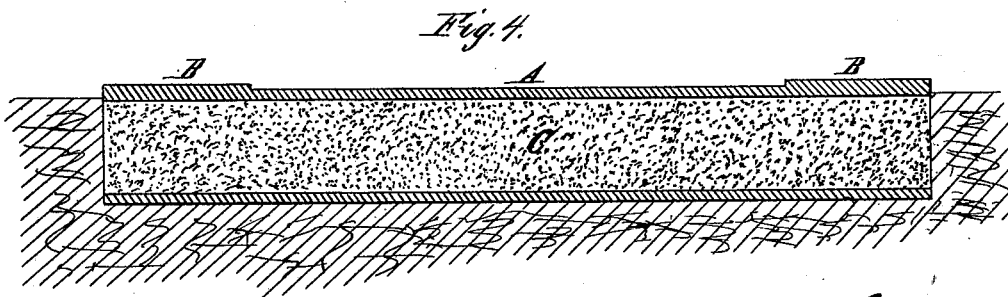
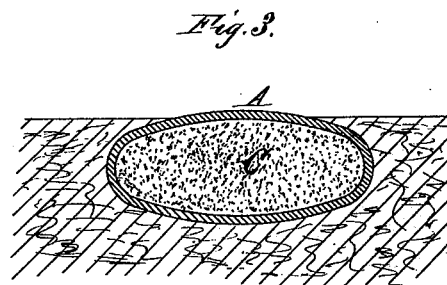
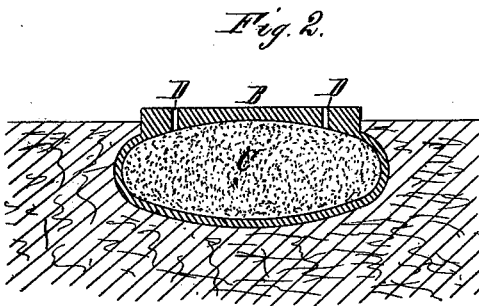
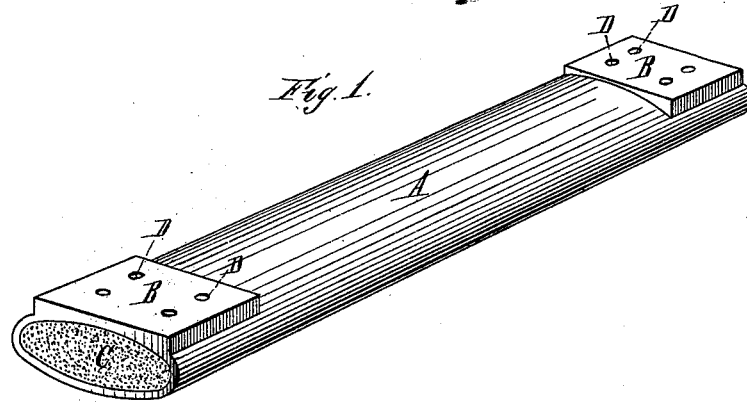


H. T. LIVINGSTON.
Railway-Tie.

No. 220,026.

Patented Sept. 30, 1879.



Herman Livingston

Inventor,

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Attorney.

Attest:
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UNITED STATES PATENT OFFICE.

HERMAN T. LIVINGSTON, OF OAK HILL, NEW YORK.

IMPROVEMENT IN RAILWAY-TIES.

Specification forming part of Letters Patent No. **220,026**, dated September 30, 1879; application filed March 29, 1879.

To all whom it may concern:

Be it known that I, HERMAN T. LIVINGSTON, of Oak Hill, Columbia county, and State of New York, have made new and useful Improvements in Railway-Ties, of which the following is a specification.

The object of my invention is to contrive a metallic railway-tie having the best form for strength, durability, and elasticity; also to bed itself in the ground and to shift in its bed to suit the requirements of the rails, and to be made the cheapest; and it is also specially designed to enable the metal to be re-enforced with other material of very cheap and durable character, to add to the strength, elasticity, and durability of the metal.

The tie consists of a hollow metal tube of oval form in cross-section, preferably made of cast-iron, with a flat portion near each end on the upper side for the rails to lie on, the said flat portions being tapped for screw-bolts to fasten the rails on.

The re-enforcing material consists of a core or packing in the hollow space, made of a pulp of oat-straw or Manila grass, or other suitable material, soaked in castor oil or crude petroleum, which oil and grass, so combined, will prevent frost from entering; and as these oils will never dry, they insure the packing against shrinkage, whereby it might become loose, as well as against frost, whereby the tie might be rendered brittle and weak. This core is packed in very hard and solid by great pressure, making a solid filling of great strength for resisting the crushing effect of the weight on the rails, and possessing great elasticity, which is one of the most important requisites of railway-ties.

Figure 1 is a perspective view of the improved tie contrived according to my invention. Fig. 2 is a cross-section of the tie through one of the bearing-seats for the rails. Fig. 3 is a cross-section of it between said seats, and Fig. 4 is a longitudinal section.

A represents the body of the tie, which consists of an oval-shaped cast-iron tube of suffi-

cient length for a tie, with a flat seat or base, B, on the upper side, at or near each end, for the rails to rest on. C represents the core of pulp with which the tube is filled, the said pulp being pressed very hard and solid by hydraulic or other suitable apparatus, so as to make a solid support against the crushing effect of the weight on the rails, and at the same time possessing elasticity sufficient to equal or excel the wood tie in that respect. D represents the bolt-holes, tapped in the flat rail seats B, for securing the rails by bolts to be screwed in with a wrench applied to the head.

This material will not shrink, especially when soaked with oil, as I propose, so that it remains a permanent support for the metal, and it excludes the wet and frost and protects the metal against corrosion.

The exterior of the tie may be coated with paint or other suitable material.

The shape of the tie is very favorable to the shifting of it in the earth bed and packing it up under the rails by the track-raisers by tamping the earth under it.

Thus I make a simple, cheap, and efficient metal tie, which, it is believed, will afford the best practicable substitute for the wood tie, now becoming scarce and expensive.

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

1. A railway-tie consisting of a metallic tube of oval form in cross-section, with a flat-topped seat or base on the upper side near each end, for the rails, substantially as described.

2. The combination of a solid pressed core or filling of pulp with a hollow metallic railway-tie, substantially as described.

3. The combination, with a hollow metallic railway tie, of a pressed solid core or filling of pulp soaked in castor-oil or crude petroleum.

HERMAN T. LIVINGSTON.

Witnesses:

F. A. THAYER,
W. J. MORGAN.