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L. V. PARSSON  
AWNING SHUTTER

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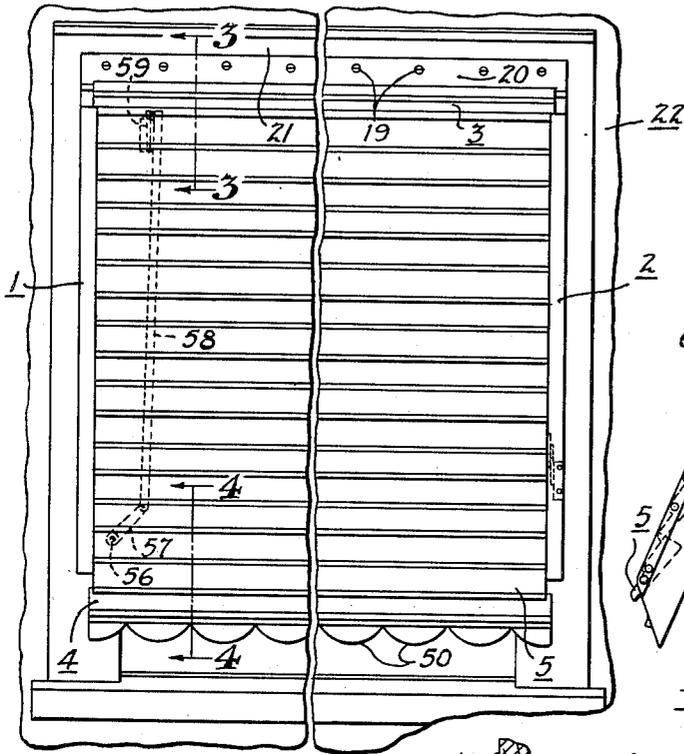


Fig. 1

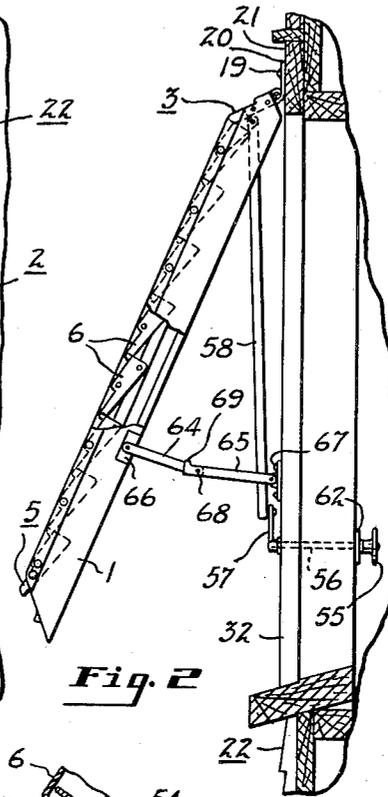


Fig. 2

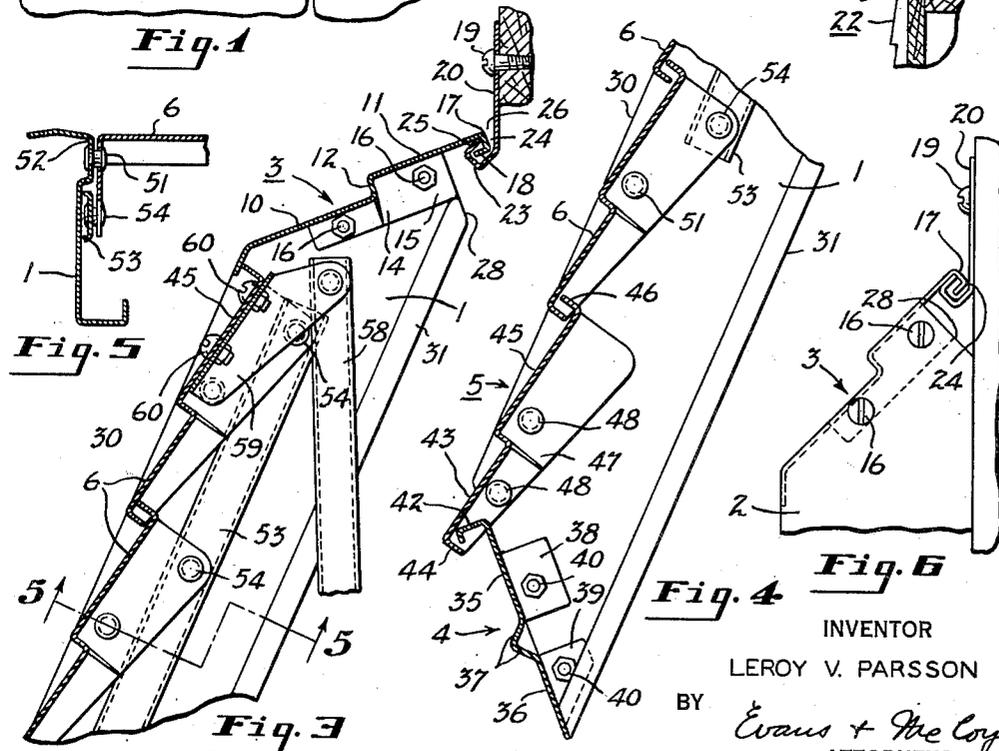


Fig. 5

Fig. 3

Fig. 4

Fig. 6

INVENTOR  
LEROY V. PARSSON

BY  
Evans + Mc Coy  
ATTORNEYS

# UNITED STATES PATENT OFFICE

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## AWNING SHUTTER

Leroy V. Parsson, Cleveland, Ohio, assignor to The  
F. C. Russell Company, Cleveland, Ohio, a cor-  
poration of Ohio

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This invention relates to awnings or sun shades for use over building openings and more particularly to metal awnings of the type having a plurality of movable louvers mounted for turning movement.

It is one of the principal objects of the invention to provide an improved frame structure in an awning of the character mentioned. Preferentially, the frame is constructed of sheet metal sections including flanged cross members contoured to facilitate assembly, improve appearance, and provide maximum strength with minimum weight.

Another object is to provide a mounting arrangement for an awning of the character described wherein a sheet metal cross member of the awning frame is interlocked with a metal member attachable to a building for mounting the awning. As a desirable feature of this phase of the invention, so that the awning can be swung to and from the building, the awning cross member and the mounting member or support are so interlocked as to permit relative turning or hinging about a horizontal axis. To facilitate mounting of the awning on a building, and also seasonal demounting if such is desired, the interlocking pivotal connection between the awning frame member and the mounting member is obtained without the use of pins or pivot bars, the parts being separable by relative longitudinal sliding or, when the awning is in closed position, by relative vertical movement.

Another object is to provide an awning having a frame construction of increased strength and rigidity that includes sheet metal cross members angularly disposed with respect to one another, the members having overlapped edge flanges. The overlapped edge flanges are preferably disposed at or adjacent the apex of the angle between the members, providing for mutual reinforcement and resulting in a structure having improved resistance against impacts.

A further object of the invention is to provide a generally improved awning structure simple in design and construction and relatively inexpensive to manufacture. These and other objects, residing in certain details of construction and arrangements of parts, appear in the following detailed description of a suitable embodiment of the invention, this description being made in connection with the accompanying drawings forming a part of the specification. Like parts throughout the several views of the drawings are indicated by the same numerals of reference.

In the drawings:

Figure 1 is a front elevational view of the awning showing the same mounted over a win-

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dow of a conventional building or dwelling, the portions of the building beyond the window frame being broken away and removed, and the view being foreshortened since the awning may be of any desired length;

Fig. 2 is a vertical section through the building of Fig. 1, parts being broken away and removed, the awning being shown in side elevation partly in section and with parts broken away and removed;

Fig. 3 is a fragmentary sectional detail taken substantially along the line indicated at 3—3 of Fig. 1 and enlarged with respect to that figure;

Fig. 4 is a sectional detail taken substantially along the line indicated at 4—4 of Fig. 1 and enlarged with respect to that figure;

Fig. 5 is a sectional detail taken substantially along the line indicated at 5—5 of Fig. 3; and

Fig. 6 is a sectional detail, similar to the upper portion of Fig. 3, showing the awning closed against the building.

The awning of the present invention is designed with particular reference to economical manufacture by relatively large scale production methods out of relatively thin sheet metal stock. Particular attention has been directed to the provision of structural shapes for the frame cross members and their relative positions and locations in the structure to give maximum economy with adequate strength. Any suitable sheet metal or similar material can be employed although sheet aluminum from fourteen to twenty-two gauge, preferably about eighteen gauge is considered satisfactory. The various metal sections for the various frame members and louvers are formed by the conventional bending, rolling, and slitting operations customarily used in the sheet metal art.

The awning proper is a generally flat structure and comprises a rectangular frame of spaced parallel side members 1 and 2 and top and bottom cross members 3 and 4. Desirably the cross structure at the bottom of the frame includes, in combination with the cross member 4, an auxiliary cross member 5 which may have the general shape and configuration of each of the movable louvers or slats 6 comprising the major portion of the surface area of the awning.

The upper cross member 3 comprises longitudinally extending flat portions 10 and 11 disposed in offset planes, preferably parallel, and joined throughout their lengths by angularly disposed integral connection portion 12. The planes of the flat portions 10 and 11 are each oblique or angularly disposed relative to the general plane of the awning as is the plane of the connecting portion 12. This oblique arrangement of the several parts of the cross member relative to the plane of the awning frame provides greater strength and resistance to distortion

of the frame than other arrangements. Each of the cross member portions 10 and 11 is formed at its ends with integral angularly disposed depending flanges 14 and 15 respectively, which are individually secured to the frame side members 1 and 2 as by welding or, preferably, by means of rivets 16.

Along the upper edge of the cross member 11 is a downturned angularly disposed flange portion 17 having a reversely bent edge 18 providing a reversely bent hook extending substantially the full width of the awning for hanging the latter on a mounting member or support 20. This mounting member, formed of a flat sheet metal strip, is secured as by screws 19 in horizontal position flatwise against top frame member 21 of building 22. The bottom edge of the mounting member is formed with a reversely bent integral flange 23 providing a longitudinally extending channel 24 which opens upwardly and interlockingly receives the hook flange 17 of the awning frame cross member.

The upwardly directed portion of the flange 23, forming one side of the channel 24, has an in-turned edge portion 25 which is received within the recess formed by the hook flange 17 of the frame cross member 3. This interlocking of the reversely bent flanges along the edges of the frame top member and the support or mounting member not only provides for support of the awning on the mounting member, but also prevents vertical separation of the parts such as might otherwise occur under the influence of the force exerted on the awning by an up-draft of air. In this connection it is to be observed that opening 26 into the channel 24 is narrower than the projection of the hook forming edge 18 of the reversely turned flange 17 on the top cross member. Thus when the awning is in the open position, as illustrated in Figs. 2 and 3, the flange edge portion 18 acts as a key, extending into the recess under the in-turned edge portion 25 of the support member flange and locking the parts together by preventing vertical separation.

When the awning is positioned flatwise against the window opening, as in assembly or in closing the awning, the top cross member 3 swings downwardly about the hinge axis along the interlocking flanges, moving the locking edge 18 of the frame member hook flange to an oblique position such as illustrated in Fig. 6. When the locking edge 18 is thus obliquely disposed relative to the support member 20 its effective or projected width is less than that of the channel opening 26, permitting the interlocking parts to be separated or assembled as desired. Thus vertical separation (or assembly) is feasible when the shutter is positioned flatwise against or parallel to the building face. In such position the possibility of a strong force being exerted on the awning as by an up-draft of air, is minimized.

The upper inside corner of each of the side frame members 1 and 2 is relieved or cut away along an oblique line indicated at 28, this line intersecting the plane of the flat portion 11 of the top cross member intermediate the edges of the latter. This relieving of the upper corners of the frame members leaves the ends of the cross member hook flanges 17 unobstructed, permitting the awning to be assembled on the support member 20 by longitudinally sliding the parts together from either end. This relief of each side frame member permits the hook flange 17 along the upper edge of the cross member 3 to be positioned in the space between the parallel planes defined

by the front edges 30 and the rear edges 31 of the side frame members 1 and 2. Accordingly, when the awning is moved downwardly to closed position against the frame surrounding the window opening of the building, the rear edges of the side frame members 1 and 2 abut vertical window frame members 32 along the sides of the window opening, providing a substantially weather tight seal between the awning and the window frame.

At the bottom of the awning frame the cross member 4, comprising longitudinally extending flat portions 35 and 36, is positioned so that each of the flat portions is disposed at an acute or oblique angle with respect to the general plane of the awning. The cross member flat body portions 35 and 36 are preferably disposed in parallel planes and may be coplanar, as illustrated. Integral connecting portions 37 join the flat portions of the cross member and are angularly disposed relative to the latter.

The ends of each of the cross member flat portions 35 and 36 are formed with integral angularly disposed attaching flanges 38 and 39 which are secured as by bolts 40 to the side members 1 and 2. Along the upper edge of the cross member flat portion 35 is an integral reversely turned flange portion 42 which extends outwardly and is received within the angle between a flat body portion 43 of the auxiliary cross member 5 and a downturned flange portion 44 along the lower edge of the flat portion 43.

The auxiliary cross member 5 comprises longitudinally extending offset flat portions, one of which may be the flat portion 43, another being a flat portion 45 having an upturned flange 46 along its upper edge. The ends of the auxiliary cross member 5 are formed with integral downturned end flanges 47 rigidly secured as by rivets 48 to the side frame members 1 and 2. Thus at the bottom of the awning frame the cross member 4 and the auxiliary cross member 5 comprise a composite cross member of obliquely disposed parts having overlapped flanged edges. The overlapped edges serve as a water shed and also provide reinforcement for one another against excessive deformation upon impact by reason of the relative oblique positions of their parts. The lower edge of the cross member portion 46 may be straight or, if desired, formed with ornamental scallops 50.

The louvers 6 are formed of strip stock material like that employed for the auxiliary bottom cross member 5, corresponding parts being indicated by the same reference numerals. The end flanges 47 of the louvers are pivotally received on shouldered rivets 51 secured in offset portions of the side frame members 1 and 2. These offset portions extend longitudinally of the frame members; the cross sectional shape of the side frame member 1, uniform along its length, being illustrated in Fig. 5. The louver supporting offset portion is indicated at 52. The frame member 2 is of the same shape as the frame member 1. The pivot rivets 51 are arranged so that the several louvers turn about spaced substantially parallel axes between open position and the closed position illustrated in the drawings. When closed, the edge flanges 44 and 46 of adjacent louvers overlap one another to provide substantially weather tight seals, the edges of the flanges abutting against the flat portions of the adjacent louvers.

The louvers are interconnected at their ends by bars, one of which is indicated at 53. These bars are pivotally connected to the louver flanges 47 by shouldered rivets 54 so that the louvers turn

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between open and closed positions in unison. Such turning of the louvers is effected by an operating device such as a hand wheel or hand lever 55 located inside the building and secured on the inner end of a rod or shaft 56 which extends through the wall and carries an arm 57 on its outer end. The end of this arm is pivotally connected to an upwardly extending rod or link 58, the upper end of the link being pivotally connected to a flanged arm 59 fastened by bolts 60 to flat portion 45 of the topmost louver.

Turning of the hand wheel 55 inside the building swings the arm 57 on the remote end of the shaft 56 to shift the operating link 58 up or down, this movement opening and closing the louvers as desired. Suitable means is provided for holding the hand wheel 55 in any desired adjusted position. For example, an inner guide plate 62 may be provided for the operating shaft 56, the guide plate being secured against the inside of the wall of the building and embracing the shaft and having a frictional fit therewith. The hand wheel 55 may be formed with notches or flutes which fit matching notches or flutes in the guide plate 62 or the parts may be frictionally restrained against free turning.

To support the awning in its open position, illustrated in Fig. 2, collapsible link braces are used between the awning and the building. Such braces, one at each end of the awning, each comprises link arms 64 and 65 pivotally connected together at 68. The links are also pivotally connected to brackets 66 and 67 attached respectively to the awning side frames and the window frame members 32. One end of the arm 65 extends beyond the center pivotal connection 68 and carries a lateral detent 69 engageable with the arm 64 to limit downward movement of the arms.

When it is desired to close the awning, the link braces 64—65 are collapsed and the awning swung against the window frame about the pivot axis between the top cross member 3 and the support member 20. The rear edges 31 of the side frames 1 and 2 abut against the window side frame members 32 along substantially the entire height of the closed awning. The pivot axis of the awning on the support member 20, which axis substantially coincides with the edge of inturned flange portions 25, is offset or spaced outwardly from the face of the building and the hook flange 17 of the top cross member 3 is located between the planes of the front and rear edges of the awning side frames to permit the entire length of the side frame edges 31 to contact the building or window frame. In closed position the awning thus serves as a shutter, substantially sealing off the window opening. Suitable latches or locking devices, not shown, may be employed to retain the awning in closed position.

In addition to its function as a pivotal support for the awning, the mounting member 20 also serves as a weather seal. The channel or trough 24 receives rain water that runs down the face of the building and carries off such water to the sides of the window, thus preventing such water from entering underneath the awning.

In accordance with the patent statutes, the principles of the present invention may be utilized in various ways, substitution of parts and changes in construction being resorted to as desired, it being understood that the embodiment shown in the drawings and described above is given merely for purposes of explanation and illustration without intending to limit the scope of the claims to the specific details disclosed.

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What I claim and desire to secure by Letters Patent of the United States is:

1. An awning assembly comprising a frame of spaced side members and cross members connecting the side members, louvers carried by the frame, and means for hanging the awning on a vertical wall of a building over an opening in the latter for swinging movement about a horizontal axis between an open position in which the frame is oblique to the wall and a closed position in which the frame is substantially vertical, one of the cross members having a flat portion inclined at an oblique angle to the wall of the building when the awning is in closed position, integral flange means along the upper edge of said flat portion, the flange means being inclined downwardly and toward the building from said edge of the cross member flat portion, the hanging means including a member receivable flatwise against a building for attachment thereto, said last mentioned member having integral upturned flange means formed with a free edge receivable in the angle between the flat portion and the integral flange means of the cross member, the upturned flange means of the hanging member comprising a horizontal trough for receiving run off water from both the integral flange means of the cross member and the wall of a building to which the awning assembly is attached.

2. In combination in an awning having spaced side members and a plurality of louvers supported between the side members, a sheet metal stepped cross member also extending between the side members, said cross member comprising relatively wide flat portions offset from one another in substantially parallel planes and integrally joined by a relatively narrow flat portion angularly disposed with respect to each of the wide portions, an integral angularly disposed flange on each end of each of the wide portions, at each end said flanges being in substantially a common plane and disposed flatwise against the side members, a plurality of fasteners at each end of the cross member, the fasteners at each end extending through the side members and flanges at spaced points to secure the parts together, and means having connection with the cross member for hanging the awning on a building with the flanges of the cross member disposed substantially in vertical planes so that the awning weight is carried in shear by the fasteners.

3. In combination in an awning structure, a plurality of louvers, frame means for supporting the louvers in predetermined relative positions, said supporting frame means including an elongated metal cross frame member, an elongated metal support member to be secured against the outside of a building, and interlocking flange means extending along the length of the cross frame member and along the length of the metal support member, said flange means including a generally downwardly directed flange on and extending throughout substantially the entire length of the cross frame member and a generally upwardly directed flange on and extending throughout substantially the entire length of the metal support member, said metal support member and the upwardly directed flange thereon defining a water conducting channel opening upwardly along the length of the support member to receive water running over the support member, the downwardly directed flange on the cross frame member being received within the channel in spaced relation to the

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walls of the channel to provide along the length of the channel an entry passage of substantially the same depth as the channel for water flowing downwardly over the support member to enter into the channel between the support member and the cross member flange and to flow longitudinally in the channel beneath the cross member flange.

4. In combination in an awning having movable louvers, side rails for supporting the louvers, a cross member extending between and secured at its ends to the upper ends of the side rails, an elongated metal support member to be secured against the outside of a building, and interlocking reversely bent flange means integrally formed along the length of the cross member and the metal support member, said flange means including a generally downwardly and inwardly directed flange on and extending throughout substantially the entire length of the cross member and a generally upwardly and outwardly directed flange on and extending throughout substantially the entire length of the metal support member, said metal support member and the upwardly directed flange thereon defining a water conducting channel opening upwardly along the length of the support member to receive water running down over the support member, the downwardly directed flange on the cross member being received in and throughout its width wholly spaced from the walls of the channel defined by the metal support member and the flange on the latter to provide clearance for water flowing downwardly into the channel between the support member and the cross member flange, and the upwardly directed flange on the support member having a free edge received supportingly against the underside of the cross member.

5. In combination in a shutter awning construction, a thin metal support member for attachment flatwise against a building, means on the support member providing an upwardly opening water conducting channel trough having an inturned side element terminating in an upwardly directed free edge, a shutter assembly including a thin sheet metal top cross member having an angularly disposed flange along one edge received in the channel trough of the support member, the free edge of the trough side element being disposed in bearing relation against the underside of the cross member and received in the angle between the cross member and the flange on the latter to locate the shutter assembly relative to the support member, and the cross member flange including a reversely bent portion providing with the inturned trough side an interlock resistant to vertical separation of the shutter assembly from the support member, the cross member flange and the reversely bent portion of the latter being clear of the support member and the side element of the latter to provide a substantially continuous water admitting passage opening into the channel trough along substantially the entire length of the support member.

6. In combination in an awning having spaced side members and a plurality of louvers supported between the side members for turning movement, a stepped sheet metal cross member extending between the side members, said cross member having flat portions offset from one another in different planes and an integral connecting portion angularly disposed to the flat

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portions, the connecting portion joining the flat portions along the length of the cross member, integral angularly disposed flanges on the ends of each of the flat portions, the several flanges on each end of the cross member being disposed in substantially a common plane, and means at each end of the cross member individually securing a plurality of the end flanges to spaced points of the respective side members at each end of the cross member to prevent turning of each end of the cross member relative to the side member to which it is secured.

7. In combination in an awning having spaced side members and a plurality of louvers supported between the side members for turning movement, a stepped sheet metal cross member having flat integral portions offset from one another and disposed in substantially parallel planes, said cross member portions each having integral angularly disposed flanges at the ends of the cross member, the several flanges on each end of the cross member being disposed in substantially a common plane, means for individually securing a plurality of said flanges to spaced points of the respective side members at each end of the cross member to prevent turning of the cross member relative to the side members, and flange means on one of the flat cross member portions for attaching the awning to a building.

8. In combination in an awning having spaced side members and a plurality of louvers supported between the side members, a sheet metal bottom cross member extending between the side members, the cross member having angularly disposed integral flanges along its upper edge and at its ends, the flanges at each end being in a common plane and disposed flatwise against the side members, means rigidly securing the end flanges at each end of the cross member to spaced points of the respective side members, means rigidly securing each end of one of the louvers to spaced points of each of the respective side members, other louvers being movable relative to the side members, said rigidly secured louver having a flange along one edge overlapping the edge flange of the cross member and having a flange along another edge disposed in overlapping relation to another relatively movable louver, the means for securing the end flanges of the cross member to the side members at each end of the cross member being disposed along one line, and the means for securing the ends of said one rigidly secured louver at each end of the latter being disposed along another line intersecting said first line, whereby the bottom cross member and the one rigid louver cooperate in resisting relative movement of the side members in different planes.

LEROY V. PARSSON.

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