No. 777,429. PATENTED DEC. 13, 1904.

W. PARKER.

PARTY LINE TELEPHONE SYSTEM.

APPLICATION FILED JAN. 13, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

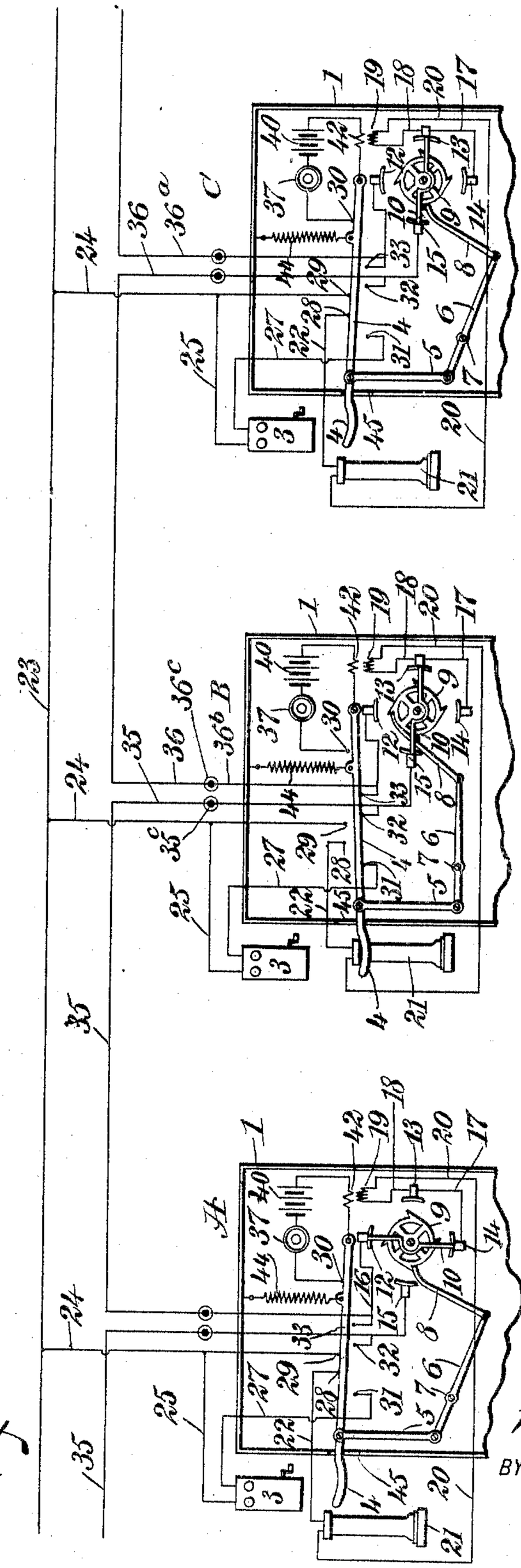
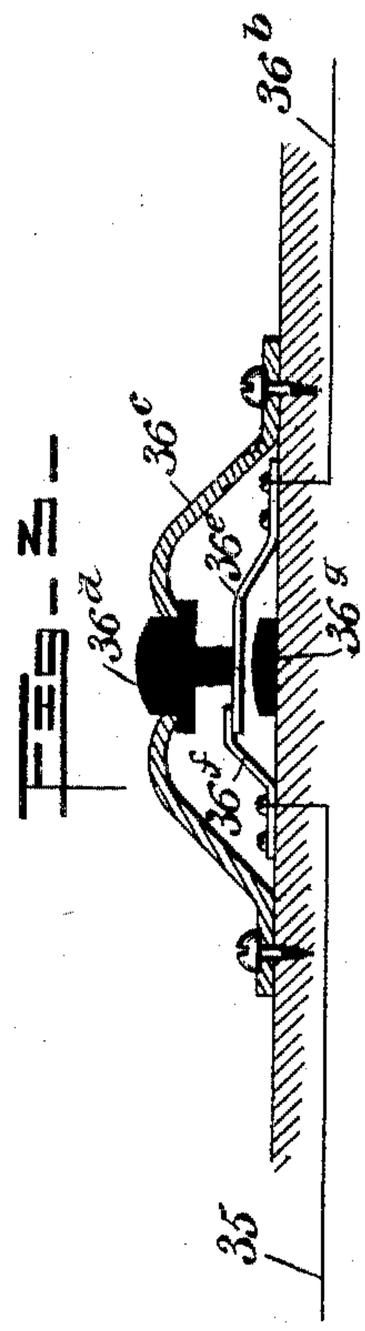


FIG. 2.



WITNESSES:

H. C. Abbott

Walton Harrison

INVENTOR

Walter Parker

BY Munn & Co

ATTORNEYS

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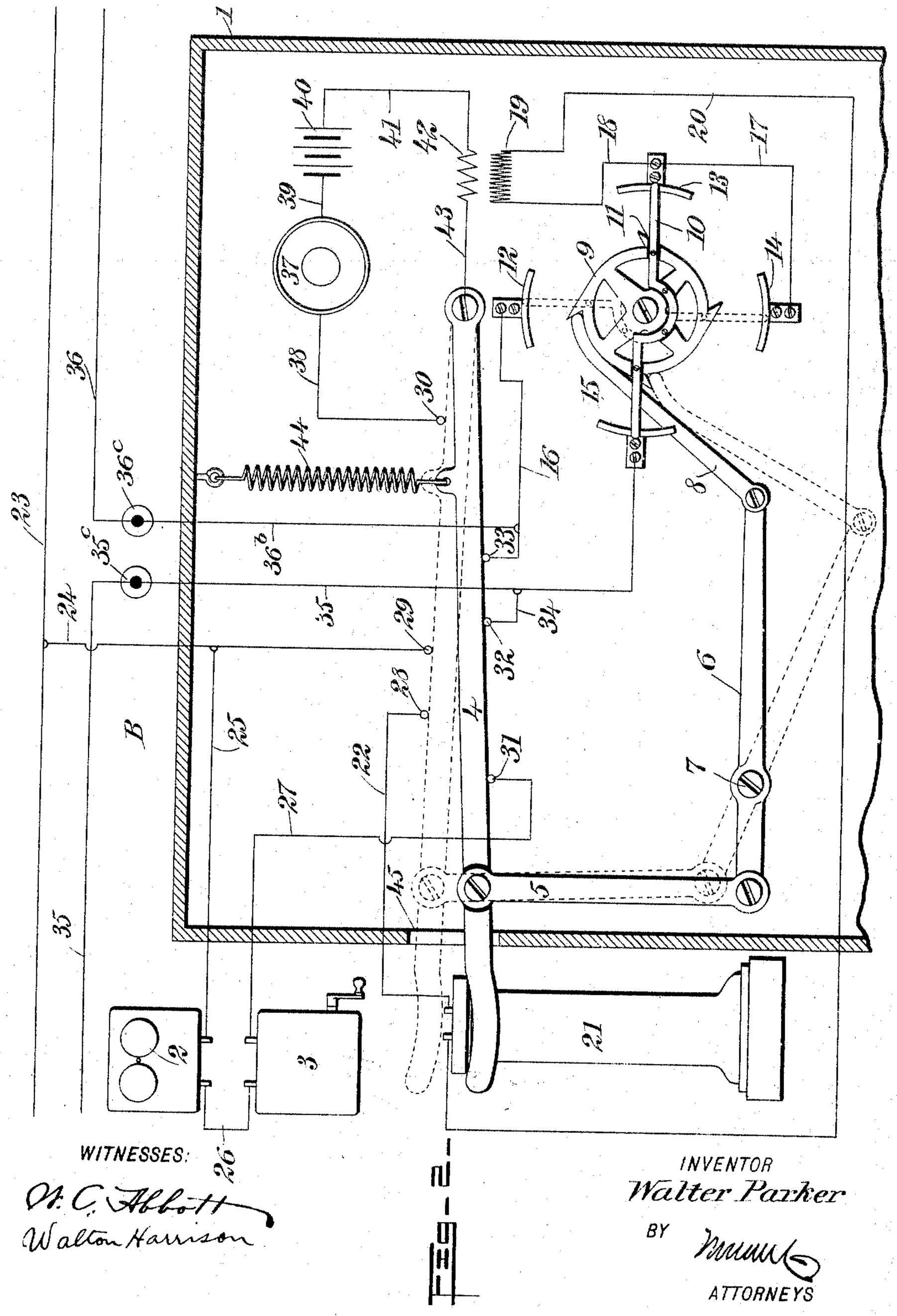

FIG. 2.

WITNESSES:

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No. 777,429. Patented December 13, 1904.

UNITED STATES PATENT OFFICE.

WALTER PARKER, OF LEICESTER, NEW YORK.

PARTY-LINE TELEPHONE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 777,429, dated December 13, 1904.

Application filed January 13, 1904. Serial No. 188,899. (No model.)

To all whom it may concern:

Be it known that I, WALTER PARKER, a citizen of the United States, and a resident of Leicester, in the county of Livingston and State of New York, have invented a new and Improved Party-Line Telephone System, of which the following is a full, clear, and exact description.

My invention relates to telephony and admits of general use, but is peculiarly adapted for party telephone-lines.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a diagram showing several stations connected together and using my system. Fig. 2 is a section, partly diagrammatic, through one of the casings and showing the switch-hook and commutator mechanism for actuating the same; and Fig. 3 is a vertical section through one of the push-buttons.

The casing which is used for containing most of the mechanism is shown at 1. The alarm is shown at 2 and is preferably of the twin-bell type. The magneto-generator is shown at 3 and may be of the kind usually employed. The switch-hook is shown at 4 and is provided with a link 5, whereby it is connected with a lever 6, pivoted at 7 and provided with a pawl 8. This pawl 8 actuates a toothed wheel 9, provided with a metallic bridge 10, mounted thereupon and kept out of immediate contact therewith by means of insulation 11. Disposed radially about the toothed wheel 9 are arc-shaped contact members 12, 13, 14, and 15, and connected with the contact members 12 13 14 are wires 16 17 18, disposed as shown in Fig. 2. The secondary winding is shown at 19 and is connected with the wire 18 and also with a wire 20, this wire 20 being connected with the receiver 21 and this receiver being also connected with a wire 22. One of the line-wires is shown at 23, and from it a number of branch wires 24 lead into the several stations. From the branch wire 24 a wire 25 leads to the alarm 2, this alarm being connected with the generator 3 by means of a wire 26. The generator 3 is connected, by means of a wire 27, with a normal contact member 31. The wires 22 and 24 are respectively connected with the abnormal contact members 28 and 29. Another abnormal contact member 30 is employed, as shown in Fig. 2. The normal contact members 32 and 33 are connected, respectively, with the wires 34 and 16, the wire 34 being connected with a fragmentary line-wire 35, which extends from station B (shown in Fig. 2 and also shown in the center of Fig. 1) to station A. (Shown at the left of Fig. 1.) A similar wire 36 extends from station B to station C at the right in Fig. 1. The transmitter is shown at 37 and is connected by wires 38 39 with the normal contact member 30 and the battery 40, respectively. From the battery 40 a wire 41 leads to the primary winding 42, this primary winding being connected by a wire 43 with the switch-hook 4. At the station C a wire 36^a is provided for the purpose of connecting with any other stations to the right of said station C. The wires 35 and 36 are connected with the respective push-buttons 35^c and 36^c. The several push-buttons are alike and are of the closed-circuit type, as will be understood from Fig. 3, wherein the knob 36^d when pressed upon causes the contact member 36^e to leave the contact member 36^f and to bear upon the boss 36^g.

My invention is used as follows: Each time the receiver 21 is removed from the hook 4 the hook being raised by a spring 44 causes the pawl 8 to move into the position indicated by dotted lines in Fig. 2. Each time the receiver is replaced upon the hook the pawl 8 moves upward into the position indicated by full lines in Fig. 2, thereby turning the toothed wheel 9 one-quarter of a revolution. The bridge 10 may therefore at any moment be horizontal, as indicated in Fig. 2, or vertical, as indicated at station A in Fig. 1. To give the toothed wheel 9 a half-turn, the receiver 21 is removed and replaced twice in succession. The position of the bridge 10, whether horizontal or vertical, is independent of the position of the switch-hook 4—that is to say, the switch-hook 4 may be depressed, as shown in full lines in Fig. 1, and the bridge 10 may be horizontal, as indicated by full lines at the center and right in Fig. 1, or may be vertical, as

indicated by dotted lines in Fig. 2. Suppose now that the several receivers 21 are hanging upon the respective switch-hooks and that the normal contacts 31, 32, and 33 are thereby closed. Any station can ring any other station over the following circuit, to wit: generator 3 of the calling-station, wire 25, wire 24, main line 23, to each of the other stations, thence through line 24, wire 25, generator 3, wire 27, normal contact 31, switch-hook 4, thence in parallel through normal contacts 32 and 33 and fragmentary line-wires 35 and 36 back to the normal contacts 32 and 33 of the calling-station, thence through wire 27 back to generator 3, from whence the call started. It will be observed that this is a bridge-circuit, the several bells being bridged on and each actuated by a shunt from the main line 23. The station called having answered, the receivers are removed from the respective switch-hooks at the called and the calling stations, and the conversation takes place. When the contact is finished, the receivers are respectively replaced, the ratchets being thereby each rotated one-quarter of a turn, as indicated by dotted and full lines in Fig. 2. It will be noted that at the station A the direction of the bridge 10 is vertical, whereas at station C the position of the bridge 10 is horizontal. This is because the subscriber at A is talking to a station disposed toward his right from the position indicated in Fig. 1, whereas the subscriber at station C in talking communicates with a station toward his left. If subscriber at station A desired to call up a station to his left and the bridge 10 were horizontal while the receiver 21 rests upon the switch-hook 4, he would merely let the switch-hook remain down and proceed to ring up and talk to the subscriber desired. If, however, the switch-hook 4 were down and the commutator-bridge 10 were vertical and he wished to communicate with a station to the left, he would raise the receiver 21, thereby allowing the switch-hook 4 to rise, and would replace the receiver upon the hook before talking. In other words, each subscriber before calling a station to his right or to his left notices the position of the bridge 10 at his station, and from its position, whether horizontal or vertical, he sees at a glance whether to proceed as the mechanism stands or whether to lift off and replace his receiver before ringing and talking, depending upon whether the station to be called is toward his left or toward his right. Suppose now that stations A and C are in communication, as above described, the following talking-circuit is completed: First, the local or battery circuit through the abnormal contact 30 is completed in the usual manner. The transmitter 37, battery 40, primary winding 42, switch-hook 4, and abnormal contact 30 are connected in the usual manner, so that merely raising the switch-hook completes this circuit. The secondary circuit, or so-called "talking-circuit" proper, is as follows: secondary winding 19 at station A, wire 18, contact-sector 13, wire 17, contact-sector 14, bridge 10, contact-sector 12, wire 16, wire 35, to station B, normal contact 32 at station B, switch-hook 4 and normal contact 33 at this station, thence through wire 36 to station C, thence through contact-sector 15, bridge 10, contact-sector 13, wire 18, secondary winding 19, wire 20, receiver 21, wire 22, abnormal contacts 28 and 29, wire 24, line-wire 23, back to station A, thence through wire 24 to switch-hook 4, thence through abnormal contact 28, wire 22, receiver 21, wire 20, back to secondary winding 19 at station A, where the circuit started. The circuit just described of course enables the subscriber at stations A and C to converse with each other.

It will be noted that while the entire line from one end to the other is free to be energized by any magneto, provided the switch-hooks are all down, as indicated at B, no matter whether the bridges 10 are vertical or horizontal or some vertical and others horizontal, yet when one of the switch-hooks 4 is elevated only that part of the line to the left or to the right of the calling-station can be energized by the talking-circuit. It will also be noted that when any receiver 20 is removed from the hook the rising of the hook by disconnecting the normal contacts and connecting up the abnormal contacts virtually breaks the line in two and connects the subscriber with either the portion of the line to the right or with the portion to the left, he being thus enabled to talk through a comparatively short metallic circuit. For instance, when the subscriber at station A removes his receiver 21 the talking-circuit above described extends only from station C to one or more stations to the right thereof. Where the instruments are in the position indicated in Fig. 1, stations A and C are in communication with each other, yet all resistance due to the talking-circuits at B is cut out and does not extend to the left of station A. Similarly when the subscriber C removes his receiver 21 the circuit at his station is no longer continuous, but the line is virtually broken in two, so as to connect him only with the portion of the wiring to the left of his station. It will also be noted that at each of the stations when the switch-hook is depressed by the weight of the receiver the entire line is complete without a break, whereas if the receiver be taken off the hook and the hook be allowed to rise not only is the subscriber connected either with the portion of the line to the right or the portion thereof to the left, as the case may be, but he talks through a circuit which is entirely metallic and which, as above explained, is comparatively short.

Should it be desired to call up a subscriber without ringing all of the bells, the calling subscriber can merely press one of the push-

buttons. Pressing either push-button cuts the line in two, the right-hand button cutting off all stations to the right and the left-hand button cutting off all stations to the left of the calling-station. Suppose, for instance, that at station B, (shown at the center of Fig. 1,) the operator presses the right-hand button 36^c. The following circuit is completed: wires 23, 24, 25, bell 2, magneto 3, wire 27, hook 4, wires 34, 35, to line-wire 35. Wire 36 is rendered idle by the opening of the button 36^c. If, however, the left-hand button 35^c be pressed, the circuit is as follows: wires 23, 24, 25, bell 2, magneto 3, wire 27, hook 4, wire 36^b, to line-wire 36. In the same manner the push-buttons may be used for shortening up the talking-circuits.

The commutator mechanism, consisting of the toothed wheel 9, pawl 8, lever 6, bridge 10, and contact members 12 13 14 15, together with the link 5, may be attached to telephones already in use.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a party-line telephone system, the combination of a plurality of movable switch-hooks disposed at different stations, a plurality of lines for connecting one station with another, and a commutator at each station, said commutator being provided with separate contacts severally connected with said lines, said commutator being also connected by a ratchet connection with a switch-hook and controllable by movements thereof for shifting circuits from one of said lines to another through the agency of said contacts.

2. In a party-line telephone system, the combination of fragmentary connecting-wires extending from station to station, a switch-hook at each station, normal and abnormal contacts for each switch-hook to be closed by the respective downward and upward movements thereof, said normal contacts being connected with said connecting-wires, a commutator at each station provided with a revoluble bridge, ratchet mechanism connecting said switch-hook with said bridge for the purpose of actuating the same, contact members arranged in pairs and so disposed as to be opened and closed by movements of said bridge, connections extending from two of said normal contacts to one pair of said contact members, alarm mechanism connected with another of said normal contacts, conductors for completing a circuit through said alarm mechanism, a local transmitter-circuit connected with said switch-hook and with one of said abnormal contacts, and a receiver-circuit connected with one of said abnormal contacts and with a pair of said contact members.

3. In a party-line telephone system, the combination of a switch-hook provided with normal and abnormal contacts, a commutator provided with a revoluble bridge, ratchet mechanism connected with said switch-hook and with said commutator for actuating said bridge, contact members disposed adjacent to said bridge and adapted to be energized when in communication therewith, and connections extending from said contact members to said normal and abnormal contacts for the purpose of changing the line connections.

4. In a party-line telephone system, the combination of a plurality of movable switch-hooks disposed at the several stations, line-wires extending from station to station in succession, a commutator at each station, a switch-hook connected with said commutator and adapted to actuate the same when depressed by the weight of a receiver, and contact mechanism connected with said commutator for normally connecting said line-wires and cutting out the resistance due to an intermediate station.

5. In a party-line telephone system, the combination of a continuous metallic conductor extending to the several stations, a plurality of comparatively short metallic conductors each extending from one station to the next, selective mechanism for connecting said continuous conductor with one or the other of said comparatively short metallic conductors and for disconnecting the same, and a switch-hook connected with said selective mechanism and controllable by the weight of a member resting thereupon for both connecting and disconnecting said short metallic conductors.

6. In a party-line telephone system, the combination of a number of movable switch-hooks respectively disposed at the several stations, each switch-hook having a portion for engaging a receiver and being adapted to move into an upper position and also into a lower position, a continuous line-wire extending to each of said stations, a fragmentary return connection for said line-wire, said fragmentary return connection being made up of a plurality of distinct wires normally connected with each other but adapted to be disconnected from each other by the upper movements of said switch-hook, and selective mechanism controllable by movements of said switch-hook due to the weight of said receiver for the purpose of connecting said line-wire with one of the wires of said fragmentary return connection, thereby virtually breaking the line in two and establishing communication through a comparatively short metallic circuit, said selective mechanism being also controllable by movements of said switch-hook when actuated by the weight of said receiver for breaking said communication.

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

WALTER PARKER.

Witnesses:
M. J. PARKER,
F. J. PARKER.