

Sept. 18, 1928.

O. P. SPILMAN

1,684,459

TENSION AND PHYSIO-THERAPY TABLE

Filed Feb. 15, 1926

3 Sheets-Sheet 1

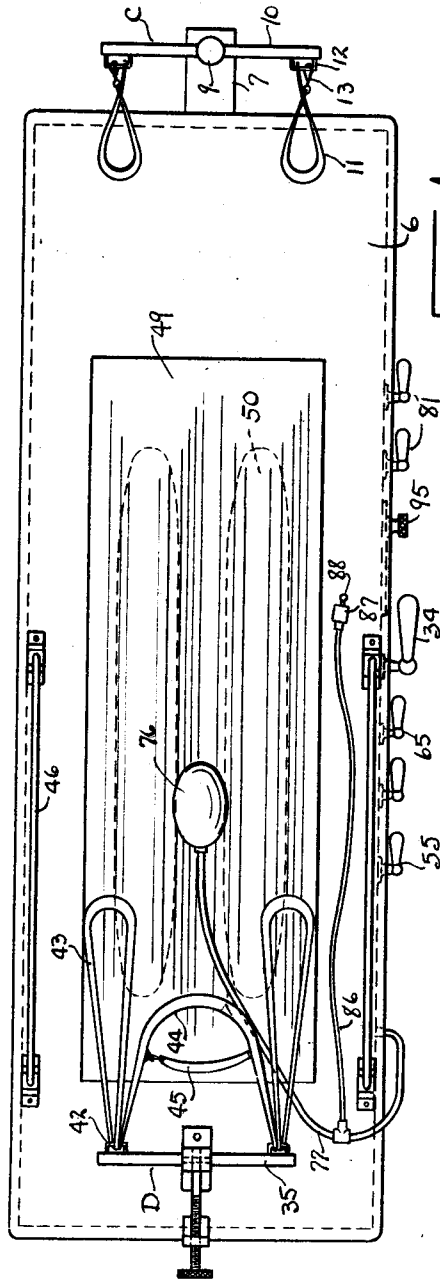


Fig. 1.

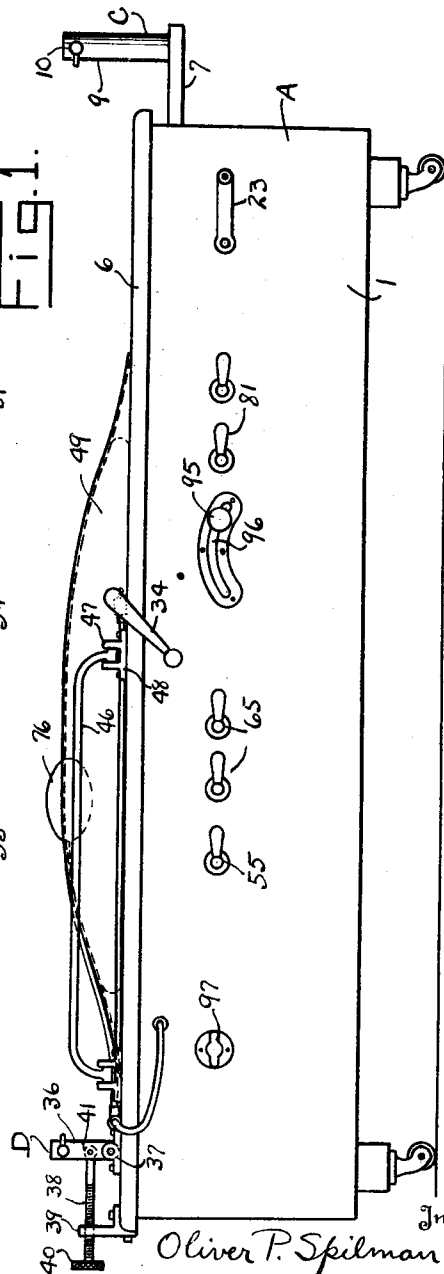


Fig. 2.

Oliver P. Spilman

Inventor

334

Jesse R. Stone

Attorney

Sept. 18, 1928.

1,684,459

O. P. SPILMAN

TENSION AND PHYSIO-THERAPY TABLE

Filed Feb. 15, 1926

3 Sheets-Sheet 2

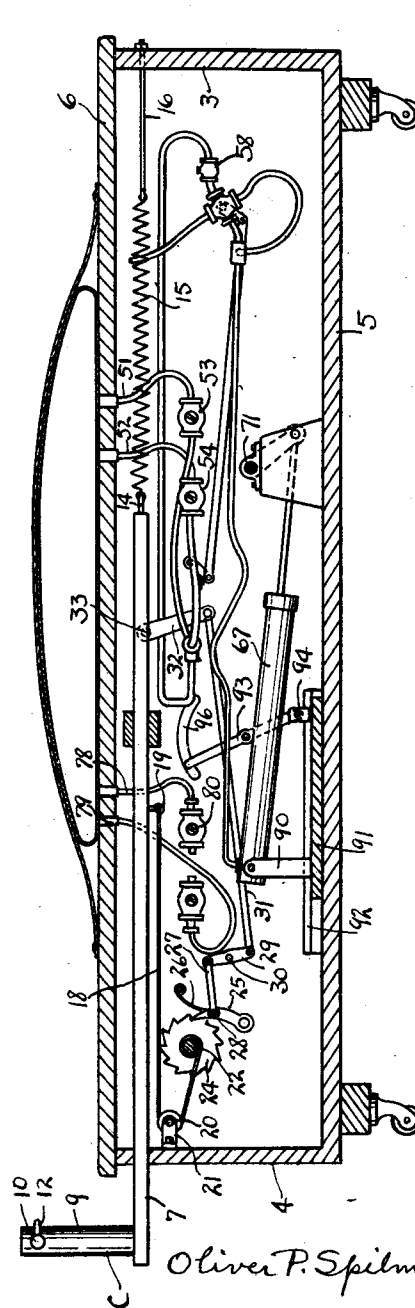
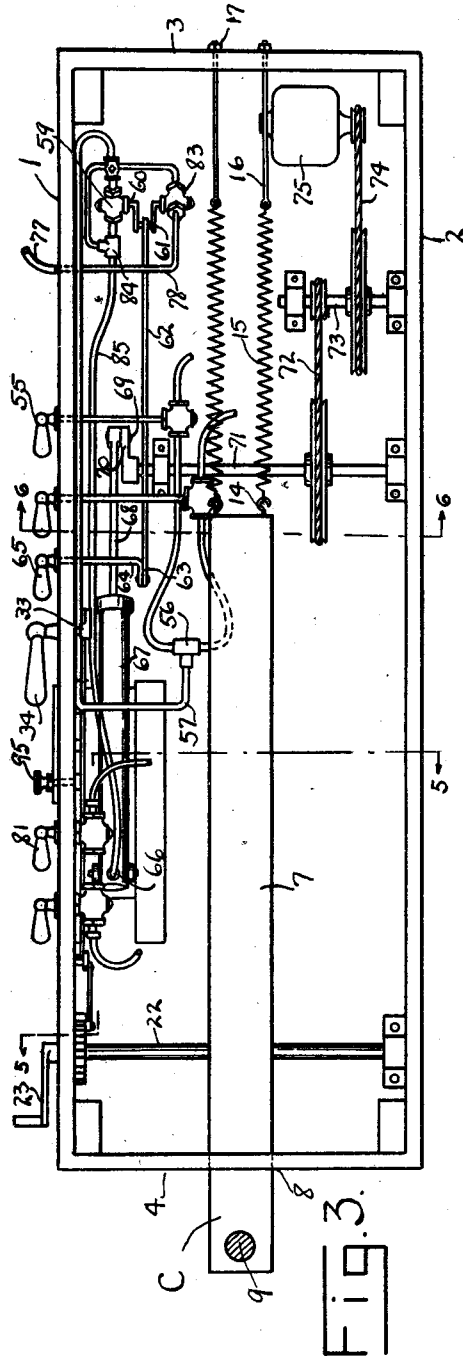


FIG. 4.

Inventor
Oliver P. Spilman

334

Jesse R. Stone

Attorney

Sept. 18, 1928.

1,684,459

O. P. SPILMAN

TENSION AND PHYSIO-THERAPHY TABLE

Filed Feb. 15, 1926

3 Sheets-Sheet 3

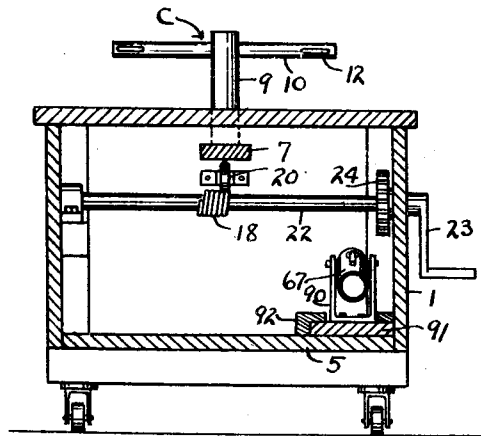


Fig. 5.

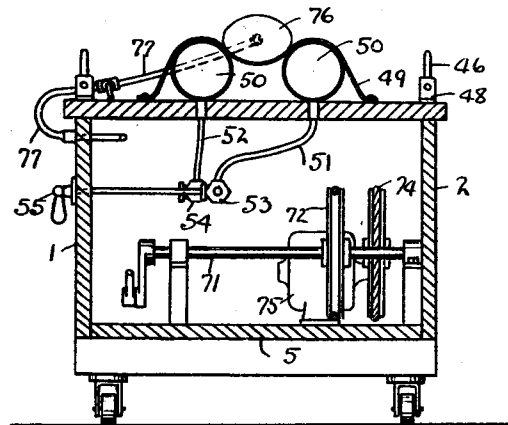


Fig. 6.

Oliver P. Spilman Inventor

384 Jesse R. Stone

Attorney

UNITED STATES PATENT OFFICE.

OLIVER P. SPILMAN, OF HOUSTON, TEXAS.

TENSION AND PHYSIOTHERAPY TABLE.

Application filed February 15, 1926. Serial No. 88,210.

My invention relates to tables adapted for use in tension and physio-therapy by doctors, or by the patient, whereby tension or spinal adjustment may be accomplished by mechanical means.

It is an object of the invention to provide a supporting table adapted to produce a tension or traction upon the spine of the patient to assist nature in relieving the extreme pressure on the vertebral-cartilage and also to allow a pulsating or vibrating movement within the control of the patient himself to cause a relaxing influence upon the muscles and ligaments of the back and spine. It is desired to produce a device capable of causing pulsations at different positions upon the table, whereby the desired manipulation of the muscles and spine of the patient may be accomplished.

It is also an object to so construct the device that the different tensions, spinal adjustments and manipulations to be accomplished by the invention may be largely within the control of the patient himself, thus making it unnecessary to visit the doctor's office at each time a treatment is desired. Other objects to be accomplished by the device residing in the particular construction and arrangement of the parts will be more particularly set forth in the specification which follows.

Referring to the drawing herewith, Fig. 1 is a top plan view of a table embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a horizontal section of the device taken immediately below the upper frame of the device. Fig. 4 is a longitudinal section taken approximately centrally of the device, and Figs. 5 and 6 are vertical sections taken on the planes 5—5 and 6—6, respectively, of Fig. 3. Like numerals of reference are employed to designate like parts in all the views.

In constructing my device, I provide a lower frame work or housing A, having two opposite sides, 1 and 2, and two end plates, 3 and 4, respectively. There is also a bottom support 5, thus making up an elongated box which constitutes the main portion of the frame work. An upper table 6 is supported upon the lower frame, thus provided, said table projecting slightly beyond the edges of the frame work on all sides, as will be clearly understood from the drawing. In connection with the table, I provide means for tensioning or stretching

the spine of the patient. This means includes a harness for the feet, indicated at C, and comprising a slidable bar 7, preferably of some light material, such as wood, adapted to move longitudinally of the table and projecting from the footboard 2 through an opening 8 therein. The outer end of the said bar has an upwardly extending post 9 thereon which has a cross piece 10 at a point above the level of the table 6. This cross piece 10 has a strap 11 formed into a loop to fit about the feet of the patient and secured at its ends within a yoke 12, secured at the ends of the cross bar 10. One of the ends of each strap has a snap 13 thereon to detachably engage with the yoke 12. The inner end of the slidable bar 7 extends to a point somewhat past the middle of the frame of the table and has hooks 14 at the end which serve to connect the same by means of springs 15 with rods 16 extending through the headboard 3 of the table and secured thereon by means of nuts 17.

The foot harness is adapted to be moved away from the table by means of a flexible member 18, beneath the bar 7, connected to a staple 19 in the lower side of the bar, and extending forwardly about a pulley 20, secured to a support 21 upon the footboard 4 of the table. It then is brought back and wound about the shaft 22 mounted at its ends in bearings supported upon the sideboards of the frame. One end of said shaft extends through the side plate 1 and has a crank arm 23 thereon by means of which the shaft may be rotated to wind up the flexible member 18 thereon. The ratchet wheel 24 is fixed rigidly on said shaft at a point adjacent the side 1, and a pawl 25 pivotally secured upon the side wall 1, is held in engagement with the teeth of said ratchet wheel by means of a spring 26. Said pawl may be withdrawn from its position in contact with the ratchet through a link 27 connected to said pawl at 28 and to a lever 29, pivotally mounted at 30 upon the side of the box. The opposite end of the lever 29 is connected through a rod or link 31 with an arm 32 mounted rigidly upon a shaft 33 projecting through the side wall 1 and having on its outer end an operating arm 34. It will be obvious that the movement of the arm 34 in the proper direction will serve to force the rod 31 toward the ratchet wheel, thus withdrawing the link 27

and the pawl and releasing the ratchet wheel and allowing the springs 15 to withdraw the foot harness, relieving the tension upon the patient. On the other hand, the winding up of the cable 18 upon the shaft 22 will force the bar 7 and the foot harness outwardly from the frame and place a tension longitudinally of the table.

There is also a harness D for the upper end of the body. Said harness includes a cross bar 35 mounted in an upright support 36, pivotally connected at its lower end to a plate 37, secured upon the table 6 at a point adjacent the end 4 thereof. The upright 36 is movable to some extent through the use of a threaded rod 33 extending through a threaded plate 39 mounted at the head end of the table and having a thumb nut 40 at the outer end of said screw 38. The inner end of the threaded rod has a swivel connection at 41 with the upright 36. At each end of the cross bar 35 is a staple 42, which furnishes the support for a loop 43, of some flexible material strong enough to withstand the usual strain exerted thereon, said loops being adapted to engage below the arms of the patient. There is also a loop 44, of some flexible material, adapted to be secured below the chin of the patient, said loop 44 having a cross connecting piece 45 detachably connected at one end to the loop 44 and secured at its other end in a fixed position upon the other side of the loop. The said cross piece may be connected behind the neck of the patient.

At each side of the table, I may provide longitudinal bars 46, which extend from a position adjacent the head of the patient to a point about midway of the table. This rod may be grasped by the patient and may furnish an attaching means for straps or bands to be tightened across the body of the patient. The ends of these bars are mounted pivotally at 47 within brackets 48, secured at the edges of the table.

Centrally of the table in a transverse direction and somewhat toward the head end of the table, I provide a cushion 49 which is adapted to be inflated by pneumatic means. This cushion is secured to the upper side of the table and may be composed of fabric or rubber, or any similar flexible material. Beneath the same, I provide two pneumatic tubes 50 arranged longitudinally of the cushion and spaced slightly apart, as will be noted particularly from Fig. 6. Said tubes are adapted to be inflated to any desired extent by means of tubes 51 and 52 connected through the upper plate 1 of the table and secured within the box below to valves 53 and 54 respectively. Each of said valves has a valve rod connected therewith, extending laterally through the side 1 of the box and having an arm 55 on the outer end by means of which it may be manipulated.

Beyond the valves 53 and 54 the tubes are extended to a fitting 56 which connects them with a pipe 57, which is recurved and extended back toward the head of the table within the box and has therein a check valve 58. Beyond the check valve is a valve 59 adapted to be opened or closed through a rod 60 having a central crank arm 61 thereon, which is connected by means of a rod 62 to a crank arm 63 upon a shaft 64, extending laterally through the side of the plate 1 and having an operating lever 65 thereon, by means of which the connecting rod 62 may be moved to open or close the valve 59.

It will be noted that when the valves 53 and 54 are both opened the two tubes 50 may be simultaneously supplied with air, but the air may be cut off from either one of the tubes by the manipulation of either of the valves 53 or 54, as desired.

Beyond the valve 59 the pipe is extended back toward the foot of the table for connection at 66 with an air pump 67, having a reciprocating plunger therein operable through a piston rod 68 connected at its outer end to a wrist pin 69 within a crank arm 70, fixed upon a shaft 71. The said shaft 71 is rotated through a belt and pulley connection 72 with a shaft 73, parallel therewith and supported on uprights resting upon the baseboard 5 of the frame. The shaft 73 has pulley and belt connection 74 with a motor 75. Thus the operation of the motor will be connected through the speed reducing mechanism supplied by the belt and pulley connections, just described, to the shaft 71 and through the crank arm thereon to the pump 67. I prefer a reciprocating pump of this character because of the pulsating effect which may be obtained thereby. The tubes 50 may be deflated to any desired extent, when desired, by means of outlet tubes 78 and 79 extending from the tubes through the upper table 6 and through valves 80 to the atmosphere. Said valves 80 are operable to be opened or closed by hand-operated levers 81 on the outer side of the side board 1.

I also contemplate the use of a separate pneumatic bag or tube 76 which is movable to any position along the table. Said bag is slightly elongated and is flattened so that it may be placed beneath the back of the patient. It is connected by a flexible tube 77 to a pipe 78 extending through the side wall 1 of the frame and connecting with a valve 83, which is operable through the rod 60, previously referred to. Beyond the valve 83 the pipe is extended around and connected at 84 to the pipe 85 connected with the pump. From Fig. 3 it will be noted that the valves 59 and 83 are arranged at different angles relative to each other so that when the rod 60 is moved through the means of the connecting rod 62, one valve will be opened when the other is closed.

The tube 77, leading to the movable bag 76, has a relief valve thereon within the control of the patient. This is provided through a tube 86 connected to the tube 77 and having on its outer end a valve 87, which may be opened by depressing a plunger having a button 88 thereon. Thus, when the patient wishes to relieve the pressure due to the action of the bag 76, he may do so by depressing the button 88 in an obvious manner.

The pump 67 may be adjusted longitudinally of the box to affect the position of the plunger therein through the fact that the said pump is connected at its discharge end pivotally with an upright support 90. Said support is fixed upon a base 91, slidable within guides 92, fixed on the bottom 5 of the frame. The support for the pump may be moved longitudinally in its guides by means of a lever 93 pivoted midway between its ends upon the side 1 of the box and connected at its lower end to a bracket 94 upon the supporting plate 91. Its upper end is formed into a laterally extending arm 95 which projects through a slot 96 in the side of the box and is adapted to be moved therein so as to vary the position of the pump. Thus, when the pump is in a position away from the operating shaft 71, the plunger will move so as to incompletely compress the air within the pump barrel. When the pump is moved closer to the said shaft the plunger will be forced more nearly to the discharge end of the barrel and will thus exert somewhat greater pressure upon the air which is discharged into the tubes which are to be inflated. It is desired that the bag 76 may be placed at any position along the spine of the patient and to pump air into the said bag in pulsating charges. This is accomplished through the reciprocating type of plunger which I employ. There is no check valve in the line 78 connecting the bladder, or bag, 76 with the pump. Thus on the forward movement of the plunger, the air will be forced into the bag, but on the withdrawal of the plunger, the air may be moved outwardly again, thus causing the pulsating effect upon the bag which will act to manipulate the back of the patient in the manner desired.

When a patient has been placed upon the table and the harnesses at the foot and head ends of the table properly adjusted so as to place the tension longitudinally upon the patient, the tubes 50 may be inflated to still further increase the tension upon the spine and to flex the same upwardly. It will be obvious that either of the tubes 50 may be inflated separately or by a proper manipulation of the valves 55, the tubes may be inflated alternately so as to rock the patient from side to side so as to obtain a further lateral flexing of the spine. This arrangement, together with the action of the mov-

able bag 76, furnishes a means whereby tension or traction may be placed upon the spine of the patient and the spine manipulated in any desired manner to obtain a flexing of the spine in such manner as to have the desired therapeutic effect. It is understood that the motor 75 may be connected through the proper wiring with an electric circuit which may be opened or closed through the instrumentality of a switch 97, located upon the side plate 1 of the supporting box.

The advantages of my construction will be obvious. The structure will be of great use to doctors in their offices but will also be capable of private use where the patient wishes stretching, adjustments or manipulation of the spine. The operating levers are placed so that the patient may operate the essential ones from his position upon the table. The movement of the lever 34 will release the tension upon the patient at any time and the depression of the valve 88 will also serve to control the pressure of the bag 76 on the spine of the patient. It thereby provides a therapeutic device capable of wide and extensive use.

What I claim as new and desire to protect by Letters Patent is:

1. In a device of the character described, a supporting box, a table thereon having a head end and a foot end, harness members at the said ends, means to vary the distance between said harness members, a cushion on said table, a plurality of pneumatic tubes longitudinally of said cushion, means to separately inflate said tubes, and means to separately deflate said tubes, for the purpose stated.

2. In a device of the character described, a supporting box, a table thereon, harness members at the ends of said table, means to vary the distance between the said harness members, a cushion on said table, parallel pneumatic tubes in said cushion, means to separately inflate said tubes, means to separately deflate said tubes, and a pneumatic bag movable on said table in the manner described.

3. In a device of the character described, a supporting box, a table thereon, harness members at the ends of said table, means to vary the distance between said harness members, a cushion arranged longitudinally of said table, parallel pneumatic tubes adapted to be separately inflated and deflated, a pneumatic bag adjustable to various positions on said table, and means to force air into said bag.

4. In a device of the character described, a support, a table thereon, attaching means at each end of said table, a cushion arranged longitudinally of said table, parallel pneumatic tubes in said cushion adapted to be separately inflated and deflated, a pneu-

matic bag adjustable to various positions on said table, and means to introduce air into said bag in uniform pulsations.

5 5. A therapeutic device for use in the treatment of a patient, comprising a support, means at each end thereof to secure a patient on said support, means to exert tension between said securing means, a pneumatic cushion on said support, means to vary
10 the pressure in different parts of said pneumatic cushion, and manually operated means to relieve said tension and deflate said cushion.

6. A therapeutic device for use in the
15 treatment of a patient, comprising a table, means at each end of said table to secure a patient thereon, a pneumatic cushion on said table, means to vary the pneumatic pressure in parts of said pneumatic cushion, a movable pneumatic bag, and mechanically operated means to alternately expand and deflate said bag.
20

7. A therapeutic device for use in the treatment of a patient, comprising a table, a
25 central pneumatic cushion on said table, a pair of parallel pneumatic tubes within said cushion, a reciprocating air pump beneath

said table, connections between said pump and said tubes, separately operated valves in each tube, separate discharge valves connected with said tubes, and mechanical means to operate said pump. 30

8. A therapeutic device for use in the treatment of a patient, comprising a table, a cushion on said table, pneumatic tubes
35 within said cushion, an air pump, separate connections between said pump and said tubes, means to separately deflate said tubes, a movable pneumatic bag, a tube connecting said pump and said bag and a relief valve
40 connected with said tube adapted to be actuated by said patient.

9. In a device of the character described, a support, a table thereon, attaching means at each end of said table, a cushion fixed on
45 said table longitudinally thereof, and pneumatic tubes in said cushion longitudinally of the table, said tubes being adapted to be separately inflated for the purpose described.

In testimony whereof I hereunto affix my
50 signature this 10th day of February, A. D. 1926.

OLIVER P. SPILMAN.