

Sept. 30, 1952

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2,611,935

VENTILATED AWNING

Filed Aug. 6, 1949

Fig. 1

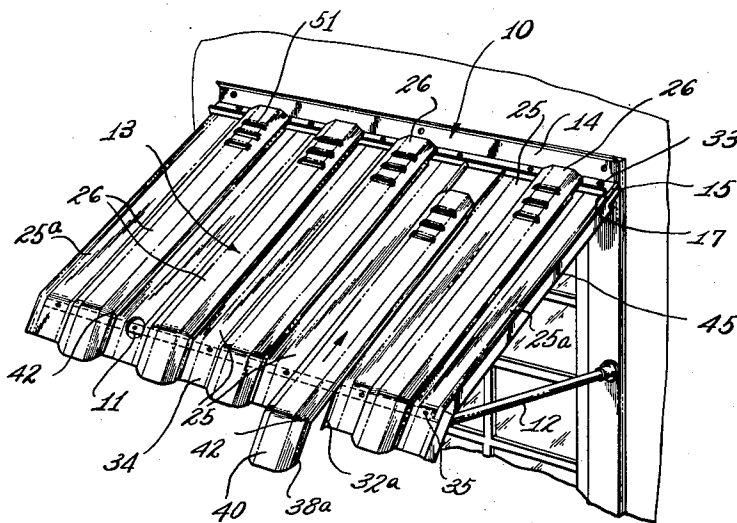


Fig. 2

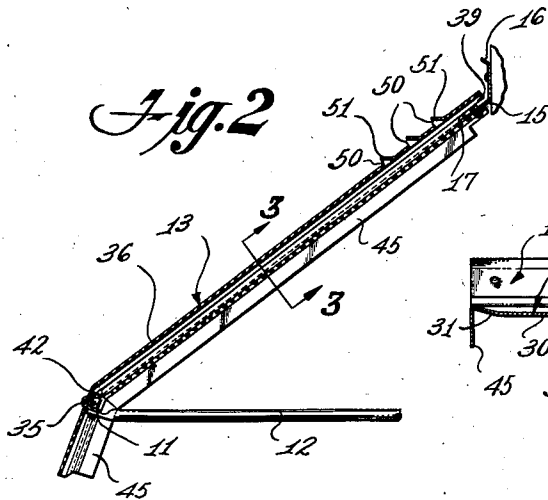


Fig. 3

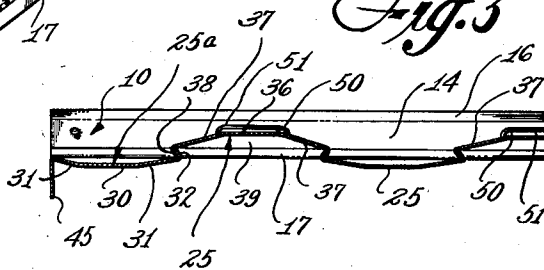
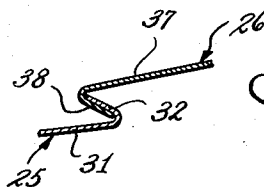


Fig. 4



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2,611,935

VENTILATED AWNING

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Application August 6, 1949, Serial No. 108,904

9 Claims. (Cl. 20—57.5)

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Our invention relates generally to awnings and more particularly to exterior awnings of the type adapted to be permanently installed on a building or other supporting structure.

In order to be permanently installed, an awning of the above type should be suitable for all weather conditions, and should be a light-weight structure which can be easily installed on a building without great cost and without the necessity for a great amount of custom-fitting. Accordingly, it is a major object of our invention to provide a permanent awning which is suitable for use throughout the seasons, and which provides protection against all the elements.

It is another object of our invention to provide an improved awning of great simplicity and light-weight construction which may be pre-fabricated and assembled at a building site with the simplest of hand tools.

A further object of our invention is to provide for the circulation of air upwardly through the awning and prevent the accumulation of heated air beneath the awning. Such circulation means have been provided in the present invention, without sacrificing the protection afforded against the direct force of the elements.

Still another object of our invention is to provide an improved awning which may be constructed in a great variety of shapes and sizes by merely changing the amount of basic parts used, while avoiding the necessity for hand finishing and fitting on a particular installation.

A still further object of our invention is to provide an improved awning which may be disassembled if necessary, and which may be removed from the building without damage to the awning itself, or the building structure. An advantage of this is that the awning may then be conveniently stored or shipped and re-assembled for use on another building.

These and other objects and advantages of our invention will become apparent from the following detailed description of a particular form thereof, and from an inspection of the accompanying drawings, in which:

Fig. 1 is a partial perspective view of our improved awning shown installed to protect a conventional window;

Fig. 2 is a vertical cross-section of the device showing the supporting and frame members thereof;

Fig. 3 is a partial cross-section of the device taken along the line 3—3 of Fig. 2; and

Fig. 4 is an enlarged and partial cross-section showing the engagement between adjacent covering members.

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The particular device which we shall describe hereinafter in connection with the drawings is a form of the invention generally used to protect window openings, and is of a shape and pitch to provide adequate protection against the inclined rays of the sun.

We wish it to be understood, however, that the invention is not limited to use in this particular manner, but may be used, as for example, over a porch or patio to provide protection immediately therebeneath.

Referring now to the drawings and particularly to Fig. 1 thereof, the numeral 10 indicates a generally horizontal frame member or support fastened by suitable means to a vertical surface of a building, as for example, along the upper casement of a conventional window. The surface 13 of the awning is generally rectangular and inclines outwardly and downwardly from the support 10. A lower frame member or support 11 is parallel to the frame member 10 and outwardly disposed therefrom to support the lower edge of the awning. End braces 12 extend outwardly from the building and are connected to the ends of the lower frame member 11 to complete the framing. As is seen best in Fig. 2, the end braces 12 are generally horizontal and form with the upper support 10 and the lower support 11, an open generally triangular structure which supports the downwardly inclined surface 13 of the awning. The end braces 12 may be of any suitable construction and are shown as light-weight tubular members. If the awning is of extended width, a similar brace can be spaced intermediate the braces to add further rigidity to the device. It can also be understood that if the awning is of short length, the lower supporting means 11 may be eliminated, and the surface 13 of the device may be supported entirely from the upper supporting member 10, and it is therefore apparent that the framework of the awning is very simple, and consists of a minimum of lightweight members which may be modified as desired.

The upper support 10 is of angular section, having a vertical side 14 abutting the building and an inclined base or flange 15 directed downwardly towards the lower support 11. Along the upper edge of the sides 14 is an out-turned lip 16 forming a horizontal trough along the building. A similar lip 17 is up-turned along the lower edge of the base 15 to form therebetween another horizontal trough. Both troughs serve as water deflectors as will be hereinafter explained.

The lower support 11 is an angular member of conventional shape, such as a right angular

section and is held by the end braces 12 with the forward wall thereof inclined slightly with respect to the vertical. All of the frame members may be of any suitable material, and in the preferred form of the device, a lightweight structural metal is used throughout. Aluminum having a corrosion and oxidation-resistant baked enamel finish, has proven very satisfactory, and gives an attractive appearance to the device.

The covering or surface 13 of the awning is of sectional corrugated construction comprising a plurality of generally rectangular trough members 25 and ridge members 26 disposed in alternate staggered relationship, with the sides of the ridge members aligned with one side each of two adjacent trough members. The troughs 25 and ridges 26 extend perpendicular to, and across the upper and lower supports 10 and 11 to form a surface which inclines outwardly and downwardly from the side of the building. Any suitable material may be used for the covering, and a resilient sheet aluminum is preferred, having a baked enamel finish similar to that on the frame members to prevent deterioration and present an attractive appearance.

The trough 25 is formed as a long pan or tray, ribbed and bent longitudinally, as is best seen in Fig. 3. It is preferred that the bottom portion of the trough 25 be trilaterally formed into a central band 30 and upwardly deflected side bands 31 running therealong. This ribbed or angular construction helps to prevent buckling or warping of the trough, and also contributes to the attractiveness of the device. Along the outer edges of the bands 31 are upwardly convergent lateral flanges 32 for engagement with an adjacent ridge member 26. In assembling the device, all of the troughs 25 are disposed in spaced relationship along the supports 10 and 11, and subsequently the ridges 26 are interlocked and secured to the troughs. As will be hereinafter explained, the ridges 26 are secured only to the troughs 25 and not to the supports 10 and 11. The upper end of the trough 25 passes beneath the base of the upper support 10 and is attached thereto by suitable means such as the bolts 33. In order to provide a flush joint, the upper ends of the lateral flanges 32 are cut back from the end of the trough 25, and they do not pass beneath the base 15 but are terminated so as to abut the horizontal lip 17 running therealong.

The trough members 25 are substantially longer than the distance between the supports 10 and 11, and the lower ends of the troughs are transversely bent adjacent the support 11 to form overhanging portions 34 which are aligned to provide a generally vertical face or skirt at the front of the awning. To facilitate transverse bending of the trough 25, the flanges 32 may be cut or notched at the bending axis so as to form separate lower flanges 32a. The overhanging portion 34 is inclined slightly to the vertical and is parallel to the forward wall of the support 11 on which it is attached by suitable means such as the bolts 35.

The ridge members 26 are generally similar to the troughs 25, being inverted to form elevated surfaces between the troughs. The top of the member 26 comprises a flat central band 36 with downwardly inclined outer bands 37 running therealong. Upon the edges of the bands 37 are downwardly convergent lateral flanges 38 for interlocking engagement with the cooperating flanges 32 of a pair of adjacent troughs 25. As is best seen in Figs. 3 and 4, the flanges 32 and 38

overlap to form a tight joint therebetween, and are engaged to secure a ridge member 26 between two adjacent trough members 25, so that the flanges 38 bracket and enclose one flange 32 of each of the adjacent trough members.

The lower ends of the ridge members 26 are also bent transversely adjacent the support 11 to form overhanging portions 40 similar to the portions 34 on the troughs 25 and secured thereto, as will be explained. The lower end of the portion 40 in the preferred form is rounded in shape so as to create an attractive scalloped border on the face or skirt of the awning.

It will be remembered that the ridge members 26 are locked between the trough members 25 and are not fastened to the supports 10 or 11. To install the ridge members 26, they are inserted by a longitudinal sliding movement between the troughs 25 as is best seen in Fig. 1, showing a partially installed ridge; the direction of movement being indicated by the arrow. The flanges 38 bracket tightly around the flanges 32 to prevent any lateral movement therebetween, and the angular relationship between the flanges likewise prevents any upward or downward motion between the members so as to form a very rigid structure. It is desirable that the upper end of the ridge member 26 extend above the lip 17 formed on the support 10, and the upper ends of the flanges 38 are cut away so that the top portion of the ridge 26 overhangs the lip 17, and the ends of the flanges 38 abut thereagainst, as do the ends of the flanges 32 on the trough 25. The width of the lip 17 is just equal to the vertical displacement of the flanges 32 and 38, and it should be noted that the top band is spaced a substantial distance above the lip 17 by the inclined side bands 37 so as to provide a vertical opening or vent 39 as may best be seen in Fig. 3.

On the axis of transverse bending of the ridges 26, the flanges 38 are triangularly notched or cut at 42 so as to form separate lower flanges 38a and facilitate deflection of the overhanging portion 40. As was previously mentioned, the ridge members 26 are somewhat resilient and flexible, and the flanges 38a are capable of outward deflection so that they may be engaged with the lower flanges 32a. When the ridge member 26 has been moved upwardly almost into position, the flanges 38a and 32a are mutually parallel but they angularly intersect the upper flanges 32 and 38 which are being interlocked by a longitudinal sliding movement. Therefore, it can be seen that the flanges 38a must be deflected outwardly to override and engage the flanges 32a. As this is done, the ridge member 26 is seated upwardly against the lip 17, and the flanges 38a are then allowed to spring back inwardly to lock firmly on the flanges 32a. It is then impossible to move the ridge members 26 in any direction, and in effect, the lower flanges 32a and 38a are locking flanges to hold the upper sliding flanges 32 and 38 from relative movement. It can also be understood that this angular interlocking requires no separate fastening means, and binds the ridge members 26 and trough members 25 together in a continuous surface. The lower support 11 may be eliminated if desired, and the outer end of the awning will still be held rigidly together without external support.

The width of the awning is, of course, determined by the number of members 25 and 26 used, and it is apparent that this sectional construction permits simple modifications in the shape and size of the device. It should also be noted

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that the interlocking construction used makes the device very rigid and adapted to withstand large deflecting forces, such as would be present in a high wind. The ridge and trough members 26 and 25 are both structural and covering members, and their ribbed construction provides for stiffening between the upper support 10 and lower support 11 so that no longitudinal support need be used in the device. When it is desired to separate the members 25 and 26, the flanges 32a and 38 are unlocked by prying them apart, and the ridge members 26 are then withdrawn without damage to either of the members.

To provide a finished appearance and aid in the deflection of water, the surface 13 is terminated by an outer pair of troughs 25a which are provided with an outer downwardly extending flange 45 for additional protection, as is best seen in Fig. 3. In all other respects, the troughs 25a are similar to the troughs 25.

In a closed awning of this type, it is necessary to provide adequate means for the circulation of air through the device. If no provision is made, the warm rising air will collect beneath the awning and the high point immediately adjacent the building, and will pass undesirable heat through the window. We have provided novel means to allow free circulation of air through the awning without sacrificing the direct protection afforded by the continuous awning surface 13. As can best be seen in Fig. 3, the highest point at any cross-section of the awning is immediately beneath the central band of each ridge member 26. From this position, the rising air passes upwardly along the channelled surface of each ridge 26 until it reaches the upper end thereof. As previously mentioned, a vent opening 39 is provided in the space between the lip 17 and the top of the ridge 26 so that the rising air is free to pass through this opening and away from the awning. Since the angular support 10 is open-ended, cross-circulation is further provided to aid in carrying away the heated air from the upper end of the ridges 26. It should also be noted that the flow path of the air is not circuitous, each ridge 26 being in effect a flue, to provide an unrestricted path for the upward flow of air. Further provision for venting the awning is made by a plurality of slits or vents 50 formed near the upper end of each ridge member 26 as another exit for the warm rising air. As can best be seen in Fig. 2, each vent 50 is provided with a hooded downwardly facing cowl 51 which deflects any water therearound and prevents dripping into the interior of the awning.

The suitability of the device for protection against all of the elements can now be clearly understood. The awning surface 13 is impervious to all of the elements, and because of the downward overlap of the flanges 38 and the flanges 32, there can be no leakage between the trough and ridge members 25 and 26. The overhanging portions 34 and 40 provide additional protection against obliquely driven rain and sleet, and as best seen in Fig. 2, the angular overlap of the ridges 26 above the base portion 15 tends to prevent any water entry therebetween. If water should find its way under the ridge members 26, it will run into the horizontal trough created by the lip 17 and base 15, where it will be carried outwardly from the awning. Water dripping down the building wall will fall into the horizontal trough created by the upper lip 16 and will be similarly carried away from the awning.

Excellent drainage is provided on the awning

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surface 13 by the troughs 25, and it can also be understood that there are no horizontal surfaces present in the device to permit the accumulation of water. The slightly inclined position of the overhanging trough portion 34 directs the drainage away from the awning, and prevents any splattering inwardly against the building surface. These drainage provisions likewise resist the accumulation of snow or sleet on the awning, and there are no crevices nor projections against which such a mass can collect. The surface 13 is smooth and non-frictional and tends to cause any large mass to slide free of the device as soon as it is formed. Further, the ribbed surface of the troughs 25 and ridges 26 are adapted to withstand a large deflecting force without buckling, and no damage will be done even if a substantial amount of snow or sleet should form on the awning.

It can thus be seen that our improved awning is a durable and truly permanent device. Sufficient circulation and drainage means are provided without sacrificing the direct protection afforded, and the unique inter-engagement of the members provides an easily modified and lightweight structure which is simple to manufacture and install.

While we have shown and described the preferred embodiment of our invention, it will be understood that various changes in the design and construction can be made by those skilled in the art, and we do not wish to be limited except as defined in the appended claims.

We claim:

1. An awning which includes: generally horizontal supporting means; a plurality of spaced parallel trough members secured to, and inclined downwardly from said supporting means to provide longitudinally extending drainage surfaces, the lower end of each member being deflected to form an overhanging skirt portion angularly intersecting said drainage surface; upwardly turned lateral flanges on the inclined and overhanging portions of said trough members; a plurality of parallel ridge members in alternate staggered relationship with said trough members, the edges of said ridge members each being in alignment with one edge of each of two adjacent trough members, and the lower end of each ridge member being deflected to form an overhanging portion parallel to said overhanging skirt portion; and downwardly convergent lateral flanges on said ridge members, said flanges on said inclined portion being slidably engaged with the flanges of said trough members to provide a continuous rigid surface, and said flanges on said overhanging portion being deformable to permit the same to pass over said skirt flanges and resilient whereby to spring back into engagement with said skirt flanges to interlock said members.

2. An awning which includes: generally horizontal supporting means; a plurality of spaced parallel trough members secured to, and inclined downwardly from said supporting means to provide longitudinally extending drainage surfaces, the lower end of each member being deflected to form an overhanging skirt portion angularly intersecting said drainage surface; upwardly convergent lateral flanges on the inclined and overhanging portions of said trough members extending substantially the length thereof; a plurality of parallel ridge members positioned in alternate staggered relationship with said trough members, the edges of said ridge members each being in alignment with one edge each of two adjacent

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trough members, the lower end of each member being deflected to form an overhanging portion parallel to said skirt portion, and the upper end being spaced from said supporting means to provide a longitudinally extending air passage; and downwardly convergent lateral flanges on said ridge members, said flanges on the inclined portions being slidably engaged with the flanges of said trough members to provide a continuous rigid surface, and said flanges on said overhanging portion being deformable to permit the same to pass over said skirt flanges and resilient whereby to spring back into engagement with said skirt flanges to interlock said members.

3. An awning which includes: a generally horizontal upper support of angular cross section having a vertical wall and a downwardly inclined base section; a plurality of spaced parallel trough members secured beneath and inclined downwardly from said base section to provide longitudinally extending drainage surfaces, the lower end of each member being deflected to form an overhanging skirt portion angularly intersecting said drainage surface; upwardly convergent lateral flanges on the inclined and overhanging portions of said trough members extending substantially the length thereof; a plurality of parallel ridge members having upwardly elevated surfaces, said members being positioned in alternate staggered relationship with said troughs, the lower end of each member being deflected to form an overhanging portion parallel to said skirt portion and the upper end surface being spaced above said base section to provide a longitudinally extending air passage; and downwardly convergent lateral flanges on said ridge members, said flanges on the inclined portions being slidably engaged with the flanges of said trough members to provide a continuous rigid surface, and said flanges on said overhanging portion being deformable to permit the same to pass over said skirt flanges and resilient whereby to spring back into engagement with said skirt flanges to interlock said members.

4. An awning which includes: a generally horizontal upper support of angular cross section having a vertical wall adapted to be secured to a building structure and a downwardly inclined base section with an upturned outer lip thereon forming a horizontal trough; a plurality of spaced parallel trough members secured beneath and inclined downwardly from said base section to provide longitudinally extending drainage surfaces, the lower end of each member being deflected to form an overhanging skirt portion angularly intersecting said drainage surface; upwardly convergent lateral flanges on the inclined and overhanging portions of said trough members extending substantially the length thereof; a plurality of parallel ridge members in alternate staggered relationship with said troughs, the lower end of each member being deflected to form an overhanging portion parallel to said skirt portion, and the upper end surface being spaced above said upturned lip and overhanging said horizontal trough to provide a longitudinally extending vent allowing the upward passage of air but preventing water entry therein; and downwardly convergent lateral flanges on said ridge members, said flanges on the inclined portions being slidably engaged with the flanges of said trough members to provide a continuous rigid surface, and said flanges on said overhanging portion being deformable to permit the same to pass over said skirt flanges and resilient whereby to spring

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back into engagement with said skirt flanges to interlock said members.

5. An awning which includes: a generally horizontal upper support of angular cross section having a vertical wall adapted to be secured to a building structure and a downwardly inclined base section with an upturned outer lip thereon forming a horizontal trough; a lower support parallel to said upper support and outwardly disposed therefrom; inwardly directed side braces connected to said lower support and adapted to be secured to said building structure; a plurality of spaced parallel trough members secured beneath and inclined downwardly from said base section to provide longitudinally extending drainage surfaces, the lower end of each member being deflected to form a skirt portion overhanging said lower support, and angularly intersecting said drainage surface; upwardly convergent lateral flanges on the inclined and overhanging portions of said trough members extending substantially the length thereof; a plurality of parallel ridge members in alternate staggered relationship with said trough members, the lower end of each ridge member being deflected to form an overhanging portion parallel to said skirt portion, and the upper end surface being spaced above said upturned lip and overhanging said horizontal trough to provide a longitudinally extending vent allowing the upward passage of air but preventing water entry therein; supplemental hooded air vents extending transversely across said ridge members near the upper end thereof; and downwardly convergent lateral flanges on said ridge members, said flanges on the inclined portion being slidably engaged with the flanges of said trough members to provide a continuous rigid surface, and said flanges on said overhanging portion being deformable to permit the same to pass over said skirt flanges and resilient whereby to spring back into engagement with said skirt flanges to interlock said members.

6. An awning which includes: a generally horizontal upper support of angular cross section having a vertical securing wall and a downwardly inclined base section with an upturned continuous outer lip thereon forming a horizontal rain gutter; a generally horizontal lower support parallel to and forward of said upper support; a plurality of spaced troughs secured to and inclined downwardly across said supports to provide longitudinally extending drainage surfaces, said troughs being longitudinally ribbed to form a trilateral upwardly open surface; angular upwardly convergent flanges extending along the sides of said troughs and formed integrally therewith; a plurality of parallel ridges having trilateral downwardly open surfaces and positioned in alternate staggered relationship with said troughs, the upper end of each ridge terminating short of said vertical securing wall and overhanging said gutter in spaced relationship to define a longitudinal exhaust stack communicating with the interior of said ridge, and said horizontal gutter cooperating to prevent the entry of water therein; and angular downwardly convergent flanges extended along the sides of said ridges and adapted to interlock slidably with the flanges of said troughs to provide a continuous rigid surface, the spacing of said troughs being such that said trilateral surfaces are sprung slightly upon the engagement of said flanges to hold the same in firm frictional engagement.

7. An awning which includes: a generally horizontal upper support of angular cross section having a vertical securing wall and a downwardly inclined base section with an upturned continuous outer lip thereon forming a horizontal rain gutter; a generally horizontal lower support parallel to and forward of said upper support; a plurality of spaced troughs secured perpendicularly to said supports, passing over said lower support and lying flush with the underside of said base section; angular upwardly convergent flanges extending along the sides of said troughs and formed integrally therewith; a plurality of parallel ridges positioned in alternate staggered relationship with said troughs, the upper end of each ridge terminating short of said vertical securing wall and overhanging said gutter in spaced relationship to define a longitudinal exhaust stack communicating with the interior of said ridge, and said horizontal gutter cooperating to prevent the entry of water therein; and angular downwardly convergent flanges extended along the sides of said ridges and adapted to interlock slidably with the flanges of said troughs to provide a continuous rigid surface, said flanges being cut back from the upper end of said ridges to abut the outer face of said gutter.

8. An awning which includes: a generally horizontal upper support of angular cross section having a vertical securing wall and a downwardly inclined base section with an upturned continuous outer lip thereon forming a horizontal rain gutter; a generally horizontal lower support parallel to and forward of said upper support; a plurality of spaced troughs secured perpendicularly to said supports, passing over said lower support and secured to the underside of said upper support, said troughs being longitudinally ribbed to form a trilateral upwardly open surface; angular upwardly convergent flanges extending along the sides of said troughs and formed integrally therewith; a plurality of parallel ridges having trilateral downwardly open surfaces and positioned in alternate staggered relationship with said troughs, the upper end of each ridge terminating short of said vertical securing wall and overhanging said gutter in spaced relationship to define a longitudinal exhaust stack communicating with the interior of said ridge, and said horizontal gutter cooperating to prevent the entry of water therein; and angular downwardly convergent flanges extended along the sides of said ridges and adapted to interlock slidably with the flanges of said troughs to provide a continuous rigid surface, said flanges being cut back from the upper end of said ridges

to abut the outer face of said gutter, the spacing of said troughs being such that said trilateral surfaces are sprung slightly upon the engagement of said flanges to hold the same in firm frictional engagement.

9. An awning which includes: a generally horizontal upper support of angular cross section having a vertical wall adapted to be secured to a building structure and terminated by an angular upper lip to define an upper rain gutter for diverting water flowing down said building, the base section of said support inclining downwardly and having a continuous outer lip thereon defining a lower rain gutter; a generally horizontal lower support parallel to and forward of said upper support; a plurality of spaced troughs secured perpendicularly to said supports, passing over said lower support and lying flush with the underside of said base section; angular upwardly convergent flanges extending along the sides of said troughs and formed integrally therewith; a plurality of parallel ridges positioned in alternate staggered relationship with said troughs, the upper end of each ridge terminating short of said vertical securing wall in such position as to lie beneath said upper rain gutter and overhanging said lower gutter in spaced relationship to define a longitudinal exhaust stack communicating with the interior of said ridge, and said upper and lower gutters cooperating to prevent the entry of water therein; and angular downwardly convergent flanges extended along the sides of said ridges and adapted to interlock slidably with the flanges of said troughs to provide a continuous rigid surface, said flanges being cut back from the upper end of said ridges to abut the outer face of said gutter.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
968,061	Kramer	Aug. 23, 1910
1,330,493	Perrusi	Feb. 10, 1920
2,101,695	Waddell	Dec. 7, 1937
2,256,941	Crawford	Sept. 23, 1941
2,270,218	Palmer	Jan. 13, 1942
2,441,081	Perry et al.	May 4, 1948
2,442,891	Harrison et al.	June 8, 1948
2,484,987	Eschrich	Oct. 18, 1949
2,539,705	Simonton	Jan. 30, 1951
2,542,919	Freeman	Feb. 20, 1951
2,549,201	Hunter	Apr. 17, 1951