

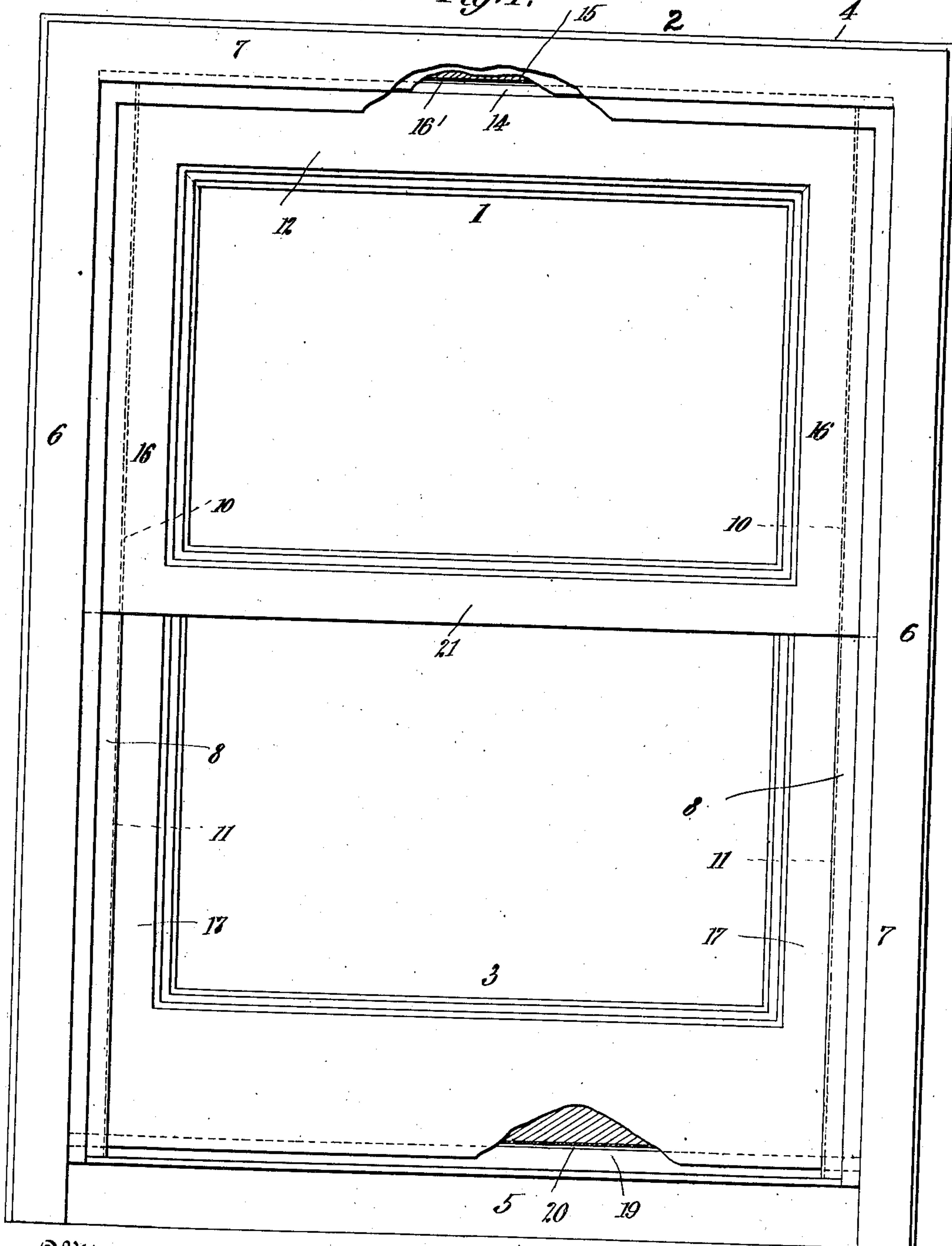
A. J. ELLIS.  
WINDOW CONSTRUCTION.  
APPLICATION FILED AUG. 24, 1909.

963,363.

Patented July 5, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:  
Francis Ober  
Arthur Stone

Inventor  
Alfred J. Ellis  
By his Attorneys  
Rosenbaum & Leavitt

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2 SHEETS—SHEET 2.

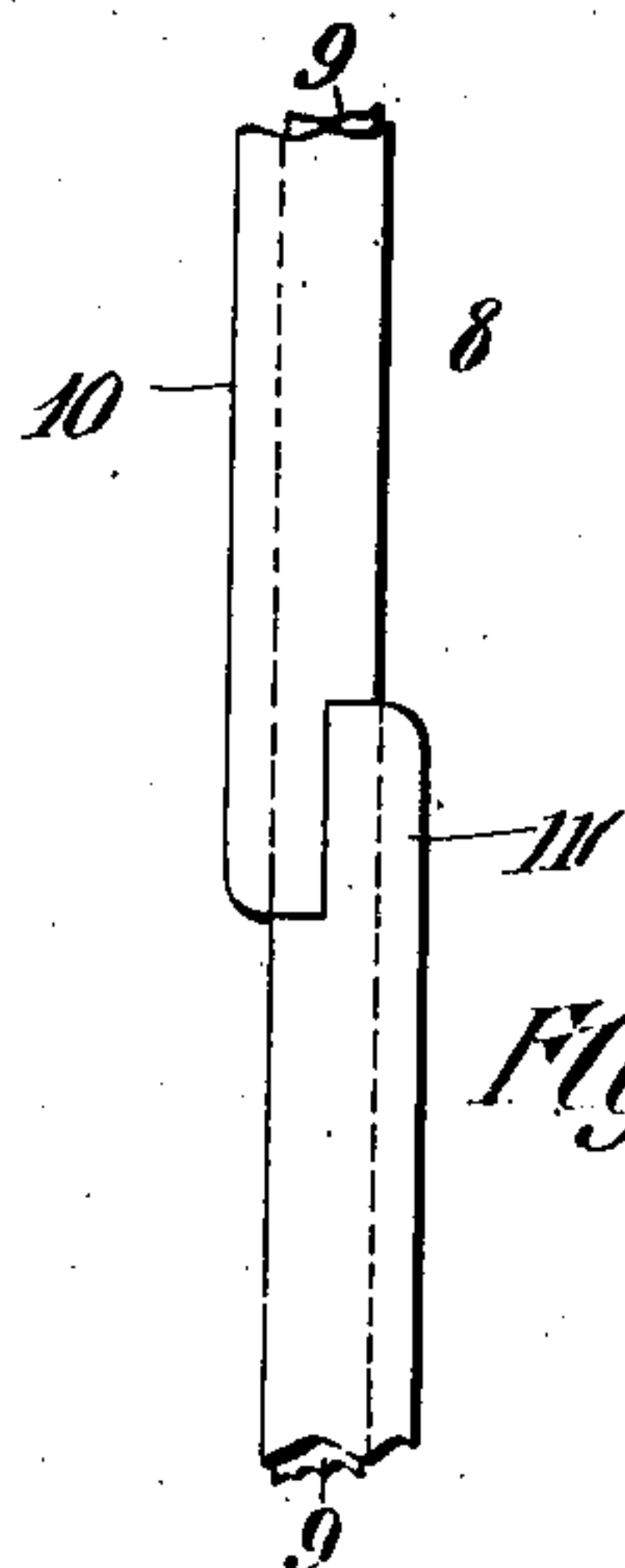
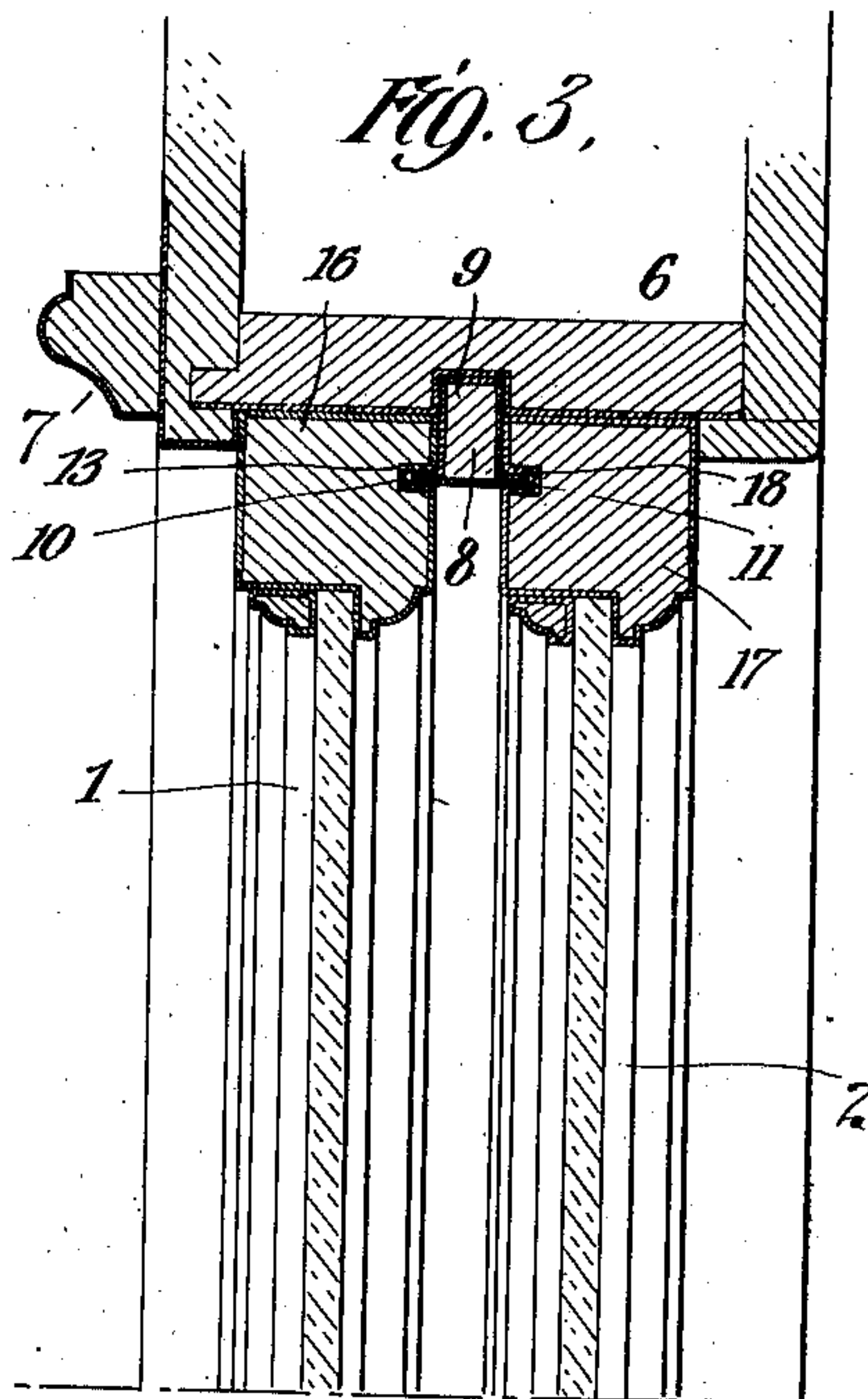
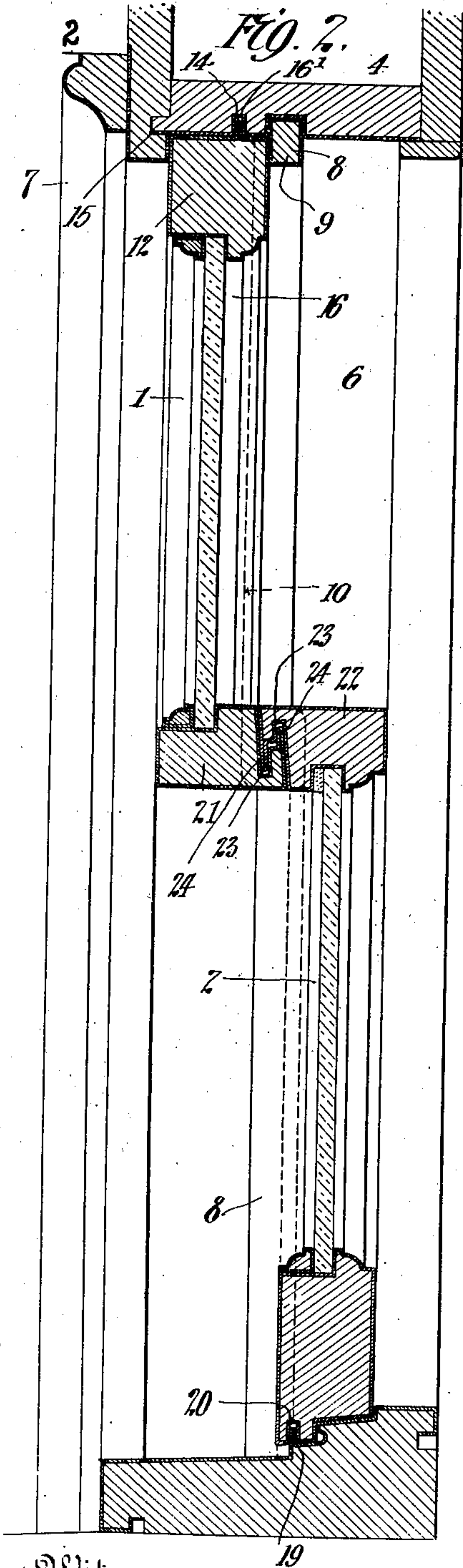


FIG. 4.

Witnesses:

*Francis Ober*  
*Arthur*

Inventor  
*Alfred J. Ellis*  
 By his Attorneys  
*Rosenbaum & Stockbridge*



# UNITED STATES PATENT OFFICE.

ALFRED J. ELLIS, OF WOODCLIFF-ON-HUDSON, NEW JERSEY.

## WINDOW CONSTRUCTION.

963,363.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed August 24, 1909. Serial No. 514,353.

*To all whom it may concern:*

Be it known that I, ALFRED J. ELLIS, a citizen of the United States, residing at Woodcliff-on-Hudson, township of North Bergen, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Window Construction, of which the following is a full, clear, and exact description.

My invention relates to window constructions, more particularly high grade windows for office buildings, hotels and dwellings, where the requisites of easy manipulation and tightness against wind and weather, together with permanence or durability in the foregoing qualities are especially desired.

The invention employs sheet metal as a basis of the structure, this material being drawn or otherwise formed into special outlines which secure the features and principles hereinafter described.

A difficulty with prior constructions has been in the matter of obtaining sufficient tightness against wind and weather without sacrificing easy running qualities, it being evident that all forms of yielding packing such as a rubber weather strip, impose considerable friction on the sash and interfere with its free movement.

It is a prominent object of my invention to avoid all forms of yielding packing and obtain all the wind and weather resisting qualities desired, without imposing any appreciable extra friction or resistance to the movements of the sash. I have furthermore provided for great permanence or durability in the above mentioned functions or purposes, the window retaining its wind and weather tight qualities and easy running qualities regardless of continued wear, and further regardless of any sort of changing weather conditions, such for example, as those which produce swelling or changes of form in ordinary wooden frame parts.

A still further object of the invention is to provide a window which is fireproof and ornamental in appearance, and suitable for the exacting requirements of the high grade purposes for which it is designed to be used.

With the various foregoing and other objects in view my invention consists in the features of construction and combination as hereinafter set forth and claimed.

In the drawings: Figure 1 is a front view.

of a window construction embodying the principles of my invention. Fig. 2 is a vertical sectional view. Fig. 3 is a transverse sectional view through one side of the same. Fig. 4 shows a detail.

Referring to the drawings in which like parts are designated by the same reference sign, 1 denotes the upper sash and 3 the lower sash of a window, 2 being the window frame. This frame comprises a head 4 at the top, a sill 5 at the bottom, and a jamb 6 on each side.

7 denotes a molding serving as an ornamental facing for the outside of the window frame in the usual way.

In accordance with the present invention, each jamb 6 has a parting bead 8 extending from the top to the bottom thereof and which I construct of sheet metal, preferably drawn or formed on a solid wooden core 9 of rectangular transverse section. The sheet metal, however, does not merely form a coating for the wood, but has separate structural features of its own, entirely apart from the characteristics of the core, and which form an important part of the present invention. I refer to the ribs 10 and 11 which project respectively to one side and the other of the parting bead at the front face thereof and which are produced by laterally extending flat folds of the metal coincident with the plane of its front face. The rib 10 cooperates with the upper sash and the rib 11 with the lower sash, as later described. In practice I make the upper section of the parting rail of an entirely separate piece of sheet metal from the lower part, folding the metal at the upper part with a rib 10 on one side and the metal on the lower part with a rib 11 on the other side, the two parts being jointed together and soldered over the continuous wooden core. In this way the rib 10 of the upper part of the bead overlaps for a distance of a few inches the rib of the lower part of the parting bead. This overlap amounts to about the normal overlap of the upper and lower window sashes.

The upper sash 1 has an upper rail 12 also formed of sheet metal which is preferably drawn or formed on a wooden core. It will be understood that the provision of a core of this sort is not an essential but is merely a convenient construction; the sheet metal may be left hollow if desired, or supplied with any kind of interior filler. In



accordance with the present invention I fold the sheet metal of which the upper rail is composed with a tongue 14 on its top side, this tongue extending parallel with the length of the rail and standing up in a vertical plane. The sheet metal of which this tongue 14 is composed is tightly drawn or pressed into a flat fold so that the resultant tongue is hard, rigid and slender, with a total thickness not exceeding twice the thickness of the sheet metal employed. In these respects this tongue is similar to the ribs 10 and 11 of the parting bead already described.

15 15 denotes a sheet metal facing on the under side of the head 4, and this facing is formed with a narrow deep groove 16' having a position and alinement adapted to receive the tongue 14 when the upper sash is fully elevated.

20 The side rails 16 of the upper sash are constructed of sheet metal like the upper rail, except that in place of having a tongue 14, these side rails are each formed with a deep narrow groove 13 adapted to receive the rib 10 of the parting bead. In case a wooden core is used the metal is simply drawn or pressed into a deep groove of the core, thereby establishing a narrow channel of just about the width of the corresponding rib 10.

The lower sash is similar to the upper sash, having side rails 17 with grooves 18 to receive the ribs 11. The lower rail of the lower sash also has an interlocking engagement with the sill formed by a tongue 19 and groove 20 similar to the tongue and groove 14, 16 of the upper rail and head, except that in the lower sash the tongue is on the sill or stationary frame part and the window rail has the groove. It will be understood that either arrangement is within my invention in any part of the window structure, one being merely an obvious reversal of the other.

Each window sash has a meeting rail denoted 21 and 22 for the respective upper and lower sashes. These meeting rails are also of sheet metal preferably drawn or formed on a wooden core, and each has a groove 23 and a tongue 24 respectively cooperating in the manner shown in Fig. 2. These tongues and grooves are constructed in the same manner as the tongues, ribs and grooves already described. The meeting faces of the meeting rails are inclined with respect to one another so that as the sashes approach their normal closed positions, the said faces press against one another with an increasing tightness of engagement, and at the same time their respective tongues and grooves interlock, as shown, thereby providing a double seal against any passage of air, in addition to the seal which is effected by the wedging together of the inclined faces.

It will be observed that the foregoing window construction secures all the functions and advantages mentioned in the preliminary part of this specification. A wind and weather tight seal is established at every point and on all sides, but the character of the engagement is such as not to obstruct perfect freedom of movement of the sashes. The upper sash slides up and down in the jambs with the ribs 10 continuously interlocking with grooves 13. Correspondingly, the lower sash slides freely up and down with the ribs 11 continuously interlocking with the grooves 18. Inasmuch as these ribs are closely folded and compacted and hard drawn, they are very stiff and rigid as well as straight and uniform in cross section. They are not liable to swelling or expansion or any change of form by use or weather conditions. The same is true of the grooves in which the said ribs are received. Under these circumstances freedom of movement and at the same time a tight fit are permanently insured. The various tongues 14, 19 and 24 which are brought into their grooves by being longitudinally projected thereinto at the completion of the sash movement, are accurately guided by virtue of the tightness and accuracy of the sliding fits. These tongues may therefore be made to engage with the same closeness and accuracy as the sliding ribs. The completed window construction therefore serves all its purposes with complete and unvarying efficiency throughout, and regardless of continued wear or any sort of unfavorable weather conditions.

What I claim, is:—

1. A window construction comprising a window frame having parting beads, sashes having meeting rails, the opposed faces of which are inclined and directly engageable with each other substantially over their entire extent, and interlocking tongues and grooves on said faces, said tongues and grooves being wholly formed of sheet metal and having the surfaces thereof stepped to afford a plurality of engaging surfaces.

2. A window construction comprising a window frame having parting beads, sashes having meeting rails with inclined engaging faces, directly engageable with each other, each face having, further, a tongue and a groove, the tongues and grooves of the respective faces being adapted to interlock with each other and being wholly formed of rigid sheet metal, said tongues having the form of flat blades.

3. A window construction comprising a window frame having parting beads, sashes having meeting rails provided with interlocking tongues and grooves on the engaging faces thereof, said tongues and grooves being wholly formed of rigid sheet metal, each tongue being relatively narrow along its



outer edge and spaced from the body of the rail to which it is secured, by a groove, said groove being relatively wide at the outer portion thereof, and the base of the tongue  
5 being abruptly and inwardly offset to widen the same and to reduce the space of the groove at the bottom thereof.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

ALFRED J. ELLIS.

Witnesses:

F. C. SONEN,

A. H. ELLIS.