

No. 625,247.

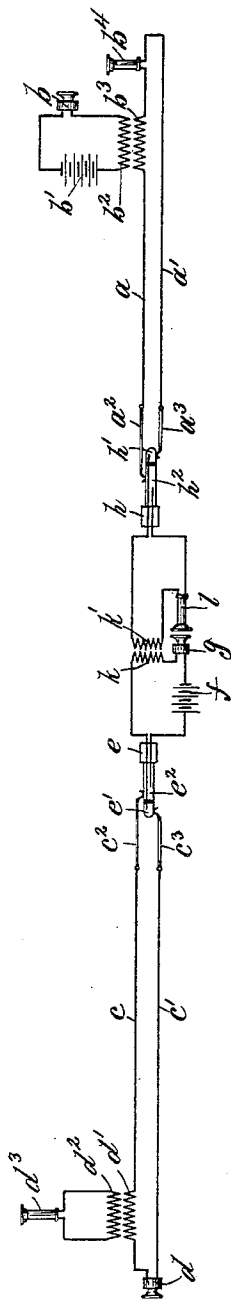
Patented May 16, 1899.

W. M. DAVIS.

TELEPHONE REPEATER.

(Application filed Feb. 21, 1898.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM M. DAVIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, OF SAME PLACE.

TELEPHONE-REPEATER.

SPECIFICATION forming part of Letters Patent No. 625,247, dated May 16, 1899.

Application filed February 21, 1898. Serial No. 671,102. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. DAVIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone-Repeaters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to a telephone-repeater, my object being to provide an improved construction of repeater whereby two lines may be connected together for conversation, one of which is provided with a transmitter in a local circuit and connected through an induction-coil, while the other line is provided with a transmitter connected directly in circuit with a battery or other source of electricity located in the line.

My invention comprises a connecting device whereby two lines may be connected together for conversation, a transmitter and the primary of an induction or repeating coil being arranged to be connected in circuit with the telephone-line having the direct-connected transmitter, while the secondary of the induction-coil and a telephone-receiver placed opposite to the transmitter are arranged to be connected in circuit with the telephone-line having the transmitter in a local battery-circuit. I preferably provide a pair of plugs each having two contacts, the transmitter and the primary of the induction-coil being included between the contacts of one plug, while the receiver and the secondary of the induction-coil are included in circuit between the contacts of the other plug. When the direct-connected transmitter is operated, the talking-current traversing the primary of the induction-coil induces similar currents in the secondary, which traverse the other telephone-line and actuate the receiver thereof. When the transmitter in the local battery-circuit is actuated, talking-currents are produced on the line, which traverse the receiver included in the circuit of the connecting device, and the vibration of the diaphragm of the receiver actuates the transmitter situated opposite thereto and the transmitter produces talking-

currents which traverse the receiver of the connected line.

I have illustrated my invention diagrammatically in the accompanying drawing, in which like letters refer to like parts.

Upon the right is shown for the purpose of illustration a telephone-line having two limbs $a\ a'$, extending to contact-springs $a^2\ a^3$ at the central station, the transmitter b being included in a local circuit with the battery b' and the primary b^2 of an induction-coil, the secondary b^3 thereof and the receiver b^4 being included directly in the telephone-circuit. Upon the left I have illustrated a telephone-line comprising two limbs $c\ c'$, extending to the line-springs $c^2\ c^3$ at the central station, the transmitter d being connected directly in the telephone-circuit with the primary d' of an induction-coil, the secondary d^2 of which is included in circuit with the receiver d^3 . At the central station is provided a connecting device comprising a pair of plugs $e\ h$, the plug e having a pair of contacts $e'\ e^2$, in circuit with which are connected a battery f , a transmitter g , and the primary k of an induction-coil. The plug h is provided with two contacts $h'\ h^2$, in circuit with which are connected the receiver l and the secondary k' of an induction-coil.

When the subscribers desire to converse, the signals are sent to the central station in any of the usual ways (the calling apparatus having been omitted from the drawing for clearness, as it forms no part of the present invention) and the operator inserts the plug h in the spring-jack of the subscriber having the transmitter in the local circuit and inserts the plug e in the spring-jack of the subscriber having the direct-connected transmitter. When the transmitter d is actuated, talking-currents are produced in the circuit, which may be traced from battery f through contact e^2 , line-spring c^2 , limb c , primary d' , transmitter d , limb c' , spring c^3 , contact e' , primary k , transmitter g , back to the battery. The currents thus traversing the primary k induce currents in the secondary k' , which pass through receiver l , contact h^2 , line-spring a^2 , limb a , secondary b^3 , receiver b^4 , limb a' , spring a^3 , contact h' , back to the secondary.

When transmitter *b* is actuated, the talking-currents from battery *d'* traverse the primary *b*², thus inducing currents in secondary *b*³, which pass over the telephone-line and through the receiver *l* at the central station, which actuate the transmitter *g* to thereby produce talking-currents in the circuit of battery *f*, which may be traced through the transmitter *g*, primary *k*, over limb *c'*, transmitter *d*, primary *d'*, limb *c*, back to the battery. The talking-currents traversing the transmitter *d* induce currents in the secondary *d*², which traverse the receiver *d*³.

My invention is applicable to telephone systems wherein part of the transmitters are directly connected and part in local circuit, and is also applicable to the connection of lines of different exchanges having this difference of construction, and is also applicable to the connection of lines of a telephone system with a toll-line. There are perhaps other applications where my invention may be employed to advantage, but it has been designed with particular reference to the applications above mentioned. The connector above described may also be used to advantage in joining together a telephone-line having a magneto-transmitter and a line having a direct-connected microphone-transmitter. Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a telephone-line having a source of electricity and a microphone-transmitter connected directly in the line, of a second telephone-line having means for producing talking-currents on the line, and a repeater interposed between the two lines comprising a microphone-transmitter and the primary of an induction-coil in circuit with the first line and a telephone-receiver and the secondary of an induction-coil in circuit with the second line, the trans-

mitter and the receiver of the repeater being opposed in position so that the receiver vibrates the transmitter-diaphragm, substantially as described.

2. The combination with a telephone-line having a source of electricity and a microphone-transmitter connected directly in the line, of a second telephone-line having a microphone-transmitter in a local circuit connected with the telephone-line through an induction-coil, and a repeater interposed between the two lines comprising a microphone-transmitter and the primary of an induction-coil in circuit with the first line, and a telephone-receiver and the secondary of an induction-coil in circuit with the second line, the transmitter and the receiver of the repeater being opposed in position so that the receiver vibrates the transmitter-diaphragm, substantially as described.

3. The combination with a telephone-line having a microphone-transmitter connected directly in the line, of a second telephone-line having means for producing talking-currents on the line, and a connecting device for joining the said lines together comprising two pairs of terminals one pair being adapted to be connected with the first line and having in circuit between the same a source of electricity, a microphone-transmitter and the primary of an induction-coil, the second pair of terminals being adapted to be connected with the second telephone-line and having in circuit therewith the secondary of an induction-coil and a receiver situated opposite said transmitter, substantially as described.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM M. DAVIS.

Witnesses:

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M. R. ROCHFORD.