

(No Model.)

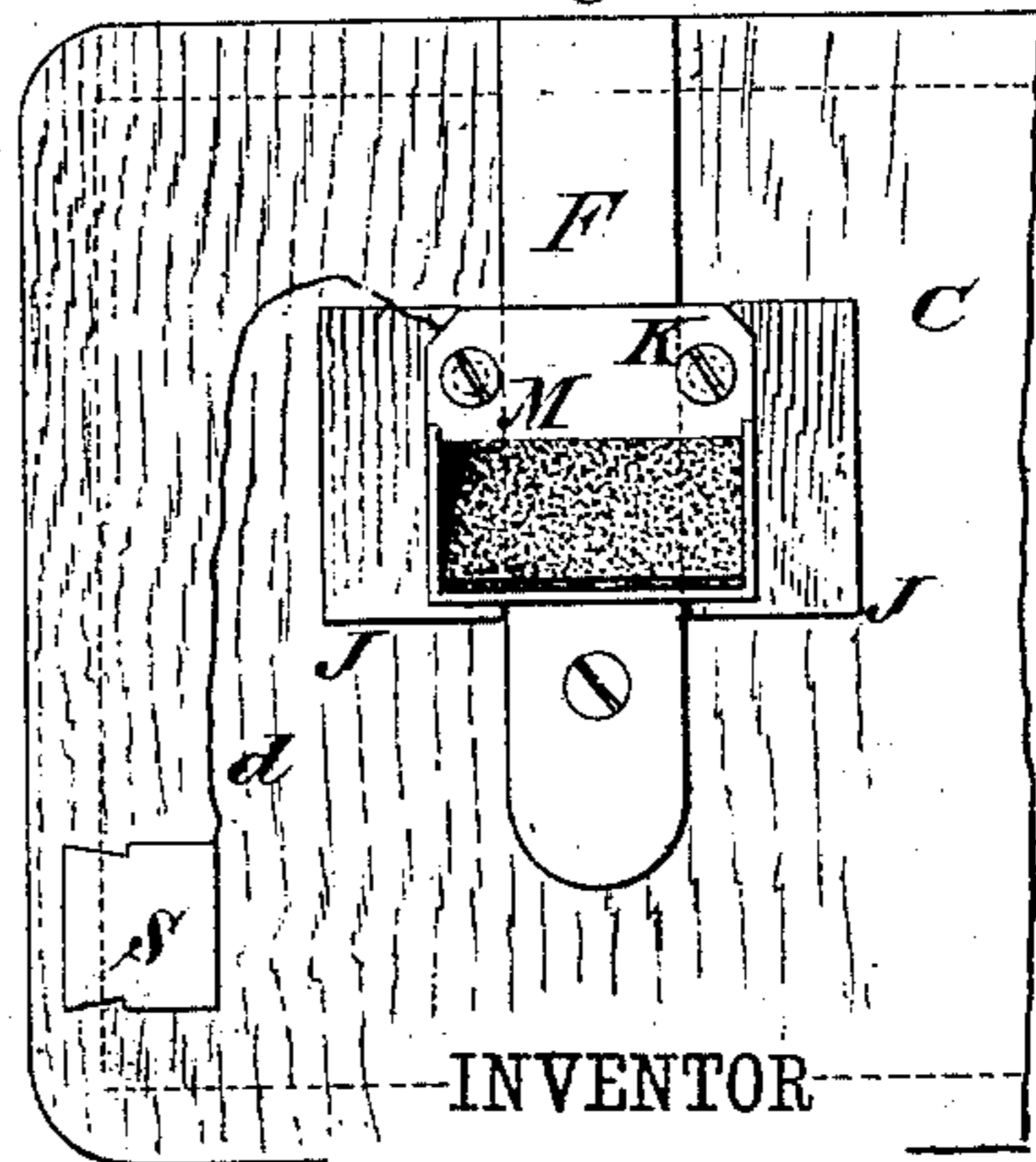
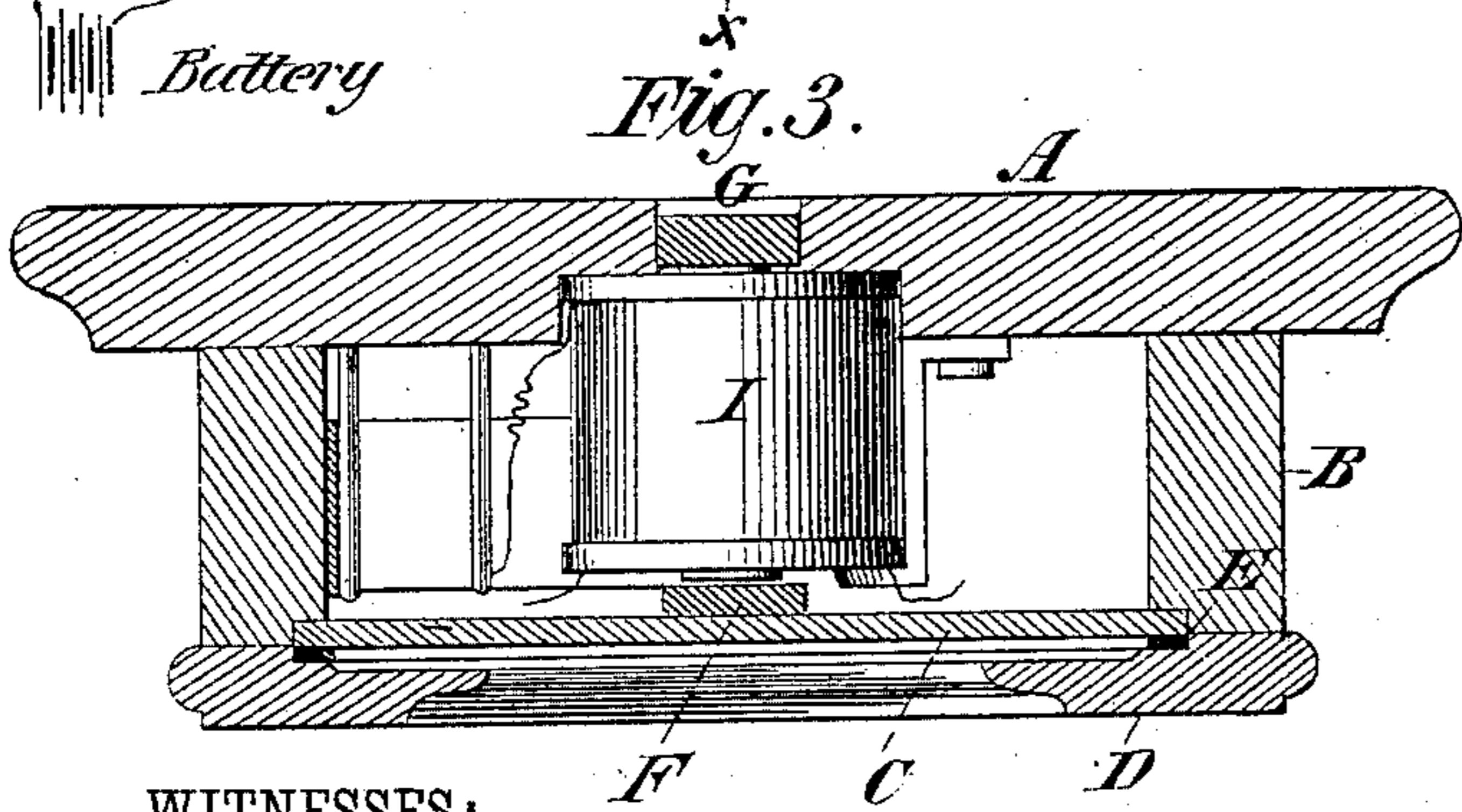
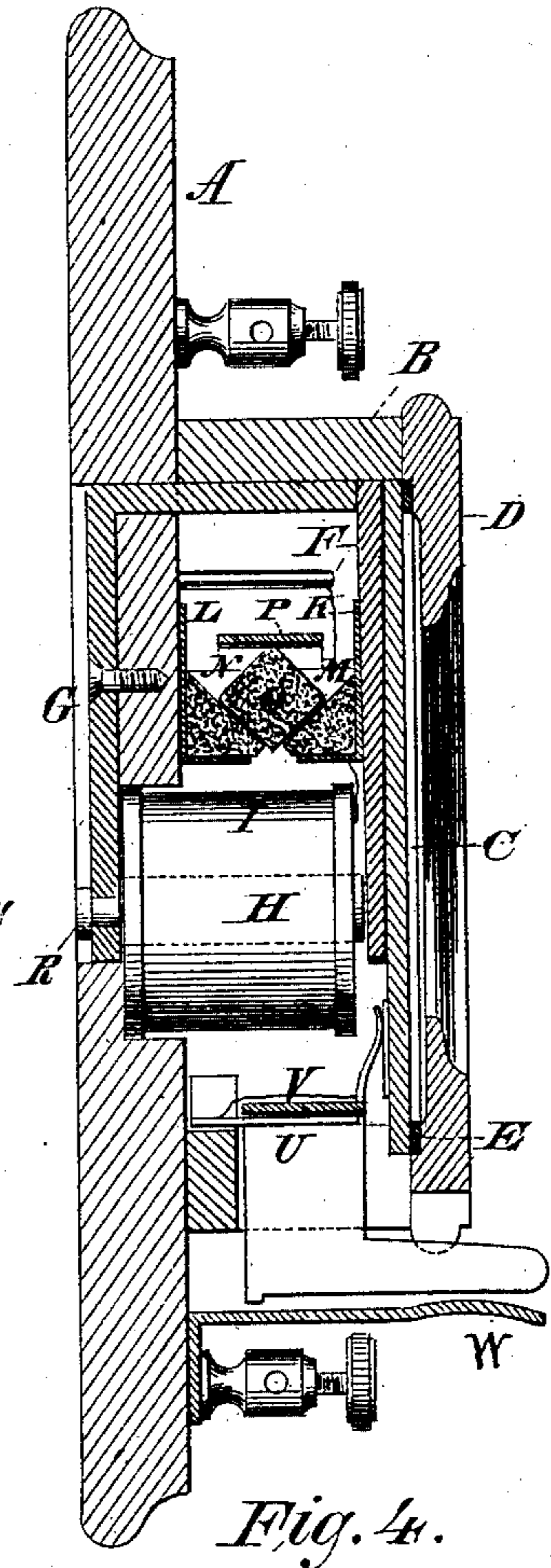
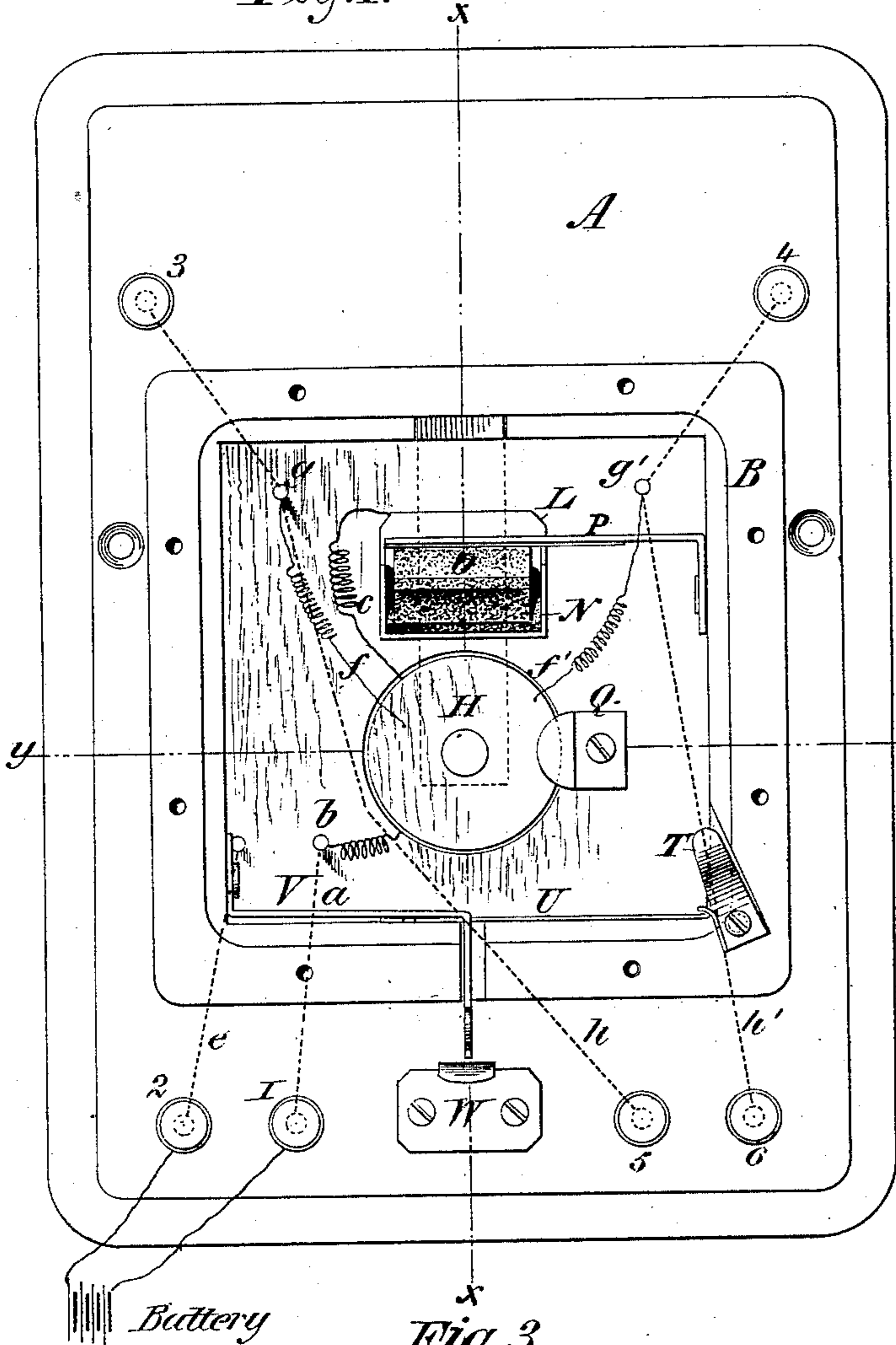
D. DRAWBAUGH.
TELEPHONE TRANSMITTER.

No. 354,541.

Patented Dec. 21, 1886.

Fig. 1.

Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DANIEL DRAWBAUGH, OF EBERLY'S MILL, PENNSYLVANIA, ASSIGNOR TO
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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 354,541, dated December 21, 1886.

Application filed November 12, 1883. Serial No. 111,548. (No model.) Patented in England September 4, 1883, No. 4,247; in France September 4, 1883, No. 157,376, and in Belgium September 5, 1883, No. 62,503.

To all whom it may concern:

Be it known that I, DANIEL DRAWBAUGH, of Eberly's Mill, Cumberland county, Pennsylvania, have invented a new and useful Improvement in Telephone-Transmitters, of which the following is a specification.

The invention relates to a telephone-transmitter; and it consists in the novel construction and arrangement hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front view of the instrument with the diaphragm and its attachments removed. Fig. 2 is a vertical section on the line xx of Fig. 1. Fig. 3 is a transverse section on the line yy of Fig. 1. Fig. 4 is a rear view of the diaphragm.

Similar letters of reference indicate like parts.

A is the base or back board. B is the inclosing box or case. C is the diaphragm, which may be of wood or other non-conducting material. D is the cover having a mouth-piece orifice, and E is a gasket of yielding material interposed between the diaphragm and cover.

The permanent magnet G has a pole-piece, F, in the form of a flat bar, which is secured to the rear side of the diaphragm. The magnet G is in the form of a bar bent at right angles, and is secured to the back board, A, passes through said back board, and has its front end in contact with the pole-piece F when the diaphragm and cover are in place.

To the lower end of the magnet G is secured, as a pole-piece, the core H of the coil I. The magnetic poles are therefore at the outer extremity of the core H and at the lower end of the bar F, these parts facing each other, as shown, and the bar F thus becoming the armature of the electro-magnet H I when the diaphragm is in place.

Secured to the rear side of the diaphragm, and on each side of the bar F, are pieces of wood J, Fig. 4, upon which is secured a metal bracket, K. To the base-board is attached a similar bracket, L. In these brackets are placed, preferably, blocks of carbon M N, having inclined sides facing each other. These carbons are not in contact. Resting upon both

carbons M N is a prismoidal piece of carbon, O. This carbon is held in place by gravity only. It is prevented from being displaced, when the instrument is inverted, by means of the metal bar P, the lower side of which bar is covered with paper or other insulating material.

The electro-magnet H I has two coils—one communicating with the line and the other in local circuit with the electrodes and battery. Said electro-magnet rests in a socket in the back board, A, and is secured in place by means of the bent bar Q. The magnet G is secured to the core H by the screw R.

The circuits in the instrument proceed as follows: From the battery to the binding-post 1, by the wire a to the post b and thence to the primary of the induction-coil or electro-magnet H I; thence by the wire c to the metal bracket L; thence to the carbon N, to the carbon O, to the carbon M, to the metal bracket K; thence by the wire d on the back of the diaphragm to the contact-piece S; thence, when the diaphragm is in place, to the contact-piece T, attached to the box B; thence by the fixed contact-plate U to the spring contact-plate V, and thence by the wire e to the binding-post 2 and thence to the battery.

The secondary circuit proceeds from the coil H I by the wires $f f'$, to the posts $g g'$, and thence to the binding-posts 3 4, then to the line.

Branch wires $h h'$ lead from the posts $g g'$ to the binding-posts 5 6, to which a receiving-instrument may be attached.

W is an arm attached to the back board to receive the ring of the receiving-instrument when not in use, which ring then raises the spring-plate V out of contact with the plate U, and so breaking local circuit in the instrument.

The operation of the instrument is as follows: When speech is uttered in front of the diaphragm, the movement of said diaphragm causes the carbon M to move toward or from the carbon N. The effect of moving the carbon M away from the carbon N is to allow the carbon O to fall lower down in the space between N and M, thus reducing the area of con-

tact between the middle carbon, O, and the outer carbons, N and M. Conversely, when the diaphragm moves inward, the carbons N and M are brought nearer together, the carbon O is raised thereby, and the area of contact and degree of pressure between the sides of said carbon and the fixed carbons N and M is increased. The bar P is a flat spring and rests with very light pressure upon the upper angle of the carbon O. This spring yields easily when the carbon O is raised by the inward movement of the diaphragm. The weight of the carbon is sufficient to cause its descent as the carbons N and M are separated more widely by the outward movement of the diaphragm.

In order to secure the ready movement of the loose carbon, I have found it preferable to form or arrange the upper inclined surfaces of the fixed carbons at an angle of about forty-five degrees to the horizontal, and to form said loose carbon so that two of its sides may stand to each other at an angle of ninety degrees, said angle being the same as that included between the inclined surfaces of the fixed blocks.

It will be apparent from the foregoing that when the diaphragm moves inward the current is so modified as to increase the magnetization of the core H, and of the oppositely-polarized armature F, which will thus exercise a stronger mutual attraction, so that said armature is drawn toward the core, thus still further increasing the proximity of the electrodes N and M, and hence augments the area of contact of said electrodes and the electrode O. A stronger induced direct current is thus generated in the secondary coil.

I do not herein lay claim, broadly, to an ap-

paratus containing a permanent magnet having for one pole-piece the core of an electro-magnet, and having for its other pole-piece an armature attached to a diaphragm, inasmuch as the same has been heretofore constructed.

I claim as my invention—

1. In a telephone, the combination of a diaphragm, a polarized armature attached thereto, and electrodes, one electrode being connected to said diaphragm, an electro-magnet having two coils, one in circuit with the line, the other in a local circuit with the electrodes, a permanent magnet having for one pole-piece the core of the electro-magnet, and for the other the polarized armature, and a local battery and circuit-connections, substantially as set forth.

2. In a telephone, the combination of the electro-magnet H I, having two coils, one in circuit with the line and the other in local circuit with the electrodes, the permanent magnet G, having a pole-piece, F, supported by the diaphragm, the diaphragm C, the electrode M, attached thereto, the electrodes O and N, and a local battery and circuit-connections, substantially as described.

3. In a telephone, the permanent magnet G, having attached thereto the core of the induction-coil I, substantially as described, the fixed electrode N, and loose electrode O, in combination with the diaphragm and its attached electrode M, and armature F, the whole being arranged and applied substantially as and for the purpose set forth.

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Witnesses:

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