

(No Model.)

A. E. DOLBEAR.

MEANS FOR INCREASING THE EFFICIENCY OF TELEPHONES.

No. 325,660.

Patented Sept. 8, 1885.

Fig. 1

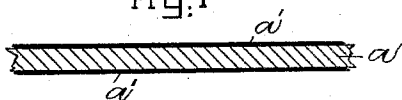


Fig. 2.

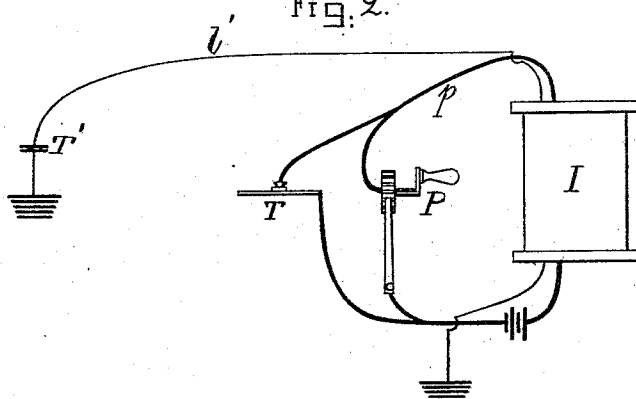
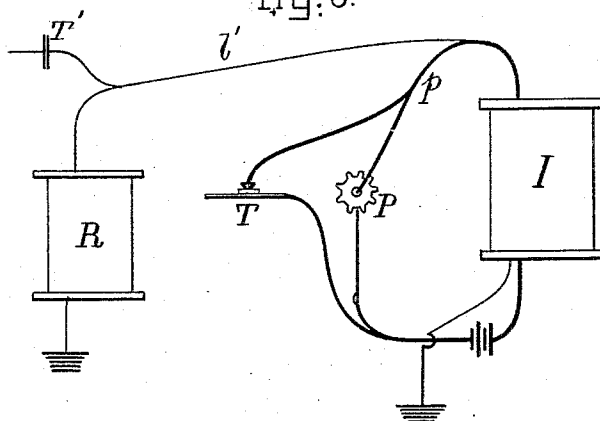


Fig. 3.



Witnesses.

*Lairditz, W. Miller.*

*John R. Snow.*

Inventor.

*Amos E. Dolbear*

*J. E. Magnanini*  
*his Atty*

# UNITED STATES PATENT OFFICE.

AMOS EMERSON DOLBEAR, OF BOSTON, MASSACHUSETTS.

## MEANS FOR INCREASING THE EFFICIENCY OF TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 325,660, dated September 8, 1885.

Application filed April 16, 1883. (No model.) Patented in England December 8, 1882, No. 5,870.

*To all whom it may concern:*

Be it known that I, AMOS EMERSON DOLBEAR, of Boston, (Somerville,) in the county of Middlesex and State of Massachusetts, have  
5 invented an Improved Method and Means for Increasing the Efficiency of Telephones, of which the following is a specification, reference being had to the accompanying drawings, making a part hereof, in which—

10 Figure 1 is a cross-section, enlarged for clearness, illustrating the construction of the plates of my receiver. Figs. 2 and 3 are diagrams illustrating the best method of practicing my present invention.

15 My invention relates to that class of telephones described in my Patents No. 239,742, dated April 5, 1881, and No. 240,578, dated April 26, 1881.

It has been discovered that when one or  
20 both plates of my receiver are kept charged to a high potential, as by a Holtz machine or other generator, the working of the receiver is materially bettered; and while it is possible to effect this result by the continuous rotation  
25 of a machine for generating electro-motive force, or by a sufficient number of battery-cells, yet neither of these methods is well suited for general use, and the object of my present invention is to provide for charging  
30 the plates (one or both) of my receivers and keeping them charged without the inconvenience arising from the use of the means above mentioned. It is well known that when a conductor is charged, whether the conductor forms  
35 part of a closed circuit or not, a dielectric, such as shellac and other materials of like specific induction capacity, in contact with it possesses the property of absorbing and retaining a charge, and I avail myself of this property by  
40 making the receiver-plates of iron coated with shellac, or other dielectric of like specific induction capacity, and charging the dielectric coating by a charge of high potential in the metallic part of the plate, best given by rapidly making and breaking the battery-circuit  
45 of an inductorium, to the secondary of which the plate to be charged is connected, as hereinafter more fully described.

50 In the drawings, Fig. 1 illustrates the construction of my plates *a*, representing the metallic plate and *a'* the coating of shellac or similar dielectric.

Before my present invention it was thought necessary, for the best results, to connect the metal plate *a* with some generator of continuous high electro-motive force, as a battery of many cells or a Holtz machine kept in rotation. This not only kept the metal plate *a* charged, but also necessarily charged the line with which metal plate *a* was in electric connection, and while efficient as to the result sought was objectionable for other reasons.

In Fig. 2 the plate is connected with a line, *l'*, of which the secondary coil of inductorium I forms a part, and in the primary circuit *p* of this inductorium there is a circuit-breaker, by the operation of which the circuit can be rapidly made and broken, thereby inducing momentary electro-motive force in the secondary coil of inductorium I and the line *l'*, and this charging and discharging of the metal plate *a* soon causes the coating *a'* to become so charged that it will remain charged for days. In the practical use of this apparatus the person about to use the telephone first operates the circuit-breaker P for a few seconds and then talks to the transmitter T in the usual way, and is heard at the receiver T'.

The transmitter consists of the usual diaphragm and electrodes for varying the resistance of the primary circuit by the energy of the sound-waves.

I have shown the circuit-breaker P in a shunt; but this is not essential, although it is desirable for some reasons to shunt out the electrodes of transmitter T when the circuit-breaker is in use. But the function of the circuit-breaker P is to vary the battery-current in the primary circuit of the inductorium rapidly and largely. The charging of the dielectric coating of the receiver T' is practically effected by operating the circuit-breaker P, and my theory is the well-known one that the potential induced in the secondary by the break in the primary (whether P be in a shunt or in a primary proper) is far greater than the potential induced by the make, for the latter is comparatively gradual, while the former is abrupt.

The line-wire is in electric contact with the metallic plate of the diaphragm of the receiver T', as fully described in my patents above named.

I do not claim the charging of the receiver.

plates by means of a Holtz machine or other machine kept in continuous rotation, or by a battery in the line; nor do I limit my claim to the precise means shown for charging the receiver-plates, as my invention includes any known means for rapidly varying the current in the primary of an inductorium whose secondary constitutes the line in combination with a receiver whose plates are coated with shellac or the like.

In Fig. 2 the line is an open circuit and the plates form the terminals of that circuit; but this is not essential, for the line may be a closed circuit, provided a sufficient resistance be interposed, as shown at R in Fig. 3, to cause sufficient electric pressure or potential at that point in the line at which the plate-receiver T' is connected. The other plate of receiver T' in Fig. 3 may be grounded or other-

wise, as described in my Patent No. 240,578, above mentioned.

The construction of the receivers T' is the same as described in my above-mentioned patents, except that the plates are coated with shellac. In practice the well-known ferrotype iron is used.

What I claim as my invention is—

In combination with the metal plate of the receiver coated with a dielectric, as explained, an inductorium whose primary contains a circuit-breaker adapted, when in operation, to induce a high electro-motive force in the secondary circuit, and thereby charge the dielectric coating of the plate.

AMOS EMERSON DOLBEAR.

Witnesses:

G. B. MAYNADIER,  
JOHN R. SNOW.