

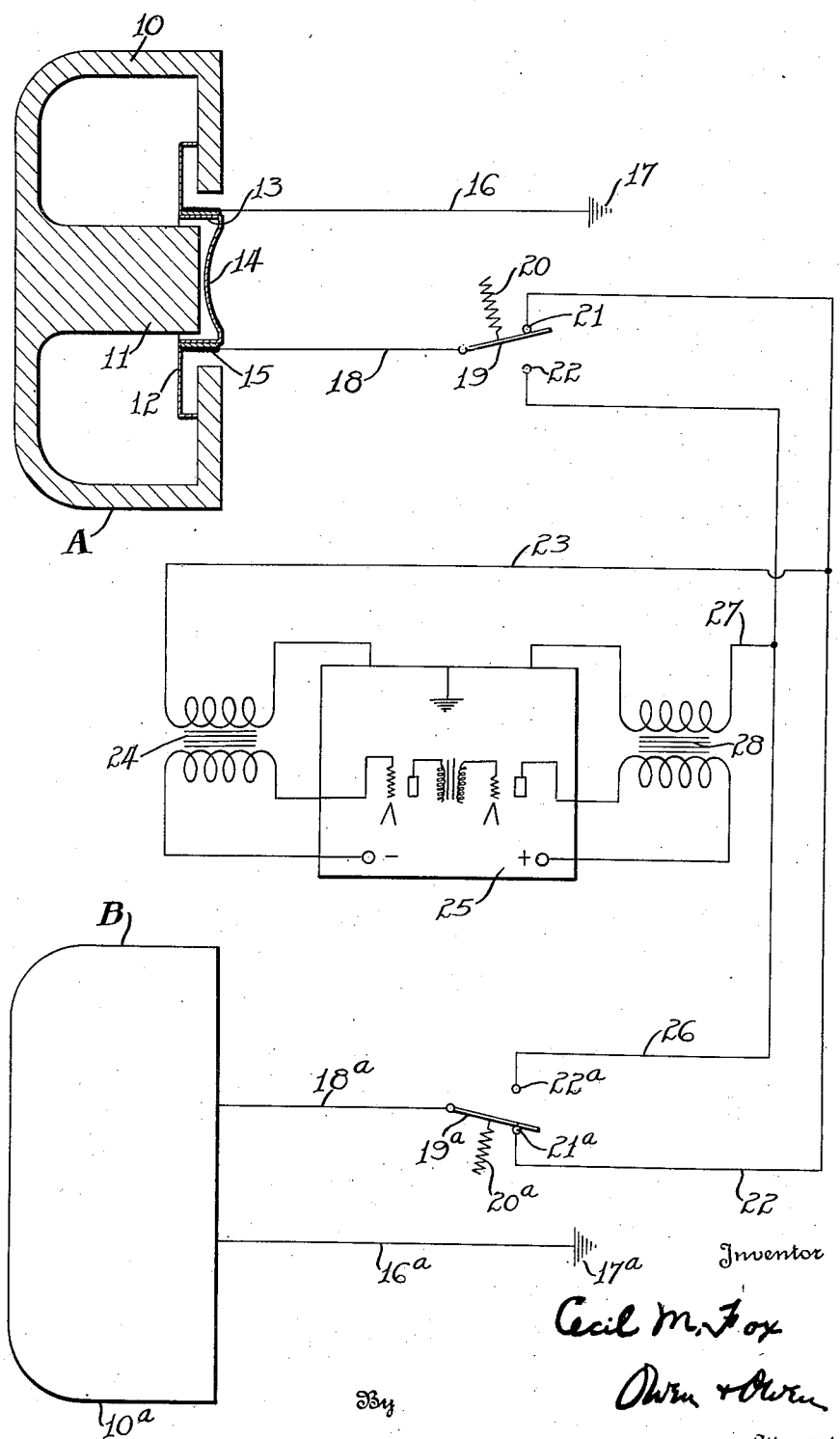
Oct. 9, 1934.

C. M. FOX

1,975,932

SOUND RECEIVING AND TRANSMITTING SYSTEM

Filed Jan. 9, 1933



UNITED STATES PATENT OFFICE

1,975,932

SOUND-RECEIVING AND TRANSMITTING
SYSTEMCecil M. Fox, Toledo, Ohio, assignor to Albert L.
McAfee, Toledo, Ohio

Application January 9, 1933, Serial No. 650,786

4 Claims. (Cl. 179—1)

This invention relates to acoustic devices of the sound-receiving and transmitting type, but more particularly to intercommunicating telephonic systems, and an object is to produce a simple and efficient system of this character in which the same device is used for transmitting the voice or sound and is also used for receiving the same.

Another object is to produce a new and improved system of this character and apparatus therefor having the features of arrangement, construction and operation hereinafter described.

Other objects and advantages will hereinafter appear, and, for purposes of illustration, but not of limitation, an embodiment of the invention is shown on the accompanying drawing, in which:

The figure is a diagrammatic view of an intercommunicating telephonic system showing in transverse section the combined receiver and transmitter unit.

The illustrated embodiment of the invention comprises a telephonic system having two identical units A and B for both transmitting and receiving the sound or voice. Each unit comprises a housing 10 having a permanent magnet 11, and associated with the latter is a flexible one-piece diaphragm 12 of any suitable material, such as thin sheet aluminum, the peripheral edges of which are suitably anchored. The diaphragm 12 includes an outwardly extending annular piston portion 13, which encloses the end portion of the magnet 11 and a concavo-convex portion 14 mounted on the outside of the piston portion 13, and movable with the diaphragm is a coil 15 of insulated wire having an end portion 16 grounded at 17. The opposite end portion 18 of the coil 15 is connected to a switch 19, which is yieldingly held in a predetermined position by a coil spring 20. The construction of the unit B is the same as unit A, and detailed description thereof is not deemed necessary, similar parts being designated by the same reference characters with the addition of the exponent *a*.

The switch 19 is engageable selectively with contacts 21 and 22, and the switch 19^a is selectively engageable with the contacts 21^a and 22^a. The contacts 21 and 21^a are connected by a lead 22 from which branches a lead 23 extending to the output transformer 24 of an amplifier 25. The contacts 22 and 22^a are joined by a lead 26, which is connected through a lead 27 to the input transformer 28 of the amplifier 25. The amplifier 25 may be of any suitable or desired construction, obtaining its energy from a source of direct or alternating current, as desired.

Normally, the switches 19 and 19^a are held by

their respective springs in engagement with the contacts 21 and 21^a, respectively, and, in this position, units A and B are in receiving condition. Consequently, for a person to transmit his voice from the unit A to the unit B, it is necessary to throw the switch 19 into engagement with the contact 22, and by talking into the diaphragm 12 the current is passed through the lead 18 through the switch 19, the leads 26 and 27, through the amplifier lead 23 and lead 22, and through the switch 19^a to the diaphragm of the unit B. After transmitting the message or call in this manner, the operator at the unit A releases the switch 19, allowing the spring 20 to return it to the contact 21, and thereupon the operator at the unit B first moves the switch 19^a into engagement with the contact 22^a, enabling him to audibly convey his message or call to the unit A through the lead 26, amplifier 25, leads 23 and 22, to the switch 19, and thence to the diaphragm 12. It is apparent that to receive the message the switches 19 or 19^a should be in engagement with the contact 21 or 21^a, and to transmit the sound the operator depresses the switch, the switch for the other unit remaining in the normal position retained by the coil spring 20 or 20^a.

It is apparent from the above description that an exceedingly simple and inexpensive telephonic intercommunicating system is provided in which the same unit serves both as the transmitting and receiving device, thus eliminating the necessity of utilizing one device for transmitting the sound, and another for receiving the sound.

It is to be understood the invention is not confined solely to the precise arrangement and apparatus above described, but numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention, especially as defined in the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A telephonic system comprising transmitting and receiving means for each station, conductors connected to said means having one grounded, a two-way switch connected to the other conductor, an amplifier having an input and an output transformer, a pair of spaced contacts for each switch, leads joining said contacts respectively, a connection between one lead and said input transformer, a connection between the other lead and said output transformer, and means normally retaining each switch in engagement with the contact joined to the output transformer.

2. A telephonic system comprising a pair of

- combined transmitting and receiving diaphragms of flexible material, a coil carried by each diaphragm, magnetic means associated with each diaphragm, a ground for one end of each coil, two
- 5 pairs of spaced contacts, a switch for each pair of contacts engageable with one contact or the other of the respective pair, a connection between the other end of each coil and one of said contacts, leads joining like contacts of said pairs of
- 10 contacts, an amplifier having an input and an output transformer, a connection between one lead and said input transformer, a connection between the other lead and said output transformer, and means for normally retaining each
- 15 switch in engagement with the contact joined to the output transformer.
3. An acoustic device comprising a pair of combined transmitting and receiving diaphragms of flexible material, a coil carried by each diaphragm, magnetic means associated with each diaphragm, a ground for one end of each coil, two
- 20 pairs of spaced contacts, a switch for each pair of contacts engageable with one contact or the other of the respective pair, a connection between the other end of each coil and one of said contacts, leads joining like contacts of said pairs of
- 25 contacts, an amplifier having an input and an output transformer, a connection between one lead and said input transformer, a connection between the other lead and said output transformer, and means normally holding each switch in engagement with the respective contact connected to the lead joined to the output transformer.
4. An acoustic device comprising a pair of combined transmitting and receiving devices, each device including a flexible diaphragm, a coil on said diaphragm, and magnetic means associated with said diaphragm, a ground for one end of each coil, two pairs of spaced contacts, a switch for each pair of contacts engageable with one contact or the other of the respective pair, a connection between the other end of each coil and one of said contacts, leads joining like contacts of said pairs of contacts, an amplifier having an input and an output transformer, a connection between one lead and said input transformer, a connection between the other lead and said output transformer, and spring means for each switch for normally retaining the same in engagement with the respective contacts connected to the lead joined to the output transformer.
- CECIL M. FOX.

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