

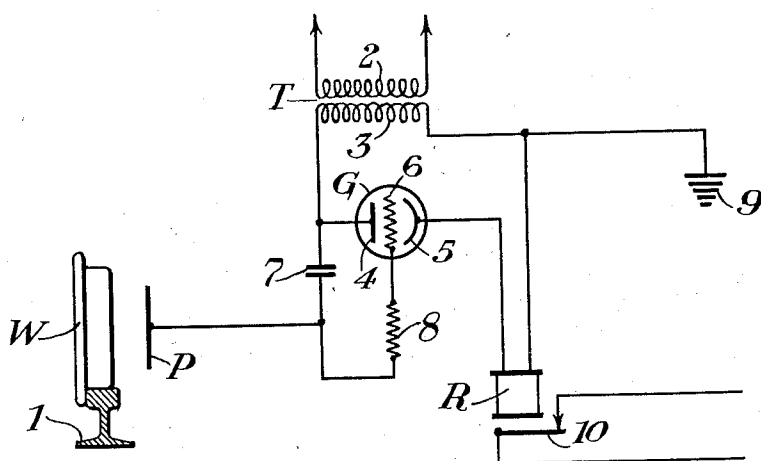
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APPARATUS RESPONSIVE TO THE PASSAGE OF RAILWAY VEHICLES

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APPARATUS RESPONSIVE TO THE PASSAGE OF RAILWAY VEHICLES

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My invention relates to apparatus responsive to the passage of railway vehicles, and has for an object the provision of apparatus of this character controlled through the medium of a condenser formed in part by the vehicle itself, thereby avoiding the necessity for track circuits or mechanical cooperation between a part on the vehicle and a part on the track. Apparatus embodying my invention is particularly well adapted for the control of highway crossing signals, but is not limited to this specific use.

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 reference character 1 designates a track rail, and the reference character W designates a vehicle wheel rolling on this rail. Located in the trackway is a plate P mounted in such position that when a vehicle passes it, the plate and the vehicle wheel form a condenser.

Associated with the condenser plate P is a transformer T, the primary 2 of which is connected with a source of alternating current which is not shown in the drawing. One terminal of the secondary 3 of this transformer is connected with the plate P through a fixed condenser 7, and the other terminal of the secondary 3 is connected with ground at the point 9.

The reference character G designates a grid glow tube having two electrodes 4 and 5 and a grid 6. The electrode 4 will usually be the anode of the tube, and the electrode 5 will usually be the cathode. The anode 4 is connected directly with the left-hand terminal of transformer secondary 3, and the cathode 5 is connected with the other terminal of this secondary through the winding of a relay R, so that the secondary 3, the tube G, and the relay R are connected in series. The grid 6 is connected with the condenser plate P through a grid leak resistance 8.

When the condenser plate P is not affected by the presence of a vehicle, so that this plate offers no path to ground for the current from

transformer T, the grid 6 will assume the same potential as that of the anode 4, and the parts are so proportioned that under this condition the tube will be in the conducting condition, with the result that relay R will be energized. When a car wheel W registers with plate P, a small amount of current will flow from the transformer secondary 3, through condenser 7, plate P, wheel W, rail 1, then through the ground to point 9, and back to the secondary 3. Under this condition the potential of the grid 6 will no longer be that of the anode 4, but will be a potential closer to that of the right-hand terminal of secondary 3, the exact potential being determined by the relative sizes of the condenser 7 and the condenser P, W. Under this condition the tube G will become non-conducting, so that relay R will become deenergized. As soon as the wheel W leaves the position opposite plate P, the condition of tube G will be restored to normal, so that relay R will again become energized.

Contact 10 of relay R may be utilized to control any suitable apparatus, such for example, as the highway crossing signal controlling apparatus disclosed and claimed in application for Letters Patent of the United States filed by H. C. Vantassel on March 24, 1930, Serial No. 438,314.

Although I have herein shown and described only one form of 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. Apparatus responsive to the passage of a railway vehicle, comprising a plate mounted in the trackway in such position that when a vehicle passes it the plate and a portion of the vehicle form a condenser, a source of alternating current one terminal of which is connected with said plate through a fixed condenser and the other terminal of which is connected with ground, a grid glow tube the grid of which is connected with said plate, a relay, and a circuit for said relay including

said source and the two electrodes of said tube in series, the parts being so proportioned that in the absence of a vehicle the tube is in conducting condition so that the relay is energized, whereas when a vehicle coacts with said plate, the relative potentials of the grid and one of the electrodes of said tube are changed so that the tube becomes non-conducting and the relay becomes deenergized.

2. Apparatus responsive to the passage of a railway vehicle, comprising a source of alternating current, a grid glow tube and a relay, which elements are connected in series and are so proportioned that the tube is normally in conducting condition so that the relay is energized, and means responsive to the presence of a vehicle for rendering said tube non-conducting to thereby deenergize the relay.

3. Apparatus responsive to the passage of a railway vehicle, comprising a source of alternating current, a grid glow tube and a relay, which elements are connected in series and are so proportioned that the tube is normally in conducting condition so that the relay is energized, a plate mounted in the trackway in such position that when a vehicle passes it the plate and a portion of the vehicle form a condenser, and means responsive to the formation of such condenser for rendering said tube non-conducting to thereby deenergize the relay.

4. Apparatus responsive to the passage of a railway vehicle, comprising a source of alternating current, a grid glow tube and a relay, which elements are connected in series and are so proportioned that the tube is normally in conducting condition so that the relay is energized, and means responsive to the presence of a vehicle for changing the potential of the grid of said tube with respect to one of the electrodes to render the tube non-conducting and so to deenergize said relay.

5. Apparatus responsive to the passage of a railway vehicle, comprising a source of alternating current, a grid glow tube and a relay, which elements are connected in series and are so proportioned that the tube is normally in conducting condition so that the relay is energized, and means including a condenser plate mounted to coact with a part of a vehicle to change the potential of the grid of said tube with respect to one of the electrodes and so to render the tube non-conducting.

In testimony whereof I affix my signature.
ANDREW J. SORENSEN.