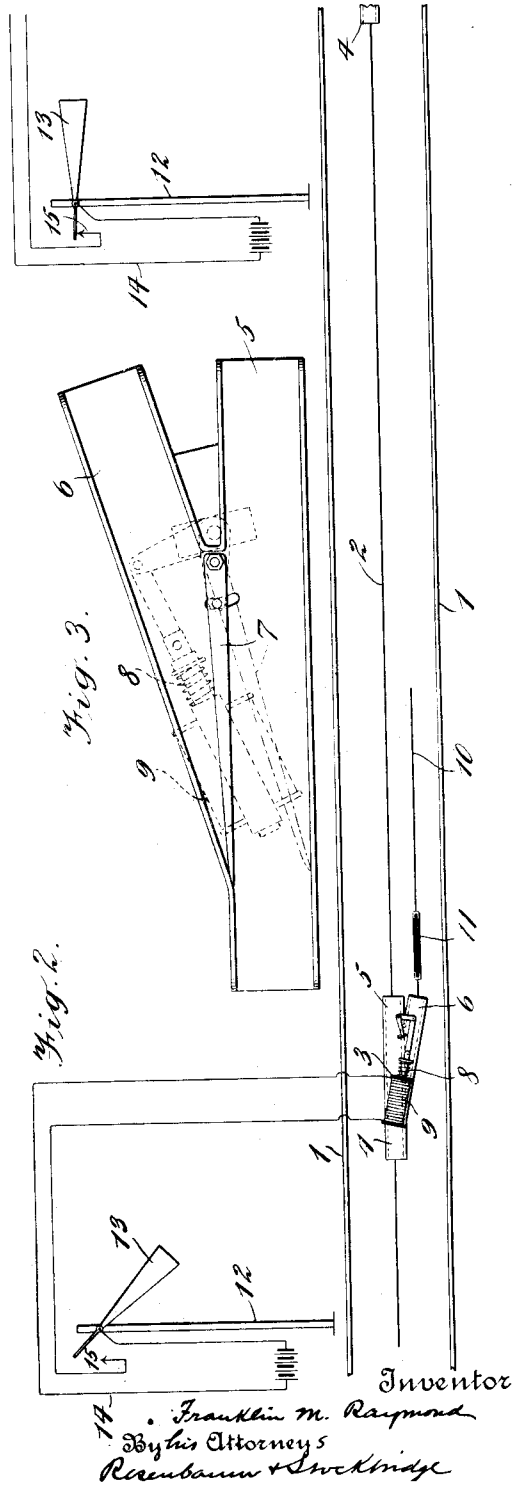
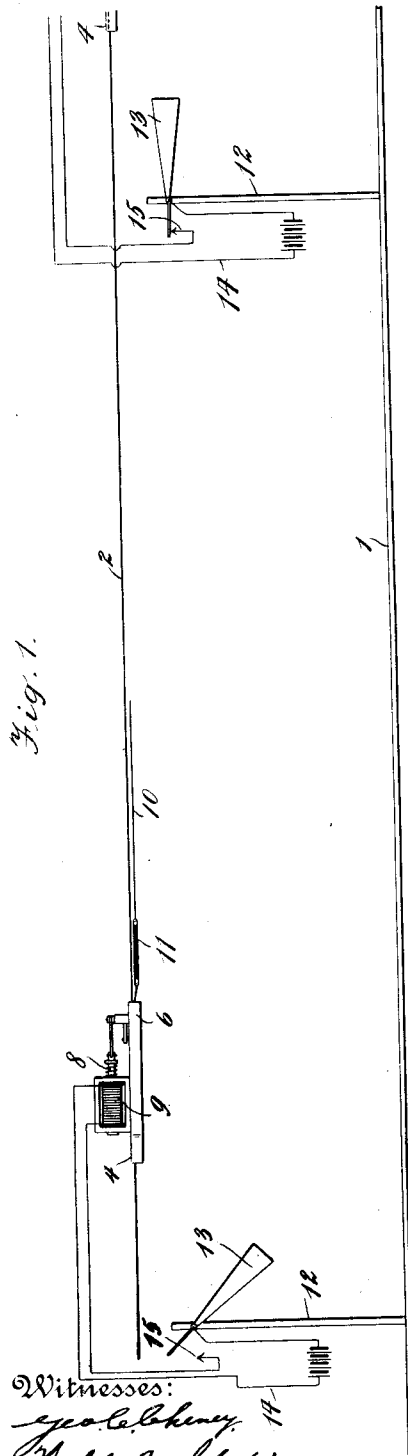


F. M. RAYMOND.
 TRAIN CONTROL.
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1,065,722.

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FRANKLIN M. RAYMOND, OF SAUGATUCK, CONNECTICUT.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANKLIN M. RAYMOND, a citizen of the United States, residing at Saugatuck, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Train Control, of which the following is a full, clear, and exact description.

My invention relates to improvements in train-control systems and more particularly to electric railway systems in which the prescribed traffic conditions are automatically enforced by cutting off the power from the train or car.

The object of my invention is to obviate the necessity of using a sectional power conductor in which sections are cut out, either automatically or manually.

My invention consists in a main power conductor provided with means, such as switches or the like, by which a contactor or trolley carried by the car is diverted from the main line onto a branch conductor which is at a different potential than the main line and in the preferred form is at zero potential.

My invention also consists in the features of construction and combinations as herein set forth and claimed.

In the drawings, Figure 1 is a diagrammatic view in elevation of my system; Fig. 2 is a plan view of the same; and Fig. 3 is a bottom plan view of the switch.

Referring to the drawing, 1 represents a trackway, and 2 the usual overhead trolley. It is not my intention, however, to be limited to an overhead construction and the system is equally applicable to a third rail system. The trolley wire is divided into blocks by switches 3, inserted at definite intervals in the main line, which are made of conducting material such as brass or the like, so that the main trolley wire will be electrically continuous throughout its length. Switch 3 comprises a plate 4 having a bifurcated end forming portions 5 and 6. A switch tongue 7 is pivotally connected to the plate and is electromagnetically actuated by a pin mounted thereon which moves in a slot in the plate and is connected at its other end to a bell-crank which is in turn connected with the core 8 of the solenoid 9. A compression spring is interposed between the solenoid and the core, which normally tends to maintain the switch tongue in position to leave the main line clear for the pas-

sage of the trolley-pole or contactor carried by a car. A branch conductor 10 which is parallel to and in close proximity to the main line is connected to the portion 6 of the switch. The branch conductor consists of a short length section, preferably about 50 feet in length, which is insulated from the switch by means of the insulator 11, forming a section which is at a different potential than the main line and in the preferred form is at zero potential. Spaced along the trackway at definite intervals which may be adjacent to the switches 3 or not, as is desired, are the signals 12, having semaphores 13. These signals may be controlled by any of the well known means, either automatically by the passage of trains, or from a signal tower. A circuit 14 provided with contacts 15 which are closed when the semaphore is in its danger indicating position is electrically connected with the solenoid 9. It is not essential, however, that the solenoid 9 be controlled by the track-signal but may be controlled from any distant point such as the switch tower or the like.

When the signals are in their safety-indicating position, the solenoid will not be energized, and the switch will be in position to allow the contactor or trolley to pass over the main line without any interruption of the supply of power. If, however, a signal is set at danger, the solenoid 9 will be energized and the switch 3 set for the branch conductor. If an attempt is made to pass the danger signal, the trolley or contactor will be diverted from the main line onto the branch conductor, which is a dead section, and the supply of power will be cut off. The operator will then be aware that he has passed the danger signal or that something else is wrong with his power supply and will apply the brakes to stop the train. The dead section is made of sufficient length to enable the operator to gradually stop the car so that there will be no sudden jars and yet allow the contactor or trolley-pole to remain in contact with the dead section so that it will not assume an inoperative position. After the operator has assured himself that the signal which he has passed has returned to its safety-indicating position, the contactor is removed from the branch conductor onto the main line and the car proceeds along the trackway. If the usual form of trolley block system is used

where the entrance of a train at one end sets the signal for the other end to danger-indicating position, the operator will, as in the preceding instance, remove the trolley from the branch conductor onto the main line. The car will then be driven backward until it has passed out at the entrance end of the block which will set the signal at the other end of the block to its safety-indicating position. When the signal at the entrance end goes to safety-indicating position, the train may then proceed along the main line under the control of the operator. One of the material advantages of this system is that it may be installed upon any of the trolley lines now in use with a minimum expense and labor as the only change necessary is that the switches be inserted in the main line where it is advisable to control the stopping of the car and branch conductors be supplied at these points. Another advantage of the system is that the current in the main line is not interfered with and the necessity of connecting these sections in parallel with a power or feed conductor is obviated.

Having described my invention, I claim:—

1. A train control system comprising a main line, a branch conductor of different potential in close proximity thereto, a car having a contactor carried thereby, and means for diverting said contactor from the main line onto said branch conductor.

2. A train control system comprising a main line, a dead section parallel to and in close proximity to said main line, a car having a contactor thereon, and means for diverting the contactor from said main line onto said dead section.

3. A train control system comprising a

main line, a branch section of different potential in close proximity thereto, a car having power-supplying means including a contactor, and means automatically controlled by the passage of trains over the trackway for diverting the contactor from the main line onto the branch section to control the power-supplying means.

4. A train control system comprising a main line, a branch conductor of different potential in close proximity thereto, a car having a contactor, and electro-magnetic means for diverting the contactor from the said main line onto the branch conductor.

5. A train control system comprising a main line, a branch conductor of different potential in close proximity thereto, a car having a contactor, and electro-magnetic means for diverting the contactor from the said main line onto the branch conductor, said electromagnetic means being controlled by signals along the track.

6. A train control system, comprising a feed wire for conveying electric power to the train, a branch wire mounted adjacent to the feed wire and of different potential therefrom, a contactor carried by the train, a mechanical switch adapted to control the path of the contactor from the feed wire to the branch wire, a train signal, and means operated coincidentally therewith whereby said mechanical switch is operated when the position of the signal is changed.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

FRANKLIN M. RAYMOND.

Witnesses:

C. H. DARE,

M. V. B. DARE.