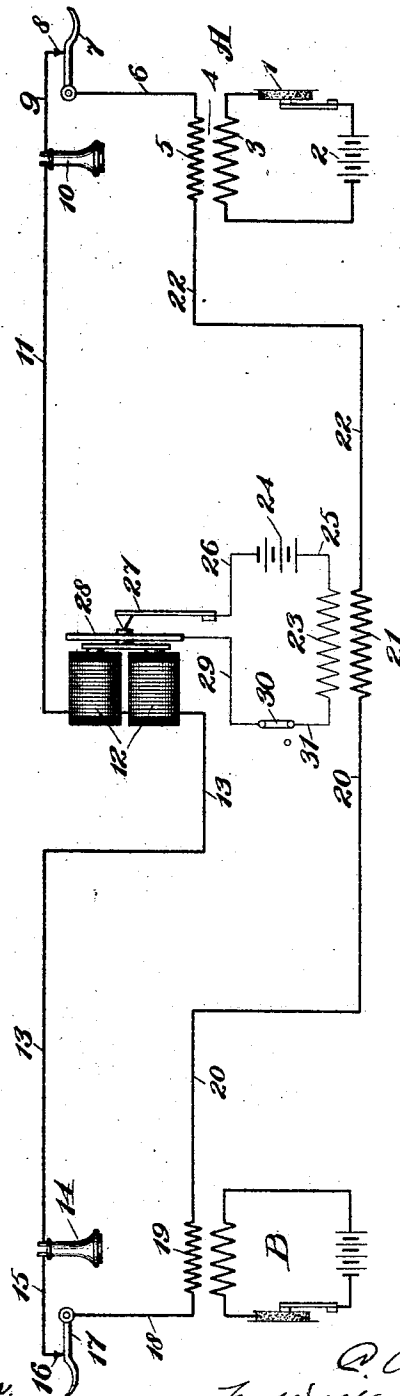


C. ADAMS-RANDALL.
 APPARATUS FOR INCREASING THE EFFICIENCY OF TELEPHONE LINES.
 APPLICATION FILED MAR. 13, 1911.

1,017,617.

Patented Feb. 13, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR INCREASING THE EFFICIENCY OF TELEPHONE-LINES.

1,017,617.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed March 13, 1911. Serial No. 614,191.

To all whom it may concern:

Be it known that I, CHARLES ADAMS-RANDALL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Increasing the Efficiency of Telephone-Lines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same. —

This invention relates to means for increasing the efficiency of telephone lines, and has for its object to produce a device of this character which will be simple in construction, efficient in action, and one which may be applied to ordinary simple and cheaply constructed telephone lines at a minimum cost.

Referring to the accompanying drawing forming a part of this specification, which diagrammatically illustrates one form of my invention:—1 indicates any suitable transmitter; 2 the usual local battery associated therewith, and 3 the primary of the induction coil 4 of which 5 is a secondary. One end of the secondary 5 is joined by the wire 6 to the hook lever 7 associated with the contact 8 joined by the wire 9 to the receiver 10 connected by the wire 11 to the coils of the repeater 12, which in turn are connected by the wire 13 to the receiver 14 connected by the wire 15 to the contact 16, associated with the lever 17 connected by the wire 18 to one end of the secondary 19, whose other end is connected by the wire 20 to one end of the coil 21, whose other end is connected by the wire 22 to the other end of the secondary 5, as shown. Inductively associated with the coil 21 is the coil 23 connected at one end to the local battery 24, by the wire 25, and said battery is connected on its other side by the wire 26 with the contact 27, associated with the contact 28, controlled by the repeater 12, and said contact 28 is connected by the wire 29 to the switch lever 30, adapted to be connected to the wire 31 joining the other end of the said coil 23.

In operation the usual call is made by a circuit (not shown) whereupon each of the receivers 10 and 14 at the stations A and B respectively are removed from their hooks and the circuit made at the contacts 7 and 8 and 16 and 17, respectively. Upon talking

into the transmitter 1, voice caused currents leave one end of the secondary 5, traverse the connection 6, the contacts 7 and 8, the wire 9, receiver 10, wire 11, coils of the repeater 12, wire 13, receiver 14, wire 15, contacts 16 and 17, wire 18, secondary 19, wire 20, coil 21, and wire 22 back to the other end of said secondary 5. These voice caused currents traversing the coils of the repeater 12, cause the resistance across the contacts 27 and 28 to be varied, whereupon currents similar to the voice caused currents traverse the coil 23 from the battery 24 in a manner well known. These local currents act inductively upon the coil 21, and therefore augment the said currents originally transmitted from the secondary 5, and consequently reinforce and render more clear the speech emitted from the receiver 14.

The switch lever 30 may be employed to make or break the local circuit from the battery 24 whenever desired, but it is found whenever there is trouble caused through indistinctiveness of the delivered speech in cheaply constructed lines, that it is very desirable indeed to keep the local circuit closed.

This invention differs from my co-pending applications No. 614,190 filed March 13, 1911 and entitled multiple repeating telephone systems and, No. 614,189 filed March 13, 1911 and entitled telephone circuits and repeating apparatus in that it is especially adapted for cheap lines which cannot afford heavy copper wires, and in that it is provided with a continuous metallic circuit and involves no switchboard, and no relay. In fact, as will be apparent from the drawings, it really involves a continuous main line with an electro-magnetically operated transmitter in series, and a local circuit controlled by said electro-magnetic transmitter in inductive relation to said main line circuit.

What I claim is:—

1. In a telephone repeating system, the combination with a main line metallic circuit of transmitting and receiving apparatus at the terminals thereof; a repeater intermediate said terminals having a coil in series with one side of said circuit; a local battery and coil associated with said repeater; and a third coil in inductive relation with said second mentioned coil and in series with the other side of said circuit, substantially as described.

2. In a telephone repeating system, the

combination with a main line metallic circuit of transmitting and receiving apparatus at the terminals thereof; a repeater intermediate said terminals having a coil in
5 series with one side of said circuit; a local battery and coil associated with said repeater; means for opening or closing the circuit of said battery at will; and a third coil in inductive relation with said second men-

tioned coil and in series with the other side 10 of said circuit, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

CHARLES ADAMS-RANDALL.

Witnesses:

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