

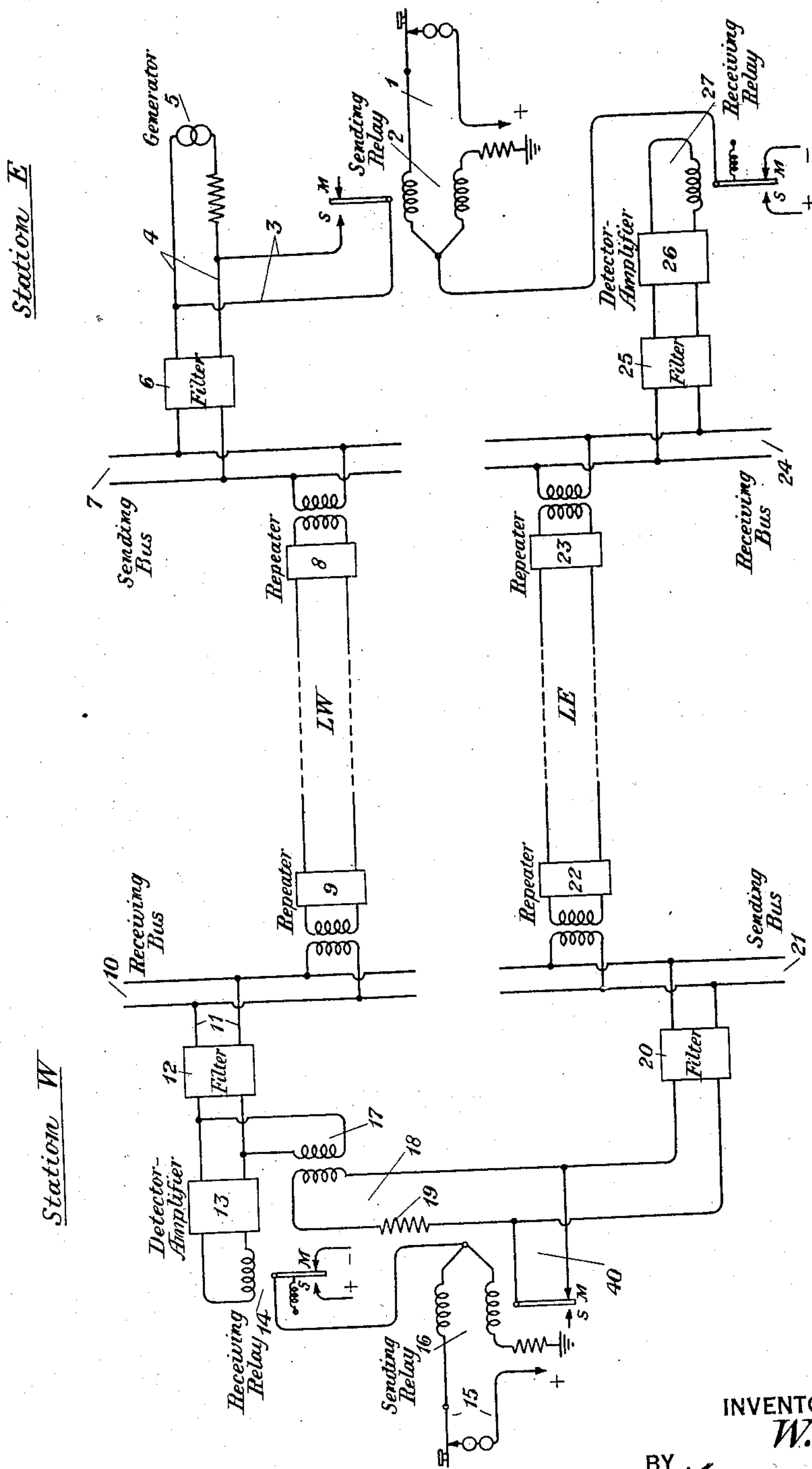
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CARRIER CURRENT TELEGRAPH SYSTEM

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CARRIER-CURRENT TELEGRAPH SYSTEM

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This invention relates to telegraph systems and more particularly to telegraph systems utilizing one or more carrier channels for the transmission of the telegraph messages.

One of the primary objects of the invention consists in providing a carrier telegraph system for interconnecting two terminals and in which system the carrier current for two-way transmission is supplied at only one of the terminals. Such arrangements would be particularly desirable in the development of short-haul systems, which might include as one of the terminals thereof a small office at which the provision of a generator of carrier currents might be commercially undesirable. 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 from the following description together with the accompanying drawing in the figure of which is shown a circuit diagram embodying the invention.

In the drawing is shown a half duplex carrier telegraph system interconnecting station E and station W. This system comprises the line LW for transmission from station E to station W and line LE for transmission from station W to station E. Repeater apparatus, such as 8, 9, 22 and 23 may be included in these lines. At station E, line LW is connected to a sending bus circuit 7 to which may be connected a plurality of sending circuits for different carrier channels. One of such circuits 4 is illustrated and will include a filter 6 and a generator 5 for generating carrier frequency oscillations. Bridged across circuit 4 is a circuit 3 which, when closed, will short-circuit the carrier oscillations from the generator 5. Circuit 3 is under the control of a sending relay 2 in the loop circuit 1. Line LE would be connected at station E to a receiving bus circuit 24 to which might be connected a plurality of receiving circuits for various carrier channels. One of such circuits is shown and includes a filter 25, an amplifier-detector 26 and the winding of a receiving relay 27. At station W, the line LW is connected to a

receiving bus circuit 10 to which may be connected a plurality of receiving circuits for various carrier channels. One of such circuits 11 is shown and includes a filter 12, an amplifier-detector 13 and the winding of a receiving relay 14. Bridged across circuit 11 is a circuit 17 which is connected to a circuit 18. The circuit 18 is connected through the filter 20 to a sending bus circuit 21 which in turn is connected to the line LE. Circuit 18 may be short-circuited by the circuit 40 which is under the control of the sending relay 16 in the loop circuit 15.

When the loop circuits 1 and 15 at both ends of the system are closed, carrier current flows in the line LW but not in the line LE. This is because the carrier current transmitted over the line LW and thence over circuits 11, 17 and 18 will be short-circuited by circuit 40. The receiving relay 27 at the east terminal is so poled that it transmits a spacing signal to the loop 1 when current is flowing through its windings and a marking signal when no current is flowing. The receiving relay 14 at the station W is poled in the usual way, namely, the flow of current through its windings will transmit a marking signal to the loop 15.

As long as the loop 15 at station W is closed, station E may send the carrier current. The carrier current will actuate the receiving apparatus at station W but will not return over the line LE since circuit 18 is short-circuited by the operation of circuit 40 and the sending relay 16. When the loop circuit 1 at station E is closed, the station W may send. This is made possible because a portion of the carrier current coming in over line LW will be transmitted over circuits 11, 17 and 18 to the sending bus circuit 21 and thence to the line LE.

The resistance 19 is included in circuit 18 to prevent circuit 40 from causing the input to the amplifier-detector 13 from being short-circuited when the loop 15 is closed.

The subscriber at either station may send a break signal by opening his key. In the case of a break by the subscriber at station E, the key of loop circuit 1 will be opened and the output of generator 5 will be short-

circuited. Accordingly, carrier current will cease to flow over the line LW and the subscriber at station W will receive a continuous spacing signal. When the subscriber at station W opens the key of loop circuit 15 to send a break signal, short-circuit 40 will be removed from circuit 18. Under these conditions, when the subscriber at station E closes his key, carrier current will flow over line LW and thence over circuits 11, 17, 18, 21 and over line LE to the receiving apparatus at station E and will operate receiving relay 27 which will transmit a continuous spacing signal to the subscriber at station E.

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

What is claimed is:

1. A carrier telegraph system comprising two terminals interconnected by two line sections, each for transmission in opposite directions between said terminals, means at one of said terminals for applying carrier current to one of said line sections for transmission to receiving apparatus at the other of said terminals, and means associated with said receiving apparatus for applying a portion of the received carrier current to the other of said line sections for transmission to receiving apparatus at the first of said terminals.

2. A carrier telegraph system comprising two stations, each of said stations comprising telegraph sending and telegraph receiving apparatus, two line sections interconnecting said stations, each for transmission in opposite directions between said stations, means at one of said stations under the control of the sending apparatus thereat for applying carrier current to one of said line sections for transmission to the receiving apparatus at the other of said stations, a means connected to said last mentioned receiving apparatus for applying a portion of said received carrier current to the other of said line sections for transmission to the receiving apparatus at said first station, and means at said second station controlled by the sending apparatus thereat for controlling said last mentioned means.

3. A carrier telegraph system comprising two stations, each of said stations comprising telegraph sending and telegraph receiving apparatus, two line sections interconnecting said stations, means at one of said stations under control of the sending apparatus thereat for applying carrier current to one of said line sections for transmission to the receiving apparatus at the other of said stations, a circuit connected to said last mentioned receiving apparatus for applying a

portion of said received carrier current to the other of said line sections for transmission to the receiving apparatus at said first station, a device in said circuit having an impedance similar to that of the receiving apparatus at the second station, and means at said second station controlled by the sending apparatus thereat for controlling said circuit.

4. A carrier telegraph system comprising two stations, each of said stations comprising telegraph sending and telegraph receiving apparatus, the telegraph receiving apparatus at the first station including a receiving relay so adjusted that when current flows through its windings a spacing signal will be given, the telegraph receiving apparatus at the second station including a receiving relay so adjusted that when current flows through its windings a marking signal will be given, two line sections interconnecting said stations, means at the first station under control of the sending apparatus thereat for applying carrier current to one of said line sections for transmission to the receiving apparatus at the second station, means connected to said last mentioned receiving apparatus for applying a portion of said received carrier current to the other of said line sections for transmission to the receiving apparatus at the first station, and means at said second station controlled by the sending apparatus thereat for controlling said last mentioned means.

In testimony whereof, I have signed my name to this specification this 24th day of June, 1929.

WILTON T. REA.