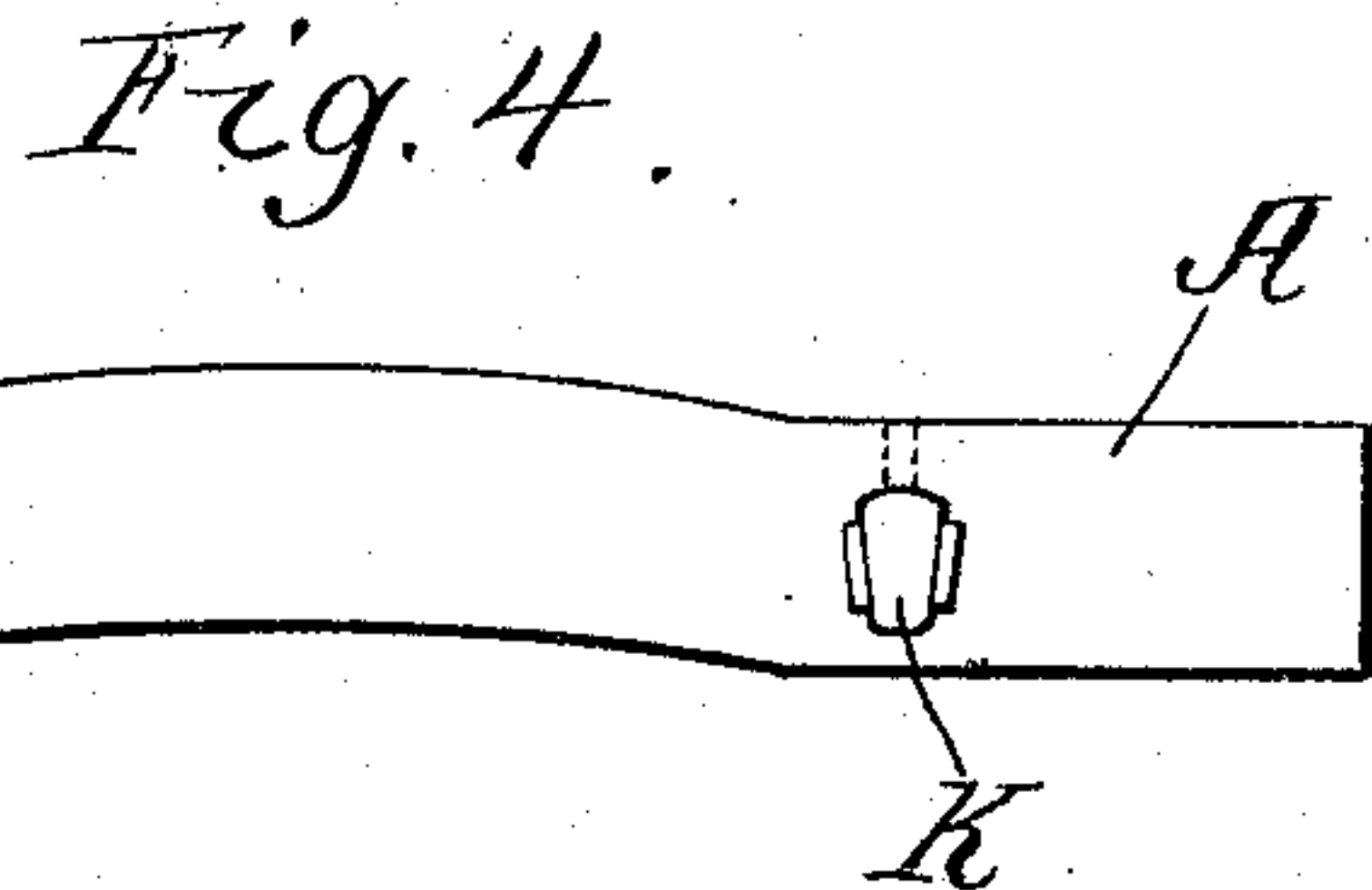
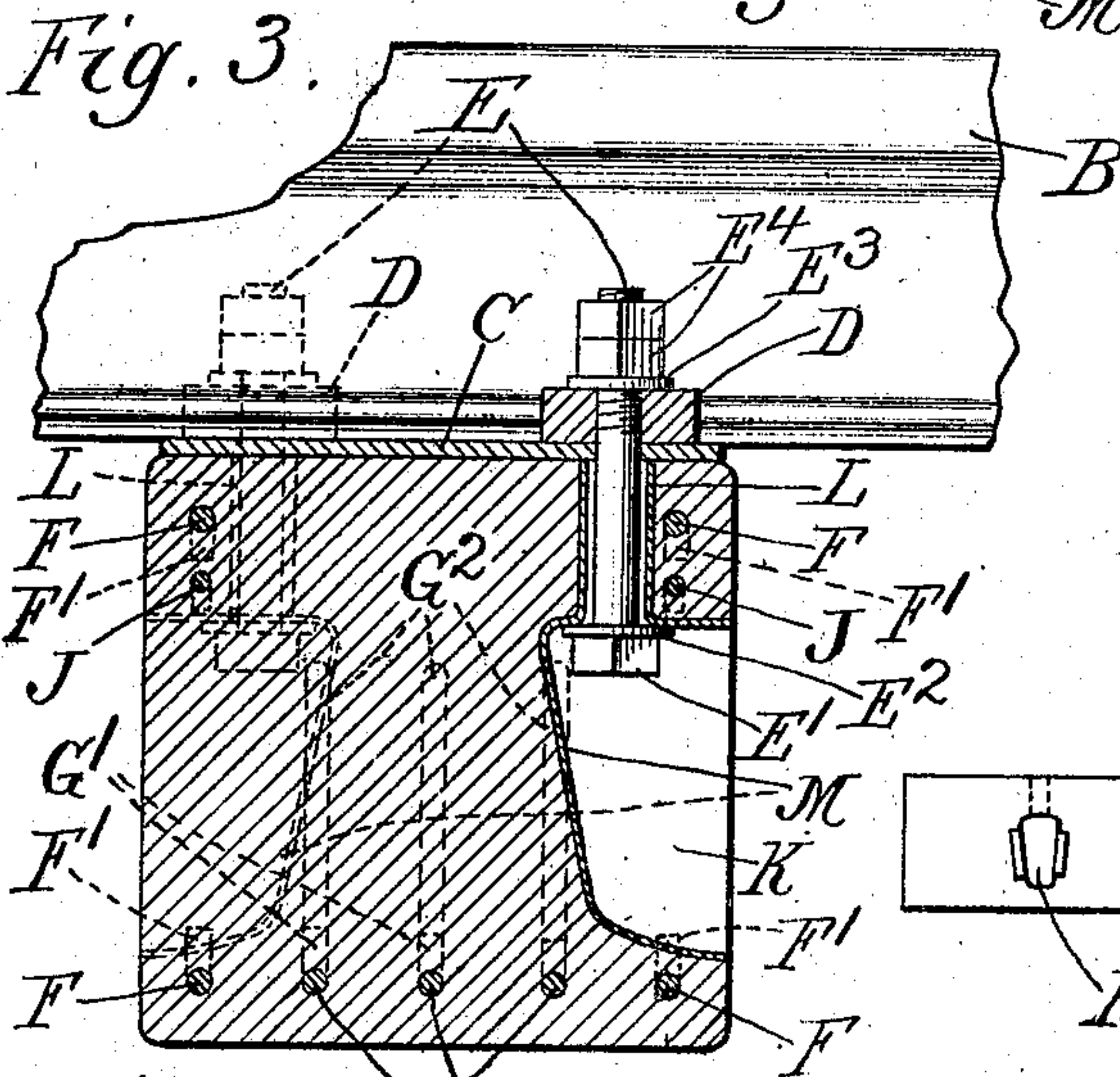
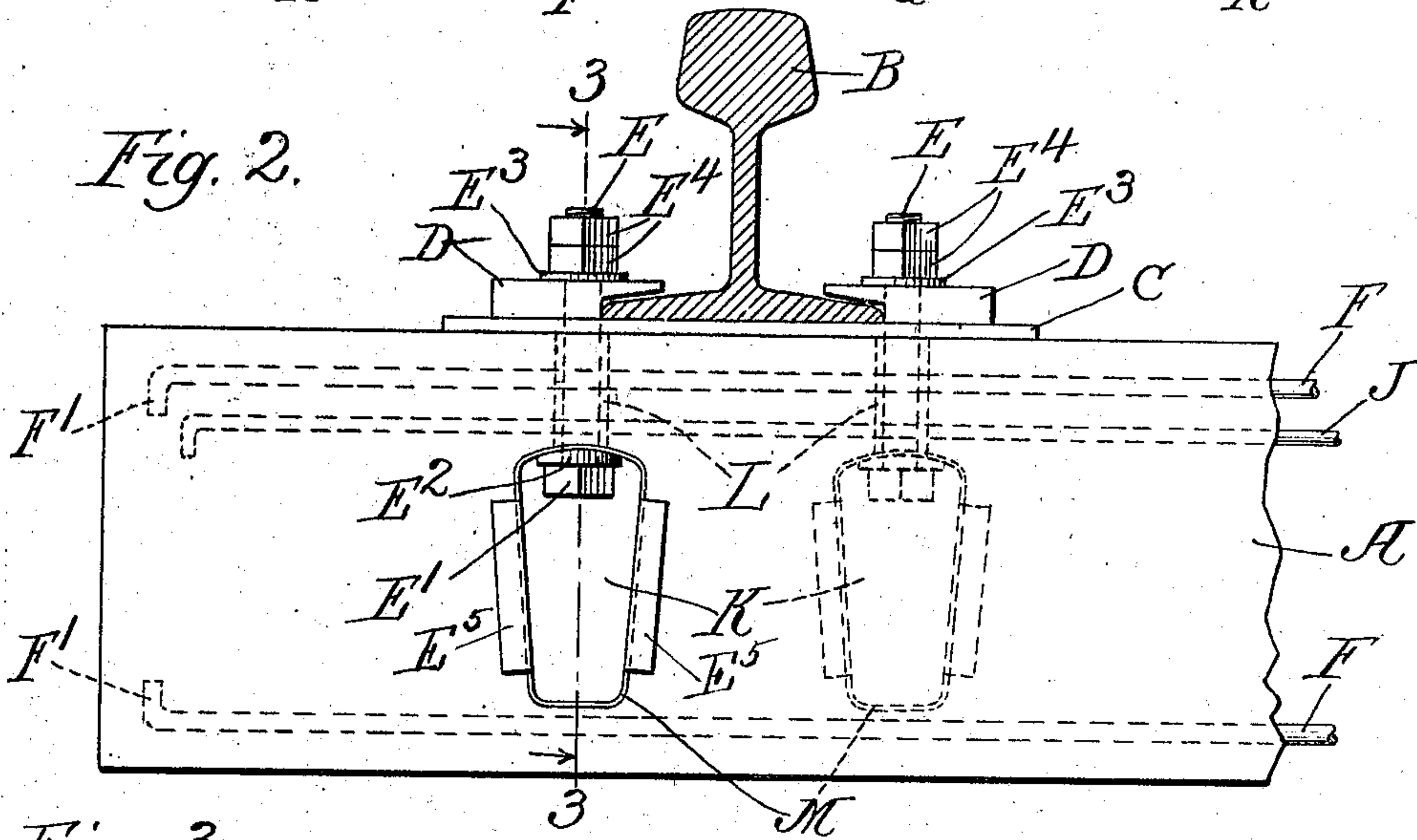
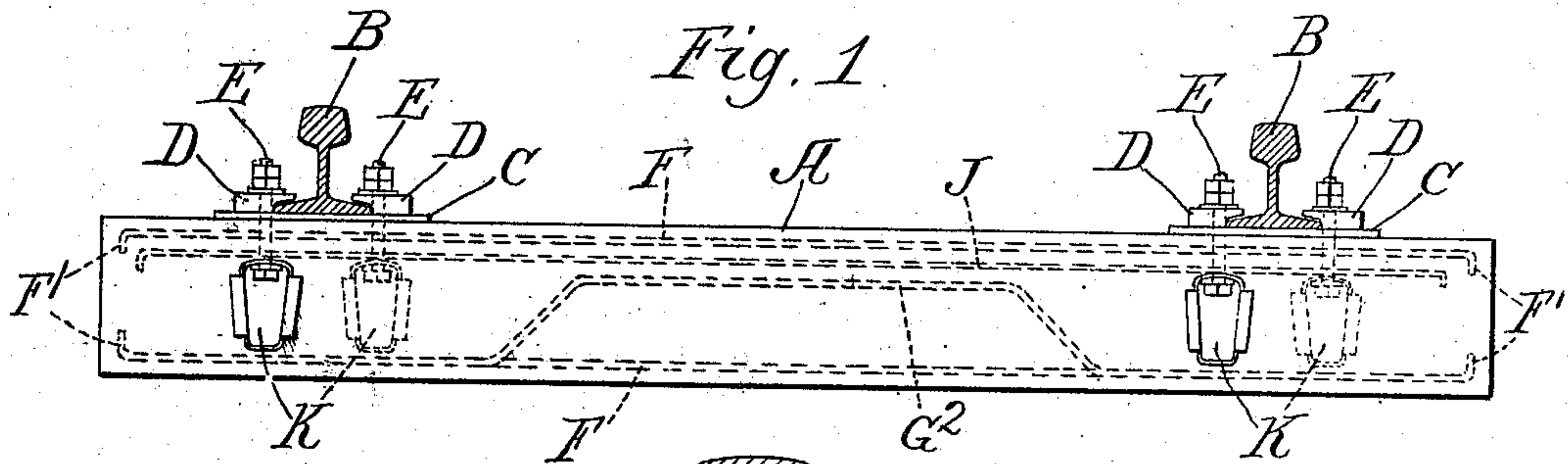


No. 885,863.

PATENTED APR. 28, 1908.

W. H. PRUYN, JR.  
CONCRETE RAILWAY TIE.  
APPLICATION FILED OCT. 29, 1906.



Witnesses:  
Edward T. Wray.  
Abbi E. Johnson.

Inventor.  
William H. Pruyn, Jr.  
by *Wm. H. Pruyn, Jr.*  
Attorneys.



# UNITED STATES PATENT OFFICE.

WILLIAM H. PRUYN, JR., OF CHICAGO, ILLINOIS.

## CONCRETE RAILWAY-TIE.

No. 885,863.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed October 29, 1906. Serial No. 340,981.

*To all whom it may concern:*

Be it known that I, WILLIAM H. PRUYN, Jr., a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Concrete Railway-Ties, of which the following is a specification.

My invention relates to railway ties and has for its object to provide certain new and useful improvements particularly in connection with ties made of concrete or similar material.

My invention is illustrated, as it were, diagrammatically in the accompanying drawings wherein

Figure 1 is a side view of a tie with interior parts shown in dotted lines, Fig. 2 is an enlarged detail, Fig. 3 is a cross-section on the line 3—3 of Fig. 2, Fig. 4 is a side elevation of a modified form.

Like parts are indicated by the same letter in all the figures.

A is the body of the tie preferably composed of concrete or concrete-like material; BB are the rails; CC are plates laid upon the concrete material beneath the rail. These plates are preferably of the same width as the tie and long enough to support all the other parts. DD are clamping plates laid upon the supporting plate C and adapted to overhang the base of the rail. Each of these clamping plates is provided with a lower portion slightly higher than the thickness of the edge of the base of the rail and an upper portion projecting so as to overhang the base but not to be in actual contact therewith. In other words, the relation is such that the rail is permitted the usual spring or rise and fall incident to the passage of locomotives and cars. The clamp is held in position on the plate and over the base of the rail by means of the bolt E, having the head E<sup>1</sup> and washer E<sup>2</sup> below, and the washer E<sup>3</sup> and nut E<sup>4</sup> above. The latter should, of course, be some kind of a lock nut. These parts could be considerably varied in size, shape and arrangement or equivalent devices could be substituted. Their object when co-acting is to securely hold the rail down onto the tie or the plate on top of the tie while at the same time permitting the rail to have all the necessary vertical motion.

Returning now to the tie proper,—it is reinforced by rods. I have found by experience that certain arrangements of these rods prove to be very helpful. FF are cor-

ner rods for which I have found a convenient size is three-eighths of an inch in cross-section. They proceed from near one end of the tie to near the other end, being turned up at the ends as indicated at F<sup>1</sup>. Along the base of the tie are a series of rods GG, each turned up at the end in like manner as indicated at G<sup>1</sup> and each bent upwardly as indicated at G<sup>2</sup> to form an arch in the middle of the tie.

J is an additional rod which may be a little smaller. I have used one-fourth inch in cross-section. It lies immediately above the opening which I shall now describe. On each side of each tie is a cup-like opening K formed beneath the point where the bolt holes through the plates C and D pass. Upwardly from this opening leads the bolt hole L. This opening is provided for the purpose of admitting the bolt which is passed upwardly through the bolt hole, leaving the head and associated washer in the cup-shaped opening. When the nut is forced home above the base flange of the rail, the head of the bolt is drawn up against the top of the cup-shaped opening. Here it is immediately beneath the two reinforcing bars. I provide for the cup-shaped opening an associated bolt hole and body lining M which, preferably in the shape of a continuous metal piece, lines both cup-shaped opening and hole. In the making of the ties this metal lining and the rods are suitably supported in the mold and the material then poured in until the mold is full, whereupon when the material sets the tie is completed.

In one form of my device shown in Fig. 4, the central portion of the tie is shown in an arched form, the lower part being hollowed out to a depth of about one and one-eighth inch for a distance of about three feet and the upper part being strengthened by a strengthening mass about three feet long and one and one half inches thick.

As previously suggested, the size, proportion and arrangement of the several parts could be greatly altered without departing from the spirit of my invention and, moreover, some of the parts could be omitted while retaining others without departing from my invention.

The cup-like opening in the side of the tie is preferably arched above and below, same as indicated, and the cross-section diminishes toward the bottom. The corners are preferably rounded as indicated. These configurations, of course, will be followed by the



metal lining. The cup part is provided with the side flanges  $E^5E^5$  whereby it is conveniently secured in the mold against the side thereof. The lining has been described and  
 5 will be referred to as a cup part. It will be obvious that it need not completely line the opening but forms at least lining for the upper part of the opening so as to distribute the strain exerted against the portion of the  
 10 tie lying above the opening.

The use and operation of my invention are evident from the drawing and description. I may add, however, that the rail seating part or upper portion of the tie, and particularly  
 15 that portion which lies above the side opening, is reinforced in the case shown by at least two longitudinal rods. Just above the openings it is preferably reinforced by another rod. To prevent shattering of the concrete body a plate is placed over such rail  
 20 seat part beneath the rail; and to prevent direct contact between the concrete body portion and the metal of the rail or its securing devices, I provide a plate to lie under the  
 25 rail and a metal lining for the opening and the bolt hole which leads up therefrom. Thus there is interposed at every point between the rail and its securing part and the concrete-like body of the tie metal portions preferably presenting extended surfaces to the  
 30 concrete to distribute the strains. The rail must have an opportunity to move vertically. In the case of wooden ties it always does so, loosening the bolt sufficiently for  
 35 that purpose. It also embeds itself in the tie. This latter action is obviated in the case of my tie by the plate interposed between the tie and the rail. While the first action is permitted by the arrangement of  
 40 the clamping plate which, although in a fixed position, is not in absolute contact with the base flange of the rail. The other points in the operation of the device will be sufficiently understood from what has already been said.

45 I claim:

1. In a railway tie, the combination of a body part of concrete like material with inwardly projecting cup like openings on its sides beneath the rail seating part provided  
 50 with holes into such openings extending from such openings upwardly through the tie and securing devices in such holes which take against the upper inner part of the cup like opening and the upper part of the base flange  
 55 of the rail.

2. In a railway tie, the combination of a body part of concrete like material with inwardly projecting openings on its sides beneath the rail seating part provided with  
 60 holes into such openings extending from such openings upwardly through the tie, securing devices in such holes which take against the upper part of the openings, and a metallic lining for the upper portion of said opening.

65 3. In a railway tie, the combination of a

body part of concrete like material with inwardly projecting openings on its sides beneath the upper rail seating part provided with holes extending from such openings upwardly through the tie and securing devices  
 70 in such holes which take against the upper part of the opening and the upper part of the base of the rail, and a metallic lining for said opening.

4. In a railway tie, the combination of a  
 75 body part of concrete like material with inwardly projecting openings on its sides beneath the rail seating part provided with holes extending from such openings upwardly through the tie, and securing devices  
 80 in such holes which take against the upper part of the opening and the upper part of the base of the rail, and a metallic lining for said hole and the upper part of the opening.

5. In a railway tie, the combination of a  
 85 body part of concrete-like material with inwardly projecting openings on its sides beneath the upper rail seating part, provided with holes extending from such openings upwardly and securing devices in such holes  
 90 which take against the upper part of the opening and the upper part of the base of the rail, and a metallic lining for said opening.

6. In a railway tie, the combination of a  
 95 body part of concrete-like material with inwardly projecting openings on its sides beneath the upper rail seating part provided with holes extending from such openings upwardly and securing devices in such holes  
 100 which take against the upper part of the opening and the upper part of the base of the rail, and a metallic lining for said hole.

7. In a railway tie, the combination of a  
 105 body part of concrete-like material with inwardly projecting openings on its sides beneath the upper rail seating part, provided with holes extending from such openings upwardly, and securing devices in such holes  
 110 which take against the upper part of the opening and the upper part of the base of the rail, and a metallic lining for said hole and opening.

8. In a railway tie, the combination of a  
 115 body part of concrete-like material with inwardly projecting openings on its sides beneath the upper rail seating part, provided with holes extending from such openings upwardly, and securing devices in such holes  
 120 which take against the upper part of the opening and the upper part of the base of the rail, and a metallic lining for said hole and opening, and reinforcing rods in the body of the tie above said openings.

9. In a railway tie, the combination of a  
 125 body part of concrete-like material recessed by cup like openings in its sides beneath where the rail rests to form above such openings a rail seating part with such openings accessible and metal reinforcements for such  
 130 seating part embedded in the body of the tie



and extending along and above such opening, and a metal lining for such openings.

10. In a railway tie, the combination of a body part of concrete-like material recessed by cup like openings in its sides beneath where the rail rests to form above such openings a rail seating part with such openings accessible, and a metal lining for the same.

11. In a railway tie, the combination of a body of concrete like material, with a plurality of openings along its sides beneath the rail seating part, a series of longitudinal reinforcing rods in the body of the tie on each side above the openings with their ends turned down into the body of the tie, a series of reinforcing rods running longitudinally through the body of the tie near the bottom thereof, with their ends turned upward into

the body of the tie, the central rods of said series being arched up in the middle of the tie. 20

12. In a railway tie, the combination of a body of concrete like material, with a plurality of openings along its sides beneath the rail seating part, a series of longitudinal reinforcing rods in the body of the tie on each side above the openings, a series of reinforcing rods running longitudinally through the body of the tie near the bottom thereof, the central rods of said series being arched up in the middle of the tie. 25 30

WILLIAM H. PRUYN, JR.

Witnesses:

ABBIE E. JOHNSON,  
SOPHIE B. WERNER.