A. FROMHOLD.

METAL WINDOW CONSTRUCTION.

APPLICATION FILED OCT. 2, 1915.

1,240,193.

Patented Sept. 18, 1917.

Fig. 1.

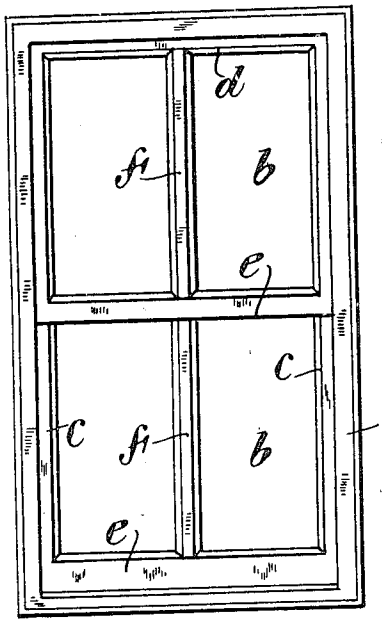


Fig. 3.

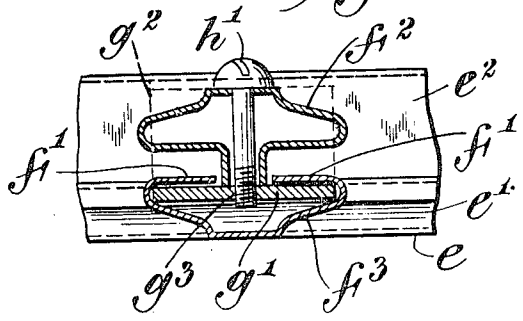


Fig. 2.

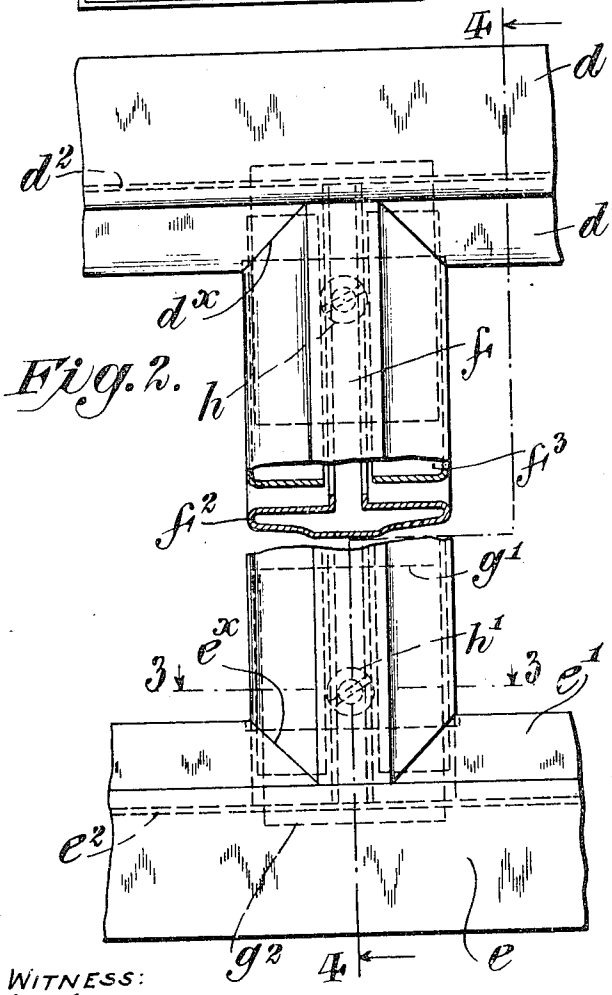
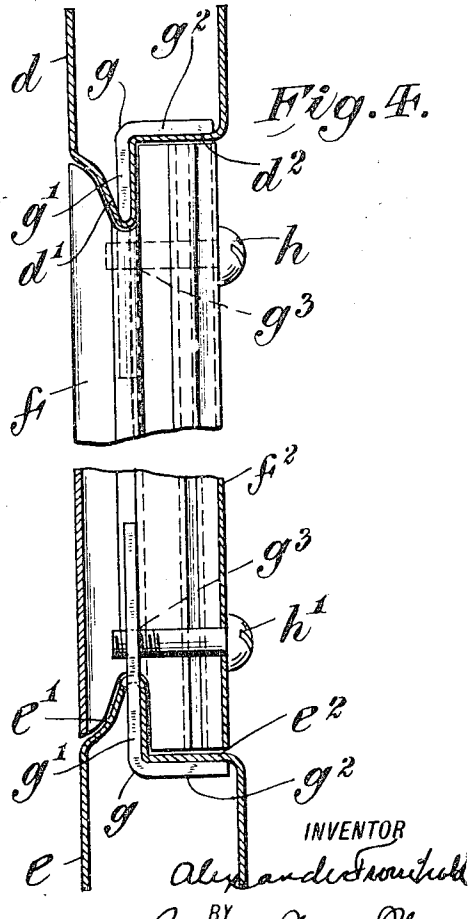


Fig. 4.



WITNESS:

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METAL WINDOW CONSTRUCTION.

1,240,193. Specification of Letters Patent. Patented Sept. 18, 1917.

Original application filed January 28, 1915, Serial No. 4,816. Divided and this application filed October 2, 1915. Serial No. 53,676.

To all whom it may concern:

Be it known that I, ALEXANDER FROMHOLD, a citizen of the United States, and a resident of Rutherford, in the county of Bergen, in the State of New Jersey, have invented certain new and useful Improvements in Metal Window Construction, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This application is a divisional case of an application Ser. No. 4816 filed by the present applicant on January 28, 1915, and relates generally to hollow metal window construction. In the copending case there were claimed certain features relating more particularly to the construction of the frame members of metal windows, and by the present case it is sought to cover an improved muntin bar which shall be especially useful in connection with windows of the general character shown in the case above identified but, as will appear, is not to be limited to such use. More particularly, the invention is concerned with the devices for securing the muntin bars to the rails in such manner as to insure a strong and durable construction and give reinforcement to the entire window structure. The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated and in which—

Figure 1 is a view in elevation of a window frame with upper and lower sashes in the construction of which the present improvements may be embodied.

Fig. 2 is a detail view showing a muntin bar embodying the improvements.

Fig. 3 is a view in section on the plane indicated by the line 3—3 of Fig. 2 and looking in the direction of the arrows.

Fig. 4 is a view in section on the plane indicated by the broken line 4—4 of Fig. 2 and looking in the direction of the arrows.

It will be obvious that the present improvements are capable of application to windows of different constructions and in fact to analogous structures other than windows and in the present specification and drawings it has been sought to describe and illustrate only such embodiments of the invention as will suffice for a clear understanding thereof.

In Fig. 1 of the drawings is shown a window of ordinary construction, comprising a frame a and upper and lower sashes b. Each sash comprises generally side stiles c, a top rail d, a bottom rail e, and a vertical muntin bar f which is secured to the top and bottom rails d, and e. In the illustrated embodiment each of the parts referred to is formed of sheet metal of relatively heavy gage which is sufficiently stiff to permit it to be formed in open construction, the strip of metal which is bent to form the rail having its outer edges unconnected as by a web as is necessary when sheet metal of the lighter gage commonly employed is used. Furthermore, the heavier metal employed has such a substantial degree of thickness as compared with the lighter metal commonly employed, as to permit the corresponding flanges of the two members of a joint to be interlocked in a common plane. This construction is especially adapted for the use of the improved muntin bar and lends itself admirably to the securing of this muntin bar fixedly to the rails. At the points where a muntin bar is to be secured to the rails, each rail d, e, is slotted as at d^x, e^x, preferably through the edge of the molding d' and e' of the respective rails, to receive one arm g' of an L-shaped connecting piece g, the other arm g^2 of which bears on the corresponding flat step or web d^2, e^2, of the respective rails. The end of the muntin bar f is suitably cut to fit the corresponding rail and the extended arm g' is entered within the muntin bar, bearing against the internal flanges f', the arm of each connecting piece g', at the top and bottom ends of the muntin bar f being provided with threaded holes g^3. Screws h are then inserted through opposite faces of the muntin bar, adjacent the top and the bottom thereof, to engage the threaded holes g^3, respectively, in the arms g'. This construction not only serves to hold the muntin bar securely to the rails but it serves also to secure together the two parts of hollow metal f^2 and f^3 of which the muntin bar may be formed. It is evident that the construction has the further advantage of securely interlocking the two rails d and e, and reinforcing effectively the entire sash. The muntin bar f is a tension member and must be locked to the rails d and e if it is to serve this function. The L-shaped connecting piece being connected di-

rectly to the rails *d* and *e* and to the muntin bar serves to transfer all tension directly from the muntin bar to the rails. For this reason the L-shaped connecting piece must be secured fixedly to the rails. At the same time, the devices for maintaining the muntin bar in position are inexpensive and simple and greatly facilitate the assembling and disassembling of the sash.

Modifications in the details of construction and in the arrangement of the parts and substitution for some of the elements of their mechanical equivalents will suggest themselves to those skilled in the art, but all such departures from the illustrated embodiments are to be deemed within the spirit of this invention provided they fall within the scope of the appended claims.

I claim as my invention:

1. In metal window construction, a rail having a slot in its inner face, a muntin bar having its end fitted to the rail, an L-shaped connecting piece having one arm bearing internally against the rail and the other arm projected through the slot in the rail directly, and means to secure said last named arm to the muntin bar whereby tension on the muntin bar is transferred directly to the rail.

2. In metal window construction, a sheet metal rail bent to form inner and outer flanges and an intermediate web and slotted through its inner face, a muntin bar having its end fitted to the rail, an L-shaped connecting piece having one arm bearing internally against the web of the rail and the other arm projected through the slot in the rail, and means to secure said last named arm directly to the muntin bar whereby tension on the muntin bar is transferred directly to the rail.

3. In metal window construction, a rail formed of sheet metal with inner and outer flanges and an intermediate web and slotted in its inner face, a muntin bar formed of sheet metal with internal flanges, an L-shaped connecting piece having one arm bearing internally against the rail and the other arm projected through the slot in the rail and within the muntin bar and bearing against the internal flanges thereof, and means to secure the last named arm directly to the muntin bar whereby tension on the muntin bar is transferred directly to the rail.

4. In metal window construction, a rail formed of sheet metal with inner and outer flanges and an intermediate web and slotted in its inner face, a muntin bar formed of sheet metal with internal flanges, an L-shaped piece having one arm bearing internally against the rail and the other arm projected through the slot in the rail and within the muntin bar and bearing against the internal flanges thereof, and a screw projected through one side of the muntin bar and threaded directly into the corresponding arm of the connecting piece whereby tension on the muntin bar is transferred directly to the rail.

5. In metal window construction, a rail having a slot in its inner face, a muntin bar formed of sheet metal in two parts with internal flanges on one part, an L-shaped connecting piece having one arm bearing internally against the rail and the other arm projected through the slot in the rail within the muntin bar and bearing against said internal flanges of one member and a screw passed through the other member and threaded into said last named arm whereby tension on the muntin bar is transferred directly to the rail.

This specification signed this first day of October A. D., 1915.

ALEXANDER FROMHOLD.