

April 18, 1961

W. R. STEPHENS ET AL

2,980,180

FOLDABLE AWNING

Filed Sept. 22, 1958

3 Sheets-Sheet 1

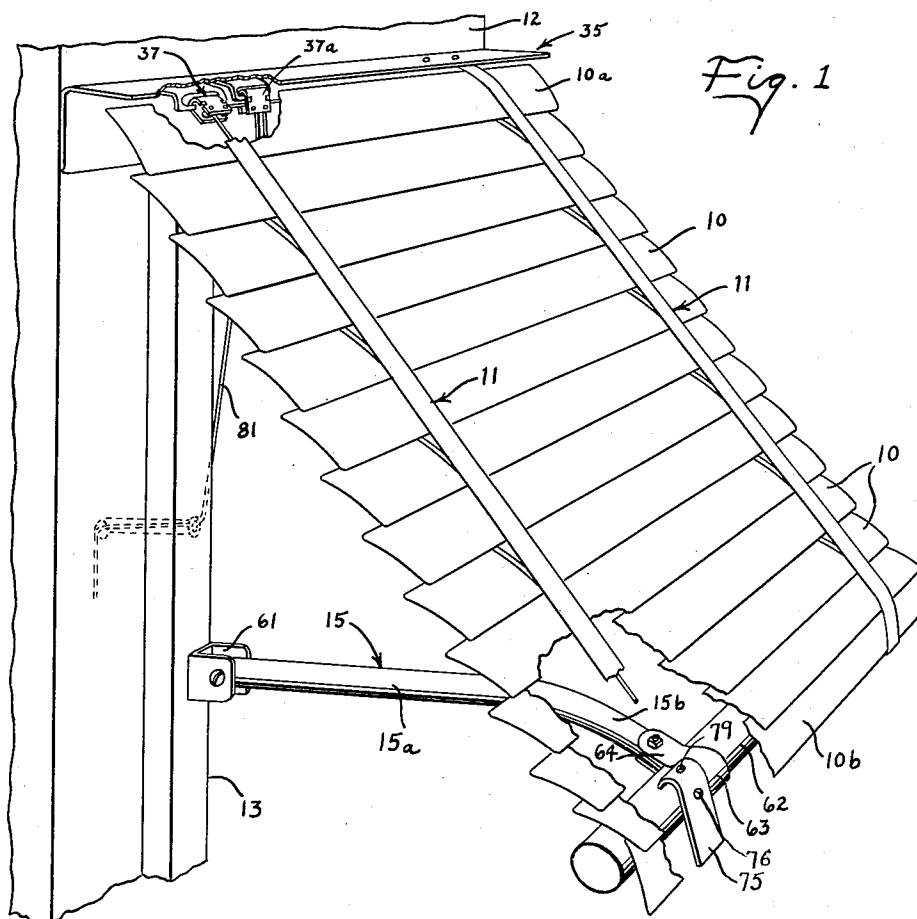


Fig. 1

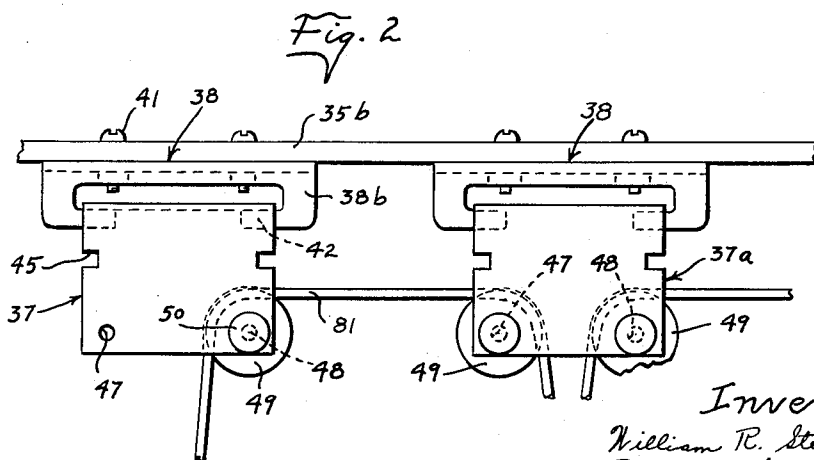


Fig. 2

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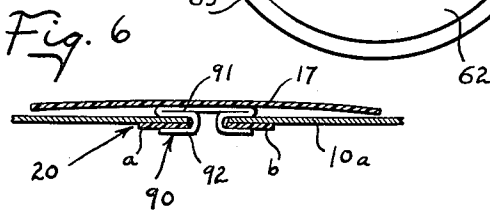
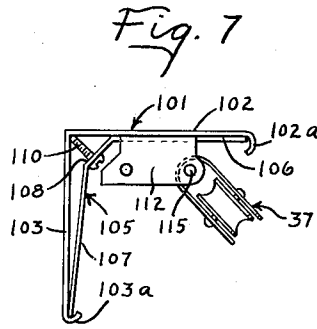
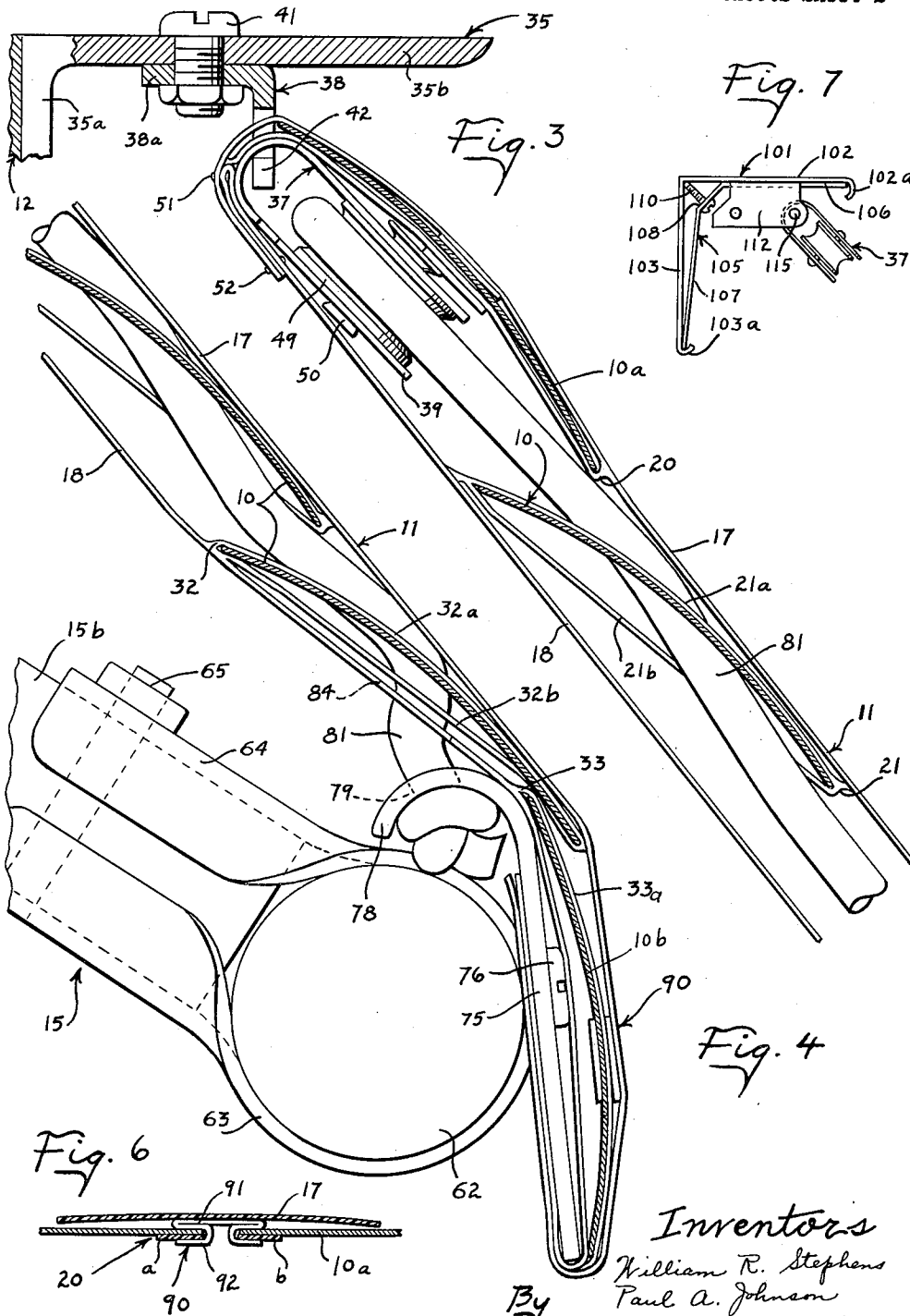
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3 Sheets-Sheet 2



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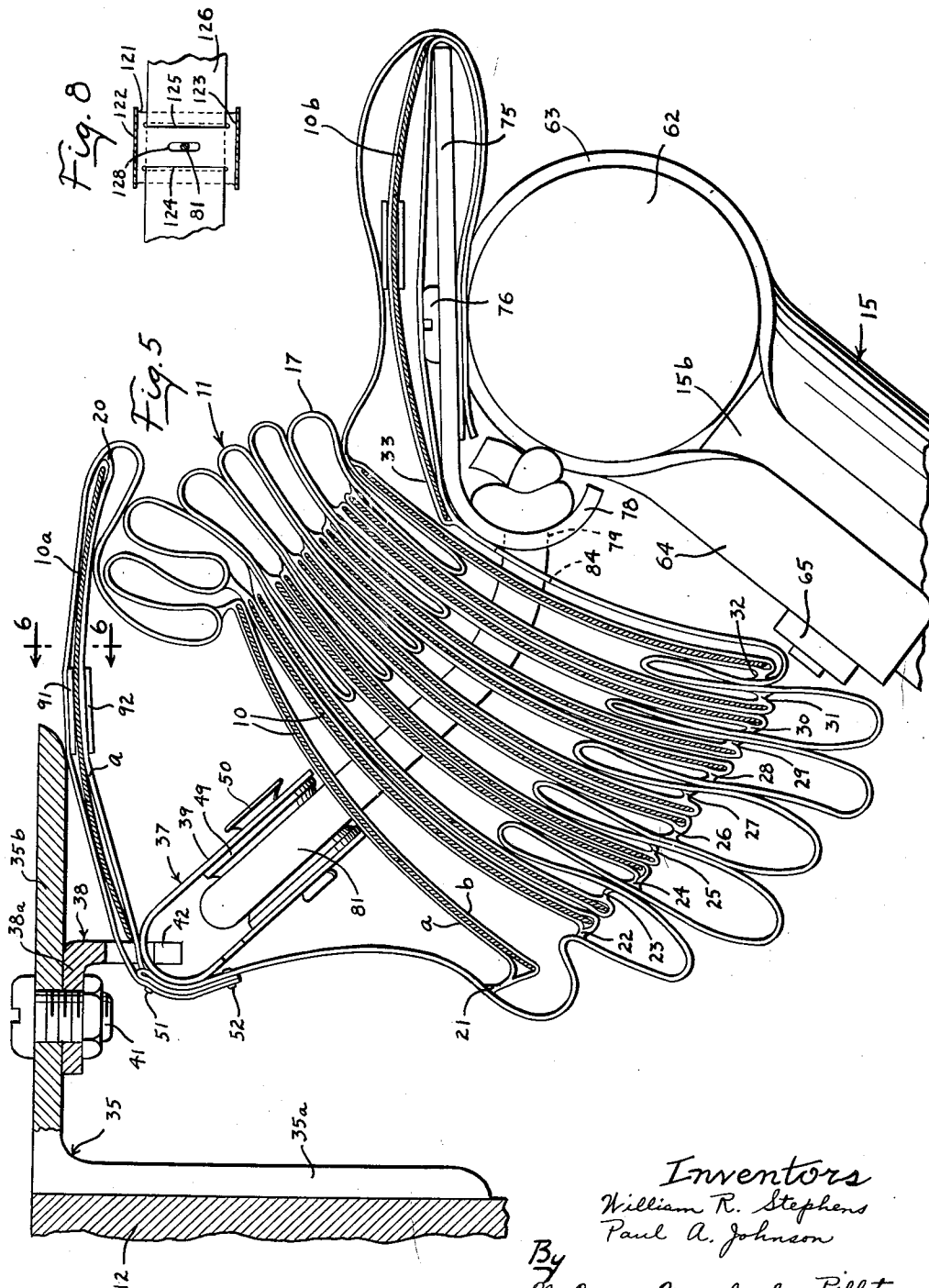
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FOLDABLE AWNING

Filed Sept. 22, 1958

3 Sheets-Sheet 3



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2,980,180

FOLDABLE AWNING

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10 Claims. (Cl. 160—62)

This invention relates to awnings and particularly to an improved collapsible awning construction.

An important object of this invention is to provide a louvered awning which is readily collapsible into a compact arrangement, and which is of simple and economical construction and is rugged and durable in use.

A more particular object of this invention is to provide a collapsible awning formed of horizontally extending slats maintained in spaced parallel relation by flexible ladder tapes and having an improved arrangement for attaching the upper and lower ends of the tape respectively to a supporting wall and to a swingable arm on the wall, whereby the tapes are automatically drawn to a position to close the slats when the arm is lowered and wherein the slats are automatically opened and collapsed one upon the other into a compact stack when the arm is raised.

Another object of this invention is to provide a collapsible awning in accordance with the foregoing object and which has an improved arrangement for mounting the upper slat so that the latter forms a protective cover for the other slats when in their collapsed condition.

A further object of this invention is to provide an improved arrangement for attaching the lower ends of the ladder tapes and the awning draw cords to the vertically swingable awning support arms, which arrangement is simple and economical and provides a pleasing appearance.

These, together with various ancillary objects and advantages of this invention will be more readily appreciated as the same becomes better understood by reference to the following detailed description when taken in connection with the accompanying drawings wherein:

Figure 1 is a perspective view of the awning of the present invention shown mounted on a supporting wall in overlying relation to a window opening and with parts broken away to illustrate details of construction;

Fig. 2 is a fragmentary view of the awning mounting rail and illustrating the manner of supporting the pulley brackets thereon;

Fig. 3 is an enlarged fragmentary vertical sectional view of the upper portion of the awning taken on a plane adjacent one end of the slats and illustrating the awning in its open or extended position;

Fig. 4 is an enlarged fragmentary vertical sectional view through the lower portion of the awning, taken on a plane adjacent one end of the slats and illustrating the awning in its open position;

Fig. 5 is an enlarged fragmentary vertical sectional view through the awning taken on a plane adjacent one end of the slats and illustrating the awning in a collapsed position;

Fig. 6 is an enlarged fragmentary vertical sectional view, taken on the plane 6—6 of Fig. 5;

Fig. 7 is an end elevational view of a modified form of mounting rail and bracket construction shown on a reduced scale, and

Fig. 8 is a fragmentary sectional view illustrating a modified form of ladder tape.

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The awning of the present invention, as shown in Figure 1, includes a plurality of slats 10 of transversely arcuate contour, and which are maintained in parallel spaced relation by two or more ladder tapes 11. The slats and tapes are generally of the type used in Venetian blinds. In accordance with the present invention, provision is made for attaching the upper ends of the ladder tapes to the supporting wall 12 above the window opening therein and for also attaching the lower end of the tapes to the free ends of the vertically swingable arms 15 in such a manner that the tapes are drawn to a position to substantially close the slats 10, as shown in Figs. 1 and 3, when the arms 15 are lowered, and to permit slats to move to their open position and collapse into a compact stack, as shown in Fig. 5, when the arms are raised.

Referring more specifically to Figs. 3, 4 and 5 it will be noted that the ladder tapes 11 include front and rear flexible strips 17 and 18 respectively, which strips are interconnected by longitudinally spaced tie bands, herein shown fourteen in number and designated by the numerals 20—33 respectively. In order to firmly retain the slats in position, the tie bands are each formed by two or more ribbons designated by the letters *a* and *b* which are respectively arranged to overlie and underlie the slats to maintain the same therebetween. As is conventional, the ladder tapes may be formed of any flexible material but are preferably formed of plastic to render the same more weather resistant.

The upper end of the ladder tapes are supported on the wall 12 by means of a mounting rail 35 herein illustrated as having an L-shaped cross-section with one leg 35a thereof attached to the wall 12 and the other leg 35b extending generally horizontally outwardly from the wall. A pulley and tape support bracket 37 is attached to the rail by a mounting bracket 38 for vertical swinging movement relative thereto. Advantageously, the support bracket 37 and mounting bracket 38 are so constructed that the same support and mounting bracket can be used, with minor modifications, to support each of the tapes 11 and to also serve as idler pulleys. In particular, the pulley bracket 37 comprises an elongated generally U-shaped member 39 having a length approximately equal to the width of the front and rear strips 17 and 18 of the ladder tape and having a width that is narrow as compared to the width of the slats 10. The mounting bracket 38 is a generally L-shaped configuration, one leg 38a of which is secured to the horizontally extending leg 35b of the rail, as by fasteners 41. The other leg is bifurcated and extends downwardly along the opposite ends of the pulley bracket 37 and terminates in inwardly extending fingers 42 (see Fig. 2) which underlie the web portion of the pulley bracket to pivotally support the same thereon. In order to facilitate assembly of the pulley bracket on the mounting bracket 38, the pulley bracket may be formed with notches 45 in opposite ends thereof so dimensioned that when one of the notches is positioned to receive a depending portion 38b adjacent one end of the mounting bracket, the inwardly extending finger 42 at the other end of that bracket will pass through the other notch in the pulley bracket to enable removal of the pulley bracket. The support bracket 37 not only supports the ladder tapes 11 but also supports the pulleys for the draw cords. In order to enable use of the same pulley bracket for the several tapes of the blind and also as an idler pulley designated 37a, the support bracket is formed with pairs of aligned openings 47 and 48 in the legs thereof adjacent each end. With this arrangement, a pulley 49 may be mounted by a pin 50 in either or both of the aligned pairs of openings 47 and 48, as required. In the embodiment illustrated, one pulley 49 is mounted on the bracket 37 used as a tape support bracket, and two

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pulleys are mounted on the bracket 37a used as an idler pulley bracket, it being understood that in some installations the draw cords arrangement may require more than one pulley in the tape support bracket and may require additional idler pulleys.

For reasons set forth more fully hereinafter, the upper end of the front strip 17 of the ladder tape is secured to the rear ladder tape 18 adjacent the juncture of the upper tie band 20 with the rear ladder strip. The portion of the front strip 17 above the upper tie band 20 is preferably co-extensive with the upper tie band and extends contiguous thereto as is clearly shown in Figs. 3 and 5. The front strip may be secured to the rear strip in any desired manner, as by adhesives or separate fasteners and as herein shown, the portion of the rear strip 18 above the upper tie band 20 is folded back upon itself and the front tie band extended to overlie the folded portion of the rear strip and the three layers and secured together as by staples 51 and 52. The pulley bracket 37 is disposed between the front and rear strips 17 and 18 and underlies the upper tie band 20 so as to support the upper ends of the tapes 11 thereon. Since the pulley bracket 37 is relatively narrow, it will be seen that the tapes can be drawn to a position such as shown in Fig. 3 in which the upper and lower strips are disposed in relatively closely spaced relation to "close" the slats 10.

The arms 15 are mounted for vertical swinging movement on the wall 12, as by U-shaped brackets 61 and a crosspiece 62, herein shown in the form of a tube having capped ends, is attached to the outer ends of the arms and extends therebetween. The crosspiece 62 may conveniently be attached to the arms 15 by a fitting 63 which surrounds the crosspiece intermediate its ends and which is shaped to have opposed semi-cylindrical ends 64 which receive the ends of the tubular arms 15 and which are secured thereto by a fastener 65. For reasons to be described more fully hereinafter, the arms 15 are angulated adjacent the outer ends thereof to provide a generally horizontally extending inner portion 15a and an outer end portion 15b which is inclined downwardly and outwardly, when the arms are lowered as shown in Figure 1.

The lower ends of the ladder tapes 11 are attached to the crosspiece 62 in such a manner as to draw the upper and lower strips of the ladder tapes to the position shown in Fig. 3, when the arms are lowered, to thereby automatically close the slats 10. Again referring to Figs. 4 and 5, it will be noted that the end portion of the rear strip 18 of the ladder tapes, below the juncture of the lower tie band 33 therewith, extends substantially co-extensive with the lower tie band and is clamped to the front strip 17 at a point adjacent the juncture of the lower tie band with the front strip. The lower ends of the front and rear strips, arranged in this manner, are rigidly clamped to the crosspiece 62. For this purpose a tape attaching bracket is secured to the crosspiece and has a width substantially equal to the width of the tape strips 17 and 18 and a length approximately equal to the length of the tie bands. The lower portion of the rear strip 17, and the lower tie band 33 as well as the portion of the front strip 17 between the lower tie band and the adjacent tie band 32, overlie the front face of the attaching bracket 75 and the portions of the front and rear strips 17 and 18 beyond the juncture of the lower tie band with the front strip are folded back upon the backside of the bracket 75 and clamped thereto. As shown, the lower ends of the ladder tapes extend between the bracket and the crosspiece 62 and fasteners 76 extend through the bracket and through the ends of the tape to secure the lower portion of the tape ladders to the crosspiece. As shown in Fig. 4, the attaching bracket 75 extends generally upright when the arms 15 are in their lowered position, and has a rearwardly extending portion 78 on the upper end thereof, which portion is apertured as indicated at 79.

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As is conventional, each of the slats 10 have openings therein for receiving a draw cord 81 and the draw cord extends downwardly between the upper and lower strips 18 and through the openings in the intermediate slats 10 to a point just above the lowermost tie band 33. In accordance with the present invention, an opening 84 is formed in the rear strip 18, above the juncture of the lower tie band 33 therewith, and the end of the cord extends through this opening and through the opening 79 on the attaching bracket 75. The lower end of the cord is then knotted or otherwise secured to the attaching bracket, as is clearly shown in Figs. 4 and 5. The upper end of the cord 81 is entrained over the pulley 49 in the support bracket 37 to enable the crosspiece 62 and the arms 15 to be drawn upwardly and collapse the awning as shown in Fig. 5.

As apparent from Figs. 3-5, the cord 81 extends from the attaching bracket 75 through the openings in the intermediate slats 10 and over the pulley 49. The cord does not extend through the upper slat 10a or the lower slat 10b. The upper slat 10a is interposed between the upper tie band 20 and the end portion of the front strip 17 to be retained therebetween with the rear edge thereof in abutting relation with the mounting bracket 38. When the awning is extended as shown in Fig. 3, the upper slat 10a overlies the pulley bracket 37 to protectively cover the same and provide a pleasing appearance. In addition, the forward edge of the upper slat 10a engages the front strip at the juncture of the upper tie band 20 therewith while the rear edge of the upper slat engages the mounting bracket 38. This pushes the front strip 17 downwardly while drawing the rear strip 18 upwardly and aids in closing the slats. When the awning is collapsed, the free edge of the upper slat 10a is pushed upwardly while the rear edge thereof swings about the mounting bracket 38, until the upper slat reaches the position shown in Fig. 5 closely underlying the mounting rail 35. The upper slat overlies the collapsed intermediate slats, and forms a protective cover for the same. The lower slat 10b is interposed between the lower portion of the rear strip 18 and the lower tie band 33 and overlies the front of the attaching brackets 75 and the crosspiece 62 to cover the same and provide a pleasing appearance.

As will be noted, the cord 81 extending through the openings in the intermediate slats 10 inhibits axial movement thereof. In order to prevent axial shifting of the upper and lower slats, a clip 90 is provided which, as best shown in Figs. 5 and 6 includes a head portion 91 and leg portions 92 and 93. The head portion 91 is adapted to overlie the respective slats and the leg portions 92 and 93 extend through the openings in the slats and between the ribbon portions a and b of the respective tie bands and underlie the same to detachably clamp the slats to the tie bands.

The location of the ladder tapes and hence the location of the mounting brackets 38 varies for different size awnings. In addition, the number and location of idler pulleys 37a also varies with different installations. A modified form of mounting rail and mounting bracket is illustrated in Fig. 7 and is so arranged as to enable positioning of the mounting brackets at any point along the rail without requiring the drilling of holes in the rail.

In particular, the rail 101 has a generally L-shaped cross-section defined by legs 102 and 103. The edges of the rail 101 are rolled inwardly as indicated at 102a and 103a to define an inwardly facing channel along the side edges of the rail. The mounting brackets 105 are also generally L-shaped and include legs 106 and 107 connected by a diagonal portion 108. The legs are disposed at an angle of slightly greater than 90° with respect to each other, as shown in Fig. 7, and at least one leg, herein shown as leg 106, is made shorter than the corresponding leg 102 so that the bracket 105 can be mounted on the rail by positioning the end of the leg 107 in the channel 103a and pressing that leg toward the leg 103 of the

rail until the other leg 106 of the mounting bracket snaps into the channel 102a. The mounting bracket is then adjusted to the proper position along the rail and locked in that position by a screw 110 which is threaded in the diagonal portion 108 of the mounting bracket and engages the rail 101 adjacent the apex thereof.

Spaced flanges 112 are formed at opposite sides of the upper leg 106 of the bracket and extend downwardly therefrom. A means is provided for vertically pivotally attaching the pulley brackets 37 on the mounting brackets 101 and, as herein shown, pins 115 are attached to the depending flanges 112 and extend through the U-shaped pulley brackets. As is apparent, similar mounting brackets may be used for mounting the idler pulleys.

A modified form of ladder tape is shown in Fig. 8. In this tape, the tie bands 121 which extend between the front and rear strips 122 and 123 are formed in one piece and have spaced slots 124 and 125 therein, the ends of which are spaced a short distance from the front and rear strips of the ladder tapes. The slots define a central tie band which overlies the slats 126 and spaced side tie bands which underlie the slat to firmly retain the slat therebetween and prevent vibration of the slat in the wind. The length of the slots 124 and 125 is made only slightly greater than the width of the slats to prevent lateral movement of the slats between the strips 122 and 123. The portions of the tie band 121 between the edge of the slats 126 and the strips 122 and 123 function as a hinge to facilitate tilting of the slats relative to the strips. A central opening 128 is formed in the tie band to receive the draw cord 81.

From the foregoing it is apparent that the blind may be compactly folded as shown in Fig. 5 with the upper slat 10a overlying the intermediate slats and tape to provide a protective cover therefor. Further, when the arms 15 are lowered and awning extended, the upper strip 17 of the ladder tapes are automatically drawn downwardly relative to the lower strips 18 to "close" the slats 10, as shown in Figs. 3 and 4. As will be noted from Figs. 3 and 4, complete closing of the slats is prevented by the cord 81 which extends therebetween and which provides a small space between adjacent slats to admit air and light. However, since the slats overlap an appreciable amount, the direct rays of the sun are effectively excluded.

We claim:

1. A collapsible awning construction comprising a plurality of ladder tapes each including spaced front and rear flexible strips having upper, lower, and a plurality of intermediate tie bands therebetween at longitudinally spaced points therealong, a plurality of intermediate slats each supported on corresponding ones of the intermediate tie bands, the upper portion of the front strip extending contiguous to said upper tie band and being attached to the rear strip adjacent the juncture of the upper tie band therewith, an upper slat interposed between the upper tie band and the front strip, a cord guide bracket disposed between said upper tie band and rear strip and underlying said upper slat, mounting means for supporting said cord guide brackets, a pair of arms mounted for vertical swinging movement, a crosspiece extending between said arms, a tape attaching bracket for each tape attached to said crosspiece and having a front face approximately equal to the width of a slat, means attaching the lower end of a tape to each tape attaching bracket with the lower portion of the front strip extending adjacent to the lower tie band and across the front face of the tape attaching bracket, a lower slat disposed between the front strip and the front face of the tape attaching bracket to overlie the front of the crosspiece, and a cord attached to said crosspiece and extending upwardly between the strips of one tape and over the guide brackets for drawing the crosspiece upwardly toward the guide brackets to collapse the intermediate slats into a compact stack and raise said upper slat into overlying relation to said guide bracket and said stack of intermediate slats.

2. A collapsible awning construction comprising a plurality of ladder tapes each including spaced front and rear flexible strips having upper, lower, and a plurality of intermediate tie bands therebetween at longitudinally spaced points therealong, a plurality of intermediate slats each supported on corresponding ones of the intermediate tie bands, the upper portion of the front strip extending contiguous to said upper tie band and being attached to the rear strip adjacent the juncture of the upper tie band therewith, an upper slat interposed between the upper tie band and the front strip, a cord guide bracket disposed between said upper tie band and rear strip and underlying said upper slat, mounting means for supporting said cord guide brackets, a pair of arms mounted for vertical swinging movement, a crosspiece extending between said arms, a tape attaching bracket for each tape attached to said crosspiece and having a front face approximately equal to the width of a slat, means attaching the lower end of a tape to each tape attaching bracket with the lower portion of the front strip extending adjacent to the lower tie band and across the front face of the tape attaching bracket, a lower slat disposed between the front strip and the front face of the tape attaching bracket to overlie the front of the crosspiece, said attaching bracket having a laterally extending portion at its upper end, a cord attached to said laterally extending portion and extending upwardly between the front and rear strips of a tape and over said guide bracket for raising said crosspiece toward said guide bracket and thereby collapse said intermediate slats into a compact stack and raise said upper slat above said stack.

3. A collapsible awning construction comprising a plurality of ladder tapes each including spaced front and rear flexible strips having upper, lower, and a plurality of intermediate tie bands therebetween at longitudinally spaced points therealong, a plurality of intermediate slats each supported on corresponding ones of the intermediate tie bands, the upper portion of the front strip extending contiguous to said upper tie band and being attached to the rear strip adjacent the juncture of the upper tie band therewith, an upper slat interposed between the upper tie band and the front strip, a cord guide bracket disposed between said upper tie band and rear strip and underlying said upper slat, mounting means for supporting said cord guide brackets, a pair of arms mounted for vertical swinging movement, a crosspiece extending between said arms, a tape attaching bracket for each tape attached to said crosspiece and having a front face, means attaching the lower end of each tape to said tape attaching bracket with the front and rear strips extending along opposite sides of the lower tie band, a lower slat disposed between the lower tie band and the rear strip and overlying the front side of said attaching brackets and the crosspiece, a cord attached to said bracket and extending upwardly between the strips of one tape to collapse the intermediate slats into a compact stack and raise the upper slat into overlying relation to said guide bracket and said stack of intermediate slats.

4. A collapsible awning construction comprising a plurality of ladder tapes each including spaced front and rear flexible strips having upper, lower, and a plurality of intermediate tie bands therebetween at longitudinally spaced points therealong, a plurality of intermediate slats each supported on a respective one of the intermediate tie bands, the upper portion of the front strip extending alongside the upper tie band and being attached to the rear strip adjacent the juncture of the upper tie band therewith, an upper slat disposed between the upper tie band and the front strip, a U-shaped pulley bracket disposed between the upper tie band and the rear strip and underlying said upper slat, the space between the legs of said U-shaped pulley bracket being small as compared to the width of a slat to enable the front and rear strips of the tapes to be drawn into closely spaced relation, a pulley mounted between the legs of said pulley bracket, a pair of vertically swingable arms, a crosspiece extending between

said arms, means for attaching the lower ends of said tapes to said crosspiece with the lower portion front strip extending alongside the lower tie band, a cord attached to said crosspiece and extending upwardly between the front and rear strips of a tape for drawing the crosspiece upwardly and thereby collapse the intermediate slats into a compact stack, and a mounting bracket engageable with said pulley bracket and extending upwardly therefrom, the rear edge of said upper slat being adapted to engage said mounting bracket whereby the upper slat swings upwardly into overlying relation with said stack when the crosspiece is drawn upwardly.

5. The combination of claim 4 including a mounting rail having an L-shaped cross-section, and means for attaching said mounting bracket to one leg of said rail inwardly of the free edge of the latter whereby the rail forms a drain cap which overlies the upper edge of the awning.

6. The combination of claim 4 including a rail having an L-shaped cross-section and lateral flanges on each leg of the rail, said mounting bracket including an L-shaped attaching bracket underlying the legs of said rail and detachably engaging the flanges thereon, and means for swingably attaching said pulley bracket to said L-shaped attaching bracket to support the upper end of the tape on said rail.

7. A collapsible awning construction comprising a plurality of flexible tapes, a plurality of slats mounted on the tapes at longitudinally spaced points therealong, a pair of arms, means for mounting the arms for vertical swinging movement, a crosspiece extending between the arms, means attaching the lower ends of the tapes to the crosspiece, an elongated horizontally disposed mounting rail having an L-shaped cross-section, a flange extending lengthwise of each leg of the rail and each flange projecting laterally from the respective leg toward the other leg of the rail, an L-shaped bracket underlying the legs of the rail and detachably engaging the flanges thereon, a cord pulley, means on said L-shaped bracket for swingably attaching said cord pulley and the upper end of a tape thereto at a point intermediate said flanges on said rail, and a cord attached to said crosspiece and entrained over said pulley for selectively raising and lowering the crosspiece.

8. A collapsible awning construction comprising a plurality of ladder tapes each including spaced front and rear flexible strips having upper, lower and a plurality of intermediate tie bands therebetween at longitudinally spaced points therealong, a plurality of intermediate slats each supported on corresponding ones of the intermediate tie bands, the upper portion of the front strip extending contiguous to said upper tie band and being attached to the rear strip adjacent the juncture of the upper tie band therewith, an upper slat interposed between the upper tie band and the front strip, a plurality of pulley brackets each having a pulley thereon and each disposed between said upper tie band and the rear strip of a respective one of the ladder tapes and underlying said upper slat, said pulley brackets each having a thickness measured in a direction along the pulley axis which is small as compared to the width of said slats to enable the front and rear strips to be drawn into closely spaced relation, mounting means for supporting said pulley brackets and extending upwardly therefrom, a pair of arms mounted for vertical swinging movement, a crosspiece extending between said

arms, means attaching the lower ends of each of said tapes to said crosspiece, and a cord attached to said crosspiece and extending upwardly between the strips of each of said tapes and over said pulley brackets for drawing said crosspiece upwardly toward said pulley brackets to collapse the intermediate slats into a compact stack, the rear edge of the upper slat being engageable with said mounting means whereby said upper slat swings upwardly about the rear edge thereof into overlying relation to said pulley brackets and the stack of intermediate slats when said crosspiece is drawn upwardly.

9. The combination of claim 8 wherein said mounting means includes a rail having an L-shaped cross-section, a first leg of the rail being adapted for attachment to a supporting wall and a second leg of the rail being adapted to extend outwardly from the wall, and means for swingably attaching each of said pulley brackets on said rail at a point spaced inwardly from the outer edge of said second leg.

10. A collapsible awning construction comprising a plurality of ladder tapes each including spaced front and rear flexible strips having upper, lower, and a plurality of intermediate tie bands therebetween at longitudinally spaced points therealong, a plurality of intermediate slats each supported on corresponding ones of the intermediate tie bands, the upper portion of the front strip extending contiguous to said upper tie band and being attached to the rear strip adjacent the juncture of the upper tie band therewith, an upper slat interposed between the upper tie band and the front strip, a plurality of pulley brackets each having a pulley thereon and each disposed between said upper tie band and the rear strip of a respective one of the ladder tapes and underlying said upper slat, said pulley brackets each having a thickness measured in a direction along the pulley axis which is small as compared to the width of said slats to enable the front and rear strips to be drawn into closely spaced relation, mounting means for supporting said pulley brackets and extending upwardly therefrom, a pair of arms mounted for vertical swinging movement, a crosspiece extending between said arms, means attaching the lower ends of each of said tapes to said crosspiece, a cord attached to said crosspiece and extending upwardly between the strips of each of said tapes and over said pulley brackets for drawing said crosspiece upwardly toward said pulley brackets to collapse the intermediate slats into a compact stack, the rear edge of the upper slat being engageable with said mounting means whereby said upper slat swings upwardly about the rear edge thereof into overlying relation to said pulley brackets and the stack of intermediate slats when said crosspiece is drawn upwardly, and a lower slat disposed between the lower end of the front strip of each tape and the crosspiece to overlie the front face of the latter.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,980,180

April 18, 1961

William R. Stephens et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 23, for "fact" read -- face --.

Signed and sealed this 12th day of September 1961.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

DAVID L. LADD

Commissioner of Patents

USCOMM-DC