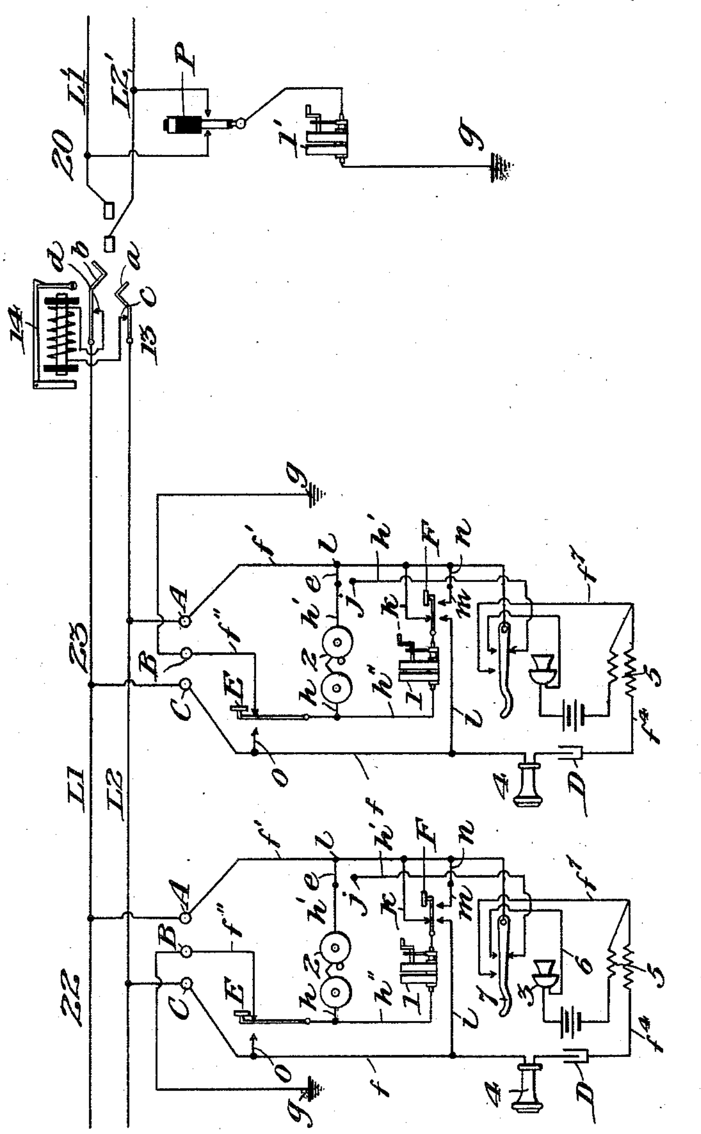
H. F. JOECKEL.

TELEPHONE SYSTEM.

APPLICATION FILED AUG. 10, 1911.

1,018,666. Patented Feb. 27, 1912.



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TELEPHONE SYSTEM.

1,018,666. Specification of Letters Patent. Patented Feb. 27, 1912.

Application filed August 10, 1911. Serial No. 643,444.

To all whom it may concern:

Be it known that I, HENRY F. JOECKEL, a citizen of the United States, residing at Camp Point, in the county of Adams and State of Illinois, have invented new and useful Improvements in Telephone Systems, of which the following is a specification, and which are illustrated in the accompanying drawing, forming a part thereof.

The invention relates to a system similar to that disclosed in my application No. 614,964, filed Mar. 16, 1911, in which two line wires to form a metallic talking circuit are used, and the annunciators, of the substations of party lines, are connected to ground from each side of the metallic talking circuit, the magneto circuit and central station annunciator circuit being however wired differently.

The object is to provide means for a substation to signal the central station without signaling the substations upon the line and for substations to signal one another upon the line without signaling the central station. These objects are obtained in the mechanism and system of wiring, as hereinafter described and shown in the accompanying drawing.

The drawing represents a central station at 20, and at 22 and 23 substations of a party telephone line, the line wires are shown at L^1 and L^2. While but two substations are shown, it is to be understood that there may be more.

At the central station 20 $L^{1\prime}$ and $L^{2\prime}$ represent cord set leads terminating in switching plugs as usual. The central station line jack 13 is connected at the tip spring a to L^2 and at the sleeve spring b to L^1, the annunciator 14 is normally bridged from L^1 to L^2 at line jack springs b, and a, by contacts c, and d, respectively. The insertion of a switching plug into the line jack cuts the annunciator out as usual, this adapts either line wire to be used separately by the central station for signaling the substations upon their respective sides, a magneto $1'$ having one terminal grounded and the other terminal provided with a switch p, to connect the magneto with $L^{1\prime}$, or $L^{2\prime}$ which register with L^1 and L^2 respectively whenever the switching plug is inserted into the line jack, is provided.

The telephone instruments of substation 22 consisting of a magneto 1, an annunciator 2, switch E, transmitter 3, receiver 4, induction coil 5, switch hook 7, condenser D, switch F, and their wiring are the same, as shown in my application No. 614,964, a contact m, has however been added to the switch F, which is connected to wire f' of binding post A, which adapts the telephone set for this system. Suitable means are provided by a clip n, to disconnect the contact m, from wire f' thus adapting the telephone set to be used as the one of application No. 614,964. The telephone of substation 22 has binding posts A, B and C, and is connected to L^1 by binding post A, to L^2 by binding post C and to the ground by binding post B. The secondary talking circuit is from L^1 to L^2 by binding post A, wire f', switch hook 7, wire f^7, induction coil 5, wire f^4, condenser D, receiver 4, wire f, and binding post C, the circuit is however normally interrupted at the switch hook. The annunciator circuit is from L^1 to ground by binding post A, wire f', clip e, wire h', annunciator 2, wire h, switch E, wire f'', and binding post B. The magneto circuit to ground is simultaneously from L^1 and L^2 by the switch F, being from L^1 by binding post A, wire f', clip n, contact m, switch-arm F, magneto 1, wire h'', switch E, wire f'', binding post B, and from L^2 by binding post C, wire f, contact l, switcharm F, magneto 1, wire h'', switch E, wire f'', and binding post B; and from L^1 to L^2 by binding post A, wire f', contact k, switch-arm F, magneto 1, wire h'', switch E, contact o, wire f, and binding post C, the magneto circuit is however normally interrupted at the usual cut out or at a switch.

The telephone instruments and their wiring of substation 23, are duplicates of substation 22, the line connections of binding posts A, and C, are however transposed, binding post A, being connected to L^2 and binding post C, to L^1, the annunciator circuit being thus from L^2 to ground at this station.

The metallic talking line circuit of L^1 and L^2 is nearly balanced by giving each side of the circuit nearly an equal amount

of ground, for that purpose one substation annunciator is shown connected to ground from L^1, and the other connected to ground from L^2, all telephone lines of this system should have an even number of substations, and for lines of from ten to twenty substations I recommend a resistance of 80 ohms for the annunciator coil 14 at the central station, as the operating of the annunciator at the central station without disturbing those of the substations depends upon the coil at the central station taking sufficient of the signaling current generated so that the annunciators at the substations can not operate, from the current passing to ground through those of one side of the metallic circuit and back through those of the other side of the circuit, the resistance of the annunciator coils of the different stations, and the signaling current that can be used upon different lines of this system must therefore be suitably proportioned.

This system furnishes selective signaling for two party lines as each party may signal the other without signaling the central station or signal the central station without signaling the other party and the central station can signal either party without signaling the other by signaling upon their respective side only.

The telephone instruments of substations 22 and 23 and their wiring, except the dividing of the talking and signaling circuits by the adding of switches E, and F, are those of telephones of the usual bridging telephone system, in which the bells have a resistance of from 1000 to 2500 ohms, and by placing these switches in a position so the circuits correspond with the usual bridging system will fit these telephones also to be used upon said system, as well, as the adding of switches adapt those telephone sets for this system. In two party lines of this system the heavy magnetos usually placed in bridging telephones are not needed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a telephone system, a central station, a metallic circuit leading therefrom, and being normally closed at said station by an annunciator, a plurality of substation talking sets bridged into the said metallic circuit, said bridges being however normally interrupted at the switch hook, an annunciator at each substation connected to ground from one or the other side of the metallic circuit so as to give each side of the metallic circuit nearly an equal amount of ground, a magneto in a normally open branch at each substation and means at each substation to connect the magneto in circuit with the annunciator of the central station or in circuit with all of the annunciators of the substations simultaneously upon both sides of the metallic circuit.

2. The combination, in a telephone system, a line jack at the central station, a metallic circuit leading therefrom, a plurality of substation talking sets bridged into the metallic circuit said bridges being however normally interrupted at the switch hook, a ground branch at each substation containing an annunciator, connected to one or the other side of the metallic circuit so as to give each side of the metallic circuit nearly an equal amount of ground, an annunciator at the central station normally bridged across the metallic circuit at the line jack, adapted to be cut out whenever a switching plug is inserted into the line jack, a magneto in a normally open branch at each substation and means at each substation to connect the magneto in circuit with the annunciator of the central station or in circuit with the annunciators of the substations simultaneously upon both sides of the metallic circuit, a switching plug and means at the central station to signal separately upon either side of the metallic circuit.

3. The combination, in a telephone system, a central station, a metallic circuit leading therefrom, and being normally closed at said station by an annunciator, two substation talking sets bridged into the said metallic circuit, said bridges being however normally interrupted at the switch hook, an annunciator at each substation connected to ground, one from one side of the metallic circuit the other from the other side of the metallic circuit, a magneto in a normally open branch at each substation and means at each substation to selectively signal the other substation or the central station, and means at the central station to signal either substation selectively.

4. The combination, in a telephone system, a central station, a metallic circuit leading therefrom, and being normally closed at said station by an annunciator, two substation talking sets bridged into the said metallic circuit, said bridges being however normally interrupted at the switch hook, an annunciator at each substation normally connected to ground, one from one side of the metallic circuit the other from the other side of the metallic circuit, a magneto and means at each substation to put the magneto in circuit with the annunciator of the other substation, with the annunciator of the central station or to leave the magneto out of circuit, the annunciators of said substations being adapted to be operated selectively upon their respective sides by the central station.

5. The combination, in a local battery magneto telephone, a secondary talking circuit extending from binding post A to C

normally interrupted at the switch hook, an annunciator circuit normally extending from binding post A to B, a magneto and means to put the magneto in a circuit extending from binding post A to B, from binding post A to C, or from binding posts A and C to B, the magneto is however normally not in circuit.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY F. JOECKEL.

Witnesses:
JAMES R. MOFFETT,
HENRY BARTLETT.