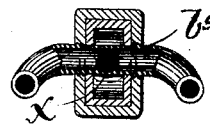
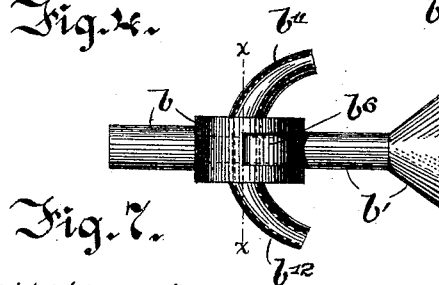
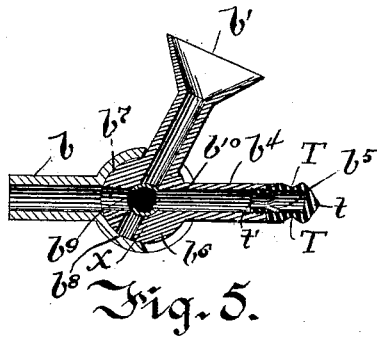
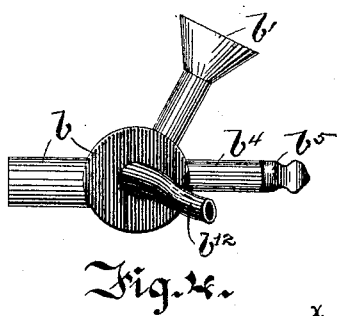
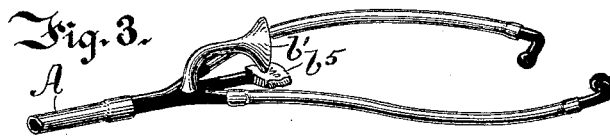
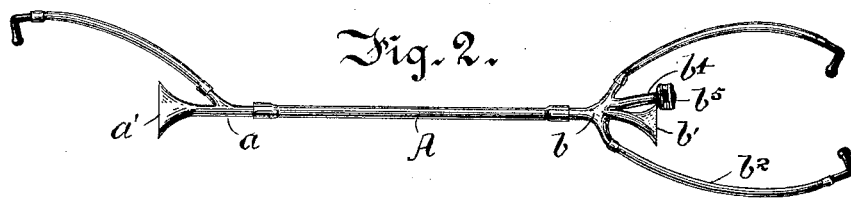
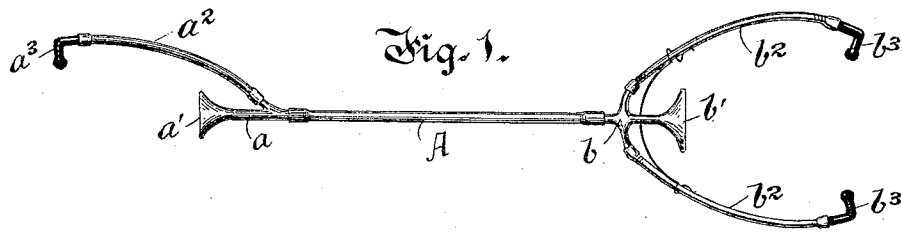


(No Model.)

G. A. LEECH.
APPARATUS FOR DEAF MUTE INSTRUCTION.

No. 523,536.

Patented July 24, 1894.



Witnesses:
James Forest
Jos. H. Jameson

Fig. 8.
Inventor:
George A. Leech

UNITED STATES PATENT OFFICE.

GEORGE A. LEECH, OF NEW YORK, N. Y.

APPARATUS FOR DEAF-MUTE INSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 523,536, dated July 24, 1894.

Application filed August 19, 1893. Serial No. 483,573. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. LEECH, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Apparatus for Deaf-Mute Instruction, of which the following is a specification.

My invention relates to the apparatus used in instructing deaf-mutes in vocalization, and known as the aural tubes, and it has for its object to add to said apparatus means by which the sounds may be further intensified to the pupil's ear, by communicating with the middle ear through the bony structure as well as by the external meatus.

It further relates to the use of said improved apparatus in connection with my improved phonograph whereby instruction may be given to several patients at once.

Referring to the accompanying drawings, wherein the same letters indicate the same parts throughout;—Figure 1, is a view of the apparatus as at present in use. Fig. 2, is the same with one form of my improvement. Fig. 3, is a figure showing another form of my improvement. Figs. 4 and 5, are detail views of the preferred form thereof. Fig. 6, is a view in section on the line x, x , of Fig. 7. Fig. 7, is a top view of Fig. 5.

Referring to Fig. 1, A, is a tube connecting two branch joints, a , and b . The branch, a , is intended for the instructor's use, and carries a mouth piece, a' , and an ear tube, a^2 , with the customary ear piece, a^3 . The branch b , is intended for the pupil's use and carries a mouth piece b' , and ear tubes, b^2 , with ear pieces, b^3 .

The use of this device is as follows:—In instructing deaf-mutes in vocalization the great desideratum to be attained is that the pupil shall institute a comparison between the sound of his own voice and that of his instructor for each syllable, or in case his hearing is totally deficient that he may compare the sounds he produces with the positions of lips, teeth, palate, &c., of his instructor. Now, with the apparatus shown in Fig. 1, this comparison of sounds is possible. First, the instructor says "ah" in the mouth piece, a' , and this the pupil hears through his ear

tubes, b^2 . Then the pupil in turn pronounces the same word into his mouth piece, b' , and this also he is enabled to hear, on account of the connection between the mouth piece, b' , and ear tubes, b^2 , through the branch, b .

My invention consists in adding to the device already in use a short additional branch, b^4 , carrying at its end a receiver, b^5 , of metal or other resonant material adapted to be held between the pupil's teeth and so intensify the sound effect on his ear. This is more clearly shown in Figs. 4 and 5, where b^5 , is shown enlarged. I make this resonant receiver preferably in the form shown, with a neck, t' , for screw or other attachment to the branch, a thickened end portion, t , and upper and lower tables, T, T, which are made thin. These tables T, T, are intended to be held between the teeth, and to transmit the vibrations of the inclosed air thereto, while the thickened portion, t , and the body, b^5 , remains quiescent. These tables T, T, may be molded to the shape of the incisors of the individual pupil, to prevent jarring, and to give a firm grasp.

In Figs. 4 and 5, I show a form of the branch, b , which I prefer to use with my receiver, which may be of hard rubber or other suitable material. Here, b , is the body of the branch, having an opening vertically through it to receive a hollow flat disk, b^6 , which carries the mouth piece tube, b' , and receiver tube, b^4 , both of which open into it, on its edge. This disk, b^6 , is free to turn on a trunnion, x , passed through from side to side, which trunnion is hollow and has two ports or openings, b^9 , b^{10} , in line with the opening in the body b . The ear branches, b^{11} , b^{12} , are attached to the ends of the hollow trunnion or one or both may be integral therewith.

The operation is obvious:—When the receiver is in use, the mouth piece is turned up, and the proper port, b^9 , is thereby brought into line with the openings in the trunnion while the other port is closed by the solid portions thereof. When the mouth piece is in use the receiver is turned down and the other port, b^{10} , thus brought into position. These tubes I also propose to adapt for use upon phonographs and cylinders may be especially prepared for use thereon in the instruction of mutes. In this way several mutes may re-

ceive instruction at the same time; several phonographs being used and several pupils being connected to each phonograph. Then one instructor can teach a large class where-
 5 as, at present, he can teach but one pupil at a time. The tubes may be attached to the phonograph in the usual way, the branch *a*, being removed, or said tubes may be attached to my improved resonator and used in con-
 10 nection with my improved phonograph transmitter which forms the subject of an application for patent of even date herewith—Serial No. 483,572.

It is also obvious that after a mute has been
 15 taught the function and use of the phonograph and attachments he can instruct himself. From specially prepared cylinders he may receive his instruction, then he may repeat what he has learned to plain cylinders
 20 and cause them to repeat it to him and in that way compare it with the original.

What I claim as my invention is—

1. In sound conducting apparatus, the combination of the branch, *a*, having mouth piece
 25 and ear tube, connecting tube, *A*, four-way branch, *b*, having ear tubes, *b*², and extra receiver tube, *b*⁴, and the resonant receiver, *b*⁵, all as and for the purpose intended, substantially as described.

30 2. The resonant sound receiver consisting

of the hollow body, *b*⁵, having neck, *t'*, a thickened end, *t*, and thin vibratory tables, *T*, *T*, substantially as described.

3. The four-way branch connector consisting of a body, *b*, having an internal channel, 35 the revoluble hollow disk, *b*⁶, having ports, *b*⁷, *b*⁸, and carrying tubes, *b*¹, *b*⁴, having at their ends a mouth piece, and a resonant receiver respectively, as and for the purpose intended, substantially as described. 40

4. A branch connector for sound conveying apparatus having a body, ear connections, and a connected interchangeable pair of branch tubes carrying a mouth piece and a receiver, substantially as described. 45

5. A four-way branch connector for sound conveying apparatus, consisting of a body, with ear connections, and a movable part connected to a receiver and mouth piece having ports for the same, one of which is automatically uncovered as the other is covered, substantially as described. 50

Signed at New York, in the county of New York and State of New York, this 17th day of August, A. D. 1893.

GEORGE A. LEECH.

Witnesses:

WM. H. CAPEL,
 EDWARD N. DEAN,
 WALTER D. JOHNSON.