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R. M. GILSON ET AL

1,679,014

RAILWAY TRAFFIC CONTROLLING APPARATUS

Filed Dec. 11, 1926

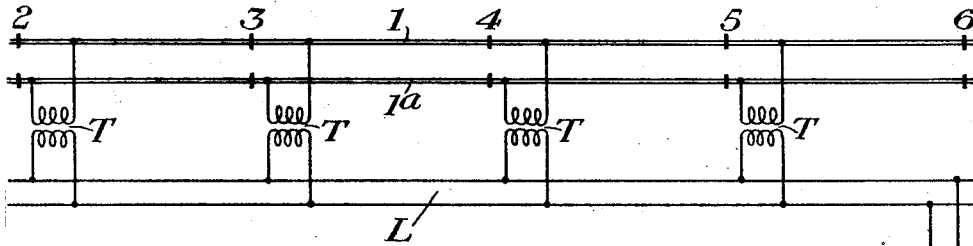


Fig. 1.

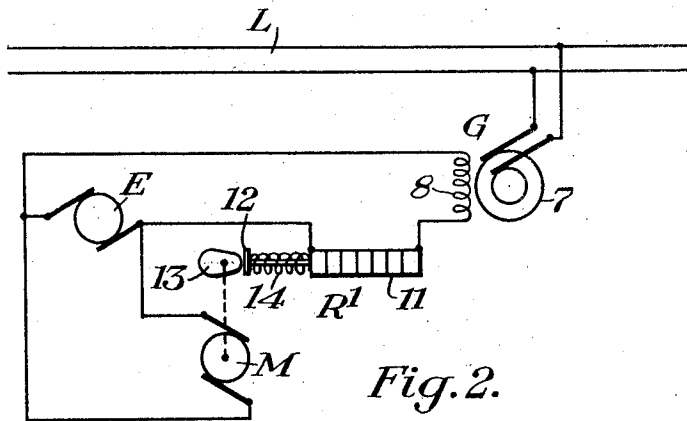
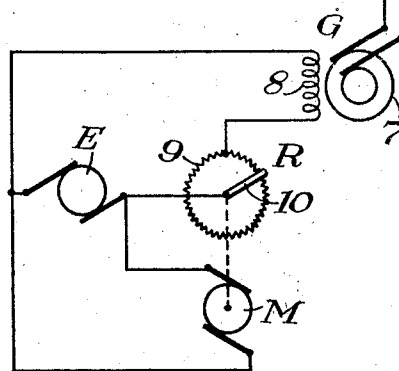


Fig. 2.

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UNITED STATES PATENT OFFICE.

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RAILWAY-TRAFFIC-CONTROLLING APPARATUS.

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Our invention relates to railway traffic controlling apparatus, and particularly to apparatus of the type wherein periodically varying alternating current is supplied to the track rails for the control of trains.

We will describe two forms of apparatus embodying our invention, and will then point out the novel features thereof in claims.

In the accompanying drawing, Fig. 1 is a diagrammatic view showing one form of apparatus embodying our invention. Fig. 2 is a view showing a modification of the portion of the apparatus shown in Fig. 1 and also embodying our invention.

Similar reference characters refer to similar parts in each of the views.

Referring first to Fig. 1, the reference characters 1 and 1^a designate the track rails of a stretch of railway track, which rails are divided into a plurality of sections 2—3, 3—4, etc., by suitable means, such as insulated joints. Extending along the trackway is a transmission line L, which is connected with the rails of each section through a transformer T.

Alternating current is supplied to the transmission line L by a generator G, comprising, as usual, an armature 7 and a field 8. The field 8 is supplied with current by an exciter E, and a rheostat R is interposed in the field circuit. As shown in Fig. 1, the rheostat R comprises a circular resistance unit 9 and a contact member 10 movable along the resistance unit. The resistance unit 9 is connected with one terminal of the field winding 8 and the movable contact 10 is connected with one terminal of the exciter E. The other terminal of the field winding 8 is connected with the remaining terminal of the exciter E. The contact 10 is constantly rotated over the resistance unit 9 by motor M, which in turn is constantly operated by current received from the exciter E. It will be seen, therefore, that the effective value of the rheostat R is constantly increased and decreased, with the result that the output voltage of the generator G is constantly increased and decreased. That is to say, as the contact 10 moves away from the point at which the field winding 8 is connected to the resistance unit 9, the output voltage of the generator G decreases, and as

the contact 10 approaches the said point, the output voltage of the generator G increases.

Referring now to Fig. 2, the rheostat, which is here designated R¹, comprises a carbon pile 11 interposed in the connection between the exciter E and the generator field winding 8. The pressure applied to the carbon pile is periodically increased and decreased by a cam 13 co-acting with a plunger 12 which is biased away from the carbon pile 11 by a spring 14. The cam 13 is constantly rotated by a motor M, which in turn receives current from the exciter E. As the cam 13 increases the pressure on the carbon pile 11, the resistance of the field circuit decreases, and so the voltage output of the generator G increases; conversely, as the cam 13 decreases the pressure on the carbon pile 11, the resistance of the field circuit increases and so the output voltage of the generator G decreases.

The apparatus shown herein is suitable for cooperation with train-carried mechanism receiving energy from the track rails and responsive to alternating current of periodically varying amplitude.

One feature of our invention is the fact that by proper design of the rheostat R or R¹, the wave of the periodic variation of the alternating current may be of any form desired. Furthermore, the periodic variation of the alternating current supplied to the track rails is gradual, and consequently, the difficulties which have been encountered due to abrupt variation of the alternating current value, are eliminated.

Although we have herein shown and described only two forms of apparatus embodying our 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 our invention.

Having thus described our invention, what we claim is:

1. In combination, a stretch of railway track divided into sections, a transmission line extending along said track for supplying train governing current to said sections, a generator for supplying alternating current to said transmission line, a rheostat in the field circuit for said generator, and means for constantly operating said rheo-

stat to continuously vary the voltage applied to said line by said generator.

2. In combination, a stretch of railway track divided into sections, a transmission line extending along said track for supplying train governing current to said sections, a generator for supplying alternating current to said transmission line, a rheostat included in the field circuit for said generator and comprising a resistance unit and a contact movable along said unit, and means for constantly moving said contact along said unit to continuously vary the voltage applied to said line by said generator.

3. In combination, a stretch of railway track divided into sections, a transmission line extending along said track for supplying train governing current to said sections, a generator for supplying alternating current to said transmission line, an exciter for supplying current to the field of said generator, a rheostat included in the field circuit

for said generator, and a motor supplied with current by said exciter for constantly operating said rheostat.

4. In combination, a railway track, a generator for supplying alternating current to said track, a rheostat in the field circuit for said generator, and means for constantly operating said rheostat to continuously vary the voltage applied to said track by said generator.

5. In combination, a railway track, a generator for supplying alternating current to said track, an exciter for supplying current to the field of said generator, a rheostat interposed between said exciter and said field, and means for constantly operating said rheostat to continuously vary the voltage applied to said track by said generator.

In testimony whereof we affix our signatures.

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