

No. 632,700.

Patented Sept. 12, 1899.

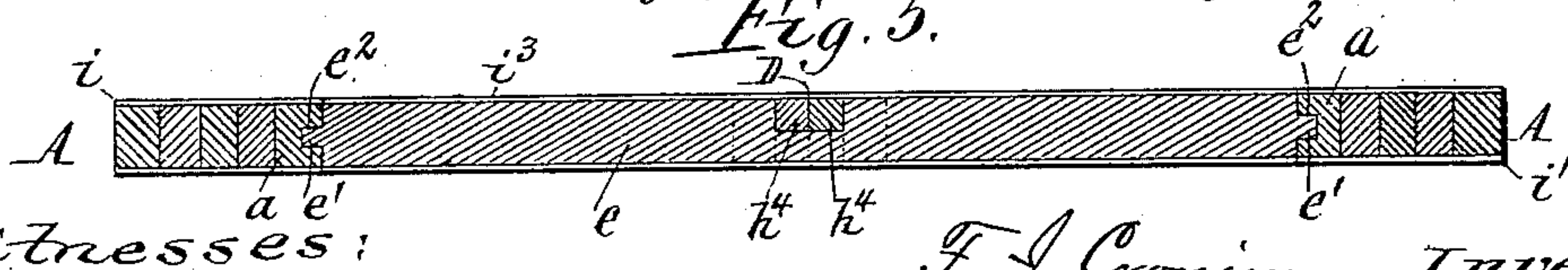
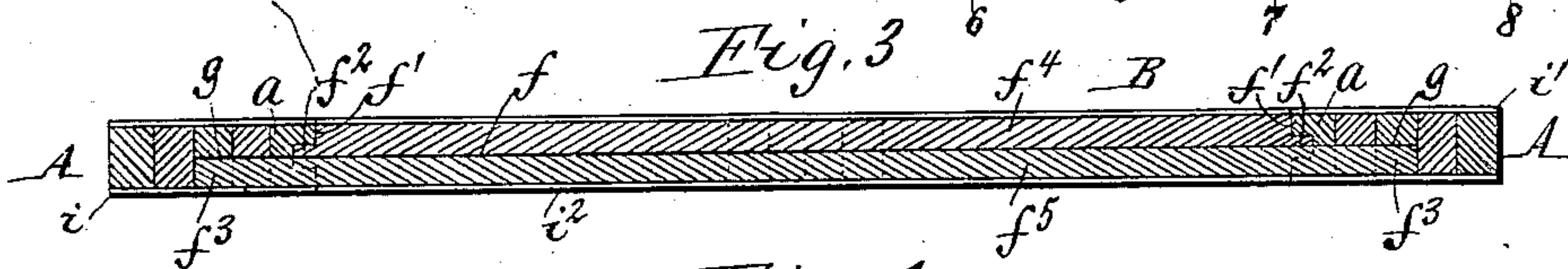
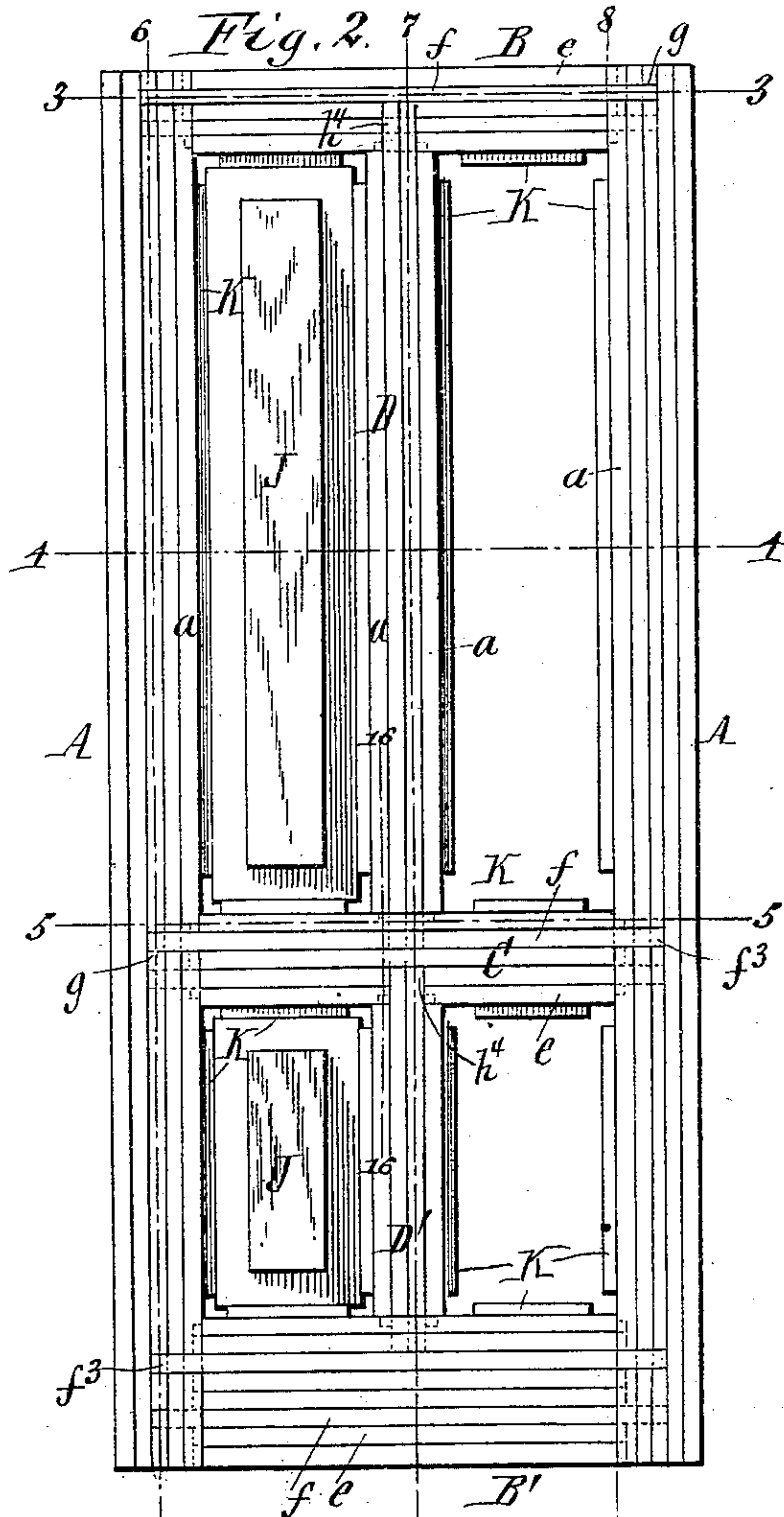
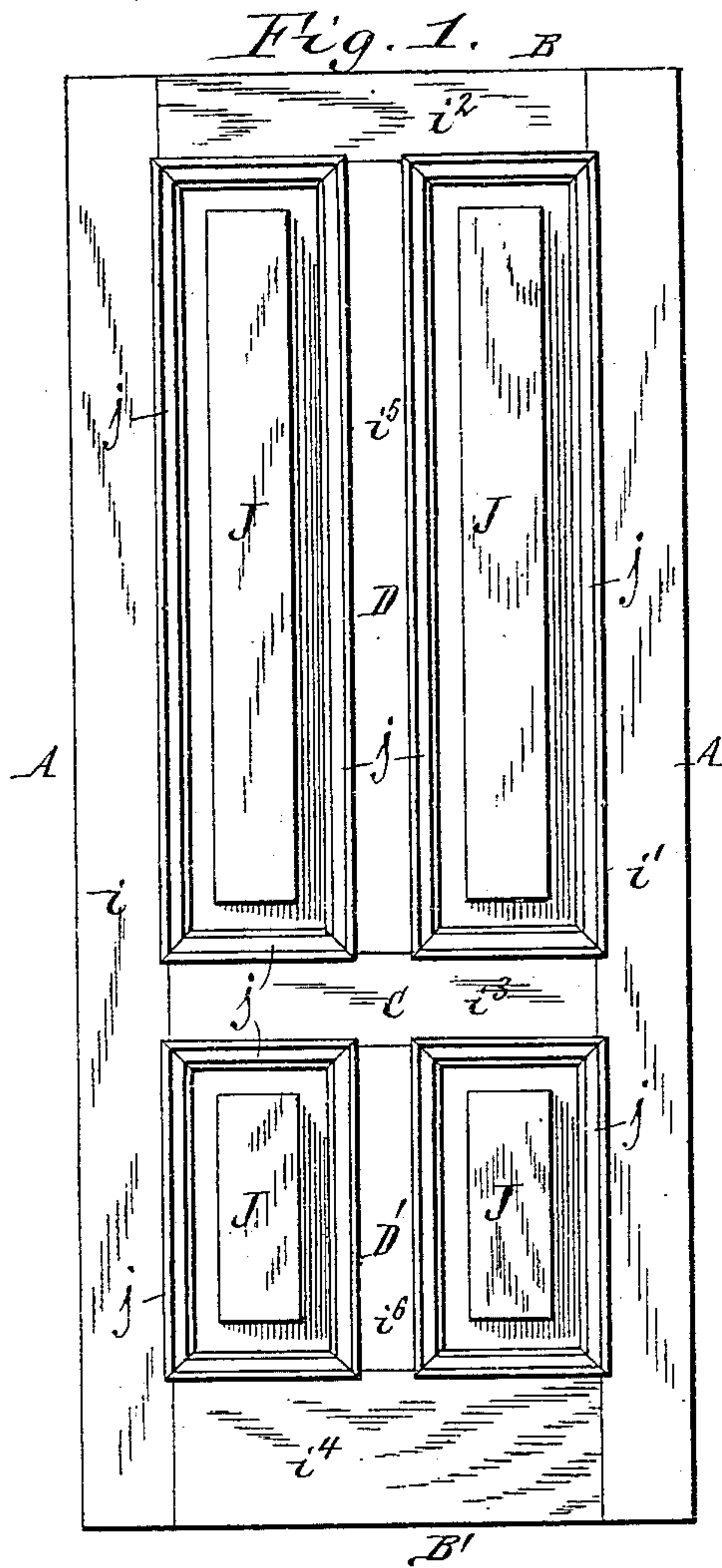
F. J. CRONIN.

DOOR.

(Application filed Jan. 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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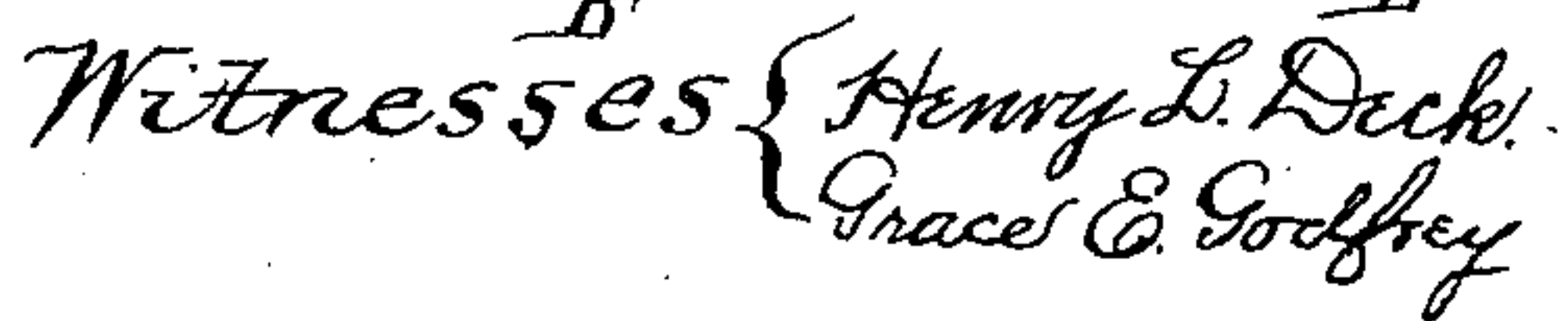
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**2 Sheets—Sheet 2.**



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# UNITED STATES PATENT OFFICE.

FREDERICK J. CRONIN, OF BUFFALO, NEW YORK.

## DOOR.

SPECIFICATION forming part of Letters Patent No. 632,700, dated September 12, 1899.

Application filed January 21, 1899. Serial No. 702,876. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK J. CRONIN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Doors, of which the following is a specification.

This invention relates to cored doors in which the body or frame of the door is built up of strips or pieces of cheap hard or soft wood and veneered with more expensive hard or soft wood.

One of the objects of this invention is the production of a door of this character in which the different frame members are connected by joints which can be thoroughly glued and which prevent the frame members from warping.

Another object of my invention is to improve the means for securing the panels to the frame after the latter is finished.

In the accompanying drawings, consisting of two sheets, Figure 1 is a face view of a door constructed in accordance with my invention. Fig. 2 is a similar view of the door-frame before the veneer is applied thereto and showing the means for centering the panels. Figs. 3, 4, and 5 are horizontal sections, on an enlarged scale, in lines 3 3, 4 4, and 5 5, Fig. 2, respectively. Figs. 6, 7, and 8 are vertical sections, on an enlarged scale, in lines 6 6, 7 7, and 8 8, Fig. 2, respectively. Fig. 9 is a fragmentary vertical section in line 9 9, Fig. 8. Fig. 10 is a perspective view of the top rail of the door-frame. Figs. 11, 12, and 13 are fragmentary perspective views of the two stiles and the upper muntin, respectively. Fig. 14 is a fragmentary sectional perspective view of the top rail on an enlarged scale, the section being taken in line 14 14, Fig. 10. Fig. 15 is a fragmentary perspective view of one of the binding-strips of the frame. Fig. 16 is a fragmentary sectional perspective view taken in line 16 16, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A A represent the stiles of the door; B B', the top and bottom rails; C, the intermediate or lock rail, and D D' the upper and lower muntins.

Each of the stiles is built up of a number of strips of uniform length and thickness ar-

anged side by side and secured to each other, preferably by glue. As shown in the drawings, each of the strips is made in one piece; but, if desired, the same may be built up of a number of pieces, which permits of utilizing small scraps of wood. The outward strip of each stile may be of choice wood and the remaining strips of inferior wood.

Each of the rails is composed of a number of short locking-strips *e* and a number of long binding-strips *f*, which are of the same thickness as those of the stile and which are glued or otherwise secured together side by side. Each of the short locking-strips *e* abuts with its ends against the inner longitudinal side of the innermost strips *a* of the stiles and is provided at its ends with short tenons *e'*, which engage with the adjacent portion of longitudinal grooves *e''*, formed in the inner sides of said innermost strips. Each of the long binding-strips *f* is provided at its ends with shoulders *f'*, which bear against the inner sides of the innermost strips of the stiles, short tenons *f''*, engaging with the grooves in the stiles, and tongues *f'''*, engaging with recesses or sockets *g*, formed in the sides of the stiles. The binding-strips are each preferably built up of two parts or members *f<sup>4</sup>* *f<sup>5</sup>*, the combined thickness of which is equal to the locking-strips of the rails, because small pieces or scrap-wood which usually goes to waste may thus be utilized, although the same may be formed in a single piece, if desired. One of the members of the binding-strips preferably has the shoulders *f'* and the tenons *f''* formed thereon, while the other member is provided with the tongues *f'''*, as shown in Figs. 3, 10, and 15. A pair of binding-strips is preferably arranged in each of the rails, and the tongues of the binding-strips in each rail and the recesses in the adjacent stile receiving the tongues are arranged on opposite sides of the rail and stile, as shown in Figs. 6, 8, 10, and 12. By this arrangement of the tongues and recesses each rail overlaps or embraces both sides of the adjacent stile, thereby securely interlocking both of the members and preventing them from warping. The upper rail and the lock-rail are each preferably composed of three locking-strips and two binding-strips arranged alternately, the former being arranged between the binding-



strips and along the longitudinal edges or sides of the rail, as shown in Fig. 10, by which construction the tongues  $f^3$  at each end of the rail and the recesses in the stile, which receive the tongues  $g$ , are arranged transversely out of line, as shown in Fig. 6, thereby leaving a sufficient amount of stock between each pair of recesses on opposite sides of the stile to prevent weakening the door at this point.

In the construction of the bottom rail the locking-strips are preferably arranged in pairs between the binding-strips and along the inner and outer sides of this rail, as shown in Figs. 2, 7, and 8. In the drawings each stile is represented as being composed of five strips, and the recesses  $g$ , which receive the tongues  $f^3$  of the rails, extend through the inner three strips, leaving the outer two strips thereof complete or uncut from end to end; but the number of strips and the extent of the recesses therein may be varied to suit the size of the door and other conditions.

Each of the muntins is preferably composed of two inner binding-strips and two outer locking-strips, which are arranged side by side and which are of the same thickness as the strips of the rails and stiles, so as to be flush therewith. The locking-strips of the muntins are each provided at opposite ends with short tenons  $h$ , which engage with longitudinal grooves  $h'$  in the inner sides of the innermost strips of the top and bottom rails and in the locking-strips on opposite sides of the lock-rail, as shown in Figs. 9, 10, 13 and 16, in the same manner in which the tenons of the rails engage with the grooves in the stiles. Each binding-strip of the muntins consists of two parts or members, each of which is provided at one end with a shoulder  $h^2$  and a short tenon  $h^3$ , which engage with the inner side and groove  $h'$  of the adjacent rail and at its opposite end with a tongue  $h^4$ , which engages with a recess  $h^5$  in the side of the strips of the adjacent rail, as shown in Figs. 7, 10, 13, and 14. By this construction of the muntin binding-strips the tenons and tongues are arranged reversely at opposite ends of the same binding-strips, and the recesses  $h^5$ , which receive the opposing tongues of the two muntins, are arranged in opposite sides of the lock-rail, as shown in Figs. 7 and 16, thereby securely holding the latter against warping. The recesses  $h^5$  in the lock-rail extend only through the two outer strips on opposite sides thereof, leaving the central strip thereof uncut.

In the construction of this frame the inner long-grained side of each of the tongues on one member can be laid flatwise and be thoroughly glued against the long grain in the bottom of the recess in the opposing member, thereby always insuring a strong glue joint between the parts, which is not possible when inserting a tenon into a mortise as heretofore practiced, because more or less of the glue on the parts is wiped out of place in the act of assembling the parts.

$i, i', i^2, i^3, i^4, i^5$ , and  $i^6$  are strips of veneer glued to opposite sides of the stiles, rails, and muntins of the door. These strips of veneer, in addition to giving the door its finish, also aid in holding these several strips of each member together, and by extending the veneer across the joints between adjacent members the latter are firmly secured to one another.

J represents the panels of the door which are arranged in the panel-openings of the frame, and  $j$  the moldings secured by nails or otherwise to the frame around the edge of the panel-openings on opposite sides of the panels. K represents centering pieces or cleats whereby the panels are held in the proper position in the panel-openings preparatory to securing the moldings in place. One or more of these centering-cleats is secured by gluing or otherwise in the grooves of the stiles and rails and in similar longitudinal grooves  $j'$  in the outer strips of the muntins. After the door-frame is completed the panels are placed between the centering-cleats and then secured in place by the moldings. The panels are preferably fitted loosely between the cleats to allow the panels to expand or contract freely and thereby avoid warping or cracking of the same. By grooving the strips facing the panel-openings and placing separate panel-centering cleats therein a considerable saving in lumber is effected, because the centering-cleats can be made of waste or scrap wood, whereas if the cleats were formed integrally with the strips facing the panel-openings a correspondingly wider strip would have to be used to allow for forming the cleat thereon.

I claim as my invention—

1. A door having adjacent frame members one of which is composed of strips secured side by side and provided with a recess in its side, and the other member having a tongue which fits into said recess, substantially as set forth.

2. A door having adjacent frame members one of which is provided with a groove in its edge and a recess in its side, and the other member having a tenon which engages with said groove and a tongue which engages with said recess, substantially as set forth.

3. A door having adjacent frame members one of which is provided with recesses on opposite sides and the other member having tongues on opposite sides which engage with said recesses, substantially as set forth.

4. A door having adjacent frame members each of which is composed of strips secured side by side, one of said members having a groove in its innermost strip and a recess in the outer side of one or more of its strips, and the other member having a tenon on one or more of its strips which engage with said groove and a tongue on one of its strips which engages with said recess, substantially as set forth.

5. A door having adjacent frame members each of which is composed of strips secured



side by side, one of said members having a groove in its innermost strip and having its opposite sides provided with recesses which are out of line, and the other member having strips provided with tenons which engage with said groove and strips provided on opposite sides with tongues arranged out of line and engaging with said recesses, substantially as set forth.

10 6. A door having adjacent frame members each of which is composed of strips secured side by side, one of said members having a groove in its innermost strip and having its opposite sides provided with recesses which  
15 are out of line, and the other member having alternate long and short strips, the short strips having central tenons which engage with said groove and the long strips having tongues on the side which engage with said recesses, sub-  
20 stantially as set forth.

7. A door having adjacent frame members each of which is composed of strips secured side by side, one of said members having a groove in its innermost strip and a recess in  
25 the side of one or more of its strips, and the other member having one or more of its strips divided into two parts, one part having a tenon which engages with said groove and the

other part having a tongue which engages with said recess, substantially as set forth. 30

8. The combination with the door-frame provided with a panel-opening and having the inner edges of its members which face the panel-opening provided with grooves, of centering pieces or cleats arranged in said grooves  
35 and adapted to center the panel in said opening, substantially as set forth.

9. The combination with a door-frame having each of its members which incloses the panel-opening provided along its inner edge  
40 with a groove and having adjacent members connected by a tenon arranged on one member and engaging with the groove in the other member, of centering pieces or cleats arranged in those portions of said grooves which face  
45 the panel-opening, a panel constructed to enter the space between said centering pieces or cleats, and moldings for securing the panel in its opening, substantially as set forth.

Witness my hand this 11th day of January, 50  
1899.

FREDERICK J. CRONIN.

Witnesses:

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ALBERT C. HALL.