

No. 639,860.

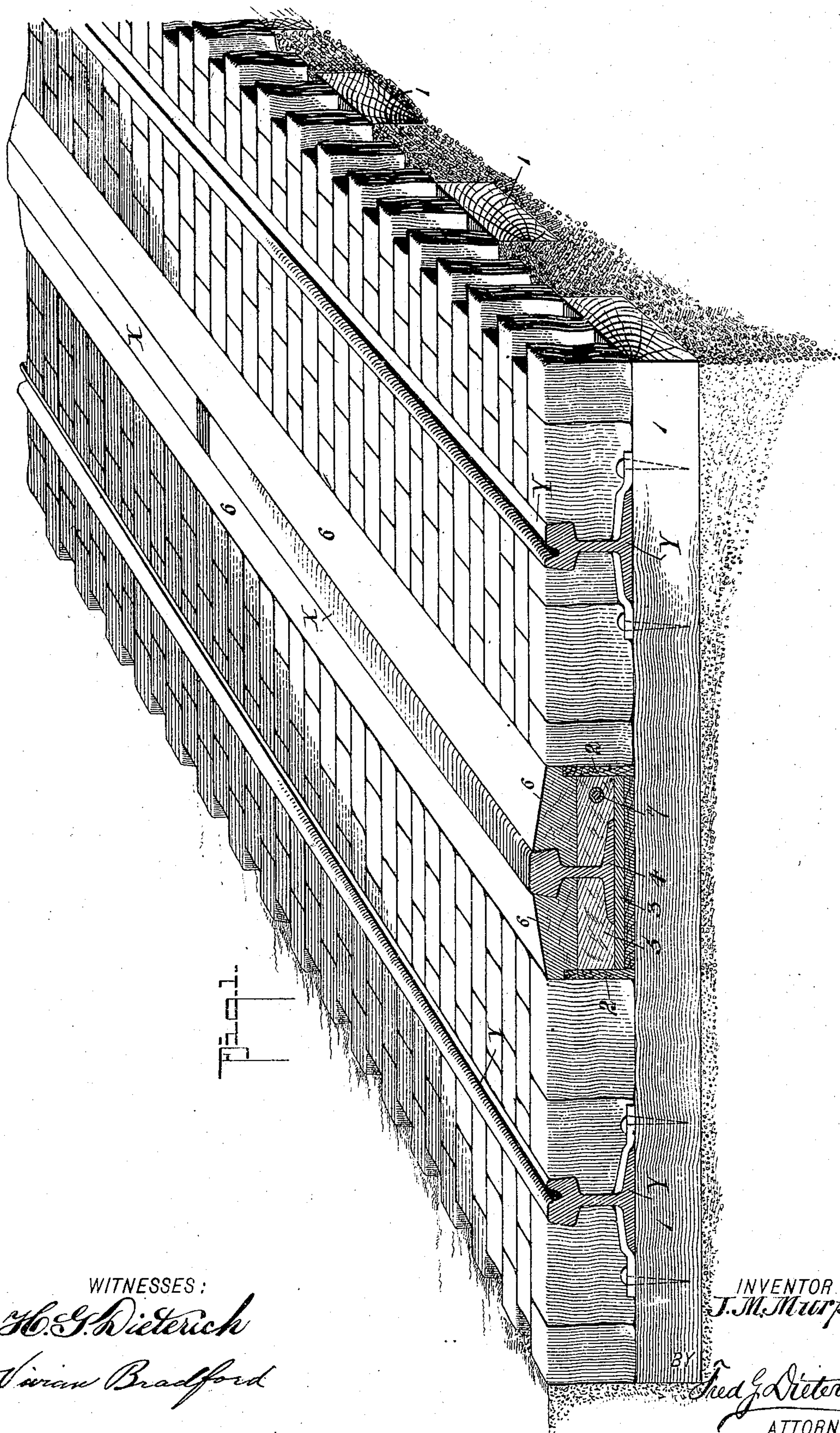
Patented Dec. 26, 1899.

J. McL. MURPHY.
ELECTRIC RAILWAY.

(Application filed Apr. 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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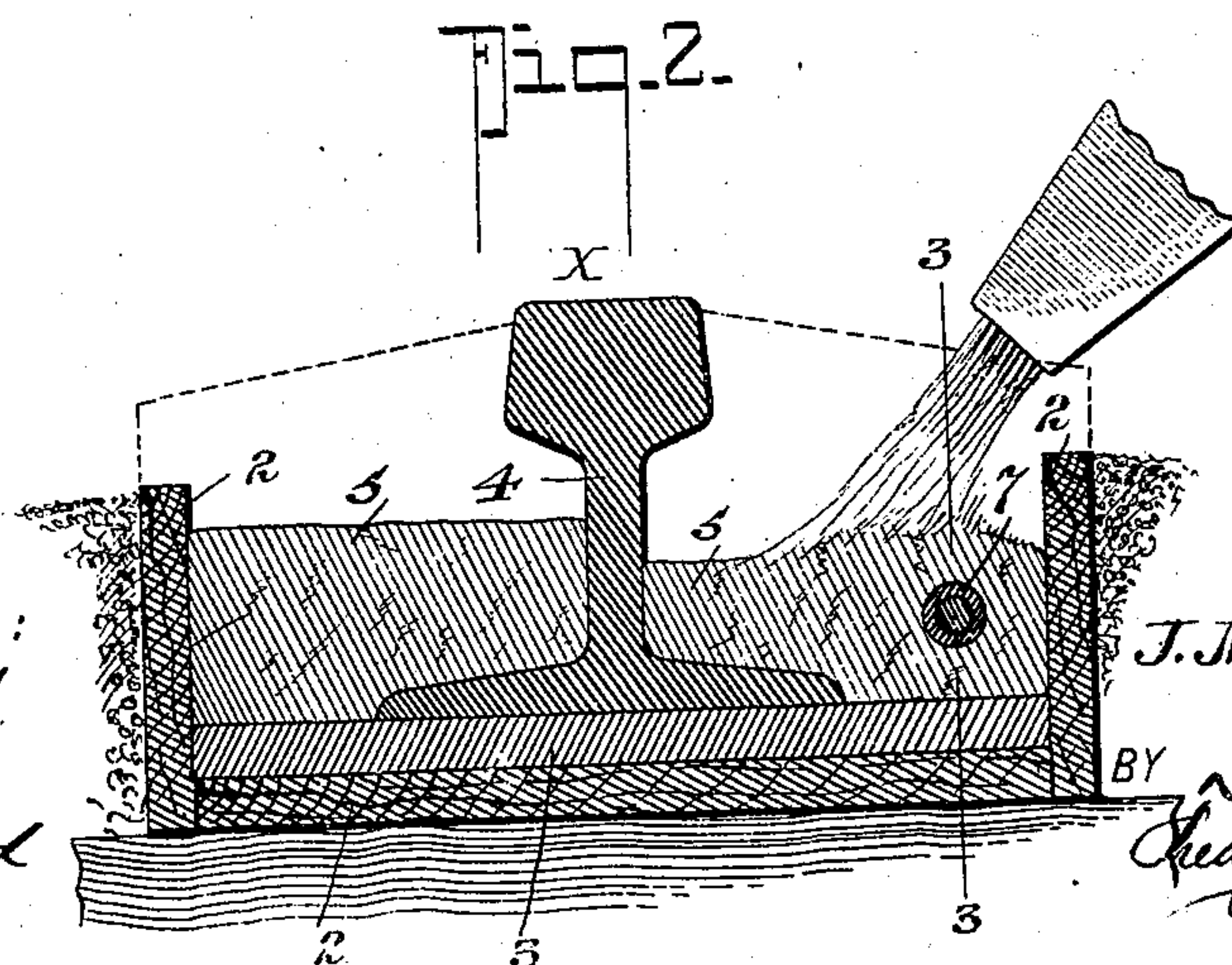
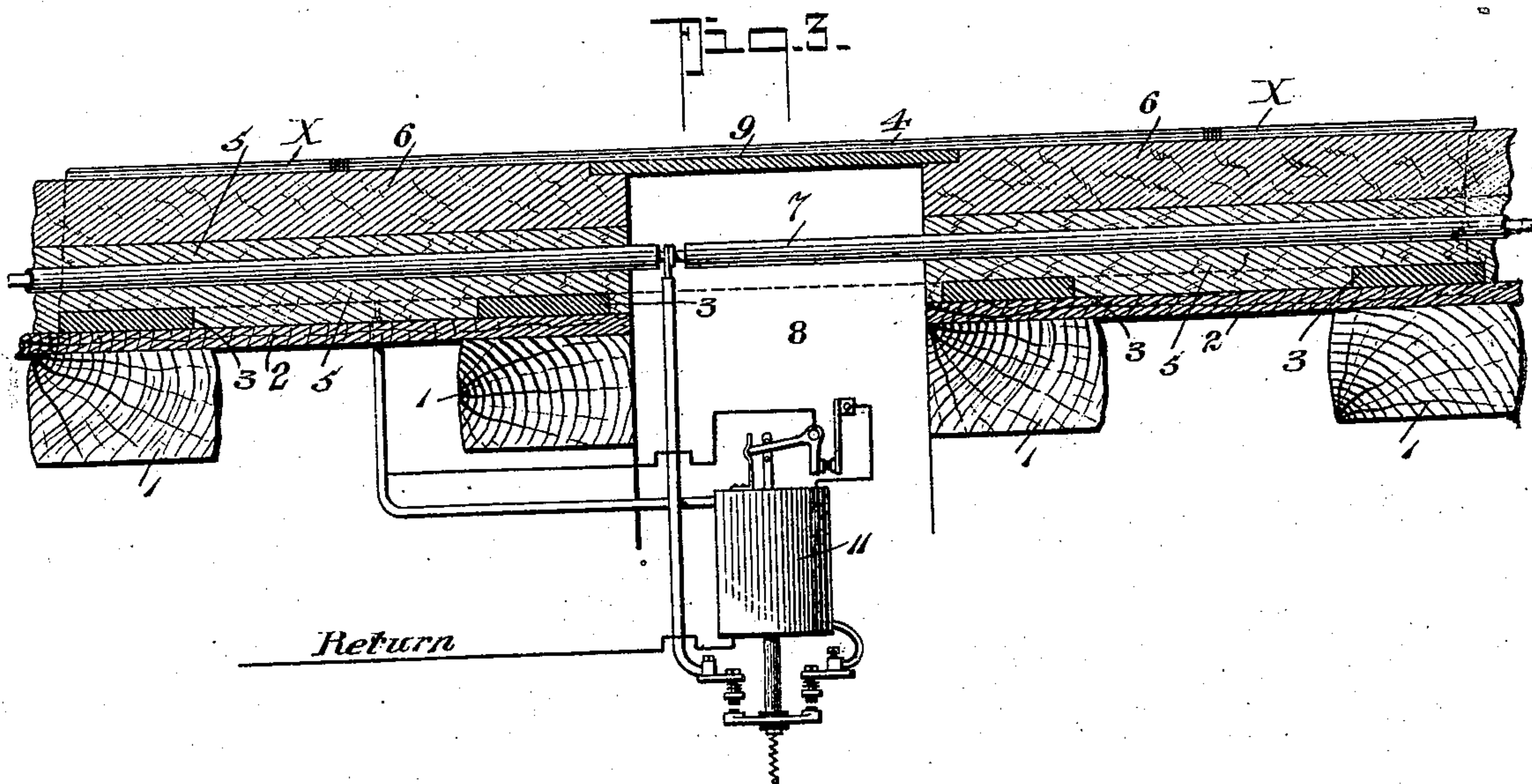
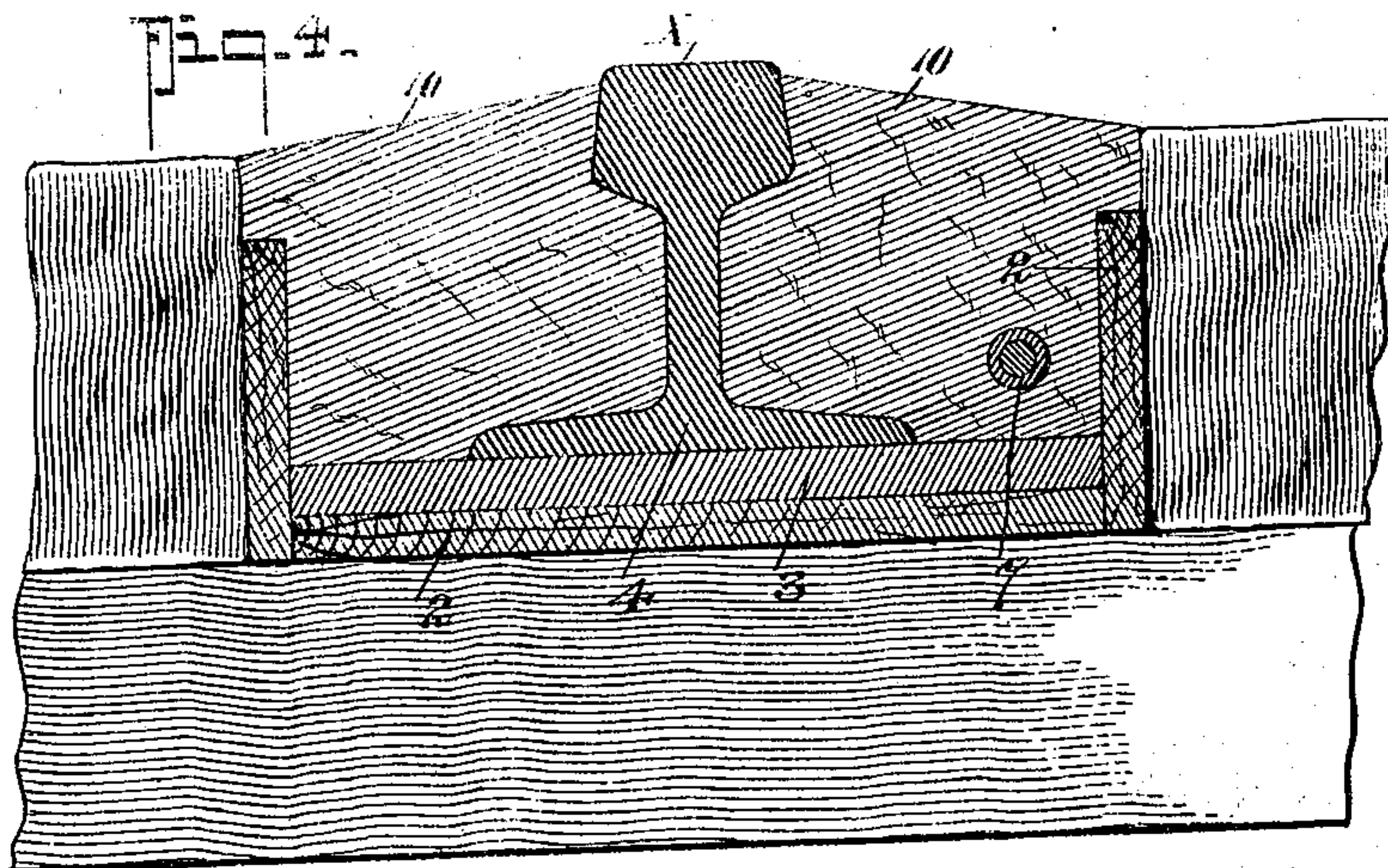
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UNITED STATES PATENT OFFICE.

JOHN MCLEOD MURPHY, OF TORRINGTON, CONNECTICUT.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 639,860, dated December 26, 1899.

Application filed April 19, 1899. Serial No. 713,610. (No model.)

To all whom it may concern:

Be it known that I, JOHN MCLEOD MURPHY, residing at Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Roadway Structures for Electric-Railway Systems, of which the following is a specification.

This invention relates to improvements in roadway structures for surface-contact railways, and particularly to means for supporting and insulating the sectional contacts for transmitting the current from the feeder to the trolley.

Heretofore in the construction of surface-contact systems having the sectional conductor composed of a series of contact buttons or plates each contact of necessity required to be separately mounted and anchored. For this purpose a vault or other similar chamber has been provided to receive the contact plate or button and the operating switch mechanism therefor. This method of securing the surface contacts has been found to be very expensive and unsightly, for the reason that such construction is not of a lasting character, and particularly for the reason that danger of ground leakage and short-circuiting of the feeder-current is not sufficiently avoided or reduced to render the use of the sectional conductor, when arranged in such manner as above stated in place when it is necessary that the conductor-sections be of short lengths, practicable and without danger. In surface-contact-railway systems having a third rail formed substantially in the nature of a continuous member said rail has been made fast by spiking in a manner similar to the securing of the tread-rails, the sections constituting the third rail being insulated from each other by spacing-blocks. This method of mounting the third rail has also been found objectionable and unreliable on the score of expense and danger of short-circuiting.

My present invention, therefore, primarily seeks to provide a means for economically, expeditiously, and effectively constructing the conductor or third rail in a manner that will make it lasting under all conditions of traffic, that will reduce the danger of ground short-circuiting practically to *nil*, and that will admit of securing the feeder-wire in close proximity to the third rail, whereby to make

the connection between the switches, the third rail, and the feeder-rail the more stable and economical and whereby to provide for a more complete and sightly construction of the third rail for use on block or concrete paved thoroughfares.

Another object of my invention is to provide a base construction to receive and secure the third rail, whereby the said rail can be firmly held without the use of spikes, chairs, or other similar rail-tying means and in which the body of the rail will be held entirely embedded in a non-conducting material, which material also serves as a binder for holding the base members upon which the rail is supported as a fixed part of the complete rail-supporting bed.

My invention comprehends certain features of construction and peculiar combination of parts, such as will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of the roadway structure for surface-contact electric-railway systems constructed in accordance with my invention. Fig. 2 is a view illustrating the manner of securing the third rail and feeder-wire in place. Fig. 3 is a longitudinal section taken practically on the line 3 3 of Fig. 2, and Fig. 4 illustrates a modified form of my invention.

In its practical application my invention is best adapted for use for securing in place a sectional third rail disposed between the main tracks or contiguous thereto, and while my improvement is applicable for laying a sectional third rail for any surface-contact system having a continuous third rail as a part thereof, yet my improvement has been especially provided as a part of the complete electric-railway system referred to in my Patent No. 599,344, dated February 22, 1898.

In the construction of my improvements the third rail X is preferably placed midway of the tread-rails Y-Y, which rails Y are mounted on the cross-ties 1 in the usual manner. Before filling the space between the tread-rails I build a trough 2 of common lumber and mount the same upon the cross-ties 1 and make it fast or not to the said ties, as desired. This trough extends the full length

of the road or the length of the third rail, and at suitable intervals, preferably over each cross-tie, a bed-block 3 of hard stone (blue-stone) is laid transversely of the trough 2, as clearly illustrated in Fig. 3, said blocks forming, as were, the base members upon which the contact-rail sections 4 are seated. After the rail-sections have been properly seated upon the stone blocks 3 the base of the rail is securely tied in position by a filling of cement 5, which is filled in to or near the top of the trough, as clearly shown in Fig. 1. The filling 5 is composed of cement possessing a high grade of insulating quality, and to facilitate the laying of the road-bed, and thereby materially reducing the cost of construction, I employ a cement filling of a character capable of being freely poured into the trough from suitable pouring vessels, as indicated in Fig. 2. So far as described it will be manifestly clear that the filling 5 as it sets ties the trough, the blocks 3, and the rail-base firmly to form a solid body, which when the roadway is complete is securely held from lateral movement by a ballast filling between it and the tread-rails, which may be in the nature of granite blocks, as shown in the drawings, or a concrete filling, as indicated in Fig. 2, it being understood that in the most complete form of road-bed the ties are also seated in a concrete filling, as indicated in Fig. 1.

I have found from practical experience that when using a cement capable of being freely poured into the trough, while the same will sufficiently harden to form a strong and durable tying-base for the rail, yet the same under a strong sun heat is adapted to soften slightly. To overcome the danger of softening of the said filling 5, I prefer to provide a supplemental filling of cement of such character as to positively withstand any ordinary heat temperature. This filling (indicated by 6) is of a plastic character and is of such nature as to set quickly, and therefore must be applied and made ready by troweling. The filling 6, as will be seen by reference to Fig. 1, extends to a point above the trough, and when the ballast is in the nature of blocks, as shown in Fig. 1, or concrete filling, the said filling 6 is smoothed off to an incline to form a proper water shed to keep the water from standing on the contact-rail, it being also understood that by lapping the trough

edges the said trough is somewhat protected thereby from the weather.

7 indicates the feeder-cable, which, as will be seen by reference to the drawings, is embedded within the filling 5 and carried within the trough 2.

At suitable points along the road the vaults 8 are provided, having removable caps 9, which vaults receive the electromagnetic switches 11, as illustrated in Fig. 3.

While I prefer, on the score of economy and speed of construction, to use two fillings of different plastic condition, yet, if desired, the rail may be embedded in a single filling (indicated by 10 in Fig. 4) of hard cement. In this latter form it will be understood that the cement filling must be shoveled in place and finished off by troweling, as the same must be of a character to withstand the sun's rays.

From the foregoing, taken in connection with the accompanying drawings, it is thought the advantages of my improvement in roadway structures will be readily understood. It will be observed that the third rail can be made secure and laid quickly and the danger of short-circuiting reduced to the minimum, as no part of the conductor-rail during the entire length of the road is in direct contact with earth.

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

1. As an improvement in roadway structures for electric-railway systems; a third-rail support and binder, comprising a series of stone base-blocks; a holding-trough, and a plastic insulator filling material held within the trough and engaging the blocks and the rail and adapted to bind the rail and the rest-blocks, substantially as shown and for the purposes described.

2. In a roadway structure of the character described, in combination with the cross-ties; a trough mounted thereon; a series of stone blocks held transversely on the bottom of the said trough; a conductor-rail supported on the blocks; the plastic filling 5 capable of being poured into the trough when fresh, and the binder-filling 6, all being arranged substantially as shown and for the purposes described.

JOHN MCLEOD MURPHY.

Witnesses:

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