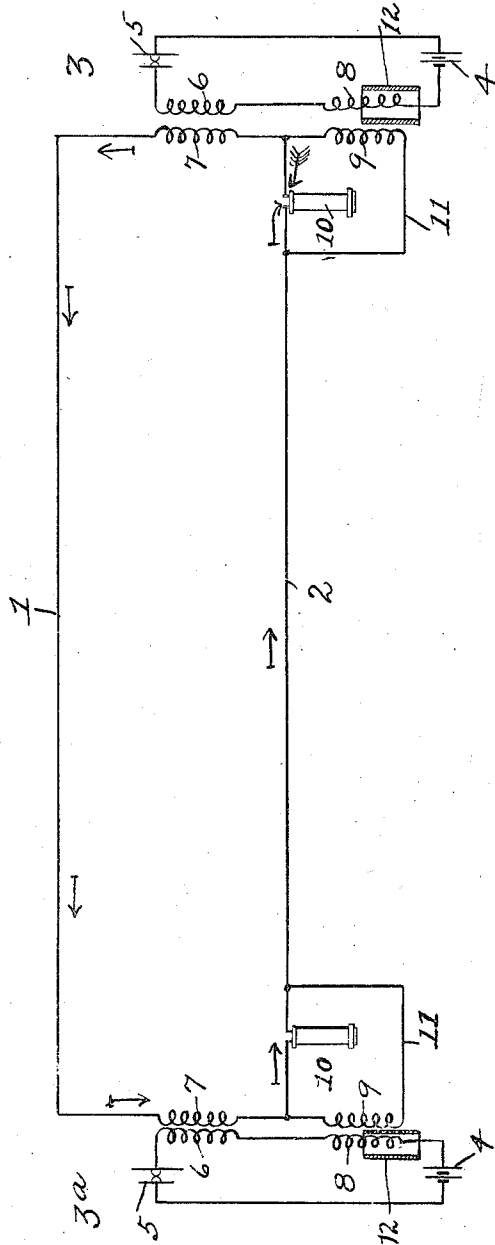


I. KITSEE.
TELEPHONY.

APPLICATION FILED MAR. 16, 1907. RENEWED JULY 19, 1912.

1,062,161.

Patented May 20, 1913



WITNESSES:

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TELEPHONY.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ISIDOR KITSEE, citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Telephony, of which the following is a specification.

My invention relates to an improvement in telephony. Its object is, to provide means whereby, with the aid of one single circuit, one message may be transmitted from one terminal of said circuit simultaneously with the transmission of a message from the other terminal of said circuit.

In some cases, especially in newspaper work, the line or circuit is occupied by the operator to transmit messages from one city to a second city for a great length of time, even extending for hours. To-day, when the operator from one city occupies the line, the same cannot be used for any other message. In my invention, the line or circuit may be employed, as stated above, for sending messages from both terminals at the same time.

In the drawing, which shows a diagrammatic view of a circuit embodying my invention, 1 and 2 are the lines of transmission; 3 and 3^a are the two stations therefor, each station being equipped, as is usual, with the battery 4, transmitter 5, and the primary 6 of an inductorium, the secondary 7 of this inductorium connected to the line. In the drawing, the local circuit containing the battery and transmitter is also provided with a second inductorium comprising the primary 8 and the secondary 9; the primary as in the former case, connected to the battery and the secondary to the line. The receiver 10 is connected, as is usual, in the line. The secondary 9 is connected through wire 11 in shunt with the receiver.

The *modus operandi* is as follows: When the operator at, say station 3, transmits a message over the line, the fluctuating current of the battery 4, flowing through the primary 6, generates corresponding impulses in the secondary 7, and these impulses flowing over the line, are received by the operator at station 3^a by the aid of the receiver 10. But as in the circuit containing the primary 6 is also inserted the primary 8, the same fluctuations of the current, which will induce through 6 impulses in 7, will also induce through 8 impulses in 9. The impulses induced in 7 will flow over the

line to the far end and will be received at the far end of same; whereas, the impulses induced in 9 will only flow through the local shunt consisting of the wire 11. When the impulses of 7 are flowing in the direction of the unfeathered arrow over the line, the impulses from 9 are flowing in the direction of the feathered arrow through the shunt, and both impulses will oppose each other in the receiving device. The home operator, therefore, will not hear in the receiver his own voice, because, as said above, the impulses at 7 nullify the impulses at 9 in his own receiver. If, at one and the same time, the operator at 3^a transmits a message, the home impulses will not be distinguished in the home receiver, but will be distinguished in the receiver on the far end. Should other impulses flow in the same direction over the line, then they will intensify each other and the receiver of both stations; they will overcome the localized impulses through the shunt 11, and if the impulses transmitted over the line from both stations are in opposite direction, then they will nullify each other and the receiver will answer to the impulses of the home transmitter, but only in a manner and for such a time, as the line impulses are opposing each other, and the vibration of the diaphragm will be in accordance with the impulses transmitted from the far end. But as the resistance of the line weakens the impulses, it is necessary to provide means so that the strength of the impulses flowing in the shunt 11 should harmonize with the strength of the impulses flowing over the line; and for that purpose, I have provided—as the simplest means of adjusting—the inductorium comprising 8 and 9 with a metallic tube 12. It is well known that if a metallic tube is inserted between the primary and secondary of an inductorium, the influence of the primary on the secondary can be regulated at will, by the simple moving in and out of the shielding tube.

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

1. A telephonic circuit and means in said circuit to duplex the same, said means comprising for each of the stations connected to said circuit, two inductoriums, the secondary of said inductoriums connected one to the line proper and one with the interposition of a receiver to a localized shunt of.

part of said line, and means to neutralize the home impulses in the shunt secondary.

2. The method of duplexing a telephonic circuit, which consists in causing to be generated the home impulse in two secondaries of inductoriums, causing the impulse in one secondary to be neutralized and causing the impulse of the far-off station to travel

through one of the secondaries and receiving device.

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

ISIDOR KITSEE.

Witnesses:

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