July 17, 1923. 1,461,818

R. S. DRUMMOND

WINDOW CONSTRUCTION

Filed June 20, 1919

Fig. 1.

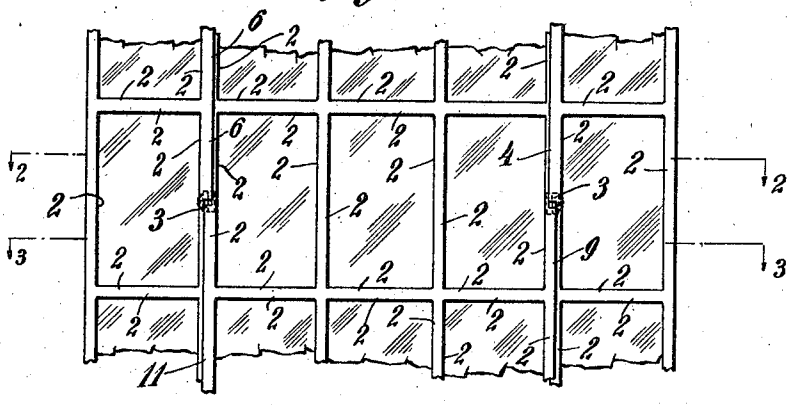


Fig. 2.

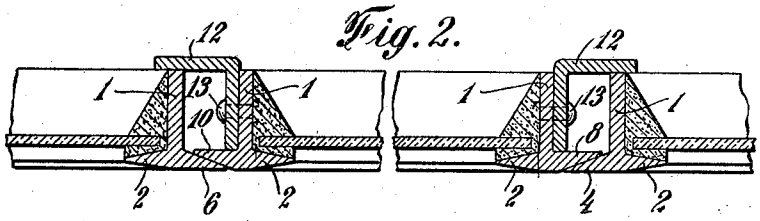


Fig. 3.

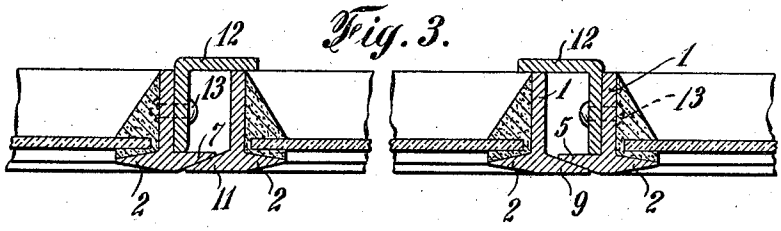


Fig. 4.

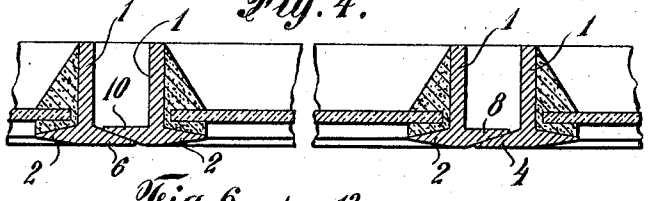


Fig. 5.

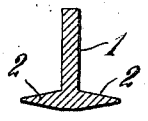
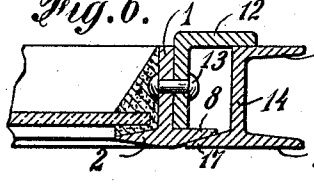


Fig. 6.



Inventor

Robert S. Drummond

By his Attorneys

Williams & Pritchard

Patented July 17, 1923. 1,461,818

UNITED STATES PATENT OFFICE.

ROBERT S. DRUMMOND, OF NEW YORK, N. Y.

WINDOW CONSTRUCTION.

Application filed June 20, 1919. Serial No. 305,550.

To all whom it may concern:

Be it known that I, ROBERT S. DRUMMOND, a citizen of the United States, residing in the borough of Manhattan, city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Window Construction, of which the following is a specification.

My invention relates to the construction of metallic window sash and relates more particularly to improvements in the means for providing weathering around the marginal edges of a pivoted or otherwise transversely movable ventilator section. The principal object of my invention is to increase the lighting capacity of a window section of a given size and having therein a ventilator, without complicating the construction or increasing the expense of manufacture, and in fact, to make the changes from the standard forms of construction of the sash members as slight and few as possible. Heretofore, commonly, the adjacent stationary and movable sash bars or muntin members have been placed adjacent to but out of contact with each other, and weathering, either single or multiple, has been provided by means of an interposed weathering strip secured to one or the other of the sash bars or muntins, an angle strip being employed for single weathering and a channel strip for double weathering. In such a construction, light of course is excluded to the extent of the width over all of the two adjacent slightly spaced sash bars, which on their adjacent sides are commonly provided with the usual flanges forming glazing rebates of substantially standard construction, and with which, particularly in double weathering, the weathering strip may cooperate. Another object of my invention is the saving of metal.

In carrying out my invention, I bring the adjacent stationary and movable muntin members or sash bars close together so that their adjacent rebate-forming glazing flanges, or other adjacent flanges, have a cooperative overlapping relation for thereby effecting weathering without the employment at this place of a separate weathering strip, as has been done heretofore, and also, by reason of the bringing of the sash members closer together than heretofore, less light is excluded. In order to effect this weathering relation of the usual glazing flanges of the standard muntin or sash bar construction, or of other similar flanges, I bend or distort these flanges, preferably bending one inward and one outward so as to provide complementary oppositely disposed co-operative weathering surfaces, such as oppositely inclined flat contact surfaces. In the case of ventilators which are hinged or pivoted between their margins, these co-operative weathering flanges are distorted in opposite directions at opposite sides of the pivots, thereby to provide for the swinging of the ventilator section on its pivots while preserving a proper weathering relation of the adjacent flanges of the sash bars. My invention more particularly includes features of construction and combinations of parts, as will hereinafter appear.

I shall describe the metallic sash construction illustrated in the accompanying drawings as an embodiment of my invention, and shall thereafter point out my invention in claims.

Figure 1 is an elevation as viewed from the outside of a metallic window section, having a horizontally pivoted ventilator therein, parts being omitted at the top and bottom.

Figure 2 is an enlarged horizontal section on a plane above the pivot line and indicated by the line 2—2 of Figure 1 as viewed from above.

Figure 3 is a similar view below the pivot line and indicated by the line 3—3.

Figure 4 is a view similar to Figure 2 illustrating the application of my invention to single weathering instead of the double weathering construction shown in the preceding figures.

Figure 5 is an enlarged transverse section of one of the muntin members which has not been bent or distorted for weathering purposes.

Figure 6 is a view similar to the upper right hand part of Figure 2 and illustrates the application of my invention to produce weathering between a muntin member and a sash frame member at the jamb, instead of between two muntin members as shown in Figures 1, 2, 3 and 4.

In Figure 5 is shown a cross-section of a solid metallic muntin member or sash bar, such as I prefer to employ in the metallic window sash construction embodying my

invention. This muntin is of T-shape, having a web or stem 1, and oppositely projecting glazing flanges 2, which with the stem 1 form glazing rebates or rabbets. Each of these rebate-providing glazing flanges 2 is comparatively thin and of wedge-shape and is preferably similarly tapered on both sides as shown. This muntin or mullion such as is illustrated in Figure 5 may be employed for both the vertical and transverse non-marginal sash bars in the construction shown in Figure 1 and as there indicated by the reference numeral 2, there employed to designate the glazing flanges shown in Figure 5. These solid metallic muntins are originally rolled to the form shown in Figure 5.

In the particular metallic sash construction embodying my invention illustrated in Figure 1, the middle part of the complete window section is a movable ventilator part shown as mounted on pivots 3 to swing inward at the top and outward at the bottom, on a horizontal axis or pivot line. This pivoting is effected between adjacent stationary and movable muntins, these muntins being originally of the construction and transverse configuration illustrated in Figure 5, and which also appear non-marginally in Figure 1, but which at the ventilator edges have been slightly modified so as to produce, in accordance with my invention, the weathering relation between these adjacent stationary and movable muntins. The marginal stationary muntin at the right of the pivoted ventilator section appearing in Figures 1, 2 and 3, similarly to the muntin shown in Figure 5, has a stem or web 1 and at the right side thereof has a glazing flange 2, but at the left side thereof, the glazing flange such as appears at the left in Figure 5, as shown in Figures 1 and 2 has been distorted or bent outward to form a weathering flange 4; and below the pivot 3, this flange which was originally the glazing flange has been similarly distorted or bent inward to form an inner weathering flange 5, as appears in Figure 3 and in the lower part of Figure 1. Correspondingly, at the left side of the swinging ventilator section appearing in Figures 1, 2 and 3, the stationary muntin has a usual stem 1 and glazing flange 2, but above the pivot 3 of the ventilator section, what otherwise would be a similar glazing flange is bent or distorted outward, as appears in Figure 2 at the left and in the upper part of Figure 1 at the left, to form an outer weathering flange 6, while the lower part of this same flange is distorted or bent inward as appears in the lower part of Figure 1 and in Figure 3, to form an inner weathering flange 7.

At the right side of the ventilator section the marginal muntin thereof has a usual stem or web 1 and an inner glazing flange 2, but at the right or outer side of this muntin what otherwise would be a similar glazing flange above the pivot 3 has been bent inward to form an inwardly movable weathering flange 8, shown in Figure 1 at the top, and in Figure 2; and below the pivot 3, this same flange has been bent outward to provide an outer outwardly movable weathering flange 9, as shown in the lower part of Figure 1 and in Figure 3. The inwardly movable weathering flange 8 has an outer inclined flat weathering or sealing surface co-operative with a similar flat inclined inner weathering surface of the stationary weathering flange 4 on the stationary muntin bar, to which the movable muntin bar is pivoted at 3 as above noted. Similarly below the pivots 3, the outer movable weathering flange 9 of the movable muntin bar at its inner side has a flat outwardly inclined weathering or sealing surface which is co-operative with a similarly flat inwardly inclined sealing surface provided by the stationary weathering flange 5 on the stationary muntin below the pivots 3, as is clearly shown in Figure 3 at the right.

At the left side of the swinging ventilator section, the movable marginal muntin has the usual stem 1 and a glazing flange 2 at the right side thereof. At the left of this muntin what otherwise would be a similar glazing flange has been bent inward to form an inner inwardly movable weathering flange 10, as indicated at the left and top in Figure 1 and as clearly shown at the left in Figure 2. Similarly, below the pivot 3, as shown at the left in Figures 1 and 3, the same flange has been bent outward to form an outer outwardly movable weathering flange 11. The upper and inwardly movable weathering flange 10 of the movable muntin bar at the left of the ventilator section has a flat inwardly inclined outer sealing surface co-operative with a similar flat outwardly inclined sealing surface on the stationary weathering flange 6 of the adjacent stationary muntin. Similarly below the pivot 3 the outwardly movable weathering flange 11 is provided with an inner outwardly inclined flat sealing surface co-operative with and movable outwardly away from the similar inwardly inclined outer flat sealing surface of the stationary weathering flange 7 of the adjacent stationary muntin.

In the drawings, the swinging ventilator section is shown as in the closed position. When this swinging ventilator section is opened, the upper movable weathering flanges 8 and 10 thereof will move inward away from the stationary weathering flanges 4 and 6 respectively; and similarly the lower movable weathering flanges 9 and 11 will move outward away from the sta-

tionary weathering flanges 5 and 7, as will be clear from an inspection of Figures 2 and 3 in connection with Figure 1.

It is to be particularly noted as a feature of my invention that the adjacent movable and stationary muntins are brought closer together to the extent of the weathering overlap between the weathering flanges, and also to the extent of the elimination of the usual clearance space which heretofore commonly has been left between projecting adjacent glazing flanges, similar to the flanges 2. It is evident that the bringing closer together of these muntins or sash bars into overlapping relation of their flanges will cause them to exclude that much less light than they would if placed merely adjacent to each other with their flanges not in overlapping relation, but opposite to and slightly spaced from each other, as commonly has been done heretofore, a special weathering strip then being provided for closing the clearance spaces between the opposed flanges. It is to be noted of my invention that the co-operative weathering flanges provide between them an unusually wide weathering joint, by reason of the great width of the flat contacting sealing surfaces. It is obvious that the weathering arrangement of my invention may be equally well employed regardless of whether the pivots of the ventilator section are at a middle point thereof, or are at an end thereof; and also whether these pivots are along horizontal or vertical lines, all of these forms of pivoting being common in the art.

When multiple weathering is desired, an angle strip 12 is employed, this strip being substantially the same as heretofore has been employed for single weathering. This weathering strip 12 above the pivots 3 is secured to the stem 1 of the movable marginal muntin at each side of the swinging ventilator section, as shown in Figure 2; and below the pivots 3, at each side of the swinging ventilator section, this angular weathering strip 12 is attached to the stem 1 of the adjacent stationary muntin, as shown in Figure 3. These angular weather strips 12 are shown as secured in place by means of rivets 13, although they may be otherwise held, for example by welding, as is common in the art. The outwardly projecting flange of each of the upper movable weather strips 12 forms a weathering seal with the inner surface of the web 1 of the adjacent stationary muntin, as shown in Figure 2, and similarly the inwardly projecting flange of each of the lower stationary weather strips 12 forms a similar weathering seal with the inner surface of the lower part of the web 1 of the adjacent movable marginal muntin of the swinging ventilator, as shown in Figure 3.

Where only single weathering is desired, these angle strips 12 may be omitted, as is illustrated in Figure 4, where, as there appears, the co-operative relation of the sealing surfaces on the overlapping flanges of the adjacent movable and stationary muntins results in complete single weathering without the necessity of employing a special weathering strip, as has been done heretofore for single weathering.

Heretofore commonly for single weathering an angle strip similar to the strip 12 has been employed, and for double weathering a channel strip has been employed. For double weathering my invention dispenses with one leg or flange of such a channel strip and enables the other leg to be made shorter. My invention therefore results in the saving of material to the extent that for double weathering an angle strip such as 12 is employed instead of the usual heavier channel strip, and for single weathering the usual additional angle strip is omitted altogether.

Figure 6 shows that the weathering arrangement of my invention may be equally well employed at the outer edge of a window section or at the jamb, and that it is not limited to the middle part of the window section as illustrated in the preceding figures. The construction shown in Figure 6 is the same as appears at the right in Figure 2, excepting that instead of the stationary muntins there appearing, a stationary frame member of channel form is shown, comprising a middle web 14, outer marginal inner and outer flanges 15 and 16, and an inwardly projecting glazing flange which has been distorted or bent outward to form a weathering flange 17 similar to the weathering flange 4 appearing at the right in Figure 2, and having a similar function. The other parts illustrated in Figure 6 may be and are shown as of the same construction as appears at the right in Figure 2. Obviously the construction shown in Figure 6 can also similarly be employed at the left as well as at the right side, and either above or below pivots such as 3. It is also obvious that single weathering similar to that shown in Figure 4 would be obtained in the construction shown in Figure 6 merely by omitting the angle strip 12.

It is obvious that various modifications may be made in the construction shown in the drawings and above particularly described within the principle and scope of my invention.

I claim:

1. The combination with a ventilator having an axis of rotation, of a stationary muntin member having a weathering flange on one side of said axis and another weathering flange on the opposite side of said axis and projecting from the same part of said sta-

tionary muntin member as the first mentioned flange but disposed at an angle to said first mentioned flange.

2. The combination with a stationary muntin member, of a rotatable ventilator provided with weathering flanges in substantially longitudinal alignment at their bases, the flange on one side of the axis of rotation being arranged at an acute angle to the flange on the opposite side of said axis.

3. The combination with stationary and rotative muntin members at least one of which is formed of rolled angle iron having a flange projecting toward the other muntin member, the portion of said flange on one side of the axis of rotation being bent relative to the portion of said flange on the opposite side of said axis, to form a substantially small acute angle.

4. In a pivotal ventilator, an angle iron muntin member of substantially the same shape and cross-section on each side of the pivot axis, a portion of a flange of said member on one side of said axis being angularly disposed to a portion of the same flange on the opposite side of said axis.

5. In a pivotal closure, stationary and rotative muntin members each of rolled angle iron, flanges on said members projecting toward one another for co-operation as weathering strips, these weathering flanges contacting on different faces on opposite sides of the pivot axis.

6. The combination of claim 5 in which the weathering flanges of said angle irons are tapered on both faces thereof, whereby said flanges are adapted to co-operate with small angular displacement between the portions of the same flange on opposite sides of the pivot axis.

In testimony whereof, I have affixed my signature to this specification.

ROBERT S. DRUMMOND.