

(No Model.)

J. H. ROGERS.

TELEPHONE.

No. 297,167.

Patented Apr. 22, 1884.

Fig. 7.

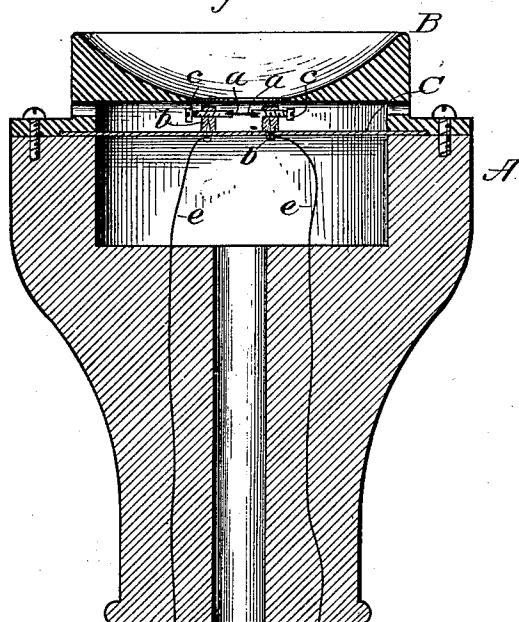
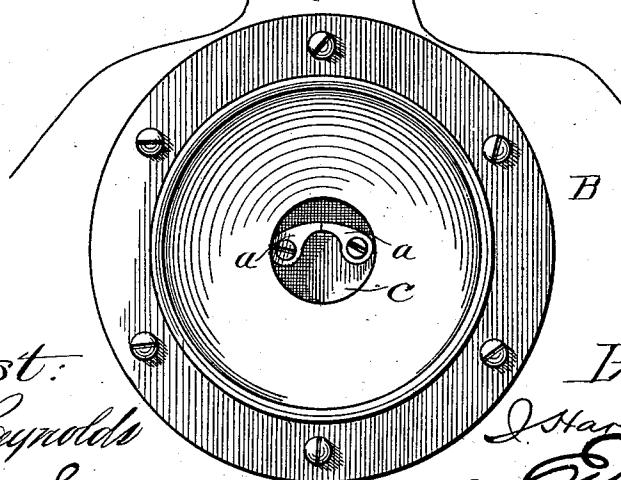


Fig. 8.



Attest:

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# UNITED STATES PATENT OFFICE.

JAMES HARRIS ROGERS, OF NEW YORK, N. Y.

## TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 297,167, dated April 22, 1884.

Application filed December 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HARRIS ROGERS, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Telephones, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to electric telephones of the class in which the electric undulations which convey articulate speech are caused and controlled by the varying resistance of an imperfectly conducting medium under pressure, and more particularly to instruments in which the sound-waves sent by a transmitter having two carbon points held under varying pressure upon the diaphragm are reproduced in a receiver of similar construction.

15 It has been found that in instruments of this class, when operated over long lines where the sound-waves are caused by a simple variance in pressure upon the electrode, the current is weakened to such a degree that 20 tones produced in the receiver are hardly audible, and various means—such as telephonic relays—have been introduced into the circuit to counteract this decrease in intensity. I have found, however, that an instrument constructed in the manner hereinafter described, 25 and adapted for use either as a transmitter or receiver, will transmit tones which will be reproduced in the receiver with great volume without the interposition of relays or other devices for the same purpose.

30 The invention consists in a telephone having a diaphragm of carbon or metal, and carrying two adjustable electrodes adapted to be brought directly into contact with each other, 35 and which are in electrical connection with the terminal conductors.

In the accompanying drawings, Figure 1 shows a vertical section of a telephone, and Fig. 2 a plan of a modification.

40 A represents the recessed body of the telephone; B, the mouth-piece, and C the diaphragm, clamped between them by screws, as shown. Upon this diaphragm—which may be of metal, hard rubber, or carbon—I mount 45 two carbon electrodes, *a a*. These electrodes may be mounted directly upon the diaphragm; but I prefer the construction shown in the drawings, in which short standards *b b*

are mounted upon the diaphragm—one on each side of the center. In each standard is 55 a horizontal screw, *c*, which supports the carbon electrodes *a a*, the electrodes being adjusted to normal contact by means of the screws. The standards *b b* are in electrical connection with the wires *e e*. I have shown 60 the electrodes as mounted upon the diaphragm between it and the mouth-piece; but as good results may be produced by placing them upon the opposite side.

As before stated, this form of instrument is 65 used both for transmitting and receiving, the sound-waves being produced and controlled by the varying pressure of the electrodes in the transmitter and reproduced in the receiver in the same manner.

70 In the modification shown in Fig. 2 the carbons are pivoted on screws, so that they may be adjusted horizontally on the diaphragm to normal contact by turning them on the pivots and bringing their points or edges together.

75 I am aware that two carbons have been mounted upon a diaphragm and adjusted simultaneously by changing the form of the diaphragm by a spring bearing thereon, and also 80 that a carbon electrode has been held loosely in two cups, which are adjusted by screws, and I desire to disclaim these constructions.

Having described my invention, I claim—  
85 1. In a telephone adapted for use either as a transmitter or receiver, the diaphragm, in combination with two electrodes mounted thereon in direct contact with each other, such electrodes being adjustable independently of the diaphragm and of each other, 90 and electrical connections, substantially as described and shown.

95 2. In a telephone adapted for use either as a transmitter or receiver, the diaphragm, in combination with the standards, the screw carbon-holders, the independently-adjustable electrodes held in direct contact with each other, and electrical connections, substantially as described.

100 In testimony whereof I affix my signature in presence of two witnesses.

JAS. HARRIS ROGERS.

Witnesses:

L. W. SEELEY,  
E. M. MARBLE.