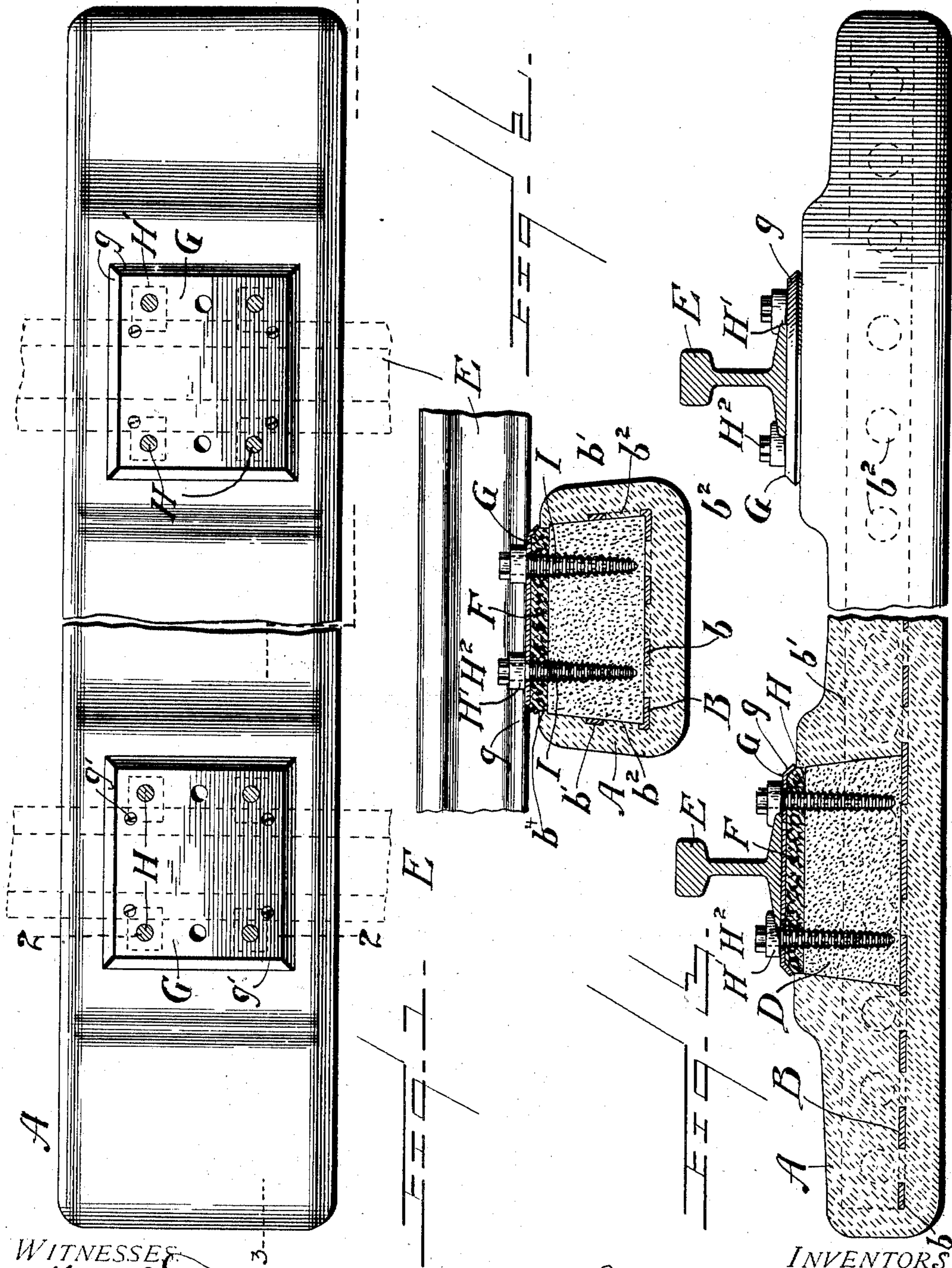


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PATENTED MAY 17, 1904.

L. & M. J. BEEZER.  
CONCRETE RAILWAY TIE.  
APPLICATION FILED JUNE 8, 1903.

NO MODEL.



WITNESSES

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# UNITED STATES PATENT OFFICE.

LOUIS BEEZER AND MICHAEL J. BEEZER, OF PITTSBURG, PENNSYLVANIA.

## CONCRETE RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 759,852, dated May 17, 1904.

Application filed June 8, 1903. Serial No. 160,452. (No model.)

*To all whom it may concern:*

Be it known that we, LOUIS BEEZER and MICHAEL J. BEEZER, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Concrete Railway-Ties, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a plan of a tie constructed in accordance with our invention, the central portion being removed. Fig. 2 is a cross-section on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal section on the line 3 3 of Fig. 1.

Our invention relates to railway appliances, and more particularly to railway-ties and rail-fastening devices.

It is the object of our invention to provide a substitute for the common wooden ties in use, which, owing to the scarcity of suitable wood and their increasing cost, must give way to a superior article, effecting a great saving in maintenance. We have devised a tie which is thereby cheaper and one which will be practically indestructible. Our tie being thoroughly waterproofed in all its parts will not be affected by the water or frost, and the parts are so strongly united that they will not become broken or separated. We also give the rails a suitable elastic bed-cushion, preferably of compressed cork capped with a flanged steel plate, which not only makes the train less noisy and less injurious to the rolling-stock, but also prevents to a large degree the pounding action of the car-wheels from being transmitted so suddenly to the concrete portion of the ties, the result being that the ties will not become cracked or broken.

Referring to the drawings, A represents the tie as a whole, having the beveled sides and ends, as shown in Figs. 1 and 2, which retain the tie more securely to the ballast. Nearly all the body of tie is made of slag cement, concrete, or other plastic material, which will set or become hard and has embedded in it when formed a plate B, preferably of steel, having the bottom *b* and the upwardly-extending flanges *b'*, which are inclined toward each other and lie substantially parallel with the

sides of the tie, the plate thus having a U-shape cross-section. The sides *b'* and the bottom *b* are provided with numerous holes *b<sup>2</sup>* punched, which allow the concrete to pass through, so as to tie or bind the concrete into a more thoroughly solid homogeneous mass than would be the case if the concrete were unconnected along the entire surface of unperforated plate. The plate B extends almost the entire length of the tie.

Seated under each rail and between the flanges *b'* and on the bottom *b* of the plate B is a composition block D, made, preferably, of wood or compressed sawdust and glue, &c.

On top of block D and partially below the top of the concrete is a layer of compressed ground cork, wood-pulp, fiber, or ordinary wood F, forming an elastic cushion, which makes the train less noisy and prevents to a large degree injury to the rolling-stock and the pounding action of the wheels from being transmitted so suddenly and sharply to the concrete portion of the tie.

A pressed-steel cap-plate G is seated on the cushion F and has its edges *g* flanged or turned down, so as to stiffen the same and cover and protect the upper edges of the cushion, keeping out water and preventing the ultimate squeezing out of the cork.

The rail E lies directly on the plate G and is held in place by the clips H' and the lag-bolts H, screwed down through the plate G, the cork *g*, and the block D. The block is provided with the tapered holes I, (shown in dotted lines,) which holes are smaller than the diameter of the lag-bolts and do not extend so far into the block D as the lag-bolts are intended to go. The large tapering lag-bolts are screwed into the holes I, which are hereby widened and lengthened, as shown on Figs. 2 and 3.

Lying on top of plates G and the flanges of the rail E are the clips H', strung on the lag-bolts, as shown. The under side of each clip, on the portion thereof nearest the rail-flange, is beveled upwardly slightly, so that it will not engage that part of the plate G between the rail-flanges and the outer sides of the bolts before it engages the top of the said flanges. The beveling of the clips insures that they will

have one end on a rail-flange, with no obstruction in the way of applying or tightening their clamping action. The heads  $H^2$  of the lag-bolts are screwed down tight on the clips,  
 5 so as to hold the rail securely in place on the tie.

The composition block D is very strong and is waterproof, and it is, furthermore, protected from water by the cork layer F and the flanged cap-plate G, also by the overhanging  
 10 flanges  $b^4$  of the concrete, being locked securely by the slag-concrete walls surrounding the same.

The concrete we prefer to use is made of slag and cement. We do not desire to be limited to this composition, as other plastic hardening compositions may be used to accomplish the same result.

Having described our invention, we claim—

1. In a railway-tie, a plastic material, a  
 20 metal plate embedded therein, and having up-turned sides, a waterproof composition block between said sides, elastic material on said block, a metal cap on said elastic material and means for securing the rail on the said cap-  
 25 plate.

2. In a railway-tie, a plastic material, a metal plate embedded therein, and having up-turned sides, a waterproof composition block between side plates, elastic material on said

block, a metal cap on said elastic material, said  
 30 cap-plate having downwardly-turned edges which overlie the edges of the elastic material, and means for securing the rail on the said cap-plate.

3. In a railway-tie, a plastic material, and a  
 35 composition cushion-block embedded therein and lying under the rails and consisting of a disintegrated material and a binding material.

4. In a railway-tie, a plastic material, and a  
 40 block embedded therein and composed of wood sawdust and a binding material.

5. In a railway-tie, a plastic material, and a  
 45 block embedded therein and composed of wood fiber and glue composition the block lying beneath the rail.

6. In a railway-tie, a plastic material, a  
 50 block to receive and transmit the weight and impact of cars or trains to the plastic material, screw-threaded lag-bolts in the block, and clips strung on the lag-bolts and having portions lying on the rail-flange.

Signed at Pittsburg, Pennsylvania, this 3d day of June, 1903.

LOUIS BEEZER.

MICHAEL J. BEEZER.

Witnesses:

F. N. BARBER,

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