Jan. 19, 1937. V. J. MOIR 2,068,148

SHUTTER AWNING

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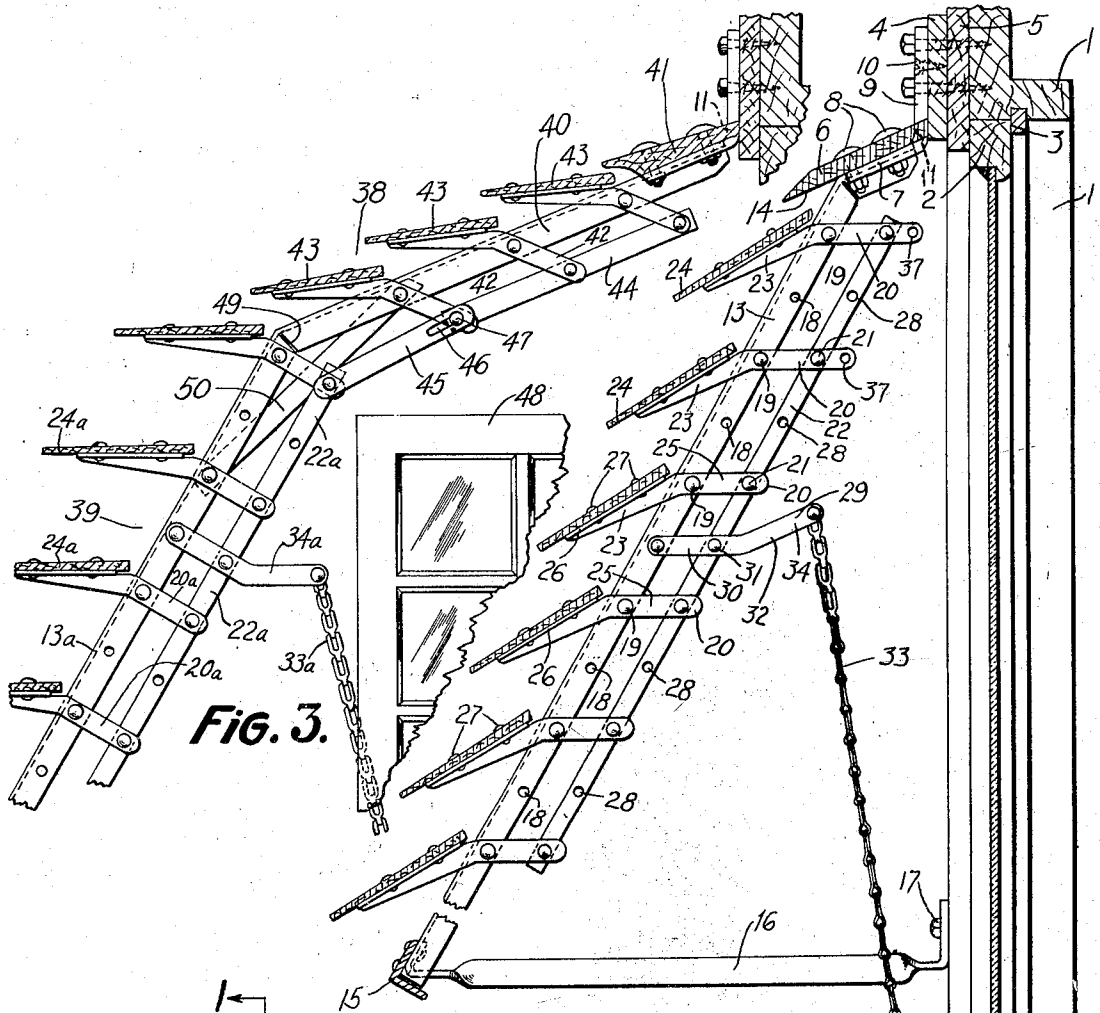


FIG. 3.

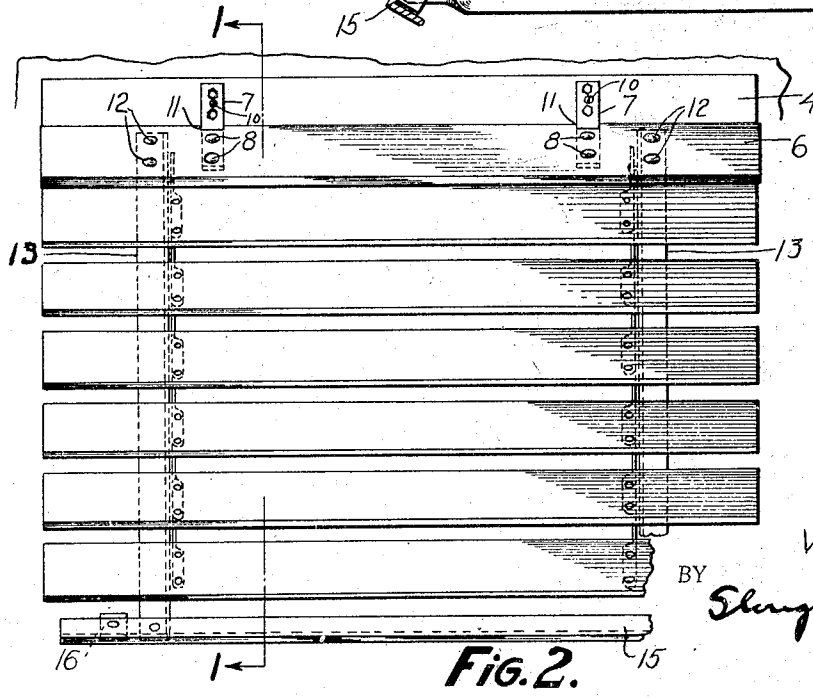


FIG. 2.

FIG. 1.

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SHUTTER AWNING

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5 Claims. (Cl. 156—17)

This invention relates to awnings and particularly to awnings of the multi-vane or shutter class.

One type of awning of this class which has been proposed heretofore is constructed to be installed on the outside of a window or other opening to a building, or over a porch or balcony or the like, and comprises a frame carrying a plurality of pivoted movable shutter vanes which may be opened to admit light or shut to exclude rain, etc., the entire awning structure being disposed outwardly of the building so as not to interfere with the normal operation of the window or door at the opening. It is to this type of awning that the present invention more particularly relates.

It is among the objects of the invention:

To provide generally an improved shutter type awning construction;

To provide an awning of the class referred to constructed to permit of its use with outwardly opening casement windows, doors, etc., in an improved manner;

To provide a shutter type awning comprising a plurality of pivoted shutter vanes adapted to open or close in a predetermined sequence;

To provide an improved pivotal support for the shutter vanes of a shutter awning of the type referred to;

To provide an improved operating mechanism for opening or closing the vanes of a shutter awning of the type referred to;

To provide in a shutter type awning structural elements adapted in an improved manner to be used in different sizes of complete awnings;

To provide in shutter type awnings in which shutter vanes are pivotally moved by a lever, improved means for varying the operating lever ratio;

To provide a shutter awning which may be cheaply constructed, and which will be convenient to install or to remove from its installed position, and which will be easy to operate and durable in use.

Other objects will be apparent to those skilled in the art to which my invention appertains.

My invention is fully disclosed in the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a side elevational view partly in cross-section of a shutter awning embodying my invention and illustrating it installed at a window, the view being taken from the plane 1—1 of Fig. 2;

Fig. 2 is a front elevational view of the shutter of Fig. 1;

Fig. 3 is a view similar to Fig. 1 illustrating fragmentarily a modification of the shutter of Fig. 1.

Referring to the drawing, I have shown generally at 1 the frame of a window having an upper sash 2—2 and a lower sash 3 vertically slidable therein by the usual construction. The shutter awning about to be described is installed outwardly of the upper sash so that an unobstructed view may be had through the lower sash.

The awning structure is assembled upon a base element 4 which may conveniently be constructed from wood in the form of a board or strip of such size as to be suitably secured upon the outer surface of the building, as for example upon the upper transverse portion 5 of the window frame. The base also comprises an upper stationary shutter vane 6 to the underside of which are secured hangers 7—7 formed from bar metal bent into V-form with one leg secured to the underside of the stationary shutter vane 6 by bolts 8—8 projected through the vane 6 and through the said legs, the other leg 9 being vertically disposed and secured to the outer face of the strip 4. If desired also, the legs 9 of the hangers 7 may be permanently secured to the strip 4 by screws 10—10, shown only in Fig. 1, but this feature is optional.

The upper edge of the stationary vane 6 is notched out as shown at 11, upwardly through which notches the hanger legs 9 may project so that the upper edge of the vane 6 may be disposed in water-proof contact or engagement with the strip 4.

Also, to the underside of the stationary vane 6 are secured as by bolts 12—12, a pair of laterally spaced rails 13—13, the upper ends of the rails being bent at a relatively acute angle to the horizontal so that they may lie flat against the underside of the stationary vane 6 and the lower portions of the rails 13 being preferably rectilinear and disposed at a relatively obtuse angle to the horizontal as plainly shown in Fig. 1.

By this arrangement, the mutual cooperation of the vane 6 and rails 13 is attained whereby the rails may be securely attached to the vane 6 by conforming thereto over a relatively great extent and at the same time the vane 6 may be inclined at an angle to the lower portions of the rails 13 to act in the nature of a first vane or water shed and overhang said lower portions of the rails as shown at 14.

The lower ends of the rails 13 are connected by

a transverse, preferably metal, bar 15, and the bar 15 and therefore the rails 13 are secured by their lower ends to the building face such as to the outer surface of the window frame thereof by a pair of strut elements 16, outer ends of which are secured to the bar 15 and inner ends of which are secured as shown at 17 to the building or window frame.

Preferably the rails 13 and bar 15 are formed from angle iron, but this is not essential, this construction however being preferred inasmuch as it is well adapted to provide the above described base construction in one plane and shutter arm pivot support to be described in a plane at right angles thereto.

Each rail 13 in one leg of the angle when angle iron is employed, is provided with a plurality of longitudinally spaced perforations 18—18, and between each pair of perforations 18 the rail is perforated to receive bolts or rivets 19—19 upon which are pivoted to oscillate in a common vertical plane shutter vane arms 20—20 formed from sheet metal, the rivets 19 projected through perforations in the arms 20 and through the said perforations in the rail 13. The inner ends of the arms 20—20 are pivotally riveted by rivets 21—21 to a bar 22 in perforations having the same spacing as those for the rivets 19—19 and the bar 22 being disposed parallel to the rail 13 whereby a parallelogram movement mechanism is provided.

The outer ends of the arms 20 are bent downwardly to provide shutter vane supporting portions 23—23 to which are secured shutter vanes 24—24, the vanes being disposed horizontally and opposite ends of the vanes being secured to corresponding arm portions 23 on opposite rails 13—13.

The arms 20 are preferably constructed from sheet metal with the depending portion 23 in the same plane with the above mentioned pivoted portion 25, and to provide a seat for the shutter vanes 24 the portion 23 has a wing 26 bent at a right angle thereto and bolts or rivets 27—27 are projected through aligned perforations in the vanes and in the wing 26. By this construction of arms, the maximum of strength throughout for the minimum of material is provided, all tendencies for the arm to bend being resisted by the width or depth of the arm considered as a lever, which depth is maintained throughout as would not be the case, for example, if the arm were twisted to provide a flat seat for the shutter vanes, and at the same time the said flat base for the shutter vanes is provided by the angularly bent wing 26 without detracting from the strength of the arm.

The bar 22, besides having the necessary spaced perforations for the rivets 21 of the shutter arms, has spaced perforations 28—28 corresponding to the perforations 18 between adjacent arms. There are thus provided a plurality of pairs of perforations longitudinally of the rail 13, one of each pair being in the rail and the other in the bar 22.

An operating lever 29, preferably formed from sheet metal and of the general form of an obtuse bell crank, has one leg 30 thereof pivotally riveted as at 31—31 to the rail 13 and bar 22 in one pair of said perforations and with the other leg 32 generally inclined upwardly. A flexible element such as a chain 33 is connected at the outer end of the leg 32 of the lever, indicated generally at 34, and the other end of the chain extends downwardly and passes through a hole or bore 34 extending through the building to the interior thereof at one side of the lower sash 3, and terminating in a suitable handle 35 inside the building.

As will now be apparent, if an operator in the building grasps the handle 35 and pulls on the chain 33, the lever 29 will operate the parallelogram movement mechanism above described and operate the shutter vanes 24 either to move them generally downwardly to a completely overlapping closed position or to raise them to the open position illustrated or to an even higher more open position; and in any operated position, a link of the chain 33 may be looped over a pin or hook or other device 36 in the building to hold the shutter vanes in the adjusted position.

The lever 29 may be located at an upper, intermediate, or lower portion of the shutter construction by disposing the rivets 31—31 in one or another of the above described pairs of perforations in the rail 13 and bar 22 to change as may be desired the angle at which the chain 33 pulls on the lever 34, so that no matter in what location the bore or hole 34 is disposed, a corresponding leverage relation may be established by suitably positioning the lever 29. To this end, instead of using permanent rivets 31—31, removable bolts may be used so that the optimum leverage relation may be attained at the time of installing the awning at a window.

In some cases it is preferred to provide the arms 20 long enough to extend inwardly beyond the bar 22 and to provide in their ends another perforation such as that shown at 37—37. The arms 20, with this provision, may all be made alike with the said extra set of perforations and when assembled in a relatively small awning, the inner perforations may be used because sufficient leverage in the parallelogram movement mechanism will be present therein; but when the same arms are assembled in a larger awning, greater leverage may be wanted and then the outer set of perforations 37—37 may be used in riveting the bar 22 to the arms. When a small shutter is assembled from the arms which can thus be made in great quantities for both large and small awnings, it is desired to have the bar 22 relatively close to the rail 13 for the sake of neatness and compactness in appearance.

As will now be apparent, the entire shutter may be assembled at a factory including the base strip 4 and may be attached to the building or installed in position for use by mounting the strip 4 upon the building and securing the strut 16; then, after it is decided where the bore 34 shall be for convenience to the operator in the building, the lever 29 may be pivotally attached in operative position at an upper or lower or intermediate portion of the awning as may be best.

In the modification illustrated in Fig. 3, the upper part of the awning indicated generally at 38 is disposed at a more acute angle to the horizontal than the lower portion indicated generally at 39. The lower portion 39 having rails 13a, a bar 22a, shutter arms 20a—20a and shutter vanes 24a—24a as well as the lever 34a and operating chain 33a may all be like or similar to the correspondingly numbered parts of the form of Fig. 1. In this form, however, the upper portion of the rail 13a as at 40 which is secured to the underside of the stationary vane 41 is elongated and has a plurality of arms 42—42 pivotally riveted thereto carrying vanes 43—43. These arms and vanes may be identical or sim-

ilar to the above described arms and vanes. The inner ends of the arms **42** are pivotally riveted to a bar **44** providing with the rail portion **40** and the arms **42** a parallelogram movement mechanism. The lower end portion of the bar **44** and the upper end portion of the bar **22***a* are pivotally connected to a link **45**, the connection having lost motion therein. This lost motion may be provided by various means but I prefer to provide it by means of a slot **46** in the link **45** where it connects with the lower end of the bar **44**, there being at this point a common rivet **47** extending through the slot **46** and through the end of the lowermost arm **42** and the lower end of the bar **44**. As will appear hereinafter, this slot may be provided at the upper end of the bar **22***a* and in other locations, the exact location and nature of the lost motion not being essential.

Except for the alternative form of the stationary vanes **41** shown in this figure, the construction of the upper end portion or base of the awning by which it is attached to the building or window frame may be the same as that described for the form of Fig. 1.

In the operation of the form of Fig. 3, when the chain **33***a* is pulled, the shutters **24***a* will be moved to an open position, preferably approximately one-third of the full-open movement, and at this point of operation, the lost motion provided by the slot **46** will all have been taken up by the downward movement of the bar **22***a* and link **45**, and further movement on the chain **33***a* will cause the arms **42—42** to be rocked to initiate opening of the vanes **43—43**, and further movement will open them to any desired degree.

Thus, in some kinds of weather, it may be desired to admit light through the vanes **24***a* and at the same time have shelter from rain by the vanes **43**.

The rail **40** by extending outwardly in a relatively horizontal direction or at a relatively slight angle to the horizontal, provides room under the awning as a whole for outwardly swinging doors, casement windows, etc., one of which is shown at **48**, so that the awning of my invention may be installed at doors or windows of this type as well as at the more usual type illustrated in Fig. 1.

When the rails **40** and **13***a* are made from a single piece of angle iron as illustrated in the drawing, the bend at the juncture of the two portions may be provided by sawing the vertical flange of the angle iron as at **49**, and the bent rail may be stiffened or strengthened by a brace bar **50** secured at opposite ends to rail portions. Of course, as will be understood, if the above described sequence of operation for the shutter vanes **43** following opening movement of the vane **24***a* and preceding closing movement thereof is not wanted, it is only necessary to use a link **45** without the slot **46**.

It will be apparent that changes and modifications may be made in my invention within the scope of the appended claims so that my invention is not limited to the exact construction illustrated.

I claim:

1. In a shutter type awning, a plurality of groups of substantially horizontal cooperating vanes, the groups being disposed generally in planes at a dihedral angle, one with the other, and outwardly convex, a frame comprising a pair of horizontally spaced members each comprising frame elements conforming to the direction of and spaced from the planes of the vane groups, each frame element having a bar disposed parallel thereto and spaced therefrom, a plurality of arms pivotally connecting each bar with the corresponding frame element and having outwardly extending free end portions, the vanes each being supported by its opposite end portions on opposite pairs of arm free end portions, the bars of each member being connected together by means permitting relative pivoting thereof, and means to move the bars with a parallelogram movement relative to the frame elements to pivotally move the vanes.

2. A shutter type awning as described in claim 1, and in which means is provided to move a bar of one frame element, and the other bar is moved by its connection with the first named bar, and the connection is a predetermined lost motion connection whereby the vanes of one group may be moved a predetermined amount before movement of the other groups begins.

3. In a shutter type awning, a plurality of vanes and vane supporting arms, a pair of side rails having parallel bars pivoted thereto by the arms, the upper ends of the rails having each an inwardly diverging portion, and a stationary vane supported on the diverging portion.

4. A shutter awning as described in claim 1 and in which means is provided to move the bar of one frame element and the other bar associated with the same frame member is moved by a pivotal connection with the first named bar.

5. A vane supporting arm for a shutter type awning of the parallelogram movement type, the arm being formed from sheet metal and comprising a flat elongated body portion provided with two perforations for pivoting it to a frame element and parallelogram bar associated therewith, and comprising an angle section portion one flange of which is substantially co-planar with said flat elongated body portion and the other flange of which extends substantially at a right angle thereto and is provided with a perforation for securing it to a horizontally disposed vane.

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