

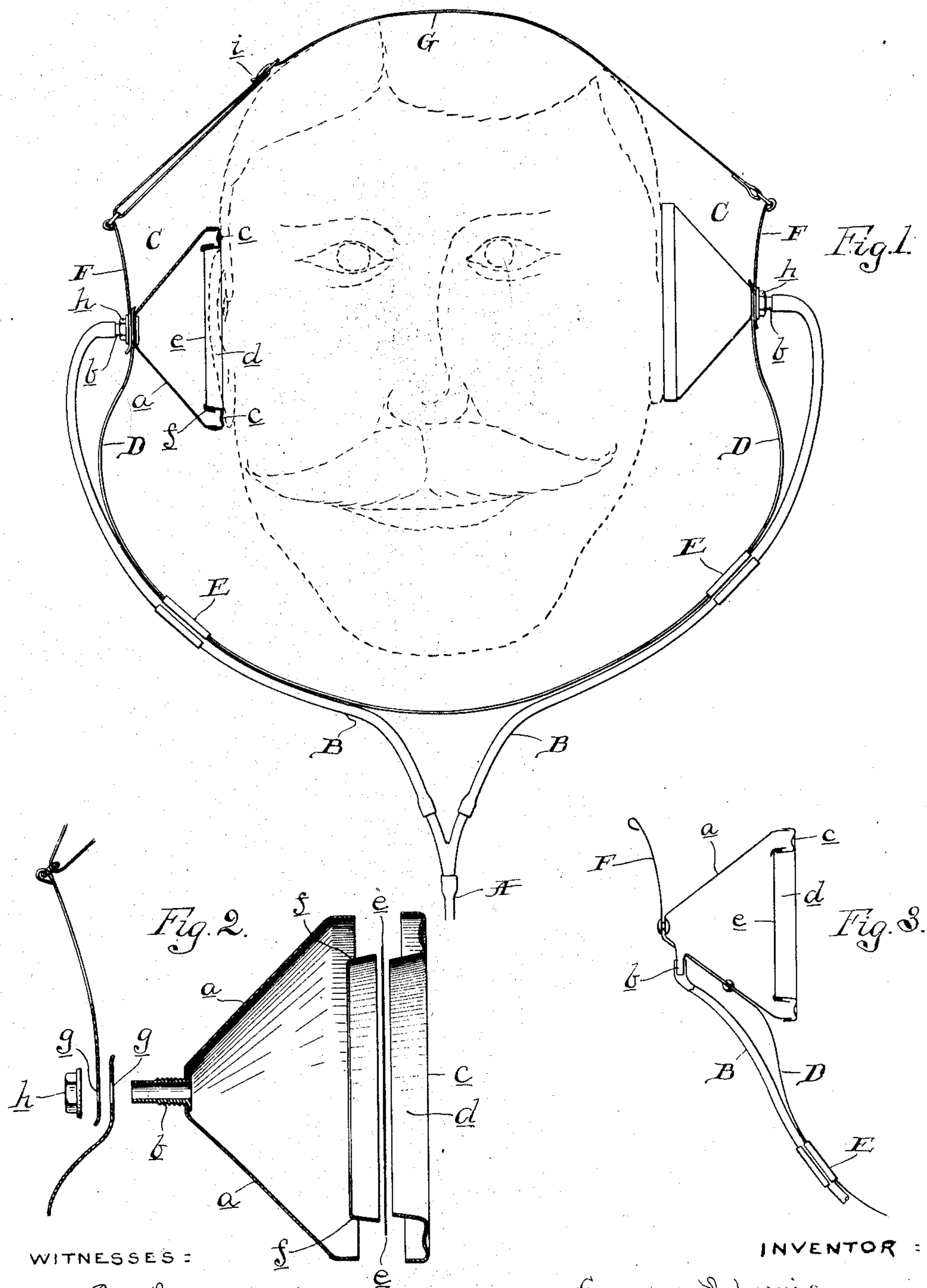
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PATENTED APR. 7, 1908.

G. A. LEWIS.

HEARING TUBE FOR SOUND REPRODUCING MACHINES.

APPLICATION FILED DEC. 24, 1906.



UNITED STATES PATENT OFFICE.

GEORGE A. LEWIS, OF DETROIT, MICHIGAN.

HEARING-TUBE FOR SOUND-REPRODUCING MACHINES.

No. 883,818.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed December 24, 1906. Serial No. 349,241.

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 for phonographs and other sound reproducing devices and the object of the invention is to give the device a perfect support and adjustability on the head of the wearer without producing any discomfort, all as more fully hereinafter described and shown in the accompanying drawings, in which

Figure 1 is an elevation of the device as in use, with one of the ear pieces shown in section. Fig. 2 is a section through the parts composing the ear piece and its connecting parts, the parts being shown detached from each other in the order in which they are connected. Fig. 3 is a section of an ear piece of slightly modified construction.

Referring to Figs. 1 and 2 of the drawings A is the main tube connecting the device with the sound reproducing device. B are branch tubes leading from the main tube. C are ear pieces attached to the ends of the branch tubes. D is a bow-shaped spring bar on which the ear pieces are mounted. E are fastenings by means of which the branch tubes are supported on the spring bar D. F are extensions at the ends of the spring bar D, and G is a tape connecting the free ends of the extensions F. Each ear piece is made of sheet metal preferably of aluminium to give it lightness and comprises a conical body portion or shell *a* formed with or provided at its contracted end with a hollow nipple *b* for attachment to the branch tube. The enlarged end bears a ring shaped cap *c* which forms a recess *d* of suitable dimension to encompass the human ear. The recess is closed at the inner end by a diaphragm *e* held in position on the inner wall of the cap by a clamping ring *f*. The diaphragm is preferably made of thin rubber, gold beaters skin or other suitable membrane secured under tension. The spring bar D is preferably formed of a leaf spring and the extensions F may be integral parts thereof, as shown in Fig. 3, or preferably they are separate parts in which case the bar or the extensions are

pivotaly connected to the ear drum so as to be adjustable in relation to each other. In Figs. 1 and 2 the bar D and extensions F are made with overlapping ends provided with holes *g* to receive the nipple which is formed with a screw thread to secure the parts detachably together by means of a nut *h*. The tape G connects the free ends of the extensions F together and it is preferably provided with an adjusting buckle *i* for lengthening or shortening it.

In practice the device being applied to the head the spring bar D being suitably bowed hangs freely below the chin of the wearer without touching any part of the body or clothing and lightly presses the ear pieces against the head while the tape passing over the head of the wearer holds them in position. By means of the extensions F the tape will also exercise an inward pressure which tends more directly to press the ear pieces against the head at their upper margin thus counteracting the tendency of the spring bar D to press more firmly at the lower margin and the pressure will thus be equalized all around and keep the ear pieces in all around contact with the head and prevent dissipation of the sound and discomfort to the wearer.

In the modification in Fig. 3 the ear pieces are permanently secured to the spring bar and the extensions are formed integral with it. The bar D is also differently bent at the ends which enables it to lie more closely to the head of the wearer, for the same reason the nipple *b* enters the shell on the underside. The amount of inward pressure which the spring bar D exercises on the head can be readily regulated by manipulating the bar with the hands and that exercised by the tape can be regulated by adjusting the tape.

Having thus fully described my invention what I claim is:—

1. The combination with the ear pieces and their branch tubes of a bow-shaped spring bar on which the same are mounted, extensions on the ends of the spring bar beyond its points of connection with the ear pieces, and a tape connecting the spring bar at its ends.

2. The combination with the ear pieces and their branch tubes, of a bow-shaped spring bar on which the ear pieces are mounted in position to apply to the head with the bar passing below the chin and supporting the branch tubes, extensions on the

ends of the spring bar beyond its points of connection with the ear pieces and an adjustable tape connecting the ends of the spring bar.

5 3. The combination with the ear pieces and their branch tubes, of a bow-shaped spring bar on which the ear pieces and branch tubes are mounted in position to apply to the head, the spring bar passing below the
10 chin, extensions on the ends of the spring bar beyond its points of connection with the ear pieces and pivotally connected thereto, and a tape connecting the free ends of the spring bar.

15 4. The combination with the ear pieces formed with recesses adapted to encompass the ears, of a bow-shaped spring bar on which the ear pieces are mounted in position to engage with the ears; branch tubes
20 supported on the spring bar, extensions at the ends of the spring bar, beyond their points of connections with the ear pieces and a tape connecting the free ends of the extensions.

25 5. The combination with the ear pieces formed with recesses adapted to encompass

the ears, of a bow-shaped spring bar on which the ear pieces are mounted, branch tubes supported on the spring bar, extensions on the ends of the spring bar—said ex- 30
tensions and spring bar connected to the ear pieces relatively adjustable to each other—and an adjustable tape connecting the free ends of the extensions together and forming
35 a support for the ear pieces on the head of the wearer.

6. An ear piece for hearing tube comprising a conical metallic shell provided at its contracted end with a hollow nipple and at its enlarged end with an annular cap having
40 an annular inner wall forming a recess adapted to accommodate the ear and a membrane secured thereto and forming a diaphragm between the interior of the cone and the recess. 45

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

GEO. A. LEWIS.

Witnesses:

OTTO F. BARTHEL,
ANNA M. DORR.