

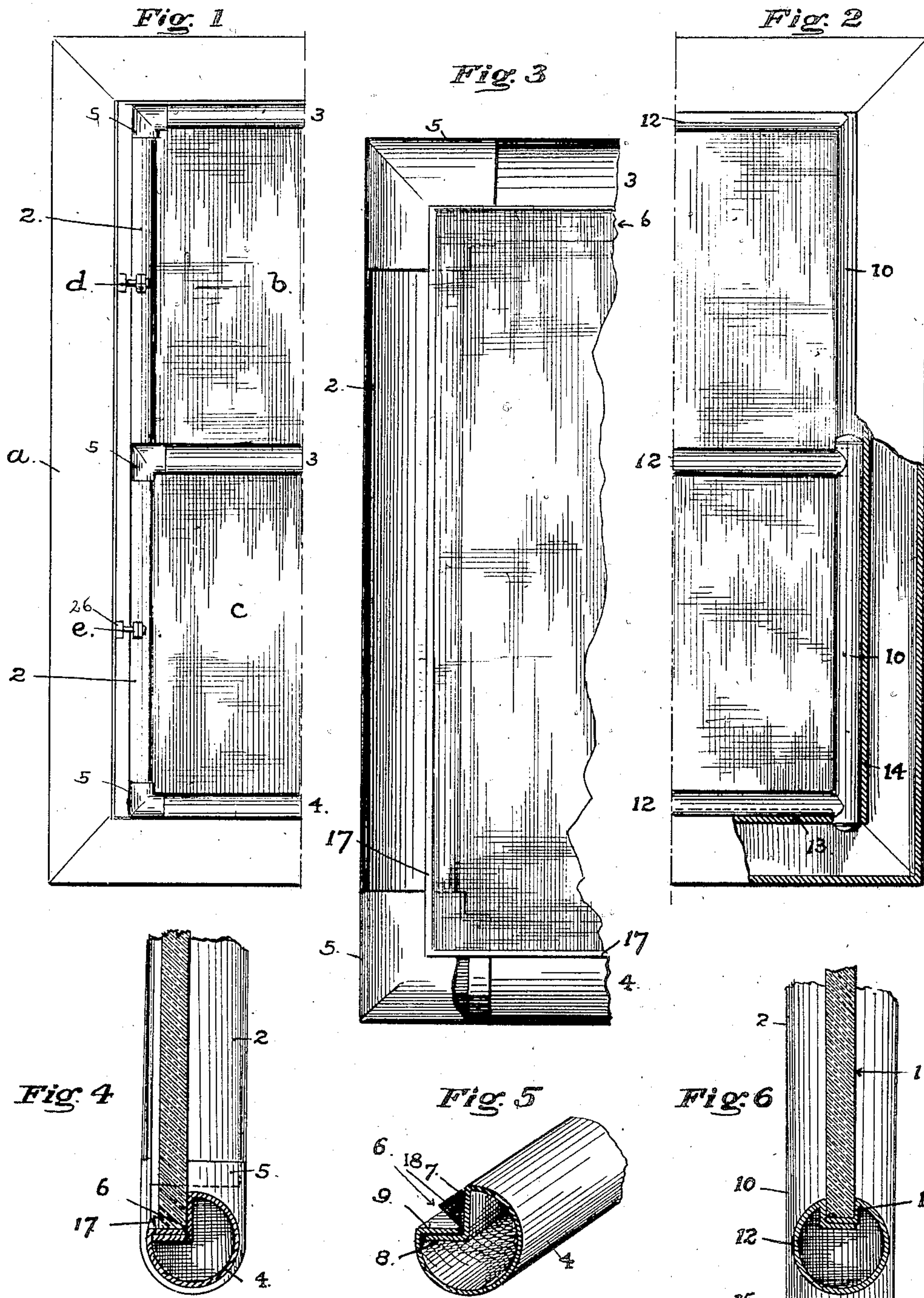
No. 897,414.

PATENTED SEPT. 1, 1908.

E. A. SANDERS.
METAL WINDOW SASH.

APPLICATION FILED SEPT. 26, 1906.

2 SHEETS—SHEET 1.



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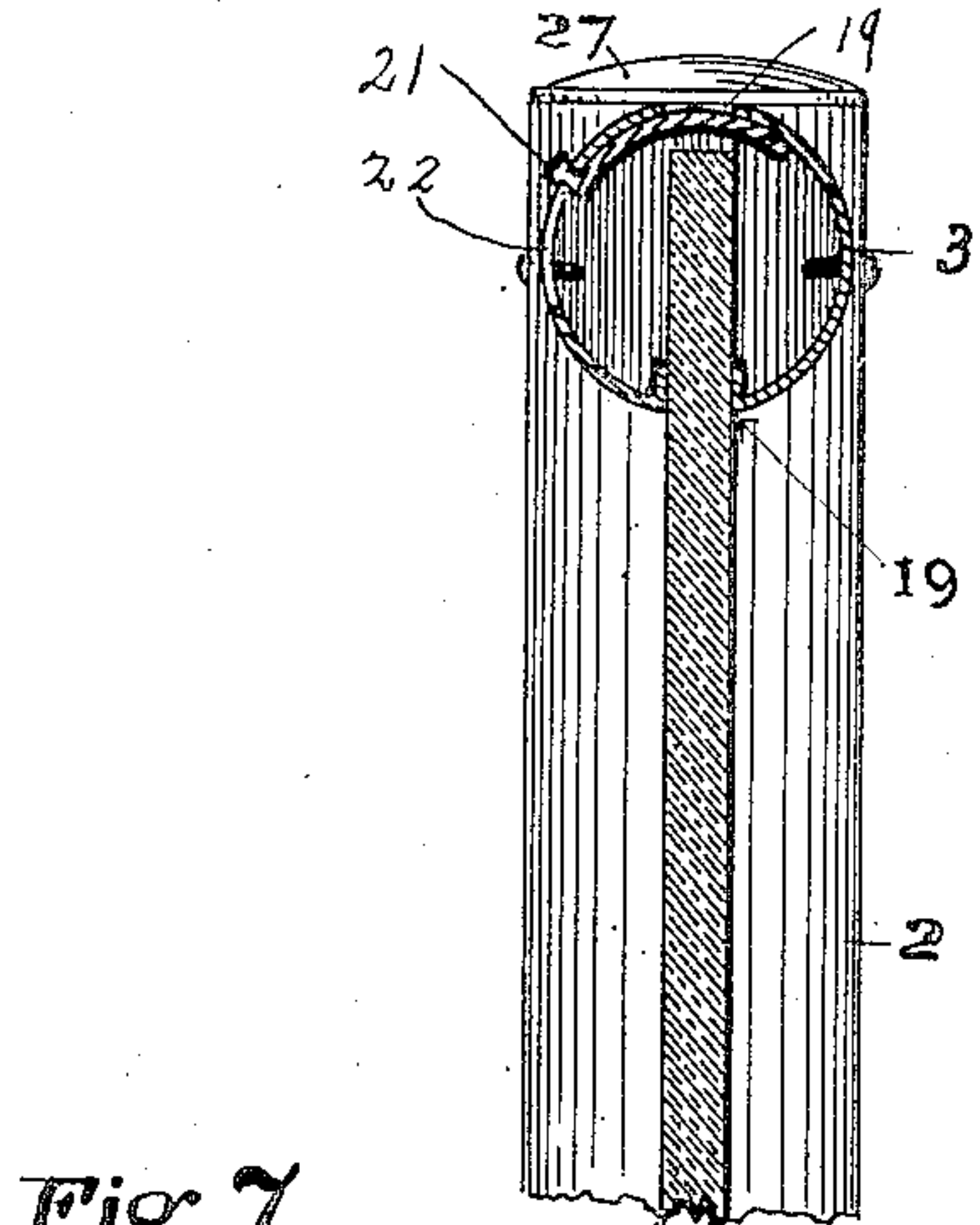


Fig 7

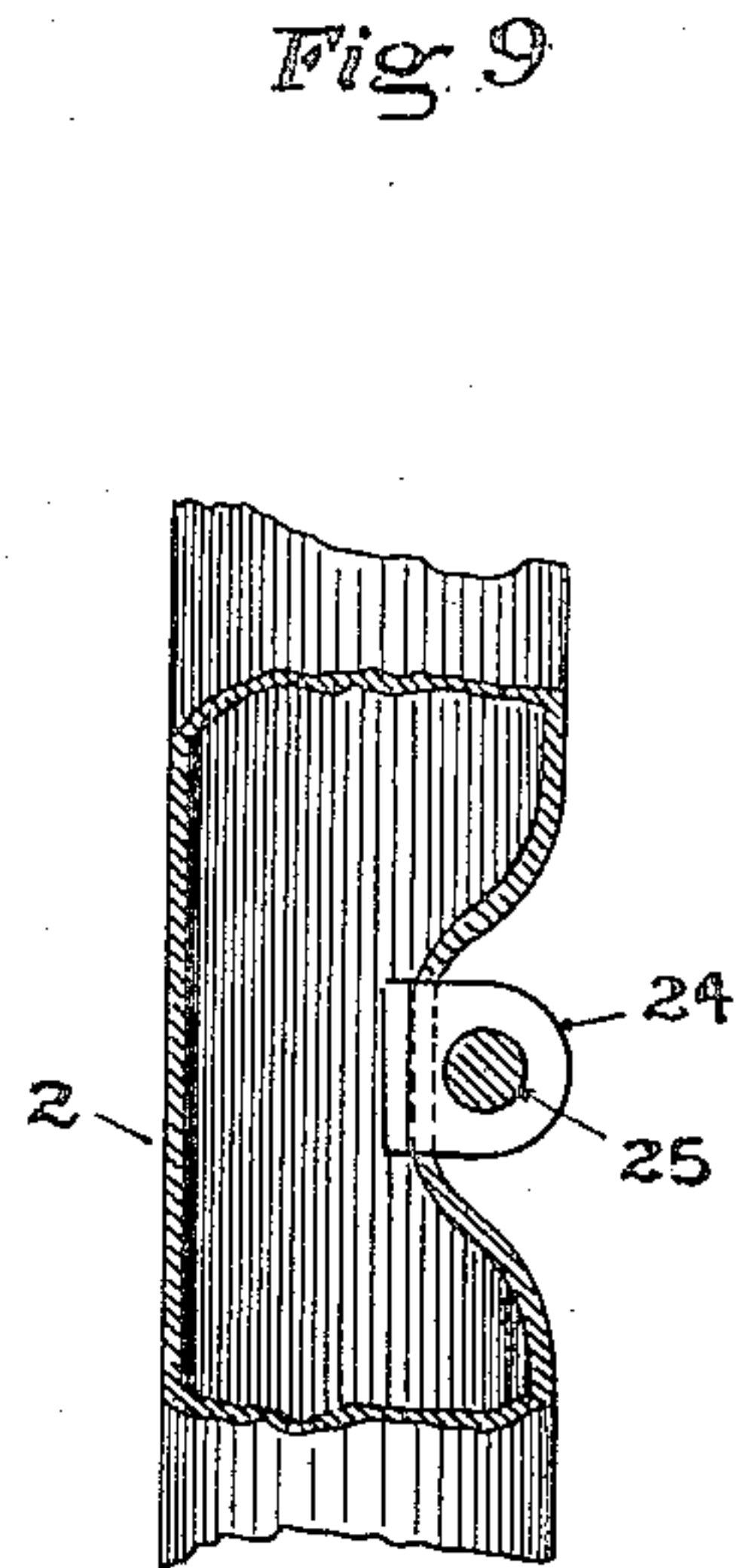
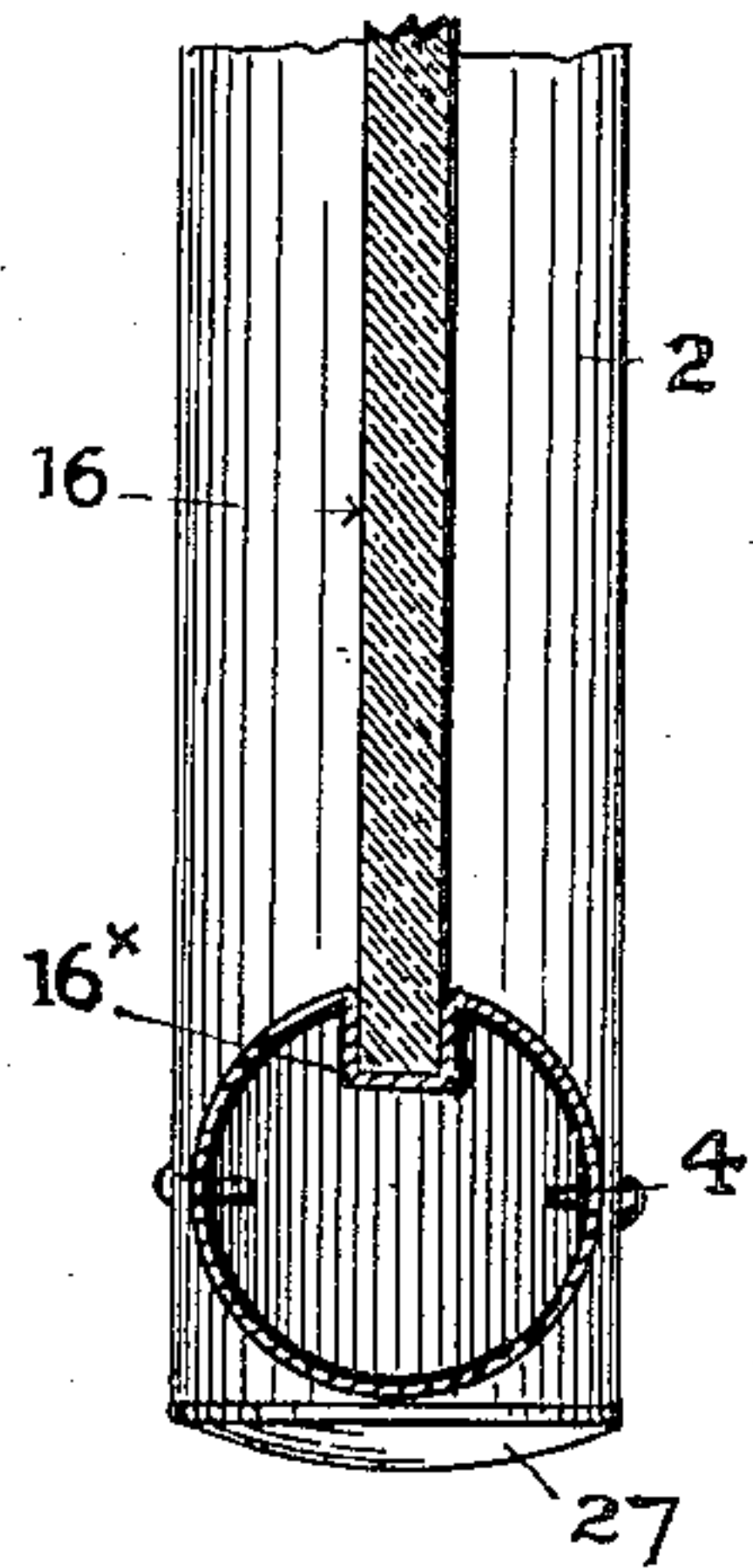


Fig 10

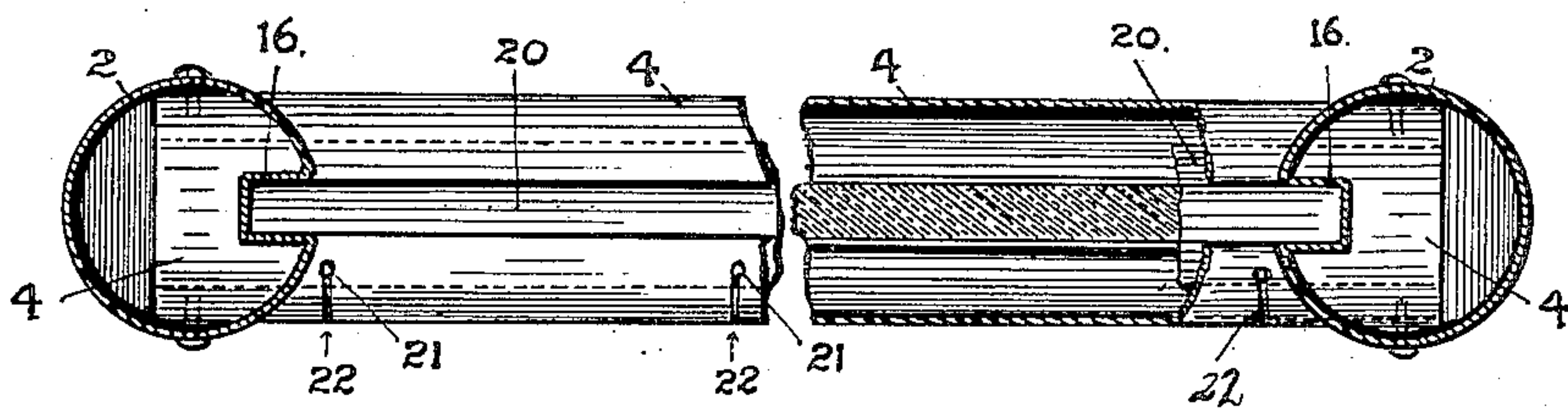
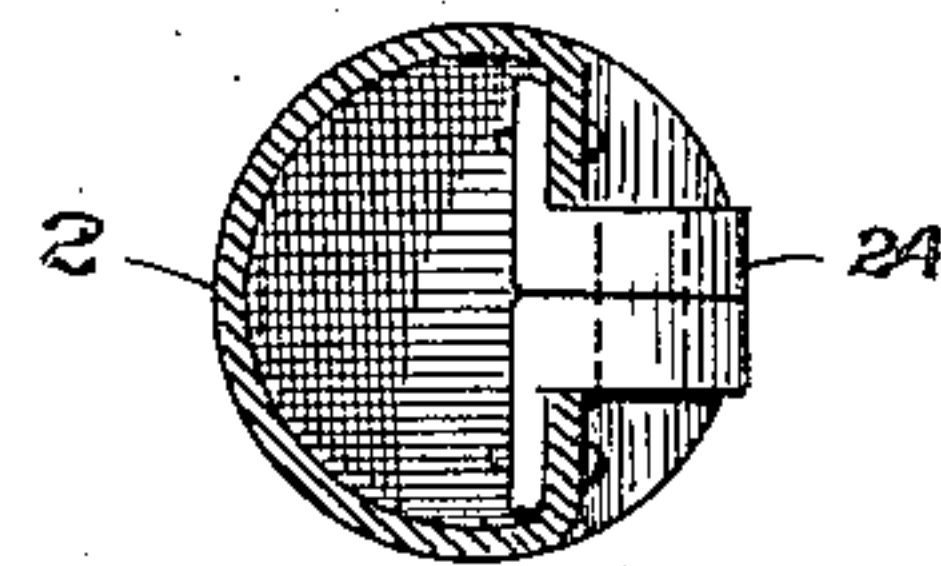


Fig 8

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UNITED STATES PATENT OFFICE.

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METAL WINDOW-SASH.

No. 897,414

Specification of Letters Patent.

Patented Sept. 1, 1908.

Application filed September 26, 1906. Serial No. 336,333.

To all whom it may concern:

Be it known that I, EDWARD A. SANDERS, a citizen of the United States, residing in Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Metal Window-Sash, of which the following is a specification.

This invention relates to improvements made in the construction of tubular window sashes, and frames for sashes.

It has for its object the production of a metal window-sash having several features and advantages that render it especially applicable to the production of fire-proof windows, and to windows other than fire-proof in which the sashes are adapted to swing as well as to slide.

The novel points or features of the invention comprise a construction of tubular bar or rail of sheet-metal having a peculiarly formed groove or recess to admit the glass, and means or devices for fastening the glass in place, the groove or recess being formed or produced by bending and lapping the sides of a strip of sheet metal.

The invention embraces further the production of a sheet-metal sash in which the rails and stiles are adapted to permit the glass to be inserted in place through the rail. Also certain novel construction and combination of parts producing an improved metal window-sash, applicable to swinging or sliding windows, or to those having both features or qualities.

The nature of my said improvements, and the manner in which I proceed to produce, apply and carry out the same are explained at length in the following description in which reference is had to the accompanying drawings forming part thereof:—

Figure 1 of the said drawing is a front elevation of a sash for a swinging and sliding window, embodying my invention; the members of the sash being broken away in part to expose the manner of setting the glass in the sash. Fig. 2 is a similar view of a sash constructed for a window in which the sash is adapted to slide, but not to swing in the frame. Fig. 3 is a view of a portion of a glazed sash removed from the frame, as seen from the outside of the window, showing one mode of securing the stiles and rails together at the corners. Fig. 4 is a transverse section through the bottom-rail of the sash, with the glass in the groove. Fig. 5 is a

cross-section in perspective showing the manner in which the groove for the glass is formed. Fig. 6 is a cross-section, on an enlarged scale, through the bottom-rail of the lower sash seen in Fig. 2. Fig. 7 is a vertical cross-section through the top-rail and bottom rail of the lower sash in which the top-rail is provided with a slot for inserting the glass in place from above. Fig. 8 is a top-view of the top-rail showing a portion of the rail partly broken away to disclose the internal construction. Fig. 9 is a side-view of a stile provided with a bearing for a pivot; the tube being broken away to uncover parts inside. Fig. 10 is a horizontal cross-section through the tube, just above the line of the pivot.

In the construction of my improved window-sash the stiles or upright members 2 2 and the rails or horizontal members 3—4 are separately formed from a strip of metal of the length and width required for the member, by bending the strip around a mandrel of cylindrical shape, for about three quarters of the circumference, and forming in the remaining portion, for the entire length of the member a right angle recess 6. Such recess is produced by bending the metal along one side or edge of strip 7 and on or parallel with a line running diametrically across the cylindrical portion and to, or nearly to, the center; and afterwards at right angles outwardly or towards the circumference, as seen at 8, Figs. 4 and 5, and then bending the opposite edge portion 9 of the metal-strip at right angles inwardly, so as to lie against the outwardly standing edge portion 8 on the opposite side of the strip, thereby interlocking the ends of the strip and at the same time producing the recess 6 to receive the glass having two sides only, one side forming a seat for the glass and the other side forming a backing therefor. This recess exceeds in depth the thickness of the glass to be set in the sash, to an extent sufficient to admit a strip 17, which is fastened in place over the glass along the recess, the same being fastened, in one way, by means of screws inserted through the strip and into the metal behind it; or, in another way, by the use of clips 18 of pliable metal, such as copper, which are readily secured in place in the tubular bar or rail by inserting the same between the overlapping members 8—9 of the joint.

In the bottom-rail 4 the groove for the glass

is similarly formed, excepting that it is a close groove 16^x and not open on one side. It corresponds in width to the thickness of the glass, so as to admit the latter when it is inserted through the top-rail into the grooves of the side-bars. To permit the introduction of the glass from above in that manner, the top-rail is formed or provided with a slot or opening 19 extending downward through it and in line with the groove 16 in the side-bars, as seen in Figs. 6 and 7, the edges of the slot being usually rounded or turned inwardly to form a close joint between the rail and the glass. A slide or movable plate 20 fitted within the hollow rail forms a means of closing the slit or opening in the top after the glass is set in place.

The means illustrated in Figs. 7 and 8 for closing the opening in the rail is a curved plate 20, fitted on the inside of the tubular rail so as to have a limited movement in an arc in one direction to uncover the opening, and in the contrary direction to close it; the plate being confined in place by pins or screws 21 working in slots 22. This is a simple means of closing the slot in the top rail; but other means may be employed for the same purpose, such, for example, as a simple cap or curved strip fastened over the opening from the outside. It will be obvious, also, that the strips on the side-grooves to confine the glass in place may be permanently secured to the side-bars where the glass is inserted and set into the grooves from the top of the sash in the above described manner; also that clips, putty, and other means to hold the glass in the sash can be dispensed with to advantage.

It will be evident that the construction above described is applicable to a double sash, or one having several lights or panes set side by side and separated one from the other by a stile or upright-bar. The stiles and rails thus formed are joined together to complete the sash, either by means of corner-pieces 5 having cylindrical ends or bosses to fit into the ends of the tubular rails or bars, as seen in Figs. 1 and 3. Or, in another way, by letting the ends of the top-rail and the bottom-rail into the side-bars, as seen in Figs. 2, 7 and 8. The parts thus joined together are fastened by screws or pins inserted through the walls of the parts.

Where this invention is applied to the construction of a sash for a swinging and sliding window in which the sash is pivotally hung in the window-frame, the face of each side-bar is flattened at the point or part where the pivot is to be located, and an ear or knuckle 24 having an eye to admit the pintle 25 is fixed against the flattened portion, either by screwing the knuckle against such flattened face, or by inserting the knuckle-piece through a slot in the tube and fastening it on the inside, as seen in Figs. 9

and 10. Blocks 26 secured in like manner to the frame, or stationary part in which the sash is arranged to swing, furnish supports for the pivots *d—e* on the upper and lower sashes.

Where this construction is applied to or employed in other than fire-proof windows, the glass can be set with cement, or putty; the formation of the grooves or recesses being well adapted to that purpose.

Figs. 1 and 3 represent the manner in which I join the rails and stiles of the sash together by corner-blocks. These pieces are each cast preferably in one piece with bosses to fit in the ends of the tube.

This construction is adapted more particularly for sashes of large sizes and heavy weight. The corner-pieces can be dispensed with, however, and the parts joined at the corners by setting the ends of the rails into the stiles, as seen in Figs. 7 and 8. In such modification the stiles 2 should be made of greater diameter than the rails 3—4, so that the ends of the latter parts can be fitted into the openings in the stiles below, or within the ends of those members. The open ends of the stiles are usually closed by a plug or a cap 27 to give a better finish to the sash. Additional strength can be secured at these joints by inserting pins or screws through the parts.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A window sash comprising a sheet metal tubular rail or stile formed with a longitudinal groove to receive a pane of glass, the groove being formed by the inturned edge portions of the sheet metal, the opposite edge parts overlapping and arranged to lie opposite the edge of the pane, and at right angles to a face of the groove that constitutes a backing for the pane, substantially as set forth.

2. In a window sash construction, a rail formed of sheet metal having its opposite longitudinal edges inturned and disposed at right angles to each other whereby is formed a groove having two sides only, one side of the groove forming the seat for the edge of a pane of glass and the other side forming a backing therefor, substantially as set forth.

3. In a window sash construction, a rail formed of sheet metal having its opposite longitudinal edges inturned and disposed at right angles to each other whereby is formed a groove having two sides only; one side of the groove forming the seat for the edge of a pane of glass and the other side forming a backing therefor, the said seat portion of the groove being of double thickness of metal, substantially as set forth.

4. A window sash composed of tubular top and bottom rails and stiles of sheet-metal, and metal corner-blocks uniting the ends of

the rails and stiles at the angles, said rails and stiles being each formed of a strip of metal, and having inturned portions extending longitudinally of the strip, the opposite 5 edge portions thereof being disposed at right angles to the said inturned portions, whereby is formed a recess or groove and the corner blocks being formed with slots for the corners of a pane of glass.

10 5. In a metal sash for a window, a tubular bottom rail having a glass-receiving groove, stiles having similar grooves to admit the glass, and a top-rail having a slot extending through it and longitudinally of the rail in 15 line with the grooves in the stiles and bottom rail, for inserting the glass from above, and

means for closing said slot after the glass is set.

6. In a metal sash, a tubular stile having a recess in its front face formed by a flat- 20 tened depression, and a knuckle-piece having an eye to receive a pintle and a flange on the back by which it is fixed in place within the recess.

In testimony whereof I have signed my 25 name to this specification in the presence of two subscribing witnesses.

EDWARD A. SANDERS.

Witnesses:

EDWARD E. OSBORN,
H. ROBT. BRADEN.