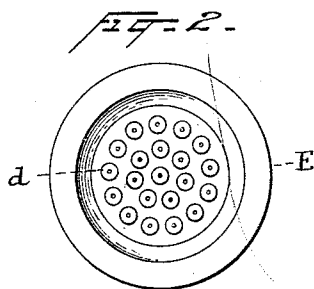
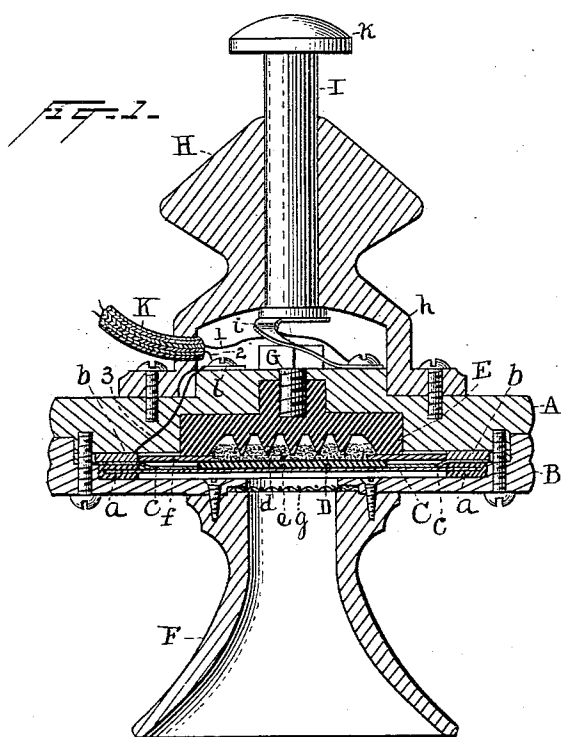


(No Model.)

A. GRAHAM.
TELEPHONE TRANSMITTER.

No. 555,154.

Patented Feb. 25, 1896.



Witnesses

Honnis A. Clark.
 John R. Taylor.

Inventor

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UNITED STATES PATENT OFFICE.

ALFRED GRAHAM, OF LONDON, ENGLAND.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 555,154, dated February 25, 1896.

Application filed May 3, 1894. Serial No. 509,952. (No model.)

To all whom it may concern:

Be it known that I, ALFRED GRAHAM, a subject of the Queen of Great Britain, residing at London, England, have invented a certain new and useful Improvement in Telephone-Transmitters, of which the following is a specification.

The object of my invention is to produce a telephone-transmitter of the "Hunning" type, which will be more effective than those heretofore produced, and, further, to make such an instrument of a simple and convenient form, including the feature of portability, as well as providing a circuit-controller which can be conveniently operated by the same hand which holds the instrument.

In the accompanying drawings, forming a part hereof, Figure 1 is a sectional view of an instrument embodying the invention, and Fig. 2 is a front view of the stationary electrode.

The body of the instrument A is made of a suitable insulating material in the form of a disk. It is recessed at its center to receive the stationary electrode, which will be presently described. A cover B is screwed to the face of the body A, the parts having suitably-formed engaging shoulders, leaving between the body and the cover a shallow chamber in which is placed a diaphragm C, held between rings *a*, of india-rubber, felt, or paper. This diaphragm is made of glass and has secured to its center the electrode D, which is preferably a thin carbon disk cemented to the rear side of the glass diaphragm. A metal ring *b*, secured between the adjoining surfaces of the body and cover, is connected with the movable electrode D by strips of metal foil *c*.

The stationary electrode E is preferably a molded carbon disk provided at its center with a series of conical studs *d*, which are formed in the molding of the electrode. In the space between the conical studs *d* and the movable electrode D is placed loosely a body of carbon granules *e*, which are prevented from falling out of this space by a surrounding ring of cloth *f* placed between the plane annular surface of the stationary electrode and the movable electrode.

I have found that the conical studs give a better effect than the pyramidal studs which

have heretofore been employed in this form of instrument. The glass diaphragm I have also found to be peculiarly effective.

F is the mouthpiece secured to the front of the cover B over the opening in the center of the cover. This opening is closed by a piece of wire-gauze *g*, which prevents injury being done to the diaphragm by the insertion of anything through the mouthpiece.

The molded stationary carbon electrode E is inserted in a recess in the insulating-body A and is held by a screw G, which passes through the body A into a screw-threaded stud formed upon the rear of the electrode. To the rear of the body of the instrument is secured a knob H, of insulating material, formed in one piece with a cover *h*, which forms an inclosed chamber at the rear of the body A. In this closed chamber is located the head of the screw G. Screwed to the body A in this chamber is also a curved metallic spring *i*, one end of which is secured to the body A, and the other end passes over, but is not in contact with, the head of the screw G. Passing through the knob H and entering the chamber inclosed by the cover *h* is a plunger I, whose inner end rests upon the free end of the spring *i*. This plunger may have a button *k* at its outer end. A two-wire flexible cord K passes through a hole in the cover *h*, entering the chamber closed by such cover. One of the wires, 1, of the cord is connected with the spring *i*, while the other wire, 2, is connected with a plate *l*, from which plate a wire 3 passes through the body A to the ring *b*.

It will be seen that the circuit between the wires 1 and 2 passes through the movable and stationary electrodes and the intervening body of carbon granules, but that it is broken by the air-space between the screw G and the spring *i*. To close the circuit, the plunger I must be forced inwardly against the pressure of the spring.

In use the instrument will be grasped by the knob H, the palm of the hand covering the button *k* on the plunger I, and by the movement of the same hand the plunger can be readily forced inwardly to close the circuit through the instrument by forcing the spring *i* directly upon the screw which supports the stationary electrode. When the hand of the

operator is relaxed, the spring *i* forces the plunger I outwardly and breaks the circuit.

What I claim is—

1. In a telephone-transmitter, the combination of a glass diaphragm, a movable electrode composed of a carbon disk carried thereon, a stationary electrode composed of a block of carbon having molded integral therewith a series of short conical studs, a body of carbon granules surrounding said studs and interposed between the electrodes, a conducting-ring mounted on the edge of the glass diaphragm, a soft flexible connection (such as metal foil) connecting the movable electrode and said conducting-ring, and circuit connections for said conducting-ring and the stationary electrodes, substantially as set forth.

2. In a telephone-transmitter, the combination of a casing having a mouthpiece thereon, a glass diaphragm carried within the casing opposite said mouthpiece, a protecting-shield for the glass diaphragm secured in said mouthpiece, a movable electrode composed of a carbon disk carried thereon, a stationary electrode composed of a block of carbon having molded integral therewith a series of short conical studs, a body of carbon granules surrounding said studs and interposed between

the electrodes, a conducting-ring mounted on the edge of the glass diaphragm, a soft flexible connection (such as metal foil) connecting the movable electrode and said conducting-ring, and circuit connections for said conducting-ring and the stationary electrodes, substantially as set forth.

3. In a portable telephone-transmitter, the combination with the stationary and movable electrodes, a case inclosing the same, and a screw supporting the stationary electrode in the case, of a circuit controller carried by the case and movable into and out of contact with said screw for controlling the transmitter-circuit, substantially as set forth.

4. In a telephone-transmitter, the combination with the body of insulating material carrying the stationary electrode, of a terminating knob and cover and a circuit-controller composed of a plunger passing through said knob and a circuit-closing spring with which the plunger engages, substantially as set forth.

This specification signed and witnessed this 25th day of April, 1894.

ALFRED GRAHAM.

Witnesses:

EUGENE CONRAN,
W. PELZER.