(No Model.)

G. W. DRAWBAUGH.

TELEPHONE TRANSMITTER.

No. 316,883. Patented Apr. 28, 1885.

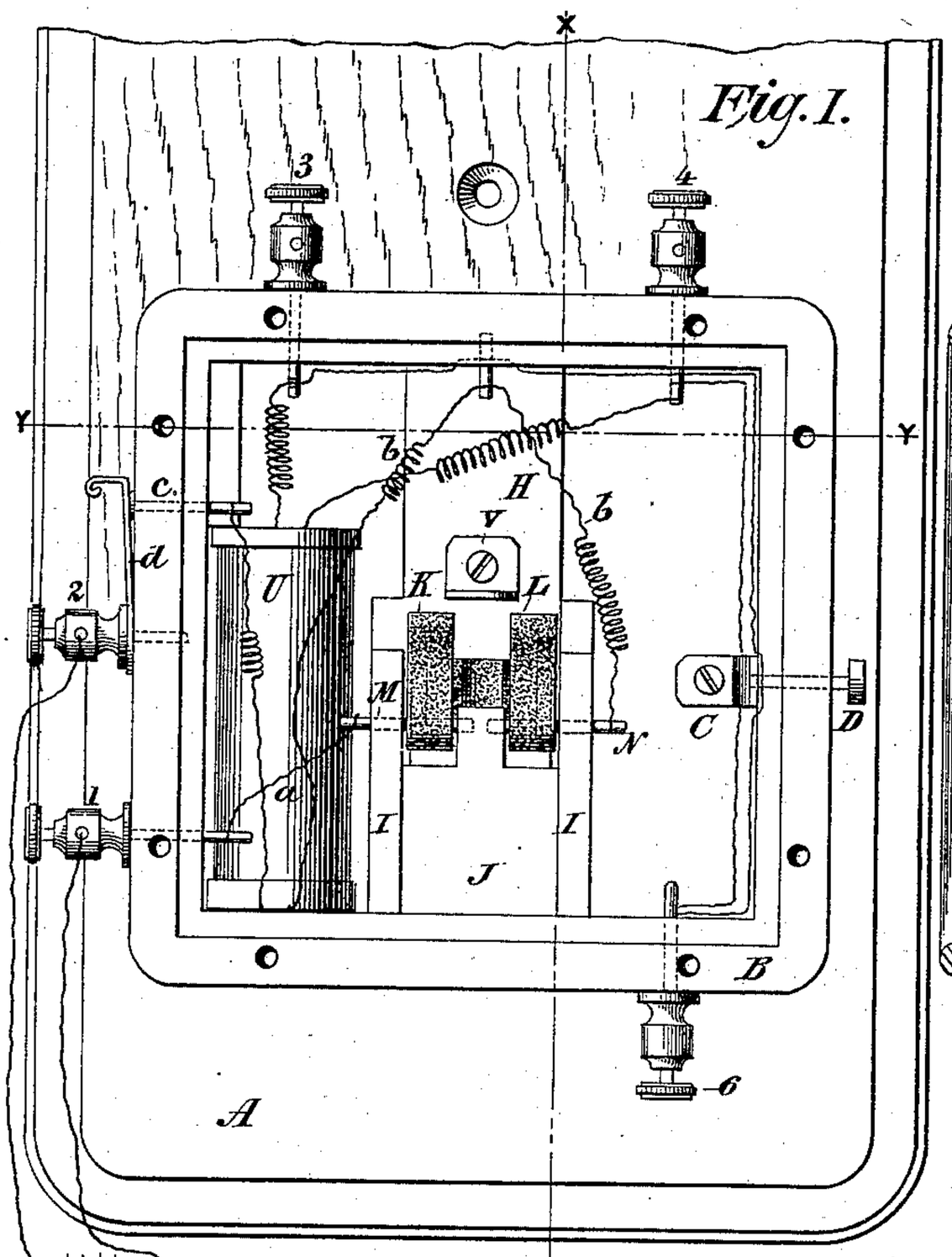

Fig. 1.

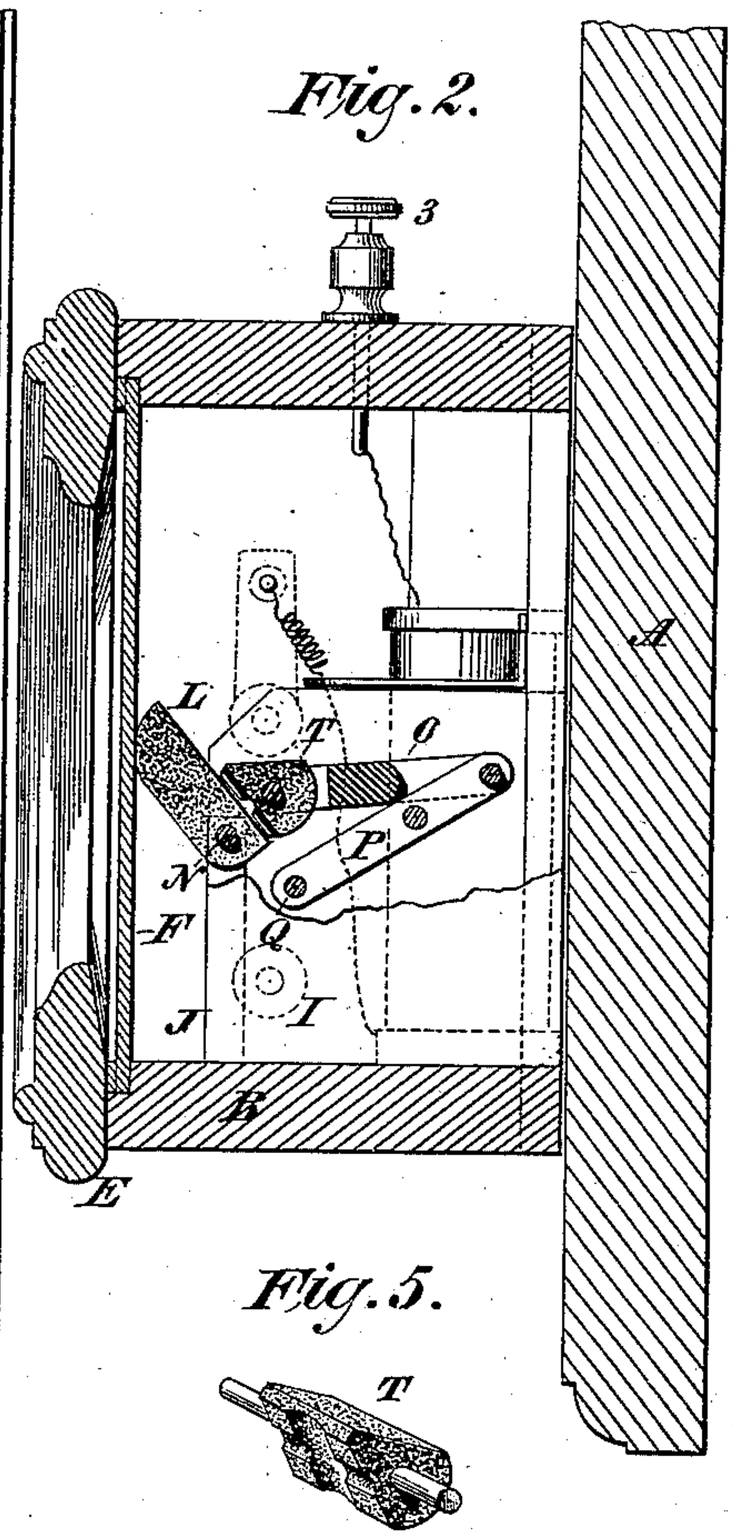

Fig. 2.

Fig. 5.

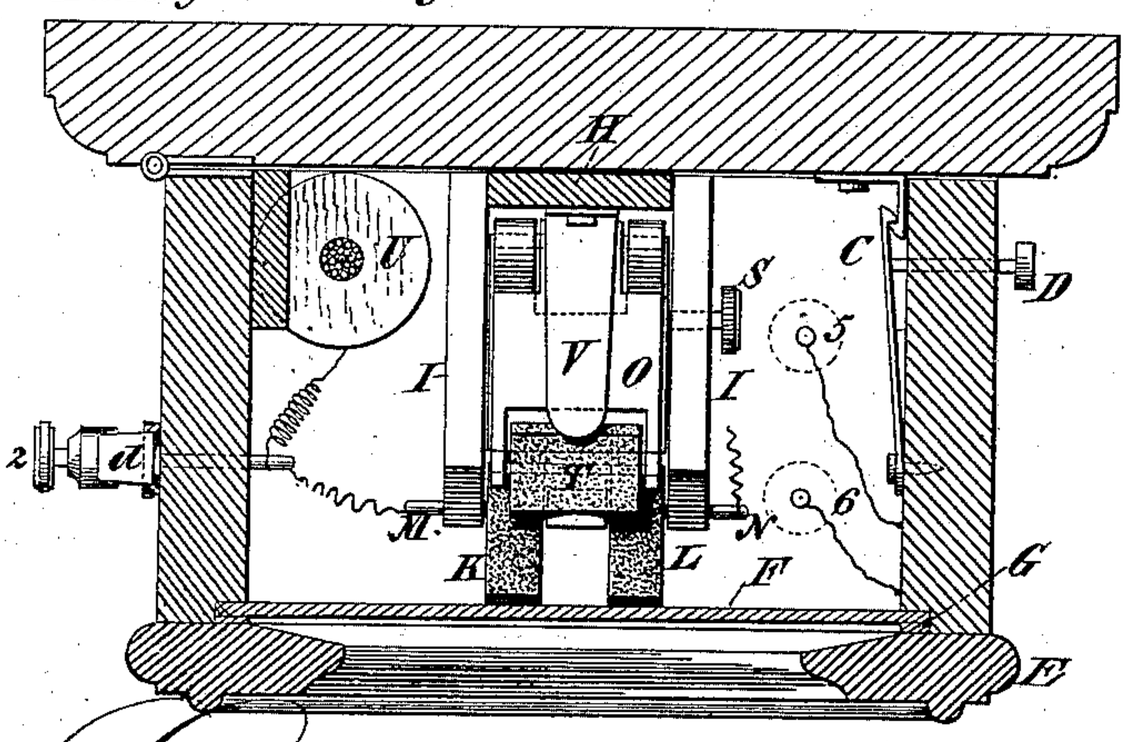

Fig. 3.

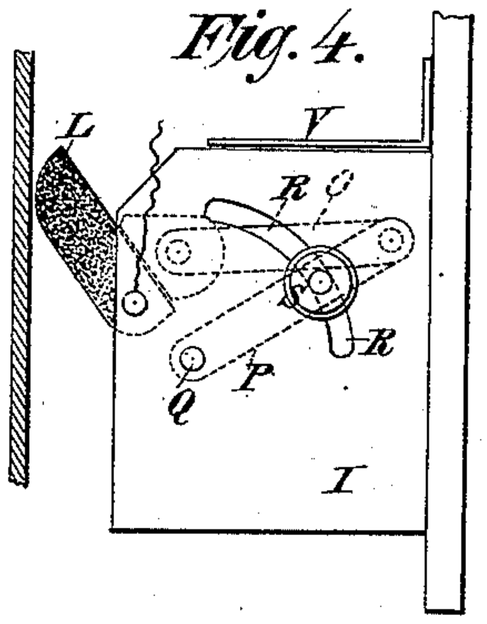

Fig. 4.

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GEORGE W. DRAWBAUGH, OF EBERLY'S MILL, PENNSYLVANIA, ASSIGNOR TO THE PEOPLE'S TELEPHONE COMPANY, OF NEW YORK.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 316,883, dated April 28, 1885.

Application filed April 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. 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 relates to a telephone-transmitter containing resistance-varying electrodes controlled by the vibrations of a diaphragm under the influence of sound-waves, and thereby caused to modify a current passing through them to adapt the same for the reproduction of speech in a suitable receiving-telephone.

The invention consists in the construction and arrangement of the resistance-varying electrodes and in the device for adjusting the initial pressure between the same.

In the accompanying drawings, Figure 1 is a front view of the instrument with the diaphragm and cover removed. Fig. 2 is a vertical section on the line *x x* of Fig. 1. Fig. 3 is a horizontal section on the line *y y* of Fig. 1. Fig. 4 is a detailed view of the mechanism for adjusting the movable electrode and the support for the same. Fig. 5 shows the movable electrode separately.

Similar letters of reference indicate like parts.

A is the base or back board of the instrument.

B is the box or case which is hinged to the back board at one side. On the other side of the box is a latch, C, provided with a press-button, D. When the box is turned against the back board, the hook-shaped parts of the latch engage, thus holding the box in position. When access is desired to the rear side of the box, the press-button D is pushed inward, thus moving the part of the latch attached to said box out of engagement with the part attached to the base-board, when the box may be swung on its hinges away from the base-board.

E is the cover, having a sound-receiving orifice.

F is the diaphragm, which I make preferably of wood or other non-conducting material, suitably held between the cover and box and in a recess on the front side of the latter. A gasket, G, of rubber or other yielding material, may be interposed between the cover and diaphragm.

To the rear-side of the box is secured a vertical bar, H, of wood. To the sides of this bar, and projecting into the box, are attached two side pieces, I, preferably of hard rubber. Between these side pieces, and in front, is secured a piece, J, also of hard rubber or analogous non-conducting material.

In recesses formed in the upper edge of the piece J are pivoted two electrodes, K and L, preferably of carbon. The upper front sides of these electrodes are rounded, and they rest by gravity against the rear side of the diaphragm. The pivots M and N of the electrodes K and L are of metal, and are independent of each other, and not in contact, as shown in dotted lines, Fig. 1.

O is a yoke-shaped piece of hard rubber or other non-conducting material, having at its rear side a projection, through which passes a pivot-pin, which also passes through the rear ends of a second yoke-shaped piece of hard rubber, P. The piece P at its front end is pivoted at Q in the side pieces, I. On one side of the piece P is a pin which passes through a sector-shaped slot, R, in one of the side pieces, I. The end of the pin is screw-threaded and provided with a nut, S.

Between the arms of the yoke-piece O on its front edge, is pivoted a segmental-shaped electrode, T, of carbon or other suitable material. One plane side of this electrode rests upon the rear sides of the two electrodes K and L and bridges them.

By reason of this construction, when the nut S is moved to its lowest position on the sector-shaped slot, the electrode T is carried downwardly and rests upon the electrodes K and L, about over their pivotal parts. When the nut S is moved to its highest position in said slot, the electrode T is carried upward and then rests upon the electrodes K and L, near their upper and free ends. It follows, therefore that the electrodes K and L become levers of the second order, the electrode T being the weight and the pivot-pins M and N the fulcra, power being communicated to the electrode-levers from the diaphragm by the vibrations thereof, caused by sound-waves produced before it. The condi-

tions of equilibrium of weight and power are obviously changed by the movement of the weight nearer to or farther from the fulcra, and hence the initial pressure between the electrodes L and K and the electrode T may be nicely adjusted by varying the position of the electrode T in the manner described. So, also, when the electrode T is moved to its highest position, a greater proportion of the weight of all the electrodes is borne by and opposes the action of the diaphragm. Conversely, when the electrode T is moved to a lower position, less of the aggregate weight is borne by the diaphragm and more by the pivot-pins M and N. When the electrode T is suitably adjusted, it may be held in place by tightening the nut S, which binds against the side-piece, I. It is, of course, necessary in the construction shown to swing open the box to obtain access to its rear side to reach the nut S to effect this adjustment. It will also be apparent that the electrode T, being loosely supported, rests upon the electrodes K and L by gravity.

U is an induction-coil of any suitable construction.

V is an arm attached to the bar H, and serving to prevent the movable electrode from becoming displaced in case the instrument should be reversed.

The circuits in the instrument proceed as follows: From the battery to the binding-post 1, thence by a wire, *a*, to the pivot-pin M of the electrode K, to the electrode K, to the bridge-electrode T, to the electrode L and pivot-pin N by a wire, *b*, to the primary of induction-coil U, to a metal post, *c*, the end of which forms a switch-point outside the case, to switch-lever *d*, which may be used to cut out the battery when the instrument is not in use, to a binding-post 2, and thence back to battery.

The secondary of the induction coil is electrically connected to the binding-posts 3 and 4, to which the line-wire is attached, and to binding-posts 5 and 6, to which a receiving-telephone may be connected.

I claim as my invention:

1. In a telephone, a diaphragm, resistance-varying electrodes inclined and leaning against the rear side of said diaphragm by gravity, and not in electrical connection with one another, a movable electrode resting by gravity upon the upper inclined sides of the first-mentioned electrodes, and mechanism for changing the position of said movable electrode upon the inclined electrodes, substantially as described.

2. In a telephone, a diaphragm, resistance-varying electrodes inclined and having their free ends resting against said diaphragm by gravity, not in electrical connection with one another, and supported at their opposite ends so as to be free to oscillate, a movable electrode resting by gravity upon the first-mentioned electrodes and bridging them, and a support holding said movable electrode in position upon the inclined electrodes, substantially as described.

3. In a telephone, a diaphragm, resistance-varying electrodes inclined and having their free ends resting against said diaphragm by gravity, not in electrical connection with one another, and supported at their opposite ends so as to be free to oscillate, a movable electrode resting by gravity upon the first-mentioned electrodes and bridging them, and an adjustable support holding said movable electrode in position upon the inclined electrodes, substantially as described.

4. In a telephone, a diaphragm, resistance-varying electrodes inclined and having their free ends resting against said diaphragm, not in electrical connection with one another, and supported at their opposite ends so as to be free to oscillate, a movable electrode resting by gravity upon said inclined electrodes, and mechanism for sliding said movable electrode along the upper inclined sides of the inclined electrodes, the said mechanism being contained within the box or case and operated from the rear side thereof, substantially as described.

5. In a telephone, a diaphragm, resistance-varying electrodes inclined and having their free ends resting against said diaphragm by gravity, not in electrical connection with one another, and supported at their opposite ends so as to be free to oscillate, a movable electrode resting upon said inclined electrodes by gravity, mechanism for moving said movable electrode upon the inclined electrodes, and mechanism for holding said movable electrode in place and preventing its further movement of translation, substantially as described.

6. In a telephone, a diaphragm, resistance-varying electrodes inclined and having their free ends resting against said diaphragm by gravity, not in electrical connection with one another, and supported at their opposite ends so as to be free to oscillate, and an electrode pivoted horizontally and free to oscillate in a movable support, and resting by gravity upon said inclined electrodes, substantially as described.

7. In a telephone, a diaphragm, resistance-varying electrodes inclined and having their free ends resting against said diaphragm by gravity, not in electrical connection with one another, and supported at their opposite ends so as to be free to oscillate, an electrode of prismoidal form, having one side resting by gravity upon said inclined electrodes, and loosely pivoted horizontally in a movable support, and mechanism adapted to impart to said support and electrode therein a diagonally upward or downward movement, substantially as described.

8. The combination of the diaphragm F, electrodes K L, having independent pivots M N, supports I J, movable electrode T, pivoted in the yoke-piece O, yoke-piece P, pivot-connection between yoke-piece O and yoke-

piece P, and pivot Q, substantially as described.

9. The combination of the diaphragm F, electrodes K and L, having independent pivots M N, support J, supports I, one of said supports I containing a slot, R, movable electrode T, pivoted in the yoke-piece O, yoke-piece P, pivot-connection between said yoke-pieces, pin on yoke-piece P entering the slot R, and the nut S, substantially as described.

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Witnesses:
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