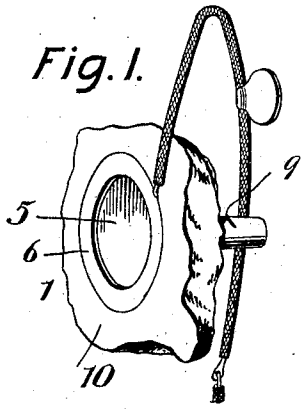
No. 837,196. PATENTED NOV. 27, 1906.

F. E. COULTER.

EAR DRUM.

APPLICATION FILED NOV. 6, 1905.

Fig. 1.



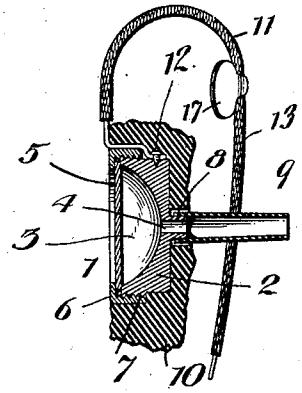


Fig. 2.

Fig. 3.

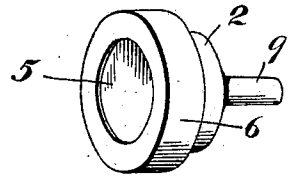


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

FRANK E. COULTER, OF SIOUX FALLS, SOUTH DAKOTA.

EAR-DRUM.

No. 837,196. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed November 6, 1905. Serial No. 286,111.

To all whom it may concern:

Be it known that I, FRANK E. COULTER, a citizen of the United States, residing at Sioux Falls, in the county of Minnehaha and State of South Dakota, have invented certain new and useful Improvements in Ear-Drums; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in ear-drums or devices for facilitating the hearing of deaf persons.

It consists in the construction, combination, and arrangement of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of my improved ear-drum, showing the means for holding the same in the ear. Fig. 2 is a vertical sectional view through the parts shown in Fig. 1. Fig. 3 is a perspective view of the ear-drum proper removed from its holder, and Fig. 4 is a view showing a pair of my improved ear-drums connected by an electrical attachment for increasing the sense of hearing.

Referring to the drawings by numeral, 1 denotes my improved ear-drum proper, which comprises a substantially cylindrical body 2, made, preferably, of aluminium or other light material and having its rear face flat and its front outer face dished or concave, as shown at 3, so as to collect sound-waves and direct them toward an opening 4, formed centrally in said body portion. Upon the concave or outer face 3 of the body 2 is clamped a diaphragm 5, which is preferably in the form of a thin disk of hard rubber or other suitable material adapted to receive sound-waves and transmit them through the opening 4. Said disk or diaphragm 5 is clamped on the edge of the body 2 by an annular angle-metal rim 6, which has a screw-threaded engagement with the body 2, as clearly shown at 7. The opening 4 extends through a tubular extension 8, formed on the rear face of the body 2 and to which is attached a short tube 9, of rubber or other flexible material, which is adapted to project into the external auditory meatus of the ear. The ear-drum proper of the body 2 is adapted to be held in the concha or exterior portion of the ear by means of a holder 10, which is formed, preferably, of celluloid, rubber, or the like and which is adapted to conform to the shape or contour of the ear in which it is to be placed. These holders 10 are preferably molded from a wax impression taken of the ear, so that they fit the latter perfectly and will not be liable to fall out. To retain them more effectively in position, I may employ a curved spring 11, which is adapted to fit behind the ear and to have one of its ends attached to the body 2, as shown at 12. This spring 11 may be covered with a tube or covering of rubber or other suitable material 13, so as to form a cushion and also to insulate the spring when the same is utilized as a conductor with the electrical attachment shown in Fig. 4 of the drawings. This electrical attachment comprises a suitable electric or galvanic battery or generator 14, which may be readily carried in one's pocket, insulated electric wires or conductors 15, an electric switch 16, and electrodes 17. The latter may be of any desired form and construction and are secured to the central portions of the springs 11, so that they are adapted to bear upon the head in rear of the ears. The electric conductors 15 lead from the pole of the battery 14 to the outer or free end of the spring 11, and in one of the said conductors is included the switch 16. The current flows from the battery through one of the conductors to the spring connected thereto and through the electrode attached to the said spring, thence through the head of the person to the other electrode, and returns through the spring 11 and conductor connected to the last-mentioned electrode to the other pole of the battery.

The many uses and advantages of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that one or a pair of the ear-drums may be used without the electrical attachment and that when the latter is applied to a pair of the ear-drums the electric current may be used or not, as desired, by operating the switch 16. When the current is switched on, the organs of the ear will be rendered more acute or sensitive, so that they will receive the sound-waves more readily, and hence the hearing will be facilitated. It will be seen that the device is of comparatively simple and inexpensive construction, so that it may be manufactured at a small cost, and that it is very convenient in use.

While I have shown and described the pre-

ferred embodiment of my invention it will be understood that I do not wish to be limited to the exact construction shown, since various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

The herein-described device for the purpose set forth, comprising the body having the concavity in its outer side, the opening in its inner side, the tube extending from said opening, and a diaphragm covering said concavity, the ring attached to the body, and securing the diaphragm thereon, a holder formed to fit in the concha and in which the said body is embedded, and the inverted-U-shaped spring having one arm attached to the body, said spring extending over and inwardly from the body and holder, to adapt its inner arm to bear against the inner side of the ear.

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

FRANK E. COULTER.

Witnesses:
R. F. WILLIAMS,
MAUD LAKE NEALE.