

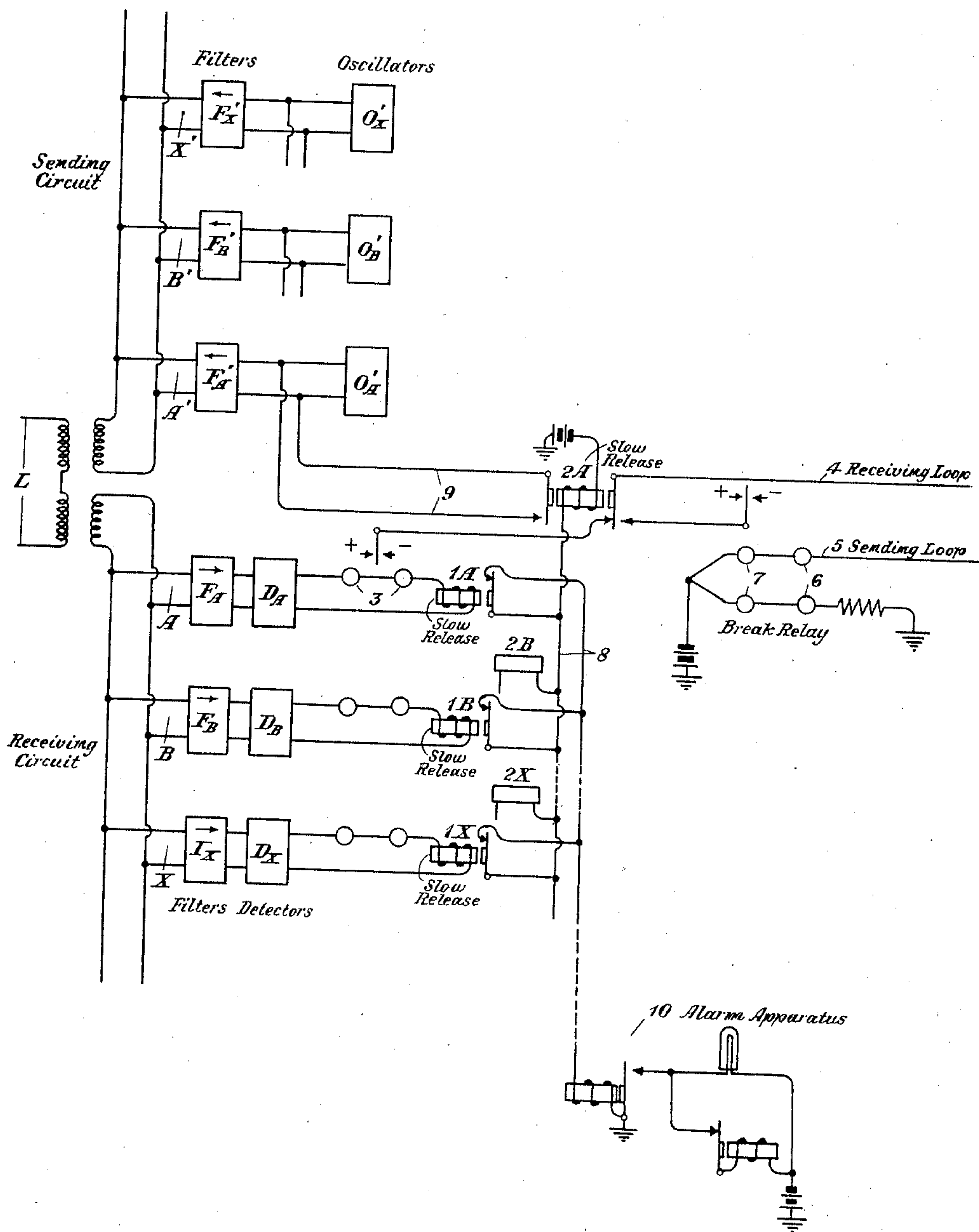
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F. G. GARDNER

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CARRIER TELEGRAPH ALARM SYSTEM

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INVENTOR
F. G. Gardner
BY *John*
ATTORNEY

UNITED STATES PATENT OFFICE

FRED G. GARDNER, OF HOHOKUS, NEW JERSEY, ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK

CARRIER-TELEGRAPH ALARM SYSTEM

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This invention relates to carrier telegraph circuits and more particularly to an alarm system for use with circuits of this type.

The alarm system of the invention is designed to operate whenever a carrier telegraph circuit becomes open, grounded, or short circuited. The arrangements of the invention will notify the repeater attendants and also the subscribers connected to such a circuit whenever the line fails so that an operator will not continue to send after the line is in trouble, not knowing that his signals are not being received. The arrangements of the invention will also automatically disable the sending apparatus at a station when the line circuit fails. Other features and objects of the invention will appear more fully from the detailed description thereof hereinafter given.

The invention may be more fully understood with reference to the accompanying drawing in the figure of which is shown a circuit diagram illustrating a preferred form of the invention.

In the circuit diagram of the drawing is shown a carrier telegraph circuit L. At each end of this circuit, there would be connected thereto, a station comprising sending circuits common to a plurality of sending channels such as A', B' and X'. There would also be connected to the line L a receiver circuit common to a plurality of receiving channels, such as A, B and X. In the transmitting channels are shown filters, such as F_A', F_B' and F_X', and the oscillators O_A', O_B' and O_X', for transmitting different carrier frequencies out over line L. Each of the receiving channels would include filters, such as F_A, F_B and F_X, and detectors such as D_A, D_B, and D_X. In each of the individual receiving channels, there would be provided in the detector output circuit receiving relays, such as 3, and the slow release relays 1A, 1B and 1X. Associated with the series 1 relays is a circuit arrangement 8 in which the armatures and contacts of all of these relays are connected together in parallel. Connected to this circuit arrangement, is a series of slow release relays, such as 2A, 2B and 2X. The circuit 8 will be completed through an alarm device

10 which may include desirable apparatus, such as a lamp and buzzer. In connection with the individual receiving channel A, there is shown a subscriber's receiving loop 4 and a subscriber's sending loop 5. The receiving loop will be completed over the armature and contact of the relay 2A. Included in the sending loop would be a sending relay 6 and a break relay 7. Similar apparatus would be provided for each of the channels. 60

When the carrier circuit L is in operation the current thereover will normally hold the series 1 relays operated. The series 2 relays will also be held operated. If the carrier line L should fail for any reason, such as an open, a ground or a short circuit, all of the series 1 relays, such as 1A, 1B and 1X, would be released. This would release the series 2 relays, such as 2A, 2B and 2X. The release of relay 2A will connect the subscriber's receiving loop 4 to the armature of the break relay 7 so that if the subscriber continues to send, he will get his signals back reversed. This will notify the subscriber to cease sending as the line is in trouble. The release of all the series 1 relays will open the circuit arrangement 8 and hence start the alarm apparatus functioning. The release of relay 2A will close a short circuit 9 across the output of the sending oscillator O_A', which would be controlled by the subscriber's sending loop 5, thereby preventing the transmission of signals out over the line L by the subscriber connected to this channel. The relays 2B and 2X would perform functions similar to those explained in detail with regard to relay 2A. Accordingly, it will be seen that when the carrier line fails, all of the series 1 relays will release and cause each subscriber to be informed of such line failure, to operate an alarm device, and to disable the sending apparatus. The disabling of the sending apparatus causes the alarm apparatus at the distant end of the system to function in the same manner as heretofore described. This feature is desirable in case the carrier line fails in one direction of transmission only, such as would result from the failure of a one way amplifier at a vacuum tube repeating point. Accordingly this provides a means 100

for notifying the distant subscribers of the failure of the system.

While the arrangements of the invention have been disclosed as embodied in certain specific arrangements which are deemed desirable, it is understood that they are capable of embodiment in other forms without departing from the spirit of the invention as defined by the appended claims.

10 What is claimed is:

1. A carrier telegraph system comprising a line circuit, a plurality of receiving channels associated with said line circuit, relay means in each of said receiving channels normally in an operated state, a circuit under the joint control of all of said relay means, and an alarm system controlled by said circuit.

2. A carrier telegraph system comprising a line circuit over which carrier currents are normally flowing, a plurality of receiving channels associated with said line circuit, means in each of said receiving channels responsive to said carrier currents, and apparatus operated by the joint failure of all of said responsive means for indicating an abnormal line circuit condition.

3. A carrier telegraph system comprising a line circuit over which carrier currents are normally flowing, a plurality of receiving channels associated with said line circuit, slow release relays in each of said receiving channels normally held operative by the carrier currents on said line circuit, a circuit completed over the contacts of all of said slow release relays, and alarm arrangements individual to each channel controlled by said circuit.

4. A carrier telegraph system comprising a line circuit over which carrier currents are normally flowing, a plurality of receiving channels associated with said line circuit, a local sending and a local receiving loop for each of said channels, slow release relays in each of said receiving channels normally held operative by the carrier currents on said line circuit, an alarm circuit completed over the contacts of all of said relays, and means controlled by said alarm circuit for connecting each of said local receiving loops to the armature of a break relay in the associated local sending loop.

5. A carrier telegraph system comprising a line circuit over which carrier currents are normally flowing, transmitting channels and receiving channels associated with said line circuit, an alarm circuit operated by the joint failure of all of said receiving channels, and means controlled by the operation of said alarm circuit for disabling said transmitting channels.

In testimony whereof, I have signed my name to this specification this 2nd day of March 1928.