March 15, 1938. E. PEREMI ET AL 2,111,224

WINDOW CONSTRUCTION

Original Filed Sept. 29, 1933 3 Sheets-Sheet 1

Fig. 1.

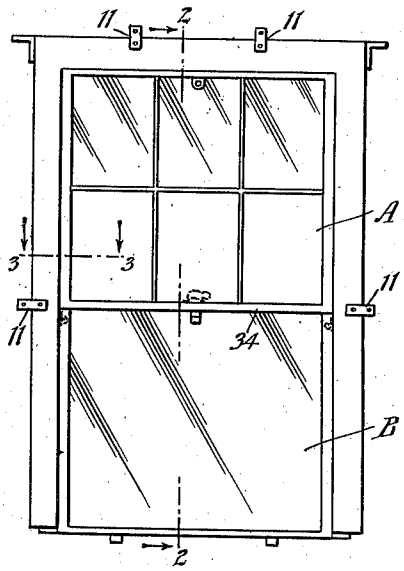


Fig. 2.

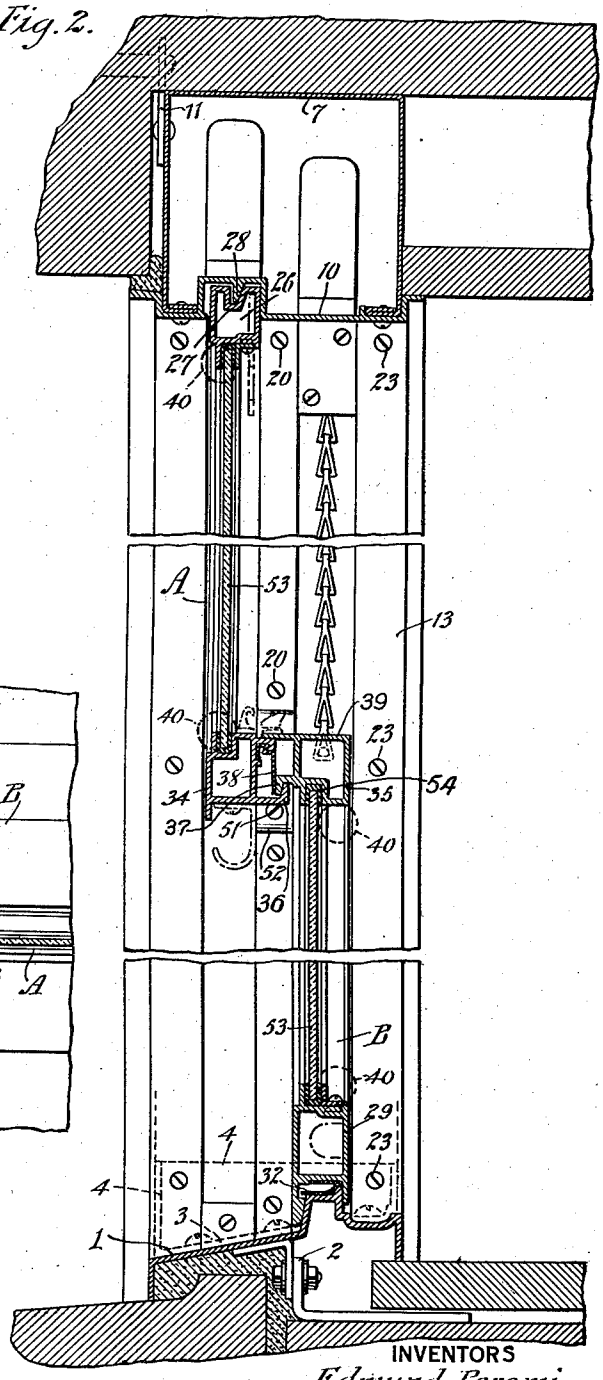


Fig. 3.

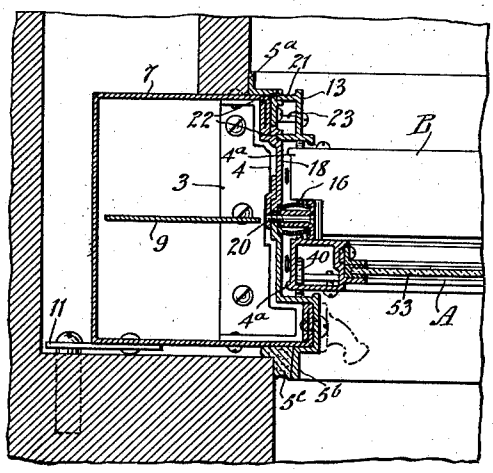
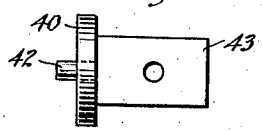


Fig. 4.



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Fig. 5.

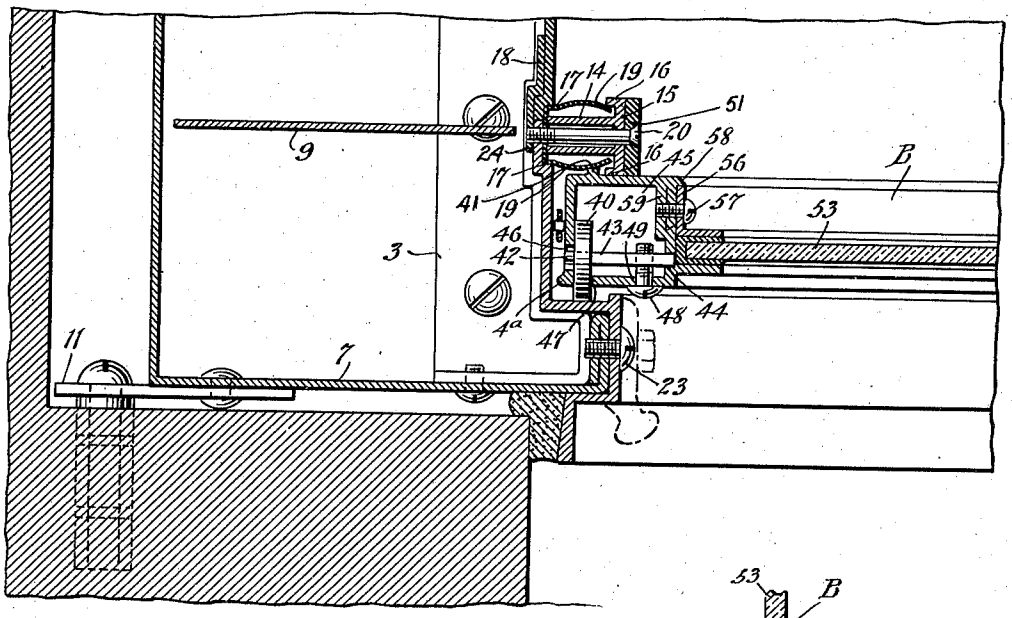
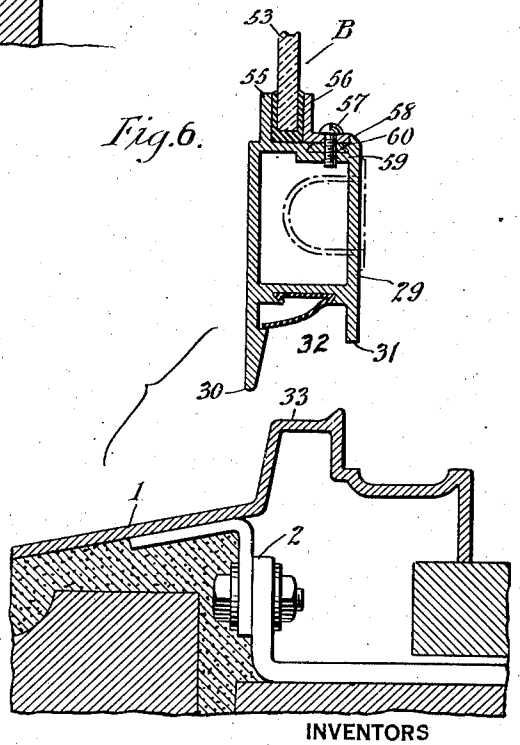


Fig. 6.



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WINDOW CONSTRUCTION

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Fig. 7.

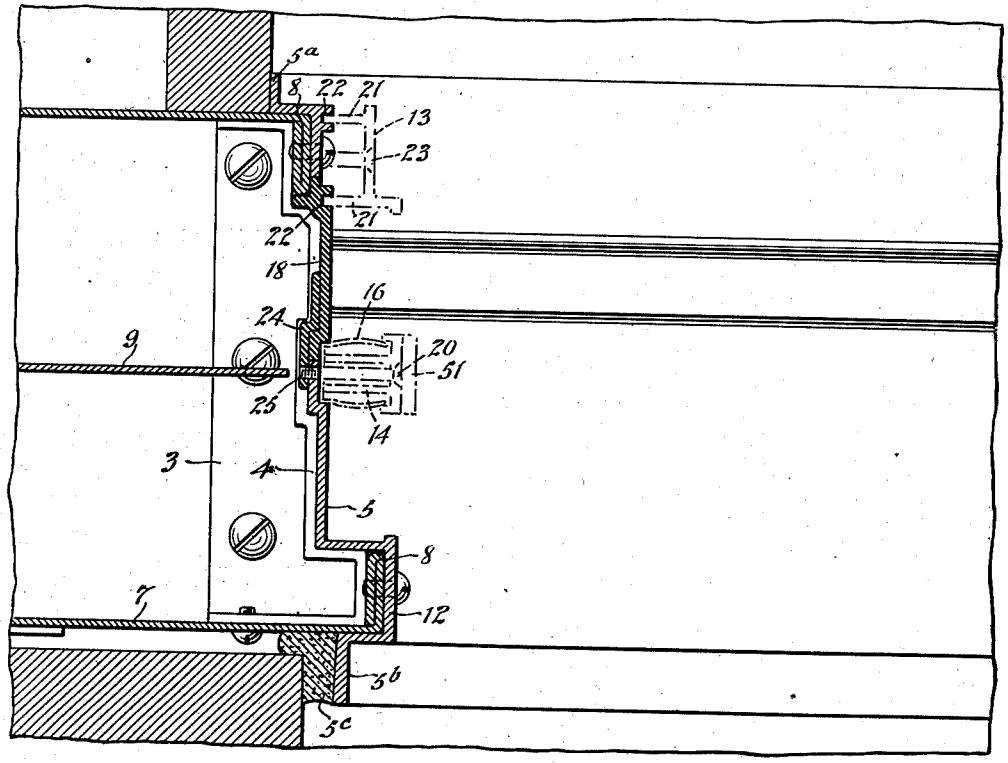


Fig. 8.

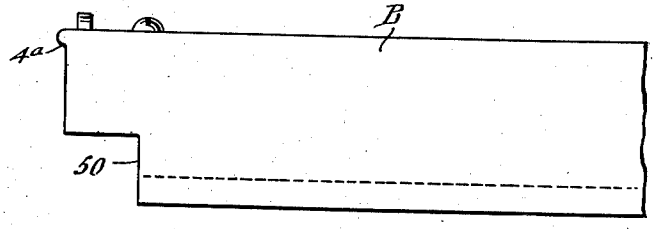
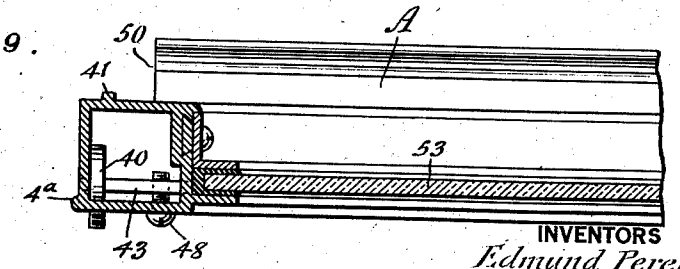


Fig. 9.



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UNITED STATES PATENT OFFICE

2,111,224

WINDOW CONSTRUCTION

Edmund Peremi and Louis Toth, Manhasset, N. Y.

Application September 29, 1933, Serial No. 691,552
Renewed May 23, 1935

9 Claims. (Cl. 189—72)

This invention relates to window construction, an object of the invention being to provide a window construction having sliding sashes, the latter having roller contact with the frame, said contact being adjustable so as to ensure an easy movement and yet provide a tight sash.

A further object is to provide, in combination with the roller sash, improved resilient weather strips with which the sashes contact.

A further object is to provide an improved frame construction with a removable section providing access to the weight boxes.

A further object is to provide a window construction having an improved arrangement of parting strip and inner bead, both of which are removable to facilitate the assemblage of the sashes in the frame or removal of the sash therefrom.

A further object is to provide a window construction having a heavy gauge channel-shaped buck carried around the top and sides of the opening, said buck having flanges folding upon themselves for strength and for creating heavy material for fastening to the non-ferrous jamb and other parts of the frame. The buck is also provided at its bottom or lower end with angular anchor pieces for fastening the sill to the channel frame, and the upper corners of the channel frame are riveted or welded together and create an unusual, strong construction upon which masonry may lie and serve instead of a lintel.

A further object is to provide a window construction of this character embodying many novel features of construction and combinations and arrangement of parts, all of which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings,—

Figure 1 is a more or less diagrammatic view in elevation illustrating the improved window construction;

Figure 2 is an enlarged broken view in vertical section on the line 2—2 of Figure 1;

Figure 3 is a fragmentary view in transverse section on the line 3—3 of Figure 1;

Figure 4 is a view in elevation of one of the sash rollers and its supporting plate;

Figure 5 is a view taken on the same section line as Figure 3, but illustrating portions of the construction on an appreciably larger scale;

Figure 6 is a view in vertical section illustrating the shapes of the lower cross bar of the lower sash and the sill;

Figure 7 is a fragmentary view in horizontal section illustrating the frame construction and the removable section to provide entrance to the weight box;

Figure 8 is a fragmentary plan view of the upper sash; and

Figure 9 is a fragmentary sectional plan view of the lower sash.

Our improved window construction embodies a heavy gauge channel-shaped buck illustrated generally by the reference character 7, which is located around three sides of the window opening; that is to say, at the top and at both sides of the opening. This buck constitutes weight boxes and spaces for the necessary pulleys and the like for supporting the sashes, and may be of steel or other metal. The lower ends of the buck receive therein anchor pieces 3, the latter having upright flanges 4 to which in-turned flanges 8 on the buck are secured. These flanges 8 are preferably turned backward on themselves for strength and for rigidity of coupling. Non-ferrous frame members 5 are secured to the anchor pieces 3 and close the open portions of the channel-shaped buck 7. The anchor pieces 3 also serve to secure the buck and frame to a sill 1 so that the buck, sill and frame members constitute a strong, rigid structure which may be inserted in the window opening. The side members of the buck 7 which form weight boxes have removable and swinging partitions 9 therein which are hung from the top and which can be readily moved so that access may be had to both compartments through a single entrance, as will more fully hereinafter appear. An upper member 10 is also fixed to the upright side members 5 and to the lintel portion of the buck to complete the frame structure, and plates 11 located at proper intervals are secured to the weight boxes and lintel formed by the buck 7 and to the masonry or wall construction.

The vertical side members 5 of the frame are made with integral outer beads 12 comprising an inverted three-sided channel shaped member and with seats for a removable inner bead 13 and a removable parting strip 14. The parting strip 14 has a plate 15 extending throughout the length of the frame, forming with the strip 14 a member T-shaped in cross section, each end of the T head 15 comprising a bearing surface having sealing engagement with the upper and lower sashes A and B. The strip 15 has flanges 16 at its edges which co-operate with shoulders 17 which form the parting strip recess on the frame member and on a removable section 18 of the frame, to form holding means or confining means for the edges of bowed weather-strips 19

located at opposite sides of the parting strip. The weather strips 19 are integral parts of an element U-shaped in cross section. The bottom of the U-shaped element fits between and is held by the shoulders 17 and the legs of the U-shaped element project outward from the jamb member. The parting strip 14 may be removably secured in place by means of screws 20 so that it may be readily removed as occasion may require. The strip 14 cooperates with the shoulders 17 to hold the weather-strip element in place.

The inner bead 13 constitutes a bar which has webs 21 fitting in grooves 22 in the frame member 5 and in the removable section 18 respectively, and this inner bead 13 is secured to the frame member 5 by means of screws 23 so that it is readily removable on occasions. The removable section 18 of the frame member 5, which may be punched directly out of the frame member and preferably extends for but a short distance of the length of the frame member, is held in closed position by one of the webs 21 of the inner bead 13, and also by reason of the fact that this section 18 has a stepped plate 24 fixed to its rear face which extends back of the strip 14, and screws 20 which hold the parting strip 14 in place are also screwed into threaded openings 25 in this plate 24 after being screwed to the frame bar 5.

A and B represent the upper and lower sashes which are mounted to slide in the frame between the beads 12 and 13 and the parting strip 14. The upper horizontal bar 26 of the sash A has a grooved portion 27 receiving a web 28 on the bar 10, and the lower bar 29 of the lower sash B is provided with webs 30 and 31 and a weather-strip 32 properly engaging over an enlargement 33 on the sill 1. Meeting rail 34 of the upper sash A and meeting rail 35 of the lower sash B are formed with inter-engaging webs 36 and 37. The rail 34 carries a weather-strip 38 engaging the web 37, and a flange or web 39 on the bar 35 engages the upper edge of the bar 34 giving a three-point contact. The construction of the three-point contacts between the bars of the sash and frame are illustrated in our United States Patent No. 2,084,355, dated June 23, 1937.

An important feature of this invention is the employment of rollers 40 which are carried by the vertical bars of both sashes which engage the outer bead 12, and by reason of the adjustment of these rollers the frictional sealing engagement between the webs 41 on the rails and the resilient weather-strips 19 is regulated. Any desired number of these rollers 40 may be employed, and each roller 40 is supported on a trunnion 42 projecting from the end of a plate 43, and the major portion of the roller is housed within the hollow vertical bars of the sash frames. The ends of the plates 43 are movably fulcrumed in notches 44 in the sash bars 45. The trunnions 42 move in slots 46 in the peripheral walls of the bars 45, and the rollers 40 project through slots 47 in the inner side walls of the bar and bear against the beads 12 and 13 respectively. Screws 48 project through the openings 49 in the bar 45 and have screw-threaded engagement with the plates 43 so that by adjusting these screws the angular disposition of the plates may be varied so as to force the rollers with variable pressure against the beads. The pressure exerted forces the web 41, on the opposite side of the vertical sash bars from which the rollers 40 project, into sealing frictional engagement with the resilient weather strip 19 and the bearing surfaces at either side of the T head 15 to give a weather-tight and freely movable engagement between the sashes and the parts of the frame.

Should it be necessary at any time to have access to the weight boxes the inner bead 13 and the parting strip 14 must be removed, which will release the movable section 18 and allow it to be removed. When this section is in place the inner bead and parting strip may be replaced and the closure will be secure and tight.

The frame bars or plates throughout are formed with inwardly projecting flanges 5*a*, which serve as plaster guides, and with outwardly projecting tapering flanges 5*b* which provide pockets for caulking material 5*c*, and the sash and frame together provide spaces between them, constituting air pockets or cushions which resist wind pressure. While there is a weather-tight juncture between the sash and frame there is a minimum frictional engagement. This reduction of frictional contact is due primarily to the fact that the sashes have at their outside edges F rounded beads 4*a* which are adapted during the sliding movement of the sashes to contact with the frame; thus the entire edges of the sash do not at any time contact with the frame.

Particular attention is called to the manner of securing the panes of glass 53 in the sashes. A groove 54 may be provided in one bar of the sash to receive a pane of glass, the other three bars of the sash being formed with integral flanges 55, between which and removable glazing anchor strips 56 the glass is secured. These glazing anchor strips 56 are secured by screws 57 to the sash bars and lie back of integral flanges 58 on the sash bars so that wind pressure is sustained by the flanges 58, and so that the screws 57 are not solely relied upon to retain the strips 56 in place against the elements of weather.

The sash bars are also provided with dovetailed grooves 59 in which muntins, not shown, may be anchored, and in these grooves 59 under the glazing anchor strips 56 short strips 60 are preferably located.

As illustrated in Figures 9 and 10 of the drawings, it will be noted that the upper and lower sashes A and B at the overlapping portions of their meeting rails have notches 50 at the ends of the meeting rails, and these notched portions of the sashes receive the parting strip 14. On the parting strip a plate 51 is secured. This plate, shown in Figure 2, is relatively short and has bevelled or inclined ends 52 so that when the sashes are together the plate 51 will bear tightly against the ends of the sashes and hold them against rattling or movement. When the sashes are partly opened they will be free from contact with the plate 51 and can slide readily in the frame without undue friction.

By reason of the construction above described, it will be noted that we not only employ a novel arrangement of buck, non-ferrous jamb, header and sill so constructed as to receive the sliding sashes, but we also provide a novel arrangement of parting strip with continuous resilient weather-strips therein which are housed in the parting strip, and the specially designed frame construction provides flat riding surfaces for the rollers of the sashes to provide easy operating movement thereof.

While we have illustrated what we believe to be the preferred embodiment of our invention, it is to be distinctly understood that various slight changes may be made with regard to the form and arrangement of parts without departing from

our invention, and hence we do not limit ourselves to the precise details set forth but consider ourselves at liberty to make such changes and alterations as fairly fall within the spirit and scope of the claims.

What we claim is:

1. In a window construction, a frame, a sliding sash mounted in the frame and having hollow rectangular side bars, said bars having paired slots in their walls at right angles to each other, plates fulcrumed in the hollow bars each having its inner end in one slot of a pair, a trunnion on the free end of each plate, a roller on the trunnion projecting through the second slot of a pair and engageable with the frame of the window construction, and screws projecting through the side walls of the bars and engaging the plates to angularly adjust the plates and so regulate engagement of the rollers with said frame.

2. In a window construction, a frame, a sliding sash mounted in the frame and having hollow rectangular side bars, said bars having slots in their walls at right angles to each other, plates fulcrumed in the hollow bars having their inner ends in one of said pairs of slots, trunnions on the free ends of the plates, rollers on the trunnions projecting through the second mentioned slots and engageable with the frame of the window construction, screws projecting through the side walls of the bars engaging the plates to angularly adjust the plates and so regulate engagement of the rollers with the frame, a parting strip on the frame having pockets therein, bowed metallic weather strips in said pockets, and webs on the sash at opposite sides of the bars from which the rollers project, said webs engaging the weather strips whereby the sash is free to slide in contact with the weather strip by means of the rollers with the frame.

3. In a double hung window, a metal jamb member having a parting strip recess therein, a U-shaped resilient metal weather-strip seated in said parting strip recess with the bottom of the U-shaped section fitting therein and the legs of the U projecting away from the jamb member, a parting strip mounted in said resilient U-shaped weather-strip, and means for firmly clamping said parting strip to said jamb member with said resilient weather-strip held between them.

4. In a double hung window, a metal jamb member having a parting strip recess therein, a U-shaped resilient metal weather-strip seated in said parting strip recess with the bottom of the U-shaped section fitting therein and the legs of the U projecting away from the jamb member, a parting strip mounted in said resilient U-shaped weather-strip, and means for firmly clamping said parting strip to said jamb member with said resilient weather-strip held between them, said parting strip having a T-shaped head overhanging the free edges of said U-shaped resilient weather-strip, the edges of said T-shaped head being flanged so as to limit the possible outward spread of the legs of the U-shaped resilient weather-strip.

5. In a double hung window a metal jamb member having a parting strip recess therein, a U-shaped resilient metal weather-strip seated in said parting strip recess with the bottom of the U-shaped section fitting therein and the legs of the U projecting away from the jamb member, a parting strip mounted in said resilient U-shaped weather-strip, means for firmly clamping said parting strip to said jamb member with said resilient weather-strip held between them, said parting strip having a T-shaped head overhanging the free edges of said U-shaped resilient weather-strip, the edges of said T-shaped head being flanged so as to limit the possible outward spread of the leg of the U-shaped resilient weather-strip, said jamb carrying inner and outer retaining beads, and upper and lower sliding sashes mounted between said weather-strip and said beads respectively, said sashes having portions engaging in sealing engagement with the ends of the T head of said parting strip and with the resilient legs of said U-shaped weather-strip respectively.

6. In a double hung window, a metal jamb member having a parting strip recess therein, a U-shaped resilient metal weather-strip seated in said parting strip recess with the bottom of the U-shaped section fitting therein and the legs of the U projecting away from the jamb member, a parting strip mounted in said resilient U-shaped weather-strip, means for firmly clamping said parting strip to said jamb member with said resilient weather-strip held between them, said parting strip having a T-shaped head overhanging the free edges of said U-shaped resilient weather-strip, the edges of said T-shaped head being flanged so as to limit the possible outward spread of the legs of the U-shaped resilient weather-strip, said jamb carrying inner and outer retaining beads, and upper and lower sliding sashes mounted between said weather-strip and said beads respectively, said sashes having portions engaging in sealing engagement with the ends of the T head of said parting strip and with the resilient legs of said U-shaped weather-strip respectively, and means carried by the sashes for holding the same in engagement with the T head of said parting strip.

7. In a double hung window, a metal jamb member having a stop bead and a recessed parting strip, said strip having a sash bearing face thereon outside of said recess, a resilient metal weather strip seated in said parting strip recess and exposed for engagement with a sash, a sash guided in the jamb and having a portion engaging in sealing engagement with the weather strip and a portion adapted to engage with the bearing surface on said parting strip, and means carried by the sash bearing against the stop bead for forcing the sash into engagement with the weather strip and stop bead.

8. In a window of the double hung type, a frame, including a jamb comprising a three sided hollow sheet metal weight box and a jamb face formed of an extruded section of non-corrosive metal attached near its edges to the opposite sides of said weight box and so as to form a structurally strong window frame unit of four sided section, the exposed side of which is formed of non-corrosive metal, said extruded section being formed to provide seats for a parting strip and for an inner stop bead, and having an inverted three sided channel shaped member near the outer side of the window to provide a stop bead and to provide a recess for receiving the margin of the outer wall of the three sided weight box, said extruded section at the inside of the window having a flange extending outwardly in a plane parallel to the plane of the window and engaging the margin of the inner wall of the weight box.

9. In a window of the double hung type, in combination, a weight housing, a jamb facing member of extruded metal secured to said housing, said member having an opening therein to

afford access to the weights, a closure plate fitted in said opening, the face of said jamb facing member having a pair of spaced longitudinal grooves therein near the inside of the window, the line of the groove farther from the inside of the window crossing said opening, said closure plate having a groove in the face thereof in alignment with the last mentioned groove in the jamb facing member, and a channel shaped inner stop bead having the legs thereof fitting in said longitudinal grooves in said jamb face and closure plate, and means for removably attaching said stop bead to said facing member.

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