(Model.)

H. T. WALTERS & W. VOORHIS.

Acoustic Telephones.

No. 235,049. Patented Nov. 30, 1880.

Fig. 2

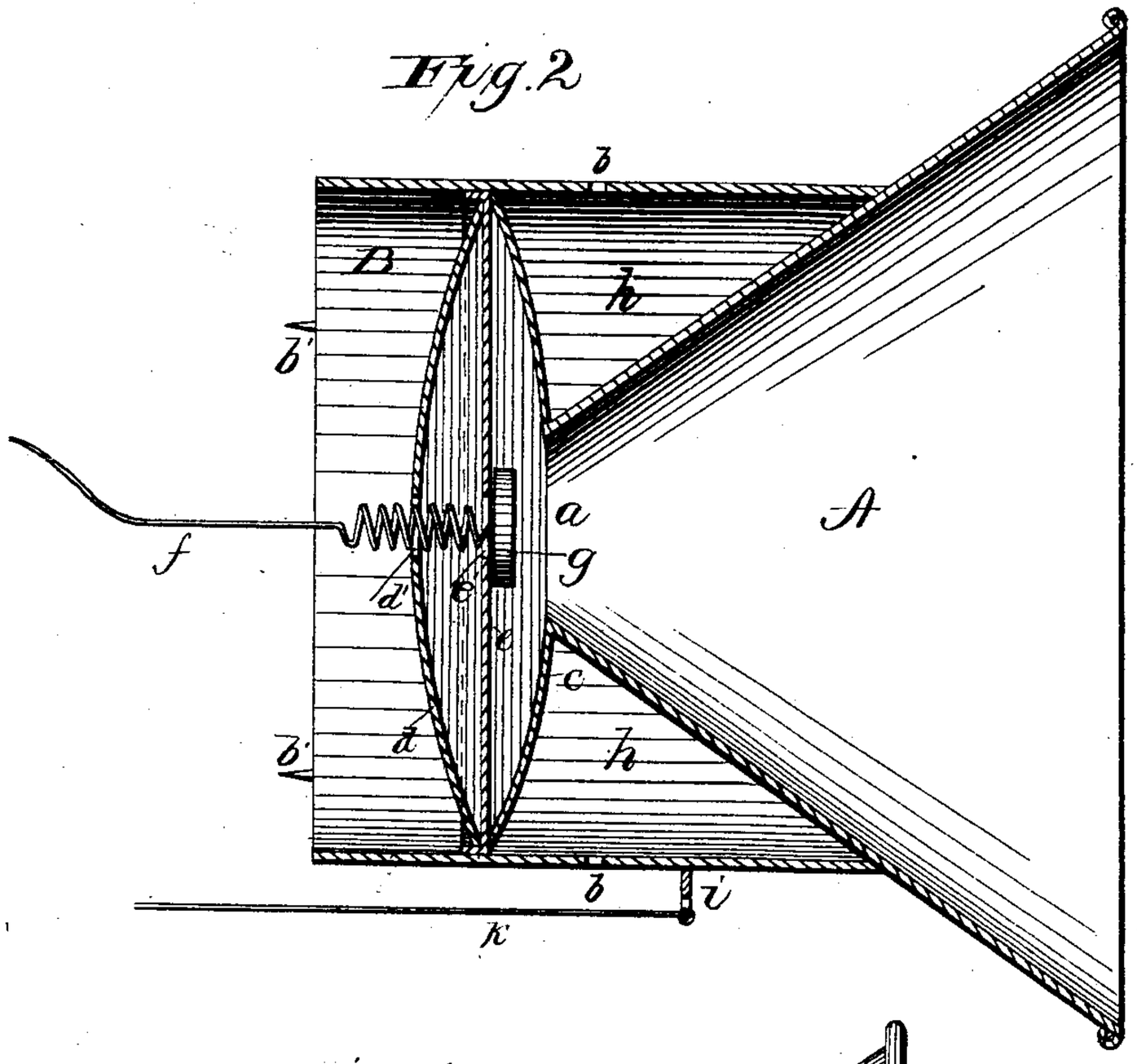
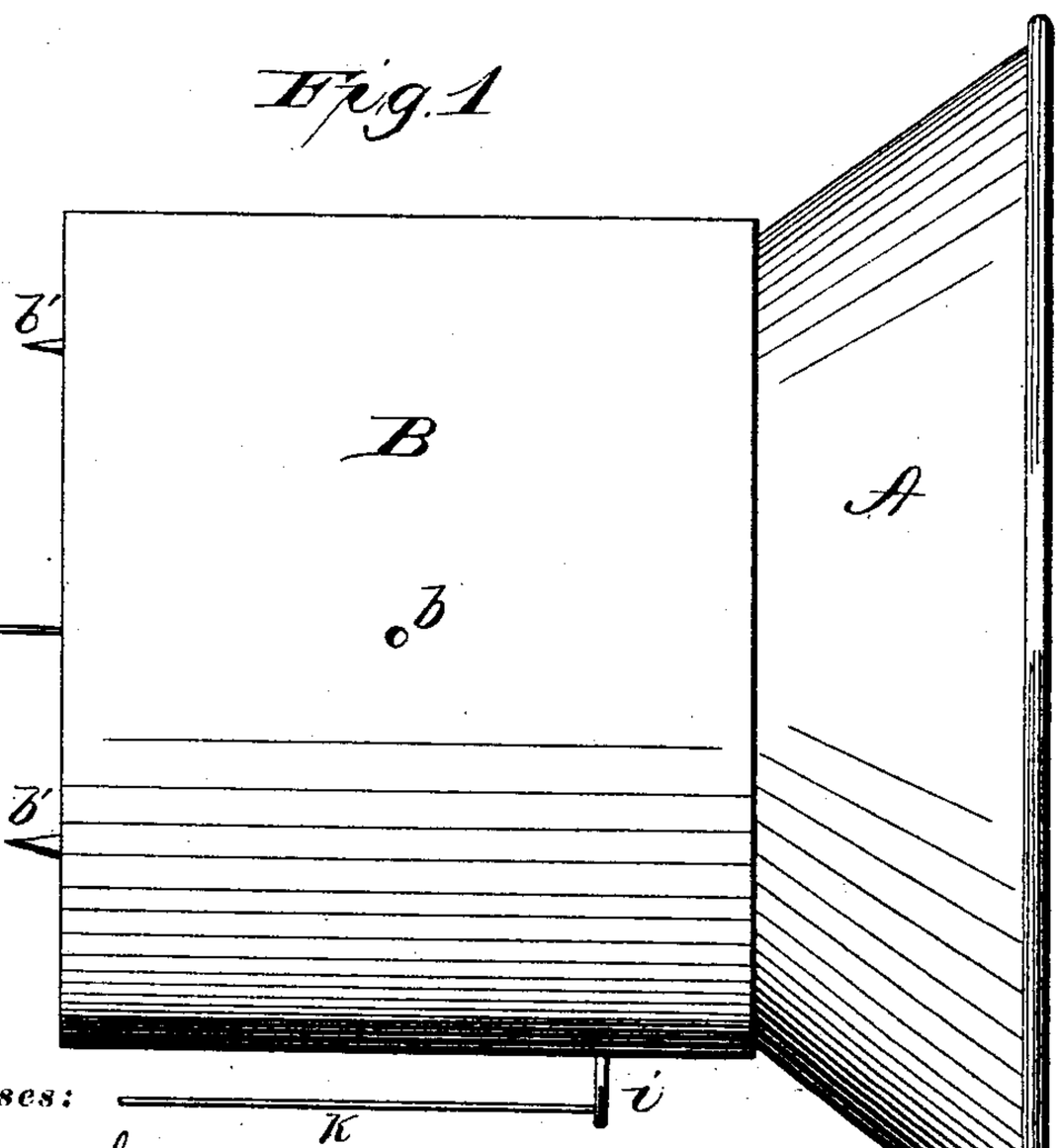


Fig. 1



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UNITED STATES PATENT OFFICE.

HENRY T. WALTERS AND WINFIELD VOORHIS, OF BUSHNELL, ILLINOIS, ASSIGNORS OF ONE-THIRD TO CHARLES WEST, OF SAME PLACE.

ACOUSTIC TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 235,049, dated November 30, 1880.

Application filed March 20, 1880. (Model.)

To all whom it may concern:

Be it known that we, HENRY T. WALTERS and WINFIELD VOORHIS, citizens of the United States, residing at Bushnell, in the county of McDonough and State of Illinois, have invented certain new and useful Improvements in Acoustic Telephones; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of a device embodying the present invention. Fig. 2 is a vertical central section of device shown in Fig. 1.

The object of this invention is to produce a very sensitive and complete acoustic telephone; and the special novelty consists in the construction and combination of the several parts, all as will now be more fully set out and explained.

In the accompanying drawings, A denotes the mouth-piece or receiver, flaring or in shape of a truncated hollow cone, its larger end out. It is preferred to make this part A about three inches deep, and five and one-half inches wide at its greatest width.

B is a short cylinder, into which A is placed about two-thirds of its length. This cylinder is preferably three and one-half inches in diameter in the clear, and three inches long. At the smaller end *a* of cone A, which is preferably about one inch in diameter, is fixed an annular concavo-convex disk, *c*, of a diameter sufficient to make a snug fit inside of the cylinder B. At is periphery it is soldered or fixed securely to the outer edge of the convexo-concave disk *d*, and centrally between these two disks *c* and *d*, and fixed to them at the periphery is the horizontal diaphragm *e*. The concavity of disks *d* and *c* is preferably five-sixteenths of one inch. When the disks, with the central diaphragm, are thus united to each other and to the end *a* of the mouth-piece, and the whole placed in the cylinder B, the disks will be about one-third the distance from the lower end of B, and will fit snugly against the sides of B.

The diaphragm *e* and disk *d* have a central perforation, *e'* and *d'*, about one-fourth of an inch in diameter. The transmitting-wire is secured to the bottom *g*, which is placed directly under the small end *a* of the mouth-piece A and upon the diaphragm *e*. Said wire thence passes down through said perforations and without touching said disk *d*. This bottom will serve to hold the wire and allow it to be drawn as tense as may be needed.

The walls of the cylinder B are perforated at *b* in the space *h* between the sides of the mouth-piece A and above the annular disk *c*. This space, by reason of its office, we call the "sound-concentrating chamber."

On the outside of the cylinder there is a post, *i*, for the ground-wire connection K. It is believed that such a connection is quite necessary in devices of present character to carry off electrical discharges in times of storms. At the lower end of the cylinder there are sharp points *b'*, to enable the mouth-piece to be fixed in the wall, if desired, so as to hold the telephone firm and steady. The parts thus made are soldered or secured permanently together, and may, by painting, gilding, or otherwise be ornamented so as to present a pleasing appearance.

It is designed that the annular disk *c* and disk *d* shall be made of brass or galvanized iron of a thickness nearly or quite equal to No. 20 English wire-gage measure, while the diaphragm *e* is to be made of German silver of a thickness nearly or quite equal to No. 31 of the above gage, and it is preferred to have the concavity of the disks nearly or quite five-sixteenths of one inch.

By the use of this device a remarkable clearness and distinctness of sound can be secured. The German-silver diaphragm and its peculiar relation to the sound-concentrating chamber, with the concave sides of the encompassing disks of a different metal, aid largely in producing this effective result, as has been demonstrated by repeated and most careful tests. The chamber above the annular disks and between the walls of the cylinder and the cone,

pierced, as described, is also of very large importance in gaining the best results from this device.

This instrument is exceedingly sensitive to the movements or influences of sound, and will receive or deliver all messages or sounds in an exceedingly plain and distinct manner.

Having thus described our invention, what we consider new, and desire to secure by Letters Patent, is—

1. In an acoustic telephone, in combination with the mouth-piece or receiver, of the shape of a hollow truncated cone, a cylinder placed partially about it, and provided with concavo-convex disks having a central diaphragm between them, substantially as and for the purposes set forth.

2. In an acoustic telephone, a sound-concentrating chamber at the base or inner end of the mouth-piece or receiver, composed of the brass or galvanized-iron concavo-convex disks and a central horizontal disk of German silver, substantially as described.

3. In an acoustic telephone, the combination of the cylinder B with the mouth-piece or receiver A, the disks *c d*, diaphragm *e*, and wires *f* and *i*, substantially as and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY T. WALTERS.
WINFIELD VOORHIS.

Witnesses:
E. E. CHESNEY,
EMERSON CHESNEY.