

(No Model.)

L. V. ELLIOTT.
ACOUSTIC TELEPHONE.

No. 410,791.

Patented Sept. 10, 1889.

Fig. 1.

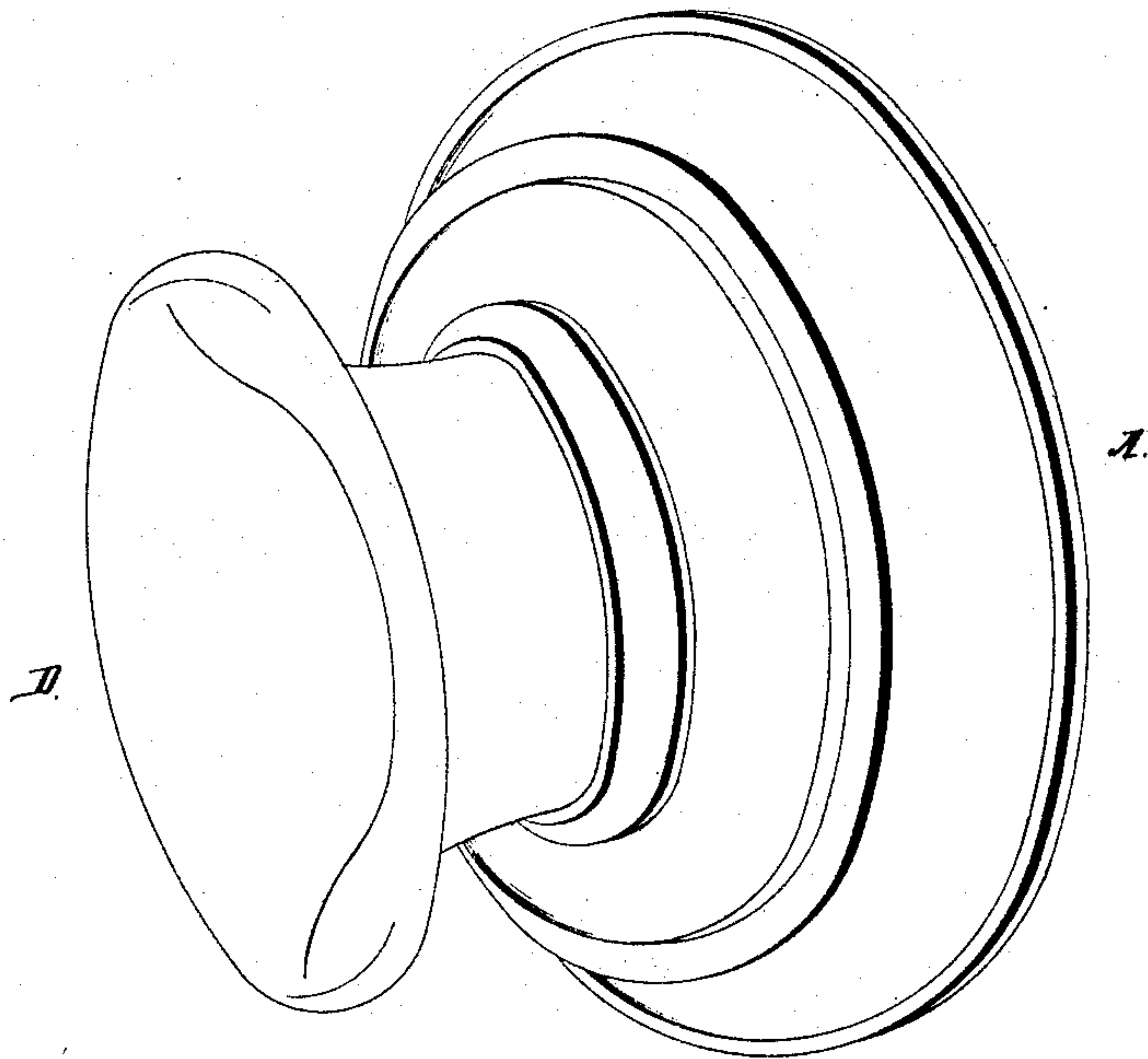


Fig. 2.

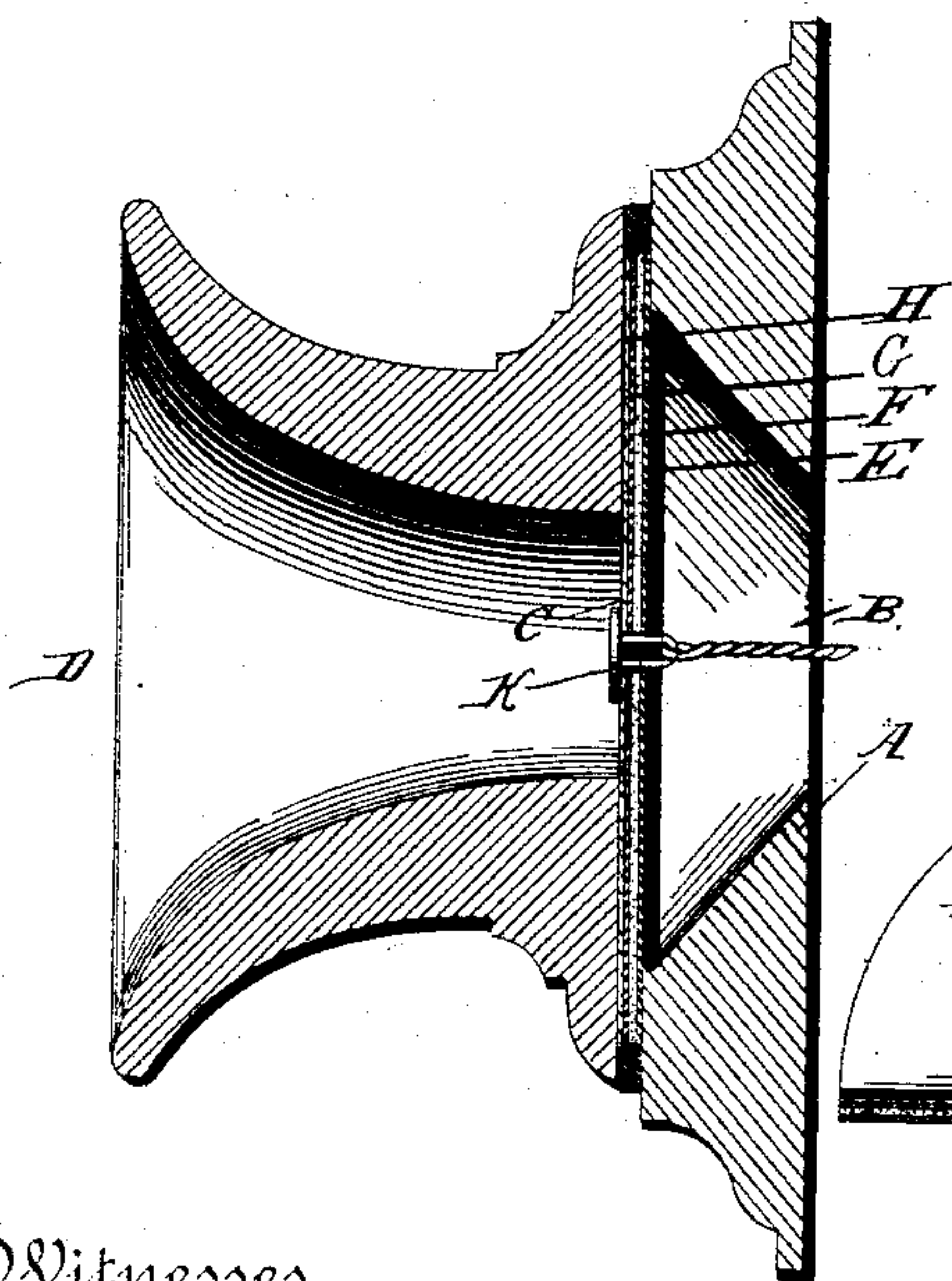
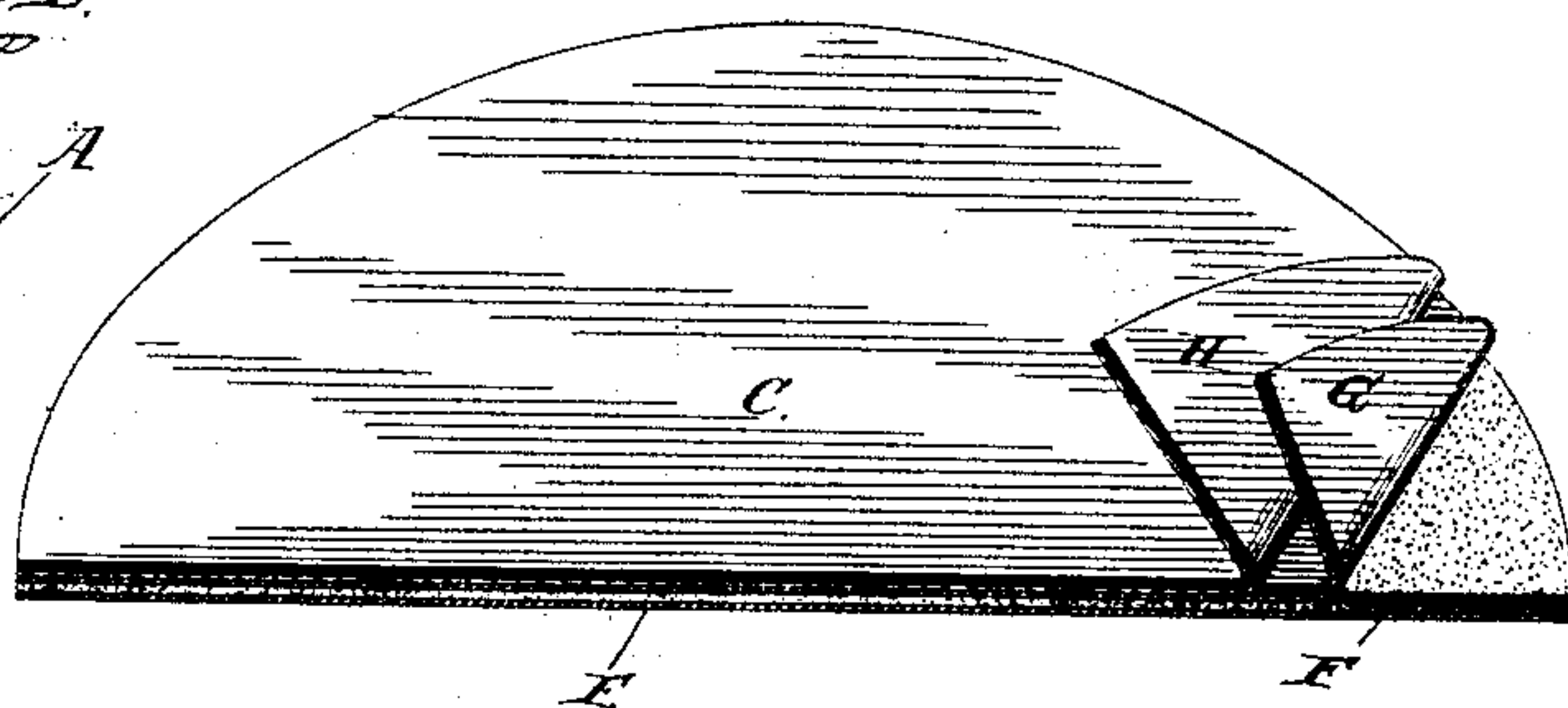


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

LARKIN V. ELLIOTT, OF MOORESVILLE, INDIANA.

ACOUSTIC TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 410,791, dated September 10, 1889.

Application filed February 5, 1889. Serial No. 298,767. (No model.)

To all whom it may concern:

Be it known that I, LARKIN V. ELLIOTT, a citizen of the United States, residing at Mooresville, in the county of Morgan and State of Indiana, have invented new and useful Improvements in Acoustic Telephones, of which the following is a specification.

The invention relates to improvements in acoustic telephones; and it consists in a certain novel construction and combination of devices, fully described hereinafter in connection with the accompanying drawings, and specifically pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a receiver embodying the improvements. Fig. 2 is a central sectional view of the same. Fig. 3 is a detail view of the diaphragm.

Referring by letter to the drawings, A designates the base of the improved receiver, provided with a central opening B, which is flared toward the front side of the base to a diameter of from three and one-half to about four inches, and over this enlarged end of the opening is stretched the diaphragm C, which is secured rigidly to the front side of the base.

D represents the bell-shaped mouth-piece, which is attached to the front side of the base, over the diaphragm, the bore thereof being about three inches long. The bore of the mouth-piece is approximately parallel-sided for the greater portion of its length, and substantially agrees in diameter with the small or rear end of opening B, and it is abruptly flared at its extreme end to about four or four and one-half inches, or slightly larger than the large end of the opening B, as shown in the drawings.

I have found by experiment that much of the indistinctness, hollowness, and unnaturalness of the sound in acoustic telephones is caused, first, by the diaphragm being either too small or too large, and, second, by the mouth-piece being too long and flared or enlarged gradually toward its free end. When the diaphragm is made about four and one-half inches in diameter, so that about four inches is exposed, I have obtained the best results; and when the mouth-piece is made in about the size and pro-

portion described and flared at its end to about four and one-half inches in diameter, the tone of the voice of the operator is preserved. It is neither hollow nor sharp, as when these proportions are not followed.

Another great disadvantage of telephones of this class is that the contact of the wire or button with the diaphragm causes a roaring, singing sound, which interferes with the vibrations of the diaphragm and renders the speech of the operator indistinct. Various devices have heretofore been adopted with a view to overcoming this difficulty; but they have been only partially successful.

In constructing the improved diaphragm I first stretch a sheet E of thick rawhide very tightly across the opening of the base, preferably while wet, so that when it dries it will be still more tightly drawn. I then arrange a layer F of cotton batting or other soft fibrous material on the rawhide. I then stretch a sheet G of thin rawhide over the batting, but not so tightly as the first, and, lastly, I place a sheet H of velveteen on the front side of the loose sheet of rawhide. The line-wire I passes through an opening in the center of the diaphragm, and is provided on its end with a button K, which bears against the velveteen or other covering-sheet H.

It will thus be seen that the diaphragm consists of four members—two sheets of stretched rawhide, (one being preferably heavier and tighter than the other, forming an efficient backing,) an interposed layer of soft fibrous material, and a covering of fabric which receives the pressure of the button. This covering may be omitted without entirely defeating the object of the invention; but it is preferably used as described, inasmuch as it aids materially in preventing the roaring and singing sound above referred to.

The combination of the layer or filling of soft fibrous material and the sheets of hide forms a cushion, which not only prevents the roaring sound in the receiver, but improves the sound by rendering the same more distinct, and enables the diaphragm to reproduce a clear natural tone of voice, such as that which acts upon the diaphragm at the other end of the line-wire.

Having thus described the invention, I claim—

1. In an acoustic telephone, a base-piece having a central transverse opening flared toward the front of the base, a mouth-piece mounted over the base and provided with a bell-shaped bore agreeing in diameter at its front end with the front or large end of the opening in the base and at its rear end with the smaller or rear end of the opening, and a diaphragm interposed between the front face of the base and the rear face of the mouth-piece, and having contact with the latter face at all points except opposite its bore, substantially as specified.

2. The diaphragm for acoustic telephones, consisting of parallel sheets of rawhide, which are held out of contact by an interposed filling or layer of soft fibrous material, substantially as specified.

3. The diaphragm for acoustic telephones, having an inner tightly-stretched sheet of rawhide, an outer loosely-stretched sheet of rawhide, and an interposed filling or layer of

soft fibrous material, substantially as specified.

4. The diaphragm for acoustic telephones, consisting of the sheets E G of rawhide, the filling or layer of soft fibrous material interposed between the said sheets, and the covering H of fabric, substantially as specified.

5. In an acoustic telephone, the combination, with the receiver, of the diaphragm consisting of the rawhide members E G, the filling or layer of soft fibrous material, and the covering C of velveteen or fabric, and the line-wire extending through a central opening in the diaphragm and provided with a button which bears on the said covering, substantially as specified.

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

LARKIN V. ELLIOTT.

Witnesses:

OTTO E. ROOKER,
SAMUEL M. ROOKER.