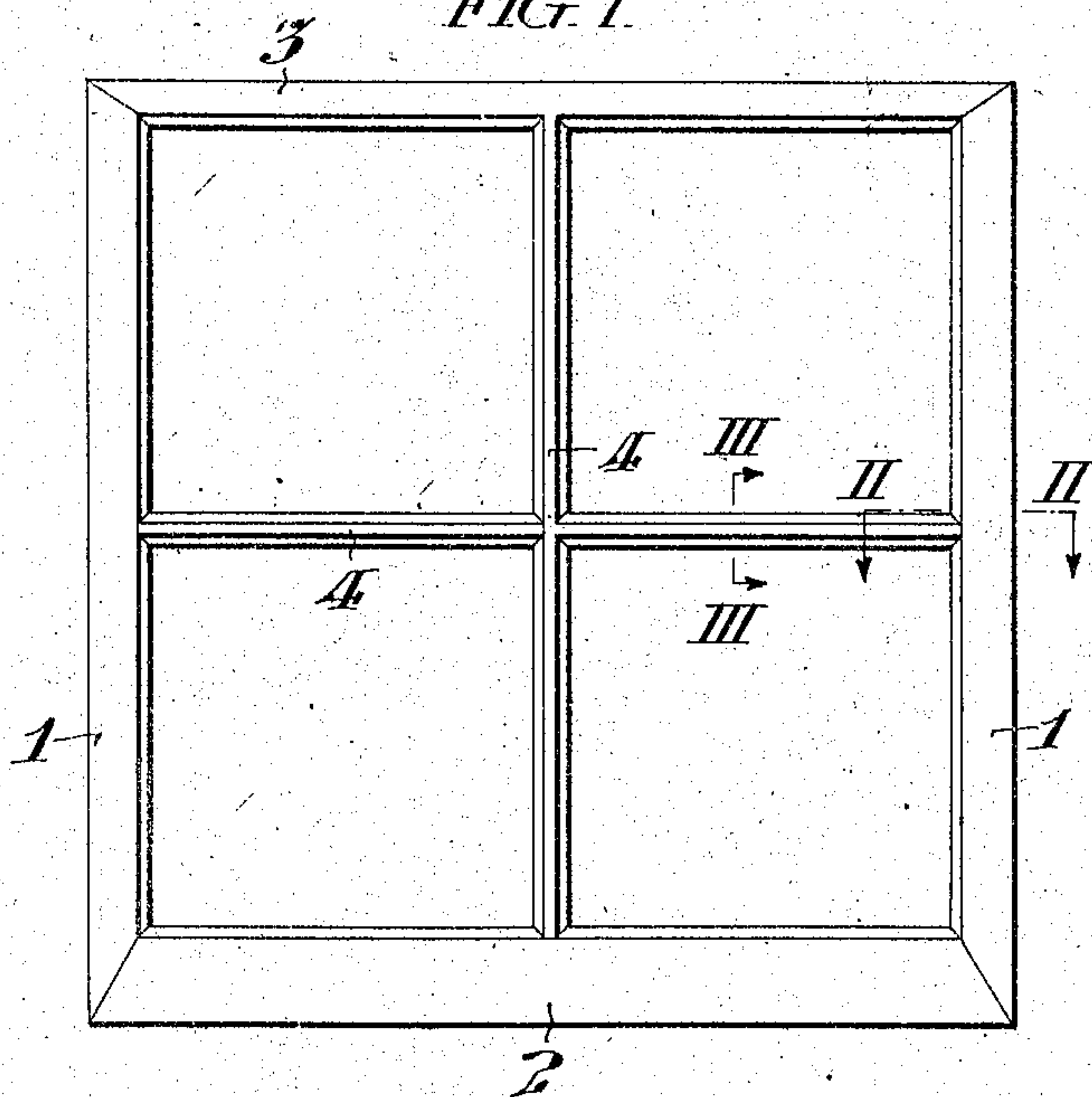


No. 815,769.

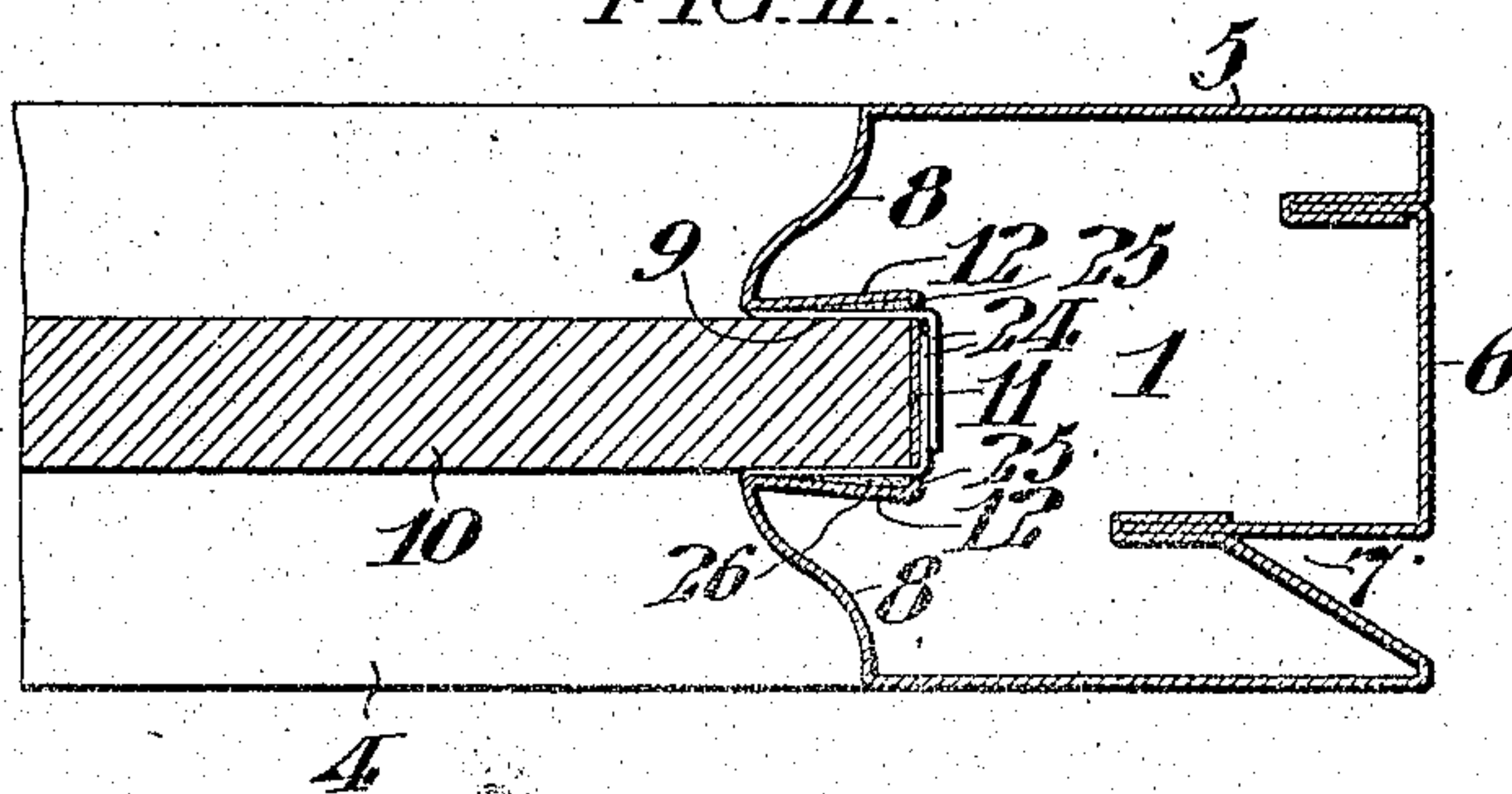
PATENTED MAR. 20, 1906.

J. W. WATKINS.  
SHEET METAL WINDOW SASH.  
APPLICATION FILED JUNE 14, 1904.

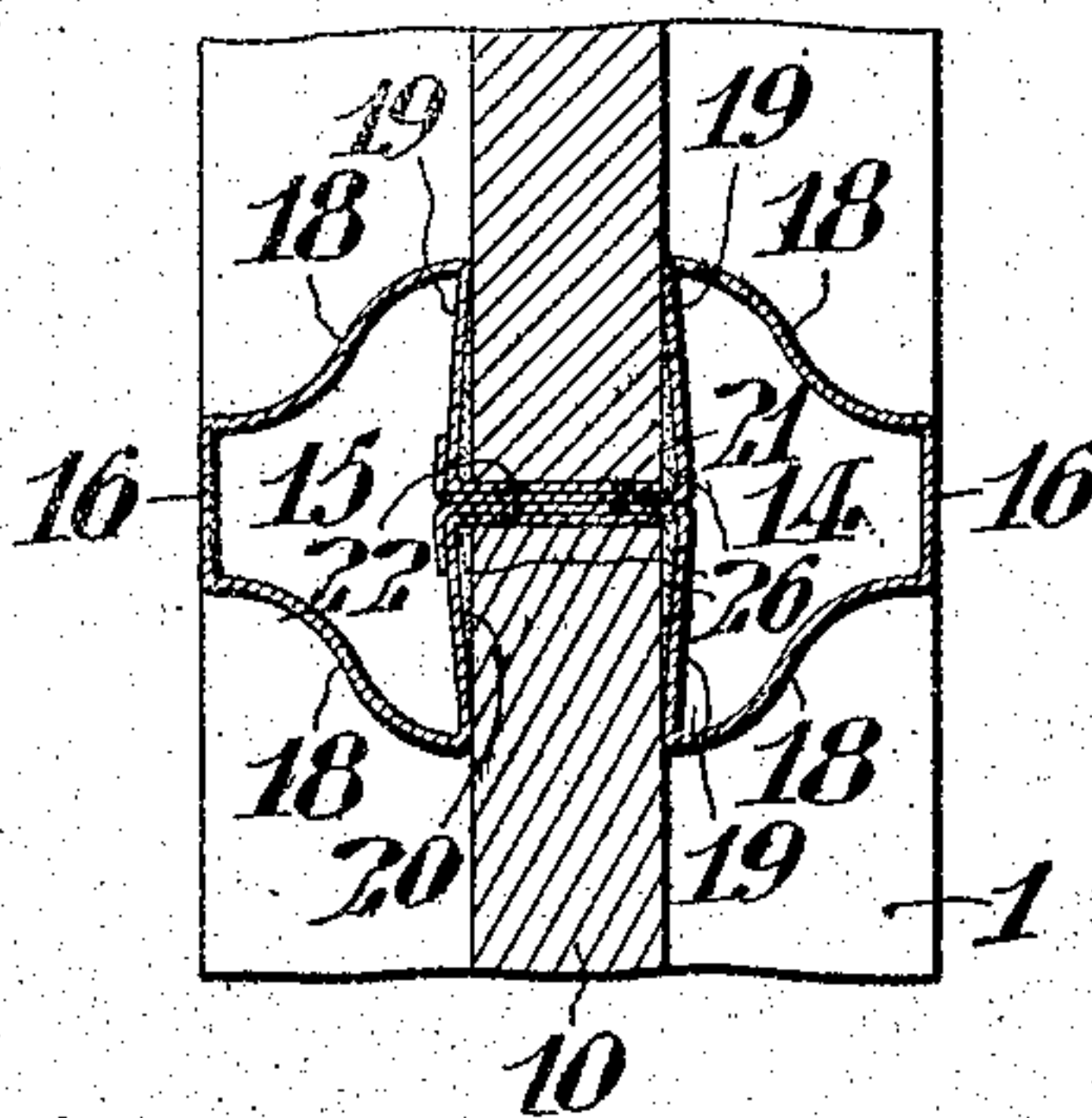
*FIG. 1.*



*FIG. II.*



*FIG. III*



**WITNESSES:**

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# UNITED STATES PATENT OFFICE.

JOHN W. WATKINS, OF PHILADELPHIA, PENNSYLVANIA.

## SHEET-METAL WINDOW-SASH.

No. 815,789.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed June 14, 1904. Serial No. 212,452.

*To all whom it may concern:*

Be it known that I, JOHN W. WATKINS, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Sheet-Metal Window-Sashes, of which the following is a specification, reference being had to the accompanying drawings.

I have shown my invention as applied to a window-sash composed wholly of sheet metal and provided with undercut grooves in the rails and muntin for the retention of the pane.

My invention relates to the method of forming and uniting the sheet-metal pieces for the formation of the muntin.

My invention comprehends such construction of the grooves and the adjoining facings of the muntin and rails that under the influence of heat the pane is subjected to an increased pressure or grip between the outer edges of the grooves, so that the greater the heat to which it is subjected the more tightly the pane is held in place.

My invention further comprehends a convenient method of uniting the muntin, whether horizontal or vertical, to the rails of the sash in such a way as to prevent the members from springing apart under influence of heat.

In the accompanying drawings, Figure I is an elevation of a sheet-metal sash embodying my improvements. Fig. II is a horizontal sectional view of the right-hand side rail, taken on the line II II in Fig. I. Fig. III is a vertical sectional view of the horizontal muntin, taken on the line III III in Fig. I.

In said figures, 1 1 are the side rails, 2 is the bottom rail, 3 is the meeting-rail, and 4 4 are the muntins. All of said sash members are formed by folding and interlocking pieces of sheet metal, only such details of construction being shown as are pertinent to my present invention.

The side rails 1 are each formed of two pieces of sheet metal 5 and 6. As shown in Fig. II, the piece 5 constitutes the plane sides, curved facing, and part of the back of the side rail, while the other piece 6, which is interfolded at its edges with the edges of said piece 5, completes the back of the rail. An angular recess 7 may be formed at one of the joints between the pieces 5 and 6 to receive a guide for the sash; but this has nothing to do with my present invention. The piece 5 forms the facing of the rail and for this purpose is curved to form two reverse or ogee

curves 8 8 and between these curves is formed the groove 9 for the pane of glass 10. Said groove 9 comprises a flat bottom wall 11 and undercut side walls 12 12. The width of the groove is such that its outer overhanging edges receive the pane 10 snugly between them, the only space left in the groove after the pane of glass is inserted being inclosed by said gripping edges and diverging therefrom to the bottom of the groove.

The muntins 4 of the sash are formed of two pieces 14 and 15, of sheet metal, bent as best shown in Fig. III. The opposite sides of said muntins are respectively formed of said pieces 14 and 15 and each comprises a plane wall 16, merging into two ogee-curved facing walls 18 and two overhanging side walls 19, forming the opposite grooves 20, having their bottom walls formed by the centrally-interlocked flanges 21 and 22 in the respective pieces 14 and 15, the extremities of the former being bent out so as to clench the latter.

As shown in Fig. II, the muntin 4 is engaged with the rail 1 by projecting flaps 24, which being formed at the end of the muntin extend in the groove 9 of the rail 1 through slots 25 cut in the bottom wall of said groove and are clenched within the rail 1, as shown. When the panes 10 are inserted in their grooves, a suitable cement 26 is run in liquid form into the base of the grooves and allowed to harden within the spaces inclosed by the gripping edges of the grooves. For this purpose I prefer to use a fireproof cement comprising sodium silicate. Such cement may include other fire-resisting ingredients, such as asbestos.

Upon the occurrence of a fire in the room fitted with a sash constructed in accordance with my invention the heat does not directly affect the cement by which the glass is held in place, because of the fact that the edges of the grooves press tightly against the surface of the glass. Consequently the cement is not as easily melted as if the spaces for it were exposed as in devices of the prior art. When subjected to intense heat, the curved facing walls 8 and 18 tend to straighten themselves out, as do all curved pieces of sheet metal under similar circumstances, and the straightening of these walls under the influence of heat occasions pressure between the edges of the grooves, thus tightening the grip of the edges of said grooves upon the glass, so that



when very hot the panes 10 instead of tending to fall out are more tightly held within their grooves.

It is to be understood that I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim—

1. In a sheet-metal window-sash, a muntin comprising two bent and interlocked pieces of sheet metal, one piece of sheet metal forming all of the muntin upon one side of the pane-grooves and another piece forming all of the muntin on the other side of the pane-grooves, and the two being interlocked by the clenching of the portions which project between the panes, to form the bottoms of the grooves, substantially as set forth.

2. In a sheet-metal window-sash a member comprising a pane-groove having undercut straight sides and ogee-curved surfaces outwardly adjacent to said straight sides of the groove, whereby upon the straightening of said surfaces under the influence of heat, the grip of the edges of the groove upon the pane is increased, substantially as set forth.

3. In a sheet-metal window-sash a muntin having pane-grooves comprising flat bottoms and undercut straight sides spaced to snugly embrace a pane of glass; an ogee-curved surface upon the muntin outwardly adjacent to the sides of the grooves whereby upon the straightening of said surface under the influence of heat the grip of the edges of the groove upon the pane is increased, substantially as set forth.

4. In a sheet-metal window-sash, the combination of a muntin provided at the rail-abutting end with vertical projecting flaps formed by extension of the side walls of the grooves of the muntin; and a rail provided with vertical companion slots at both interior corners of the pane-groove for the reception of the flaps projecting from the muntin; whereby the muntin may be united to the rail by the clenching of the flaps within the rail, substantially as set forth.

In testimony whereof I have hereunto signed my name, at Philadelphia, Pennsylvania, this 13th day of June, 1904.

JOHN W. WATKINS.

Witnesses:

JAMES H. BELL,  
E. L. FULLERTON.