

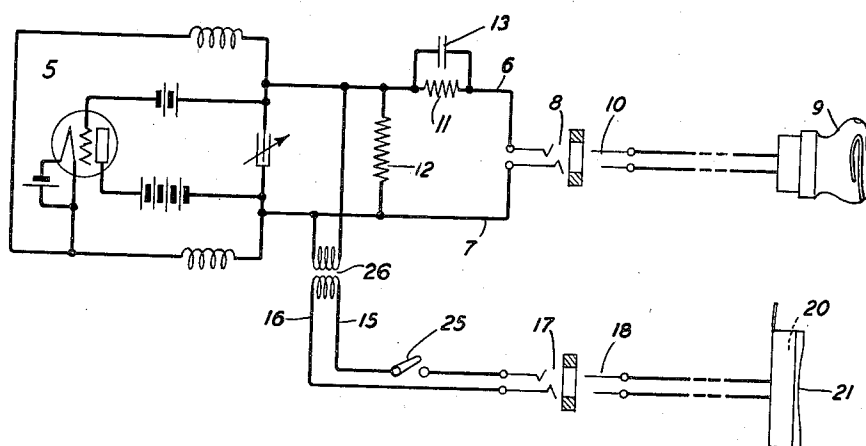
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METHOD FOR TESTING BONE CONDUCTION

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METHOD FOR TESTING BONE CONDUCTION

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1 Claim. (Cl. 128—2.1)

This invention relates to hearing tests and particularly to tests for measuring hard of hearing patients for a bone conduction receiver.

To determine the acuity of bone conduction in the poor ear, it is necessary to mask the good ear in some manner to render it impervious to the action of the bone conduction receiver on the mastoid eminence adjacent the ear under tests in order that the noise from the test will not reach the good ear either through the air or the osseous construction of the head.

The best method of masking the good ear against this condition is by the introduction of a tone into that ear which will provide the necessary masking effect and it has been determined that if this tone is a continuous one above the level of that applied to the bone conduction device and that of the bone conduction device is intermittent, the patient is able readily to distinguish what is perceptible in the poor ear.

The object of this invention is to provide a simple convenient apparatus by means of which the tests may be easily made in an efficient manner.

According to the general features of this invention a continuous tone is applied to the good ear of a patient through an air conduction receiver to mask that ear against an intermittent tone applied to a bone conduction receiver applied to the patient.

In the drawing which is a simple schematic of the apparatus and circuit for practicing this invention 5 designates a multiple frequency oscillator of well-known character provided with conductors 6 and 7 leading to jack connections 8 to which an air conduction receiver 9 such as shown in W. C. Jones patent 1,668,910 may be connected by means of a plug 10. Included in this circuit is a network comprising series and shunt resistances 11 and 12 and a capacity 13 the purpose of which will be hereinafter described.

Connected to the opposite conductors 6 and 7 are conductors 15 and 16 terminating in a jack 17 adapted to receive a plug 18 connected with a bone conduction receiver 20 which may comprise a case 21 adapted to fit against the mastoid eminence of the patient and an electromagnetic vibrating system adapted to respond to the voice frequency currents to vibrate the mastoid eminence located within the case. A manually oper-

ated key 25 located in the conductor 15 constitutes a means for interrupting the tone through the bone conduction receiver 20.

Inasmuch as the normal response characteristic of the air conduction receiver 9 is considerably above that of known bone conduction receivers and the responses of the two devices may vary for different frequencies, the network comprising the resistances 11 and 12 and the capacity 13 is inserted in the circuit in order to insure that the difference in level of the two devices will be about thirty (30) decibels in favor of the air conduction device at any of the applied frequencies. It is important that the level between the response of the two receivers be maintained always the same since it insures that the ear not being tested has sufficient sound in it to mask any sound produced by the bone conduction receiver.

It is also important that there be sufficient impedance in the circuit of the bone conduction receiver that the opening and closing of key 25 will not produce a flutter of sound in the air conduction receiver. This may be built into the bone conduction receiver or may be provided by means of a transformer 26 in the leads 15 and 16.

In the application of the apparatus for testing purposes the air conduction receiver 9 is placed in the good ear of the patient and the bone conduction receiver 20 against the mastoid eminence adjacent the poor ear. The tester adjusts the oscillator for the frequencies and volumes desired and operates the interrupting key 25 until the patient signifies what his reaction is to the interrupted tone. From the results thus obtained the tester is able to prescribe a bone conduction receiver of the best characteristics for the condition indicated by the patient's response to the test.

What is claimed is:

The method of determining the bone conduction response in the hard of hearing which comprises applying by air conduction to the good ear of the patient a steady tone of given frequency and volume and by bone conduction to the osseous structure adjacent the poor ear an interrupted tone of the same frequency but of lower volume and noting the reaction of the patient to the interrupted tone.

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