(No Model.)

2 Sheets—Sheet 1.

D. DRAWBAUGH.

TELEPHONE TRANSMITTER.

No. 266,615. Patented Oct. 31, 1882.

fig. 1.

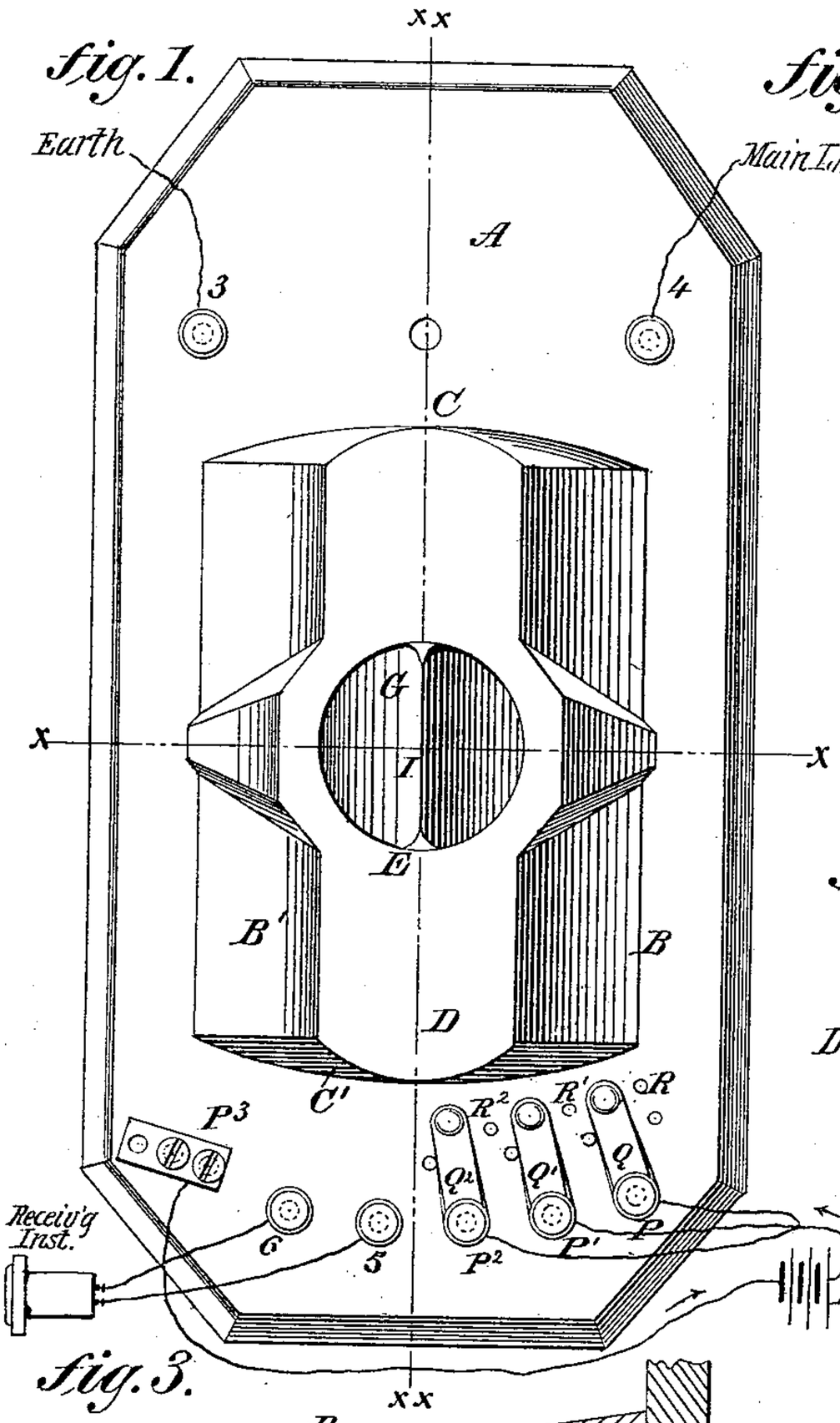


fig. 3.

fig. 2.

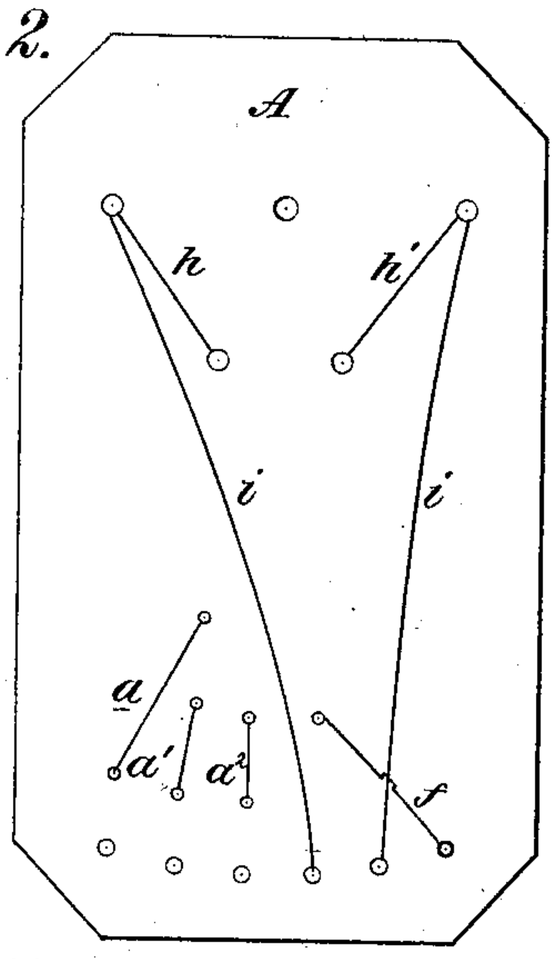


fig. 4.

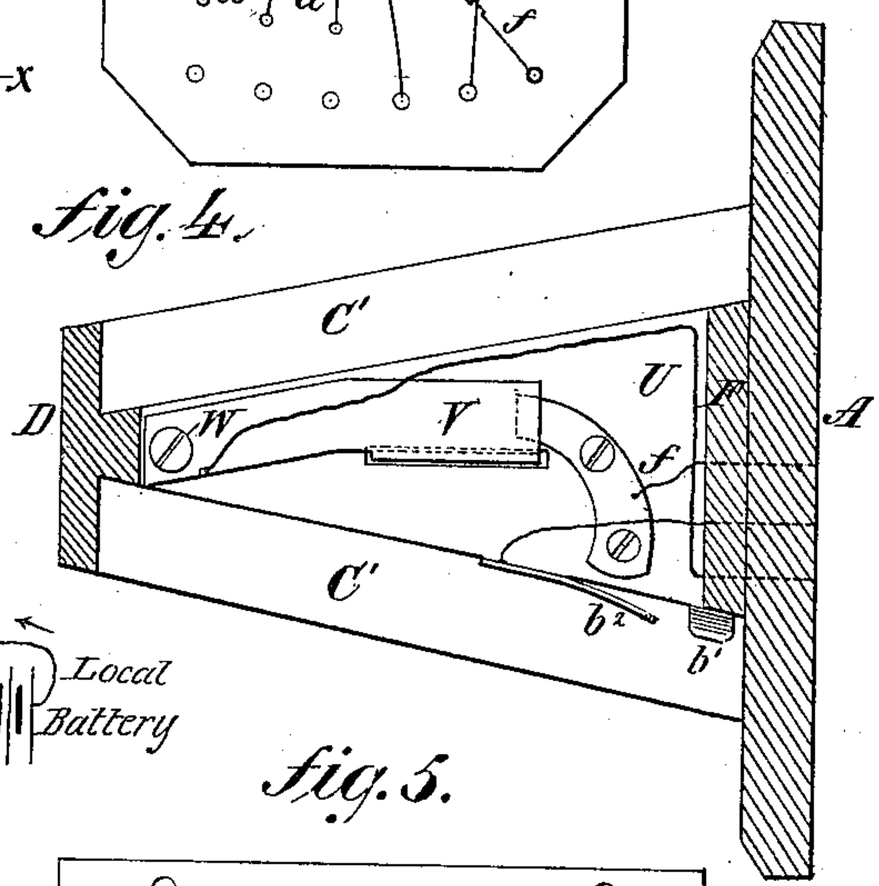
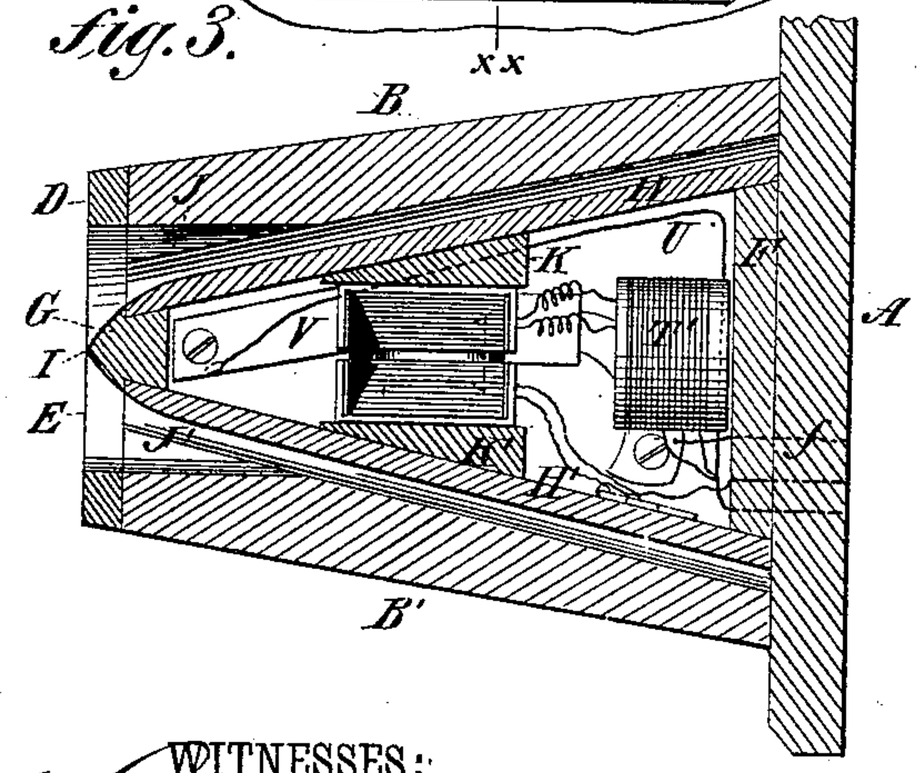
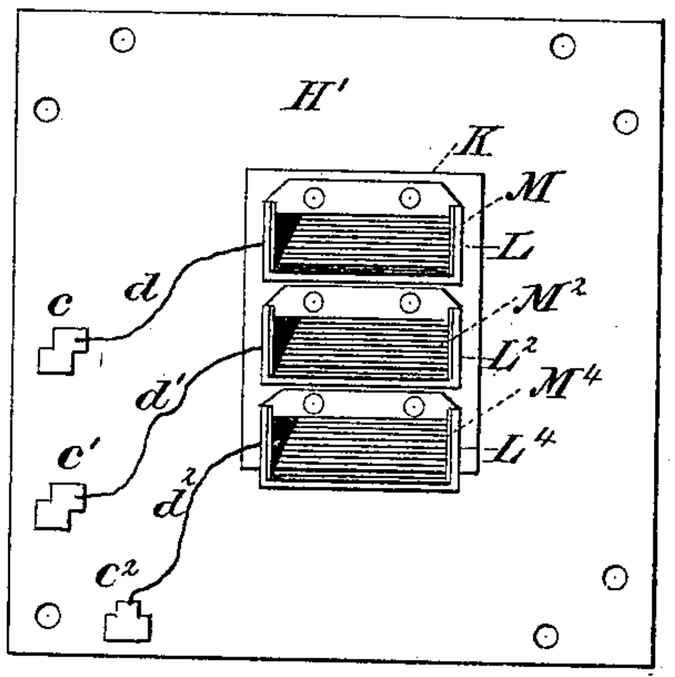


fig. 5.





WITNESSES:

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BY Park Benjamin & Bro

ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

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TELEPHONE TRANSMITTER.

No. 266,615. Patented Oct. 31, 1882.

Fig. 7.

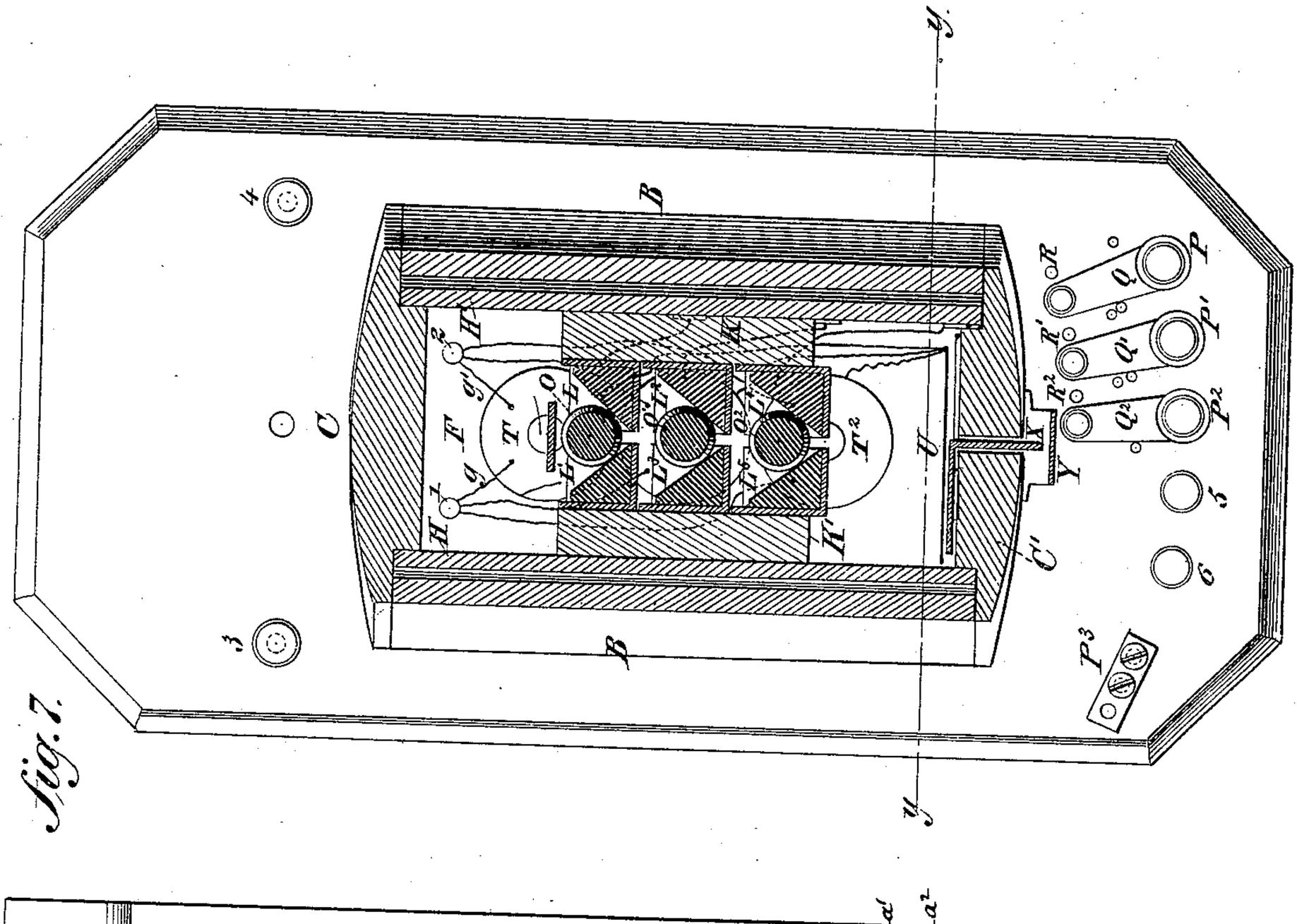

Fig. 9.

Fig. 8.

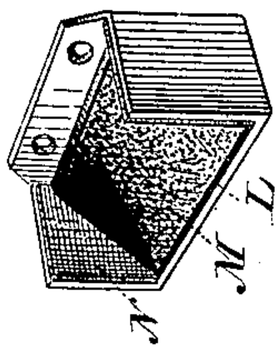

Fig. 6.

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UNITED STATES PATENT OFFICE.

DANIEL DRAWBAUGH, OF EBERLY'S MILL, PENNSYLVANIA.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 266,615, dated October 31, 1882.

Application filed August 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, DANIEL DRAWBAUGH, of Eberly's Mill, Cumberland county, Pennsylvania, have invented a new and useful Improvement in Telephone-Transmitters, of which the following is a specification.

The invention consists in a telephone having two diaphragms, inclined to one another, so that the line of junction of their edges shall bisect the mouth-piece orifice. Sound-chambers are formed between these diaphragms and the exterior case of the instrument, and between the two inclined diaphragms are arranged series of low conductors, which are put under compression simultaneously on opposite sides by the vibration of both diaphragms.

In the accompanying drawings, Figure 1 is a plan view of the instrument. Fig. 2 is a plan view of the rear of the base, showing the lead of the conducting-wires. Fig. 3 is a transverse section on line *x x* of Fig. 1. Fig. 4 is a partial section on line *y y* of Fig. 7. Fig. 5 shows the inner side of one of the diaphragms with its attachments. Fig. 6 shows the interior of the instrument with one of the covers and one diaphragm removed. Fig. 7 is a vertical section on the line *xx xx* of Fig. 1. Fig. 8 shows one of the carbon-holders, brackets, and carbons detached; and Fig. 9 represents one of the carbon rollers.

Similar letters of reference indicate like parts.

A is the base-board of the instrument. The exterior cover consists of the two side pieces, B B′, top and bottom pieces, C C′, and front D. In the front is formed the mouth-piece orifice E. The interior case consists of a back piece, F, a front piece, G, and the two diaphragms H H′. The top and bottom pieces, C C′, are shouldered, so that the diaphragms H H′ rest against them in inclined position. The front piece, G, is suitably shouldered, as shown in Fig. 3, to receive the upper edges of the diaphragms, and has two inclined sides, which are prolongations of the outer surfaces of said diaphragms. It should be understood that this front piece, G, is used as a support for the two diaphragms, and that I regard the apex of the angle of its inclined surfaces as substantially the apex of the angle formed by the diaphragms with each other; or, in other words, I might omit this piece G and cause the diaphragms actually to meet along their upper edges without departing from the invention. Hence, in stating that the line extending along the apex of the angle formed by the inclined diaphragms bisects the mouth-orifice, I mean the line extending along the summit I, Figs. 1 and 3, of the front piece, G, which, it will be seen from Fig. 1, bisects the mouth-piece orifice E.

It will be seen that outside the diaphragms H and H′, and between them and the side pieces or covers B B′, two chambers or compartments, J J′, are formed. These I term "sound-receiving chambers," inasmuch as they serve the function of receiving and preventing diffusion of the sound-waves uttered in the mouth-orifice. It will also be apparent that by reason of the apex of the diaphragms bisecting the said orifices the said sound-waves will enter both chambers J J′ simultaneously, and therein will act upon both of the diaphragms H H′ at once, so that both of these diaphragms will be caused to approach or recede from each other by the action of the said sound-waves at one and the same time. Consequently any object placed between these diaphragms and in contact with both of them will thus be subjected to compression or extension from two opposite sides.

The diaphragms and other parts thus far described I make preferably of wood. The interior mechanism of my device upon which these diaphragms act is as follows:

On the inner side of each diaphragm I attach a wooden block, K K′. To each block I affix a series of metal brackets, L L′ L^2 L^3 L^4 L^5, the brackets L, L^2, and L^4 being on block K and the brackets L′, L^3, and L^5 being disposed opposite them on the block K′. One of these brackets is shown detached in Fig. 8. Each bracket contains a prism-shaped piece of carbon, M, M′, M^2, M^3, M^4, and M^5, and insulating material N, Fig. 8, is placed between the said piece of carbon and the ends of the bracket. As is clearly shown in Figs. 3 and 7, these carbons do not come in contact, there being an air-space left between them. Resting against the opposite inclined sides of each carbon is a carbon roller, O O′ O^2, shown separately in Fig. 9. From this construction it will be evident that when the diaphragms H and H′ are caused to approach each other by sound-waves acting upon them they will cause a compression of the rollers O O′ O^2 between the carbons M M′ M^2 M^3 M^4 M^5, and the degree of this compression will depend upon the amount of movement of the diaphragms,

and as this movement is caused by sound-waves the compression of the carbons will be in proportion thereto, and hence the resistance offered by said carbons to the passage of an electric current through them will be correspondingly modified, rendering said current undulatory and capable of transmitting the characteristics of vocal speech, so that a suitable receiving-instrument may reproduce the same.

The mechanism for conducting the current through the carbons and to the line is as follows:

P P′ P² are binding-posts, communicating with the switch-levers Q Q′ Q², which levers can be moved into and out of contact with the contact-points R R′ R². A battery-current entering at the post P proceeds through the switch-lever Q to the contact-point R, and thence by wire *a*, Fig. 2, to contact-piece *b*. On the diaphragm H′ is a contact-piece, *c*, which, when said diaphragm is in place, comes in contact with the piece *b*, so that the current passes from piece *b* to piece *c*, and then proceeds by the wire *d*, Fig. 5, to the bracket L and carbon M, thence through the carbon roller O to carbon M′ and bracket L′, and then through the primary wire of the induction-coil T. The primary wire of said coil extends from the coil, as shown at *e*, Fig. 6, to a wire shown at U, Fig. 4, and this wire connects with the spring-lever V. Returning now to the binding-posts P P′ P², another current or branch current of electricity enters at the post P′, passes by the lever Q′ to the contact-point R′, and thence by wire *a′* to contact-piece *b′*, then to the contact-piece *c′* on diaphragm H′, Fig. 5, then to the carbons M² O′ M³, then to the primary of induction-coil T′, and then by the wire *e′* to the wire U and spring-lever V. Similarly another current or branch current enters at the post P² and proceeds by lever Q², contact-point R², wire *a²*, contact-piece *b²*, contact-piece *c²*, carbons M⁴ O² M⁵, primary of induction-coil T², wire *e²*, to wire U and spring-lever V. Thus, it will be seen, each current traverses a separate set of carbons and the primary of a separate induction-coil, and that the three currents are then united upon the wire U and conducted to the spring-lever V. The lever V is secured at one end by the screw W, Fig. 4. Near its free end it is provided with a projecting piece, X, which extends through the case, as more plainly shown in Fig. 6. To the case is attached a hook, Y. Inside the case is secured the contact-piece Z, one end of which is beneath the free end of the lever V, so that normally there is contact between the lever V and piece Z, and the current passing from the former to the latter proceeds by the wire *f*, Figs. 4 and 5, to the binding-post P³, and thence the circuit is completed to the battery, as shown in Fig. 1. The arrows in this figure indicate the path of the current leaving and returning to the battery. When it is desired to break this current, and so throw the instrument out of operation, a receiving-telephone or other object may be hung upon the hook Y, so as to push up or in the piece X, thus forcing the lever V and piece Z out of contact.

The secondary wires *g g′* of the coil T are united with the binding-posts 1 2. To the same posts are led the secondary wires of the coils T′ and T². These posts 1 2 communicate by the wires *h h′*, Fig. 2, with the binding-posts 3 4, one of which posts communicates with earth, the other to the main line, as shown in Fig. 1. Leading from the posts 3 4 are two wires, *i i′*, Fig. 2, which communicate respectively with a receiving-instrument, as indicated in Fig. 1.

The operation of the instrument will now be readily understood. Sound-waves entering the mouth-orifice E simultaneously affect the two diaphragms H H′, and these in turn act on both sides of the series of carbons between them. As each set of carbons is traversed by an independent current, all three currents are thus simultaneously modified in the same way, thus greatly augmenting the effect caused in an instrument containing but one set of carbons, and rendering the instrument much more sensitive or more efficient in its capability of transmitting speech.

I do not claim herein the particular arrangement of each set of carbons here shown, these features being the subject of another application now pending. Neither do I broadly claim herein a series of sets of carbons affected by a single diaphragm; but,

Having now described my invention, what I claim as new and original is—

1. In a telephone, the combination of a mouth-piece and its orifice, and two diaphragms relatively inclined to one another so that the line of junction of their edges or the line extending along the apex of the angle formed by the inclined diaphragms shall bisect the orifice of the mouth-piece, substantially as described.

2. A telephone having a mouth-piece and mouth-piece orifice and two diaphragms relatively inclined to one another so that the line of junction of their edges or the line extending along the apex of the angle formed by the inclined diaphragms shall bisect the orifice of the mouth-piece, in combination with two sound-receiving chambers formed between the diaphragms and the exterior case, each chamber communicating with the same mouth-piece orifice, substantially as described.

3. The combination of the single mouth-piece orifice with the two diaphragms and the exterior sound-chambers, as herein described, and with a series of low conductors arranged between the two diaphragms and connected to each diaphragm so as to be put under compression simultaneously on opposite sides by the vibration of both diaphragms, substantially as described.

DANIEL DRAWBAUGH.

Witnesses:
D. BENJAMIN,
M. F. BURNS.