A. J. ALLARD.

ELECTRICAL TRAIN CONTROLLING MEANS.

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1,060,399. **Patented Apr. 29, 1913.**

Fig. 1.

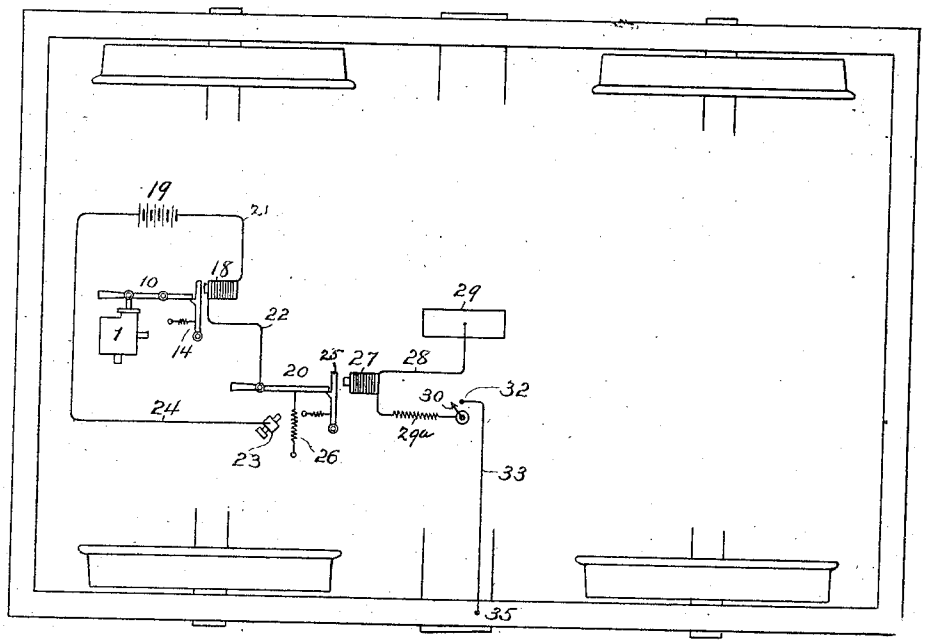
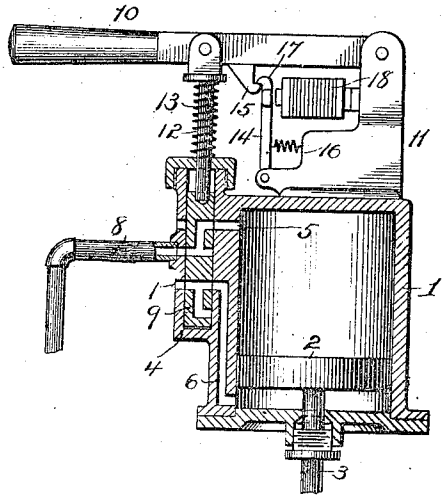


Fig. 2.



WITNESSES

E. L. Nottingham

G. F. Downing

INVENTOR

A. J. Allard

By H. A. Seymour

Attorneys

UNITED STATES PATENT OFFICE.

ANDREW J. ALLARD, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-THIRD TO T. F. GREEN AND ONE-THIRD TO D. R. CREECY, JR., OF RICHMOND, VIRGINIA.

ELECTRICAL TRAIN-CONTROLLING MEANS.

1,060,299. Specification of Letters Patent. Patented Apr. 29, 1913.

Original application filed October 4, 1910, Serial No. 585,295. Divided and this application filed February 18, 1911, Serial No. 609,506. Renewed January 28, 1913. Serial No. 744,781.

To all whom it may concern:

Be it known that I, ANDREW J. ALLARD, of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Electrical Train-Controlling Means; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in electric train signaling and controlling means,—this application being a division of my application for patent filed October 4th, 1910, and designated by Serial No. 585,295.

The object of my present invention is to provide simple and efficient means for causing the automatic operation of the brake devices on a train.

With this object in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claim.

In the accompanying drawings, Figure 1 is a diagrammatical view showing the circuits and devices on a rolling equipment, and Fig. 2 is an enlarged detail view of the brake controlling device.

The brake controlling devices on the rolling equipment are controlled by current derived from a source along the road, the controlling circuit on the rolling equipment being closed by being interspersed in such outside source of current, through the medium of the truck frame and a shoe which makes contact with a contact rail between the track rails. The source of outside current and the manipulation of the circuits traversed by the same (outside the rolling equipment) does not constitute a part of my present invention, but the arrangement of circuits and devices for controlling the circuits from which the appliances on the rolling equipment may derive their controlling electrical energy are fully set forth and illustrated in my application for patent Serial No. 585,295, of which this application is a division.

On the rolling equipment, a cylinder 1 (shown in detail in Fig. 2) is located. This cylinder is provided with a piston 2, the rod 3 of which is connected with the air-brake valve mechanism (not shown) for operating the same. The cylinder 1 is provided with a valve chamber 4 which communicates with the respective ends of the cylinder by means of ducts 5—6, and said valve casing is also provided with exhaust ports 7. An air supply pipe 8 communicates with the valve chamber between the exhaust ports. A reciprocating valve 9 is located within the valve chamber 4 and provided with suitable ducts for connecting respective ends of the cylinder with the air supply pipe and an exhaust port, alternately so as to cause reciprocation of the piston 2 for operating the valve controlling mechanism of the air brakes. A hand lever 10 is pivoted at one end to a suitable support 11 and this lever is connected, by means of a rod 12 with the valve 9,—said lever being movable in one direction by a spring 13. The valve 9 is maintained normally in the position shown in Fig. 2 by means of a latch 14 pivoted at one end to a fixed support and adapted at its other end to engage a lug or hook 15 on the lever 10, such engagement being normally maintained by means of a spring 16. The latch lever 14 is provided with an armature 17 for an electro-magnet 18, and this magnet is controlled by devices presently explained, to actuate the latch lever and release the hand lever 10. When the hand lever shall have been thus released, the spring 13 will be free to shift the valves 9 and thus admit air behind the piston 2 to operate the valve mechanism of the brakes.

The brake controlling devices above described will be located in such position under the locomotive that it will be necessary for the engineer to leave his cab before he can reach them for resetting, such resetting being accomplished by operating the hand lever 10 until its latch devices 14—15 become engaged.

The coil of the magnet 18 is included in a normally open local circuit with a battery 19 and a switch 20,—this circuit being traced on Fig. 1, as follows:—The battery 19 is connected by a conductor 21 with one terminal of the coil of magnet 18 and the other terminal of said coil is connected, by a conductor 22, with the switch lever 20. This switch lever is intended to coöperate with a fixed contact 23 and the latter is connected, by a conductor 24, with the battery 19. This

circuit is maintained normally open by the engagement of a pivoted latch 25 with the switch lever 20 as shown in Fig. 1, and when said switch lever has been released by the operation of the latch lever, it will be thrown, by the action of a spring 26, and be permitted to coöperate with the contact 23 to close said local circuit. The switch devices above described for controlling the local circuit of magnet 18, will also be located under the locomotive, so as to necessitate the engineer leaving the cab to reset them. It is apparent that the engineer cannot reset the brake controlling devices shown in Fig. 2, until he has first reset the switch 20 to open the local circuit including the magnet 18 because the latter would not permit the operation of the latch lever 14 as long as the magnet 18 remains energized. The latch 25 is maintained normally in engagement with the switch lever 20 by means of a suitable spring and the operation of said latch is controlled by an electro-magnet 27. One terminal of the coil of this magnet is connected, by a conductor 28 with a contact shoe 29 to engage a suitable contact rail, not shown. The other terminal of the coil of magnet 27 is connected with one end of a resistance 29^a, the other end of said resistance being connected with the movable arm 30 of a speedometer 31 of any preferred construction and suitably connected with the car axles or wheels. The arm 30 of the speedometer also forms a switch arm adapted to coöperate with a contact 32, the latter being connected, by means of a conductor 33, with the truck frame 35 of the rolling equipment. The speedometer will be so set that the circuit including the magnet 27 will be closed at 30—32 when the train is running beyond a predetermined rate of speed,—preferably, five miles per hour or more.

When a train runs with sufficient speed over the contact rail with which the shoe 29 engages, to cause the circuit of magnet 27 to be closed at the speedometer 31, current will be supplied to this circuit to energize said magnet 27, and cause it to actuate trip 25 to release lever 20. This switch lever will then be promptly moved by the spring 26, into engagement with the contact 23 and close the local circuit including the magnet 18 and battery 19. The magnet 18 will then move the trip 14 and release the lever 10, whereupon the action of the spring 13 will shift the valve 9 and permit a movement of the piston 2 to operate the valve mechanism of the air brakes and the consequent application of the latter, thus automatically stopping the train. Before the train can proceed, the engineer must alight from his cab and manually reset, first the switch lever 20 and then the lever 10 as previously explained.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

The combination with rolling equipment, and a brake controlling valve, of a hand lever connected with said valve, a spring for moving said lever and valve in one direction, a latch for locking said lever with the spring under tension, an electro-magnet for withdrawing said latch to release the lever and spring, an electric circuit including said magnet, a normally open circuit-closer in said circuit, an electro-magnetic latch device for controlling the closing of said circuit closer, a contact shoe, circuit connections between said contact shoe and electro-magnetic latch device, circuit connections between the latter and the wheels of the rolling equipment, and a speedometer-controlled circuit closer included in said circuit connections.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

ANDREW J. ALLARD.

Witnesses:
WM. P. REDD,
PERCY SMITH.