

J. KAHN & T. H. KANE.
WINDOW FRAME.
APPLICATION FILED APR. 21, 1909.

933,908.

Patented Sept. 14, 1909.
2 SHEETS—SHEET 1.

Fig. 1.

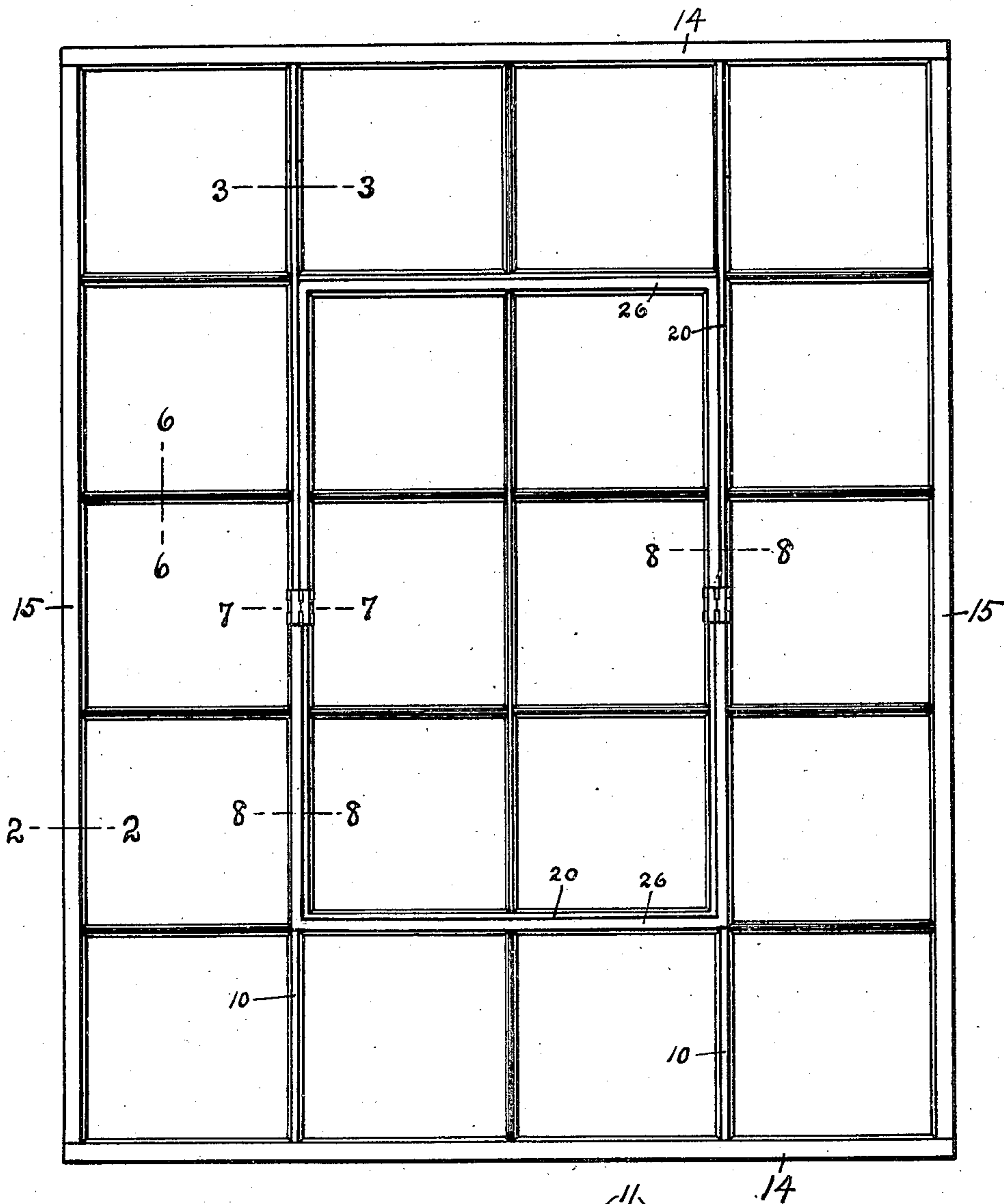
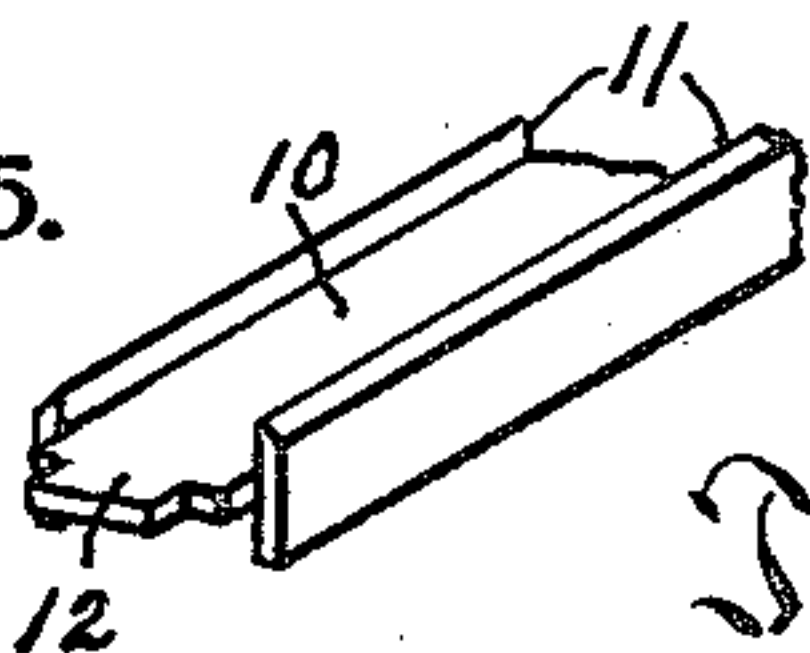


Fig. 15.



Witnesses:

J. H. Ferrault
E. M. Brown

Inventors.

J. H. Kane & J. Kahn
By *Edward N. Pagelsen*
Attorney.

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2 SHEETS—SHEET 2.

Fig. 2.

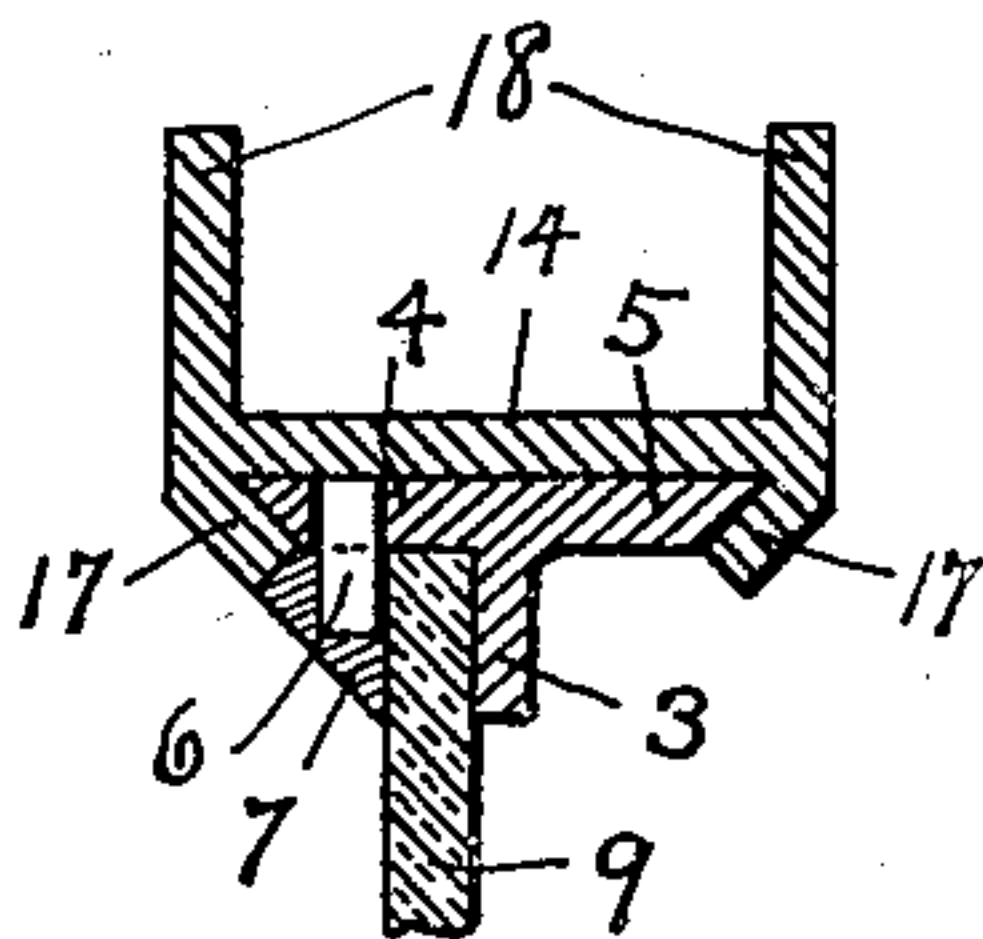


Fig. 3.

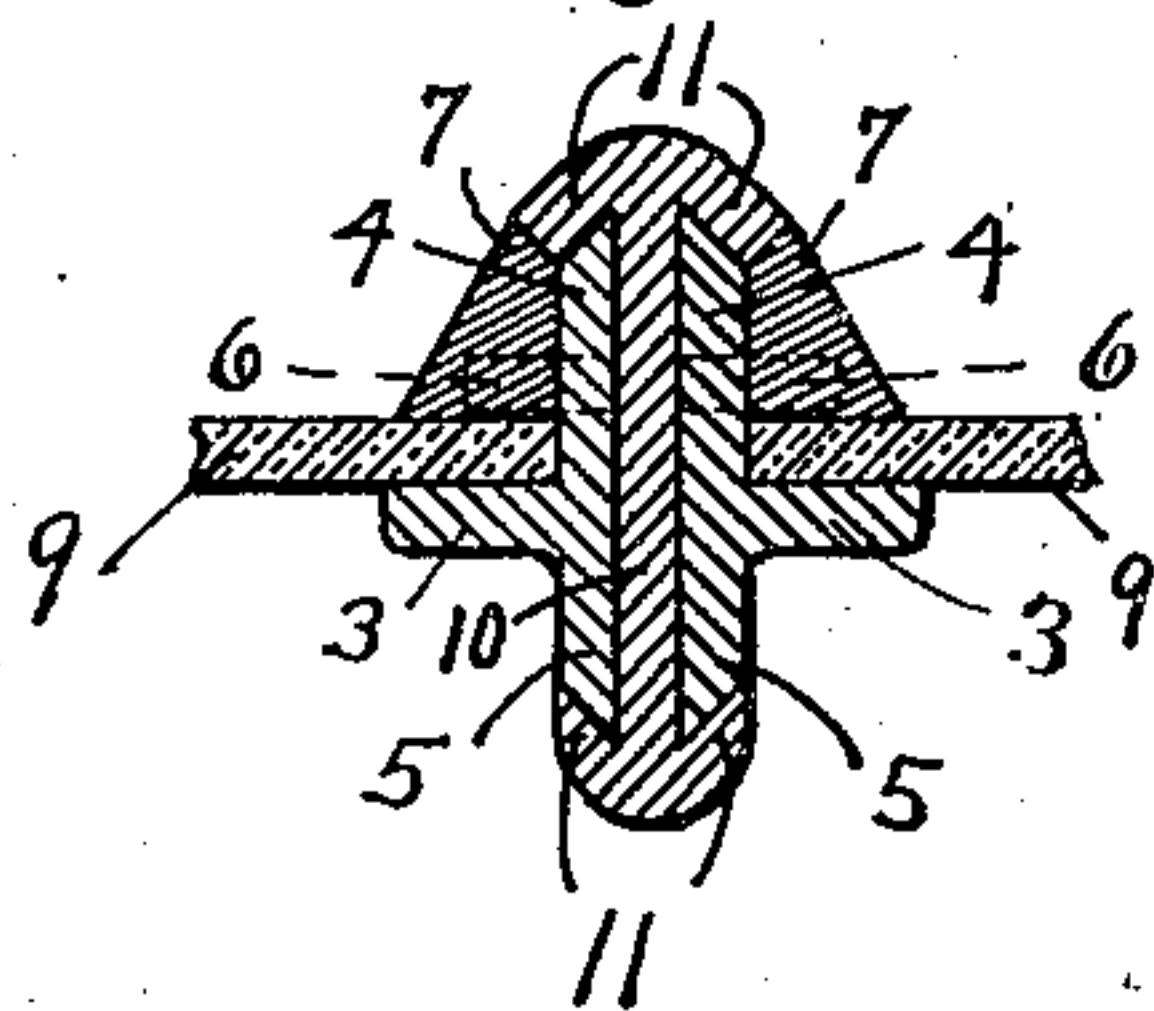


Fig. 4.

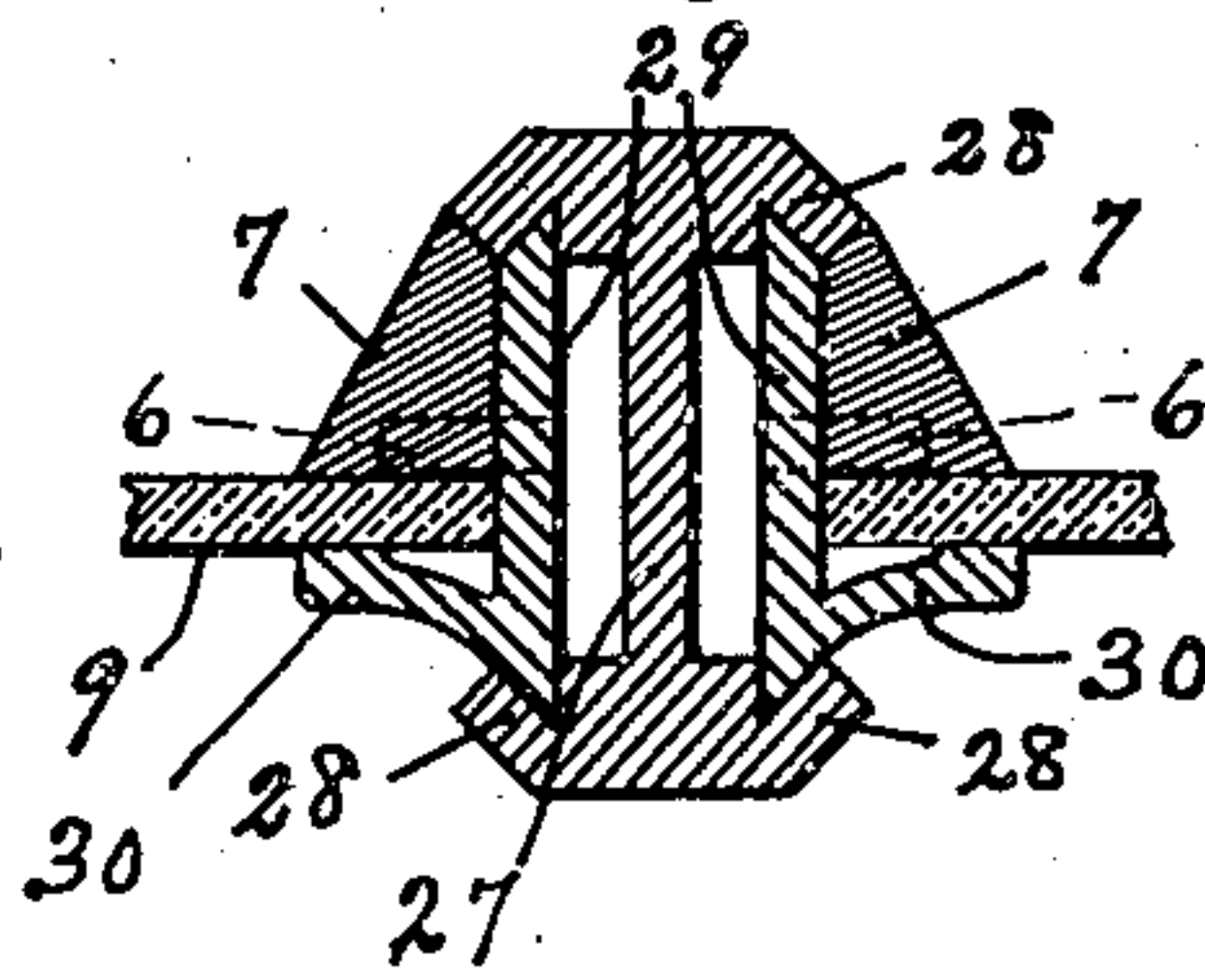


Fig. 5.

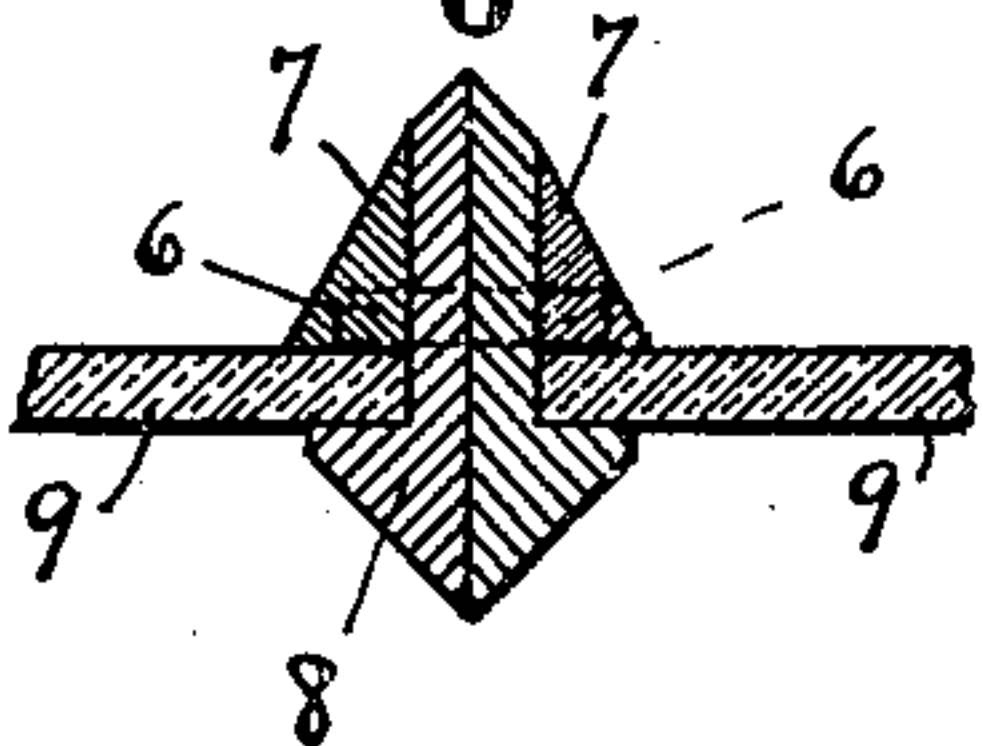


Fig. 6.

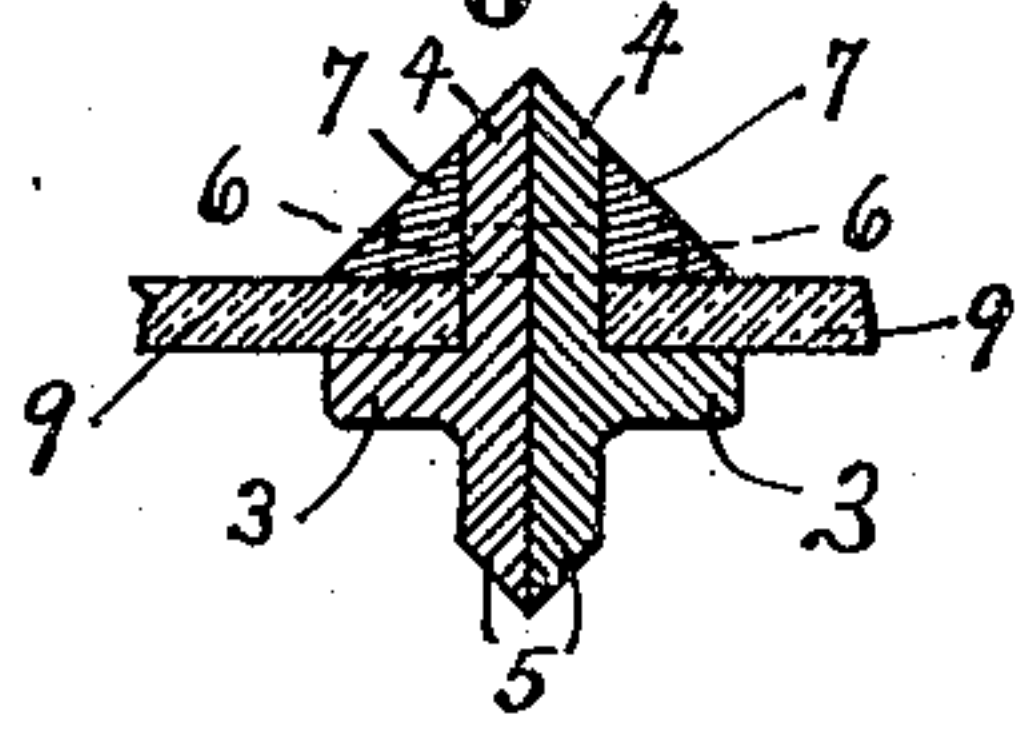


Fig. 7.

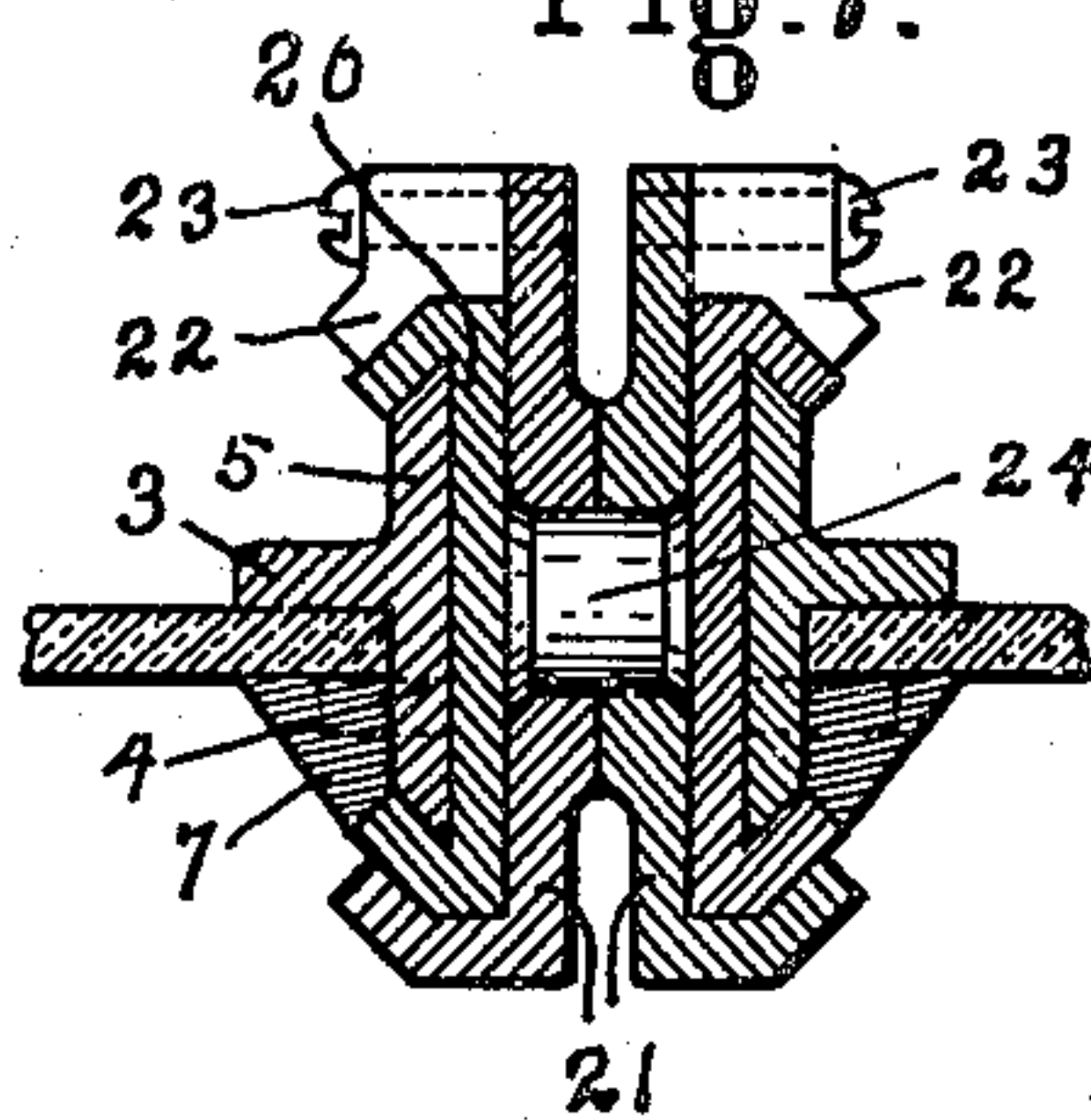


Fig. 10.



Fig. 11.

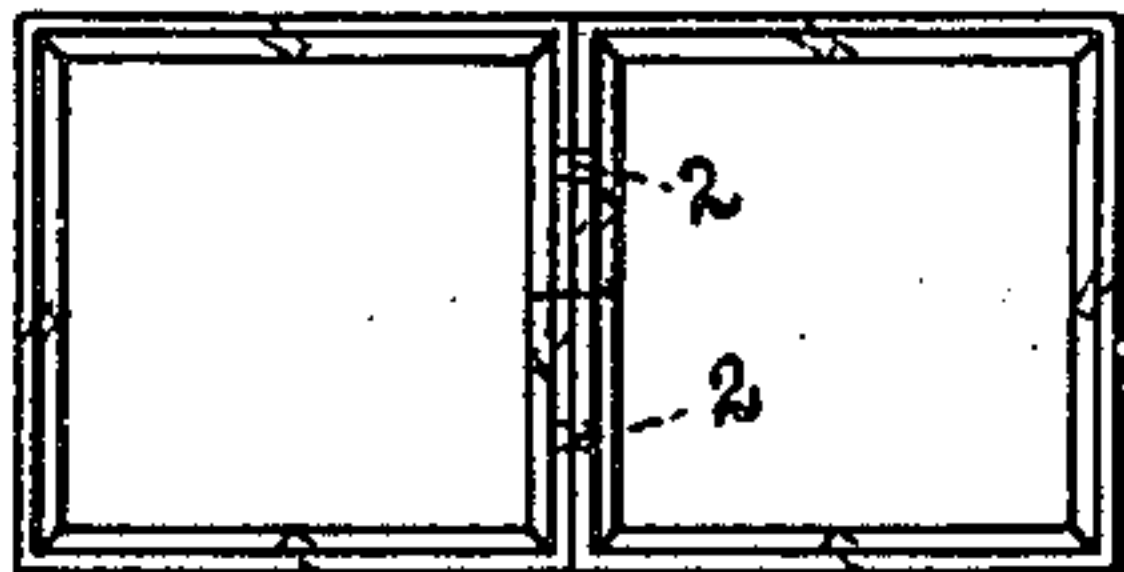


Fig. 12.

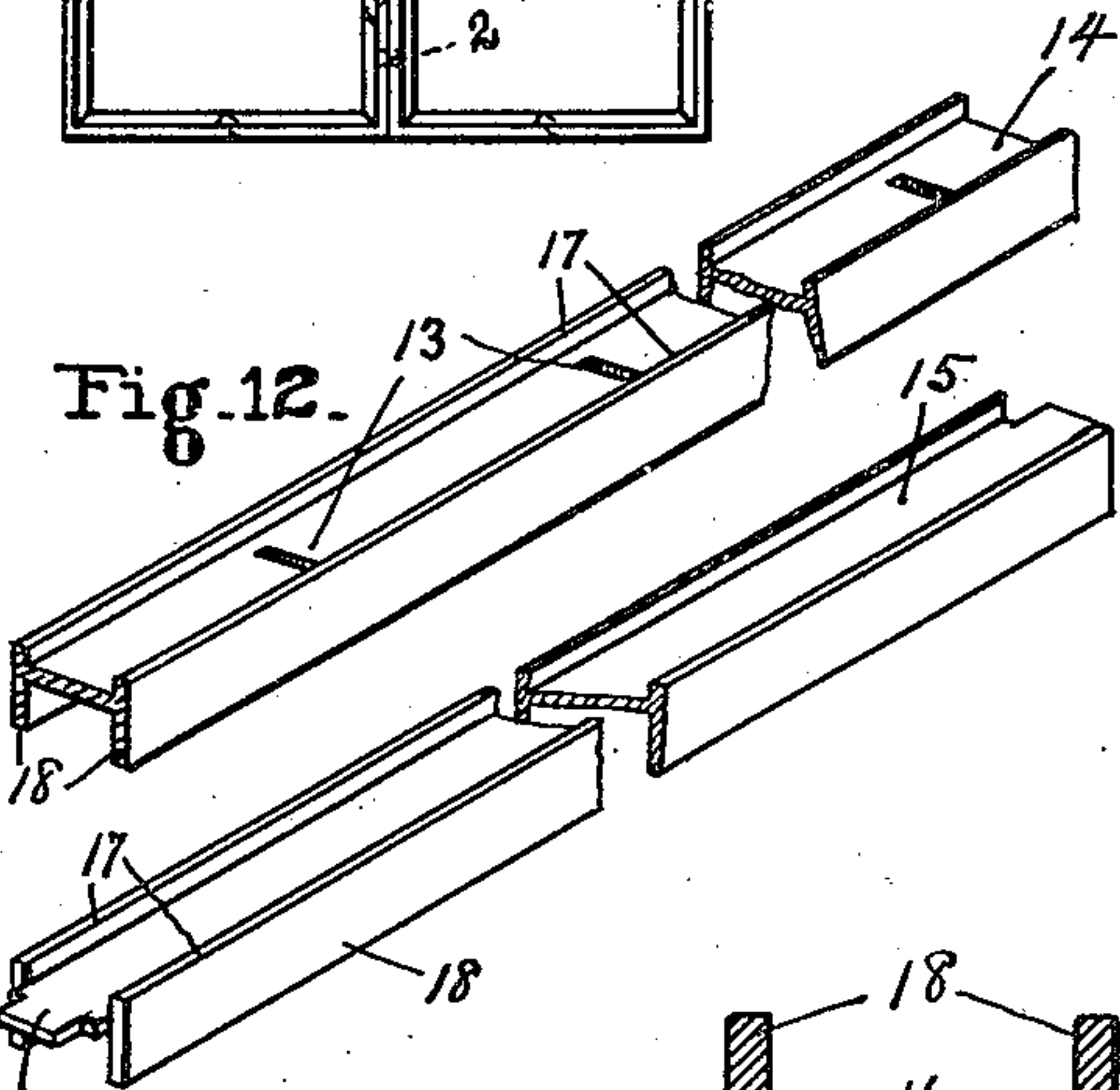


Fig. 13.

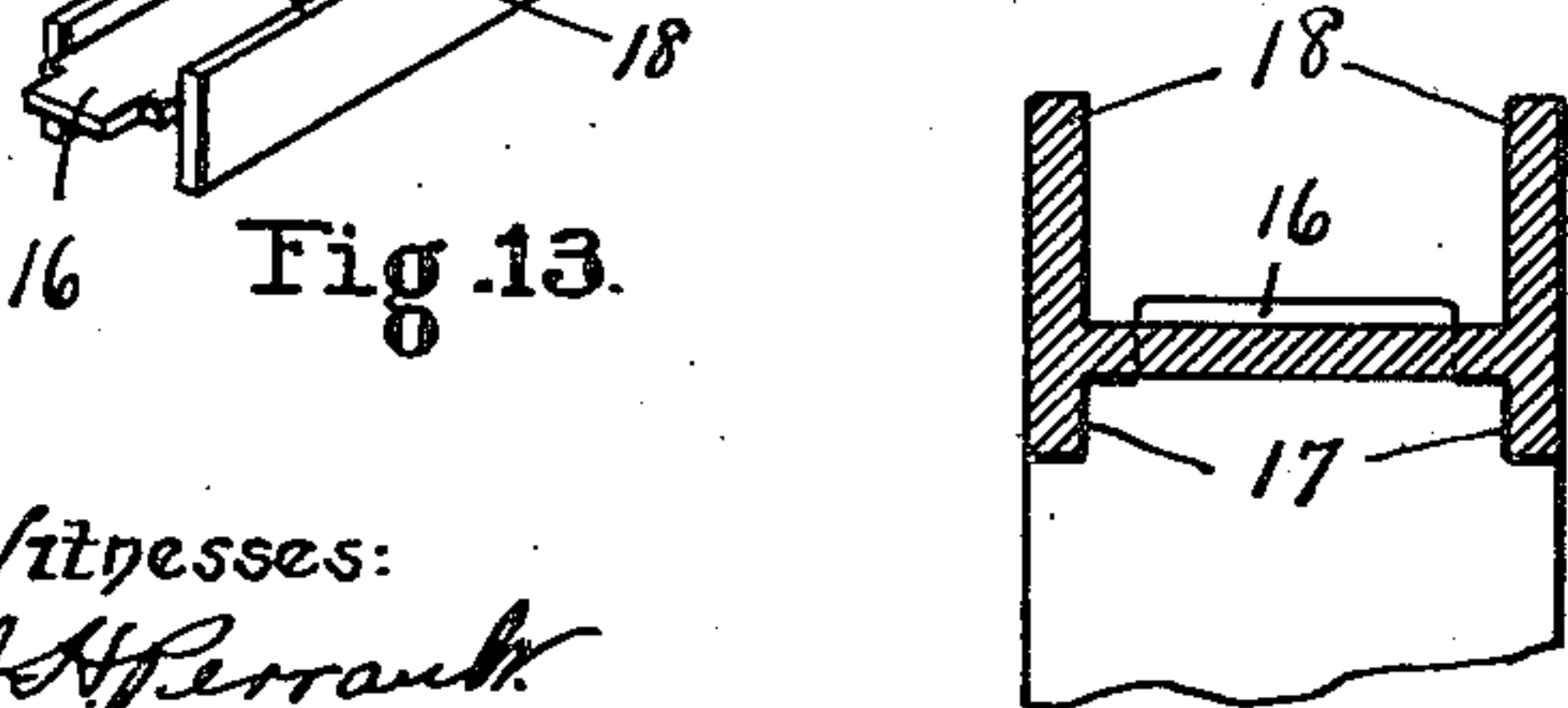


Fig. 8.

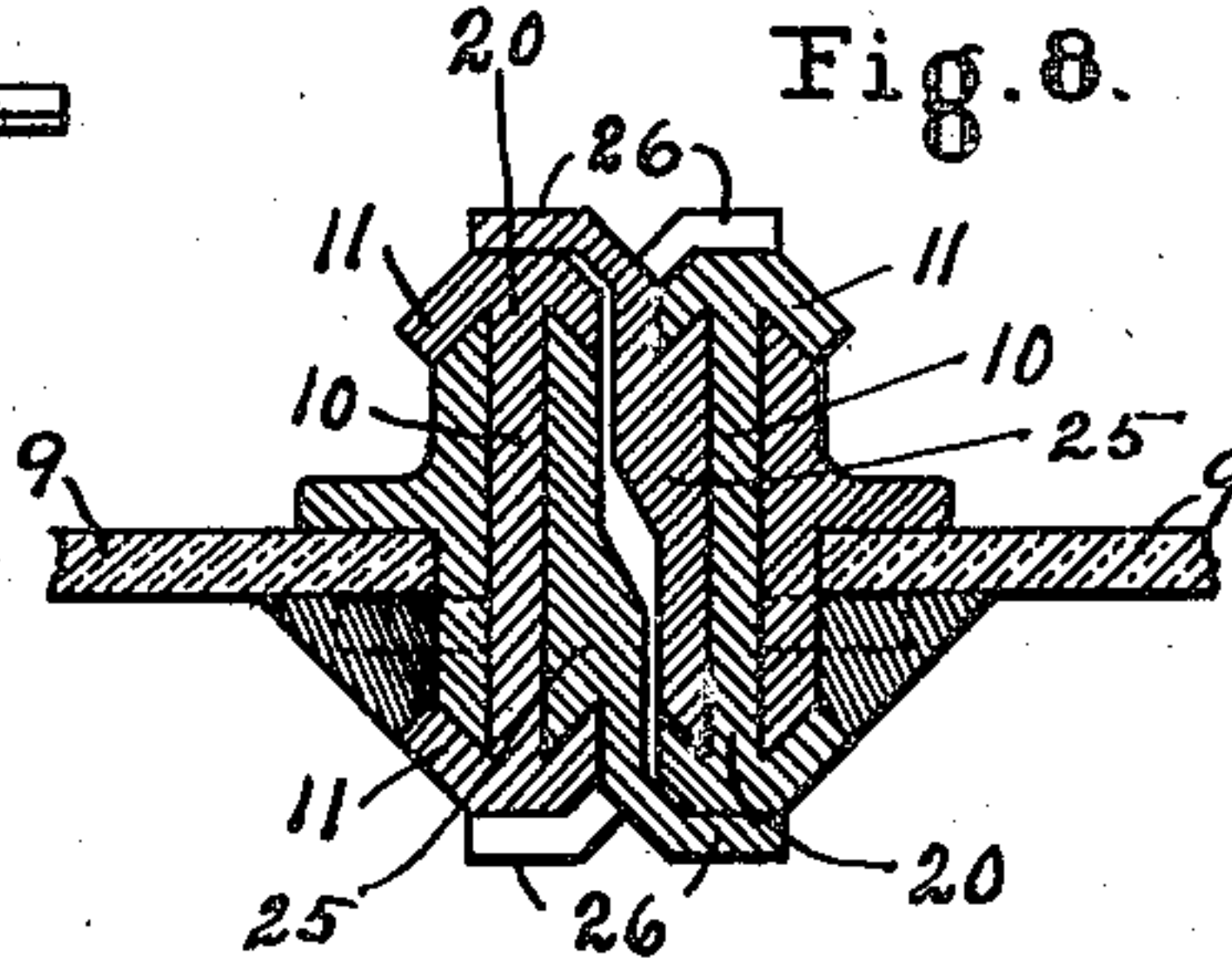


Fig. 9.

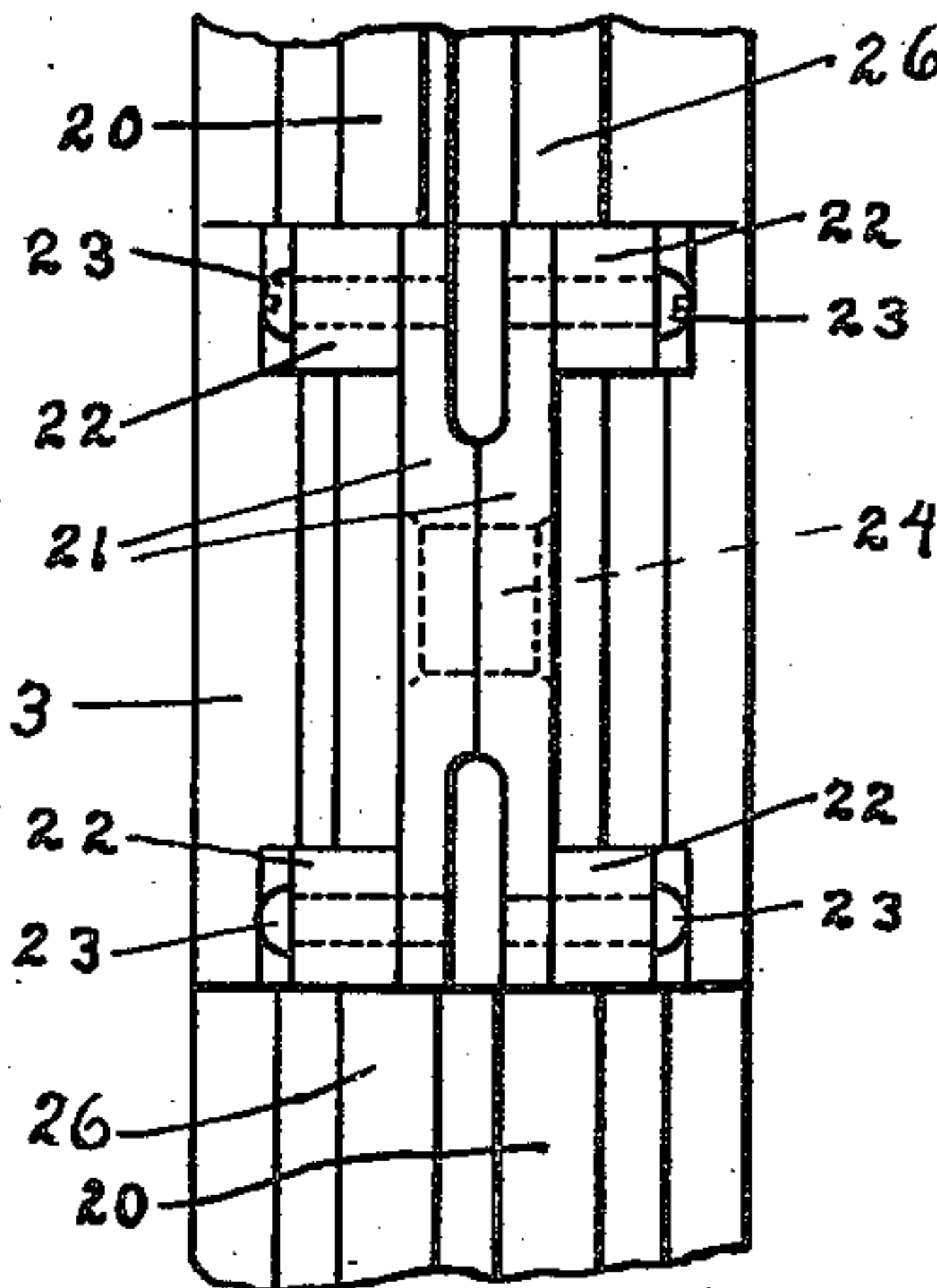
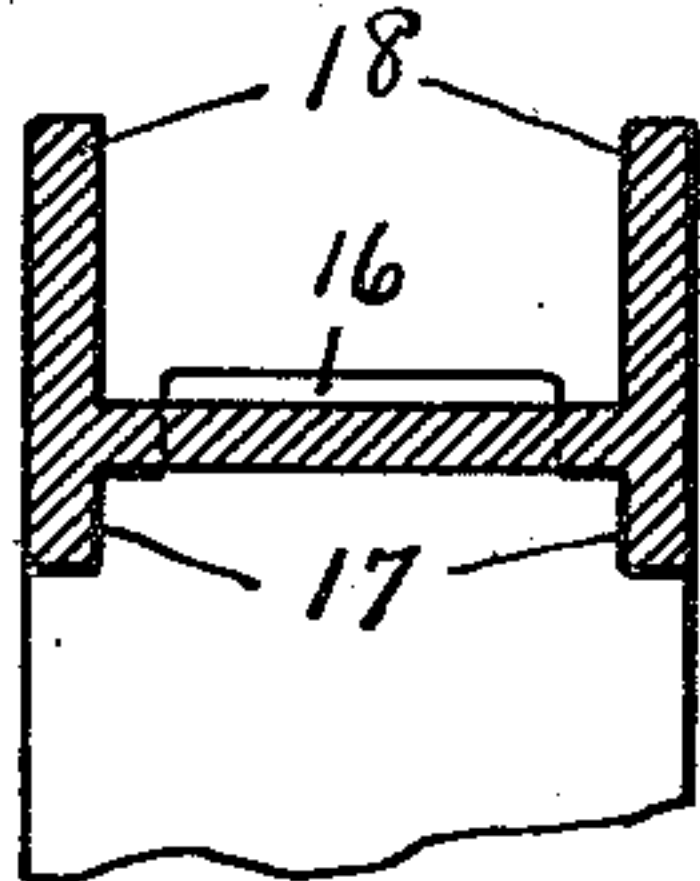


Fig. 14.



Inventors:

J. H. Kane & J. Kahn

By Edward N. Pagelsen
Attorney.

Witnesses:

J. H. Perrault

E. M. Brown.

UNITED STATES PATENT OFFICE.

JULIUS KAHN, OF DETROIT, MICHIGAN, AND THOMAS H. KANE, OF YOUNGSTOWN, OHIO,
ASSIGNORS TO TRUSSED CONCRETE STEEL COMPANY, OF DETROIT, MICHIGAN, A
CORPORATION OF MICHIGAN.

WINDOW-FRAME.

933,908.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed April 21, 1909. Serial No. 491,375.

To all whom it may concern:

Be it known that we, JULIUS KAHN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, and THOMAS H. KANE, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Window-Frame, of which the following is a specification.

This invention relates to metal supports for window lights, and its object is to provide window frames which shall be of great stiffness for the amount of metal employed, and which shall be of pleasing appearance.

In the accompanying drawings, Figure 1 is an outside elevation of an assembled window frame having a hinged portion adapted to be swung open. Fig. 2 is a cross section of one type of frame on the line 2—2 of Fig. 1. Fig. 3 is a cross section of the same type of construction on the line 3—3 of Fig. 1. Fig. 4 is a cross section of a slightly modified form of construction on the same line 3—3 of Fig. 1. Figs. 5 and 6 are cross sections of two modifications of construction on the line 6—6 of Fig. 1. Fig. 7 is a cross section of the type shown in Figs. 2, 3 and 6 on the line 7—7 in Fig. 1. Fig. 8 is a cross section of the same type on the line 8—8 in Fig. 1. Fig. 9 is an elevation of the hinge. Fig. 10 is a view of an individual sash bar on a smaller scale. Fig. 11 is a view of two connected sashes. Figs. 12 and 13 are views of frame bars. Fig. 14 is a cross section of a frame bar. Fig. 15 is a perspective view of the end of a rib.

Similar reference characters refer to like parts throughout the several views.

The present construction consists of a series of sashes, one for each pane of glass, united by side bars and ribs into a frame. The different parts are secured together by rolling down projecting flanges so that but a minimum amount of machine work is necessary. For safety, the parts may be united by electrically welding adjacent portions.

Two types of construction and modifications of the types are shown. Each pane will be secured in a separate sash, formed from a generally T shaped bar such as is shown at 1, Fig. 10, one flange of which is notched and which bar is bent to form the sash in Fig. 11. Two sashes may be connected by

electrically welding at points 2 as indicated in Fig. 11. The bars may have any desired cross section. In Figs. 2, 3, 6, 7, and 8 the bar has three flanges 3, 4 and 5, the flange 3 being at right angles to flanges 4 and 5. Tongues 6 are cut free from the flanges 4 of the bars, and after the glass is in position, these tongues may be bent out, as indicated in the drawings, and the glass thereby held in position. Putty 7 may be used if desired. The position of the flange 3 will determine whether the glass shall be central or nearer one side. It is obvious that the putty side of the sash may be toward either the weather or the interior. The form of bar 8, shown in Fig. 5, is that especially adapted for sashes where the glass 9 is to be near one side.

The edges of the flanges 4 and 5 are preferably beveled to properly provide engaging portions for the ribs and frames. The ribs are preferably in the form of I beams 10, (Fig. 3) having a web and flanges 11 as shown in Figs. 3 and 15. The sashes are placed within the flanges and these are then rolled down. This unites adjacent sashes and by placing the ribs vertically in the assembled construction, great stiffness results. The ends 12 of the ribs are so formed that they may be slipped into the slots 13 in the upper and lower bars 14 of the outer frame. The side bars 15 of the outer frames also have tongues 16 which enter slots 13 and are riveted over. In this manner the outer frame and the ribs will be firmly united. The frame bars have flanges 17 which receive the bars 1, which flanges are rolled down to secure the parts together as shown in Fig. 2. They may also have flanges 18 which form an air space between the frame and the building walls, in which mortar may be run, if desired, to hold the frame in the window opening.

It is sometimes desirable that a portion of the window frame can be swung open for ventilation. In Fig. 1, the six middle sashes are united into an auxiliary frame which may swing on a central horizontal axis. The details of the construction are shown in Figs. 7, 8 and 9. The sash bars have the usual flanges 3, 4 and 5. Instead of using the frame bars 14, the side members 20 are preferably small I beams. The adjacent flanges of the I beams are cut away at the pivots and hook plates 21 are attached to these side

members by the jaws 22 which are secured in position by the bolts 23. A pivot 24 is revoluble in either or both of these plates.

To prevent rain and snow driving through the space around the auxiliary frame, the flanged bars 25, shown in Fig. 8, are employed. One of these bars is secured to extend around the upper half of the auxiliary frame with its flange 26 on the inside, and around the lower half of this frame with the flange 26 on the outside. A similar stationary bar extends around the lower half of the opening, with the flange 26 on the inside, while this flange of the upper stationary bar will be on the outside. See Fig. 1. Thus when the "window is closed," the cracks between the stationary and auxiliary frames will be closed by two flanges 26, one on the outside, the other on the inside. The flanges 11 of the beams 20 are rolled down over the beveled edges of the bars 25 and thus secure them in position.

Instead of the compact constructions above described, the parts may be so formed that air-spaces will separate portions of the frames. In Fig. 4, the rib 27 is shown with a web and grooved flanges 28, which flanges are rolled down to properly engage the sash bars 29, and form large air spaces between the web of the rib and the sash bars. The flanges 30 of the sash bars may also be grooved to form an air-space next to the glass.

The flanges on the various bars may be beveled as shown on the lower end of the rib in Fig. 3, or they may be left of even thickness throughout in order to furnish shoulders to support the putty as shown in all the other portions of the drawings.

It may be desirable to have the bars 20 of the swinging auxiliary frame extend entirely around this frame, in which case this bar will be bent at the corners. After the frame is assembled, the flanged bars 25 are positioned and the outer flanges of the I beams 20 are rolled down. The hinge may be first secured to either the stationary or auxiliary frame before the auxiliary frame is secured in proper position.

As each rib and side member of the frame of a window must act as a girder to resist wind pressure, it is of the utmost importance that the full strength of each be preserved, and that intimate union exist between the parts. By giving the ribs and side bars the forms of I beams the greatest strength is attained for the amount of metal employed. By rolling down the flanges to securely grip the edges of the sash bars the whole frame is rendered practically equal to an integral construction.

Having now explained our improvements, what we claim as our invention and desire to secure by Letters Patent is;—

1. In a window frame construction, the

combination of a sash formed of a bar having beveled edges and an inwardly projecting flange, and side bars adjacent the sash bar and having flanges adapted to be rolled down over the beveled edges of the sash bar. 70

2. In a window frame construction, the combination of a sash formed of a bar having beveled edges and inwardly projecting tongues and flanges to hold the glass, and I beams adjacent the sash bars and having their flanges rolled down over the beveled edges of the sash bars. 75

3. In a window frame construction, the combination of a sash formed of a bar having an inwardly projecting flange, and side bars adjacent the sash bar and having flanges adapted to be rolled down over the edges of the sash bar. 80

4. In a window frame construction, the combination of a sash formed of a bar having inwardly projecting tongues and flanges to hold the glass, and I beams adjacent the sash bars and having their flanges rolled down over the edges of the sash bars. 85

5. In a window frame construction, the combination of a sash consisting of a bar having an inwardly projecting flange which bar is bent to form a rectangle, and side bars adjacent the sash bar and united thereto. 90

6. In a window frame construction, the combination of a plurality of sashes having adjacent sides secured together, each sash adapted to support a pane of glass, and stiffening bars extending along the outer sides of the united sashes. 95 100

7. A window construction consisting of a sash for each pane of glass formed by a continuous bar and bars to unite the sashes into a frame.

8. A window construction comprising a plurality of sashes; each sash consisting of a flanged bar bent into rectangular form, the contacting sides of the sash bars electrically welded together, and flanged bars extending along the sashes and having flanges rolled down onto the sash bars to unite the whole into a frame. 105 110

9. A window construction comprising a main frame and an auxiliary frame, each frame formed of sashes and flanged bars uniting the sashes, each sash formed by bending a flanged bar to rectangular shape, the auxiliary frame being mounted within an opening in the main frame, and pivots secured to said frames. 115 120

10. In a window construction the combination of a plurality of sashes, each formed of a flanged bar bent to a rectangle, I beams extending around said sashes to form a frame, the inner flanges of the I beams being rolled down to rigidly secure the sashes, pivots secured to the frame, an inclosing support for said frame on which the pivots are mounted, and flanged bars extending around the frame and around the support to lap 125 130

over the spaces between the frame and support.

11. In a window frame construction, the combination of a plurality of parallel rows of sashes, each sash consisting of a flanged bar bent to form a rectangle, I beams extending vertically between adjacent rows of sashes and having their flanges rolled down onto the edges of the flanged bars forming the sashes, and flanged bars extending along the sides and ends of said frame to rigidly unite the same, the inner flanges of said bars being rolled down onto the flanges of the sash bars.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

JULIUS KAHN.

Witnesses:

M. K. KENNEDY,

EDWARD N. PAGELSEN.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

THOMAS H. KANE.

Witnesses:

H. D. MILLER,

E. T. LYNCH.