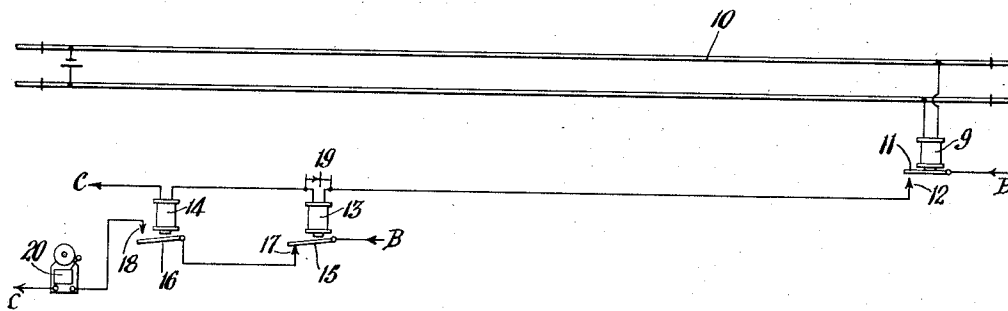


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P. H. CRAGO
ELECTRIC ANNUNCIATOR
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INVENTOR
Paul H. Crago
BY
E. C. Sanborn
ATTORNEY

UNITED STATES PATENT OFFICE

PAUL H. CRAGO, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH & SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

ELECTRIC ANNUNCIATOR

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My invention relates to electric annunciators, and more particularly to an annunciator controlling system adapted to cause a signal to be given upon the occurrence of a certain event, said signal being discontinued after a predetermined period of time even though the condition causing the initial sounding of the signal still exists. This condition may, for example, be the dropping of the armature of a track relay by the entry of a train upon a particular section of track.

I shall describe herein one form of apparatus embodying my invention and shall point out the novelty 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 9 designates an ordinary track relay, the armature 11 of which may be caused to drop by the entry of a train upon the section of track 10, thus short-circuiting the relay. The armature 11, upon being released, comes to rest upon contact point 12, thus forming a current path through the coils of relays 13 and 14. Relays 13 and 14 are constructed in such manner that the current necessary to pick up the armature 15 of relay 13 is much greater than that necessary to pick up the armature 16 of relay 14. When in its lower position the armature 15 rests on the contact point 17, while the armature 16 makes contact at 18 only when it is attracted by the relay 14 to its raised position. A rectifier 19 is shown connected across the relay 13 for a purpose to be later set forth. An electric bell is indicated at 20.

The operation of my annunciator controlling system is as follows:

The entry of a train upon the section of track 10 equipped with the relay 9 causes the armature 11 to drop and engage the contact 12. A circuit is now established from one terminal B of a source of direct current not shown in the drawing, through said armature 11 and contact 12 and thence through the coils of relays 13 and 14 to the opposite terminal C of said source. There is now

impressed upon said circuit by said source a voltage sufficient to provide a current of a value slightly greater than that required to pick up armature 15, but, owing to the inductance of the relay coils, the growth of current in the circuit is retarded so that said current is held below the value necessary for picking up said armature. The armature 16 of relay 14 is, however, quickly brought into engagement with contact 18, so that a circuit is closed through the bell 20 and a signal is given out. This circuit runs from one terminal B of a source of current through armature 15 and back contact 17 of relay 13, armature 16 and front contact 18 of relay 14 and bell 20 to the opposite terminal C of said source.

The closing of the air gap in the relay 14 as armature 16 is brought into engagement with contact 18, serves to increase the inductance of the circuit, and thus further retards the building up of the current through the relays 13 and 14. Thus an appreciable interval (which may be of the order of a second or so) will elapse before the armature 15 is lifted, breaking the contact at 17 and opening the circuit through the bell 20. It will be seen therefore that the bell will ring only during this period, and will cease to ring when the current in the relay circuit builds up to a point where it is sufficient to lift the armature 15. The relay 13 is so constructed that the current necessary to lift its armature will be nearly as high as the or steady value of the current in the relay circuit, so that the armature 15 will not be lifted until the current through the relay 13 is near its highest value.

When the train leaves the track section in question, thus causing the armature 11 to be lifted, the circuit through relays 13 and 14 will be broken and armatures 15 and 16 will drop. They are then in position for a repetition of the operation when the track relay 9 is again de-energized.

Due to the characteristics of the relays 13 and 14, when the current through them is interrupted, the armature 15 may tend to be released before armature 16, thus causing the

bell to ring again for a very short period. This action, however, is prevented by the rectifier 19, which is connected across the relay 13 and causes the decrease of current in said relay to be retarded with respect to the decrease of current in relay 14, causing the armature 16 to be dropped before the dropping of armature 15.

It should be understood that, although I have here illustrated my invention as applied to the control of an electric bell, any other form of signal could be substituted for this bell without affecting the operation of the apparatus.

It should also be pointed out that my invention is in no way limited to the control of an annunciator by a track circuit or by a track relay, but that any other form of control could be used in place of the contact 11—12 to control the relays 13 and 14.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. In combination, a circuit, an inductive relay for closing said circuit in response to a flow of current through said relay, a relay for breaking said circuit upon increase of said current to a given amount, means for causing direct current to flow through said relays against the inductance of said inductive relay, and a rectifier connected across the second mentioned relay.

2. In combination, an inductive relay, a second relay requiring for its operation a smaller current than that required for operation of said inductive relay, means for at times applying to said relays in series a direct electromotive force of such magnitude that the initial current flowing through said relays in opposition to the inductance of said inductive relay energizes only said second relay while the subsequently increased current produced by such electromotive force energizes both said relays, and a circuit including a back contact of said inductive relay and a front contact of said second relay.

3. In combination, an inductive relay, a second relay requiring for its operation a smaller current than that required for operation of said inductive relay, means for at times applying to said relays in series a direct electromotive force of such magnitude that the initial current flowing through said relays in opposition to the inductance of said inductive relay energizes only said second relay while the subsequently increased current produced by such electro-

motive force energizes both said relays, a circuit including a back contact of said inductive relay and a front contact of said second relay, and a rectifier connected across the second mentioned relay for delaying release thereof in response to interruption of said electromotive force.

In testimony whereof, I have signed my name to this specification this 13th day of November, 1929.

PAUL H. CRAGO.

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