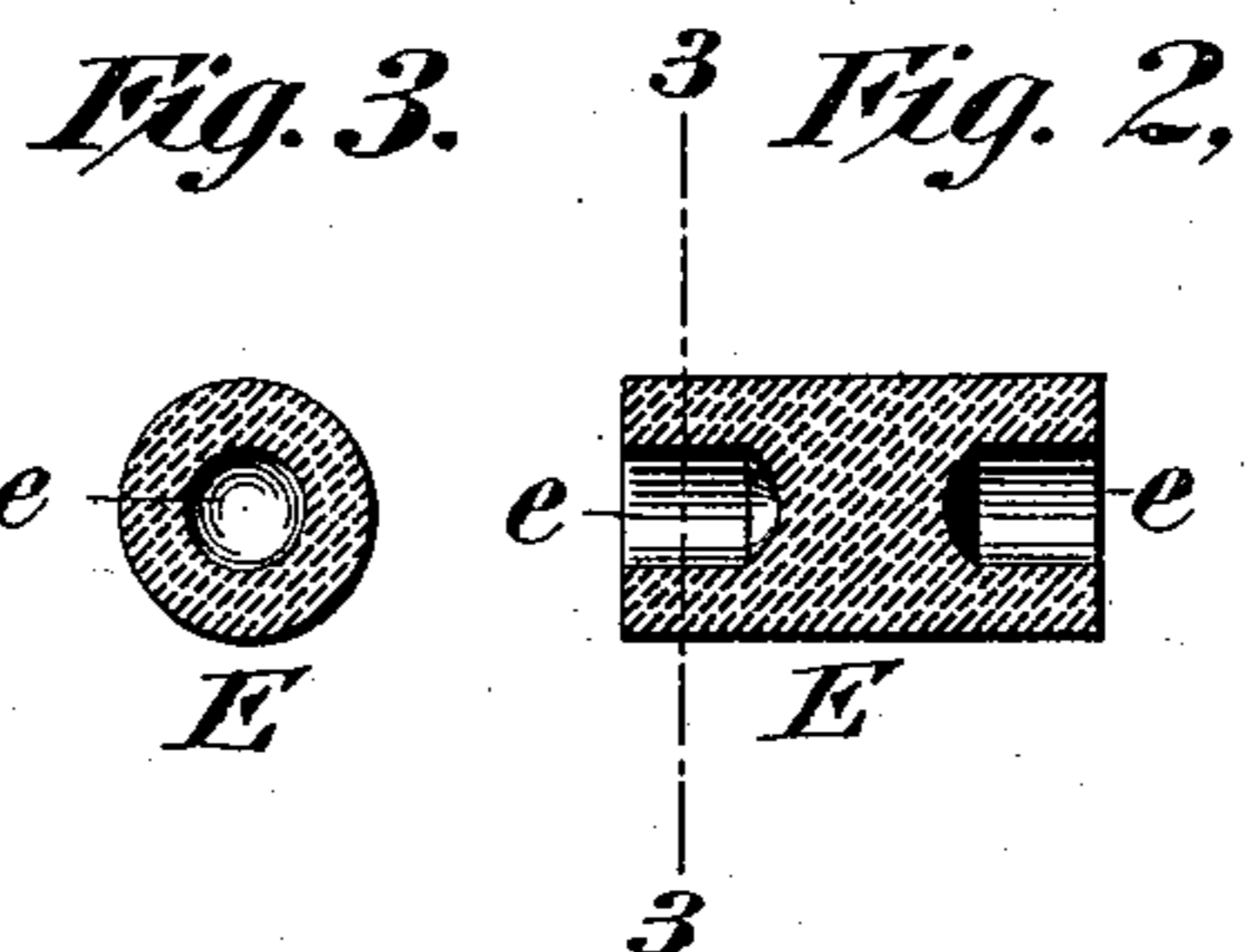
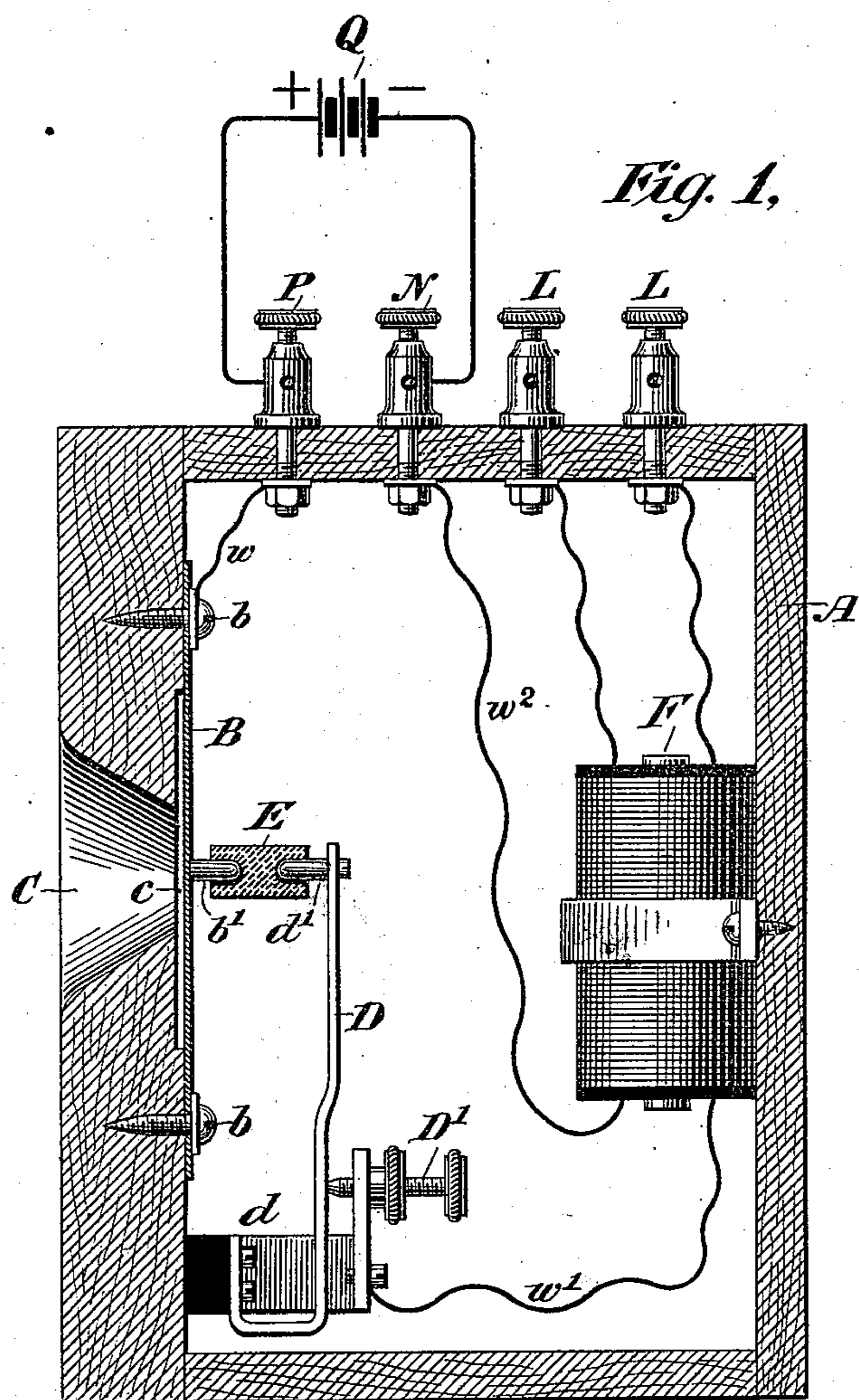


(No Model.)

N. PARKS.  
TELEPHONE TRANSMITTER.

No. 504,454.

Patented Sept. 5, 1893.



Witnesses  
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By his Attorney  
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# UNITED STATES PATENT OFFICE.

NATHANIEL PARKS, OF DEANSVILLE, NEW YORK.

## TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 504,454, dated September 5, 1893.

Application filed December 6, 1892. Serial No. 454,224. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL PARKS, a citizen of the United States, residing at Deansville, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Telephonic Transmitters, of which the following is a specification.

My invention relates to that class of telephonic transmitters known as "variable contact" or microphonic transmitters, in which electrical vibrations or undulations corresponding to the air-waves produced by vocal and other sound, are established in a local electric circuit of small resistance, and are thence transferred by means of an induction coil or other equivalent device in a well known way to a main circuit, which latter may extend to a great distance. The fundamental principle of all transmitters of this class, consists in interposing in the said local circuit, an imperfectly conducting contact, the conductivity of which is controlled and made to vary in accordance with the mechanical vibrations of a plate or diaphragm which is responsive to the impact of sound waves or vibrations in the air.

My present improvement relates more especially to the construction and mode of operation of the electrodes, by which such variable contact is produced, and it consists principally in so organizing the apparatus that the conductivity of the imperfect contact-point will be varied both by pressure and by friction.

In the accompanying drawings, which illustrate an apparatus embodying my invention, Figure 1 is a vertical transverse section through the box or case containing the transmitter, showing the relation of the several parts to each other. Fig. 2 is a vertical longitudinal section; and Fig. 3 a vertical transverse section (both enlarged) of the carbon block, which forms one of the essential features of my invention.

Referring to the drawings, A is the box or case within which the apparatus is inclosed.

B is a thin plate or diaphragm of metal or other resilient material, preferably circular in form, which may be secured to the inner front wall of the case A by means of screws *b*, or otherwise, passing through its edge.

C is a conical opening or mouth-piece formed

in the front of the case A, immediately in front of the plate or diaphragm B and concentric therewith. A shallow chamber *c* may with advantage be formed around and concentric with the mouth-piece and in front of the diaphragm B. An electrode *b'* is affixed to the center of the diaphragm directly behind the center of the mouth-piece C. This electrode is preferably of metal, although it might be of carbon, and is preferably cylindrical in form with a convex end. A second electrode *d'* of precisely similar construction, is carried upon the end of an upright flexible resilient spring D, which is firmly attached to the case A at or near the point *d*, but is insulated from the diaphragm B. This spring is bent in the form shown and is fitted with an adjusting screw D', the function of which will hereinafter be explained.

E is a block of carbon, shown in longitudinal and transverse section in Figs. 2 and 3 respectively. It is preferably cylindrical in form, although the form is not very material, and has similar recesses *e e* formed in its opposite sides, preferably cylindrical and of such dimensions as to permit the electrodes *b'* and *d'* to enter them loosely. The recesses *e e* may conveniently be formed by boring and are preferably made concave at the bottom, as shown in Figs. 2 and 3. When the carbon block E is in position, as shown in Fig. 1, it is loosely carried by and rests upon the electrodes *b'* and *d'*. The electrode *d'*, which is supported upon the flexible resilient spring D, is then adjusted by means of the screw D' in such manner that the electrodes *b'* and *d'* will press lightly against the bottom of the respective recesses *e e* in the carbon block E.

A battery Q is attached to the binding screws P N. From the binding screw P a wire *w* connects with the electrode *b'*, through the diaphragm D or otherwise; a wire *w'* connects the electrode *d'* with the primary wire of the induction-coil F, through the spring D or otherwise, and a wire *w<sup>2</sup>* connects the other terminal of the primary wire of the induction coil with the binding screw N. The terminals of the secondary wire of the induction coil, are carried to the binding screws L L and to these are connected the main line and earth wires in the ordinary and well-known manner.

The operation of the apparatus is as follows: When a person speaks into the mouth-piece C, the diaphragm or plate B is thrown into vibration in a manner well understood, which vibrations are participated in by the electrode *b'*. As this electrode moves to-and-fro, it necessarily produces a variation, not only in the direct pressure between the ends of two electrodes *b'* and *d'* and the intervening portion of the carbon block E, but also establishes a frictional or rubbing contact between the upper sides of the respective electrodes and the corresponding surfaces of the inner walls of the apertures *e e* in the carbon block E.

By means of the peculiar construction of my apparatus the electric current is caused to pass simultaneously through two points of imperfect contact, situated electrically in series with each other, the conductivity of these two points being simultaneously varied by each motion of the diaphragm B, and for this reason the variation in conductivity due to any given movement of the diaphragm, is necessarily very much greater than when only a single contact is employed. It results therefore, from the peculiar construction of my apparatus, that the loudness of the sound heard in the receiver is greatly augmented without impairing its quality or distinctness.

I claim as my invention—

1. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with electrodes loosely entering each of said recesses and carrying said block.

2. In a telephonic transmitter, a block of carbon having cylindrical recesses formed in its opposite sides but in the same axial line,

in combination with a movable and a fixed cylindrical electrode loosely entering said recesses and carrying said block.

3. In a telephonic transmitter, a block of carbon having cylindrical recesses with concave bottoms formed in its opposite sides, in combination with cylindrical electrodes with convex ends entering said recesses and supporting said block.

4. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with electrodes loosely entering into opposite sides of, and carrying said block, and means for adjusting the normal distance between said electrodes.

5. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with a fixed and a movable electrode loosely entering said recesses and carrying said block, a vibrating plate communicating motion to one of said electrodes, and a yielding support for the other electrode.

6. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with a movable and a fixed electrode loosely entering said recesses and carrying said block, a vibrating plate communicating motion to one of said electrodes, and an adjustable yielding support for the other electrode.

In testimony whereof I have hereunto subscribed my name this 28th day of November, A. D. 1892.

NATHANIEL PARKS.

Witnesses:

DON CARLOS YALE,  
WILLIAM R. SMALL.