C. W. McKIBBEN.

TELEPHONE SYSTEM.

APPLICATION FILED JULY 29, 1909.

1,004,290. Patented Sept. 26, 1911.

Fig. 1

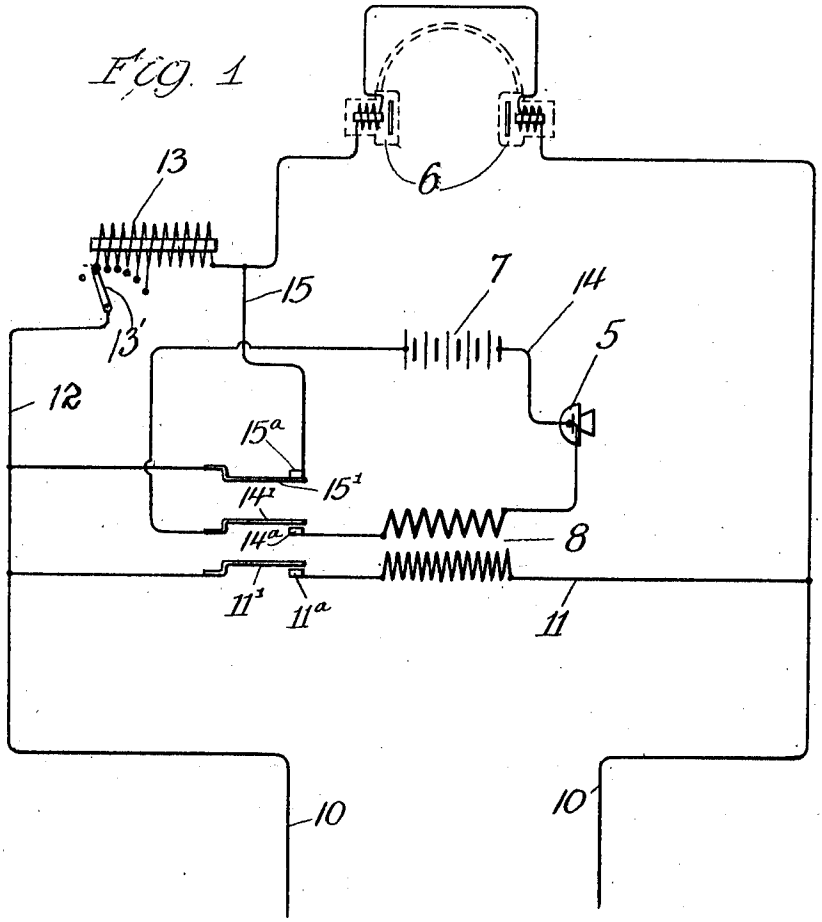
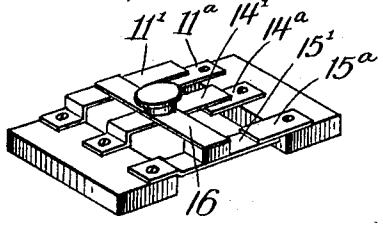


Fig. 2.



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UNITED STATES PATENT OFFICE.

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TELEPHONE SYSTEM.

1,004,290. Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed July 29, 1909. Serial No. 510,255.

To all whom it may concern:

Be it known that I, CHARLES W. McKIBBEN, a citizen of the United States, residing at Beaumont, in the county of Jefferson and State of Texas, have invented certain new and useful Improvements in Telephone Systems, of which the following is a specification.

My invention relates to improvements in telephone systems, and has for its general object to provide an effective telephone set and circuits therefor for use in transmitting over a very high impedance line.

On long iron-wire lines, for example, where the impedance practically precludes the use of ordinary telephone instruments, my invention finds advantageous employment, and its nature and advantages will become apparent from the following description taken in conjunction with the accompanying drawings, wherein—

Figure 1 is a diagrammatic view of a telephone circuit and set embodying my invention; and Fig. 2 is a perspective view of a switch suitable for employment in conjunction therewith.

On high impedance work of the character described, I employ any suitable form of transmitter 5, receiver or receivers 6 preferably of the head type as diagrammatically shown, a relatively high voltage battery 7 for the transmitter, and a large induction coil, 8. In the use of such devices, however, it will be obvious that if the receiver of the speaking party received the full effect of the high potential current which is necessarily employed to transmit to a distant party, the effect upon the speaker's ears would be unbearable, whereas if the receiver were wound to stand such current without producing abnormal sounds as a result, the waves transmitted from the opposite end of the high impedance line would not sufficiently affect the receiver to be intelligible.

In the operation of the invention, therefore, I provide a system whereby both highly efficient transmitters and high power induction coils may be employed in conjunction with very sensitive receivers and yet without producing unpleasant effect in the ears of a speaking party. To this end I provide for the interposition in the receiver branch of the circuit of an impedance device appropriately proportioned; and preferably, disabling means for the impedance device, arranged in conjunction with means for potentiating the transmitting devices in such a way that when the transmitting devices are potentiated, the impedance device is likewise potentiated for operation; and vice versa.

Specifically, 10 and 10′ represent the line wires, bridged by branch 11, including the secondary of the induction coil 8, and bridged also by a receiver branch 12, including the two receivers 6, 6, and having connected therein an adjustable impedance device such as the coil 13, adjusted or opened by switch 13′. The transmitter circuit 14 includes the battery 7, transmitter 5, and primary of the induction coil. A shunt 15 is thrown around the impedance device and acts as a disabling means for the impedance device. In the shunt 15 and the transmitter circuit 14, and, preferably, the branch 11 as well, controlling switches are provided so combinatively arranged that as the circuit branch 15 is opened, circuit branches 14 and 11 are closed; and vice versa. Such switch, as illustrated in Fig. 2, may comprise the movable contacts 11′, 14′, and 15′, associated in common with an operating handle 16 in such relation to their stationary contacts 11^a, 14^a, and 15^a, that the contacts 15′ and 15^a stand normally made while the other two are broken, and pressure upon the handle 16 will reverse this condition, opening contacts 15′, 15^a, and closing the others. Now it will be apparent that whenever a party desires to talk, he must press upon the handle 16 to close the transmitter circuit as also, in the embodiment shown, the bridge 11, to potentiate his transmitting devices, and such action automatically opens the low-impedance shunt 15 around the impedance coil 13 cutting said impedance device in series with the receivers. Thus the receivers are protected from such abnormal response as would be damaging or unpleasant to the ears of the talking party. When the party's transmitter is not in use, however, and he is being talked to, he releases his key, thereby breaking his branch circuit 11 and transmitter circuit 14, and closing the disabling shunt 15 around the impedance device, 13, so that his receiver may be subjected to the maximum effect of the current on the line transmitted from the distant point. In brief, the transmission from remote points is received directly; from the home station, it is affected by the impedance device.

Where absolutely maximum transmission is desired, the impedance branch may be opened by switch 13′ and then, so long as the party is talking, all of the current goes out over the line.

What I claim is:

1. In a telephone system, a line and a subscriber's set including a receiver, an impedance device in series therewith, a short-circuiting shunt circuit connected to the terminals of said impedance, and means for opening and closing said shunt circuit.

2. In a telephone system, a line, and a subscriber's set including a receiver, an impedance device in series therewith, a shunt circuit around said impedance device, normally closed and short-circuiting said device, and a switch for opening said short circuit.

3. In a telephone system, a line and a party's set comprising a transmitter, a receiver, an impedance coil in series with the receiver, a shunt around the impedance coil, and a switch controlling the shunt and effecting operative connection of the transmitter with the line, arranged automatically to close the shunt when the transmitter is disconnected from the line, and to disable the transmitter when the shunt is closed.

4. In a telephone system, a line and a party's set comprising a transmitter, a bridged receiver, an impedance in the receiver circuit, means for varying the impedance; a short-circuiting shunt around said impedance, and means for opening the short circuit or disabling the transmitter alternatively.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

CHARLES W. McKIBBEN.

In the presence of—
M. M. Mothner,
Goldie Stern.