

98

No. 644,710.

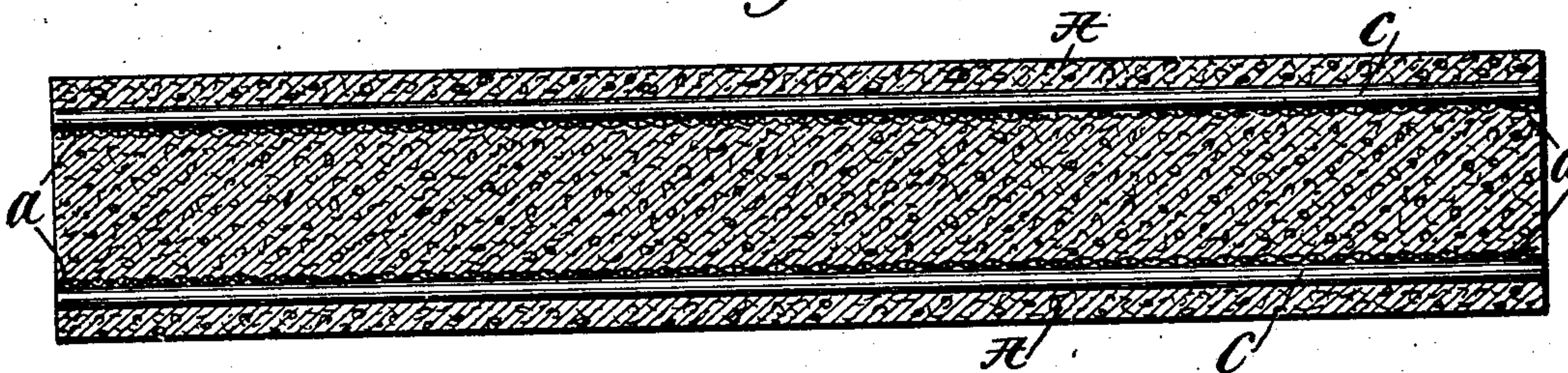
A. L. A. HIMMELWRIGHT.
RAILROAD TIE.

(Application filed Aug. 31, 1898.)

Patented Mar. 6, 1900.

(No Model.)

Fig. 1.



Portland cement

Ashe

Sand,

for refs see

509924 (106-24)

446382 (")

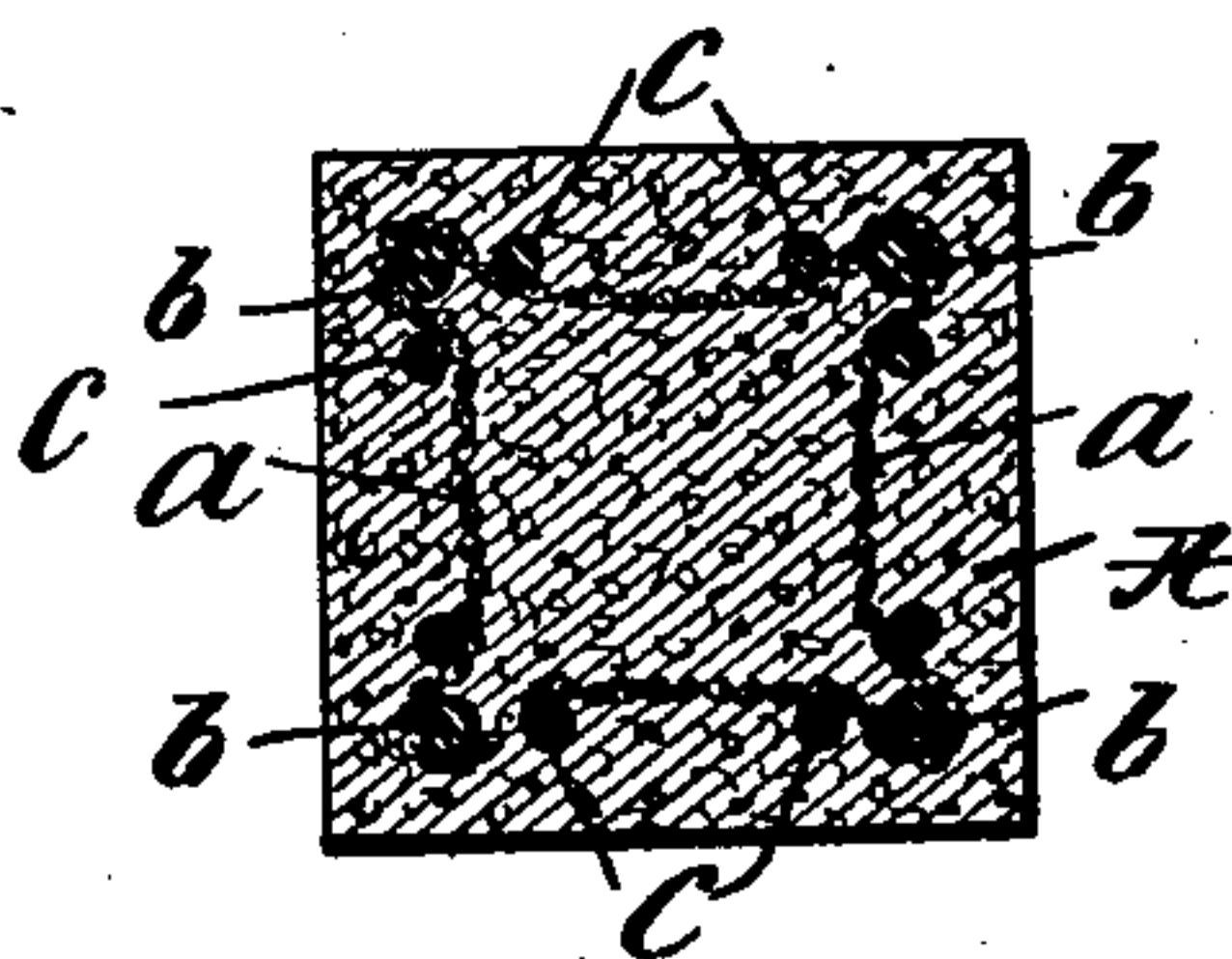


Fig. 2

Attest:

[Signature]
J. A. Crane

Inventor

Abraham L. A. Himmelwright

By Philip Phelps Lawyer

[Signature]

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644,710

UNITED STATES PATENT OFFICE.

ABRAHAM L. A. HIMMELWRIGHT, OF NEWARK, NEW JERSEY, ASSIGNOR TO
THE NEW JERSEY WIRE CLOTH COMPANY, OF TRENTON, NEW JERSEY.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 644,710, dated March 6, 1900.

Application filed August 31, 1898. Serial No. 689,917. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. A. HIMMELWRIGHT, a citizen of the United States, residing at Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Railroad-Ties, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to an improved cross-tie for railroad use, the object being to provide a molded tie that shall afford the desired resistance to crushing or breaking during the handling incident to shipment and laying the tie and under the conditions of use and that shall avoid danger of breaking or splitting in case spikes are driven into the tie in fastening the rails. I secure these results by the use of a light metal frame embedded in the molded material of the tie and preferably near the faces of the tie, so that the principal mass of the tie is held thereby, and strengthening-bars of any suitable form extending longitudinally of the tie and embedded therein, so as to secure the required resistance of the tie against breaking crosswise. The metal frame is formed, preferably, of woven or netted wire, but may be formed of wire arranged in any suitable manner or of perforated or expanded sheet metal or metal strips or small rods or of any other form of reticulated metal. The longitudinal bars may be rectangular, round, or, in fact, of any cross-section desired, preferably such as to secure a large surface exposed to the friction of the concrete in proportion to the area of section, and, if desired, they may be corrugated or twisted or formed in any other suitable manner to provide an irregular cross-section, and thus secure a stronger hold upon the molded material.

The material in which the metal frame and longitudinal bars are molded may be varied widely and may be any light porous combustible material mixed with sand and cement or similar binding material; but preferably the tie is formed of steam-ashes, which is the residue of anthracite coal consumed in steam-boilers or large furnaces, mixed with sand and Portland cement. The proportions

may be varied as occasion may require; but I have secured good results with one part, by quantity, of good Portland cement, two of good sharp sand, and five of steam-ashes and recommend these proportions, although fairly good results may be secured with a larger proportion of sand and ashes.

The accompanying drawings show a railroad-tie embodying all the features of the invention in their preferred form, and this construction will now be described, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a longitudinal section of a tie. Fig. 2 is a cross-section of the same.

Referring to said drawings, A is a body of molded plastic material, preferably of the composition above described, in which is molded and embedded a metal frame *a*, which in the preferred form shown consists of a sheet of woven or netted wire bent to approximately-rectangular form, with the wire a short distance inside the faces of the tie, so as to inclose and hold in position the principal mass of the tie. This wire-netting should be of quite coarse mesh and preferably is of three-fourths-inch to one-and-one-half-inch mesh material, as the plastic material on opposite sides of the netting thus forms substantially one body, and all danger of cleavage on the lines of the wire between the portions of plastic material inside and outside of the wire is avoided. This wire-netting *a* is combined with longitudinal strengthening-bars *b*, arranged within the corners formed by the bent lathing, these bars being shown as round in cross-section and being of such size as to secure the desired resistance of the tie to breaking crosswise. With these bars *b* are preferably used also other bars *c*, shown as of smaller diameter, which are arranged outside the wire-netting, two at each corner and on opposite sides of the bars *b*, the netting *a* thus being held inside and outside by the bars *b c*. While this arrangement of the netting and longitudinal bars is preferred and in itself forms a specific part of the invention, and a tie thus constructed forms a part of the present invention, other suitable arrangements

of metal frame and longitudinal bars may be used.

In the manufacture of this tie the woven or netted wire or other metal frame will be preferably molded into the tie, so as to be at approximately-uniform distances from each of the faces of the tie, as shown, the molds being so designed that the material may be rammed in position or deposited through a nozzle under air-pressure or in any other suitable manner that may be found economical and efficient.

It will be seen that this invention provides a tie in which the mass of material molded to form the tie is bound and held together by the woven or netted wire or other similar metal frame used, so that the breaking or splitting off of large portions of the tie in spiking is avoided and a tie of great resistance against crushing and splitting secured, while the longitudinal bars secure the required resistance to breaking crosswise.

What I claim is—

1. A railroad-tie formed of a solid block of molded material having embedded therein and within the faces of the tie a metal frame formed of reticulated metal with strengthening-bars extending longitudinally of the tie, substantially as described.

2. A railroad-tie formed of a solid block of molded material containing steam-ashes and a suitable binding material, such as cement, having embedded therein and within the faces of the tie a metal frame formed of reticulated metal with strengthening-bars extending longitudinally of the tie, substantially as described.

3. A railroad-tie having embedded therein a metal frame bent to rectangular form and lying at approximately-uniform distances inside each of the faces of the tie, in combination with one or more strengthening-bars at each corner of the rectangle formed by the metal frame and extending longitudinally of the tie, substantially as described.

4. Tie A formed of molded material having embedded therein the rectangular metal frame *a* and having at each corner strengthening-bars *b* inside the frame and strengthening-bars *c* on opposite sides of the bars *b* outside the frame, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ABRAHAM L. A. HIMMELWRIGHT.

Witnesses:

C. J. SAWYER,
A. L. KENT.