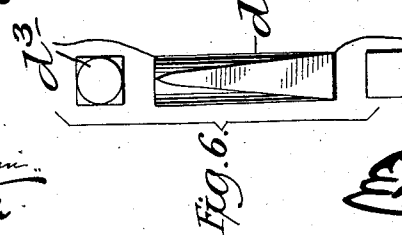
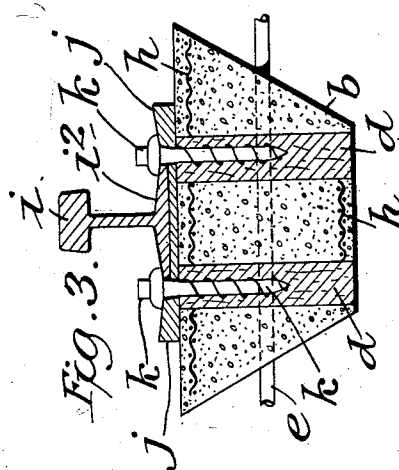
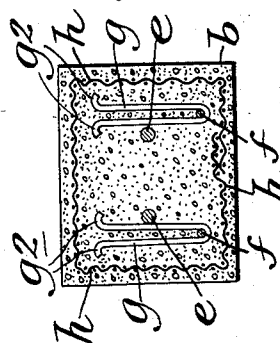
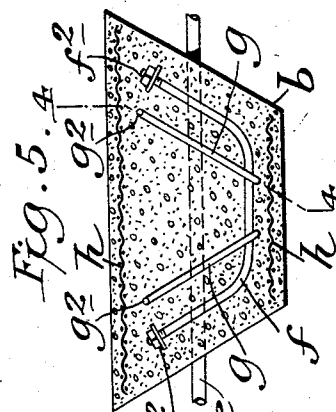


997,452.

Patented July 11, 1911.



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# UNITED STATES PATENT OFFICE.

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## RAILWAY-TIE.

997,452.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed April 25, 1911. Serial No. 623,151.

*To all whom it may concern:*

Be it known that I, WILLIAM V. LA BAU, a citizen of the United States, and residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Railway-Ties, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to railway ties and particularly to ties of this class composed of or formed of concrete, and the object thereof is to provide a railway tie composed of separate blocks or voussoirs, made in the manner of the voussoirs of an arch, whereby the concrete is placed in compression.

It is a well known fact that concrete has very little resistance in tension and that the greatest strength or value is secured by placing said concrete under compression, and my invention consists in forming a railway tie of separate blocks or voussoirs, the contact surfaces of the central voussoirs being in planes which converge to a predetermined point above the tie, while the contact surfaces of the voussoirs adjacent to the central voussoirs are in planes which converge to a predetermined point below the tie, said last named voussoirs serving as supports for the rails and said tie being also provided with end voussoirs having contact surfaces which correspond with the contact surfaces of the adjacent rail supporting voussoirs, whereby the concrete of the tie is placed in compression and the greatest possible strength secured, the separate blocks or voussoirs being also bound together by longitudinal reinforcing rods which pass therethrough.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1, is a side view of a railway tie made according to my invention and showing the rails mounted thereon, the rails and part of the tie being in section;—Fig. 2, a plan view thereof;—Fig. 3, a section on the line 3—3 of Fig. 2;—Fig. 4, a section on the line 4—4 of Fig. 5;—Fig. 5 a sectional view at right angles to that of Fig. 4, and; Fig. 6, a side and end view of a fibrous retaining plug, two of which are placed in the voussoirs which support the railway rails and

into which are passed screws or spikes for securing the rails into position.

My improved railway tie consists of a plurality of central voussoirs *a*, which are three in number in the construction shown, two rail supporting voussoirs *b* and two end voussoirs *c*.

The abutting face of the end of the central voussoirs *a* are in planes which converge to a predetermined point above the tie, while the abutting faces of the voussoirs *b* are in planes which converge to a predetermined point below the tie, and the inner or abutting faces of the end voussoirs *c* are in the same plane as the outer abutting surfaces or faces of the rail supporting voussoirs *b*.

The rail supporting voussoirs *b* are provided with vertically arranged blocks or plugs *d*, the lower ends of which are square in form, as shown at *d*<sup>2</sup> in Fig. 6, and the outer ends of which are cylindrical in form, as shown at *d*<sup>3</sup> and reinforcing or tie rods *e* are passed longitudinally through the tie or the separate blocks or voussoirs of which it is composed and the end voussoirs *c* are provided with recesses *c*<sup>2</sup> and the rods *e* are provided with washers and nuts *c*<sup>3</sup> countersunk in said recesses, which recesses are afterward filled up with concrete as shown at *c*<sup>4</sup>.

The rail supporting voussoirs *b* are provided in the opposite side portions thereof with longitudinally arranged yoke-shaped reinforcing rods *f*, the ends of which extend upwardly and are provided with retaining washers or plates and nuts, as shown at *f*<sup>2</sup>, and these yoke-shaped rods *f* are supported by stirrups or loops *g* through the bottom portions of which the yoke-shaped devices *f* pass and which extend upwardly and outwardly and the ends of the side arms or members of which are also provided with hooks *g*<sup>2</sup>. The voussoirs *b* are also reinforced by metal fabric *h* which extends entirely around and within the body portion thereof in line with the longitudinal axis of the tie, the end portions of said voussoirs being unreinforced. My invention, however, is not limited to the exact means herein shown and described for reinforcing the voussoirs *b* and said voussoirs may be reinforced in any desired manner.

In practice, the vertically arranged blocks or members *d* are placed in the voussoirs *b* in the operation of casting or molding and in connecting the rails *i* with the tie or with the voussoirs *b* thereof, I preferably pro-

vide tie plates *j* which are placed on the voussoirs *b* and which are provided with central depressions to receive the base flanges *i*<sup>2</sup> of the rail, and in practice I also  
 5 preferably employ screws *k* which are passed downwardly through the tie plates *j* and into the blocks *d*, as clearly shown in Fig. 3.

By reason of the vertical form of the blocks *d* which are preferably composed of  
 10 wood, the said blocks cannot be drawn upwardly through the voussoirs *b*, and said blocks or plugs *d* are treated with creosote, paraffin or other suitable preservative material, and said blocks or plugs are also  
 15 preferably bored at the top to receive the screws or spikes *k*; but my invention is not limited to the use of screws, and ordinary spikes may be driven into the blocks or plugs *d* if desired.

20 With the construction herein shown and described, the angles of the abutting faces of the voussoirs *a* and *b* may be made equal to the angle of friction of concrete or between the said angle and a vertical line, the  
 25 angles being considered with reference to the base of the tie or side opposite the rails, and the point toward which the abutting faces of said voussoirs converge may be raised or lowered, or the angle of said abutting  
 30 faces to the longitudinal axis of the tie may be varied, and this is also true of the abutting faces of the voussoirs *b* and *c*.

It may not be necessary, under all conditions to reinforce the voussoirs *b*, but this  
 35 should be done when said voussoirs are made so long that both tension, compression and shear have to be taken care of.

The number of voussoirs may be varied as may also the lengths thereof according to  
 40 the length of the tie desired, and the ties may also be made of different sizes according to the load to be passed thereover, and my improved railway ties may be used on any kind or class of railways or in the con-  
 45 struction thereof.

Having fully described my invention,

what I claim as new and desire to secure by Letters Patent, is;—

1. A concrete railway tie composed of central blocks, rail supporting blocks, and  
 50 end blocks, the abutting surfaces of the central blocks being in planes which converge to a point above the tie, and the abutting surfaces of the rail supporting blocks being  
 55 in planes which converge to a point below the tie, and the abutting surfaces of the end blocks corresponding with the adjacent abutting surfaces of the rail supporting blocks.

2. A concrete railway tie composed of central blocks, rail supporting blocks, and  
 60 end blocks, the abutting surfaces of the central blocks being in planes which converge to a point above the tie, and the abutting surfaces of the rail supporting blocks being  
 65 in planes which converge to a point below the tie, and the abutting surfaces of the end blocks corresponding with the adjacent abutting surfaces of the rail supporting  
 70 blocks, said rail supporting blocks being also provided with fibrous plugs.

3. A concrete railway tie composed of central blocks, rail supporting blocks, and  
 75 end blocks, the abutting surfaces of the central blocks being in planes which converge to a point above the tie, and the abutting surfaces of the rail supporting blocks being  
 80 in planes which converge to a point below the tie, and the abutting surfaces of the end blocks corresponding with the adjacent abutting surfaces of the rail supporting  
 85 blocks, said rail supporting blocks being also provided with fibrous plugs, and being also independently reinforced.

In testimony that I claim the foregoing as my invention I have signed my name in  
 90 presence of the subscribing witnesses this 24th day of April 1911.

WILLIAM V. LA BAU.

Witnesses:

C. E. MULREANY,  
 G. A. MANDEVILLE.