

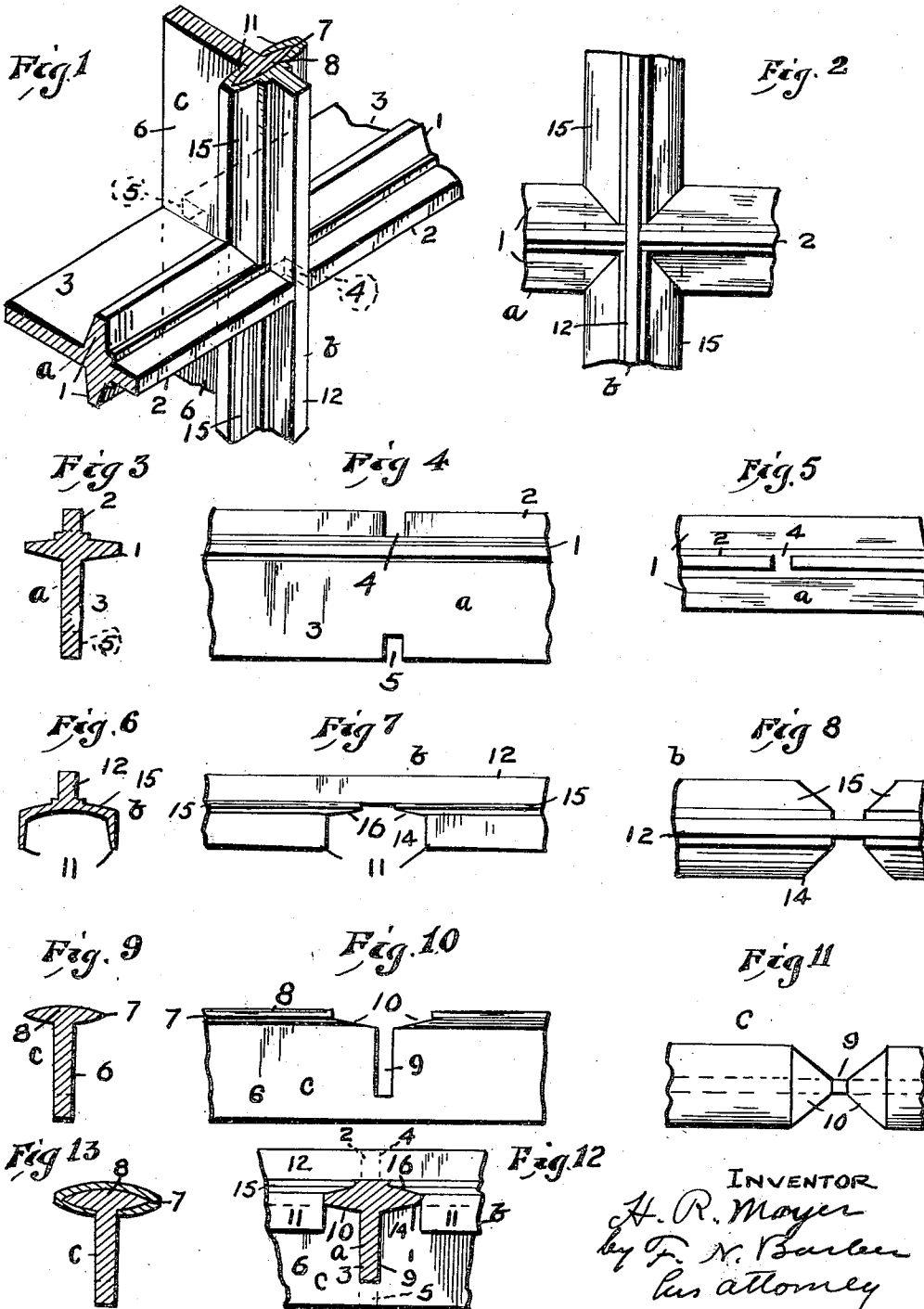
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SASH.

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HARRY R. MOYER, OF THORNBURG, PENNSYLVANIA.

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To all whom it may concern:

Be it known that I, HARRY R. MOYER, a citizen of the United States, residing at Thornburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Sashes, of which the following is a specification.

My invention relates to improvements in sashes, and more particularly to the construction of mullion bars and the joints at their mutual crossing, though some of the features of the mullion bars may be used in the construction of stiles, the end and side bars, and other parts of windows. The principal object of this invention is to construct mullion bars of the fewest possible numbers of simple shapes, which can be easily rolled from metal bars by simple operations, which can after rolling be stamped each by a single operation, and which can be easily assembled, and then locked together by a simple bending operation. Heretofore it has not been feasible to roll all the sashes required for making windows having mullion bars which, when they are assembled and have their joints concealed, resemble those I illustrate. The reasons for this will be understood better in connection with the description of the drawings hereinafter.

Referring to the accompanying drawing, Fig. 1 is a perspective of two crossed mullion bars made in accordance with the present invention, parts being broken away; Fig. 2, side elevation of Fig. 1; Fig. 3, a transverse section of my improved integral mullion; Fig. 4, a side elevation of Fig. 3, the ends being broken off; Fig. 5, a top plan view of Fig. 4; Fig. 6, a transverse section of the channel member of my improved composite mullion; Fig. 7, a side elevation of Fig. 6, the ends being broken off; Fig. 8, a top plan view of Fig. 7; Fig. 9, a transverse section of the headed or T-member of the said composite mullion; Fig. 10, a side elevation of Fig. 9, the ends being broken off; Fig. 11, a top plan view of Fig. 10; Fig. 12, a section of the bar "a" at its crossing with the bar "c", the bar "b" being shown in side elevation and its planes 11 in their assembled positions; and Fig. 13 a section of a modification.

I employ a preferably integral mullion "a" in combination with a composite mullion comprising the channel member of bar

"b" and the headed or T-member or bar "c," which are fitted together to form a crossing, as shown in Figs. 1 and 2.

The mullion bar "a" is in general cross-shaped, having the two lateral oppositely extending flanges 1 which constitute glass ledges, and the two oppositely extending webs 2 and 3 arranged on opposite sides of the flanges and at right angles therewith. The bar "a" is rolled from hot steel bars by rolls so shaped as to make the webs 2 and 3 of unequal width, the former being considerably the shorter. At the point where the mullions are to cross each other, I cut the open notch 4 in the web 2 and the open notch 5 in the web 3, the notches being directly opposite each other.

The bar "c" has the web 6 corresponding in width and thickness to the width and thickness of the web 3, and has at one edge the flanges 7, constituting the head 8 extending laterally both sides of the web 6. In the edge of the bar "c" containing the head and at the point where the mullions are to cross, I make a transverse slot or notch 9 as wide as the web 3 is thick and as deep as the distance from the ledges 1 to the base of the notch 5, leaving in the web 6 between the base of the slot 9 and the adjacent edge of the web 6 a depth of metal equal to the depth of the notch 5. The head 8 has its outer face beveled inwardly at both sides of the slot 9 to form seats 10 for the flanges or ledges 1, when the web 3 is in the slot 9 and the web 6 is in the notch 5.

The bar "b" is a channel having the flanges 11 originally parallel and extending in the same direction from each side of the bar. The web 12 extends along the central longitudinal line of the bar "b" and at the side thereof opposite the flanges 11. The thickness of the web 12 equals the width of the notch 4 and the width or depth of the said web equals the depth of the said notch. At the point where the bar "b" is to cross the bar "a" the flanges 11 are cut away transversely as shown at 14 for a distance equalling the distance between the outer edges of the flanges 1. The base member 15 of the bar "b" is cut away at the crossing point to form seats 16 for those faces of the flanges 11 which face the web 2.

The bar "a" is placed in the slot 9 with the notch 5 embracing the bar "c" below the slot 9, the faces of the flanges 11 which the

web 3 lying on the seats 10 in the head 8. The bar "b" is placed parallel with the bar "c" with the spaces 14 in the flanges 11 embracing the edges of the flanges 1, and with the web 12 in the notch 4, and with the seats 16 engaging the faces of the flanges 1 which face the web 2. The flanges 11 are then bent to engage the faces of the flanges 7 or the head 8 facing the web 6, whereby the three bars a, b, c, are firmly bound into a strong unyielding structure. The folded edges of the flanges 11 form ledges flush with corresponding ledges on the flanges 1 against which panes of glass or the like may be laid, so that when putty is applied it will cover the edges of the flanges 11 and prevent moisture getting past them.

There is no particular difficulty encountered in rolling the mullion "a" for it can be rolled between rolls having matched peripheral grooves corresponding to the flanges 1 nor is any difficulty met in rolling the bar "c" for the same reason. The bar "b" can be readily rolled between rolls which on one side of the pass have two grooves for the flanges 11, and on the other side one groove for the web 12. All these operations are rendered easy because the flanges 1, 7 and 11 and the web 12 are each of small depth or width, so that the metal of the blank being rolled can gather and flow to the bases of the grooves in the rolls. If the base member 15 with its flanges 11 is to be formed with the wide web 6, the latter would prevent the bar from being rolled. It could obviously not be rolled with the axes of the rolls parallel with the web and flanges, nor could it be rolled with the axes of the rolls transversely of the web, because the metal in the blank could not be gathered and made to flow to the depth of a groove having the width of the web 6; at least, the difficulty would be very great compared with that required to roll the bar "b" which has the web 12 of quite small depth.

The flanges or ledges 1 are not cut away to provide for a crossing, so that only a single stamping operation is required, and that to form the notches 4 and 5. The bar "b" can after rolling be prepared for a crossing by a single stamping operation which removes all of the cross-section except the web 12. The bar "c" can also be stamped at a single operation. The stamping of each of the bars by a single step is a great advantage over other bars known to me for forming windows having external appearances resembling mine.

In Fig. 13, I show a modification in which the web 12 is omitted and the base 15 is not slotted.

I claim:—

1. In a metal sash, a mullion having oppositely-extending webs and continuous lateral glass ledges integral with the webs, the webs

having opposite notches in their edges, a second mullion crossing the first mullion and composed of two bars, one bar comprising a web continuous at one edge which is seated in one notch and carrying lateral flanges at the other edge, the said bar having a transverse slot open in the latter edge to receive one web of the first mullion and the said lateral flanges being cut away to form seats for the said ledges the other bar comprising a channel having a central web on the side opposite the flanges of the channel, the flanges being cut away to pass the said glass ledges, the base of the channel being cut away to form seats for the said ledges, the web being seated in the remaining notch in the first mullion, and the said flanges being bent beneath the said ledges.

2. In a metal sash, a mullion with continuous oppositely-extending glass ledges and oppositely-extending webs integral with the ledges and having opposite notches in their edges, and a second mullion crossing the first mullion and composed of two bars, having each one edge continuous and fitting in the notches of the first mullion and having each at the other edge an opening receiving one web and both ledges of the first mullion.

3. In a metal sash, a mullion with continuous oppositely-extending glass ledges and oppositely-extending webs integral with the ledges and having opposite notches in their edges, and a second mullion crossing the first mullion and composed of two bars having each one edge continuous and fitting in the notches of the first mullion and having each at the other edge an opening receiving that portion of the cross-section of the first mullion which lies between its said notches.

4. In a metal sash, a mullion having oppositely extending webs and continuous lateral glass ledges integral with the webs, the webs having open opposite notches in their edges, and a second mullion having corresponding webs and glass ledges and crossing the first mullion, the second mullion being composed of two members having their webs in said notches and having openings to receive the glass ledges of the first mullion.

5. In a metal sash, a cross-shaped mullion having opposite members continuous and forming glass ledges and the remaining member forming webs with notches in their edges, and a second correspondingly-shaped mullion crossing the first mullion and composed of two members, one being a channel with a web in one of the notches and the other comprising a headed web with the web in the remaining notch and the head in the channel, the flanges of the channel being bent beneath the head.

6. In a metal sash, a cross-shaped mullion having opposite members continuous and forming glass ledges and the remaining member forming webs with notches in their

edges, and a second correspondingly-shaped mullion crossing the first mullion and composed of two members, notched to complement the notches in the first member and
5 parts being cut away from the second mullion to receive the glass ledges of the first mullion.

7. In a metal sash, a mullion composed of two bars, one bar being a channel with a
10 narrow web arranged longitudinally thereof and on the opposite side thereof from the flanges of the channel, and the other bar being a headed bar with a wide web, the head fitting the channel and the flanges
15 of the latter being bent down on the outer surface of the head, the web of the first bar being sufficiently narrow to permit the bar to be rolled from a bent blank.

8. In a metal sash, a mullion composed of two bars, one bar being a channel with its
20 flanges at its opposite edges and with a narrow web arranged longitudinally thereof and on the opposite side thereof from the flanges of the channel, and the other bar being a headed bar with a wide web, the head
25 fitting the channel and the flanges of the latter being bent down on the outer surface of the head, the web of the first bar being sufficiently narrow to permit the bar to be
30 rolled from a bent blank.

Signed at Pittsburgh, Pa., this 4th day of March, A. D. 1921.

HARRY R. MOYER.