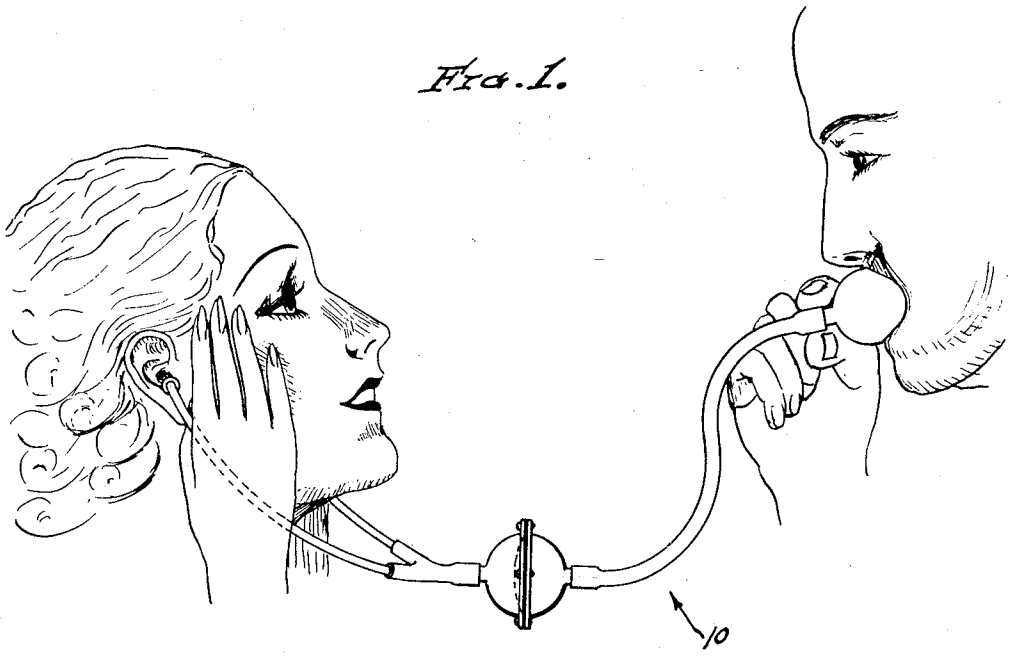
Nov. 23, 1937. B. A. STERN 2,099,871

APPARATUS FOR EXERCISING THE HEARING ORGANS

Filed May 19, 1936

Fig. 1.



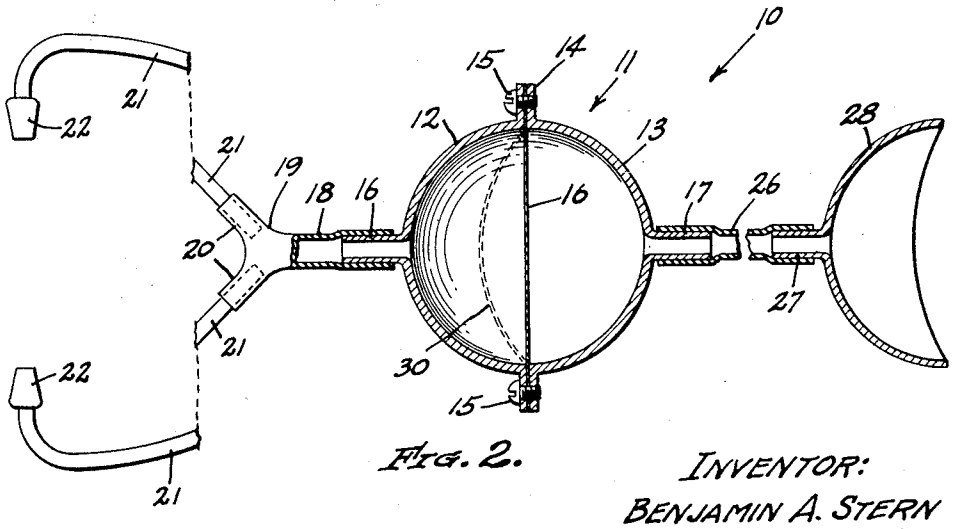


Fig. 2.

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APPARATUS FOR EXERCISING THE HEARING ORGANS

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2 Claims. (Cl. 128—39)

This invention relates to the healing arts and has particularly to do with treating the hearing organs for the purpose of improving the hearing.

It is an object of this invention to produce a method of and apparatus for exercising the hearing organs in such a way as to improve the capacity of said organs to respond to auditory stimuli.

The manner of accomplishing the foregoing object as well as further objects and advantages will be made manifest in the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a diagrammatic illustration of the treating of a patient with the method and apparatus of my invention.

Fig. 2 is a horizontal sectional view through a preferred form of the apparatus of my invention.

I shall now refer specifically to the drawing for the purpose of describing the preferred form of apparatus of my invention shown therein, which is designated by the numeral 10.

This apparatus includes a spherical diaphragm shell 11 having two hemispheres 12 and 13, which are provided with flanges 14 the latter being held together by screws 15. Tightly gripped between the flanges 14 and assembled therewith in a taut condition is a diaphragm 16 which may be of very thin rubber or other resilient material. The hemispheres 12 and 13 have nipples 16 and 17 respectively. Stretched over the nipples 16 and 17 is the main tube 18 of a Y fitting 19 formed of rubber and having branch tubes 20 leading from the main tube 18. Inserted into the branch tubes 20 are metallic tubes 21, having their separate ends turned inwardly and provided with ear tips 22, which are adapted to be inserted into the ears of a patient. Stretched over the nipple 17 of the hemisphere 13 is an end of a rubber tube 26, the opposite end of which receives a nipple 27 of a mouthpiece 28. The mouthpiece is adapted to fit over the lips of the operator and make an air-tight connection with the face when pressed thereagainst.

Operation

The manner of using the apparatus 10 in the performance of the method of my invention is as follows:

The ear tips 22 are first inserted into the external canals of the ears of a patient so as to make an air-tight fit therewith as shown in the left-hand portion of Fig. 1. The operator, as illustrated in the righthand side of Fig. 1, then positions the mouthpiece 28 over his mouth and presses this tightly against his face so as to make an air-tight fit therewith. The operator then exhales into the mouthpiece 28 to create a sufficient pressure in the tube 26 and in the hemisphere 13 to bulge the diaphragm 16 until it assumes a condition such as indicated by the broken lines 30. This causes a compression of the air in the hemisphere 12, the Y fitting 19, the tubes 21, and in the external ear canals of the patient.

This pressure, of course, is transmitted to the ear drums of the patient and through the ear drums to the inner ear apparatus through which the sense of hearing functions. While holding this pressure on the ear drums of the patient, the operator speaks into the mouthpiece 28 so as to set up the vibrations of speech, and particularly the vowels, which vibrations are transmitted through the apparatus 10 to the ear drums of the patient while they are thus under pressure. The ear drums of the patient are thus simultaneously subjected to a mild super-atmospheric air pressure from the outside and to normal voice vibrations, although the latter are dampened somewhat by their being spoken through the resilient diaphragm 16.

The method of my invention contemplates improvement of the hearing of the patient by thus exercising the hearing organs at frequent intervals throughout the day. As special skill is not necessary in order to operate my apparatus 10, the treatments with this may be administered to the patient by a member of his family or a friend thereby making these treatments very inexpensive.

While the apparatus 10 is provided with binaural tubes 21 for treatment of both ears simultaneously, it is to be understood that a monaural tube for treatment of a single ear alone might be substituted in place of the two tubes 21, and in such a case the treatment, as hereinabove described, would be administered to one ear of the patient at a time.

While the method of my invention is preferably performed by a human operator the invention also embraces producing pressure and voice vibrations mechanically and using these simultaneously as above described in a treatment of the hearing organs. The scope of the invention is not, therefore, to be considered as limited to the specific example illustrated and described herein but is to be given the maximum breadth with which the state of the art permits the following claims to be construed.

What I claim is:

1. In an apparatus for treating the ears, the

combination of: means forming a compressed air chamber; means for conducting compressed air from said chamber to both outer ear canals of a patient; a flexible diaphragm forming one wall of said compressed air chamber; means forming a compressing air chamber, the latter also having one of its walls formed by said diaphragm; and means connected to said compressing air chamber and adapted to receive breath under super-atmospheric pressure from a person operating said apparatus to transmit this breath to said compressing air chamber and by the expansion of said diaphragm compress the air in said compressed air chamber, the increased pressure of the air in said compressed air chamber being transmitted to the outer ear canals of said patient.

2. In an apparatus for treating the ears, the combination of: means forming a compressed air chamber and a compressing air chamber; a movable member disposed to separate said chambers and yieldable to the pressure of air in the compressing chamber to compress the air in said compressed air chamber; means for conducting compressed air from said compressed air chamber to an outer ear canal of a patient, so as to make an airtight fit between said compressed air chamber and said outer canal; means connected to said compressing air chamber adapted to receive breath under super-atmospheric pressure from a person operating said apparatus to transmit this breath to said compressing air chamber to effect movement of the aforesaid member and the consequent compressing of the air in said compressed air chamber and said outer ear canal, said means last recited permitting vocal vibration to be emitted by said person while maintaining said super-atmospheric pressure, said member being of a nature to transmit said vibration to the compressed air in said compressed air chamber and said outer ear canal.

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