

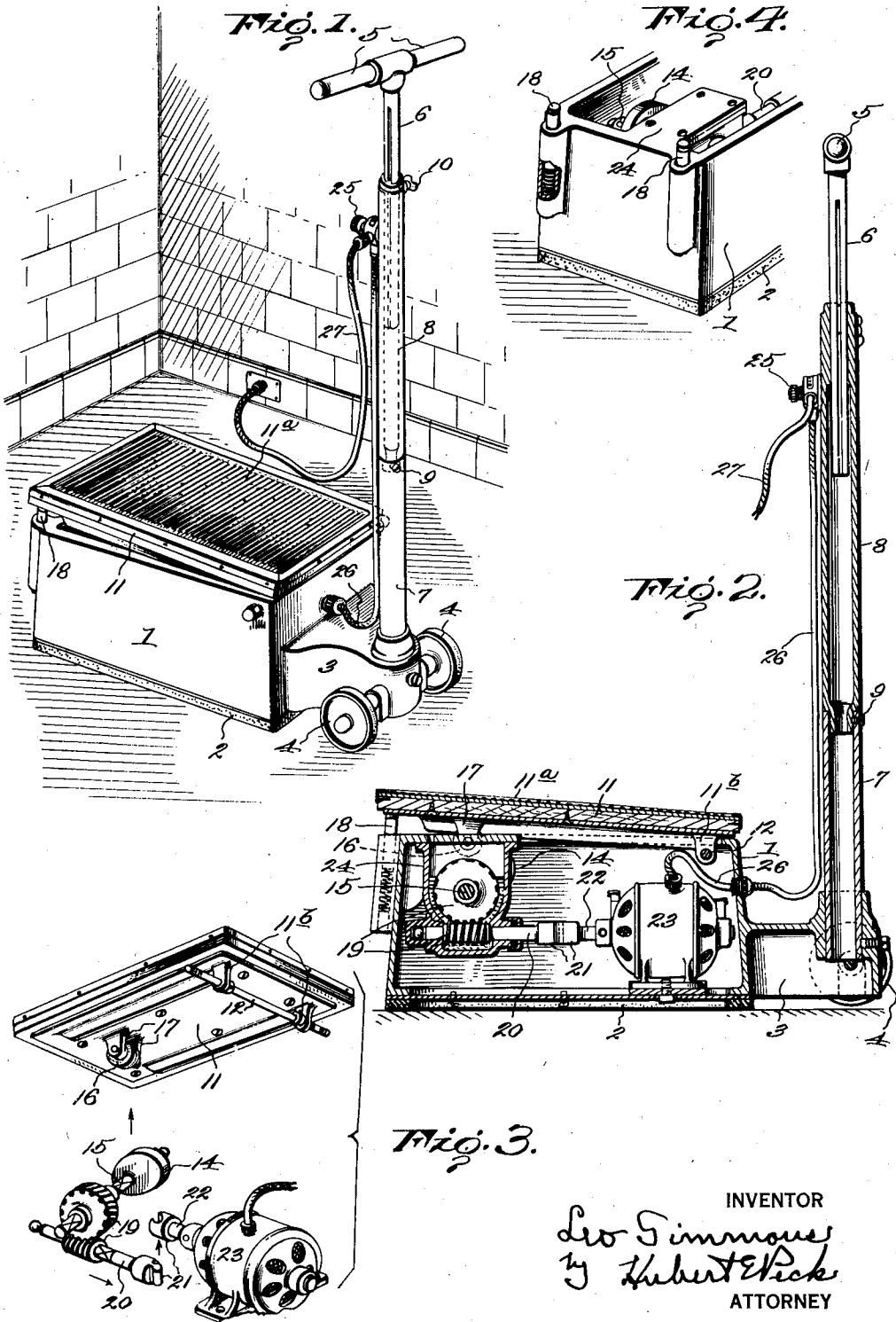
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KINESITHERAPY APPARATUS

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KINESITHERAPY APPARATUS.

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The object of the invention is to provide power driven apparatus for rapidly and bodily moving a human being through short vertical oscillations to rapidly lift and, in effect, drop the body to approximately vertically shake or jar the body for the promotion of certain desirable body functions.

I have discovered that evacuation of the intestinal tract is promoted by such peculiar vertical shaking or jarring movement of the body, particularly where the stomach has received a considerable quantity of water preparatory to such vertical oscillatory shaking or jarring of the body. Under this treatment stomach lavage takes place with more or less rapid passage of the water into the intestinal tract, and subsequent evacuation of the intestines. Whether or not this theory or explanation of what takes place within the body, by reason of this rapid short oscillation shaking of the body, is correct, the fact remains that evacuation does follow, such treatment. However, regardless of such physical functions promoted by the peculiar shaking of the body by apparatus of my invention, I find that the action of such apparatus in thus shaking the human body has the effect of horseback riding, and is most beneficial in its action on the body as well as on certain organs.

With the foregoing and other objects in view, my invention consists in certain novel features, and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings, forming part hereof:—

Fig. 1 shows in perspective apparatus embodying my invention.

Fig. 2 is a vertical section.

Fig. 3 shows in perspective certain parts detached.

Fig. 4 is a detail perspective.

In the particular example illustrated as an embodiment of the invention, from among others, for purposes of explanation, I provide a vertically oscillatory support for the human body on which the patient can stand in upright position, and an independently supported elevated front hand hold which the patient can grasp to maintain the desired position, during the oscillatory movements imparted to the body by the operation of the apparatus. Motor driven mechanism is also provided to rapidly

oscillate the support and the patient upheld thereby.

In this embodiment, I employ a supporting frame or strong housing in the form of a horizontally disposed box 1, preferably closed except at the top, and preferably provided at the exterior of the bottom with a cushioning or elastic protective floor base 2, adapted to rest on the floor, as this example of my invention is portable. This housing 1, can be composed of a casting at one end formed with a forwardly projecting arm or nose 3, to which are mounted supporting rollers or wheels 4, normally elevated approximately from contact with the floor when the housing is in normal horizontal position, as in Fig. 1, supported by its base 2, on the floor. The arrangement of the rigid nose 3, and the supporting rollers 4, is such that by lifting the rear end of the housing 1, the apparatus is tilted forward depressing the rollers 4, to contact with the floor, so that the apparatus can thus be upheld in a tilted position and transported, wheelbarrow fashion, with the rollers traveling on the floor and carrying a substantial proportion of the weight of the apparatus.

The vertically oscillatory support for the patient, in the example shown, consists of a horizontally disposed platform or stand 11, carrier by and generally arranged above, or forming the top wall of, the horizontally disposed box or main frame 1. This platform 11, in this example, is substantially flat at the top and elongated from front to rear and of such length and width as to provide ample top area to receive both feet of any patient spaced the desired distance apart, and to permit the patient to stand with his feet positioned at any desired forward or rearward location between the front and rear ends of the platform. In other words, in this particular example, the platform is of greater length than necessary to provide but one standing place for the feet with respect to the length of the platform, so that ample room is provided to enable the patient to shift his feet forwardly or rearwardly on the platform to assume different standing positions longitudinally of the platform at various distances from the front end of the platform, as hereinafter explained, although I do not wish to so limit all features of my invention.

The approximately flat top of the platform

is preferably provided with a non-slipping floor or surface 11^a, to receive the feet. The platform 11, is arranged above the top edges of the main frame 1, and preferably overhangs the same, and covers the otherwise open top thereof. The platform, in this instance, is at its front end hinged or fulcrumed to the main frame to swing vertically on a transverse or horizontal axis 12, arranged transversely of the upper front corner of frame 1 and mounted in the opposite walls thereof and upholding the front end of platform 11, through the medium of ears 11^b, depending from the under side of the front end of the platform.

Motor driven mechanism is provided within the box-like frame 1, below platform 11, to oscillate the platform and its load (the patient supported thereby) rapidly in an up and down direction to attain the peculiar desired vertical shaking of the patient. Various mechanisms for this purpose can be provided, although in the example illustrated I show a cam 14, vertically rotating about a transverse horizontal axis 15, and acting on, to control the vertical position of, a rotary roll 16, carried by a bracket 17, fixed to and depending from the under side of the rear or free end of platform 11. The axis of this roll is parallel with the axis of the cam and the roll is arranged above the roll in such manner that the cam travels against the roll, particularly when the platform is depressed by the weight of the patient, to elevate the platform and permit drop thereof as the roll follows the cam periphery, whether or not the limit of downward movement of the roll is such as to permit the roll to continuously engage the cam edge throughout a complete revolution of the cam.

I prefer to employ means to cushion the drop of the platform under the load of the patient, and to yieldingly uphold the rear of the platform, when not carrying the patient, from its limit of downward movement, in which unloaded position the platform appears in Figs. 1 and 2. For instance, such cushioning device can be formed by one or more vertical spring upheld plungers 18, carried by the rear end of the frame 1, and projecting upwardly therefrom to abut the under side of the rear end of the platform and normally uphold the same a distance above the frame 1, when the patient is not on the platform. The weight of the patient on the platform is sufficient to force down the plungers in their sockets in the frame 1, and against the tension of their springs, to bring the roll 16 into full operative relation with the cam 14, to elevate the loaded platform its full stroke, say about one inch, slightly more or less, and permit its drop the same distance, with each drop finally cushioned to avoid a distinct knock or blow.

The cam is usually continuously rotated

in one direction, to actuate the loaded platform at the rate of approximately one hundred to one hundred and twenty-five oscillations per minute or thereabouts, which according to my experience will usually vertically shake the body to the extent necessary to produce the results desired.

I preferably fix the cam rigidly on a rotary driven cross shaft 15, driven by spiral and worm gearing 19, from drive shaft 20, having more or less loose detachable coupling connection 21, with the shaft 22, of an electric motor 23, secured within the box-like frame 1. The cam shaft 15, is mounted in the frame and extends into or through a preferably lubricant tight gear box 24, rigidly secured within the frame 1 and enclosing the spiral and worm gearing. The worm shaft is also mounted in said gear box and projects therefrom approximately in alinement with motor shaft 22.

The rigid bracket or nose 3, serves to carry the support for the handle 5, located at an elevated front position with respect to the patient's position and the main frame or housing 1. In the example shown, the elevated handle 5, provides handle holds for both hands of the patient, in other words a T or twin handle is provided. This twin handle can be in the form of a horizontal cross head having a central depending vertically-elongated stem 6, rigid therewith. This handle is carried by a vertical elongated post arranged a distance in front of the supporting frame 1, and rising from and at its lower end normally fixed to the bracket or nose 3. In the particular example illustrated, this post embodies a lower section 7, at its lower end fitted and clamped in a vertical socket in the nose 3, and a tubular upper section 8, in longitudinal upward continuation of section 7, and telescoped therewith and preferably coupled thereto against substantial relative longitudinal movement but preferably to permit the upper section 8, to turn or rotate on its longitudinal axis with respect to the lower section, although I do not wish to so limit my invention. However, the two sections 7, 8, can if so desired, be locked together against such rotation, by stop or clamping screw 9.

The shank 6, of the handle 5, depends in the post section 8, through the upper end thereof and is normally secured rigidly thereto, as by clamping screw 10, and is slidable vertically with respect to the supporting post when released by clamping screw 10, to adjust the handle to the elevation desired by the particular patient.

Any suitable manually-operated electric switch, such as 25, is provided for stopping and starting the motor 23, and this switch is, preferably, conveniently located and accessible to the patient standing on the platform. For instance, I locate this switch on the upper rear portion of the post that carries han-

dle 5. The electric wire cable 26, leads from the switch to the motor, and the free end electric wire cable 27, leads from the switch and at its free end is equipped with a suitable terminal whereby the wire cable can be plugged into any convenient socket for coupling into the house power circuit.

In using the apparatus, the patient steps up onto the platform 11, standing in upright position with both feet on the platform. The load thus placed on the platform depresses the same the distance permitted by the cam 14 according to the particular position of the cam at the time. The patient has preferably consumed the desired quantity of water preparatory to the shaking operation, and having positioned his feet, as desired, on platform 11, and grasped elevated handle 5, that is conveniently located at the desired elevation in front of the patient, thereupon throws switch 25, to start the motor, and initiate the shaking operation.

The handle 5, or the equivalent thereof, performs an important function, in enabling the patient to maintain his balance in the desired upright position on the oscillating platform or other support, and to provide the patient with a steady support or brace to give the patient confidence against falling from his otherwise unstable support.

The particular example illustrated, that provides an elongated oscillatory platform swinging vertically from one end, thereby performs an important function in that different points in the length of the platform oscillate vertically different distances so that the patient by moving his position rearwardly on the platform increases the vertical throw to which he is subjected, and by moving forwardly subjects himself to shorter vertical shaking movement.

When the treatment has continued for the desired or prescribed duration, the patient stops the motor by switch 25, and thereupon steps down the platform 11, aided by handle 5, which also aids the patient in stepping up onto the platform and in maintaining himself in a steady position thereon.

The mechanism for causing vertical oscillation of the support for the patient, whether the patient stands, or sits thereon with his torso upright, to shake the patient, approximately as hereinbefore described, is so constructed and arranged that the descending movements are rapid with respect to the speed of the ascending movements, preferably the support is elevated its full upward stroke and then permitted to drop by gravity to produce the desired shaking action on the human body. The cushions 18, are hence provided to prevent hammering or jarring blows by the dropping movements of the support 11.

It is evident that various changes, modifications and variations might be resorted to without departing from the spirit and scope

of my invention and hence I do not wish to limit myself to the approximate disclosures hereof.

What I claim is:—

1. Apparatus for rapidly shaking the human body vertically while the patient is in upright position to promote certain bodily functions, comprising a base, a vertically swingable stand carried by the base to receive and carry the patient and at its free end portion having a depending roller, a rotating cam carried by the base under the stand for cooperation with said roller to uphold the stand and the patient thereon and to rapidly swing the stand up and permit the same to drop by gravity, and spring cushioning means carried by the base and normally holding the unloaded stand elevated with respect to said cam, said spring cushioning means arranged to cushion the gravity dropping movements of the stand when carrying the patient.

2. Apparatus for rapidly shaking the human body vertically while the patient is in upright position, comprising a hollow open top base, a patient carrying and receiving stand arranged over the open top of the base and at one end pivotally joined to the base, spring cushioning means normally yieldingly upholding the free end of said stand when unloaded, a shaft supported in the stand and provided with actuating means for cooperating with the free end of the stand to rapidly swing the stand vertically when loaded by the weight of the patient thereon, a motor in the base, and driving transmission from the motor to said shaft for rotating the shaft, said transmission including a loose coupling.

3. Apparatus for rapidly shaking the human body vertically while the patient is in upright position to promote certain bodily functions, that includes a hollow open top base, a patient carrying and receiving stand on which the patient stands in upright position, arranged over the open top of the base and at one end portion pivotally joined to the base, spring cushioning means normally yieldingly upholding the free end of said stand when unloaded, a shaft supported in the stand and provided with actuating means for cooperating with the free end of the stand to rapidly swing the stand vertically when loaded by the weight of the patient thereon, and permit the same to drop by gravity to produce a patient shaking jar, a motor in the base, and driving transmission from the motor to said shaft for rotating the shaft.

4. Kinesitherapy apparatus including a base; a platform carried by the base and mounted to swing vertically with respect thereto from one end portion, whereby the vertical movement of the platform increases from said end portion toward the opposite end of the platform, and whereby the patient standing on and supported by said platform

can vary the vertical movements of his body with the platform by shifting his position on the platform toward either end thereof; means carried by the base to enable the patient
 5 to maintain his position on the platform during the swinging movements thereof; and mechanism for causing said platform when depressed by the weight of the patient standing thereon, to swing vertically on short
 10 rapidly repeated up and down patient shaking movements.

5. Kinesitherapy apparatus including a base; a support for the patient; rotary means carried by said base for cooperating with
 15 said support, when said support is depressed by the weight of the patient carried thereby, to impart rapidly repeated lifting movements to said support and its load and patient shak-

ing gravity return drops on its release by the completion of each lifting movement; and
 20 spring means normally upholding said support when not loaded by the patient, elevated with respect to said rotary means.

6. Kinesitherapy apparatus including a base; a rotary cam carried thereby; and a
 25 vertically movable patient supporting platform carried by the base, and on which the patient stands in upright position, said cam being formed and cooperating with the plat-
 30 form to lift quickly and then release the platform for patient jarring drop under the weight of the patient, on each cam rotation.

Signed at Washington, D. C., this 24 day of January, 1927.

LEO SIMMONS.