June 10, 1930. DE CLIFFORD PHIPPS 1,763,103

- DEVICE FOR ASSISTING HEARING

Original Filed June 11, 1927

FIG. 1.

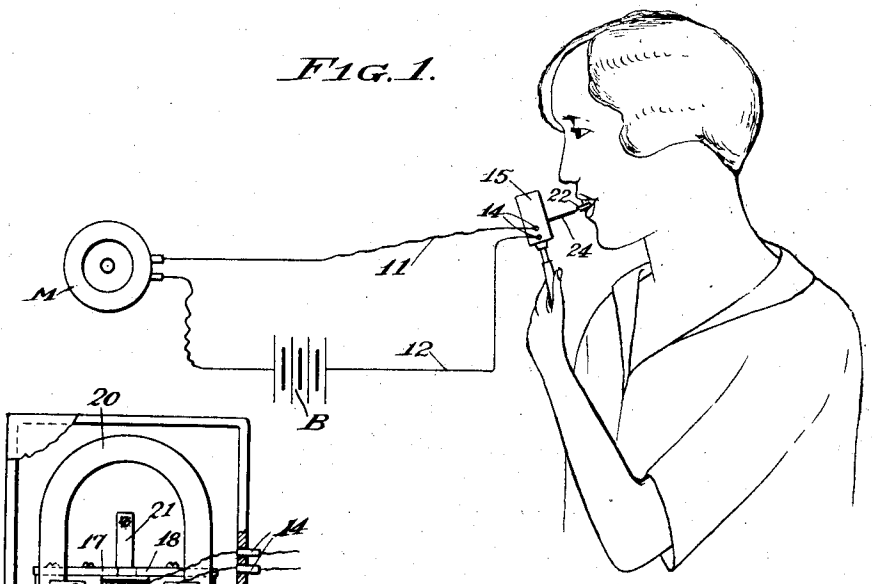

FIG. 2.

FIG. 3.

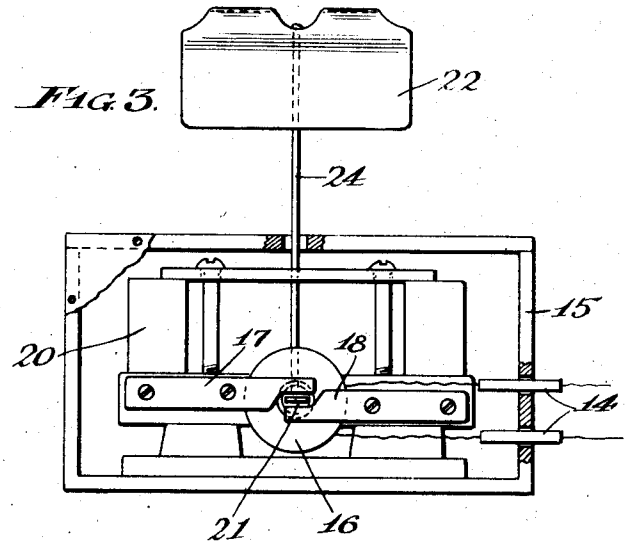

FIG. 4.

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UNITED STATES PATENT OFFICE

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DEVICE FOR ASSISTING HEARING

Application filed June 11, 1927, Serial No. 198,050. Renewed March 1, 1930.

This invention relates to devices for use by the deaf, and the object thereof is to accomplish and to improve hearing by conveying sound vibrations to the inner ear through the nerves and skull in order not only that hearing may be promoted but also that the effects so produced in the inner ear will have an exercising influence on the parts of the middle and outer ears, whereby continued use will gradually cause the latter to resume its normal function.

Briefly, the invention resides in combining a telephone transmitting unit of any ordinary or preferred construction with a mouthpiece adapted to be engaged between the teeth of the user, whereby the vibrations transmitted by the vibratory arm of the unit will be carried through the mouthpiece to the teeth, jaws and skull and thence to the inner ear. A microphone and a low voltage battery connected with the unit complete the equipment necessary for operation. The invention also resides in such other features of novelty as may be herein disclosed.

In the accompanying drawings wherein one embodiment of the invention is disclosed by way of illustration,

Fig. 1 is an elevation showing an entire assembly with the mouthpiece of the present invention in position between the user's teeth.

Fig. 2 is a plan view of the unit showing the location of the mouthpiece.

Fig. 3 is an end view thereof.

Fig. 4 is a detail of the mouthpiece.

In Fig. 1 the unit is shown as being connected in operative relation with a microphone or receiving instrument —M— of any construction (forming no part of the present invention) and a low voltage battery —B— which may conveniently be a radio "A"-battery, the conductors 11 and 12 connecting the same with the terminals 14 projecting through the casing 15 which houses a phone unit. This unit may comprise the usual coil 16 which leads to the terminals 14 and is disposed adjacent the pole pieces 17 and 18 mounted on the poles of a permanent horseshoe magnet 20, the usual vibrating arm 21 being mounted in the coil and extending in spaced relation between the extremities of the pieces 17 and 18.

A mouthpiece 22 is carried upon a rigid steel wire stem 24 mounted on the outer end of the arm, said mouthpiece being substantially U-shape in cross section and designed to be gripped between the teeth of the user.

In operation, the mouthpiece 22 is placed in the mouth and held between the teeth as indicated in Fig. 1, the engagement being either firm or rigid as desired. In this manner whatever vibrations are transmitted by the microphone to arm 21 of the phone unit under influence of the current from the battery —B—, are carried by the stem 24 and piece 22 to the teeth, jaw bones and skull which in turn transmit them to the vestibule of the inner ear, thus causing the subject to hear. While these vibrations are being recorded in the inner ear, they are at the same time forcing the middle ear into at least a small degree of activity, perhaps by sympathetic action or perhaps by pure mechanical effects or both. This action affects the nerves, muscles and blood vessels, and induces muscular action and renewed circulation.

Thus the transmitted vibration first attacks the inner ear and then forces the middle ear to become active. In this manner good hearing is first developed in that part of the ear of least resistance, that is, the inner ear. As the middle ear develops under this exercising influence, its hearing also is improved; then the outer ear is forced into some slight activity which gradually increases as time goes on. Finally the outer ear becomes sufficiently normal and active to function at least partially in its natural manner, and in many cases the instrument may then be abandoned. Thus, it becomes apparent that a two-fold purpose is served by the present device, namely, that of promoting hearing and that of developing the ear functions themselves and urging them back to normal.

What I claim is:

1. A device for promoting hearing in the deaf comprising a telephone unit having a vibratory arm, a mouthpiece carried by said arm to be engaged between the user's lips, and a microphone and a battery connected there-

with for transmitting impulses to said unit.

2. A device for promoting hearing in the deaf comprising a portable telephone receiving unit, an arm connected to said unit having a mouthpiece adapted to be held between the user's teeth, a microphone connected in circuit with said telephone unit, and a battery in said circuit for transmitting impulses through the microphone to said unit.

3. A device for improving hearing comprising a portable electric vibrating mechanism, an arm having a mouthpiece attached to said mechanism for transmitting the vibrations of said mechanism to the mouthpiece, a microphone connected in circuit with said vibratory mechanism, and a battery in said circuit for transmitting impulses to the vibratory mechanism.

In witness that I claim the foregoing I have hereunto subscribed my name this 12th day of May, 1927.

DE CLIFFORD PHIPPS.