E. GRAY.

Receiver for Electro-Harmonic Telegraphs.

No. 198,379. Patented Dec. 18, 1877.

Fig 1

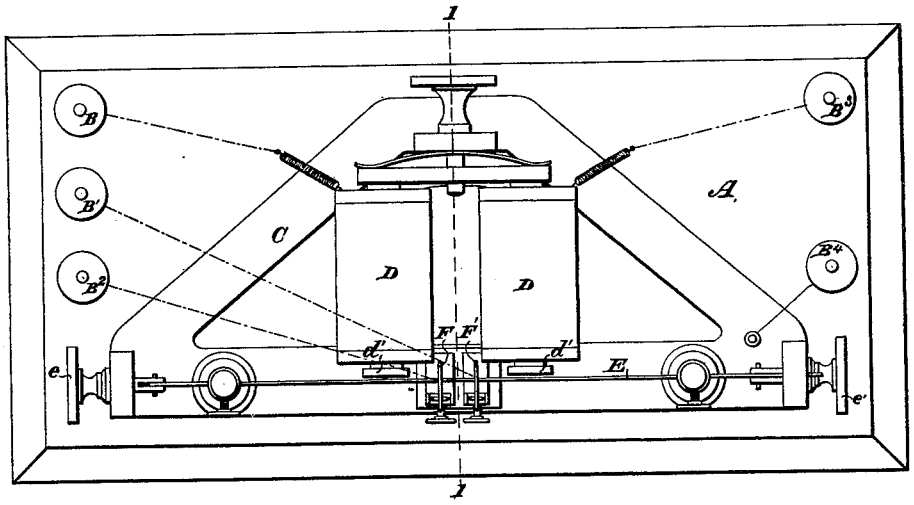


Fig 2

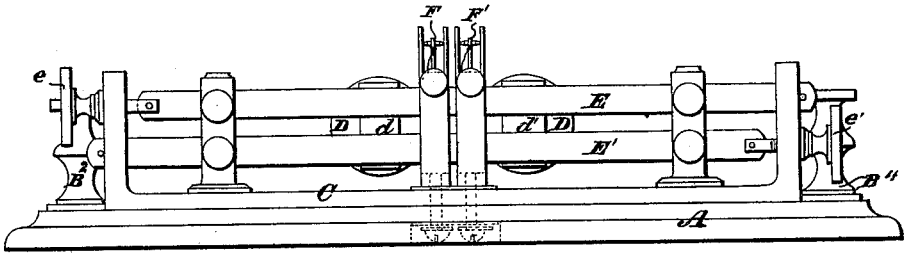
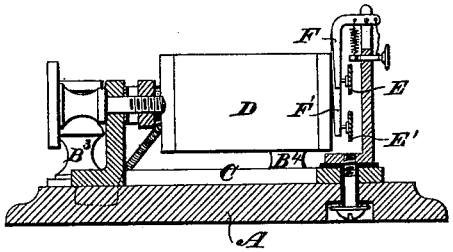


Fig 3.



WITNESSES

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By his Attorney

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UNITED STATES PATENT OFFICE.

ELISHA GRAY, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE HARMONIC TELEGRAPH COMPANY, OF NEW YORK CITY.

IMPROVEMENT IN RECEIVERS FOR ELECTRO-HARMONIC TELEGRAPHS.

Specification forming part of Letters Patent No. **198,379**, dated December 18, 1877; application filed April 12, 1876.

To all whom it may concern:

Be it known that I, ELISHA GRAY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Receivers for Electro-Harmonic Telegraphs, of which the following is a specification:

My invention relates to an analyzing-receiver having two or more analyzing springs or bars, combined with a single electro-magnet, and constitutes an improvement upon the instrument shown in Letters Patent No. 166,094, granted to me July 27, 1875; the improvement consisting in combining two or more analyzing springs or ribbons, with separate adjustment, with the magnet, instead of the single bar or ribbon shown in that patent.

In the accompanying drawings, Figure 1 represents a plan or top view of my improved apparatus; Fig. 2, a side elevation thereof; and Fig. 3, a vertical transverse section therethrough on the line 1 1 of Fig. 1.

In this instance, A represents a suitable base-board; B B^1 B^2 B^3 B^4, suitable binding-screws for the electrical connections; C, a triangular frame, upon which an electro-magnet, D, is mounted; E E′, two ribbons or springs, provided with tension-screws *e e′*, by which they may be adjusted; and F F′, two circuit-breaking springs, adapted to vibrate more slowly than the bars E E′, and provided with mechanism to adjust their rate of vibration.

The ends of the magnets are provided with pole pieces *d d′*, which extend opposite the springs, so that two or more of these springs or analyzing-receivers may be included within the attraction of the same magnet.

When two notes of different pitch are transmitted through the electric circuit simultaneously, and the two receiving-springs are tuned in unison with their respective transmitters, each will respond to its respective tone; but if either note is stopped, its corresponding receiver ceases to vibrate, just as if operated by a separate magnet, the reasons of which operation will be obvious upon consideration of the fact that the cores of all the magnets in the circuit respond to all the electric impulses sent through them, whether simple or complex, the analyzing principle being developed only by the appliances upon which the magnetic impulses act. From this it is obvious that one or more magnet would operate two or more tuned reeds or bars, mounted, in order to secure amplification of sound, upon resonant boxes, such as shown in my application for Letters Patent filed January 8, 1876.

The advantages of this apparatus are not only in the direction of economy of saving in a number of magnets, but of battery-power, as it is well known that the induction of a great number of electro-magnets in a telegraph-line seriously diminishes the working power of the battery.

In an application for Letters Patent filed simultaneously herewith I have shown and described this apparatus, as carried out on a large scale, in combination with a printing-telegraph.

I claim as of my own invention—

The combination, substantially as hereinbefore set forth, in an electric circuit, of an electro-magnet through which notes of different pitch are transmitted with two or more vibrating receiving-springs, tuned correspondently with the notes so transmitted, whereby each analyzer selects its own tone from the magnet without interfering with the others.

In testimony whereof I have hereunto subscribed my name.

ELISHA GRAY.

Witnesses:

WM. A. SKINKLE,

W. J. PEYTON.