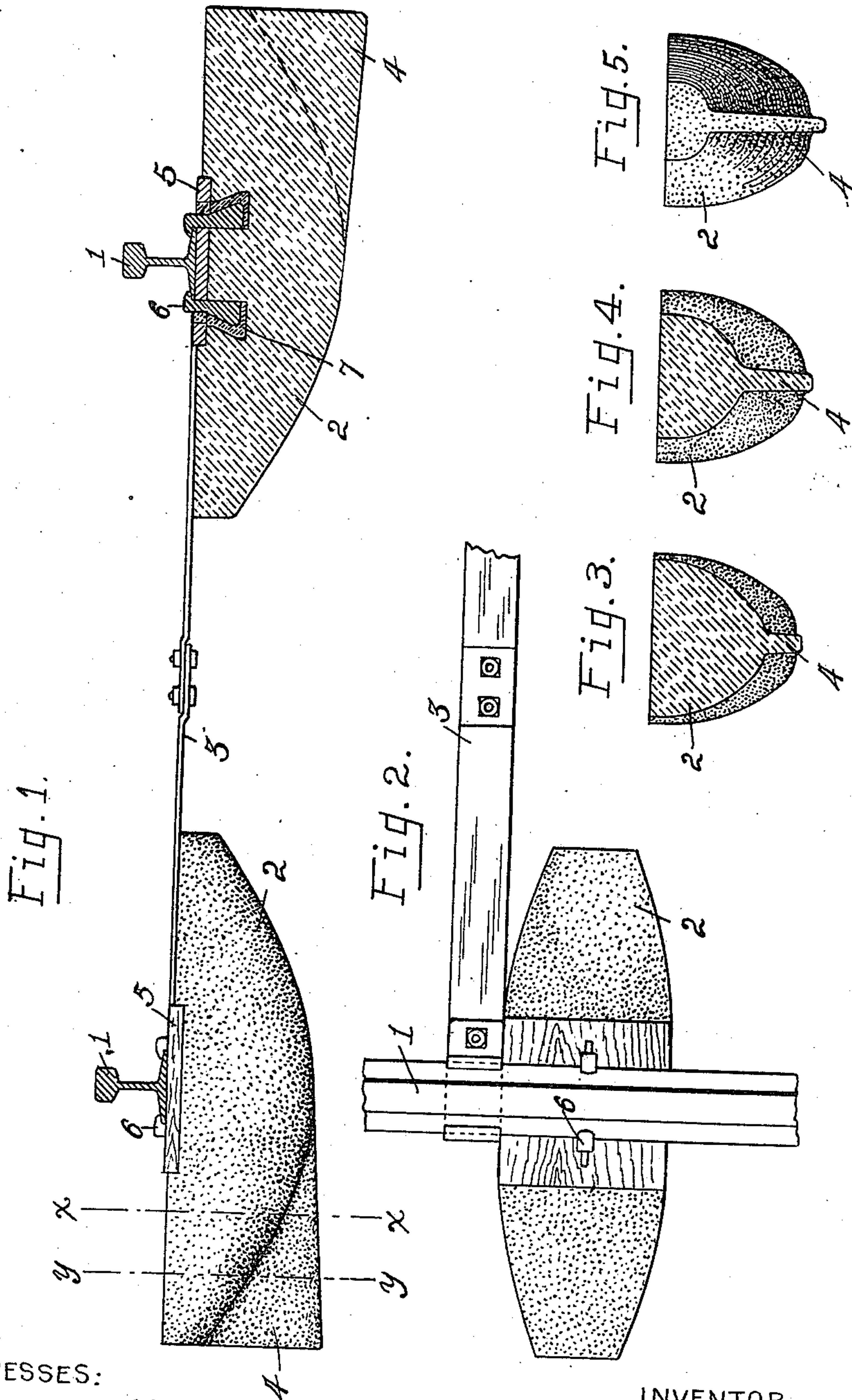


976,341.

W. F. BRADLEY.
CONCRETE TIE,
APPLICATION FILED AUG. 18, 1909.

Patented Nov. 22, 1910.



WITNESSES:
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CONCRETE TIE.

976,341.

Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed August 18, 1909. Serial No. 513,372.

To all whom it may concern:

Be it known that I, WILLIAM F. BRADLEY, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Concrete Tie; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to concrete railway ties; and has for its object the provision of a simple and highly efficient tie of this class which is easy and inexpensive of manufacture; and which combines a maximum of strength and durability with a minimum of material, and eliminates the steel reinforcement usually employed in ties of this class.

The invention is fully described in the following specification, and while in its broader aspect, it is susceptible of numerous modifications, a preferred form thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a cross-section of a track, with a tie of one rail in side elevation and a tie of the other rail in central longitudinal section. Fig. 2 is a top plan view of a portion of one rail and supporting tie. Figs. 3 and 4 are cross-sections of a tie taken, respectively, on the lines $x\ x$ and $y\ y$ in Fig. 1, and Fig. 5 is an outer end elevation of a tie.

Referring to the drawing, 1, 1 designate the two rails of a track, which are supported by individual sets of ties 2, and prevented from relative lateral movements by tie-bars 3, which latter embrace and rigidly connect the bases of the rails in any suitable manner.

It has been found by experimenting that the usual point of breakage of a long tie, or one which extends under and supports both rails of a track, is substantially midway between the rails, as the weight of trains passing thereover is not evenly distributed throughout the length of the tie, but is applied more directly to the ends thereof. To overcome this, each rail is provided with individual sets of supporting ties, as shown, thus eliminating the breakage of ties between the rails. It has further been found that the best results are obtained

by so shaping a tie that the maximum area in cross-section is disposed directly beneath the rail, or at the point of shock, and to then gradually reduce the cross-sectional area of the tie from the point of shock outwardly to its ends in both directions, as indicated. To accomplish this the top of each tie is preferably made flat, or substantially so, and its sides and bottom are of convex form both transversely and longitudinally thereof, or, in other words, gradually diminish in width and depth from its central portion outwardly, as indicated in the side, end and cross-sectional views. Too much stress cannot be laid upon the importance of the manner of forming the tie, as it materially facilitates a packing or tramping of dirt around the tie and gives a maximum of strength with a minimum of material.

In order to cause water to drain from one end of the tie instead of standing in the hollow formed in the soil thereby, it is provided on one end portion of its underside with a vertically-disposed longitudinally-extending fin or flange 4, which extends from the central portion of the tie outwardly to one end thereof, and preferably has its lower edge inclined downwardly from the central portion of the tie as shown. As moisture has a tendency to follow the surface of the tie it will drain from the same through the trough formed in the soil by the fin 4.

The ties 2 are provided on their top surfaces with pillow-blocks 5, on which the rails 1 rest. These blocks are preferably of wood and are partially countersunk in the surfaces of the ties, as shown.

6 designates spikes for securing the rails to the ties. In order to reduce to a minimum the weakening of a tie due to the positioning of spikes therein, such spikes have their shanks thinned transversely of a tie and broadened longitudinally thereof, and set in correspondingly shaped sockets 7, which are provided through the blocks 5 and in the tops of the ties. The sockets 7 are larger than the spike shanks to enable pavers' pitch, or other suitable cementitious substance, to be deposited therein around the spike shanks to rigidly secure the same to the tie, as indicated in Fig. 1.

I wish it understood that my invention is not limited to the specific construction and arrangement of the parts except in so far as such limitations are specified in the claims.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent, is,—

1. A concrete-tie having its cross-sectional area gradually decreasing in horizontal and vertical planes from near its center toward its ends.
2. A concrete-tie having its maximum cross-sectional area at the point of shock and its end portions gradually diminishing in cross-sectional area outwardly therefrom both in vertical and horizontal planes.
3. A concrete-tie which has its top surface substantially flat and its bottom convexed both transversely and longitudinally with the greater cross-sectional area at the point of greatest shock.
4. The combination with a rail of an individual tie therefor, which has its top of substantially elliptical form and its bottom convexed both transversely and longitudinally with its greatest cross-sectional area beneath the rail.

5. A concrete-tie the cross-sectional area of which gradually decreases from the point of shock outwardly, and a fin provided at the underside of one end portion thereof.

6. A concrete-tie having its cross-sectional area gradually decreased from near its center toward its ends and provided at the under portion of one end with a vertical longitudinally-extending flange, the lower edge of which inclines downwardly from its inner end outwardly.

7. A concrete-tie having sockets in its top which are elongated longitudinally of the tie, spikes having their shanks thinned and projected into such sockets, and a bituminous substance securing the spikes therein.

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

WILLIAM F. BRADLEY.

Witnesses:

C. W. OWEN,
H. TUEDENBURG.