

No. 641,569.

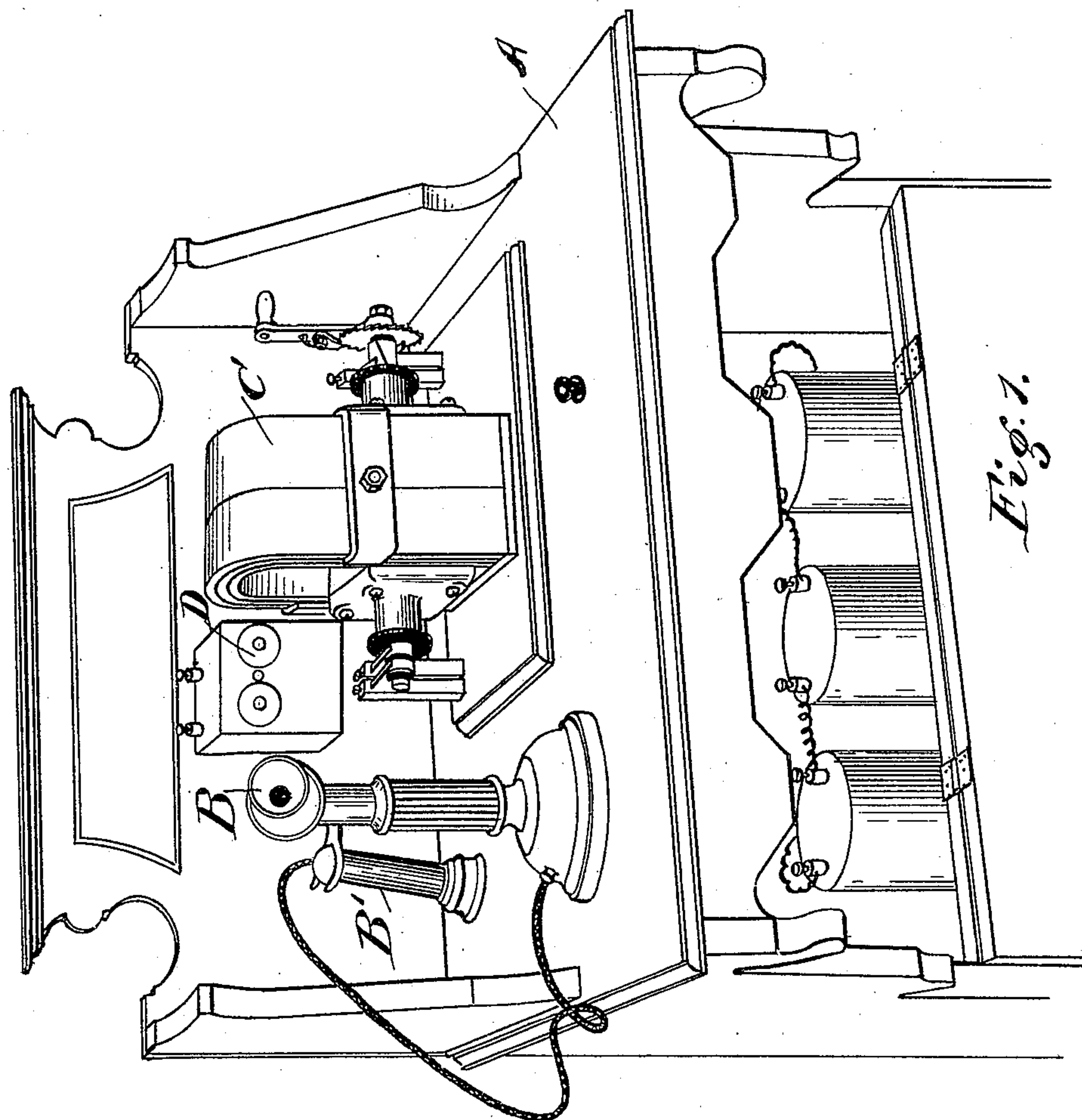
Patented Jan. 16, 1900.

D. H. WILSON.
TELEPHONE APPARATUS.

(Application filed Jan. 29, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
C. E. Durnap
Ronald M. Carter

Inventor
David H. Wilson

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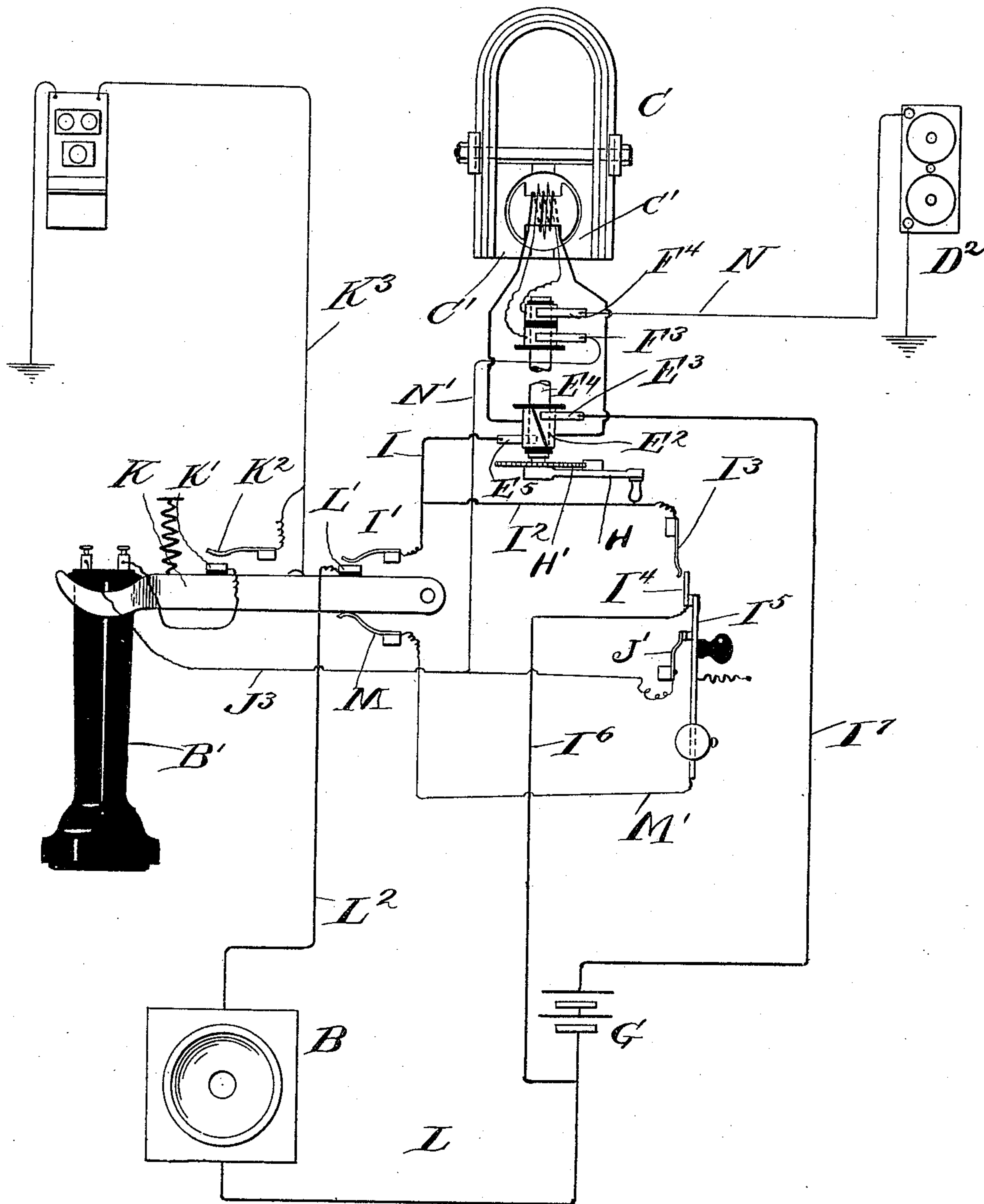


Fig. 2.

Witnesses:

C. S. Surnap
Donald M. Carter

Inventor:

David H. Wilson

No. 641,569.

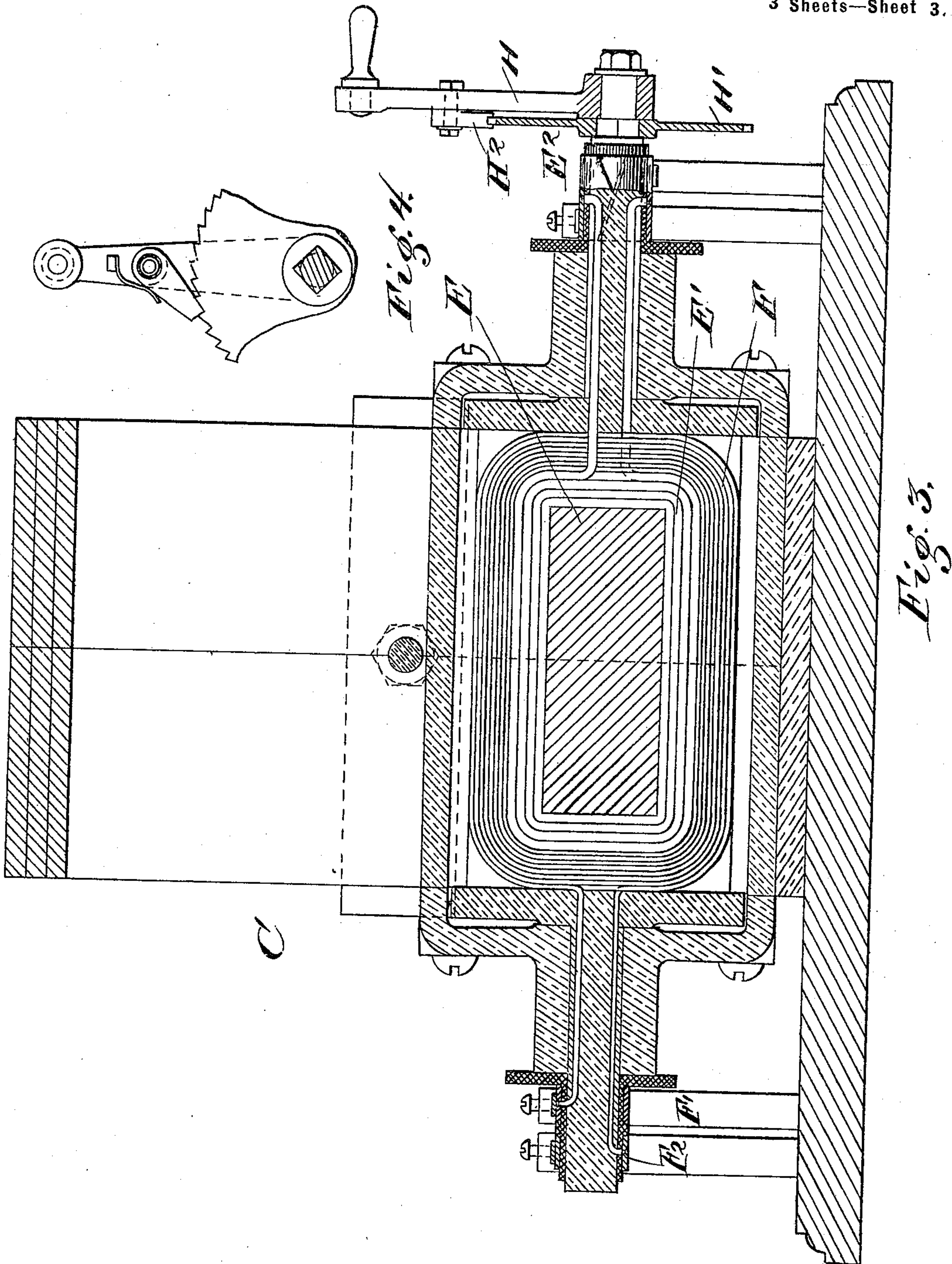
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Witnesses:
W. D. Burnap
Donald M. Carter

Inventor:
David H. Wilson

UNITED STATES PATENT OFFICE.

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

TELEPHONE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 641,569, dated January 16, 1900.

Application filed January 29, 1898. Serial No. 668,368. (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 Telephone Apparatus, of which the following is a specification.

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

Figure 1 is a view of the apparatus at one end of the line in position. Fig. 2 is a diagrammatic view showing the connecting-circuits of the system. Fig. 3 is a sectional view through the transformer. Fig. 4 is a detail showing one form of connecting a crank to the core of the coils of the transformer.

Like letters refer to like parts throughout the several figures.

In Fig. 1 I have shown the instruments at one end of the line in position upon the table or stand A, such instruments consisting of the transmitter B, the receiver B', the transformer C, and the signal or bell D. The transformer C consists of a permanent magnet provided with opposed pole-pieces C' C', between which is mounted the core E, upon which, for example, are wound the primary and secondary coils E' F. (See Fig. 3.) The core E and the primary and secondary coils E' F are preferably rotatably mounted in any convenient manner, and the ends of the primary coil are connected with the commutator E² on the shaft E⁴, connected with the core of the coil, and are connected in circuit with the source of electric supply G by the brushes E³ E⁵. (See Fig. 2.) The ends of the secondary coil are connected with the collecting-rings F' F² on the shaft E⁴, said rings being connected in circuit by means of the brushes F³ F⁴. The shaft E⁴ is provided with the crank H, which is rotatably mounted upon the shaft, (see Fig. 3,) said shaft being provided with the ratchet-wheel H', adapted to be engaged by the pawl H², connected with the crank H. By this construction the primary and secondary coils may be rotated manually or otherwise by applying power to the crank H. It will also be seen that the said coils may be rotated independent of the crank H. The construc-

tion for this purpose is shown in Fig. 2, wherein the brush E⁵ is connected with the conductor I, associated with the contact I', said conductor being connected by the conductor I² with the contact I³, opposed to the contact I⁴ on the switch-arm I⁵. The contact I⁴ is connected by the conductor I⁶ with the source of electric supply G, said source of electric supply being connected by the conductor I⁷ with the brush E³. It will thus be seen that by moving the switch-arm I⁵ the circuit through the primary coil may be completed, thus causing a rotation of the armature. The switch-arm I⁵ is also connected by the conductor J³ with the receiver B'. The receiver is also connected with the contact K' on the receiver-hook K, said contact being opposed to the contact K², connected with the main line K³. The transmitter is connected with the source of electric supply G by the conductor L and with the contact L' on the receiver-hook by the conductor L². The switch-arm I⁵ is connected with the contact M, associated with the receiver-hook, by means of the conductor M'. The brush F⁴, associated with the secondary coil, is connected by the conductor N with the signal D, and the brush F³ is connected by the conductor N' with the conductor J³.

I have shown in detail a particular construction of the several parts herein shown; but it is of course evident that these several constructions may be greatly varied in form, construction, and arrangement and that some of the parts herein shown may be omitted and others used in connection with the parts not shown without departing from the spirit of my invention, and I therefore do not wish to be limited by the construction shown and described.

The use and operation of my invention are as follows: If it is desired to ring up a party with whom it is desired to speak, the switch-arm I⁵ is moved so as to engage the contacts I³ and J'. A circuit is then completed through the primary coil, which may be traced as follows: from the source of electric supply G, through conductor I⁶, contacts I⁴ I³, conductor I², conductor I, brush E⁵, primary-coil brush E³, conductor I⁷, and back to the source of electric supply G. This current in the primary coil causes a rotation of both the primary and secondary coils and the core to which they are

attached. An alternating current is then generated in the secondary coil, which passes out upon the line and rings the subscriber's bell. The circuit may be traced as follows:

5 from the secondary coil, through the brush F³, conductor N', conductor J³, switch-arm I⁵, conductor M', contact M, main line K³, to the bell of the called party, thence through ground and back through bell D and conductor N to

10 the secondary coil. When the bell is operated in this manner, the crank-arm H remains stationary, while the shaft to which it is attached rotates with the primary and secondary coils. If it is desired to ring the bell manually, the

15 primary and secondary coils are rotated by means of the crank H, thus generating an alternating current in the secondary coil, the current being traced as above described. When it is desired to talk, the receiver is removed

20 from the hook, said hook being moved by its retracting-spring so as to close the circuit between contacts K' and K² and L' and I and break the contact between the contact M and the receiver-hook. The circuit through the

25 primary coil is then completed and will be traced as follows: from the source of electric supply G, through conductor L, transmitter B, conductor L², contacts L' I', conductor I, brush E⁵, primary-coil brush E³, conductor I⁷,

30 and back to the source of electric supply G. The varying of the resistance in the transmitter produces a current in the secondary coil which is traced as follows: from the secondary coil, through brush F³, conductor N',

35 conductor J³, receiver B', contacts K' K², to main line K³, thence through the other instrument, and thence through ground and back to the secondary coil.

I have found that by the use of the transformer herein shown I am enabled to produce results which cannot be produced in the ordinary telephone, one result being that the combination of the parts allows me to talk through great resistance with comparative ease.

45 I claim—

1. The combination in a telephone system of a transformer provided with a primary and secondary coil wound upon a core, a permanent magnet provided with opposed pole-

50 pieces between which the core of the said coils is interposed so as to form part of the magnetic circuit of said permanent magnet, a transmitter, a receiver, and suitable electrical connections whereby the transformer,

55 transmitter and receiver are connected in circuit.

2. A telephone system comprising a transformer, consisting of a core of magnetic material provided with two separate coils wound

60 one on top of the other, a permanent magnet provided with opposed pole-pieces, said core of magnetic material being movably mounted between said pole-pieces so as to form part of the magnetic circuit of the permanent magnet, a transmitter, a receiver, an alarm device, and suitable electrical conductors connecting the parts in circuit.

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3. A transformer for telephone-circuits and the like, comprising a permanent magnet having opposed pole-pieces, two separate

70 coils, one a primary coil and the other a secondary coil, wound upon a core of magnetic material, said core and coils mounted between said opposed pole-pieces so as to form part of the magnetic circuit of the permanent magnet.

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4. A transformer for telephone-circuits and the like, comprising a permanent magnet formed with opposed pole-pieces, two separate coils wound upon a core of magnetic material, said core and coils movably mounted between said opposed pole-pieces so as to form part of the magnetic circuit of the permanent magnet, means for connecting one of

80 said circuits with a telephone-circuit and the other with a source of electric supply, and a switch interposed between the source of electric supply and the coil connected therewith.

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5. The combination in a telephone system of a transformer, consisting of a core of magnetic material having two separate coils

90 wound thereon, a permanent magnet provided with opposed pole-pieces between which said core and coils are rotatably mounted so as to form part of the magnetic circuit of the permanent magnet, a transmitter adapted to be

95 connected in circuit with one of said coils, an alarm device adapted to be connected in circuit with the other coil, a receiver also adapted to be connected in circuit with said latter coil, and means associated with the circuits so that the alarm device may be connected in a circuit including said latter coil either with or without said receiver.

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6. The combination in a telephone system of a transformer consisting of a core of magnetic material having two coils wound thereon, a permanent magnet provided with opposed pole-pieces, between which said core and coils are rotatably mounted so as to form part of the magnetic circuit of the permanent

105 magnet, one of said coils adapted to be connected with the source of electric supply and a telephone-transmitter, the other coil adapted to be connected with an alarm device and a telephone-receiver, and means for rotating

110 both of said coils when the alarm is in circuit so as to generate a current in one of the coils and actuate the alarm device.

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7. A transformer, comprising a permanent magnet having separated and opposed pole-

120 pieces, two separate coils of different-sized wire wound upon a suitable core, one acting as a primary coil and the other as a secondary coil, said core and coils movably mounted between said opposed pole-pieces, so as to

125 form part of the magnetic circuit of the permanent magnet, and means for connecting said respective coils with a primary and a secondary circuit.

DAVID H. WILSON.

Witnesses:

DONALD M. CARTER,
HOMER L. KRAFT.