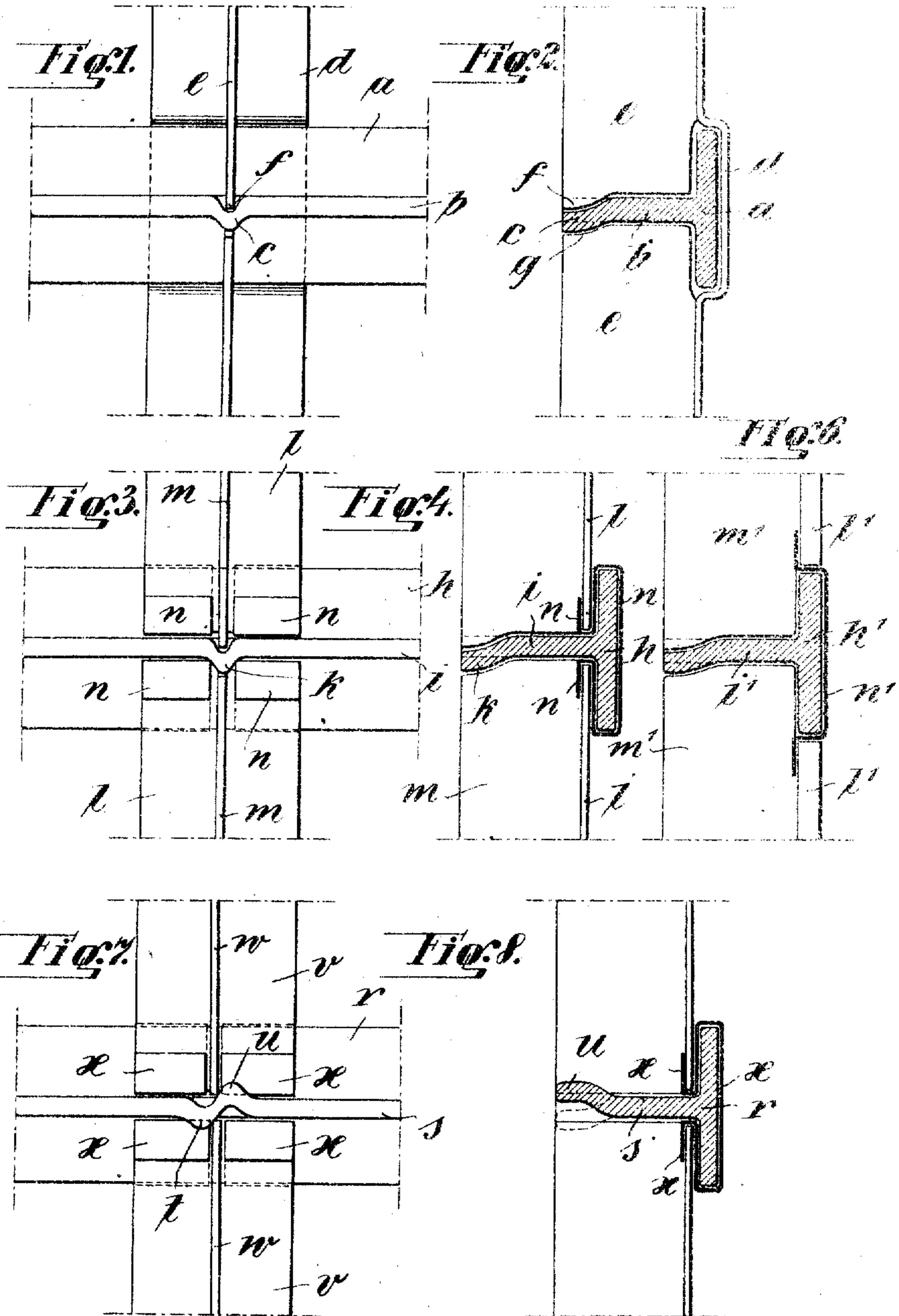


A. WINDEKNECHT.
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 APPLICATION FILED MAR. 30, 1909.

920,707.

Patented May 4, 1909.
 2 SHEETS—SHEET 1.



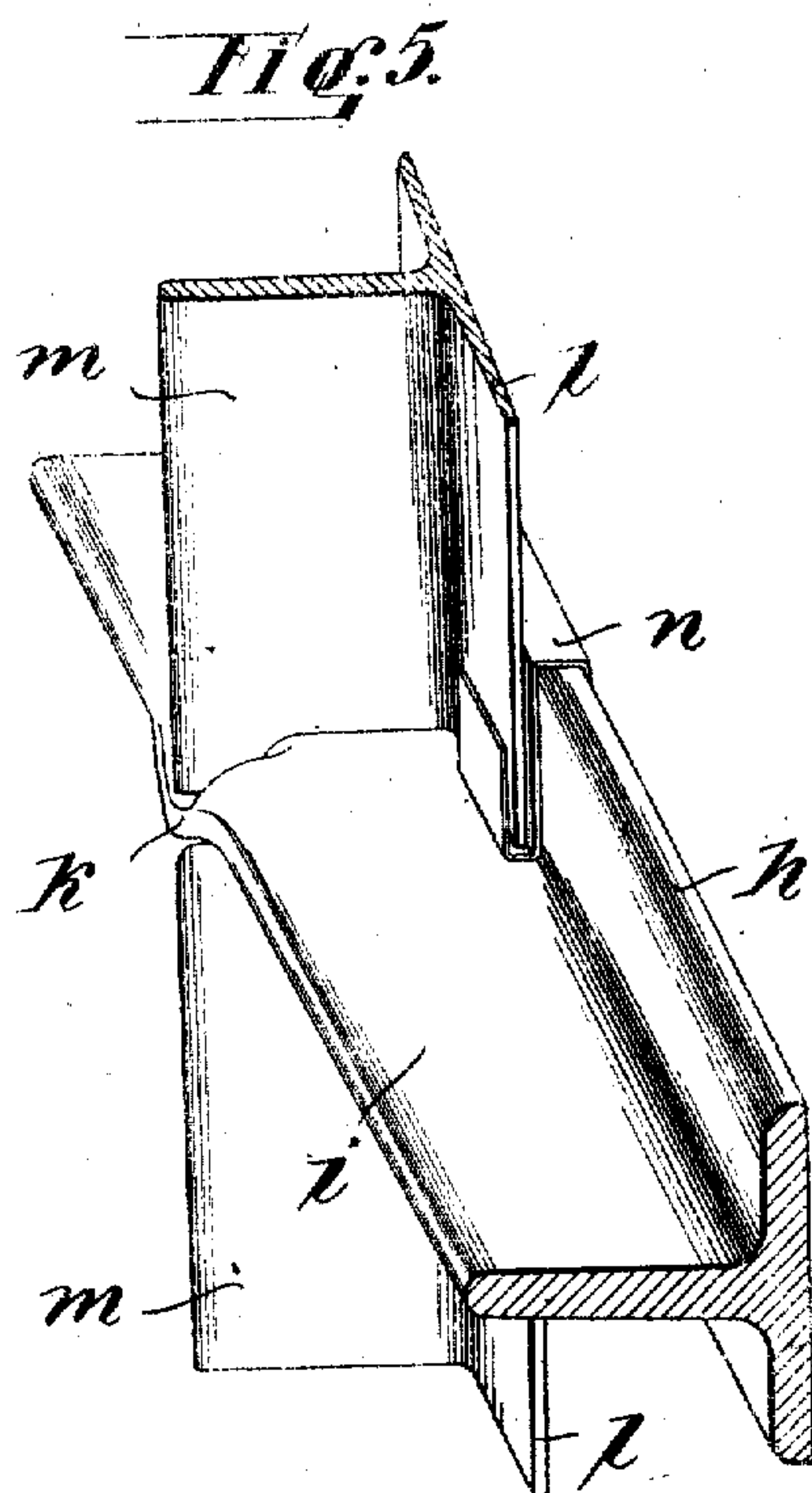
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UNITED STATES PATENT OFFICE.

AUGUST WINDEKNECHT, OF CHARLOTTENBURG, GERMANY.

JOINT FOR CROSSING BARS, PARTICULARLY IN WINDOW-SASHES.

No. 920,707.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed March 30, 1909. Serial No. 486,742.

To all whom it may concern:

Be it known that I, AUGUST WINDEKNECHT, civil engineer, of Charlottenburg, Germany, (whose post-office address is 44 Goethestrasse, Charlottenburg, Germany,) have invented certain new and useful Improvements in Joints for Crossing Bars, Particularly in Window-Sashes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in window sashes made up of upright and horizontal bars of metal. And the object of the improvements is to provide a sash which will be adapted to withstand the heavy strain exerted on the same by the pressure of the wind on the window. For this purpose, the upright and transverse bars which are designed to take up the pressure of the wind are weakened as little as possible by their connections with the crossing bars.

A further object of the improvements is to provide a sash in which the cross bars are so secured to the continuous supporting bars, that they can not be displaced thereon.

The joint between the upright and transverse bars is made in such a way, that the construction of the sash requires but a minimum of time, whereby the cost of the sash is considerably reduced.

With these objects in view, my invention consists in forming the supporting bars of the sash with bulges of U- or V-shaped form which do not in any way weaken the bars, but which are adapted to securely hold the cross bars against lateral displacement. As the supporting bars of the sash do not show any cut or notch at the joints of the sash, it will readily be understood, that a particularly strong sash is produced. The cross bars are made with slots into which the supporting bars are inserted, and which correspond to the bulged portions of the supporting bars. Thereby the bulged portions of the latter prevent the cross bars from being displaced laterally, and the cost of the construction is reduced to a minimum.

While in the following my invention has been described with reference to sashes which are made up of bars of T-shaped construction, I do not limit myself to the use of bars having the cross-section described.

For the purpose of explaining the invention, I have shown several examples em-

bodimenting the same in the accompanying drawings, in which the same letters of reference have been used in all the views to indicate corresponding parts.

In said drawings—Figure 1, is a front view of a joint of a sash constructed according to my invention, Fig. 2, is a cross-section of Fig. 1, Fig. 3, is a front view showing a modification of the joint illustrated in Fig. 1, Fig. 4, is a cross-section of Fig. 3, Fig. 5, is a perspective view of the joint shown in Figs. 3 and 4, Fig. 6, is a modification of the joint similar to the example shown in Figs. 3 to 5, in which both cross-bars are of the same cross-section, and Figs. 7 and 8 are respectively a plan and a cross-section of a further modification of the joint.

Referring to the example shown in Figs. 1 and 2, the upright and transverse bars of the sash are made in the form of a T-iron. The supporting bar consists of the flange portion *a* and the web portion *b*. The latter is formed near its margin with a V- or U-shaped bulged portion *c* which extends from the margin of the web and over a small part of the latter downward. The supported bar comprising the flange portion *d* and the web portion *e* is made with a notch fitting to the cross-section of the bar *a b* at its bulged portion *c*. Therefore, the upper part of the web of said bar (as appears in the drawing) shows a nose *f* and the lower one a notch *g*. The upper and lower parts of the supported bar are connected by their flange *d* surrounding the flange *a* of the supporting bar, for which purpose the flange *d* is bulged outward, as shown in the figure.

For the purpose of constructing the sash from the bars described, the nose *f* is first bent out of the plane of the web *e*, whereupon the bar *a b* is passed through the notch of the bar *d e*, until the bulged portion *c* is adjacent to the nose *f*. Now the latter is again forced into the plane of the web *e* by means of a hammer or another suitable tool, so that it engages the notch provided by the bulge of the web. Now a lateral displacement of the bar *d e* on the bar *a b* is impossible.

In the example shown in Figs. 3 to 5, the web *i* of the supporting bar *h i* is bulged in the same way as in the example shown in Figs. 1 and 2. However, the supported bar *l m*, which has a smaller cross-section than the bar *h i*, is made of independent sections bearing with their end faces against the web *i* and with their flanges on

the flanges of the supporting bar *h i*. The web ends of the supported bar are cut in a similar way as the slot made in the web of the corresponding bar shown in Figs. 1 and 2, that is to say, one of them shows a nose and the other one a notch corresponding to the cross-section of the supporting bar at its joint with the supported bar. The sections of the supported bar are connected with each other by means of a strip of sheet metal *n* bent around the flange *h* and over the ends of the flanges *l*.

The modification shown in Fig. 6 differs from the example just described in this respect, that the cross section of the supported bar *m'* is the same as that of the supporting bar *i'* and that the end faces of the two sections of the supported bar are so formed that their flanges *l'* are in the same plane with the flanges *h'* of the supporting bar, the two sections of the supported bar being connected by the strip of sheet metal *n'*.

In the example shown in Figs. 7 and 8, the web of the supporting bar *r s* is made with two adjacent V-shaped bulges *t* and *u* one of which is directed downward (as appears in the figures) and the other one upward. The supported bar is made with a straight slot having no nose or notch. The webs *w* bear against the bulged portions *t* and *u* from the right and left respectively, and the joint is made by means of a strip *x* of sheet metal in combination with the said bulged portions.

In windows made up of sashes constructed as herein described, the bulged portions and other projecting parts of the joints are perfectly covered by putty.

I claim—

1. A joint for crossing bars comprising a supporting bar having its web deflected to form a bulged portion, and a supported bar having a two-part web extending in opposite

directions from the supporting bar at the bulge, the two sections of the web being connected at their bases, the bulged portion of the supporting bar constituting an abutment to prevent lateral shifting of one bar with respect to the other.

2. In a joint for crossing bars, the combination with a supporting bar having its web deflected to form a bulged portion, of a supported bar having a two-part web abutting against opposite sides of the supporting bar and having the abutting web ends fitted to the cross section of the supporting bar at the bulged portion, said webs being connected to each other.

3. A joint for crossing bars comprising a supporting bar having a bulged portion, a supported bar having a two-part web extending in opposite directions from the supporting bar at the bulge, and a separate sheet metal connection joining the two sections of the web at their bases, the bulged portion of the supporting bar constituting an abutment to prevent lateral shifting of one bar with respect to the other.

4. In a joint for crossing bars, the combination with a T-shaped supporting bar having a bulged portion in its web, of a supported bar having a two-part web abutting against opposite sides of the supporting bar and having the abutting web ends fitted to the cross section of the supporting bar at the bulged portion, and a separate sheet metal connection spanning the web of the supporting bar and uniting the two parts of the supported bar to each other.

In testimony whereof I affix my signature, in presence of two witnesses.

AUGUST WINDEKNECHT.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.