

Feb. 26, 1929.

1,703,479

H. A. CRONMILLER
REINFORCED METAL WINDOW SASH

Filed Feb. 24, 1927

2 Sheets-Sheet 1

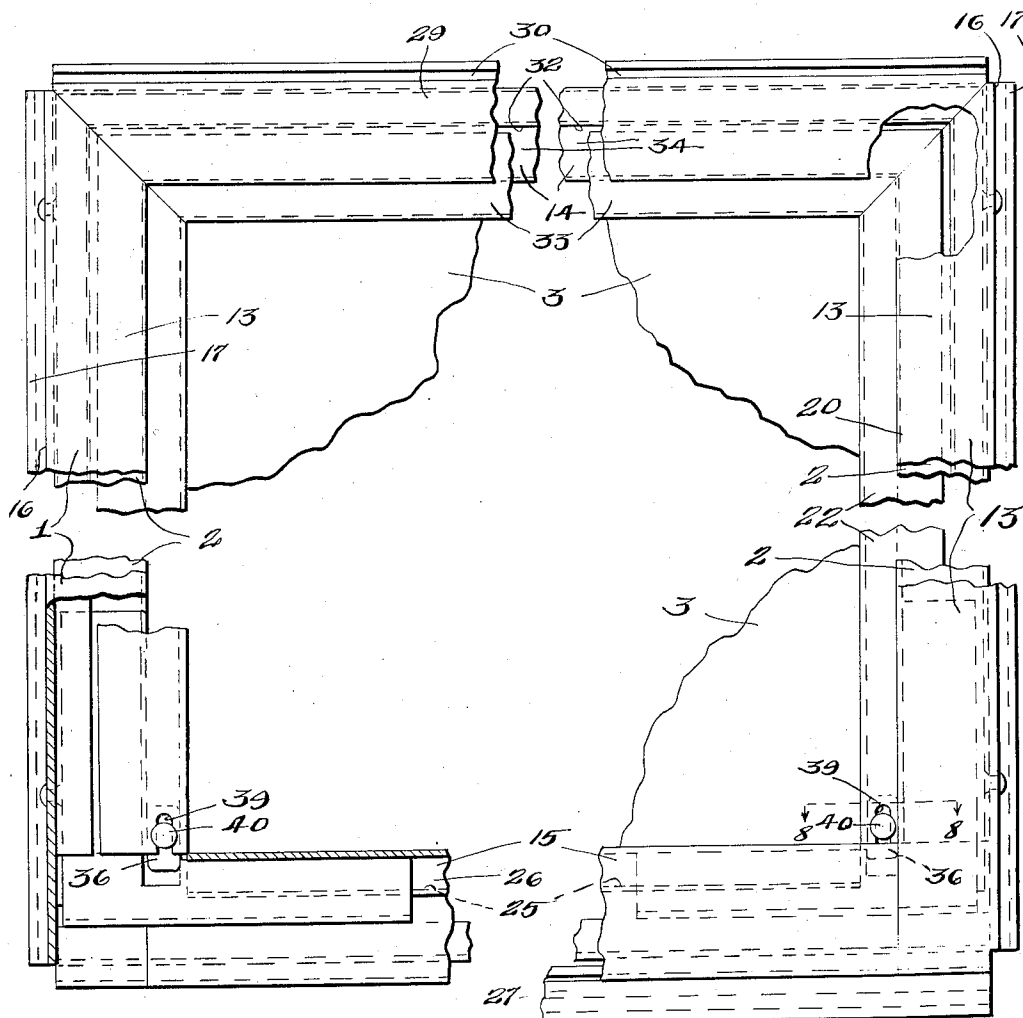


Fig. 1.

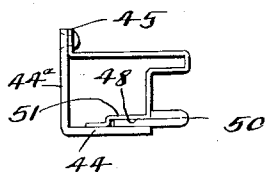


Fig. 6.

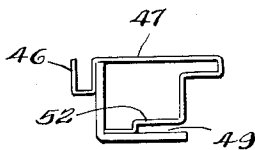


Fig. 7.

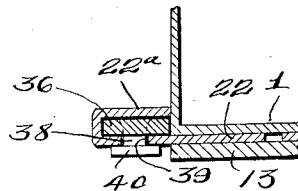


Fig. 8.

INVENTOR.

BY Howard Albert Cronmiller

Parsons & Bodell.
ATTORNEYS.

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H. A. CRONMILLER

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2 Sheets-Sheet 2

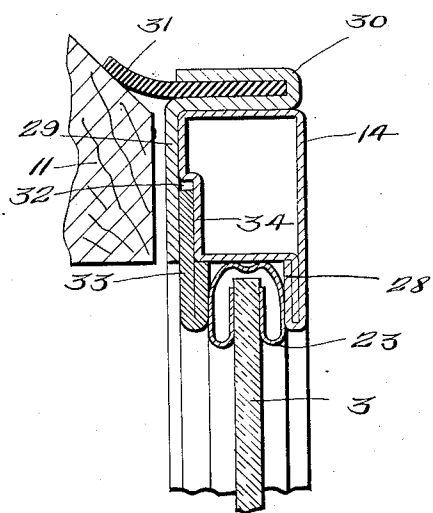


Fig. 3.

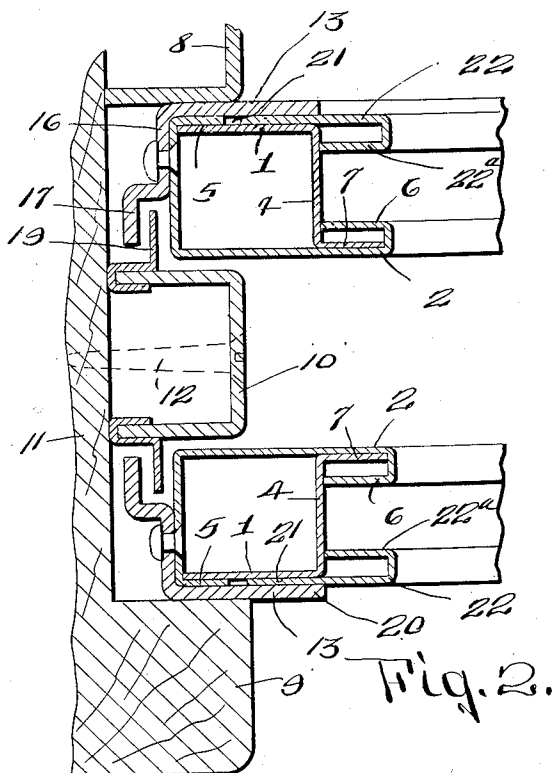


Fig. 2.

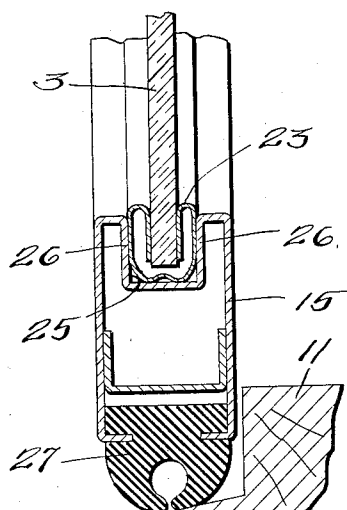


Fig. 4.

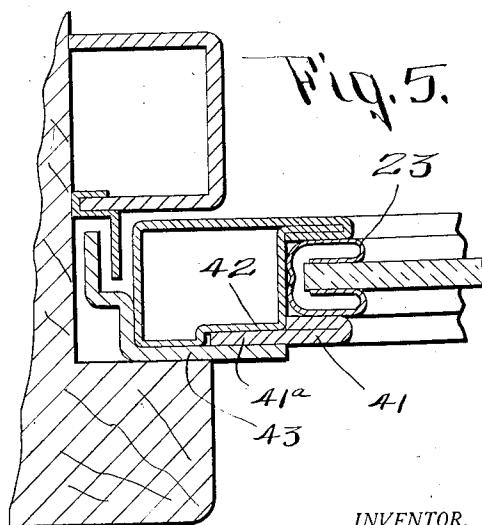


Fig. 5.

INVENTOR.

Howard Albert Cronmiller
BY
Parsons & Bodell
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HOWARD ALBERT CRONMILLER, OF SYRACUSE, NEW YORK, ASSIGNOR TO O. M. EDWARDS COMPANY, INC., OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

REENFORCED METAL WINDOW SASH.

Application filed February 24, 1927. Serial No. 170,647.

This invention relates to metal sash constructions, and particularly to metal sashes having hollow stiles formed up of sheet metal, and has for its object a particularly simple and efficient means for reenforcing against wear, one of the thin walls of the stiles where they engage the window guides particularly such means combined with other features as hereinafter set forth. Other objects appear throughout the specification.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention reference is made to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation, partly broken away, of a sash provided with my invention.

Figure 2 is an enlarged cross sectional view through the stiles of a double window construction embodying this invention, the contiguous portion of the window frame being also shown.

Figure 3 is an enlarged vertical sectional view through the top rail of the sash.

Figure 4 is an enlarged vertical sectional view through the bottom rail of one of the sashes shown in Figure 1.

Figure 5 is an enlarged cross sectional view through another form of stile, the contiguous parts of the window frame being also shown.

Figures 6 and 7 are end views of modified forms of the stile.

Figure 8 is an enlarged sectional view on line 8—8, Figure 1, showing the latch for holding the glazing strips along the stiles from dislocation.

This sash construction comprises, generally, hollow sheet metal stiles formed up of comparatively thin sheet metal, and a wear strip along one of the sides of each stile, that is the side which slides against the window stop, this wear strip being so arranged relatively to the opposing walls of the stile, that a groove is provided at the inner edge of the stile for receiving a removable glazing strip. The wear strip is also formed to provide a weather strip at the outer edge of the sash in the sash guide.

Each stile is provided with a wear strip on one side only, for the reason that the sash

is provided with means tending to force it toward either the inner or the outer stop.

In Figure 2 a double sash is shown and the inner sash engages the inner stop and the outer sash, the outer stop. The sashes are pressed toward the stops in any well known manner, and preferably sash locks are provided, which press the sashes toward one or the other of the stops, and as such sash locks are old and well known, and further as various forms of sash tighteners for forcing the sashes toward one or the other of the window stops are well known, and in general use, further description is thought to be unnecessary. In so far as the wear strip feature of this invention is concerned, it is only necessary to bear in mind that the sash is pressed toward one window stop only.

In the double window construction shown, the sashes are alike in construction, but are reversely arranged relatively to each other. That is the wear strip is on the outer side of the outer sash and on the inner side of the inner sash. The sash locks are located on the inner side of the outer sash and tends to press the sash toward the outer stop. The sash locks on the inner sash are also on the inner side thereof, but the locking bolts are so beveled and coact with the beveled rack or other means on the window frame as to pull the inner sash toward the inner stop. The sash is formed of top, bottom, and side members, each of which is formed up of sheet metal strips, the top and bottom members being usually called rails and the side members, stiles.

1 designates the stiles, each formed up of thin, sheet metal pieces as brass in the general form of a rectangular tube, each stile being provided at its inner edge with a flange 2, forming one side of a channel for receiving a glass pane 3, the opposite side of this channel being formed by a removable glazing strip to be hereinafter described. In Figure 2 the stile is formed of an outer body and an insert 4, the insert being angular, and one flange thereof forming the bottom of the glass groove, and the other flange lapping the inner side of the outer or body portion of the stile. The flange 2 is formed double by doubling the same back upon itself at 6, and the insert 4 is provided with an angular flange or lip 7 extending between the double walls of the flange 2. These parts

are secured together by any suitable means preferably by a welding process or by rivets or both.

8 designates the inner stop of the window frame. 9 the outer stop and 10 the intermediate stop, all provided on the window frame 11. The outer stop 9 is shown as part of the frame, while the inner and intermediate stops 8 and 10 are channel irons arranged with their open sides toward the frame, the channel irons being secured to the frame in any suitable manner as by screws 12.

13 designates the wear strip extending along one face of each stile, and the full height of the sash, as the stiles themselves extend the full height thereof, the stiles being connected to the top rail 14 by a beveled joint and to the bottom rail 15 by joints in which the ends of the bottom rail abut squarely against the inner sides of the stile. The wear strip is usually of brass and preferably secured to the stile by soldering or some other welding process. The wear strip is here illustrated as having an extension 16 lapping the outer edge of the stile body 1, and this extension is further provided with an angular portion 17 offset or spaced from the edge of the stile body and forming a weather strip, which coacts with a weather strip 19 associated with one of the window stops, as the intermediate stop 10, and extending into the space between the offset portion 17 of the weather strip, and the edge of the body. The weather strip is also provided with a portion 20 extending outside of the window guide and spaced from the underlying wall of the stile or body forming therewith a groove 21 for receiving the base of the glazing strip 22.

Each glazing strip 22 is preferably formed of sheet metal and is doubled back upon itself, the double flange portion, 22^a, forming the outside of the channel for receiving the glass. The glass is usually provided with a resilient marginal channel piece 23, which fits in the channel formed by the flange 6 and the flange 22 of the stiles and in the corresponding grooves in the top and bottom rail. One of the sash members is formed with a glass receiving channel, the opposite walls of which are permanent, while the other members are formed with a removable glazing strip as seen in Figure 4, and preferably the top or bottom rail is formed with the glass receiving groove having both its opposite walls permanent, and in the illustrated form of this invention, the bottom rail is formed with the glass receiving channel having permanent walls.

The lower rail 15 is formed up of sheet metal in the form of a channel the bottom of which is provided with a reentrant groove 25 for receiving the margin of the pane of glass, and its metal covering 23. This reentrant groove may be formed in any suitable manner, but the walls 26 thereof are permanent.

That is neither of them is removable. Also a rubber buffer 27 is provided at the lower edge of the bottom rail for engaging the sill.

The top rail 14 is also formed up of sheet metal and provided with a glass receiving channel, one wall 28 of which is permanent and the other wall of which is formed by the removable glazing strip. The top wall is further provided with a metal strip 29 corresponding to the wear strips 13 of the stile, but this strip 29 is not a wear strip, except its extreme end portions which extend into the window guides. The strip 29 is formed with an offset extension 30 along the upper edge of the top rail, which forms a groove for receiving a weather strip 31 for engaging the upper portion of the window frame or the lower rail of an upper sash when the sash is closed. The groove 32 for receiving the glazing strip 33 of the top rail is provided by inseting the part of the opposing wall 34 of the top rail body. That is the part of the wall opposite the strip 29. The glazing strip 33 is similar to the glazing strip 22 with the exception that the walls of its folded flanges are not spaced apart.

The stiles of the sash are joined to the top rail by a miter joint, and likewise the wearing strips 13 and strip 29 are mitered at their abutting ends. The glazing strips along the top rail and along the stiles interlock at their abutting ends and as here illustrated their abutting end edges are angularly disposed or mitered.

The glazing strips 22 along the stiles are, however, square or straight at their lower ends and abut against the horizontal edges of one of the flanges 26 of the bottom rail. Owing to the interlocked or angularly disposed, mitered, abutting ends of the glazing strips 22 and 33 along the stiles and the top rail and to the square lower rails of the strips 22, these strips hold themselves in assembled relation. Preferably, however, quick detachable means are provided which hold each glazing strip 22 from dislocation, and as here illustrated this means consists of a locking member carried by the glazing strips 22 near their lower ends, and operable into and out of interlocking engagement with the bottom rail or the inner or outer flange thereof. This locking means on each strip 22 is here shown as a latch or slide 36 movable between the double walls of the glazing strip portion 22^a near the lower end thereof into a slot or opening 37 in the edge of one of the flanges 26 of the bottom rail, the slide 36 having a short stem 38 which extends through a slot 39 in the lower end of each glazing strip 22 to the outside of such strip where it is provided with a head or finger engaging member 40.

In Figure 5 the stile is shown as formed with a removable glazing strip 41 similar to that shown in Figure 3, the base portion 41^a of which is located in a groove formed by the

insetting portion of the wall 42 of the stile underlying the wearing strip 43.

In Figures 6 and 7 different forms of stiles are shown and in Figure 6, the wearing strip 44 is shown as closing the open outer edge of the stile body 44^a, and as secured to an angular lip 45 on the stile body and secured thereto, this lip 45 and the contiguous portion of the strip 44 constituting a weather strip. In Figure 7 the weather strip 46 is provided by an angular extension of one of the walls 47 of the stile body. In both Figures 6 and 7, the groove 48 or 49 for the glazing strip 50 is provided by inseting at 51 or 52 one of the walls of the stile body.

In inserting a new pane of glass, it is merely necessary to remove the glazing strips 22 and 33 by withdrawing the slide 36 by means of the finger piece 40 and swinging the glazing strip 22 inwardly toward each other, so that they can be removed and after they are removed, pulling the glazing strip 33 out of its groove 32. A new glass pane is then inserted by first setting its lower margin in the groove of the bottom rail and pressing the pane so that its side and top margins are against the permanent flanges or sides 6 and 28 of the glass receiving grooves of the stiles and the top rail.

The glazing strip 33 is then placed in position along the top rail and then the glazing strips 22 placed in position along the stiles by first locating their miter upper ends in juxtaposition to the miter ends of the strip 33, then swinging these strips 33 toward the stiles pressing their base portions into the grooves 21 of the stiles until when they are fully placed in position. The lower ends of the strips 22 abuts squarely against the upper edges of the flange 26 of the bottom rail and ordinarily on account of the squared lower ends of the glazing strips 22 and the beveled upper ends thereof, these strips 13 will stay in position. However, as a precautionary measure, the locking means is provided and after strips 22 are properly located the slide 36 is moved downwardly by means of the finger piece or head 40 into the opening 37 in the bottom rail.

In the double window construction the glazing strips are preferably located on the outside of the outer sash and on the inside of the inner sash and as the wear strips form one wall of the groove which receives the glazing strips, the wear strips are located on the outside of the outer sash, and on the inner side of the inner sash, and the sash locks are so formed as to press the outer sash outwardly, and the inner sash inwardly, although other sash tightening means may if desired be employed. By this construction, the stiles can be formed up of particularly thin sheet metal and a combined wear strip, and glazing strip retaining means applied to the thin sheet metal sash not only to receive

the wear, but also to provide a comparatively stiff means for holding the glazing strip.

What I claim is:—

1. In a window construction, the combination with a window guide of a window sash comprising hollow sheet metal stiles movable in the guide, and a wear strip extending lengthwise of one of the walls of each stile for engaging one of the walls of the guide, said wear strip having an extension at the edge of the guide constituting a weather strip.

2. In a window construction the combination with a window guide, of a window sash comprising hollow sheet metal stiles movable in the guide, and a wear strip extending lengthwise of one of the walls of each stile for engaging the guide, a portion of the wear strip toward the inner edge of the stile being spaced from the stile forming a groove, and a removable glazing strip having a base portion fitting the groove.

3. In a window construction the combination with a window guide, of a window sash comprising hollow sheet metal stiles movable in the guide, and a wear strip extending lengthwise of one of the walls of each stile for engaging the guide, the wear strip having an extension at the outer edge of the stile constituting a wear strip and a portion toward the inner edge of the stile spaced from the underlying wall of the stile forming a groove and a glazing strip fitting the groove.

4. In a window construction the combination with a window guide, of a sash having hollow sheet metal stiles movable in the guides, and a reenforcing wear strip extending lengthwise of each stile on the side thereof toward the walls of the guide toward which the sash tends to thrust.

5. In a window construction the combination with a window guide, of a sash having hollow sheet metal stiles movable in the guide, each stile having a flange on the inner side of the stile forming one side of a glass receiving channel, a wear strip extending lengthwise of the stile on the opposite side thereof to that on which said flange is located, the wear strip being arranged to engage one of the walls of the guide, and having a portion extending inwardly toward the glass receiving opening of the sash and spaced apart from the underlying portion of the stile forming a groove, and a glazing strip forming the other side of the glass receiving channel and having a portion fitting the groove.

6. A window sash construction including top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls and each of the other members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means interlocking with the latter members forming the other walls of said channels

of the same, the glazing strips of two of said other members abutting at their ends against the member formed with the glass receiving channel having permanent walls and the glazing strips along said other members having angular abutting ends.

7. A window sash construction including top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with said other members and forming the other walls of the channels in the same, the glazing strips along two of said other members having square ends abutting against the edge of the member formed with the channel having permanent opposing walls.

8. A window sash construction comprising top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with said other members and forming the other walls of the channels in the same, the glazing strips along said other members having mitered abutting ends and the glazing strips along two of said members having square ends, abutting against the edge of the member having the channel with permanent walls.

9. A window sash construction comprising top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with the latter members and forming the other walls of the channels in the same, and the glazing strips along said other members having angularly disposed abutting end edges and the glazing strips along the two of the latter members having substantially square ends abutting against the edge of the sash member formed with the channel having permanent walls and means for locking the glazing strips having the square ends, from displacement.

10. A window sash construction comprising top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with the latter members and forming the other walls of the channels in the same, and the glazing strips along said other members having angu-

larly disposed abutting end edges and the glazing strips along the two of the latter members having substantially square ends abutting against the edge of the sash member formed with the channel having permanent walls and means for locking the glazing strips having the square ends, from displacement, said means being located at the square ends of the glazing strips.

11. A window sash construction comprising top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with the latter members and forming the other walls of the channels in the same, and the glazing strips along said other members having angularly disposed abutting end edges and the glazing strips along the two of the latter members having substantially square ends abutting against the edge of the sash member formed with the channel having permanent walls and a lock member carried at the square end of each of said glazing strips and movable into engagement with the sash member against which the square end abuts.

12. A window sash construction comprising top, bottom and side sash members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other sash members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with the other members and forming the other walls of the channels in the same, the glazing strips along said other members having their abutting ends interlocked and the glazing strips along two of said members which abut against the sash member having the channel with permanent walls being provided with latch members, said sash member having the permanent walled channel being formed with openings for receiving the latch members.

13. A window sash construction comprising top, bottom and side sash members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the other sash members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with the other members and forming the other walls of the channels in the same, the glazing strips along said other members having their abutting ends interlocked and the glazing strips along two of said members which abut against the sash member having the channel with permanent walls being provided with latch members, said sash member having the permanent walled channel being formed with openings for receiving the latch members, said

latches being in the form of slides having finger engaging portions on the outside of the glazing strips, said slides being operable to project beyond the lower ends of the glazing strips into said openings.

14. A window sash construction comprising top, bottom and side members, one of which is formed with a glass receiving channel having permanent opposing walls, each of the three other sash members being formed with a glass receiving channel having a permanent wall along one side thereof, glazing strips having means for interlocking with said three other members and forming the other walls of the channels in the same, the glazing strips along said three members having their abutting ends interlocked and the glazing strips along two of said members having ends abutting against the edge of the member formed with the permanent walled

channel, the glazing strips along the two members each including a base portion interlocking with the same and a portion for lapping the margin of the glass pane, the latter portion being doubled back upon itself forming a space between the double walls thereof, a slide arranged between said double walls and operable to project beyond the ends of the strips and the outer wall of the double wall portion of each of said glazing strips being formed with a lengthwise slot and each slide having a finger engaging piece extending through the slot, the sash member having the permanent walled channel being formed with openings for receiving the slides.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga, and in the State of New York, this 22nd day of February, 1927.

HOWARD ALBERT CRONMILLER.