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SPINAL RELAXATION COUCH

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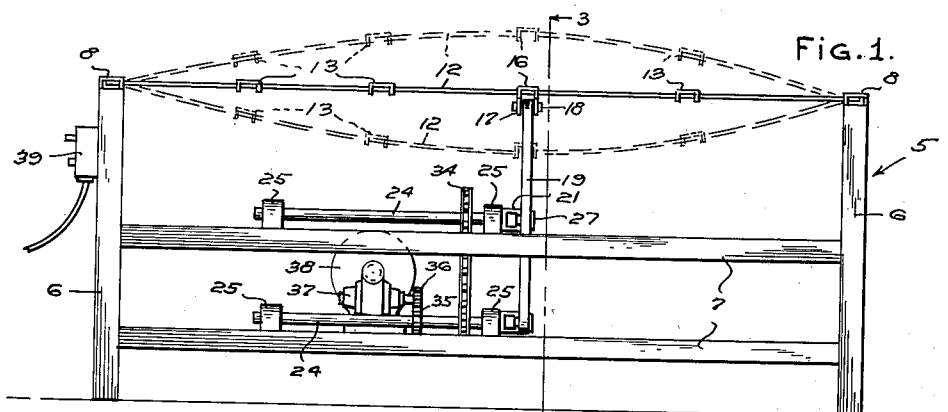
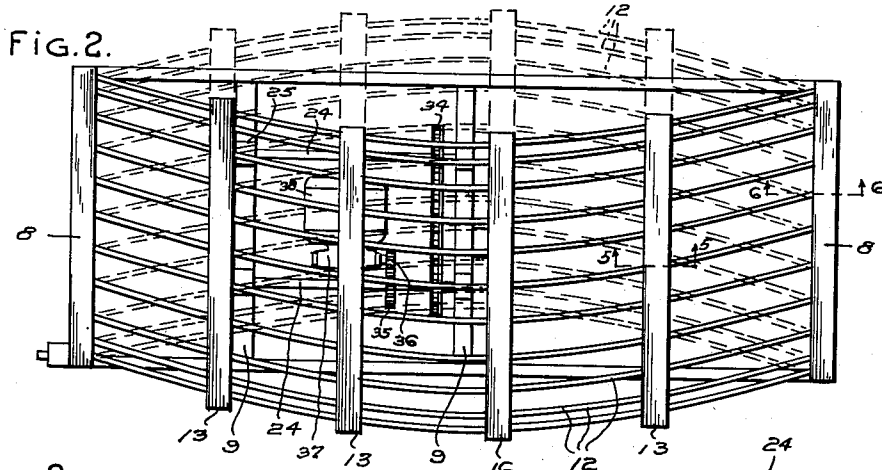
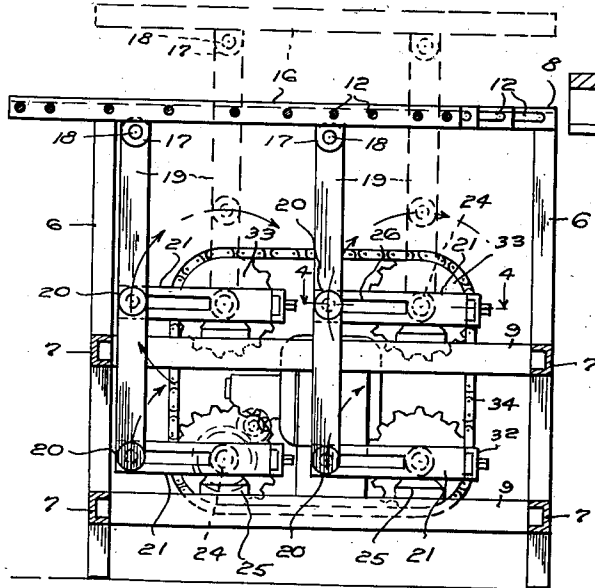
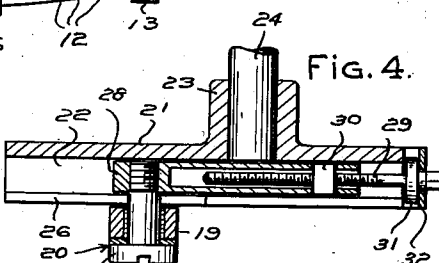
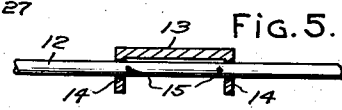
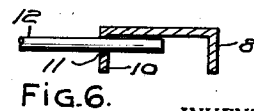


FIG. 3.



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SPINAL RELAXATION COUCH

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6 Claims. (Cl. 128—33)

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This invention relates to improvements in exercising devices and has particular reference to such a device for the full and complete exercise of the human spinal column.

It is an object of the present invention to provide a simple and very effective flexing of the spine in all lateral directions while the individual is in a completely relaxed reclining position free of muscular tension whereby the spine will be exercised in a manner to loosen the several vertebra and allows the cartilage cushions to return to their natural shape and thickness.

The cartilage cushions, particularly in non-physically active persons, have a tendency to become compressed, causing the person to lose height, poise and body flexibility, but more seriously might cause pressure upon the nerves which leave the spine at the joints and which in turn is frequently the cause of bodily aches and pains.

The exercising device of the present invention permits a complete relaxation of the spine without the individual disturbing or changing his clothing, since the motion is imparted to the spine while the person is in a reclining relaxed position and the effect is far greater than that received from setting-up exercises and in a fraction of the time and without effort on the part of the individual.

It is contemplated that a relaxation couch be provided that has a rotary movement at approximately 17 cycles per minute to correspond with normal respiration, such timing inducing a natural rhythmic relaxation.

The invention contemplates new and novel mechanical mechanism whereby a specific motion is imparted to the couch, the parts being simple and economical to manufacture, embodying novel means for varying the degree of rotary motion and may, with slight mechanical changes vary the motion from a rotary to an oscillatory motion.

Other important objects and advantages of the invention will be readily apparent during the course of the following description, reference being had to the accompanying drawings, wherein has been illustrated a preferred example of the device and wherein like characters of reference are employed to designate like parts throughout the several figures.

In the drawings:

Figure 1 is a side elevation of a device constructed in accordance with the invention,

Figure 2 is a top plan view thereof,

Figure 3 is a transverse vertical section thereof, taken on line 3—3 of Figure 1,

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Figure 4 is a horizontal section through one crank arm, taken on line 4—4 of Figure 3,

Figure 5 is a transverse section through one spacer bar, taken on line 5—5 of Figure 2, and,

Figure 6 is a similar view through an end mounting for the couch rods, taken on line 6—6 of Figure 2.

Referring specifically to the drawings, the numeral 5 designates the exercising machine as a whole, of generally rectangular shape in top plan. The device embodies corner legs 6, connected by side rails 7. The corner legs 6 of both ends of the device are connected at their tops by channel irons 8. It is contemplated that the frame, including the corner legs and connecting rails shall be formed of angle irons and channel irons respectively. The side rails 7 are connected transversely by channel irons 9, upon which a suitable base is supported as a mounting platform for a prime mover, to be described.

The channel irons 8 are apertured at equidistantly spaced points throughout the length of one flange 10, as at 11, for the sliding reception of the opposite ends of a plurality of flexible and preferably cylindrical rods 12, jointly forming the top of the couch. The rods are equidistantly spaced and parallel throughout their length. The rods are retained in their spaced relation by a plurality of channel irons 13, the flanges of which are apertured at 14 for the reception of the rods, the apertures 14 being equal in number and spacing to the apertures 11. The rods may be apertured at points inwardly of each pair of flanges of each channel iron 13 to receive pins 15, as a means to prevent shifting of the channels 13 upon the rods when in use. The channels 13 are identical as to length and are parallel with each other and with the channels 8. A combined spacing and actuating channel 16 is engaged with the several rods 12 in a manner similar to the channels 13. The channel 16 is provided with a pair of spaced pivotal brackets 17 upon its under side, as shown.

Pivotaly connected with the brackets 17, as by removable pivot bolts 18, are a pair of vertically arranged and parallel push rods 19. The rods 19 are pivotaly connected at their lower ends and intermediate their length, as at 20, with identical crank arms 21. Each crank arm is formed generally rectangular in cross-section and is provided with a channel 22, throughout its length. Each crank arm 21 is provided with a cylindrical hub 23, adjacent one end for preferably splined connection upon drive shafts 24. The shafts 24 are journaled in bearings 25, fixed upon the

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cross channels 9. The shafts are preferably four in number, corresponding to the number of crank arms 21 and are parallel with each other. The crank arms are slotted for their major length, as at 26, for the slidable reception of trunnion bolts 27, serving as the pivotal connections for the push rods. The bolts 27 are threaded into shiftable carriages 28, slidable in the channels 22. The carriages are shiftable in the channels 22 under the influence of a screw device 29, engaging a threaded nut 30 that is seated within a recess of the carriage. Each screw 29 is provided with a collar 31 outwardly of the end of the crank and this collar bears against the end of the crank and a bracket 32. The terminal end of the screw is formed square to facilitate rotation.

Each shaft 24 has fixed thereon a sprocket wheel 33, commonly engaged by an endless sprocket chain 34. One shaft 24 is provided with a gear 35, driven by a gear 36 from a speed reducing gearing 37, driven from an electric motor 38. Any convenient electrical connector 39 may be employed to conduct current to the motor 38, as desired.

Since the couch, formed by the rods 12 and channels 13 would be comparatively uncomfortable to lie directly thereupon, it is contemplated that any suitable pad, not shown shall be placed thereover. The pad will obviously be provided with a head rest to avoid undue pulling upon the hair of the individual as the body is caused to move in a circular path. Pads for such purpose form no part of the present invention.

In the use of the device, assuming that the operator has not previously used the machine, the several cranks are adjusted through the medium of the screws 29, to shift the trunnion bolts inwardly toward the shafts 24 to obtain the minimum throw to the cranks which, as in the present invention, is approximately two inches. In order to conveniently adjust the several cranks, one push rod 19 is disconnected from the channel 16 by the removal of its pivot pin, after which the other push rod may be adjusted inwardly or outwardly to the desired position, following which, the other push rod is adjusted to the same degree and the pin 18 replaced. The shifting of the push rods outwardly or inwardly, causes the rods 12 to flex, as shown in Figure 2. The operator having placed a suitable pad upon the couch that completely overlies the rods 12, he lies thereon in a completely relaxed position. The switch 39 is then operated to conduct current to the motor 38, causing the several shifts 24 to rotate in unison through the medium of the gears 35 and 36 and chain 34. The several cranks 21 simultaneously rotate in the same direction causing the push rods to travel in an arc, pushing upwardly upon the channel 16 and causing the several rods 12 to describe a true circular motion in a vertical plane, imparting such circular motion to the body of the operator, flexing the spine in an arcuate motion. The arcuate motion of the rods 12 is permitted due to the shiftable engagement of the rod ends in their respective openings 11, there being sufficient clearance in the openings to permit the flexing and arcuate motion of the rods. The degree of arcuate travel of the rods 12 is obviously determined by the adjustment of the push rods outwardly along the cranks 21. The channels 13 insure of the rods 12 being equidistantly spaced throughout their arcuate travel, thus providing a transversely even surface for the sup-

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port of the operator throughout the actuation of the couch. As the operator becomes accustomed to the flexing of the spine and the vertebra becomes looser, the cranks 21 are progressively adjusted outwardly to impart a greater arcuate movement to the couch. Thus the body of the operator describes an arc, with the head and feet being relatively immobile, imparting to the spine a flexing motion very similar to the usual setting up exercises of bending back and forth and sidewise, but with the distinct advantage of the body being free of muscular tension.

It is believed that the structure and its operation is entirely obvious and that further description is unnecessary.

It should be understood, that the invention is not limited to the precise arrangement shown, but that changes in the shape, size and arrangement of parts may be resorted to as fall within the scope of the invention or the terms of the appended claims.

Having described my invention, what I claim as new and desire to secure by letters patent is:

1. An exercising device for the human spinal column that includes a frame having a couch top formed of a plurality of flexible rods supported at their ends and means connected to the several rods for simultaneously shifting the rods in identical transverse arcuate paths.

2. An exercising device for imparting a transversely arcuate motion to the human spinal column, comprising a frame having a top formed of a plurality of parallel and equidistantly spaced rods supported at their ends by frame members, spaced channel members connecting the several rods transversely of the top, cranks connected to one of the channel members which is intermediate the length of the top, drive means for imparting rotation motion to the cranks, the cranks and their connecting means imparting an identical transversely arcuate motion to the several rods and adjustable means carried by the cranks for varying the degree of arcuate motion.

3. An exercising device for the human spinal column whereby the spinal column is shifted in an arcuate path transversely, comprising a frame rectangular in shape having a human body supporting top formed of a plurality of parallel flexible rods having their ends shiftable supported at the ends of the frame, transverse channel members for maintaining the several rods equidistantly spaced throughout their length, the channel members being arranged horizontal at all times, a pair of spaced push rods connected with one transverse channel member intermediate the length of the top, crank arms connected with the push rods, drive means for rotating the crank arms in unison, the push rods being shifted in a vertical arcuate plane by the crank arms, the connection of the push rods with the transverse channel members imparting a transversely arcuate motion to the several top rods simultaneously and in an identical path and adjustable means carried by the cranks for varying the arcuate motion of the push rods and the top rods.

4. An exercising device for the human spinal column when arranged in a horizontal position, that includes a base frame that is rectangular in shape, a flexible and arcuately movable body supporting top formed of a plurality of flexible rods loosely supported at their ends in the frame and equidistantly spaced throughout their length transversely of the device, transversely arranged

spacer channel members connected to the several rods, the channel members being spaced from each other longitudinally of the top, spaced pivotal brackets carried by one channel member intermediate the length of the top, spaced perpendicular push rods connected to the brackets and depending below the top, a pair of crank arms pivotally connected with each push rod, parallel shafts for the rotatable support of the several cranks, common drive means for the several shafts whereby the cranks move in unison to impart a vertical motion to the push rods simultaneously, the push rods describing an arcuate travel while remaining perpendicular, the several spacer channel members being parallel and horizontal at all times, the arcuate motion of the push rods being imparted to the several flexible rods through the medium of the spacer channel members to cause the top to travel in a transverse arcuate path and adjustable means carried by the several crank arms for shifting the push rods toward and from the rotatable center of the crank arms to vary the arcuate movement of the top.

5. An exercising device for the human spinal column whereby the spine is caused to travel in a transverse arcuate path when the operator is lying in a horizontal position upon his back, comprising a base frame that is rectangular in top plan, a flexible and transversely arcuate shifting top formed of a plurality of flexible rods extending longitudinally of the frame in equidistantly spaced relation with their ends loosely supported in the frame ends, transversely arranged spacer bars connected to the several rods, the bars being spaced longitudinally of the top, one spacer bar being arranged intermediate the length of the top and provided upon its under side with spaced pivotal brackets, a pair of spaced perpendicular push rods pivotally connected at their upper ends with the brackets, a pair of crank arms pivotally connected to each push rod, one crank arm connected at the lower end of the push rods and a companion crank arm pivotally connected to the push rods intermediate their length, the push rods and their cranks being arranged at an identical elevation, parallel drive shafts for each crank arm, sprockets fixed on each shaft, an endless sprocket chain for simultaneously driving the several sprockets, an electric motor and gearing for imparting rotation to one shaft, the rotative motion of the cranks imparting a transverse arcuate motion to the top through the medium of the push rods, the pivotal connection between the crank arms and the push rods being

adjustable toward and from the center of rotation of the crank arms for varying the diameter of arcuate travel of the top.

6. An exercising device for the human spinal column whereby the spine is moved in a predetermined transverse arcuate path, comprising a frame having a top for the support of a human body in horizontal position, the top formed of a plurality of transversely spaced flexible rods having their ends loosely supported in the frame, the rods adapted to maintain an identical elevation at all times, a plurality of spacer bars positioned along the rods and transversely of the device, the bars being connected with each rod, one of the bars being positioned substantially intermediate the length of the device and provided upon its under side with a pair of pivotal brackets adjacent its outer ends, push rods connected to the brackets, the push rods being perpendicular at all times of identical length, a crank arm pivotally connected to the lower end of each push rod, a crank arm pivotally connected to each push rod intermediate its length, a shaft for the rotatable support of each crank arm, the shafts being parallel, a common drive for all of the shafts to rotate the crank arms in the same direction for the simultaneous and identical movement of the push rods through a vertical arcuate path, the motion of the push rods being imparted to the flexible top rods and their spacer bars to shift the top in an arcuate path, each crank arm provided with a longitudinal channel, a carriage shiftable in the channel under the influence of an adjusting screw, a slot formed in a side of the crank arms and communicating with the channel, a trunnion bolt projecting through the slot for engagement with the carriage, the trunnion bolts serving as the pivotal means to connect the crank arms to the pusher rods, the arcuate movement of the top being transmitted to the spinal column of an operator positioned upon the top.

WARD BUTLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,638,025	Everts	Aug. 9, 1927
2,433,548	Ecks	Dec. 30, 1947
2,448,777	Crise	Sept. 7, 1948