Dec. 15, 1925. 1,565,975

H. D. WILSON

WINDOW CONSTRUCTION

Filed Feb. 15, 1923 3 Sheets-Sheet 1

Fig. 1

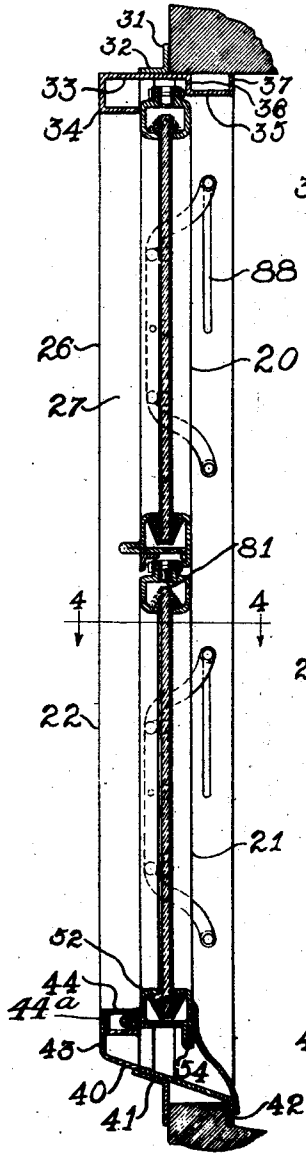


Fig. 2

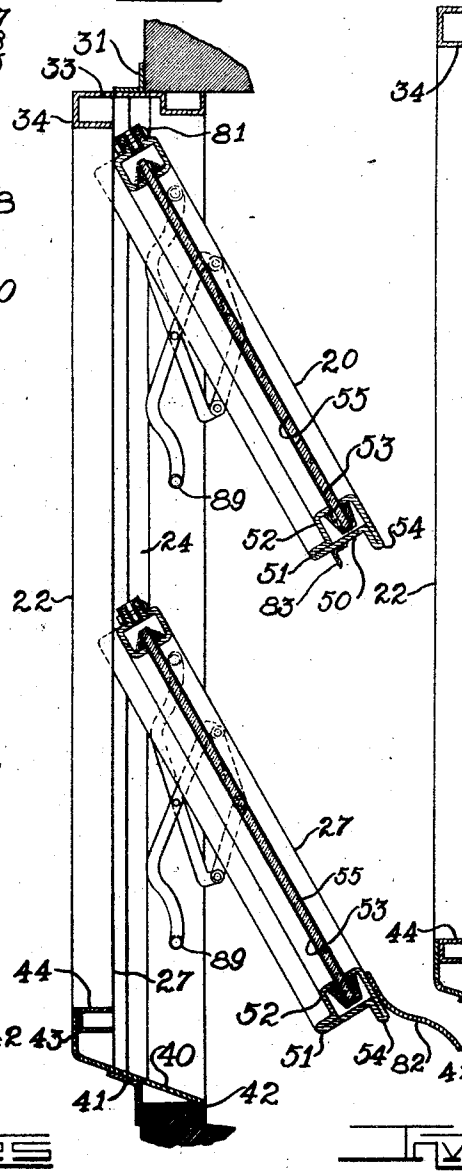
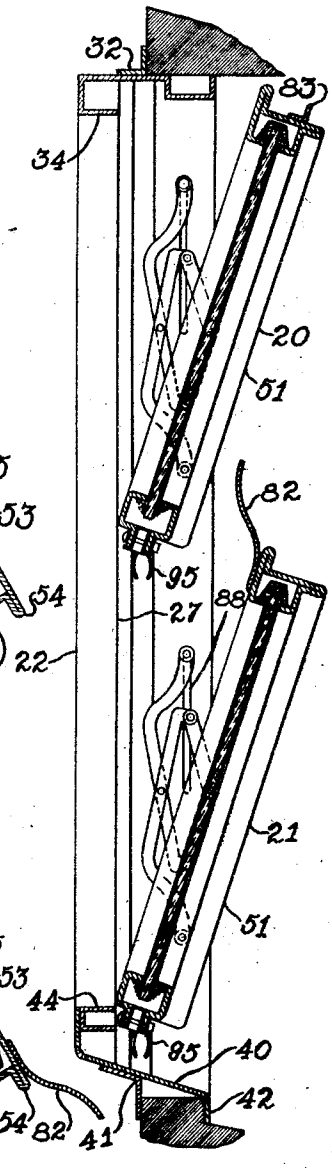


Fig. 3



Witnesses

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Dec. 15, 1925. 1,565,975

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WINDOW CONSTRUCTION

Filed Feb. 15, 1923 3 Sheets-Sheet 2

Fig. 4

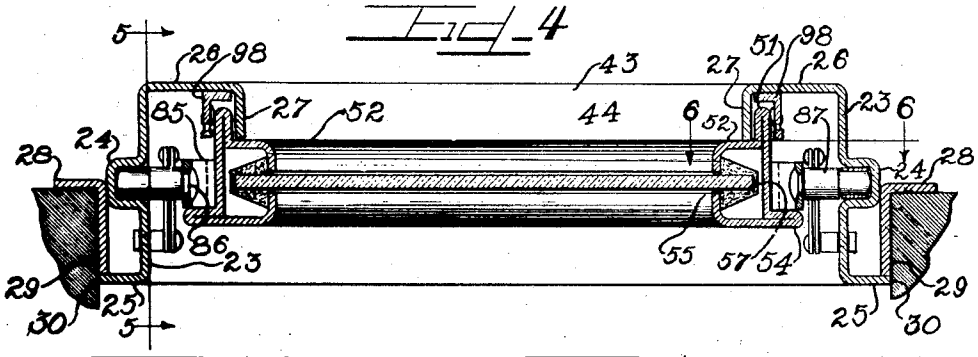


Fig. 5

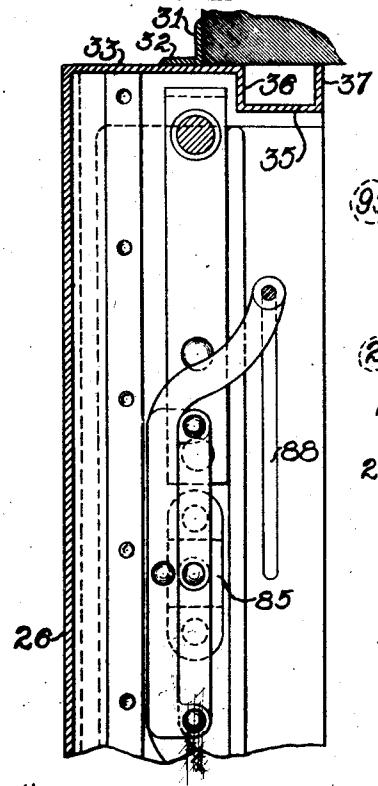
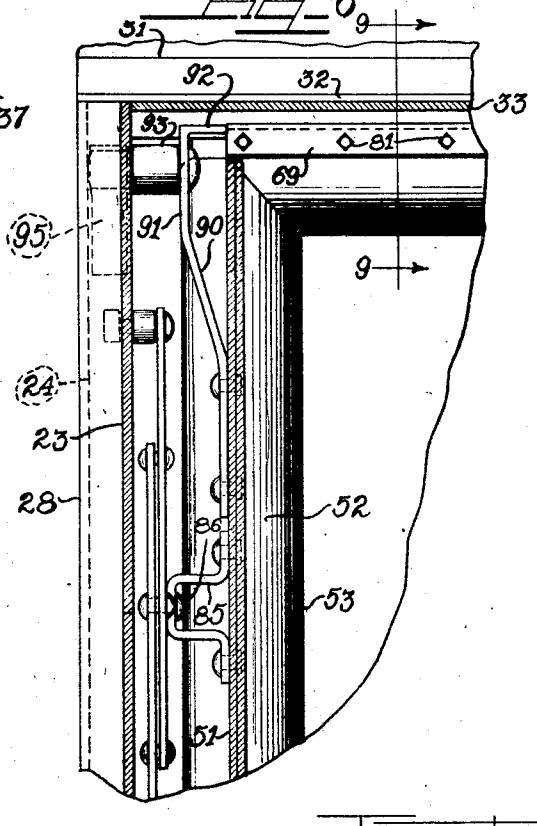


Fig. 6



Witnesses

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Dec. 15, 1925. 1,565,975

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WINDOW CONSTRUCTION

Filed Feb. 15, 1923 3 Sheets-Sheet 3

Fig. 7

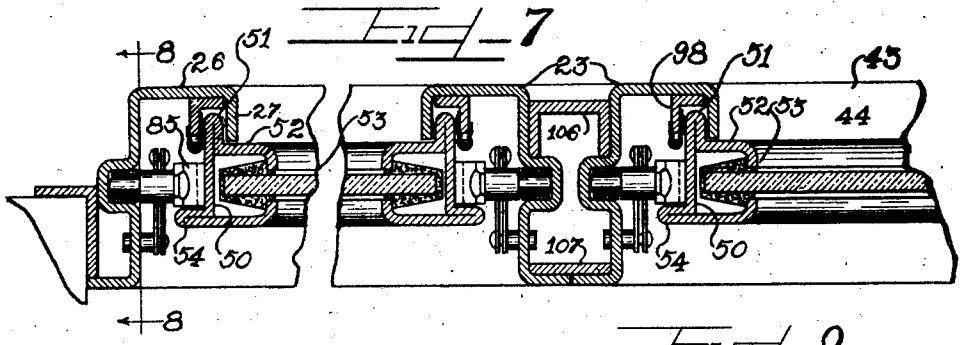


Fig. 8

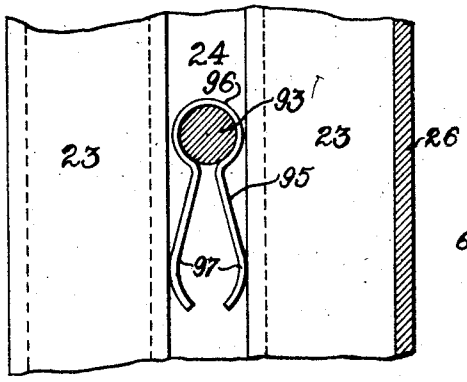


Fig. 9

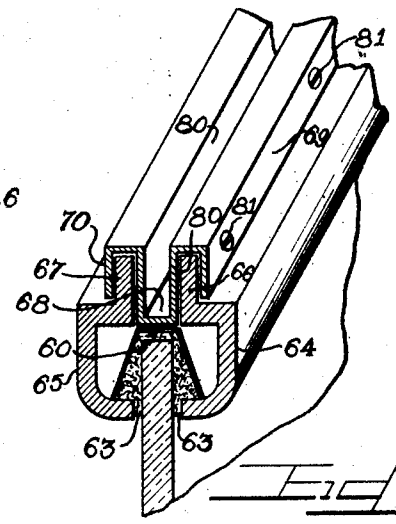


Fig. 10

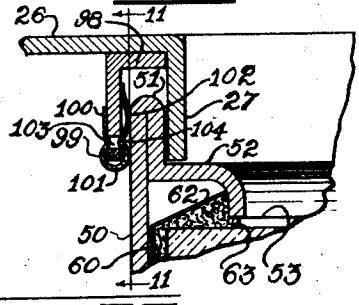
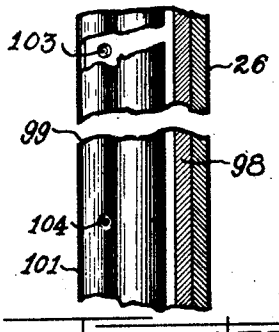


Fig. 11



Witnesses

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by

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Patented Dec. 15, 1925. 1,565,975

UNITED STATES PATENT OFFICE.

HARRISON D. WILSON, OF CHICAGO, ILLINOIS.

WINDOW CONSTRUCTION.

Application filed February 15, 1923. Serial No. 619,106.

To all whom it may concern:

Be it known that I, HARRISON D. WILSON, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Window Construction; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

It is an object of the present invention to provide a metal construction for window frames and window sashes which shall be more inexpensively manufactured than such articles have been heretofore.

It is a further object of this invention to provide a metal stock material of such cross section that it may be used for any part of the window frame.

It is a further object of this invention to provide a metallic window sash adapted to co-operate with such a window frame.

It is a further object of this invention to provide a metallic weather strip adapted to co-operate with such window frames and sashes.

It is a further object of this invention to provide a bearing for windows of the pivoted type which shall prevent all noise and rattling in such windows.

It is a further object of this invention to provide a metallic window sash into which the window glass may be slid and will be then surrounded by the sash so that the addition of a single closure member along the entrance side of the sash will completely enclose the glass.

It is a further object of this invention to provide such a window sash with a putty retaining means whereby a saving in putty is effected.

Other and further important objects of this invention will be apparent from the disclosures in the accompanying drawings and following specification.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a vertical section through a window embodying my invention.

Figure 2 is a similar section showing the window partially open.

Figure 3 is a similar section showing the window in a position nearly completely reversed.

Figure 4 is a section upon the line 4—4 of Figure 1.

Figure 5 is a section upon the line 5—5 of Figure 4.

Figure 6 is a section upon the line 6—6 of Figure 4.

Figure 7 is a section similar to Figure 4 showing the application of this invention to another style of window.

Figure 8 is a section upon the line 8—8 of Figure 7.

Figure 9 is a view partly in perspective and partly in section upon the line 9—9 of Figure 6.

Figure 10 is a view upon an enlarged scale of a portion near the upper left hand corner of Figure 4 showing the application of the weather strip.

Figure 11 is a view in section on the line 11—11 of Figure 10.

As shown on the drawings:

The window has an upper sash 20 and a lower sash 21 which are mounted in the window frame 22 by a lazy tongs form of pivot support closely similar to that described in my Patent 1,193,101, granted August 1st, 1916. The two upright members and the top cross piece of the window frame each have a cross section somewhat resembling the letter Z. The two upright members, however, have a trough produced in the middle of the portion corresponding to the oblique part of the Z. This is well illustrated at the right hand part of Figure 4, where the middle portion 23 of the upright member has a trough 24 projecting toward the right. The portion of this member nearest the exterior of the building has a flange 25 corresponding to the lower line of the letter Z and the portion next the interior has a wider flange 26 corresponding to the top part of the letter Z. The side of this flange next the middle of the window is turned inward, as shown at 27, to afford an edge against which the sash abuts.

Stock for making the upright part of the frame may be rolled in long lengths and cut off to the desired size. By turning a piece of the stock end for end the part cor-

responding to the left hand portion of Figure 4 is provided, wherein the same numbers designate the corresponding parts. Because of the reversal of the piece, these parts occur in a different order making a section resembling the letter S instead of the letter Z.

The bearing of these upright members against the wall of the building is afforded by angle irons, one arm 28 of which lies against the interior surface of the wall and the other arm 29 of which constitutes the facing of the edge of the wall towards the window. This facing does not extend across the whole of this edge, but the thickness of the wall goes beyond the depth of the window frame. The flange 25 meets the surface of the wall at 30 and the arm 29 of the angle iron is secured to the flange 25 at this point. This joint may be made by brazing, electric welding, or in any other desired fashion.

The upper cross piece of the frame also co-operates with an angle iron which, however, is somewhat differently positioned. One arm of this angle iron, as shown at 31 in Figs. 1 to 3, is against the interior surface of the wall. The other arm 32 is against the top surface of the middle part 33 of the cross member. This middle part has no trough, but otherwise it is of like cross section. The inner edge of the top frame member merges into a channel 34, the two ends of which form miter joints with the corresponding parts 26 and 27 of the upright members. The exterior portion of the top frame member forms a channel 35, the inner wall 36 of which co-operates with the edge of the channel 34 to afford a pocket for the reception of the upper edge of the top sash. The outer wall 37 of the channel 35 has its edge against the edge of the wall and so makes a good finish to the window frame. It forms miter joints with the parts 25 of the uprights.

The lower member of the frame consists of a bar, the middle portion of which rests obliquely and extends horizontally across the window, as shown at 40. On the interior of the wall this member has connected to it an angle bar 41, one arm of which is secured by brazing, electric welding or in any other desired manner to the oblique portion 40, and the other arm of which rests against the interior surface of the building wall. The exterior surface of the building wall is contacted by a flange 42 on the edge of the oblique portion 40. The wall is made with a shoulder to cooperate with this flange and from this shoulder outward the wall slopes to provide the usual water shed or sill.

The oblique portion 40 is provided with a vertical portion 43 making miter joints with the portions 26 of the vertical members. A channel 44 is attached by its web 44^a to the flange 43 and extends transversely of the window to form a weather strip or seal for receiving the fold 51 of the sash.

The bottom and the two side members of the sash for each pane are all made of stock of the same cross section. This includes a portion 50 at right angles to the plane of the glass, as shown in Figs. 4 and 7. On the edge next to the inside of the window this stock is folded back upon itself to form a double-walled flange 51, from the edge of which the stock turns through a right angle and then a second right angle to form a bearing member 52 whose edge 53 is separated from the glass by only the putty. The edge of the portion 50 nearest the outside of the wall is turned away from the glass and then folded back upon itself to form a double-walled flange 54. The exterior wall of this flange continues parallel to the glass and then is turned inward to form a similar bearing edge 55 for the exterior surface of the glass. The two upright members of the sash are connected to the bottom member by miter joints. Before this connection is made, however, a putty receiving trough is passed lengthwise into each of the sash members. This trough is most clearly shown in Figure 10. It has a base 60 and flaring sides 62.

In assembling the window the putty is introduced into these troughs through the opening between the edges 53 and 55, which opening is to accommodate the glass. When the troughs have been filled with putty to the desired depth, the glass is slid in from the top of the sash, causing the putty to fill the trough and to come out through the space between the edges 53 and 55 and the glass, as is shown at 63 in Figure 10.

The top member of the sash consists of two pieces 64 and 65 which afford edges facing the glass in the same way as the edges 53 and 55. Instead of being united in a plane at right angles to the glass, as are the other members of the sash, these pieces 64 and 65 are turned into a plane parallel to the sash, as shown at 66 and 67. The trough for receiving putty is in this case also made of a general U-shape in cross section and is filled with putty and introduced between the flanges 66 and 67 and being compressed for its passage between them. When it is in the space between the members 64 and 65 adjacent the glass, this member expands as shown in Figure 9 into the same form as the other putty receiving members. The trough-shaped member is then forced home so that the putty is caused to exude between the members 64 and 65 and the glass, as shown at 63 in Figure 9. This is done by forcing a closure strip into place between the flanges 66 and 67. This strip is of a form somewhat resembling the letter M and the central portion 68 contacting with the flat part 60 of the

putty trough forces it into the illustrated position and so brings the putty into the position described. The extreme members 69 and 70 of the closure member contact with the flanges 66 and 67. Bolts 81 are inserted through flanges 66 and 67 and all four walls of the closure member and the insertion of these bolts completes the fastening of the sash.

The lower member of the sash for the lower part of the window is provided with an apron 82, as may be most readily seen in Figure 2, which, in the closed position of the window, by contacting with the outer flange 42, upon the lower member of the frame, makes a weather-tight joint. Also this apron, being somewhat resilient, assists in holding the window against rattling. The lower member of the sash on the upper window is provided with an angle iron 83, which co-operates with the double-walled flange 54 of that member to form a trough, which, in the closed position of the window, receives the projecting parts 66 and 67 and the inclosure member on the upper edge of the lower sash, as may be best seen in Figure 1.

Secured to the portion 50 of the upright member of the sash for each of the windows is a fixture or stirrup 85 which carries a pivot 86 for receiving the sleeves or eyes 87 that constitute the outer joint of the lazy tongs support for the window. The links and cross members constituting this lazy tongs correspond exactly to the similar members in the above-mentioned patent and need not here be described in detail. Slots 88 are provided in the portions 23 of the upright frame members for the reception of the moving ends of the lazy tongs members secured to the frame. The other ends of these lazy tongs members are pivoted to the frame as shown at 89.

In order to better guide the sash in its motion, an additional bearing is afforded near the upper end of each sash. For this bearing a strap 90 is provided which, as shown in Figure 6, is bolted, riveted or otherwise secured to the part 50 of the upright portion of the sash. The strap 90 has a portion 91 which is bent to be parallel to the frame and a portion 92 bent through a right angle to contact with the sash. Near the upper end of the portion 91 a pivot 93 is provided which projects into the trough 24.

The part of this pivot contained within the trough 24 is surrounded by a resilient shock-absorbing strap 95, the middle portion of which, as shown at 96, is made practically circular to enclose and tightly engage the pivot 93 and the two end portions of which, as shown at 97, are rounded to bear against the side walls of the trough 24. The windows are adapted to swing upon the pivots 93, as shown in Figure 2. The windows may be swung upside down as shown in Figure 3; during such movement, the pivots 93 will slide downwardly in the grooves 24.

The frame members 26 have secured to them adjacent to the flanges 27 a pair of angle irons 98, best shown in Figures 4 and 7, one arm of which projects parallel to the flange 27 and on the side thereof toward the edge of the window opening. Between this arm of the angle iron 98 and the flange 27 the double-walled flange 51 of the sash is received. Mounted upon this arm of the angle iron 98 is a resilient strip of brass or other metal 99, best shown in Figures 10 and 11. This strip has a general U-shaped cross section. The arm of the U farthest from the window has its terminal edge flat and lying close against the member of the angle iron 98 as shown at 100. The central part of the strip is rounded, as shown at 101, to afford a resilient edge. The arm of the U-shaped section nearest the window has a wide and shallow curvature, as shown at 102, to afford a resilient bearing against the double-walled flange 51. Preferably the end of this wall of the strip 99 extends beyond the edge 100 and lies flat against the member of the angle iron 98. Near the rounded edge 101, the member of the angle iron 98 is perforated at intervals, as shown at 103, and depressions, as shown at 104, are made in the metal 99 to secure it in place.

In the application of this device to the form of window shown in Figure 7, two windows side by side or two sashes mounted to independently pivot in one large window, are illustrated. The side members 23 of the window frames which come adjacent one another are of the form already described. For proper spacing apart, an ordinary channel iron 106 is used on the interior side of the frame, and an ordinary piece of strap iron 107 is used on the outside. Thus, no matter what the situation of the windows, the same rolled stock of standard cross section may be used for the upright members of the frame.

In the operation of the device, opening and closing the windows is as described in the above mentioned patent. The use of the several forms in assembling the device has been described in connection with the detailed description of the structure. When the window is closed, the double-walled flange 51, forcing its way between the flange 27 and the weather strip 99, presses the portion 102 of this strip making it assume a flatter position. Thus a water-tight joint is afforded. The resilient nature of the pressure of this weather strip against the sash also assists in preventing rattling. Rattling is further prevented by the resilient pressure of the arms 97 of the spring member 95 against the trough 24. The window is still further held resiliently in posi-

tion when closed by the apron 82. Thus, when the window is closed, no motion in any direction can take place without being resiliently resisted. All rattling is, therefore, avoided.

I am aware that numerous details of construction may be varied through a wide range without departing from the spirit of this invention, and I therefore do not purpose limiting the patent granted otherwise than is necessitated by the prior art.

I claim as my invention:

1. In a weather strip support, a flat metallic member provided with a row of perforations, a resilient metallic weather strip member surrounding the edge of said flat member and extending along each face thereof, said resilient metallic member having dents entering said perforations whereby said resilient member is secured to said flat member.

2. In a window construction, a window frame having a trough therein, a pivotally supported window sash, a projection from said sash into said slot, and resilient means surrounding said projection and contacting with the walls of said slot whereby rattling of the window is prevented.

3. In a window construction, a window frame provided with slot-shaped recesses, a sash provided with flanges adapted to enter said recesses, resilient weather strips mounted upon one wall of said recess and adapted to co-operate with said flanges to resiliently hold the window in place, upright troughs in said frame, a window sash having projections entering said upright troughs, and resilient means surrounding each projection and co-operating with the walls of its trough to resiliently hold the window in place, the lower edge of one of said window sashes having a resilient apron adapted to resiliently engage the bottom member of the window frame whereby when the window is closed it is resiliently held in position from motion in all directions and rattling thereby prevented.

4. In combination, a window sash including members surrounding the edges of the glass, projections secured to said members, a window frame having troughs for receiving said projections, resilient members each including a cylindrical portion surrounding one of said projections, and two wing portions, one contacting each wall of said trough, the ends of said wing portions being curved away from said wall whereby motion of the projection at right angles to the walls of the trough is resiliently prevented.

5. In a window sash construction, integral metallic members surrounding the edge of the glass upon each of three sides, metallic members connecting said first-named members across the fourth side and positioned one on each face of the glass, the space between said metallic members being slightly greater than the thickness of the glass, and a resilient trough-shaped metallic putty-receiving member adapted to be introduced between said connecting members through said space, said resilient metallic member assuming when so introduced a position straddling the edge of the glass.

6. In a window frame, vertical side members, each member having a grooved portion in the plane of the window and a channel extending transversely to the window, and a weather strip associated with said channel.

7. In a window construction, a frame comprising vertical side members, each member having a central portion extending transversely of the window and an end portion parallel with the window, such end portion having an inwardly directed terminal flange, and a member secured to said portion in spaced relation to said flange to provide a channel for receiving a portion of the window sash.

8. In a window frame, vertical side members, each member having a central portion extending transversely of the window and an end portion parallel with the window, such end portion having inwardly directed parallel flanges to provide a channel-like groove, and a weather strip associating with one of said flanges.

In testimony whereof I have hereunto subscribed my name.

HARRISON D. WILSON.