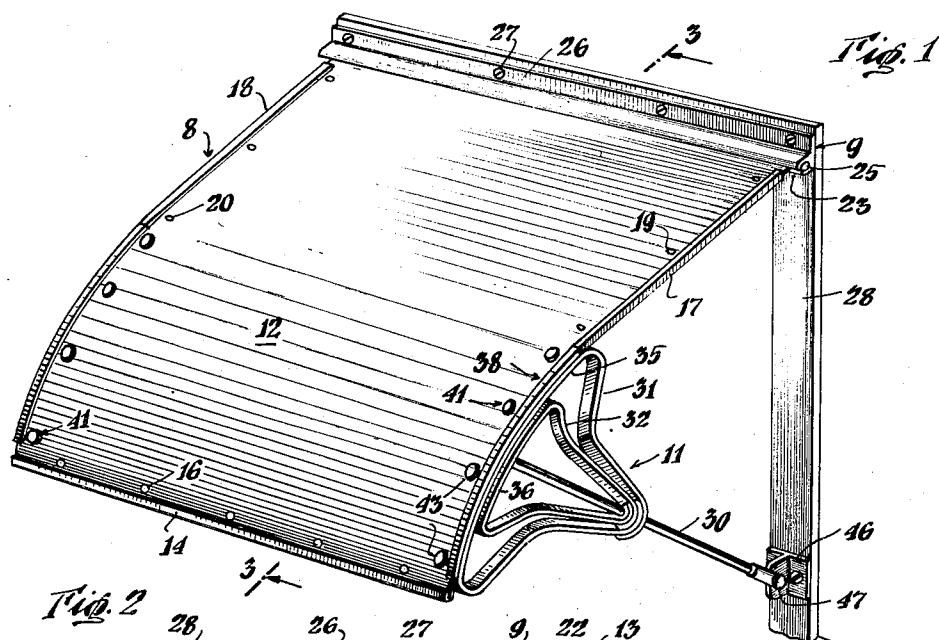
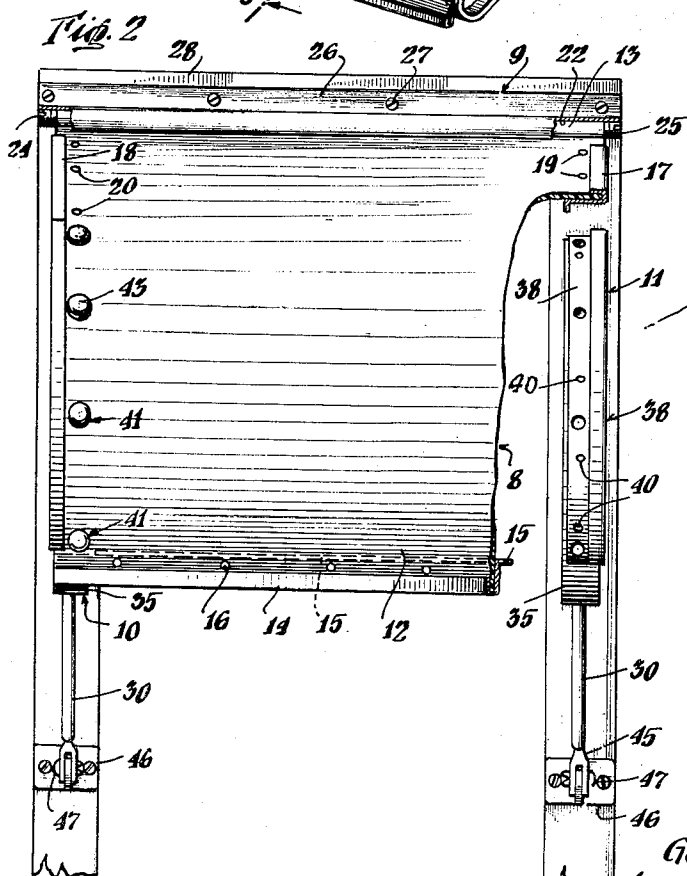
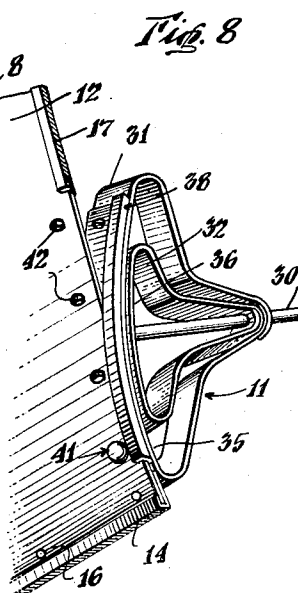
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2,778,071

AWNINGS

Filed April 27, 1954

2 Sheets-Sheet 1



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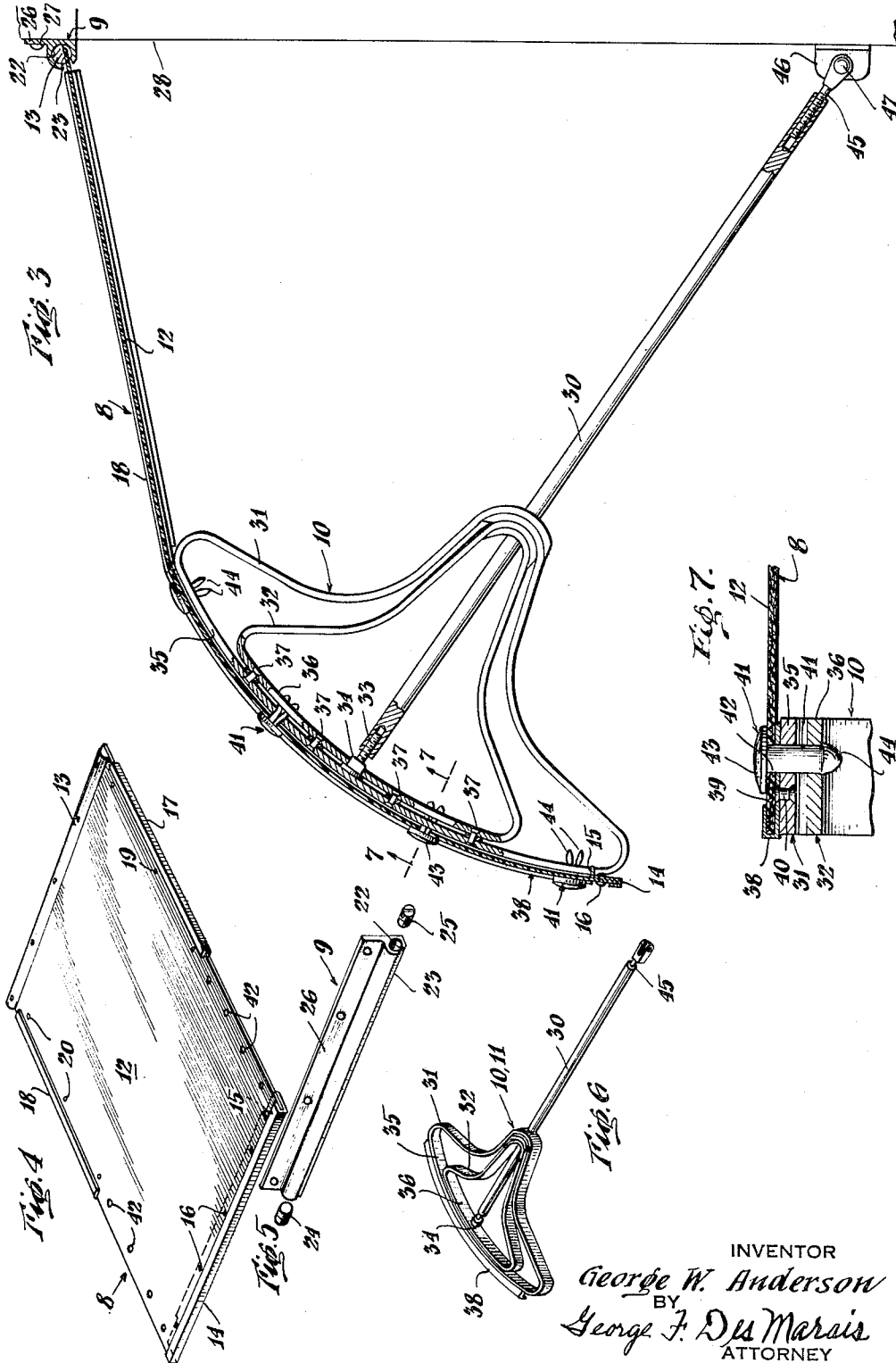
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AWNINGS

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2 Claims. (Cl. 20—57.5)

This invention relates to awning structures and has as its primary object the providing of an awning structure which is maintained in a high state of rigidity by the potential energy of a curved resilient sheet constrained in curvature between side frames by which the sheet is supported as a cover or canopy of the awning structure. The acting forces are generated as the result of curving a resilient sheet of material, preferably a normally flat resin sheet reinforced with fibers, and by holding the sheet in curved form and so availing of the stress thereby induced in the sheet to provide powerful restraint against distortion or twisting of the entire awning structure. Owing to the forces prevailing, there is obtained a relatively light awning structure having three-dimensional stability throughout the height and depth of the cover. Another object of the invention is to provide an awning structure which is mechanically simple to assemble and does not require special skill to mount or demount.

The side frames have members engaging the surfaces of the cover along portions of its side edges extending rearwardly from adjacent to its front or outboard edge. These members are curved downwardly toward the outboard edge in a direction substantially normal to the horizontal, and hold the cover in its stressed condition of curvature. In the embodiment of the invention illustrated in the drawing, the curved member of each frame is in the form of a channel which provides a groove in which a side edge of the sheet is entered as the sheet is progressively flexed to the curvature of the channel. The sheet is secured in curvature by the channel member and its edge is locked in the channel member by removable studs of a type which requires only that they be pressed into position to secure a locking action. The studs are self-expanding as they protrude through corresponding holes in the sheet and in the curved member of a frame and provide a vibration-proof attachment which is susceptible to instant release when it is desired to demount the sheet from a frame. A bead along the inboard edge of the sheet of plastic is engaged in a channel member by which the inboard edge of the sheet is held in place against a wall structure of a building, and means are provided for fastening the side frames to the wall structure.

The awning structure is such as to enable the use of a relatively thin sheet of plastic material. Desirable degrees of translucence and color for the awning cover are available in the nature of the material. Owing to the great strength and resilience of the sheet, it readily returns to its original flat condition after having been rolled in curvature. This natural tendency facilitates storage of the sheet upon its disassembly from the awning structure.

Other objects and advantages of the invention will be set forth in more detail in the following description and in the accompanying drawing, in which:

Fig. 1 is a perspective view of one embodiment of the invention shown supported from a wall structure;

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Fig. 2 is a front view of the awning shown in Fig. 1 with parts broken away;

Fig. 3 is a section on line 3—3 of Fig. 1 and showing parts of the side frame broken away;

Fig. 4 illustrates the cover of the awning when disassociated from the side frames;

Fig. 5 illustrates a member by which the inboard edge of the cover is attached to a side structure;

Fig. 6 illustrates one of two similar side frames;

Fig. 7 is an enlarged section on line 7—7 of Fig. 3; and

Fig. 8 illustrates the first step of assembling the cover and a side frame.

The awning comprises four principal parts, a cover 8, a moulding 9, and a pair of side frames 10 and 11.

As best shown in Fig. 4, the cover 8 comprises a sheet of reinforced plastic 12 which is normally flat and sufficiently thin to be subject to flexure when subjected to pressure. The plastic should be a resin in sheet form, reinforced with fibers, and capable of being rolled from a normally flat condition and of restoring itself after relief of restraining force. It should preferably be a thermosetting polyester resin having characteristics similar to "Vibrin," a product of the Naugatuck Chemical Company, but any other suitable resins may be employed, as, for example, "Laminac," a product of the American Cyanamid Company, and "Marco," a product of the Celanese Corporation of America. I have obtained satisfactory results with a reinforced polyester resin ("Vibrin") originally moulded as a flat sheet about one-sixteenth of an inch thick, reinforced with glass fibers in felted arrangement. Any other suitable fibers, such as Orlon or Dacron, may be employed as reinforcement in the plastic.

The inboard edge of the sheet 12 has fastened to it a bead 13 which may consist of a strip of wood which has been treated to be resistant to the weather. This bead is attached in any suitable manner, as by rivets passing through the sheet and the bead. The outboard edge of the sheet 12 is enclosed within a channel member 14 which has a flange 15 extending at right angles to the plane of the sheet. This channel member may be made of any suitable material such as stainless steel or tempered aluminum and is attached to the sheet 12 by a plurality of rivets 16.

The side members 17 and 18 are structurally similar to the channel member 14 and are attached to the side edges of the reinforced plastic sheet by rivets 19 and 20, as shown in Fig. 4. The channel members 14, 17 and 18 are straight and sufficiently stiff to resist the tendency of the sheet to deflect when it is curved by the side frames. They also protect the enclosed edges of the sheet.

The metal moulding 9 by which the inboard edge of the sheet is held fast to a building structure is formed in such a manner as to provide a channel 22 for receiving and retaining the bead 13. This channel has a longitudinal slot 23 through which the sheet extends. The ends of the channel are closed by threaded plugs 24 and 25. At least one of these plugs is removable for permitting the entry and removal of the bead and the inboard edge of the sheet endwise of the channel. The moulding has a flange 26 which is perforated for receiving the screws 27 by which the moulding is fastened against the frame 28 of a window or other opening in a side structure.

The opposite side frames 10 and 11 are mirror likenesses of one another and are preferably made of suitable light metals. Each of the side frames includes a rod 30 and a head consisting of an open-work of bent bars 31 and 32 supported by the rod 30. The rod 30 passes through openings in the lower portions of the bent bars and is engaged to the bent bar 32 by a stud 33 and its enlarged head 34. The head portion 35 of the bar

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31 is curved to provide a convex surface by which the curvature of the sheet opposite to the head of the frame is determined. The head portion 36 of the bent bar 32 is fastened to the head portion 35 of the bent bar 31 by any suitable means, such as the rivets 37.

The moulding 38, as best seen in Fig. 7, is a channel member which provides a channel or groove 39 into which the side edge of the plastic sheet fits. The moulding 38 is fastened to the head portion 35 of the bent bar 31 by rivets 40. The plastic sheet is held within the groove of the moulding 38 by means of the removable studs 41 which pass through openings 42 in the sheet and through aligned openings in the moulding 38 and in the bars 31 and 32. These studs are preferably of a type having a thumb head 43 and expendable legs 44 which frictionally engage the edges of the openings.

A threaded clevis 45 is screwed into the lower end of the rod 30 and is attached to a bracket 46 by a removable stud 47.

As supplied to the user, the parts are in knocked-down condition. The moulding 9 and the brackets 46 are attached to the wall structure of a building in proper relation to each other. The side edge of the cover at its outboard edge is then engaged in the groove 39 of the moulding 38, as generally illustrated in Fig. 8, and the first of the studs 41 is pressed into position. This requires a slight curving of the plastic sheet adjacent its outboard edge and after the first stud 41 is placed, the sheet is additionally curved and moved edgewise into the groove 39 progressively along the head of the frame as the curvature of the sheet is conformed to the convex surface of the frame. The top flange of the moulding 38 maintains the plastic sheet stressed in curvature and the remaining studs 41 are inserted in the holes 42 as these holes are brought into registry with corresponding holes in the frames.

When both frames have been attached to the plastic sheet, the awning is ready for mounting. The bead 13 and the inboard edge of the plastic sheet is moved endwise into the channel 22 of the moulding 9 and the plug 25 is positioned for holding the sheet against endwise movement in the moulding. There then remains to be done only the attachment of the clevises 45 to the brackets 46 by inserting the studs 47 therethrough.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the specific description herein be deemed illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the particular showing herein to indicate the scope of this invention.

What is claimed is:

1. In an awning supportable from a wall structure, a cover comprising a resilient sheet of plastic material inherently capable of restoring itself to a flat condition after being curved, a bead attached to said sheet at its

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inboard edge, a channel member enclosing the outboard edge of said sheet and having a flange extending outwardly from said sheet, a moulding having a longitudinal channel for retaining said bead and a slot for the passage of said sheet, means carried by said moulding and engaging the ends of said bead for locking said bead within said channel, means for attaching said moulding to a wall structure, a frame at each side edge of said cover, each frame having a convex surface underlying the under surface of said sheet at a side edge thereof and a flange parallel to said convex surface and engaging the upper surface of said sheet and thereby restraining the portion of said sheet between said frames in a state of curvature corresponding to the arc of the convex surfaces of said frames, means for locking the side edges of said sheet between the flanges and the convex surfaces of said frames, said locking means comprising removable studs engaged in holes in said sheet and in said frames, and means for attaching said frames to said wall structure.

2. In an awning supportable from a wall structure, a cover comprising a relatively stiff though flexible sheet of normally flat plastic material, a bead attached to said sheet along its inboard edge, a straight stiff member attached to said sheet along its outboard edge, means for securing the inboard edge of said cover to a side structure, said means comprising a moulding having a longitudinal channel for receiving said bead, said channel having a slot less wide than the thickness of said bead whereby said bead is insertable in and removable from said channel only endwise, means for preventing movement of the bead lengthwise of said moulding, a frame at each side edge of said cover, each frame having a convex surface underlying the under surface of said sheet at a side edge thereof and a flange extending above said convex surface and overlying the upper surface of said sheet and thereby restraining said sheet in a state of curvature corresponding to the arc of the convex surfaces of said frames, means for preventing relative lateral movement between said cover and said frames, said last-named means comprising expandable locking studs engaged in holes in said sheet and in said frames, means for preventing deflection of said sheet intermediate said moulding and said frames, said last-named means comprising metal strips fastened to the side edges of said sheet, and means for attaching said frames to the wall structure.

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