

(No Model.)

L. BEECHER.  
ACOUSTIC TELEPHONE.

No. 260,737.

Patented July 11, 1882.

Fig. 1.

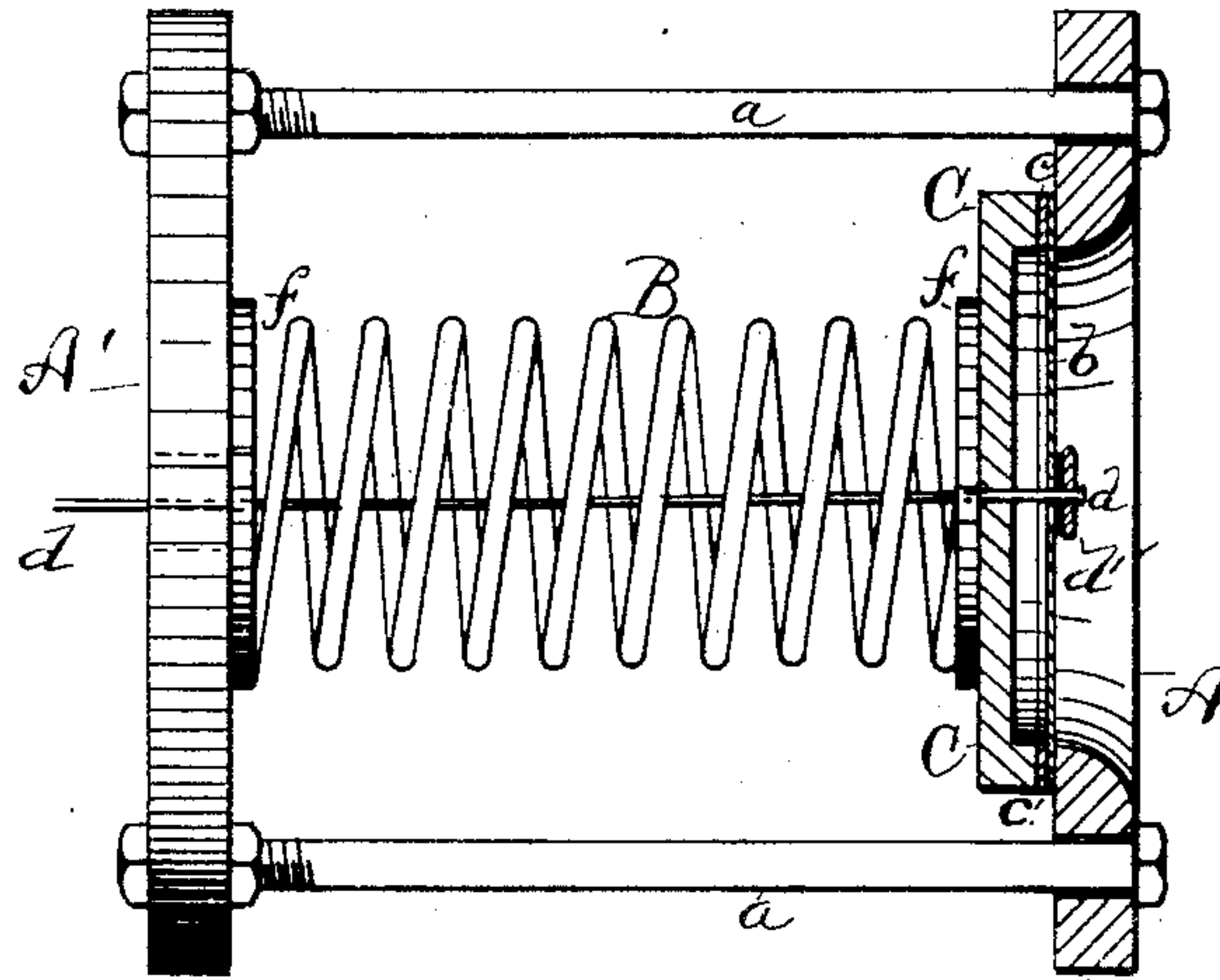


Fig. 2.

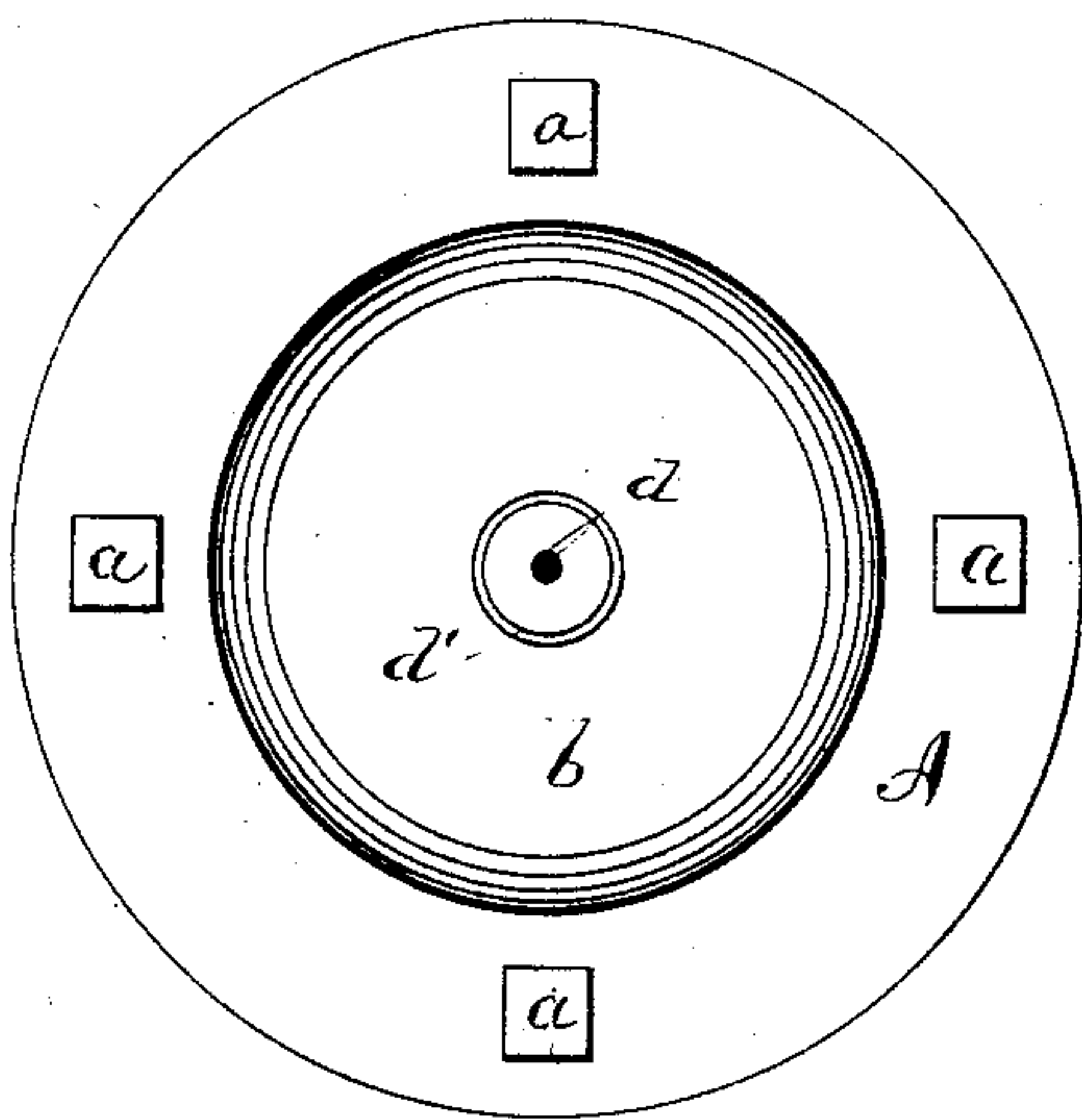


Fig. 3.

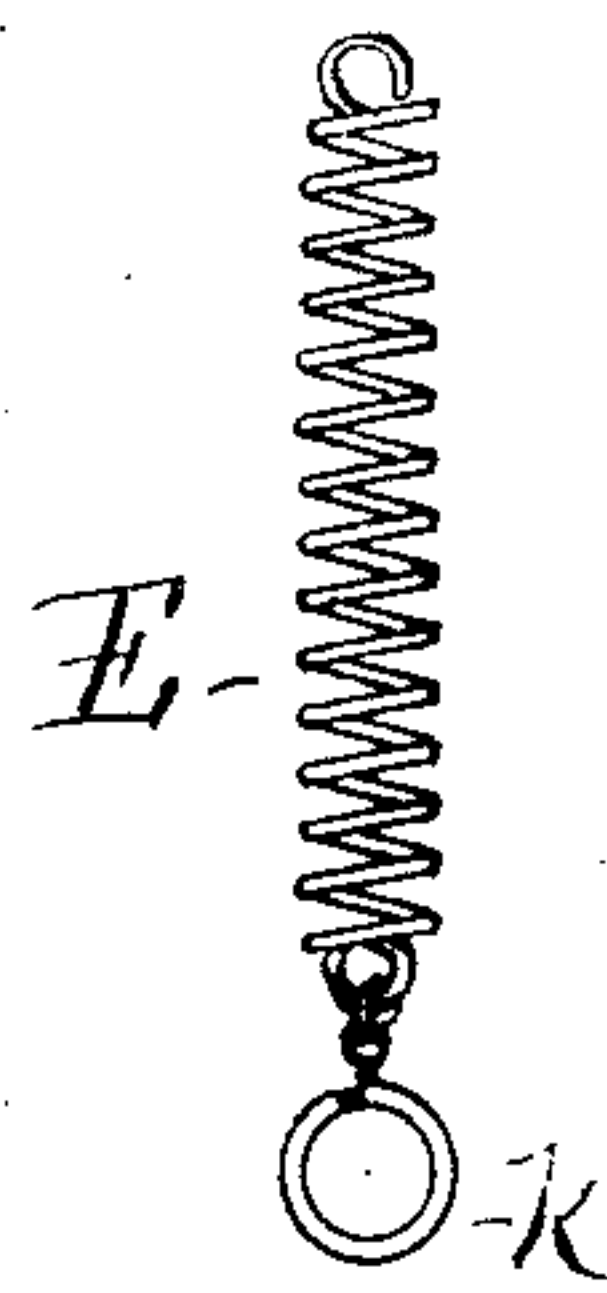
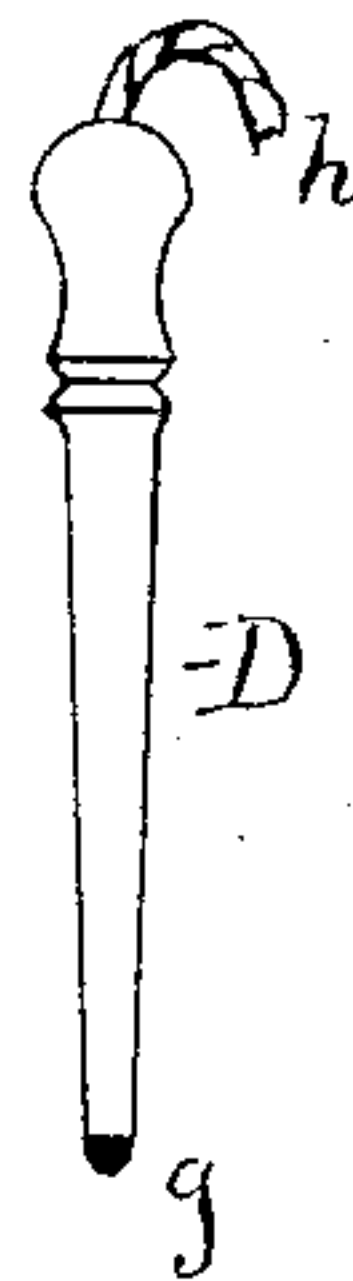


Fig. 4.



Witnessed:

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# UNITED STATES PATENT OFFICE.

LINA BEECHER, OF MEDINA, NEW YORK.

## ACOUSTIC TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 260,737, dated July 11, 1882.

Application filed March 31, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, LINA BEECHER, a citizen of the United States, residing at Medina, in the county of Orleans and State of New York, have made certain Improvements in Acoustic Telephones, of which the following is a specification.

The object of this invention is to get a simple device that will greatly increase the sound, and also allow for expansion and contraction of the line-wire; and the invention consists in its construction, and also in a spring-connection for the line-wire to posts, &c., to prevent breaking, &c., all as hereinafter fully set forth.

In the drawings, Figure 1 is an elevation of the device for receiving and sending sounds, &c., the front end partly in section; Fig. 2, elevation of one end of the transmitter and receiver, showing the mica disk, &c.; Fig. 3, the spring line-connection, and Fig. 4 the signaling-peg.

It is well known that with acoustic telephones usually a sudden change of weather renders them nearly or entirely useless by the contraction or expansion of the line-wire, from warm to cold contracting and either breaking it or destroying the diaphragm, while a change to warm expands the wire and destroys its utility as a vocal conductor. To overcome these defects I make the transmitting and hearing end A slightly movable by its connection with a spiral spring, B, set between the front A and back A' of the frame, by which a uniform tension on the line is preserved to a great extent through atmospheric changes, which is of the greatest importance to these lines. To allow for the action of spring B the front end, A, is connected to the back end, A', by rods *a a a a*, the back A' firmly screwed thereto, but the front A sliding on said rods back and forward, according to the action of the spring. This gives an instrument open at all sides, thus discarding the tube form. This is to avoid the muffled sounds common to acoustic telephones, and allows the operator to get closer to the instrument and concentrate the full volume of voice on the line-wire.

Another important improvement is in employing a flexible transparent diaphragm of

mica, *b*, and which rests at the back on an elastic ring, *c*, made of thin dental rubber. This is called an "articulator," because it stops vibration of sounds to a certain extent, which otherwise would all run together. In addition to this, the spiral spring B is set into rubber seats *f f*, and is held therein by its own tension. These seats are firmly attached to the inside of the back piece, A', and to an extra partly-hollow wooden piece, C, secured to the back of the front piece or end, A, the rubber ring *c* and mica diaphragm *b* being interposed between it and the front piece, A. (See Fig. 1.) This hollow piece C acts as a sound-chamber or sounding-board. This makes the transmitter proper, as well as hearing device.

The rubber seats *f f*, for holding the spiral spring B, not only hold the spring, but entirely insulate it, preventing its vibrations from being communicated to anything but the line-wire *d* at the hearing end. This wire running through the middle of the spiral spring B, some of the sound waves or vibrations from the line-wire are communicated to said spring, which takes them up and intensifies the sounds received thereby, as well as acting as a compensator for line expansion and contraction. The line end is held on a button, *d'*, in the center of the mica disk *b*.

The whole device is of the simplest construction, the front A and back end, A', being of wood. The rods *a a* are of metal.

The call is made by a peg, D, attached near the transmitter by a cord, *h*, and has a metal point, *g*, (see Fig. 4,) which, by striking on the button *d'*, gives the calling-signal.

Lines for acoustic telephones are not usually over a mile long. For attaching these lines to posts, &c., which carry the lines, I use a spring-connection, E, (see Fig. 3,) which is a short coiled spring, one end attached to a post, the other ending in an insulated ring, *k*, the metal part being wound with non-conducting material, like cloth, &c., through which the line-wire passes. This spring-connection allows for all let out or contraction of the wire, and repairing of the line will not be necessary when said line has been "run" with this connection, it being a sure safeguard against damage by wind, sleet, and sudden changes in the weather.



I claim—

1. In combination with the line-wire of an acoustic telephone, the receiving and transmitting device consisting of the front end, A, and back piece, A', the former loose on frame-rods *a a a a* and the latter fastened thereto, the mica diaphragm *b*, rubber ring *c*, back piece, C, spiral spring B, and rubber seats *f*, all arranged and operating substantially as  
10 and for the purpose specified.

2. In an acoustic-telephone transmitting and receiving instrument, in combination with the usual line-wire and the diaphragm *b* and spring

B, the front or transmitting and receiving end, A C *c*, adapted to move automatically back 15 and forth on the rods *a a a a* (attached also to the back piece, A') by the contraction or expansion of the line-wire, aided by the spring B, all substantially as specified.

In witness whereof I have hereunto signed 20 my name in the presence of two subscribing witnesses.

LINA BEECHER.

Witnesses:

J. R. DRAKE,

C. H. KELLOGG.