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W. H. MULLINS & W. C. HARE.

METALLIC WINDOW SASH.

APPLICATION FILED DEC. 28, 1904.

FIG. 1

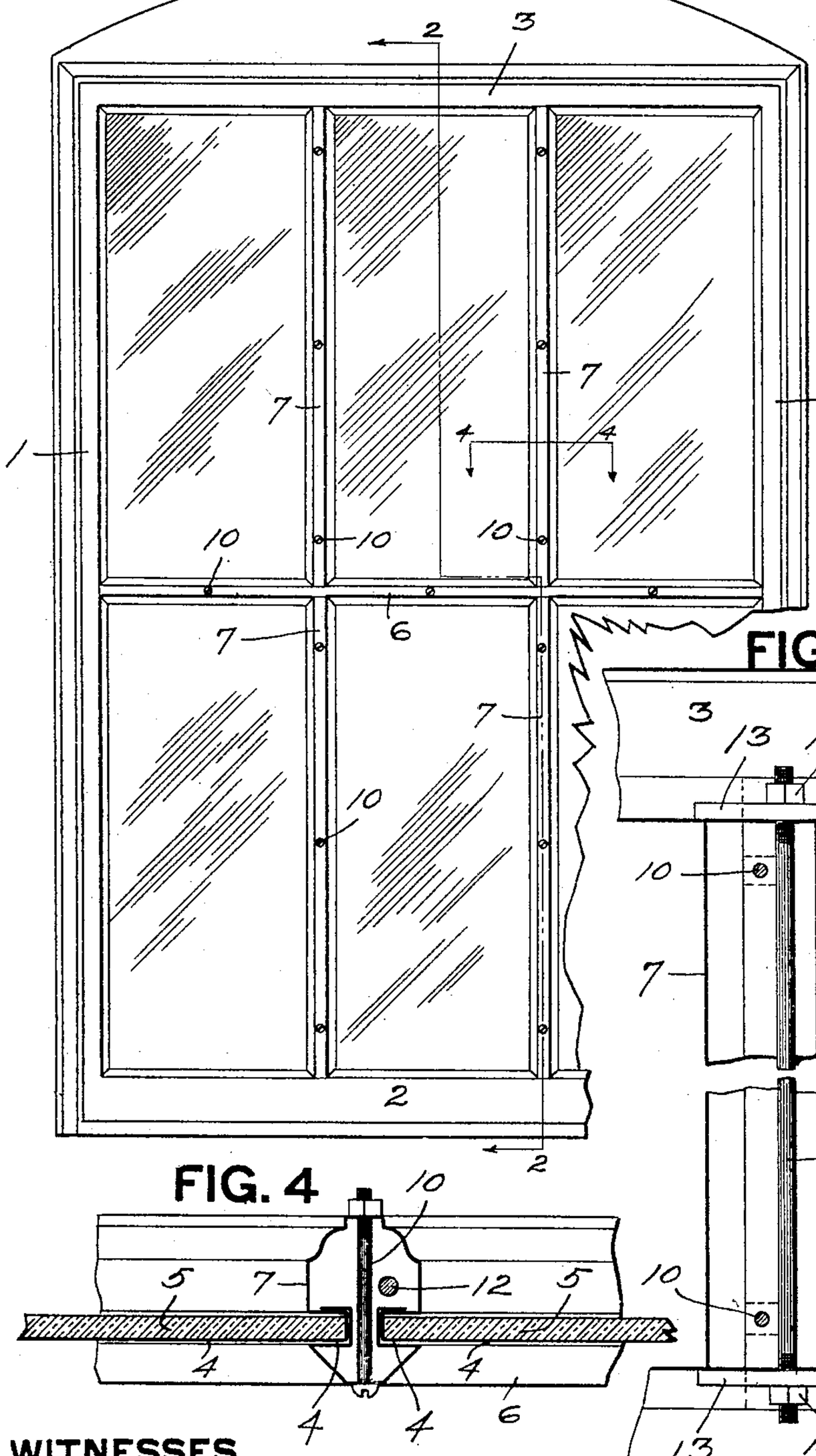

FIG. 2

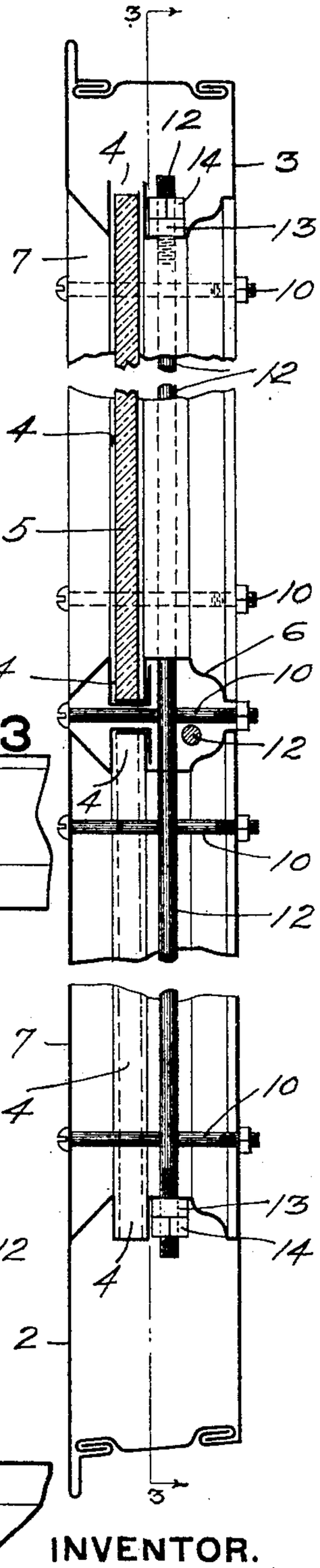

FIG. 3

FIG. 4

WITNESSES.

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WILLIAM H. MULLINS AND WILL C. HARE, OF SALEM, OHIO.

METALLIC WINDOW-SASH.

No. 803,303. Specification of Letters Patent. Patented Oct. 31, 1905.

Application filed December 28, 1904. Serial No. 238,624.

To all whom it may concern:

Be it known that we, WILLIAM H. MULLINS and WILL C. HARE, residents of Salem, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Metallic Window-Sashes; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to hollow metal sashes for fireproof windows; and the object is to provide a sash which will not bulge out under the expansive force of the heat.

The windows for fireproof buildings have the sashes constructed of metal, generally sheet metal, bent to proper shape and secured together to form the stiles, rails, and muntins. The muntins, both vertical and cross, are usually tenoned or set into the rails and stiles and either bolted, riveted, or hooked onto metal lugs; but no secure fastening means is possible at these joints without undue labor and expense. When subjected to a high temperature, the expansion of the metal will bow and warp the muntins, and if continued sufficiently far will disengage the muntins from the rails and stiles, thus causing the sash to collapse.

The object of our invention is to overcome this defect in prior constructions of fireproof windows.

To this end it consists in extending tie-rods or members through the hollow muntins and connecting the same to the rails or to the stiles in the case of a cross-muntin, and thus preventing the muntins from becoming disengaged from the rails.

The invention also consists in details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an elevation of a window, showing our invention applied thereto, a portion being broken away. Fig. 2 is a vertical section, on an enlarged scale, taken on the line 2 2, Fig. 1. Fig. 3 is a vertical section on the line 3 3, Fig. 2; and Fig. 4 is a horizontal section on the line 4 4, Fig. 1.

Our window-sash will comprise the usual stiles 1, bottom rail 2, and top rail 3. These will be formed of metal of any preferred shape, preferably sheet metal being employed, and bent to the desired shape and united by suitable lock-joints, as shown in Fig. 2. These rails and stiles will be provided with suitable seats 4 for the glass 5. The sash will be provided with a muntin or muntins, the number varying according to the size and number of panes of glass to be held in the sash. The particular window-sash shown in the drawings is provided with a cross-muntin 6 and two pairs of vertical muntins 7, extending from the cross-muntin to the top and bottom rails, respectively. These muntins also will be formed of sheet metal bent to shape, as shown in Fig. 4, and provided with suitable seats for the glass. Usually these muntins are formed in two sections, one on either side of the glass, said sections being united by the through-bolts 10.

The sash so far described is or may be of the usual construction. Our invention consists in adding thereto tie members which extend through the hollow muntins and unite the rails. Such tying member consists of a rod 12, extending through each of the hollow vertical muntins 7 between the top and bottom rails and projecting into the latter and being suitably secured thereto. Any convenient securing means may be used, that shown in the drawings comprising bearing-plates 13 of sufficient size and length to get a good bearing in the hollow rails and through which bearing-plates the ends of the tie-rods project and to which they are fastened by means of nuts 14 or other suitable means. The nuts on these tie-rods will be tightened up so as to securely tie the top and bottom rails together and clamp the same firmly onto the ends of the vertical muntins. If a window constructed in this manner is subjected to intense heat, the tie-rods will prevent the excessive bulging outwardly and warping of the muntins and entirely prevent the ends of the muntins from pulling out of their rails. As a consequence the sash will not collapse. Similar tie-rods will extend through the horizontal muntins and tie together the stiles of the sash.

Various modifications may be made in the form of the tying member and in the means for connecting the same to the rails.

What we claim is—

1. In a window-sash, the combination with metallic stiles and rails, of a muntin or muntins extending between the stiles or rails, a tie-rod extending through the muntin, and bearing members in the stiles or rails and to which said tie-rod is secured.

2. In a window-sash, the combination with

the metallic stiles and rails, of a hollow metallic muntin extending between the rails or stiles, and a tying member located in said hollow muntin and extending between the rails or stiles and secured thereto.

3. In a window-sash, the combination with the hollow metallic stiles and rails, of a hollow metallic muntin extending between the rails or stiles, a tie-rod extending through the muntin, and bearing-plates located in the rails or stiles and to which the ends of said tie-rod are connected.

In testimony whereof we, the said WILLIAM H. MULLINS and WILL C. HARE, have hereunto set our hands.

WILLIAM H. MULLINS.
WILL C. HARE.

Witnesses:
F. W. WINTER,
ROBERT C. TOTTEN.