April 1, 1930. C. B. FOWLER 1,752,429

TELEPHONE SET

Filed June 9, 1928

FIG. 1

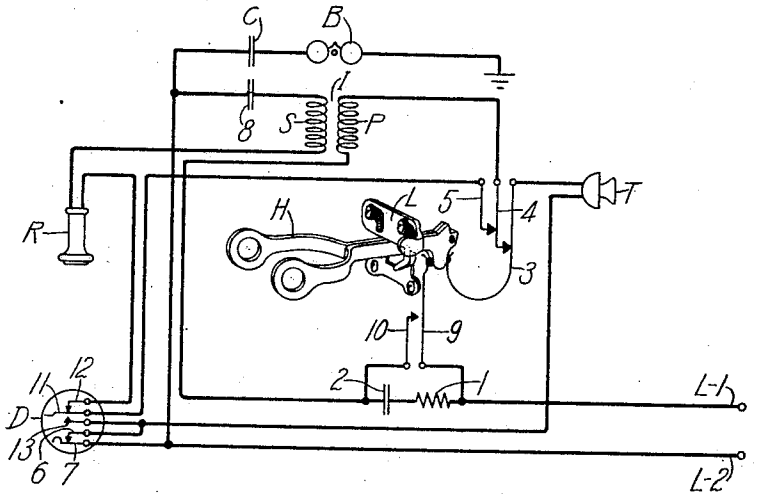
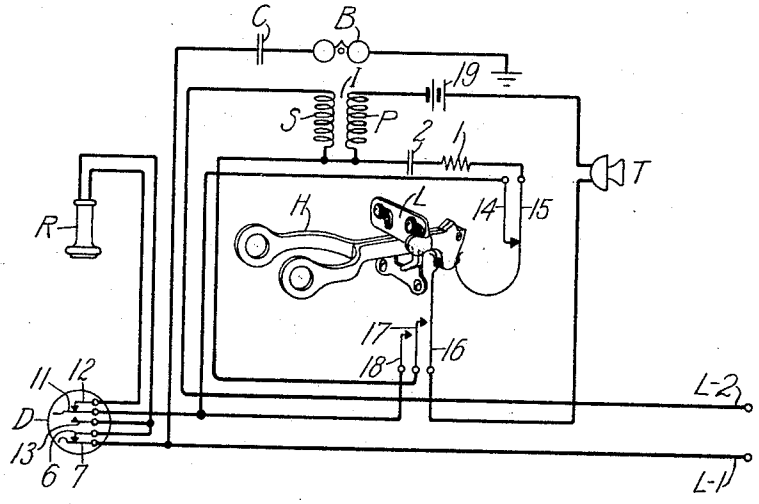


FIG. 2



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UNITED STATES PATENT OFFICE

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TELEPHONE SET.

Application filed June 9, 1928. Serial No. 284,225.

This application relates to telephone substation circuits and more particularly rural service substation circuits for use on party lines having automatic service.

The object of this invention is to provide means whereby a calling party may listen in on a line to determine the busy or idle condition thereof without disturbing any existing connection.

In accordance with a feature of this invention, a monitoring impedance is provided which may be effectively interposed between the line circuit and the receiver upon the removal of the receiver from its switchhook. When it is determined by the calling party that the line is idle, the monitoring latch may be operated which will allow the receiver hook to move to its operating position whereupon the monitoring impedance will be short circuited and the substation circuit put in talking condition.

The invention is shown in diagrammatic form in two figures. Fig. 1 illustrates the application of the invention to a common battery line; and Fig. 2 illustrates the application of the invention to a local battery line.

Considering first Fig 1, when the receiver R is removed from the hook H, a circuit is established from terminal L^1 through resistance 1, condenser 2, primary winding P of the induction coil I, switchhook contacts 4 and 3, transmitter T, dial contacts 6 and 7 to terminal L^2. The receiver is in a local circuit comprising the receiver, the secondary winding S of induction coil I, condenser 8, dial contacts 6 and 7, transmitter T, switchhook contacts 3, 4 and 5, off-normal dial contacts 11 and 12 back to the receiver. The terminals L^1 and L^2 being connected to the telephone line, the receiver is now in circuit for monitoring purposes. The switchhook H is prevented from moving to its operating position where contacts 9 and 10 are closed through the use of a monitoring latch which may be of the type shown in Patent No. 1,418,764, granted June 6, 1922 to H. L. S. Williams or the latch shown in Patent No. 1,432,883, granted November 24, 1922 to N. H. Lysons.

When the calling party ascertains that the line is idle, he will operate the monitoring latch L thereby allowing the switchhook to move to its operating position and close contacts 9 and 10. Closure of these contacts will shunt the monitoring impedance consisting of the resistance 1, and condenser 2 and thereby put the substation circuit in talking condition. The dial D is provided for interrupting the circuit thus established for the purpose of setting automatic switches in any well known manner. The contacts 6 and 7 are the interrupting contacts and the contacts 11, 12 and 13 are the off-normal contacts. When the dial is moved from its normal position, the connection between contacts 11 and 12 is broken and a connection made between contacts 11 and 13. A dialing circuit is thereby established from terminal L^2, contact 7, contact 6, contact 13, contact 11, contact 5, contact 4, primary winding P, contact 10, contact 9 to terminal L^1. Thus the transmitter is short circuited and the receiver opened during dialing. Upon the return of the dial to normal the substation circuit is put into its normal operating condition.

Considering now the circuit of Fig. 2, when the receiver R is removed from its switchhook H, a circuit is established from terminal L^1, dial contact 7, dial contact 6, receiver R, dial contact 12, dial contact 11, switchhook contact 14, switchhook contact 15, resistance 1, condenser 2, secondary winding S of induction coil I to terminal L^2. As in the previous case, the switchhook is prevented from moving to its operating position through the use of a monitoring latch. In this position, contacts 14 and 15 are closed, but contacts 16, 17 and 18 remain open. When the calling party ascertains that the line is idle, he will operate the monitoring latch L thereby allowing the switchhook to move to its operating position where contacts 16, 17 and 18 are closed. In this position the receiver circuit may be traced from terminal L^1, contact 7, contact 6, receiver R, contact 12, contact 11, contact 18, contact 17, secondary winding S of induction coil I to terminal L^2. The transmitting circuit may be traced from the transmitter through the local battery 19, primary wind-

ing P of induction coil I, contact 17, contact 16 to transmitter T. The dialing circuit upon the off-normal movement of the dial D may be traced from terminal L^1, contact 7, contact 6, contact 13, contact 11, contact 18, contact 17, secondary winding S of induction coil I to terminal L^2. In this condition the receiver R is opened but the transmitter T remains in its normal operating condition.

In both figures the call bell circuit extends from terminal L^2 through a condenser C, bell B to ground.

What is claimed is:

1. In a telephone set, a monitoring latch, an impedance, switchhook contacts for connecting said impedance in series with said set, and additional switchhook contacts responsive to said monitoring latch for shunting said impedance.

2. In a telephone set, line terminals, a monitoring latch, an impedance, a receiver, switchhook contacts for connecting said impedance and said receiver in series to said line terminals, and additional switchhook contacts responsive to said monitoring latch for shunting said impedance.

3. In a telephone set, line terminals, a switchhook, a monitoring latch therefor, an impedance, a receiver, switchhook contacts for connecting said receiver and said impedance in series to said line terminals, and additional switchhook contacts responsive to the actuation of said monitoring latch for shunting said impedance.

4. In a telephone set, line terminals, a monitoring latch therefor, an impedance comprising a condenser and a resistance, a receiver, switchhook contacts for connecting said impedance and said receiver in series to said terminals, and additional switchhook contacts responsive to the actuation of said monitoring latch for shunting said impedance.

5. In a telephone set, a transmitter, a receiver, a receiver hook, an impedance, receiver hook contacts operated in response to the removal of the said receiver from the said hook for connecting said impedance in series with said set and rendering only said receiver effective, and additional manually operable receiver hook contacts for excluding said impedance and rendering both said receiver and said transmitter effective.

6. In a telephone set, a transmitter, a dial switch, a receiver, a receiver hook, an impedance, receiver hook contacts operated in response to the removal of the said receiver from the said hook for connecting said impedance in series with said set and rendering only said receiver effective, and additional manually operable receiver hook contacts for excluding said impedance and rendering both said receiver, said transmitter and said dial switch effective.

7. In a telephone set, a transmitter, a receiver, a dial switch, a receiver hook, an impedance, contacts operated by said receiver hook, means automatically responsive to the removal of said receiver from said hook to operate certain of said contacts to render only said receiver in series with said impedance effective, and means thereafter responsive to a manual operation to operate the remainder of said contacts to exclude said impedance and render both said transmitter, said receiver and said dial switch effective.

In witness whereof, I herunto subscribe my name this 29th day of May, 1928.

CLARENCE B. FOWLER.