A. L. LAMBERT.

METALLIC WINDOW AND DOOR.

APPLICATION FILED OCT. 27, 1911.

1,074,631. Patented Oct. 7, 1913.

Fig. 1,

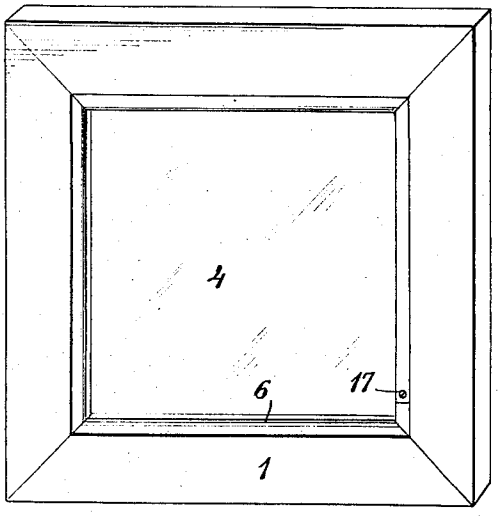


Fig. 2,

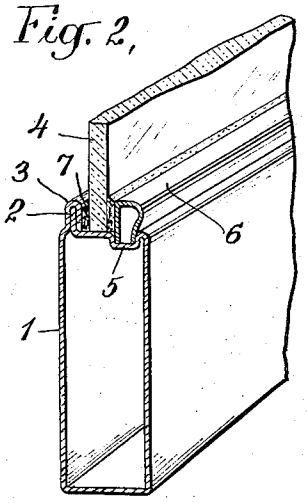


Fig. 3,

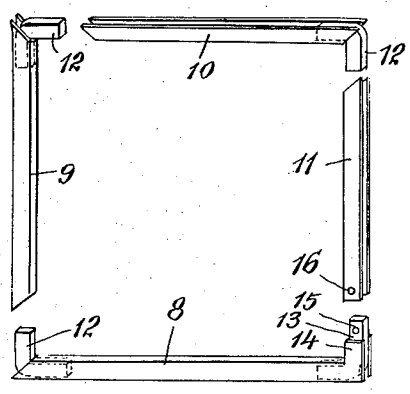


Fig. 4,

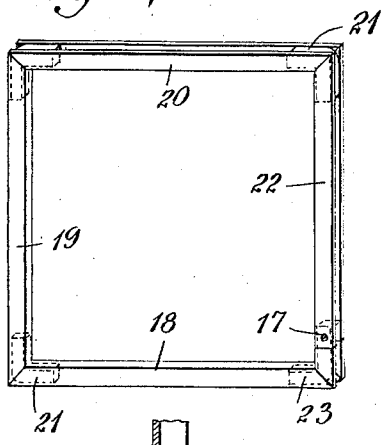


Fig. 5,

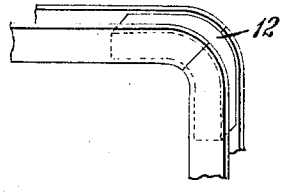
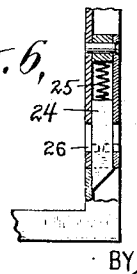


Fig. 6,



WITNESSES:

J. Ernest Intrieb

J. F. Collins

INVENTOR

A. L. Lambert

BY Edmonds & Edmonds

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBERT LESLIE LAMBERT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HALE AND KILBURN COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

METALLIC WINDOW AND DOOR.

1,074,631. Specification of Letters Patent. Patented Oct. 7, 1913.

Application filed October 27, 1911. Serial No. 657,035.

To all whom it may concern:

Be it known that I, ALBERT LESLIE LAMBERT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Windows and Doors, of which the following is a specification.

This invention is directed to the provision of an improved means for securing a panel in position within a frame, and is of special utility in the construction of windows and doors having metallic frames.

In accordance with the invention, a frame is provided adapted to receive a panel within the same, the frame having an inwardly extending flange formed thereon against which the panel is positioned. Additionally, the frame has a groove formed therein adjacent and parallel to the flange, and this groove is adapted to receive a retainer-frame which holds the panel in position. Means are provided for securing the ends of each member of the retainer-frame to the adjacent ends of the adjacent members of that frame, as a result of which the retainer-frame will be held rigidly in its position in the groove formed in the members of the main frame. This retainer-frame has a detachable securing device at one point therein, which is accessible from the exterior of the device and by means of which a break may be made in the retainer-frame, permitting removal thereof.

While the invention may be utilized in metallic doors for securing a metallic panel in position between the rails and stiles of the door, it is of greatest utility in window-sashes provided with frames formed of sheet-metal, in positioning the pane of glass within the sash-frame.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a window-sash, Fig. 2 is a perspective view showing the construction employed in detail, Fig. 3 is a perspective view of the retainer-frame, showing the parts thereof separated, Fig. 4 is a perspective view of a modified form of retainer-frame, Fig. 5 is a detail perspective view illustrating a further modification and Fig. 6 is a longitudinal sectional view of another modification showing a spring latch to lock the retainer frame in position.

Referring to these drawings, a window-sash is shown in Figs. 1 and 2, having a sash-frame consisting of four metallic members secured together at their ends. Each of these members is formed from a single strip of sheet-metal, which is pressed to the desired configuration, preferably that shown in Fig. 2. The metallic frame-member 1 is bent to a rectangular cross-section and to provide a flange 2 at one edge of the strip and a fold 3 at the other edge of the strip, the fold 3 being adapted to inclose the flange 2 and to form therewith a flange extending inwardly of the sash-frame from the inner side of the frame-member. This flange extends lengthwise of the frame-member and serves as a means for positioning the panel, in this case a pane of glass 4. The strip for the frame-member is also bent so as to form on the inner side thereof a groove 5 extending lengthwise of the frame-member and parallel and adjacent to the flange formed by the parts 2 and 3. This groove 5 receives and holds in position a retainer 6. The pane of glass has a strip of rubber or other compressible material 7 applied to the edge thereof, and the space between the groove 5 and the flange 3 is such that the glass 4 will be held firmly in position between the flange 3 and the retainer 6.

Refering now to Fig. 3, it will be seen that the retainer is a rectangular frame consisting of four pieces 8, 9, 10 and 11. Each of the pieces 8, 9 and 10 is mitered at one end, and an angular metallic piece 12 is secured in position with one end extending within the mitered end of the member and the other end projecting outwardly therefrom at a right angle to the member. At their opposite ends, the members 9 and 10 are mitered as shown. The opposite end of the member 8 is provided with an angular metallic piece 13, similar to the pieces 12 but of slightly greater length. This end of the member 8 is extended and turned at a right angle, as shown at 14, and the piece 13 projects beyond this extension and is provided with a threaded opening 15. The member 11 of the retainer-frame is mitered at one end to coact with the adjacent end of the member 10, and at the opposite end is cut off square and provided with an opening 16 adjacent to that end. When the pane of glass 4 has been positioned within the frame, the member 8 of the retainer-frame is posi-

tioned within the groove 5 of one of the members of the sash-frame. The member 9 of the retainer-frame is then positioned with one end extending over the projecting portion of the piece 12 on the member 8, so that the mitered ends of the members 8 and 9 abut. The member 10 of the retainer-frame is then similarly positioned in its groove in the sash-frame with its end in coaction with the end of member 9. The member 11 of the retainer-frame is then positioned in its groove, with its upper end in coaction with the adjacent end of the member 10 and its lower end adjacent to but inwardly of the frame from the projecting portion of the metallic piece 13 on the member 8. The lower end of member 11 is then swung around to carry that member into its proper position in its groove in the sash-frame, with its lower end inclosing the projecting end of the piece 13. A screw 17 is then applied through the opening 16 in member 11 and screwed into the threaded opening 15 in the piece 13, whereupon the member 11 will be held rigidly in its position. It will thus be seen that the retainer-frame is completed, and by reason of its completion each member thereof will be held firmly in its groove in the sash-frame. The completed structure may be made of attractive appearance, particularly as the only means for securing the retainer-frame in position which shows upon the exterior of the device is the one screw 17. Each of the members of the retainer-frame is held in its groove by this one securing device 17, and the other members of the retainer-frame, and there is no danger of the retainer, and hence the panel, working loose. However, the panel may be taken out readily at any time by merely withdrawing the screw 17 and taking out the parts of the retainer-frame in a manner substantially the reverse of that above described as to inserting these parts in position.

Fig. 4 may be considered as illustrating the retainer-frame after the parts thereof have been united in the manner above described. This figure, however, is intended as an illustration of a slightly modified form of the retainer-frame, which may be used if desired. In accordance with Fig. 4, the members 18, 19 and 20 of the retainer-frame are welded together at their adjacent ends, the corner-pieces 21 being employed within the ends of these members to facilitate the operation and strengthen the joints. Also, the member 22 is connected rigidly at its upper end with the adjacent end of the member 20. A corner-piece 23 is positioned within one end of member 18, in substantially the same manner as that heretofore described in connection with corner-piece 13. These connections in the retainer-frame are preferably made by welding the members of the retainer-frame to the corner-pieces 21 and 23. The retainer-frame having been completed, it is inserted in position within the sash-frame by bowing the member 18 sufficient to permit of inserting it in its position and then similarly bowing the members 19 and 20. This having been done, the lower end of the member 22 is moved laterally until it embraces the upper end of the corner-piece 23 and the member 22 is within the groove in its corresponding member of the sash. A screw is then inserted to hold the lower end of member 22 to the corner-piece 23.

Fig. 5 illustrates a slight modification which may be employed with either of the constructions shown in Figs. 3 and 4. It consists merely in rounding the corners of the retainer-frame, instead of making those corners square. It will be seen that the metal of the members of the retainer-frame is shaped to correspond with the curvature of the corner-pieces.

In Fig. 6 is shown a further modification, such that no screw shows upon the exterior of the structure as a securing means for holding the retainer in place. In accordance with Fig. 6, one end of the member 11 or 22 of the retainer-frame is provided with a spring-actuated bolt 24 pressed outwardly by a spring 25. The end of this bolt is inclined and the adjacent end of the member 8 or 18 of the retainer-frame is made hollow to receive the end of the bolt. When assembling the retainer-frame, the member 11 or 22 thereof is moved laterally to its position and when so moved the bolt 24 will be pressed back against spring 25 until the member of the retainer-frame has reached its final position, whereupon bolt 24 will be forced out, so that its end enters the end of the adjacent frame-member and thus holds the entire retainer-frame in place. If desired, a small slot 26 may be provided, through which a pointed tool may be inserted into an opening in the bolt 24, whereby the bolt may be retracted in order to permit removal of the retainer-frame.

The groove 5 to receive the retainer-frame may be formed in various ways other than that shown, or, in fact, a flange might be provided on the interior of the frame similar to the flange 3, and the members of the retainer-frame be provided with grooves to fit over this flange. In such case, however, a groove would be provided between that flange and the panel 4 or the flange 3, which groove would serve to hold the retainer-frame in place.

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

1. The combination of a frame the members of which have grooves on the inner sides thereof, a panel in the frame, and

means for holding the panel in position comprising a plurality of disconnected but interlocking retainer-strips lying in the grooves in said members, means at the end of each retainer-strip fitting within the end of the next adjacent strip, and means for securing the end of one of the strips in position, substantially as set forth.

2. The combination of a frame the members of which have grooves on the inner sides thereof, a panel in the frame, and means for holding the panel in position comprising a plurality of disconnected but interlocking retainer-strips lying in the grooves in said members, a plurality of angle-pieces each having one end secured to the end of a strip and the other end projecting laterally from the strip and entering within the end of the next adjacent strip and means for securing the end of one of the strips in position, substantially as set forth.

3. The combination of a frame the members of which have grooves in the inner sides thereof, a panel in the frame, and means for holding the panel in position comprising a plurality of retainer-strips of U-shaped cross-section and mitered at their ends, a plurality of angular corner-pieces each having one end fitting within and secured to a strip and the other end extending laterally from the strip and entering the end of the next adjacent strip, and means for securing one of the strips in position, substantially as set forth.

4. The combination of a sash consisting of frame-members secured together at their ends and each formed of sheet-metal bent to a rectangular cross-section and to form a lengthwise flange and a groove parallel thereto on the inner side thereof, a pane of glass within the sash positioned by the flange on the members of the sash, and a retainer-frame lying in the said grooves, said retainer-frame consisting of a plurality of strips each extending along one of the frame-members of the sash, and each of a plurality of said strips consisting of a sheet-metal piece of U-shaped cross-section mitered at its ends and having an angle-piece secured to one end thereof and extending laterally therefrom for coaction with the end of the next adjacent strip, substantially as set forth.

5. The combination of a frame the members of which have grooves in the inner sides thereof, a panel in the frame, and means for holding the panel in position comprising a plurality of retainer-strips of U-shaped cross-section and mitered at their ends, a plurality of angular corner-pieces each having one end fitting within and secured to a strip and the other end extending laterally from the strip and entering the end of the next adjacent strip, a retainer-strip mitered at one end and coacting with a corner-piece at said end and having the other end squared, and means for securing said squared end of the last-named retainer-strip in position, substantially as set forth.

This specification signed and witnessed this 18th day of October, 1911.

A. LESLIE LAMBERT.

Witnesses:

JOHN P. FLETCHER,

A. B. SHOEMAKER.