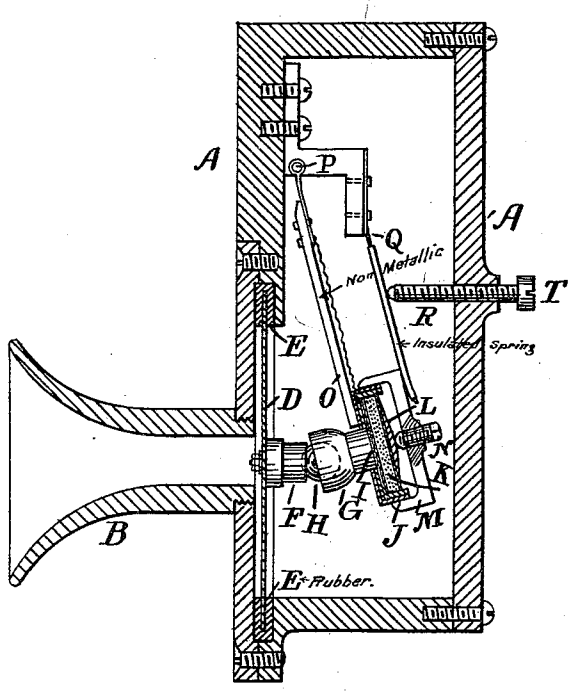
(No Model.)

J. C. H. STUT.

TELEPHONE.

No. 438,784. Patented Oct. 21, 1890.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN CH. H. STUT, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE AMERICAN BELL TELEPHONE COMPANY, OF BOSTON, MASSACHUSETTS.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 438,784, dated October 21, 1890.

Application filed September 16, 1889. Serial No. 324,073. (No model.)

To all whom it may concern:

Be it known that I, JOHN CHRISTIAN HENRY STUT, of the city and county of San Francisco, in the State of California, have invented an Improvement in Telephones, of which the following is a specification.

The invention consists in details of construction hereinafter specified.

The drawing is a sectional view of a telephone embodying my present invention.

In my former patent, No. 355,952, issued to me January 11, 1887, I have shown in combination with the diaphragm and the contact-point supported by the diaphragm a second contact-point and a cup containing granulated material supported by an insulated elastic arm. In the present case the cup and second contact-point are supported by a rigid arm, which is not elastic, and is fulcrumed, so as to swing about pivot-pins, and in connection therewith I employ an independent adjustable spring, which acts upon the rear portion of the cup without being directly connected with it, so as to prevent any breaking of the circuit when violent vibration of the diaphragm is produced by loud sounds. By making the non-elastic and fulcrumed arm of hard rubber or non-metallic substance I prevent any ringing or metallic tones therefrom.

A is an exterior case.

D is the diaphragm, the edges of which are secured in a rubber or other packing E to reduce the metallic tones of the diaphragm when set in vibration. To the center of the diaphragm is fixed a piece of carbon F, which extends a short distance inwardly from the diaphragm, and has its inner end made concave, as shown.

B is the mouth-piece or speaking-tube of the instrument.

G is a concave carbon cap, which is supported by or attached to a shallow cylindrical cup J, in turn supported by an arm O, formed of rubber or other non-metallic material, so that said cap G stands exactly opposite the concavity of the carbon piece F, and within the cap G is contained a ball of carbon H, which forms the contact between the carbon piece F and cap G. The cap G has its base connected with platinum-plated disk I within the said shallow cylindrical cup J, and this cup contains granulated carbon, as shown at K, which is insulated from the sides of said cup J by any suitable insulated material, as shown. Upon the opposite side or back of this granulated carbon is a platinum-plated plate or disk L, and a yoke M extends across the back of the cup J, and has an adjusting-screw N passing through it and pressing upon the plate or disk L, so that the pressure of the granulated carbon within the cup may be regulated at will, as described in my said former patent. The said arm O, supporting the cup J as aforesaid, is hinged or pivoted, as shown at P, so that it may swing freely about the pivot-pins.

The telephonic circuit is from the diaphragm through contact-point F, ball H, cap G, disk I, granulated carbon K, disk L, screw N, yoke M, cup J, and a wire along the arm O. This circuit is normally maintained by force of gravity, acting upon cup J, containing the granulated material, due to its suspension by the arm O upon the pivot-pins P. In order to retain the cap G in proper relation with the contact-point F on the diaphragm and the intermediate carbon ball H, in the operation of the instrument I employ a light spring Q, which is insulated and presses upon the yoke M or other convenient part of the cup J with a light pressure, but which is entirely independent of the arm O. The effect of this device is to prevent the entire breakage or interruption of the circuit caused by violent vibrations caused by loud tones. This combination of gravitation and spring action makes a differential action, which is not like that of the spring or gravitation alone; and this differential action is facilitated by the carbon ball, which always rests upon the inside of the cap G.

The spring Q is adjusted to greater or less pressure by means of the screw R, which passes through the back of the case A, and is operated by the thumb piece or nut T.

I claim—

1. In a telephone, the hinged non-metallic swinging arm supporting the cap and carbon ball and maintaining contact by gravitation, in combination with the independent spring Q, pressing upon the cap but insulated there-

from, said spring and arm producing a differential pressure substantially as described.

2. The combination of the diaphragm D, concave contact-points F and G, and intervening ball H with the cup J, disks I and L, and intervening granulated material K, the pivoted arm O, supporting said cup, and the spring Q, pressing upon said cup, substantially as described.

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Witnesses:
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