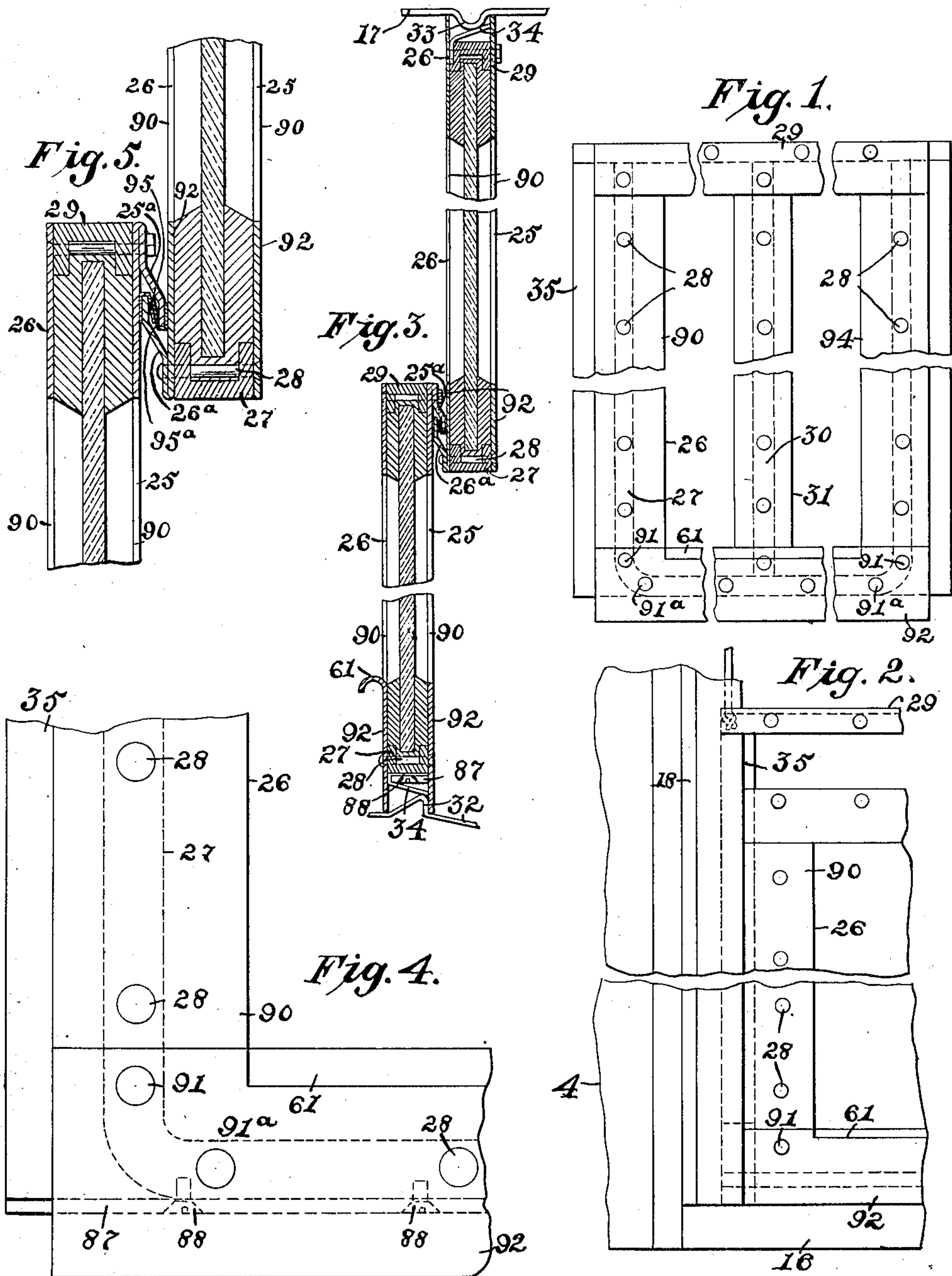


No. 871,129.

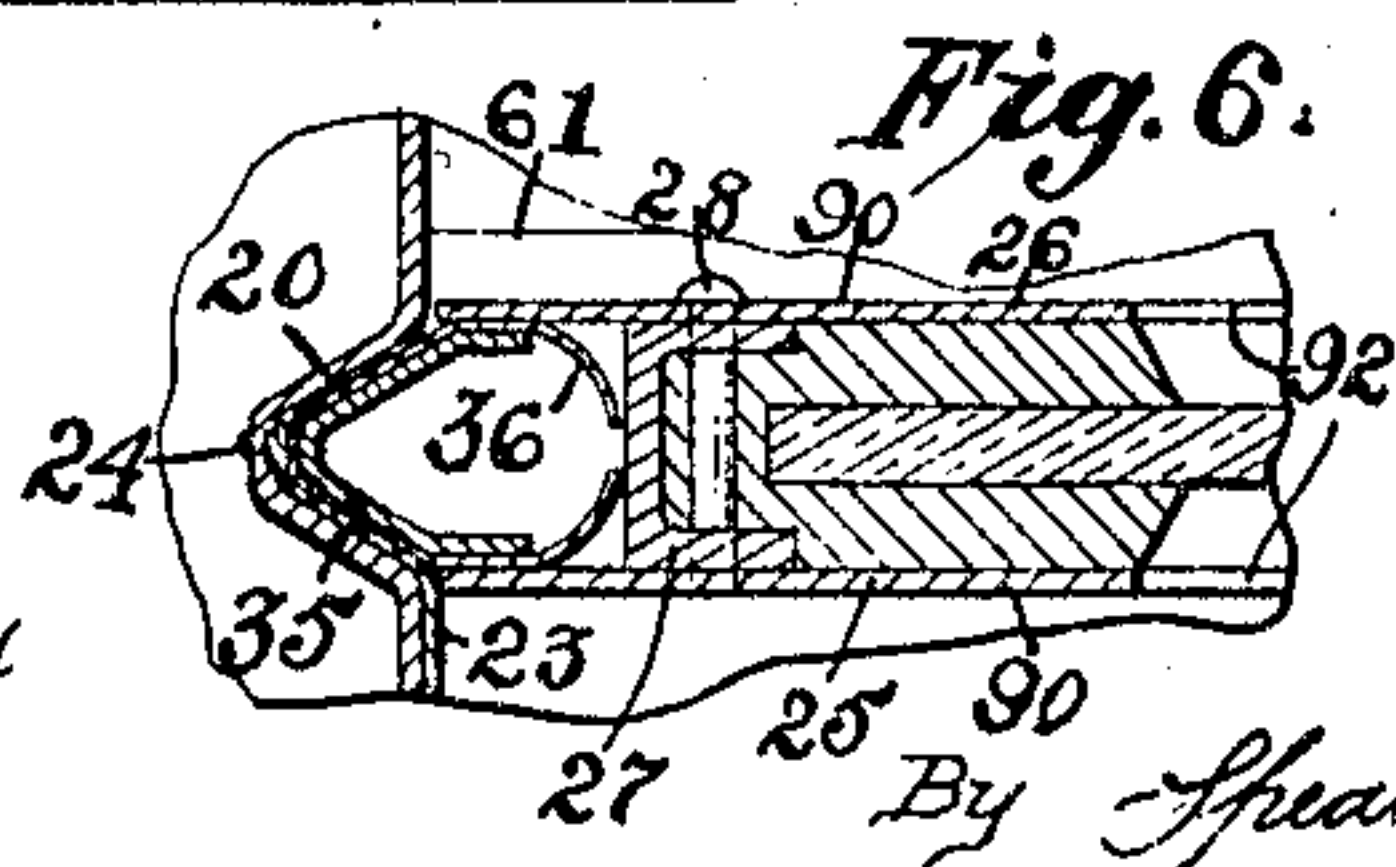
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E. H. LUNKEN & C. M. CONKLIN.  
FIREPROOF WINDOW CONSTRUCTION.

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# UNITED STATES PATENT OFFICE.

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## FIREPROOF WINDOW CONSTRUCTION.

No. 871,129.

Specification of Letters Patent.

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Serial No. 357,541.

*To all whom it may concern:*

Be it known that we, EDMUND H. LUNKEN and CHARLES M. CONKLIN, citizens of the United States, residing at Cincinnati, Ohio, have invented certain new and useful Improvements in Fireproof Window Construction, of which the following is a specification.

Our present invention relates to improvements in metallic window sash designed more especially for use in fire proof windows such as shown and described, for example, in the application filed by us Nov. 22/06, #344643, of which this application is a division.

Among the objects of the invention are to provide an improved construction of sash which will be very compact, and still be more rigid and stronger, especially at its corners, than those heretofore constructed and which will permit of the ready insertion and removal of the glass.

With these and other objects in view the invention includes the various features of construction, and arrangement and combination of parts hereinafter described and particularly set forth in the appended claims.

An embodiment of the invention is illustrated and described in the accompanying drawings in which only a lower sash is shown in front elevation for convenience.

Figure 1 is a face view of a sash. Fig. 2 is a detail view showing the top bar slightly raised. Fig. 3 is a transverse vertical section of both sashes. Fig. 4 is an enlarged detail view of one of the lower corners of the sash, and Fig. 5 is an enlarged sectional detail showing the construction of the meeting rails. Fig. 6 is a sectional detail.

A sash, as shown in these drawings, consists of outer strips 25 and inner strips 26, between which is interposed the U-shaped frame 27, preferably made of channel iron, as clearly shown in Fig. 1, 3 & 5. This U-shaped piece 27 is constructed of one piece, and continues entirely around three sides of the frame. The inner and outer frames 25 and 26 are secured to the U-shaped frame 27, preferably by means of rivets 28, extending entirely through the three members. By this construction, a channel is provided between the inner and outer frames 25 and 26, into which glass may be slid from the top.

To securely hold the glass in place, a removable bar 29, preferably of channel form in cross section, is employed, which closes the opening at the top, between the side frames 25 and 26, and lies upon the ends of the U-shaped frame 27, overlapping the same, for the purpose hereinafter described.

Where it is desired to use more than one glass in a single frame, we provide a muntin consisting of the center piece 30 (which lies between the inner and outer frames 25 and 26 at the top and bottom, where it is secured by rivets) and side plates 31, which overlap this center piece 30 and are riveted thereto. Any suitable filling strip or material may be used to form a seat for the glass as indicated at 92<sup>x</sup>.

It will be observed that the U-shaped frame 27 lies inwardly, and is removed from the outer edges of the side frames 25 and 26 on three sides, thereby forming a channel on the three sides of the frame. The horizontal or bottom portion of the U-shaped frame is removed from the lower edges of the frames 25 and 26, to form a channel into which a bead or edge piece 32 of the sill projects to form a tight joint. The outer face of the bead 32 is disposed in a vertical plane, so as to lie flat against the inner face of the frame 25, making it practically impossible for water to work its way up through between the parts. The removable piece 29, at the upper edge of the top sash, is likewise removed from the outer edges of the frames 25 and 26, forming a channel the object of which is to provide a weather proof joint between the top cross piece coverplate 17 and the upper sash, inasmuch as the bead 33 lies within this channel when the sash is closed.

As a further protection against the weather, spring brass strips 34 are provided within the top channel of the upper sash and the bottom channel of the lower sash. The brass weather strip within the bottom channel of the lower sash, is held in place by means of the bar 87, and lies between this bar 87 and bottom of U-shaped frame 27. The bar 87 is removably held in place by screws 88, and projects beyond the side frames 25 and 26, for the purpose hereinafter described. At the top of the upper sash, the weather strip is removably held between the removable bar 29 and one of



the frames 25 or 26. When inserting the weather strip for the bottom sash, it is angular in cross section, one end of the angle lying between the bar 87 and bottom of U-shaped frame, while the other rests against either the frame 25 or 26, as desired. After the bar 87 is secured in place, the weather strip is then bent over the bar 87, as shown in Fig. 3 so that the free end bears against the bead 32. The weather strip for the top sash, however, can be placed in position after having first been formed to the desired shape, or it may be inserted in a flat form, and after being secured in place between the removable bar 29 and either of the side frames 25 or 26, can then be bent to shape.

The lower crosspiece of the inner sash frame 26 has its upper edge 61 turned over, as illustrated in Figs. 1, 3, and 4, the object being to provide a continuous handle, by which means the lower sash can be easily raised, thereby eliminating the expense and time of attaching separate handles. The presence of this handle, which extends the length of the lower bar, terminating at the inner edges of the vertical members of the lower sash, as shown in Fig. 4, also tends to strengthen and stiffen the frame, particularly when the frame is of great width.

An important feature in the construction of the sash, lies in the method employed of securing the side frames 25 and 26 to the U-shaped frame at the corners. It will be observed that the bottom piece 92, of the side frames 25 and 26 embraces the edges of the side pieces 90, the purpose of this being to enable the placing of both rivets 91 and 91<sup>a</sup> (one on either side of the corner formed by the U-shaped frame) in the bottom piece, as shown in Fig. 4, thereby greatly increasing the strength of these corners and insuring a right-angular frame.

The channels at the sides of the sash, formed by the inner and outer frames 25 and 26 and U-shaped frame 27, contain the removable guides 35. These removable guides consist of metallic strips preferably V-shaped in cross-section, which may conveniently be made of pressed steel. To form a non-corrosive bearing surface, we envelop these pressed steel guides with a thin sheet of spring brass 36, bent to conform to the shape of the pressed steel guides. They, however, continue around the open end of these steel guides, as clearly shown in Fig. 6 and bear against the U-shaped frame 27.

A weather tight joint is effectually made by means of these non-corrosive coverings for the guide strips, owing to the fact that they bear against the U-shaped frame 27, which forces them into the guide grooves of the coverplate for the side members of the main frame, as fully set forth in our above mentioned application. The tension of the spring brass strips 36, however, is not

severe enough to cause too much friction between the bearing surfaces, and therefore the sash can be operated with perfect ease and still maintain a tight joint. These guide strips are held in place between the extending ends of the removable bar 29 and the weather strip retaining piece 87, which project sufficiently beyond the U-shaped frame for this purpose. In both ends of the removable bar 29 holes are provided, through which the ropes or cables for the weights extend, and are knotted or otherwise secured.

Suitable meeting rails are provided between the upper and lower sash to present a weather tight joint. In this instance, we have formed them of the same piece as the upper bar of the lower sash side frame 26 and the lower bar of the upper sash of the frame 25, as shown in Fig. 5. They consist of similar reversely arranged portions 25<sup>a</sup> and 26<sup>a</sup> overlapping each other when the sash are closed. As these portions 25<sup>a</sup> and 26<sup>a</sup> are of the same piece as the upper and lower members of the top and bottom sash respectively, it is only necessary to bend them to the desired shape, eliminating the presence of bolts or rivets to secure these meeting rails, and greatly increasing the strength and rigidity of these particular members, especially should the sash be of great width. To insure a positive joint between these meeting rails, we employ spring brass weather strips 95 and 95<sup>a</sup> soldered or otherwise secured to the meeting rails on their outer sides. As they are bent around the edge of said meeting rails as shown in Fig. 3 & 5 and their loose ends permitted to bear against each other when the sash are closed, a positively tight joint is obtained at a reduced cost and a small amount of labor.

Having thus described our invention what we claim is:—

1. In fire proof window construction, a sash comprising facing strips, a U-shaped frame of one piece between said strips on three sides, forming a channel, a glass pane removably seated in the channel, and a removable spacing bar closing the remaining side.

2. In fire proof window construction, a sash comprising facing strips, a U shaped frame of one piece between said strips on three sides, forming a channel, a glass pane removably seated in the channel, and a removable spacing bar closing the remaining side, and rivets passing through the facing strips and U-shaped frame and permanently holding said parts together.

3. In fire proof window construction, a sash comprising inner and outer frames, said frames composed of two horizontally and two vertically disposed members, spacing pieces between them, the lower corners of which are bent at right angles, one of each of



said members opposite to each other, being secured to both legs of one of the angle corner pieces.

4. In fire proof window construction, a sash comprising facing strips with an interposed spacing member, the strips extending on one of its sides beyond the spacing member and a removable sash guide bar being located in the channel formed by the said extended edges of the facing strips.

5. In fire proof window construction, a sash comprising facing strips with an interposed spacing member, the strips extending on one of its sides beyond the spacing member and a yielding sash guide bar located in the channel formed by the said extended edges of the facing strips.

6. In fire proof window construction, a sash comprising metallic glass retaining facing strips suitably secured together one of the lower strips of which has a turned over portion forming a handle.

7. In fire proof window construction, a sash comprising facing strips, a U-shaped bar between said strips on three sides, a removable bar on the fourth side, and a muntin comprising a center bar secured at its ends between the facing strips and supplement facing strips secured to opposite faces of the center bar.

8. In fire proof window construction, the combination of a sash having a horizontally disposed member, an inclined meeting rail carried thereby, and formed of the same piece as the horizontal member and providing a groove and an oppositely converging meeting rail carried by the other sash, adapted to enter said groove and contact with the first named rail.

9. A sash having a U-shaped frame around three sides thereof, and secured between flanges projecting inwardly to form a groove for the reception of a pane of glass, inner and outer facing strips secured to the projecting ends of the U-shaped frame at the open side

thereof, forming a slot through which the pane of glass is inserted, and a removable spacing bar to cover said slot.

10. In fire proof window construction, a sash frame having facing plates and muntin composed of inner and outer plates and an interposed spacing bar providing grooves on opposite sides, said spacing bar having projecting ends secured between the facing plates of the sash frame, substantially as described.

11. In fire proof window construction, a sash frame having glass receiving channels and an open edge for the insertion of the glass, a removable bar closing said open edge, a metal weather strip located against the face of the frame, and bolts passing through the frame, removable bar and packing strip for holding said parts together, substantially as described.

12. In fire proof window construction, upper and lower sash frames, having glass receiving channels and openings in their meeting rails for the insertion of the glass, removable bars closing said openings, and contacting metal packing strips carried by said rails, one of said packing strips being of spring metal, substantially as described.

13. In fire-proof window construction, an upper and a lower sash, a downwardly and outwardly inclined rail or flange carried by the upper bar or member of the lower sash, a reversely arranged rail or flange carried by the lower bar or member of the upper sash, and spring packing strips carried by the edges of these rails or flanges, substantially as described.

In testimony whereof, we affix our signatures in presence of two witnesses.

EDMUND H. LUNKEN.  
CHAS. M. CONKLIN.

Witnesses:

WM. H. MUENCH,  
E. E. WINTER.