No. 882,700. PATENTED MAR. 24, 1908.

G. A. LEWIS.

HEARING TUBE FOR SOUND REPRODUCING DEVICES.

APPLICATION FILED MAY 13, 1907.

Fig. 1.

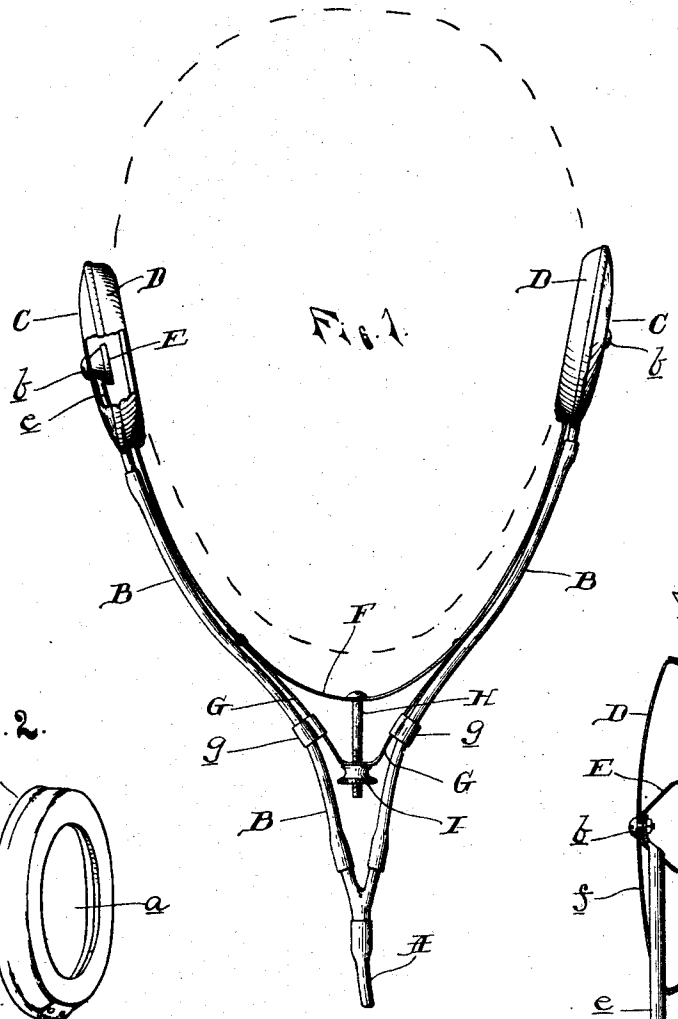


Fig. 2.

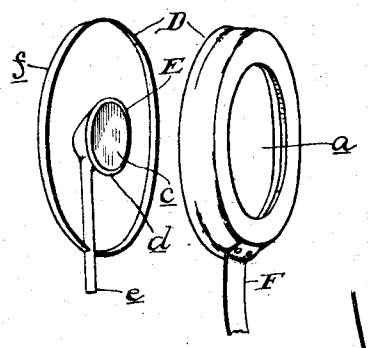


Fig. 3.

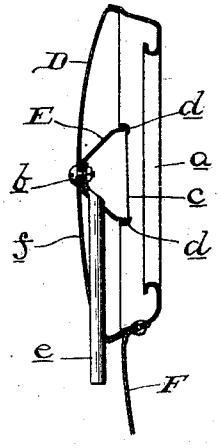
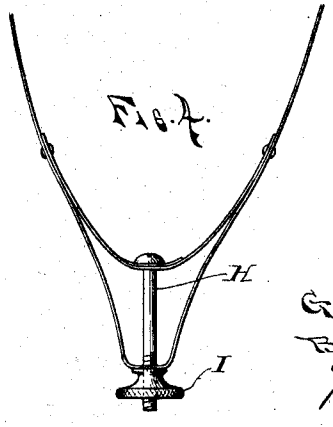


Fig. 4.



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UNITED STATES PATENT OFFICE.

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HEARING-TUBE FOR SOUND-REPRODUCING DEVICES.

No. 882,700. Specification of Letters Patent. Patented March 24, 1908.

Application filed May 13, 1907. Serial No. 373,206.

To all whom it may concern:

Be it known that I, GEORGE A. LEWIS, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Hearing-Tubes for Sound-Reproducing Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to hearing tubes adapted to be supported on the head of the wearer in close juxtaposition to the ear so as to leave both hands free and the object of the invention is to provide an efficient device which will cause no fatigue nor inconvenience by impeding the movements of the head or body and which can be adjusted to the head of the wearer all of which I intend to accomplish in the manner and by the means hereinafter more fully described in connection with the accompanying drawings, in which

Figure 1 is an elevation partly in section showing my device as applied to the head; Fig. 2 is a perspective view of the ear piece, the parts being shown detached; Fig. 3 an enlarged central cross-section of one of the ear pieces; Fig. 4 is an elevation of a slightly modified form of construction of the means of adjusting the tension of the bow spring.

A is the main tube through which the device is adapted to be connected to a phonograph or other sound reproducing device, B are the branch tubes leading therefrom and C are the ear pieces attached to the ends of the branch tubes.

Each ear piece comprises an exterior casing D and an interior casing or drum E of considerably smaller size, each casing being a mere shell preferably formed of thin aluminium sheet to make it very light. The exterior casing D conforms to the exterior ear and has its inner wall provided with an aperture *a* through which the exterior ear is adapted to be introduced into the casing. The interior casing or drum conforms to the inner ear and is preferably of conical shape, it is secured at the apex to the exterior casing by a screw *b* or otherwise in juxtaposition to the inner ear, the end being preferably closed by a vibrative diaphragm or membrane *c* secured thereto under tension by a metal ring *d*.

A sound conveying tube *e* leads through the exterior casing into the small end of the shell E and communicates with the interior thereof. As shown in the drawings, the screw *b* may form the means of fastening both the tube *e* and drum E to the exterior casing, the outer wall *f* of which for convenience sake in mounting is made a separate part of the shell D and is preferably made of convex shape.

The ear pieces are connected together by a bow-spring F of suitable tension to clamp the ear pieces to the head and support the device thereon free of contact with any part of the head, body or clothing of the wearer by passing freely beneath the chin, and the branch tubes are supported on the spring F in conformity therewith by means of clips *g*.

The spring F is reinforced at its middle portion by a second member G and an adjusting screw H passes through the two and bears a tightening nut I all arranged in such manner that by tightening the nut I upon the screw the two arms of the spring are drawn together and thus form a means for regulating the normal distance between the ear pieces or in other words the degree of tension with which the ear pieces are applied to the head of the wearer, making the device thus adjustable to any head of any shape and to the heads of children as well as grown persons.

By making the ear pieces of thin sheet aluminium they are so light that the ear itself can support the device, the rim around the aperture in the outer shell operating as a retaining flange to hold it in position on the ear, a slight clamping force by the bow spring being only required to hold the ear pieces tightly to the head.

The construction of the ear piece makes the interior casing or drum the receiver from which the sound is conveyed to the inner ear while the exterior casing incloses it with a surrounding air space and in addition to its function of supporting the interior casing in close proximity to the inner ear forms a shield which prevents dispersal of the sound from within and interference therewith from without by forming a dead air space around it when applied to the ear.

What I claim as my invention is:—

1. In a hearing tube for sound reproducing devices, the combination with the bowed spring and sound conveying tube having branches supported on the spring, of ear pieces secured to the ends of the bow spring and adapted to suspend the whole device

on the head of the wearer, each ear piece comprising an outer shell and an inner drum communicating with the branch tubes, the outer shell forming an air chamber around the inner drum of a size to freely encompass the ear, the shell being provided with an aperture for introducing the ear which is smaller than the size of the chamber whereby the shell is adapted to engage with the ear and support the ear pieces thereon independently of the clamping action of the spring.

2. In a hearing tube for sound reproducing devices, the combination with the bowed spring and branch tubes supported thereon, of ear pieces secured to the ends of the bow spring and adapted to suspend the device from the ears of the wearer, said ear pieces made of thin sheet aluminium each with an outer shell forming a chamber of a size to freely encompass the ear and having an aperture of lesser size for the introduction of the ear, whereby the ear piece is adapted to engage with the ear.

3. In a hearing tube for sound reproducing devices, the combination with the bowed spring and the branch tubes supported thereon, of ear pieces secured to the ends of the bowed spring and adapted to suspend the device from the head of the wearer, each ear piece comprising an outer shell and an inner drum in communication with the branch tubes, the outer shell forming an air chamber around the inner drum and adapted to encompass the ear and support the ear piece thereon independently of the clamping action of the spring and means on the spring for regulating its tension.

4. An ear piece for a hearing tube for sound reproducing devices comprising an outer shell and a sound transmitting interior drum secured in the outer shell and provided with a nipple for connecting it to the sound conveying tube, the outer shell forming an air chamber around the inner drum of a size to freely inclose the ear and provided with an aperture of smaller size through which the ear is adapted to be introduced into the chamber and forming the means of supporting the ear piece in position on the ear.

5. In a hearing tube for sound reproducing devices, the combination with ear pieces, of a bow-spring to which the ear pieces are connected, said bow-spring provided at its middle portion with a reinforcing member separately connecting the spring at two points intermediate between its ends and its middle portion and an adjusting screw connecting the spring and its reinforcing member.

6. In a hearing tube for sound reproducing devices, the combination with ear pieces, of a bow-spring connecting the ear pieces and adapted to support the same in position on the head of the wearer with the spring passing beneath the chin and wholly out of contact with the head and body and means applied to the spring for varying the tension of the spring.

7. In a hearing tube for sound reproducing devices, the combination with ear pieces, of a bow-spring upon which the ear pieces are mounted, the spring adapted to support the ear pieces in position on the head of the wearer, the spring passing beneath the chin and wholly out of contact with the head and body of the wearer, and means applied to the middle portion of the spring for varying the tension thereof.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. A. LEWIS.

Witnesses:
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