(No Model.)

# A. W. ROSE.

## Electric Telephone.

No. 237,207. Patented Feb. 1, 1881.

*Fig 1.*

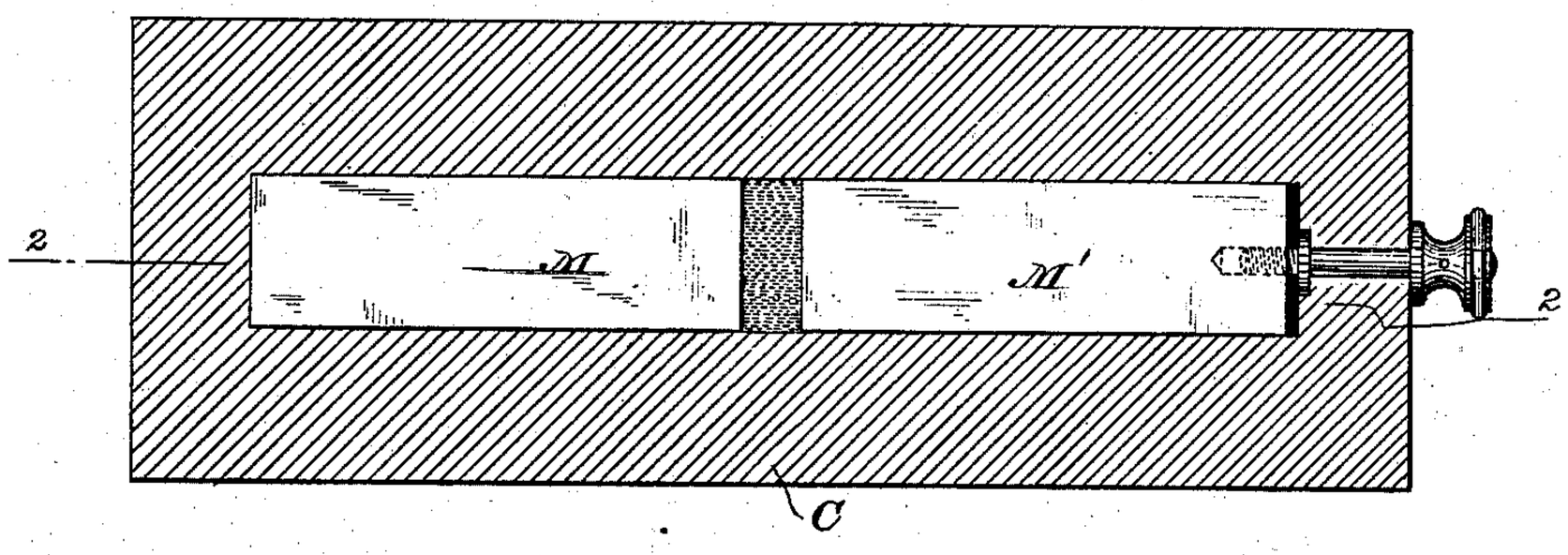
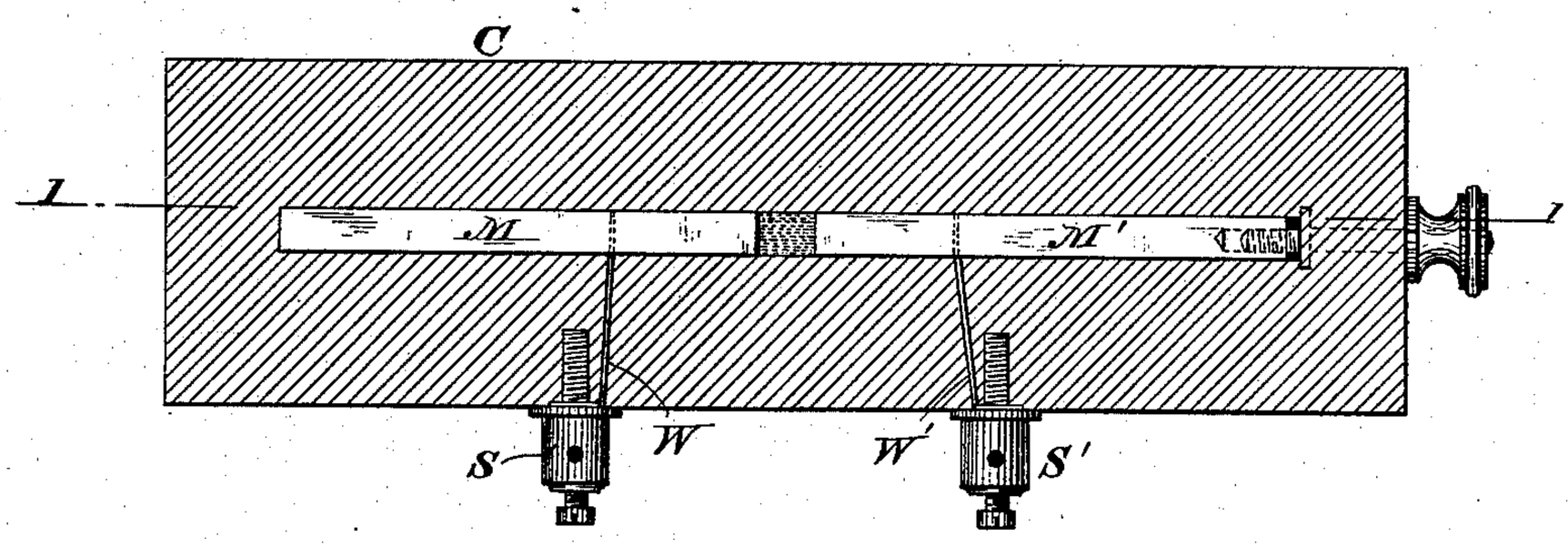



*Fig 2.*




WITNESSES.

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INVENTOR

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By his Attorneys.

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# UNITED STATES PATENT OFFICE.

ALLEN W. ROSE, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES A. CHEEVER, OF SAME PLACE; SAID CHEEVER ASSIGNOR TO HIMSELF AS TRUSTEE.

## ELECTRIC TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 237,207, dated February 1, 1881.

Application filed October 26, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN W. ROSE, a citizen of the Dominion of Canada, now residing in the city, county, and State of New York, have invented certain new and useful Improvements in Transmitting-Telephones, of which the following is a specification.

My invention relates to that class of transmitting-telephones in which variations in the strength of an electric current are caused by the varying condition of magnetic filings interposed in a magnetic field through which the current passes. Various modifications of such an apparatus are shown in several other applications for Letters Patent of the United States filed by me simultaneously with this one, and in one of which the method of operation is broadly claimed.

My present invention relates to the adaptation and embodiment of such an apparatus in what is known as a "molecular transmission apparatus," to which end my improvement consists, first, in the combination of metallic filings susceptible to inductive or magnetic action, interposed in a magnetic field through which the current passes, with an enveloping-case, through which the vibrations which produce the variations in the current are transmitted by molecular movements of such case.

My improvement further consists in the combination of an enveloping-case, conducting-bodies inclosed therein, placed end to end, with a space between, metallic filings susceptible to inductive or magnetic action interposed in the magnetic field between them, and circuit-wires connecting said conducting-bodies with the respective poles of a galvanic circuit.

In the accompanying drawings, Figure 1 represents a horizontal longitudinal section through my improved apparatus on the line 1 1 of Fig. 2, which latter represents a similar section on the line 2 2 of Fig. 1.

The case C of the apparatus may be made of cork, wood, papier-maché, vulcanized fiber, metal, or other material capable of transmitting the vibrations produced by the impingement of sound-waves upon its surface molecularly. Should a metal case be employed, it must, however, be insulated from the conducting bodies through which the current passes. Conductors M M′, consisting in this instance of plates of metal, one or both of which must be magnets, are arranged in the same plane in a cavity of the case, with their ends a slight distance—say one-eighth of an inch—apart. The space thus left between their adjacent ends constitutes a magnetic field, and is supplied with filings of some metal susceptible to inductive or magnetic action, such, for instance, as iron, steel, aluminium, cobalt, or nickel. I prefer the last-mentioned metal, as it resists the action of moisture, and is therefore not liable to oxidation. These filings may be in the form of a coarse powder, though I prefer to use them in the form of slivers or filings the length of which is three or four times greater than their width, as this form secures a more perfect interlacing of the fibers and adapts it better to the transmission of delicate vibrations. A mixture of filings of different magnetic metals, or of filings and powder of similar or dissimilar magnetic metals, may be used, if preferred.

The conducting-bodies M M′ may be either permanent magnets or electro-magnets. The drawings show permanent magnets, each connected by appropriate connecting-wires W W′ and binding-screws S S′ to an ordinary galvanic circuit in well-known ways.

The operation of this apparatus will readily be understood from the foregoing description.

The magnets maintain the filings in the circuit by magnetism. Sound-waves impinging upon the case produce molecular disturbances therein, which are communicated therethrough to the filings, thus causing correlative variations in their resistance to the circuit, and consequently in the strength of the current, which variations are reproduced in any of the ordinary approved receivers in the form of articulate sounds or speech.

I limit the claims herein to the specific organization of mechanism shown, as other modes of operation and other organizations of apparatus are claimed in the other divisions of this application hereinbefore referred to.

I claim herein as of my own invention—

1. The combination, substantially as herein set forth, of the enveloping-case, a magnet or magnets inclosed therein, and filings susceptible of magnetic or inductive action, in a loose condition, interposed in the magnetic field, to vary the electric current traversing the circuit in which they are included by changes in their condition by molecular vibrations transmitted through the casing.

2. The combination, substantially as herein set forth, of the enveloping-casing, magnets inclosed therein, placed end to end, with a space between them, metallic filings susceptible of magnetic or inductive action, in a loose condition, interposed in the magnetic field between the magnets, and a galvanic circuit in which the magnets and filings are included.

In testimony whereof I have hereunto subscribed my name this 22d day of October, A. D. 1880.

A. W. ROSE.

Witnesses:
WILLARD L. CANDEE,
E. C. DAVIDSON.