

Nov. 23, 1965

H. PREHN

3,219,101

AWNING

Filed May 10, 1962

5 Sheets-Sheet 1

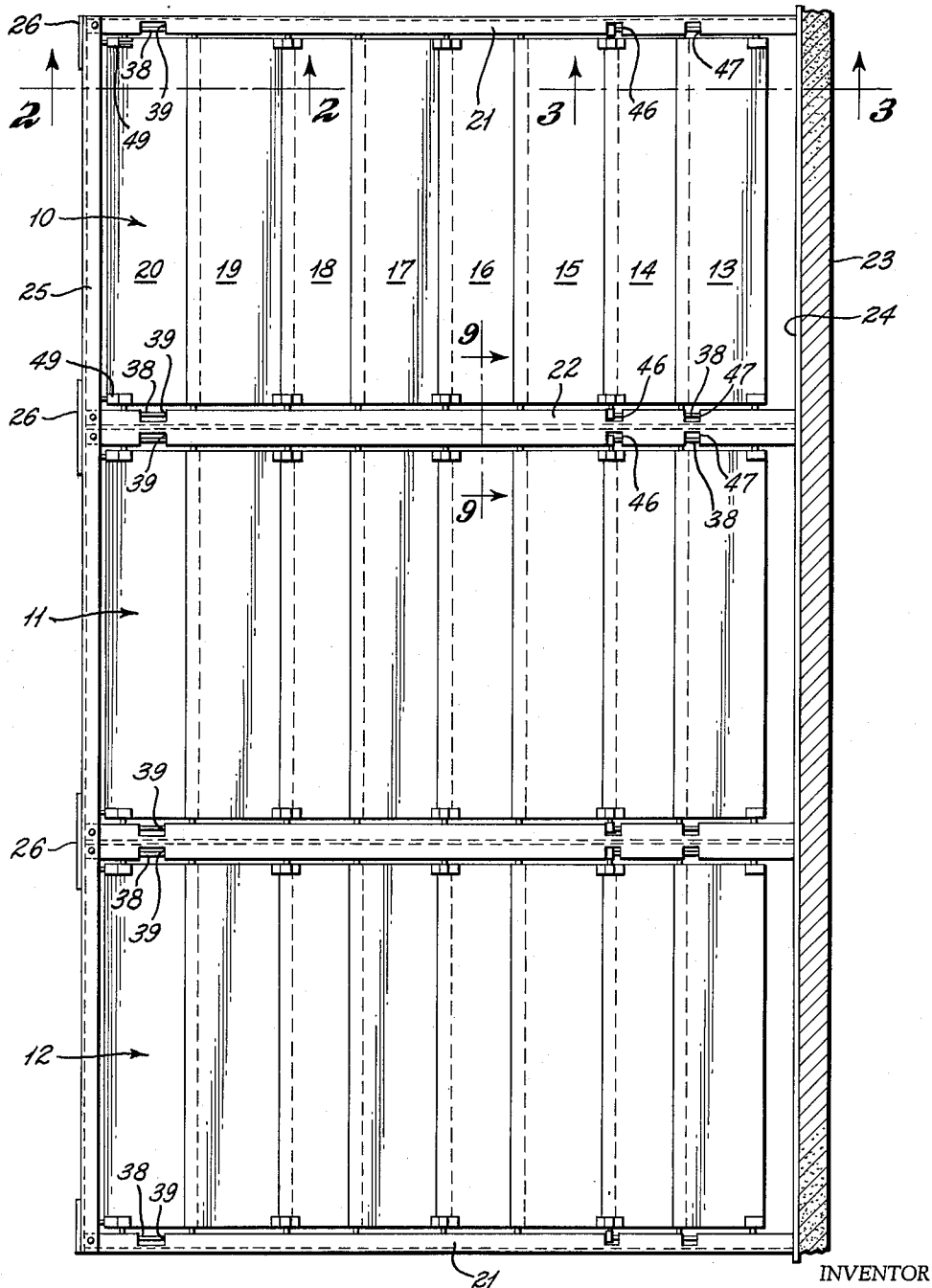


Fig. 1.

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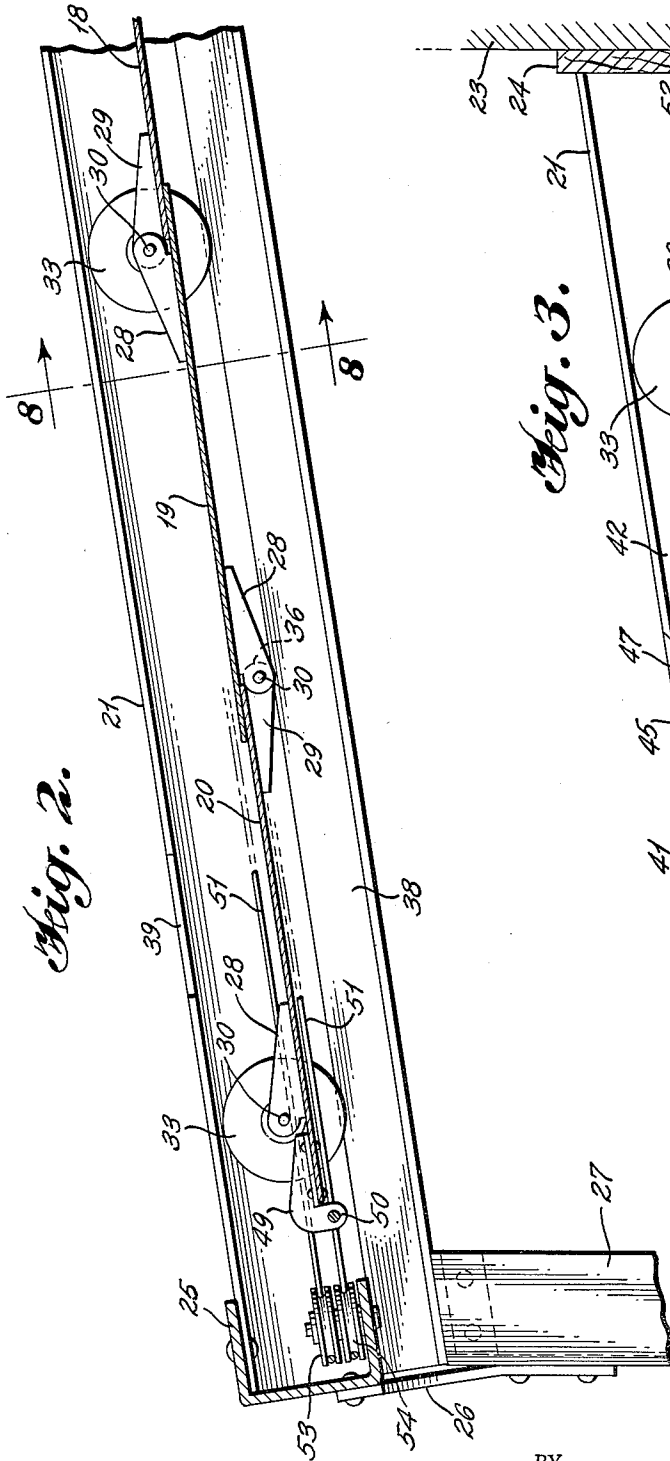


Fig. 2.

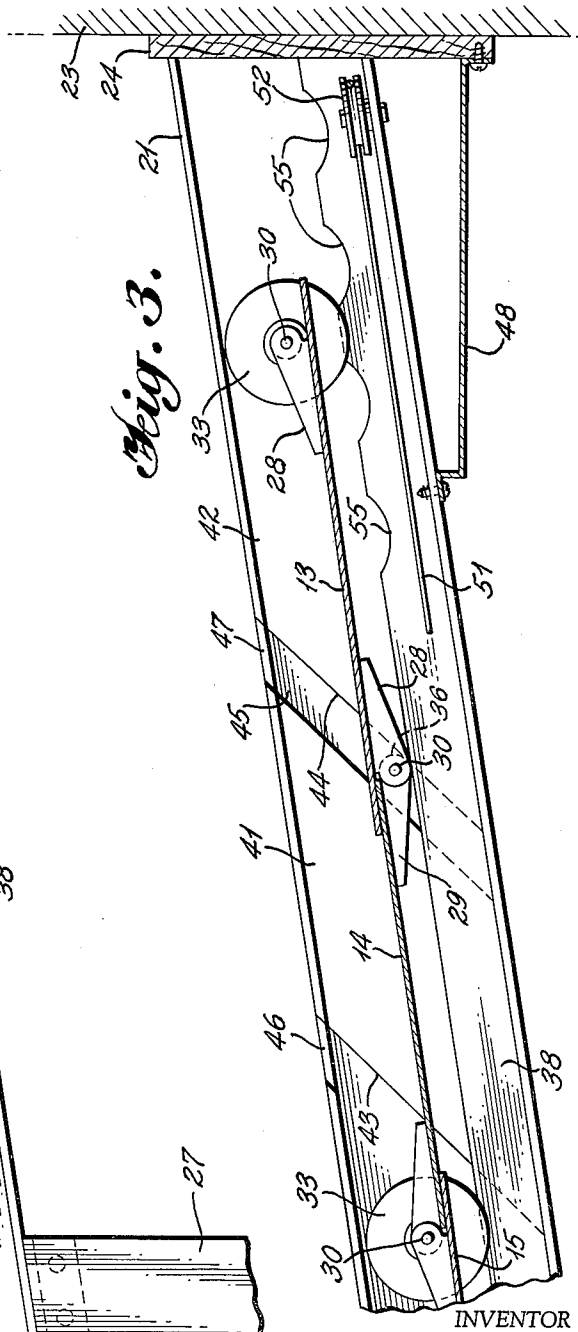


Fig. 3.

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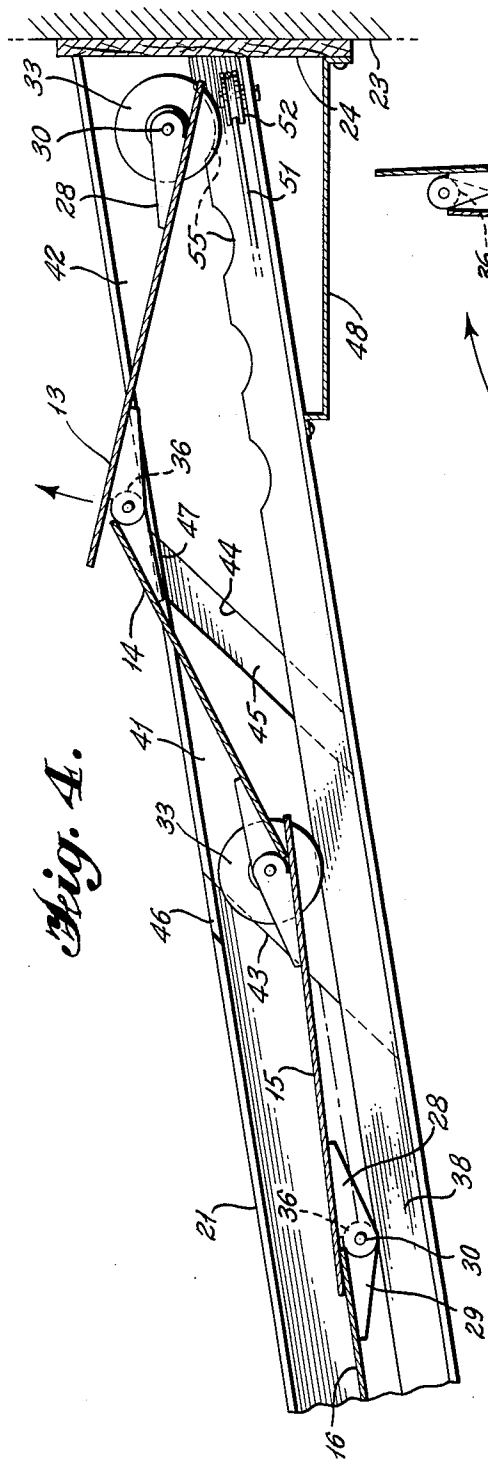


Fig. 4.

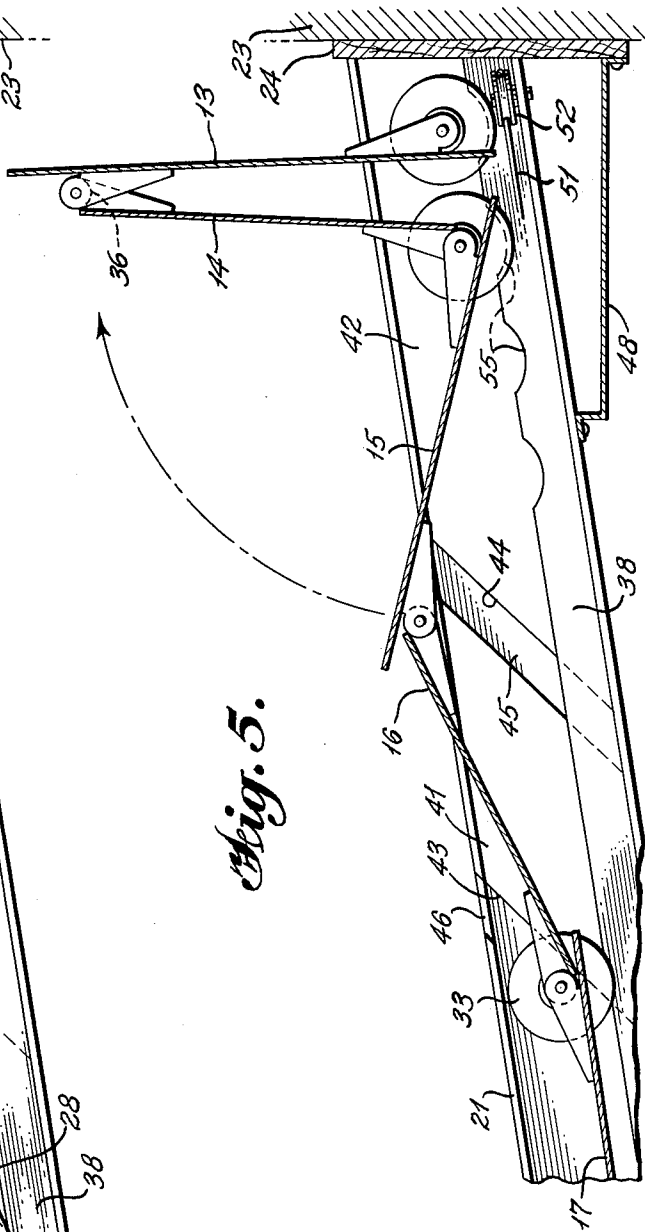


Fig. 5.

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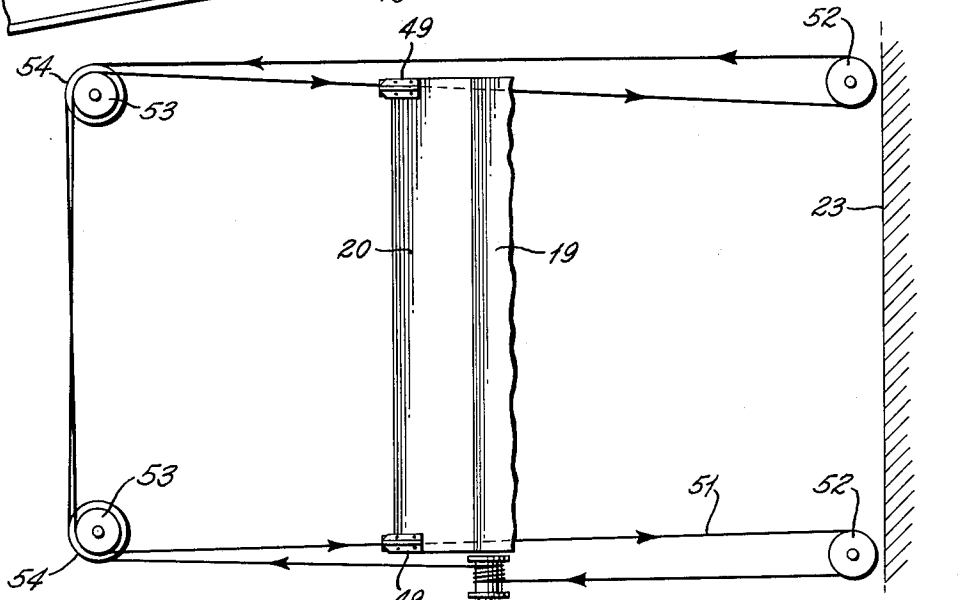
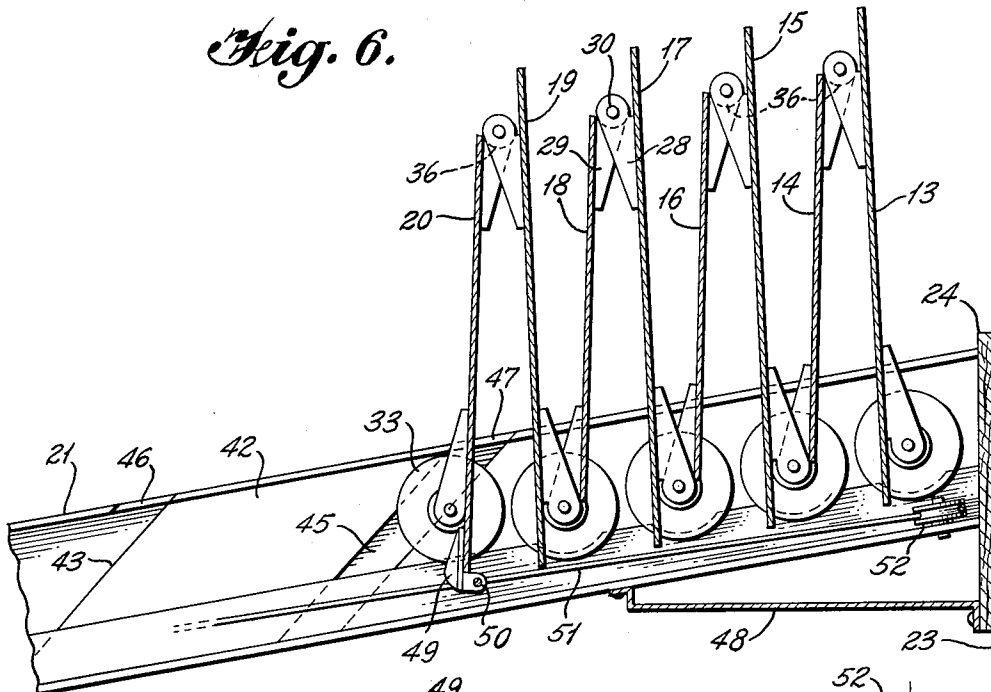
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*Fig. 6.*



*Fig. 7.*

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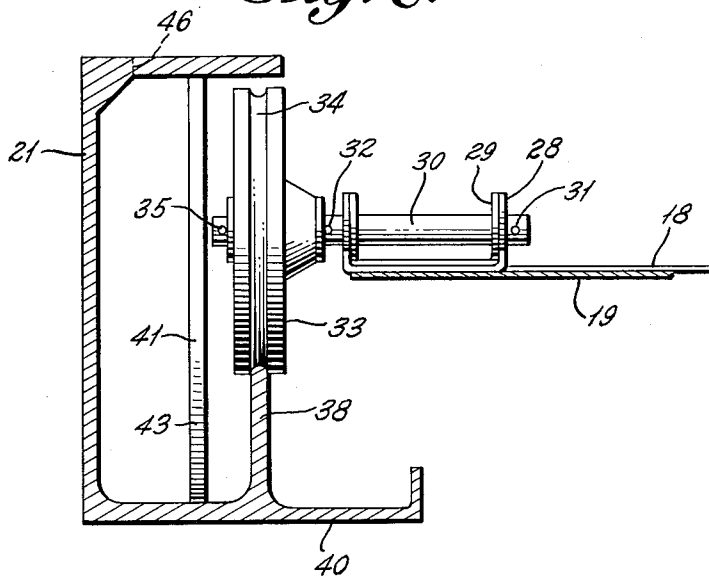
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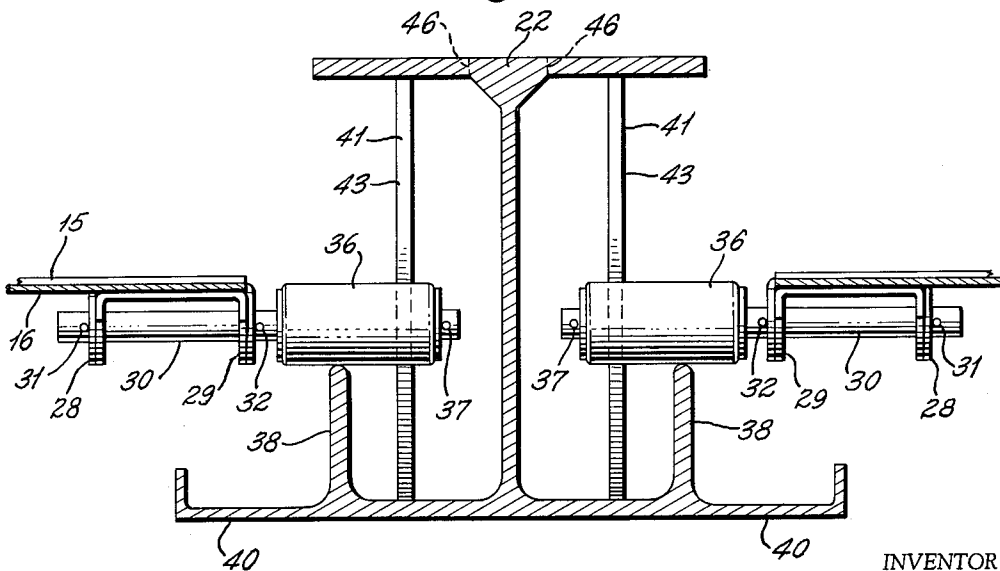
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*Fig. 8.*



*Fig. 9.*



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AWNING

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Filed May 10, 1962, Ser. No. 193,800  
2 Claims. (Cl. 160-193)

Outdoor living and dining on a patio or porch has fast become a part of the home owner's living comfort and pleasure. To make such outdoor living enjoyable in direct sunlight many patios have been covered with permanent structures of canvas, wood, fiberglass or aluminum. All these coverings suffer the disadvantage of excluding too much daylight from the adjoining house on cloudy or rainy days. It is the object of this invention to provide a rigid awning which is adjustable in its coverage of the patio to any position desired, from fully covered to fully opened.

Another object of the present invention is to provide an awning comprising a plurality of panel sections, preferably made from metal or plastic material such as fiberglass, which are arranged to be folded relative to one another in proper sequence in order to achieve a "down" or "up" position or to maintain the awning in between these two positions.

A further object of the present invention is to provide an awning of a construction that absolutely excludes twisting or warping of the awning.

A still further object of the present invention is to provide an awning composed of panel sections which remain firmly in each set position without swaying, buckling or flapping under all conditions.

Another object of the present invention is to provide an "up" folded position of the panel sections positively secured against unintended lowering.

A further object of the present invention is to provide a rigid and extremely durable awning construction of high strength and reliability.

A still further object of the present invention is to provide the possibility of arranging easily a plurality of awnings side by side without interference between adjacent ones.

Other and further objects of the present invention will be readily apparent from the following detailed description of the same, taken in conjunction with the drawings, in which:

FIGURE 1 is a plan view of the awning showing three single awnings side by side wherein the panel sections are in completely extended position;

FIGURE 2 is a sectional view taken along line 2-2 of FIGURE 1;

FIGURE 3 is a sectional view taken along line 3-3 of FIGURE 1;

FIGURE 4 is a view similar to FIGURE 3, but showing the first stages of folding the first panel sections while raising the awning;

FIGURE 5 is a view similar to FIGURE 4, but showing the continuation of the raising of the awning;

FIGURE 6 is a view similar to FIGURE 5, but showing the panel sections in their completely "up" folded position;

FIGURE 7 is a plan view showing the arrangement of the draw wire means;

FIGURE 8 is a section taken along line 8-8 of FIGURE 2; and

FIGURE 9 is a section taken along line 9-9 of FIGURE 1.

Referring with greater particularity to FIGURE 1 of the accompanying drawings, three awnings 10, 11 and 12 are shown. The following description relates particularly to the awning 10, because the awnings 11 and 12 are substantially of the same construction. The awn-

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ing 10 comprises eight panel sections 13 to 20, each panel section overlapping the following one, as indicated in the illustrated embodiment by the full and dashed lines, to provide a rain-proof roof in the completely extended position, called the "down" position in the following description, of the awning. It will be understood that the number of the panel sections can be chosen at will depending on the necessary length of the awning; however, an even number of panel sections is preferred. The panel sections can be made from any suitable material, a preferred embodiment uses panel sections made from fiberglass or aluminum.

The supporting framework of the awning comprises a steel beam 21 shaped like a C (see FIGURE 8) and a steel beam 22 either shaped like a C if the awning comprises only awning section 10, or shaped like an I (see FIGURE 9) if the awning comprises two or more sections as shown in FIGURE 1. The upper ends of the steel beams 21 and 22 are attached to a house wall 23 by suitable means, in the illustrated embodiment a redwood panel 24. The lower ends of the steel beams 21 and 22 are connected together by a U-shaped steel beam 25. Fishplates 26 connect the beam 25 to upright standing posts not shown in FIGURE 1, but one post having the numeral 27 being shown in FIGURE 2. Beams 21 and 22, as well as other structural parts, may be composed of aluminum or alloys thereof.

FIGURE 2, read in conjunction with FIGURES 8 and 9, illustrates the connections between the single panel sections. It will be seen from FIGURE 2 that hinge parts 28 and 29 are attached to the panel sections, wherein said hinges are alternately fixed to the upper and lower sides of the panel sections. The said hinge parts are provided with eyelets in their side faces so that a movable connection is obtained by hinge rods or pins 30 which fit through the eyelets and are secured against slipping by split pins 31 and 32. The hinges are substantially the same, but vary in some dimensions to make possible the assembling of the common pins, rods or shafts 30 and the overlapping of the panel sections. The upper end of panel section 13, the lower end of panel section 20 and all connections between the panel sections 14-15, 16-17 and 18-19 carry the said hinges on the upper surface, the pins thereof having mounted thereon guide wheels 33 with guide grooves 34, the wheels 33 being secured against slipping by split pins 35. All the remaining odd numbers of connections between the panel sections carry the said hinges on the lower surface, the pins thereof having mounted thereon guide rollers 36 as seen in FIGURE 9, the rollers 36 being likewise secured against slipping by split pins 37. The guide wheels 33 and guide rollers 36 run on tracks 38 mounted along the narrow sides of each of the panel sections. The tracks 38 are rigidly connected to the steel beams 21 and 22 either by welding or making the beams 21 or 22, respectively, from one piece. The tracks 38 accomplish an additional rigidity of the steel beams 21 and 22. Slots 39 in the upper flange of steel beams 21 and 22 make possible the inserting of the completely assembled panel sections including the guide wheels and rollers on the tracks. As illustrated in FIGURES 8 and 9, a flange member 40 attached to the beams 21 and 22 constitutes a trough and provides discharging of the rain water which can enter laterally between the edge of the panel sections and the tracks 38. FIGURE 9 shows the symmetrical embodiment of beam 22 to provide an arbitrary joining of a second awning section.

The upper portion of the awning in section is shown in FIGURE 3, wherein the panel sections are in "down" position. Two guide members 41 and 42 are inserted serially between the upright standing parts of the C-shaped

steel beam 21 or 22, respectively, and the tracks 38, the first guide member 41 forming an oblique ramp 43, the second guide member 42 forming an oblique ramp 44, wherein the first guide member 41 extends parallel to said ramp 44 so that a slot 45 is provided. The guide members 41 and 42 are attached to the steel beams 21 and 22 and spaced from the tracks 38 so that the guide wheels 33 will not be affected thereby; however, the prolonged ends of the guide rollers will engage the oblique ramps 43 or 44, respectively, and be lifted from the tracks 38 in order to accomplish the "up" folding of the awning. The upper end of track 38 has notches 55 to receive wheels 33. Through recesses 46 and 47 in the top of the steel beams 21 and 22, the guide rollers will emerge from the ramps. The gutter 48 provides discharging of the rain water penetrating between panel section 13 and wall 23.

FIGURE 7 shows a draw wire arrangement adapted to move the panel sections. Brackets 49 rigidly connected on each side to the top of the lower panel section 20 have eyelets 50 to fasten the wire 51. The wire 51 is guided by means of the single sheave pulleys 52 on the upper end of the awning and the double sheave pulleys 53, 54 on the lower end thereof in the form of an endless loop. All pulleys are freely movable around the bolts suitably connected to the supporting framework of the awning. The moving of the draw wire is obtained by operating the winch 54. The wire is wound several times around the drum of the winch in order to prevent slipping of the wire on the drum. The marked arrows along the line of the wire illustrate the pulling direction if the awning is to be folded up.

FIGURES 4, 5 and 6 demonstrate the advancing folding "up" of the awning from the "down" position. When exerting pull on the wire 51 by operating the winch 54, the linked panel sections move upwards and the guide roller 36 resting in the slot 45 moves up on the ramp 44 to the top of the steel beam 21 or 22, respectively, through the recesses 47 until guide wheel 33 attached to the panel section 13 drops into the circular end notch or recess 55 in the top of the track 38. This position is illustrated in FIGURE 4. With continued movement, the panel sections 13 and 14 fold up into a vertical position; in the meantime, guide roller 36 of the connection of panel sections 15 and 16 has moved up on the ramp 43 and emerged through the recess 46 in the flange of the steel beam, as will be seen from FIGURE 5. The remaining sections will fold up in the same manner. FIGURE 6 shows all panel sections folded "up" in a vertical position. In order to obtain the vertical position of the panel sections on the pitched track, the distances from center to center of the connections of panel sections 14, 16, 18 and 20 are longer than of panel sections 13, 15, 17 and 19. The recesses 55 in the tracks receiving the guide wheels 33 provide the "up" folded position of the panel sections positively secured against unintended lowering. For closing the awning, the above described procedure will be reversed. The circular recesses 55 in the upper end of the tracks into which the guide wheels 33 carrying the panel sections 13 to 19 have dropped will retain the upstanding panel sections sufficiently for the proper sequence of the down movement thereof.

Although the present invention has been described in a specific embodiment, various changes and modifications, obvious to one skilled in the art, may be made within the scope and intent of the present invention.

What is claimed is:

1. In an awning, supporting means including a pair of parallel spaced rails downwardly sloped in registry alignment from a position of attachment at one end to a wall,

each rail in section defining a C-shaped channel having its respective open portions in facing relationship, each rail including a pair of slots on its respective upper portion adjacent said rail end attached to the wall, track means inside each parallel rail, said track means defining a vertical flange extending lengthwise of the bottom portion thereof and including a number of concave recesses adjacent said rail end attached to a wall, a pair of inclined means on each said rail laterally spaced outwardly from said track means and substantially proximate said wall end, each said inclined means defining within each rail a pair of longitudinally spaced oblique ramps each having a respective upper end engaging one of said pair of slots and their lower ends adjacent said vertical flange in angular proximity thereto, a plurality of elongated panels arranged side by side in a row, an elongated side portion of a first panel of the row adjacent the second panel of the row overlapping an elongated side portion of a second panel, said second panel, and each of the remaining panels overlapping the next succeeding panel on the proximate elongated side thereof, a first group of hinges below each opposite transverse panel edge, said hinges pivotally connecting the joints between all odd number panels of the row and the next succeeding even number panels of the row at each end of said joints, with the pivot axis for each joint being substantially at the edge of the overlapped panel of the joint, a second group of hinges above each opposite transverse panel edge and pivotally connecting the joints between all even number panels of the row and the next succeeding odd number panels of the row at each end of said joints with the pivot axis of each joint being substantially at the edge of the overlapping panel of the joint, first guide means mounted each on the pivot axis of each hinge of the second group, each of said guide means being positioned adjacent opposite transverse panel edges, said guide means including a grooved wheel operably inserted into the concave portion of each one of said pair of parallel rails and movably displaceable over said vertical flange inside each rail, second guide means each mounted on the pivot axis of each hinge of the first group, each guide means positioned adjacent opposite transverse panel edges, said second guide means including an elongated roller operably inserted into the concave portion of each one of said pair of parallel rails and movably displaceable over said vertical flange inside each rail, said second guide means projecting laterally beyond said first guide means and terminating in the plane of said inclined ramp, and means to apply a force to the first panel of the row.

2. An awning as set forth in claim 1, wherein the even number panels of the row have shorter elongated transverse dimensions than the odd number panels of the row.

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