

[54] THERAPEUTIC TREATMENT MACHINE

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[58] Field of Search **128/24.3, 57, 32, 33, 56**

[56] **References Cited**

UNITED STATES PATENTS

86,604	2/1869	Taylor.....	128/57
1,630,911	5/1927	Wentz.....	128/57
2,447,269	8/1948	Myers.....	128/24.3
2,492,406	12/1949	Thomas	128/33
2,553,873	5/1951	Schwebel.....	128/24.3

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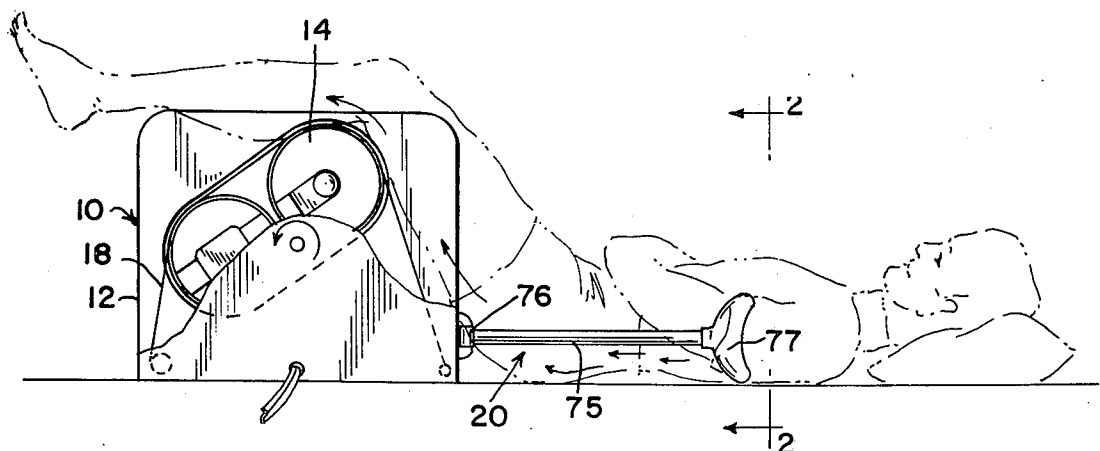
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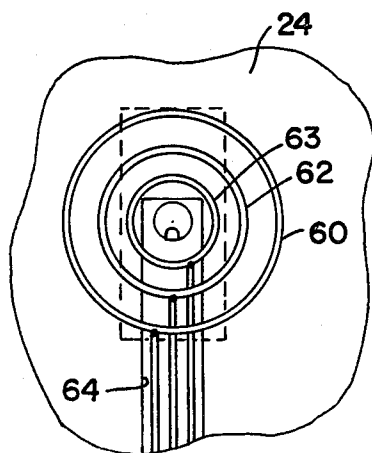
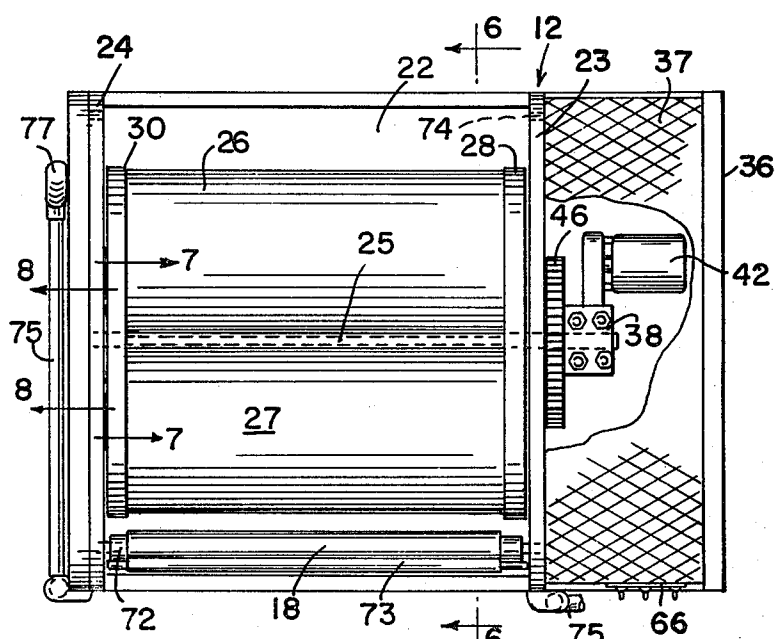
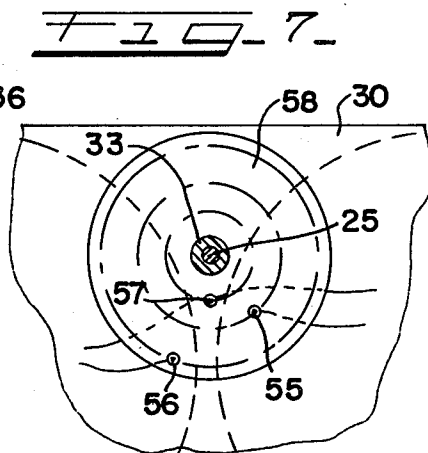
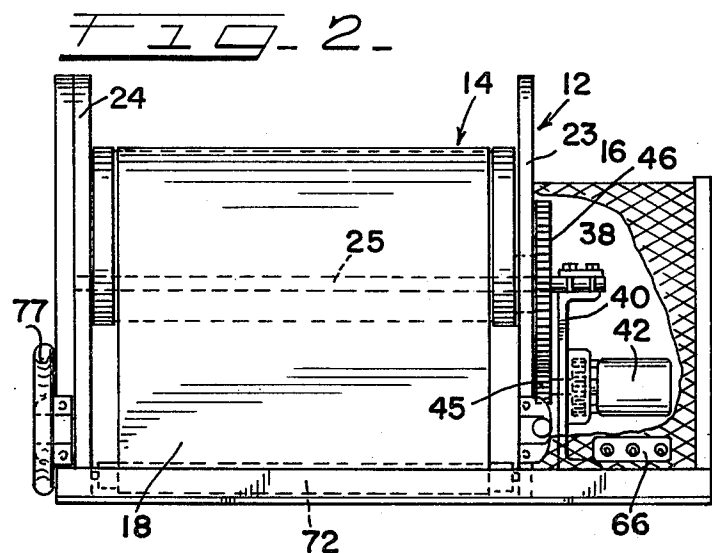
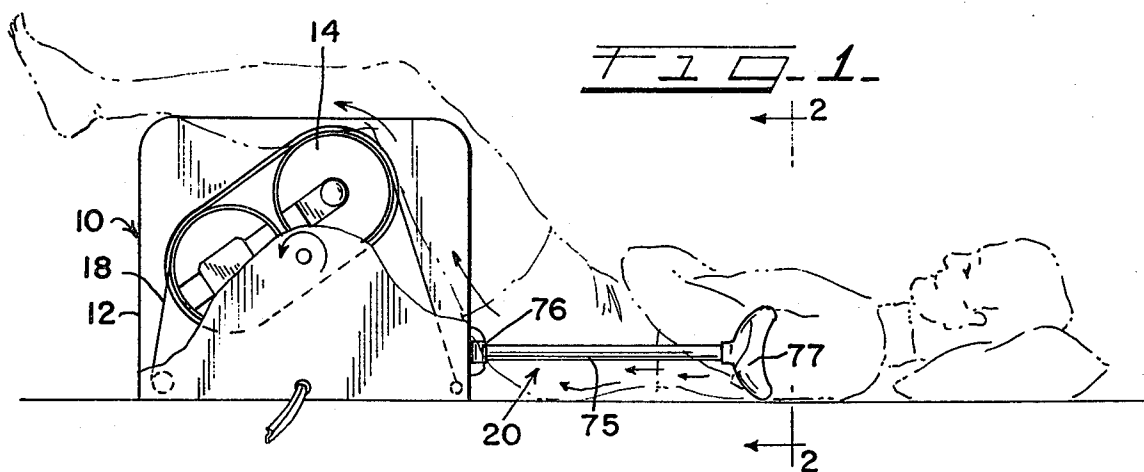
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ABSTRACT

A therapeutic machine which comprises a pair of elongate, hollow, cylindrical members arranged in side-by-side relation and connected at the ends by plate members which are eccentrically mounted for rotation on an axis which is parallel with the axes of the cylindrical members and extends between spaced, upright side members of a supporting frame, means for slowly rotating the assembly of cylindrical members with one of the members having a heating means therein and the other one having a vibrator means therein, and a spring roller mounted cover member beneath which the assembly revolves and which protects the limbs or other portion of the body against any possible irritation when placed directly against the rotating assembly in using the machine for physical therapy.

3 Claims, 9 Drawing Figures





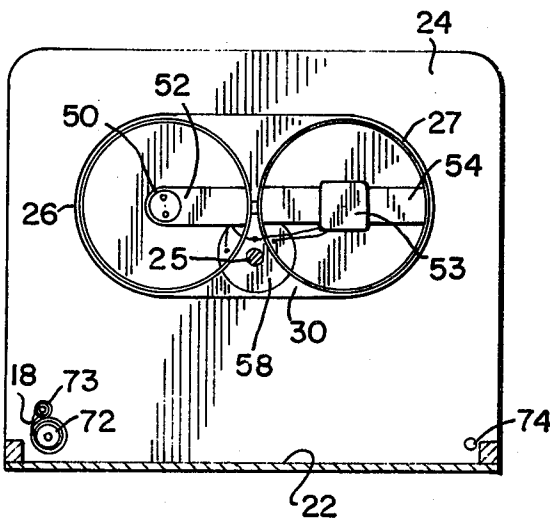
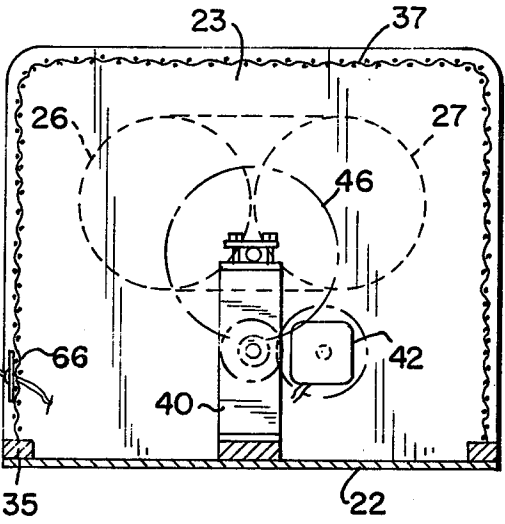
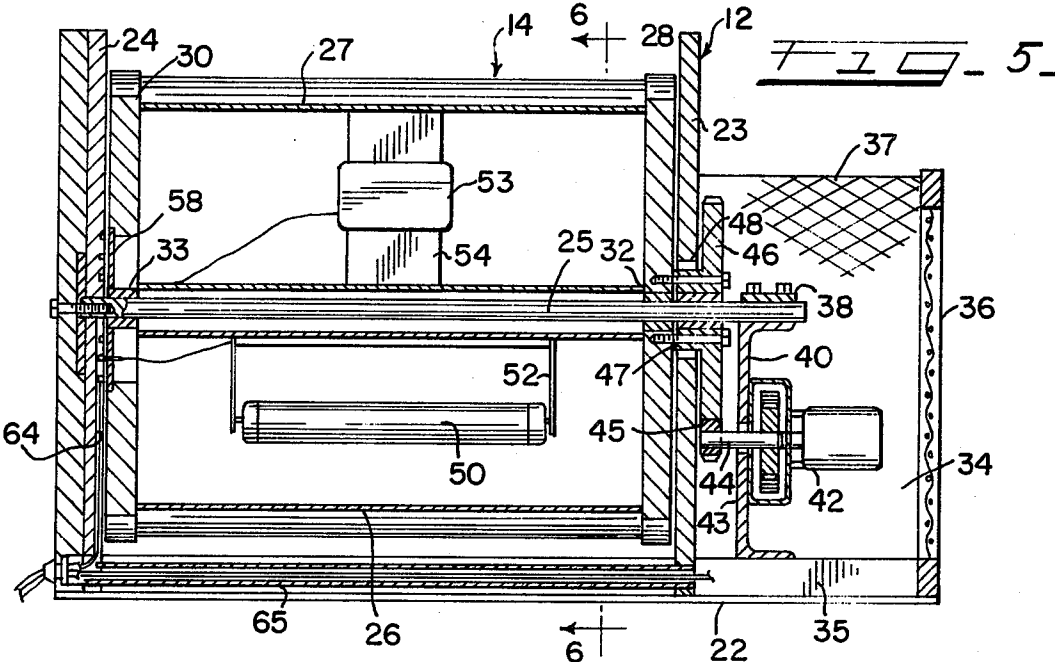


FIG. 4

FIG. 6

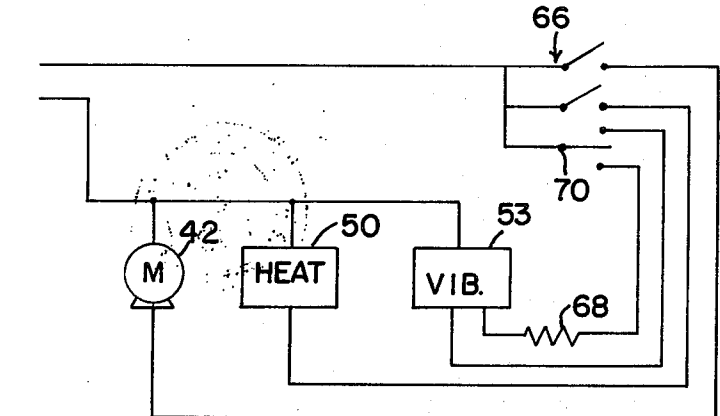


FIG. 9

THERAPEUTIC TREATMENT MACHINE

This invention relates to apparatus by means of which portions of the body may be subject to physical therapy treatment and is more particularly concerned with an improved apparatus for subjecting the limbs or other parts of the body to traction, vibration, massage, and heat therapy.

Numerous types of apparatus and devices have been developed for use in treating the limbs and other parts of the body to relieve stresses due to muscle spasm and other stress inducing conditions and various arrangements have been proposed for supplying heat and vibration in devices for such purposes. Most such apparatus has been provided for use by the medical profession or other professional or semi-professional people involved in the treatment of body ills or body care. Also most apparatus for such purpose has been either too expensive for home or personal use or too inefficient to accomplish the desired results. It is a general object of the present invention to provide an apparatus for physical therapy treatment of the body which is relatively inexpensive and which is highly effective in applying traction, massage, vibration and heat to the limbs and other parts of the body.

It is a more specific object of the invention to provide an apparatus for therapeutic treatment of the body ills by mechanical means which is highly effective in applying traction to the limbs or other parts of the body accompanied by massage, vibration and the application of heat.

Another object of the invention is to provide an apparatus for therapeutic treatment of the limbs or other parts of the body which is readily portable and which is effective in applying traction to the limbs or back by eccentric rotation of a pair of cylindrical members in which there are incorporated heating and vibratory producing elements.

A further object of the invention is to provide an apparatus for the treatment of physical ills of the human body by the application of traction, massage, vibration and heat to the limbs or other body parts, with provision for adequately controlling the application of the heat and the vibration when such therapy is employed.

A still further object of the invention is to provide an apparatus for treatment of physical ills of the human body, such as, stress due to muscular malfunctions and other conditions, which apparatus may be safely used by a normal individual without professional supervision, for relieving the condition by application of traction, massage, vibration and heat therapy.

Another object of the invention is to provide a machine for therapeutic treatment of muscular stress and like body ills which is of simple construction, which is highly effective and which may be manufactured at a cost sufficiently low to enable it to be marketed, at an attractive price, directly to the individual desiring such treatment.

These and other objects and advantages of the invention will be apparent from a consideration of the therapeutic machine which embodies the principal features of the invention and which is illustrated in the accompanying drawings wherein:

FIG. 1 is a side elevational view, with portions broken away, showing a machine for applying physical therapy which embodies the principles of the invention, the view illustrating one manner in which the machine may be used;

FIG. 2 is an end elevational view of the machine with portions broken away, the view being taken on line 2—2 of FIG. 1, but with the cylinders in the rotating assembly positioned in a horizontal plane;

FIG. 3 is a top plan view of the machine of FIG. 2 with portions broken away;

FIG. 4 is a side elevational view of the machine of FIG. 2 illustrating the drive mechanism for rotating the cylinder assembly;

FIG. 5 is a longitudinal, vertical, sectional view, through the machine, with the cylinders in the rotating assembly positioned one above the other;

FIG. 6 is a cross sectional view, the view being taken on the line 6—6 of FIG. 3;

FIG. 7 is a fragmentary view taken on the line 7—7 of FIG. 3, to an enlarged scale;

FIG. 8 is a fragmentary view taken on the line 8—8 of FIG. 3, to an enlarged scale; and

FIG. 9 is a diagrammatic view showing the electrical arrangement for driving the cylinder assembly and controlling the vibrating and heating elements.

Referring to the drawings and particularly FIG. 1, there is illustrated a therapeutic machine which embodies the principal features of the invention and which is adapted for use in physical therapy treatment of various parts of the body for the purpose of relieving the stress resulting from muscular malfunctioning or other stress inducing conditions. In FIG. 1, the machine 10 is shown in use for applying traction to the limb and back areas of a person in order to relieve the discomfort of backache, muscular fatigue and similar physical stress conditions. The illustrated machine 10 comprises a generally U-shaped frame structure 12 in which there is mounted an assembly 14 of hollow cylindrical members which is rotatable on an eccentric axis, with a drive mechanism 16 (FIG. 2) for rotating the assembly 14 beneath a body protecting cover member or curtain 18. When the machine or apparatus 10 is employed for the purpose illustrated in FIG. 1, it is supported on a horizontal surface, such as a table, bed, or the like, with the patient or user lying on his back and having his lower limbs extended and resting on the assembly 14 so that rotation of the assembly 14 in the direction indicated by the arrow in FIG. 1 will apply traction to the back and leg muscles while massaging the contacting limb portions. The machine 10 as shown in FIG. 1 is provided with a stirrup arrangement 20 for holding the upper portion of the body against the pull of the assembly 14 when the latter is rotated.

The frame 12 for supporting the rotating cylinder assembly 14 is formed by a rectangular bottom (FIGS. 3, 5 and 6) and upstanding side frame members 23 and 24 which are generally rectangular and arranged in parallel, spaced planes. The assembly 14 is rotatably mounted on a supporting shaft 25 which extends between side plates 23 and 24.

The rotating cylinder assembly 14 comprises two hollow cylinders 26 and 27 disposed in side-by-side relation and connected at corresponding ends by side plates 28 and 30 which are of a size and contour to close the ends of the cylinders 26 and 27. Cylinders 26 and 27 may be of thin sheet metal or any other suitable material. The end plates 28 and 30, which are formed of wood, plastic, or any other suitable material, are supported for rotation on the shaft 25 by means of bearings 32 and 33 which are arranged so as to provide an axis of rotation which is parallel with the axes of the two

cylinders 26 and 27 and offset therefrom thereby forming with the other axes a triangular relation resulting in eccentric rotation of the assembly 18, and providing a body support point or a body contacting point which oscillates along a radius of the path of rotation of the assembly. Thus the arrangement of the cylinders 26 and 27 and the end plates 28 and 30 provides an assembly or body engaging unit having a body contacting surface of periphery which is, in cross section, an oval configuration with curved, semi-circular ends and relatively straight or flat sides. The axis or center of rotation is offset from the major axis of the oval configuration and when the unit is rotated with the limbs or other portions of the body resting on the surface of the unit, or on the cover member 18 back of which the unit is traveling, the effect is a massaging of the body surface accompanied by a certain amount of traction or pulling of the muscles in the direction of rotation.

A drive mechanism for rotating the cylinder assembly 14 housed in a compartment 34 formed by a bottom frame extension 35 and a small vertical frame 36 with a covering screen member 37. Shaft 25 is extended into the compartment 34 and supported in a bearing formation 38 at the top of an upstanding bracket forming channel member 40. A motor and speed reduction unit 42 is mounted on the outside face of the channel web 43, with the output drive shaft 44 extending through an opening in the web 43 of the support bracket 40 and carrying a small gear 45 which is in engagement with a larger gear 46. The hub 47 of the gear 46 extends through a bearing 48 in the wall 23 of the frame and is secured to the outside face of the end plate 28 of the assembly 14. The motor drive unit 42 rotates the assembly 14 through the gears 45 and 46 at a low rate of speed so that the effect on the limbs when used as in FIG. 1 is to exert a pull on the muscles and to massage the surface in the area which overlies the assembly or which is contacted by the cylinders when the cover or curtain 18 is not employed.

One of the cylinders 26 is provided with a heat producing element, which, in the form shown, may be a light bulb 50, mounted on a suitable bracket 52 within the cylinder member. Any other suitable heat producing element may be employed having regard for the need to minimize the risk of fire from any possible overheating or malfunctioning of the unit. A vibrator device 53, such as, one of the well known electrically driven devices employed in hand vibrators, and like units, is mounted on a suitable bracket 54 in the other cylinder 27. The heat producing element 50 and the vibratory device 53 are supplied with current through connections with contacts 55, 56 and 57 (FIGS. 5 and 7) carried on an insulating plate 58 mounted in the outside face of the end plate 30, and positioned for contact with co-operating ring members 60, 62 and 63 (FIG. 8) suitably mounted in the inner face of the frame end member 24. Contact rings 60, 62 and 63 are connected with a power input line by leads running through a vertical conduit forming groove 64 in the inner face of frame member 24 and a horizontal conduit 65 leading to a control switch 66 (FIG. 4). A suitable electric circuit is shown in FIG. 9 in which the supply line to the vibrator includes a resistance 68 enabling the use of a double contact switch element 70 for varying the current to, and thus the vibration produced by, the vibratory device 53.

To avoid any irritation to the body surface which could possible otherwise occur, through direct contact with the cylinder assembly 14, a cover in the form of a cloth web 18 is provided which may be draped over the assembly 14 when desired. The cover or curtain member 18 is mounted on a curtain roller or shade roller 72 which is suitably supported between the two side frame plates 23 and 24 at one end of the machine with a cross rod 73 in the free end and suitable means for fastening the same at the other side or end of the machine, for example, by spring pressed end pins and co-operating apertures 74 in the side wall plates 23 and 24.

As illustrated in FIG. 1, the machine may be provided with a body movement restraining device in the form of a pair of bars or rods 75 detachably mounted at one end in hinge forming members 76 on the machine frame 12 and having padded members 77 at the other end which will fit the arm pits in the reclining position as shown in FIG. 1. The movement restraining means 20 will, of course, hold the upper portion of the body against the pull of the rotating assembly 14 as it contacts the limbs of the user.

I claim:

1. A therapeutic machine comprising a supporting frame having spaced upright members, and a rotatable assembly mounted between said upright frame members which includes a pair of elongate members in the form of cylinders arranged in side-by-side relation so as to present axially extending, exterior, curved surfaces, plate members connecting corresponding ends of said cylinders, means mounting said assembly for rotation on an axis which is parallel to the axes of the cylinders, said axis of rotation being arranged relative to the axes of the cylinders in triangular relation so as to effect eccentric rotation of the cylinder assembly, means for rotating said assembly at a relatively slow rate of speed so as to subject a part of the body placed against the exterior curved surfaces of the cylinders to physical therapy, and a readily removably, flexible, body protecting curtain which is spring roller mounted on said supporting frame relative to said assembly and which may be drawn so that it is draped over said assembly and when said assembly rotates beneath said curtain the body of the user is not in direct contact with the rotating assembly.

2. A machine for therapeutic treatment of the body which comprises an elongate, rotatably mounted assembly having an oval cross sectional configuration which assembly comprises a pair of hollow, elongate members arranged in side-by-side relation and having a longitudinally extending curved surface configuration which defines in cross section the curved ends of an oval, one of said side-by-side members having a heat producing device and the other one of said side-by-side members having a vibration producing device means for mounting said assembly on an axis which is parallel to the longitudinal axis of the assembly, and offset relative to the longitudinal axis of the oval cross sectional configuration and means for slowly rotating said assembly so that a body resting on the surface of said assembly, when the machine is disposed with the assembly in a generally horizontal position, will be subject to a massaging action.

3. A therapeutic machine comprising a supporting frame having spaced upright members, and a rotatable assembly mounted between said upright frame members which comprises a pair of elongate members in the

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form of hollow cylinders having a heating element mounted in one of said cylinders and a vibration importing device mounted in the other one of said cylinders, said cylinders being arranged in side-by-side relation so as to present axially extending, exterior, curved surfaces, plate members connecting corresponding ends of said cylinders, means mounting said assembly for rotation on an axis which is parallel to the axes of

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the cylinders, said axis of rotation being arranged relative to the axes of the cylinders in triangular relation so as to effect eccentric rotation of the cylinder assembly, and means for rotating said assembly at a relatively slow rate or speed so as to subject a part of the body placed against the exterior curved surfaces of the cylinders to physical therapy.

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