March 4, 1941. E. AZARETTI 2,233,506

TREATMENT OF VOCAL DEFECTS AND THE VOCAL ORGANS

Filed Oct. 2, 1939

Fig. 1

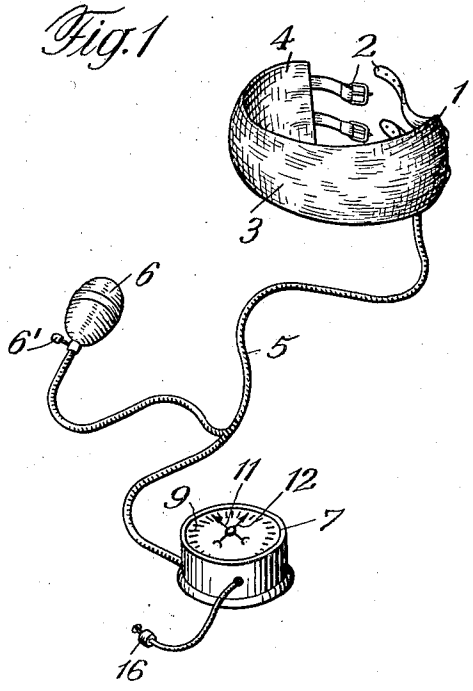


Fig. 3

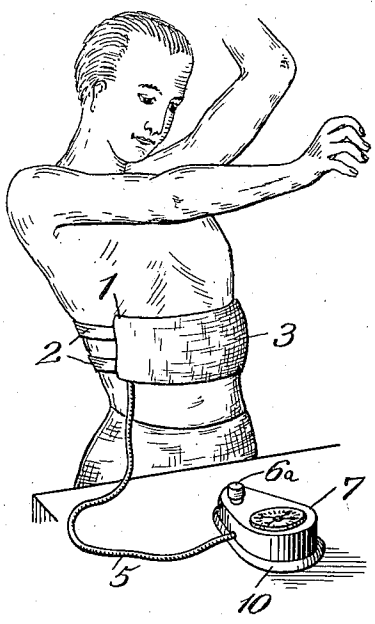
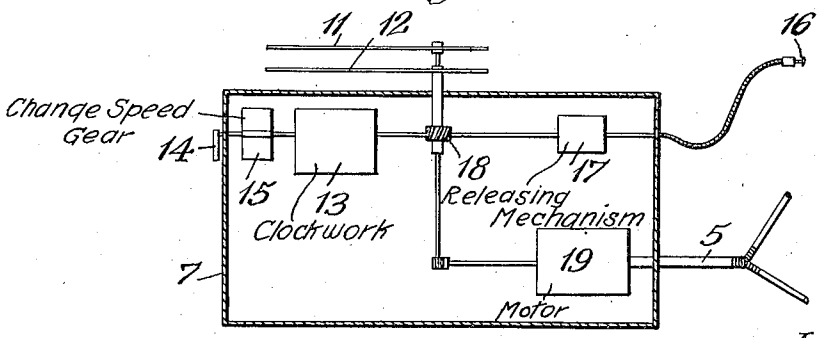


Fig. 2



Inventor:
Emilio Azaretti
By Sommers & Young
Attys.

Patented Mar. 4, 1941 2,233,506

UNITED STATES PATENT OFFICE

2,233,506

TREATMENT OF VOCAL DEFECTS AND THE VOCAL ORGANS

Emilio Azaretti, Ventimiglia, Italy, assignor to Schweizerische Gesellschaft der Kalophone Institute, Oberageri, Switzerland

Application October 2, 1939, Serial No. 297,598
In Switzerland September 15, 1938

4 Claims. (Cl. 128—2.08)

This invention relates to the treatment of stuttering and like vocal defects and to the strengthening of the vocal organs.

It is known that stuttering and like vocal defects are caused by faulty functioning of the diaphragm. This can be treated by appropriate exercising of breathing in conjunction with loud reading or exercising of speaking by which means at the same time weakness of the vocal organs can be treated.

Formerly, the patient in carrying out the exercising of breathing had, however, no control of the same even when the exercises had been prescribed by a trained professional. The treatment of the defect was, therefore, carried out arbitrarily for the most part and consequently often had no success even after a long duration.

This drawback is eliminated according to this invention by the provision of a device which comprises a bandage adapted to be tightened about the body of the patient at the region of the diaphragm and having an interior hollow space which is connected with a pressure indicating device for indicating the fluctuations of pressure of a pressure medium, filling this hollow space, as caused by the breathing of the patient.

This device permits the exercising of breathing to be controlled by the patient and by the instructor, due to the fact that the indications of the pressure indicating device are indicative of the pulsating movements which the patient undergoes in breathing and which can thus be checked. Accordingly, faulty breathing can be readily recognized and the exercising of breathing continued on a more scientific basis than hitherto, in consequence of which, the chances for expediting improvement are greater.

In the accompanying drawing an embodiment of the invention is illustrated by way of example only, in which—

Fig. 1 is a perspective view of the device according to the invention;

Fig. 2 is a vertical section of the pressure indicating device, and

Fig. 3 shows an elevational view of a modified device according to the invention during use.

A bandage 1 which can be tightened about the body of the patient at the region of the diaphragm by means of a strap closure 2 is provided with a hollow space which is formed by an outer rubberized layer 3 of fabric and an inner elastic layer 4 of rubber. The two layers 3, 4 are interconnected all around in such a way that the intervening hollow space holds tight against a pressure medium, such as compressed air. With this hollow space a hose 5 is connected which is provided with a compressible rubber bulb 6, acting as an air pump and provided with a valve 6', and being connected through a branch conduit with a pressure indicating device 7 of the kind of the usual pressure gauges. The device 7 has an indicator 11 which visually indicates the pressure of the air contained in the hose 5 on a scale 9.

In using the device, the bandage 1 is placed about the body of the patient by means of the strap closure 2 in such manner that the elastic wall portion of the hollow space is pressed against the region of the diaphragm, whereupon the air is pumped in the hollow space of the bandage by means of the rubber bulb 6 until the indicator 11 of the device 7 indicates a desired pressure. The device is then in condition for exercising. During the exercising, irrespective of whether the breathing is accompanied with speaking, the indicator of the pressure gauge oscillates over the scale 9 in accordance with the pulsations of breathing for the reason that these pulsations set up corresponding fluctuations of pressure in the air cushion of the bandage.

The indicator 11 of the pressure indicating device indicates the pulsations of breathing in visual manner by which means faulty respiratory movements are recognized and the defect of the patient can thus be determined as well as the measures to be taken for treating it.

For this purpose the following modified form of the pressure indicating device 7 is of particular advantage. As shown in Fig. 2, the casing of this form includes, apart from the auxiliary motor device 19 for transforming the fluctuations of pressure into mechanical movements of the indicator 11, a clockwork 13, having a speed regulating device similar to a change speed gear 15 adjustable by means of a handle 14, as well as a releasing mechansm 17 which can be controlled by a push button control 16. The releasing mechanism 17 controls the drive 18 associated with the clockwork 13 of an auxiliary indicator 12 which is movable in a plane parallel with the plane of movement of the primary indicator 11.

By means of the push button control 16 the releasing mechanism 17 can be set in motion for releasing the drive 18, whereupon the auxiliary indicator 12 is set in motion by the clockwork 13. Depending upon the adjustment of the regulating device 15 by means of the handle 14 which can be set to corresponding marks on the casing

of the device 7, the auxiliary indicator 12 moves continually or in steps at a corresponding velocity. By comparison of the movements of the primary indicator 11 caused by the respiratory movements of the patient with the movements of the auxiliary indicator 12 the rhythm of respiratory movement of the patient can be exactly determined and accordingly the proper mode of procedure in carrying out the exercises for treating the defect of the patient can be chosen. To this end it is necessary to ascertain whether the indicator 11 follows the movements of the indicator 12, taking place at a certain velocity, or not, that is, in which manner the movements of the two indicators differ from each other.

By means of the push button control 16 the auxiliary indicator 12 can be stopped and reset into zero position.

As shown in Fig. 3, the pressure indicating device 7 and a push button 6a for controlling the extent to which the bandage is pumped up are included in a common casing 10.

The pressure indicating device may have several scales which may be provided with numerals or characters or colored marks or the like.

The scale for indicating the movements of the indicators 11, 12 of the pressure indicating device may be arranged on a removable sheet so that this sheet can be exchanged for another sheet provided with a different scale.

The drive of the auxiliary indicator 12 may be derived from a part exteriorly of the casing of the pressure indicating device. Furthermore, the releasing mechanism 17 may be automatically adjustable. The pressure medium may be supplied by a branch connection of a pressure conduit instead of by a hand operated air pump.

The clockwork 13 may be provided with an electrical drive instead of with a mechanical drive.

I claim:

1. In a device for the treatment of stuttering and like vocal defects and the strengthening of the vocal organs of a patient, a bandage adapted to be tightened about the body of the patient at the region of the diaphragm thereof and having an interior hollow space, a pressure medium filling said hollow space, a pressure indicating device connected with said hollow space, an indicator provided in said pressure indicating device for indicating the fluctuations of pressure caused in said pressure medium by the breathing of the patient, an auxiliary indicator for indicating the movements of said pressure fluctuation indicator, and a power actuated drive for operating said auxiliary indicator.

2. In a device for the treatment of stuttering and like vocal defects and the strengthening of the vocal organs of a patient, a bandage adapted to be tightened about the body of the patient at the region of the diaphragm thereof and having an interior hollow space, a pressure medium filling said hollow space, a pressure indicating device connected with said hollow space, an indicator provided in said pressure indicating device, for indicating the fluctuations of pressure caused in said pressure medium by the breathing of the patient, an auxiliary indicator for indicating lapse of time, a power actuated drive for operating said auxiliary indicator, and a releasing mechanism for alternately setting in motion, stopping and resetting into zero position said auxiliary indicator.

3. In a device for the treatment of stuttering and like vocal defects and the strengthening of the vocal organs of a patient, a bandage adapted to be tightened about the body of the patient at the region of the diaphragm thereof and having an interior hollow space, a pressure medium filling said hollow space, a pressure indicating device connected with said hollow space, an indicator provided in said pressure indicating device, for indicating the fluctuations of pressure caused in said pressure medium by the breathing of the patient, an auxiliary indicator for indicating the movements of said pressure fluctuation indicator, and a clockwork for operating said auxiliary indicator.

4. In a device for the treatment of stuttering and like vocal defects and the strengthening of the vocal organs of a patient, a bandage adapted to be tightened about the body of the patient at the region of the diaphragm thereof and having an interior hollow space, a pressure medium filling said hollow space, a pressure indicating device connected with said hollow space, an indicator provided in said pressure indicating device for indicating the fluctuations of pressure caused in said pressure medium by the breathing of the patient, an auxiliary indicator for indicating the movements of said pressure fluctuation indicator, a clockwork for operating said auxiliary indicator, and a variable speed gear connected with said clockwork for driving said auxiliary indicator at different speeds, as selected.

EMILIO AZARETTI.