(No Model.)

J. M. GRAHAM.

TELEPHONE TRANSMITTER.

No. 381,234. Patented Apr. 17, 1888.

Fig. 1.

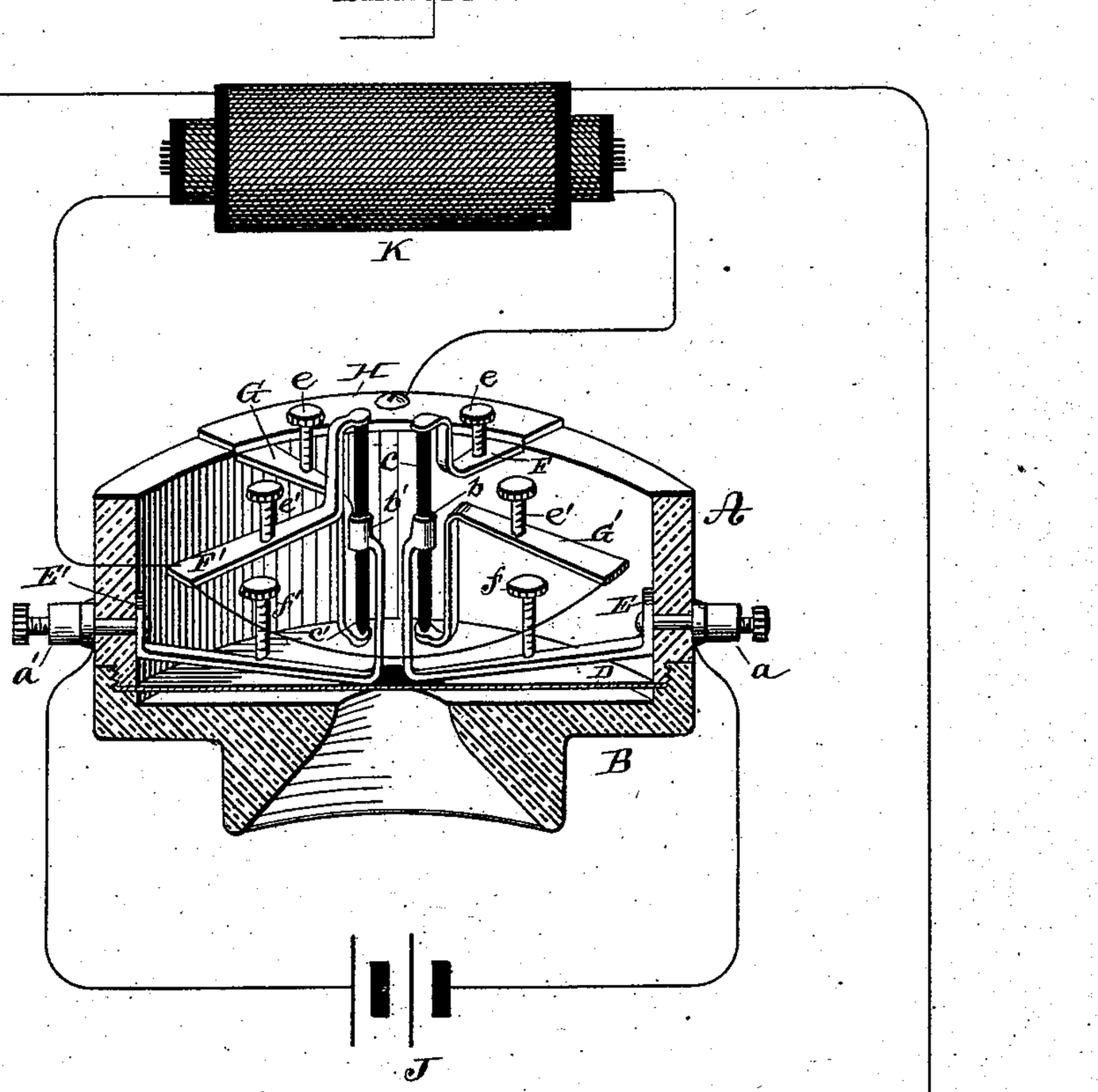
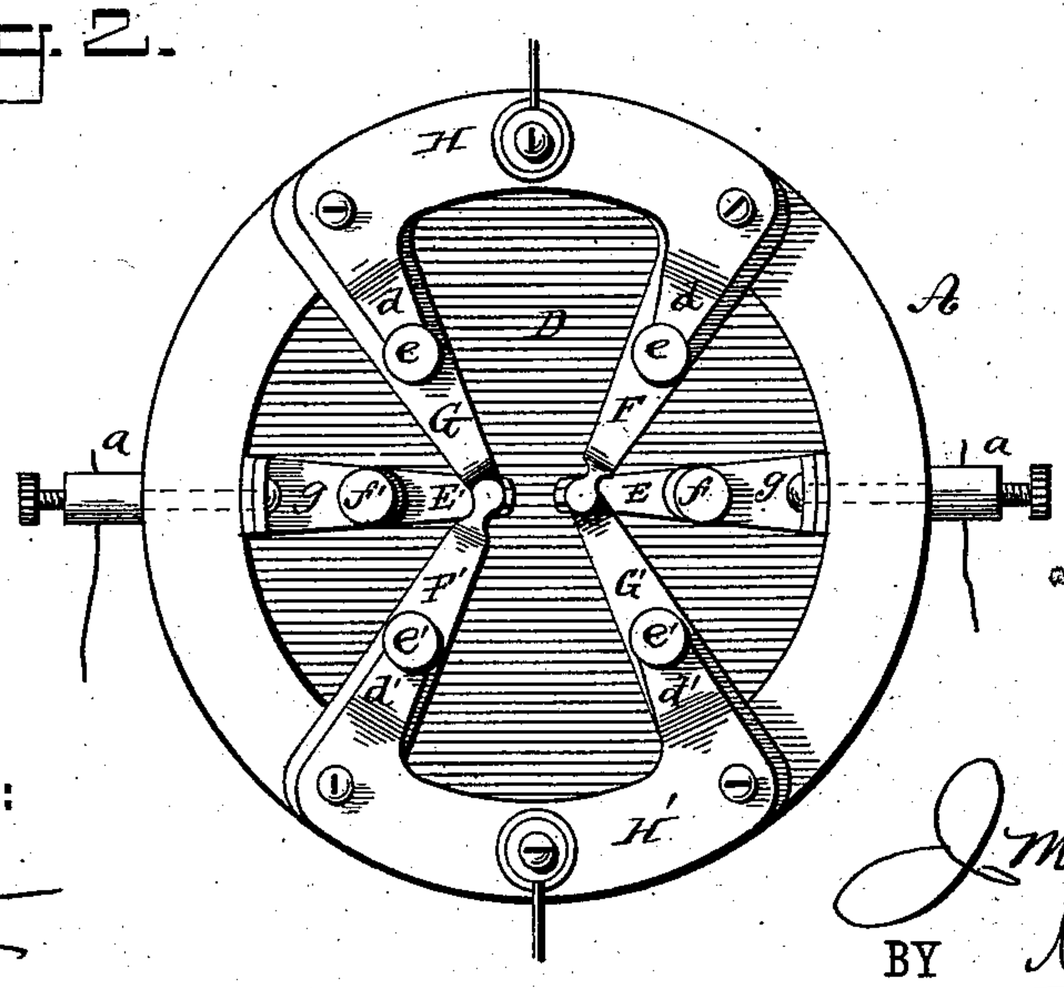


Fig. 2.



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JOHN M. GRAHAM, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF, SARAH C. GRAHAM, MARTHA GRAHAM, AND THOMAS C. L. GRAHAM, ALL OF SAME PLACE.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 381,234, dated April 17, 1888.

Application filed May 12, 1887. Serial No. 238,014. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. GRAHAM, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Telephone-Transmitter, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation, partly in section, of my improved telephone-transmitter; and Fig. 2 is a rear view of the same.

Similar letters of reference indicate corresponding parts in both figures.

The object of my invention is to construct a telephone-transmitter in which the current in the local circuit will be reversed during each vibration of the diaphragm.

My invention consists in the combination, with the diaphragm of a transmitting-telephone, of two pairs of contact-springs arranged to press opposite ends of electrodes carried by springs bearing on the diaphragm, one contact-spring of each pair being connected with one terminal of the induction-coil, the electrodes operated by the diaphragm being connected with the terminals of the local battery.

In the casing A, provided with the usual mouth-piece, B, is clamped the diaphragm D, and to the inner walls of the casing A are secured two angled springs, E E′, by the screws of the binding-posts *a a′*. The springs E E′ are inclined toward the center of the diaphragm D, where they are bent outward away from the diaphragm parallel with each other and at right angles to the diaphragm, and upon the extremities of the springs are formed sockets *b b′* for receiving the electrodes, which in the present case consist of carbon rods *c c′*. The springs E are insulated from the diaphragm.

To the casing A are secured four contact-springs, F F′ G G′. The contact-spring F is offset at its extremity and is provided with a shallow cavity for receiving the outer end of the carbon rod *c*. The contact-spring F′, which is of the same construction, is arranged to bear upon the outer end of the carbon rod *c′*. The contact-spring G is offset and provided with a shallow cavity for receiving the inner end of the carbon rod *c′*, and the contact-spring G′, which is of the same construction as the spring G, is arranged to bear upon the inner end of the carbon rod *c*. The contact-springs F G are connected by a curved plate, H, provided with arms *d*, which extend over the contact-springs F G and are provided with adjusting-screws *e*, which bear upon the backs of the contact-springs and serve to adjust their pressure upon the ends of the carbon rods *c c′*. In a similar manner the contact-springs F′ G′ are connected by the curved plate H′, which is provided with arms *d′*, having adjusting-screws *e′*. The springs E E′ are adjusted by screws *f f′*, passing through arms *g*, projecting inwardly from the walls of the casing A over the said springs.

In Fig. 1 the arms *d d′ g* are omitted for the sake of clearness.

The binding-posts *a a′* are connected with the terminals of the local battery J. The contact-springs F G are connected through the plate H with one terminal of the primary wire of the induction-coil K, and the contact-springs F′ G′ are connected through the curved plate H′ with the remaining terminal of the primary wire of the induction-coil. The terminals of the secondary wire are connected with the line and ground in the usual way.

When the diaphragm D is set in vibration by sound-waves made in the mouth-piece B, the inward movement of the diaphragm pushes the springs E E′ backward, diminishing the pressure between the contact-springs G G′ and carbon rods *c c′* and increasing the pressure between the said carbon rods and the contact-springs F F′, thereby causing the current to flow from the battery J through the springs E E′, carbon rods *c c′*, and contact-springs F F′ in one direction through the primary wire of the induction-coil. When the diaphragm retracts, the springs E E′ follow it and carry the carbon rods *c c′* in the opposite direction, diminishing the contact between the said carbon rods and the springs F F′ and increasing the contact between the said carbon rods and the springs G G′, causing the current to flow in the opposite direction through the primary wire of the induction-coil. By these two variations of the current the maximum effect of induction is

produced in the secondary wire of the induction-coil and strong impulses are sent over the line, which affect the receiving-telephone. When the diaphragm D is at rest, the current flowing to the induction-coil from the battery equally in opposite directions produces no effect in the coil, and does not therefore interfere with the current sent through the line and through the secondary wire of the induction-coil. It will thus be observed that for every complete vibration of the diaphragm the direction of the current through the primary wire of the induction-coil is reversed.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a telephone-transmitter, the combination, with a casing and its diaphragm, of a pair of springs secured to the casing, projecting inwardly toward the center of the diaphragm, and then bent upwardly and away from the said diaphragm and carrying electrodes at their free ends, and two pairs of contact-springs arranged opposite each other and engaging the ends of the electrodes, the said springs being connected with opposite terminals of the primary wire of the induction-coil, substantially as described.

2. The combination, in a transmitting-telephone, of the casing A, provided with the mouth-piece B, the diaphragm D, clamped in the casing, the springs E E′, bearing upon the diaphragm and carrying electrodes *c c′*, the contact-springs F G, connected together and with one terminal of the primary wire of the induction-coil, the contact-spring G being arranged to press upon the inner end of the electrode *c′*, the contact-spring F being arranged to press upon the outer end of the electrode *c*, the contact-springs F′ G′, connected together and with the remaining terminal of the primary wire of the induction-coil, the contact-spring G′ being arranged to press upon the inner end of the electrode *c*, the contact-spring F′ being arranged to press upon the outer end of the electrode *c′*, and the battery and line connections, substantially as described.

3. The combination, in a transmitting-telephone, of the casing A, provided with the mouth-piece B, the diaphragm D, clamped in the casing, the springs E E′, bearing upon the diaphragm and carrying electrodes *c c′*, the contact-springs F G, connected together and with one terminal of the primary wire of the induction-coil, the contact-spring G being arranged to press upon the inner end of the electrode *c′*, the contact-spring F being arranged to press upon the outer end of the electrode *c*, the contact-springs F′ G′, connected together and with the remaining terminal of the primary wire of the induction-coil, the contact-spring G′ being arranged to press upon the inner end of the electrode *c*, the contact-spring F′ being arranged to press upon the outer end of the electrode *c′*, the battery and line connections, and the adjusting-screws *e e′ f f′*, substantially as described.

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Witnesses:
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