

(No Model.)

E. M. BENTLEY.
ELECTRIC RAILWAY.

No. 470,654.

Patented Mar. 15, 1892.

Fig. 2.



Fig. 1.

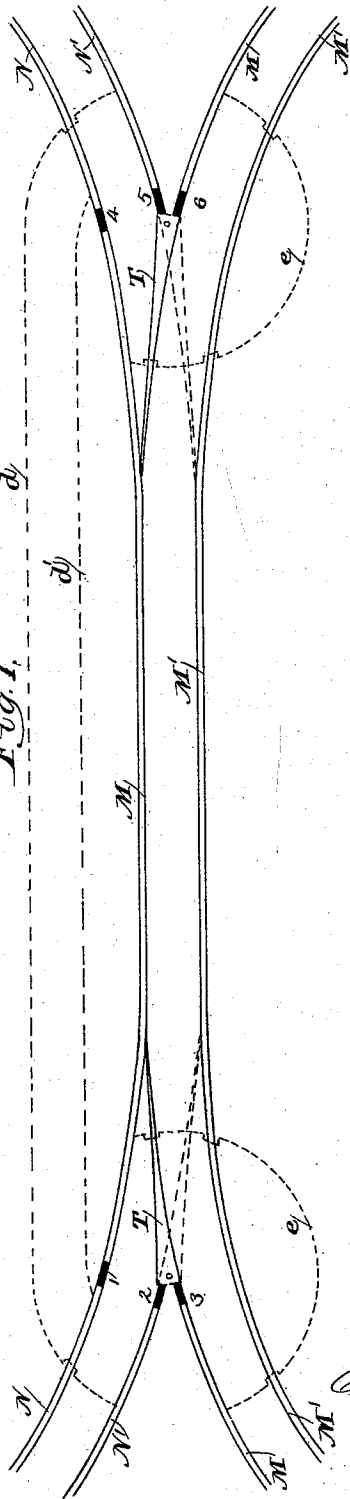
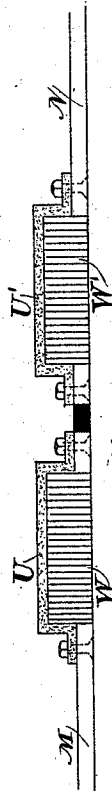


Fig. 3.



WITNESSES:

Harben & Knight
Arthur P. Knight

INVENTOR:

Edward M. Bentley
by *Bentley & Knight*
ATTYS.

UNITED STATES PATENT OFFICE.

EDWARD M. BENTLEY, OF BOSTON, MASSACHUSETTS.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 470,654, dated March 15, 1892.

Original application filed December 11, 1885, Serial No. 185,411. Divided and this application filed February 25, 1891. Serial No. 382,811. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BENTLEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Electric Railways, of which the following is a specification, this application being a division of my application, Serial No. 185,411, filed December 11, 1885.

My invention consists in an arrangement of conductors in an electric railway by which current can be supplied to the locomotives traveling over the railway and by which one road can be used for a distance by the locomotives of another road having an independent supply.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 illustrates converging roads having a section in common over which the cars of either road may travel. Fig. 2 shows one way in which the line conductor may be interrupted electrically at desired points, and Fig. 3 shows different means for this same purpose.

In electric-railway service it is often essential that one road be able to use the track of another road for a distance usually not great. I provide for this in the following manner: The supply-conductors of the converging roads which meet in the common road or section of road are correspondingly arranged, so that the vehicle may travel on either and the same contact device be employed to maintain electrical connection with the supply-conductor.

M M' are the conductors of the main road, and N N' those of the side road leading into the main road, and being at the same height and distance apart, so that the same contact-plows can be utilized upon both. As N N' approach M M' they are interrupted at the points 1, 2, 4, and 5, the current being carried around by the bridge-wires *d d'*, and M is interrupted at 3 and 6, the breaks being bridged by *ee*. Independent insulated switch-points T are adapted to lead from the main conductor M to the disconnected section, as shown in the full-line position, or, as shown by

the dotted-line position, from N' to M'. Any motor on the main line will pass along without any interruption; but a motor on the side line will lose its normal current by the breaks 1 2 and 4 5 and take up for a time the main-line currents from M M' and then again be restored to its normal conductors.

For breaking automatically the circuit of any motor in passing from one system to another I employ the device shown in Fig. 3. U U' are insulating-holders for a series of sheet-iron plates W W', set on edge and having their lower or contact ends arranged in line, so that they form a continuation of M or N in the path of travel of the contact device. When a contact-shoe passes from N or M onto the plates W, it cuts more or less of them into circuit. As the resistance between each pair of plates is comparatively small, this increases the total resistance gradually, until it becomes so great in comparison with the potential of the line that the circuit is finally ruptured, and that, too, without arcing. When no resistance is used, the ends of the conductors are separated a distance apart too great for the arc to be carried across and bent down or cut to a bevel, so that the contact-shoe will pass over without catching. The spring of the contact must not be so great as to press it inward beyond the line of the bevel.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with two electric railways having separate sources of current, of a section of conductor common to both of said railways, but insulated from the main conductors of one road.

2. The combination of two converging railways, each having a distinct source of current and running into a common track or road, with conductors correspondingly arranged on each railway, so that the same vehicle is adapted to maintain contact with the supply-conductor while traveling on either road.

3. The combination of an interrupted supply-conductor adapted for a traveling contact, a bridging-conductor around the break, and an intermediate section of conductor

adapted for a traveling contact connected to a separate source of current and forming a continuation of the said interrupted conductor.

5 4. The combination, with the converging conductors insulated from each other, of the insulated conductor-switching point adapted to lead a contact device into either branch.

10 5. The combination of two electric-railway conductors insulated from each other, but adapted to a common contact device, with a resistance in each near the point of junction, adapted to be cut into the circuit of the passing contact.

15 6. The combination, with the line conductor of an electric railway, adapted to be engaged by a traveling contact, of a series of resistance-plates arranged in said conductor in the path of travel of said contact.

20 7. A device for separating electrically while preserving the mechanical continuity of adjacent sections of an electric-railway-line conductor, consisting of a series of conducting plates or pieces having their contact ends in
25 line with one another in the path of travel of the contact devices, but so arranged that the

total resistance offered thereby is sufficient to form an effective insulator between the sections and prevent arcing across the entire series, as set forth.

30 8. The combination, with the line conductor of an electric circuit, of a series of conducting-plates permanently connected therewith and forming a resistance, preventing the formation or continuance of an arc between the
35 said line conductor and a neighboring conductor.

9. A series of conducting-plates permanently connected in an electric line-circuit at a point where arcing is liable to occur and is
40 to be prevented and set adjacent to one another, so that, while the resistance between each pair of plates is small comparatively to their total resistance, yet the total resistance
45 is sufficient to prevent arcing across the entire series, as set forth.

In testimony whereof I have hereto set my hand this 20th day of February, 1891.

EDWARD M. BENTLEY.

Witnesses:

HERBERT KNIGHT,
ARTHUR P. KNIGHT.