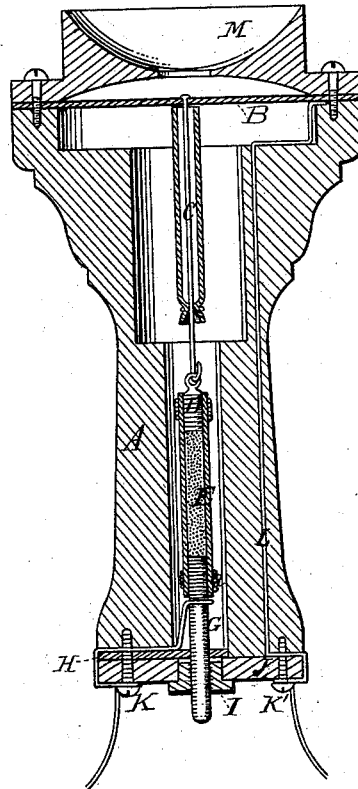


J. E. WATSON.  
Carbon Rheostat and Transmitter.

No. 219,544.

Patented Sept. 9, 1879.

*Fig. 1.*



WITNESSES

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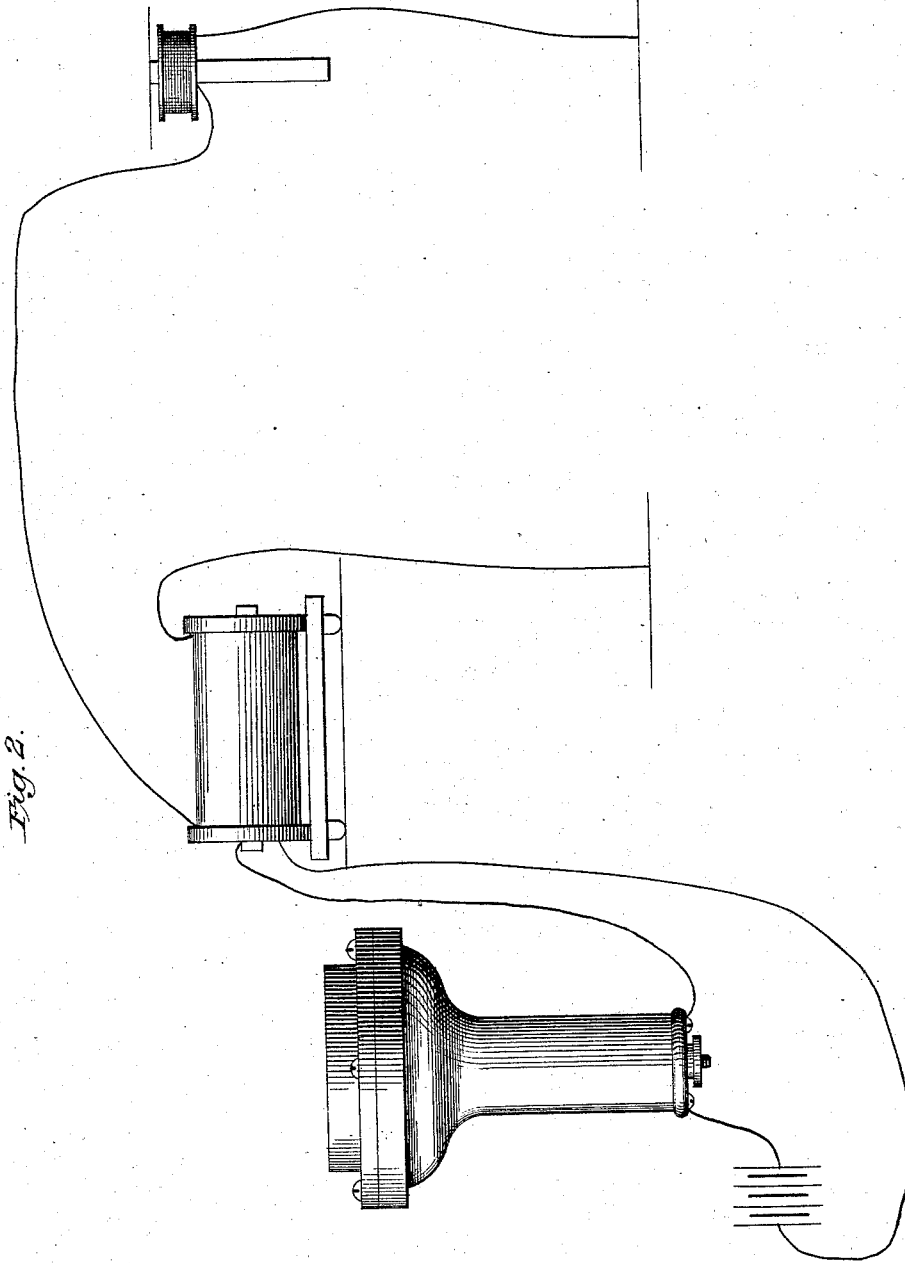
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# UNITED STATES PATENT OFFICE

JOHN E. WATSON, OF LOUISVILLE, KENTUCKY.

## IMPROVEMENT IN CARBON RHEOSTATS AND TRANSMITTERS.

Specification forming part of Letters Patent No. **219,544**, dated September 9, 1879; application filed May 12, 1879.

*To all whom it may concern:*

Be it known that I, JOHN E. WATSON, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Carbon Rheostats and Transmitters; and do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal section of this invention. Fig. 2 is a view showing the telephone arranged with relation and connected to a battery, induction-coils, and electric circuit.

This invention has relation to improvements in carbon rheostats and transmitters for telephonic or other use; and it consists, mainly, in the combination, with a tube or receptacle, of rubber or other elastic non-conducting material, of finely-divided carbon or coke filling said receptacle, which has at one end a metallic plug extending into the carbon, and at the other an adjustable bolt or rod, also extending to the tube or receptacle, and firmly pressing the carbon, and proper battery-connections, as hereinafter set forth.

In the accompanying drawings, the letter A designates the wooden case inclosing the rheostat or transmitter.

B indicates a metallic or other suitable diaphragm or membrane, secured in the case or cover near its mouth end, and connected by means of the wire C to the electric conductor D, which is of brass or other suitable metal.

E indicates an elastic tube, of rubber or other non-conducting substance, having firmly fastened into one of its ends a metallic plug, D, which is in forcible contact with the filling F, of finely-divided coke or carbon, lamp-black, iron filings, or equal parts of iron and carbon, in the tube or receptacle.

The finely-divided coke or carbon, or other suitable finely-divided conducting substance, is firmly packed in the receptacle against the end plug, D, and is secured therein by means of a head, *a*, at the other end, and a small bolt or rod, G, which is provided with a delicate means of adjustment, such as a fine screw-thread.

The bolt G is made square or triangular in cross-section, and its edges only threaded to

engage the adjusting-nut I, which works in guides on the exterior of plate H at the lower end of the case, and which has a central aperture of square or triangular form, corresponding to that of bolt G, so that this bolt is held from turning during its adjustment, and will not be liable, therefore, to twist the rubber tube or receptacle E.

J is a non-conducting plate, covering the lower end of the transmitter-case, and serving for the support and attachment of binding-posts or other suitable connections.

K indicates the post connecting the lower end of the carbon-tube by the metal plate H, and K' the binding-post connecting the upper end of carbon-tube by means of the plug D, wire C, diaphragm B, and wire L. M is the mouth-piece.

By adjusting the nut or screw connection I the elastic tube or carbon-holder is lengthened or shortened to increase its electrical resistance, as may be required in transmitters for telephones or rheostats.

Previous to the adjustment the carbon, held compact by the shrinking pressure of the elastic tube, offers the least resistance to the passage of the current, and as the nut I is screwed up the pressure is removed from the carbon, thereby increasing the resistance, and when properly adjusted the slightest vibration in the diaphragm or membrane acts likewise, allowing a current of different degrees of resistance to pass through in unison with the vibrations of the diaphragm or membrane.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a rheostat and transmitter, the elastic adjustable non-conducting receptacle and the finely-divided carbon or other conducting material therein, substantially as specified.

2. The combination, with a receiving-telephone, galvanic battery, induction-coils, and electric circuit, of the transmitter and rheostat, provided with the elastic non-conducting receptacle, having the finely-divided conducting filling and adjusting devices, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

Witnesses: JOHN E. WATSON.  
GALEN E. THURMAN,  
ALBERT AMILLE.