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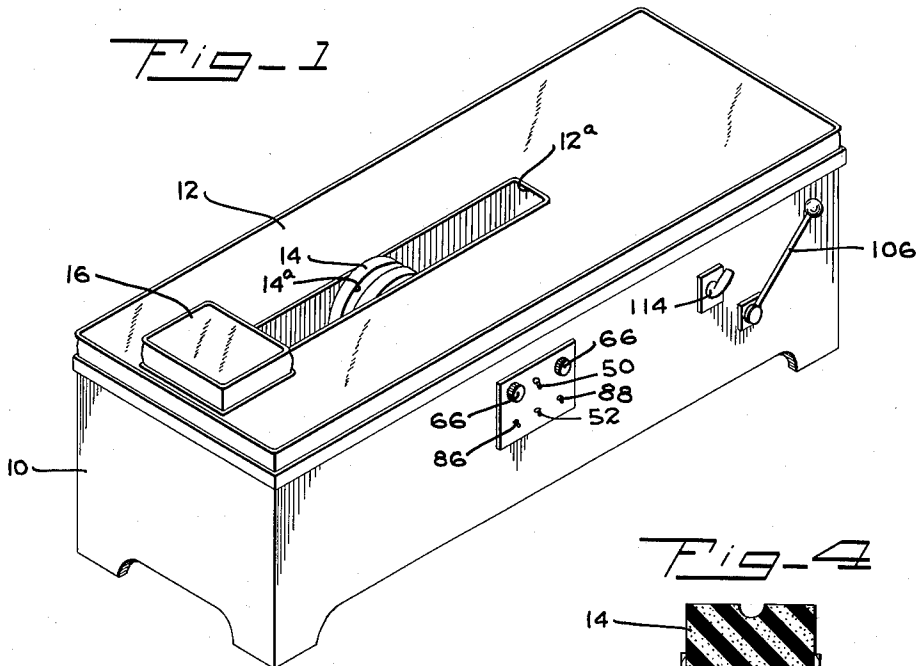
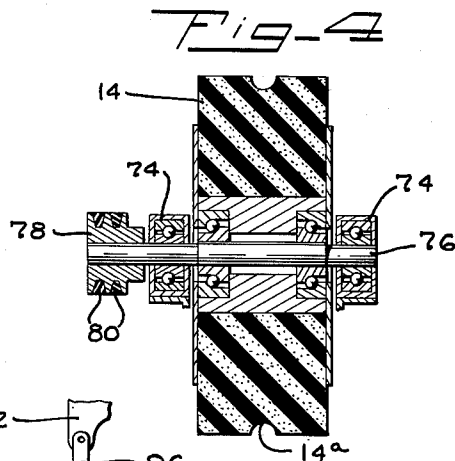
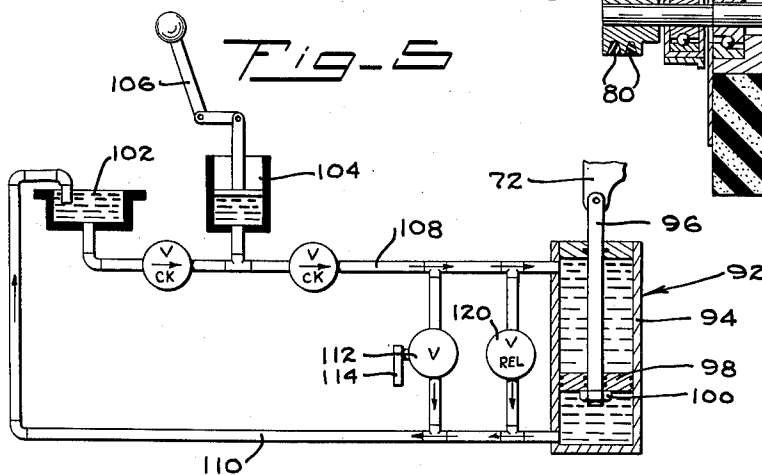
J. L. NUNES

3,003,497

MASSAGE TABLE WITH HYDRAULICALLY CONTROLLED ROLLER

Filed Feb. 25, 1959

2 Sheets-Sheet 1



INVENTOR.
JOHN L. NUNES

BY

Paul Q. Fike
PATENT AGENT

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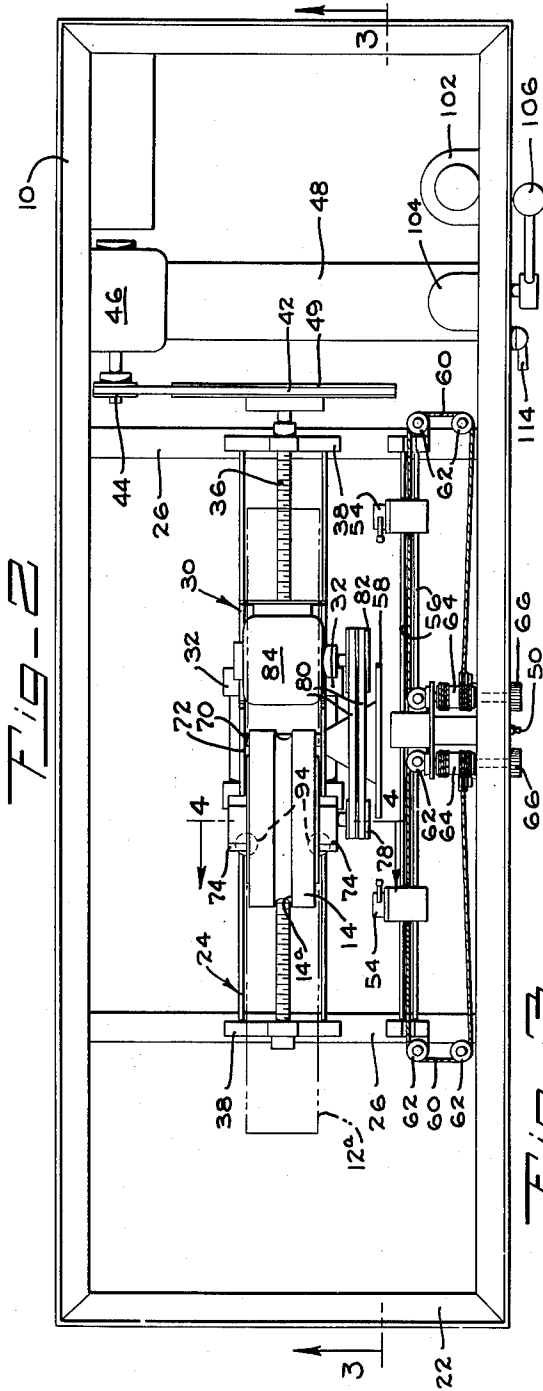
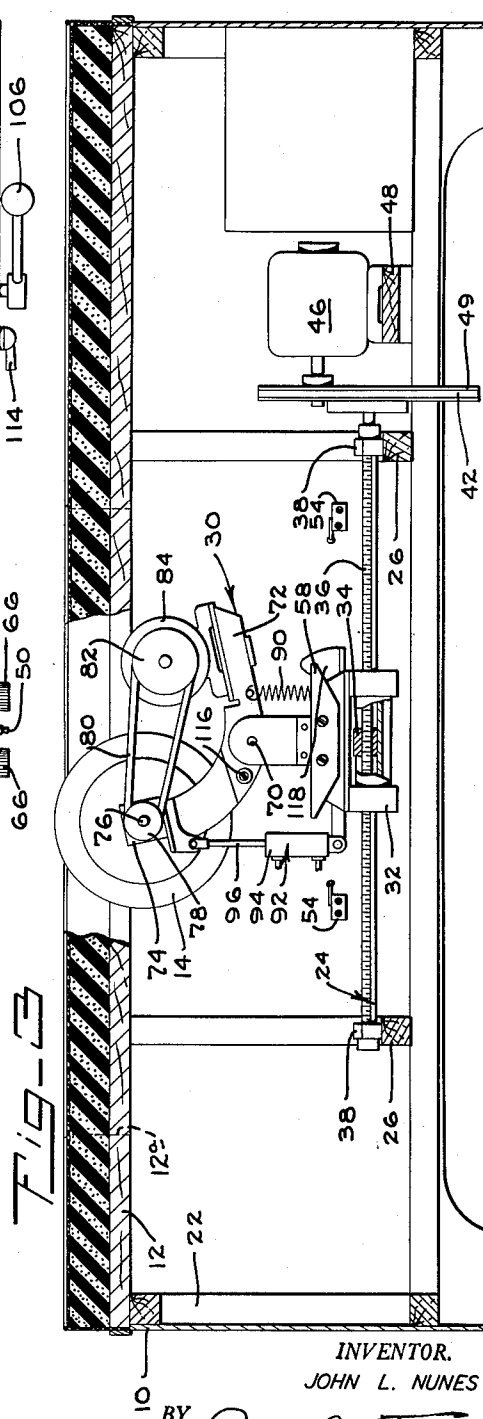
J. L. NUNES

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MESSAGE TABLE WITH HYDRAULICALLY CONTROLLED ROLLER

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2 Sheets-Sheet 2



INVENTOR.
JOHN L. NUNES
BY *Paul B. Fike*
PATENT AGENT

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MASSAGE TABLE WITH HYDRAULICALLY CONTROLLED ROLLER

John L. Nunes, 4972 Sandy Lane, San Jose, Calif.

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1 Claim. (Cl. 128—57)

The present invention relates generally to massage apparatus and more particularly to apparatus designed primarily, though not exclusively, for spinal massage.

It has been known for some time that massage of a person's body or portions thereof is physically beneficial. For many years, hand massage has been employed and more recently, mechanically-driven massaging apparatus has been incorporated in tables, chairs, and the like, in a concerted attempt to realize the fullest advantages derivable from massage.

It is a general object of the present invention to provide an efficacious massage apparatus, particularly for the treatment of the back and the spine.

It is a particular feature of the invention to provide a resilient massage member which can be vibrated at various speeds and can be caused to traverse a predetermined path during its vibratory oscillation.

An additional feature is the availability of adjustment of the massage member so that a desired massage pressure can be maintained against the body.

Additionally, it is a feature of the invention to provide a massage apparatus which, although efficacious in its application to treatment of a patient's body, is yet relatively inexpensive to construct and simple to operate.

These and other objects and features of the invention will become more apparent from the following description of the preferred apparatus shown in the accompanying drawings, wherein:

FIG. 1 is an isometric view of the preferred form of apparatus embodying the present invention,

FIG. 2 is a top plan view of the structure shown in FIG. 1 with the patient-supporting top thereof removed to enable illustration of interior details,

FIG. 3 is a sectional view taken substantially along line 3—3 of FIG. 2,

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 2, and

FIG. 5 is a diagrammatic view of a hydraulic system incorporated as part of the structure.

Generally, the preferred form of the apparatus, as illustrated in FIG. 1, includes an elongated rectangular table 10 having a longitudinal slot 12a in its top 12 through which a massage member 14 is adapted to project so as to engage the spinal area of a patient lying on his back on the top of the table with his head disposed upon a small pillow 16 provided therefor. The massage member 14 is mounted for rapid vibratory circular oscillation about a substantially horizontal axis and is gradually moved to and fro lengthwise of the longitudinal slot 12a so as to engage the entire spinal area of the prone patient. The vibratory motion of the massage member 14, the pressure thereof against the body of the patient, and the length of its longitudinal stroke in the slot 12a are controlled by suitable switches and knobs disposed conveniently on one side of the table 10 as will be described in greater detail hereinafter.

With additional reference to FIGS. 2 and 3, the top 12 of the table 10 is formed with a padded framework which provides a comfortable supporting surface for the patient during his treatment, but can be lifted from the lower rectangular frame 22 of the table, as illustrated in FIG. 2, when access to the interior operating mechanism is required for adjustment or repair.

Under the general area of the longitudinal slot 12a in the top 12 of the table 10, a track 24 extends in parallelism

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to the slot, this track 24 including a pair of spaced parallel rails supported at their opposite ends on transverse wooden members 26 of the lower frame 22 of the table. A carriage, generally indicated at 30 is supported on these spaced rails by self-oiling bearings 32, each of which extends a sufficient distance along the respective rails so as to provide a generally stable but slightly resilient support for the carriage which permits its sliding movement lengthwise of the track 24 yet maintains the carriage in a generally upright disposition, as shown in FIG. 3. A nut 34 centrally and fixedly mounted on the carriage 30 encompasses a lead screw 36 which is supported between the spaced rails of the track 24 on suitable bearings 38 on the previously mentioned transverse frame members 26 and the projecting end of the lead screw carries a large pulley 49 about which is trained a V-belt 42. From the large pulley 49, the V-belt 42 extends around a small pulley 44 mounted on the shaft of a motor 46 mounted on yet another transverse frame member 48 of the table structure 10.

The motor 46 is energized through a main switch 50 mounted on the side of the table 10, as previously mentioned, and through a second manual switch 52 designed to control specifically the energization of this motor. The specific circuit will not be described since it is relatively conventional and forms no part of the present invention, in and of itself.

Additionally connected in the circuit are two polarity switches 54 that are designed to reverse the direction of rotation of the motor 46 when the carriage 32 approaches one end of the track 24 or the other, as the case may be. These two polarity switches 54 are slidably mounted on rods 56 extending parallel to the described track 24 and are adapted for actuation upon contact by a cam member 58 mounted on the carriage 32. In order to adjust the position of the polarity switches 54 on their supporting rods 56, a switch-adjustment wire 60 is trained around a series of pulleys 62 and a roller 64 and is connected at its opposite ends to opposite sides of a respective one of the switches 54. The shaft of each roller 64 extends through the side of the table 10 to mount a manually-operable knob 66, the turning of which effects motion of the respective polarity switch 54 lengthwise of its mounting rods 56. Thus, an operator by turning one or both of these control knobs 66 can adjust the entire distance of travel of the carriage lengthwise of the table.

At its upper extremity, the carriage 32 mounts a horizontally-extending shaft 70 on which is pivotally supported a rocker arm 72 that in turn carries the mentioned massage member 14 and the means for imparting vibratory motion thereto. More specifically, this rocker arm 72 constitutes a pair of connected, spaced and generally curving plates at one end of which are bearings 74 that rotatably support an eccentric shaft 76 (see FIG. 4). In turn, the massage member 14, which preferably takes the form of a sponge rubber roller with a central indentation, 14a, is mounted for free rotation on this eccentric shaft 76. The central indentation 14a is sufficiently broad and deep to accommodate the projecting elements of a spine, but no larger since the back immediately adjacent the spine must be contacted by the roller for maximum effectiveness of treatment. A double pulley 78 is mounted at one end of the roller-supporting shaft 76 and V-belts 80 are trained about it and a similar double pulley 82 on the shaft of a motor 84 mounted at the remote end of the rocker arm 72 beyond its pivotal-supporting shaft 70 on the carriage 30.

This motor 84 is energized through the described main switch 50 on the side of the table 10 and one or the other of two vibratory control switches 86, 88 which determine the motor speed in a known fashion. When the

motor 84 is energized to rotate the eccentric shaft 76, a substantially circular vibratory oscillation is imparted to the massage member 14. Preferably, the oscillatory stroke is about 1/8 inch in diameter.

Between the motor-supporting end of the rocker arm 72 and the carriage 30, a spring 90 is maintained under tension so as to normally urge the sponge rubber roller 14 upwardly through the slot 12. This upward movement is limited by a hydraulically-adjustable stop generally indicated at 92 in FIG. 3. This hydraulically-adjustable stop 92 includes a pair of hydraulic cylinders 94 connected between the carriage 30 and the rocker arm 72 on opposite sides of the roller 14. More specifically, the bottom of each cylinder 94 is pivotally secured to the carriage 30 while the end of the projecting piston rod 96 extending upwardly from the cylinder is pivotally connected in turn to one of the side plates forming the rocker arm 72.

With additional reference to FIG. 5, wherein only one of the cylinders 94 is shown for diagrammatic purposes, the piston rod 96 extends slidably through the center of the piston 98 within the cylinder housing and mounts a nut 100 at its lower end. As a consequence, the piston rod 96 can move downwardly from its position shown in FIG. 5 without requiring movement of the piston 98, but on the other hand, if the piston rod 96 is to move upwardly from the position shown in FIG. 5, the piston 98 is engaged by the nut 100 and must move therewith. Thus it will be seen that upward movement of the piston rod 96 and the rocker arm 72 connected thereto is limited by the precise position of the piston 98 within the cylinder 94.

The piston position is controlled by the supply of fluid from a hydraulic reservoir 102. The fluid is drawn from this reservoir 102 by a force pump 104 connected to a manually operable handle 106 mounted on the side of the table 10, as shown in FIGS. 1 and 2. Fluid drawn from the reservoir 102 by the force pump 104 is delivered through an input line 108 to the hydraulic cylinder 94 above the piston 98 so as to force the latter downwardly and fluid in the cylinder below the piston is in turn forced out of the cylinder through a return line 110 back to the reservoir. Once a predetermined piston position has been obtained, such position will be maintained until a manually-operable by-pass valve 112 is opened, at which time the piston position is automatically shifted upwardly through the action of the previously described tension spring 90 on the rocker arm 72 and the piston rod 96 connected thereto. Furthermore, when this valve 112 is opened by actuation of handle 114 on the side of the table 10, any actuation of the force pump 104 will merely cause liquid to flow through the valve 112 and back to the reservoir 102, thus bypassing the hydraulic cylinder 94.

The pivotal motion of the rocker arm 72 is limited in each direction by suitable stops indicated at 116 and 118, and if by any chance additional pumping of hydraulic fluid is attempted after one of these permanent stops has been engaged by the rocker arm, the build up of pressure against the piston 98 within the hydraulic cylinder 94 will effect opening of a pressure-release valve 120 which is connected in parallel therewith and thus will

in turn bypass any pumped fluid back to the reservoir 102 even though the manually operable valve 112 is in its closed position.

In operation, a patient is placed on the table 10 with his head resting on the small pillow 16 and his spine extending substantially centrally over the longitudinal slot 12. The attendant then adjusts the disposition of the polarity switches 54 to limit movement of the roller 14 to and fro in the slot 12a and also adjusts the hydraulic stop 92 by actuation of handle 106 so that the desired pressure against the spinal area of the patient is attained. The main switch 50 is first energized and then the first motor switch 52, which controls the to and fro motion of the roller 14, is at this point checked to see that it covers the desired spinal area of the patient. This having been ascertained, the desired control switch 86 or 88 for the vibratory motor 84 is thrown to instigate the treatment. As the sponge rubber roller 14 moves along the back of the patient, its circular vibratory oscillation stimulates and massages the spinal area. The spine itself is not engaged since it is disposed within the central indentation in the roller 14. At any time during the treatment, the pressure of the roller 14 against the back of the patient may be adjusted and the speed of vibration can also be adjusted quickly and without substantial interruption of the treatment.

It will be apparent that other parts of the body, such as legs, feet, and arms can also be treated by engagement with the described massage member and various modifications and/or alterations can obviously be made in the described structure without departing from the spirit of the invention. Consequently, the foregoing description is to be considered as purely exemplary and not in a limiting sense and the actual scope of the invention is to be indicated rather by reference to the appended claim.

What is claimed is:

A massage apparatus which comprises a table having a longitudinal slot in its top, a track under the top of said table parallel to the slot therein, a carriage mounted on said track for movement therealong, a rocker arm pivotally supported on said carriage for pivotal motion about a horizontal axis, a massage member supported at one end of said rocker arm arranged to project through the longitudinal slot in said table an amount dependent on the pivotal position of said rocker arm, spring means connected to said rocker arm whereby said massage member is urged upwardly through said table slot, and hydraulic means for adjustably limiting the spring-urged pivotal motion of said rocker arm.

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