June 23, 1931. H. LIEBER 1,811,639

EARPHONE

Filed Dec. 9, 1929

Fig.1.

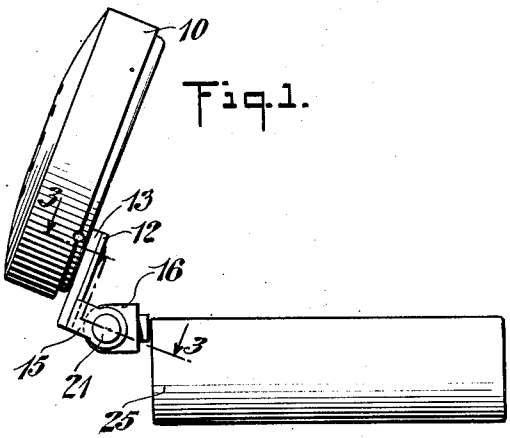


Fig.2.

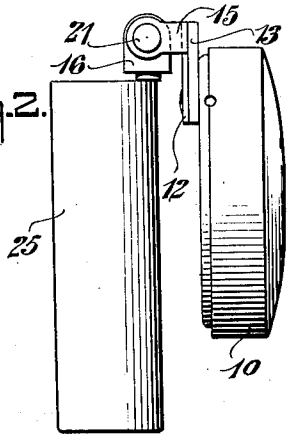


Fig.3.

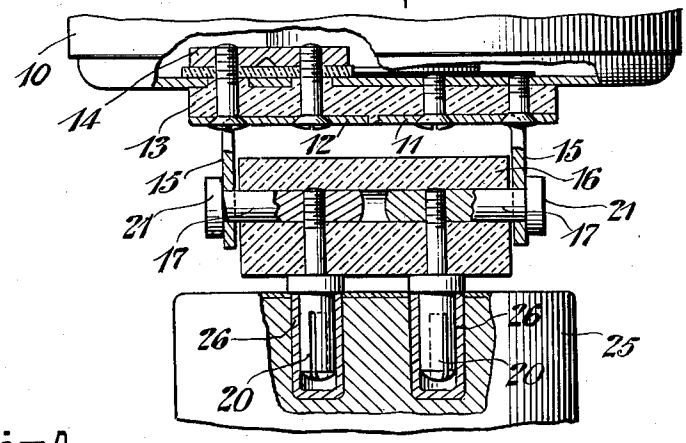


Fig.4.

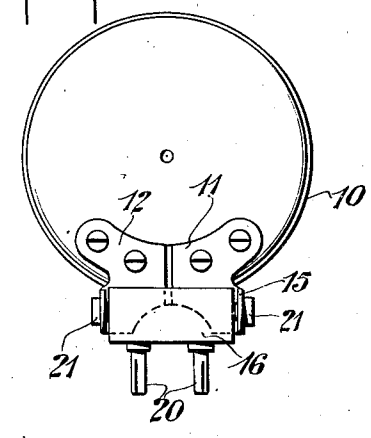
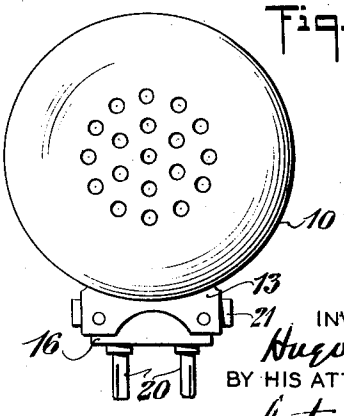


Fig.5.



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Patented June 23, 1931 1,811,639

UNITED STATES PATENT OFFICE

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EARPHONE

Application filed December 9, 1929. Serial No. 412,686.

This invention relates to earphones designed to assist the hearing of the deaf. Such earphones include a receiver or earpiece, a microphone transmitter and a dry battery. The object of the present invention is so to connect the transmitter with the battery that the battery may be used as an adjustable support for the transmitter and may easily be replaced by another when it is worn out.

In accordance with the invention, contact terminals adapted to engage a dry battery are connected to the transmitter by a hinge and are individually electrically connected to the circuit terminals of the transmitter.

In order that the nature of my invention may be understood, I will describe in detail the specific embodiment of it which is shown in the accompanying drawings, in which:

Fig. 1 is a side view of a combined transmitter and battery embodying the invention showing the parts positioned so that the battery serves as an adjustable table support for the transmitter;

Fig. 2 is a side view showing the parts positioned so that the battery serves as a pocket support for the transmitter;

Fig. 3 is an enlarged section taken on the line 3—3 of Fig. 1, but showing the transmitter and battery at right angles to each other; and

Figs. 4 and 5 are front and rear views, respectively, of the transmitter.

To the rear side of the casing of the microphone transmitter 10, two bracket plates 11 and 12 are secured with a plate 13 of insulating material between the bracket plates and the casing wall. By means of screws which fasten the plates 11 and 12 to the transmitter casing, they are separately connected to the positive and negative members of the microphone. The transmitter casing is most desirably made of metal, and connection to one microphone member is made through the casing from one of the bracket plates, as 11, the fastening screws for this plate screwing into threaded openings in the casing wall as shown in Fig. 3. The screws which hold the other bracket plate 12 are insulated from the casing wall and screw into a metal plate or block 14 which is also insulated from the casing wall and from which connection is made to the other microphone member. The microphone members may be of any suitable construction.

The bracket plates 11 and 12 each has a projecting ear 15 by means of which the microphone casing is hinge-connected to a block 16 of insulating material by means of aligned pivot pins 17 which extend through holes in the ears 15 into an opening extending endwise of the block. The pivot pins are of such length that they do not meet within the block and each pin is formed with a transverse opening. Two connecting terminal plugs 20 are secured to the block 16 by screw ends screwed into threaded openings one side of the block, and the screw ends of the terminal plugs extend into the openings in the pivot pins, thereby securing the pivot pins and establishing an electrical connection of each of the plugs with one of the pivot pins. Each pivot pin has a head 21 at its outer end, and the ears 15 are spaced so that when the parts are assembled the ears will press resiliently outwardly against the head 21. The battery 25 is provided with the usual plug sockets 26 and the terminal plugs 20 are spaced so as to be adapted to enter these sockets, thus providing means for mounting the block 16 on the end of the battery.

It will be seen that the construction described provides means for mounting the transmitter on the battery with a hinge connection between the transmitter casing and the plug carrying block 16 and with the hinge axis offset sidewise from the rear wall of the transmitter casing, and at the same time provides the necessary circuit connections between the battery and the microphone members. The pressure between the ears 15 and the heads 21 of the pivot pins insures a good electric connection between these parts and at the same time creates a friction between them which enables the hinge connection to hold the transmitter at any angle to the battery to which it may be turned.

The battery serves as an adjustable sup-

port for the transmitter. Thus, by placing the battery flat on a table or other supporting surface, the transmitter may be held in a vertical position or at any angle desired for receiving sound waves. This use is illustrated in Fig. 1. When it is desired to support the transmitter in the user's pocket, it is necessary only to turn the transmitter to a position parallel to the battery, as shown in Fig. 2, and then to place the battery in the pocket so that the transmitter depends outside the pocket. To replace the battery with a new one it is necessary only to pull off the old battery and connect a new one by inserting the terminal plugs 20 into the terminal sockets of the battery.

What I claim is:

1. In an earphone device, the combination with a transmitter and a battery electrically connected, of a hinge connection between the transmitter and the battery formed to permit the transmitter to be turned between a position in which its back extends along and substantially parallel to the adjacent side of the battery but spaced away therefrom and a position in which it extends transversely of such side to enable the battery to be used as an adjustable support for the transmitter.

2. In an earphone device, the combination of a microphone transmitter, a battery, and a hinge connection between the transmitter and the battery formed to provide two independent electric circuit connections between the battery and the microphone and offset from the back of the transmitter and from the end of the battery to permit the transmitter to be turned to a position in which the back of the transmitter extends along and substantially parallel to the adjacent side of the battery but spaced away therefrom.

3. In an earphone device, the combination of a microphone transmitter, a battery, and a hinge connection between the transmitter and the battery offset sidewise from one of said members and formed to provide two independent electric circuit connections between the battery and the microphone, whereby the battery is adapted to serve as a table support and as a pocket support for the transmitter.

4. In an earphone device, the combination with a microphone transmitter, of means for detachably connecting the transmitter to a battery comprising a block of insulating material, contact pieces carried by said insulating block and adapted to make a plug and socket connection with a battery, and a hinge connection between the transmitter and the insulating block arranged to provide independent electric circuit connections between said contact pieces and the microphone members of the transmitter.

5. In an earphone device, the combination with a transmitter, of means for detachably connecting the transmitter to a battery comprising a block of insulating material, a pair of contact pieces carried by said block and adapted to make a plug and socket connection to the battery, two aligned hinge pivots projecting from opposite sides of said insulating block and each in electric contact with one of said contact pieces, and separate insulated hinge brackets secured to the transmitter and each engaging one of said hinge pivots and forming electrical connections to the transmitter.

6. In an earphone device, the combination with a transmitter and a battery connecting member, of headed hinge pivots on one of said parts insulated from each other, and separate resilient hinge ears on the other of said parts insulated from each other and which press outwardly against the heads of the hinge pivots to make electric contact therewith and to provide mechanical friction restraining the turning of the hinge, the battery connecting member having a pair of contact pieces for detachably securing and electrically connecting said member to a battery.

7. In an earphone device, the combination of a microphone transmitter, a flat elongated battery, and a connection between the upper portions of said transmitter and of said battery formed to hold the transmitter in position with its back extending along and substantially parallel to the adjacent side of the battery but spaced away therefrom.

In testimony whereof, I have hereunto set my hand.

HUGO LIEBER.