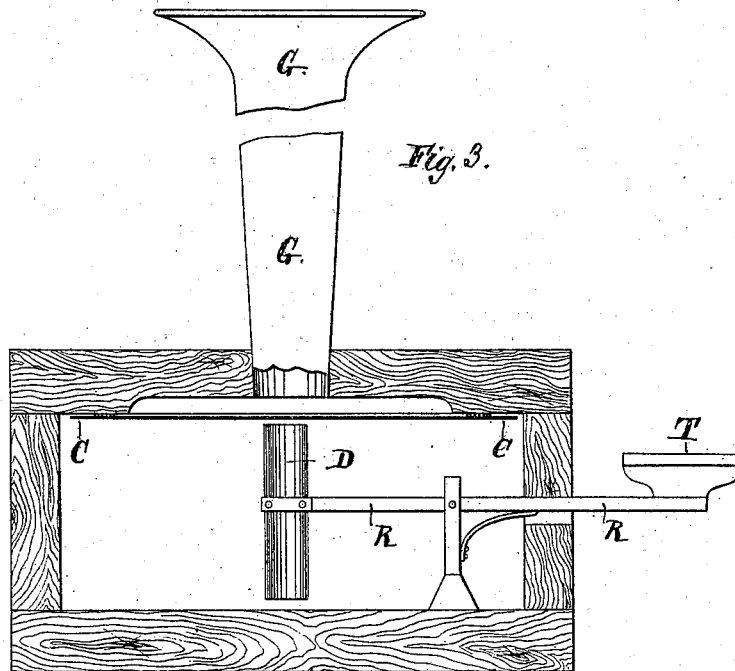
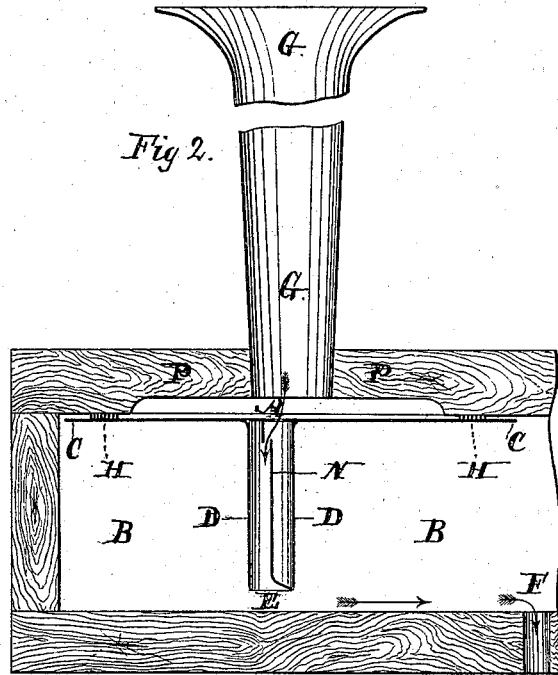
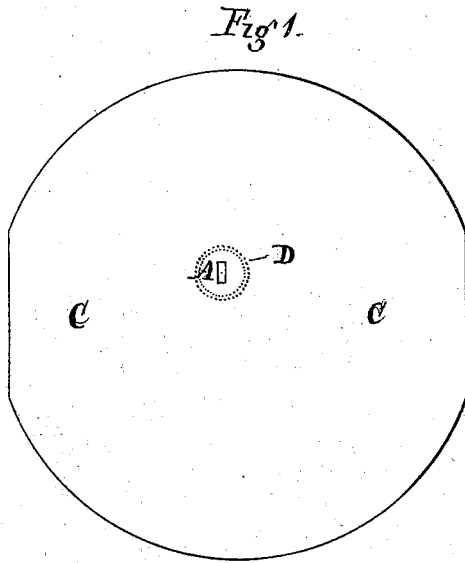


F. A. GOWER.  
Pneumatic Signal Telephone.

No. 217,278.

Patented July 8, 1879.



*Emile Barault*  
*Aug. Harck*

*F. A. Gower.*

# UNITED STATES PATENT OFFICE.

FREDERIC A. GOWER, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO  
HIMSELF AND CORNELIUS ROOSEVELT, OF NEW YORK, N. Y.

## IMPROVEMENT IN PNEUMATIC SIGNAL-TELEPHONES.

Specification forming part of Letters Patent No. 217,278, dated July 8, 1879; application filed  
October 24, 1878.

*To all whom it may concern:*

Be it known that I, FREDERIC ALLEN GOWER, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pneumatic Signal-Telephones, of which improvements the following is a full, clear, and exact description.

My invention has for its object several new combinations in telephones, by which telephonic signals can be given without having recourse to any auxiliary apparatus, such as galvanic battery, magneto-electric machines, &c. These same combinations are also intended to increase the power of the telephone in transmitting vocal sounds and articulate speech.

The basis of my invention is the combination of a musical instrument with a telephone in such a manner that the mouth-piece of the telephone, which is now used only for the transmission of sonorous vibrations, can also be used for the passage of a current of air to actuate the said musical instrument. The telephonic mouth-piece has therefore a double object—the transmission of spoken words and the passage of a current of air to produce a signal.

Another essential part of my invention consists in the placing of the musical instrument, which I desire to vibrate by the current of air which passes through the telephonic mouth-piece in the interior of the box of the telephone, underneath the vibrating plate, the box of the telephone being pierced by one or more holes to permit escape of the air.

There are several ways of realizing my idea, and in the annexed drawings I have indicated two of them.

Figure 1 shows the vibrating plate of the telephone C, pierced by a hole, A, which can be of any form whatever, but which, in my design, is oblong. The vibrating plate C is fixed, by means of a ring of brass or in any suitable way, underneath a cavity formed in the under part of the lid of the wooden box of the telephone, with a caoutchouc band on the whole circumference of the plate, as is seen in H H. The opening of the conical mouth-piece

G reaches to the hollow space over the vibrating plate C.

A tube, D, containing a flexible strip of metal or reed, N, is soldered underneath the vibrating plate C, as shown in Fig. 2, and the box of the telephone B is perforated at the back with one or more holes, F. The poles of a permanent magnet—of a horseshoe shape, for instance—connected in the usual manner with the bobbins of the telephone, are located below the vibratory plate, in proximity thereto, in the ordinary or in any suitable way.

By applying the mouth to the conical opening and blowing, a violent current of air is produced, which passes in the direction indicated by the arrows in Fig. 2 through the opening A of the vibrating plate C, so as to cause the strip of metal N in the tube D to vibrate, thence through the lower end of this tube E, and escapes by the hole F of the box. The sound produced is transmitted to the receiving-telephone with a great intensity, and attracts the attention of the person or persons who are to receive the communications. These communications are made in the usual manner, in an ordinary tone of voice, but are transmitted and received with a much greater intensity of sound. This very remarkable result is evidently due to the dispositions indicated by me, and for which I do not think it necessary to give the theory.

Instead of soldering the tube D to the vibrating plate C, I can attach it to the end of a lever, R, in such a manner that by pressing the knob T the tube is brought into position under the plate only when a call is necessary, as represented in Fig. 3.

I reserve the right to vary the form, dimensions, proportions, materials employed, and accessory matter in such a way as will not affect the really characteristic features of my invention. Experience has, however, demonstrated that it is not a matter of indifference where the reed or whistle is placed with reference to the vibrating plate. Numerous experiments have led to the conclusion, first, that the best effects are produced both as to sound from the reed and articulation by the permanent attachment of the whistle to the

plate; second, that the whistle or reed should be placed eccentrically with respect to the circular plate, and preferably about midway between the center and the circumference of the plate; third, that the reed should be placed so that its free end shall be toward the center of the diaphragm.

Although I have shown and described a rubber ring surrounding the vibratory plate, good effects may be produced with my invention without it. The combination of such a ring with the vibratory plate or diaphragm of a telephone of ordinary construction forms no part of this invention.

I have shown and described my pneumatic signal-telephone as combined with a perforated plate as one of the most practical and ready means of conveying the blast to the reed or whistle; but this perforation in the plate is by no means essential. The blast can be conveyed to the musical instrument around the plate by a tubular connection with the mouth-piece, or by a bellows or rubber bulb or other means independent of the mouth-piece. The perforation in the plate therefore is no part of the within-described invention, except when used in combination with the musical instrument, as already fully set forth herein.

Having thus described the objects of my invention and the means of realizing them, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in the box of a telephone, of a musical instrument which can be sounded by the passage of a current of air blown into

the same mouth-piece which serves to transmit the spoken words, substantially as herein shown and set forth.

2. The combination, with the vibratory plate of a telephone, of a musical instrument or reed, substantially as described, the vibrations of said instrument or reed being communicated directly to the plate of the telephone.

3. A telephone provided with a musical instrument, the vibrating plate of said telephone being pierced with one or more holes of any form, substantially as and for the purposes herein shown and set forth.

4. The combination, in a telephone, of a vibratory and perforated plate, a reed or other musical instrument, and the perforated box, substantially as shown and described.

5. A telephone provided with a musical instrument or vibratory reed, located within the case upon the side of the vibratory plate opposite that on which the mouth-piece is placed, substantially as set forth.

6. In a telephone of otherwise ordinary construction, but having a perforated plate, the movable reed and mechanism to bring the same into and out of contact with said plate, substantially as shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

F. A. GOWER.

Witnesses:

EMILE BARRAULT,  
AUG. VINCK.