Bijlage 6: Patent Marzi

Amerikaans patent van Marzi uit 1917 van de toestellen die gebruikt werden te Laken in 1914 (de aanvraag gebeurde op 12 februari 1914).

G. B. MARZI.

MICROPHONE WITH CARBON POWDER FALL FOR STRONG CURRENTS.

APPLICATION FILED FEB. 12, 1914.

1,237,933.

Patented Aug. 21, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

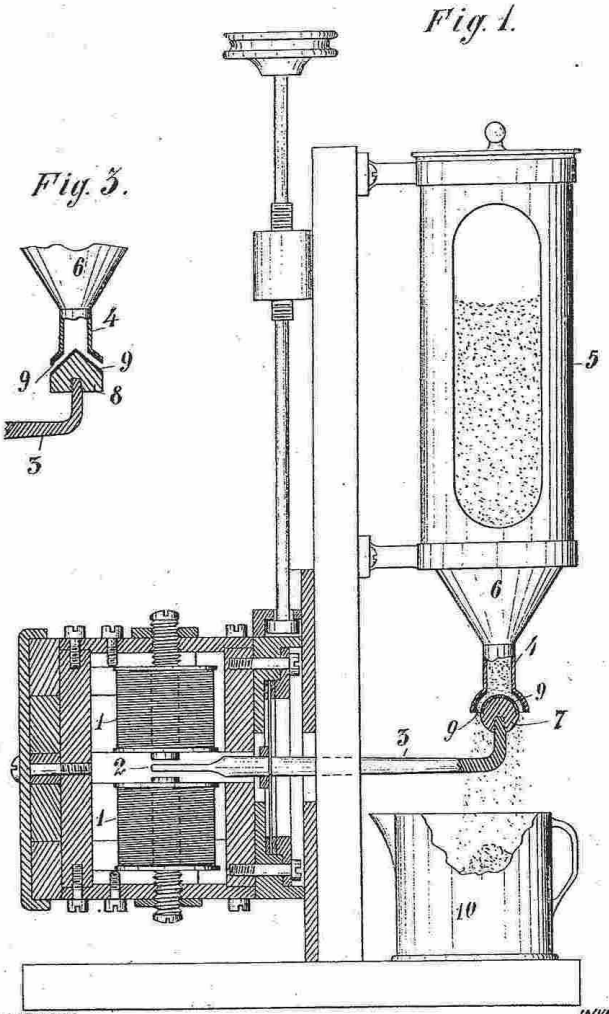

Fig. 3.

WITNESSES

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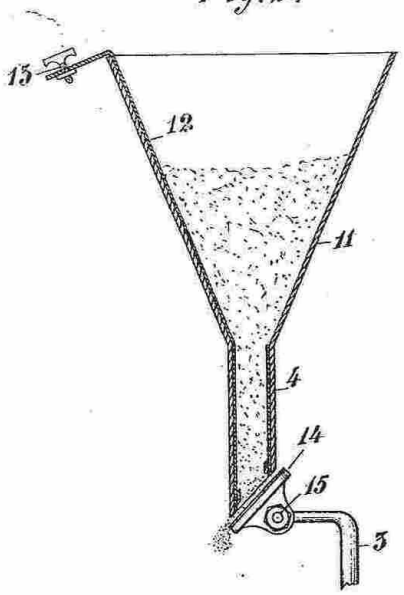
2 SHEETS—SHEET 2.

Fig. 2.



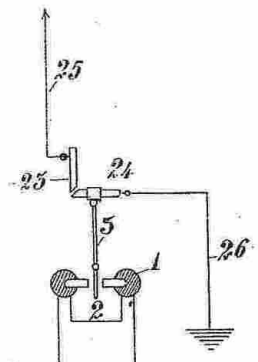
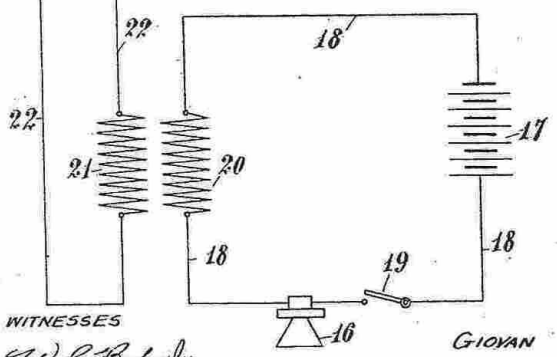


Fig. 4.



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MICROPHONE WITH CARBON-POWDER FALL FOR STRONG CURRENTS.

1,237,933. Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed February 12, 1914. Serial No. 818,266.

To all whom it may concern:

Be it known that I, GIOVAN BATTISTA MARZI, electrician, a subject of the King of Italy, residing at Cornigliano Ligure, in the Province of Genoa and Kingdom of Italy, have invented certain new and useful Improvements in Microphones with Carbon-Powder Fall for Strong Currents, of which the following is a specification, reference being had therein to the accompanying drawing.

All electrical microphones including carbon under any form, such as powder, pieces, grains, rods, disks, have the great disadvantage that the carbon owing to the continual passage of excessively strong electric current gets heated until it becomes incandescent, and in this latter state its surface gets coated with an insulating crust of ash, which increases gradually the inner resistance of the microphone to such an extent as to render it inactive.

Several kinds of carbon microphones have been experimented with in trying to eliminate or at least to diminish this defect, but up to date these efforts have led to no favorable result, nor has any noteworthy advantage been secured with artificial cooling produced by the circulation of water or of air. Such inadequate means have repeatedly been tried for eliminating the above defect, but without any real result.

A measure preventing the evil at the root consists, on the contrary, in eliminating the causes, instead of the effects, of the defect. This is obtained according to the present invention, by renewing continually the carbon which forms the contacts of variable resistance so that it cannot become heated.

The heating and the subsequent incandescence of a carbon mass take place only gradually within a determined period of time. It is, therefore, important not to leave a given carbon mass under the influence of the passage of the electric current beyond a certain space of time, that is to say for a time sufficient to heat the mass excessively; or, in other words, as already stated, it is imperative to renew the carbon, thus providing a kind of circulation of powder in the same way as the circulations of liquids or of gas are established.

In the annexed drawing, which shows a practical embodiment of the invention,

Figure 1 is a side elevation of the carbon feeding apparatus;

Fig. 2 is a partial modification of Fig. 1;

Fig. 3 is a modification of the swinging valve;

Fig. 4 is a diagram of the electrical connections.

The fundamental idea of this invention may be applied to any telephonic apparatus; here is shown, by way of example, its application to a telephonic transmitter, in which is employed a lever with two arms —2—3—, of which the arm —2— swings between the poles of an electromagnet —1—, while the arm —3— controls, as explained hereinafter, the orifice of a carbon-powder chute —4—.

A reservoir —5— contains a certain quantity of fine-grained carbon powder; its lower portion —6— is funnel-shaped and carries a tubular extension —4— open at its lower end. The outlet of the carbon-powder is controlled by a check-valve —7— having a spherical (Fig. 1), or conical shape —8— (Fig. 3), or any other convenient shape whatever. The said valve is fastened at the end of the arm 3 oscillating between the poles of the electromagnet 1. Thereby the contrivance is regulated in such manner that in the position of rest, the valve closes the lower orifice of the tube 4 preventing thus the falling down of the carbon powder, while when in operation, the vibrations of the levers 2 and 3 open and close alternately the said orifice, so that at every opening of the latter a certain quantity of the carbon powder falls down, causing thus a continuous change of the lower layers of the carbon powder which are just those through which passes the electric current. The continuous renewal of these layers of carbon powder prevents them from becoming excessively heated, as would be the case if they were not continuously renewed. At the same time the vibrations of the lever modify the pressure of the carbon-powder column, thus permitting the speech to be transmitted. The surfaces of the electrodes, which are in contact with the carbon mass and influenced by the passage of the current, are covered with a platinum plate —9—.

The carbon-powder which falls down is collected in a vessel —10— placed beneath, from which it is poured periodically in the reservoir —5—.

Another embodiment is illustrated in Fig. 2. A glass funnel —11— has its lower end cut obliquely at about 45°; inside it is covered with a metallic plate —12— which is

slightly shorter than the glass tube; at the upper end of this plate projecting from the funnel is provided a binding-screw —13—, where ends one of the wires of the circuit; the check-valve or check-door is formed by a plate —14— linked with a pivot —15— at the end —3— of the lever of the electromagnet, and forming an inclined plane, which facilitates the gliding down of the carbon-powder. In this embodiment the lever swings in the horizontal plane, while in the embodiment described above it must swing in the vertical plane. From the lever —2—3— starts the other wire of the microphonic circuit.

Fig. 4 shows the way in which this microphone in practice is inserted in a circuit, for instance for radiotelephonic transmissions. In said Fig. —16— is a microphone of the ordinary type as used for the usual telephonic transmissions; —17— is the battery which feeds the microphonic circuit —18— comprising a circuit-breaker —19— and the primary winding —20— of the transformer coil. The secondary winding —21— of this transformer belongs to a circuit —22— comprising the electromagnet —1— which acts on the lever —2—3—. This lever operates the microphone with carbon-powder fall according to the present invention, which in the diagram is supposed to be formed by two carbon rods —23—24— cut obliquely, of which that movable horizontally —24— is a solid rod, while the vertical rod —23— is hollow and serves as outlet for the vessel with the powder. At the two carbon rods —23—24— are fastened the ends —25—26— of the oscillating transmitting circuit.

Having now fully described this my invention, and how the same is to be carried out, I declare that what I claim is:

1. In a microphone employing a powdered carbon contact, a carbon supply, and electrically actuated means for controlling the delivery of the carbon from the supply to renew the carbon contact.

2. In a microphone employing a powdered carbon contact, a carbon supply, a valve in circuit with the said contact and commanding the said supply, and electrically controlled means responsive to variations in the electric current of the circuit for actuating the valve to vary the pressure on the contact and to renew the same from the said supply.

3. In a microphone, a supply of granulated carbon, a chute through which said carbon is allowed to fall, movable parts controlling the fall of the carbon, and an electric circuit in which the falling carbon forms a contact medium.

4. The combination of a microphone employing a powdered carbon contact, a supply of granulated carbon, movable parts controlling the fall of the carbon, and a second microphone actuating the movable parts which act on the falling carbon constituting the contact medium.

5. The combination of a primary microphone, an electromagnet inductively energized by the variation of current in said primary microphone, a vibrating lever, one arm of which swings between the poles of said electromagnet, a valve at the end of the other arm of said lever, a supply of carbon, a receptacle therefor, the said valve controlling the fall of the carbon contained in the receptacle, the falling carbon constituting the contact medium of a microphone for strong currents flowing through a circuit including the valve and the receptacle.

In testimony whereof I affix my signature in presence of two witnesses.

GIOVAN BATTISTA MARZI.

Witnesses:
LETTERIS LABOCCETTA,
ANTONINO LABOCCETTA.