

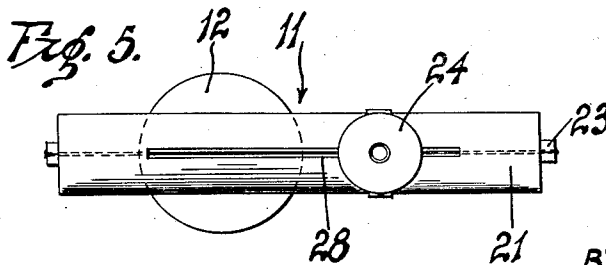
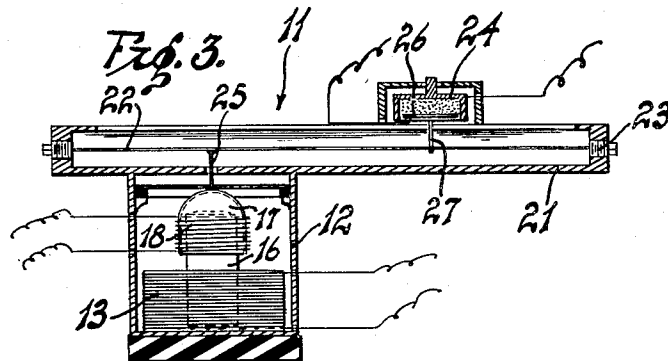
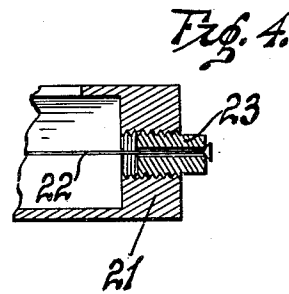
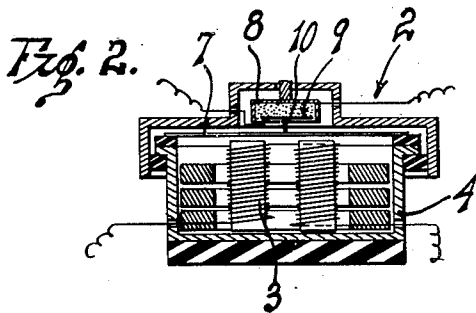
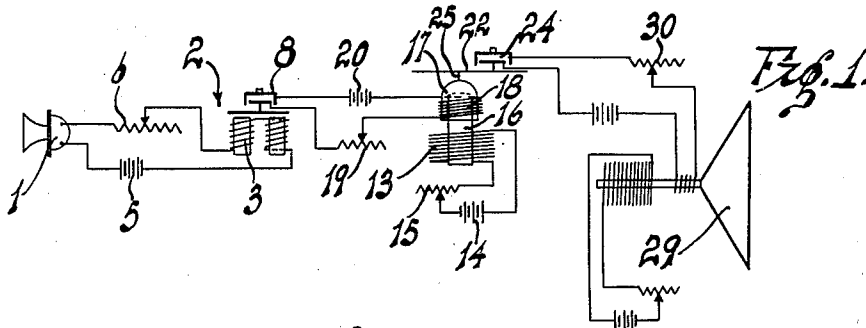
Jan. 21, 1941.

C. R. LA MAR ET AL

2,229,296

SOUND AMPLIFIER

Filed Nov. 12, 1938



INVENTORS.
CHARLES R. LA MAR.
LELAND R. KIRBY.

BY.

H. A. Duckman
ATTORNEY.

UNITED STATES PATENT OFFICE

2,229,296

SOUND AMPLIFIER

Charles Roy La Mar and Leland R. Kirby,
Long Beach, Calif.

Application November 12, 1938, Serial No. 240,023

5 Claims. (Cl. 179—171)

This invention relates to a sound amplifier, in which sound is amplified through a mechanism requiring the expenditure of very little power.

An object of our invention is to provide a sound amplifier which will greatly amplify sound passing into a microphone or transmitter, the sound passing out of the loud-speaker being true in tone and without distortion, and the like.

Another object of our invention is to provide a multi-stage sound amplifier, one or more of the stages being capable of being tuned so as to provide the maximum amplification without distortion.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing—

Figure 1 is a wiring diagram of our sound amplifier.

Figure 2 is a transverse, sectional view of the first stage of amplification.

Figure 3 is a transverse sectional view of the second stage of amplification.

Figure 4 is a fragmentary, vertical, sectional view of the tube forming a part of the second amplifier.

Figure 5 is a top plan view of the second amplifier.

Referring more particularly to the drawing, the numeral 1 indicates a microphone or transmitter into which sound passes from the source requiring amplification. The first stage of amplification 2 includes an electromagnet 3, mounted in a housing 4. One end of the windings of the electromagnet 3 is wired to a battery 5, and thence back to the microphone 1. The other end of the windings of the electromagnet 3 is electrically connected to an adjustable rheostat 6, and thence to the microphone 1. A diaphragm 7 is mounted in the housing 4 immediately above the electromagnet 3, and this diaphragm is actuated by the electromagnet 3.

A transmitting button 8 is mounted above the diaphragm 7, and this button is preferably of the usual and well-known granular carbon type. The disk 9 of the transmitter is fixedly attached to the diaphragm 7 by means of the pin 10. A second amplifier 11 comprises a housing 12, which encloses an electromagnet 13. A battery 14 is electrically connected to one end of the coils of the electromagnet 13, and the other end of the battery is connected through a variable rheostat 15, and thence back to the other end of the windings of the electromagnet 13.

The core 16 of the electromagnet 13 is provided with a cap 17, which fits onto the upper end of the core. The cap 17 is made of some insulating material and fits closely on the core 16, so as to move with this core. A coil 18 is wrapped on the cap 17, and one end of this coil is electrically connected through a rheostat 19, and thence to the disk 10 of the button 8. The body of the button is electrically connected to a battery 20, and thence to the other end of the coil 18.

A horizontal tube 21 is mounted on the upper end of the housing 12. The tube 21 contains a wire 22, which extends longitudinally of the tube, and is stretched taut by means of plugs 23, which screw into the end of the tube. By adjusting the plugs 23 the tone of the wire 22 can be changed as desired or necessary. A transmitting button 24 of the granular carbon type is slidably or adjustably mounted on the tube 21. The cap 17 has a pin 25 rising therefrom, and this pin is fixedly attached to the wire 22.

The disk 26 of the button 24 is provided with a pin 27, which slidably engages the wire 22. The pin 27 extends through a slot 28 in the top of the tube 21, thus enabling the button 24 to be adjusted longitudinally of the wire 22 for the purpose of engaging the wire at points of maximum or minimum vibration or intermediate points as may be desired or necessary. Maximum amplification in the second unit will be obtained when the button 24 is so adjusted that the pin 27 will engage the wire 22 at a point of maximum vibration. To eliminate overtones or other objectionable noises, the button 24 might be adjusted to some point other than the point of maximum amplification. A loud-speaker 29 of usual and well-known construction is electrically connected to the transmitter button 24, and a variable rheostat 30 included in the loud-speaker circuit controls the amount of current fed into a loud-speaker from the button 24.

In operation, the microphone 1 picks up the sound which is to be amplified, the electromagnet 3 is then actuated, and the diaphragm 7 will vibrate to create the first stage of amplification. The carbon transmitter 8 then picks up the amplified sound and transmits it to the coil 18, the current of which is supplied by the battery 20. The wire 22 is then caused to vibrate as soon as it is directly connected to the cap 17, which rests on the coil 16. The transmitter 24 then picks up the amplified sound from the wire 22, and transmits this amplified sound to the loud-speaker 29.

where it is again amplified in the usual and well-known manner of a power speaker.

Having described our invention, we claim:

1. A sound amplifier unit comprising a housing, a tautly stretched wire mounted in the housing, an electromagnet means adjacent the wire, a core in the electromagnet means, means positively connecting the core and the wire whereby a vibration is imparted to the wire from the core, a transmitter adjustably mounted on the housing, and means extending from the transmitter and adjustably engaging said wire.
2. A sound amplifier unit, comprising a housing, an electromagnet in the housing, a core in the electromagnet, a tautly stretched wire in the housing, a cap on the core, a coil surrounding the cap, means positively connecting the cap and the wire, a transmitter mounted on the housing, and means depending from the transmitter and adjustably engaging said wire.
3. A sound amplifier unit comprising a housing, a tautly stretched wire mounted in the housing, an electromagnet means adjacent the wire, a core in the electromagnet means, means positively connecting the core and the wire whereby a vibration is imparted to the wire from the core, a transmitter adjustably mounted on the hous-

ing, means extending from the transmitter and adjustably engaging said wire, said transmitter being slidably mounted on the housing, and adjustable relative to said wire.

4. A sound amplifier unit comprising a housing, an electromagnet in the housing, a core in the electromagnet, a tautly stretched wire in the housing, a cap on the core, a coil surrounding the cap, means positively connecting the cap and the wire, a transmitter mounted on the housing, means depending from the transmitter and adjustably engaging said wire, said transmitter being slidably mounted on the housing, and adjustable relative to said wire.

5. A sound amplifier unit comprising a housing, a tautly stretched wire mounted in the housing, an electromagnet means adjacent the wire, a core in the electromagnet means, a pin fixedly attached to the stretched wire and operatively attached to the core whereby a vibration is imparted to the wire from the core, a transmitter adjustably mounted on the housing, a second pin extending from the transmitter and slidably engaging said wire.

CHARLES ROY LA MAR.
LELAND R. KIRBY.