March 11, 1930. A. H. KLIM ET AL 1,750,110

WINDOW CONSTRUCTION

Filed Dec. 4, 1928 5 Sheets-Sheet 1

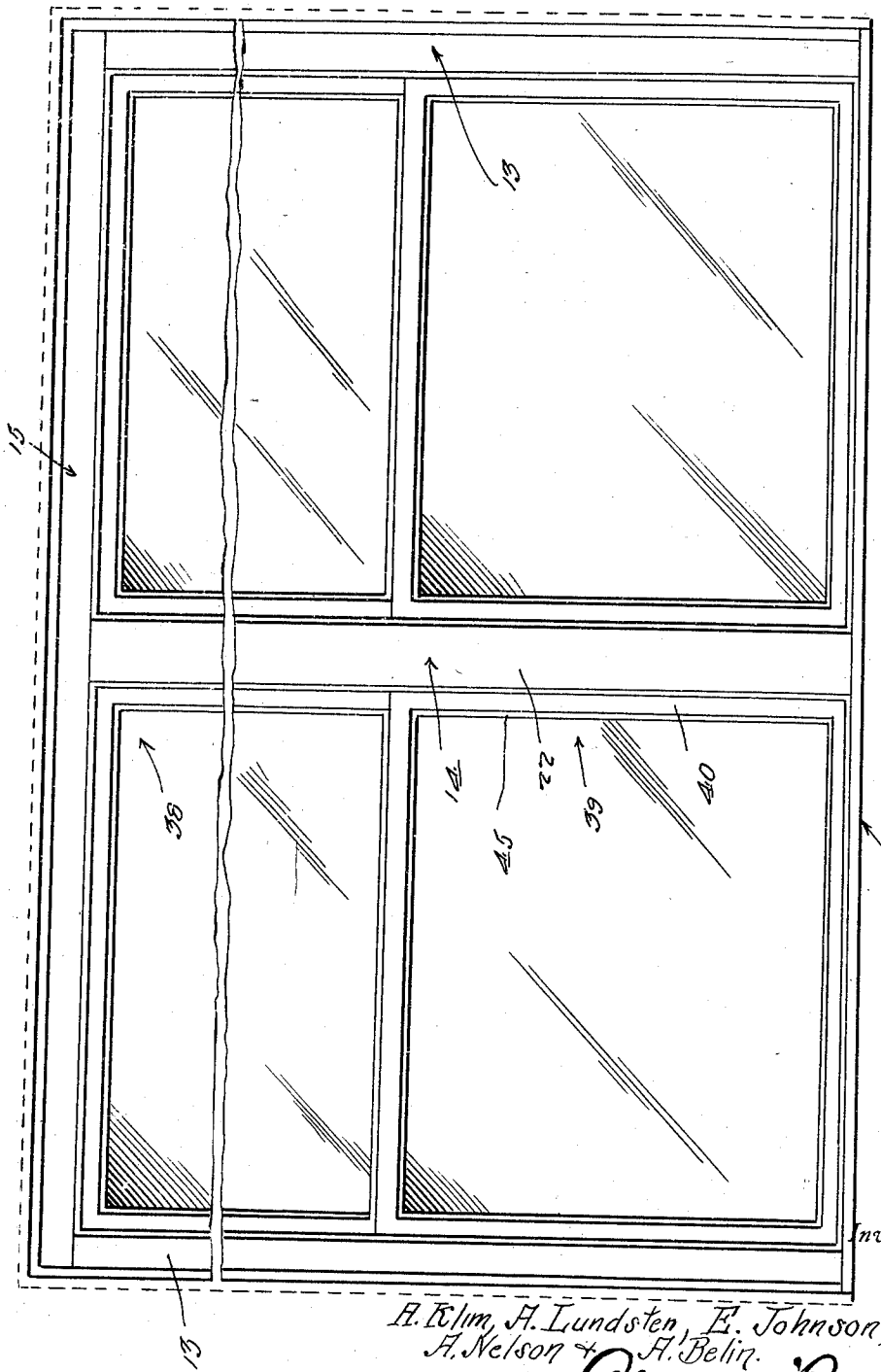


Fig. 1.

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WINDOW CONSTRUCTION

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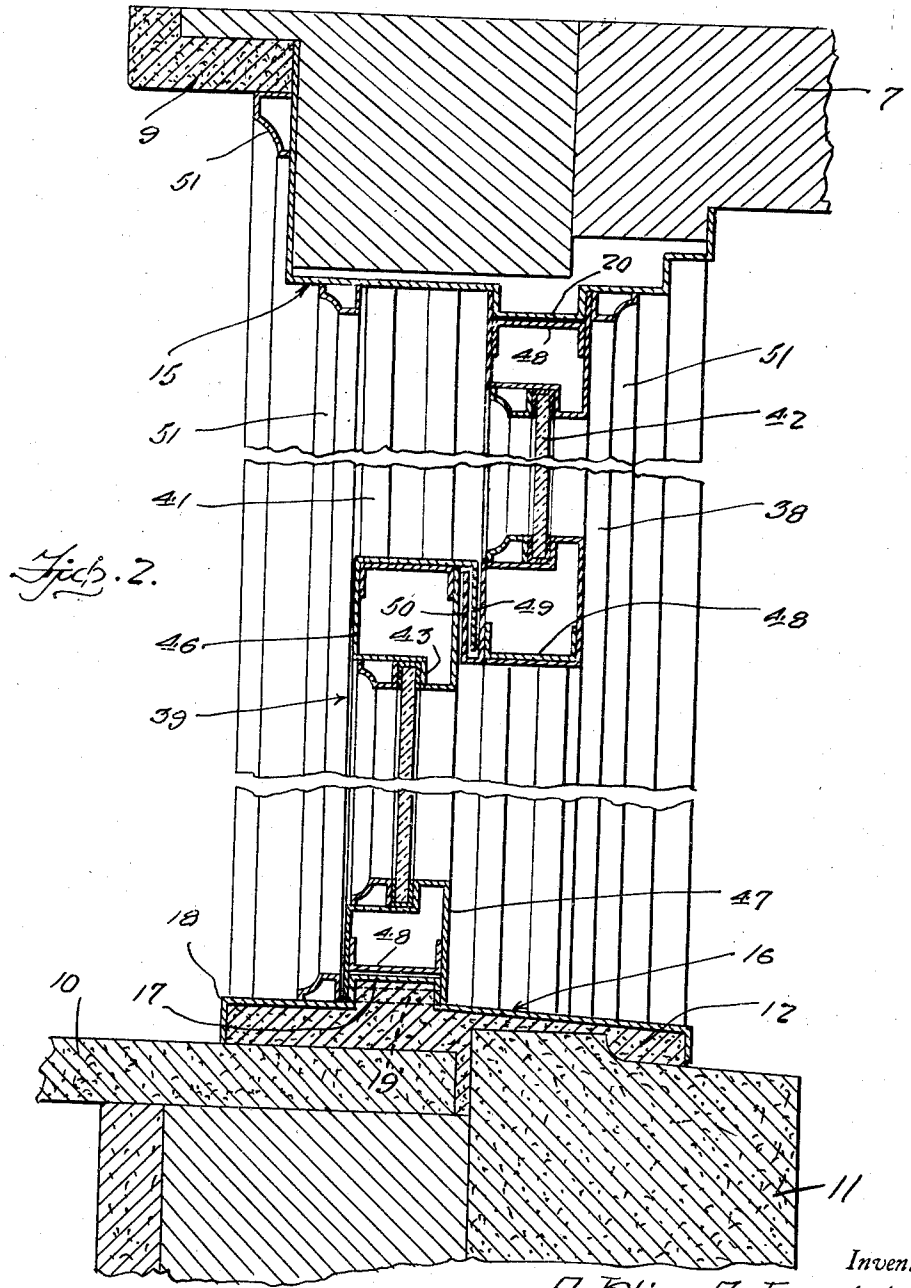


Fig. 2.

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WINDOW CONSTRUCTION

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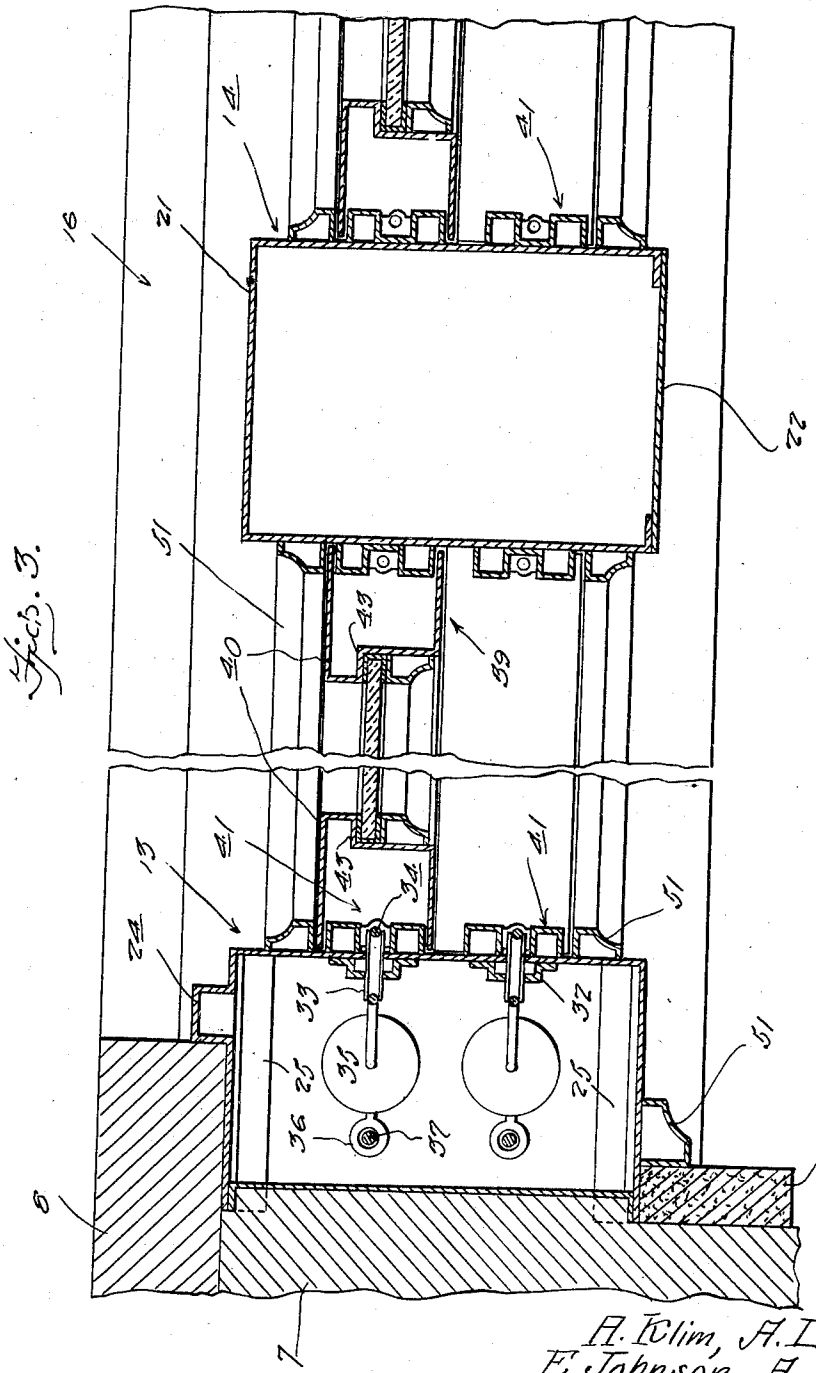


Fig. 3.

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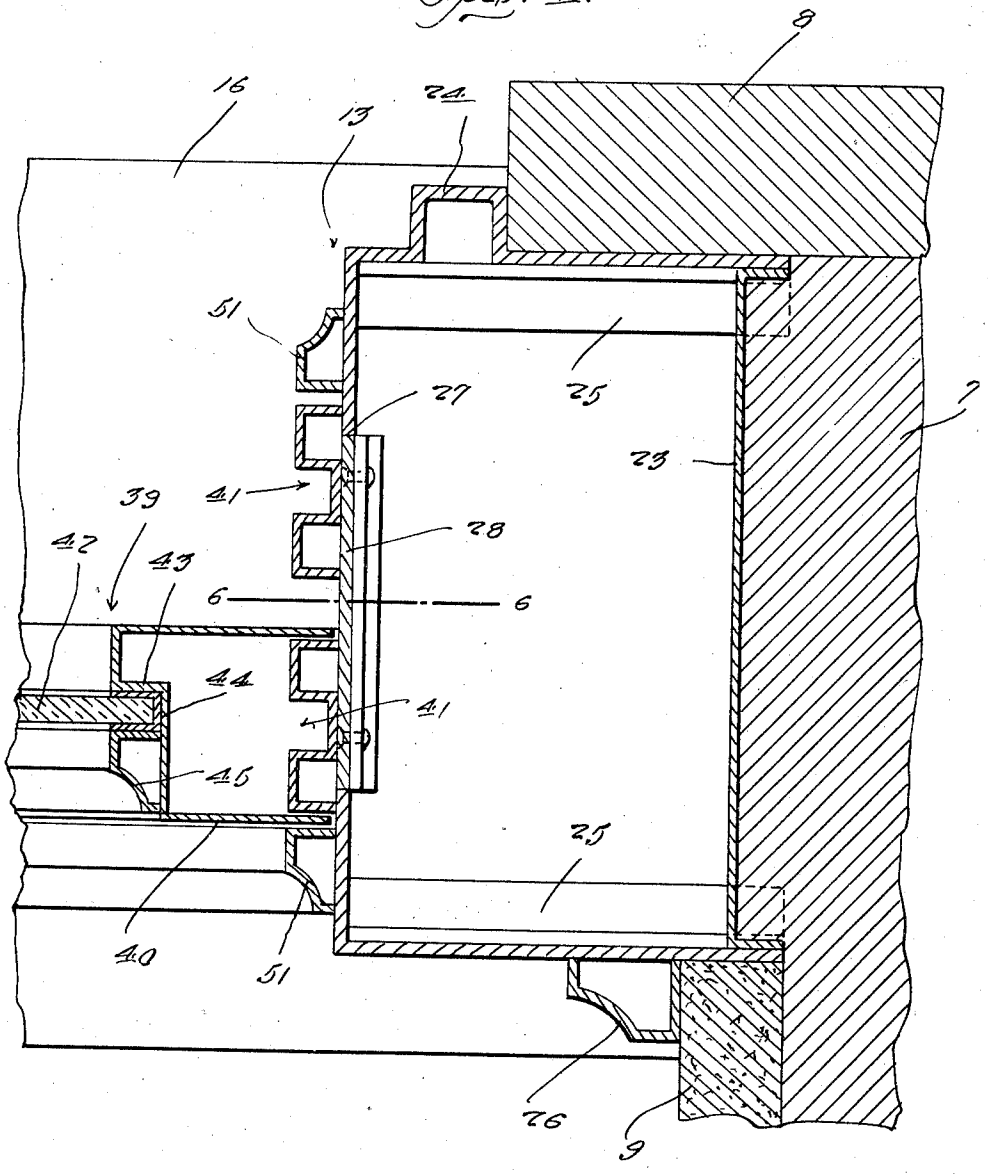
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WINDOW CONSTRUCTION

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Fig. 4.



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WINDOW CONSTRUCTION

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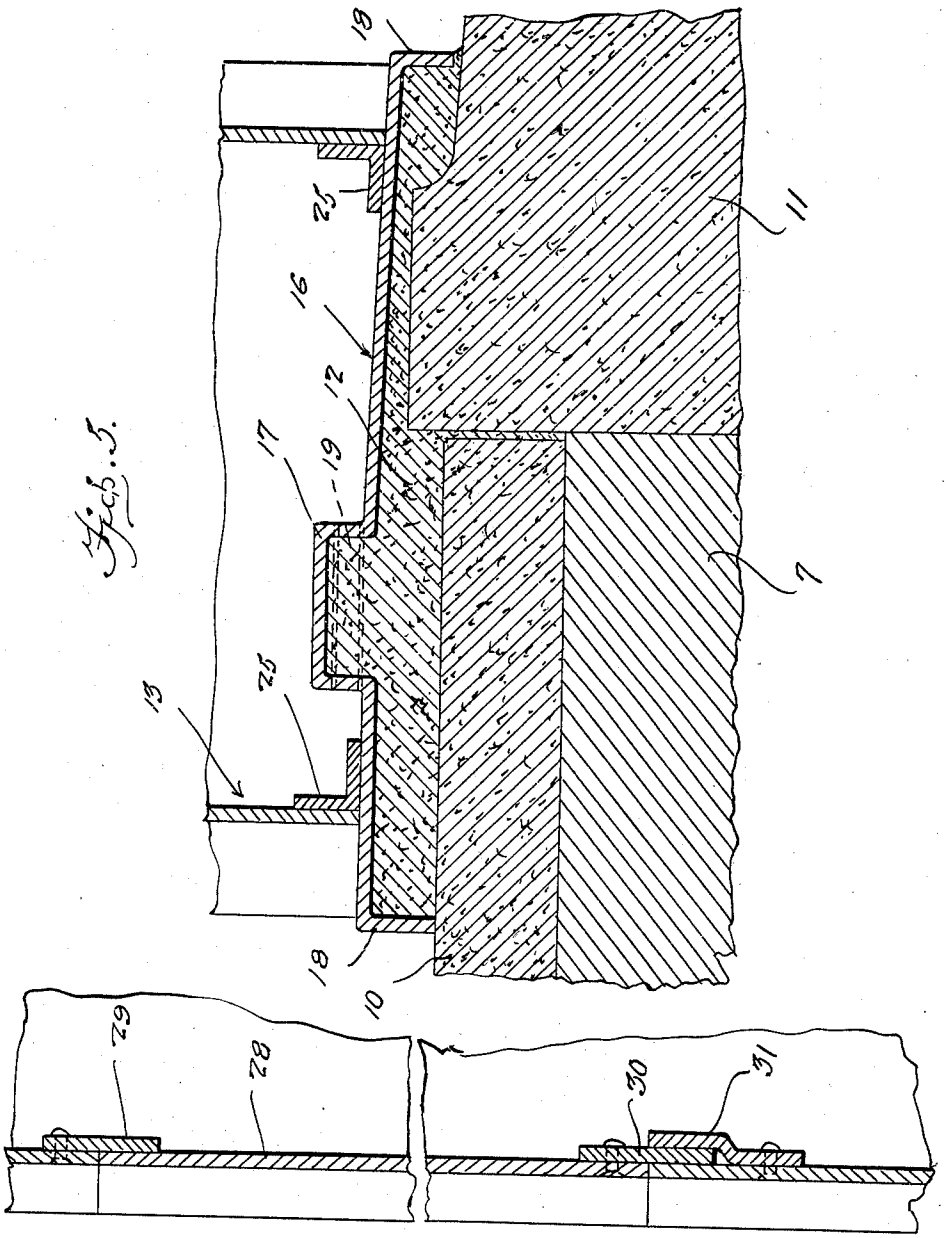


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE

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WINDOW CONSTRUCTION

Application filed December 4, 1928. Serial No. 323,634.

This invention relates to an improved window construction of the double hung sash species, and it has more particular reference to a structure which is principally characterized by an all metal window frame and sash construction.

In carrying out this invention we have evolved and produced a novel structural organization expressly made to accomplish such desirable results as smooth and quiet in operation, weather and water proof joints, simplicity in construction, economy in manufacturing and installation and positive and dependable action.

A salient feature of the complete structure is the improved metal frame which is distinguished from known structures in that it embodies hollow vertical stiles connected at their upper ends to an individual form of head jamb, and connected at their lower ends with a special type of metal sill plate.

An equally important feature is predicated upon the use of new sash guides, and an equally new mullion post at the center.

Particularly do we wish to emphasize the construction and utilization of the vertical stiles as housing for boxings for the sash weights and cords, and the provision of suitably covered openings permitting access to be had to the interior for making repairs.

Then too, the window sashes themselves are of special design to provide weather proof joints, smooth operations and lightness in weight.

Other features and advantages of the invention will become more readily apparent from the following description and drawings.

In the drawings wherein like numerals indicate like parts:

Figure 1 is a front elevational view, on a reduced scale of the complete window construction.

Figure 2 is a vertical sectional view of a fragmentary nature, through one side of the structure.

Figure 3 is a horizontal sectional view showing the internal construction of one vertical style, and construction and arrangement of the central mullion post.

Figure 4 is an enlarged fragmentary sectional view, on a horizontal plane, through one vertical stile, detailing the stamped sash guides.

Figure 5 is a fragmentary sectional view on a horizontal plane through the lower portion showing the sill construction.

Figure 6 is a vertical section taken approximately upon the plane of the line 6—6 of Figure 4.

Referring now to the drawings by reference characters, it will be observed that 7 designates a fragmentary portion of the wall of a building, 8 the outside bricks or stucco facing, and 9 the plaster. These details are seen in Figure 4.

Observing now the sill structure seen in Figure 2 it will be noted that 10 designates the customary stool, 11 the sub-sill, and 12 the cement caulking.

As before indicated, the window frame is of all metal construction, for example in Figure 1 the vertical end members 13, which are duplicate in construction, are distinguished as stiles. Also disposed vertically and centrally located is the mullion post 14. At the top of the structure is a horizontal head jamb 15, and at the bottom is a metal sill plate cooperating with and properly shaped to fit upon the cement caulking 12. This plate as represented in Figure 2 has downturned flanges 17 and is formed at its center with a raised horizontally extending rib 18 which is filled with cement from the caulking 12. Incidentally, a horizontal drain 19 is provided here for moisture escape. This hole is preferably lined with a metal tube, and it is frequently referred to in the trade as a "weep hole". The head jamb 15, also shown in this figure is shaped to fit the building structure and includes a depression 20 forming a second horizontal rib. These ribs 17 and 20 cooperate with the sliding sashes in the manner to be hereinafter described. As detailed in Figure 3 the mullion comprises a hollow metal body or post of general rectangular cross section as indicated at 21 with a suitable inner spacing plate 22.

Considering now the vertical stile detailed in Figure 4, it will be observed that this com-

prises a metal body of channel shaped cross section, the open side of which is closed by a flanged closing plate 23. Formed in one side wall is a vertical abutment 24 engaging the bricking 8. On the interior, and usually at the bottom are reinforcing angle irons 25. On the inside wall of the stiles is a suitably shaped and properly welded strip of metal molding 26 cooperating with the plaster 9. At a suitable point is a hand hole 27 and a cooperating closing plate or cover 28 therefor. As shown in Figure 6 the upper end is engaged beneath a depending retaining lip or strip 29, and the lower end carries a riveted retaining strip 30 fitting down into an offset keeper 31 mounted as here shown. This cover plate can be removed to permit access to be had to the interior of the stile. As before stated the stile is intended to form a boxing or a housing for the pulley cords and sash weights. In this connection we invite attention to Figure 3 wherein it will be observed that brackets 32 are provided for mounting of the pulleys 33 over which the cords 34 are trained. The cords carry sash weights 35 suitably attached thereto and the sash weights in turn carry guide eyes 36 movable along guide rods 37 disposed within stiles as herein shown. This insures smooth operation and prevents binding.

Considering now the window sashes, it will be seen that 38 (see Figure 2) designates generally an upper sliding sash, and 39 a lower sash. Both sashes have substantially the same structural details in their makeup. For instance, a hollow metal frame is employed, the vertical members 40 of which are of channel shaped cross section with their open sides disposed outwardly to telescopically receive the stamped rib equipped guides 41. For instance this structure is shown in Figure 4 and the side walls of the member 40 have sliding contact with the ribs of the guides. The guides are made in the form of separate stampings and either bolted or spot welded in place. Obviously in this double hung sash structure we find guides mounted on the inner walls of the vertical stiles 13 and on opposite walls of the mullion 14. The portion of the sash frame member which cooperates in the glass panels 42 are bent as shown at 43 in Figure 4. This provides a shoulder against which the glass panel is placed. Incidentally the reference character 44 designates putty which serves to partly hold the glass in place. Cooperating with the opposite or inner side of the glass is removable molding 45. The only distinction between the vertical frame members 40 and the top and bottom frame members 46 and 47, respectively, is that flanged closing strips or elements 48 are fitted into the open sides of the channels. For example, as shown in Figure 2 the lower member 47 of the lower sash 39 has the closing element 48 spaced inwardly so as to permit the vertical walls of this member 47 to fit telescopically down over the rib 17 which provides a weather proof joint. The same arrangement is provided for the top sash 38 except that there is a reversal in the arrangement of the details as is obvious. Moreover, the top member 46 of the lower sash 39 carries an interlocking flange 49 cooperating with a similar flange 50 on the complemental member of the sash 38. In other words the meeting rail members of the upper and lower sashes are formed with complemental tongues 49 and 50 for interlocking connection to provide a weather and waterproof joint at this point.

It is perfectly obvious that the gist of the construction here is in providing a desirable type of joint where the two sashes meet when they are closed, and to provide desirable joints between the sashes and the window frame where these parts cooperate. It is also to be mentioned that suitable molding 51 is also provided where necessary to produce the desired finish, and to add to the efficiency of the construction.

From the foregoing description and drawings it is quite obvious that we have shown and described a window construction which is economical, practicable in construction and otherwise efficient in performance in fulfilling the requirements of an invention of this class in a practicable and modern manner.

It is thought however that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the same after considering the description with the drawings. Therefore, a more lengthy description is regarded unnecessary.

Minor changes in shape, size and rearrangement of parts coming within the field of the invention claimed may be resorted to in actual practice, if desired.

Having thus described the invention, what we claim as new is:

1. In a window construction of the class described, an all metal window frame comprising a sill plate adapted for horizontal disposition, a pair of vertically disposed stiles disposed at the opposite ends of and rising from said plate, a mullion post rising from the center of the plate, a head jamb bridging and connected to said stiles and mullion post, vertically disposed rib equipped guides fastened to said stiles and post, and vertically slidable window sashes including vertical side members slidably contacting said guides, said side members comprising spaced opposed side walls having a single connecting wall at one end only thereof adapted to support a pane of glass, the free ends of said side walls embracing the guides.

2. In a window construction of the class described, a window frame including vertical stiles, vertically disposed guides fastened to each stile, said guides comprising stamped

metal plates formed with ribs, and window sash including a metal frame, the vertical members of which are of channel shaped cross section and comprise spaced opposed side walls having a pane supporting connecting wall at one end only, the free ends of said walls adapted to telescopically receive the ribbed portions of said guide plates.

In testimony whereof we affix our signatures.

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