United States Patent [19]

Bradley

[11] **3,794,023**

[45] **Feb. 26, 1974**

[54] **THERAPEUTIC APPARATUS FOR THE RETARDATION OF EMPHYSEMA**

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[22] Filed: **Mar. 21, 1973**

[21] Appl. No.: **343,215**

[52] **U.S. Cl.** ..... **128/68,** 128/24 R

[51] **Int. Cl.** **A61f 5/00**

[58] **Field of Search** ... 128/24 R, 68, 70; 272/54, 55

[56] **References Cited**

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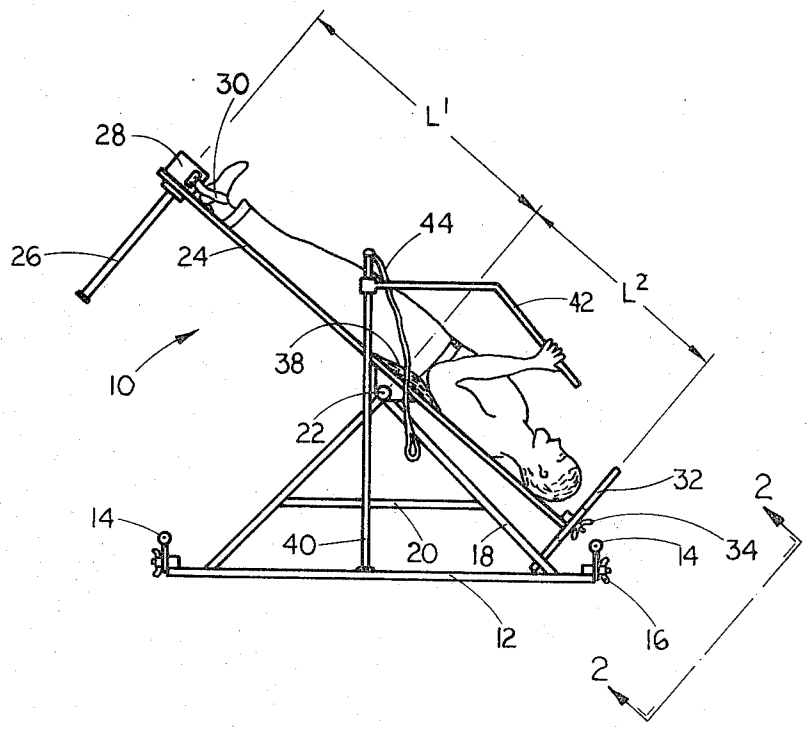
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[57] **ABSTRACT**

An emphysema retarding apparatus comprising a tilt board on which a patient may position himself at a rather steep angle of inclination with his head lowermost. A handle bar extending generally parallel to the head end of the board provides leverage to enable a patient to lower and raise the board from and to a generally horizontal position, with little effort, due in part to a container of counterweights. An adjustable stop at the head end controls the maximum angle of inclination.

5 Claims, 2 Drawing Figures



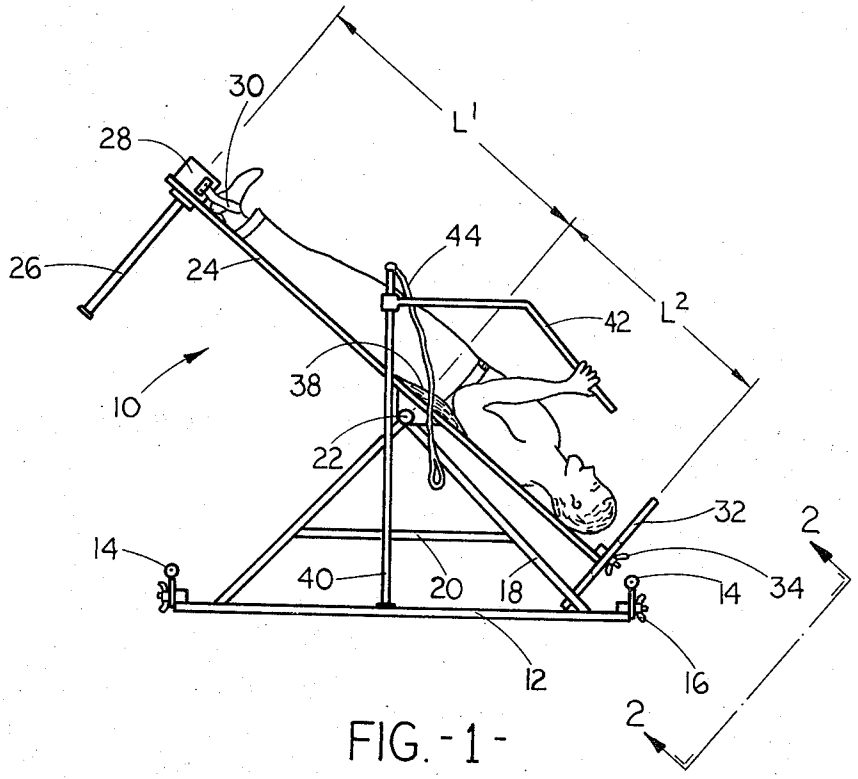


FIG.-1-

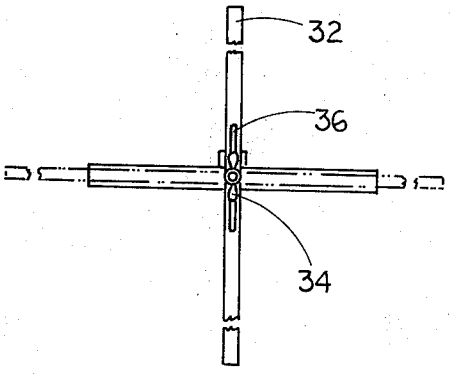


FIG.-2-

THERAPEUTIC APPARATUS FOR THE RETARDATION OF EMPHYSEMA

BACKGROUND OF THE INVENTION

A patient suffering from emphysema and related chronic obstructive lung diseases may become dyspneic as a result of obstructions of the bronchial tubes. Such a patient may frequently have to assume a position wherein his upper torso and head are inverted so that gravity would operate to drain the bronchial tubes. However, attempts to assume such a position without the aid of satisfactory support equipment may result in discomfort and often dizziness. By the same token, efforts to accomplish this by use of available support surfaces, such as a sofa or a bed do not seem to promote enough drainage to relieve the obstructed condition.

OBJECTS OF THE INVENTION

It is an object of this invention to provide a postural drainage apparatus to retard the progress of chronic destructive lung diseases.

It is an object of this invention to provide an emphysema retarding apparatus to facilitate the drainage of bronchial tubes through gravity.

It is a further object of this invention to provide a tilt board that will support an emphysema patient in relative comfort at a relatively steep angle.

It it a further object of this invention to provide an emphysema retarding apparatus which may be easily manipulated by the patient and which will produce effective drainage of the bronchial tubes.

It is a further object of this invention to provide an emphysema retarding tilt board which may be manipulated to tilt a patient back with his head lowered at a relatively steep angle.

It is a further object of this invention to provide an emphysema retarding tilt apparatus which is easily and conveniently mounted but which can tilt a patient to an inverted position at a controlled angle of inclination.

Other objects and advantages of this invention will become apparent from the description to follow when read in conjunction with the accompanying drawings.

BRIEF SUMMARY OF THE INVENTION

In carrying out this invention, I provide a postural drainage apparatus comprising essentially a tilt board which is pivotally mounted on a support base and of sufficient strengthened dimension to support a human lying prone thereon. A container carried at the foot end of the board is adapted to receive counterweights to oppose the force of gravity acting on the upper torso and thereby to ease the tilting movement from a normal, nearly horizontal position to an effective drainage position wherein the body is positioned head down at an angle of approximately 45°. A hand control bar extends along side the tilt board and substantially parallel thereto and may be readily grasped by the patient to lower himself into the drainage position and to raise himself up to the nearly horizontal position. While in the drainage position, a pair of strong, heavily padded straps grip him around his insteps to hold him securely in place. At the foot end of the board a stop member limits the pivotal movement of the board to nearly horizontal position while at the head end of the board there is an adjustable stop member by which the maximum angle of inclination may be controlled. A pad may be placed at or near the center of the board to further elevate the buttocks of the patient.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a side elevational view of my emphysema retarding tilt board; and

FIG. 2 is an end view taken along line 2—2 of FIG. 1.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings with greater particularity, the emphysema retarding tilt board of this invention 10 includes a base 12 on the corners of which are carried wheel or castor assemblies 14 which may be lowered, as by adjustment of a thumb screw 16 to facilitate movement of the apparatus. Carried on the base 12 are upright support members 18 which may be of an A-frame configuration with a strengthening cross member 20.

Pivotally mounted at 22 on the A-frame support members is a tilt board 24 of adequate strength and dimension to support a person lying prone thereon as shown.

Depending from the foot end of the board is a fixed stop member 26 which is approximately as long as the A-frame support members 18 are high whereby the normal position of the tilt board 24 is in approximately a horizontal position making it easier for the patient to mount the board and position himself thereon. Also at the foot end of the board is a box or other suitable container 28 in which may be carried counterweights to partially balance the weight of the person lying on the tilt board 24. Since the pivotal movement of the board 24 starts from a near horizontal position, the effort of lifting the counterweight at the foot end container 28 from floor level is not encountered. Secured to the tilt board at the foot end thereof are straps 30 which are adapted to engage around the feet of a patient and hold him securely in place to prevent him from sliding down along the board 24. The side of the counterweight container 28 may also function as a support, or brace, for the patient's feet, particularly when first mounting the board 24. The straps are preferably of rugged construction and may be reinforced with wire of other strength members. Preferably also they are heavily padded for maximum comfort of the patient.

At the head end of the tilt board 24 there is carried an adjustable stop bar 32 which may be secured to the board 24 as by engagement of a thumb screw 34 in a longitudinal slot 36 in the bar 32. Hence, by adjusting the thumb screw along the slot, the maximum angle of inclination can be adjusted to suit the requirements and comforts of the patient. Tests show that optimum results are achieved for emphysema patients in producing drainage of the bronchial tubes by setting the angle of inclination at a range between 30° and 60° and preferably at an angle of approximately 45°. I have also found that bronchial tube drainage is further facilitated by placement of a pad or a cushion 38 below the buttocks of the patient.

Support on the base 12 and extending upright therefrom and displaced laterally a short distance from the tilt board is a support staff 40 from which there is extended a manual control arm 42. The control arm 42 extends generally horizontally from the support staff 40

and then slopes downward at an angle of approximately 45°, i.e. the preferred maximum angle of inclination. With the control arm so disposed, the patient may easily reach up and grasp it as shown to pull himself into the normal, approximately horizontal position or to lower himself into the inclined position shown. While the board is at or near a near horizontal position, the patient may, if desired, grasp the horizontal extent of the control bar for convenience. In addition, I may also provide a pull rope **44** which may be grasped as an alternative tension device to help counter the effects of gravity and to retard the movement of the board between its horizontal and inclined positions. To offer further security to the patient to enable him to gain self-confidence in use of the tilt board, the leg of the A-frame **18** may be grasped to control board movement adjacent to the maximum angle of inclination.

Performance of the self-lifting procedures just described are rendered less strenuous by the provision of counterweights in the box **28** at the foot end of the board. In addition, I prefer to mount the board on the pivot **22** so that the foot end of the board is of a greater length 1^1 than the head end 1^2. Hence, the counterweights in the box **28** amounting to approximately one-tenth of the weight of the person acting over the longer moment arm 1^1 at the foot end of the pivot **22**, there is provided adequate counter balance for a patient whereby he may with little physical effort gently lower himself to the inclined position and raise himself back up to the horizontal position after completion of the drainage operation.

I have found that use of my apparatus to lower myself to an inverted position at about 45° where I remain for periods of 15 to 20 minutes two or three times a day has greatly relieved a congested condition and has enabled me to perform physical activities which were far beyond my capacity prior to use of the apparatus.

While this invention has been described in conjunction with preferred embodiments thereof, it is obvious that modifications and changes therein may be made by those skilled in the art without departing from the spirit and scope of this invention.

What is claimed is:

1. Emphysema retarding apparatus comprising:
a base adapted for support on a horizontal surface;
a tilt board pivotally carried on said base and adapted to support a person lying thereon;
a container on the foot end of said board for receiving counterweights;
a side of said container facing the head end of said board being adapted for engagement by the feet of said person;
means adjacent said container for securing the feet of said person to said foot end;
a first stop member at said foot end to limit pivotal movement thereof to approximately a horizontal position;
an adjustable stop member at the head end of said board to control the maximum angle of inclination thereof to a selected angle over a range thereof between 30° and 60°;
a lift bar extending along and above the head end of said board to be grasped by said person to facilitate raising and lowering said head end; and
a portion of the length of said lift bar extending along said maximum angle of inclination.

2. The apparatus defined by claim **1** wherein:
said adjustable stop member controls the maximum angle of inclination of said head end to between 40° and 50°.

3. The apparatus defined by claim **1** wherein:
the tail end of said board is longer than the head end thereof.

4. The apparatus defined by claim **1** including:
a pad secured to said board in a position to engage under the buttocks of said person.

5. The apparatus defined by claim **1** including:
support wheels on said base; and
means for selectively lowering and raising said support wheels between active and retracted positions.

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