

Sept. 24, 1935.

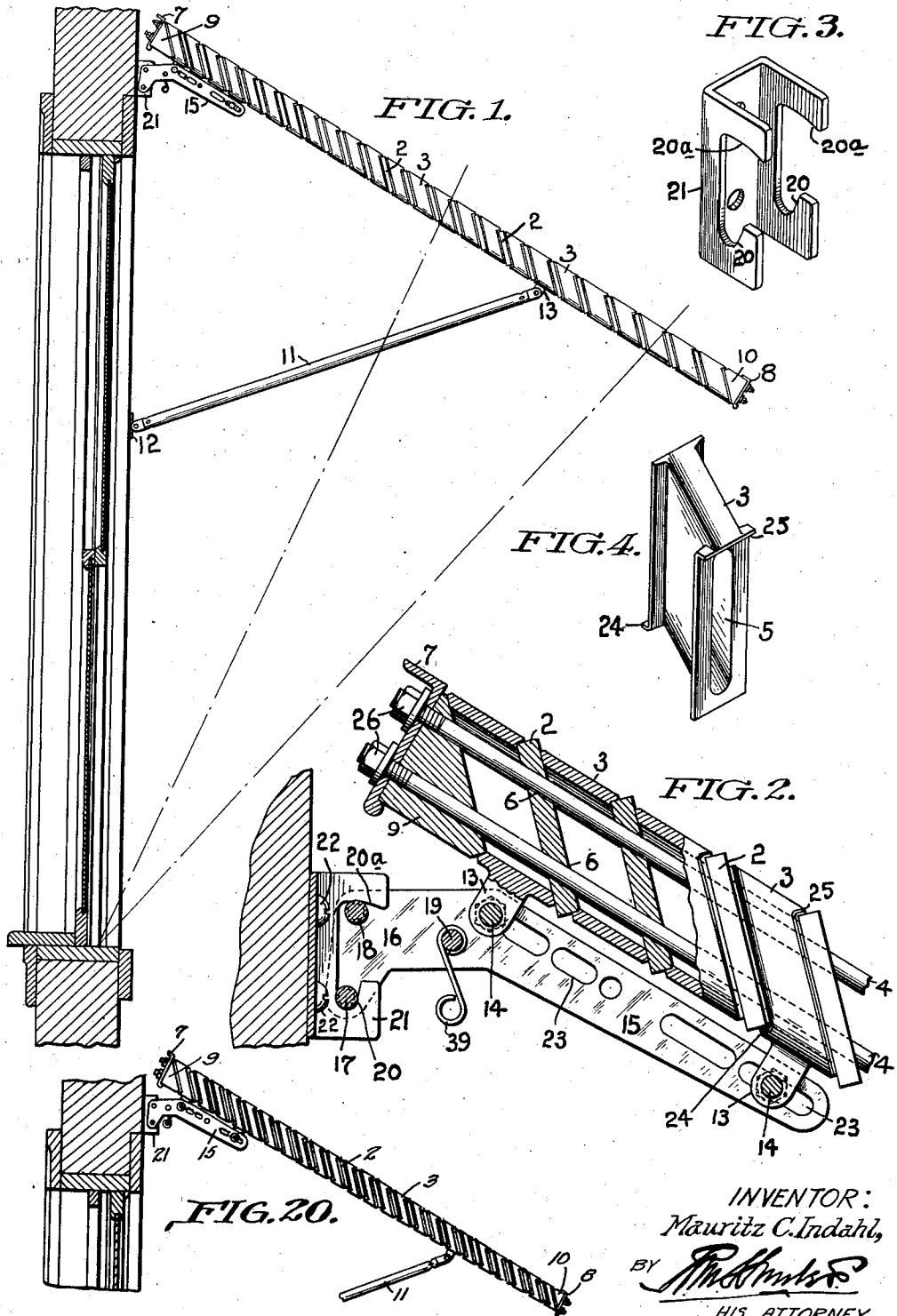
M. C. INDAHL

2,015,342

AWNING

Filed June 6, 1934

5 Sheets-Sheet 1



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2,015,342

AWNING

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FIG. 5.

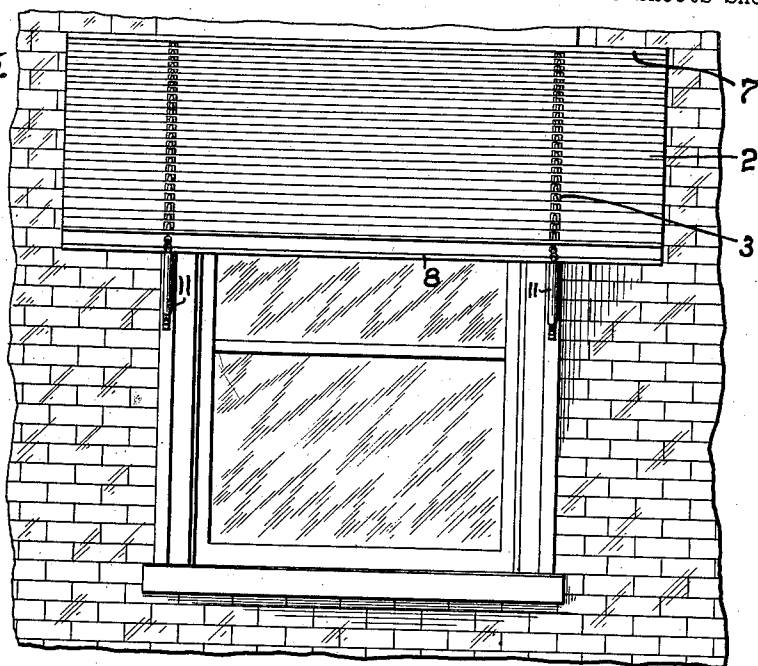


FIG. 6.

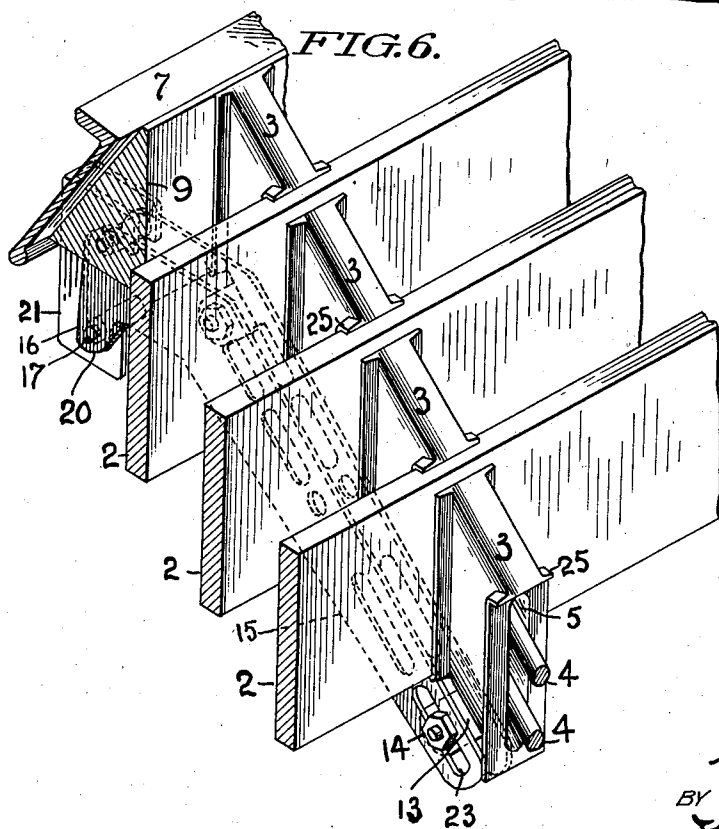
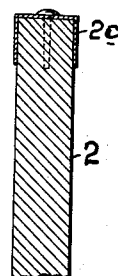


FIG. 2.<sup>a</sup>



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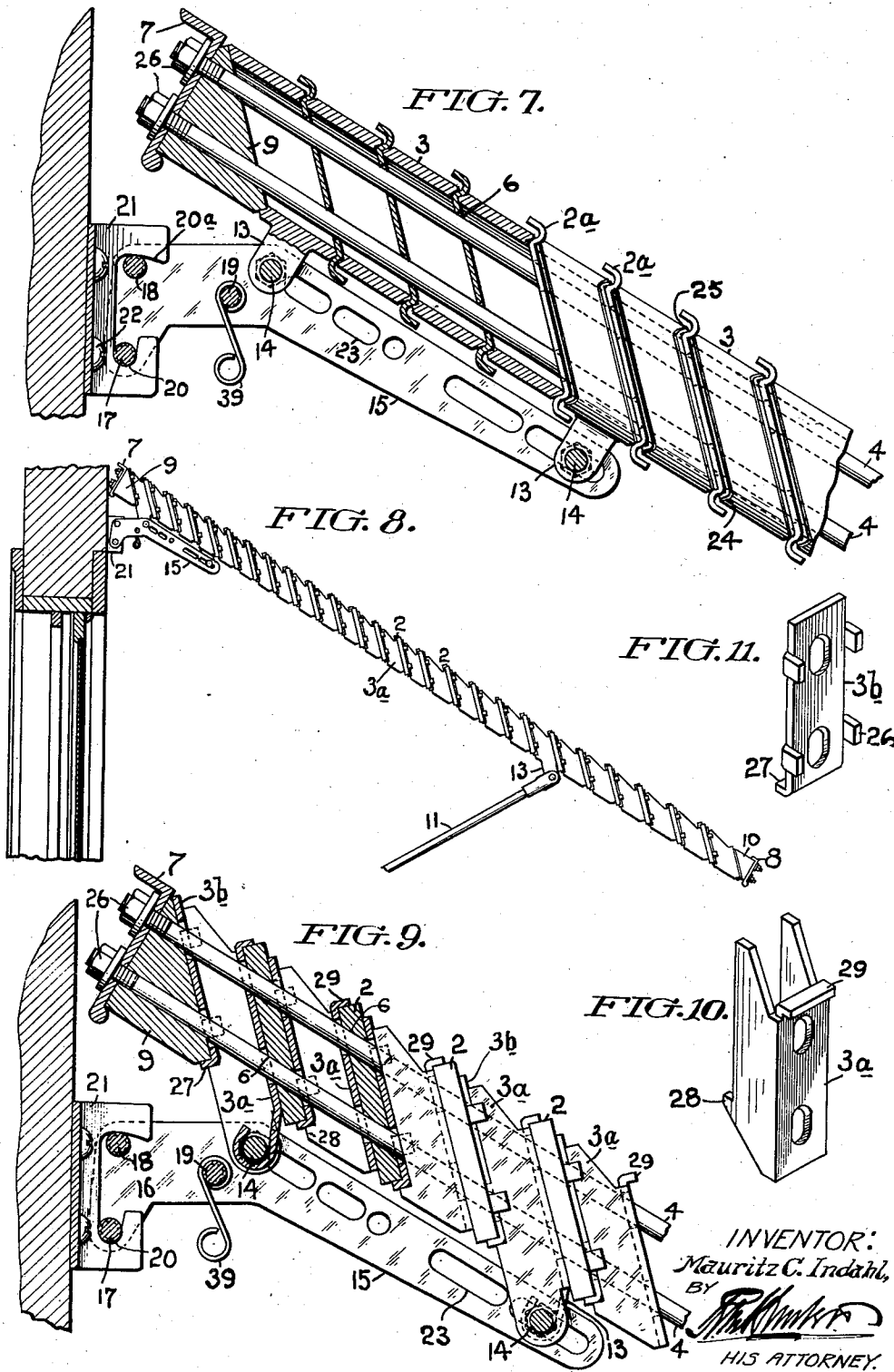
M. C. INDAHL

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AWNING

Filed June 6, 1934

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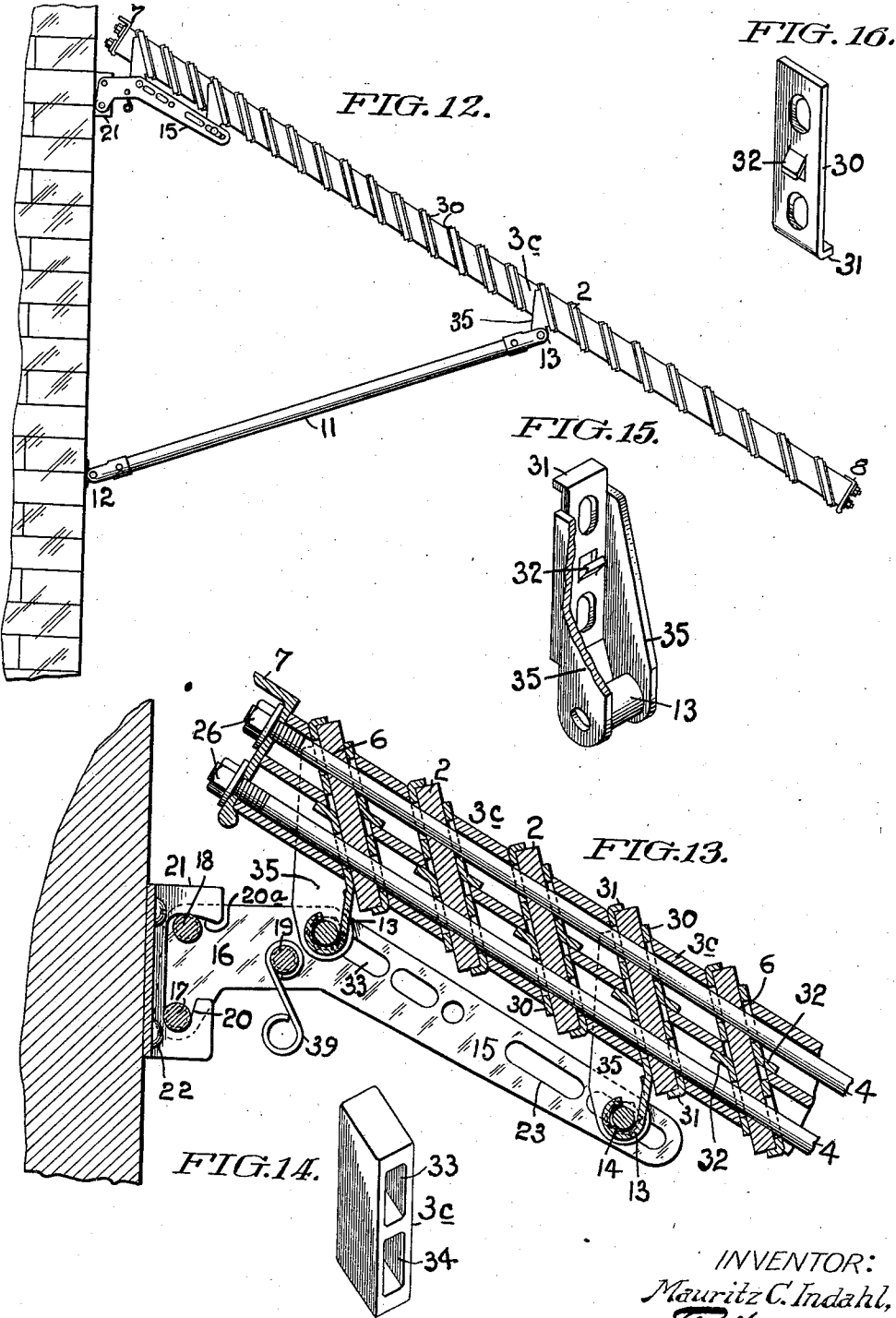
Sept. 24, 1935.

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AWNING

2,015,342

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5 Sheets-Sheet 4



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**Sept. 24, 1935.**

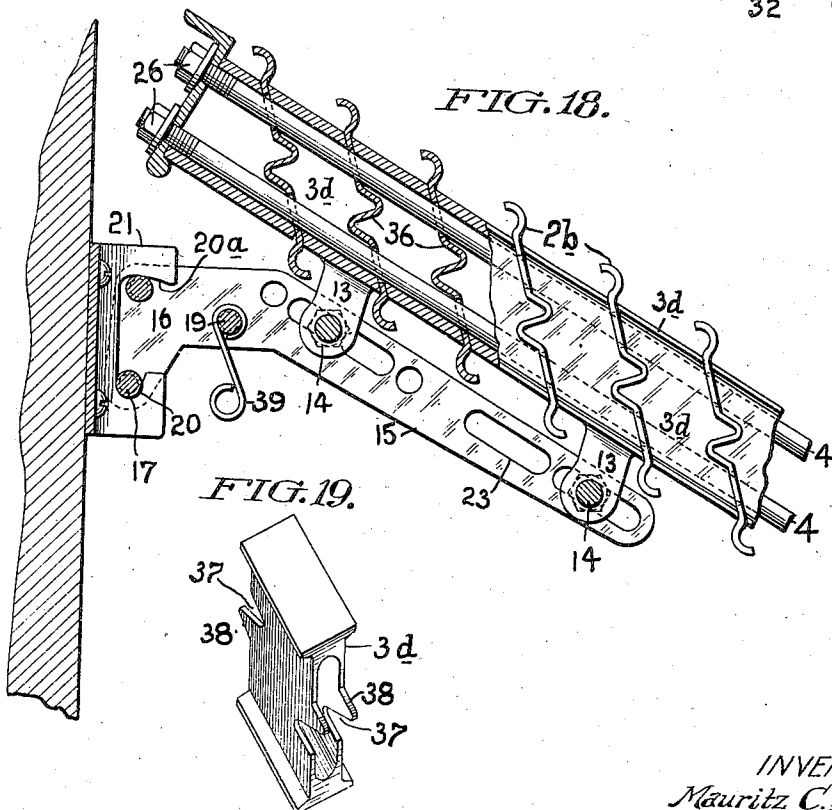
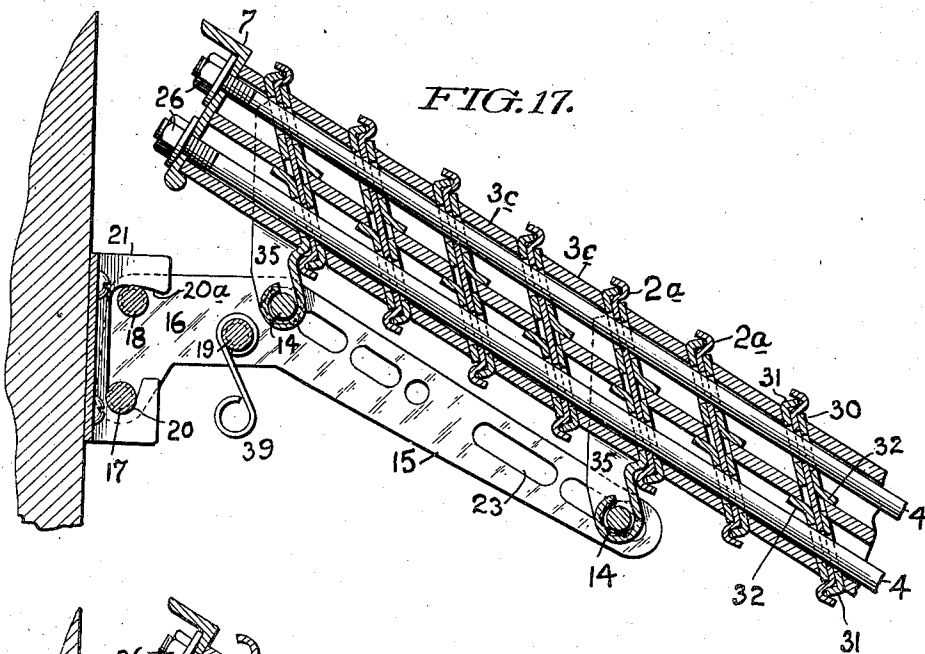
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**2,015,342**

AWNING

Filed June 6, 1934

5 Sheets-Sheet 5.



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## UNITED STATES PATENT OFFICE

2,015,342

AWNING

Mauritz C. Indahl, Rydal, Pa.

Application June 6, 1934, Serial No. 729,221

18 Claims. (Cl. 156—15)

My invention relates to a special type of awning of the general character illustrated and described in Letters Patent No. 1,941,308, issued to me on December 26, 1933; and comprises, more particularly, an awning structure made up of an assembly of parts, wholly or partly of metal, so arranged as to control the sun's rays being continuously directed upon a predetermined area beneath the awning structure and during the time of changing of the sun's altitude from horizon to zenith, while at the same time permitting a subdued light and ventilation to pass into the protected area, as clearly pointed out in my aforesaid Letters Patent.

More specifically considered, the purpose of my present improvements is to enable an awning structure of the type referred to above to be speedily built up by assembling a series of spacing parts, with or without key forms, in proper relative association with longitudinal ray controlling strips or slats which, together with longitudinal finishing or bounding strips, may be clamped in said relative positions by long bolts or tie rods, and whereby the inclined transverse supporting frames of the awning structure are largely made up of said spacing parts combined with the longitudinal ray controlling strips, the latter of which may be either of metal or wood, as preferred.

As pointed out in my aforesaid Letters Patent No. 1,941,308, the longitudinal awning strips or slats are desirably made in "groups" of different depths and spaced equi-distant apart (Figs. 1, 2 and 3); or, as an alternative, said strips may each be of gradually increasing depth and of uniform distance apart (Fig. 12); or still further the strips may be spaced at different distances apart while being made of uniform depth (Fig. 13), to obtain the desired relative positions of the longitudinal strips or slats for controlling the sun's rays. In my present invention, the particular manner and special means for causing the assembly of the longitudinal strips in one or other of the said relations, for regulating the control of the sun's rays, is an important part of the improvements, more particularly, because they permit the results desired by merely selecting the proper elements and assembling them, according to formula, in connection with the bolts or supporting means in predetermined relation.

Referring to the drawings: Fig. 1 is a side elevation of an awning structure embodying my improvements and as applied to a window, the latter being shown in section; Fig. 2 is an en-

larged view, partly in section, of the upper portion of Fig. 1; Fig. 2a is a cross section of a modified form of ray controlling strip; Fig. 3 is a perspective view of a wall bracket constituting a part of the suspension for the awning structure; Fig. 4 is a perspective view of one of the spacing members forming part of the present improvements; Fig. 5 is a front view of the awning structure shown in Fig. 1; Fig. 6 is a fragmentary perspective view of a portion of Fig. 2, showing the supporting means for the awning and several of the ray controlling strips held apart by spacing members of the character shown in Fig. 4; Fig. 7 is an enlarged view, partly in section and similar to Fig. 2, but with the strips or slats formed of rolled metal; Fig. 8 is a side elevation similar to Fig. 1, but showing the use of modified spacing members formed of sheet metal; Fig. 9 is a view similar to Fig. 2, but embodying the sheet metal spacing members shown in Figs. 10 and 11; Figs. 10 and 11 are perspective views of the two-part spacing members employed in Figs. 8 and 9; Fig. 12 is a side elevation similar to Fig. 1, but employing a still further modified form of spacing member; Fig. 13 is an enlarged sectional view, corresponding to Fig. 2, but employing the modified spacing members shown in Figs. 14, 15 and 16; Figs. 14 and 16 are perspective views of the two-part spacing members employed in Figs. 12 and 13; Fig. 15 is a perspective view of a special form of spacing member for facilitating the suspension of the awning, as shown in Figs. 13 and 17; Fig. 17 is an enlarged sectional view similar to Fig. 2, but employing the metal strips or slats of Fig. 7 in conjunction with the spacing members shown in Figs. 14, 15 and 16; Fig. 18 is an enlarged view, partly in section, showing another form of metal strip and spacing member; Fig. 19 is a perspective view of one of the spacing members shown in Fig. 18; and Fig. 20 is a side elevation of a modification of the awning structure shown in Fig. 1.

Referring to Fig. 1, it will be seen that the awning structure is made up of a plurality of parallel strips or slats 2 arranged laterally at an angle and separated from each other by spacing members 3 of the character shown in Fig. 4, the thickness of which spacing members gradually decreases from the lower end of the awning successively upward to the upper portion thereof, as clearly shown in Figs. 1, 8 and 12, said parts being clamped in proper relation by means of tension or tie rods 4. These tie rods 4 extend through the aperture 5 of each of the spacing

members 3 and also through apertures 6 in the longitudinal strips or slats 2. The ends of the tie rods extend through longitudinal rolled metal finishing strips 7 and 8 respectively arranged along the upper and lower edges of the awning, and also extend through triangular-shaped abutment portions 9 and 10 which act as filling pieces between the finishing strips 7 and 8 and the adjacent faces of the spacing members 3. It will be understood that by this assemblage arrangement of the strips 2, spacing members 3, and finishing strips 7 and 8, the said parts are all clamped together by the tie rods 4 in the relative positions shown and provide a plurality of transverse inclined supports at two or more places along the length of the awning structure, as shown in Fig. 5 for example. It will also be understood that the abutment parts 9 and 10 may be co-extensive longitudinally with the rolled finishing strips 7 and 8, if so desired, and in that manner increase the strength of the awning. From a reference to Figs. 1, 4, 5 and 6, it will be seen that the width of the supporting structure, made up of the spacing members 3, the bolts 4 and the finishing members 7 and 8, is relatively narrow as compared to the length of the awning and, as above stated, may comprise two or more of such supports for any given length of awning. Furthermore, the spaces between the strips or slats 2 along the length of the awning provide opportunity for air ventilation and passage of light, but restrict the passage of the sun's rays except upon a predetermined area beneath the awning structure, as fully described in my aforesaid Letters Patent No. 1,941,308.

The longitudinal strips or slats 2 are made of wood and may be reinforced, if so desired, by metallic edge pieces 2c, as shown in Fig. 2a, but I do not restrict myself in this respect as any other form or character of reinforcement may be employed for protecting the wooden strip or slat against warping.

As a suitable means for supporting the awning structure, the latter may be held in an inclined position, such as shown in Figs. 1, 8 and 12, by struts 11 hinged at their lower ends to the window frame, as at 12, and at their upper ends to lugs 13 projecting downward from one of the spacing members 3. Aside from the support of the awning by the struts 11, the upper end of the awning has two of its spacing members 3 also provided with downwardly extending lugs 13 which are bolted, as at 14, between two inclined brackets 15. These brackets 15 have heel extensions 16 connected in spaced relation by rivets 17, 18 and 19, one of the rivets 17 being received in a hook-like recess 20 of a wall bracket 21 while the other rivet 19 acts in conjunction with the edges 20a of the bracket 21 to lock the rivet 17 down into the recess 20. As will be seen from Fig. 6, two inclined brackets 15 are employed, one upon each of the outer side walls of the wall bracket 21, said wall bracket being secured to the window frame structure by means of the screws 22. In this manner, the awning is supported at its upper end to the window frame and the weight of the lower end is sustained by the struts 11, as before explained. In making the connection between the brackets 15 and the lugs 13 of the spacing members 3, the bolts 14 are extended through elongated slots 23 on the brackets 15, such slots being of sufficient length to permit the use of the bolts in connection with spacing members 3 of various thicknesses, such as would compensate for variations as shown in the awning of Figs. 1, 8 and 12.

As distinguished from the continuous transverse inclined support of the awning structure of my former patent hereinbefore referred to, my present improvements employ a series of spacing members 3 arranged alternately with the longitudinal strips or slats 2, and which, by means of the tension bolts or tie rods 4, are clamped together in association to insure the parallel spacing of said strips from each other and so as to control the passage of the sun's rays; and at the same time the assemblage of the strips or slats and the clamping bolts or tie rods is such as to make the transverse suspension frames so produced rigid in character and capable of being made of any length and breadth desired. In carrying out this part of my invention, the spacing members 3 are threaded, according to formula, upon the bolts 4 alternately with the strips or slats 2, and this is made possible by reason of the slotted character of the spacing members, 20 as indicated at 5, and by the apertures 6 through the strips or slats where they are clamped between the spacing members, as shown more particularly in Fig. 2. It will be seen that the strips or slats, as well as the spacing members, are arranged gradually in closer relation from the lower end of the awning to the upper end thereof, to definitely control or regulate the passage of the sun's rays through the spaces between the strips or slats upon a predetermined area beneath the awning structure, as graphically illustrated in dot and dash lines in Fig. 1; but I do not restrict or limit myself in this respect as said strips or slats and spacing members may be arranged in "grouped" or other relation as fully set out in my aforesaid Letters Patent and also referred to in the present specification. It is, therefore, to be understood that the illustrations herein of the relation between the spacing members and longitudinal strips or slats are by way of 40 examples only.

Referring again to the assemblage of the strips or slats with the spacing members and the cooperation of these parts in forming the supporting structure for the awning, I will point out that in threading the strips or slats, and also the spacing members, upon the tie rods 4, the lugs 24 and 25 on the spacing members form additional supports for the strips or slats by providing grooves into which the edges of the strips or slats are received and definitely positioned. For instance, the lower edge of one of the longitudinal strips or slats fits into and is supported by the groove 24 of the spacing member 3 immediately preceding such strip, while the upper edge of the said strip or slat fits into the groove 25 of the following spacing member 3 and aids in supporting such member 3, as shown in Fig. 2. In this manner, the tie bolts 4 are directly attached to the strips or slats and through said strips or slats are indirectly attached to the spacing members. The bolts are further attached to the spacing members by means of the finishing strips 7 and 8 and by association with the latter to the abutment parts 9 and 10. When the strips or slats 2 and spacing members 3 are threaded upon the bolts 4, the tightening of the nuts 26 upon said bolts causes all of the parts to be drawn towards each other and cooperate in assuming a definite rigid relation whereby the awning may be handled and moved as a unit. This rigidity is enhanced by the presence of the finishing strips 7 and 8 as well as by the presence of the members 9 and 10. The spacing members, when of the form shown in Fig. 2, are best formed 75

by die casting or may be made in any other suitable or desirable manner.

While I have described the general construction and functioning of the parts which enter into the make-up of the awning per se, as shown in Figs. 1 and 2, I have not limited myself as to the composition or make-up of the longitudinal strips or slats or the spacing members, as these parts may be varied or modified in numerous particulars, some of which modifications I have herein illustrated and will now describe by way of examples. Furthermore, it will be understood that the general assemblage of the spacing members, longitudinal strips or slats, finishing strips and abutment portions upon the tie rods or bolts, is similar in all the modified awning structures illustrated; and I will, therefore, in describing these modifications point out only wherein such modifications are found without referring again to the general assemblage of the several parts making up the awning structure.

As a preliminary statement, I may employ longitudinal ray controlling strips composed either of wood or of metal, or combinations of these, as desired. The strips when formed wholly of wood, with or without the protecting edge pieces shown in Fig. 2a, are indicated at 2 in Figs. 1, 2, 6, 8, 9, 12 and 13, and will need no further description. The metal strips as employed in Figs. 7, 17 and 18 will be more fully described when referring to the modifications employed in the particular figures.

Referring to Fig. 7, it will be seen that the construction of the awning is similar to that shown in Figs. 1 and 2, with the single exception that metal strips or slats are employed instead of wooden strips in the make-up of the awning structure, said metal strips being indicated at 2a and are threaded upon the tie rods or bolts 4 in conjunction with the spacing members in the same manner as are the wooden strips or slats 2. These metal strips 2a are spaced apart by the use of spacing members 3 of the same general character as that shown in Fig. 4 and employed in connection with the awning structure illustrated in Figs. 1 and 2, and operate in the same manner for regulating and controlling the sun's rays as do the wooden strips or slats.

Considering now the various modifications of the spacing members employed in connection with my present improvements, the following features are pointed out:

1. In Figs. 8 and 9, the spacing members are each made up of two parts 3a and 3b, the former being of a box-like construction and the latter as a flat lid therefor. When these parts are assembled upon the tie rods and in connection with the longitudinal strips or slats 2, the said parts 3a and 3b will be interposed between two adjacent strips or slats so as to space them apart to the desired extent. The box-like portions 3a are made of varying thicknesses, similar to the spacing members 3 of Figs. 1 and 2, and this is accomplished by changing the channel depth of the part 3a. The lid part 3b requires no change in form. It is, however, provided with lugs 26 extending down upon the outer sides of the part 3a to prevent side shifting of said part. The part 3a has at its upper end a flange 29 extending forward of its closed surface and also has lug portions 28 extending backward from the lower edges of the side walls for supporting the plate 3b (Fig. 11), said plate 3b having a flange 27 which, in turn, supports the longitudinal strip or slat 2. The spacing members, comprising the

parts 3a and 3b of Figs. 10 and 11, may be made as castings, but are preferably formed as stampings from sheet metal.

Referring now to Figs. 12 and 13, the spacing members employed in this construction are of the character as shown in Figs. 14 and 16; but in this connection it will be seen, from Fig. 13, that the longitudinal ray controlling strips or slats 2 are interposed between two sheet metal stampings 30 of the form illustrated in Fig. 16, said stampings being reversed in their assemblage upon the tie rods 4 and with the spacing members 3c of the form shown in Fig. 14. The plates 30 are flanged at one end as at 31 to provide shouldered grooves between which the longitudinal strips or slats are clamped, and are also provided with lugs 32 about mid-way of their length, said lugs fitting into spaces 33 and 34, respectively, in the spacing members 3c, as shown in Fig. 13, to prevent shifting of the plates 30 and the spacing members 3c. In the construction of Figs. 12 and 13, it will be seen that the spacing members which are to be attached to the inclined brackets 15, instead of having the lugs formed integral with the body of the members themselves (as shown in Figs. 2 and 9, for example), have the lugs formed upon separate side flanges 35 attached to the plates 30, as shown in Fig. 15, and these plates 30 are, therefore, mechanically connected to the brackets 15 substantially as in the case of Figs. 2 and 9. It will also be seen that where these special members are employed, the spacing members 3c fit between the side flanges 35.

In Fig. 17, the construction therein shown is similar to that shown in Fig. 13, with the single exception that the wooden strips or slats 2 of Fig. 13 have been substituted by metallic strips 2a of the character shown in Fig. 7.

Referring to Figs. 18 and 19, it will be seen that in the construction shown in these figures, a still further modified form of spacing member 3d and also a modified metallic strip or slat 2b are employed in the make-up of the awning structure illustrated in these figures. More specifically referring to these modified spacing members and metallic strips or slats, it will be seen that said strips or slats are provided with zigzag body portions 36, as shown in Fig. 18, which fit into notches 37 and cooperate with lugs 38 on the spacing member 3d. It will further be seen that in this construction of Fig. 18, the spacing members which are secured to the inclined bracket 15 have the lugs for such attachment extended downward from the said spacing members, as in the case of Fig. 2, for example. The zigzag portions 36 of the strips or slats act as supports between the strips or slats and the spacing members.

While I have shown a desirable bracket construction for supporting the awning in an inclined manner and securing it to the window frame, such as would be suitable for all of the various modified forms of construction described herein, it will be evident, however, that such supporting bracket construction and the manner of detachably securing it to the window frame may be modified in any desired manner from the construction shown.

The assembling or building up of the awning structure may be accomplished in accordance with a predetermined formula which definitely indicates the parts which are to be employed in succession to produce the proper relative assemblage of said parts, and may in this manner include in such assemblage the ray controlling strips or slats, and also the different sizes or proportions

of the spacing members with or without the key forms 32, as shown in Fig. 16, for example.

In storing the awning structure during the winter season, I may either disassemble the structure making up the awning and store the several parts; or the strut 11 may be disconnected at its hinged point 12 and turned upward into engagement with a clip 39 and the awning, as a whole, allowed to swing about its axis 20 to a vertical position; or the awning structure may be disconnected from the wall bracket and hung up in a storage place, as preferred.

Furthermore, it will be understood that the several constructions of awning structure herein described may be reversed in their order of assembly and inclination when the structure is to be used on that side of a wall which receives the sun's rays in its travel from zenith to horizon, to obtain the same desired results as are secured when the sun's altitude is changing from horizon to zenith.

Of course the awning illustrated and described herein may be modified and changed in many ways without departing from the invention herein set forth and hereafter claimed.

I claim:

1. An awning, comprising a plurality of substantially parallel longitudinal strips fastened to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, and clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure.

2. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, and hinged suspension means comprising a fixedly positioned wall bracket and a detachable bracket hingedly connected to the wall bracket and having an extension firmly secured to a plurality of the spacing members along the transverse supports.

3. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising a pair of clamping bolts and spacing members for holding the parallel awning strips in spaced relation, and means for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts to form a self-sustaining unitary slotted awning structure.

4. An awning, comprising a plurality of substantially parallel longitudinal strips ar-

anged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising a pair of clamping bolts and spacing members for holding the parallel awning strips in spaced relation, and means for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts to form a self-sustaining unitary slotted awning structure, said clamping bolts arranged one above the other and extending lengthwise through passages formed in both the spacing members and longitudinal strips.

5. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, and longitudinal finishing strips in parallel alignment with the longitudinal awning strips disposed at the rear and front ends of the awning structure, said bolts extending through said spacing members and strips whereby said parts are firmly clamped together.

6. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, and sustaining means connected with the spacing members at widely separated points along the transverse supports whereby the awning structure is supported in position.

7. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, and clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, said spacing members being provided with oppositely directed top and bottom flange extensions forming transverse grooves into which the top and bottom edges of the longitudinal strips are received and sustained thereby.

8. In an awning structure, the combination of a plurality of edgewise parallel longitudinal strips, bolts for supporting said strips, and spac-

ing means for spacing said strips on said bolts, said longitudinal strips formed of rolled sheet metal and having their parallel edges formed in oppositely directed shouldered portions.

5 9. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said 10 transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips 15 and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, means for suspending said awning structure in a fixed oblique position comprising downwardly 20 extending oblique suspension means at the upper rear end and rigid struts connected to one of the spacing members positioned substantially midway of the transverse supports for the awning structure.

10. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, and clamping bolts for applying pressure 35 transversely to the length of the parallel longitudinal strips and also clamping the said strips and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, said 40 longitudinal strips being provided with oppositely directed top and bottom flange portions forming grooves into which the top and bottom edge portions of the spacing members are received in abutting relation.

11. An awning, comprising a plurality of substantially parallel longitudinal strips arranged to form a slotted structure, transverse supports at a distance apart and sloping downwardly from the rear to the front end of the awning structure and sustaining the slotted structure, said transverse supports comprising spacing members for holding the parallel awning strips in spaced relation, and clamping bolts for applying pressure transversely to the length of the parallel longitudinal strips and also clamping the said strips 55 and spacing members alternately along said bolts, whereby all of the parts cooperate to form a self-sustaining unitary slotted awning structure, said spacing members being supported on said bolts and having successively increasing widths to provide gradually increasing spaces between the longitudinal strips of the awning structure.

12. An awning structure, comprising flat parallel longitudinal strips having openings through same, bolts extending through the openings of 65 said strips, spacing members on said bolts and between said strips, and means on the ends of said bolts for applying tension to the strips and

spacing members to form a self-sustaining unitary slotted awning structure.

13. An awning structure, comprising longitudinal strips, holes extending through the flat sides thereof, bolts passing through said holes, 5 spacing members on said bolts and between each of said strips, means for holding said strips in oblique relation to said bolts, means engaging the edges of the strips for holding said strips and spacing members in alignment, and means at the 10 ends of said bolts for applying tension to the strips and spacing members to form a self-sustaining unitary slotted awning structure.

14. An awning structure, comprising longitudinal strips, holes extending through the flat sides 15 thereof, bolts passing through said holes, spacing members on said bolts and between each of said strips, means for holding said strips in oblique relation to said bolts, overhanging flanges on said spacing members engaging the top edge 20 of the strip on one side and the bottom edge of the strip on the other side for holding said strips and spacing members in alignment, and means at the ends of said bolts for applying tension to the strips and spacing members to form a self- 25 sustaining unitary slotted awning structure.

15. An awning structure, comprising parallel longitudinal strips having openings through same, spacers with intermediate bar and independent lugs interlocked on intermediate bar of 30 said spacer, said independent lugs having means at opposite ends to co-act with top and bottom edges of parallel longitudinal strips, bolts extending through whole structure and means on said bolts to apply tension to strips and spacing 35 members to form an awning structure.

16. In an awning structure, the combination of a plurality of parallel longitudinally arranged strips and a plurality of inclined transverse supports therefor, said supports comprising a plu- 40 rality of bolts passing through said strips, spacing members on said bolts and between said strips, said supports spaced a substantial distance apart and also a substantial distance from the end edges of said strips, whereby the ends of the awnings counter-balance the center against sag- 45 ging, and clamping means for holding said supports in fixed relative positions.

17. An awning structure, comprising parallel metal strips having one or more longitudinal cor- 50 rugations and openings through said strips, bolts extending through said openings, spacing members with irregular profile to conform with the corrugations on said strips placed on said bolts, and means on the ends of said bolts for applying 55 tension to the ends of the strips and spacing members to form an awning structure.

18. An awning structure comprising longitudinal strips having holes extending transversely through same, bolts passing through said holes, 60 spacing members on said bolts and between said strips, means for holding said strips in oblique relation with said bolts, and means at the ends of said bolts for applying tension to the strips and spacing members to form a self-sustaining 65 unitary slotted awning structure.

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