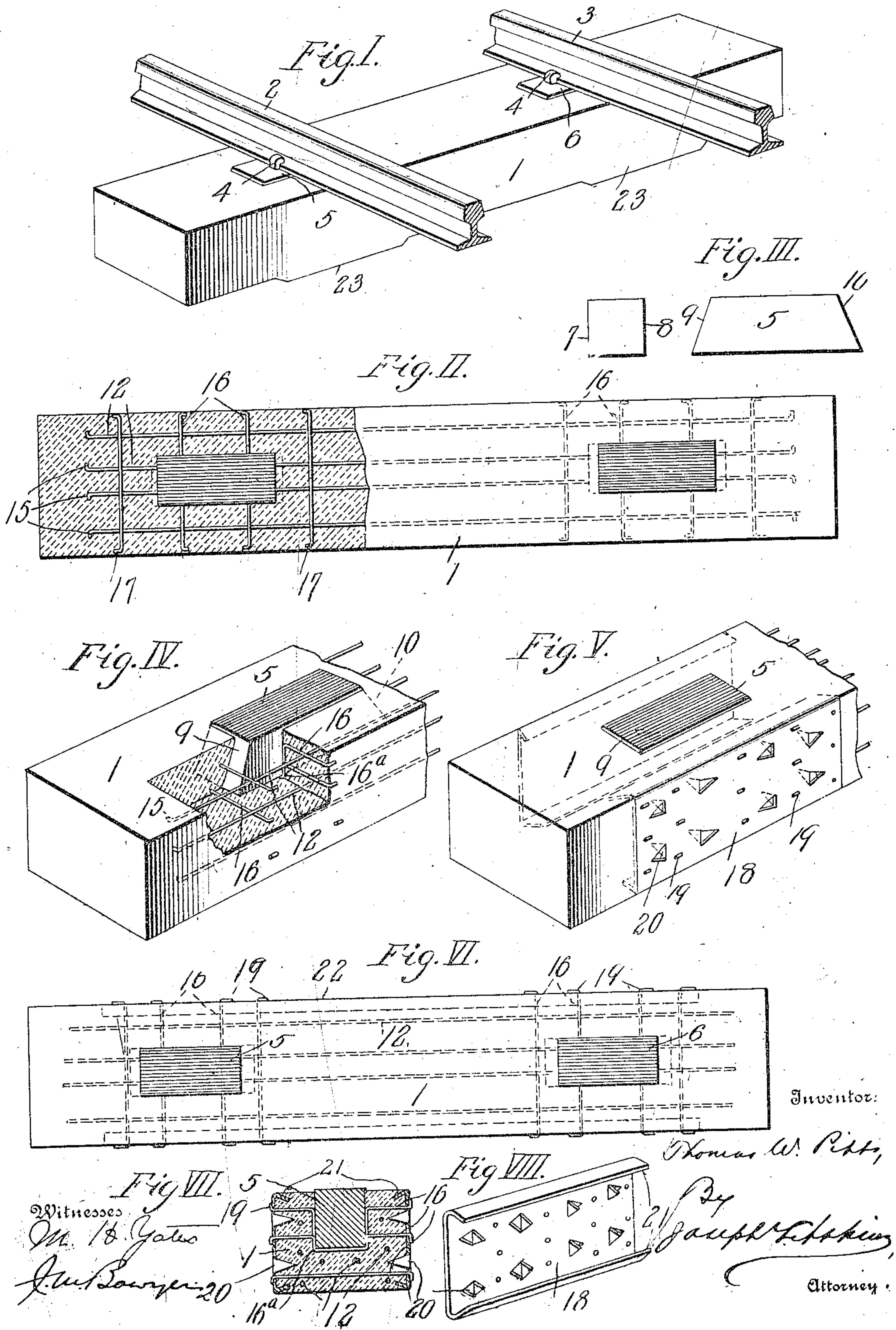


No. 862,103.

PATENTED JULY 30, 1907.

T. W. PITTS.  
RAILWAY CROSS TIE.  
APPLICATION FILED MAR. 6, 1907.





# UNITED STATES PATENT OFFICE.

THOMAS W. PITTS, OF TAMPA, FLORIDA.

## RAILWAY CROSS-TIE.

No. 862,103.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed March 6, 1907. Serial No. 360,894.

*To all whom it may concern:*

Be it known that I, THOMAS W. PITTS, of Tampa, in the county of Hillsboro, State of Florida, have invented certain new and useful Improvements in Railway Cross-Ties, of which the following is a specification.

The object of my invention is to produce a railway cross-tie of composite concrete construction, which, being more durable and less expensive than wood, combines all the advantages of a wooden tie with those made of more durable material.

An objection in practice to the use of the concrete cross-tie arises from the liability of the tie to cleavage longitudinally, or to parting between the rails which it carries, which, tending to permit the rails to spread, is particularly objectionable in practice. These objections may be, of course, eliminated by increasing the size of the tie indefinitely, but by my invention, I produce a tie of ordinary dimensions possessing all of the advantages in practice which are desirable in this class of objects.

What constitutes my invention will be hereinafter specified in detail and succinctly set forth in the appended claims.

In the accompanying drawing, which constitutes a part of this application, Figure I is a perspective view of sections of a pair of rails and one of my cross-ties uniting the same. Fig. II is a top plan view of the subject matter of Fig. I, partially in section, with the rails removed. Fig. III is a group of an end and side elevation, respectively, of one of my pillow blocks. Fig. IV is a perspective view of one end of the subject matter of Fig. I with a portion cut away exhibiting the pillow block therein. Fig. V is a view similar to Fig. IV showing a completed end of one of my cross-ties. Fig. VI is a view corresponding to Fig. II, showing a cross-tie embodying the subject matter of Fig. V. Fig. VII is a transverse section of Fig. VI taken through one of the blocks therein. Fig. VIII is a perspective view of one of the side-plates, shown in Figs. V to VII inclusive, removed, looking at it from the inside.

Referring to the numerals on the drawing, 1 indicates a railroad tie, 2 one rail, and 3 the other secured thereto, preferably, as by ordinary spikes 4.

My tie is made of concrete, or other like construction, preferably including cement as an ingredient of its composition. It is provided at suitable distances apart with wooden blocks 5 and 6, which constitute pillow blocks for the rails 2 and 3, respectively, and preferably project sufficiently above the surface of the concrete tie 1 to afford a wooden support for the rails. The blocks 5 and 6, though comparatively small in dimensions, are large enough to afford ample support for the rails, and also to receive and hold the spikes 4 without danger of cleavage.

Wooden blocks set in cement ties have been used prior to my invention, but as used have been objected

to for a variety of reasons, chief of which may be mentioned the tendency, on one hand, to cleavage of the concrete construction by reason of embodying the wooden blocks in it, or, on the other hand, the tendency to excessively amplify the dimensions of the concrete tie. By my invention, I overcome these difficulties by the hereinafter described means substantially. In the first place, I employ a block having its opposite sides 7 and 8 parallel and its ends only 9 and 10, as shown in Fig. III, inclined. Wooden blocks tend to expand by absorption of moisture only in the direction transverse to the grain. Consequently, by the employment of the parallel sides 7 and 8, the extent of the blocks in the direction in which the resistance to cleavage in the concrete block is least, is reduced to a minimum. The inclined sides 9 and 10 are relied upon to afford secure anchorage for the block in the concrete, and are not only not exposed to the effects of expansion and contraction of the block in a longitudinal direction, but, being located lengthwise of the tie, find ample material therein for its secure anchorage.

It is of the utmost importance in practice to provide against the loosening of blocks in the tie and the possibility of parting of the tie between the rails. For that reason, I provide metal stringers 12 consisting of bars or strands of wire extending nearly from one end of the concrete tie to the other, and embedded in the material of which it is made, each stringer being provided at the end with a bend 15 or other means of anchorage in the material. These stringers are located either below the blocks 4 and 5, or to one side thereof, so as not to interfere with them. Adjacent to all of the blocks, near the opposite ends of each tie, I provide transverse metal binders 16, which cooperate with the stringers 12 to afford a strong, reinforced construction about the recesses whose sides incase the respective blocks.

The binders are distributed about the recesses which incase the blocks 5 and 6 so as not to interfere with the blocks, but they may be located midwise of the blocks, if preferred, and bent downwardly underneath the blocks, as indicated at 16<sup>a</sup> in Figs. IV and VII of the drawing.

The binders 16 may be provided with bent ends 17 as a means of anchoring them in place, but if preferred, the tie may be provided upon opposite sides with metal plates 18, secured to the binders as by bent or riveted heads 19, and provided also with independent means of anchorage in the concrete mass. Such means of anchorage may consist of teeth 20 cut out and inwardly from the metal of the plate, and of oppositely intumed flanges 21. The plates 18 may be employed, as stated, near the opposite ends of the tie 1, or they may extend nearly from one end to the other of the tie, as shown in Fig. VI, wherein they



are indicated by the numeral 22. The plates 22 are substantially identical with the plates 18, with the exception of their relative extent. The construction of the plates 22 and 18 is equally well shown in Fig.

5 VIII.

The tie 1 is preferably provided upon its bottom with projections 23, located underneath the blocks 5 and 6, respectively, designed to lend additional weight of concrete material to the tie at points where, 10 in practice, it is subjected to the greatest strain.

In the manufacture of my block, the ties are preferably formed in a mold or box of suitable dimensions, wherein are properly distributed, as the tie is being built, the stringers 15 and binders 16, together 15 with the plates 18 or 22, if employed. The concrete may be formed in the mold by any of the well known processes, either by pouring, or filling and tamping, or any other preferred method.

It should be observed that the plates 18 or 22, if 20 employed together with the binders 16, are incorporated in the concrete construction as it is built up. This is one distinguishing feature of my invention; the employment of metal sides plates in connection with concrete construction in railroad ties having 25 been attempted but without provision for permanently incorporating the plates into the construction of the tie itself. In the attempts referred to, the use of bolts and rivets has defeated the end in view by reason of the tendency of the members to work loose and to 30 produce disintegration of the composite structure.

When in the course of the manufacture of the tie the concrete material has been supplied in sufficient quantity to fill the required depth in the bottom of the box or mold in which the concrete is formed, the 35 blocks 5 and 6, previously prepared, are set in place,

and the concrete is filled in around them until the tie of required thickness is built up complete about them. When the tie is finished and withdrawn from the mold, it presents an appearance substantially corresponding to that illustrated in Fig. I, wherein 40 the body of the tie is made of concrete construction, above the surface of which are presented the surfaces of the pillow blocks 5 and 6 for the support of the rails.

The feature of my invention is in providing secure anchorage without danger of the cleavage of the pillow 45 blocks and by means which will not permit the pillow blocks, in service, to work loose within the cement which incases them.

What I claim is:

1. The combination with a concrete railroad tie provided with pillow-block-recesses and pillow blocks therein, of metallic stringers longitudinally disposed and embedded in the concrete structure, and metallic binders disposed transversely to the stringers adjacent to the pillow-block-recesses and also embedded in the concrete structure. 50 55

2. The combination with a concrete railroad tie provided with pillow-block-recesses and pillow blocks therein, of metallic stringers longitudinally disposed and embedded in the concrete structure, and metallic binders disposed transversely to the stringers adjacent to the pillow-block-recesses and also embedded in the concrete structure, the 60 stringers and binders being located so as not to interfere with the pillow-block-recesses.

3. In a railroad tie, the combination with a concrete structure provided with pillow-block-recesses and pillow-blocks therein, of opposite lateral metal plates provided with teeth and with intumed flanges, said teeth and intumed flanges being embedded in the concrete structure. 65

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS W. PITTS.

Witnesses:

C. E. ALLEN,

W. W. TRICE.