Jan. 8, 1935. B. J. TRILLER 1,987,380

WINDOW CONSTRUCTION

Filed Nov. 19, 1932

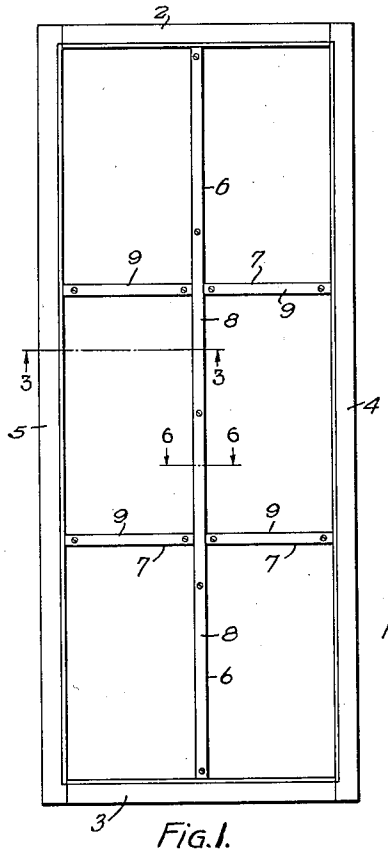
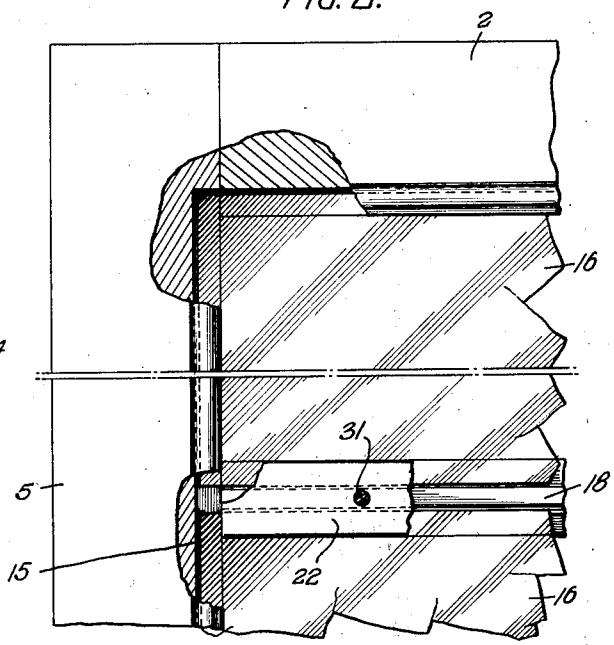


Fig. 1.

Fig. 2.



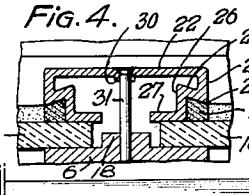


Fig. 4.

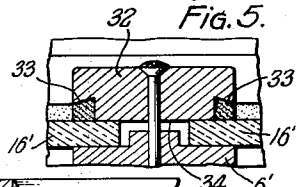


Fig. 5.

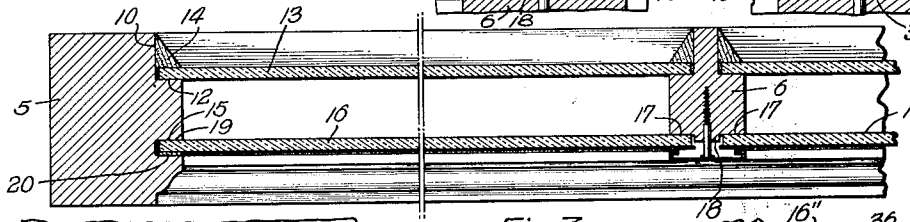


Fig. 3.

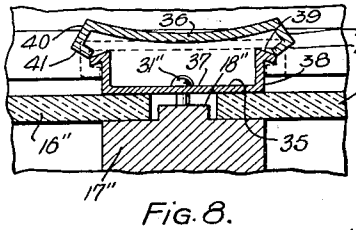


Fig. 8.

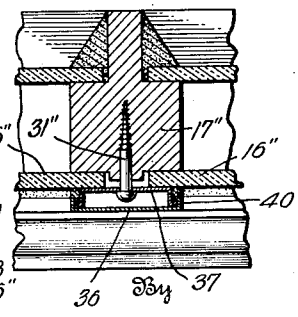


Fig. 6.

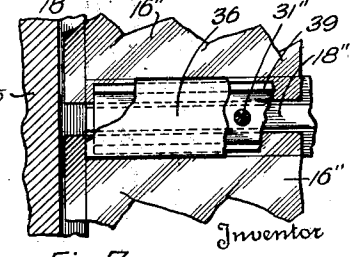


Fig. 7.

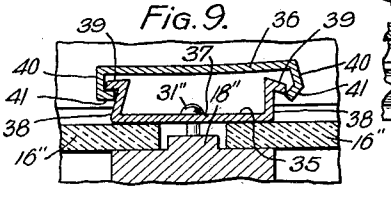


Fig. 9.

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UNITED STATES PATENT OFFICE

1,987,380

WINDOW CONSTRUCTION

Benjamin J. Triller, Dubuque, Iowa

Application November 19, 1932, Serial No. 643,447

3 Claims. (Cl. 20—56)

The object of the invention is to improve the construction of divided light sash and other panels to reduce the cost of construction and to facilitate glazing thereof by employing a simple plowed continuous groove in the rails and stiles to receive the glass or other panes or panels, employing specially formed muntins and detachable cames or strips with special provision for weather-sealing.

With the above and other objects in view, reference will be had to the accompanying drawing forming a part of the specification and wherein:

Fig. 1 is a view in rear elevation of a glazed divided light sash,

Fig. 2 is an enlarged view in rear elevation of fragments of a rail, stile, muntin and came with portions of panes in place,

Fig. 3 is a horizontal sectional view taken through line 3—3 of Fig. 1,

Fig. 4 is an enlarged transverse sectional view through a came, and fragments of a muntin and panes,

Fig. 5 is a similar view employing a modified form of came,

Fig. 6 is an enlarged horizontal sectional view through a muntin and fragments of panes, employing a sectional came,

Fig. 7 is a view in rear elevation of portions of a stile, muntin and panes employing the sectional came, and

Figs. 8 and 9 are enlarged detail views in transverse section through the sectional came illustrating positions of its sections during interlocking and separation thereof.

In the drawing, reference numerals 2 and 3 designate upper and lower rails respectively and 4 and 5 right and left hand stiles respectively of a window sash, windowed door or the like, these parts being joined together in conventional manner. A longitudinal muntin 6 extends centrally between the stiles from top rail 2 to bottom rail 3, and cross muntins 7 extend from opposite sides of the muntin 6 to the stiles, the muntins being joined to each other and to the rails and stiles in conventional manner. In Fig. 1 the muntins are concealed by came strips 8 and 9 respectively and in said figure the numerals 6 and 7 nevertheless are applied to indicate the location of the muntins.

The inner edges of the rail, stiles and muntins in their outdoor faces are rabbeted in conventional manner as at 10 to provide seats 12 for outer panes 13 and face puttying 14.

The inner edges of the rails and stiles are additionally plowed with grooves 15 which coincide to provide a continuous groove around the inside edge of the sash. Indoor panes 16 between which and the outdoor panes 13 occurs dead air spaces for insulating purposes, have their outer edges inserted in the continuous groove 15 and their outer facial edge portions are seated upon muntin faces or seats 17 which are separated by a rib 18 and which are also in the plane of one wall 19 of the groove 15. The rib 18 of each muntin is of less height than the thickness of the panes 16 and the distance between the walls 19 and 20 of the groove 15 is greater than the thickness of the panes permitting the panes to be readily passed over the ribs 18 of the muntins when inserting the panes in the groove 15 of the rails and stile. This is particularly important since the corner panes must be inserted at two perpendicularly related edges simultaneously.

The aforementioned cames 8 and 9 are applied to the muntins, the cames 8 extending from top rail 2 to bottom rail and the cames 9 extending on opposite sides thereof to the stiles 4 and 5, the cames abutting each other and the inner edges of the rails and stiles with a neat fit.

The cames 8 and 9 are formed of sheet metal such as aluminum, requiring no painting and giving an effect found only in expensive leaded windows. Each came is in the nature of a channel member and comprises a face wall 22, substantially right angular side flanges 24, inwardly extending flanges 25, downwardly extending flanges 26, and inwardly extending flanges 27, the flanges 25 from their outside edges or corner 28 extend at right angle away from the plane of the panes 16 to the point of juncture with the flanges 26 providing "undercut" grooves or spaces in the opposite sides of the cames between such walls 25 and the panes. These spaces together with the space between the groove wall 20 and panes 16, which spaces are coincident with each other, are filled for weather-proofing purposes with putty 29 by the method known as "back-puttying".

The cames 8 and 9 at intervals are provided with countersunk perforated bosses 30 through which pass wood screws 31 which thread into the muntins. The cames engage only the panes 16 pressing them to their seats 17 and the base flanges 25, 26, and 27 are free to yield toward the face portion or wall 22 under pressure thereby compensating for any irregularities in the panes due to varying thickness. This is particularly true as to the long center came which engages all of the panes. Cames which only engage two panes, as in the case of the cames 9, are free to cant if one pane is of less thickness than the

other. In any event, any variations occurring in the spacing of the corners 28 or walls 25 from the panes is compensated for and rendered unnoticeable by the back-puttying 29. The "undercut" effect given to the putty receiving spaces causes the putty 29 to be effectively retained.

Should a pane require replacement, the cames may be readily removed by unscrewing the screws 31 and pulling the necessary cames 7 and 8 away from the panes.

Plowed grooves are the cheapest and a very desirable means for holding panes in window sash, but usually cannot be adopted. True, in ordinary double hung windows, the upper edge of the glass of the lower sash seats in a plowed groove, but face puttying or the use of mitered molding strips or beads in lieu of the putty must be used elsewhere thereby greatly increasing the cost of manufacture. The fact that it is possible to flow a continuous groove in the rails and stiles is an outstanding feature of this invention, not only in reducing manufacturing costs, but in reducing the time and expense required in glazing the openings. For example, in glazing a six-light sash by the present invention, only five cames have to be applied, whereas under the method of using molding strips or beads, twenty-four such strips or beads are required, necessitating the cutting of forty-eight miters, to say nothing of bradding these strips or beads in place and then setting the nails. The advantages over the old uncertain face puttying glaze are believed to be apparent.

While the invention, particularly, comprehends the use of the metal cames described, wooden cames may be substituted therefor, each such came consisting of a wooden strip 32 substantially T-shaped in cross section and provided with preferably undercut grooves 33 in its opposite sides to receive back-puttying. In this case, the base 34 engages opposite panes 16' and screws 31' secure the strip against the panes and to the muntin 6'. Instead of one-piece cames, the same may each comprise a fastening section 35 and a finishing section 36. The fastening strips 35 are in the nature of channel members, the bases 37 of which engage directly with the panes 16'', being drawn firmly against the said panes by round headed wood screws 31'' or nails which pass into the muntins and their ribs. In this manner, the panes 16'' are firmly seated against the muntin faces 17'' and the fastening strips 35 do not come into engagement with the muntin ribs 18''.

The sides 38 of each fastening strip are bent substantially at right angles to the base 37, extending away from the panes 16'' and these sides 38 terminate in inclined lock flanges 39 which extend outwardly from the longitudinal center of each strip 35 and toward the plane of the base 37 of the strip.

The finishing strips 36 are also in the nature of channel members, being rolled from resilient non-rusting metal such as aluminum, requiring no painting and giving a leaded window effect. Opposite sides 40 of each finishing strip 36 extend substantially at right angles thereto and terminate in lock flanges 41 which substantially parallel the plane of the body portion and extend inwardly toward each other.

The finishing strips 36 are applied against the fastening strips 35 and pressure is applied at one end thereof causing the lock flanges 41 to ride upon the inclined lock flanges 39 and the sides 40 of the strips 36 to spread outwardly until the free edges of the lock flanges 40 clear the free edges of the lock flanges 39. This may be accompanied by more or less movement of the flanges 39 toward each other, and after pressure has been applied from one end to the other of a finishing strip, the lock flanges 40 and 39 will have snapped over each other to bring the finishing strip in final position.

In this position, it will be found that there is a space between the lock flanges 41 and the panes 16'' which, together with the spaces between the panes 16'' and groove walls 20 are filled for weather-proofing purposes with putty 29'' applied by back-puttying. Each fastening strip 37 engages at least two window panes and should a pane on one side be thinner than the pane on the opposite side, the fastening strip will be slightly canted, its flat bottom 37 bearing against the corner of the thicker pane 16'' and one of its bottom corners bearing upon the face of the thinner pane. This places one lock flange 41 a greater distance from one pane than the other lock flange is from the other pane and this variation, as well as any others that may occur, are compensated for by the back puttying.

Should a pane require replacement, at least two of the horizontal finishing strips 20 must be removed before the vertical finishing strip can be removed, since the side flanges of the latter must spread laterally. Detachment of a finishing strip 36 from its fastening strip 37 is effected by pushing against one side 40 of a finishing strip at one end thereof which forces the lock flange 41 of the opposite side 40 beyond the lock flange 39 of the fastening strip when the entire strip 36 may be removed. The resiliency of the metal strips 36 and 37 allows the necessary temporary distortion to permit this disengagement of the lock flanges 39 and 41 from each other.

Many of the disadvantages ordinarily attending the painting of windows are avoided by this invention. The stiles, rails and wooden cames may be easily painted without paint overflowing onto the window glass, eliminating the necessity of being later cleaned or scraped off, and the metal cames require no painting whatever. The cames in all cases, however, may be easily removed for any finishing operation that may require.

In the parallel pane type of window illustrated, while for the outer door panes 12, the ordinary method of face puttying is adopted, it will be understood that the same method of securing these panes 12 may be adopted as is employed for the indoor panes 16, by simply plowing another continuous groove, similar to the groove 15, in the stiles and rails in lieu of the face puttying grooves and adopting the same came method of glazing at the muntins for the outdoors panes as is adopted for the indoor panes.

While the sash has been referred to as a window sash, the same may also be regarded as a door since window sash and doors with window openings are substantially the same structurally and serve the same purpose and may be taken as one and the same so far as the present invention is concerned.

What is claimed:

1. In windowed panel construction, a frame composed of parallel horizontal and parallel vertical solid wooden members and being provided in its inner edge with a continuous groove, a permanent solid wooden muntin intermediate the

horizontal members and a permanent solid wooden muntin intermediate the vertical members of the frame, said muntins having pane seats coincident with one side wall of said groove, panes inserted in said grooves and bearing directly upon the said side wall thereof and directly upon the pane seats of the muntins, the side walls of the frame groove being parallel and spaced apart a distance sufficiently greater than the thickness of the panes whereby a pane may be inserted diagonally into the groove of adjacent horizontal and vertical frame members simultaneously, cames securing the panes to said seats and said cames having side grooves one wall of which is coincident with the side wall of the frame-groove upon which the panes do not seat, and weather-sealing means within the frame and came grooves.

2. In a windowed panel construction, a frame composed of parallel horizontal and parallel vertical solid wooden members and being provided in its inner edge with a continuous groove, a permanent solid wooden muntin intermediate the horizontal members and a permanent solid wooden muntin intermediate the vertical members of the frame, each muntin having pane seats separated by a rib which extends beyond the plane of said pane seats a distance less than the thickness of the panes to be imposed upon said seats, the pane seats being coincident with one side wall of said groove, panes in said groove and bearing directly upon one side wall thereof and directly upon the pane seats of the muntins, the side walls of the frame groove being parallel and spaced apart a distance sufficient to permit a pane to be inserted over said ribs diagonally into the groove of adjacent horizontal and vertical frame members simultaneously, removable cames securing the panes to said seats and said cames having side grooves one wall of which is coincident throughout with the plane of the side wall of the frame-groove upon which the panes do not seat, and putty within the came grooves and within the portions of the frame groove between the panes and the groove wall upon which the panes do not seat.

3. In windowed panel construction, a frame composed of parallel horizontal and parallel vertical solid wooden members and being provided in its inner edge with a continuous groove, a permanent solid wooden muntin intermediate the horizontal members and a permanent solid wooden muntin intermediate the vertical members of the frame, each muntin having pane seats separated by a rib which extends beyond the plane of said pane seats a distance less than the thickness of the panes to be imposed upon said seats, the pane seats being coincident with said one side wall of said groove, panes in said groove and bearing directly upon said one side wall thereof and directly upon the pane seats of the muntins, the side walls of the frame groove being parallel and spaced apart a distance sufficient to permit a pane to be inserted over said ribs diagonally into the groove of adjacent horizontal and vertical frame members simultaneously, cames removably secured to the muntins out of contact with the said ribs and bearing directly upon opposite panes to secure them to said seats and said cames having side grooves one wall of which is coincident throughout with the plane of the side wall of the frame-groove upon which the panes do not seat, and putty within the came grooves and within the portions of the frame groove between the panes and the groove wall upon which the panes do not seat.

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