(No Model.)

L. DE LOCHT-LABYE.

TELEPHONE TRANSMITTER.

No. 264,028. Patented Sept. 5, 1882.

Fig. 1.

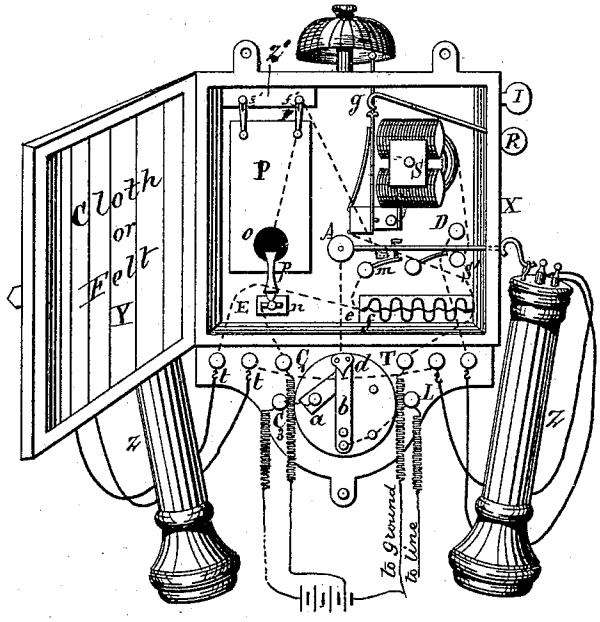
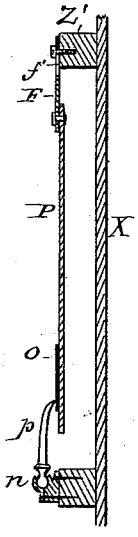


Fig. 1ª



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LÉON DE LOCHT-LABYE, OF LIEGE, BELGIUM.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 264,028, dated September 5, 1882.

Application filed April 20, 1882. (No model.) Patented in France August 30, 1879, No. 132,464; in Belgium April 21, 1881, No. 54,442; in Portugal November 25, 1881, No. 723; in Sweden November 28, 1881, and in British India December 31, 1881, No. 1,146.

To all whom it may concern:

Be it known that I, LÉON DE LOCHT-LABYE, of Liege, in the Kingdom of Belgium, have invented a certain new and useful Improvement in Telephone-Transmitters, of which the following specification is a full description.

This invention has reference to a new telephonic transmitter for use in connection with a battery or other auxiliary source of electricity, which transmitter is characterized by the use of a plate for receiving the impact of the sound-waves, made of cork or other suitable material adapted to furnish a large surface with small weight, the same being supported so as to be movable about one edge, (or being carried by spring-levers,) in combination with a contact-piece or electrode, of carbon, carried by and movable with said plate, and a contact-piece or electrode, of carbon or metal—such as silver, copper, or platinum—suitably supported so as to press against the movable electrode.

The plate of this instrument, which is called the "pantelephone," is preferably fixed at the extremities of spring arms or bars in a condition of great mobility, which allows it to respond to feeble sounds of the human voice uttered at a distance or close at hand in the manner best adapted to regular telephonic service. With a plate of cork the best effects are obtained with a plate having a surface measurement of about eighty millimeters by fifty-five millimeters and a thickness of three to six millimeters, and suspended by flat springs, of steel, copper, brass, or German silver, which are preferably provided with slots and attached by set-screws, thereby enabling the effective length of the springs to be increased or diminished and the point of contact between the carbon disk on the lower part of the plate and the edge of the platinum electrode to be changed. The platinum electrode is attached by a universal or ball-and-socket joint to the extremity of a metal finger.

An important feature of the invention consists in inclosing the pantelephonic plate and other parts of the apparatus in a box or case having the wall or a portion thereof on one or more sides formed by cloth, felt, or other non-vibratory material permeable to sound-waves without alteration.

In order that the invention may be fully understood, the manner in which the same is or may be carried into effect will now be described, with the aid of the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a telephone station apparatus constructed in accordance with the invention, the door of the box or case being open. Fig. 1ª shows the pantelephone or transmitter in vertical section, partly in elevation.

The box or case X, Fig. 1, is provided with a door, Y, consisting of a wooden frame with cloth stretched thereon. In the interior of the box are placed the pantelephone, (of which the plate is lettered P,) the magnet, armatures, and contacts of a vibratory or automatic circuit-breaking bell, S, an induction-coil, *e f*, and the contact devices of an automatic or gravity switch, A. Below the body of the box or case, on an extension of the back board, are the signal-key or push-button *a b d* and the binding-posts.

The cork plate P, of determined dimensions, is suspended by two small and supple springs, F F, of German silver, from a support, Z′. A small and perfectly-flat disk of carbon, *o*, is let into the lower part of the plate P, and is in contact with the edge of a platinum finger, *p*, attached to a support by the universal or ball-and-socket joint *n*, which enables it to be set in the position required for its edge to bear on the carbon disk *o* evenly along its whole length in all positions of the plate P. The regulation of the contacts is therefore effected in the most simple manner, for it is only necessary to set the finger *p* so as to secure an intimate and uniform contact between the edge thereof and the carbon disk, the greater or less inclination of the plate P seeming to regulate the degree of pressure, and the distance between the extreme positions in which conversation may be carried on under ordinary conditions being more than a centimeter.

By providing the springs F with holes or slots *f′* the plate P may be suspended higher

or lower, so as to vary at will the point of contact between the carbon disk *o* and the finger *p*. The carbon disk *o* is connected with one of the springs F by a wire, which is hid in the back of the plate P, and is shown by a dotted line. The finger *p*, which constitutes the other contact-piece or electrode, is connected with the binding-post C. The other electrical connections are as follows: The circuit of the pantelephone from the spring F is completed through the spring *m* and primary of the induction-coil *e f* to the post T, which is connected with the post C through a local transmitting-battery, (shown as a cell of the signaling-battery,) and which is also grounded or connected with the return-branch of the line-circuit.

The receiving-telephones Z, of which two are shown, although one will in most cases suffice, are connected in circuit with the line-wire and the secondary of the induction-coil *e f*, the circuit, when complete, being from the line-post L, through the key or spring *b*, contact-piece *d*, switch-lever A, contact D, coils of right-hand telephone, coils of left-hand telephone, and posts *t t* and secondary of induction-coil, and post T, to ground or return line. The circuit of the bell-magnet S is, when complete, the same as the receivers from the post L to the switch-lever A, but proceeds thence from the contact *s'* through the coils of the magnet S and its armature and back contact to the post T and ground. The circuits of the receiving-telephones and the bell and electro-magnet being respectively connected with the contact D and the contact S', the receiving-telephones will be automatically connected in with the line when the right-hand telephone is removed from the hook at the end of the switch-lever A, and, conversely, the line-circuit will be completed through the vibratory bell S when the said telephone is on the hook, as shown. In the latter position, the lever A being depressed, the spring *m* is also depressed, breaking the circuit of the local battery through the transmitter or pantelephone.

The contact-point *a* of the signal key or switch *b* is connected, by way of the post C^3, with the positive pole of a local signaling-battery, of which the positive pole of the last cell is connected with the post C'.

Connected with the signal-bell is a visible signal device consisting of a disk, R, and a lever, *g*. When the signal is set the disk R covers a fixed disk, I, being held in that position by engagement of the hook at the left of the lever with a pin on the armature of the signal-bell. The same apparatus being used at two stations on a line, if one party wishes to call the other, he pushes in the key or switch *b*, which thereupon connects the local battery to line through the contact *a*, key or switch *b* cutting out the other devices. The current from the battery, traversing the line-wire, passes through the magnet S of the signal-bell, which thereupon rings so long as the key or switch *b* is depressed. At the same time the lever *g* is released by the vibration of the bell-armature, and the disk R drops and remains in that position until reset by the party called. The latter, having received the signal, returns it by means of his key or switch *b*, and the receiving-telephones at the two stations are removed from their supports, and by the automatic movement of the spring switch-levers A are, together with the secondary of the induction-coils *e f*, connected in the line-circuit, while at the same time the circuit of the local transmitting-battery is completed by the spring *m* through the transmitter or pantelephone and the primary of the induction-coil. On replacing the telephones Z after the conversation is finished the original conditions are restored.

For the local battery Bunsen cells are not well adapted; but cells of any type in which the reaction is constant—such as those of Daniell, Meidinger, Calland, &c.—may be used, although it is preferred to use Leclanché cells with agglomerated plates, one or two of such cells serving for the pantelephone.

A signaling apparatus will now be described which operates by rapid breaks in an electric circuit, and which is capable of use with, if need be, no more than a single cell of battery.

The circuit traversed by the galvanic current includes the telephones at the two corresponding stations; or there is at each station a local circuit which includes the primary of an induction-coil, (the induction-coil of the transmitter will answer,) the secondary being connected to line. The simplest means for breaking the circuit consists of a metallic point connected with one pole of the circuit and a rough-surfaced metal plate connected with the other pole. For this plate a piece of a metal cloth with serrated meshes or the like may be used, it being secured to the telephone-box like a plate for lighting friction-matches.

Modifications may be made in the details of construction without departing from the spirit of the invention—for example, instead of suspending the plate P of the telephone-transmitter (Fig. 1) from above, it may be supported at the lower edge, so as to be in unstable equilibrium.

Having now fully described the said invention and the manner of carrying the same into effect, what I claim is—

1. In a telephonic transmitter, the combination of a plate of cork or other not polished wood suspended by spring-arms, and a carbon contact-disk carried by said plate, with a contact-piece or electrode having an edge in contact with said disk, substantially as described.

2. In combination with the electrodes or contact-pieces of a telephonic transmitter, a cork plate having the surface dimensions and thickness described.

3. A contact-electrode connected with its support by a universal or ball-and-socket joint,

and provided with a bearing-edge of platinum, silver, copper, or carbon, substantially as described.

4. The combination, with plate and carbon electrode carried thereby, and the stationary electrode, of means for supporting the plate adjustably, substantially as described, so as to change the point of contact between the electrodes, substantially as set forth.

5. A telephone-box inclosing a transmitting-telephone and having one or more sides made of cloth or other material permeable to sound-waves, substantially as described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

LÉON DE LOCHT-LABYE.

Witnesses:

EMMA BAUSSE,

LABYE.