A. POLLÁK.

APPARATUS FOR STRENGTHENING WEAK ELECTRICAL CURRENTS.

APPLICATION FILED AUG. 7, 1908.

939,625. Patented Nov. 9, 1909.

Fig. 1.

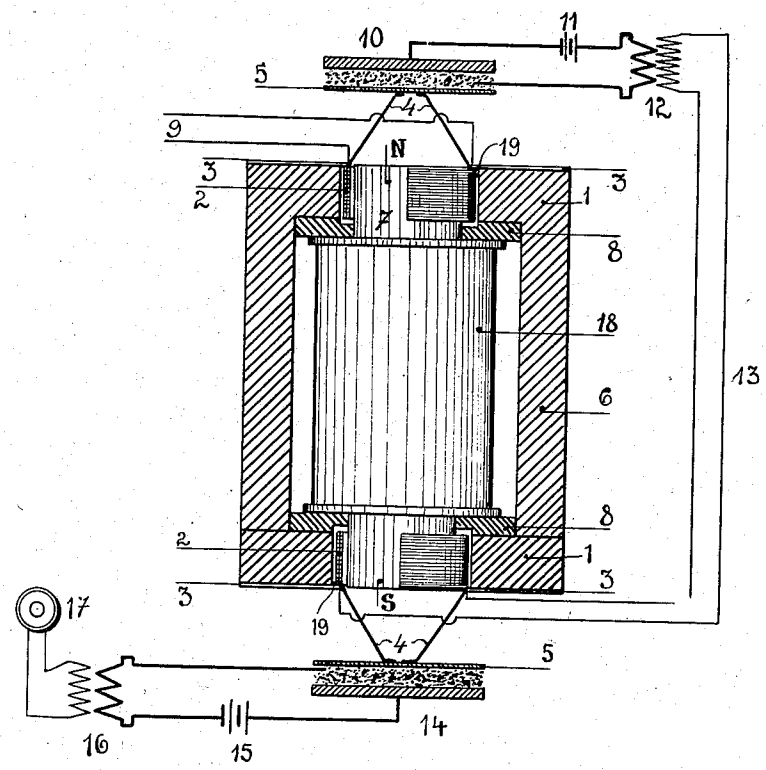
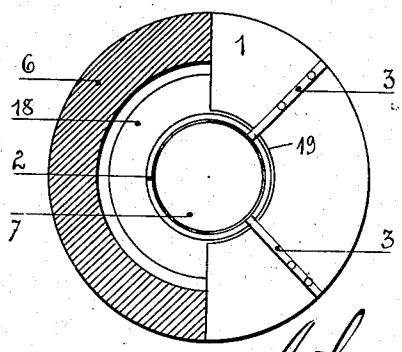


Fig. 2.



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APPARATUS FOR STRENGTHENING WEAK ELECTRICAL CURRENTS.

939,625. Specification of Letters Patent. Patented Nov. 9, 1909.

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To all whom it may concern:

Be it known that I, ANTON POLLÁK, a subject of the King of Hungary, residing in Paris, France, have invented certain new and useful Improvements in Apparatus for Strengthening Weak Electrical Currents, of which the following is a specification.

The object of the invention is to provide an apparatus for the strengthening of weak current impulses, such for example as telephone currents. This has been accomplished heretofore by introducing into a magnetic field a movable coreless coil attached to a membrane of a microphone, or to any similar part of a carbon contact or the like.

According to the present invention the operation of apparatus working on this principle is improved by passing the microphone circuit of such a coil through a second strengthening coil, using a single magnet for both coils. The air space for the two coils is preferably provided by the use of a magnet shell which is separate from the core of the magnet, and by leaving at both ends of the magnet core a narrow space for the coils. In this way an apparatus is provided in which each of the two poles of the one magnet is used as a strengthener without the action of one being injuriously affected by that of the other; these two poles being arranged opposite each other on the longitudinal axis of the magnet. With this arrangement the apparatus is made extremely simple, a higher efficiency is obtained than with previous apparatus, and the cost of manufacture is small.

The accompanying drawings illustrate an embodiment of the invention.

Figure 1 is a vertical section of an apparatus showing also the electrical connections of the two strengthening coils; Fig. 2 is a plan partly in section of the apparatus, the microphone membrane being removed.

Referring to the embodiment of the invention illustrated, the electro-magnet consists of a shell 6, a core 7, and an exciting coil 18. Plates 8 of non-magnetic material serve for fastening the core 7 in the shell.

The upper and lower end plates 1 of the shell 6 of the electro-magnet are provided with circular openings 19 in which lie the ends of the core 7; a narrow annular intermediate space being left on each end between the core 7 and the edge of the side opening. In each of these spaces is a coil 2 through which passes the current to be strengthened. The coils 2 are mounted on elastic arms 3 in such a way that they can move only in the direction of their longitudinal axis. Each coil 2 is attached by arms 4 to a membrane 5 of a microphone; the upper coil to the microphone 10 and the lower coil to the microphone 14, which microphones are in the circuits of batteries 11 and 15 respectively. One of the coils 2, for example the upper one, is connected with the line wires 9, and the opposite coil is in the circuit of the microphone 10 of the first coil; so that the movement of the upper coil 2 caused by the line current causes fluctuations of the current in the lower coil by means of the microphone 10, the transformer 12 and the wires 13. The lower coil 2 acts upon the membrane 5 of the appropriate microphone 14, in whose circuit are arranged the transformer 16 and the telephone or the like 17. In this way, consequently, the weak line current is strengthened first by the upper microphone and then by the lower one, and then conveyed to the telephone.

Though I have described with great particularity of detail a specific practical apparatus embodying the invention, yet it is not to be understood therefrom that the invention is restricted to the particular apparatus shown and described. Various modifications thereof may be made by those skilled in the art without departing from the invention.

The apparatus can be advantageously used in telephone circuits as a sound strengthener. It can also be advantageously employed in telegraphic systems where the current which actuates the receiver is very weak (cable, telegraph, wireless telegraphy, &c.) for the strengthening of the current.

What I claim is:—

1. An apparatus for the strengthening of weak electric currents, including in combination a magnet having a shell with two end plates and a core with two ends between which and the end plates there is a narrow air space, a coil in each of said air spaces supported movably in the direction of its axis only, a microphone actuated by each of said coils, one of said coils carrying the current to be strengthened and the other coil being in the circuit of the microphone of the first coil.

2. An apparatus for the strengthening of weak electric currents, including in combina-

tion a magnet having a shell 6 with opposite apertured end plates 1, and having a core 7 with its opposite ends lying in the apertures of said end plates with narrow air spaces between the core and the end plates, coils 2 in said air spaces and supported movably in their axial direction, and microphones attached to said coils.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

ANTON POLLÁK.

Witnesses:
H. C. COXE,
JACK H. BAKER.