

H. HAMANN.
 EAR TRUMPET.
 APPLICATION FILED MAY 15, 1916.

1,302,036.

Patented Apr. 29, 1919.

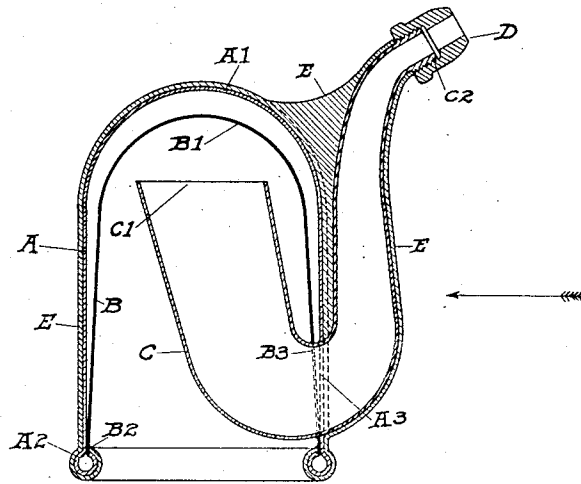


Fig. 1.

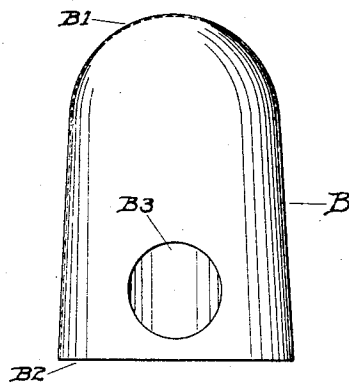


Fig. 2.

WITNESSES:

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EAR-TRUMPET.

1,302,036.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY HAMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Ear-Trumpets, of which the following is a specification.

My invention relates to that class of devices which are designed to aid a defective sense of hearing by applying amplified sound directly to the human ear, and more particularly to the type known as ear trumpets, which consist of a sound receptacle and a tapering passage leading from said receptacle to a small outlet adapted to be placed in the ear.

The objects of my invention, are first, to attain a greater degree of efficiency, *i. e.* to gain as great or a greater degree of amplification with a small, convenient instrument than that ordinarily attained by a larger and correspondingly more inconvenient instrument.

Second, purity of tone, *i. e.* that the amplified sound shall be clear and distinct, retaining its original qualities unadulterated. Third, convenience. Fourth, sanitation.

I attain these objects best by the combination illustrated in the accompanying drawing, in which Figure 1 is a sectional elevation through the center of the instrument in the plane of the tapering sound passage.

Fig. 2, is a detail in elevation of the diaphragm, which is the principal feature of my invention, from a plane at a right angle to Fig. 1, in the direction indicated by an arrow.

Referring to Fig. 1, A is the sound chamber or receptacle, preferably of one piece of metal, drawn cylindrical in form, the upper end, A¹, closed, the lower or open end, A², curled inwardly, the edge of the metal spaced a sufficient distance from the body of the shell to permit the insertion of the diaphragm. A perforation, A³, is made in the side to accommodate the sound passage.

The diaphragm, B, may be composed of any of several materials having the necessary qualities, chief of which is hardness and lively resiliency. The body is conical in form, its upper or closed end, B¹, spherical or dome shaped. The lower or open end, B², a diameter to fit into the base, A², of the receptacle. A perforation, B³, is made in the side to accommodate the sound passage.

The sound passage, C, preferably of metal, round in cross section and tapering through-

out its length, is assembled in the receptacle, A, with the larger end, C¹, facing the closed end A¹, of the receptacle. Passing downward and curving outward it passes through the opening, B³, in the side of the diaphragm and A³, in the receptacle, thence curving upward and then outward and terminating at the small end in a threaded portion, C².

The sound passage, C, must be securely fastened to the receptacle, A, and carefully sealed at the perforations A³, and B³.

The dome shaped end B¹, of the diaphragm B, is interposed between the closed end A¹, of the receptacle A, and the larger end C¹, of the sound passage C, while the lower end B², is securely fastened to the base A² of the receptacle and thoroughly sealed so as to maintain an air tight compartment between the diaphragm and the receptacle.

D, is the ear tip, composed of hard rubber or similar material, formed to fit into the human ear; having a perforation approximately the size of the opening in the small end of the sound passage and a thread to fit the threaded portion, C², of the sound passage, this construction permitting of removal for cleaning.

I prefer to coat the outside of the metal parts with rubber or other material, E, having the ability to reduce or eliminate vibration of said metal parts. This coating adds to the appearance and is also a protective measure.

The operation is as follows: Sound vibrations entering the receptacle strike the diaphragm which acts as a sounding board, adding resonance; the dome shaped end densifying and projecting the sound into the passage in which it is further densified, emerging at the tip, it produces a powerful effect on the organs of hearing.

Many modifications of my invention may be constructed, for instance,—The operation may be reversed, *i. e.* the sound vibrations may enter at the small end of the passage, strike the diaphragm and be projected into the sound chamber as applied to a phonograph, megaphone, telephone, etc.

The coating, E, may be dispensed with and other means, such as a change in the material composing the receptacle and passage substituted.

The essential element of my invention being a diaphragm used in combination with a sound chamber and passage, I make no claim for novelty in the use of the receptacle and

sound passage separately. However, I do not wish to be limited to the precise construction shown and described, but what I claim and desire to secure by Letters Patent, is:

- 5 " An ear trumpet, comprising a receptacle or chamber, said receptacle having its upper end closed; a tapering passage leading out of said receptacle, said passage having its larger portion extending into said receptacle; its
10 larger opening facing the closed end of said receptacle, said passage also carrying on its small end means adapted to the human

ear; a diaphragm having a dome shaped end interposed between said closed end of said receptacle and the larger opening of said 15 passage, said diaphragm being formed with a conical body extending to the base or open end of said receptacle and securely sealed thereto.

HENRY HAMANN.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."