J. H. IRWIN.

Electric-Telephone.

No. 216,793. Patented June 24, 1879.

Fig. 1.

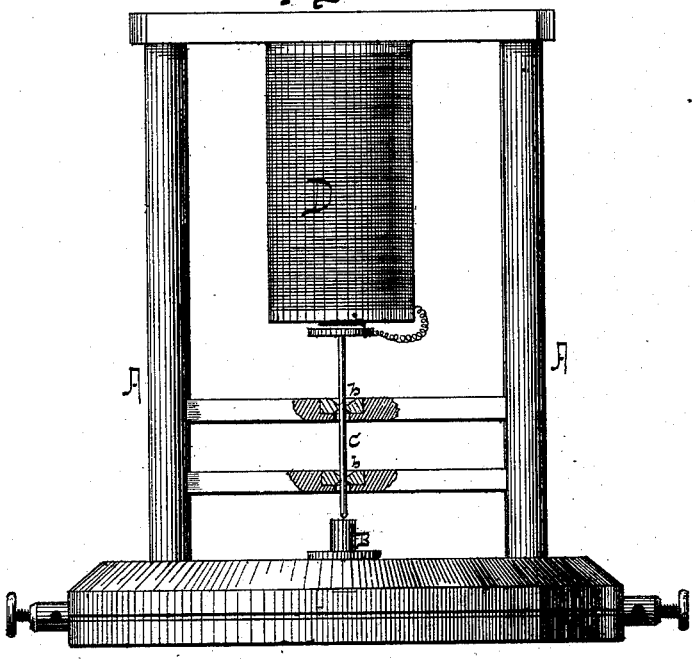
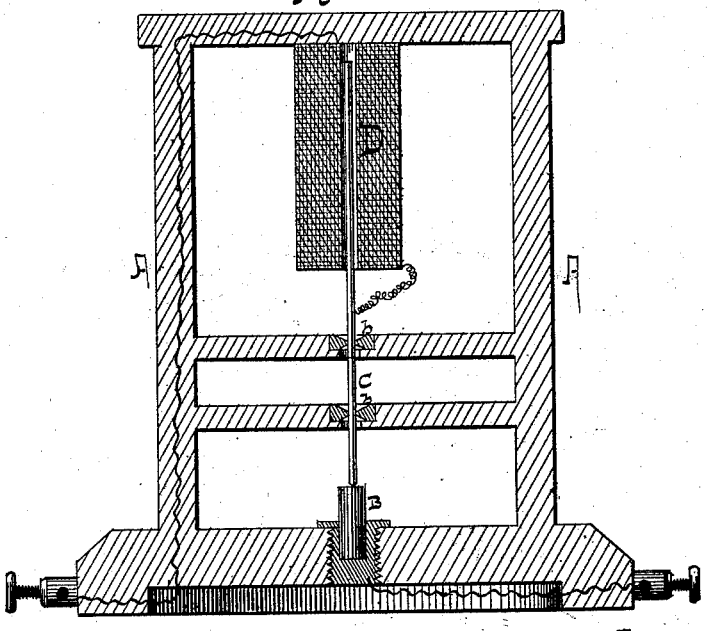


Fig. 2.



Attest.

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UNITED STATES PATENT OFFICE.

JOHN H. IRWIN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ELECTRIC TELEPHONES.

Specification forming part of Letters Patent No. **216,793**, dated June 24, 1879; application filed August 16, 1878.

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Acoustic Telegraphs, of which the following is a true and exact description.

This improvement relates to acoustic telegraphs wherein articulate sounds are transmitted; and it more particularly relates to that class of said telegraphs wherein a continuous electric current is transformed into a series of electric undulations corresponding to the vibrations of the exciting sound-waves by means of an attenuated place in the line-conductor, as fully set forth and described in my patent dated July 23, 1878, No. 203,241; and it consists in an electro-magnetic regulator for the upper needle, in place of a coiled spring, as shown in said patent.

That others may more fully understand my invention, I will more particularly describe it, reference being had to the accompanying drawings.

Figure 1 is an elevation, and Fig. 2 is a vertical section, of my invention.

A is the frame-work which supports the operative parts of the device. B is the lower needle, which heretofore has, preferably, been made of carbon or platinum. C is the upper needle, which is a straight shaft, pointed at its lower end and supported in bearings *b b*, which may be of any material capable of receiving a high polish, so as to render their surfaces anti-frictional.

To produce the best results the contact between the needles must be regulated to a certain pressure, self-regulated after the first adjustment, and in my patent this was accomplished by means of a delicate adjustable spring; but in this improvement I accomplish it by means of an electro-magnet, D. The line-current flows through both magnet-helix and needles, and its intensity is varied precisely in accordance with the undulations in the line-current. Hence if, when in a state of rest, the passing current will excite the magnet D just sufficiently to support a certain portion of the weight of the needle C, then its pressure upon the cushion B will thereby be relieved to that extent. The particular portion of such weight so sustained is a matter for individual adjustment, and is to be adjusted at the point where the greatest clearness and strength of articulate transmission are secured.

With every undulation of the electric current the excitement of the magnet will correspondingly vary, with a corresponding variation in tendency to lift the needle; but the vertical movement of the needle in either direction applies its own correction, because an upward movement will instantly weaken the magnet by the increase of resistance at the needle-point, and a downward movement will strengthen the magnet by decreasing resistance at the same point, so that the needle will be sustained by a practically unvarying and automatically corrective power.

Having described my invention, what I claim as new is—

1. In an acoustic telegraph wherein a continuous electric current is transformed into a series of undulations corresponding to the vibrations of impinging sound-waves, the needles or pencils in contact in the sensitive plane, wherein said transformation occurs, combined with an electro-magnetic regulator to control the contact-resistance of said needles, substantially as set forth.

2. In an acoustic telegraph, in the line-circuit, a point of variable resistance formed by the contact of two separate needles, substantially as shown and described, combined with an electro-magnet excited by the same line-current, and adjusted to regulate the contact-resistance of said needles, substantially in the manner set forth.

J. H. IRWIN.

Witnesses:
CHAS. F. R. HEUCKEROTH,
WILLIAM J. VOELKER.