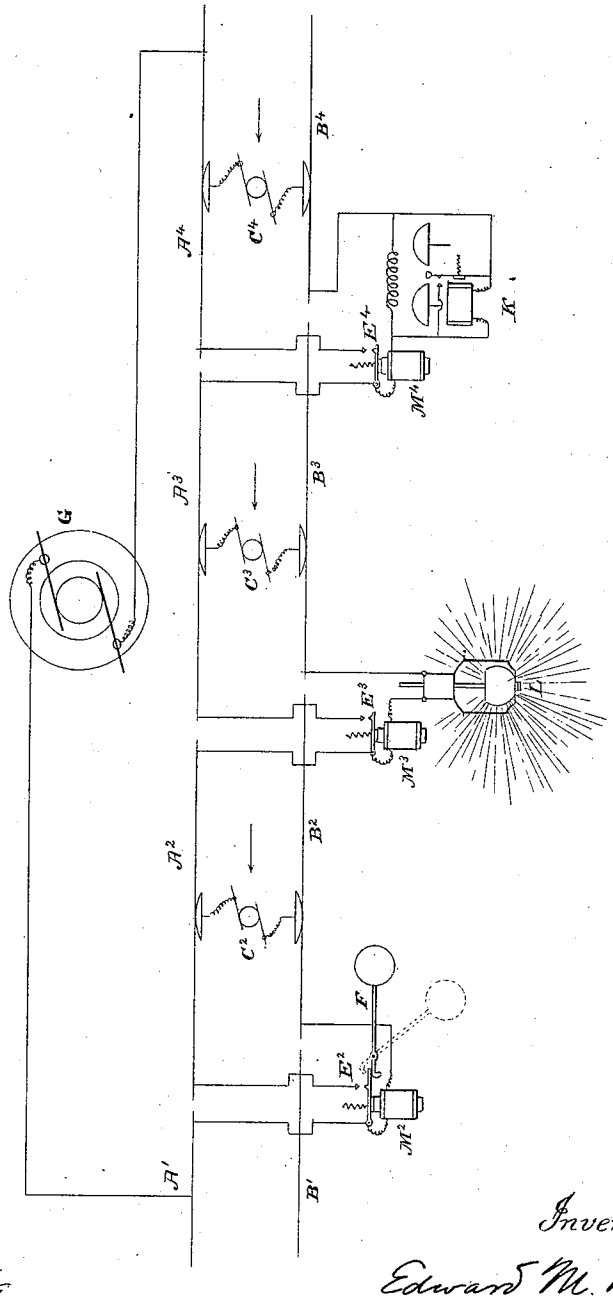
(No Model.)

E. M. BENTLEY.

SIGNAL FOR ELECTRIC RAILWAYS.

No. 430,263. Patented June 17, 1890.



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UNITED STATES PATENT OFFICE.

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SIGNAL FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 430,263, dated June 17, 1890.

Application filed August 30, 1884. Serial No. 141,841. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BENTLEY, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Signals for an Electric Railway, of which the following is a specification, reference being made to the accompanying drawing, which shows a diagram of the invention.

My invention lies in an electric signaling device operated by the same current which acts to propel the electric locomotives on the line and in a circuit-closer operated by a train at a distance to include the signal in circuit and give notice of the approach of the train.

This invention is shown and described in an application for a patent for an electric railway, filed by me December 29, 1883, and patented October 7, 1884, No. 306,315, and is especially adapted to the peculiar form of electric railway shown in the said application. That railway consists in general of two conductors extending along the line of the road and divided into sections of equal length, one end of each section of one conductor being connected to the succeeding section of the opposite conductor, and this cross-connection containing an electro-magnet which when energized acts to break a normally-closed connection between the succeeding sections of the said opposite conductor. The terminal sections will be connected to the source of electricity, and each locomotive will have two contact-shoes, which are constantly in connection with the two main conductors, respectively.

The present invention consists in including in the cross-connection with the electro-magnet that operates the section-switch a signaling device, either audible or visual, or both, which will give notice whenever a train comes onto the section which terminates at the signal.

In the drawing, A' A^2 A^3 A^4 and B' B^2 B^3 B^4 are the two sectional conductors, the former having its succeeding sections normally connected by the switches E and its terminal sections in connection with the electrical source G, and the latter having one end of each of its sections connected to the succeeding section of the former, as B^4 to A^3, B^3 to A^2, &c. Each cross-connection contains an electro-magnet M, which when energized operates a switch E to break connection between successive sections of conductor A.

C^2, C^3, and C^4 are locomotives—one in each section—going in the direction of the arrows. Looking at one of them, as C^4, it will be seen that the current from the source G goes to conductor A^4, and that when there is no locomotive on the section the switch E^4 is closed and the current goes directly to A^3; but when C^4 strikes the section and its lower contact-shoe runs onto B^4 a second path for the current is opened through C^4 B^4 M^4 to A^3. A part of the current takes this path and energizes M^4, which immediately breaks the connection between A^3 and A^4 and forces all the current to go by the second path. By this arrangement a magnet M at the end of the section in advance of each locomotive is active, and I take advantage of this fact to place in the circuit of M a signal device, or have M itself operate a signal. This may be a semaphore, as F, or a lamp, as L, or a bell, as K. The lower contact-shoe of the locomotive, coming in contact with a section of B, acts as a circuit-closer to include the signal device in circuit, and it is cut out when the shoe strikes the next section.

I claim as my invention—

The combination, with an electric railway comprising conductor-sections normally connected in series, of switches for breaking the series connection and completing the circuit through the propelling-motor upon the presence of a car on the corresponding section, and a signaling device operated simultaneously with the breaking of the series connection, as described.

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