(No Model.)

C. T. BLOOMER.

TELEPHONE TRANSMITTER.

No. 492,883. Patented Mar. 7, 1893.

Fig. 1.

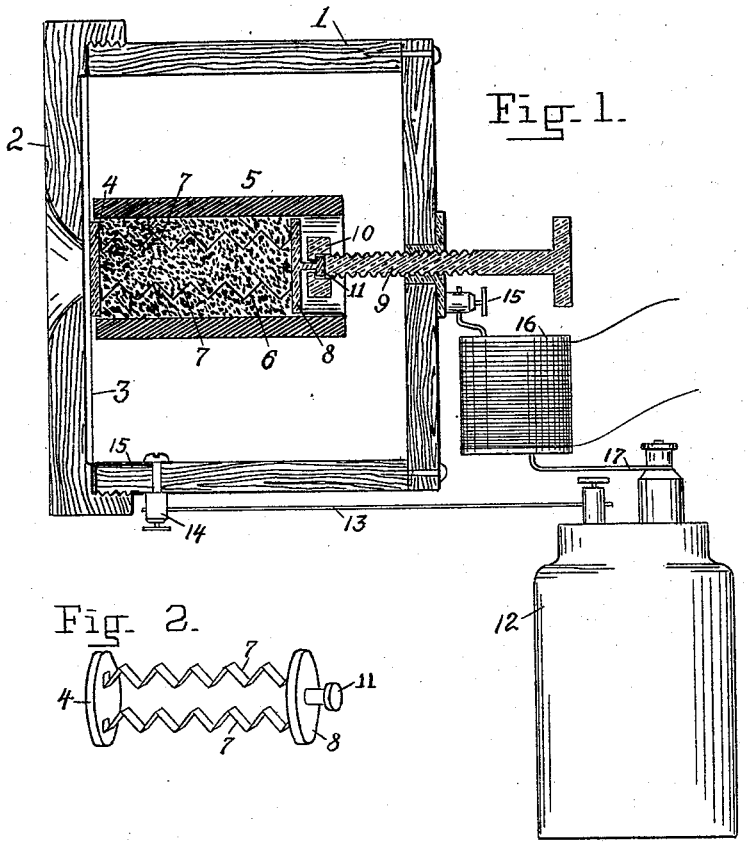


Fig. 2.

Fig. 3.

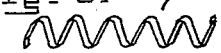
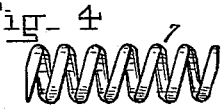


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES T. BLOOMER, OF NEW YORK, N. Y.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 492,883, dated March 7, 1893.

Application filed December 14, 1892. Serial No. 455,139. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. BLOOMER, a citizen of the United States of America, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a specification.

My invention is an improvement in telephone transmitters and consists in a variable resistance in the form of one or more strips or ribbons (preferably carbonized) plaited, or otherwise folded or wound in spiral and embedded in a mass of pulverized or granulated carbon. It is therefore a combination of the variable resistance described in United States Patent No. 464,959, to Charles Cuttriss, granted December 15, 1891, or No. 203,013, to Thomas A. Edison, granted February 30, 1878, (Fig. 6,) or No. 476,026, to Stephen F. Sherman, granted May 31, 1892, or some similar device, with the variable resistance described in United States Patent No. 213,283, to Webster Gillett, granted March 18, 1879.

In the accompanying drawings which form a part of this specification, Figure 1 is a cross-section of a telephone transmitter with my variable resistance attached thereto. Fig. 2 is a detail showing plaited strips or ribbons attached to end plates. The ribbon is such as is described in the patent to Sherman above named. Fig. 3 is a ribbon plaited as in Fig. 2 except that the bends are less sharp, giving a wavy strip. Fig. 4 is a rod such as is described in the Cuttriss patent above named.

The box, 1, of the transmitter may be of any suitable material, as wood or metal. Upon its end is secured the mouth piece, 2, and between the mouth piece and the wall of the box is held the transmitter diaphragm, 3. This is of suitable material and construction for taking up sound vibrations and carries preferably at its center a plate or knob, 4, which fits into the end of, and is attached tightly to a tube, 5, of suitable material, *e. g.* elastic rubber tubing, containing the mass of granulated or pulverized carbon, 6. The strip or strips, 7, are attached to this plate at one end and at the other end to a plate, 8, fitted into the other end of the tube against which presses an adjusting screw, 9. This screw has a block, 10, fixedly attached to its end which embraces a knob, 11, on the rear of the plate, 8, so that the plate may be pushed in or pulled out by turning the screw, but will not be rotated.

As shown the variable resistance is in the following electrical circuit, the parts included therein all being electrical conductors, though of course the circuit might be considerably varied and some of the parts shown as included therein be made of non-conducting material. Battery, 12, wire, 13, binding post, 14, metal strip, 15, diaphragm, 3, block, 4, carbon and strips, 6 and 7, plate, 8, screw, 9, binding post, 15, primary coil of the induction coil, 16, and wire, 17, to battery.

The conducting strip and mass of carbon should be of high resistance compared with the other resistances of the circuit. It can be made in the following manner. A flexible strip or ribbon of silk, cotton, paper, or other suitable material is coated with mucilage or other suitable adhesive material and while this coating is still moist is coated with a layer of powdered carbon, or a thin carbonized strip of vulcanized fiber may be used. But I do not limit myself to a ribbon of any particular composition.

The value of a conducting strip as a variable resistance is greatly increased by the presence of the pulverized or granulated carbon. The value of the mass of powdered carbon as a variable resistance is also increased by the presence of the strip or ribbon whether it be of conducting material or not. But it is highly advantageous to use conducting strips since the current is then never reduced below a certain minimum determined by the resistance of the conducting strips, and all crackling sputtering and frying sounds are done away with.

The operation of the transmitter is as follows. When the diaphragm is struck by sound waves its vibrations are transmitted to the mass of carbon and the strip or strips therein. The folds, plaits, or coils of the strip are closed and opened by the motions of the diaphragm. These motions of the strip affects its own resistance, and its contacts with the surrounding carbon, and also changes the density and contacts of the mass of carbon

and thereby alters the resistance of this mass. A variation of the resistance of the whole conductor is thereby set up, the intensity of the current flowing through the circuit is changed, and currents are induced in the line circuit as is well understood.

I do not herein claim specifically a variable resistance consisting of a mass of powdered carbon with one or more spiral strips or ribbons embedded therein such as is herein before described, though I do claim that such a form is embraced within my generic invention.

Without limiting myself to the precise details shown, what I claim, and desire to secure by Letters Patent, is—

1. In a telephone transmitter the combination of a vibrating diaphragm and a variable resistance connected therewith and included in the circuit, which resistance consists of a mass of powdered carbon with one or more strips or ribbons embedded therein, substantially as described.

2. In a telephone transmitter the combination of a vibrating diaphragm and variable resistance connected therewith and included in the circuit, which resistance consists of a mass of powdered carbon with one or more strips or ribbons of conducting material embedded therein, substantially as described.

3. In a telephone transmitter the combination of a vibrating diaphragm and a variable resistance connected therewith and included in the circuit, which resistance consists of a mass of powdered carbon with one or more strips or ribbons creased or folded to form plaits embedded therein, substantially as described.

4. In a telephone transmitter the combination of a vibrating diaphragm and a variable resistance connected therewith and included in the circuit, which resistance consists of a mass of powdered carbon with one or more strips or ribbons of conducting material creased or folded to form plaits embedded therein, substantially as described.

5. In a telephone transmitter the combination of a vibrating diaphragm and a variable resistance connected therewith and included in the circuit, which resistance consists of a mass of powdered carbon with one or more strips or ribbons of carbon creased or folded to form plaits embedded therein, substantially as described.

6. In a telephone transmitter the combination of a vibrating diaphragm, a plate attached thereto, an elastic tube fitted on and attached to the plate and filled with powdered carbon, a plate fitted into the other end of the tube and one or more strips or ribbons connecting the plates and embedded in the carbon, substantially as described.

7. In a telephone transmitter the combination of a vibrating diaphragm, a plate attached thereto, an elastic tube fitted on and attached to the plate and filled with powdered carbon, a plate fitted into the other end of the tube and one or more strips or ribbons of conducting material connecting the plates and embedded in the carbon, substantially as described.

8. In a telephone transmitter the combination of a vibrating diaphragm, a plate attached thereto, an elastic tube fitted on and attached to the plate and filled with powdered carbon, a plate fitted into the other end of the tube and one or more strips or ribbons creased or folded to form plaits connecting the plates and embedded in the carbon, substantially as described.

9. In a telephone transmitter the combination of a vibrating diaphragm, a plate attached thereto, an elastic tube fitted on and attached to the plate and filled with powdered carbon, fitted into the other end of the tube and one or more strips or ribbons of conducting material creased or folded to form plaits connecting the plates embedded in the carbon, substantially as described.

10. In a telephone transmitter the combination of a vibrating diaphragm, a plate attached thereto, an elastic tube fitted on and attached to the plate and filled with powdered carbon, a plate fitted into the other end of the tube and one or more strips or ribbons creased or folded to form plaits connecting the plates and embedded in the carbon, substantially as described.

Signed by me, in New York city, this 13th day of December, 1892.

CHAS. T. BLOOMER.

Witnesses:
SAMUEL W. BALCH,
WILLARD P. SHAW.