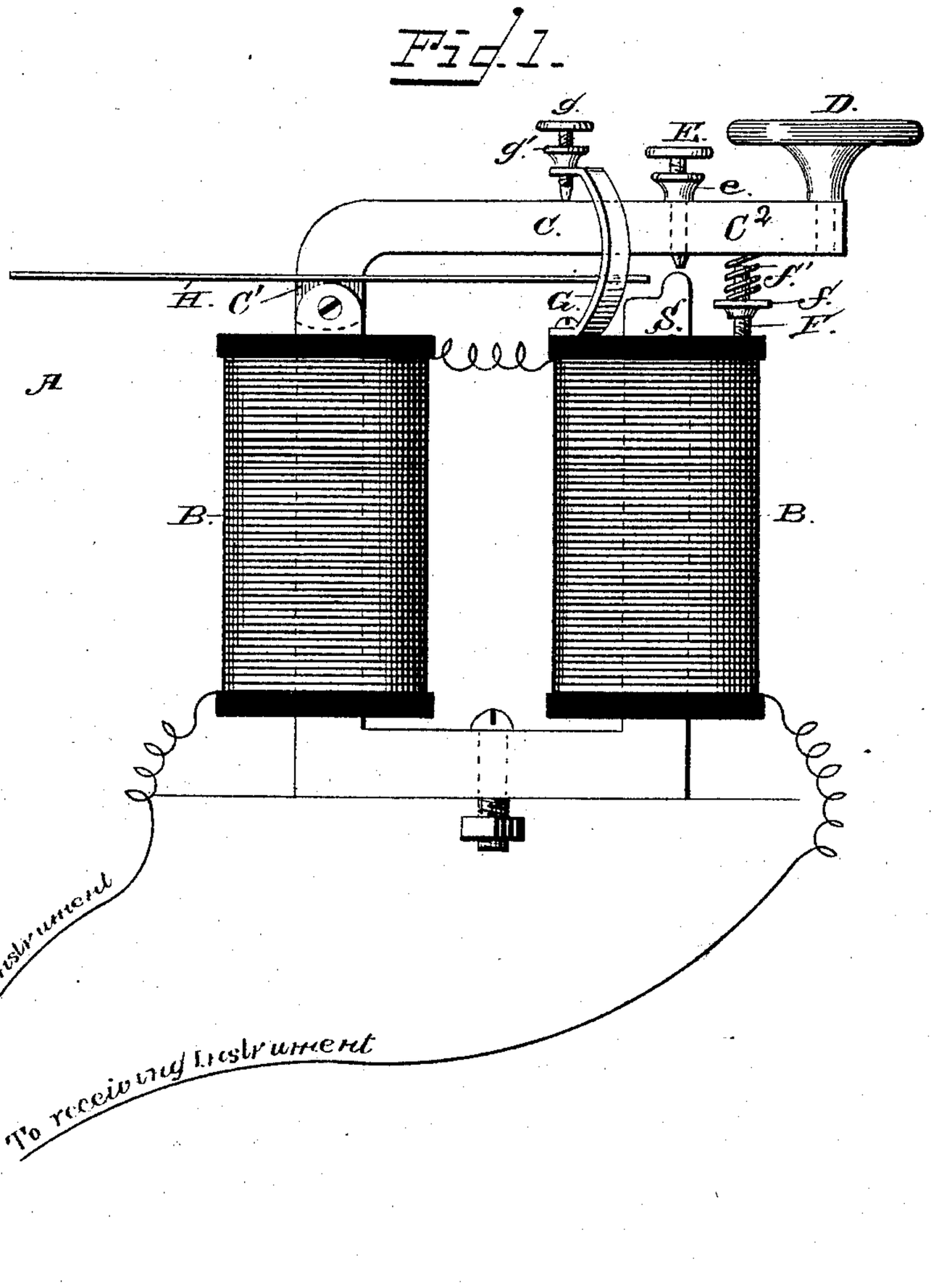
(No Model.) 2 Sheets—Sheet 1.

F. H. BROWN.

MAGNETO ELECTRIC TELEGRAPHY.

No. 324,746. Patented Aug. 18, 1885.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

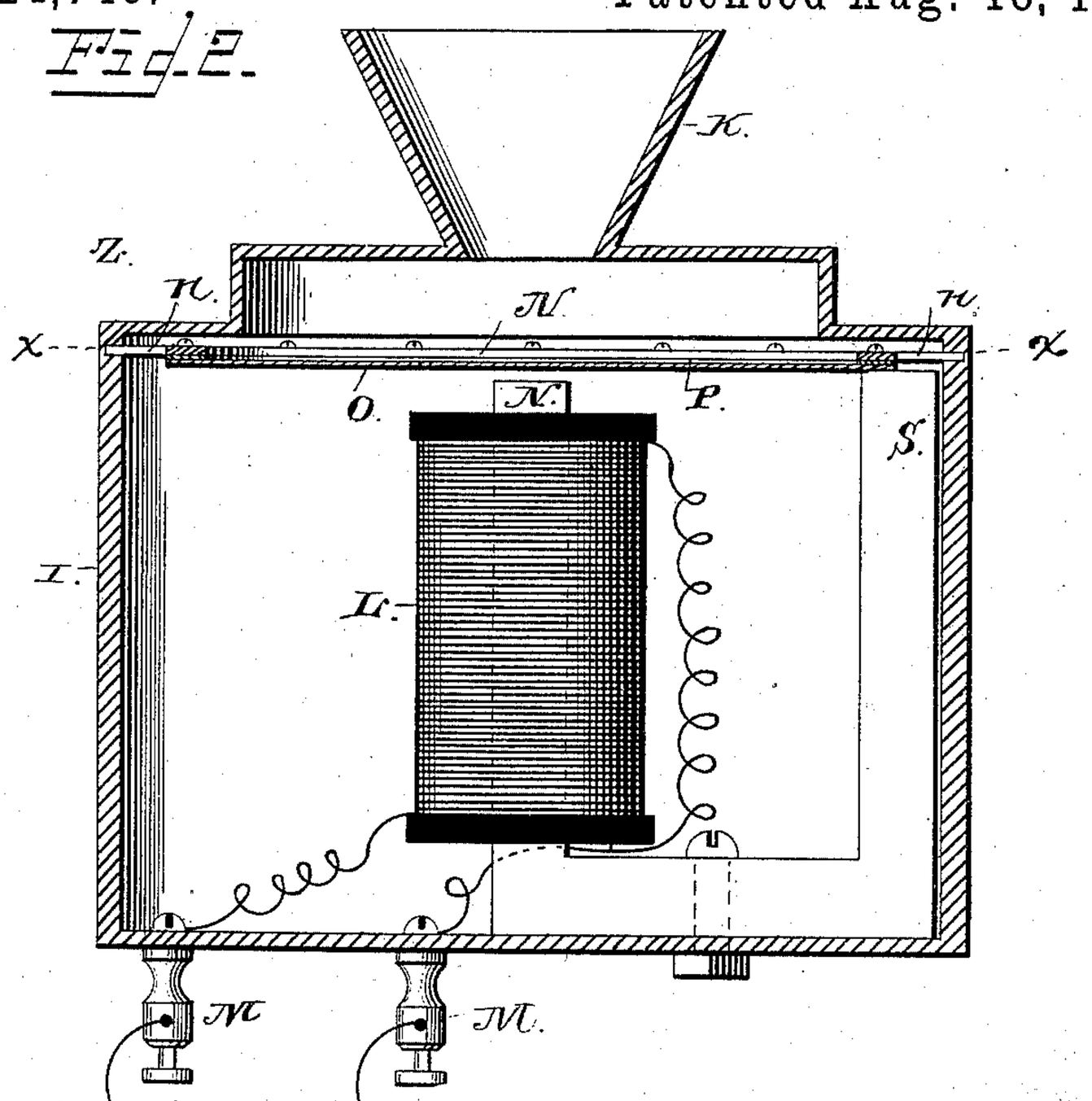
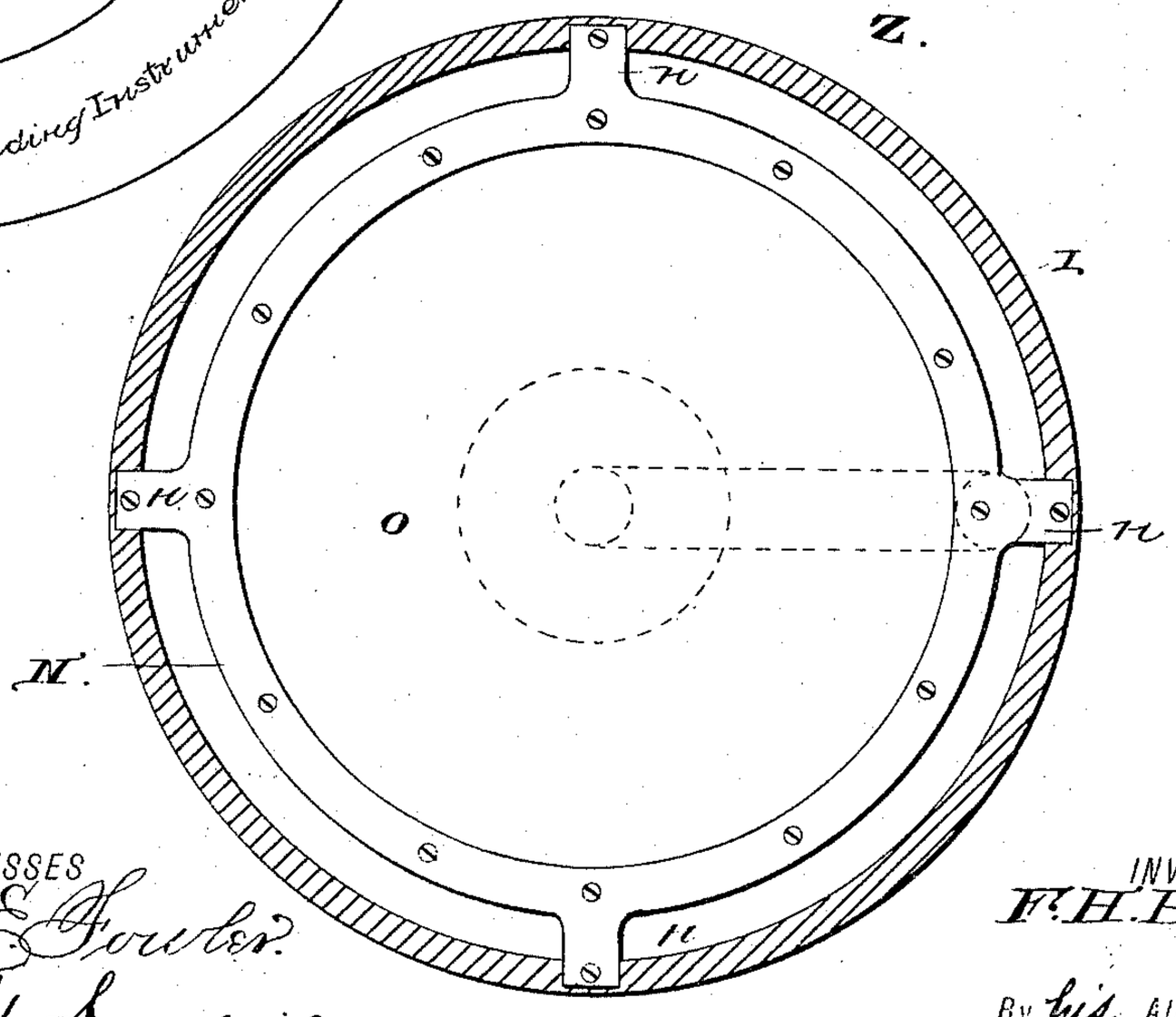


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MAGNETO-ELECTRIC TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 324,746, dated August 18, 1885.

Application filed March 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, FRED. H. BROWN, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented a new and useful Improvement in Magneto-Telegraphs, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improvement in magneto-telegraphs; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

My invention has for its object the transmission of telegraphic or telephonic messages between distant points by means of induced currents produced by the use of permanent magnets and without the use of a battery-current.

The accompanying drawings represent instruments by means of which I am enabled to carry my invention into effect.

Figure 1 is a side elevation of a sending-instrument. Fig. 2 is a vertical sectional view of a receiving-instrument. Fig. 3 is a horizontal sectional view of the same, taken on the line *x x* of Fig. 2.

A represents the sending-instrument, which is composed of a permanent U-shaped magnet, on the poles of which are wrapped the helices of insulated wire B. A key, C, is pivoted to one pole of the magnet, and extends over and beyond the opposite pole thereof, and is provided at its outer extremity with a button, D, similar to the telegraphic keys now in common use. The pivotal end portion, C′, of the key is made of soft iron, and the extended arm portion C^2 thereof is made of brass.

E represents an adjusting-screw, which is made of iron, and which passes down through the key C, its lower end being normally nearly in contact with the pole S of the magnet. The adjusting-screw E is provided with a jam-nut, *e*, as shown.

F represents a brass screw that projects from the upper side of the south pole of the helix. On this screw is placed a thumb-nut, *f*, which is internally threaded to receive the screw, and which is adapted to be adjusted up and down upon the screw F. A coiled spring, *f′*, bears between the upper side of the nut *f* and the lower side of the key, and prevents the screw E from coming normally in contact with the south pole of the magnet. A curved arm, G, is made of brass, and is secured to the upper side of the south helix, and down through the upper end of this arm is passed a regulating or adjusting screw, *g*, which has a jam-nut, *g′*, and limits the upward movement of the key.

H represents a disk, which is preferably made of thin sheet-steel, and which is permanently secured to the pivoted end of the key and extends horizontally over the poles of the magnet, as shown.

Z represents the receiving-instrument, of which I represents an inclosing-case, which is composed of wood or metal, and is provided with a mouth-piece, K. To the lower side of this case, on its inner side, is secured a permanent U-shaped magnet, the south pole of which is at one side of the inclosing-case, while the north pole is directly in line with the center of the case and its mouth-piece. On the north pole of the magnet is wound a helix, L, of fine insulated wire, while the south pole is left bare. The ends of helix L are secured to the binding-posts M, and the wires from the sending-instrument are connected to said binding-posts, as shown.

N represents a circular metallic band having projecting points *n*. This band is placed in the inclosing case, in the upper side thereof, at a suitable distance below the contracted inner end of the mouth-piece, and is secured to said inclosing-case by means of screws, which pass through openings in the outer ends of the projecting points, and secure said points in recesses that are made in the inclosing-case to receive them, as is shown at Fig. 3. By this construction an air-space is left between the band and the inclosing-case.

On the under side of the band N is secured a disk, O, which is preferably made of thin sheet-steel, and which is acoustically insulated from the band N by a piece of paper or other suitable substance, P, that is interposed between the disk and its supporting-band. The south pole of the magnet is in contact with the north pole or outer edge of the magnetized disk, and the north pole of the magnet is directly under the center of the disk and out of contact therewith.

By this construction it will be plain that the center of the disk O is free to vibrate. By securing the disk in the inclosing-case so as to leave an air-space around the outer side of the disk, between it and the inner side of the inclosing-case, the air-chamber formed by the inclosing-case is in communication with the air-space in that part of the inclosing-case above the disk.

The operation of my invention is as follows: The key of the sending-instrument is operated so as to tap off the dots and dashes used in the telegraphic code, (Morse.) As the key is depressed it comes in contact with the south pole of its magnet, and thus closes the magnetic circuit, and the jar consequent upon this impact sets the disk, which is secured to the key, in vibration in consonance therewith, and produces a resonant tone. The vibration of the sending-disk induces an electric current instantaneously of great kinetic energy and intensity, but of short duration, which is transmitted through the connecting-wires to the receiving-instrument, and the vibrations of the sending-disk are reproduced by the disk in the receiving-instrument. The vibrations of the receiving-disk are communicated to the air in the inclosing-case, and this air-chamber being in communication with the external air the air in said chamber acts as a resonator, and conveys clearly to the ear of the receiving-operator the signals made by the sending-instrument.

I do not desire to limit myself to the precise construction hereinbefore described, as it is evident that many modifications may be made therein without departing from the spirit of my invention.

By placing an inclosing-case around the disk at each end of the line, and by providing these inclosing-cases with suitable mouth-pieces, the instruments are adapted for the transmission of articulate sounds.

In Fig. 2 I have shown the receiving-instrument with only one helix on its magnet, which is all that is necessary if the instrument is to be used merely as a receiving-instrument; but if it is adapted for use both as a sending and receiving instrument or as a sending-instrument its magnet will be provided with two coils.

Having thus described my invention, I claim—

1. The combination of a permanent magnet having a coil or coils, an armature or disk connected to one pole thereof and free to vibrate over the opposite pole, and a key for vibrating the armature or disk, substantially as described.

2. The combination of a permanent magnet having a coil or coils, an armature or disk connected to one pole thereof and free to vibrate over the opposite pole, a key for vibrating the armature or disk, and stops for limiting the play of the key, substantially as described.

3. The combination of a permanent magnet having a coil or coils, an armature or disk connected to one pole thereof and free to vibrate over the opposite pole, a key for vibrating the armature or disk, and a spring for keeping the key normally out of contact with the disconnected pole, substantially as described.

4. The combination of a permanent magnet having a coil or coils, an armature or disk connected to one pole thereof and free to vibrate over the opposite pole, a key for vibrating the armature or disk, a spring for keeping the key normally out of contact with the disconnected pole, and stops for limiting the play of the key, substantially as described.

5. The combination of the permanent magnets having the coils connected in circuit, an armature or disk connected to one pole of each magnet and free to vibrate over the opposite pole thereof, whereby the vibrations of one of the armatures or disks are transmitted by induced current to the other armature or disks in circuit and reproduced by said other armatures or disks, and an inclosing-case forming an air-chamber around the disk or armature of one or each of the connected magnets, said inclosing-case having a mouth-piece, substantially as described.

6. The combination of the permanent magnets having the coils connected in circuit, an armature or disk connected to one pole of each magnet and free to vibrate over the opposite pole thereof, whereby the vibrations of one of the armatures or disks are transmitted by induced currents to the other armatures or disks in circuit and reproduced by said other armatures or disks, an inclosing-case forming an air-chamber around the disk or armature of one or each of the connected magnets, said case or cases having a mouth-piece, and a key or keys for vibrating the armature or disk of one or each of the magnets in circuit, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

FRED. H. BROWN.

Witnesses:
C. D. BROWN,
W. A. DARTER.