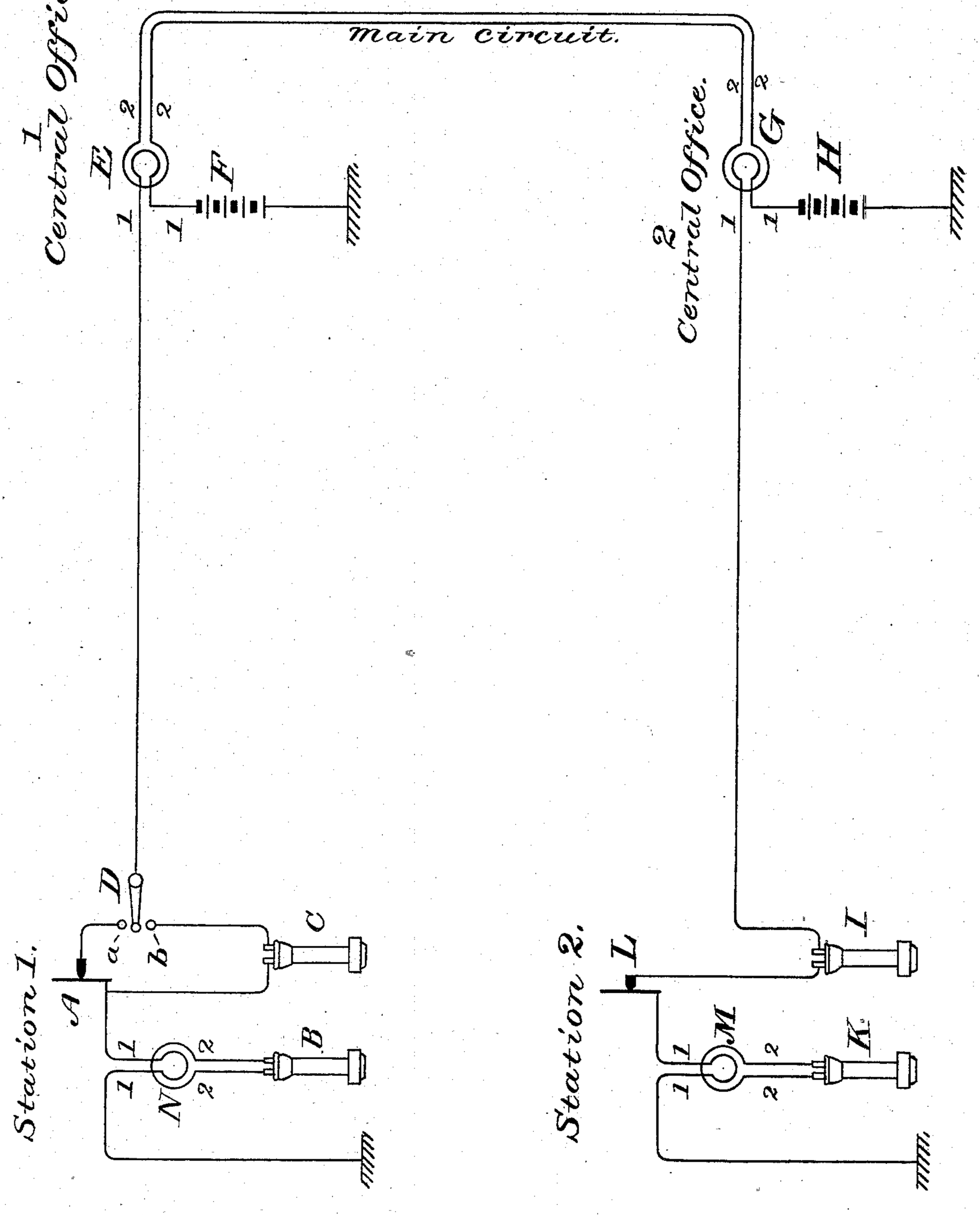
(No Model.)

E. BERLINER.

TELEPHONE SYSTEM.

No. 262,922. Patented Aug. 22, 1882.



Witnesses.
Geo. Willis Pierce
F. H. Cheever.

Inventor.
Emile Berliner

UNITED STATES PATENT OFFICE.

EMILE BERLINER, OF BOSTON, MASSACHUSETTS.

TELEPHONE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 262,922, dated August 22, 1882.

Application filed March 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, EMILE BERLINER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Telephone Systems, of which the following is a specification.

In a patent granted to me January 15, 1878, I have shown a system of telephony in which two inductoriums were so combined that a transmitter, which at the same time acted as a receiver, was inclosed in the primary circuit of each inductorium, and the secondary currents of both were combined so as to form one circuit. My present invention is an improvement upon that system, as follows: I place a transmitter and a separate receiver, preferably of low resistance, in the primary circuit of each inductorium. I provide a switch by means of which, if it is desirable, either of the instruments may be alternately cut out, and I place a receiver, preferably of higher resistance than the first, in the secondary circuit. Furthermore, I add two more inductoriums, which are placed between the two conversing-stations, and the secondaries of which are connected to and form the main line, while their primaries form each a circuit with the primary of one of the first and original inductoriums. In order to make this clearer, I refer to the drawing. Here N and M are the original inductoriums, with primary outlets or poles 1 1 and secondaries 2 2. A and L are the original transmitters, and added to these are the receivers I and C. Two other receivers, of preferably higher resistance, K and B, are placed in the secondary circuit. In the case of station 1 a switch, D, is added, with two buttons, *a* and *b*, by means of which either transmitter A or the receiver C can be switched in to the exclusion of the other. F and H are the original batteries, which, however, in my present system, are situated at the central offices Nos. 1 and 2. Here, also, are the two additional inductoriums E and G, with their primary poles 1 1 and secondary poles 2 2. As is shown, the secondaries of both E and G are combined into one circuit, which forms the main line, and the primaries of both are included in the original primaries.

The operation of this system is as follows: When station 2 wishes to talk with station 1 the latter switches the switch D on button *b'*. The undulations produced in the transmitter L induce similar undulations in the secondaries of M and G, the undulations in G induce upon E, and by this upon N. Hence it is evident that sound transmitted by means of L will be reproduced simultaneously by the receivers K, I, C, and B, and station 1 listens by holding C and B, or either, to the ears. When station 1 talks with station 2 the switch D is placed on *a'*, and talks to transmitter A, the undulations of which affect in turn the four inductoriums and the receivers I and K, by means of which station 2 listens.

The advantages of this system are that if stations 1 and 2 are subscribers' stations to two separate telephone-exchange systems, with their respective central offices, 1 and 2, the latter may be combined by a metallic circuit, which is an effective way of neutralizing induction from neighboring wires, also of evading earth-currents. Furthermore, the batteries to work the two transmitters are situated at the central office, and may be used by other subscribers; and, lastly, each subscriber has two receivers to listen with, thus enabling him to employ both of his ears. These features combined form the principal features of novelty, and under the circumstances my way of connecting two receivers at each station is both novel and advantageous.

What I claim is—

1. In a telephone system, the combination of two receivers, one placed in the secondary circuit of an inductorium, and another, which is preferably of lower resistance, placed in the primary circuit of the same inductorium.

2. In a telephone system, the combination of the primary of an inductorium, a transmitter, a receiver, and a switch, by means of which either the transmitter or the receiver may be placed in circuit with said primary coil.

3. In a system of telephonic intercommunication, the combination of two inductoriums, one at each central office, the secondaries of which are combined to form the main line between the two offices, and the primaries of which are connected each with the primary of another inductorium, the latter situated at a subscriber's station.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of March, 1882.

EMILE BERLINER.

Witnesses:
GEO. WILLIS PIERCE,
J. H. CHEEVER.