(No Model.)

S. P. THOMPSON.

MAGNETO TELEPHONE.

No. 339,500. Patented Apr. 6, 1886.

Fig. 1.

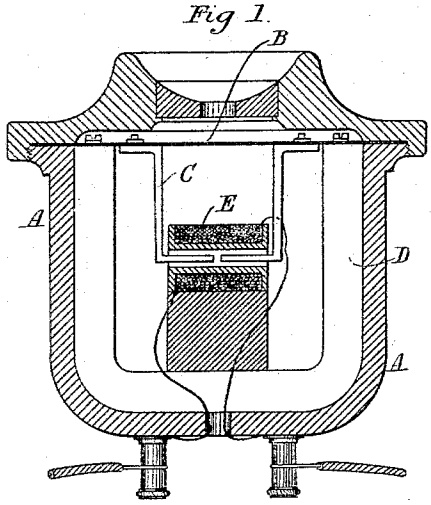


Fig. 2.

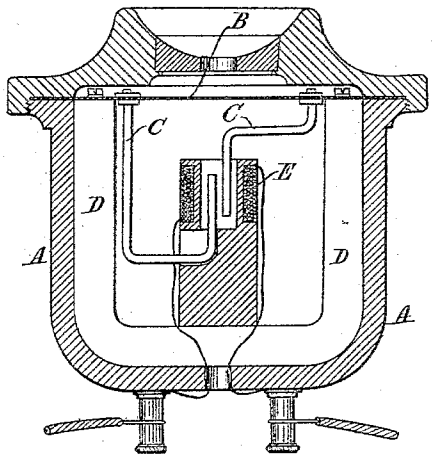


Fig. 5.

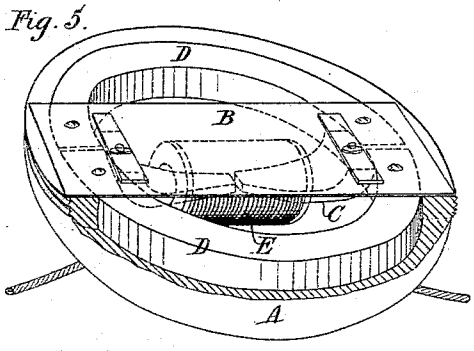


Fig. 4.

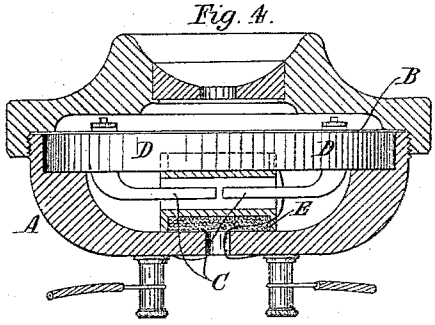
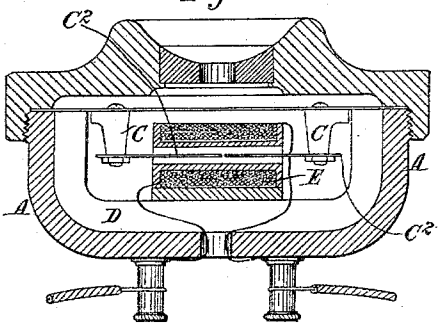


Fig. 3.



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UNITED STATES PATENT OFFICE.

SILVANUS PHILLIPS THOMPSON, OF UNIVERSITY COLLEGE, BRISTOL, ENGLAND.

MAGNETO-TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 339,500, dated April 6, 1886.

Application filed August 15, 1885. Serial No. 174,491. (No model.) Patented in England April 9, 1885, No. 4,423.

To all whom it may concern:

Be it known that I, SILVANUS PHILLIPS THOMPSON, a subject of the Queen of Great Britain and Ireland, and residing at University College, Bristol, England, doctor of science and professor of experimental physics, have invented certain new and useful Improvements in Electro-Telephonic Instruments, (for which I have applied for a patent in Great Britain on April 9, 1885, No. 4,423,) of which the following is a specification.

The object of my invention is to construct telephonic instruments very cheaply and of great power and efficiency, especially when used as receivers, although they may be used as transmitters, if desired.

According to my invention I am enabled to dispense with the magnetic or mechanical restraint, which has hitherto been put upon the central portion of the diaphragms of these instruments, and I cause the variations in the current due to the sound-waves to act upon movable pieces, forming part of a circuit independently magnetized and attached to an elastic but stiff body or spring of a non-magnetic material, and carried in the box of the instrument by its sides or ends, so that its mid-portion is not under either mechanical or magnetic constraint. The coil or coils of the instrument is or are situated in proximity to the aforesaid movable pieces, which preferably take the form of two bent arms or levers, their outer ends being attached toward the opposite sides or ends of the aforesaid elastic and stiff body or spring and their inner ends having a space between them, forming a slight break in the magnetic circuit, the coil or coils preferably surrounding these ends which are in proximity to one another. When an instrument thus constructed is in use as a receiver, the variations in the current due to the action of the sound-waves on a suitable transmitting apparatus passing in the coil or coils cause the movable pieces of the magnetic circuit to move toward and from one another, and these in turn act upon the opposite outward parts of the elastic and stiff body or spring to which they are attached, whereby the central portion is vibrated or moved in such a manner as to give good, clear, and powerful articulation in the instrument.

In the drawings, Figure 1 is a section of an instrument constructed according to my invention. Figs. 2, 3, and 4 are similar views of modified forms, Fig. 5 being a perspective view of the arrangement shown in Fig. 4, but with the cover moved.

In the several figures the parts are essentially the same and they are marked with the same letters of reference.

A is the box or case of the instrument in which is held the elastic or stiff body or spring B, which may be of mica, ebonite, wood, brass, or other non-magnetic and elastic material. At or toward the sides or edges of this spring-piece B pieces C are attached, the said pieces forming part of a magnetic circuit by reason of their being in proximity to the magnetized bar D, the said pieces C being preferably attached to the spring B, so that they can move independently of the main body of the magnet D, to which also the spring B may be attached, as shown. Around, but preferably not touching, the approximated ends of the pieces C is fixed the coil E, in connection with the external wires. The only difference between the arrangements Figs. 1 and 2 is that in Fig. 2 the axis of the coil and the direction of the ends of the movable pieces C are at right angles to the position of those parts in the arrangement Fig. 1.

In Fig. 3 the movable pieces are constituted by thin strips or additional pieces C^2, fastened by screws to the parts C, attached to the spring B, instead of being formed by continuations of the same pieces, as in Figs. 1 and 2.

In Figs. 4 and 5 the main body of the magnet D is arranged as a ring, and it may be in halves separated by an insulating space or substance, the movable pieces C being affixed to the spring in proximity to the adjacent ends of like polarity, as shown clearly in Fig. 5.

In all cases it will be seen that there is no mechanical or magnetic constraint upon the central portion of the spring B, and the said portion is therefore free to act in the most beneficial manner in receiving or transmitting vibrations.

I do not limit myself to the precise mechanical arrangement, shown in the examples given in the drawings, as it is evident that they may be varied without departing from the essential feature of my invention. For example, the magnetic circuit-pieces or any of them may be magnetized by a coil or coils, constituting them an electro-magnet, instead of their being permanently magnetized, as hereinbefore described.

I claim—

1. In a telephonic receiving or transmitting instrument, the combination, substantially as hereinbefore set forth, of a non-magnetic elastic piece or spring for receiving or transmitting vibrations, supported at or near its edges and having its central portion unconstrained and free to vibrate, and movable magnetic pieces forming portions of a magnetic circuit secured thereto, substantially as hereinbefore described.

2. In a telephonic receiving or transmitting instrument, the combination of an unconstrained non-magnetic elastic piece or spring for receiving or transmitting vibrations, movable magnetic pieces forming portions of a magnetic circuit, and a surrounding coil or coils of wire, substantially as hereinbefore described.

3. In a telephonic receiving or transmitting instrument, the combination, substantially as hereinbefore set forth, of the annular main body or core of the magnet situated in the upper portion of the case, the non-magnetic diaphragm having its central portion free to vibrate, and the attached magnetic pieces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SILVANUS PHILLIPS THOMPSON.

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