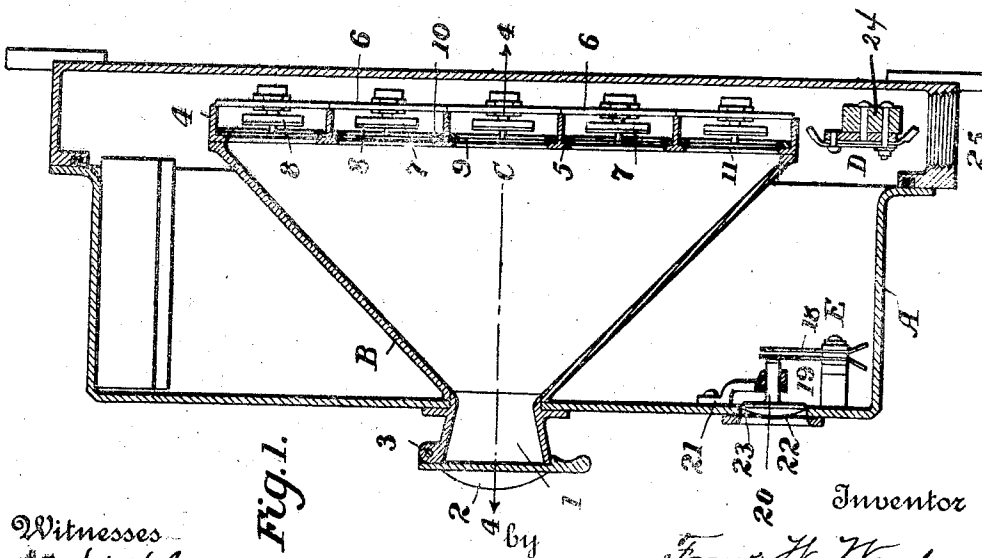
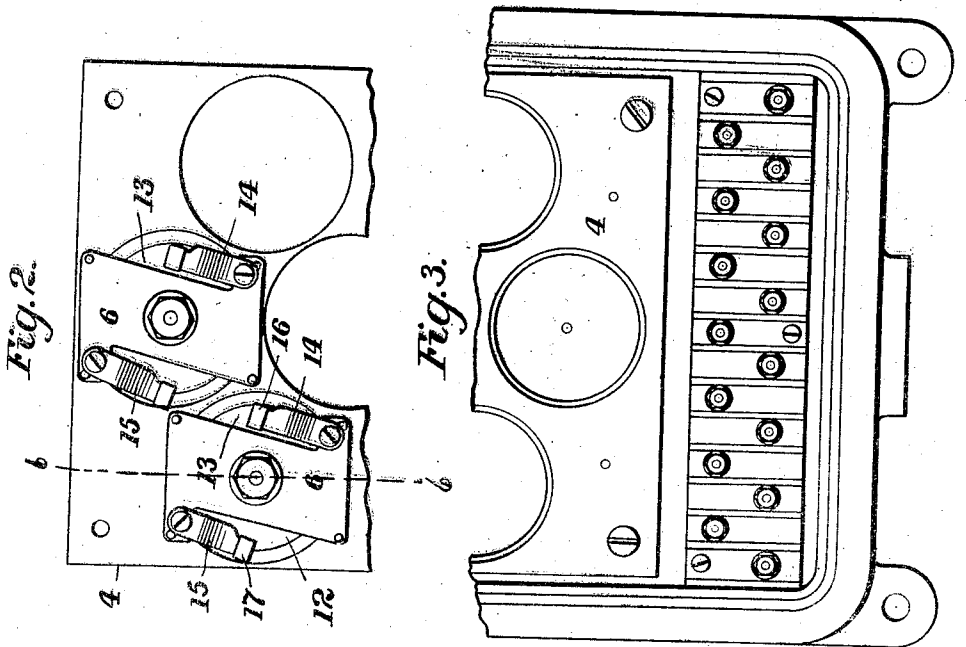


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 MULTIPLE TELEPHONE TRANSMITTER.
 APPLICATION FILED JULY 16, 1906.

945,069.

Patented Jan. 4, 1910.
 2 SHEETS—SHEET 1.



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Fig. 4.

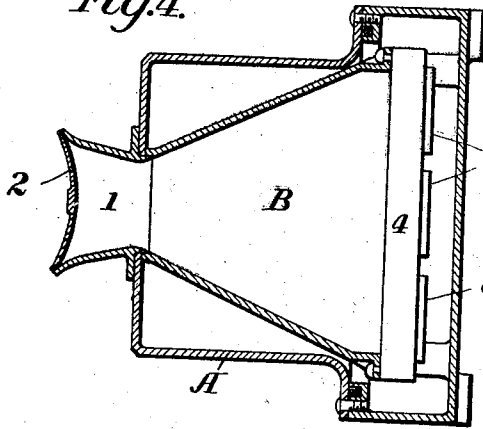


Fig. 5.

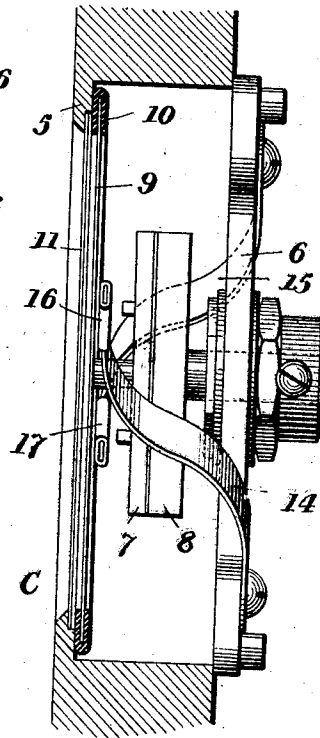
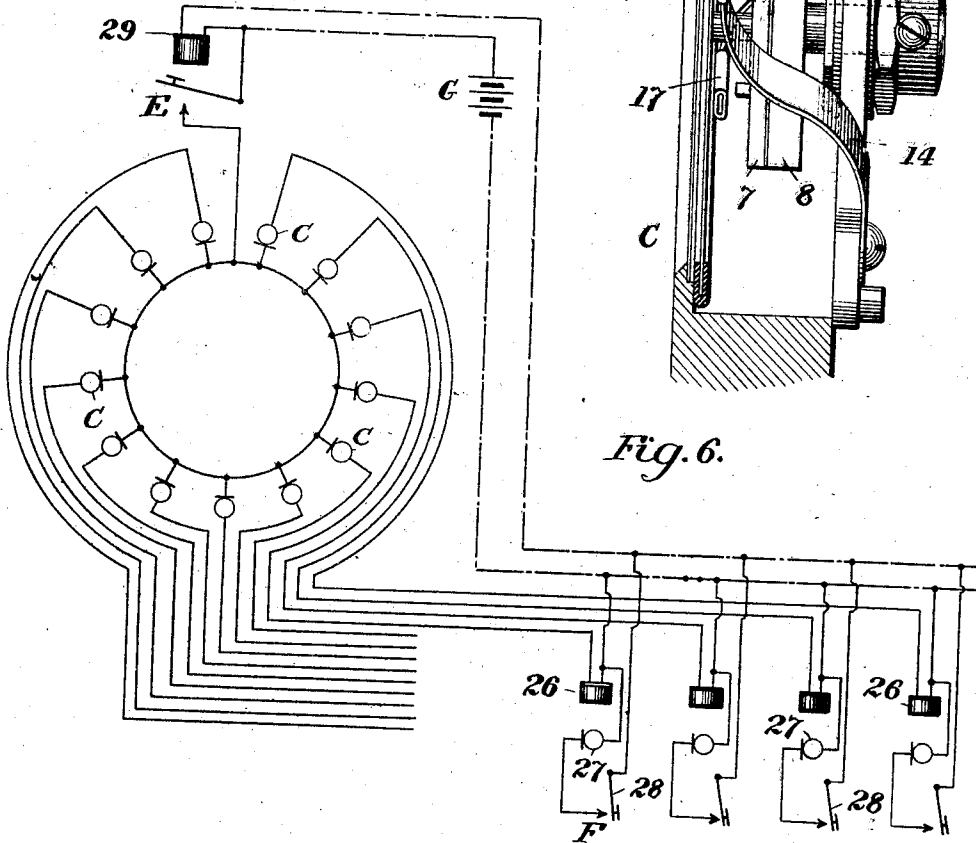


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MULTIPLE TELEPHONE-TRANSMITTER.

945,069.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed July 16, 1906. Serial No. 326,350.

To all whom it may concern:

Be it known that I, FRANK W. WOOD, a citizen of the United States, residing at Newport News, in the county of Warwick and State of Virginia, have invented new and useful Improvements in Multiple Telephone-Transmitters, of which the following is a specification.

This invention relates to telephone systems and apparatus.

In certain cases it is frequently desirable that speech transmitted from a single point shall be received at a plurality of different stations. A notable case of this character arises on board battleships when it is desired that the commands given by an officer stationed at a given point shall be received at a plurality of different stations, as by the pilot, the engineer, etc.

It has heretofore been proposed to distribute speech from a common point to a plurality of receiving points by connecting the receivers at the latter points in branch circuits through the transmitter. Such an apparatus, however, does not produce distinct and loud sounds in the receivers.

It is an object of the present invention to provide a system and apparatus whereby speech transmitted from a single point may be loudly and distinctly enunciated at a plurality of receiving points. This is accomplished by providing a plurality of transmitters having a common mouthpiece, each transmitter being connected with a receiver at a receiving point as distinguished from several receivers being connected to one transmitter.

A further object of the invention is to render the transmitting apparatus water-tight and protect all parts liable to corrosion from the action of injurious influences, thereby rendering the apparatus especially suitable for service on board ship where it may be subjected to dampness and salt air.

It is a further object of the invention to improve details of construction of the apparatus and further objects will appear hereinafter.

The invention is illustrated in the accompanying drawings of which—

Figure 1 is a central vertical section of a

transmitting instrument. Fig. 2 is a view of the top portion of the back of the transmitters, the lower portion being broken away. Fig. 3 is a front view of the lower portion of the transmitters, the top portion being broken away. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a section of a transmitter on the line 6—6 of Fig. 2, and Fig. 6 is a diagram of the electrical circuits.

Referring to the drawings, the apparatus comprises a casing A within which are mounted a mouthpiece B, transmitters C, terminals D for the transmitter contacts, a switch E for making and breaking circuit through the transmitters as will be hereinafter set forth. To the transmitters of the instrument just described are connected the different receiving stations F, as shown clearly in Fig. 6, a battery or other source of current G serving to supply the transmission current.

The mouthpiece B comprises a funnel-shaped device having an opening 1 at its smaller end through which the sound waves are received, this opening being normally closed by means of a lid 2 hinged at 3. This lid is tightly fitted so as to exclude air and moisture from the mouthpiece. At the large end of the funnel is mounted a supporting plate 4 in which the transmitters are mounted. This plate is perforated as shown, there being a ledge 5 (see Fig. 5) at the front of each perforation on which the diaphragm is mounted. To the back of the plate 4 is secured a support 6 to which one of the microphonic contacts 7 is secured. The other microphonic contact 8 is secured to the main diaphragm 9 which is preferably of aluminum but may be of iron or other suitable material. This diaphragm is secured to the inner side of the ledge 5 by any suitable means, an india rubber band 10 surrounding its edge and insulating it from the ledge. In front of the diaphragm 9 is mounted a protective diaphragm 11 which serves to shield the main diaphragm from the effects of atmosphere or other influences which may be injurious and is preferably of copper foil which, for greater security, should be coated with water-proof varnish. The microphone contacts may be of carbon and constructed

in any one of the ways which are well known to persons skilled in the art. The support 6 at the back of each transmitter has recesses 12 and 13 through which extend the damping springs 14 and 15. These damping springs are each secured at one end to the support 6 and at the other end bear upon the edge of the diaphragm 9, thereby damping the vibrations of the diaphragm in a manner as is well understood. The ends of the springs which bear upon the diaphragm are provided with rubber tips 16 and 17 whereby they are insulated from the diaphragm and free circuiting of the microphone contacts is prevented. The support 6 is preferably Z-shaped as shown and the mounting of the damping springs as described contributes to the compactness of the apparatus.

The switch E comprises normally separated contacts 18 and 19 adapted to be closed by a plunger 20 sliding in a support 21 secured to the casing A. This plunger may be actuated from the exterior of the casing by pressure exerted upon its outer end, a flexible sheet or membrane 22 of rubber or other suitable material covering in a water-tight manner the aperture 23 in the casing A through which the plunger is operated. The contacts D are suitably mounted upon an insulating strip 24 secured to the casing A. An opening 25 is provided for the entrance of conductors in a water-tight manner.

Referring particularly to Fig. 6, it will be seen that all of the transmitters C have one of their contacts connected through switch E with one terminal of the battery G. The other contact of each transmitter is individually connected with one terminal of a receiver 26 at one of the stations F, the other terminal of the receiver being connected with the other terminal of the battery G, each transmitter 27 at a station F is connected with one terminal of the battery G and when the switch 28 is closed, is connected with the other terminal of the battery G through the receiver 29 at the central transmitting station. The construction of the transmitters and receivers 26, 27 and 29 may be of any well known type and need not be further referred to, as may also the switches 28.

The operation of the apparatus may now be set forth as follows: If the person at the central transmitting station desires to transmit a message, the lid 2 is opened and the switch E is closed. The closing of the switch E operates to close the circuit of each of the transmitters C through a receiver at one of the stations F and through the battery G. Upon the entrance of speech waves in the mouthpiece and actuation of the diaphragms in the usual manner the microphonic con-

tacts will be varied and speech currents will be transmitted from each transmitter to its corresponding receiver, all of the transmitters being actuated from the common mouthpiece. It will be observed that each transmitter is connected in series with its corresponding receiver across the battery G without the interposition of other apparatus whereby the resistance of the circuit would be increased and the strength of the current diminished. If now a party at one of the stations F desires to communicate with the central transmitting station, he closes his switch 28 whereupon the transmitter at that station is connected in series with the battery G and the receiver 29 at the central station. In this case also it will be seen that no devices are interposed in the circuit with the transmitter and receiver across the battery. Upon the appraisal of the person at the central transmitting station by means of his receiver 29 that a party at a station F desires to communicate with him he may release his plunger 20, thereby permitting the switch E to open, thus cutting off circuits which might divert current from his receiver. Upon a like principle each party at the station F opens his switch 28 to prevent diversion of current from the receivers 26 when the central station is communicating with the outlying stations.

While the invention has been described in connection with microphonic transmitters, it will be understood that it may also be carried out by means of magneto transmitters.

Other variations and modifications of the structure shown might be employed without departing from the spirit of the invention, and it is not, therefore, limited to the structure shown.

What I claim is:—

1. The combination with a transmitting apparatus comprising a casing, a plurality of transmitters therein, and a common funnel shaped mouth piece for said transmitters, the smaller end of said mouth piece projecting through a wall of the casing and the large end embracing said transmitters, of a plurality of receivers, and an independent circuit connecting each of said transmitters with one of the receivers.

2. The combination with a transmitting apparatus comprising a casing having front and rear walls, a plurality of transmitters therein adjacent the rear wall thereof, and a funnel shaped mouth piece arranged with its large end embracing said transmitters, and communicating at its small end with an opening in the front wall of said casing, of a plurality of receivers, one for each transmitter, and connections between each transmitter and its corresponding receiver.

3. The combination with a transmitting apparatus comprising a casing, and a plu-

ality of transmitters therein, each transmitter having a diaphragm, and means actuated by said diaphragm for varying the resistance of an electric circuit, of a common, funnel-shaped mouth piece embracing said transmitters, the small end of said mouth piece passing through the casing and the large end embracing said transmitters, a plurality of outlying receivers, one for each transmitter, and an independent connection between each transmitter and one of said receivers.

4. In a telephone system, the combination with a central transmitting station comprising a plurality of transmitters having one common terminal; a source of current to one side of which the common terminal of said transmitters may be connected, a single receiver associated with said transmitters, and a series circuit in which said receiver and source of current are connected, of a plurality of outlying stations each comprising a receiver and transmitter, each of such transmitters being connected in multiple across said series circuit, and each of such receivers having one terminal connected to one side of said circuit, and the other terminal connected with the other terminal of one of said first mentioned transmitters.

5. In a telephone system, the combination with a central transmitting station comprising a plurality of independent transmitters having one common terminal, a single receiver at such station associated with said transmitters, a source of current, a series circuit in which said receiver and source of current are included, and a connection extending from the common terminal of said transmitters, and tapping said circuit between said source of current and receiver, of a plurality of outlying stations each comprising a transmitter and receiver, each of said receivers being connected between one side of said series circuit, and the other terminal of one of the central station transmitters, and said outlying receivers being connected across said series circuit, and means for opening the circuit of any of said transmitters when not in use.

6. In a telephone system, the combination with a central transmitting station comprising a plurality of transmitters, a source of electric current, a single switch for connecting one terminal of all of said transmitters with one terminal of said electric source, a plurality of receivers, a conductor connecting the other terminal of each of said transmitters with a terminal of one of said receivers, means for connecting the other terminal of each receiver with the other terminal of said electric source, the said conductor connecting each transmitter and receiver being independent of the similar conductors connecting the other transmitters

and receivers, a plurality of independent transmitters connected in parallel and in series with a single receiver across the said source, and means for independently breaking each of said parallel transmitter circuits.

7. The combination with a plurality of transmitters, a source of electrical supply, a plurality of receivers, means for connecting said receivers and transmitters in branch circuits in parallel across said source of supply, each branch circuit containing a transmitter and receiver connected in series, means for simultaneously breaking the circuit of said source through all of the transmitters and receivers, the conductor for connecting the receiver and transmitter in each of said branch circuits being independent of the similar conductors in the other branch circuits, a plurality of independent transmitters connected in parallel and in series with a single receiver across the said source, and means for independently breaking each of said parallel transmitter circuits.

8. The combination with a central transmitting station comprising a plurality of transmitters and a receiver, of a source of electrical supply, a plurality of outlying stations each comprising a transmitter and a receiver, of means for connecting the transmitters at the said central transmitting station and the receivers at the said outlying stations in parallel across said source, each branch circuit containing a transmitter and receiver connected in series, and means for connecting the transmitter at any of the said outlying stations in series with the said receiver at the central transmitting station across the said source.

9. The combination with a central transmitting station comprising a plurality of transmitters and a receiver, of a source of electrical supply, a plurality of outlying stations each comprising a transmitter and a receiver, of means including a switch for connecting the transmitters at the said central transmitting station and the receivers at the said outlying stations in parallel across said source, each branch circuit containing a transmitter and receiver connected in series, and means including a switch for connecting the transmitter at any of the said outlying stations in series with the said receiver at the said central transmitting station across the said source.

10. In a telephone system, the combination with a central transmitting station comprising a plurality of transmitters, a common mouthpiece for said transmitters, and a receiver, of a plurality of outlying stations each comprising a transmitter and a receiver, a source of electrical supply, means for connecting the transmitters at the said central transmitting station and the receivers at the outlying stations in parallel circuits

across said source, each of the branch circuits containing a transmitter and a receiver connected in series, and means for connecting any of the transmitters at any of the
5 said outlying stations in series with the receiver at the said central station across said source.

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

FRANK W. WOOD.

Witnesses:

J. E. WARREN,
E. W. HOUSE.