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J. C. McCORMACK ET AL
METAL AWNING OR LIKE STRUCTURE

2,644,207

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2 Sheets-Sheet 1

FIG. 1.

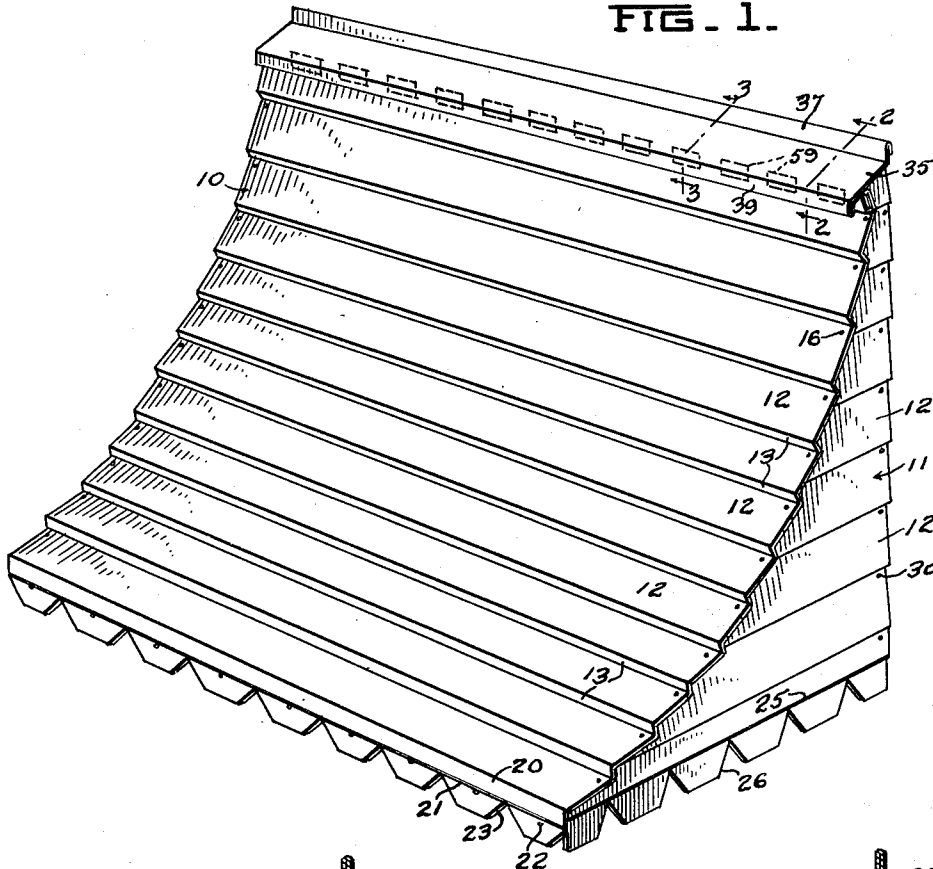


FIG. 2.

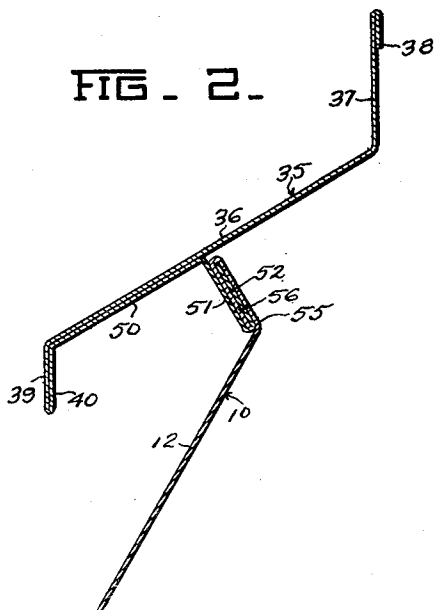
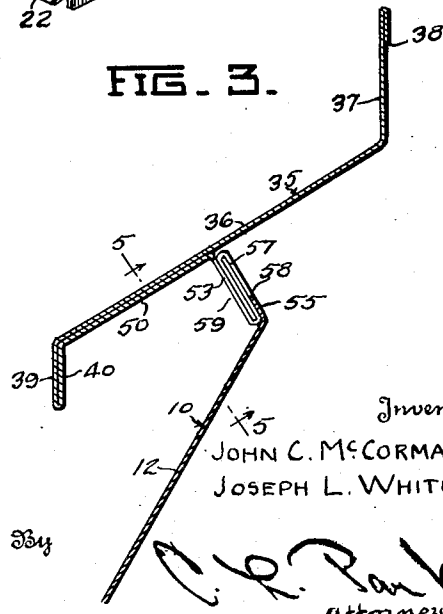


FIG. 3.



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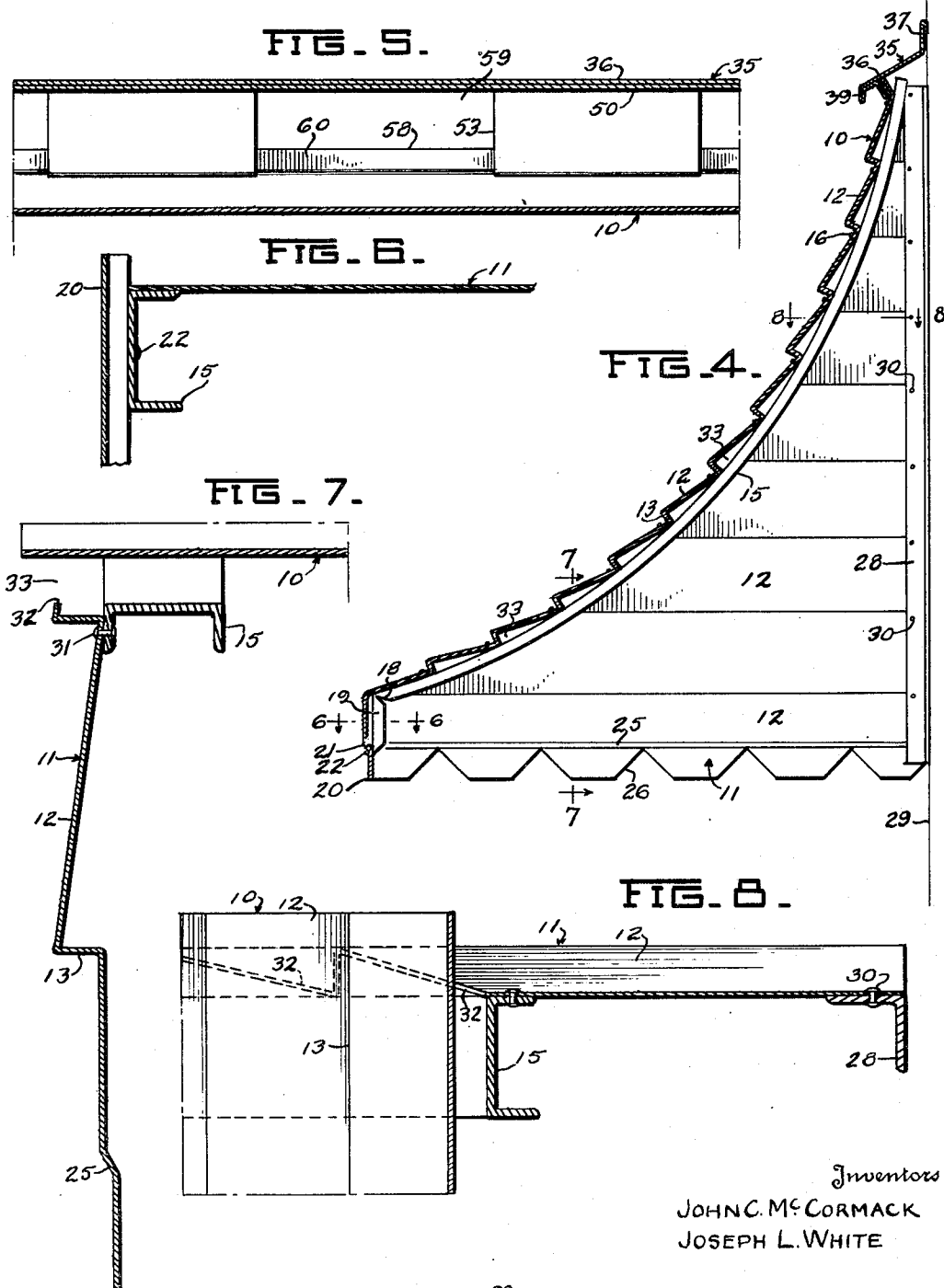
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METAL AWNING OR LIKE STRUCTURE

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4 Claims. (Cl. 20—57.5)

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This invention relates to metal awnings and similar structures.

Metal awnings are coming into quite general use to replace canvas awnings, canopies, etc. Metal awnings are advantageous over prior types of awnings and similar structures because of their attractive appearance, permanence, and low up-keep costs. However, most metal awnings and canopies available on the market at the present time are relatively expensive to build and assemble, due to the substantial number of parts involved, which require the performance of a number of stamping operations and numerous labor operations in the assembly of the parts. The surface structures themselves, for example the roof portion of an awning or canopy, and the side walls of such structures, usually are fabricated from a substantial number of parts in order to provide for proper ventilation of the interior of the awning or canopy.

An important object of the present invention is to provide a simplified and particularly attractive type of awning or like structure wherein each surface portion thereof, specifically the roof portion and side walls, is formed of a single sheet of substantially imperforate material, thus rendering the cost of manufacture of the structure relatively economical.

A further object is to provide such a structure wherein the roof and side walls are similarly formed from solid sheet material and wherein the wall structures thus formed are capable of being bent in one direction into convex or concave form, depending upon the type of installation desired.

A further object is to provide such a structure wherein the wall or sheet elements are crimped in the same manner from flat sheet material regardless of whether the wall element thus formed is to be relatively flat, or is to be curved convexly or concavely.

A further object is to provide an awning or canopy structure of the type referred to wherein the interior of the structure is adequately ventilated in a novel manner to prevent the accumulation of heated air within the structure while substantially completely preventing the entrance of rain thereto.

A further object is to provide a structure of the character discussed above wherein the formation of the sheet to form the roof unit of an awning or canopy provides the resultant sheet with substantial beam strength from side to side, thus permitting an awning or the like of substantial width to be manufactured and installed without the use of roof-supporting means between the sides of the structure.

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Other objects and advantages in the invention will become apparent during the course of the following description.

In this showing—

5 Figure 1 is a perspective view of an awning constructed in accordance with the present invention.

10 Figure 2 is an enlarged fragmentary detail sectional view taken substantially on line 2—2 of Figure 1.

Figure 3 is a similar view taken substantially on line 3—3 of Figure 1.

Figure 4 is a transverse vertical sectional view through the awning.

15 Figure 5 is a fragmentary sectional view on line 5—5 of Figure 3.

Figure 6 is a similar view on line 6—6 of Figure 4.

20 Figure 7 is a similar view on line 7—7 of Figure 4; and

Figure 8 is a similar view on line 8—8 of Figure 4.

25 Referring generally to Figure 1, it will be noted that the awning or like structure embodying the present invention comprises a roof sheet 10 and side wall sheets 11, these sheets being rolled from flat sheet material, for example aluminum, to form steps 12 connected to each other by what might be termed risers 13. In forming the side walls 11, the stepped sheet thus formed may be made relatively flat in the sense that the lower edges of the steps 12 lie in a common plane. The shaping of the roof sheet 10 depends upon the particular installation and on the particular design desired for such installation. For example, 30 the sheet may be bent transversely of the steps as shown in Figure 1 to form a concave roof sheet which, together with the stepped formation of the roof sheet, forms an awning which presents a particularly attractive appearance when installed on a building. It will be obvious that the roof sheet may partake of any desired curve within reasonable limits, whether such curve be concave or convex.

35 As stated, the roof sheet in the present case has been shown as having its outer surface concave. To support the roof in the desired curved form, structural elements, preferably in the form of channels 15 (Figures 4, 6, and 8) are employed. These channels have the greater portions of their lengths bent around a suitable form to provide the desired curvature for a given installation, and the roof sheet is then laid up on the channels 15 40 and preferably riveted thereto as at 16 (Figure 1), the rivets passing through the upper portions of

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the steps 12 where such steps substantially directly contact with the channels 15 as shown in Figure 4. Thus the roof sheet will be caused to partake of a predetermined curvature in accordance with the formation of the channels 15.

Adjacent its lower end, the channel 15 is notched as at 18 (Figure 4) to permit it to be bent downwardly as at 19. Such end 19 of each channel forms a support for securing in position a skirt 20 formed by bending the forward edge of the roof sheet downwardly. For the purpose of imparting decoration and rigidity, the skirt 20 is preferably angularly bent as at 21 above the lower limits of the channel ends 19 to which the skirts may be riveted as at 22. To further enhance its ornamental appearance, the skirt 20 is preferably notched at spaced intervals throughout its length as at 23.

Adjacent its lower edge, each side wall 11 is preferably bent somewhat as at 25, in a manner similar to the bending of the skirt 20 as at 21, to increase the rigidity of the side sheets and to increase the attractiveness of their appearance. The side sheets are also preferably notched as at 26 to further improve the ornamental appearance thereof. At the back edge of each side sheet 11 is provided a vertical structural supporting element 28 (Figures 4 and 8) preferably in the form of an angle iron adapted to be bolted or otherwise suitably secured to the supporting surface 29, usually the outer face of the wall of the building. Adjacent its lower point, each step of each side wall is preferably riveted as at 30 to the adjacent supporting channel 28, and at their opposite ends, the steps are riveted to the channels 15 as at 31. It will be noted that no horizontal structural elements are employed with the construction, the stepped formation of the side walls 11 providing such walls with substantial horizontal beam strength so as not to require the use of structural elements. It incidentally may be noted that the roof sheet 10 requires no structural elements except the end channels 15 which determine the curvature of the roof, the bending of the metal to form the steps of the roof imparting a high degree of horizontal beam strength thereto.

In forming the side walls 11, the finished wall is cut on a curved line corresponding to the curvature of the channels 15 to provide upper side wall edges 32, as shown in Figure 7, and since only the low points of the steps 12 of the roof contact with the channels 15, each step of the roof at opposite sides thereof provides within the angle of the step a ventilating opening 33. These openings permit the escape of warm air from the sides of the awning, thus greatly assisting in ventilating it and preventing the accumulation of heated masses of air within the awning.

A water shed in the form of a flashing plate 35 is arranged at the top of the awning. The formation of the water shed and its connection to the roof sheet 10 are shown in detail in Figures 2 and 3 of the drawings. The flashing 35 has its main body portion 36 inclined from the horizontal as shown in Figures 2 and 3, the upper edge portion of the flashing extending vertically as at 37 and being bent back upon itself as at 38 to provide the flange portion 37 with additional strength. The portion 37 is secured in any suitable manner, for example by screws or the like, to the supporting structure 29.

At the lower end of the portion 36 of the water shed, the metal thereof extends downwardly vertically as at 39, and then is bent upwardly as at

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40 against the portion 39, and then upwardly as at 50 to provide a sheet portion underlying the inclined flashing 36. At the upper end of the portion 50, the flashing sheet is bent downwardly and inwardly at an angle as at 51, substantially perpendicular to the portion 50, and the extremity of the sheet is bent back upon itself as at 52 to form a flange spaced from the sheet portion 51. The flange 52 and sheet portion 51 are notched as at 53 from the extremity of the flange 52 to a point adjacent the sheet portion 50. These notches are spaced apart and cooperate with notches formed in the roof sheet 10 in a manner to be described to form ventilating openings.

At the upper end of the uppermost step of the roof, the sheet forming the roof is bent upwardly and outwardly as at 55, then downwardly and inwardly to form a flange 56, both of these elements being parallel to the flashing sheet portions 51 and 52 to be interlocked therewith in the finished structure as shown in Figure 2. The flange initially formed by the roof sheet portions 55 and 56 is notched as at 57 from the extremity of the flange 56 to a point 58 spaced above the body of the roof sheet. The notches 57 thus formed coincide with the notches 53 to form ventilating openings indicated by the numeral 59 in Figures 1, 3, and 5. The lead line of the numeral 59 in Figure 3 has been terminated adjacent the opening which it represents to avoid confusing the numeral indicating the ventilating opening with the numerals indicating the notches in the roof and flashing sheets. It will be apparent that each opening 59 is in direct communication with the interior of the awning adjacent the top thereof to permit the flow of heated air from the interior of the awning. The termination of the notches 57 at the points 58 is for the purpose of providing roof sheet portions 60 as clearly shown in Figure 5 to form rain stops to prevent a driving rain from entering the interior of the awning.

Operation

The operation of the awning will be obvious from the foregoing description. The stepped formation of the side walls provides such walls with lateral beam strength to eliminate the necessity for the use of horizontal structural members to add rigidity to such walls. The formation of the roof sheet in the stepped arrangement shown not only provides the roof with substantial beam strength to eliminate the necessity for structural supporting means between the side walls, but also permits the roof sheet to be curved to any desired depending upon the installation or the particular desires of the purchaser. For example, in the making of window awnings, the concave curvature as illustrated in Figures 1 and 4 is desirable to eliminate any bulky appearance in the awning. If the structure is to be embodied in a canopy, it may be desired to curve the roof sheet 10 in a convex manner, particularly where two sides are to extend from a crown sheet corresponding to the doubling of the water shed 35. The structure of the roof sheet in such case will be initially exactly the same as that illustrated, the only difference being in the bending of the sheets transversely of the steps into the desired curved formation.

In assembling the structure, each side wall 11 is riveted or otherwise secured to its structural members 15 and 28. For windows of different sizes in a given building, all of the side walls may be identical and assembled in the same manner.

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The only difference in the roof sheets and flashings will be in the lengths of these elements as determined by the window sizes. It is not necessary to preform the roof sheet to a given curvature, since such curvature will be determined by the channels 15. A roof sheet is cut off to proper length and formed at its upper end into the portions 55 and 56 which are notched as at 57, whereupon the water shed sheet 35 is notched, crimped, and rolled to rigidly connect it to the upper edge of the roof sheet. This may be done while the flashing sections 36 and 39 are flat, whereupon the section 36 may be bent down over the section 50 to form the completed assembly of elements. The roof sheet is then assembled with respect to the side walls by riveting it or similarly securing the end portions of the roof sheet to the channels 15 and by securing the skirt 20 to the channel ends 19 as at 22.

In Figure 7 it will be noted that the roof sheet preferably projects somewhat beyond the high points of the steps 12 of the side walls 11. When the side wall sheets are cut along the line 32 corresponding to the curvature of the upper outer edge of the channel 15, therefore, all portions of the edges 32 of the side walls will lie inwardly of the side edges of the roof, thus substantially preventing the entrance of water into the awning through the ventilating openings 33.

Particular attention is also invited to the assembly and shaping of the roof sheet 10 and flashing sheet 35. The sheet portions 39 and 40 form a depending protecting lip to minimize the amount of rain which will reach the plane of the water stop 58, which is spaced a substantial distance from the lip formed by the portions 39 and 40. Any rain finding its way as far back as the crimped connection between the roof sheet and flashing sheet 35 necessarily will lie on the sloping portion of the roof sheet, and the rain stop 60 acts to prevent a driving wind from forcing rain on the roof sheet from passing through the ventilating openings 59. These openings are of substantial size and, together with the openings 33, adequately ventilate the interior of the awning without permitting the entrance of water into the awning.

The main sheet elements of the structure, namely, the roof sheet and side wall sheets, are substantially imperforate and are individually unitary, thus simplifying the awning structure and eliminating substantial labor in assembling separate elements. The stepped formation of the side walls and roof in a horizontal direction adds substantial beam strength to the roof and side wall sheets transversely thereof. Moreover, the stepped formation greatly enhances the appearance of the awning or canopy both directly and indirectly by permitting the elimination of any bulky appearance in the awning through the curving of the roof sheet. The stepping of the roof sheet is further advantageous in that it permits ordinary flat sheet stock to be crimped in the same machine for use as awning and canopy sheets regardless of the curvature thereof.

In its preferred construction, the awning preferably includes the end walls 11 for the purpose of improving the appearance of the awning, preventing the entrance of water therein and for forming a rigid connection between the roof sheet and the structural elements 28. If desired, however, the end wall sheets may be eliminated, in which case the lower end of the roof sheet will be connected to the lower end of the structural element 28 to form spacing means. This may be

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done merely by employing the lower portion of each side wall, for example up to the lower edge of the first flat step 12.

It will be obvious that while the present invention has been illustrated as an awning for a window or the like, the invention is not limited to such specific use, but may be embodied in other analogous structures such as terrace roofs, side walk canopies, etc. Where the term "awning" is used in the claims, therefore, it is to be understood that this word is used in its generic and not in its limited sense.

We claim:

1. An awning comprising a roof sheet, structural supports horizontally spaced apart a substantial distance and contacting with said roof sheet, said roof sheet being bent horizontally at spaced points from its normal shape to provide the sheet with substantial beam strength transversely thereof and being free of support between said structural supports, said roof sheet having an inner end adapted to be arranged adjacent a supporting structure, and a flashing sheet arranged over and projecting beyond the inner end of said roof sheet, said flashing sheet and said roof sheet having interconnecting portions fixing them to each other and provided with ventilating openings.

2. An awning comprising a roof sheet, a structural element beneath said sheet adjacent each end thereof and secured thereto, said roof sheet being formed in horizontal steps to provide it with a substantial degree of beam strength transversely of the sheet, said roof sheet having a lower outer end and an upper inner end, and a flashing sheet arranged over such inner end, said flashing sheet and the inner end of said roof sheet having interconnecting portions fixing them together and provided with ventilating openings, said flashing sheet extending over the inner end of said roof sheet substantially beyond said ventilating openings.

3. An awning comprising a metal sheet inclined from the horizontal to provide an upper inner edge and a lower outer edge, said sheet being bent along horizontal lines to form steps, all of which slope downwardly from the horizontal away from the inner edge of said roof sheet, a pair of structural roof supports beneath the side edges of said roof sheet and secured thereto at the deeper portions of certain of said steps, said steps imparting a substantial degree of horizontal rigidity to said roof sheet and the roof sheet possessing a substantial degree of flexibility transversely of said steps to adapt it to assume the shape of said supports, side walls for said awning having their upper edges terminating adjacent the deeper portions of said steps whereby the spaces within said steps are open to the outside to ventilate the interior of the awning, a flashing sheet arranged above the inner edge of said roof sheet, said flashing sheet and said roof sheet having inter-connected portions securing them to each other and provided with ventilating openings, said flashing sheet extending substantially beyond said ventilating openings and said roof sheet being provided with portions extending upwardly to define the bottoms of said ventilating openings and forming rain stops.

4. An awning comprising a metal sheet inclined from the horizontal to provide an upper inner edge and a lower outer edge, said sheet being bent along horizontal lines to form steps, all of which slope downwardly from the hori-

zontal away from the inner edge of said roof sheet, a pair of structural roof supports beneath the side edges of said roof sheet and secured thereto at the deeper portions of certain of said steps, said steps imparting a substantial degree of horizontal rigidity to said roof sheet and the roof sheet possessing a substantial degree of flexibility transversely of said steps to adapt it to assume the shape of said supports, side walls for said awning having their upper edges terminating adjacent the deeper portions of said steps whereby the spaces within said steps are open to the outside to ventilate the interior of the awning, vertical structural elements arranged beneath the inner edge of said roof sheet, said side walls being connected to said structural elements and being bent horizontally in a stepped formation to provide said side walls with beam strength, a flashing sheet arranged above the inner edge of said roof sheet, said flashing sheet and said roof sheet having interconnected portions securing them to each other and provided

with ventilating openings, said flashing sheet extending substantially beyond said ventilating openings and said roof sheet being provided with portions extending upwardly to define the bottoms of said ventilating openings and forming rain stops.

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