(No Model.)

A. J. MacDONALD.

TELEPHONE TRANSMITTER.

No. 438,631. Patented Oct. 21, 1890.

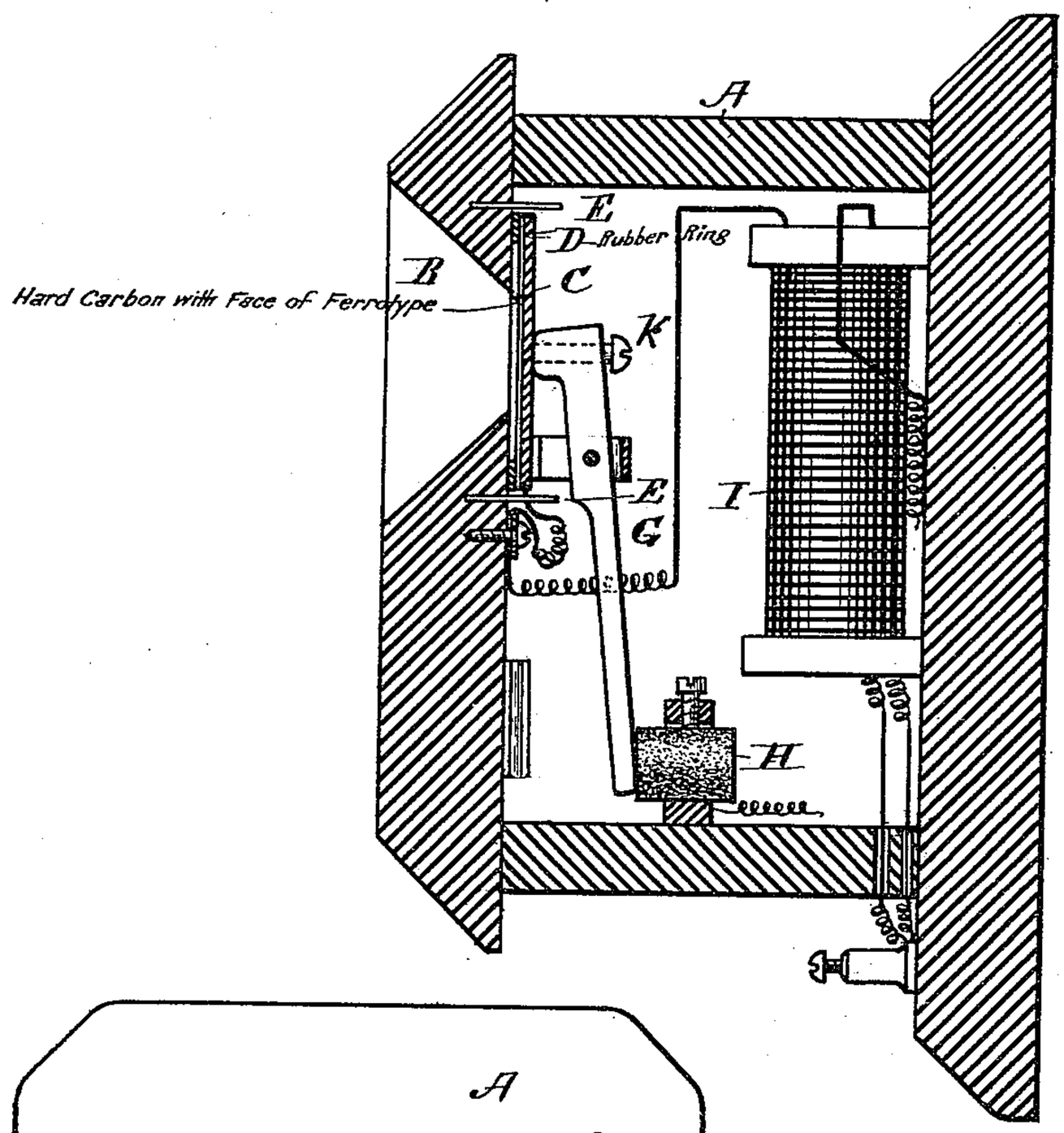

Fig. 1.

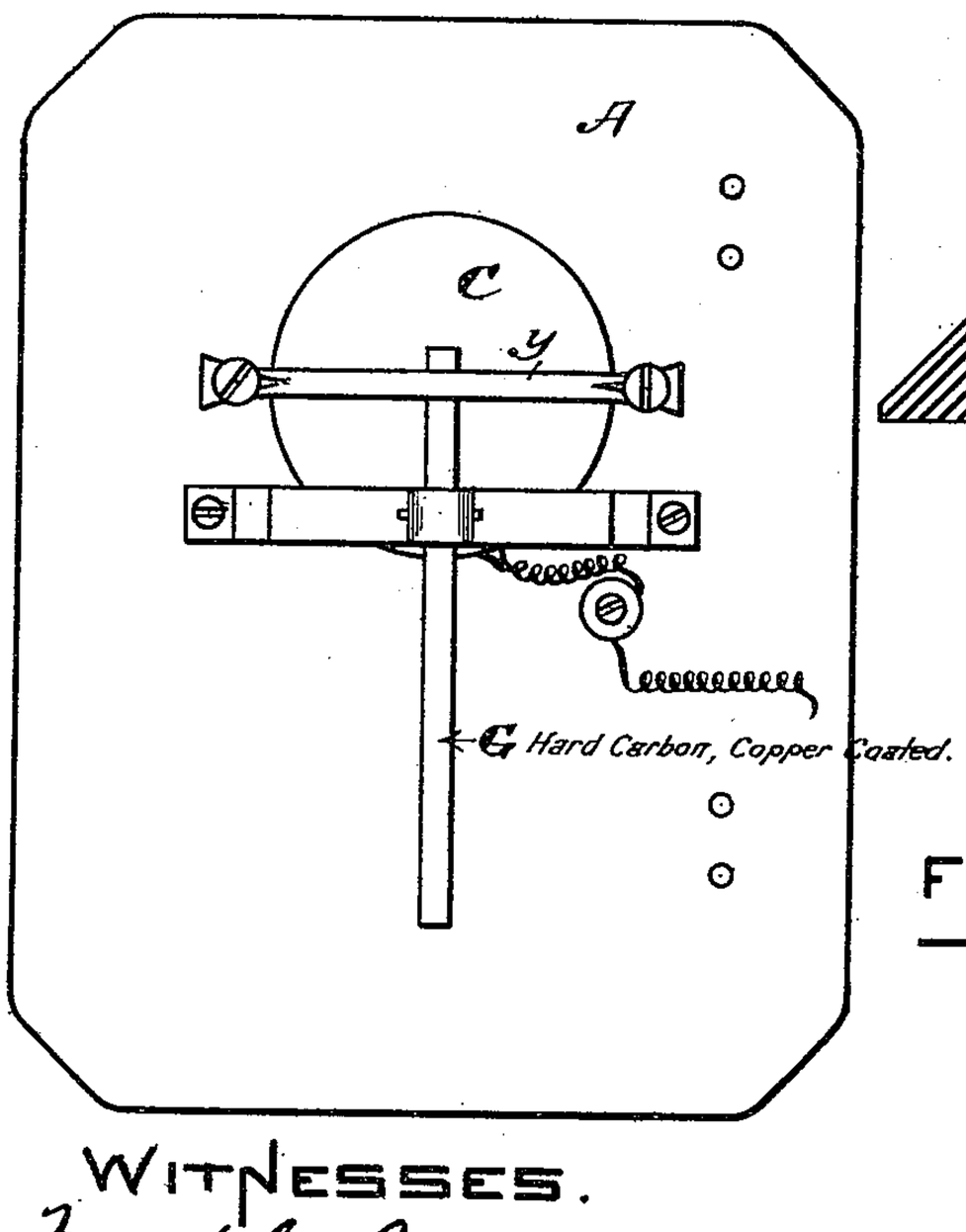

Fig. 2

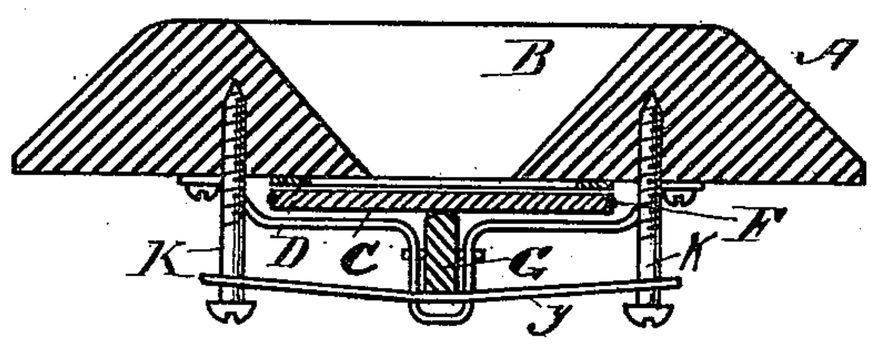

Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 438,631, dated October 21, 1890.

Application filed December 12, 1889. Serial No. 333,409. (No model.)

To all whom it may concern:

Be it known that I, ARCHIBALD J. MACDONALD, of North Tiverton, in the county of Newport and State of Rhode Island, have invented a new and useful Improvement in Telephone-Transmitters, of which the following, taken in connection with the accompanying drawings, is a specification.

In an application for Letters Patent of the United States, filed concurrently with this application and having Serial No. 333,410, I have described and claimed an improvement in telephone-transmitters invented by me, in which the vibrations of the diaphragm are amplified by means of a lever, which is pivoted near one end and whose shorter end rests against a loosely-supported diaphragm and whose longer end establishes contact with the two electrodes in accordance with the vibrations of the diaphragm.

The invention which forms the subject of the present application is an improvement upon the invention described and claimed in the application before referred to, and consists in the construction of the diaphragm and the amplifying-lever of hard carbon, whereby the efficiency of the transmitter is much increased.

In the accompanying drawings, Figure 1 is a vertical sectional view of the transmitter. Fig. 2 is a rear view in elevation, and Fig. 3 is a transverse sectional view of the same through the diaphragm.

In the several figures the same letters refer to the same parts.

Referring to the drawings, A is a suitable case, of wood or other material, which supports the induction-coil, the diaphragm, the amplifying-lever, and the electrode. The front of this case is provided with a suitable mouth-piece B.

Behind the mouth-piece is the diaphragm C. The body of the diaphragm is made of hard carbon; but in order to afford a suitable surface for the reception of the sound-waves the front face of said diaphragm is made of some conducting substance having a smooth surface—as, for example, ferrotype metal. This diaphragm is of longer diameter than the opening in the mouth-piece, and the parts projecting on each side rest upon a rubber ring D on the case around the mouth-piece. The diaphragm is loosely supported between the front wall of the case and the end of the pivoted lever G. Suitable pins E E, inserted in the case above and below the diaphragm, prevent it from moving up or down. Around the edge of the diaphragm is a copper wire F, by means of which every part of the circumference of the diaphragm becomes a conductor of the current, and the current has the same strength in every part of the diaphragm which is at the same distance from this conductor.

G is the amplifying-lever, which is suitably pivoted to the back of the case at a point near the end of the lever, and the shorter arm of this pivoted lever bears against the diaphragm. The longer arm of the lever bears against a block or carbon H, suitably supported in the case. One of the terminals of the battery is connected with this electrode in the usual manner—as, for example, through the induction-coil I, as shown—and the other terminal in the same manner is connected to the wire which surrounds the diaphragm. This amplifying-lever is made of hard carbon, and in order to increase its conductivity its surface is coated with copper, except at the parts which are in contact with the surface of the diaphragm and the surface of the carbon block N.

In order to maintain the end of the lever in contact with the diaphragm a band of rubber J, supported at each end upon pins K and adjustable thereon, extends across the end of the lever and acts upon the end of the lever with a yielding and adjustable pressure.

This device is described and claimed in the application before referred to and is not claimed in the present application.

The mobility afforded by the loosely-supported diaphragm, the yielding pressure afforded by the rubber band, and the light contact of the lever with the diaphragm and electrode render the transmitter very susceptible to the effect of sound-vibrations.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a telephone-transmitter, a diaphragm having its body made of hard carbon and having its front face made of a suitable conducting material having a smooth surface, substantially as and for the purpose set forth.

2. In a telephone-transmitter, a diaphragm having its body made of hard carbon and its front face made of ferrotype metal, substantially as and for the purpose set forth.

3. The combination, substantially as and for the purpose set forth, with a loosely-supported diaphragm of hard carbon forming part of an electric circuit, of a lever of hard carbon pivoted near one end and having its shorter arm in contact with the diaphragm and its longer arm in contact with a carbon electrode connected in the circuit, and an adjustable spring acting on the short arm of the lever to maintain its contact with the diaphragm.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 27th day of November, A. D. 1889.

ARCHIBALD J. MACDONALD.

Witnesses:

ALEX. L. HAYES,

FRANK G. PARKER.