(No Model.)

H. L. TODD.

TELEPHONE.

No. 368,628. Patented Aug. 23, 1887.

Fig. 1.

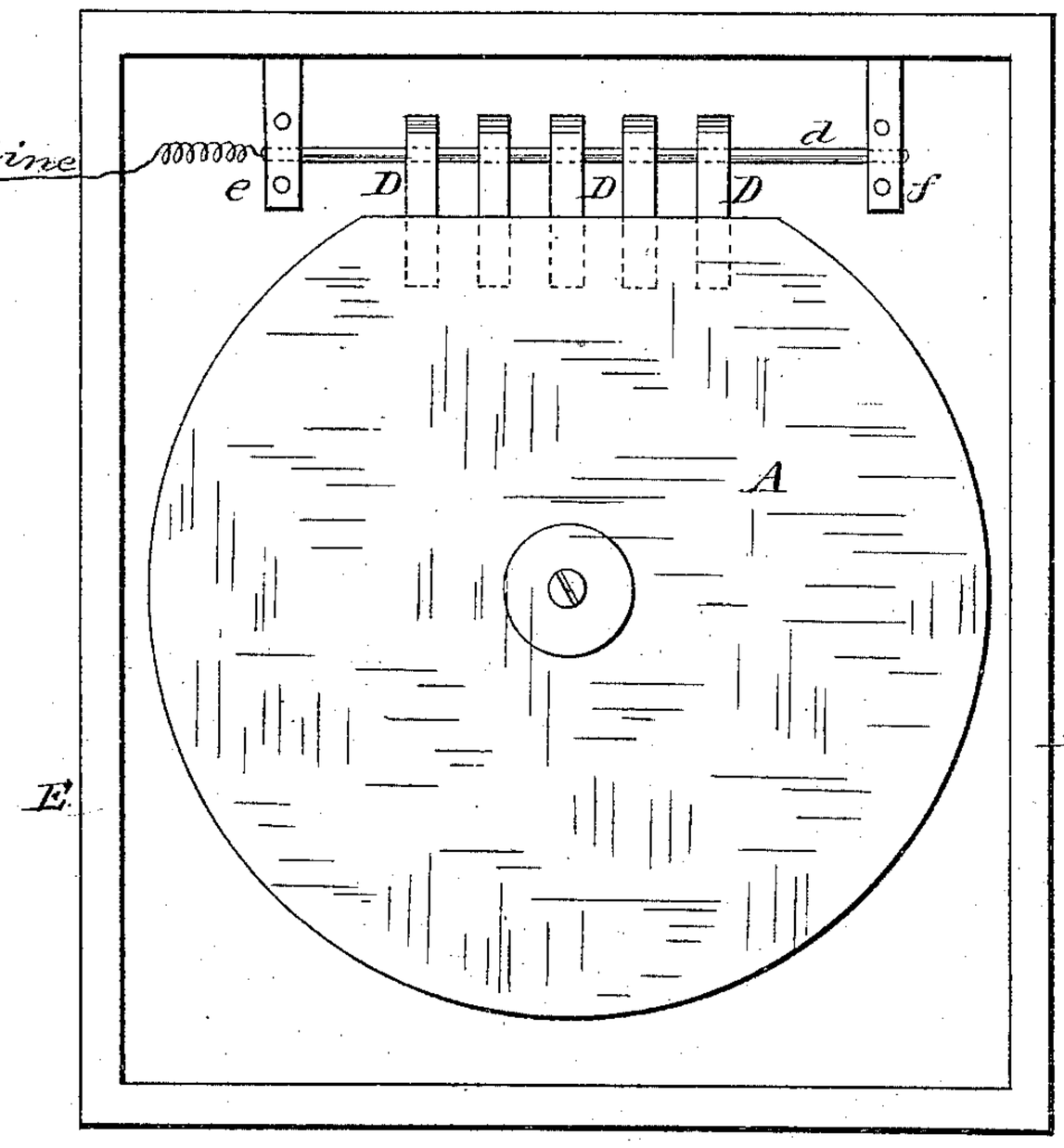


Fig. 2.

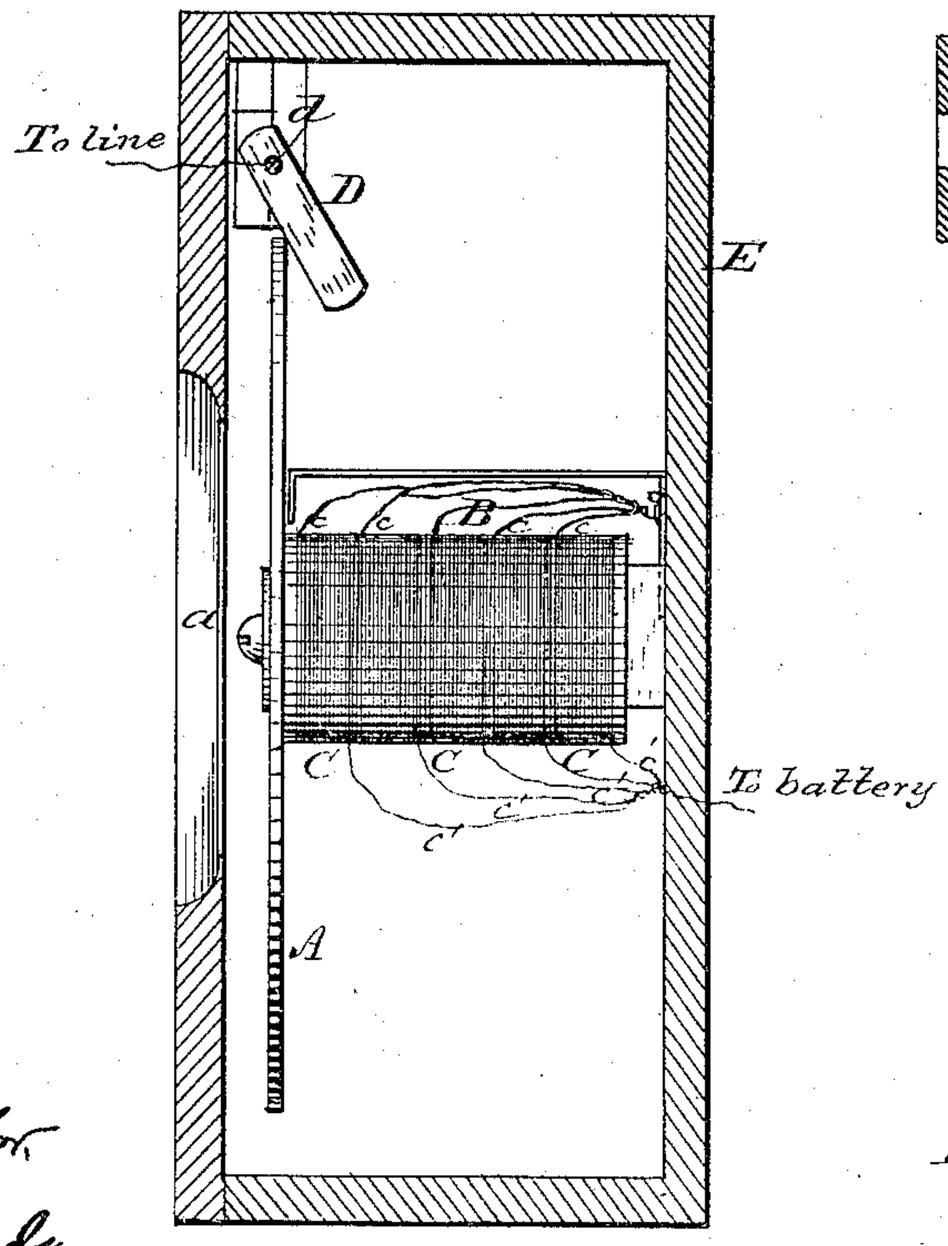


Fig. 3.

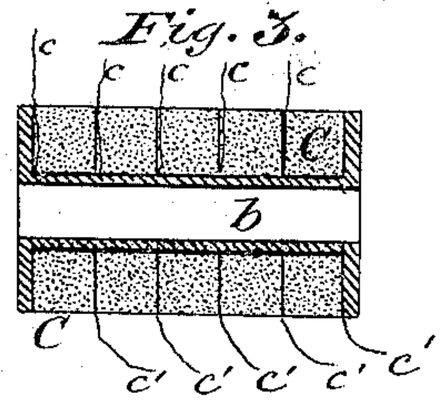
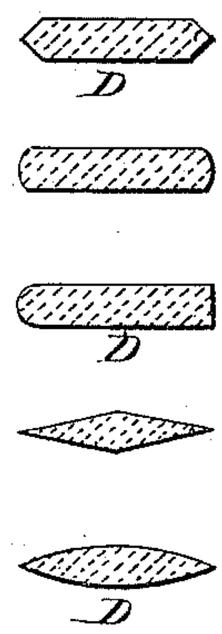


Fig. 4.



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UNITED STATES PATENT OFFICE.

HERBERT L. TODD, OF WASHINGTON, DISTRICT OF COLUMBIA.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 368,628, dated August 23, 1887.

Application filed September 28, 1886. Serial No. 214,737. (No model.)

To all whom it may concern:

Be it known that I, HERBERT L. TODD, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Transmitting-Telephones; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electric transmitting-telephones; and the objects of the invention are to produce transmitting apparatus to enable articulate speech of any pitch to be communicated by means of electricity over great distances; also, to render the spoken messages or sounds transmitted louder and more distinct and correct when received than has been the case heretofore; also, to use the instrument with or without the ordinary induction coil or coils employed; also, to employ a multiple coil of fine insulated wire in connection with the diaphragm; also, to simplify the construction of such apparatus, and thus to reduce the expense of manufacturing and operating it, and, finally, to facilitate the repair of any of its parts by rendering them more accessible.

With these ends in view my invention consists in securing the disk or diaphragm at one central point, so as to leave its periphery free to vibrate; also, in combination with said diaphragm, of a multiple coil of fine insulated wire in series, the opposite ends of which are alternately connected—*i. e.*, all the starting ends are connected together and all the finishing ends are connected together; also, in suspending the pendent electrodes, one or more, on a rod in such manner that they bear on the edge of the diaphragm, and also to reduce the point of contact between the diaphragm-electrode and the pendent electrodes to a minimum; and, finally, it consists in the construction of certain details and arrangement of parts, as will be more fully described hereinafter, and specifically pointed out in the claims, reference being had to the accompanying drawings and the letters of reference marked thereon.

Like letters indicate similar parts in the different figures of the drawings, in which—

Figure 1 represents a front elevation of my improved transmitting apparatus. Fig. 2 is a sectional elevation of the same. Fig. 3 is a detail sectional view of the multiple coil forming in use the magnet. Fig. 4 represents cross-sections of modifications of the pendent electrodes.

In the drawings, A represents a disk of circular, octagonal, hexagonal, square, rectangular, oval, or other suitable shape, formed preferably of carbon, although it may be made of metal or other material. This disk forms the acoustic diaphragm, and is secured centrally to a holding-post. In very close proximity behind it is a multiple coil formed of a series of coils of fine insulated wire, and when in use forms the magnet B. It consists of a central core of soft iron, having a small shoulder against which the diaphragm bears, and upon said core a spool, *b*, Fig. 3, upon which the series of coils C, of wire, are wound, and in such manner that the ends *c* are connected together and the opposite ends, *c'*, are likewise connected together. The connected ends *c* are then carried to the diaphragm by any proper connection, while the ends *c'* are connected to the battery-wire, and in this manner the current is greatly strengthened or increased.

The rear pendent carbon electrodes or vibrators, D, are suspended on a wire or rod, *d*, arranged in suitable journals, *e f*. I employ, preferably, a number of these vibrators, as shown in Fig. 1, and they may be varied in cross-section, as seen in Fig. 4, so as to reduce the point of contact to a minimum, and thus make their action very sensitive.

The front electrode or disk, A, and the rear electrodes, D, are respectively connected with the wire *d* of the local or induced circuit, one of which leads to the battery, and the other one is connected to the line-wire. The apparatus is usually inclosed in a case, E, having sound-opening or mouth-piece *a*, although it will operate without it.

The advantages of my transmitting apparatus will be readily appreciated by those skilled in the art, and among them may be mentioned the following: As the acoustic diaphragm-electrode is only secured at one central point, with its outer edge free to vibrate, and the rear electrodes are suspended from above on a wire or rod and bear against it by gravity, the vi-

brations of both will be much more rapid, regular, and sensitive than if the diaphragm were secured at its periphery. It will also be understood that very soft and very loud sounds are transmitted with equal correctness and distinctness, and loud sounds will be transmitted without separating the electrodes, and thereby the breaking of the circuit is reduced to a minimum.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a transmitting apparatus, the combination of an acoustic diaphragm-electrode secured at one central point and one or more rear electrodes so suspended that they bear by gravity lightly against said diaphragm, substantially as set forth.

2. A transmitting apparatus having an acoustic diaphragm secured at one central point, so as to vibrate freely at its periphery, and one or more resistance-varying electrodes suspended on a wire or rod, and so as to bear lightly against the diaphragm, substantially as described.

3. In a transmitting apparatus, the combination of an acoustic diaphragm secured at one central point, and so as to vibrate freely at its periphery, with one or more resistance-varying electrodes suspended on a wire or rod in such manner as to press lightly against said diaphragm, substantially as specified.

4. In a transmitting apparatus, the combination of an acoustic diaphragm secured at one central point, and one or more rear electrodes suspended on a wire or rod, with induction-coils, substantially as and for the purpose set forth.

5. A transmitting apparatus consisting of a case, E, having sound-opening *a*, an acoustic diaphragm-electrode, A, secured at one central point and connected to a wire, *e*, with a battery, in combination with one or more rear electrodes, D, suspended on a wire, *d*, and connected by wire *f* with the circuit-line, all arranged substantially as set forth.

6. In a transmitting-telephone, the combination of an acoustic diaphragm secured at a central point, and one or more resistance-varying electrodes suspended on a wire or rod, with induction-coils, a wire leading to the battery, and another wire connected to the line-wire, all substantially as and for the purpose specified.

7. In a transmitting-telephone, the combination of an acoustic diaphragm secured at a central point, and one or more resistance-varying electrodes suspended on a wire or rod, with a multiple coil forming the magnet when in use, and consisting of a spool having a series of coils of fine insulated wire wound upon it, and the opposite ends of said coils connected together, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERBERT L. TODD.

Witnesses:
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