May 5, 1925.

H. L. LESSARD

1,536,109

HEARING DEVICE FOR PARTLY DEAF PERSONS

Filed Oct. 21, 1921

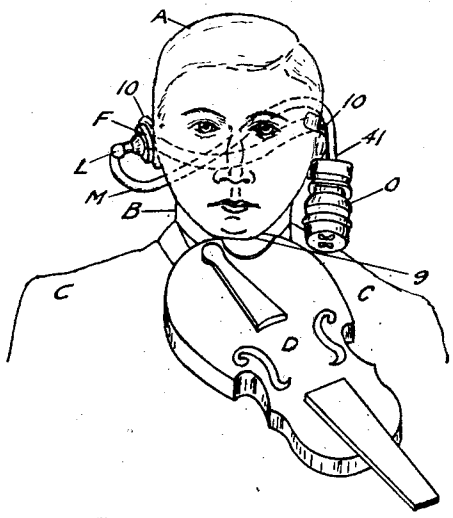


FIG. 1

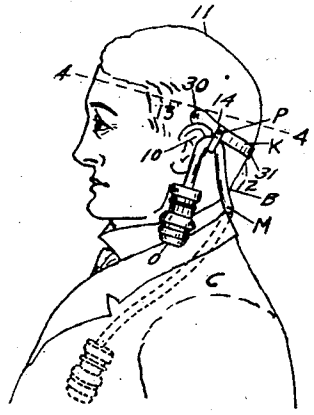


FIG. 2

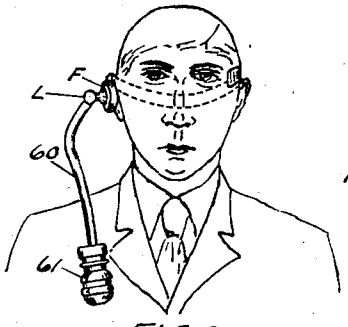


FIG. 3

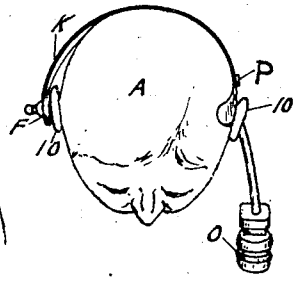


FIG. 4

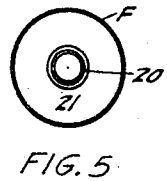


FIG. 5

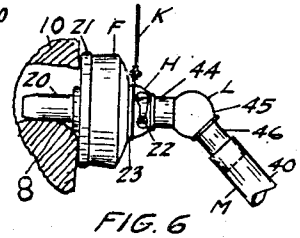


FIG. 6

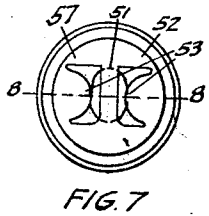


FIG. 7

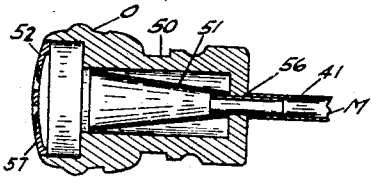


FIG. 8

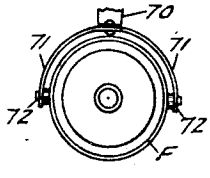


FIG. 9

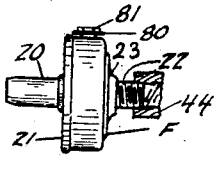


FIG. 10

Henry L. Lessard INVENTOR.

BY

Gardner W. Pierson ATTORNEY.

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UNITED STATES PATENT OFFICE.

HENRY L. LESSARD, OF NASHUA, NEW HAMPSHIRE.

HEARING DEVICE FOR PARTLY-DEAF PERSONS.

Application filed October 21, 1921. Serial No. 509,307.

To all whom it may concern:

Be it known that I, HENRY L. LESSARD, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Hearing Devices for Partly-Deaf Persons, of which the following is a specification.

My invention relates to devices for helping partially deaf persons to hear.

It is particularly suitable for the use of partially deaf violin players, but is so arranged that it is a great convenience to all deaf persons as it allows the free use of both hands and at the same time the device by which it is fastened to the head causes little, if any, inconvenience.

I am aware that devices such as stethoscopes are provided with two oppositely disposed nipples each of which enters an ear whereby it is held in position, and I am aware that telephone receivers for commercial circuits, and also such portable telephones as are used by the partially deaf, known as earphones, etc., have a receiver which is pressed up against the ear and held in position by spring holders, etc., which pass up and over the top of the head, the other end coming down in a position near the temple.

The main feature of my device is the provision of a nipple which enters the ear, together with a guard which is pressed against the ear in combination with a spring holder which passes down back of the neck and presses against the head above or behind the ear instead of passing over the head and down against the temple.

In order that the device may not be too heavy, I provide a special form of tube and receiver and so arrange the receiver that it can rest upon the shoulder of the wearer or hang from the holder close to the ear.

In the drawings, Fig. 1 is a front view of a person with my preferred form of device held in position and with a violin also in position.

Fig. 2 is an elevation as from the left of Fig. 1 omitting the violin and showing in dotted lines another position of the sound box.

Fig. 3 is a front view similar to Fig. 1 of my device with a shorter sound tube.

Fig. 4 is a view looking down on the top of the head at right angles to the line 4—4 of Fig. 2.

Fig. 5 is a front elevation of the ear guard and nipple.

Fig. 6 is a side elevation of the ear guard and nipple with adjoining parts.

Fig. 7 is a front elevation of the mouth of the sound box.

Fig. 8 is a sectional elevation as on the line 8—8 of Fig. 7.

Fig. 9 is a front view of the guard and nipple with a modified form of hanger.

Fig. 10 is a side elevation showing guard and nipple with another modified form of hanger.

In the drawings, A represents the head, B the neck and C the shoulders of a person having ears 10, 10. In Fig. 1, D represents a violin held in the usual position between the chin 9 and a shoulder C.

My hearing device comprises an ear-piece indicated broadly by F and which consists of an ear guard 21 of disc shape of a size to press against the outside of the ear, and a nipple 20 of a size and form to enter the ear which projects from the center of one side thereof. Preferably, this nipple 20 is covered with rubber or some similar material which will rest comfortably on the bottom part of the ear tube 8. 22 is a nipple tube which extends from the ear nipple through the ear guard and is threaded at the end.

In my preferred construction shown in detail in Fig. 6, I provide a holder cup H which fits closely over a boss 23 on guard 21 and over the threaded portion of nipple tube 22. To this holder cup H is rigidly fastened one end of a spring holder K so shaped at 31 as to fit around back of the head at the point 12, near the upper part of neck B. The free end 30 is of such length and so positioned that it will rest above or slightly back of the ear 10 at a point on the

head about 14 which is back of the temple 13. This spring holder K and cup H would be revoluble on nipple tube 22 were it not for the coupling tube L which has interior threads to engage the exterior threads on nipple tube 22 whereby holder cup H can be clamped between them. Preferably, coupling tube L has a part 44 in which are such interior threads, an elbow 45, and a bent end 46 over which an end 40 of a flexible sound tube M can be passed. This flexible sound tube may be made of rubber or similar material, and in Figs. 1 and 2 is shown of such length that it can pass from one ear around the back of the neck up over the other ear, and when attached by means of a rubber band or clip P proximate the free end of spring holder K, it will depend at 41 to a point which will bring the sound box O, which is attached to the other end thereof, near to and directly over the sound box of a violin, such as D.

This sound box O is formed of a light wooden shell 50 made of substantially cylindrical form, from the back end of which projects the coupling tube 56 over which the end 41 of the flexible tube M is passed to hold it in position. 51 is a metal directing horn, the mouth of which, preferably, flares and is of oval shape, which extends inside the sound box O from tube 56 to a point near the front end thereof 52. This front end 52 is preferably closed by means of a removable disc 57 preferably made of spruce wood, such as violin sounding boards are made from. It is so cut as to have two oppositely disposed vibrating tongues 53, 53, located opposite the long sides of the mouth of horn 51.

The ear-piece, with its nipple and guard, is pressed by means of the spring holder K into and against the ear, and is thereby held in position without discomfort to the wearer and with little likelihood of falling off. When used for violin playing, the sound tube M is hooked up over the left ear, as indicated, so that the sound box hangs down directly over the sound board of the violin.

As shown by the dotted lines in Fig. 2, the sound tube M can be detached from the spring holder K so that the sound box O will hang down and rest over the left shoulder where it can readily be picked up by the hand and directed towards a person's mouth when listening. It can also be swung back over the left shoulder and extended out a greater distance from the right ear if desired, or it can be used in the pendant position to a certain extent.

As shown in Fig. 3, the ear-piece F may be held in position and a short flexible tube 60 connected therewith, which is of such length that the sound box 61 will hang down and rest on the right shoulder.

Instead of the holder cup H, as shown in Fig. 9, I may use, attached to the spring holder 70, a bifurcated member 71, 71 attached by means of pivots 72, 72 to the ear-piece F.

I may use also, as shown in Fig. 10, a single screw 81 passed through the end of a spring holder 80 into the ear guard 21.

The main point of the attaching means is to have a spring which will bear against a point back of the temple and which will press the ear guard against the ear and the nipple thereinto, the nipple thus serving to prevent it from falling down on one side, and the other end of the spring, such as 30, preventing the spring holder from falling down on the other side.

The bent coupling tube, especially when arranged with the adjustable holder cup, allows the flexible tube to stay close to the head without bulging thereby helping the device to stay in position, and the tube is of such length and the sound box of such shape that in either position shown in Fig. 2 there is no drag on the ear-piece and the whole apparatus readily stays in position.

I claim:

1. In a hearing device for partly deaf violin players, the combination of an ear-piece comprising an ear guard, an ear nipple of a size and form to enter the ear which projects from one side thereof and a nipple tube which extends from the ear nipple through the ear guard having threads at the end, with a holder cup through which said nipple tube passes, a curved spring holder carried by said holder cup and shaped to pass back of the head, and a bent coupling tube threaded on to said nipple tube outside said cup.

2. In a hearing device for partly deaf violin players, the combination of an ear-piece comprising an ear guard, an ear nipple of a size and form to enter the ear which projects from one side thereof and a nipple tube which extends from the ear nipple through the ear guard having threads at the end, with a holder cup through which said nipple tube passes, a curved spring holder carried by said holder cup and shaped to pass back of the head, a hook on the free end thereof, a bent coupling tube threaded on to said nipple tube outside said cup, a flexible sound tube in extension of said coupling tube, and a light weight sound box attached to the other end thereof.

3. In a hearing device for partly deaf persons, the combination of an ear-piece comprising an ear guard, an ear nipple of a size and form to enter the ear which projects from one side thereof, and a nipple tube which extends from the ear nipple through the ear guard, with a curved spring holder carried by said nipple tube and shaped to pass back of the head, a coupling tube threaded on to said nipple tube, a flexible

sound tube in extension of said coupling tube, and a sound box attached to the other end thereof.

4. In a hearing device for partly deaf persons, the combination of an ear piece comprising an ear guard, an ear nipple of a size and form to enter the ear which projects from one side thereof, and a nipple tube which extends from the ear nipple through the ear guard, with a curved spring holder carried by said nipple tube and shaped to pass back of the head, a flexible sound tube in extension of said nipple tube, and a sound box attached to the other end thereof.

HENRY L. LESSARD.