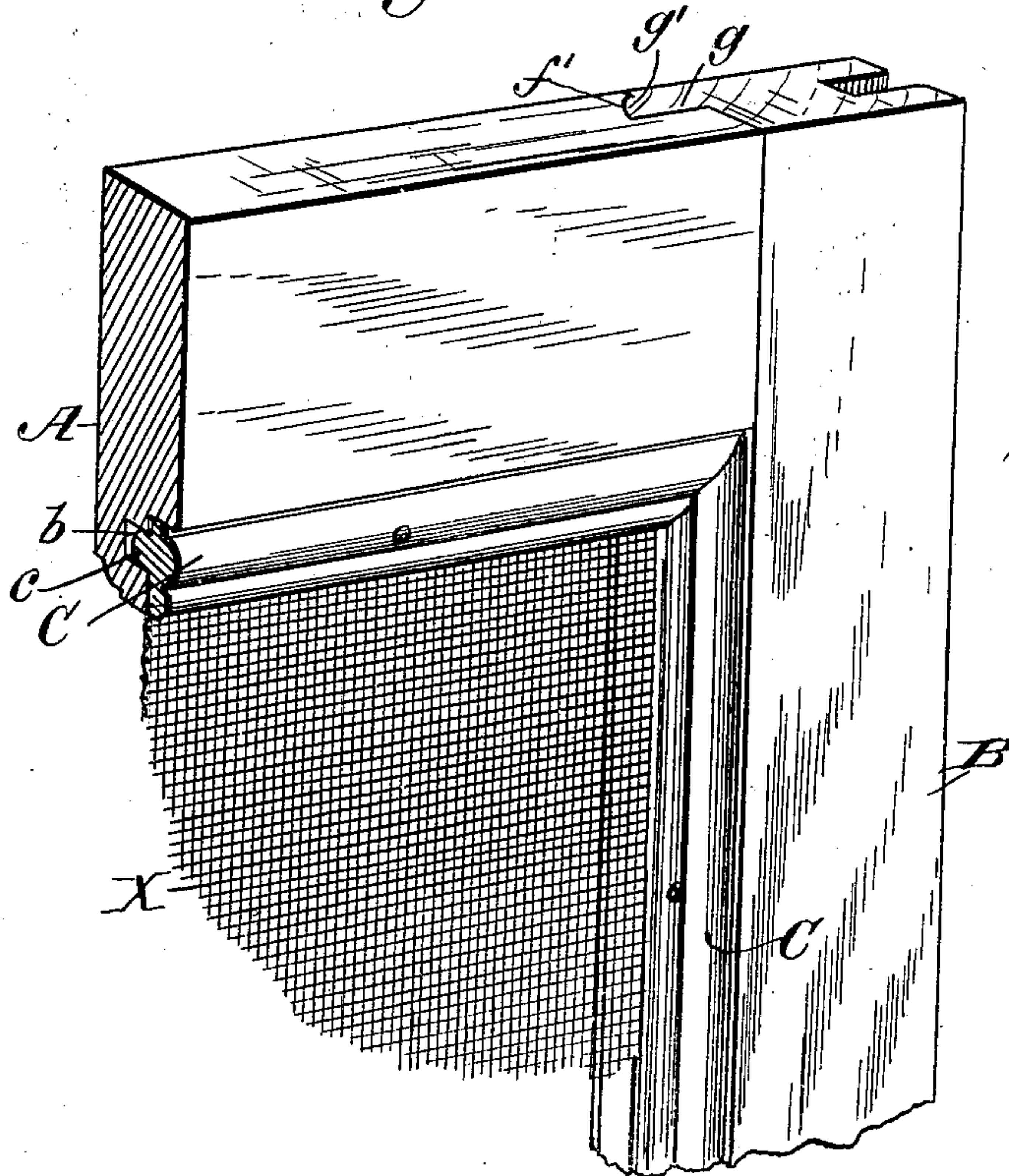


A. H. MIX.  
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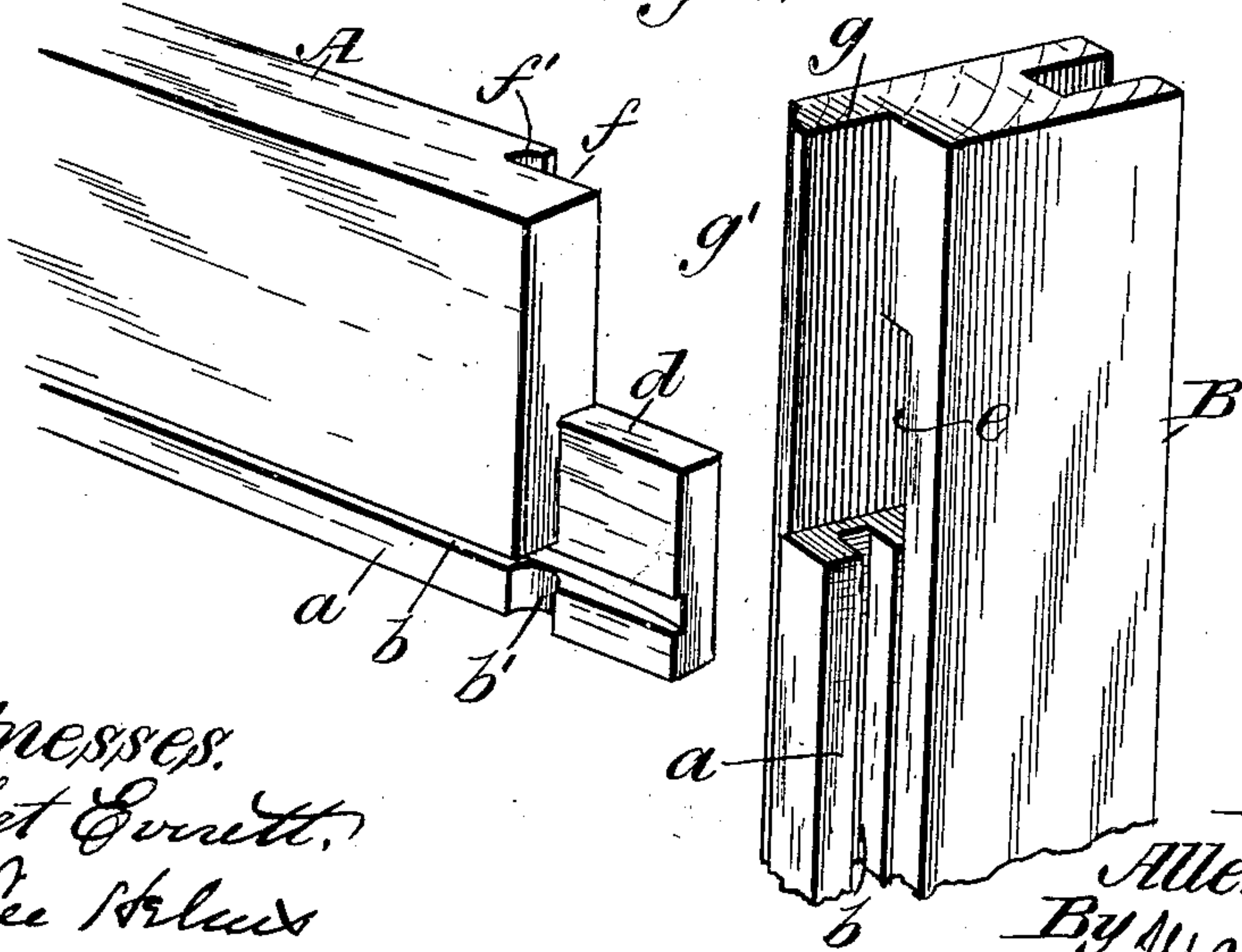
930,078.

Patented Aug. 3, 1909.  
 2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*  
*Robert Everett,*  
*Ch. Lee Helms*

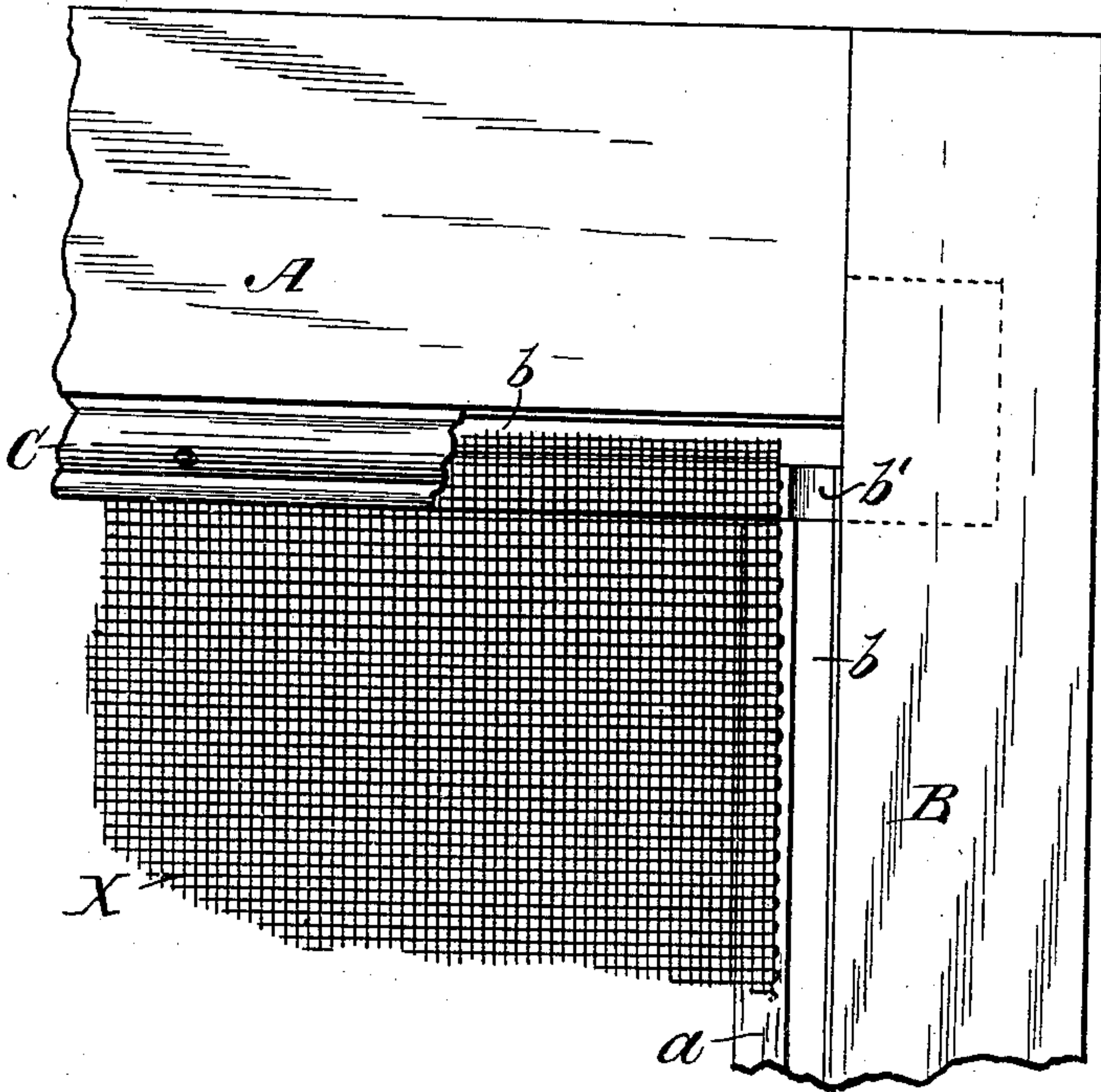
*Inventor.*  
*Allen H. Mix.*  
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*Att'y.*

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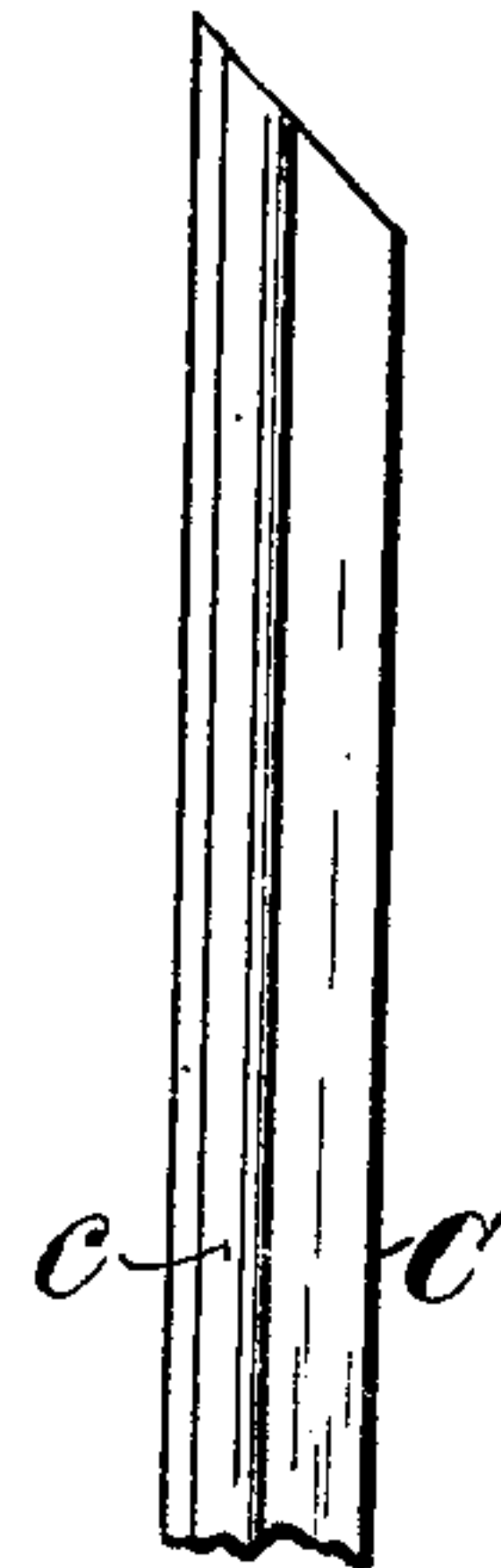
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Patented Aug. 3, 1909.  
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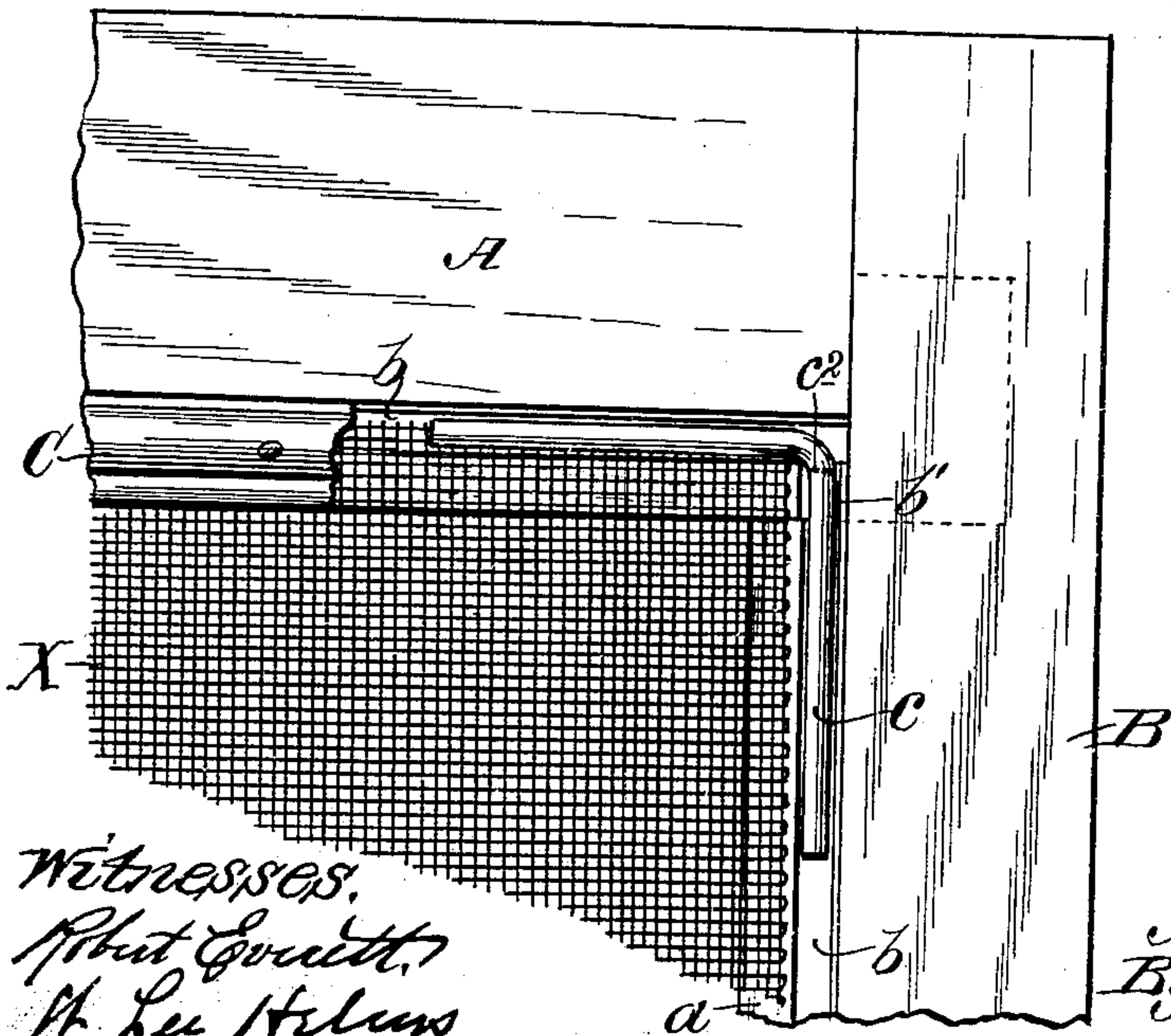
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



Witnesses,  
 Robert G. Smith,  
 H. Lee Helms

Inventor,  
 Allen H. Mix.  
 By Maxwell R. Peck  
 His Att'y.



# UNITED STATES PATENT OFFICE.

ALLEN H. MIX, OF ARLINGTON, VERMONT, ASSIGNOR TO PORTER SCREEN MANUFACTURING COMPANY, OF BURLINGTON, VERMONT.

## FRAME FOR WINDOW AND DOOR SCREENS.

No. 930,078.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed April 5, 1909. Serial No. 488,058.

*To all whom it may concern:*

Be it known that I, ALLEN H. MIX, a citizen of the United States, residing in the city of Arlington, county of Bennington, State of Vermont, have invented a new and useful Improvement in Frames for Window and Door Screens and for other Purposes, of which the following is a specification.

This invention has been devised with more particular reference to its use in connection with the wooden frames of window screens and the like, and it is in that connection that I shall describe it, without, however, limiting myself to its use in that connection.

The invention has to do with the corner construction of the frame—that is to say the joint by which the meeting ends of the end rails and side rails of the frame are united; and the object is to obtain a cheap, effective and durable joint of this character.

I shall first describe the improvement in connection with the accompanying drawings, forming part of this specification, and shall then point out more particularly in the claims that which I believe to be new and of my own invention.

In the drawings—Figure 1 is a perspective view of part of a window screen embodying my improvement—the same embracing the meeting ends of two adjacent rails, and the screen fabric held by the same. Fig. 2 is a view of the same parts with the rail ends separated from one another, and the molding on the rabbeted face of the vertical rail section also removed, so as to show the construction of the joint. Fig. 3 is a plan of the same parts fitted together, but with the molding of the vertical rail section removed, and the other molding partly broken away. Fig. 4 is a view of the tongued inner face of said molding. Fig. 5 is a view, similar to Fig. 3, of a modification in which the locking tongue is separate from the molding. Fig. 6 is a view of the inner face of the vertical molding in this modification.

In the drawing, A is the one rail section, and B is the other. Each rail on its inner edge is rabbeted as at *a*, to form a shelf for reception of the edge of the screen fabric X; and in the face of the shelf or rabbet is formed a longitudinal groove *b*.

C is the molding which is fitted to the rabbet over the edge of the wire fabric, and is there tacked to the body of the rail, thus holding the screen fabric in place. On the

inner face of the molding is a longitudinal tongue *c* which enters the groove *b* in the rail, forcing the screen fabric into said groove, and thus fastening said fabric more securely in the screen. Thus far there is nothing essentially new in the construction.

The joint between the two rails A B is a square mortise and tenon joint, the tenon *d* being on the rail A, and the mortise *e* in the rail B. In the face of the rail A opposite that in which the rabbet *a* is formed, is a transverse recess *f* formed in the edge of the rail adjoining the tenon, having its bottom flush with the corresponding face of the tenon and its rear wall undercut as at *f'*.

The mortise *e* in rail B, adjoins the end of the shelf *a*. From the point where this shelf terminates, the rabbet is deepened by the thickness of the tenon *d*, so as to bring the face of this recessed portion *g* flush with the farther wall of the mortise, the near wall of which is flush with the shelf or rabbet *a*. The part *g* forms a tongue which, when the joint is closed, fills the recess *f* in the other rail and is provided with a beveled edge *g'* to match and interlock with the undercut wall *f'* of said recess.

When the tenon *d* is fitted to its mortise, its near face will be flush with the rabbet *a*. In the face of that portion of the reduced part of the rail which adjoins the tenon is formed a groove *b'* which extends from the inner edge of the rail in a direction crosswise of the tenon, and is so located that when the tenon is housed in its mortise it (the groove *b'*) will be outside of the mortise and open or uncovered. This groove *b'* in the one rail is designed to be engaged when the joint is closed by a tongue or locking strip attached to the other rail, so as to prevent the joint from drawing apart.

The tongued molding C of rail B is, in the present instance utilized as such a locking strip. To this end the groove *b'*, is so located in its rail A that it is on the prolongation of the groove *b*, in rail B, when the tenon is home in its mortise. The molding C of the rail B overlaps that portion of rail A which contains groove *b'* and is provided on its inner face with a tongue—in this instance an extension of tongue *c*—which enters groove *b'*, thus locking together the two meeting ends of the rails against any drawing apart of the mortise and tenon joint.

All the moldings of course are secured in



place by small nails, as usual. The joint between the meeting ends of the two moldings or rails A, B, is represented by a miter joint; but the same construction, so far as the locking of the two rails together by the molding on the one rail entering a groove  $b'$  in the other rail, can be employed with a square, instead of a miter, joint.

The interlocking of the undercut  $f'$  on the one rail with the bevel edge tongue  $g'$  on the other rail, is not indispensable; but I prefer it inasmuch as it stiffens and strengthens the joint and takes off from the tenon  $d$  strains which otherwise might come upon it.

The screen fabric X, as shown in Fig. 3, extends over the groove  $b$  in the tenoned rail A, and is forced down into that groove by the tongue on the molding appropriate to that rail. On the mortised rail B, the screen fabric extends up to, but not over, the groove  $b$  therein, so as not to interfere with the action of the locking tongue. The screen fabric on this edge is of course held by the same nails which secure the molding in place. This is the preferred arrangement. But, of course, the screen fabric can project, on all its edges, over the grooves  $b$  of the frame rails if desired.

Obviously the structural embodiment of the locking tongue device for preventing the drawing apart of the members of the mortise and tenon joint, may be variously modified without departure from my invention. For instance, in the modification shown in Figs. 5, 6, the locking tongue consists of a rod or bar  $c'$  (preferably of metal) which is separate from the molding. It is conveniently made of round wire of a size to fit and fairly fill the grooves  $b$   $b'$  to the extent to which it occupies them. In the present instance the locking tongue is bent at about its middle so that the two limbs will stand at right angles with one another. The one limb fits in the groove  $b$  of the mortised rail and the cross groove  $b'$ , in the tenoned rail, and the other limb thence extends into the longitudinal groove  $b$  in the tenoned rail, acting as a tongue to hold the edge of the wire in the said groove. In this construction the tongues on both of the moldings, are duly shortened (as shown for one of the moldings in Fig. 6) so as not to interfere with the separate locking tongue  $c'$ , the moldings when in place acting to cover, as well as to hold in place, said locking tongue.

If desired, the limb of the locking tongue  $c'$  which enters the groove  $b$  in the tenoned rail A can be dispensed with, or severed from the other limb, at the dotted line  $c^2$  Fig. 5, the locking tongue in this case consisting of a straight metal bar extending from the groove  $b$  in the mortised rail into the cross groove  $b'$  in the tenoned rail.

That the locking tongue—whether forming part of the molding or not—can be thus

conveniently and efficiently applied, is due primarily to the fact that the locking grooves for said tongue in the meeting ends of the rails, are formed in the face of the rails beyond the mortise and tenon joint, so that they remain open and uncovered after the joint is closed, in a position to permit the locking tongue to be fitted or laid directly into both of them without any lengthwise sliding movement, such as takes place when a dowel pin is driven into a hole.

Having described my improvement and the best way now known to me of carrying the same into practical effect, I state in conclusion that I do not restrict myself narrowly to the structural details herein shown and specified in illustration of the invention, since manifestly the same can be varied in a number of respects without departure from the principle of the invention. But

What I claim herein as new and desire to secure by Letters Patent is as follows:

1. The rails A B having their meeting ends united by a mortise and tenon joint, that portion of the tenoned rail beyond the tenon having in its face a groove which extends from its inner edge in a direction crosswise of the tenon, and remains open after the joint is closed, and a locking tongue secured to the mortised rail and projecting into and engaging said cross groove in the tenoned rail, substantially as and for the purposes hereinbefore set forth.

2. The rails A B having their meeting ends united by a mortise and tenon joint and having on their inner edges longitudinally grooved rabbets, the tenoned rail formed also with a groove crosswise of the tenon and on the prolongation of the longitudinal groove in the rabbet of the mortised rail, in combination with a locking tongue fitting and held in the longitudinal groove in the mortised rail and projecting into the cross groove in the tenoned rail, and moldings secured in the rabbets, substantially as and for the purposes hereinbefore set forth.

3. The rails A B having their meeting ends united by a mortise and tenon joint and rabbeted on their inner edges, the tenoned rail having a groove  $b'$  crosswise of the tenon, and moldings secured in the rabbets, the molding on the mortised rail overlapping the portion of the adjoining rail in which the groove  $b'$  is formed and being provided with a projection or tongue to enter and engage said groove.

4. The rails A B having their meeting ends united by a mortise and tenon joint and having on their inner edges rabbets  $a$  formed with grooves  $b$ , the tenoned rail having a groove  $b'$ , crosswise of the tenon and on the prolongation of the groove  $b$  in the rabbet in the adjoining rail, in combination with moldings secured in the rabbets, provided with tongues to enter the grooves  $b$  therein,



the molding on the mortised rail overlapping the portion of the adjoining rail in which the cross groove *b'* is formed, and provided with a locking tongue to engage said groove.

- 5 5. The rail A formed with rabbet *a* having groove *b* therein, tenon *d*, cross-groove *b'* and undercut recessed portion *ff'*, and the rail B formed with a rabbet *a* having groove *b* therein, mortise *e* to receive the tenon *d*, and  
10 a beveled tongue *g g'* to fill and interlock with the undercut recessed portion *ff'* of the rail A when the tenon is home in the

mortise, in combination with tongued moldings secured in the rabbets in the rails and engaging the grooves *b* therein, the molding 15 on rail B also overlapping the portion of rail A in which the groove *b'* is formed and engaging said groove.

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

ALLEN H. MIX.

Witnesses:

O. E. ADAMS,  
SYLVESTER C. DEMING.