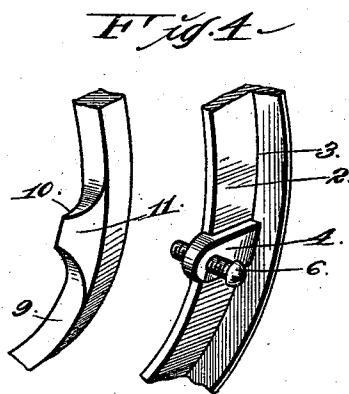
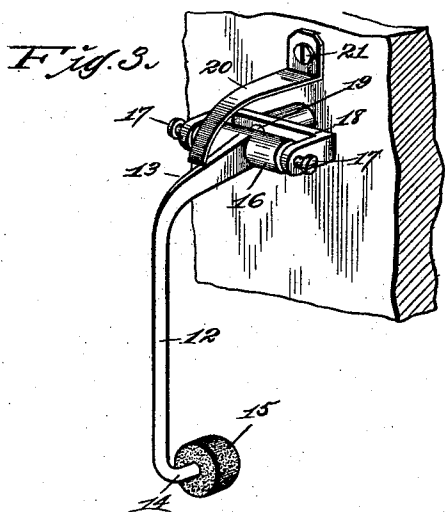
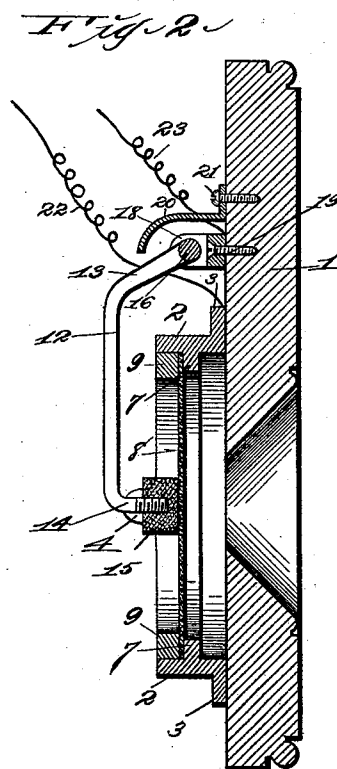
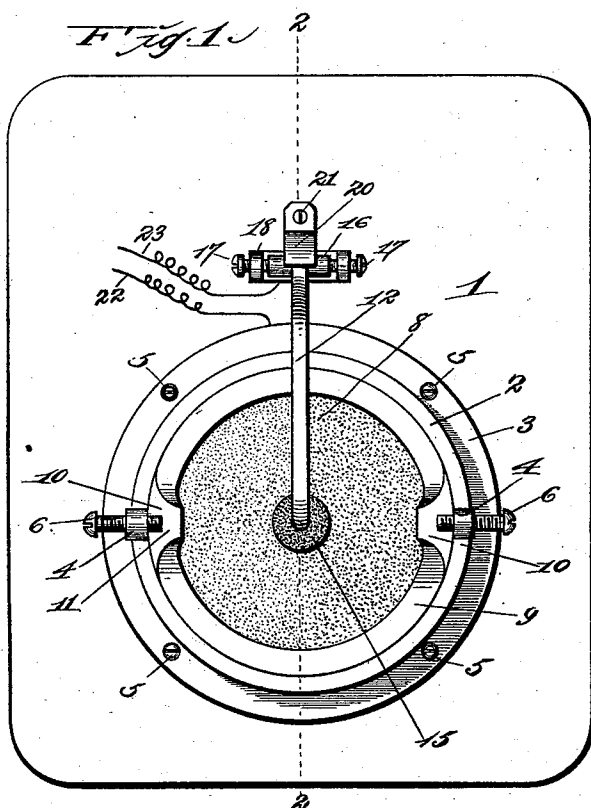


(No Model.)

D. A. KUSEL.
TELEPHONE TRANSMITTER.

No. 531,194.

Patented Dec. 18, 1894.



Attest
W. P. Smith.
A. A. Kusel.

Inventor:~
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Attys

UNITED STATES PATENT OFFICE.

DAVID A. KUSEL, OF ST. LOUIS, MISSOURI.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 531,194, dated December 18, 1894.

Application filed August 6, 1894. Serial No. 519,544. (No model.)

To all whom it may concern:

Be it known that I, DAVID A. KUSEL, of the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved electric telephone transmitter, and consists in the novel construction, combination and arrangement of parts hereinafter specified and designated in the claim.

The object of my invention is to provide an improved transmitter of the class above mentioned which shall be very simple in construction but strong and durable in all its details, and yet be very sensitive, efficient and reliable in operation.

In the drawings: Figure 1 is a rear elevation of the front face of a transmitter-box having my invention applied thereto. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a detail view in perspective of an overhanging arm carrying the carbon button made use of in carrying out the invention. Fig. 4 is a detail view in perspective of portions of my improved diaphragm holder and its clamping ring.

I have only illustrated those portions of a transmitter which appertain directly to my invention, the remaining portions being old and well known.

1 indicates the front face of the transmitter-box, the same being constructed of wood or other suitable material in the usual manner. Secured on the rear face of the front piece 1 is the circular diaphragm holder 2, which is preferably cast integral of any suitable metal of good conductivity with a peripheral base flange 3 and diametrically opposite perforated ears 4. The diaphragm holder is secured to the front piece 1 by means of suitable screws 5 or common fastenings passed through the perforations in the base flange of the holder and engaging the said front piece. The ears 4 project a distance beyond the rear edge of the diaphragm holder 2 and have threaded into each of them a clamping screw 6 which extends in a horizontal plane parallel with the surface of the front piece 1, and the clamping screw carried by one of said ears is in

alignment with the screw carried by the opposite ear.

The diaphragm holder 2 has an internal annular flange or shoulder 7, which supports the diaphragm 8 some distance in the rear of the front piece 1.

The diaphragm which I preferably make use of is composed of a thin sheet of plate of carbon, although it is clear that a common metallic diaphragm or a diaphragm made of any material and susceptible of being vibrated by sound waves, may be made use of, if it be provided with means for varying the contact between itself and the carbon button.

The diaphragm 8 is clamped in position by means of a detachable clamping ring 9 of about the same diameter as is the diaphragm so that it fits loosely upon the rear of the diaphragm and clamps the latter continuously throughout the contacting face of said ring. This ring is of such form as to extend from the rear face of the diaphragm flush with the rear edge of the diaphragm holder 2. The ring is provided with diametrically opposite projections 10 on its rear edge, the same having inwardly and rearwardly converging or inclined surfaces 11 which are engaged by the inner ends of the clamping screws 6 so that when said screws are moved toward each other they will forcibly engage said inclined surfaces of said ring and urge the latter forward into intimate contact with said diaphragm.

An important portion of my invention is the manner of mounting the carbon button forming one of the electrodes of my improved transmitter.

12 indicates what I term an overhanging arm made of any suitable conducting material with a straight body portion intermediate of its ends. The arm 12 is bent at points adjacent both of its ends so that it has two forwardly projecting portions 13 and 14 which extend substantially at a right angle to the said body portion. Threaded or otherwise secured upon the lower projecting portion 14 of said arm is the carbon button 15 having preferably a front face in the form of a smooth surface of considerable area. Formed on the forward end of the upper projecting portion 13 of said arm are pivot sockets 16 which are engaged by common pivot screws 17 threaded through

the opposite ears of a supporting bracket 18, which latter is secured to the front piece 1 at a point directly above the diaphragm holder 2, by means of a common screw 19 passed through said bracket and engaging said front piece. Of course the pivot sockets 16, screws 17 and bracket 18 are to be made of metal or some good conducting material and all are in electrical contact, as is also the button 15 in electrical contact with the arm 12.

It will be observed that the arm 12 and parts carried thereby are suspended so that they may bodily vibrate, and an important portion of my invention is the location of the pivotal point of suspension of said parts. This point of suspension is located above and slightly forward of the rear face of the diaphragm 8, and I have discovered that by so locating said point I produce the correct contact between the carbon button and the diaphragm without the use of any spring whatever, and without the use of any extraneous weight or counterbalance and in a very simple manner the weight of said arm and carbon button being just sufficient to produce the proper contact.

Mounted directly above the bracket 18 is an arm 20 the rear end of which is curved downward and rearward and terminates at a point a slight distance above the upper portion 13 of the arm 12, so as to form a stop therefor, to limit the upward movement thereof and thereby retain the said arm always adjacent the diaphragm. The arm 20 is bent at a right angle at its inner portion to form a perforated ear, and a screw 21 is passed through this ear into the front piece 1, to secure said arm in position.

The arm 12 which carries the carbon button is termed by me an "overhanging" or "overhung" arm for the reason that its point of suspension is above and forward of the rear face of the diaphragm, and therefore said arm overhangs the diaphragm with the result above stated.

The diaphragm 8 of course forms one electrode of my improved transmitter, as it is in electrical contact with the metallic diaphragm holder 2 and one of the conductors 22 is connected to said holder in the usual manner,

while the other usual conductor 23 is connected to the bracket 18.

The operation of my improved transmitter is almost obvious, as the sound-waves vibrate the diaphragm in the usual manner and vary the contact between the carbon button or electrode 15 and the diaphragm and produce variations in the current with the usual result. By means of the pivot-screws 17 the bearings of the arm 12 may be adjusted from time to time to take up any wear which may occur.

When it is desired to remove the diaphragm the clamping screws 6 are slackened or moved outward until the clamping ring 9 will pass them.

I do not wish to limit myself to the exact details of construction herein shown, as it is obvious that the same may be varied within the limits of mechanical skill, without departing from the scope of my invention.

What I claim is—

The combination of the diaphragm holder having opposite perforated ears 4 projecting a distance beyond its rear edge, clamping screws 6 extending in alignment and threaded into said ears with their headed-ends outward, an internal annular flange or shoulder 7 on said holder, to support the diaphragm some distance in the rear of the front piece of the transmitter-box, a diaphragm, a clamping ring 9 loosely mounted in rear of said diaphragm and provided with diametrically opposite projections 10 having inwardly and rearwardly converging or inclined surfaces 11 which are engaged by the inner ends of said clamping screws, whereby when said screws are moved toward each other they will forcibly engage said inclined surface of said ring and urge the latter forward into intimate contact with said diaphragm, an electrode adjacent said diaphragm, and suitable connections, substantially as herein specified.

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

DAVID A. KUSEL.

Witnesses:

J. E. LOVE,
JNO. C. HIGDON.