(No Model.)

J. H. & J. W. ROGERS.

MAGNETO TELEPHONE.

No. 326,675. Patented Sept. 22, 1885.

Fig. 1.

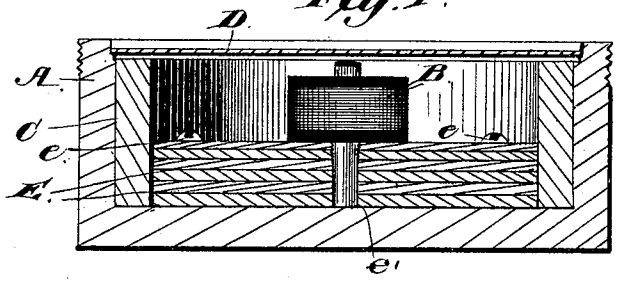
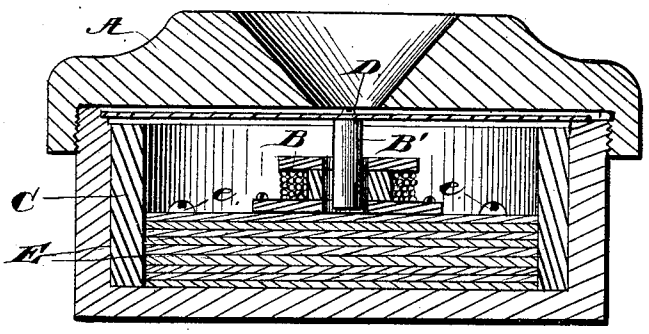


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES HARRIS ROGERS AND J. WEBB ROGERS, OF WASHINGTON, D. C.

MAGNETO-TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 326,675, dated September 22, 1885.

Application filed December 12, 1884. (No model.)

To all whom it may concern:

Be it known that we, JAMES HARRIS ROGERS and J. WEBB ROGERS, citizens of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Magneto-Telephones, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to magneto-telephones; and it consists in the construction and arrangement of the parts, which will be more fully hereinafter described, and pointed out in the claims.

The object of our invention is to provide a compound magnet composed of piles of magnetized disks wherein the magnetism is concentrated at the central and peripheral portions thereof and carried within close proximity to the diaphragm.

The several parts forming the compound magnet are magnetized separately by suitable mechanical means, and then mounted so as to form one magnet with united parts, whose magnetic polarities are combined as one entire magnet. The one polarity is concentrated and carried into close proximity to the diaphragm by the magnet of the helix, while the opposite polarity is gathered from the peripheries and concentrated by an inclosing soft-iron ring and also carried upward to near the diaphragm. By this construction the combined effect of both the peripheries and centers of the several parts forming the entire magnet are caused to act conjointly, thus producing an instrument of strong magnetic force, and at the same time more sensitive and efficacious than has heretofore been known or used, and one which is readily understood and easily and cheaply manufactured. We attain these objects by the device illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 represents a transverse vertical section of our improved instrument, with the ear-piece removed. Fig. 2 represents a modified form of the instrument, in that the core of the helix is movable therein, being secured to a diaphragm of wood, mica, or like substance.

A represents an ordinary form of case, constructed of suitable material.

B indicates an ordinary form of helix.

C is a soft-iron ring which surrounds the peripheries of the magnets and extends upward in close proximity to the diaphragm D, which, in the instrument shown in Fig. 1, is constructed of material ordinarily used.

E E represent the metallic disks composing the compound magnet, being secured by the screws *e* to the casing A.

In Fig. 1 the magnets E are illustrated as constructed of disks of metal confined or secured by the screws *e* passing through the same. These plates or disks E are constructed of a suitable thickness and then magnetized separately. In magnetizing the said disks they are subjected to the same process as the magnetization of any other form of permanent magnet, either by the use of a dynamo-machine or by a battery-current direct. It has been discovered that the one pole of each will resolve itself at the center, and the other at the periphery of the said disks. Any suitable number of the disks are then formed into a pile and secured by suitable means.

In constructing the disks a hole, *e'*, is bored in the center of each one, and when they are secured together as a pile the said holes *e'* all combine to form a suitable opening for the reception of the core of the helix B, which core extends through the pile of magnets at their centers, and takes up the combined polarity at this point and carries it to within close proximity to the diaphragm. The ring C encircles the peripheries of the said pile of disks E, touching the same, and carries the combined polarity at this point also to within a short distance of the diaphragm D.

In Fig. 2 the disks E are constructed of solid plates of metal without any hole or cavity formed in their central portion. In this instance the helix B is constructed with an enlarged hollow central portion, in which the core B', which is secured at its one end to the diaphragm D, has free movement, the whole acting on the principle of a solenoid. In this instrument the helix B may or may not be fastened to the magnetic pile. In this instance the soft-iron core will not rely wholly on the magnetic action of the pile or compound mag-

net for its magnetism, for, by its movement in the hollow helix, it is given thereby a sufficient strength; but by the magnetic effect of the pile upon the said core its polarity is increased, and the action of the diaphragm rendered vigorous and at the same time exceedingly sensitive.

The operation of the helix B is obvious, and as represented in Fig. 1 the current, coming in to the helix from line, acts upon the diaphragm by the well-known inductive principle, the other end of the wire of the said helix being connected up in the usual manner.

It is obvious that many minor changes could be made and substituted for those shown and described without in the least departing from the nature and principle of our invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a magneto-telephone, the combination of a diaphragm, a pile of magnetized disks, a helix mounted in the center thereof, and a soft-iron ring encircling and touching the periphery of said pile, said helix and soft-iron ring carrying the polarities of the parts with which they engage within close proximity to the diaphragm, and the electrical connections, substantially as described.

2. In a magneto-telephone, the combination of a diaphragm, a magnetic pile, the hollow helix fastened to the said pile, the soft-iron core secured to the diaphragm and having free movement in the hollow helix, the soft-iron ring encircling and touching the peripheries of said pile and extending within close proximity to the diaphragm, and the electrical connections, substantially as described.

3. In a magneto-telephone, the combination of the diaphragm D, casing A, magnetic disks E, forming a pile, a helix, B, engaging the centers of said disks, a soft-iron ring, C, encircling the peripheries of the disks and extending up within close proximity to the diaphragm D, and the electrical connections, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JAS. HARRIS ROGERS.
J. W. ROGERS.

Witnesses:
CHARLES S. HYER,
EMMA M. GILLETT.