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ARTIFICIAL RESPIRATION TRAINING DEVICE

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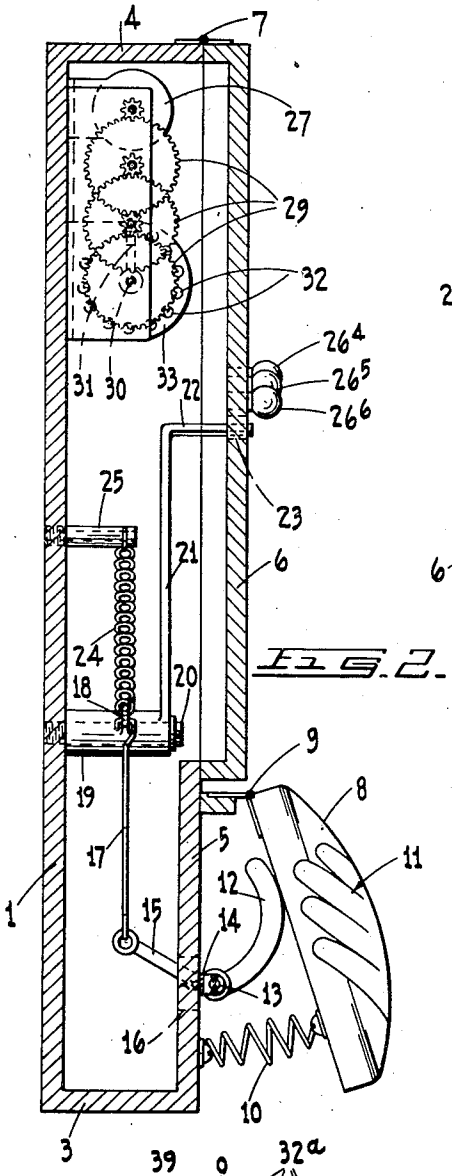


FIG. 2.

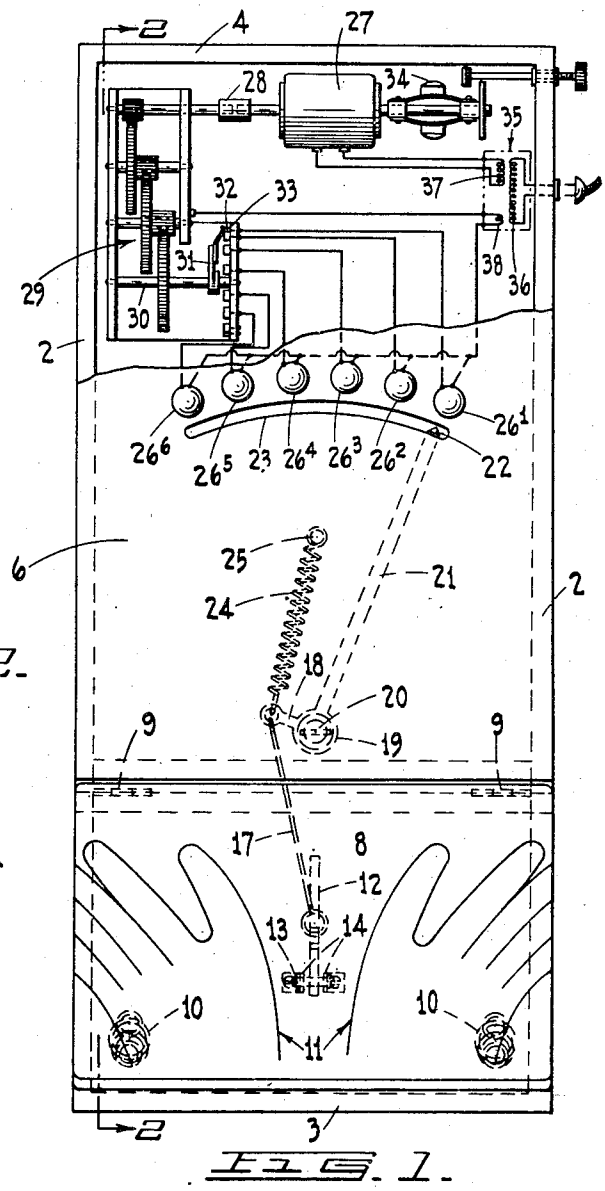


FIG. 1.

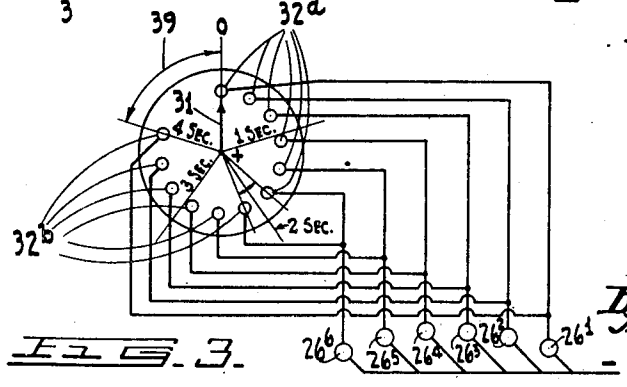


FIG. 3.

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ARTIFICIAL RESPIRATION TRAINING DEVICE

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6 Claims. (Cl. 35—17)

1

This invention relates to the instruction or training of persons in the performance of artificial respiration according to the Schafer method.

Applicant has found that it is advantageous to teach this method by first giving instruction with the aid of an apparatus which is so constructed that it enables the correct pressure and rhythm to be quickly and accurately learned.

The object of the invention is to provide a simple device to facilitate the teaching of artificial respiration by the Schafer method.

According to the best practice at present recommended this method calls for a succession of pressure strokes each followed by a relaxation of pressure. Increasing pressure is applied for about two seconds and after a slight pause the pressure is gradually relaxed during a further two second period, after which there is an idle period of one second before the next pressure stroke is begun.

According to the present invention means are provided to give a visual indication of the correct rhythm, and the pupil manipulates a pressure member, the movement of which causes a pointer to move. The pupil endeavours to synchronize the movement of the pointer with the moving visual indication and in this way he gains practice in the application of the correct pressure and in the proper rhythm.

The visual indication of the correct rhythm may conveniently take the form of a series of lamps and means for causing the lamps to flash successively, first in one direction and then in the other.

The invention consists in the construction, combination and arrangement of parts hereinafter fully described and more particularly described in the appended claims.

Referring now to the accompanying drawings which illustrate by way of example one form of the invention,

Figure 1 is a plan view partly broken away,

Figure 2 is a sectional elevation on the line 2–2 of Figure 1, and

Figure 3 is a diagram showing one form of the electrical connections.

The illustrated form of the invention comprises a shallow rectangular box comprising a bottom wall 1, vertical side walls 2, end walls 3 and 4, and a top wall 5, which extends only part way from the end wall 3. A rectangular cover member 6 is hinged to the end wall 4 at 7, and covers the space between the end wall 4 and the top wall 5.

A manually operated pressure member 8, which

2

may be suitably padded, is hinged in any convenient manner as at 9 on a transverse member mounted on the top wall 5. Compression springs 10 are arranged between and secured at their ends to the wall 5 and the pressure member 8, and the correct position of the pupil's hands is preferably indicated by means of outlines of the hands as indicated at 11.

Under the member 8 is mounted a curved lever 12 which is pivoted on a pin 13 journalled in bearing members 14 mounted on the wall 5. Attached to the lever 12 at a suitable angle is an arm 15 which extends through a slot 16 in wall 5. A link 17 connects the free end of the arm 15 to an arm 18 carried by a sleeve 19 which is journalled on a post 20 mounted on the bottom wall 1. The sleeve 19 also carries a finger or pointer 21 which is offset at its upper end as at 22, this offset end being arranged to project into or through an arcuate slot 23 in the cover member 6. The centre of curvature of the slot 23 is coincident with the axis of the post 20.

A light tension spring 24 connects the arm 18 to a fixed point such as a post 25 mounted on a bottom wall 1.

On the cover member 6 adjacent the slot 23, there is mounted a battery of six electric lamps 26^1 to 26^6. These lamps are equally spaced from one another and are positioned on a line concentric with the slot 23. Means are provided for causing the lamps to flash in succession, intermittently, at the required, equally-spaced intervals of time, and in the illustrated form of the invention, these means comprise an electric motor 27, the shaft of which is connected through any suitable coupling 28 to a train of reduction gearing 29. The shaft 30 which carries the last gear of the train rotates at the desired speed, the gearing preferably being such as to cause the shaft 30 to rotate once every five seconds. The shaft 30 carries a contact arm 31 which co-acts with a succession of stationary contacts 32 arranged in a circle and mounted on a vertical wall 33. The contacts 32 are electrically insulated from the wall 33 or the wall may be made of insulating material. The contacts 32 are 12 in number arranged in two groups indicated at 32^a and 32^b respectively, and are equally spaced around four-fifths of a circle. As will be seen from Figure 3, one pair of the contacts 32^a and 32^b is connected to the lamp 26^1, the next pair is connected to the lamp 26^3, and so on.

Suitable means are provided for controlling the speed of the motor 27, a mechanical governor 34 being shown for this purpose. It will be un-

derstood, however, that the motor speed may be controlled by means of a suitable resistance if desired. Current may be supplied to the motor 27 and the lamps 26 by means of a transformer 35 which comprises a primary winding 36, a secondary winding 37 connected to the motor and a secondary winding 38, one end of which is connected to one terminal of each of the lamps 26 while the other end is connected to the contact arm 31 shown in Figure 1. Any suitable catches or fastening means, not shown, may be provided for holding the cover 6 in its closed position.

The operation of the invention is as follows:

The motor is started by connecting the electrical power to the primary of the transformer 35 and this causes the motor to rotate and the contact arm to revolve and sweep successively over the contacts 32^a at a constant speed of one revolution each five seconds. By reference to Figure 3 it will be seen that this action will cause the lamps 26^1 to 26^6 to flash successively at equal intervals of time, the first series of six flashes occupying a little less than two seconds. The arm 31 then sweeps over the second series of contacts 32^b and causes the lamps to flash successively in the opposite direction, that is from lamp 26^6 to lamp 26^1. The arm 31 then passes idly over a space indicated at 39 representing a time interval of one second. This cycle of operations is then repeated as long as the motor is running. The gear train 29 and governor 34 are not described in detail as their construction and operation will be clear to those skilled in the art.

The pupil kneels on the floor, with the device lying in front of him, and places his hands on the pressure member 8 in the position indicated by the outlines 11 and by pressing on the member 8 causes movement of the pointer 22. It will be seen from Figure 2 that pressure on the member 8 causes the lever 12 and its arm 15 to rock on the pivot 13. A corresponding movement is transmitted to the pointer 22 through the link 7 against the action of the spring 24. When the pressure on the member 8 is relaxed the springs 10 restore the member to its initial position and the spring 24 returns the pointer 22 to its original position.

The pupil seeks to time the pressing and relaxing movements on the member 8 so as to cause the movement of the pointer 22 to synchronize with the flashing lamps and when he succeeds in doing this he is performing the correctly timed movements as required for artificial respiration. The springs 10 are of such strength that the pressure required to depress the member 8 is similar to the pressure which should be applied to the body in the actual practice of artificial respiration.

It is to be understood that the foregoing description and accompanying drawings are given by way of illustration only and that any modifications within the scope of the appended claims may be resorted to without departing from the invention. For example, the driving of the contact arm can be accomplished by means of a clockwork motor instead of an electric motor if desired and in places where electric power is not available this modification would be necessary. In that event dry cells would be provided for lighting the lamps. Also, as will be obvious, the construction and arrangement of the pointer and its operating mechanism can be modified in many different ways. While six lamps have been illustrated it will be obvious that any other convenient number may be employed in which event the number and spacing of the contacts 32 will be correspondingly rearranged.

What I claim is:

1. An artificial respiration training device comprising a series of electric lamps, means for supplying electric current to said lamps, a constant speed prime mover, a commutating device driven by said prime mover and arranged to cause said lamps to flash in succession at a predetermined speed first in one direction and then in the other, followed by a predetermined pause in the flashing, a movable indicating device, spring means, and a member manually operable against the action of said spring means to cause movement of the free end of said movable indicating device along a line parallel to that of said successively flashing lamps.

2. A training device as claimed in claim 1 wherein said movable indicating device is pivotally mounted and the series of lamps is arranged along an arcuate line whose centre of curvature is coincident with the pivotal axis of said indicating device.

3. A training device as claimed in claim 1 wherein reduction gearing is interposed between said prime mover and said commutating device.

4. A training device as claimed in claim 1 wherein said commutating device comprises a succession of stationary contacts arranged in a circle and a revolving contact co-acting with said stationary contacts and driven by said prime mover through reduction gearing.

5. A training device as claimed in claim 1 wherein the manually operable member comprises a substantially rectangular padded device pivotally mounted on a horizontal axis.

6. An artificial respiration training device as claimed in claim 1 wherein the lamps and indicating device are mounted on a box and wherein the manually operable member is pivotally mounted adjacent one end of said box and wherein a lever, positioned beneath said manually operable member and operable therewith, connects with said indicating device, wherein compression springs are positioned between said manually operable member and said box and operate against said manually operable member and wherein a second spring, operable against said lever and said indicating device, is constantly tending to move said indicating device toward its idle position.

HARRY CHURCH.

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