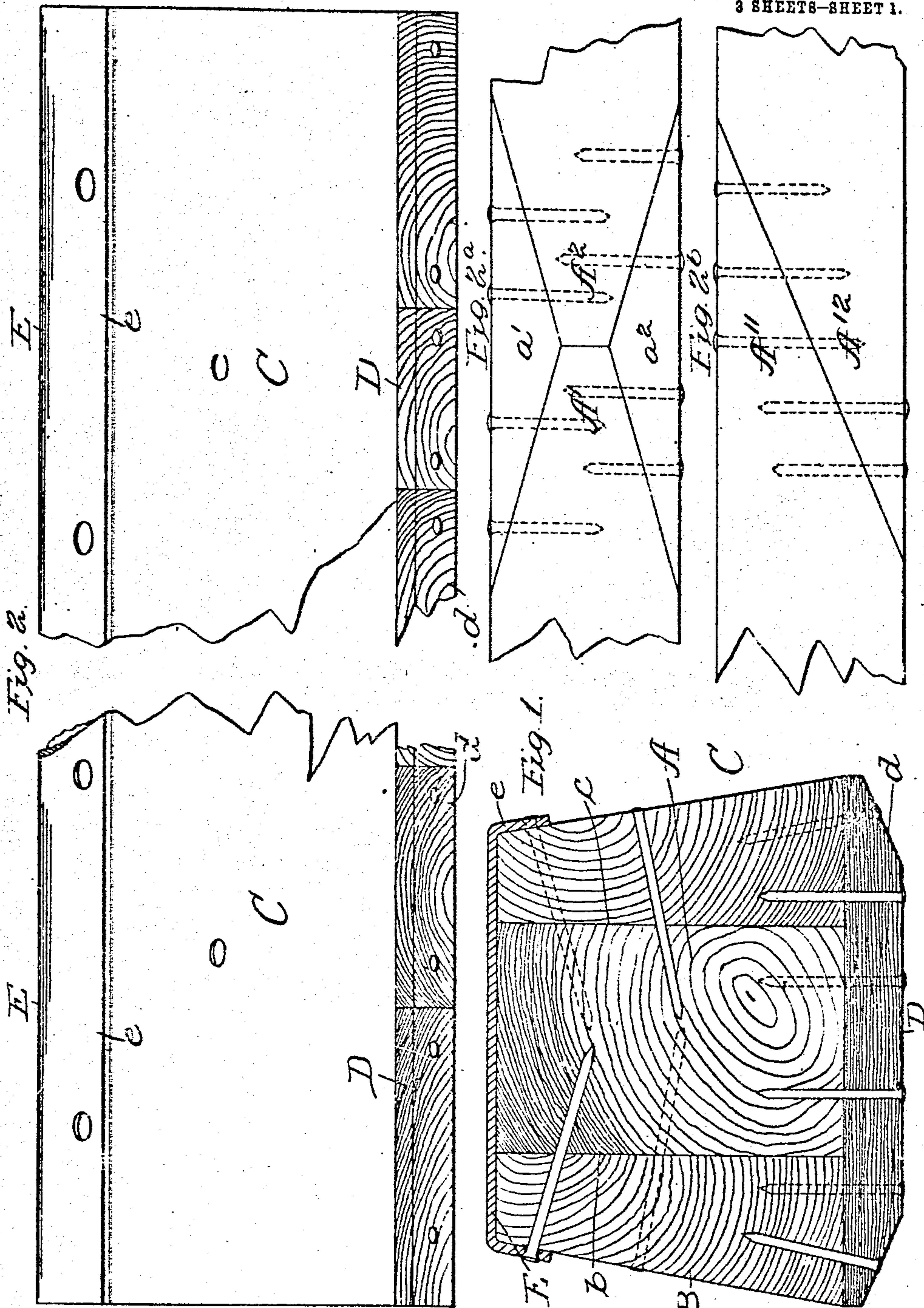


W. L. SYKES.  
RAILROAD TIE OR SLEEPER.  
APPLICATION FILED MAR. 13, 1910.

985,470.

Patented Feb. 28, 1911.

3 SHEETS—SHEET 1.



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Bent M. Stahl.  
Clerk L. Tolson

by *John Middleton Donaldson* for *Att'y's*

Inventor:  
WILLIAM L. SYKES.

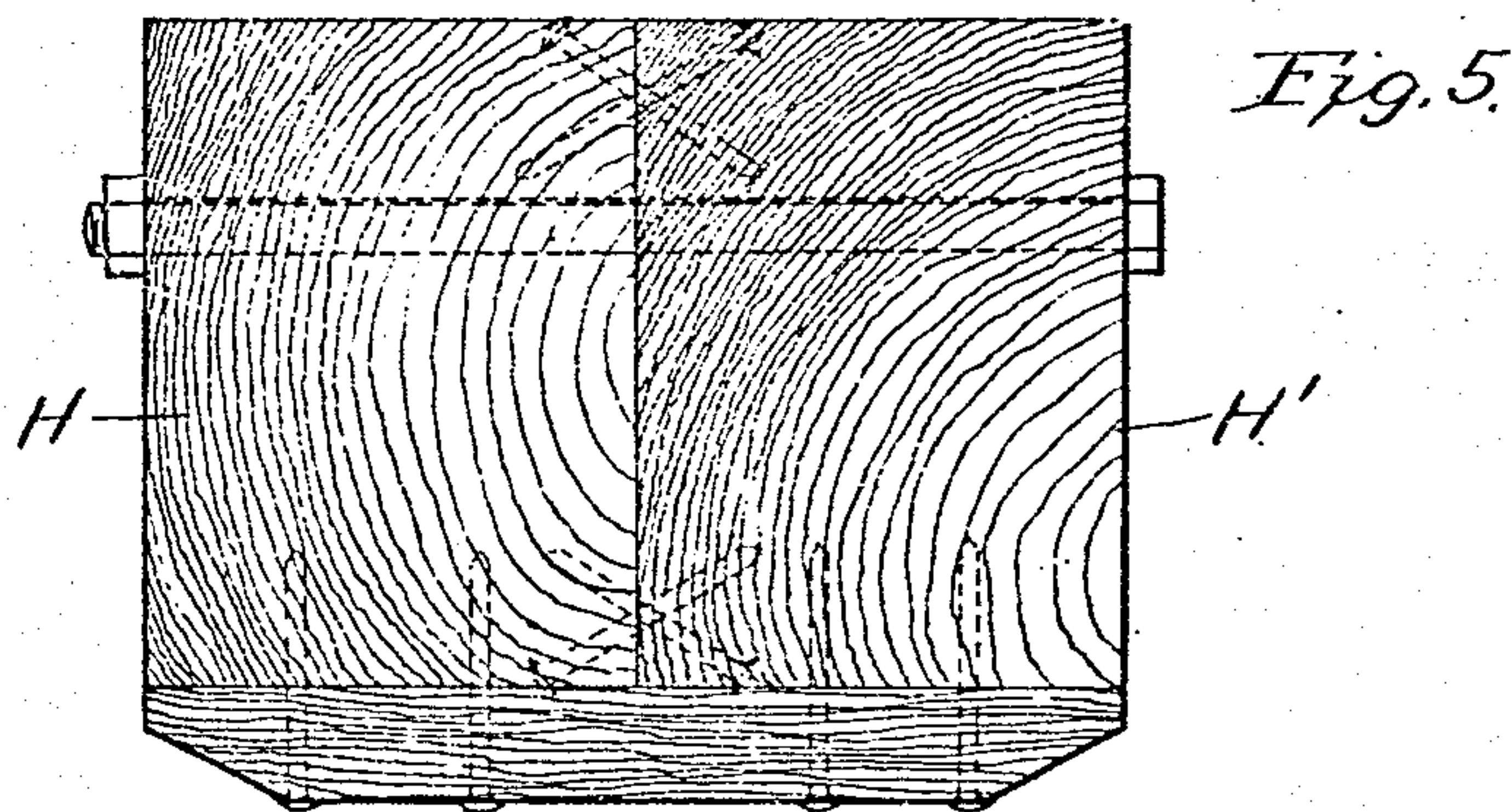
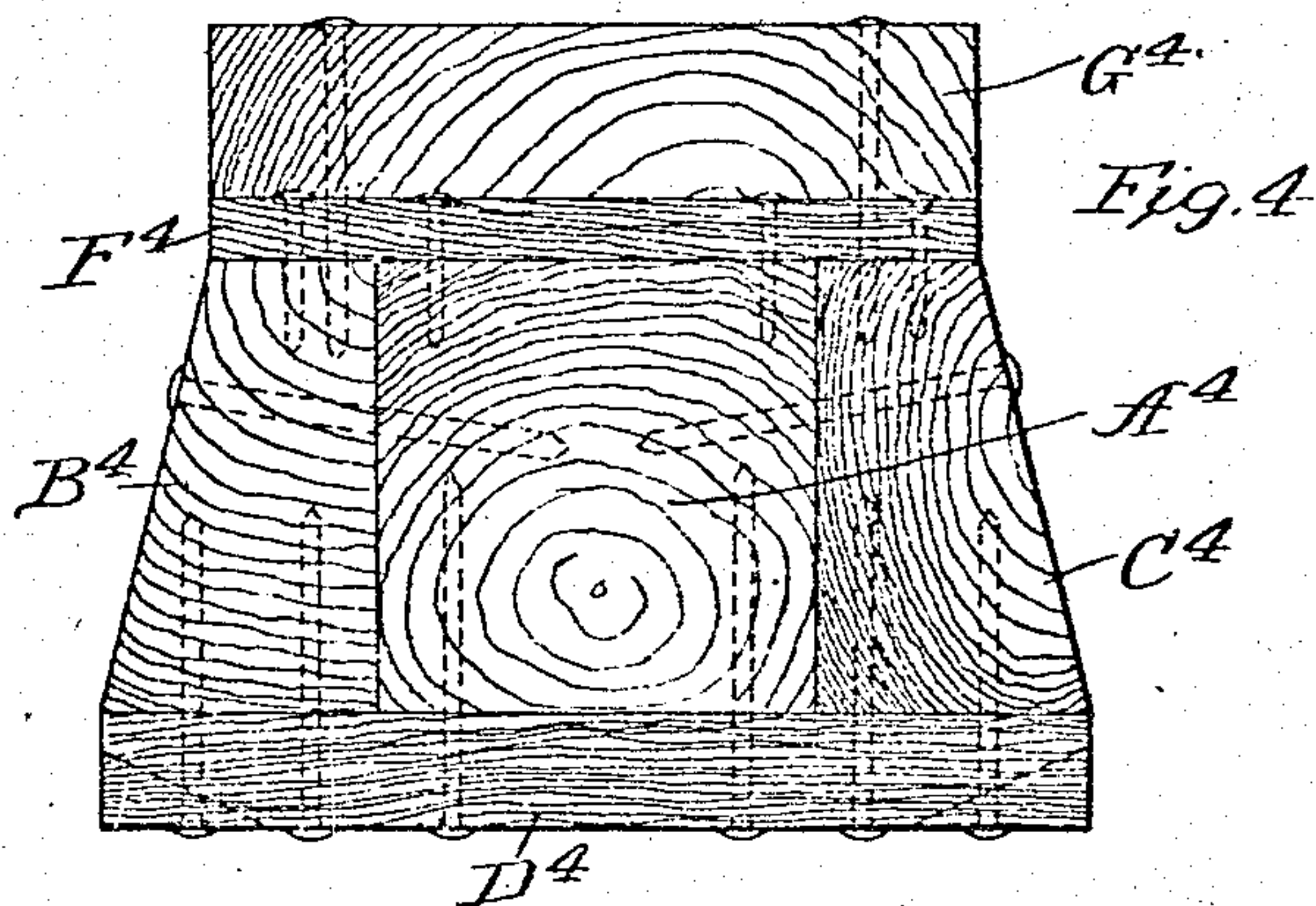
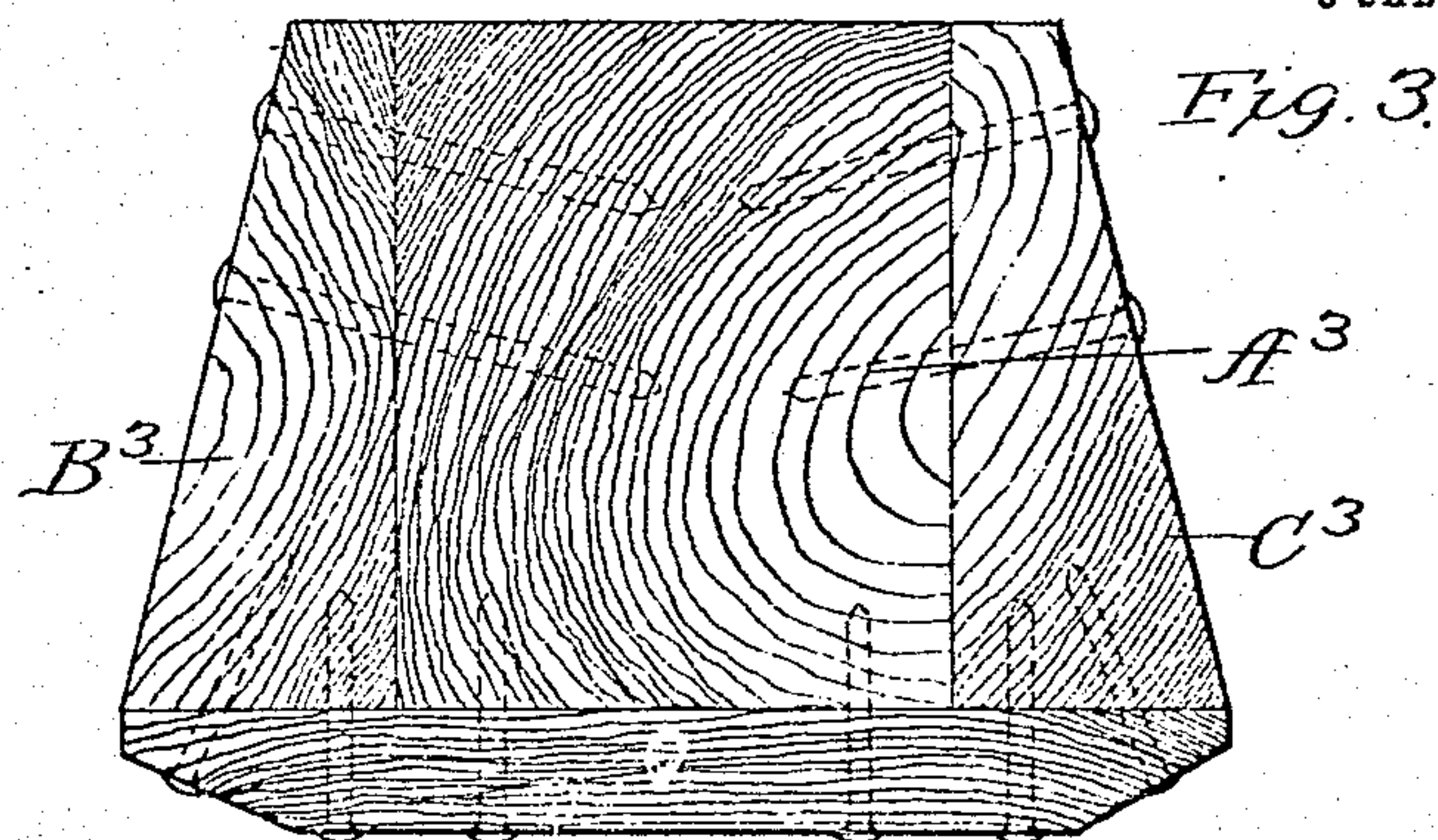


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3 SHEETS—SHEET 2.



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Inventor:  
WILLIAM L. SYKES.  
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Att'y

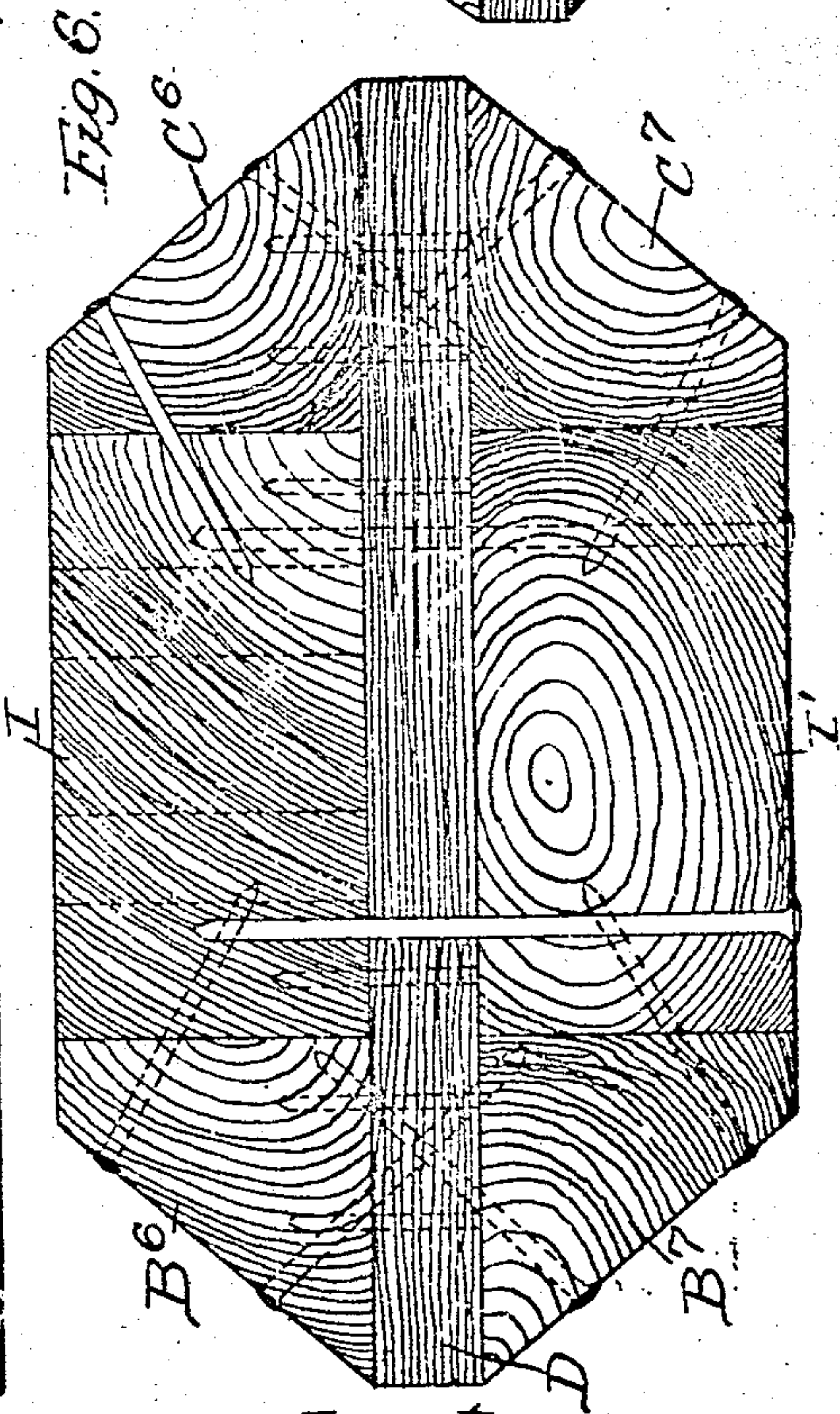
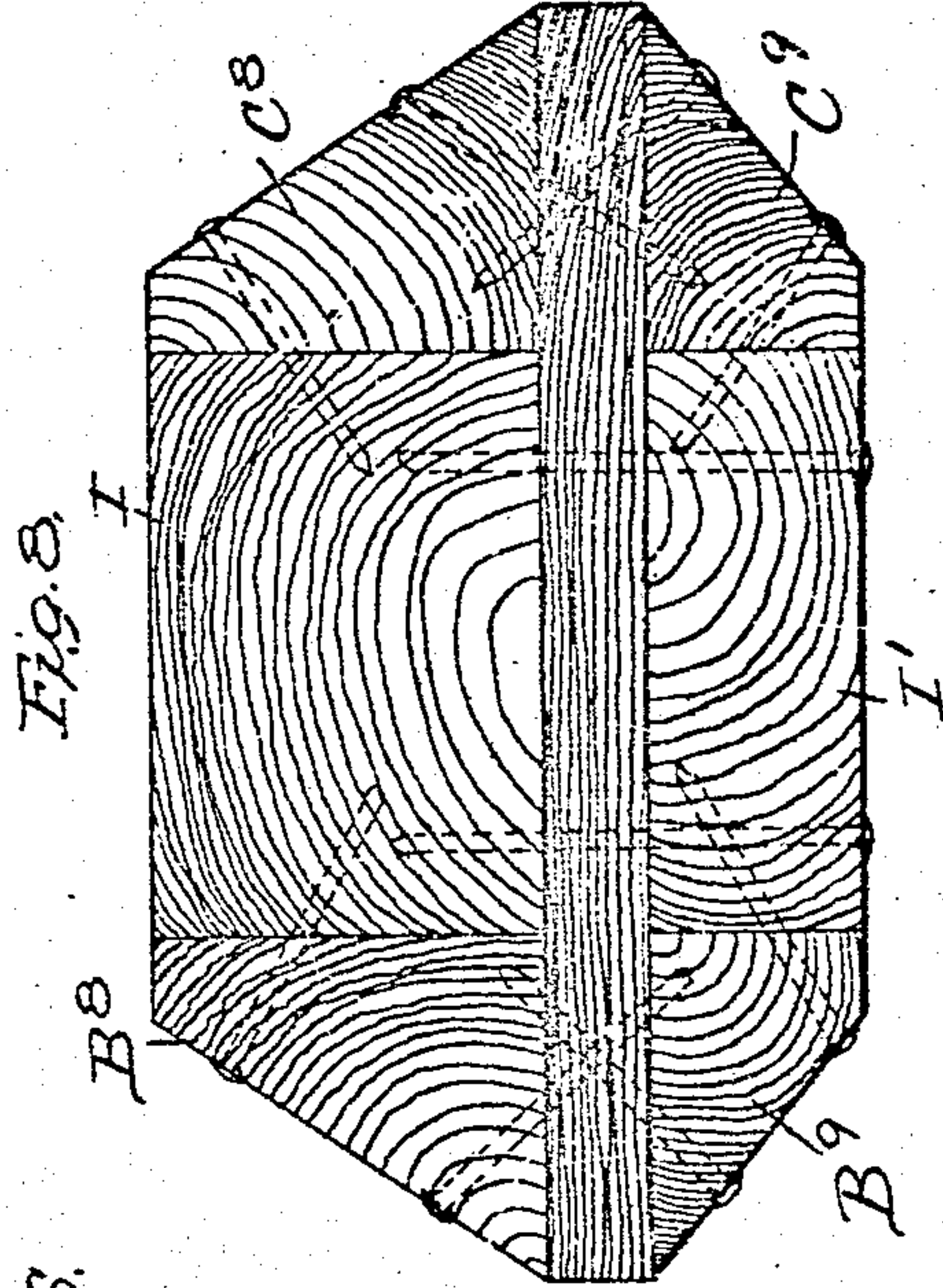
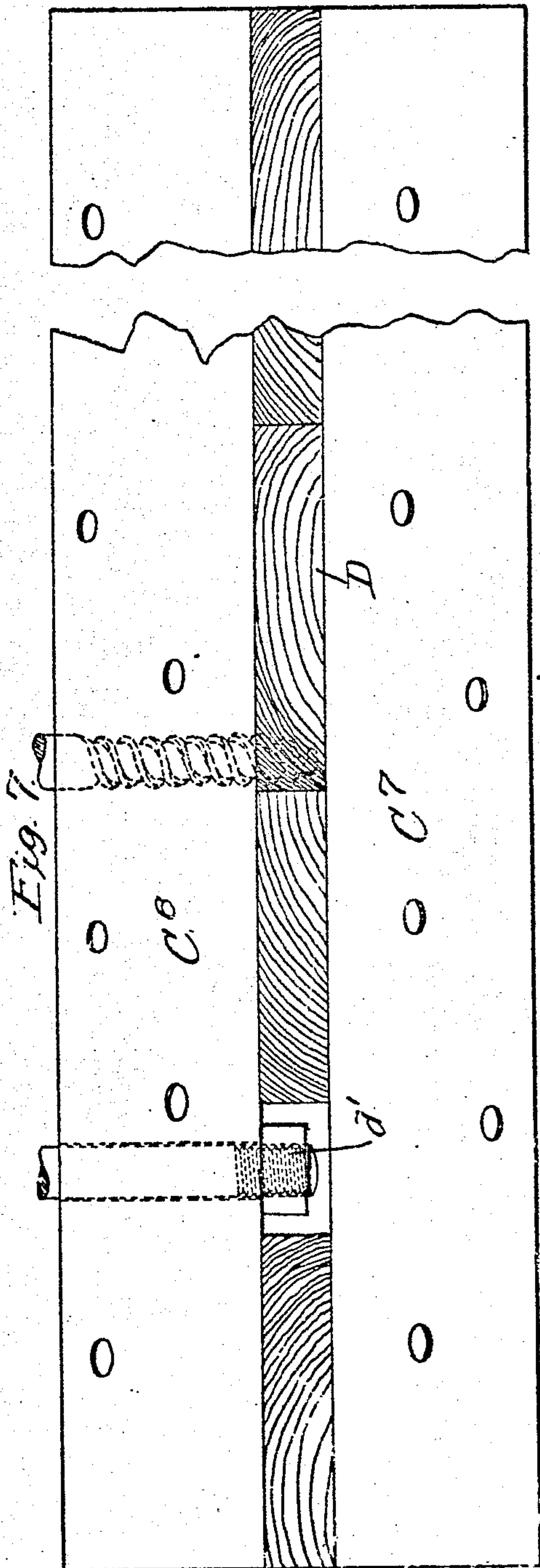


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3 SHEETS-SHEET 3.



Attest.  
Bent H. Stahl.  
Chas. A. Tolson.

by

Inventor,  
WILLIAM L. SYKES.  
Charles Middleton Donaldson, atty.



# UNITED STATES PATENT OFFICE.

WILLIAM L. SYKES, OF BUFFALO, NEW YORK.

RAILROAD TIE OR SLEEPER.

985,470.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed March 18, 1910. Serial No. 550,250.

*To all whom it may concern:*

Be it known that I, WILLIAM L. SYKES, citizen of the United States, residing at Buffalo, New York, have invented certain new and useful Improvements in Railroad Ties or Sleepers, of which the following is a specification.

My invention relates to improvements in railroad ties or sleepers and comprises the novel features of construction and arrangement and combination of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings:—Figure 1 is a transverse sectional view through a tie or sleeper constructed in accordance with my invention. Fig. 2 is a side elevation. Figs. 2<sup>a</sup> and 2<sup>b</sup> are detail views of modifications. Fig. 3 is a cross sectional view of a modified form. Fig. 4 is a similar view of a still further modification. Fig. 5 is a view of a still further modification. Fig. 6 is a view of a still further modification. Fig. 7 is a side elevation of the same, and Fig. 8 is a view of a modification of Fig. 6.

It is well known that the problem of securing timber for railway sleepers or ties is becoming a very serious one owing to the growing scarcity of timber and the increasing cost. This has led to many attempts to provide substitutes for wood ties, either in the shape of concrete or composition ties, or metallic ties, but none of these, so far as I am aware have proved successful or have been adopted to any extent by the railroads.

The average size of tie used is approximately 7x9" in cross section and hence requires for its production a log to be at least 11" in diameter, and hence, of considerable initial value. Such ties are at present more or less treated by wood preservatives, but before they can be properly treated it is necessary that they be thoroughly seasoned, and in the seasoning of a tie from a single stick of timber they, of necessity, develop large cracks which will admit of moisture, thus causing decay and otherwise weakening the tie, thus shortening its period of usefulness. Furthermore, considerable difficulty has been experienced to get the preservation material to thoroughly penetrate a tie of this size. The season cracks will be reduced in number and size by using pieces of smaller dimensions, and such smaller pieces possess the further advantage that they can be more effectively treated by preservatives, and fur-

ther, can be made from parts of trees and smaller trees than will make a standard tie of one piece.

I have aimed to produce a tie of such a construction that it can be made of such smaller pieces with the attendant advantages above set forth and which will yet be as strong and more durable than the tie made in the ordinary manner of a single solid piece of wood. In other words, I have aimed to produce a tie which, while meeting with all the demands of the railway, may be constructed to the best advantage from the standpoint of the lumberman and forester, with a view to making the most economical use of the smaller sizes of lumber, and thereby producing the maximum number of ties with a minimum amount of waste from any given number of trees.

In the preferred form of my invention, illustrated in Figs. 1 and 2, I form the tie of a main central section A, and two side sections B and C, and preferably with a base member or section D. While I do not restrict myself to size or dimensions, I will describe this tie as of a size which I regard as preferable, and in giving the dimensions, can the more readily explain some of the salient features. The central or main member A is preferably about four inches in width by about six inches in height and the two side pieces B and C are of the same height and about one-and-a-half inches thick at the top and about two-and-a-half inches at the bottom. It will thus be seen that these two pieces may be made from a single stick or piece of the size of the piece A, by simply sawing through the center of such piece on a slightly inclined or diagonal line, and then by inverting one-half and placing the two on opposite sides of the piece A, a combined article is produced having an upper surface seven inches in width and a base nine inches in width. This gives an upper surface of ample width to support the rail, a central portion of requisite size and strength and solidity to receive the spikes or screws, and provides a broader base to afford ample bearing upon the road bed. The thickness of the side pieces or members B and C is such that they may be readily fastened to the central member or section by nails of suitable size, which form a cheap fastening means but at the same time one of great strength and durability. The nailing may be cheaply and rapidly done, either by hand



or a nail driving machine. I have found by practice that fastening by means of suitable nails, properly spaced, is preferable to using bolts, as bolts must, of necessity, be placed a greater distance apart, and must have holes bored for their reception, are costly, and because of their distance apart afford opportunity for a slight movement of the parts with relation to each other under weight of the heavy rolling stock now used, and vibration thereof. Pieces of the size thus described, in addition to being easily and cheaply secured together, possess the further advantage of being more readily seasoned with less attendant cracks and more thoroughly treated by the preservative processes, as this may be done before they are secured together. I prefer to provide beneath the three assembled pieces above described, the base D, hereinbefore referred to. This is preferably composed of a plurality of strips or pieces of board of promiscuous width placed edge to edge with the grain running crosswise or at right angles to the grain of parts A, B, and C. Such strips or pieces, in a tie of the dimensions given above, would be approximately one inch in thickness. The base D I secure to the pieces A, B and C, by a sufficient number of nails of suitable size, in the same manner as I secure the side pieces B and C to the central or intermediate pieces. If desired, the lower corners or edges of the base may be beveled or inclined, as indicated at *d*, to facilitate tamping. The vertical lines of junction or contact *b* and *c*, between the central and side members, and all other joints, will in practice be found to have little detrimental effect upon the tie, as they will not admit an appreciable amount of moisture, nothing in fact compared with that admitted by the season cracks of the ordinary standard solid wood tie, and further, if any moisture should enter these joints, it would not, as in the case of the one piece season cracked tie, reach a part of the wood which has not been subjected to the action of the preservative. In case it is desired, the upper surface or top of the tie may be covered by a cap plate E made of metal, rolled or pressed, with the flanges *e*, embracing the sides of the tie at the upper corners, and provided with holes for the passage of the fastening devices. Such a plate serves to effectually cover and protect the upper face of the tie, would prevent spreading and also affords a good bearing seat or chair for the rails. It is not necessary for the central member or piece A to be made of a single homogeneous stick of timber, as it may, if desired, be composed of two pieces, as the overlapping of the side pieces B and C will afford the necessary strength, thus producing standard length ties from promiscuous lengths of lumber, with minimum amount of waste. These

may be spliced together by having their abutting ends  $A^1$  and  $A^2$  beveled or inclined as shown in Fig. 2<sup>a</sup> and connecting them by side blocks  $a^1$  and  $a^2$ , or by having the ends  $A^{11}$  and  $A^{12}$  reversely inclined and overlapping as shown in Fig. 2<sup>b</sup>, the spliced parts being connected by nails as shown. It will be obvious that instead of making the central member of piece A of two parts, it could be made of one piece and the side pieces or members made each of two parts, similarly spliced, but in no case should a spliced joint be located within eighteen inches of the rails.

In the form shown in Fig. 3, I have shown a larger central portion  $A^3$ , five inches by six inches in cross section, and two side pieces  $B^3$  and  $C^3$ , cut from a stick of about three-and-one-half by six inches cross sectional area, but on an incline which, when the parts are placed together in the position shown and secured in the manner described in connection with the preferred form, produces a tie having an upper surface seven inches in width and a ten inch base, thus making a tie with an ample upper surface and a broad base, affording large surface area upon the road bed, with a minimum amount of material, and constructed from comparatively small pieces. In this form also I have shown a base with the grain running at right angles to the grain of the superimposed pieces, which may be made with or without beveled edges, as in Fig. 2.

In the form shown in Fig. 4, the construction as provided is built up of still smaller pieces, by retaining the underlying principle of the foregoing forms. In this the central piece may be made of a four by four inch stick, and the side pieces of a piece of the same size, cut on a diagonal line which will give two pieces, each having a thickness of about one-and-one-half inch on one edge, and about two-and-one-half inches on the other. These are placed on the opposite sides of the center piece and secured in the same manner already described, and provided preferably with the bottom section  $D^4$ . In this form I may, if desired, provide above the pieces  $A^4$ ,  $B^4$ , and  $C^4$ , the covering member  $F^4$  which may consist, like the bottom section  $D^4$ , of a plurality of strips arranged with the grain running crosswise of the tie and secured by nailing, in the manner already described. Above this is placed a single piece  $G^4$  extending the whole length of the tie, preferably seven inches in width and one-and-one-half inches in thickness which could be of hard and selected wood for this purpose; or the covering member  $F^4$  can be eliminated from this tie and the piece  $G^4$  nailed direct to the pieces  $A^4$ ,  $B^4$  and  $C^4$ . If the covering member  $F^4$  is used the piece  $G^4$  is one-and-one-half inches thick, and the strips  $F^4$  would be one-half inch thick, but



if the covering member  $F^4$  is eliminated or not used, then the strips  $G^4$  can be two inches thick, and the pieces  $A^4$ ,  $B^4$ , and  $C^4$ , four-and-one-half inches thick. This provides a tie with a nine inch base and a seven inch upper surface, and a height of seven inches, composed of pieces which are cut with a view of economy from the lumberman's standpoint, and united in a manner to produce a strong durable tie free from liability of decay. This form leaves no exposed lines of division for the admission of moisture from the upper surface. The base member  $D^4$  can have its edges beveled, as shown in Fig. 3, if desired.

In the form shown in Fig. 5, I still preserve, though to a less degree, the idea of using pieces cut with economy from the lumberman's standpoint, but with a view to using timber of comparatively small size. In this construction I use two pieces,  $H$  and  $H'$ , each about four-and-one-half inches in width by six inches in height, connected by nailing at frequent intervals. In this form it may be desirable to use several bolts arranged near the upper edge, as shown in Fig. 5, and provided with a base piece similar to that described in connection with the foregoing figures.

In Fig. 6, I preserve the same general underlying principles of construction as found in the other figures; viz., keeping the idea of single small pieces, cut with economy, thus conserving or saving timber from the lumberman's point of view, as will be seen by referring to its construction. In this construction I have used two main pieces,  $I$  and  $I'$ , each about five-and-one-half inches wide by three inches thick, and four side pieces  $B^6$  and  $C^6$ ,  $B^7$  and  $C^7$ , which are fastened to the main section  $I$  and  $I'$  as hereinbefore provided. I use the section  $D$ , made up of pieces of boards or strips with the grain running at right angles to the main section  $I$  and  $I'$ , as a binder between the two pieces  $I$  and  $I'$ , with its attendant side pieces  $B^6$ ,  $C^6$ , and  $B^7$ ,  $C^7$  base to base; all securely nailed together as hereinbefore provided. It will thus be seen that I have a tie with a surface seven inches, a base seven inches, and a depth of seven inches, and having both edges beveled from the center to the surface and to the base, thus giving a wedge shaped tie in the ballast and affording greater and easier facility for tamping, the tie being about twelve inches wide on the ballast. If desired the boards or strips of section  $D$  could be spaced to provide an opening extending transversely of the tie in which could be inserted a nut for the reception of a bolt where it is desired to use a bolt as the rail fastening means. Otherwise a screw or spike might be used extending directly through the section  $D$  into the section below.

The construction of Fig. 6 may be modi-

fied, as shown by Fig. 8, in having the depth of the pieces  $I$ ,  $B^8$  and  $C^8$ , all about four inches instead of three inches, and the depth of  $I'$ ,  $B^9$ ,  $C^9$ , about two inches instead of three inches, thus being better adapted for securing the pieces by nails, as hereinbefore provided.

A tie constructed as hereinbefore described, in addition to the advantages which have been named, possesses the further advantage that it may be constructed of different kinds of wood. Thus the part which is to support the rails and secure the fastening spikes, bolts or screws, can be made of hard wood, and the other portions of softer wood. It will also be understood that the size and relation of the parts may be varied so as not to bring the line of division between the parts in such position at the point where the bolt or other fastening device of any standard rail fastener would enter, and provide a solid piece or member at the point where such fastener would penetrate the tie.

Having thus described my invention, what I claim is:—

1. A railroad tie or sleeper comprising a plurality of sections of wood of substantial thickness arranged side by side on edge and suitably secured together, and a base also composed of wood with the grain arranged crosswise of said sections, which base is suitably secured to said sections, substantially as described.

2. A railroad tie or sleeper comprising three sections of wood of substantial thickness, set on edge, and suitably secured together, and a base secured beneath said sections, said base having the grain arranged at right angles to the grain of said sections, substantially as described.

3. A railroad tie or sleeper comprising a central section and two side sections secured thereto, the side sections gradually increasing in thickness toward the base, substantially as described.

4. A railroad tie or sleeper comprising a central section and two side sections suitably secured together, the two side sections having an average width equal to that of the central section, substantially as described.

5. A railroad tie or sleeper comprising a central section and two side sections, the two side sections being formed by cutting longitudinally on a diagonal line, a piece of dimensions equal to the central section, one of said sections being inverted, substantially as described.

6. A railroad tie or sleeper comprising a central section and two side sections suitably secured together, and a superimposed covering piece or member, substantially as described.

7. A railroad tie or sleeper comprising a central section and two side sections suitably



secured together, and a covering member upon the upper face thereof, composed of strips or boards with the grain at right angles to the grain of said sections, substantially as described.

5 8. A railroad tie or sleeper comprising two central and four side sections, with a binder made up of boards with the grain running at right angles to said sections, and

means for securing the parts together, substantially as described. 10

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

WILLIAM L. SYKES.

Witnesses:

BENNETT S. JONES,  
JAMES M. SPEAR.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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