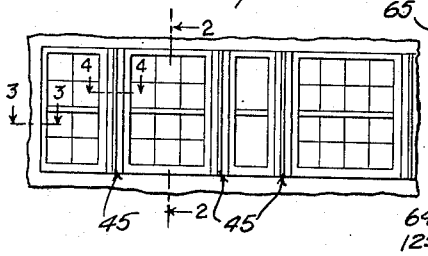
Sept. 30, 1941 E. PEREMI ET AL 2,257,703

WINDOW CONSTRUCTION

Filed Nov. 2, 1938

Fig. 1.



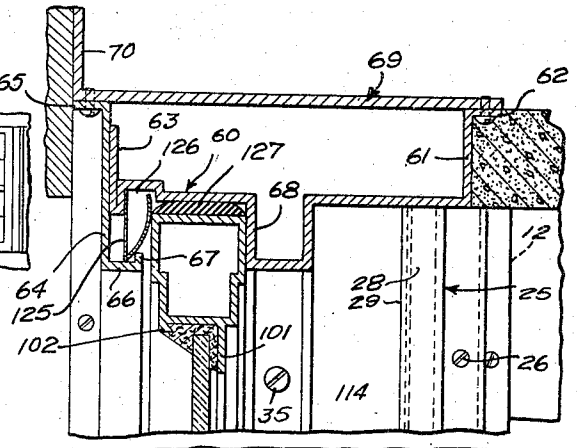
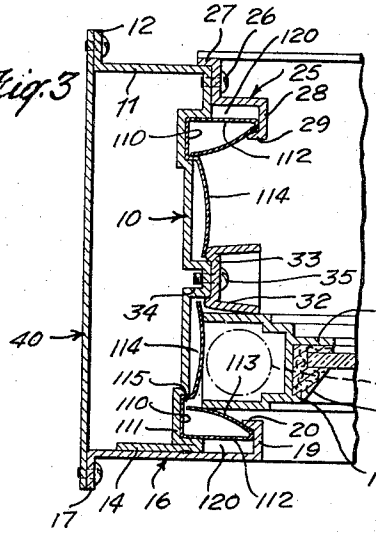




Fig. 3



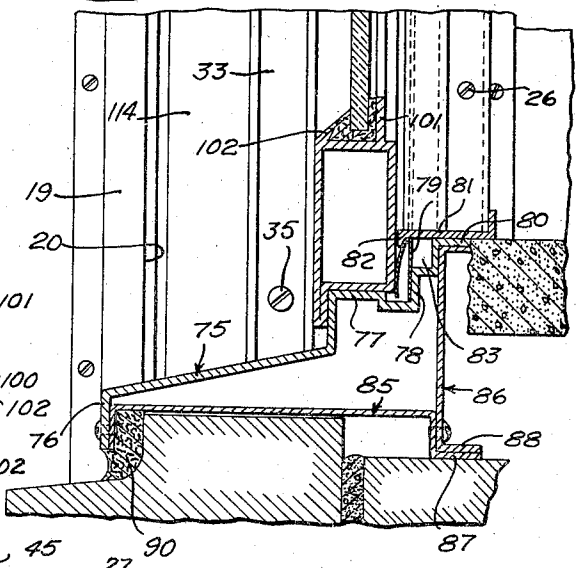




Fig. 2.

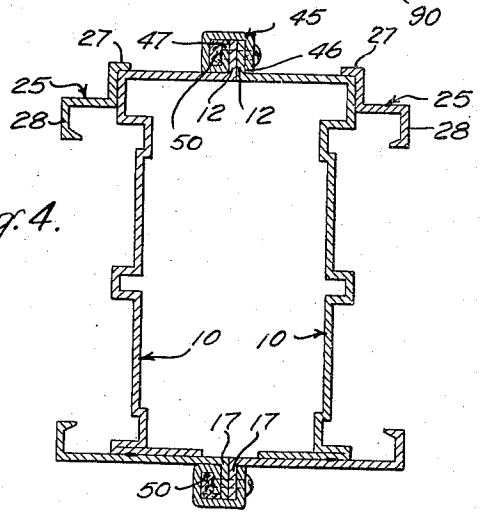



Fig. 4.

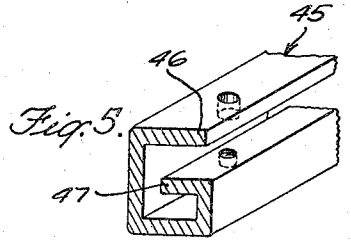



Fig. 5.

INVENTORS
EDMUND PEREMI
LOUIS TOTH

BY
Moses & Nolte
ATTORNEYS

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# UNITED STATES PATENT OFFICE

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## WINDOW CONSTRUCTION

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

Application November 2, 1938, Serial No. 238,352

11 Claims. (Cl. 189—75)

This invention relates to windows of the sliding or double hung type. An important object of the invention is to provide an improved frame construction which embodies a channel shaped section adapted to form the main member of the jamb and which may have attached to it a light metal wall forming with the channel shaped section a jamb of rectangular cross section which is strong and rigid so that it will not bend or twist. The channel shaped sections are also so formed that the windows may be made up in units of desirable size for easy handling in shipment and when multiple windows are desired, they may be joined at the job so as to form multiple units to meet the needs of the building. The jamb sections of adjacent units may be united to form hollow mullions by uniting the channel sections of the adjacent units, there being no waste of material, and it being unnecessary to remove, add or cut away any part to form the mullion.

The invention also provides for the use of clamping means for connecting the adjacent channel sections to form the mullion, the clamping means being of such nature that the two channels may be clamped together and a sealed joint formed by applying the clamp and attaching it from the outside.

Another object of the invention is to provide an improved header construction for the frame, utilizing a channel shaped member to which is attached an angle or L-shaped member to form a tubular header strong enough to form the lintel for the window, the flange of the angle also serving as means by which the header can be secured in the masonry wall.

Another object of the invention is to provide an improved sash construction in which the counterbalancing means are contained within the sash. Other objects and advantages of the invention will appear from the following detailed description of a preferred form illustrative of the principles of the invention.

In the accompanying drawing:

Figure 1 is a front elevation showing a series of window units mounted in a single opening in a wall;

Figure 2 is a vertical section on line 2—2 of Figure 1;

Figure 3 is a horizontal section of the window jamb and lower sash on line 3—3 of Figure 1;

Figure 4 is a horizontal section through the mullion taken on line 4—4 of Figure 1, the sashes and weather strips being omitted; and

Figure 5 is a perspective view of a portion of the G-shaped clamping member.

Referring to the drawing in detail, the basic member of the frame construction comprises a channel shaped member 10 which has a flange 11 towards the inside of the building, terminating in an outwardly projecting lip 12, and which has a second flange 14 on the side towards the outside of the building, this flange having permanently secured to it by welding or otherwise the flange forming memer 16. The member 16 terminates at its edge towards the outside of the window opening in a lip 17 corresponding in position to the lip 12 on the flange 11. The other edge of the member 16 terminates in a flange 19 having an overhanging lip 20, this flange forming an outer stop bead and providing a recess for holding a sash sealing and guiding member to be described. The jamb member 10, including the flanges and flange forming member 16, are preferably formed of non-ferrous or non-corrosive metal, such as aluminum, bronze or stainless steel. An inner stop bead of similar metal is shown at 25 and comprises a portion fitting against the channel 10 and adapted to be secured thereto by removable fastening means such as screws 26, this stop bead preferably having a short flange 27 and carrying a flange portion 28 terminating in a lip 29 adapted to receive and hold a sash sealing and guiding member to be described.

In a double hung window such as shown, the channel member 10 also has attached to it a removable parting strip 32 which has a base 33 adapted to fit over a rib portion 34 of the channel member 10 and to be secured thereto by screws 35 or in any suitable manner. The parting strip is preferably of slightly wedge shape as shown, the side flanges of the strip diverging slightly from the base so that the contact of the sashes with the parting strip is along a narrow line.

Where the channel member 10 is used as the outer side jamb of a frame unit, that is as a unit which contacts the masonry wall, the jamb is completed by attaching a plate 40 which may be of light metal, either ferrous or non-ferrous, to the two lips 12 and 17. The plate 40 may be secured to the lips in any suitable manner, as by riveting, welding or the like. When the plate is attached to the channel a strong and rigid tubular construction of jamb is provided. Ordinarily the frame units will be shipped to the job without the attachment of plates 40. This permits any number of frame units to be assembled to make a multiple unit. This is ac-

complished by placing the channel members of adjacent units together, as shown in Figure 4, thus forming hollow mullions. When the channel members of adjacent units are thus placed together, it is unnecessary to use the plates 40 except at the ends of the multiple unit and a saving in metal results.

Any suitable means for securing the channel members together may be employed, but that shown in Figure 4 is particularly effective. As here shown, clamping members 45, which may be described as of roughly G-shaped cross section, are employed. These G-shaped members are fitted over the lips 12 and 17 of adjacent jamb channels which fit tightly between the outer legs 46 and the inner legs 47 of the G-shaped section. Attaching screws are then passed through registering holes in the legs and lips, the holes in the inner legs of the G-shaped members being tapped for engagement with the screws. The recesses in the G-shaped members may be filled with a suitable sealing or packing compound such as mastic, as indicated at 50. The jamb channels are thus firmly and tightly secured and sealed together, this being accomplished entirely from the outside of the tubular structure formed, so that there is no difficulty in uniting the parts at the job. A very strong tubular mullion structure results with no superfluous metal, as would be the case if two completely tubular jamb members were assembled back to back.

The header comprises a main channel member 60 generally similar in shape to the jamb channel 10 and provided with a flange 61 terminating in a lip 62 at the inside of the window and with a flange 63 to which is attached a flange forming member 64 at the outside of the window. The flange forming member 64 has a lip 65 and a stop bead flange 66 terminating in a lip 67. In place of the removable parting strip the channel member 60 is preferably formed to provide a projection 68 between the sashes. For completing the header in tubular form a light angle iron or L-shaped section 69 is attached to the lips 62 and 65, the angle iron having an upstanding flange or leg 70 which may be built into the wall and serve as a means for securing the window in position and as a weather stop. Where a multiple unit, such as shown in Figure 1 is used, the angle iron 69 may extend across all of the window units, if desired, and thus assist in holding them in proper alignment.

It will be seen that the masonry or other building construction descends well below the highest point reached by the flange forming member 64, and that accordingly between this member and the masonry construction a channel is formed having as its base the lip 65, which channel is suitably adapted to receive caulking material. Similar caulking pockets occur at the side jambs of the frame, the lips 17 forming the bottom of the pockets.

The window frame is shown as being provided with a sill member 75 made of non-ferrous or non-corrosive metal, and having a downwardly projecting flange 76 at its outer edge and being formed to provide a shoulder 77 for engagement with the lower sash and with a channel 78 for reception of a resilient sealing member 79. At the inner edge of the sill member is a horizontal flange 80 to which is welded, or otherwise suitably secured, a stool 81 which terminates adjacent to the window sash in a lip 82 adapted to engage and retain the resilient sealing member 79. The sill member is preferably formed to provide a recess 83 back of the sealing member so as to permit the latter to be tilted for ready removal or insertion. The sill is completed by a horizontal flanged plate 85 and a vertical flanged plate 86, the outer edge of the former being welded or otherwise secured to the flange 76 of the sill member, while the top edge of the plate 86 is welded or otherwise secured to the under side of the flange 80. The adjacent edges of the plates 85 and 86, at the corner of the sill, are provided with overlapping flanges which may be of L-shape as shown at 87 and 88, respectively, and are suitably secured together by welding, riveting or otherwise. The overhanging flange 76 and attached flange of the plate 85 form a pocket for caulking 90. The various backing plates 40, 69, 85 and 86, being concealed from the weather, need not be formed of non-ferrous or non-corrosive material unless desired.

The sashes mounted in the frame described may be of any suitable construction, those illustrated being made of extruded metal, such as aluminum or bronze. Preferably the sashes are provided with hollow channel shaped stiles as shown in Figure 3, which are open at the outside and provide spaces to receive spring or drum type sash balances as indicated in dotted lines at 100. The sashes are provided with glass supporting ledges 101 and with overhanging putty retaining lips 102.

For sealing the sides of the sashes, resilient guiding and sealing strips are mounted in the jambs. In the construction shown, each of these comprises a base 110 shaped to seat in a recess 111 formed in the jamb member. The base carries a right angled flange 112, from the outer end of which is bent back a flexible tongue 113, adapted to bear against the side face of the sash stile. The angle of the resilient member fits behind the lip 20 which retains the resilient member in place. Extending from the opposite edge of the base 110 is a flexible tongue 114 which engages the outer edge of the sash stile. The edge of the tongue 114 projects under the overhanging part of the base 33 of the parting strip which serves to protect the raw or the unreinforced flexible edge of the tongue and also maintains the tongue under an initial tension when the sash is not in engagement with the tongue, as shown in the upper sash receiving channel in Figure 3. The extreme edge of the tongue 113 projects behind a shoulder 115 formed on the base 110. This engagement serves to protect the edge of the tongue 113 and also to hold the tongue under initial tension. The tongue 113 presses the sash towards the parting strip so that there is a direct metal contact between the face of the sash and the flange of the parting strip. There is also a sealing contact between the outer part of the tongue 114 and the edge of the side wall of the sash channel, and a third sealing engagement between the tongue 113 and the face of the sash. The jamb members are so formed as to provide recesses 120 back of the flanges 112 of the resilient members so as to permit the resilient members to be tilted to facilitate insertion or removal.

In the construction shown the header is provided with a resilient sealing member 125 which is held in a recess 126 in the header channel and retained in position by the lip 67. For further sealing the top of the upper sash the latter may be provided with a rubber cushion 127 which

engages the channel member 66 when the window is closed.

While we have illustrated and described in detail certain preferred forms of our invention, it is to be understood that changes may be made therein and the invention embodied in other structures. We do not, therefore, desire to limit ourselves to the specific construction illustrated, but intend to cover our invention broadly in whatever form its principle may be utilized.

We claim:

1. A jamb member for metal windows comprising a main channel member terminating at its edge towards the outside of the window in a flange formed by bending the metal in a plane parallel to the plane of the window, the flange comprising a fold of metal extending in the direction of the window opening and a single thickness of the metal extending outwardly to form an outwardly directed flange parallel with the plane of the window, and a flange forming member secured to said flange, said flange-forming member terminating at its outer edge in a lip directed outwardly with respect to the plane of the window and terminating at its inner edge in an inwardly directed flange, said inwardly directed flange terminating in an overhanging lip, said main jamb channel member being offset at a point adjacent said fold of metal so as to provide a recess cooperating with said lip on the inwardly directed flange on said flange-forming member to form a pocket for retaining a resilient sash guiding and sealing member.

2. A jamb member for metal windows having an outwardly directed flange at its inner edge and having an offset formed therein at a point removed from said flange, said offset forming a channel shaped seat for reception of a resilient sash guiding and and sealing member, and a stop bead secured to said jamb member between said offset and the flanged margin of said jamb member, said stop bead having a flange directed inwardly of the window opening in a plane nearer the flanged margin of said jamb member than the offset therein, said stop bead having a flange directed towards the outside of the window, said flange terminating in an overhanging lip adapted to retain a resilient metal sash guiding and sealing member in the channeled offset of said jamb member.

3. A jamb member for metal window frames having a rib at the central portion thereof projecting toward the window opening and a parting strip having a base removably attached to said rib spaced from the face of said jamb member by said rib, weather stripping in the jamb at each side of said rib, said base projecting on either side of said rib toward the inside and outside of the window respectively, said parting strip having faces for engagement of the faces of said sashes mounted upon opposite sides thereof, said projections of said base providing stop means limiting movement of jamb-contained weather stripping means.

4. A mullion for multiple unit windows comprising the jamb members of adjacent window units, each of said jamb members having outwardly directed front and rear flanges terminating in outwardly projecting lips, the lips of the adjacent jamb members being secured together by means of channeled clamping members, said clamping members being of G-shaped cross section, and the lips fitting between the outer and inner legs of the G, said lips and legs being provided with registering perforations, the perforations of the inner leg of the G being tapped, and screws passing through said perforations and screwing into said tapped perforations.

5. A mullion for multiple unit windows comprising the jamb members of adjacent window units, each of said jamb members having outwardly directed front and rear flanges terminating in outwardly projecting lips, the lips of the adjacent jamb members being secured together by means of channeled clamping members, said clamping members being of G-shaped cross section, and the lips fitting between the outer and inner legs of the G, and a packing filling the spaces in said G-shaped securing members.

6. A header for metal window frames comprising a channel shaped member provided with inner and outer flanges, the outer flange having a flange-forming member secured thereto, said flange-forming member having an outwardly directed lip at its outer edge and an inwardly directed flange at its inner edge, said flange terminating in an overhanging lip, said channel member having an upwardly directed flange at its side towards the inside of the window, said flange terminating at its outer edge in an outwardly directed lip, and an angle member attached to the outwardly projecting lips on said flange forming member and said channel flange, respectively, and constituting with the channel forming member and channel a tubular header member.

7. A sill for metal window frames having an inclined apron terminating at its outer edge in a downwardly directed flange and having an offset portion providing a seat for a sash and being formed to provide a channel inwardly of said offset portion and terminating at its inner edge in a horizontal flange, a stool member attached to said flange and having a lip overhanging the channeled portion of said sill so as to provide a recess for a resilient sash sealing member, and flanged plates secured respectively to the downwardly projecting flange at the outer edge of said apron and to the inwardly projecting flange at the inner edge of said sill member, said flanged plates being secured to each other.

8. A sill for metal window frames having an inclined apron terminating at its outer edge in a downwardly directed flange and having a shoulder providing a seat for a sash, a channel inwardly of said shoulder having a relatively low outside wall and a relatively high inside wall, said sill terminating at its inner edge in a horizontal flange, and a stool member on said flange having a lip overhanging the said channel of said sill providing with said channel a recess, a resilient V-shaped weather strip in said recess, the apex of the V being held under said overhanging lip and the leg of the V toward the outside of the window being held from unlimited movement by the outside edge of said channel and being exposed for contact with the sash stile when said stile is in closed position.

9. A metal clamping strip for use in metal window frame construction, said strip being of approximate G-shape in cross section, the inner surface of the free leg and the outer surface of the intermediate leg of the G constituting clamping surfaces for engagement with the parts to be clamped.

10. A metal clamping strip for use in metal window frame construction, said strip being of approximate G-shape in cross section, the inner

surface of the free leg and the outer surface of the intermediate leg of the G constituting clamping surfaces for engagement with the parts to be clamped, said free and intermediate legs having matching perforations, the perforations in the intermediate leg being tapped.

11. A mullion for multiple window frames comprising the channeled jamb members of two adjacent window frames each of said jamb members having outwardly directed front and rear flanges, continuous channel clamping members engaging portions of said flanges continuously from the top to the bottom of the mullion and sealing said jamb members into a compact weather-tight unit for the entire length of the mullion, and fastening devices on the outside of the mullion for securing said clamping members to the mullion, said fastening devices passing through at least one wall of said channel clamping members, and through portions of said flanges engaged by said channel clamping members.

EDMUND PEREMI.
LOUIS TOTH.