

E. GRAY.

Receiver for Electro-Harmonic Telegraph.

No. 166,094.

Patented July 27, 1875.

Fig 1.

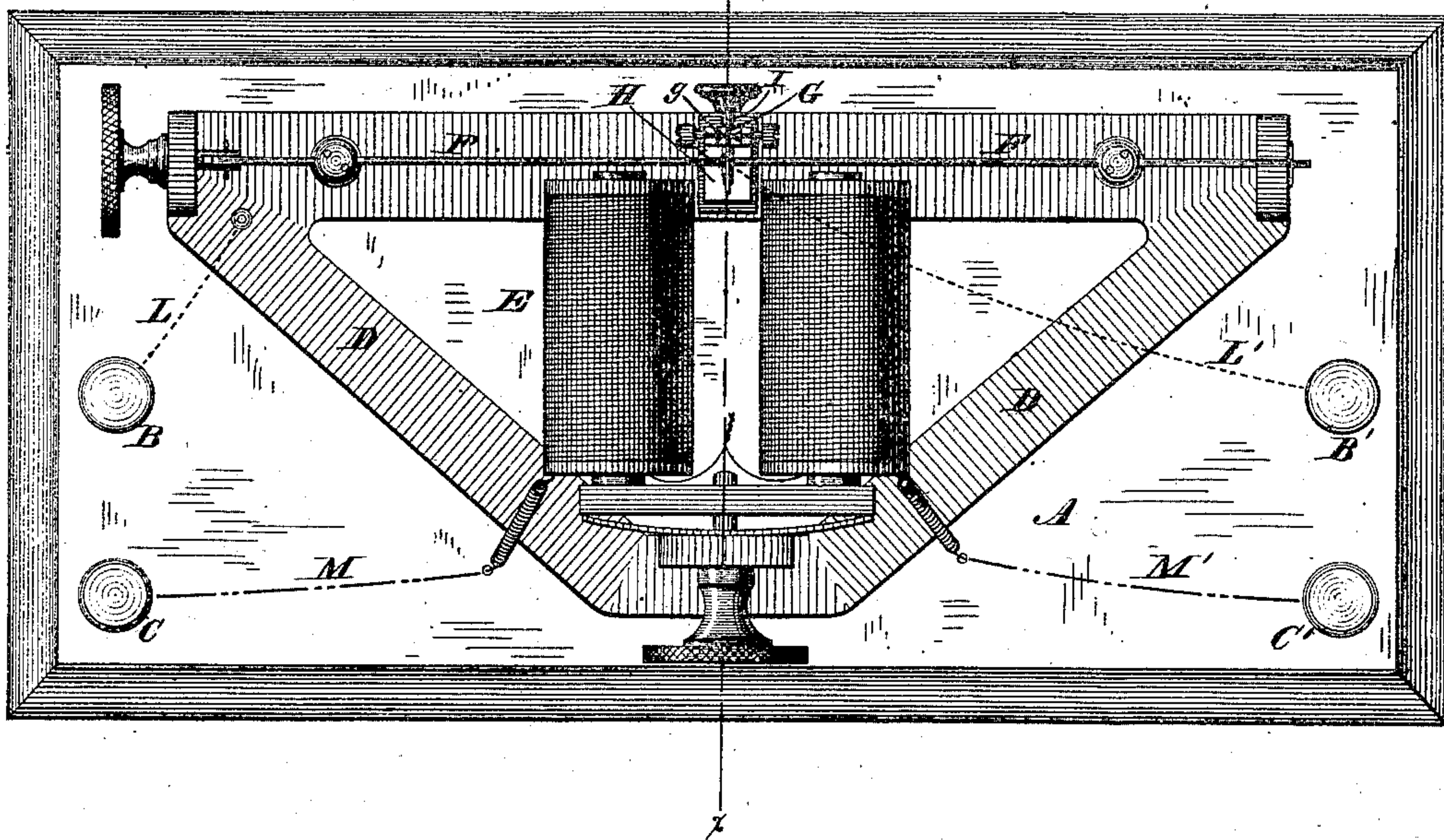
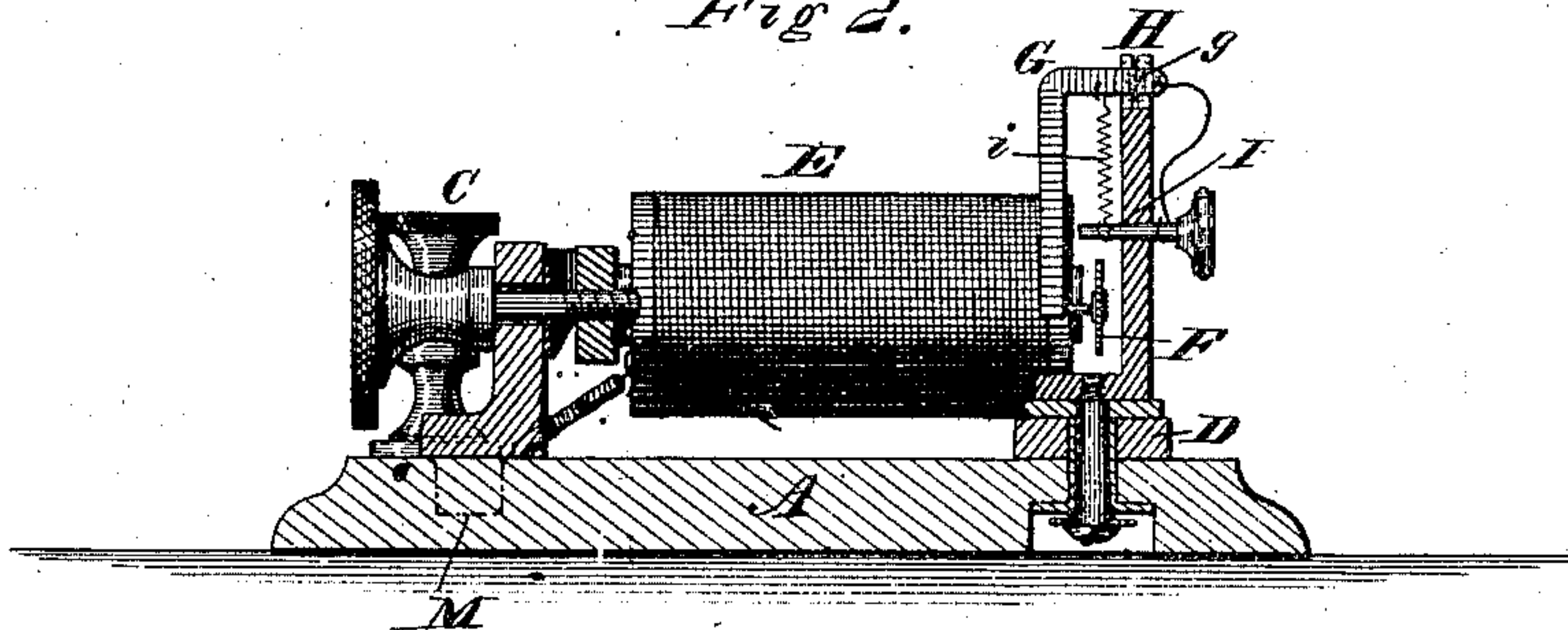


Fig 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN RECEIVERS FOR ELECTRO-HARMONIC TELEGRAPHS.

Specification forming part of Letters Patent No. 166,094, dated July 27, 1875; application filed June 28, 1875.

*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 a certain new and useful Improvement in Receivers for Electro-Harmonic Telegraphs, of which the following is a specification:

In a previous application for Letters Patent of the United States, filed February 23, 1875, for apparatus for transmitting musical vibrations by electricity, I have shown and described an instrument for receiving musical tones, called an "analyzer," composed of a series of vibrating instruments, each tuned to a different pitch, which receives from the transmitter those tones only which correspond to its own fundamental vibrations when executed by mechanical means. I have also shown in said application a method of making and breaking a local circuit, so as to record Morse or other signals in the ordinary way, the analyzer taking the place of the common Morse relay, the interruptions in the vibrations or signals being made at the sending end by a common telegraphic key. The circuit-interrupter described in my previous application above mentioned consisted of a light metal spring or lever fastened at one end to a post, while its free end rested upon the analyzing-spring or vibrating reed, the contact-point between the two being made of platinum, and the lever having a rate of vibration slower than that of the analyzing-spring or reed, which is actuated by electrical impulses from the transmitting end of the line, which synchronize with the natural or fundamental vibration of the analyzing-spring at the receiving end, the tension or rate of vibration of the lever being made adjustable to a certain extent by a screw provided for that purpose. The local circuit passes, through the analyzing-spring and its contact-points, to the metal lever, and thence to the instrument and local battery. When the analyzing-spring or reed is thrown into vibration, the metal lever, having a rate of vibration less than that of the analyzing-spring, is not able to follow its vibrations, and thus preserve a continuous contact, as would be the case if its rate of vibration were as great or greater than that of

the analyzing-spring, but is made to jar or rattle at the point of contact, and for all practical purposes it opens the local circuit, and holds it open so long as the analyzing-spring continues to vibrate. When the vibration ceases, the points come to rest, and the circuit is re-established, operating a magnet in the ordinary way.

My present invention constitutes an improvement upon the receiver shown in the application above mentioned, and consists in an improved device for operating the local circuit.

In the accompanying drawings, which represent so much of my improved receiving apparatus as is necessary to illustrate the subject-matter herein claimed, Figure 1 is a plan or top view; Fig. 2, a vertical transverse section therethrough on the line *xx* of Fig. 1.

The battery-wires are connected with binding posts or screws *B B' C C'*, mounted, as usual, upon a base-board, *A*. The receiving apparatus is mounted upon a triangular frame, *D*, of metal, suitably secured to this base by screws or other well-known means. An ordinary electro-magnet, *E*, is mounted upon this frame, with its poles at right angles to, but in the same horizontal plane as, the vibrating tension-bar or analyzing-spring *F*, provided with suitable tension devices for regulating the pitch of the tone produced by its vibrations. A light metal elbow-lever or circuit-interrupter, *G*, rocks on pivots *g* in an insulated post, *H*, mounted on the metal frame *D*. The free end of this lever is provided with a platina contact-point, resting on a corresponding point on the vibrating bar *F*. The elbow-lever is designed to vibrate at a slower rate than the analyzer-spring. This rate of vibration is regulated by a small spiral spring, *i*, one end of which is attached to the elbow-lever, and the other is connected by a cord to a windlass or pins, *I*, turning in bearings in the post *H*. The main current enters the magnet through the wire *M*, and passes out through the wire *M'*. The local current consists of the wires *L L'*.

In operation, the impulses transmitted through the main line throw the receiver or analyzing-spring into vibration, and as the

elbow-lever G vibrates more slowly, the circuit is practically kept open until closed by the key, as hereinbefore explained.

I claim—

The combination, substantially as hereinbefore set forth, of the vibrating receiving-spring, the elbow-lever circuit-interrupter, and mechanism, substantially such as described,

for adjusting the rate of vibration of said lever.

In testimony whereof I have hereunto subscribed my name.

ELISHA GRAY.

Witnesses:

WM. J. PEYTON,  
E. C. DAVIDSON.