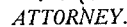
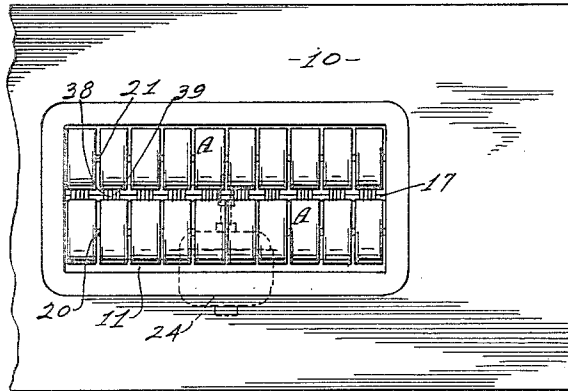


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MECHANISM FOR MANIPULATING THE SPINAL MUSCLES OF THE HUMAN BODY.

1,276,526.

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To all whom it may concern:

Be it known that we, CLARA B. HARDY and KATHARINE E. GIBSON, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Mechanism for Manipulating the Spinal Muscles of the Human Body, of which the following is a specification.

While our invention in a modified form may be employed for massaging or manipulating other muscles of the human body, the structure hereinafter set forth and described has particular reference to the machine capable of being attached to an ordinary form of surgical table so that the spinal zone of the human body, when the body is reclined on the table, may rest over the machine.

An object of this invention is to provide a machine of the character above referred to having a plurality of applicators arranged in series for simultaneously manipulating successive portions of the spinal muscles, the action of the applicators being to pull the muscles away from the spinal vertebrae as in usual osteopathic treatment.

A further object is to provide constantly operated actuating means for the applicators for intermittently and alternately actuating opposite sets of the applicators, so that the muscles on one side of the spinal column may be first manipulated and then the other side with equal pressure and effect.

A further object is to provide means for supporting the applicators in such positions that a combined lateral and rocking motion may be imparted thereto during the operation of the machine, such motion being best adapted to produce the results sought to be obtained. Other objects will appear as the description progresses.

Having in mind the above and other objects, we have shown in the accompanying drawings, forming a part of this specification, a preferred embodiment of our ideas, which we will now describe in detail.

Figure 1 is a side elevation of a surgical table of ordinary form, partially in action, showing our machine attached thereto in operative position.

Fig. 2 is an end elevation of the same, partly in action.

Fig. 3 is a plan view of one end of the table with the assembled machine mounted thereon.

Fig. 4 is an enlarged transverse section of our machine as shown in Fig. 3, in which a typical pair of applicators is shown.

Fig. 5 is a longitudinal section of the same, the applicators being shown partly in action.

In the drawings, the same reference characters are employed throughout the several views for indicating the same or like parts.

Although we have shown in the drawings a preferred embodiment of our invention, we do not desire to limit the same to the form of device shown, for we conceive it to be possible to substantially alter the structure without enlarging the scope or departing from the spirit of our invention.

The table 10 on which our machine is mounted is of the usual form except that an opening 11 is formed centrally therein between the edges and near the head of the table, through which opening the application of our device to the human body may be made, as hereinafter set forth. As shown the table 10 comprises a flat board top 12 with a suitable cushion 13 suitably attached thereto for covering the top.

The mechanism of our machine is supported at opposite ends of the opening 11 by means of a pair of similar frame members 14 and 15 which are held on the bottom of the board top by means of screws or bolts 16. A driven shaft or spindle 17 is revolvably supported on the frame members in bearings 18 and 19 and is disposed longitudinally of the table, centrally relative to the opening 11 in the table and substantially below the bottom thereof, as shown in Fig. 4. A pair of rock shafts 20 and 21 are pivotally held in the end frame members in bearings 22 and 23, respectively, and these shafts parallel the central shaft 17 and occupy planes substantially above and on opposite sides of that of the shaft 17.

A motor 24 may be suitably mounted on a base 25 attached to the bottom of the table, or otherwise, and we prefer to operate the shaft 17 by means of a worm gear set comprising a worm 26 held on the motor shaft and a worm gear 27 secured to the driven shaft 17, the gear and motor being preferably positioned midway of the ends of the shaft 17. The ratio of the gear 27 to the worm 26 should be such that the speed of the shaft 17 may be reduced sufficiently to provide against discomfort to the one being

treated by the machine, due to the too rapid movement of the applicators, as hereinafter described.

The applicators A are rigidly held on rocking supports B which have the form of bell cranks and are adapted to be loosely held on the shafts 20 and 21 at their hubs so as to move freely thereon. The applicators are arranged in two sets longitudinally on the table and in pairs laterally of the table and are composed of metal bands 28 bent around in the form of a loop, over which a soft sponge rubber 29 of high resiliency is placed, and relatively thin leather or skin strips 30 are provided for covering the rubber, the ends of the rubber elements and leather strips being firmly held on the bands by means of screws or rivets 31 threaded into bands and extending through flat metal strips 32 in contact with the outer surfaces of the leather strips, as shown in Figs. 4 and 5, for clamping the applicator elements in position.

The substantially vertical arms 33 of the applicator supports B are screwed, riveted or otherwise suitably secured to the lower sides of their metal bands 28, the arms being extended vertically so that the upper surfaces of the applicators will be substantially flush with the top of the table and also for the purpose of slightly raising and laterally moving the inner curved portions of the applicators when the applicators are rocked on their shafts. As has been stated, the supports B are oppositely mounted laterally of the table and each of these supports has an inwardly extending arm, as at 34 on one side of the center and 35 on the other side, on which rollers 36 are revolutely supported in planes substantially above the shaft 17, the arms 34 and 35 being staggered with respect to each other, so that the rollers thereon may be properly spaced for operation. In Fig. 5, the arm 34 is shown formed at the right end of the hub 37 of the bell crank support, the arm 35 on the opposite side of the table, which can be noted in the adjacent pair of applicators, is formed at the other end of the applicator support.

A cam 38 is provided on shaft 17 beneath and for operating each of the arms 34 and a similar cam 39 is provided for operating each of the arms 35. The cams are fixed to shaft 17 by any suitable means and are positioned beneath and in contact with the rollers 36, the high points on the peripheries of cams 38 being set on shaft 17 so as to be diametrically opposite those on cams 39, thus permitting the complete operation of one set of applicators before the opposite set is operated. The rollers 36 are held in resilient engagement with their cams by means of coil springs 40 which are attached at opposite ends to the opposite vertical arms of the supports B, as shown in Fig. 4.

In operation, the patient is laid on the table 10 in such a position that the head will rest on the portion of table at the end of the opening 11 and the spine will be positioned centrally between the opposite sets of applicators, the spinal muscles resting on the curved surface of the applicators A which have a range of length equal to the maximum length of the spinal column. The motor being started, the shaft 17 is rotated, by means of the worm gear set described, at the proper speed, thus rotating the cams 38 and 39 and alternately rocking the opposite sets of applicators by means of the engagement of their follower arms with the cams. The arrangement of the mechanism as shown causes a slight raising of the inner adjacent curved ends of the applicators which frictionally engage the body of the patient and at the same time the applicators move slightly outwardly from the center of the table, thus exerting pressure on and serving to pull the muscles away from the spine.

The leather strips provided on the applicators prevent direct contact with the skin of the body and thus prevent too great friction, and these elements may be renewed or replaced from time to time as may be necessary for convenience or sanitary reasons. The highly resilient rubber elements of the applicators provide for the greater comfort of the patient during the operation and are yieldable for cushioning the effect of the applicators on the body. The upper surfaces of the applicators should be of such formation as to comfortably conform to the surface of the body of a patient, and, inasmuch as the size of the different vertebrae of the spine varies from the shoulders to the trunk portion of the body, the size of the applicators may also vary accordingly. It may also be found desirable to vary the radii of the cams 38 and 39 slightly from one end of the machine to the other, in order that the movement of the applicators may be varied correspondingly from one end of a set to the other, and the applicator supports B being made loose on the rock shafts may thus be independently operated to a greater or less degree by the difference in the lines of their cams.

It will be understood that the lines of the cams determine the extent and character of the movement of the applicators, and while a preferred movement has been illustrated in the drawings and described herein, for obtaining the best results, according to our present information and experience, we do not desire to limit our invention to the exact details shown and described, but desire to claim and claim broadly on the means for the purpose set forth.

Having thus described our invention, what we claim is:

1. In a massaging machine, the combina- .30

tion with a table having an elongated opening therein, of a driven shaft longitudinally disposed beneath and centrally of said opening, means for rotating said shaft, a plurality of bell cranks pivotally supported on axes paralleling said driven shaft and arranged in sets on opposite sides thereof, a plurality of cams carried by said driven shaft for intermittently oscillating said bell cranks, and a plurality of vertebral applicator cushions held on said bell cranks for massaging the muscles of the spinal column.

2. In a massage machine, a table having an opening therein, a driven shaft centrally of and supported below said opening, a pair of spaced rods paralleling said shaft and disposed on opposite sides thereof, cams on said driven shaft, and vertebral applicators pivotally held on said rods and adapted to be actuated by said cams for massaging the spinal column, said applicators being oscillated and having a slight upward and a substantial movement about their axes for pulling the muscles away from the spinal column.

3. In a massage machine, a table having an opening formed therein and adapted to support a human body thereon, a driving element supported below said table, a driven element operated thereby, a plurality of cams carried by said driven element, and a plurality of alternately oscillatable applicators resiliently held in engagement with said cams for pressure against and pulling the muscles of the human body away from the spinal column.

4. In a massage machine, in combination with a driving element and a driven element,

a support for the body of a patient, a plurality of intermittently oscillatable arms supported for operation by said driven element, and a plurality of applicator units formed of resilient material and having their upper sides concave for supporting the vertebral muscles of the patient, the movement of said applicators transversely of their supports and of the spine of a patient serving to press against and pull the muscles away from the spine.

5. In a massage machine, a table for supporting the patient to be treated, a cam shaft longitudinally disposed below said table and adapted to be continuously rotated during a treatment, a set of applicators supported on said table and extended slightly above the top thereof for contact with the human body, cam means on said shaft for oscillating the sets of said applicators alternately for massaging opposite portions of the body, and resilient means for connecting opposite sets of said applicators, as set forth.

6. In a massage machine, a table supporting a patient thereupon, a driven cam shaft longitudinally supported thereon, resilient applicators on opposite sides of said shaft having their upper body engaging portions extended slightly above the top of said table and curved to conform to the lines of the body of the patient, cams for alternately actuating said applicators so as to apply pressure to and pull the muscles of the spinal column laterally of the body.

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