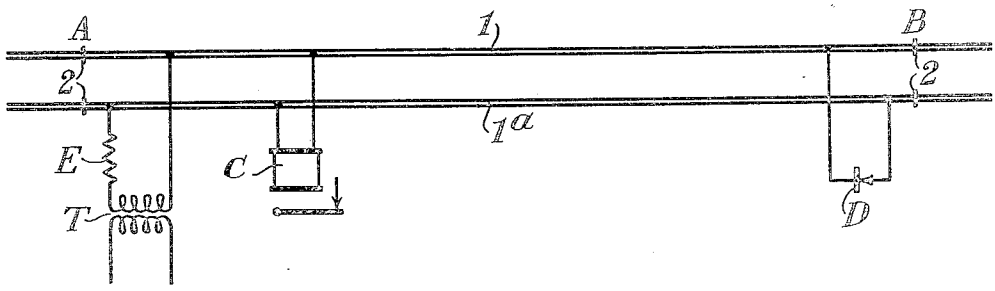
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RAILWAY TRACK CIRCUIT

Filed July 13, 1931



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RAILWAY TRACK CIRCUIT

Application filed July 13, 1931. Serial No. 550,312.

My invention relates to railway track circuits, and has for an object the provision of a track circuit having unusually high shunting sensitivity.

I will describe one form of track circuit 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 track circuit embodying my invention.

Referring to the drawing, the reference characters 1 and 1ª designate the track rails of a railway track, which rails are divided by insulated joints 2 to form a section A—B. Located at one end of this section is a transformer T, the secondary of which is connected across the rails of the section and the primary of which is supplied with alternating current from a source which is not shown in the drawing. Also located at the same end of the section, is a direct current relay C, the operating winding of which is connected across the rails 1 and 1ª. Interposed between the secondary of transformer T and one of the track rails is an impedance E which, as here shown, is a non-inductive resistor, although in some instances it may be a condenser. When the device E is a resistor it preferably has a value in ohms at least equal to the resistance of the winding of the relay C.

Located at the other end of the section A—B is a rectifier D which is connected across the rails 1 and 1ª.

Owing to the fact that the secondary of transformer T, the relay C, and the rectifier D are all in multiple, one half of each wave of the alternating current supplied by the transformer is shunted away from the relay by the rectifier, so that the relay receives only the other half of each wave. These half waves received by the relay constitute a pulsating uni-directional current to which the relay is of course responsive.

A track circuit constructed in accordance with my invention has unusually high sensitivity. For example, on a track circuit 500 feet long the track relay will release with a shunt of 6.7 ohms across the track rails, whereas a direct current track circuit of the standard type and same length involving a two-volt battery requires a shunt of 2.58 ohms to cause the relay to release.

Another advantage of a track circuit embodying my invention, is that the source of the current and the track relay may be located at the same point. This is especially desirable when a highway crossing signal is controlled by a track circuit and alternating current power is available only at the crossing. Ordinarily in such installations, storage battery track circuits are provided and it is necessary to run power lines from the crossing to the extreme ends of the controlling track circuits in order to charge the batteries. Obviously, if alternating track circuits are used under the same conditions, power lines must still be run from the crossing to the remote ends of the controlling track circuits.

Although I have herein shown and described only one form of track circuit 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. In combination, a section of railway track, a source of alternating current and a direct current track relay connected across the rails at one end of the section, a resistance interposed between said source and one rail and having a value in ohms at least equal to the resistance of said relay, and a rectifier connected across the rails at the other end of the section.

2. In combination, a section of railway track, a source of alternating current and a direct current track relay connected in multiple across the track rails at one end of the

section, and a rectifier connected across the rails at the other end of the section.

3. In combination, a section of railway track, a source of alternating current and a direct current track relay connected in multiple across the track rails at one end of the section, an impedance interposed between said source and one rail, and a rectifier connected across the rails at the other end of the section.

In testimony whereof I affix my signature.

BERNARD E. O'HAGAN.