

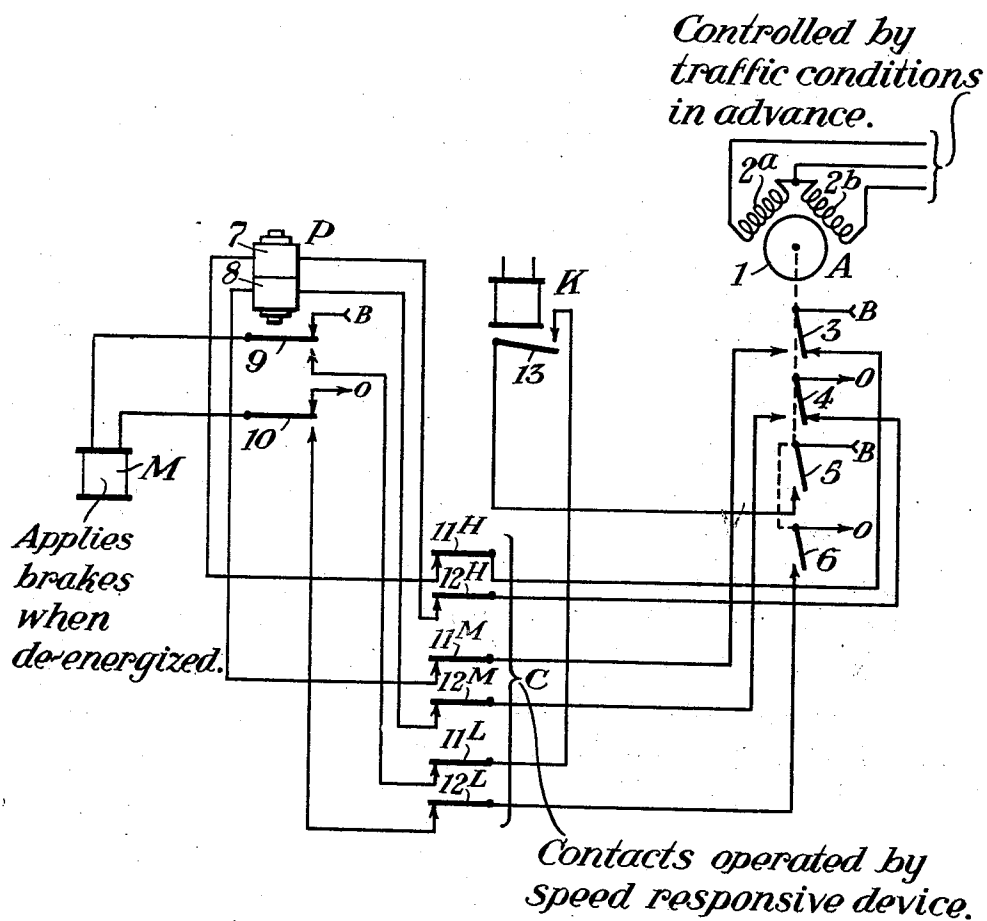
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RAILWAY TRAFFIC CONTROLLING APPARATUS

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RAILWAY TRAFFIC CONTROLLING APPARATUS

Application filed November 17, 1930. Serial No. 496,091.

My invention relates to railway traffic controlling apparatus, and particularly to apparatus of the type involving train-carried speed governing apparatus continuously controlled inductively by currents flowing in the track rails. The present invention relates particularly to the train-carried portion of such apparatus, and has for an object the provision of novel and improved means for preventing an automatic application of the brakes during momentary interruptions of the energy received from the rails.

I will describe one form of apparatus embodying my invention, and will then point out the novel features thereof in claims.

The accompanying drawing is a diagrammatic view showing one form of apparatus embodying my invention.

Referring to the drawing, the apparatus, all of which is carried on a train, comprises a main relay A of the induction motor type having a rotor 1 and two stator windings 2^a and 2^b. The circuits for the stator windings are controlled from the trackway in such manner that under proceed traffic conditions the contacts operated by the rotor 1 are swung to the right, whereas, under caution traffic conditions the contacts operated by this rotor are swung to the left. Under stop conditions these contacts assume intermediate positions wherein the back contacts 5 and 6 are closed. The stator windings of relay A may be controlled in the manner disclosed and claimed in reissue patent of the United States No. 15,592, granted to L. V. Lewis on May 1, 1923, for railway traffic controlling systems.

The apparatus also comprises a slow-releasing pilot relay P, having two windings 7 and 8, either of which when energized is sufficient to close the front contacts of the relay.

The train is also provided with a series of contacts C operated by a speed responsive device in such manner that when the speed of the train is below a given low value all of these contacts are closed. When the speed exceeds this given low value, contacts

11^L and 12^L will open. When the speed exceeds a given medium value, contacts 11^M and 12^M will open. When the speed exceeds a given high value, contacts 11^H and 12^H will open. These contacts may be controlled in the manner illustrated and described in the Lewis Reissue Patent No. 15,592, referred to above.

The reference character K designates an acknowledging relay which is normally deenergized, but which is capable of being energized under conditions requiring low speed, by acknowledgment of such conditions on the part of the engineer. The controlling circuits for this relay form no part of my present invention, and they may be similar to the circuits disclosed and claimed in Letters Patent of the United States No. 1,598, 994, granted to H. A. Wallace on Sept. 7, 1926.

The reference character M designates a brake application magnet, which is arranged to cause an automatic application of the brakes when the magnet becomes deenergized. The brake application apparatus controlled by this magnet forms no part of my present invention, and has been omitted from the drawing to simplify the disclosure.

When the train is traveling under clear traffic conditions, relay A is energized in such direction that the rotor contacts are swung to the right, and if the speed of the train is below a given high value, winding 7 of the pilot relay P will be energized, the circuit being from terminal B of a suitable source of current, through contact 3 of relay A, contact 11^H of the speed responsive device, winding 7, contact 12^H, and contact 4 of relay A to terminal O. Relay P being energized, brake application magnet M is also energized through a circuit which includes the front points of contacts 9 and 10 of relay P, which circuit will be obvious from the drawing. If the speed of the train exceeds the given high value, contacts 11^H and 12^H will open, thereby deenergizing relay P, and this will in turn deenergize magnet M to cause an automatic application of the brakes.

Under caution traffic conditions, the con-

tacts of relay A will be swung to the left, and if the speed of the train is then below a given medium value, winding 8 of relay P will be energized; the circuit will then be from terminal B, through contact 3 of relay A in the left-hand position, speed responsive contact 11^M, winding 8 of relay P, speed responsive contact 12^M, and contact 4 of relay A to terminal O. If the speed of the train exceeds the given medium value, contacts 11^M and 12^M will open, thereby deenergizing relay P to cause an automatic application of the brakes.

When relay A becomes deenergized, due to stop traffic conditions in advance, acknowledging relay K may be energized by suitable action on the part of the engineer. The circuits for both windings 7 and 8 of relay P will then be open, so that this relay will be deenergized. If the speed of the train is below the given low value, the brake magnet M will be energized by virtue of a circuit which passes from terminal B, through back contact 5 of relay A, contact 13 of relay K, speed responsive contact 11^L, back point of contact 9 of relay P, magnet M, back point of contact 10 of relay P, speed responsive contact 12^L, and back contact 6 of relay A to terminal O. If the speed of the train exceeds the given low value, contacts 11^L and 12^L will open, thereby deenergizing magnet M to cause an automatic application of the brakes.

Inasmuch as the pilot relay P is slow-releasing in character, it will be seen that while the train is traveling under the proceed or caution traffic conditions, brake magnet M will not be deenergized due to momentary deenergization of the main relay A, such as may occur when the train passes the insulated joints between two adjoining blocks.

Although I have herein shown and described only one form of railway traffic controlling apparatus embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. Train carried speed controlling apparatus comprising a main relay controlled from the trackway and energized in normal or reverse direction according as traffic conditions in advance permit of high speed or require medium speed, a speed responsive device having a high speed contact and a medium speed contact, a slow-releasing pilot relay having two windings, a circuit for the first winding of said pilot relay including a normal contact of said main relay and the high speed contact of said speed responsive device, a circuit for the second wind-

ing of said pilot relay including a reverse contact of said main relay and the medium speed contact of said speed responsive device, a brake controlling magnet acting when deenergized to cause an automatic application of the brakes, and a circuit for said magnet controlled by a front contact of said pilot relay.

2. Train carried speed controlling apparatus comprising a main relay controlled from the trackway and energized in normal or reverse direction or deenergized according as traffic conditions in advance permit of high speed or require medium or low speed, a speed responsive device having a high speed and a medium speed as well as a low speed contact, a slow releasing pilot relay having two windings, a circuit for the first winding of said pilot relay including a normal contact of said main relay and the high speed contact of said speed responsive device, a circuit for the second winding of said pilot relay including a reverse contact of said main relay and the medium speed contact of said speed responsive device, a brake controlling magnet acting when deenergized to cause an automatic application of the brakes, a circuit for said magnet controlled by a front contact of said pilot relay, a normally deenergized acknowledging relay capable of being energized under conditions requiring low speed by suitable acknowledgment of such conditions, and an auxiliary circuit for said magnet controlled by a front contact of said acknowledging relay and said low speed contact.

3. Train carried speed controlling apparatus comprising a slow-releasing pilot relay, means operating under proceed traffic conditions to energize said relay provided the speed of the train is below a given high value, means operating under caution traffic conditions to energize said relay provided the speed of the train is below a given medium value, an automatic brake valve magnet controlled by a front contact of said relay, a normally deenergized acknowledging relay capable of being energized by suitable acknowledgment of stop traffic conditions, and means for keeping said magnet energized when said pilot relay is open provided said acknowledging relay is closed and the speed of the train is below a given low value.

4. Train carried speed controlling apparatus comprising a slow-releasing pilot relay having two windings, means operating under proceed traffic conditions to energize one winding of said relay provided the speed of the train is below a given high value, means operating under caution traffic conditions to energize the other winding of said relay provided the speed of the train is below a given medium value, and an auto-

matic brake applying device controlled by said relay.

5 5. Train carried speed controlling apparatus comprising a slow-releasing pilot relay having two windings, means operating under proceed traffic conditions to energize one winding of said relay provided the speed of the train is below a given high value, means operating under caution traffic conditions to energize the other winding of said relay provided the speed of the train is below a given medium value, a normally de-energized acknowledging relay capable of being energized by suitable acknowledgment of stop traffic conditions, and an automatic
10 brake applying device controlled by said pilot relay and by said acknowledging relay.
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In testimony whereof I affix my signature.

HAROLD W. BRYAN.

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