April 14, 1931. E. J. HANNA 1,800,626

AWNING MECHANISM OR THE LIKE

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Fig. 1.

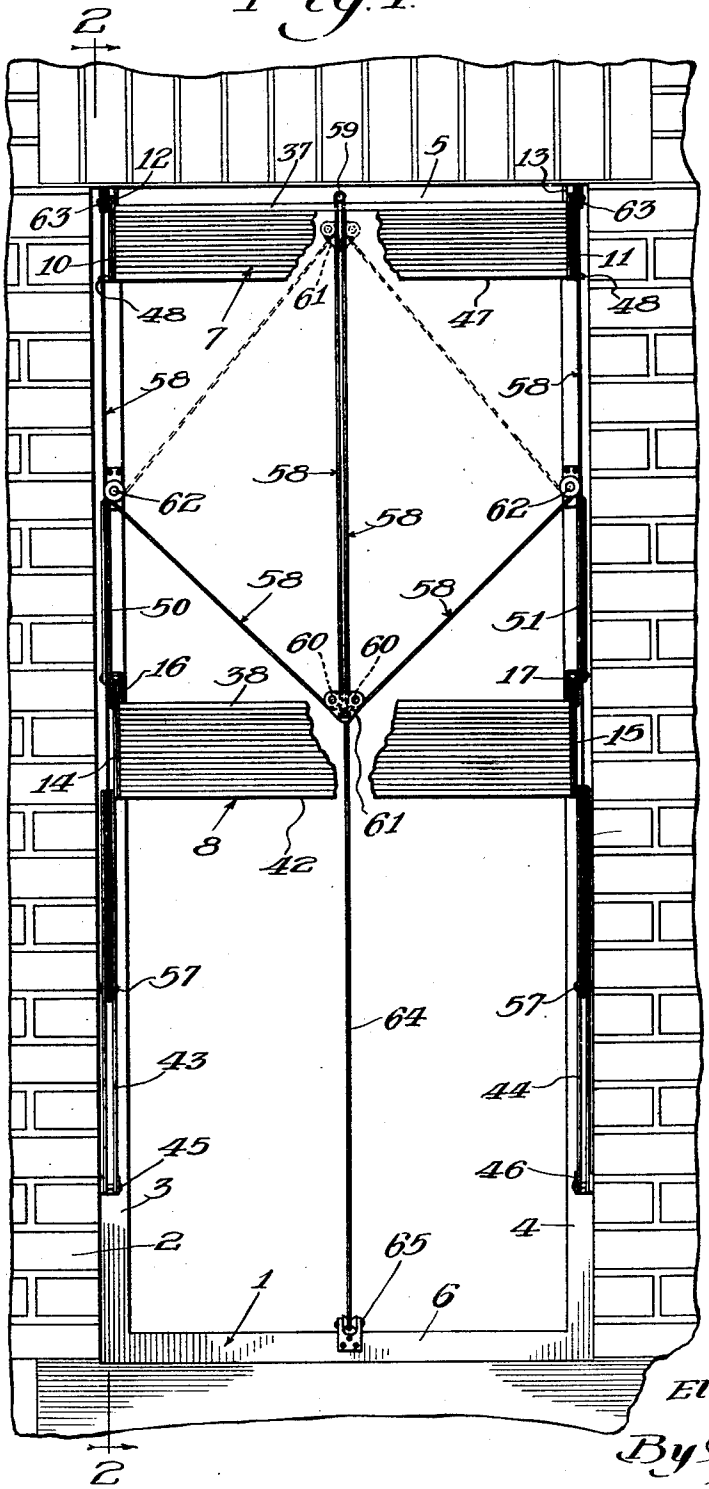
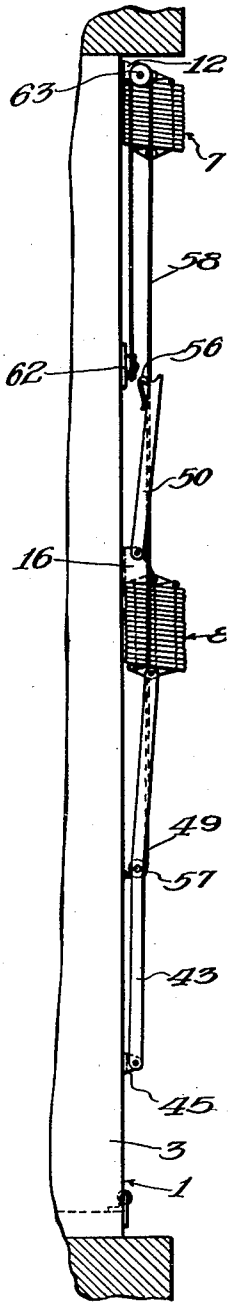


Fig. 2.



Inventor:
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AWNING MECHANISM OR THE LIKE

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Fig. 3.

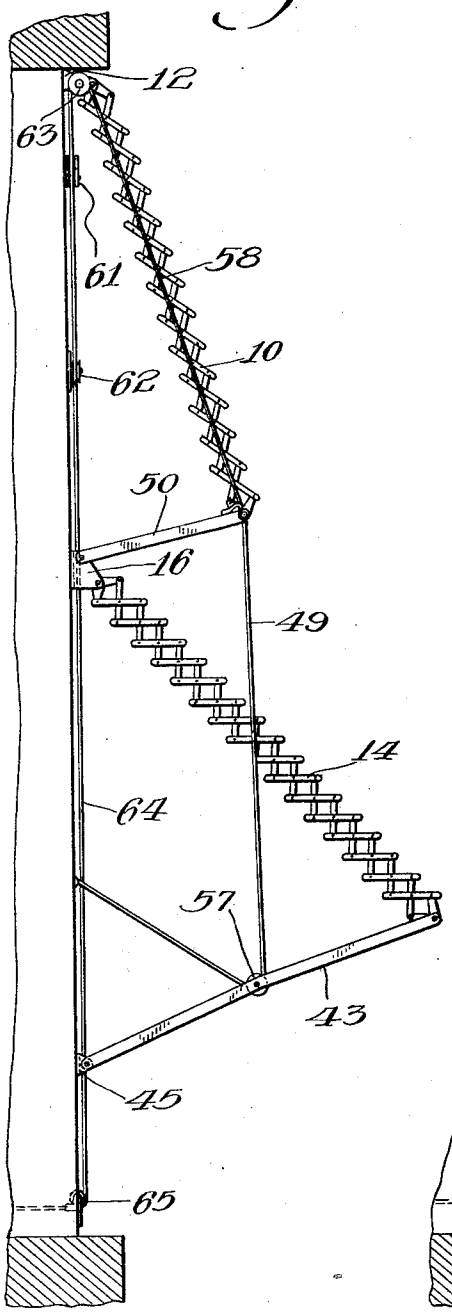
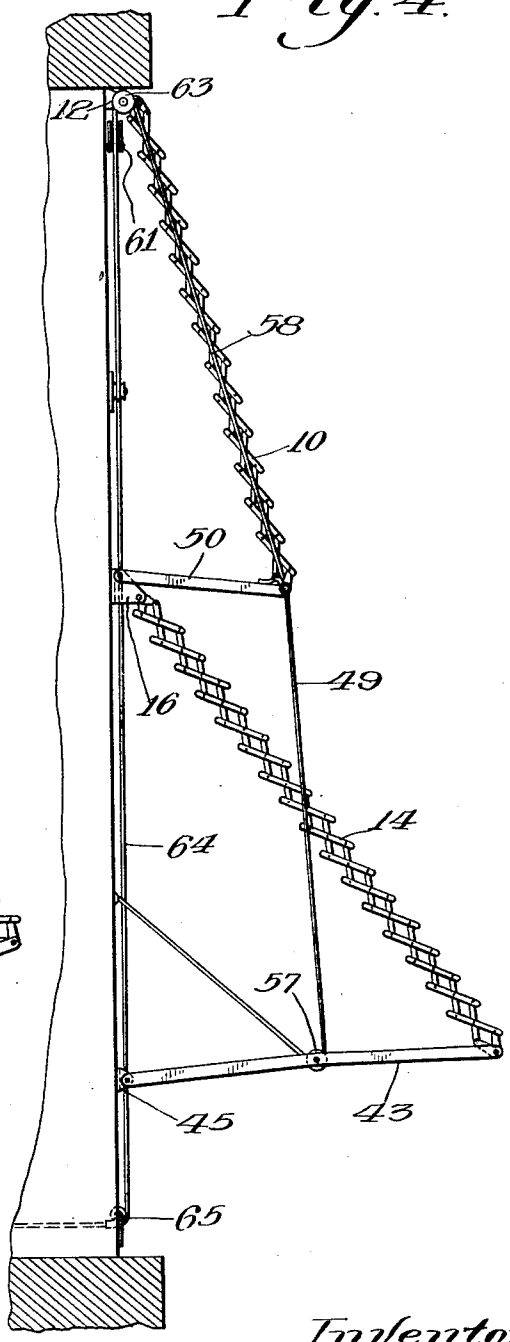


Fig. 4.



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AWNING MECHANISM OR THE LIKE

Filed Nov. 7, 1929 3 Sheets-Sheet 3

Fig. 5.

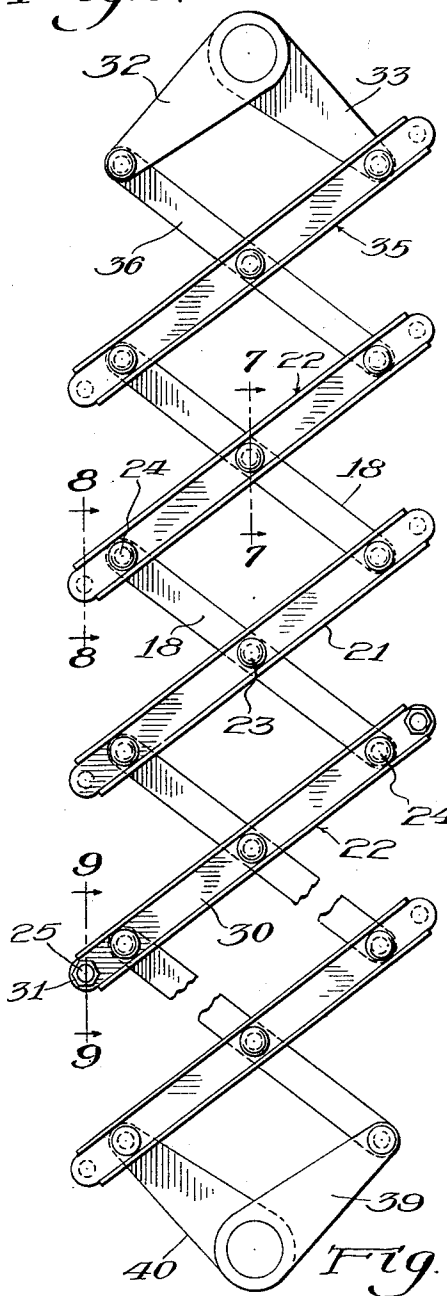


Fig. 6.

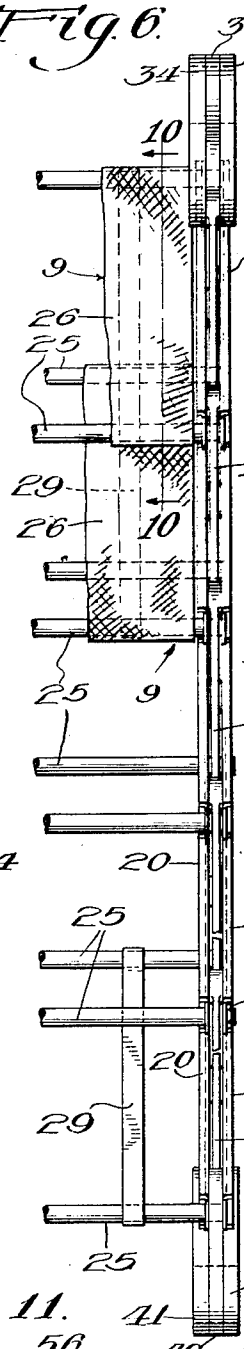


Fig. 7.

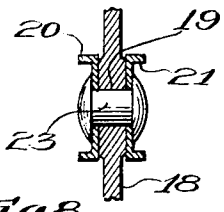


Fig. 8.

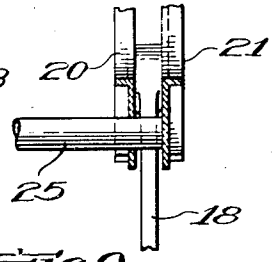


Fig. 9.

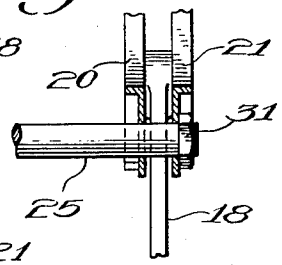


Fig. 10.

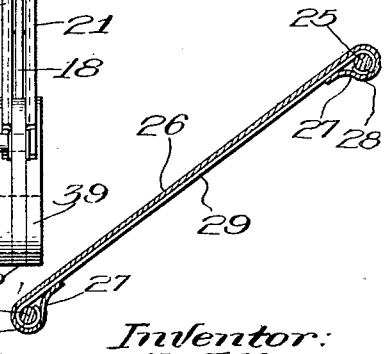
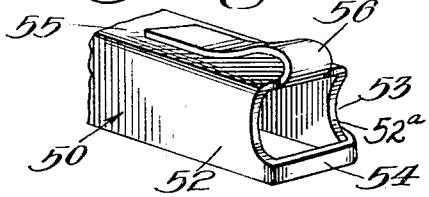


Fig. 11.



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Patented Apr. 14, 1931 1,800,626

UNITED STATES PATENT OFFICE

ELLSWORTH J. HANNA, OF EVANSTON, ILLINOIS

AWNING MECHANISM OR THE LIKE

Application filed November 7, 1929. Serial No. 405,343.

The present invention relates to barrier or deflector mechanisms for openings and more in particular to movable and adjustable awning mechanisms or the like.

Among the objects of the invention is to provide a novel barrier or deflector mechanism for an opening and having a plurality of pivotally connected vanes or slats being supported and carried by substantially rigid and extensible means.

Another object of the invention is to provide a novel means for supporting the vanes of a barrier or deflector mechanism for openings, this novel means comprising a substantially rigid and extensible means for support of the ends of the slats or vanes, and being adapted to be collapsible or contracted when not in use and to be extended into any desired position for varying the angularity of the vanes or slats supported thereby.

The invention comprehends the idea of pivotally mounting the extensible means adjacent the sides of the opening and providing suitable means for engagement with the extensible means for movement of the awning or barrier mechanisms outwardly and away from the opening upon a lowering of the same.

Another novel feature of the invention is the provision of cross members or rods secured to certain parts of the extensible means for preventing lateral movement of these extensible means, these rods adapted to have secured thereto a suitable covering to provide a plurality of vanes for the barrier or deflecting mechanism.

The invention further comprehends the idea of providing novel pantograph mechanisms for attachment to the sides of the opening, certain of the links of these mechanisms adapted to have attached or secured to the ends thereof cross members or rods, the adjacent rods or cross members of the same links having a covering secured to the same for providing a plurality of vanes or slats for the barrier or deflector.

Another object of the invention is to provide novel means for reinforcing and maintaining the rods or cross-members between the pantograph mechanisms in alignment, such means comprising strips or the like connected or attached between the adjacent rods of the same link and spaced therealong.

The invention further comprehends the idea of providing a plurality of extensible means or pantograph mechanism secured to or pivotally connected adjacent each side of an opening and carrying therebetween a plurality of vanes or slats, means being provided for raising and lowering these mechanisms simultaneously.

A further object of the invention is to provide a novel arrangement of means for raising and lowering a plurality of extensible means or pantograph mechanisms, the means employed comprising a cable or cables or the like, the same being operatively connected to the pantograph mechanisms and to an equalizer. This novel equalizer arrangement is provided to vary the ratio or movement between the same and the pantograph mechanisms during certain portions of travel of the latter from a contracted to an extended position and vice versa.

The invention further comprehends the idea of providing a novel constructed means or lever arm for movement of one of the sets of pantograph mechanisms outwardly and away from the opening, this arm being provided with an eye at the end thereof for the threading of a cable or the like for the raising of the mechanism, this arm being further provided at the same end with a notch or the like for engaging extensions on the pantographs for outward movement thereof upon a lowering of the same.

Other objects, advantages, features and capabilities are comprehended by the invention as will later appear, and as are inherently possessed thereby.

Referring to the drawings:

Fig. 1 is a front view in elevation of a window or opening and showing an embodiment of the invention connected to the sides thereof to provide an awning for the same.

Fig. 2 is a vertical cross-sectional view taken in the plane represented by the line 2—2 of Fig. 1 and showing the novel awning mechanism in its raised or contracted position.

Fig. 3 is a vertical cross sectional view similar to Fig. 2 of the drawings and showing the awning mechanism partially extended.

Fig. 4 is a vertical cross sectional view similar to Figs. 2 and 3 of the drawings and showing the awning mechanism still further extended.

Fig. 5 is a side view of the extensible means or pantograph mechanisms of the awning or barrier and disclosing the same in a partially extended position.

Fig. 6 is a top view of the awning or barrier mechanism and showing the construction of the vanes thereof.

Fig. 7 is a view in cross section taken in the plane represented by line 7—7 of Fig. 5 and showing in detail the pivotal connection between the links of the pantograph mechanism.

Fig. 8 is a view in cross-section taken in the plane represented by line 8—8 of Fig. 5 and showing in detail the manner of carrying certain of the cross members of the awning mechanism in the pantograph mechanisms.

Fig. 9 is a view in cross section taken in the plane represented by line 9—9 of Fig. 5 and disclosing in detail the way in which certain of the rods or cross members of the awning mechanism are secured to the links of the pantograph.

Fig. 10 is a view in cross section taken in a plane represented by line 10—10 of Fig. 6 of the drawings and showing in detail the reinforcing means of the vanes and the construction of the same.

Fig. 11 is an enlarged view in perspective of the end of a lever arm and showing in detail the eye construction for the threading of a cable or the like and the notch for engagement with extensions on the pantograph mechanisms.

Referring now more in detail to the drawings, an embodiment of the invention is shown as being connected to or supported by the frame 1 of a window or other opening in a wall or partition 2 and having side members 3 and 4 and top and bottom rail members 5 and 6 respectively, this frame being suitably secured within this opening.

The embodiment selected to illustrate the present novel invention comprises upper and lower awning mechanisms 7 and 8 respectively. These awning mechanisms comprise a plurality of vanes or slats 9 (as clearly shown in Fig. 6 of the drawings), the vanes of the upper mechanism being carried by pantograph mechanisms 10 and 11 supported at their upper end by brackets 12 and 13 attached at the upper ends of members 3 and 4 of the frame 1 respectively, while the slats of the lower mechanism are supported and carried by pantograph mechanisms 14 and 15 secured to brackets 16 and 17 attached to and intermediate of the ends of frame members 3 and 4 respectively.

These pantograph mechanims are of somewhat similar construction and as shown in Fig. 5 of the drawings comprise a plurality of links 18 having apertures adjacent the ends thereof and a central aperture 19, each of these links being interposed between spaced channel members 20 and 21 of a link, such as 22, the aperture 19 registering with similar central apertures of the members 20 and 21 and adapted to receive a rivet 23 or the like for pivotally securing these links together. The apertured ends of these links 18 are interposed between the channel members 20 and 21 of adjacent links and are adapted to register with similar openings in the channel members and adjacent the ends thereof, these members being pivotally secured together by rivets 24 or the like. It will be seen that this construction provides a substantially rigid means for supporting the vanes of the barrier or awning and may be readily contracted so as to require a minimum of space and which may be easily extended.

Each of the links 22 of the pantograph mechanisms on each side of the opening are provided with apertures adapted to receive the ends of rods or cross members 25, these rods providing a frame work for a suitable covering 26 of any desired material, such as cloth, fabricoid, sheet metal, or any other desired material to form a vane for the awning. This covering 26 is shown as having hems 27 for securing the same to the rods, openings being provided along the hem at intervals to permit the insertion of bent ends 28 of a metallic strip 29 or the like for engagement with the rods 25 after the covering has been placed on the rods and for reinforcing and preventing displacement of the same.

In order to prevent lateral displacement of these pantograph mechanisms, the inside member 20 only of certain of these links are apertured adjacent the ends thereof, the rods or cross members carried by these links protruding therethrough and adapted to abut the blank ends of the outside member 21, as clearly shown in Figure 8 of the drawings. Both the members 20 and 21 of certain other of these links, such as 30, are provided with apertures at their ends, the rods or cross members carried thereby having threaded ends protruding through these aligned openings or apertures and being engaged by a nut 31. Every third or fourth link of the pantograph mechanism preferably should be of this construction, so that by a tightening of these nuts, the blank ends of members 21 of the links 22 will abut the ends of the rods for preventing inward lateral movement of the pantograph mechanisms, while the nuts 31 will prevent outward lateral movement of the same. Any other suitable mechanism or means of attaching the rods to the panto-

graph mechanism and for preventing lateral displacement of the same, could be provided for accomplishing the same purposes.

Each of these pantograph mechanisms have at their upper ends lever arms 32, 33 and 34, the arm 33 being pivoted adjacent the end of the end link 35 by means of a rivet or the like, while the lever arms 32 and 34 are provided with apertures registering with an aperture adjacent the end of the link 36 through which extends a rivet or the like for pivotally connecting the same to the link 36. Each of these arms are provided with an aperture at the other end thereof, the arms of the upper pantograph mechanisms 10 and 11 being journaled on a cross member or rod 37 carried by the brackets 12 and 13, while the arms of the lower pantograph mechanisms are journaled on the cross member 38 carried by the brackets 16 and 17.

Similar lever arms 39, 40 and 41 are provided at the lower ends of these pantograph mechanisms, the lever arms of the lower pantograph mechanisms 14 and 15 being journaled adjacent the ends of a cross member or rod 42 which member or rod has its ends pivotally secured in the lever arms 43 and 44 which in turn are pivotally mounted in brackets 45 and 46 secured to the side members 3 and 4 respectively of the frame 1. The lever arms 39, 40 and 41 of the upper pantograph mechanisms are journaled adjacent the ends of a cross member or rod 47, this rod having lateral extensions 48 or having a part extending laterally of these levers to which are connected cables or the like 49 for raising and lowering the awning mechanism (to be later more fully explained), these projections being adapted to engage with the end of lever arms 50 and 51 pivotally connected to the brackets 16 and 17 on the side members 3 and 4 respectively, when the upper pantograph mechanisms are lowered.

These lever arms 50 and 51 are channel shaped as clearly shown in Fig. 11, the side portions 52 and 53 having arcuate shaped notches 52^a at the ends thereof for reception of the extensions 48 of the cross bar 47. The side portion 52 is provided with an extension 54 bent laterally and over the end of the side 53 to provide an eye or opening at the end of the lever for the threading of the cable 49 therethrough. The central or web part 55 is provided with an extension 56 bent back upon the web 55 to provide a smooth and rounded surface for passage of the cable 49 thereover.

The lower end of the cable 49 on each side of the opening passes around pulleys 57 or the like mounted on the lever arms 43 and 44 and is anchored by any suitable means to the side members 3 and 4, as clearly shown in the drawings. It will accordingly be seen that upon movement of the upper awning mechanisms, the lower awning mechanism will simultaneously be raised or lowered therewith.

For raising and lowering the upper awning mechanism, cords or cables 58 of substantially equal lengths are provided, these cords or cables having an end connected to a pin 59 or the like in the top rail 5 of the frame 1, these cords passing around pulleys 60 of an equalizer block 61, thence around pulleys 62 on the side members 3 and 4, thence over pulleys 63 mounted on the brackets 12 and 13, and then secured or attached to the extensions 48. It is of course, understood that the cable or cord 49 and 58 may be of the same piece, the connection being made to the extensions 48 by way of a loop or the like. A cord or cable 64 is connected to the equalizer block and passes around a locking pulley 65 or the like secured to the rail member 6 of the frame 1.

In the operation of the embodiment disclosed, the equalizer 61 is raised or lowered by way of the cord 64 and as shown in Fig. 1 of the drawings, a raising of this equalizer will permit the upper pantograph mechanisms to extend and drop downwardly, the lower mechanism during this operation simultaneously extending and moving angularly away from and outwardly from the opening and in the path of the ends of the lever arms 43 and 44. Upon an extension or dropping of the upper pantograph mechanisms, the extensions 48 will engage with the notch at the ends of the levers 50 and 51 which likewise causes the upper pantograph mechanisms to move outwardly and away from the opening upon a further extension thereof. The angularity of the vanes or slats of these mechanisms will vary depending, of course, upon the extent to which the pantograph mechanisms are extended, as likewise upon the length of the lever arms 50 and 51, 43 and 44. Any desired ratio between the length of the arms 43 and 50 and the arms 44 and 51 may be had.

The equalizer 61 has a double purpose. This equalizer not only provides suitable means for evenly raising and lowering the awning mechanisms, but it will likewise be noted that there is a factor of reduction between the movement of the same and the movement of the cross member 47. While the awning is comparatively light or is in a position such that the greater component of its weight is along the lever arms, the cables 58 will run considerably faster than the movement of the equalizer. This condition exists until the equalizer rises to a point opposite to the pulleys 62. From this point until the equalizer rises to its extreme top position, the ratio is reversed and has reached a point where it takes considerable motion of the equalizer to transmit very little motion to the awning mechanism.

Although I have shown and illustrated the

invention as being applicable to the construction of awnings, I wish it to be understood that the same may be employed to provide a partition for rooms where visual privacy is desired without totally sacrificing ventilation, or when sound privacy is desired, the vanes of the same may be of some suitable sound absorbing or deflecting material. The vanes of the device disclosed may likewise be made of any suitable fireproof material such that the partition might serve as an efficient fire wall. It is also comprehended that a screening may be placed over the rods or cross members for providing a screen which may be placed in a window or other opening for keeping insects and the like out of a house or other building, and which may be easily raised out of the way when a screen of this kind is not desired. Sundry other uses to which this novel mechanism may be placed for effecting a partial or total barrier or deflecting means are comprehended by the invention.

While I have herein described and upon the drawings shown an illustrative embodiment of the invention, it is to be understood that the invention is not limited thereto, but may comprehend other constructions, arrangements of parts, details and features without departing from the spirit of the invention.

Having thus disclosed the invention, I claim:

1. An awning mechanism for an opening, comprising substantially rigid and extensible means pivoted adjacent the sides of said opening, a plurality of vanes between said extensible means, and means for varying the angularity of said vanes with the plane of said opening upon extension of said extensible means.

2. An awning mechanism for an opening, comprising substantially rigid and extensible means pivoted adjacent the sides of said opening, a plurality of vanes between said extensible means, means for raising and lowering said extensible means and said vanes, and means for varying the angularity of said vanes with the plane of said opening upon extension of said extensible means.

3. An awning mechanism for an opening, comprising pantograph mechanisms adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, means for raising and lowering said vanes, and means for varying the angularity of said vanes with the plane of said opening upon movement of said pantograph mechanisms.

4. An awning mechanism for an opening, comprising pantograph mechanisms pivoted adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, means for raising and lowering said mechanisms, and means for movement of said mechanisms outwardly and away from said opening upon a lowering of the same.

5. An awning mechanism for an opening, comprising pantograph mechanisms pivoted adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, and means for movement of said mechanisms outwardly and away from said opening upon a lowering of the same.

6. An awning mechanism for an opening, comprising pantograph mechanisms adjacent the sides of said opening, rods carried by the links of said mechanisms, and a covering for adjacent rods of the same links to provide a plurality of vanes.

7. An awning mechanism for an opening, comprising pantograph mechanisms pivoted adjacent the sides of said opening, rods carried by the links of said mechanisms, a covering for adjacent rods of the same links to provide a plurality of vanes, and means for maintaining said rods in alignment.

8. In an awning mechanism for an opening, pantograph mechanisms adjacent the sides of said opening, said pantographs comprising a plurality of parallel links, certain of said links comprising spaced members, said members being provided with apertures at the ends thereof, cross members between said pantograph mechanisms and secured in said apertures for preventing lateral movement thereof, and a covering for adjacent cross members of the same link to provide a vane of said awning.

9. In an awning mechanism for an opening, pantograph mechanisms adjacent the sides of said opening, said pantographs comprising a plurality of parallel links, certain of said links comprising spaced members, the inside member of some of said links having apertures adjacent the ends thereof, cross members between said pantograph mechanisms and protruding through said apertures and abutting the outside member of said link for preventing inward lateral movement of said mechanisms, and a covering for adjacent cross members of the same link to provide a vane of said awning.

10. In an awning mechanism for an opening, pantograph mechanisms adjacent the sides of said opening, said pantographs comprising a plurality of parallel links, certain of said links comprising spaced members, the members of some of said links having apertures adjacent the ends thereof, cross members between said pantograph mechanisms and protruding through the apertures of said link members, and means for engaging the ends of said cross members for preventing outward lateral movement of said pantograph mechanisms, and a covering for adjacent cross members of the same link to provide a vane of said awning.

11. In an awning mechanism for an opening, pantograph mechanisms adjacent the

sides of said opening, said pantographs comprising a plurality of parallel links, certain of said links comprising spaced members, the inside member of some of said links being provided with apertures adjacent the ends thereof, cross members between said pantograph mechanisms and protruding through said apertures, the members of other links provided with apertures adjacent the ends thereof, cross members between said pantograph mechanisms and protruding through said apertures, means engaging the ends of said last mentioned cross members, and coverings for adjacent cross members of the same link to provide a plurality of vanes for said awning.

12. An awning mechanism for an opening, comprising pantograph mechanisms adjacent the sides of said opening, said pantograph comprising a plurality of parallel links, cross members between said pantograph mechanisms and in engagement with the ends of said links, and coverings secured to adjacent cross members of the same link to provide a plurality of vanes for said awning.

13. An awning mechanism for an opening, comprising pantograph mechanisms adjacent the sides of said opening, cross members carried by the links of said mechanisms, coverings secured to adjacent cross members of the same link to provide a plurality of vanes, and means secured at intervals to said adjacent cross members for maintaining said rods in alignment.

14. An awning mechanism for an opening, comprising pantograph mechanisms pivoted adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, a cross bar connected to said mechanisms and provided with lateral extensions, and lever arms pivoted at the sides of said opening and adapted to engage said extensions for movement of said awning outwardly and away from said opening upon lowering of the same.

15. An awning mechanism for an opening, comprising pantograph mechanisms pivoted adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, a lateral extension at the ends of said pantograph mechanisms, means connected to said extensions for raising and lowering said pantograph mechanisms, and lever arms pivoted to the sides of said opening and adapted to engage said extensions for movement of said awning outwardly and away from said opening upon lowering of the same.

16. An awning mechanism for an opening, comprising a series of pantograph mechanisms pivoted adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, means for simultaneously lowering and raising said mechanisms, and means engaged with the ends of said mechanisms for movement of said awnings outwardly and away from said openings upon lowering of the same.

17. An awning mechanism for an opening, comprising upper and lower pantograph mechanisms pivoted to the sides of said opening, a plurality of vanes carried between said mechanisms, lever arms pivoted to the sides of said opening and connected to the ends of said lower mechanisms for movement of the lower awning outwardly and away from the opening upon lowering the same, means connected to the upper pantographs and associated with said lever arms for raising and lowering said upper and lower mechanisms simultaneously, and lever arms pivoted to the sides of the opening adapted to engage for movement of said upper mechanisms outwardly and away from the opening upon a lowering of the same.

18. An awning mechanism for an opening, comprising upper and lower pantograph mechanisms pivoted to the sides of said opening, a plurality of vanes carried between said mechanisms, lever arms pivoted to the sides of said opening and connected to the ends of said lower mechanisms for movement of said lower awning outwardly and away from said opening upon lowering of the same, lateral extensions at the lower ends of said upper mechanisms, lever arms pivoted to the sides of said opening and adapted to engage said extensions for movement of said upper awning outwardly and away from the opening upon lowering of the same, said arms being provided with an eye at the end thereof, and cables threaded through the eyes of said upper lever arms and connected to said extensions and operatively associated with the lower lever arms for simultaneously raising and lowering the upper and lower awnings.

19. An awning mechanism for an opening, comprising pantograph mechanisms pivoted adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, means projecting from said mechanisms, and means adapted to engage with said projecting means for movement of said mechanisms outwardly upon lowering of the same.

20. An awning mechanism for an opening, comprising pantograph mechanisms adjacent the sides of said opening, a plurality of vanes carried by said mechanisms, and means including an equalizer for raising and lowering said mechanisms.

21. An awning mechanism for an opening, comprising pantograph mechanisms secured adjacent the sides of said opening, said mechanisms having a plurality of parallel arranged links, vanes having their ends mounted in opposite links of said mechanisms, and means for raising and lowering said mechanisms.

22. An awning mechanism for an opening, comprising pantograph mechanisms secured adjacent the sides of said opening, said mech-

anisms having a plurality of parallel arranged links, rods secured to the ends of opposite links of said mechanisms, a covering over adjacent rods to provide a plurality of vanes, and means for raising and lowering said mechanisms.

In witness whereof, I hereunto subscribe my name to this specification.

ELLSWORTH J. HANNA.