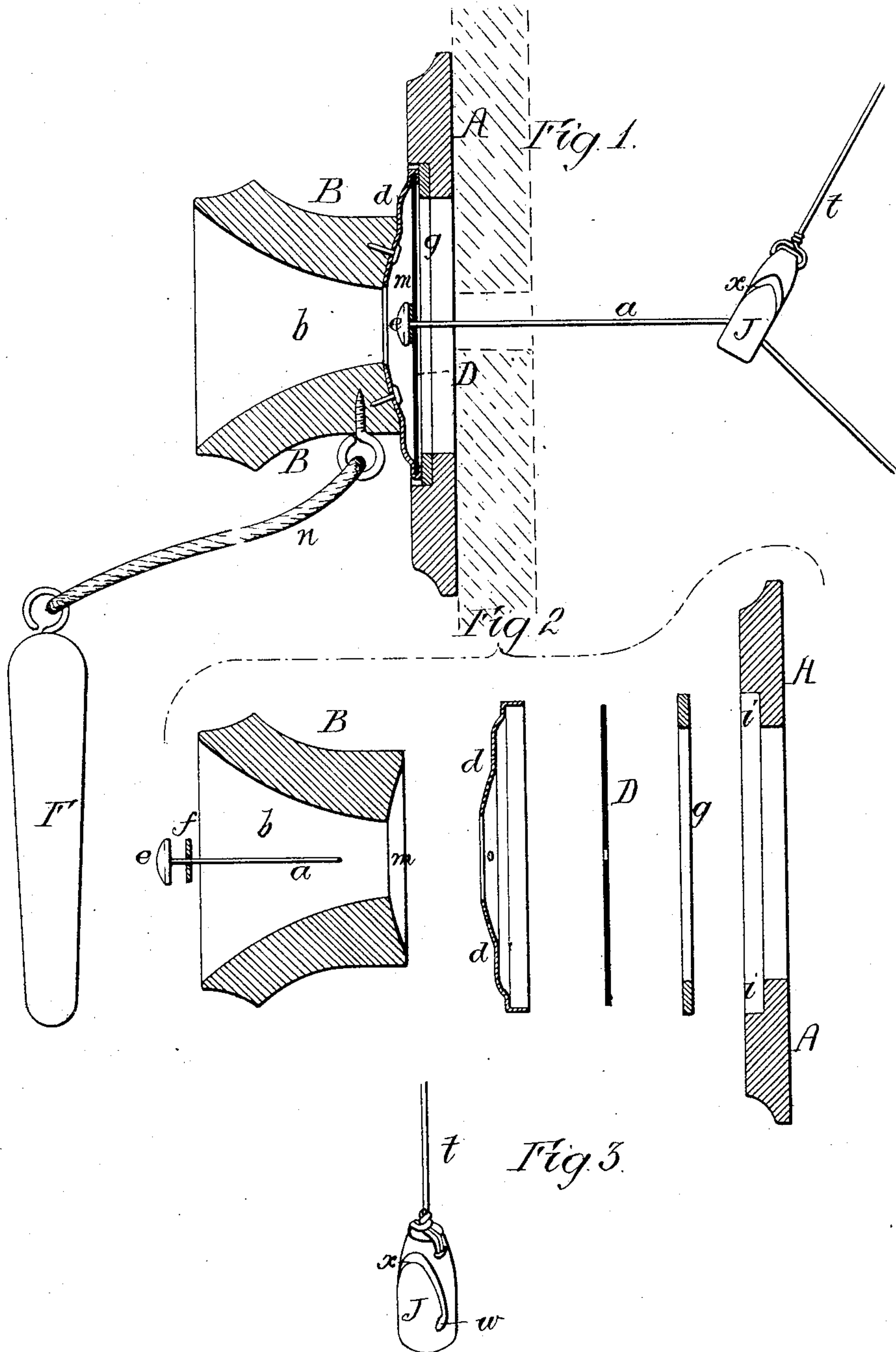


J. J. STILL.  
Mechanical Telephone.

No. 225,177.

Patented Mar. 2, 1880.



Witnesses  
Harry Smith  
Henry Howson

Inventor  
J. Jones Still  
By his Attorneys  
Howson and Son

# UNITED STATES PATENT OFFICE.

J. JONES STILL, OF MALVERN, PENNSYLVANIA.

## MECHANICAL TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 225,177, dated March 2, 1880.

Application filed February 10, 1879.

*To all whom it may concern :*

Be it known that I, J. JONES STILL, of Malvern, Chester county, Pennsylvania, have invented a new and useful Improvement in Acoustic or Vibratory Telephones, of which the following is a specification.

The objects of my invention are to firmly secure the diaphragm to the mouth-piece of the telephone, and to prevent the separation of the diaphragm and mouth-piece from the seat when the conducting-wire expands.

These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of my improved telephone with part of the wire and one hanger; Fig. 2, a sectional view, showing the different parts of the instrument detached from each other; and Fig. 3, a detached view of the hanger.

A represents a ring, preferably of wood, which rests against or is secured to a window-frame or other suitable support, as shown by dotted lines in Fig. 1, said support having an opening, through which passes the conducting-wire *a*.

B is the mouth-piece, having the usual flaring opening *b*; and to the inner face of this mouth-piece is secured, by pins or otherwise, a sheet-metal ring, *d*, having around its outer edge a flange, which is bent around the edge of the diaphragm D, and thus securely confines the same at all points on said edge, thereby insuring the even and regular vibration of the diaphragm under the action of the sound-waves. By the use of the plate *d* the diaphragm may be made of any desired diameter without correspondingly enlarging the mouth-piece B, as in those telephones in which the diaphragm is secured directly to the mouth-piece.

The diaphragm is made preferably of sheet metal, such as is used for ferrotype-plates, and has a central opening for the passage of the wire *a*, on the end of which is formed, or to which is secured, a button, *e*, a washer, *f*, of leather, cork, kid, or like material intervening between the button and the diaphragm, however, so as to prevent the direct contact of the two metallic surfaces.

The diaphragm rests upon a ring, *g*, of elastic or semi-elastic material, fitted to a groove, *i*, in the face of the ring A, the proper contact of the diaphragm with the ring at all times being insured by the tension imparted to the conducting-wire, a tension equivalent to a pull of from six to eight pounds being preferred in practice.

The inner face of the mouth-piece B is beveled, and to this beveled face the sheet-metal ring *d*, carrying the diaphragm, is made to conform, so that adjacent to the inner face of the diaphragm a diverging chamber, *m*, is formed, this chamber being widest at the center, where it communicates with the flaring opening *b* of the mouth-piece, and from this point being gradually narrowed as it approaches the edge of the diaphragm. By means of this diverging chamber the sound-waves are distributed so as to act proportionately on all parts of the diaphragm, thereby insuring a well-defined vibration and clear tone.

The washer *f* and ring *g* also aid in securing clearness of tone, as said washer and ring prevent the direct contact of two metallic surfaces, or of a metallic surface and a wooden surface, which, in acoustic telephones as usually constructed, causes a jingling sound to be imparted to the tones of the voice, and prevents that clear and distinct enunciation which is desirable.

Hung to the mouth-piece B by means of a cord, *n*, is a wooden pin, F, which furnishes a simple and convenient means of sounding a call-signal on the instrument, the button *e* being struck lightly with the point of the pin F when it is desired to attract the attention of a person at the other end of the line.

The hangers for supporting the conducting-wire *a* consist of blocks J, of hard rubber, hung to suspending wires *t*, by which they may be attached to any suitable support. Each block has an opening, *u*, through which the wire *a* passes, and from this opening to the edge of the block extends a slot, *x*, through which the wire may be readily slipped into its place or removed. The hard-rubber hangers interfere but little with the conducting power of the wire, so that the line may be made longer than usual without sacrificing the clearness or volume of the tone.



I claim as my invention—

1. The combination of the mouth-piece B, with the sheet-metal ring *d* secured thereto, projecting laterally therefrom, and having a  
5 flanged edge bent round the edge of the diaphragm D, all substantially as set forth.
2. The combination of the conducting-wire  
10 *a*, the ring A, the diaphragm D, and the elastic or semi-elastic ring *g* interposed between the ring A and diaphragm D, the latter being

kept in contact with the ring *g* by means of the tension upon the conducting-wire, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two sub- 15  
scribing witnesses.

J. JONES STILL.

Witnesses:

H. MORGAN RUTH,  
GEORGE R. STILL.