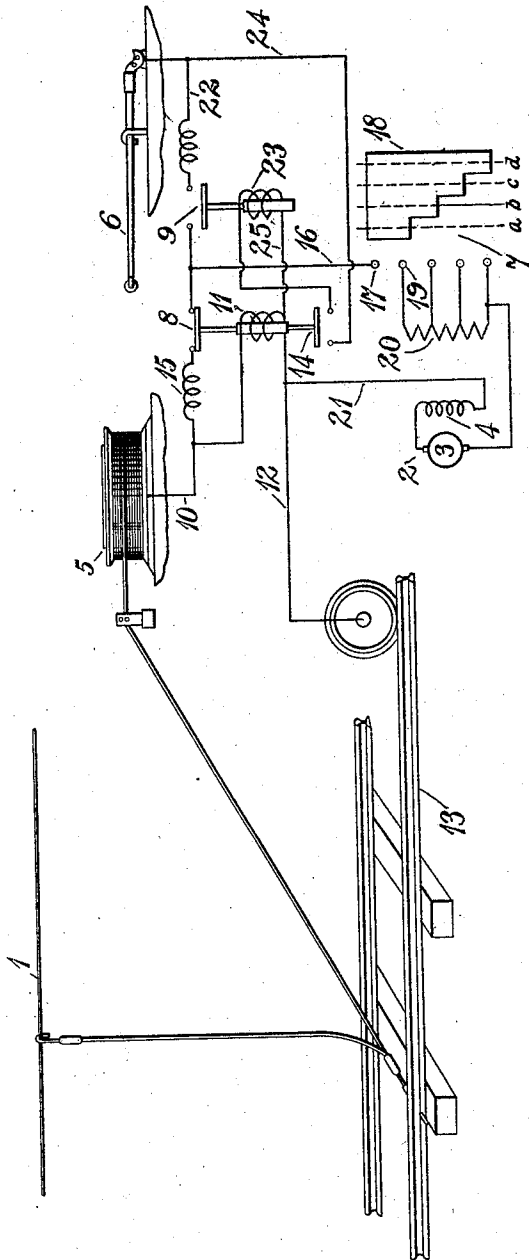


J. N. MAHONEY.
SYSTEM OF ELECTRIC MOTOR CONTROL.
APPLICATION FILED JAN. 10, 1908.

938,160.

Patented Oct. 26, 1909.



WITNESSES:

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SYSTEM OF ELECTRIC-MOTOR CONTROL.

938,160.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed January 10, 1908. Serial No. 410,223.

To all whom it may concern:

Be it known that I, JOSEPH N. MAHONEY, a citizen of the United States, and a resident of Wilkesburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Systems of Electric-Motor Control, of which the following is a specification.

My invention relates to systems of electric motor control, and it has special reference to such systems as are adapted for the control of mining locomotives and similar vehicles having electric propelling motors.

The object of my invention is to provide, in a system of the class above indicated, improved means for automatically protecting an attendant or vehicle driver from injury while the mining locomotive embodying the system is operated by energy received from a gathering reel.

A modern mining locomotive is usually electric-motor driven and is provided with a well known form of wheel trolley which transmits energy from an overhead conductor to the motor controller in certain sections of the mine which are equipped with a supply line. A locomotive of this character is also provided with a gathering reel which is rotatably mounted and has coiled upon it a considerable length of cable one end of which may be hooked on, or otherwise secured to, the supply circuit while the locomotive is operated in short shafts that are not equipped with overhead lines.

When the locomotive is operated by power received from the gathering reel, the trolley is usually pulled down and secured to the body of the locomotive in a position which is easily accessible to the locomotive driver and to other persons who may be either on or in proximity to the locomotive.

According to my present invention, I provide an automatic means for interrupting the connection between the trolley and the controller the operation of which is dependent upon the energization of the gathering reel and serves to obviate the possibility of accidentally injuring the locomotive driver and others who might easily lay hold of the trolley when it is disengaged from the supply conductor.

The single figure of the accompanying drawing is a diagrammatic view of a control system embodying my invention.

Referring to the drawing, the vehicle control system illustrated comprises a supply line conductor 1, an electric driving motor 2 having an armature 3 and field magnet winding 4, a gathering reel 5, a trolley 6, a manually operated controller 7 and electrically operated switches 8 and 9.

Assuming that energy is supplied from the line 1 to the gathering reel, as illustrated in the figure, a control circuit is then completed from the supply line through the reel, conductor 10, operating electro-magnet 11 of the switch 8 and conductor 12 to a negative line or rail conductor 13. The energized magnet winding 11 closes the switch 8 and opens the relay switch 14 the movable members of which are operatively connected together, the switch 14 being closed by gravity when the coil 11 is de-energized.

If the controller 7 is moved to the position *a*, a circuit is completed from the line 1 through the gathering reel, the conductor 10, blow-out coil 15, switch 8 and conductor 16 to a finger 17 of the controller 7, the circuit being completed from this point through contact segment 18, contact finger 19, resistance 20, motor armature 3, motor field magnet winding 4 and conductor 21 to the negative rail conductor 13.

The trolley 6 is connected by a conductor 22 and switch 9 to the conductor 16, so that the gathering reel and the trolley would be interconnected provided the switches 8 and 9 were closed at the same time. The switch 9 is provided with an operating magnet winding 23 which is energized (when the trolley 6 engages conductor 1) from conductor 1 through trolley 6, conductor 24, relay switch 14, magnet winding 23 and conductor 25 to the negative rail conductor 13. Since the switch 9 can be closed only when the switch 14 is closed and the switch 8 is open, the trolley 6 is always de-energized when the motor is receiving current through the reel 5.

When the gathering reel 5 is disconnected from the supply conductor, magnet winding 11 will be de-energized to permit switch 8 to open, and relay switch 14 to close, thereby permitting the closure of the switch 9 and the operation of the motor by energy received through the trolley.

As the controller 7 occupies positions *b*,

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c, and d, successively, the resistance 20 is gradually short-circuited until the motor 2 is connected directly across the circuit.

5 It is conceivable that various modifications in the circuit arrangements may be effected within the scope of my invention, and I desire that only such limitations shall be imposed as are indicated in the appended claim.

10 I claim as my invention:

In a system of electric vehicle control, the combination with an electric driving motor, a supply circuit, a resistance, a controller for governing the motor and resistance con-

nections, and a trolley and a gathering reel 15 adapted to receive energy from a supply circuit, of independently operated switches for connecting the trolley and the gathering reel to the controller, and means for automatically preventing the simultaneous closure 20 of the two switches.

In testimony whereof, I have hereunto subscribed my name this 19th day of December, 1907.

JOSEPH N. MAHONEY.

Witnesses:

OSCAR S. MCCURDY,
BIRNEY HINES.