WEATHERING OPERATOR FOR JALOUSIE WINDOWS

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2 SHEETS—SHEET 2

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This invention relates to improvements in window structures and has particular reference to windows of the type having a plurality of horizontally swung panels to be shifted in unison in a vertical plane.

This application is a division of Serial No. 283,268, filed April 21, 1952, now abandoned.

A very important object of the invention resides in a novel manner of supporting the several panels or louvers with their horizontal edges in overlapping relation in weathering engagement and with the several panels being angularly disposed in an identical manner with respect to the side jambs of a supporting frame structure.

The conventional jalousie type of windows wherein the several panels or louvers are pivotally supported within an open frame, have the very objectionable fault, that due to their pivotal support within the frame, adequate clearance must be provided to permit of relative free swinging movement and it has been found, that this clearance permits the entry of water and air to the extent, that frequently the drains formed in the sill section are inadequate to prevent the water flowing into the building. This is particularly noticeable with rains in the presence of high winds. Relatively little difficulty is experienced with leakage by the overlapping edges of the glass louvers commonly employed but, when glass or other transparent louvers are employed, a single operator, usually at one side of the frame, is employed to swing the louvers and the torque to the opposite side mounting is through the glass louvers, it follows that the mountings for the louvers must be relatively free against binding and results in a considerable space between the frame and the louver mountings.

The prime purpose of the present invention resides in a novel frame and novel end brackets for the swinging support of the glass louvers, coupled with a novel operating bar commonly connected with the several end brackets whereby the several louvers will swing in unison and, when in fully closed position, to seal the openings between the frame and the end brackets throughout the height of the window opening, regardless of the degree of clearance between the end brackets and the side jambs.

The invention contemplates novel end brackets shaped to provide a weathering parallel surface with a weathering parallel surface of the side jambs and a novel common operating bar for the several louvers that has a weathering surface that overlaps and binds upon the weathering surfaces of the jambs and end brackets simultaneously when the window is fully closed and the several louvers are in overlapping contacting engagement.

Novel details of construction and operation of the invention will be more fully set forth during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred embodiment of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

Figure 1 is a central vertical sectional view of a window constructed in accordance with the invention,

Figure 2 is an enlarged horizontal section, taken on line 2—2 of Figure 1,

Figure 3 is a fragmentary vertical section, taken on line 3—3 of Figure 1,

Figure 4 is a perspective view of one end bracket employed to support the ends of the louvers,

Figure 5 is a section taken on line 5—5 of Figure 4,

Figure 6 is a fragmentary perspective view of one common operating and sealing bar,

Figure 7 is a top plan view of the operating bar, illustrating the manner of applying a flexible sealing face and,

Figure 8 is a fragmentary side elevation of a connection between the operating bars and a lower link extension, taken on the line 8—8 of Figure 3.

Referring specifically to the drawings and particularly to Figures 1, 2 and 3, a rigid, preferably metallic frame has been provided, formed of extruded, pressed or otherwise shaped aluminum. The frame embodies a header 5, a sill 6 and side jambs 7. The header, sill and jambs are of generally channel formation and are interfit ted at their joining corners by welding or by the use of brackets, whichever is found most desirable.

The sill 6 is preferably inclined downwardly and outwardly as shown in Figure 1 and is pressed inwardly along its forward edge at 8, to form a bearing seat for the lower edge of the uppermost louver, to be described. The header 5 is provided with a bearing flange 9 for its full length to serve as an abutting stop for the uppermost edge of the uppermost louver when the window is in the fully closed position. The jambs 1 are shaped to provide narrow channels 10 at their forward side, the channels 10 embodying parallel side walls 11 and a working right angular face 12. The channels 10 extend for the full height of the jambs 7. The channels 1 formed by the
jamb open inwardly and furnish clearance for the operating mechanism of the window. Any suitable insect screen, not shown may be employed to entirely cover the inner opening of the frame in a customary manner.

The numeral 13 designates end brackets as a whole, for the support of the opposite ends of preferably transparent panels or louvers 14. While the louvers have been shown as being formed of glass, it will be apparent that other forms of louvers may be employed, such as metal or wood. The end brackets are preferably formed of extruded or otherwise shaped aluminum and are identical, except that they are formed in both right and left. The brackets are of generally tapered channel form and comprise a base wall 15, a right angular weathering wall 16 and a spaced right angular flange 17. The free longitudinal edge of the wall 16 is bent at a right angle to form a flange 18.

The weathering wall 16 is cut at 19 and the machine bent at a right angle to form a crank arm 20, that is offset inwardly from the base wall 15. The upper end of the arm 20 is apertured at 21 for the reception of an operating pin 22. The wall 16 thus provides a straight weathering surface upon its rear side that extends for the full length of the wall and which, in normal operation of the window in the closed position, is substantially flush with and parallel with the inner wall 14 of the channel 16. The upper end of the wall 16 is bent to provide a spring tongue 23, for bearing contact against the supported louver 14 and the lower terminal end of the flange 17 is bent at a right angle at 24, to serve as a limit stop for the lower edge of the louver. The upper terminal end of the base wall 15 is provided with a bendable lug 25, to be bent over the upper end of the louver after assembly. The wall 15 is apertured intermediate its length for the reception of a pivotal pin 26, having a bearing in the channel wall 12. A tongue 21 is struck from the wall 16 adjacent its lower end for snapping engagement within an opening 28 formed in a spring clip 29, employed to secure the glass louver in cushioned mounting within the bracket. The offset arm 20 and the weathering surface is clearly shown in Figure 2. As before stated, the end brackets are identical in construction, but are obviously formed for both the right and left hand side of the frame, it being understood, that the louver is cut to a predetermined length to have its ends snugly seat within a pair of opposed brackets 13, also clearly shown in Figure 2. The brackets 13 are pivotally supported upon the working face 12 at predetermined spacing whereby the edges of the louvers 14 will overlap a predetermined distance when the window is in the closed position.

The means employed to swing the several louvers in unison, comprises a pair of combined operating and weathering bars, indicated as a whole by the numeral 30. The bars 30 are generally L-shaped in cross-section, see particularly Figures 6 and 7 and are arranged upon opposite sides of the window. The bars 30 extend for the major height of the window and are pivotally connected with each of the crank arms 20, through the medium of a pivot pin 22. Each bar 30 is provided with a weathering face 32, for its full length and this weathering face is preferably covered by a flexible vinyl plastic pad 33, provided with a rib that is cemented or otherwise fixedly held within a groove 34 formed in the face 32. As clearly shown in Figure 2, the weathering face and plastic pad 33 have a width that substantially overlies the weathering face of the wall 16 and the face of the channel wall 14, simultaneously when the window is in the closed position, thus effectively sealing the opening between the brackets 13 and the working face 12 throughout the full height of the window opening to a point adjacent the bottom thereof. Since the bars 30 must of necessity swing inwardly and downwardly for the simultaneous operation of the louvers, it follows that the weathering face of the bars could not be carried to the sill 5. To care for this contingency, a link 35, having a similar cross-section configuration to the bars 30, is employed. The links 35, one for each bar, are pivotally mounted at 36 in the medium of the bar carried 30. At their upper ends, the links are offset at 37 and are pivotally connected adjacent the lower ends of the bars 30, as at 38. The bars 30 and links 35 are overlapped at 48 in a manner to permit movement of the links 35 and bars 30, as at 39, shifted inwardly. The links 35 are provided with vinyl plastic pads, similar to the pads 33. It will thus be seen, that with the window in the fully closed position, an effective seal is provided for substantially the full length of joint opening between the end brackets and the frame.

The means to shift the several panel louvers to open or closed position, comprises any conventional geared operator, shown at 41 and having an operating handle 42, contrivance a bar 43 and arcuately swinging arm 45. The arm 45 is pivotally connected at 44, to one end of a link 46, the opposite end of the link being pivotally connected to one operating and weathering bar 30, as at 45. The operator 41 may be mounted at either side of the frame, since either bar 30 is capable of full and complete swinging of the louvers either to open or closed position and when in the fully closed position, is capable of exerting a full sealing pressure upon both bars 30. The operation of the device is as follows:

It is customary that the several component parts be assembled, with the exception of the glass louvers and the operator 41 and the whole assembled into a preformed wall opening in the conventional manner.

In the assembly of the window, the several end brackets 13 are pivotally supported upon the jams 7 through the medium of the pivot pins 26. The bars 30 are then connected to the several arms 29 through the medium of the pins or studs 27 and the link 45 connected to one bar 30 through the medium of the stud or pin 44. The device is now ready for the operation of the louvers. The bars 30 are now shifted to swing the several brackets 13 at the operating side of the window to their maximum opening position and the group of brackets at the opposite side of the window are shifted by hand to substantially the same position. The glass louvers may be inserted from either side of the window. 47. The brackets, but usually are inserted from the inner side of the window until the lower edge of the louvers contact the
ends 24. However, when the glass louvers are inserted from the outer ends of the brackets, they are entered to a point where the lower edge may be shifted over the ends 24, at which time the inner ends of the brackets 20 are shifted inwardly, the several end brackets and their supported louvers partake of a horizontal swinging movement, as indicated by dotted lines in Figures 1 and 2. Shifting of the bars 33 will likewise provide swinging clearance for the end brackets. When the bars 33 are shifted in the opposite direction, the louvers are swung in a position to close and, when in the fully closed position, the weathering face of the bars will be in close contact engagement and in overlapping position with respect to the inner wall of the channel 10 and the weathering surface of the inner wall 16 of the end brackets and will successfully cover and seal any clearance opening between the end brackets and the working face of the wall 12. Movement of the bars 30 to opening position will break joint with the lower link extensions 35 on the pivot 39 and the link will shift in a vertical arc, as shown in Figure 1. Movement of the bars 30 to the closing position, will shift the links 35 to a position substantially in alignment with the bars 30 and cause its weathering face to press against the opening below the lower terminal ends of the bars 30, thereby effecting a continuous sealing bar for substantially the full opening of the window. While the bars could be formed with flat weathering faces and would function in a relatively successful manner, it has been found, that the vinyl plastic pads impart a greater sealing effect without undue force being applied to the operator 41.

It will be apparent from the foregoing, that a very simple and highly effective sealing medium has been provided for the jalousie type of windows. The well known operable bars for conventional jalousies has been so modified as to serve the dual function of swinging the louvers and for sealing the window against the entry of air and water between the end brackets and the jambs. The novel end brackets have been shaped to provide a weathering face that is parallel and facing with a horizontal wall formed on the jambs and the weathering faces are simultaneously overlapped by the novel operating bars. The device is strong, durable, cheap to manufacture and most efficient as a sealing medium for the window.

It is to be understood, that while a preferred form of the device has been illustrated and described, changes are contemplated in the structure as shall readily fall within the spirit of the invention or the scope of the subjoined claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a window structure, the combination with a rigid open frame embodying a header, a sill and side jambs, said jambs having a weathering surface for substantially their full height, a plurality of overlapping panels horizontally spanning the opening of the frame and mounted to swing in a vertical plane simultaneously, end brackets for the support of the opposite ends of each panel, the brackets being pivotally supported on the jambs, the end brackets having a weathering surface for their major length that is flush with and in substantially the same vertical plane as the weathering surface of the jambs, operating bars for the simultaneous swinging movement of the several panels, means carried by the operating bars for simultaneously contacting the weathering surfaces of the brackets and the weathering surfaces of the jambs and link means for shifting the bars toward and from the weathering surfaces and for swinging the panels on their horizontal axis.

2. The structure of claim 1 wherein the brackets supported on the jambs in a topward sides of the window are provided with substantially identical weathering surfaces and a common operating bar is provided for the brackets at each side of the window, each operating bar having as the means for contacting the weathering surfaces of the brackets and the jambs a weathering surface extending substantially throughout its height.

3. The structure of claim 1 wherein a common operating bar is provided for the brackets at each side of the window and the link means is connected with one of said bars for shifting said one bar inwardly and downwardly whereby to swing the several panels in unison, the motion of said one bar being imparted to the other bar through the panels, the bars being adapted to maintain a parallel perpendicular position throughout their shifting movement.

4. The structure of claim 1 wherein the means carried by the operating bars for contacting the weathering surfaces of the brackets and the jambs include a compressible sealing member extending substantially throughout the full height and width of the bars.

5. The structure of claim 4 wherein the operating bars are grooved substantially throughout their height and the compressible sealing members are provided with ribs for seating reception in said grooves.

6. The structure of claim 4 wherein the operating bars are substantially L-shaped in cross-section and the compressible sealing member is secured to one L-shaped face and the link means is secured to the other L-shaped face.

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