

(No Model.)

W. R. COLE.
TELEPHONE TRANSMITTER.

No. 522,404.

Patented July 3, 1894.

Fig. 1.

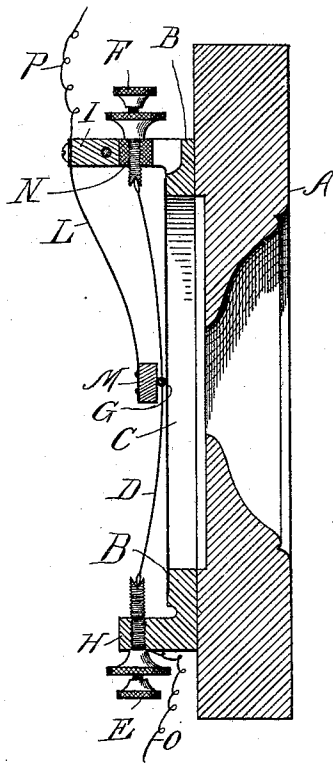
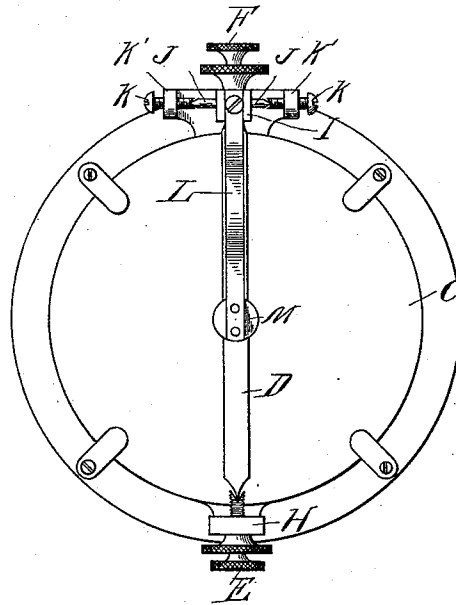


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM R. COLE, OF DETROIT, MICHIGAN.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 522,404, dated July 3, 1894.

Application filed April 30, 1894. Serial No. 509,468. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. COLE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar construction and arrangement of the electrodes in the transmitting circuit, whereby the variations of the diaphragm in speaking are greatly amplified, and thereby render the instrument very sensitive to the human voice, without being affected by outside influences, such as jars or concussions; further in the construction of the electrode supports whereby the construction is simplified and cheapened, and whereby the vibrations of the spring contact produced from the diaphragm are dampened or checked.

Figure 1 is a vertical, central cross-section, and Fig. 2 is a rear elevation of an instrument embodying my improvements.

A is a wooden base or mouth piece, provided with an orifice for speaking through.

B is a metal frame, preferably ring shaped, secured to the base and holding the diaphragm and the other parts in position thereon.

C is the diaphragm, secured by clamps or otherwise, to the frame B.

D is an elastic bar, supported at both ends in a deflected condition, to bring its center into proximity to the center of the diaphragm. E and F are adjusting screws, supporting said elastic bar at the rear of the diaphragm.

G is a platinum point or electrode attached to the center of the elastic bar and resting on the diaphragm.

H is a lug on the frame B, to hold the adjusting screw E.

I is a lever, preferable of metal, and fulcrumed by means of the trunnions J.

K are screws supported in lugs K' of the frame and forming bearings for the trunnions J.

L is an elastic bar, secured to the lever I, and projecting toward the center of the diaphragm.

M is a carbon button or like contact, secured to the free end of the bar L, and resting on the contact G.

N is a non-conducting substance in the lower end of the lever I which is screw-threaded to receive the screw F.

O and P are the incoming and outgoing electrical connections.

The parts being constructed and arranged as shown and described, the tension of the bar D and L is so adjusted that the contact point G normally rests on the diaphragm and the electrode M on the contact point. These adjustments can be made accurately and very sensitive to vibrations, by means of the adjusting screws.

In operation, the bar D maintains the platinum point in contact with the diaphragm and the bar L maintains the contact between the electrode and the platinum point, but the vibrations of the diaphragm cause a variation of pressure between them, which produces the undulation in the transmitting circuit. Now, it will be seen that the varying pressures of the diaphragm against the bar L, produce corresponding variations of pressure against the button M, but these variations in pressure are greatly amplified by the action of the lever I, which is caused to oscillate on its fulcrum on account of the elongation, and contraction of the bar D, which causes the bar L and electrode M to bring varying pressures to bear against the contact G, thereby proportionately increasing or diminishing the variations in pressure between the contacts G and M. The advantages obtained by this construction are:

First—It is not easily affected by outside vibrations.

Second—The curved spring bar D carrying one electrode acts like a toggle lever upon the bell crank lever formed by the block I and spring arm L, increasing the power as it approaches a straight line, the motion being multiplied by the bell crank. Thus we have the contacts carried by levers, or springs acting as levers, and both acting to increase the pressure with increase of vibration of the diaphragm.

Third—I obtain an easy and sensitive adjustment.

What I claim as my invention is—

1. The combination with a transmitting diaphragm, of the electrodes of a transmitting circuit, between which variations of contact are caused by the vibrations of the dia-

phragm, a curved spring bar secured between a fixed and a movable support, and maintaining one of the electrodes in contact with the diaphragm, an arm or bar maintaining
5 the other electrode in contact with the first one, and a lever to one end of which said arm or bar is secured, and the other end of which forms the movable support for the curved bar, all arranged to operate substantially as
10 described.

2. The combination with a transmitting diaphragm and the transmitting circuit, of the curved flexible bar D, the contact G carried by said bar, and resting on the diaphragm,
15 the adjusting screw E forming a stationary support and the adjusting screw F, forming a movable support for said bar, the lever I fulcrumed in stationary bearings, and the flexible arm L secured to said lever, and carrying
20 at its free end the electrode M resting

against the contact G, all substantially as described.

3. The combination with the transmitting diaphragm, of a curved spring bar arranged across the diaphragm and carrying one of the
25 electrodes centrally in contact with the diaphragm, the inward movement of the diaphragm tending to straighten the bar, and a bell crank lever against one arm of which one end of the spring bar bears, and a spring
30 bar forming the long arm of the bell crank, and carrying the other electrode bearing against the electrode on the spring bar, substantially as described.

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

WILLIAM R. COLE.

Witnesses:

M. B. O'DOHERTY,

L. J. WHITEMORE.