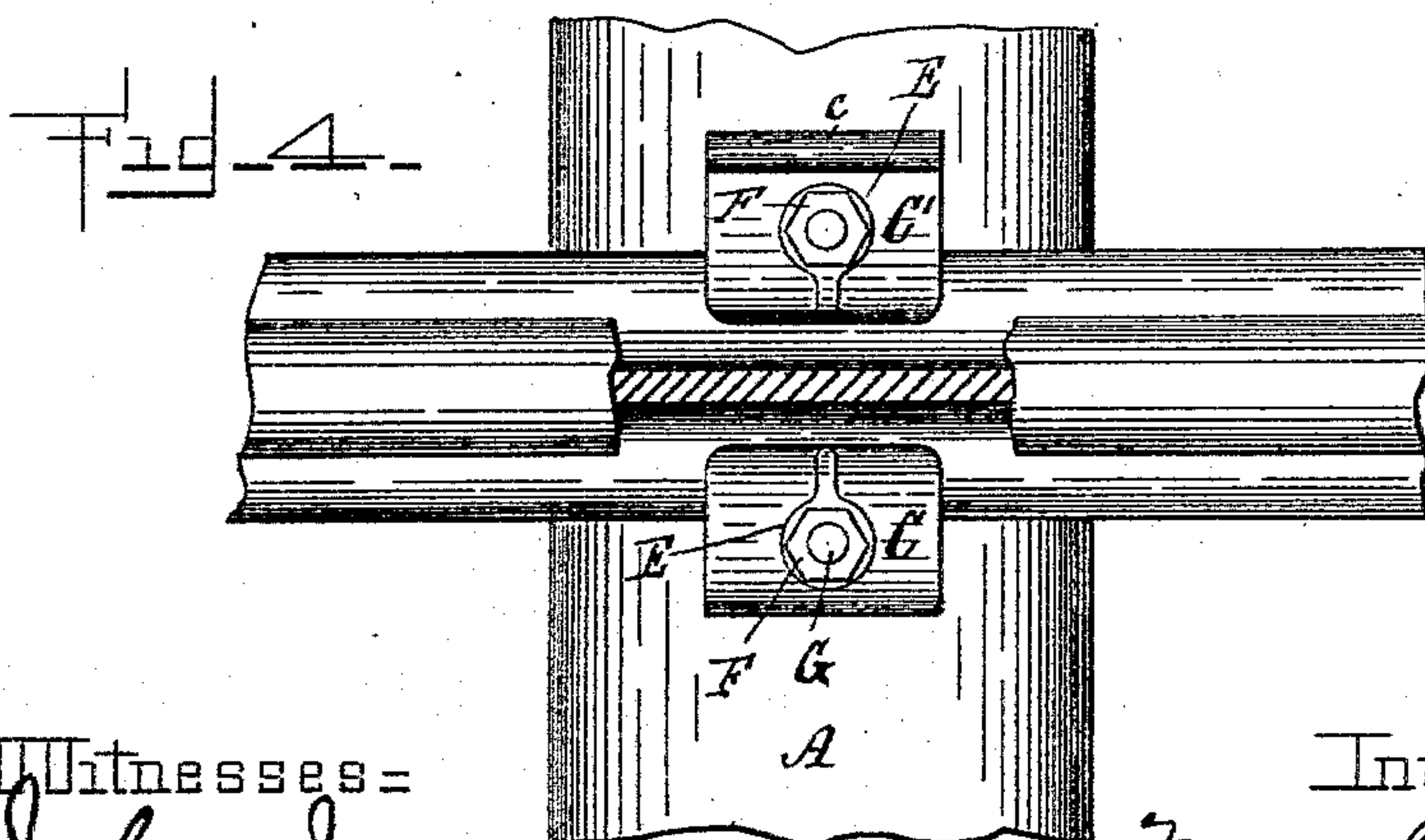
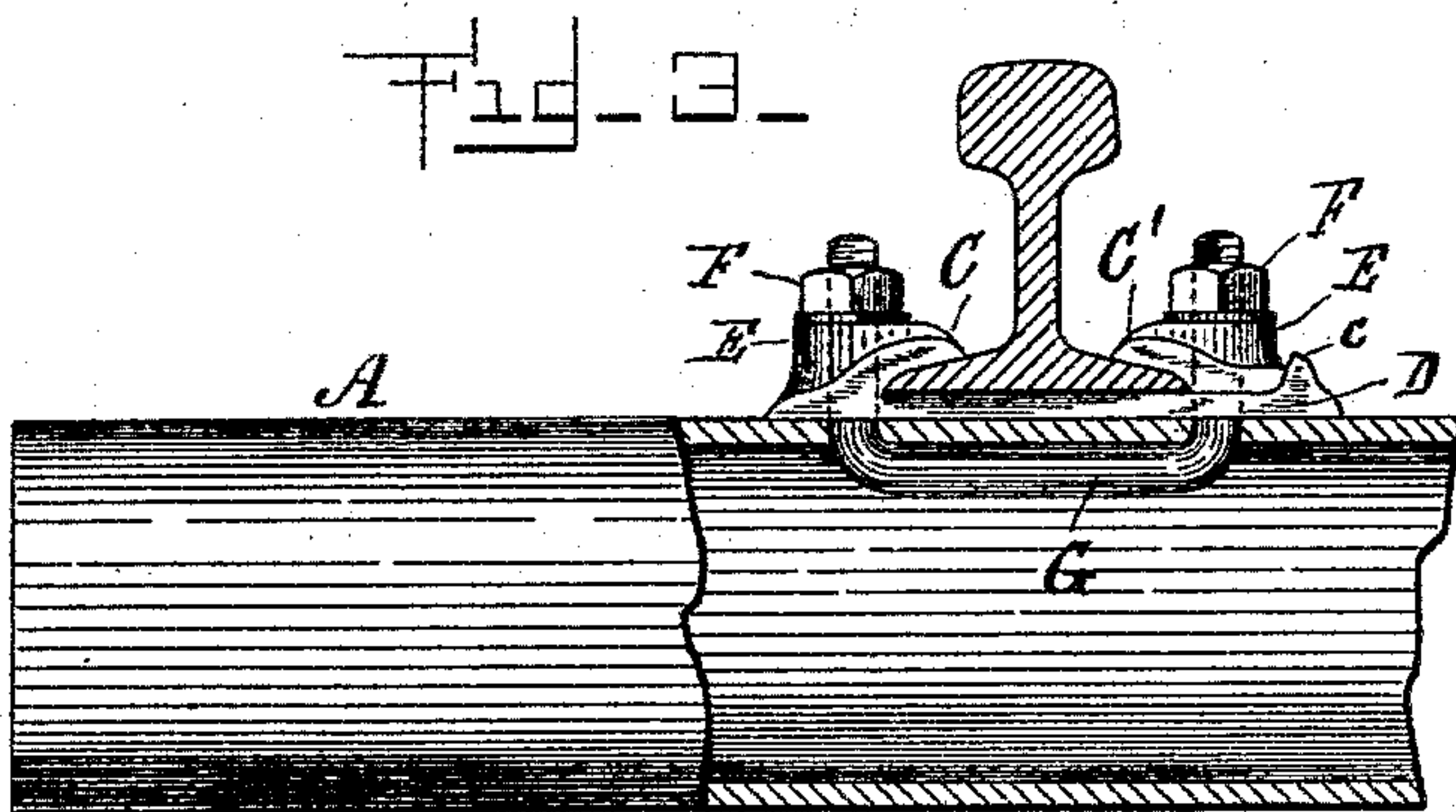
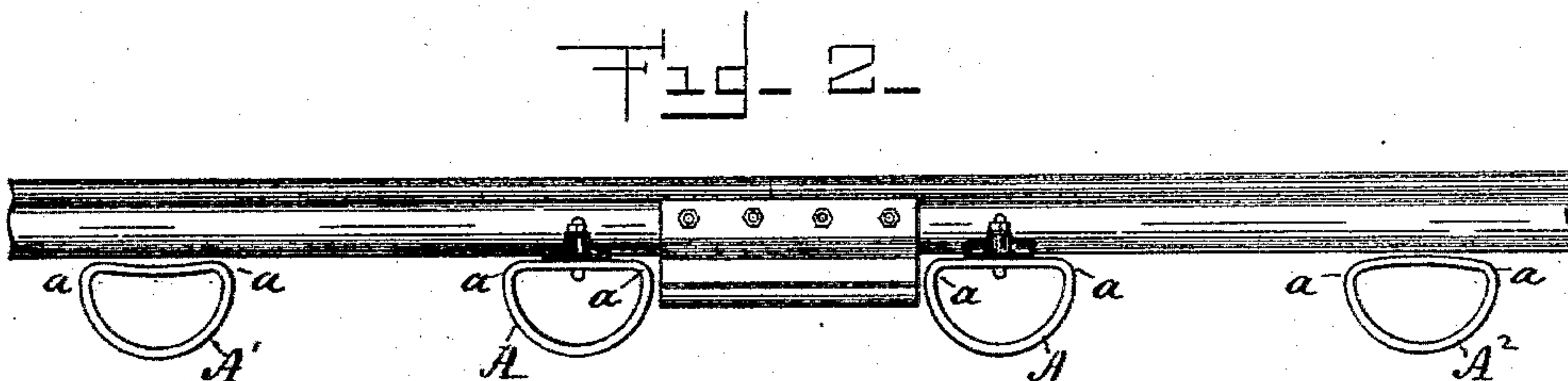
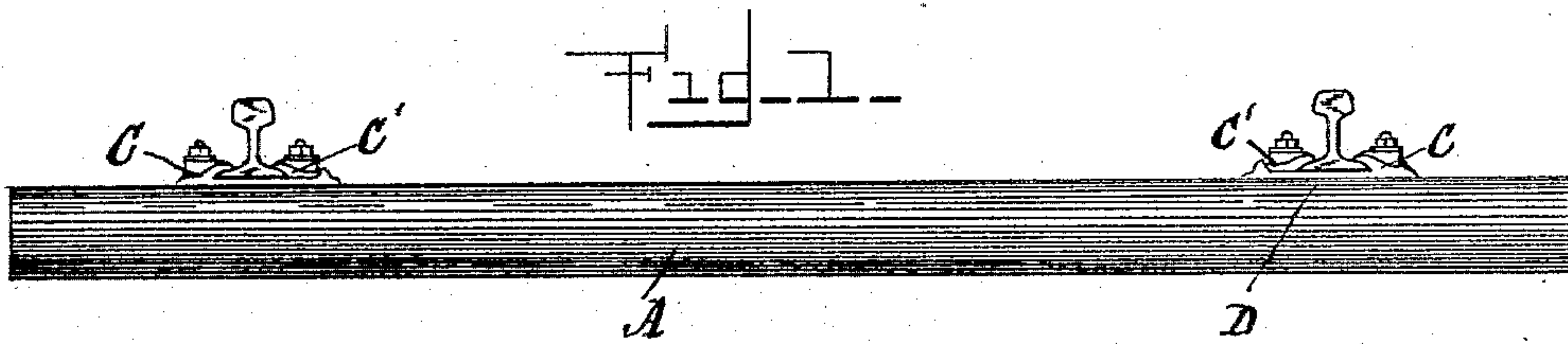


(No Model.)

M. G. HUBBARD.  
RAILROAD TRACK.

No. 515,431.

Patented Feb. 27, 1894.



Witnesses=

J. A. Jochum Jr.  
John L. Smith.

Inventor=

Moses G. Hubbard,  
By C. H. Smith & Son,  
Attorneys.



# UNITED STATES PATENT OFFICE.

MOSES G. HUBBARD, OF CHICAGO, ILLINOIS.

## RAILROAD-TRACK.

SPECIFICATION forming part of Letters Patent No. 515,431, dated February 27, 1894.

Application filed October 11, 1892. Serial No. 448,537. (No model.)

*To all whom it may concern:*

Be it known that I, MOSES G. HUBBARD, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Railroad-Tracks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to certain improvements in the construction and arrangement of a railroad track and consists, first, in the construction of the tie for supporting the rails and connecting them together, and, in the combination therewith of rails having my improved joint, and in certain details for attaching the rails permanently to the ties to form a reliable track for modern high speed trains, as hereinafter described and claimed.

In my patents of December 29, 1891, Nos. 464,984 and 464,985, for connecting the rails at their joints, the joints are secured with great strength and durability, but these qualities are not as fully attained as desired, in a complete track where wooden ties are employed. I, therefore, make the tie from sheet steel, and in the form substantially as shown in the drawings, in which—

Figure 1 is a side elevation of one of my improved ties, showing the rails in end elevation; Fig. 2, a side elevation of the rail and a joint therein, showing the ties in end elevation. Fig. 3 is a sectional view, showing the manner of uniting the rail to the tie, and, Fig. 4 is a plan view, partly in section, showing the rail fastening devices.

The tie, indicated at A, has its lower portion made approximating a half circle in form, as the best for sustaining the weight. The upper surface is made flat, as shown in Figs. 2 and 4, and this flat portion of the tie is united with the lower, curved portion by small curves *a, a*, Fig. 2, and the degree of elasticity attained in the tie depends upon the size of these curves, as the elasticity of the tie would increase until a complete circle was formed. I find that the amount of elasticity of an ordinary wooden tie is attained by about the proportions shown in the shape of ties in Fig. 2. I make these ties about the length and width of ordinary wooden ties and locate them similarly, but the great increase of strain upon

the track caused by the modern high speed trains renders the wooden tie unreliable and dangerous, as the attachment of the rails to the wooden tie cannot be permanent on account of the shrinking and swelling, decay and frequent weather cracks of the wood. I avoid these sources of danger and expense by the employment of the sheet steel ties and by attaching the rails to said ties in the manner more clearly shown in the enlarged Figs. 3 and 4. In this attachment C indicates a malleable or forged iron hook on the outer end of a malleable plate D, with a boss E formed on the top as a seat for the nut F, said malleable plate D extending under the rail and having a small, slanting shoulder, *c*, on its inner end against which the detachable hook C' abuts, said hook C' having a boss formed on its upper side, similar to that on hook C, for a nut seat. I then pass the arms of the staple bolt G up through holes in the upper side of the tie, through holes in the hooks and bosses and secure the same by the nuts F and F', which are held against displacement by suitable lock-nut washers and as this form of bolt cannot turn or rattle loose and as gravitation will keep the nuts down in position, the connection is absolutely reliable and of unusual strength, as the rail is held in position both ways by both bolts. For uniformity of parts in the construction of my improved track, I use similar staple bolts for uniting the fish plates to the rail joint as in attaching the rail to the tie. Two ordinary, straight bolts may be used in lieu of the staple bolt, but they will not be found as reliable.

The tie at A', in Fig. 2, is shown made slightly concave on its flattened, upper face; this gives an elastic pressure on the retaining bolts, when the rail is drawn snugly down to place. At A<sup>2</sup>, the tie is shown made slightly convex on its upper face, this form serving to give additional elasticity to the tie; either form may be used, but that shown at A will probably be found, for all ordinary purposes, to give the desired results.

On bridges and elevated rail-way tracks, where the ties rest upon timbers, I invert the ties, so that the flat side will rest upon the timbers, to which they are securely fastened and I form the malleable plate which extends under the rail, on its upper side in proper



shape to support the rail and on its lower face, to fit the curve of the upper face of the tie, the ears or hooks and all attachments of the rail to the tie being in all respects like those above described and shown.

Numerous attempts have been made to produce hollow, sheet metal ties as a substitute for the ordinary wooden tie, but, so far as I am aware, I am the first to make a hollow, sheet metal tie, made continuous in cross section, having a half-round or semi-cylindrical bottom or lower portion, and a flat top or upper portion, united to said lower portion by curved portions made, each in the arc of a circle of sufficient radius to give an amount of elasticity to the tie, equivalent to the resiliency of an ordinary wooden tie, the continuous form of the tie in such construction being essential to prevent the spreading and crushing of the tie.

Having now described my invention, I claim as new—

1. The hollow, sheet-steel tie the lower portion of which is constructed approximately in the form of a half circle and the upper portion of which is flat, or nearly so, and con-

tinuous and connected to the lower portion by small curves, adapted to afford vertical elasticity substantially as and for the purpose described.

2. The hook C formed on a base plate D extending under the rail and having an inclined shoulder *c*, in combination with the removable hook C' engaging said shoulder said hooks having each a raised nut seat or boss, the hollow metallic tie, and, the loop or U-shaped bolts for uniting the hooks, base-plate and rail to the tie, all substantially as described.

3. A hollow, metallic tie made continuous in cross-section and having its lower portion formed approximately on a half circle, and its upper portion flat and connected with the lower portion by the curves *a, a*, for giving vertical elasticity to the tie, substantially as specified.

In testimony whereof I have hereunto set my hand this 30th day of August, A. D. 1892.

MOSES G. HUBBARD.

Witnesses:

REXFORD M. SMITH,  
GEO. W. CLEMENT.