United States Patent [19]

Bruno et al.

[11] **3,775,781**

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[54] **PATIENT TURNING APPARATUS**

[76] Inventors: **Joan F. Bruno,** 2668 6th Ave.; **Richard E. Pietras,** 6917 Lipman St., both of San Diego, Calif.

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[52] **U.S. Cl.** ..... **5/61,** 5/81 R, 5/348

[51] **Int. Cl.** **A61g 7/10,** A61g 7/00

[58] **Field of Search** 5/61, 68, 81, 88, 5/91, 348; 291/253; 128/33

[56] **References Cited**

UNITED STATES PATENTS

3,477,071	11/1969	Emerson	5/61
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Primary Examiner—Casmir A. Nunberg
Attorney—Richard K. MacNeil

[57] **ABSTRACT**

A patient turning apparatus, for operation by a patient, in which a two-sectioned air mattress is placed on a patient's bed having a width generally conforming to the width of the bed and a length terminating at the patient's shoulders and calves. Each section of the air mattress is coupled through a different solenoid operated valve to a source of air pressure. A switch box disposed above the patient's head, having coded buttons, operates the solenoids and allows the patient to inflate either side, effecting a turn either to the left or right, with a third control for exhausting both sections of the air mattress when desired.

3 Claims, 4 Drawing Figures

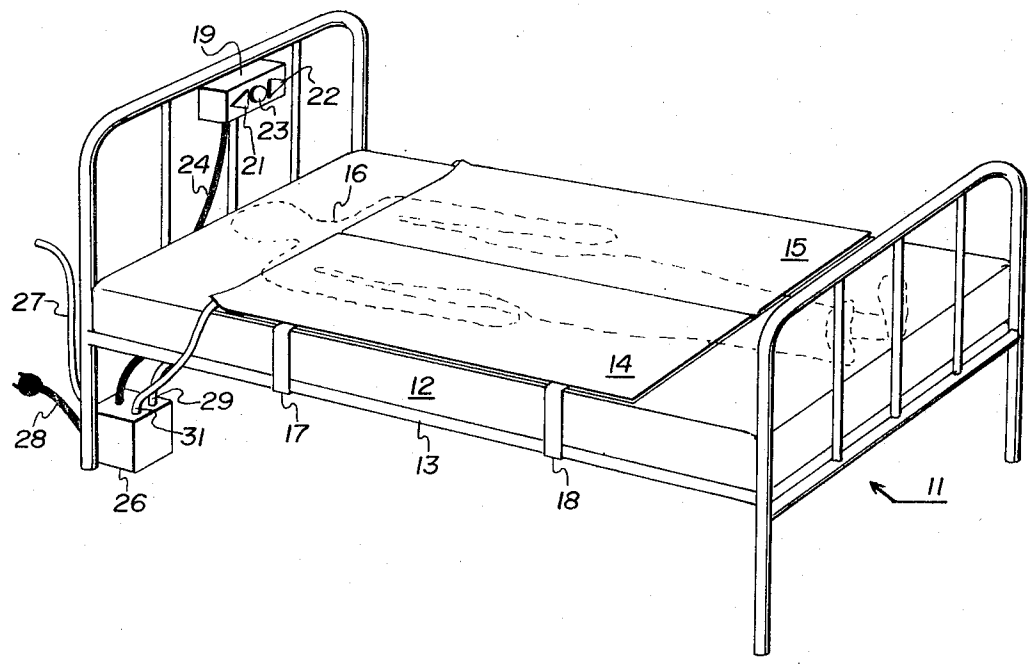
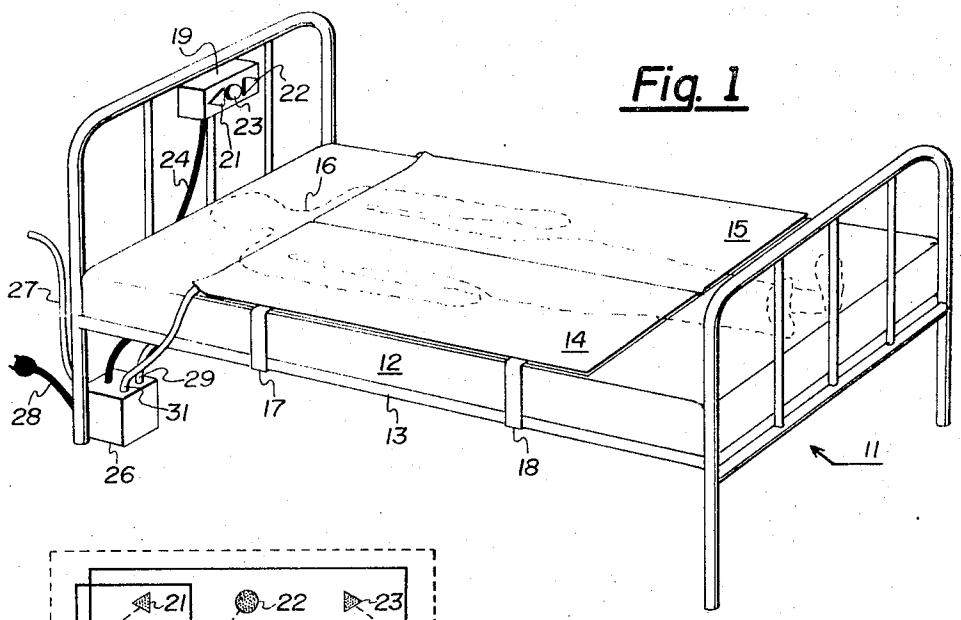


Fig. 1



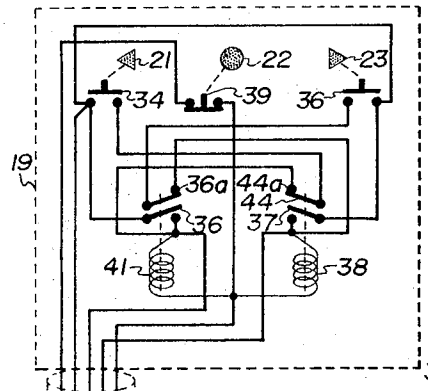


Fig. 2

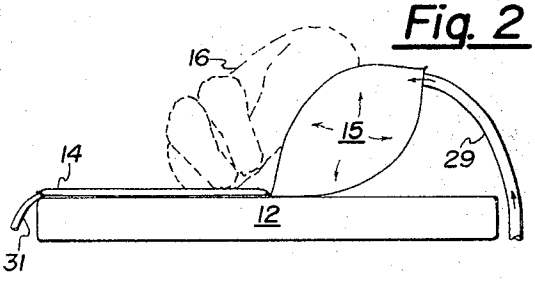


Fig. 3

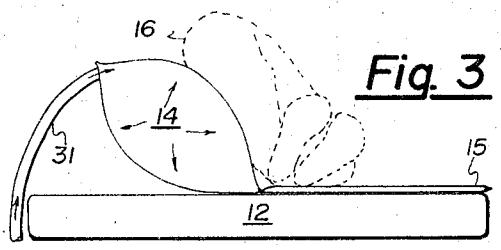
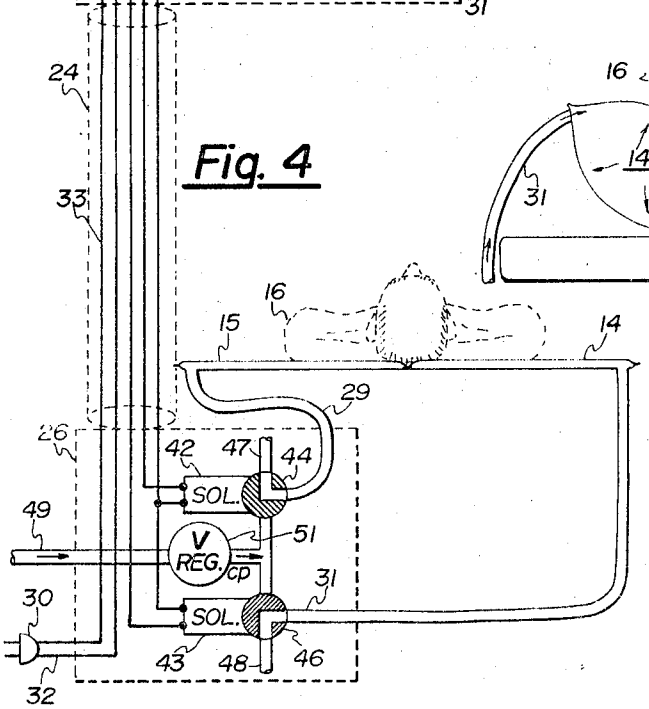


Fig. 4



INVENTOR.
JOAN F. BRUNO
BY RICHARD E. PIETRAS
Richard K. Macneill

PATIENT TURNING APPARATUS

RELATED PATENTS

The following patents were turned up by a patentably search of the prior art: U.S. Pat. Nos. 3,477,071; 3,485,240; 2,649,595; 3,526,908; 2,769,182; and 1,772,310.

BRIEF DESCRIPTION OF THE INVENTION

The present invention relates to a patient turning apparatus and more particularly to a patient turning apparatus which can be operated by the patient.

According to the invention,a patient turning apparatus is provided having an air mattress with left and right sections thereon for placing on a patient's bed. The patient will typically be lying in the center where the two sections are joined. Should the patient desire to turn to the right, the left section will be inflated through a solenoid operated valve having a control button disposed within easy reach of the patient. A second solenoid operated valve inflates the opposite section turning the patient in the opposite direction. A third control button deflates both sections simultaneously when desired.

An object of the present invention is the provision of an improved patient turning apparatus.

Another object of the invention is the provision of a patient turning apparatus which can be conveniently operated by the patient.

A further object of the invention is the provision of a patient turning apparatus which does not interfere with the patient's head or feet.

Yet another object of the invention is the provision of a patient turning apparatus which is simple and inexpensive to manufacture and extremely convenient in use.

Other objects and many of the attendant advantages will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accom-panying drawings in which like reference numerals designate like parts through-out the FIGURES whereof and wherein:

FIG. 1 is a perspective view of the present invention in situ;

FIG. 2 is a schematic representation of the present invention utilized in turning a patient in one direction;

FIG. 3 is a schematic view illustrating the present invention turning the patient in a second direction; and

FIG. 4 is a schematic representation showing the control circuitry of the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE DRAWING

Referring to FIG. 1, a bed is shown generally at 11,having a mattress 12 on a frame 13. An air mattress having sections 14 and 15 is shown disposed on top of mattress 12 with a patient 16 illustrated in phantom on top of the two sectioned air mattress. Air mattress 15 is secured to mattress 12 by straps 17 and 18. Control box 19 has a right turn switch 21,a left turn switch 22 and a stop button 23. Control box 19 has an electric cable 24 coupled to solenoid box 26. Solenoid box 26 has an air input line 27,electric input line 28, and air output lines 29 and 31.Air output lines 29 and 31 are coupled to sections 15 and 14,respectively.

Referring to FIG. 2,mattress 12 is shown with inflatable sections 14 and 15 of the air mattress. Sections 14 and 15 have intake lines 31 and 29, respectively.Section 15 is shown with arrows indicating air pressure therein and is inflated turning patient 16 on one side.

Referring to FIG. 3,mattress 12 is shown with air mattress sections 14 and 15 thereon with air intake line 31 inflating section 14 and turning patient 16 at opposite direction then that of FIG. 2.

Referring to FIG. 4,electrical plug 30 couples input power to lines 32 and 33.Line 32 is connected to one side of switches 34 and 36 and to contact 37 on solenoid 38. Line 33 is coupled through stop switch 39 to one side of solenoids 38 and 41 and to one side of solenoids 42 and 43. Line 32 is also coupled to the other side of switch 39.

Contact 36A of solenoid 41 is coupled to another side of solenoid 38. Contact 44 of solenoid 38 is connected to another side of switch 34 and contact 44 A of solenoid 38 is connected to another side of solenoid 41. Another side of 38 is connected to another side of valve solenoid 42 and another side of solenoid 41 is connected to another side of valve solenoid 43.

Valve solenoids 42 and 43 actuate solenoid valves 44 and 46,respective-ly. Solenoid valves 44 and 46 have exhaust lines 47 and 48,respectively, and intake lines coupled to pressure input line 49 through regulator 51. Solenoid valves 44 and 46 have exhaust lines 29 and 31 coupled to air mattress sections 15 and 14. A patient 16 is shown lying on top of sections 14 and 15.

OPERATION

Referring now to all of the FIGURES and particularly to FIG. 4 a sequence of operation will be described. Quiescently electrical power is applied through plug 30 to input leads 32 and 33. Input lead 33 can be considered the return lead and supplies one side of the line through stop switch 39 to the lower ends of solenoids 38 and 41 and to the lower ends of valve solenoids 42 and 43.

Lead 32,which can be considered the hot side,applies power to open turn switches 36 and 39 which when depressed actuates either relay 38 through back contacts 36A of solenoid 41 or relay 41 through back contact 44A of solenoid 38. In this manner when solenoid 38 or 41 is actuated the other one can not be actuated because of the break in the back contact circuit. When either solenoid 38 or 41 is actuated holding contacts 37 or 36,respectively,keep that solenoid in actuation until the return circuit is broken via stop switch 39.

When solenoid 38 is actuated through turn switch 36,valve solenoid 42 is simultaneously thrown,opening solenoid valve 44 to the path from input line 49 regulator 41 and pressure line 29 to section 15 of the air mattress. This will inflate section 15 and turn the patient as indicated in FIG. 2.When it is desired to deflate section 15 stop button 39 is depressed denergizing solenoids 38 and 42,which exhaust section 15 through exhaust line 47 of solenoid valve 44. When turn switch 34 is depressed solenoid 41 is actuated through contacts 44A of solenoid 38 and simultaneously valve solenoid 43 is actuated opening valve 46 through regulator 51 into pressure line 31 which inflates section 14 of the air mattress and turns the patient as illustrated in FIG. 3.

Referring particularly to FIG. 1 it is emphasized that sections 44 and 15 of the air mattress have a length dimension for excluding the head and feet portions of the patient in the turning operation.This means that the feet are free to move in any manner the patient desires

and a pillow is not affected by the inflation of either section.

It should be understood,of course,that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purposes of the disclosure which do not constitute from the departures from the spirit and scope of the invention.

The invention claimed is:

1. A patient turning apparatus comprising:

an air mattress having first and second longitudinal sections symmetrically disposed on each side of a longitudinal axis and dimensioned for receiving a patient thereon and for resting on a top surface of a mattress, the said first and second sections terminating at the patient's shoulders and calves;

a source of air pressure;

at least one solenoid actuated valve coupling said source of air pressure to said first and second sections; and

first and second switches in operable proximity to said patient for actuating said first and second solenoid actuated valves.

2. The patient turning apparatus of claim **1** wherein:

said at least one solenoid actuated valves have an exhaust position for deflating said first and second sections.

3. The patient turning apparatus of claim **2** and further including:

an exhaust button mounted in proximity to said patient and coupled to said at least one solenoid actuated valves for deactivating said at least one solenoid actuated valves and thereby deflating said at least one valves.

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