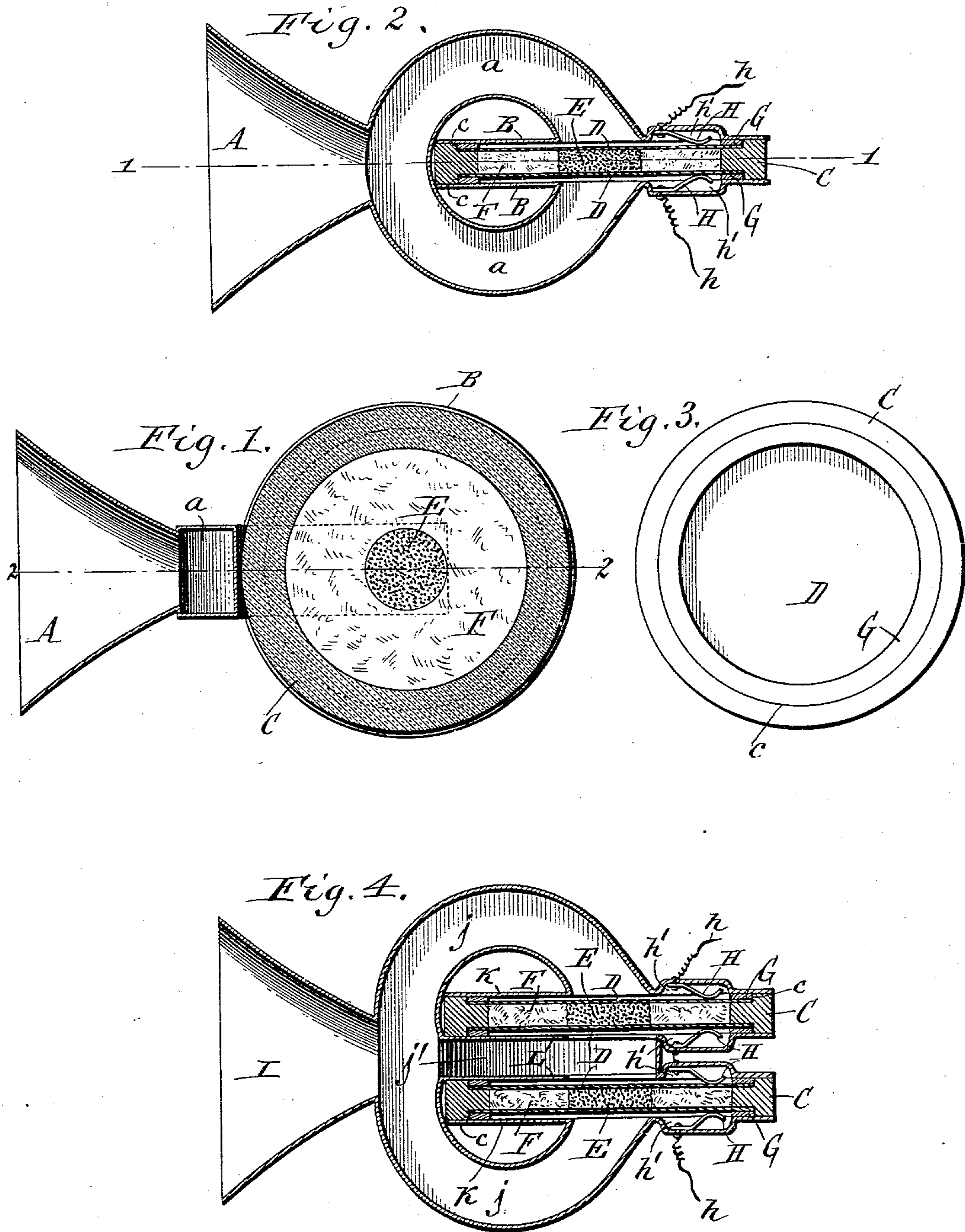


(No Model.)

W. L. WILHELM.
TELEPHONE TRANSMITTER.

No. 557,741.

Patented Apr. 7, 1896.



WITNESSES:

Chas. F. Burkhardt.
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UNITED STATES PATENT OFFICE.

WALTER L. WILHELM, OF BUFFALO, NEW YORK; WILLIAM WILHELM, GUARDIAN OF SAID WALTER L. WILHELM, ASSIGNOR OF ONE-HALF TO BYRON J. TILLMAN, OF SAME PLACE.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 557,741, dated April 7, 1896.

Application filed November 21, 1895. Serial No. 569,621. (No model.)

To all whom it may concern:

Be it known that I, WALTER L. WILHELM, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Telephone-Transmitters, of which the following is a specification.

This invention relates to that class of telephone microphones or transmitters which contain two separate diaphragms bearing against opposite sides of the same electrode and a single mouthpiece from which the sound is delivered by two branch tubes against both diaphragms.

The object of my invention is to produce a transmitter of this character which is extremely simple and inexpensive in construction and which can be easily assembled and adjusted.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved transmitter, taken in line 1 1, Fig. 2. Fig. 2 is a horizontal section of the same in line 2 2, Fig. 1. Fig. 3 is a detached side elevation of the transmitting device. Fig. 4 is a horizontal section showing a modification of my improved transmitter.

Like letters of reference refer to like parts in the several figures.

Referring to Figs. 1, 2, and 3, A represents a mouthpiece, and *a a* two branch tubes or passages connected at their front ends with the rear end of the mouthpiece.

B B represent two vertical supporting-disks secured to the open rear ends of the branch tubes and arranged parallel. The supporting-disks are separated from each other along their entire opposing surfaces, thereby forming an open-sided chamber or space between the supporting-disks, into which the transmitting devices can be inserted from the side for assembling the parts or to be removed therefrom for adjusting or repairing the same. This transmitting device is constructed as follows:

C represents a rotary supporting ring or frame, which is held snugly between the supporting-disks by friction, and which is provided on opposite sides with annular shoulders or seats *c c*.

D D represent two diaphragms, which are

separated from the supporting-disks by intervening spaces, and which are fitted with their marginal portions against the seats of the frame. These diaphragms may be made of any suitable and well-known material which will answer the purpose; but I prefer to make the same out of sheet-carbon.

E represents the electrode arranged between the diaphragms and bearing against the central portions of both diaphragms. This electrode consists, preferably, of a granular material, such as powdered carbon or carbon dust, although some other granular substance might work equally as well. The granular electrode is confined in the central portion of the space between the diaphragms by a retaining-ring F, which fills the space between the electrode and the supporting-frame. This retaining-ring is composed of any suitable fibrous material which is sufficiently dense to prevent the powdered carbon from being displaced by creeping between the fibers thereof, and which is sufficiently elastic or yielding to permit the diaphragms to vibrate freely for influencing the electrode. I have found in practice that cotton, mineral wool, and eiderdown give excellent results.

G represents packing-rings arranged between the supporting-disks and the marginal portions of the diaphragms, whereby the latter are held in place. The space between the supporting-disks is such that the transmitting device will be securely held in position by friction after it is slipped between the supporting-disks. The vertical arrangement of the diaphragms causes the carbon-dust electrode to be held in contact with both diaphragms by gravity, thereby always insuring a good contact between these parts without requiring any special adjusting device for this purpose.

When the carbon dust becomes packed or condensed in course of time by the vibrations of the diaphragms, the carbon dust can be again loosened for restoring it to its normal condition by rotating the transmitting device between the supporting-disks sufficiently to agitate and loosen the carbon dust, thereby preventing the action of the transmitter from becoming impaired.

H H represent two contact-springs which

form the terminals of the conducting-wires *h h*, and which are adapted to make connection with the carbon diaphragms when the transmitting device is in its operative position. Each of these contact-springs is secured with one end to the bottom of a pocket *h'*, formed on the inner side of a supporting-disk and bearing with its curved free end against the adjacent diaphragm, thereby forming a circuit from one wire to the other through the diaphragms and the electrode. Upon removing the transmitting device from between the disks the springs slip off from the diaphragms and recede into the pockets upon striking the packing-ring and frame, whereby the circuit is broken, and upon introducing the same again between the disks the springs again bear on the diaphragms and automatically restore the circuit, thereby enabling the working parts of the transmitter to be readily taken apart and put together without requiring any attention to be paid to the connection with the circuit-wires.

The vibrations produced by speaking into the mouthpiece are delivered by the branch tubes against the outer sides of both diaphragms, and the latter simultaneously compress the granular electrode from opposite sides, thereby increasing the force of the undulations in the current which transmits the speech to the receiving instrument in which the speech is reproduced.

In the modified construction of my invention represented in Fig. 4 a pair of transmitting devices similar to that shown in Figs. 1 and 2 are employed and mounted as follows: I represents a mouthpiece provided with two outer branch tubes *j j* and an intermediate tube *j'*. *k k* are two outer supporting-disks which are secured to the open rear ends of the outer tubes. *L L* represent two inner supporting-disks arranged on the inner sides of the outer disks and secured to opposite sides of the open rear end of the intermediate branch tube. A transmitting device similar in every respect to the one shown in Figs. 1 and 2 is inserted between each outer supporting-disk and the opposing inner supporting-disk. The vibrations of the speech delivered into the mouthpiece are distributed equally between the intermediate tube which conducts the sound to the inner diaphragms

of both transmitting devices and the outer tubes whereby the sound is conducted to the outer diaphragms of both transmitting devices.

I claim as my invention—

1. The combination with the mouthpiece provided with two branch tubes, of two supporting-disks secured to said tubes and separated from each other so as to form an open-sided space between the disks and a transmitting device arranged in said space, substantially as set forth.

2. The combination with the mouthpiece provided with two branch tubes, of two supporting-disks secured to the open ends of the tubes and separated from each other so as to form an open-sided space between the disks, a supporting frame or ring arranged between said disks and provided on opposite sides with annular seats, two diaphragms bearing with their marginal portions against said seats, packing-rings fitting against the marginal portions of the diaphragms and an electrode arranged between said diaphragms, substantially as set forth.

3. The combination with the mouthpiece provided with two branch tubes, of two supporting-disks secured to the open ends of the branch tubes and separated so as to form an open-sided space between the disks, a transmitting device arranged between said disks and provided with two diaphragms arranged adjacent to said disks and contact-springs secured to said disks and bearing against said diaphragms, substantially as set forth.

4. The combination with the mouthpiece provided with two branch tubes, of two parallel supporting-disks secured to the open ends of the branch tubes and provided on their inner sides with pockets, of a transmitting device arranged between said disks and provided with two diaphragms and contact-springs secured to the bottom of the pockets and bearing against the diaphragms, substantially as set forth.

Witness my hand this 19th day of November, 1895.

WALTER L. WILHELM.

Witnesses:

THEO. L. POPP,
E. R. DEAN.