No. 641,570. Patented Jan. 16, 1900.

D. H. WILSON.

TELEPHONE.

(Application filed Jan. 20, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

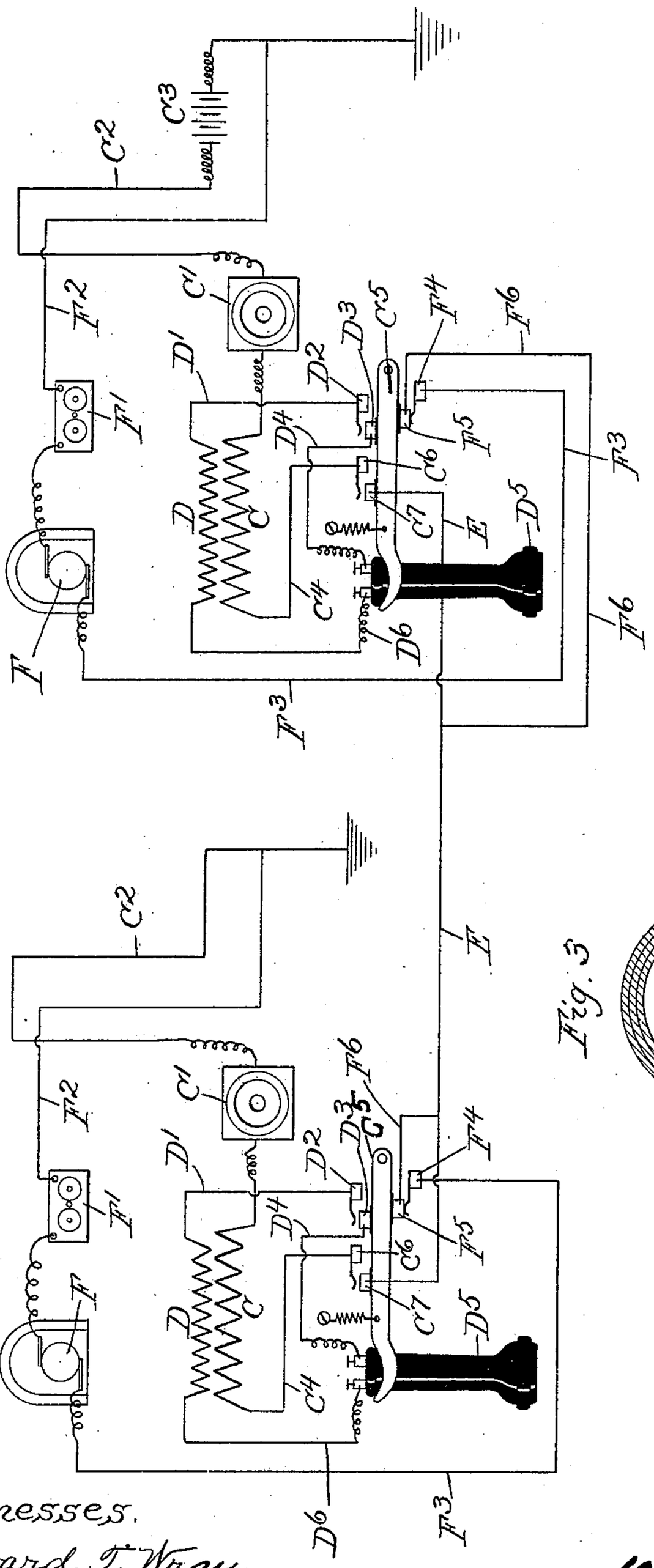


Fig. 4.

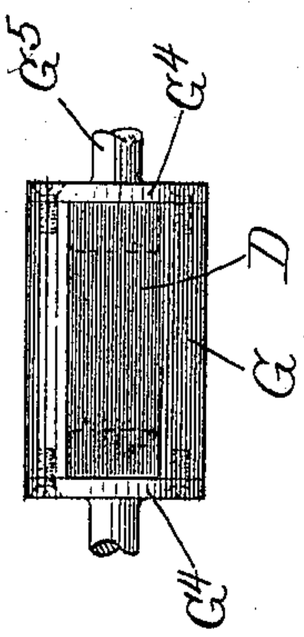
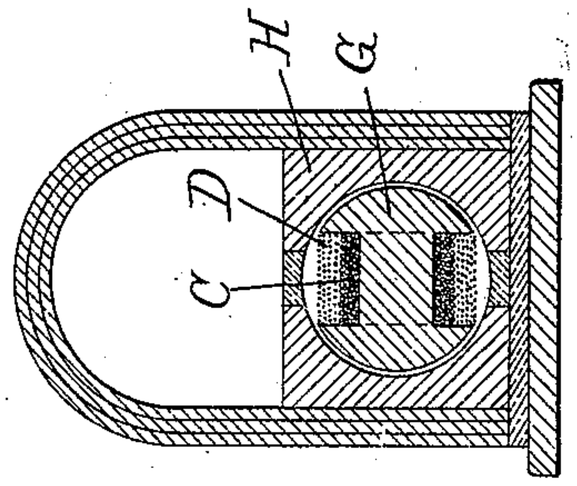


Fig. 3



Witnesses.
Edward T. Wray
Donald M. Carter

Inventor.
David H. Wilson.

No. 641,570.

Patented Jan. 16, 1900.

D. H. WILSON.

TELEPHONE.

(Application filed Jan. 20, 1899.)

(No Model.)

2 Sheets—Sheet 2.

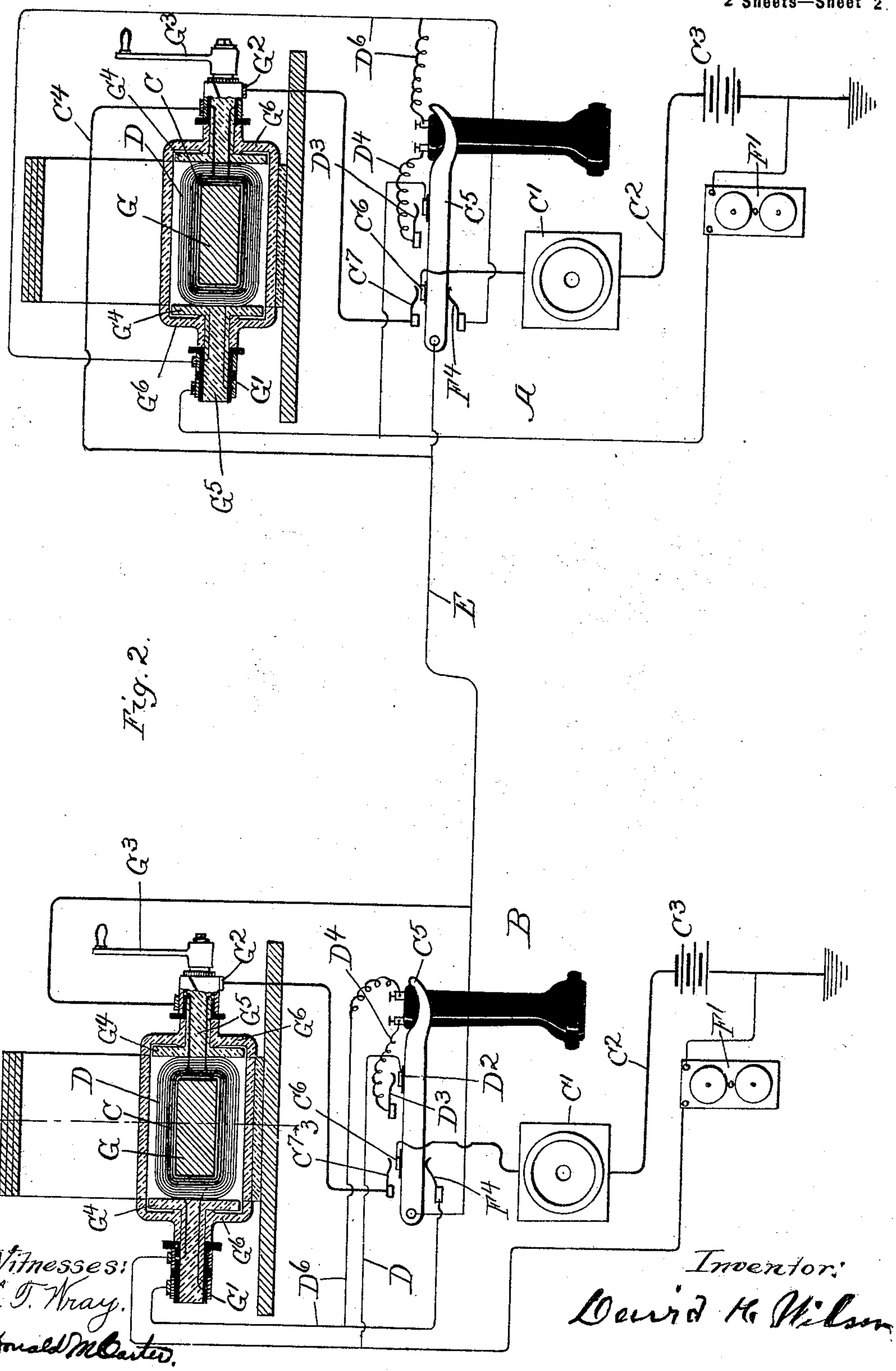


Fig. 2.

Witnesses:
E. T. Wray.
Arnold McCarter.

Inventor:
David H. Wilson

UNITED STATES PATENT OFFICE.

DAVID H. WILSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO JAY MORTON, OF SAME PLACE.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 641,570, dated January 16, 1900.

Application filed January 20, 1899. Serial No. 702,777. (No model.)

To all whom it may concern:

Be it known that I, DAVID H. WILSON, 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 Telephones, of which the following is a specification.

My invention relates to telephones, and has for its object to provide a new and improved telephone, of which the following is a description, reference being had to the accompanying drawings, wherein—

Figure 1 is a diagrammatic view showing a device embodying my invention. Fig. 2 is a diagrammatic view showing a modified construction. Fig. 3 is a section on line 3 3, Fig. 2. Fig. 4 is a plan view of the core and primary and secondary coils shown in Fig. 3.

Like letters refer to like parts throughout the several figures.

Referring now to Fig. 1, I have shown diagrammatically a construction embodying my invention, the drawing showing only two instruments A and B for purposes of illustration. In this construction each instrument is provided with a suitable transformer of any description, comprising a primary coil C and a secondary coil D. One terminal of the primary coil is connected with the transmitter C′, the transmitter being connected by conductor C^2 with a source of electric supply C^3 at station A. The other terminal of the primary coil is connected by conductor C^4 with a suitable circuit-varying device, by means of which it is connected with the main line E. As herein illustrated, I have shown the circuit-varying device as consisting of an ordinary hook C^5, upon which the receiver is suspended. The conductor C^4 is connected with the contact C^6, opposed to the contact C^7, associated with the hook C^5. The secondary coil D is connected by conductor D′ with a suitable circuit-varying device, which in this case consists of the contact D^2, opposed to the contact D^3 on the receiver-hook C^5. The contact D^3 is connected by conductor D^4 with the receiver D^5, said receiver being connected by conductor D^6 with the other terminal of the secondary coil. When an ordinary transformer is used, a suitable signaling device must be provided. Any suitable construction for this purpose may be used. As herein illustrated, I have shown a source of electric supply F, which is connected with the signaling device F′, said signaling device being connected by conductor F^2 with the ground. The other terminal of the source of electric supply is connected by conductor F^3 with the contact F^4, opposed to the contact F^5 on the receiver-hook C^5, said latter contact being connected by conductor F^6 with the main line E. When it is desired to signal instrument B, for example, the source of electric supply is rendered operative, and a current is passed through the system, which is traced as follows: from the source of electric supply through conductor F^3, contacts F^4 and F^5 and conductor F^6 to the main line E, and thence through the signaling device of the instrument B, so as to actuate it. The current then passes to the ground, so as to complete the circuit. After the signal has been sent the receiver is removed from the hook C^5. The hook C^5 then moves so as to separate the contacts F^4 and F^5 and complete the circuit between the contacts C^6 and C^7 D^2 and D^3. The talking-circuit will then be completed and will be as follows: from the source of electric supply C^3 through conductor C^2 to transmitter C′, thence through the primary coil C, thence through conductor C^4 and contacts C^6 and C^7 to the main line E, thence through the primary coil of the instrument B, thence to the ground and back to the source of electric supply C^3. The current in the primary coil sets up an induced current in the secondary coil D of the instrument B, which passes through the receiver, the circuit being traced as follows: from the secondary coil D through conductor D^6, receiver D^5, conductor D^4, contacts D^3 and D^2, and conductor D′ back to the secondary coil D. It will be seen that the primary circuit in this case constitutes the main line of the system and that the source of electric supply and the transmitter are directly in this main line. It will also be seen that the receiver is not in the main line, but is in a local secondary circuit at the receiving instrument.

Referring now to Fig. 2, I have shown diagrammatically a construction similar to that shown in Fig. 1, wherein the induction-coil

is of a peculiar construction. Said induction-coil consists of a core G, upon which are wound the primary and secondary coils C and D, said core being mounted between the opposed pole-pieces of a permanent magnet. By rotatably mounting the core G and the primary and secondary coils and providing suitable commutators G′ G² and a crank or handle G³ for the shaft I may do away with the extra signaling devices and use the transformer for this purpose. I find that when this particular transformer is used with the arrangement herein shown better results are produced than when the ordinary transformer is used. When the parts are arranged as shown in Fig. 2 and it is desired to call up instrument B, the core G is rotated by means of the handle G³ and a series of impulses sent out upon the line. The circuit will be traced as follows: from the secondary coil D by conductor D⁶ to contact F⁴, thence through the receiver-hook C⁵ to the main line E, thence through the secondary coil of instrument B and the signaling device F′ to the ground, and thence through the signaling device of instrument A back to the secondary coil. If the receivers are now taken from the hooks, the talking-circuit is completed and will be as follows: from the source of electric supply C³ through the transmitter C′, contacts C⁶ and C⁷, and primary coil C to the main line E, thence through the primary coil of the instrument B, and thence through C⁷ C⁶ and the transmitter to the ground, the circuit being provided with a ground return. A current is then generated in the local secondary circuit containing the receiver of instrument B, said circuit being traced as follows: from the secondary coil of the transformer through conductor D⁶ to the receiver, thence by conductor D⁴, contacts D³ and D², and conductor D′ back to the secondary coil.

When the construction herein shown is used, I find that highly satisfactory results may be obtained with very little current. I have found that by the arrangement herein shown I am able to produce results which I have been unable to produce with any of the telephones now on the market. Since the primary circuit is the main line, it is only necessary to have a source of electric supply or battery at one end of the line, and hence I am able to do away with a large number of sources of electric supply now used in the commercial operation of telephones.

I have described a simple construction embodying my invention for the purpose of making it clear; but it is of course evident that my invention is applicable to various constructions and arrangements, and I therefore do not limit myself in any manner by the drawings shown.

The induction-coil, wherein the primary and secondary coils are wound upon a core of magnetic material mounted between the opposed pole-pieces of a permanent magnet, may be of any desired construction, and I have shown a simple form for purposes of illustration. In this form the core G and the primary and secondary coils are mounted between the pole-pieces H of a permanent magnet. Attached to the ends of the core G are the caps or plates G⁴, provided with the projecting parts G⁵, upon which the core is mounted when the coils are adapted to be rotated to operate the signaling device. It is of course evident that this rotation is not necessary and is not used when the talking-circuit is completed. These projections G⁵, which constitute the shaft, are mounted in suitable bearings, which in this instance are obtained by means of the caps G⁶, attached to the magnet.

I claim—

1. A telephone system, comprising at least two instruments located at different points, each comprising a receiver and a transmitter, means for connecting the two instruments together by an electric circuit, an induction-coil associated with each instrument, said induction-coil comprising a permanent magnet having opposed pole-pieces, with two separate coils wound upon a core of magnetic material mounted between said opposed pole-pieces, so as to form part of the magnetic circuit of the permanent magnet, one of said coils being the primary coil and the other the secondary coil, the primary coil of each induction-coil being connected in the main circuit between the two instruments when the talking-circuit is completed.

2. A telephone system, comprising at least two instruments located at different points, each comprising a receiver and a transmitter, means for connecting the two instruments together by an electric circuit, an induction-coil associated with each instrument, said induction-coil comprising a permanent magnet having opposed pole-pieces, with two separate coils wound upon a core of magnetic material mounted between said opposed pole-pieces, so as to form part of the magnetic circuit of the permanent magnet, one of said coils being the primary coil and the other the secondary coil, the primary coil of each induction-coil being connected in the main circuit between the two instruments when the talking-circuit is completed, the secondary coil of each induction-coil connected in a local secondary circuit with its associated receiver.

3. A telephone system, comprising at least two instruments located at different points, each comprising a receiver, a transmitter, an induction-coil and a signaling device, a main line connecting said instruments normally arranged so that the signaling devices and the secondary coils of said induction-coils are in circuit, a switching device associated with each instrument and adapted to vary the circuits so as to connect the secondary coil of each instrument in a local circuit with its associated receiver and to connect the two primary coils and transmitters in the main line so as to form the talking-circuit.

4. A telephone system, comprising at least two instruments located at different points, each instrument comprising a receiver, a transmitter, a signaling device and an induction-coil, a main-line circuit between the two instruments normally connected in circuit through the signaling devices, a source of electric supply in the transmitter-circuit, a local secondary circuit connected with the secondary coil of each instrument normally open, a switching device associated with each instrument and adapted when operated to disconnect the signaling device from the main circuit and connect the transmitters and the primary coil of the transformers in said main circuit and close the local secondary circuit.

5. A telephone system, comprising at least two instruments located at different points, each instrument comprising a receiver, a transmitter, a signaling device and an induction-coil, a main-line circuit between the two instruments normally connected in circuit through the signaling devices, a source of electric supply in the transmitter-circuit, a local secondary circuit connected with the secondary coil of each instrument normally open, a movable arm upon which each receiver is supported, a series of contacts associated with each arm, said arms adapted to move when the receivers are taken therefrom, so as to disconnect the signaling devices from the main circuit, close the local secondary circuit and connect the transmitters and the primary coils of the induction-coils in said main circuit, substantially as described.

DAVID H. WILSON.

Witnesses:
DONALD M. CARTER,
HOMER L. KRAFT.