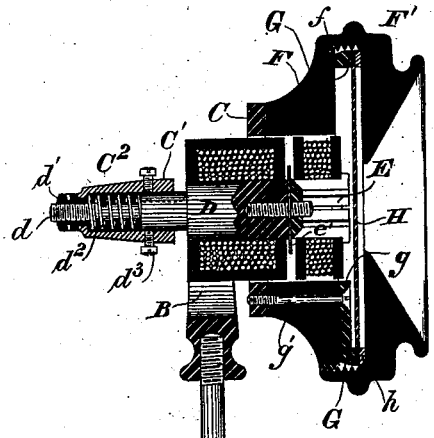
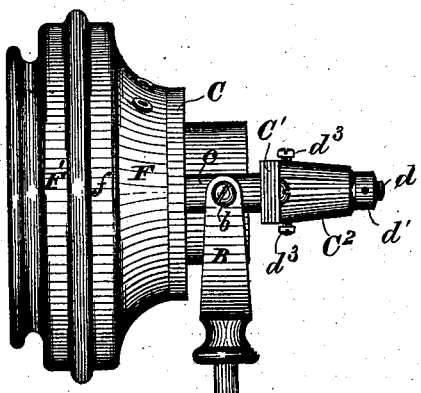
E. GRAY.
Speaking-Telephone.

No. 204,027. Patented May 21, 1878.

Fig 1





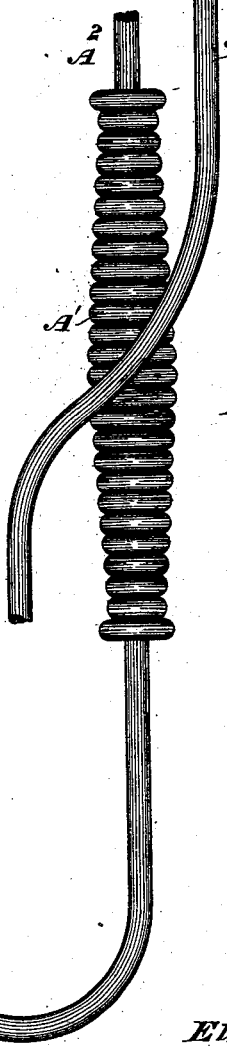


Fig 3

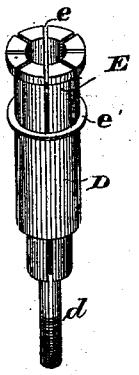
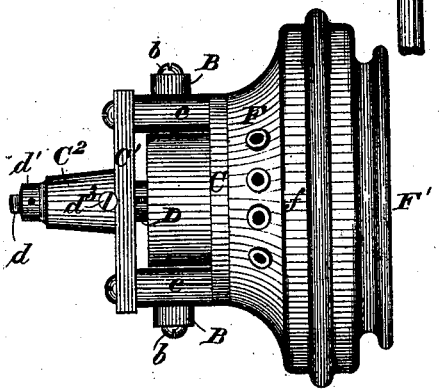


Fig 2



WITNESSES

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UNITED STATES PATENT OFFICE.

ELISHA GRAY, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN SPEAKING-TELEPHONES.

Specification forming part of Letters Patent No. **204,027**, dated May 21, 1878; application filed January 25, 1878.

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 Speaking-Telephones, of which the following is a specification:

My present invention relates to and constitutes an improvement upon speaking-telephones heretofore invented by me, for which sundry applications for Letters Patent of the United States are now pending.

The objects of my invention are, first, to secure a more perfect transmission of the articulations by excluding from the ear all sounds not transmitted through the wire to the telephone-receiver; and, secondly, to secure a convenient form of receiving and transmitting apparatus.

These ends I attain by mounting two telephones upon a suitable common support, by which means they may be applied simultaneously one to each ear of the person receiving the message.

The subject-matter claimed will hereinafter specifically be designated.

The accompanying drawings show all my improvements as embodied in one apparatus in the best way now known to me. Obviously, however, some of the improvements may be used without the others, and in apparatus differing in details of construction from the one herein represented.

Figure 1 represents a side elevation of so much of my improved apparatus as is necessary to illustrate the subject-matter herein claimed, the arrangement upon circuit being omitted, and the handle portion of the apparatus being broken to occupy a less space, and one of the telephones being represented in vertical central longitudinal section to show its construction more clearly. Fig. 2 represents a plan or top view of one of the telephones, and Fig. 3 a perspective view of the core of the magnet detached.

In this instance the instruments are shown as mounted upon the ends of a U-shaped or bifurcated spring-handle or support, for convenience of construction made in three pieces—a yoke-shaped portion, A, upon the upper ends of which are screwed corrugated handles A^1, into the other ends of which handles are screwed the upper portions A^2 of the support.

Forked brackets B, secured upon the ends of the support, are provided with pivots *b*, upon which the telephones oscillate in a vertical plane.

In their general construction the telephones proper are substantially similar to those shown, described, and claimed in an application for Letters Patent of the United States filed by me January 16, 1878, and the devices therein shown form no part of the subject-matter herein claimed. Certain modifications of construction are, however, required to adapt them to my present purpose, and also to secure certain other advantages, which modifications will be hereinafter described.

The telephones in this instance are shown as mounted upon a frame consisting of a ring, C, a cross-bar, C^1, and connecting-bars *c*, into which the pivots *b*, above mentioned, are inserted.

An ordinary electro-magnet, D, wound with a low resistance and adapted to a local battery of, say, three cells, is provided with a stem, *d*, working endwise, piston-fashion, through a tubular projection, C^2, on the frame.

A set-nut, d^1, fits on a screw on the end of this stem to adjust the magnet backward and forward relatively to the diaphragm, the magnet being normally thrust forward by a coiled spring, d^2, inside the tubular extension.

Set-screws d^3 pass through the tubular extension into longitudinal grooves in the stem *d*, to prevent it from turning and hold it securely while permitting of its longitudinal adjustment.

A supplementary electro-magnet, E, with a resistance of 100 ohms, more or less, according to the length of the line that is used, and having a tubular core, *e*, radially slotted for the greater portion of its length, of about three-eighths of an inch in length, is mounted upon the magnet D, substantially in the same axial plane, but separated from it and kept from contact therewith by a plate or washer, *e'*, of some non-magnetic substance, such as thin paper, for instance, the two magnets being bound together by a non-magnetic screw, such as brass, for instance.

Under this construction the supplementary

magnet E, which has no electrical connection with any other part of the apparatus, is acted upon inductively by the magnet D.

A cup or casing, F, of hard rubber or other suitable material, is mounted upon the ring C of the frame, being secured thereto by means of a secondary or induction ring, G, provided with internal spurs *g*, through which iron or steel screws *g'* pass into the ring, thus securing magnetic connection between the rings C and G.

The usual thin sheet-metal diaphragm H rests upon the ring G, and is clamped thereon by means of a mouth-piece, F', provided with a deep flange, *f*, with a female screw formed thereon, which screws upon the cup F, an annular washer, *h*, of soft paper or other analogous material, being interposed between the diaphragm and mouth-piece or screw-cap, which allows increased freedom of movement to the diaphragm and prevents the introduction of vibrations foreign to those produced by the voice.

By mounting the telephones upon rocking bearings, as hereinbefore described, they adapt themselves readily to the ears of the person receiving the messages, the intention being to apply one to each ear. The handle upon which they are mounted is preferably made of such length and form that the two sides come near together under the chin, while the arms project some distance farther down. The handles are thus brought near enough together to be grasped with one hand, leaving the other free to hold an ordinary single telephone or transmitting-instrument to the mouth for talk, ing or sending a message, by which arrangement the necessity of shifting the instruments from the mouth to the ear, as is the case where a single telephone is used, is avoided, and the application of the telephones close to the ear excludes extraneous noises, and the sound being transmitted to both ears at once, is rendered much more distinct.

Another advantage of my improvement is that the instruments, when applied to the ears, do not need to be removed until the conversation is completed.

I have described one form of telephone; but it is obvious that any of the ordinary forms of speaking-telephones may be adapted to my apparatus.

The combination of a supporting-frame, a magnet having a projecting stem movable endwise through a tubular extension of the supporting-frame, an adjusting-screw, and the spring which normally presses the magnet toward the diaphragm to regulate its relation thereto, is hereby disclaimed, being old. Neither do I claim herein the use of a paper ring in combination with a diaphragm as a dampener to exclude extraneous sounds, that being shown in another application heretofore filed by me.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A yoke-shaped yielding support adapted to fit under the chin, and having a telephone mounted upon each branch thereof, whereby the instrument may be grasped by one hand while a telephone is applied to each ear of the person receiving the message, and leaving the other hand free to hold a transmitting-instrument.

2. The combination, substantially as hereinbefore set forth, of a bifurcated support, a supporting-bracket on each arm of the support, and a telephone pivoted to rock upon said brackets, to facilitate their adjustment to the ears of the person receiving the message.

In testimony whereof I have hereunto subscribed my name.

ELISHA GRAY.

Witnesses:
WM. D. BALDWIN,
WM. J. PEYTON.