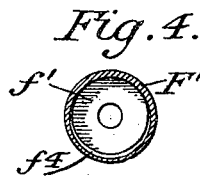
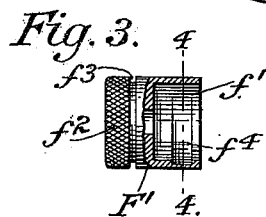
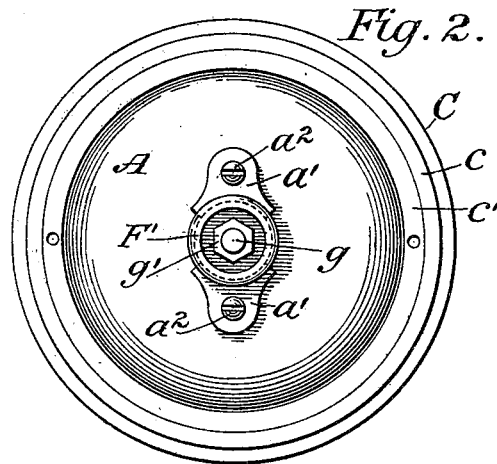
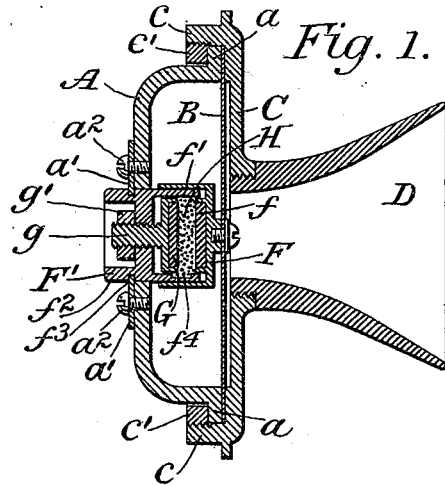


No. 645,960.

Patented Mar. 27, 1900.

A. K. KELLER.  
TELEPHONE TRANSMITTER.  
(Application filed Nov. 28, 1899.)

(No Model.)



Attest:

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# UNITED STATES PATENT OFFICE.

ALBERT K. KELLER, OF NEW YORK, N. Y., ASSIGNOR TO THE INTERNATIONAL TELEPHONE AND SWITCHBOARD MANUFACTURING COMPANY, OF PLAINFIELD, NEW JERSEY.

## TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 645,960, dated March 27, 1900.

Application filed November 28, 1899. Serial No. 738,526. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT K. KELLER, a citizen of the United States, residing in the borough of Manhattan, city of New York, State of New York, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to telephone-transmitters in which granular carbon is employed between the electrodes.

One object of the invention is to provide convenient means for loosening up the granular carbon from time to time to overcome that tendency to become packed in use to such an extent as to interfere with the distinct transmission of speech.

Another object is to make it possible to adjust one of the electrodes with reference to the other without difficulty, and particularly without separating the main parts of the transmitter, and also to permit the granular carbon to be renewed if it should be necessary.

The invention is fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a longitudinal central section of a transmitter which embodies the present improvement in an improved form. Fig. 2 is a rear elevation of the transmitter. Fig. 3 is a detail view, partly broken out, of one part of the carbon-holder; and Fig. 4 is a section on the plane indicated by the line 4 4 of Fig. 3.

The casing A, the diaphragm B, the cap C, and the mouthpiece D are substantially as usual, except that for convenience in manufacture and in manipulation the casing A is provided with a lip or flange *a*, and the cap C is provided with an inwardly-extended rim *c*, which is threaded interiorly to receive a threaded ring or nut *c'*, which bears upon the flange *a* to clamp the diaphragm B between the casing and the cap.

One part F of the carbon-holder, preferably cup-shaped, is secured to the diaphragm. It is preferably of metal in order to be in cir-

cuit with the diaphragm and with the casing, to which one side of the line is connected, thereby forming one of the electrodes. It may have seated in its interior a metal plate *f*, which with its retaining-flange forms a boss projecting slightly from the inner end of the cup and of less diameter than the interior of the cup. The other part F' of the carbon-holder is preferably of hard rubber, and its inner end forms a cup *f'*, which projects within the cup F and slightly overlaps the boss *f*. The part F' is extended outside of the casing and is knurled, as at *f*<sup>2</sup>, so that it may be conveniently grasped by the fingers and rotated from time to time. In order that the part F' may be rotated freely and yet be held in definite relation with respect to the diaphragm, it is formed with a circumferential groove *f*<sup>3</sup>, to be engaged by clips *a'*, which are secured to the rear side of the casing by screws *a*<sup>2</sup>. The interior of the cup *f'* is provided with an eccentric recess *f*<sup>4</sup> for the purpose presently to be described. The second electrode G is mounted within the cup *f'*, and its shank *g* is threaded into the end wall of the cup, so that the electrode shall be adjustable and may receive, outside of the end wall, a lock-nut *g'*.

The granular carbon (indicated at H) is disposed in the cup *f'* between the electrodes F and G, the latter being properly adjusted in the manner already described with reference to the former. It cannot escape from the space between the electrodes, since the inner cup overlaps the boss *f*, which extends from the end wall of the outer cup, and the eccentricity of the recess *f*<sup>4</sup> permits the carbon to be thoroughly loosened up whenever it is necessary by rotating the cup or part F'. Should it be necessary to renew the carbon at any time or to adjust the electrode G, the cup or part F', with the electrode G, can be easily removed by releasing the clips *a'* without requiring the separation of the cap C from the base A and the removal of the diaphragm B.

It will be obvious that by means of the improvements described herein, either in the

form shown or in some equivalent form, the carbon can easily be prevented from packing to such an extent as to interfere with the distinct transmission of speech, and the manipulation of the transmitter for purposes of adjustment, &c., is easy. It will also be understood that the invention is not to be restricted to the precise form and arrangement of parts shown and described herein.

10 I claim as my invention—

1. In a telephone-transmitter, a rotatable carbon-holder having in its interior an eccentric recess, whereby the carbon is thoroughly loosened up by the rotation of the holder, 15 substantially as shown and described.

2. In a telephone-transmitter, the combination with a casing, a diaphragm clamped thereto, and a carbon-holder carried by the diaphragm, of a carbon-holder extended 20 through said casing and having a circumferential groove, and a clip secured to the casing and engaging said groove whereby the last-named carbon-holder can be rotated with

respect to the first-named carbon-holder, substantially as shown and described. 25

3. In a telephone-transmitter, the combination with a casing, of a carbon-holder extended through said casing and removably secured thereto, and an electrode adjustably mounted in said holder, substantially as 30 shown and described.

4. In a telephone-transmitter, the combination with a casing and a diaphragm, of a cup-shaped holder secured to one of said parts and having a boss extended inwardly 35 from its end wall, and a second holder secured to the other of said parts and projecting within the first-named cup and overlapping said boss, substantially as shown and described. 40

This specification signed and witnessed this 27th day of November, A. D. 1899.

ALBERT K. KELLER.

In presence of—

ANTHONY N. JESBERA,  
W. B. GREELEY.