

No. 857,530.

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F. J. McCARTY, DEC'D.
H. A. McCARTY, ADMINISTRATOR.
WIRELESS TELEPHONE.
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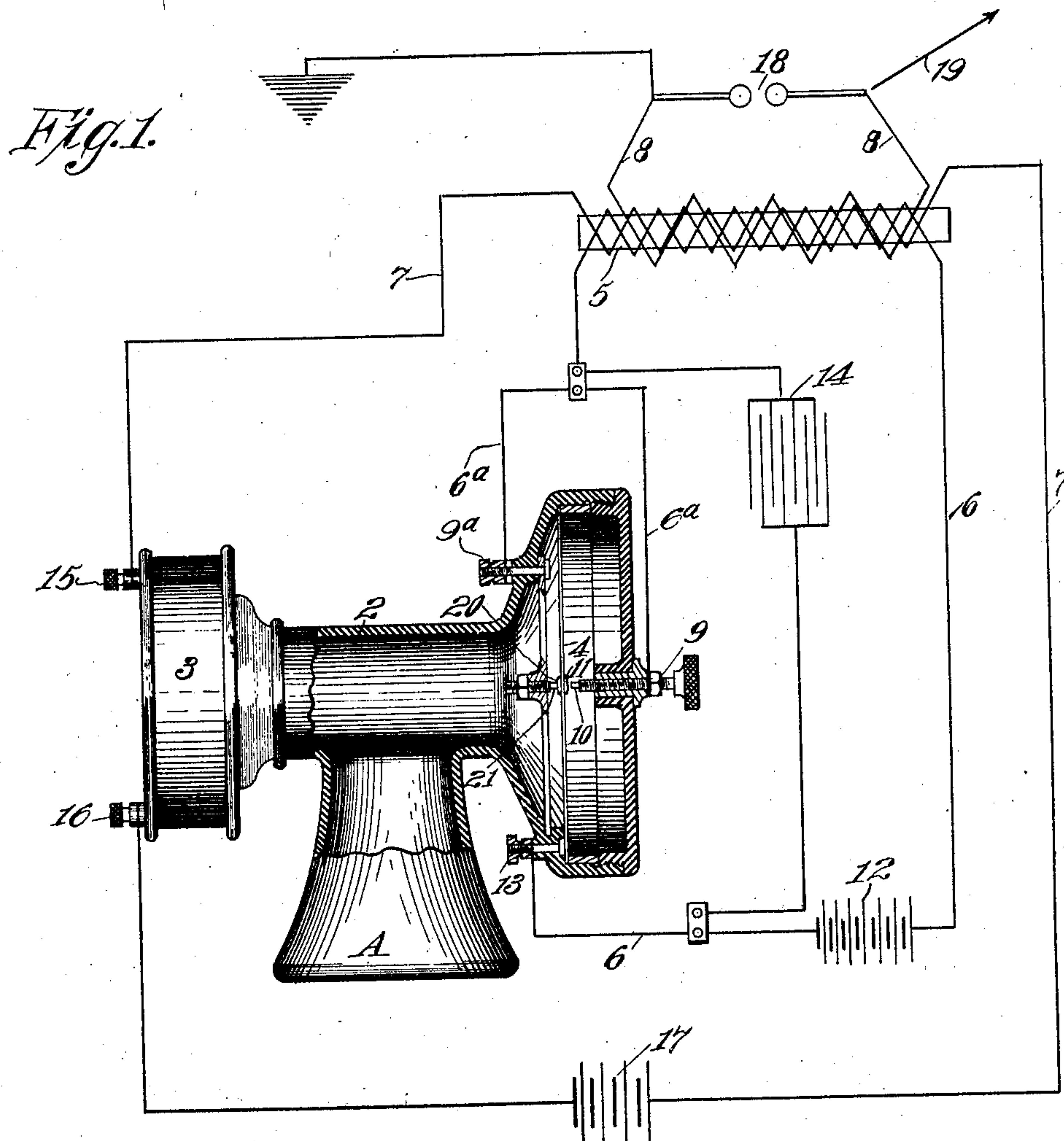
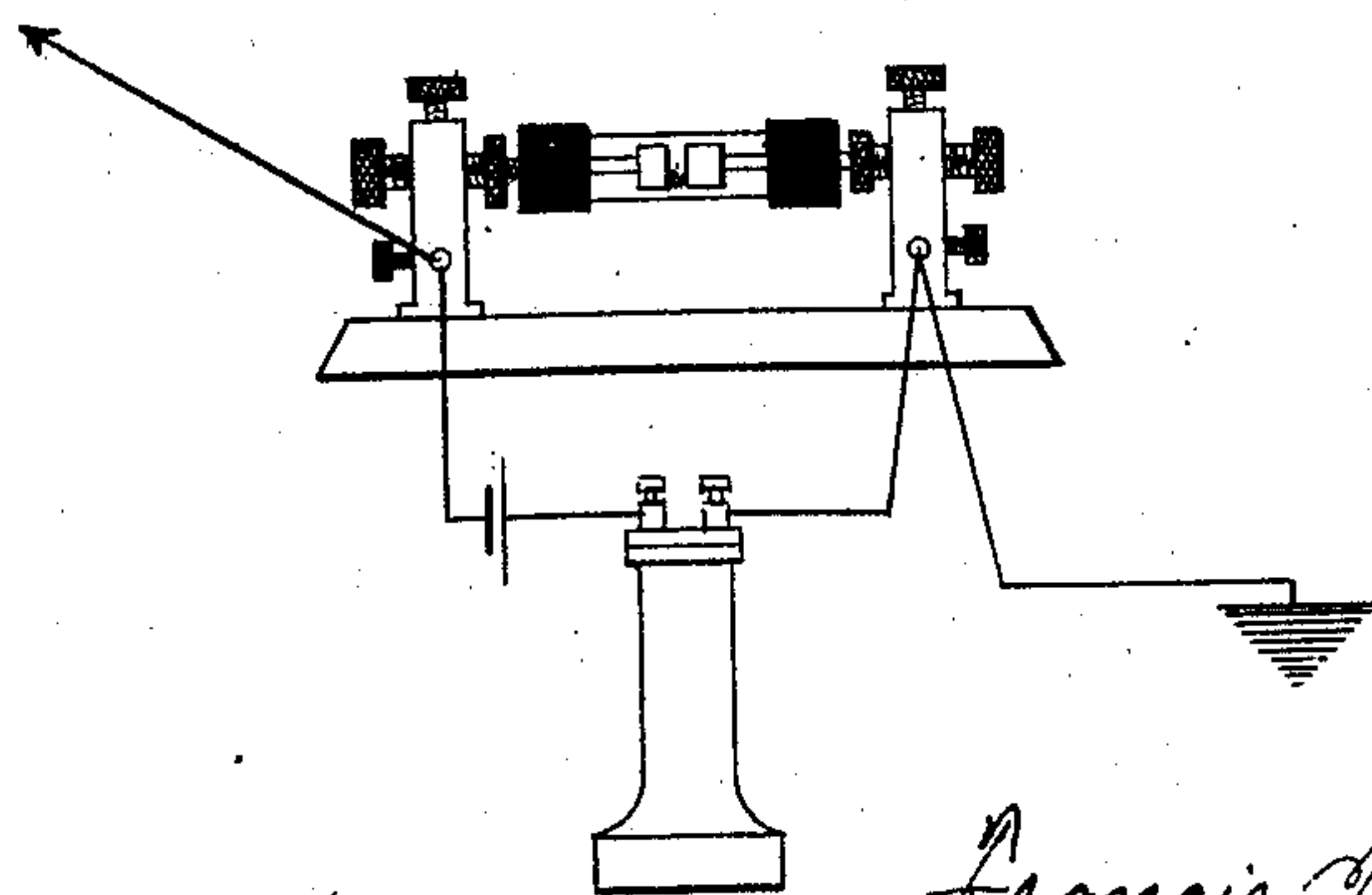


Fig. 2.



Witnesses:

Fred E. Maynard.
J. H. Moore

Inventor:

Francis J. McCarty
By Geo. H. Strong, atty

UNITED STATES PATENT OFFICE.

FRANCIS J. McCARTY, OF SAN FRANCISCO, CALIFORNIA; HENRY A. McCARTY;
ADMINISTRATOR OF SAID FRANCIS J. McCARTY, DECEASED, ASSIGNOR
TO McCARTY WIRELESS TELEPHONE CO., OF SAN FRANCISCO, CALIFOR-
NIA, A CORPORATION OF CALIFORNIA.

WIRELESS TELEPHONE.

No. 857,530.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANCIS J. McCARTY, a citizen of the United States, residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Wireless Telephones, of which the following is a specification.

My invention relates to a device by which telephonic messages may be transmitted without the aid of wires or other mechanical intermediate connections between the stations.

It consists in a combination of devices whereby vibrations produced by vocal sounds in the apparatus are capable of transmission through the medium surrounding the earth without the aid of wires or similar connections; and in the construction of mechanism at the receiving end whereby such vibrations are made capable of actuating a receiving diaphragm.

Referring to the accompanying drawings,—Figure 1 is a diagrammatic view of the transmitting apparatus. Fig. 2 is a similar view of the receiving apparatus.

A is a mouth-piece.

2 is a tube into the side of which the mouth-piece opens. At one end of this tube is the microphone transmitter as at 3, and at the opposite end of the tube is the transmitter diaphragm 4.

5 represents an induction or Ruhmkorff coil having two primary windings of wires 6 and 7, and in conjunction with these a secondary insulated winding as at 8. The first primary wire 6 is connected through a wire 6^a and a binding post 9, with the contact screw or point 10, which is adjustable in the non-conducting case within which the diaphragm 4 is fixed, and this diaphragm has the contact 11 corresponding with the contact 10. The contacts may be of platinum. Upon the opposite side of the diaphragm 4 is another contact 20, and 21 is a contact supported in opposition to the contact 20.

6^a is a wire or metallic connection between contact 21 and contact 10.

The points 20 and 21 are normally in contact and through the connections with the battery form a closed circuit, while the circuit through the contacts 10 and 11 is normally open. When a vibration of the dia-

phragm 4 takes place the circuit through contacts 21 and 20 is broken by the outward movement of the diaphragm, and a circuit is established through the contacts 10 and 11.

In the operation of the device, words spoken into the mouth-piece will cause the vibration of both the diaphragms 3 and 4. The effect of these sonorous vibrations on the diaphragm 4 is to cause it to make and break the circuit in unison with the vocal sounds; first between contacts 10 and 11, and then between 20 and 21. The effect of the sonorous vibrations on the microphone 3 is to vary the current in the second primary in unison with the sonorous vibrations. The resultant effect on the secondary causes a spark to be generated at the spark gap 18. The spark produced bears all the characteristics of the vocal or other sounds, thereby imparting waves to the etherial medium which will be recorded on a receiver at a distance.

From the binding post 9, the wire 6^a connects with wire 6 of the coil, thence the wire 6 connects with the battery as at 12, thence to the binding post 13 of the transmitter 4.

14 is a condenser having wires connecting the binding-posts 9^a and 13 with the primary wire 6, and this serves to prevent sparking at the contacts of the transmitter.

The microphone transmitter 3 has the binding-posts 15 and 16 with which the ends of the second primary wire 7 are connected, with a battery interposed as at 17.

In the operation of the device, words spoken into the mouth-piece A will cause a vibration of both the diaphragm 4 and that within the transmitter 3, and the vibration of the microphone transmitter being synchronous with the vibrations of the diaphragm 4, the effect produced by the double primary winding of the coil 5 is transmitted through the secondary winding 8, and the discharge points 18, to the aerial conductor in the line shown by the arrow 19, and thence to any suitable receiver.

I have found that any primary of a Ruhmkorff coil which has a second layer of wire wound over it serves to choke off the effect of current in the first primary on the secondary, if it be suddenly short-circuited, and that by connecting an ordinary microphone trans-

mitter across the ends of this second primary, it will vary the effects of the first primary on the secondary when the mouth-piece is spoken into without the aid of a battery when used over short distances, but to
 5 obtain this same effect over long distances I usually employ a few battery elements.

Any suitable or desired form of receiver may be employed as shown in Fig. 2.

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

1. In a wireless telephone, means for intensifying the vibrations from a transmitting
 15 device, said means consisting of a transmitting diaphragm with metallic contact points upon opposite sides, and connecting means, an induction coil, local battery and connections there-through and with the coil, a spark
 20 gap interposed in the secondary circuit and a microphone transmitter.

2. In a telephone, means introduced into transmission devices comprising a double transmitter, said transmitter consisting of
 25 a mouth-piece, a transmitting diaphragm with metallic contacts upon opposite sides, an induction coil and battery and connections with the transmitter, primary coils and a secondary coil energized thereby, means
 30 whereby a spark is produced, to transmit articulate speech.

3. In a wireless telephone, an induction coil having two primary windings and a single secondary winding, and two opposed
 35 transmitting diaphragms both operating synchronously, one of said diaphragms having contacts upon opposite sides, one of said primary windings being connected to each of said contacts and the other primary winding
 40 being connected to the other diaphragm, and said secondary winding being energized by said primary winding, substantially as and for the purpose described.

4. In a wireless telephone, a mouth-piece,
 45 a transmitting diaphragm having contacts upon opposite sides and a conductor connecting said contacts, a battery, an induction coil, wires connecting the coil and transmitter, a microphone transmitter, means whereby it is
 50 actuated in unison with the first named transmitter, and a second primary winding of the induction coil, said second winding being connected with the microphonic transmitter.

55 5. In a wireless telephone, a mouth-piece, a transmitting diaphragm with connected metallic contacts upon opposite sides, an induction coil and battery and connections with the transmitter, a microphone trans-
 60 mitter actuated in unison with the first named transmitter, a second primary winding of the induction coil connected with the microphone transmitter, and a battery interposed between said transmitter and the
 65 connected primary winding of the coil.

6. In a wireless telephone, a mouth-piece, a transmitting diaphragm with connected contacts upon opposite sides, a battery, an induction coil, wires connecting the coil and transmitter, a microphone transmitter,
 70 means whereby it is actuated in unison with the first named transmitter, a second primary winding of the induction coil, said second winding being connected with the microphone transmitter, and a condenser inter-
 75 posed between the local battery and the first transmitter.

7. In a telephone, a mouth piece, a transmitting diaphragm with contacts upon opposite sides so disposed as to complete and in-
 80 terrupt circuits alternately when energized, an induction coil having two primary windings one of which has its terminals connected to said contacts, and a second transmitter operating synchronously with the first named
 85 transmitter and connected with the other primary winding of said coil.

8. In a telephone, a mouth-piece, a transmitting diaphragm with contacts upon opposite sides disposed to alternately complete
 90 and interrupt circuits through each pair of contacts when energized, metallic connections between the exterior elements of said contacts, and induction coil having double pri-
 95 mary windings, one of said windings being connected with both the diaphragm contacts, and a second diaphragm operable synchronously with the first-named diaphragm and connected with the other primary of said coil.

9. In a telephone, a mouth-piece, a trans-
 100 mitting diaphragm, with contacts upon opposite sides disposed to alternately complete circuits through each pair of contacts when energized, an induction coil with double pri-
 105 mary windings, one of said windings being connected with both the diaphragm contacts, a microphone transmitter with which the other primary winding is connected, a battery, and a chamber with which the mouth-
 110 piece connects between the transmitters.

10. In a telephone, means for intensifying the vibrations, said means comprising a chamber with which a mouth-piece is connected, a plurality of transmitters connected with the
 115 chamber, an induction coil with double primary windings connected respectively with the transmitters, a secondary circuit energized thereby and connected with an aerial conductor, contacts upon opposite sides of
 120 one of the transmitters, alternately energized and de-energized by the diaphragm vibrations, and connections between said contacts, and also with one of the primary windings.

11. In a telephone, a double transmitter, a plurality of primary coils connecting respec-
 125 tively with the two transmitting devices, contacts upon opposite sides of one of the transmitting diaphragms, connections between said contacts and with one of the pri-
 130 mary coils, and a secondary coil.

12. In a telephone, an induction coil consisting of a plurality of primary coils and a secondary coil, a double transmitter, alternately acting contacts upon opposite sides of one transmitting diaphragm, connections between said contacts and with one of the primary coils, and connections between the other primary coil and the other transmitter.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANCIS J. McCARTY.

Witnesses:

S. H. NOURSE,
D. B. RICHARDS.