

No. 652,459.

Patented June 26, 1900.

C. C. GOULD.
ELECTRIC CIRCUIT.

(Application filed Jan. 21, 1899. Renewed Feb. 23, 1900.)

(No Model.)

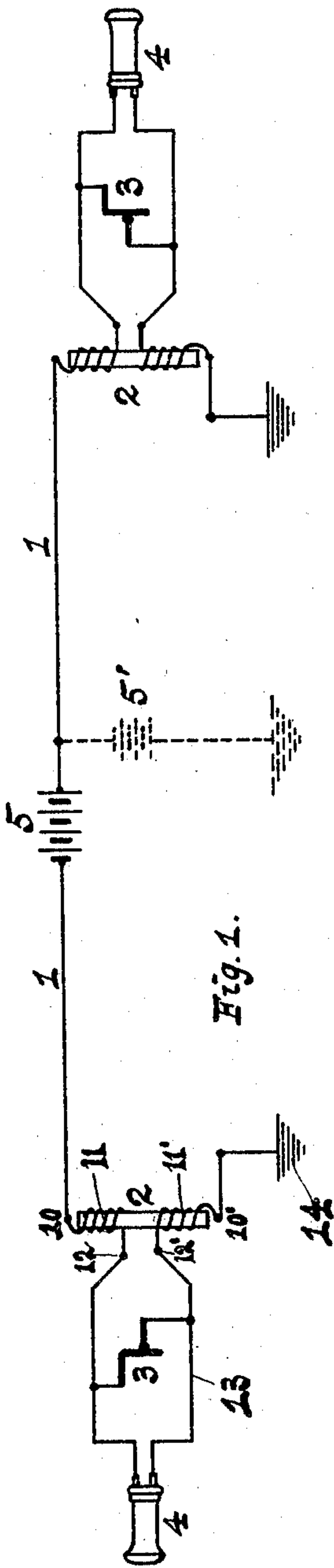


Fig. 1.

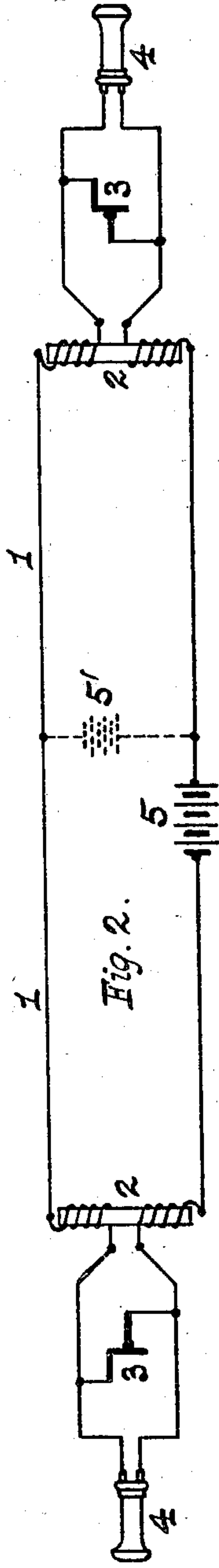


Fig. 2.

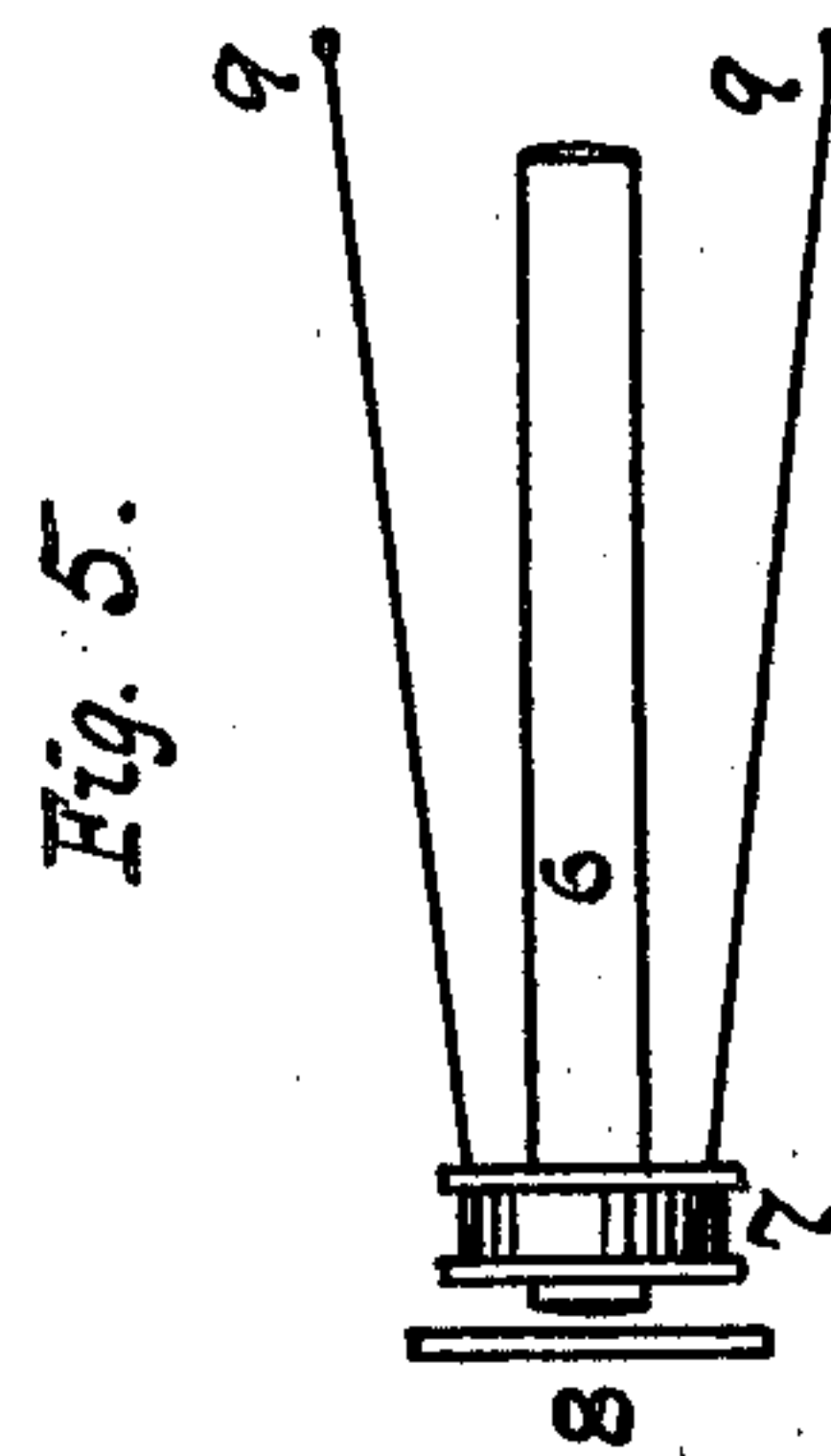


Fig. 3.

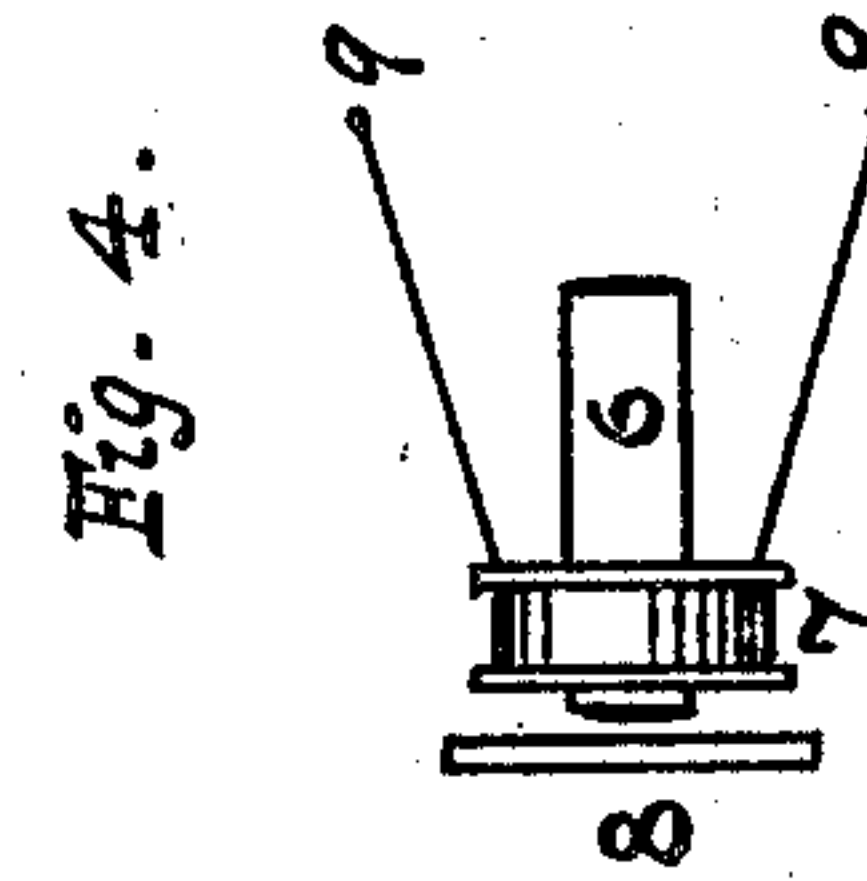


Fig. 4.

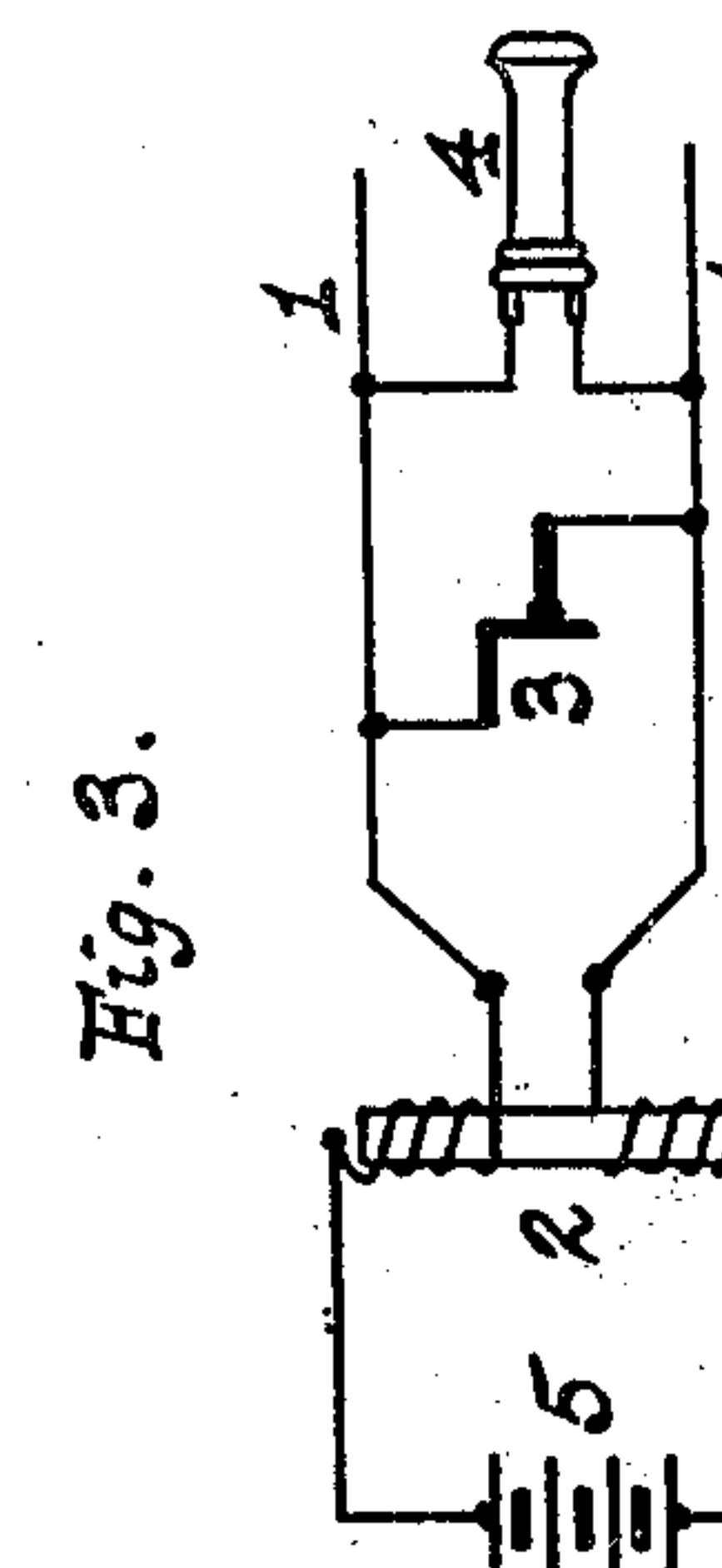


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

CORNELIUS C. GOULD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY
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ELECTRIC CIRCUIT.

SPECIFICATION forming part of Letters Patent No. 652,459, dated June 26, 1900.

Application filed January 21, 1899. Renewed February 23, 1900. Serial No. 6,305. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS C. GOULD, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric Circuits, of which the following is a specification.

My invention has relation to means for increasing the clearness, as well as volume, of sound-wave reproductions in telephone systems.

The principal object of my present invention is to provide simple and effective means for eliminating the effects of outside induction.

The current in the circuit carries the impulses generated at the transmitting-station to the receiving-station irrespective of induced foreign currents or static induction of its own circuit.

Practical experiments over a long circuit have demonstrated in a satisfactory manner the efficiency of my invention and the correctness of the underlying principles thereof.

To accomplish the object of my present invention use is made of inductive-resistance coils of comparatively low resistance arranged upon a common laminated core, the outer ends of the windings of which coils are included in the main circuit, while the inner ends of the windings are connected with the transmitting and receiving instruments in a loop of said circuit. The incoming current passes from the main line into one of the coils, then to and through the small coil of the receiving instrument, and out through the second of the pair of coils to ground.

My invention, stated in general terms, consists of the improvements in electric circuits substantially as hereinafter described and claimed.

The nature and scope of my present invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a diagrammatic view of an arrangement showing a ground electric circuit.

Fig. 2 is a similar view of an arrangement showing a metallic circuit. Fig. 3 is a similar view of a modification as to the station arrangement in the circuit; and Figs. 4 and 5 are views, partially diagrammatic, of ordinary Bell receivers of different sizes.

Referring to the drawings, with special reference to Fig. 1, 1 is the main circuit, which is connected at 10 to the outer end of the windings of the coil 11. Coils 11 and 11' consist of about three layers of No. 18 (B. & S.) insulated wire, with a resistance of one-half of an ohm each, wound upon a common laminated iron core 2. The inner adjoining ends 12 12' of the coils are connected to a loop 13 of said circuit, and the current passes therethrough and the coil of the receiver 4 to the terminal 12' and to the ground 14, or in the case of the metallic circuit, Fig. 2, to the return-wire of the same. The transmitting instrument 3 is of any well-known type and is placed in multiple to the loop 13 of the said circuit 1. A battery 5 may be located at a central station, so that none of the subscribers' stations are in need of one, and therefore do not suffer annoyances incident to the care thereof. The battery may be placed in series with the main circuit, as indicated at 5, or it may be placed in multiple, as indicated at 5'. It is a peculiar fact, as practice has demonstrated, that the receiving instrument exercises a peculiar influence over and upon the efficiency of the system. One of the important features in this connection is the size and character of the permanent magnet in the receiver. If the windings of the receiver-coil are decreased, there is obtained the same result as if the size of the permanent magnet in the receiver be decreased—that is, the apparatus becomes more efficient. By increasing the windings in the receiver-coil again objectionable induction or humming noises due to outside inductive effects will be heard, but by adjusting the inductive resistance it is entirely practical to control these effects. It has been determined by practical experiment that the magnetic field induced by the laminated core influences the incoming current in such manner as that no noises are conveyed to and through the receiving

instrument, but only the impulses or sound-wave productions of the transmitting instrument, thereby establishing the fact that inductive interference is set up between the
5 home and foreign current.

The description of my invention refers mainly to its employment in connection with telephonic systems for transmitting intelligence; but I do not, however, wish to be understood as restricting my invention to such,
10 as by the peculiar control which I have over the outside induction it is manifestly obvious that it is susceptible of use in other systems of electric transmission. The peculiar
15 control over the outside induction by proper adjustment of the inductive resistance may be made manifest, for instance, in the production of Morse signals, in apparatus in which
20 total exclusion is had of all other inductional effects and in which the signals are sent over a wire adjoining a main line having neither a metallic nor a ground connection with the same. It is also obvious that if any of the
25 many-sided manifestations can be utilized it will only be a matter of proper adjustment or appropriate attachments to utilize all of them. Such manifestations would include everything from acoustic or visible signals to
30 light and power transmission, dependent upon the character of translating device employed, which latter would include from a telephone-receiver to an electric light or an electric motor.

Having thus described the nature and objects of my invention, what I claim as new,
35 and desire to secure by Letters Patent, is—

1. In an electric-circuit system, the combination with a main circuit and inductive-resistance coils located in series with said circuit, of a transmitter and a receiver in series
40 with said circuit and in multiple with each other, substantially as and for the purposes described.

2. In an electric-circuit system, the combination with a main battery-circuit and a pair
45 of inductive resistances in series with said circuit, of a transmitter and a receiver in series with said circuit and in multiple with each other, substantially as and for the purposes described. 50

3. In an electric-circuit system, the combination with a battery-circuit, of a pair of inductive resistances, opposite wire ends of which are connected to said battery-circuit
55 and adjoining wire ends of which are connected by a loop of said circuit and a translating device in series in said circuit, substantially as and for the purposes described.

4. In an electric-telephone system, the combination with inductive resistances on a common core, in series to a main battery-circuit,
60 of a transmitter, in multiple, and a receiver, in series thereto, substantially as and for the purposes described.

In testimony whereof I have signed my
65 name to this specification, in the presence of two subscribing witnesses, this 19th day of January, 1899.

CORNELIUS C. GOULD.

Witnesses:

FRANCIS WISTER,
E. M. VALENTINE.