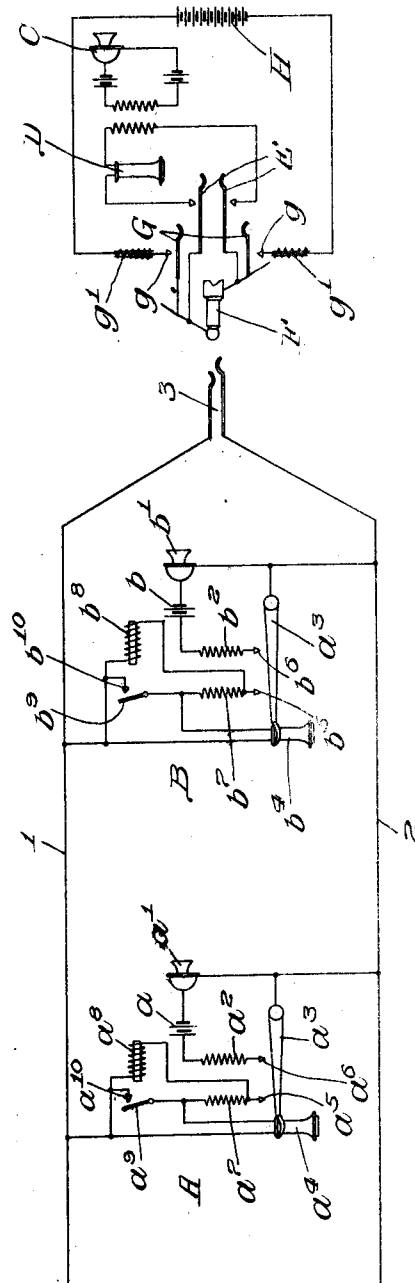


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 PARTY LINE TELEPHONE SYSTEM.
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UNITED STATES PATENT OFFICE.

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TO STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, OF ROCHESTER,
NEW YORK, A CORPORATION OF NEW YORK.

PARTY-LINE TELEPHONE SYSTEM.

1,050,532.

Specification of Letters Patent.

Patented Jan. 14, 1913.

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To all whom it may concern:

Be it known that I, BERNARD C. GROH, a citizen of the United States of America, and resident of Trenton Mercer county, New Jersey, have invented a certain new and useful Improvement in Party-Line Telephone Systems, of which the following is a specification.

My invention contemplates a party line telephone system in which provision is made for enabling the operator at the central station or exchange to control conversation between two subscribers on the same line.

Broadly stated therefore, a party line telephone system embodying the principles of my invention is characterized by means under the control of the operator for rendering the apparatus at any sub-station on a particular line inoperative to the extent that a subscriber at such sub-station cannot hear whatever conversation may be going on over the line in question, but not to the extent that the operator cannot hear such conversation.

More specifically considered, a party line telephone system embodying the principles of my invention is characterized by means under the control of the operator for cutting out or short-circuiting the subscribers' receivers, whereby, should the operator wish to stop conversation between any two subscribers on one line, the receivers may be instantly short-circuited and the apparatus thereby rendered inoperative to the extent that the subscribers cannot listen in or receive telephonic communication, but not to an extent to prevent the operator from hearing what the subscribers say.

Considered still more specifically, a party line telephone system embodying the principles of my invention is characterized by an arrangement for throwing the subscribers' receivers out of operation by simply throwing battery current on to the line, so as to energize relays having normally-open circuit-closing contacts, and thereby close normally open short-circuiting connections extending around the subscribers' receivers.

The nature and advantages of my invention will, however, hereinafter more fully appear.

The accompanying drawing illustrates diagrammatically a party line telephone sys-

tem embodying the principles of my invention.

As thus illustrated, my improved party line telephone system comprises a subscriber's line consisting of parallel line wires or limbs 1 and 2, terminating at the central station or exchange in the usual line jack 3. As shown, there are but two sub-stations A and B; but it will be understood that as many more sub-stations can be located on the line as may be found necessary or desirable.

In the particular embodiment of my invention illustrated, the system is of that particular type in which the current for talking purposes is furnished from local batteries *a* and *b* in the usual and well-known manner. Consistent with the mode of operation of a telephone system of this character, the sub-station apparatus also includes the usual transmitters *a*¹ and *b*¹, connected in series with the said batteries, and also in series with the windings *a*² and *b*² of the usual induction coils, and with the switch hooks *a*³; the latter being adapted, when released by the removal of the receivers *a*⁴ and *b*⁴, to engage the normally-open contacts *a*⁵, *a*⁶, and *b*⁵, *b*⁶. As usual in apparatus of this character, the said receivers are connected in series with the induction coil windings *a*⁷ and *b*⁷, which latter are respectively connected with the contacts *a*⁵ and *b*⁵. But in addition, and as a particular form of the means for attaining the object of my invention, the sub-station apparatus also includes relay magnets *a*⁸ and *b*⁸, the same being connected in parallel with their respective receivers and induction coil windings, as shown. Also, the said relay magnets are provided with normally-open circuit-closing contacts *a*⁹, *a*¹⁰, and *b*⁹, *b*¹⁰; adapted, it will be observed, to control normally open short-circuiting connections placed around the said receivers. The coils of the said relays may obviously be of such resistance relatively to the induction coil windings as to in no way interfere with the normal and proper action of the sub-station apparatus. It is also obvious, however, that a closing of the relay contacts operates to completely short-circuit the receivers, and to thereby make it impossible for the subscribers to listen in or hear each other, or

even hear the operator; but at the same time the operator can hear whatever the subscribers say.

The operator's talking set, consisting of the usual transmitter C and receiver D, is adapted to be connected with the line through the medium of switch springs E, and can be employed by the operator in the usual manner for conversing with the subscribers. The operator's equipment may also include the usual flexible connecting cord, provided at each end with a plug suitable for insertion in the spring jacks or terminal sockets of the different lines. As illustrated, only one of said plugs is shown, and this plug F is adapted to be inserted in the jack 3 for the purpose of establishing connection between the sub-stations A and B and the operator's talking set. Also this plug may, it will be understood, serve as the medium of connection between the subscriber's line shown and some other subscriber's line. In addition to the foregoing the operator's equipment also includes key springs G of a suitable switch for connecting the battery H with a subscriber's line—that is to say when the plug is in the jack. Preferably, the connections between the said battery and the switch contacts *g* include the impedance coils *g*¹. With this arrangement, it is obvious that an operator at central can, after the plug of the cord circuit is inserted in the jack, throw battery current on to a subscriber's line by simply pressing the key of the switch including the springs G and the contacts *g*.

It will be readily understood that the various devices and instruments shown and described may be of any suitable known or approved character. It will also be understood that any of the various known or approved devices can be employed for signaling between the sub-stations and the exchange or central station. Also, it is obvious that my invention, involving means controlled by the operator for rendering the subscribers' receivers inoperative without making it impossible for the operator to hear whatever may be said by the subscribers, may be embodied in a telephone system of any other known or approved character.

Now suppose that the subscribers at sub-stations A and B are conversing, and that the operator desires to stop the conversation. In such case, all that is necessary is for the operator to press the key for operating the switch springs G, so as to throw battery current on to the line wires 1 and 2. The battery current thus permitted to flow through a line circuit including both limbs of the line, the switch hooks, the contacts *a*⁵ and *b*⁵, and the coils of the relay magnets *a*⁸ and *b*⁸, results in the closing of the contacts of these relays and the consequent

short-circuiting of the receivers *a*⁴ and *b*⁴. When thus short-circuited, these receivers obviously cannot be used by the subscribers for listening-in or receiving telephonic communication. But it is equally obvious that the subscribers sub-station apparatus, when thus subjected to battery current, is not rendered inoperative to the extent that the operator cannot hear whatever the subscribers say. And in this way the operator is enabled to cut out the subscribers' receivers and know when the latter have ceased trying to converse.

What I claim as my invention is—

1. A party line telephone system comprising a subscriber's line, a plurality of sub-stations on said line, a central station at which the line terminates, and means controllable at the central station for rendering the sub-station apparatus inoperative to receive, together with operator's means for listening-in on the line, and provisions for enabling the operator to hear the subscribers when the latter cannot receive.

2. A party line telephone system comprising a subscriber's line, a plurality of sub-stations on said line, a central station at which the line terminates, and means controllable at the central station for rendering the sub-station apparatus inoperative for intercommunication between the sub-stations, together with operator's means for listening-in on the line, and provisions for enabling the operator to hear the subscribers when the latter cannot receive.

3. A party line telephone system comprising a subscriber's line, a plurality of sub-stations on said line, a central station at which the line terminates, and means controllable at the central station for short-circuiting elements of the sub-station apparatus essential to telephonic communication between stations, together with operator's means for listening-in on the line, and provisions for enabling the operator to hear the subscribers when the latter cannot receive.

4. A party line telephone system comprising a subscriber's line, a plurality of receivers connected with said line, normally-open short-circuiting connections each connected in parallel with one of said receivers, relays for opening and closing said short-circuiting connections, a central source of current for energizing said relays, and an operator's switch for controlling the energizing of said relays, together with operator's means for listening-in on the line, and provisions for enabling the operator to hear the subscribers when the latter cannot receive.

5. A party line telephone system comprising a subscriber's line, a plurality of receivers connected with said line, short-circuiting connections each connected in parallel with one of said receivers, relays also

connected with the line and adapted to control the short-circuiting connections, and means including a source of current and an operator's switch for controlling the energizing of said relays, together with operator's means for listening-in on the line, and provisions for enabling the operator to hear the subscribers when the latter cannot receive.

6. A party line telephone system comprising a subscriber's line, a plurality of receivers connected with the said line, a plurality of transmitters and local batteries for furnishing the talking current, normally-open short-circuiting connections extending around said receivers, relays connected with the line and adapted for controlling the short-circuiting connections, and means under the control of the operator for throwing battery current on to the line and thereby energizing said relays, together with operator's means for listening-in on the line, and provisions for enabling the operator to hear the subscribers when the latter cannot receive.

7. In a telephone system, the combination of a subscriber's receiver, a normally-open short-circuiting connection extending around said receiver, a relay for opening and closing said connection, and means including a battery and suitable switching devices for energizing and deenergizing said relay, together with an associated transmitter adapted to remain operative when the receiver is short-circuited.

8. In a telephone system, the combination with a telephone line, of a receiver in a bridge of the limbs of said line, a normally open shunt about said receiver, and means actuated over the limbs of said line in series for electrically controlling said shunt whereby the receiver alone may be short-circuited.

9. A party line telephone system, comprising a subscriber's line, a plurality of substations on said line, and means whereby the operator may, by throwing battery current onto the line, render the subscribers receiving instruments inoperative, but without affecting the operativeness of the transmitting instruments, and whereby the operator may listen-in on the line and thus control conversation between two subscribers on the same line.

10. The combination of a line circuit, a plurality of stations on the line, and means whereby the operator may render the receiving instruments at said stations inoperative, but without affecting the operativeness of the transmitting instruments, and whereby the operator may listen-in on the line and thus control the conversation between any two stations on the same line.

11. In a telephone exchange system, the combination of a telephone line, a plurality of substations on said line, a receiver and transmitter and local battery at each substation, a normally open shunt around each receiver, a relay controlling each shunt, a spring jack connected with the line, a central battery, a plug and cord and listening-in means for the operator, and connections by which the operator connects the central battery with the line to energize said relays.

12. In a telephone system, a receiver, a relay in shunt of said receiver, and a normally open shunt circuit around said receiver controlled by said relay.

13. In a telephone system, a metallic line, a receiver bridged across said line, a relay in shunt of said receiver, and a parallel bridge circuit in shunt around said receiver controlled by said relay.

14. In a telephone system, a subscriber's substation, a receiver therefor, a relay adapted to be included in shunt of said receiver when the receiver is removed from the switch-hook, and a shunt circuit around said receiver controlled by said relay.

15. In a telephone system, a receiver and a resistance, a relay in shunt of said receiver and resistance, and a contact of said relay adapted to short-circuit the receiver whereby the resistance and relay are then in parallel.

16. In a telephone system, the combination with a subscriber's station, of a transmitter and receiver thereat and means partially controlled from the central office for preventing the subscriber from receiving telephonic communication, but permitting the subscriber to send telephonic communication.

17. In a telephone system, the combination with a subscriber's station, of receiving and sending telephonic instruments at said station, and means partially under the control of the central office for rendering the receiving instrument at said station inoperative, without disabling said sending instrument.

18. In a telephone system, the combination with a telephone line, extending in two limbs from the substation to the central office, of a receiver, switch-hook and a relay at the substation, means for connecting the receiver in a bridge between the limbs of said line by the actuation of said switch-hook and means for disabling said receiver by the actuation of said relay.

Signed by me at Trenton, Mercer county, New Jersey, this 7th day of March, 1904.

BERNARD C. GROH.

Witnesses:

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