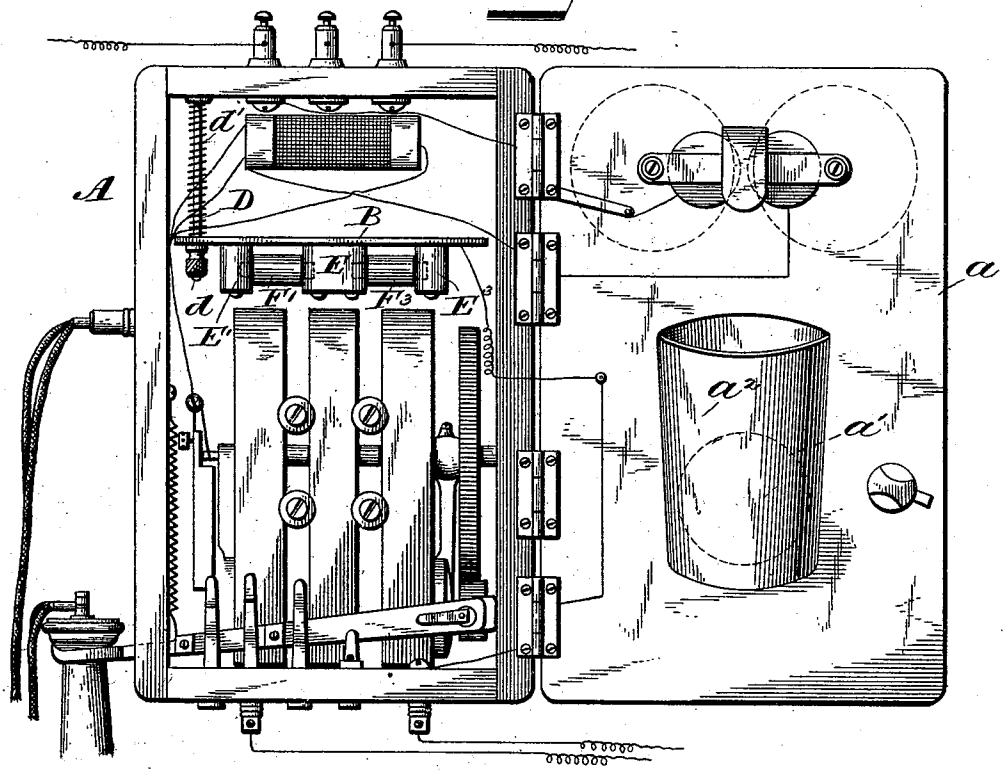
(No Model.)

P. FITZSIMONS.

TELEPHONE TRANSMITTER.

No. 514,920. Patented Feb. 20, 1894.

Fig. 1.



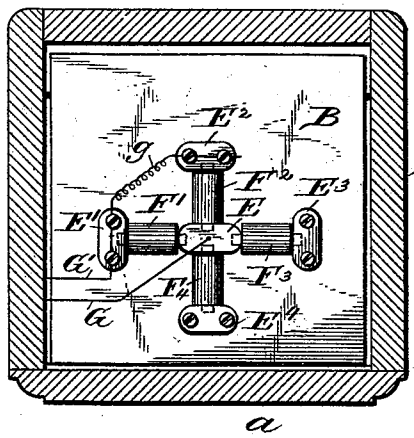


Fig. 2.

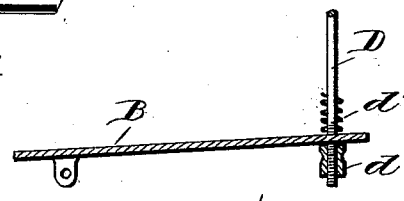


Fig. 3.

Witnesses.
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Inventor.
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His Attorney.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PHILIP FITZSIMONS, OF BIRMINGHAM, ALABAMA, ASSIGNOR OF ONE-HALF TO PATRICK H. LINNEHAN, OF SAME PLACE.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 514,920, dated February 20, 1894.

Application filed June 14, 1893. Serial No. 477,620. (No model.)

To all whom it may concern:

Be it known that I, PHILIP FITZSIMONS, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a specification.

My invention relates to that class of telephone instruments in which the undulations of current are produced by variations in the pressure of the electrodes.

The object of my invention is to provide a telephonic transmitter of simple and economic construction by which a clear and distinct reproduction of the voice may be obtained without disturbance by humming or burring sounds originating in the instrument itself or noises caused by induction.

My invention consists primarily in a novel arrangement of the vibratory elements and their connections, and secondarily in the combination of said elements with a non-vibratory support.

In the drawings: Figure 1 is a front view of a box or case containing transmitting mechanism embodying my invention and containing also the magneto and connections for operating the switch bell, the door being open. Fig. 2 is a cross section on line 2—2 of Fig. 1, and Fig. 3 is a vertical central section of the plate which supports the vibrating elements.

A designates a box or case of any suitable material in which the transmitting apparatus is inclosed, having a door a in which is a mouth piece a'. To the inner side of the door is preferably secured a tube a^2 surrounding the mouth opening and adapted to guide the sound waves to the vibratory elements.

B is a board or plate hinged to the case or otherwise mounted in such manner as to permit its inclination to be varied. A convenient means of adjusting the inclination of this plate consists of a threaded rod D secured to the upper wall of the case, taking through the outer edge of the plate and provided with an adjusting nut d under the supporting plate, and a spring d' adapted to hold the plate in contact with the nut. The supporting plate may be of wood or other vibratory material but I find that the best results are produced by a plate of stone or earthen ware or other substantially non-resonant material, by which I mean a material not vibrating readily in response to sound waves. Upon the lower side of the supporting plate are mounted a block E of carbon or other conducting material and blocks E', E^2, E^3, and E^4 in positions radial to the central block.

F', F^2, F^3 and F^4 are pencils, preferably of carbon, having reduced ends adapted to take loosely into corresponding sockets in the blocks. In the drawings I have shown four of these pencils mounted at right angles to each other and radiating from the central block. The blocks are provided with screws e adapted to clamp conducting wires thereto.

G and G′ are conducting wires leading respectively to the opposite poles of the battery. The conductor G is connected with the central block E and the conductor G′ with the block E′. The blocks E′ and E^2 are also electrically connected by a conducting wire g. The current passes from conductor G through central block E, pencils F' and F^2, block E^2, conductor g and block E′ to conductor G′, the undulations in the current being produced by the action of the sound waves upon the pencils E′ and E^2 and the variations in pressure of the pencils upon their bearings caused thereby.

It has been found that a single carbon pencil mounted between blocks is too sensitive for practical use as a transmitter. I find that a number of pencils so mounted, and all in circuit, produce a drumming or burring sound and render the reproduced articulation indistinct. I also find that by using a number of pencils, part of which are in circuit, or active, and part of which are not in circuit, or are electrically idle, the humming or burring is prevented and the voice is reproduced naturally and clearly, whether the speaker uses a loud or a low tone of voice, the idle pencils apparently equalizing the vibrations in such manner as to prevent the noises caused by play of the parts of the instrument or by induction from other conductors. I find also that by mounting the active pencils at an angle to each other and mounting the inactive pencils in a corresponding manner, bet-

ter results are produced than by any other arrangement. I find also that by mounting the pencils in a substantially horizontal position better results are produced than by mounting them vertically.

While I prefer to make the pencils, and their supporting blocks, of carbon, good results are produced by the use of aluminum and the arrangement of the pencils would doubtless produce corresponding results with any conducting medium which is sufficiently responsive to the action of sound waves and with which a variation in the pressure serves to increase or decrease the electrical resistance.

By dispensing with the metallic diaphragm I am enabled to inclose the magneto and connections for operating the switch bell in the same case with the transmitting mechanism.

What I claim is—

1. The combination, in a telephone transmitter, of a supporting plate; two or more bearings of conducting material carried thereby, and two or more pencils of conducting material loosely mounted in said bearings; one or more of the pencils being in circuit and one or more of the pencils being idle, substantially as and for the purpose specified.

2. The combination, in a telephone transmitter, of a central block of conducting material; radial blocks of conducting material; and loosely mounted conducting pencils, radiating from the central block to the radial blocks, a portion of the pencils being in circuit and a portion being idle, substantially as and for the purpose specified.

3. The combination, in a telephone transmitter, of an adjustable plate; two or more bearings of conducting material carried thereby; and two or more pencils of conducting material loosely mounted on said bearings; one or more of the pencils being in circuit and one or more of the pencils being idle, substantially as and for the purpose specified.

4. The combination, in a telephone transmitter, of a non-resonant plate; two or more bearings of conducting material carried thereby; and two or more pencils of conducting material loosely mounted in said bearings; one or more of the pencils being in circuit and one or more of the pencils being idle, substantially as and for the purpose specified.

PHILIP FITZSIMONS.

Witnesses:
O. W. UNDERWOOD,
IVEY F. LEWIS.