Feb. 27, 1951 A. A. GAUDETTE ET AL. 2,543,493

MASSAGING APPARATUS

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Fig. 1.

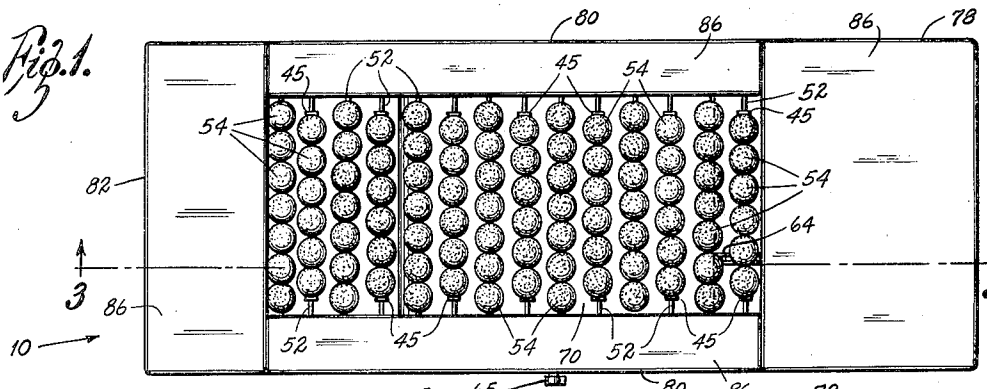


Fig. 2.

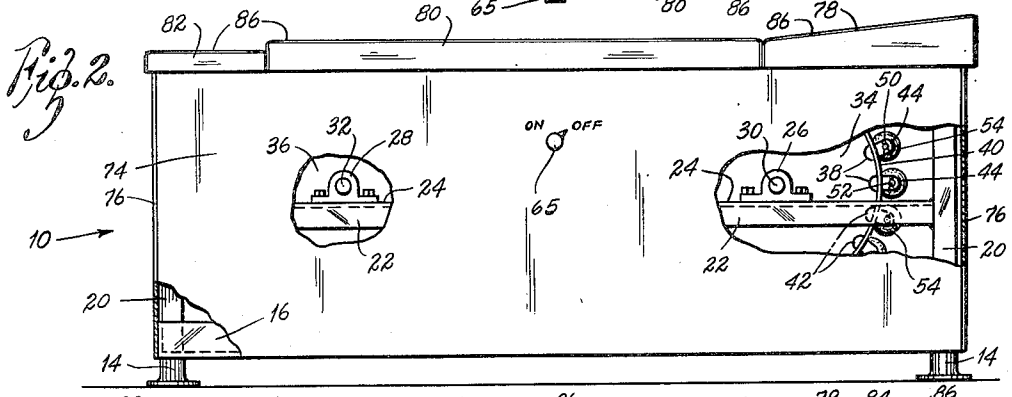


Fig. 3.

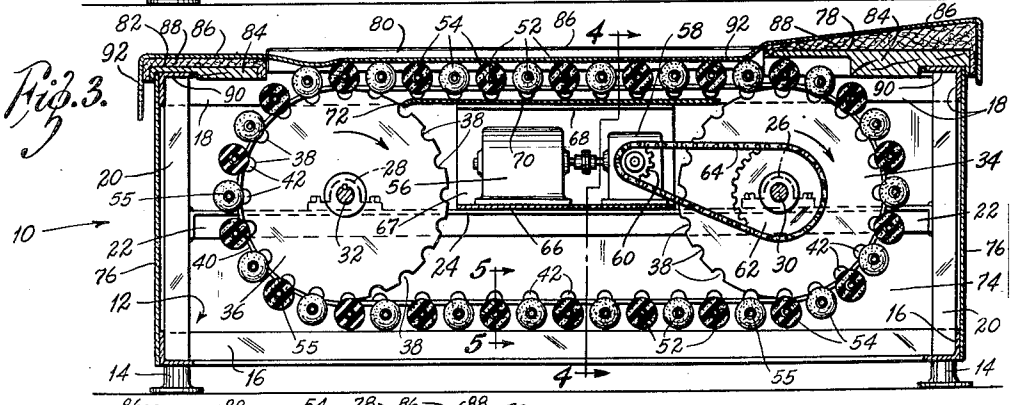


Fig. 4.

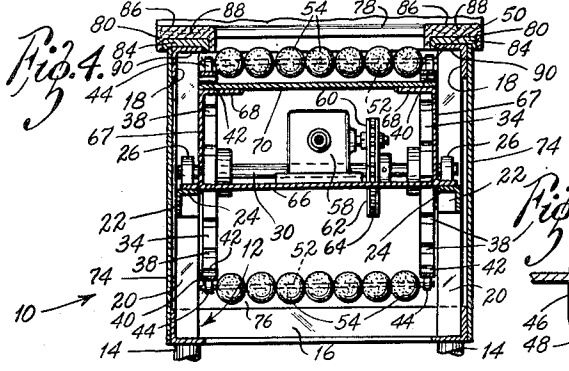


Fig. 5.

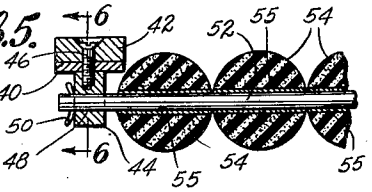
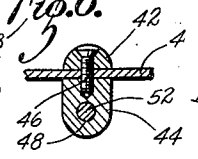


Fig. 6.



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MASSAGING APPARATUS

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7 Claims. (Cl. 128—58)

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The present invention relates generally to equipment for use in physiotherapy.

More particularly, the invention relates to apparatus for mechanically massaging portions of the human body. The apparatus is so designed that the massaging action thereof may be applied along the entire length of the body, or if desired, only to specific parts of the body, as will appear.

The principal objects of the invention are to provide a massaging apparatus which can be set in motion or stopped at the will of the patient; whereon the patient may subject any portion of his anatomy to the action of the device; wherein the spherical massaging elements are so arranged that each and every exposed portion of the human body may be engaged; which is provided with means whereby the patient himself may vary the intensity of the massaging action; and which though of comparatively light construction, nevertheless is capable of sustaining and treating patients whose body proportions may vary from the normal to the enormous.

In a general summary, the invention may be said to include a base frame; a first pair of transversely spaced sprocket wheels mounted on a driven cross shaft supported on said base frame; a second pair of transversely spaced sprocket wheels mounted on another cross shaft also supported on the base frame; a pair of endless belts each trained about one of the first pair and one of the second pair of said sprockets; a plurality of transverse spindles extending between the belts and each rotatably supporting a number of resilient rubber balls; means for supporting the upper stretches of said belts; means for driving said belts; and cushioned head, foot, and arm rests for the comfort of the patient being treated, as well as for facilitating shiftings of the body, as will be explained.

Normally, though not necessarily, a sheet of linen or the like may be interposed between the body of the patient and the spherical massaging elements. Such sheet may be secured to the apparatus at its corners by any suitable fastening means.

Other objects and advantages inherent in the present invention will be apparent or referred to in the description to follow, reference being had also to the drawing wherein the preferred embodiment of the apparatus is illustrated.

In said drawing:

Fig. 1 is a top plan view of an apparatus embodying the present invention, the sheet of linen

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or the like sometimes spread thereover being omitted;

Fig. 2 is a side elevational view thereof, portions of a side wall being broken away;

Fig. 3 is a longitudinal vertical sectional view taken approximately on line 3—3 in Fig. 1, a sheet of linen or similar material being shown spread over the apparatus;

Fig. 4 is a transverse vertical sectional view taken approximately on line 4—4 in Fig. 3;

Fig. 5 is an enlarged vertical sectional view taken on line 5—5 in Fig. 3; and

Fig. 6 is a similar view taken on line 6—6 in Fig. 5.

In Figs. 1 through 4, the massaging apparatus comprising the present invention is generally designated by numeral 10.

It includes a base frame generally designated 12, which is preferably supported a slight distance above the floor by means of pedestals or the like 14, rigidly secured thereto.

The cross-sectional configuration of the structural members which form the base frame is not critical. In the embodiment illustrated, the base includes a lower frame 16 of angle bars preferably welded together at the corners, as is understood. It also includes a similar upper frame 18, and a solid square post 20 at each corner extending between the horizontal leg portions of said frames, as shown.

Although not indicated on the drawing, it is noted that all of these structural members are welded or otherwise secured together so as to form a rigid base of skeleton form, with a pedestal 14 therefor at each corner.

Welded as shown, or otherwise rigidly secured at their ends to a pair of said posts, are two side angle rails each designated 22, and each including a horizontally disposed flange portion 24. Rigidly mounted on each said rail near the right hand end of the apparatus is a bearing block 26, and near the left hand end, a bearing block 28.

Rotatably supported in the bearing blocks 26 are the ends of a cross shaft 30, and in the bearing blocks 28, the ends of a cross shaft 32. Rigidly secured to shaft 30 is a pair of transversely spaced sprocket wheels 34, and to shaft 32, a similar pair of sprocket wheels 36.

As seen to best advantage in Fig. 3, each of the sprocket wheels 34 and 36 is preferably formed by providing a circular series of evenly spaced semicircular grooves 38 in its peripheral edges, and as is clear from Fig. 4, these wheels are fixed to their respective shafts slightly inwardly from the inner marginal edges of side rails 22.

It should also be clear that each sprocket wheel 34 is in alinement with one of the sprocket wheels 36, so that an endless belt 40 is trained over each aligned pair thereof. The belts 40 are necessarily of sturdy flexible material, and are provided at intervals corresponding to the spacing of the grooves 38, with semi-circular lugs 42 and perforated ear members 44, of metal.

As shown in detail in Figs. 5 and 6, each spaced lug 42 projects from the inner face of belt 40 opposite an ear member 44, each of the latter projecting from the outer face of said belt. A countersunk screw 46 simultaneously secures a lug 42 and its adjacent ear member 44 to the belt.

Extending transversely of the apparatus between the belts, with their ends passing through the apertures 48 in the ears 44, and secured against lateral movements by cotter pins 50 or the like, are spindles or rods 52.

Rotatably mounted on each of said rods is a plurality of spherical massaging elements, or sponge rubber balls 54, each provided with a thin metallic bushing or bearing sleeve 55. As shown in Fig. 1, the massaging elements are so arranged that no exposed portion of the body will escape treatment as the belts revolve.

In other words, the balls on one spindle are, so to speak, staggered relative to the balls on the adjacent spindles. Thus, in the arrangement shown, seven balls are mounted on one spindle, six on the next, seven on the next, and so on. Obviously, the number of balls is optional, it being only necessary that the staggered arrangement be adhered to for best results.

Any suitable means may be employed to maintain the balls 54 which are on the six unit spindles in place. Thus, a spacer sleeve may be interposed about the spindles between the end balls and the ear members 44, or as shown in Fig. 1, retaining collars 45 may be welded or otherwise rigidly secured to the spindles adjacent the end balls.

Reverting now to Figs. 3 and 4, the means for driving the belts 40 include a motor 56, a conventional speed reducing device 58, a small sprocket 60 on the end of the speed reducer output shaft, a larger sprocket 62 rigidly secured to shaft 30, and an endless chain 64 connecting the two sprockets. A manually operable switch 65 is provided for controlling the motor, and a speed reduction, whereby the sprocket wheels 34 and 36 make approximately eight revolutions per minute, has been found ideal.

The motor 56 is mounted on a horizontally disposed substantially channel-shaped supporting bracket which comprises a base portion 66, and vertical walls 67, the latter terminating in inwardly extending horizontal flange portions 68, as shown especially in Fig. 4.

The base portion 66 is rigidly secured at its ends to the horizontal flange portions 24 of the side rails 22, and rigidly secured to and supported by the inturned flanges 68 of side walls 67 is a horizontally disposed runner plate 70. Said plate, as shown in Fig. 3, terminates at its left end in a downwardly curved or arcuate portion 72, the purpose of which will appear further on.

As shown in the drawing, the base frame 12 and the elements supported thereby, are preferably encased by side panels 74, and end panels 76. These panels may be of plywood or of metallic sheathing, and are maintained in place by any selected means, as is understood. An access opening normally closed by a removable cover plate, may be provided in one of said panels.

A head rest member 78, arm rest members 80, and a foot rest member 82 are provided for the patient. Each of these rest members includes a base portion 84 of wood or analogous material, a covering of leather or the like 86, and a layer of padding 88 interposed between said base and said covering.

As illustrated in the drawing, the base portions 84 are so formed as to receive and be supported by the upper angle frame 18. That is to say, said base portions are recessed from below so as to straddle the inturned flange portions 90 of said frame, so that all of said cushioned rest members are normally maintained in place without the use of fastening means.

It is of course understood that the manner in which the cushioned rest members are constructed forms no part of the invention. However the disposition of them relative to one another and to the exposed assembly of massaging elements is important.

In other words, as is evident from an inspection of Figs. 1 and 3, none of the moving mechanism except the massaging elements can possibly come into contact with the body of the patient. Thus the patient is able to administer treatment without the aid of an attendant, and without danger of being bruised or scratched in the process. The head rest 78 is preferably inclined upwardly as shown; the arm rests are horizontally disposed; and the foot rest is also horizontally disposed but in a lower plane than the arm rests, so that massaging of the calves is facilitated.

If desirable, especially in the case of a patient whose skin is extremely sensitive, or for example when abdominal treatment is contemplated, a textile sheet, such as linen or the like, may be draped over the apparatus. Such a sheet is shown only in Fig. 3, and is indicated by numeral 92.

From the foregoing description and from an inspection of the drawing, it should be manifest that the invention provides a novel body massaging apparatus which is highly efficient, absolutely safe, simple in construction and which does not require an attendant, means being provided whereby each user may regulate the action so as to obtain for himself the maximum benefit with the least discomfiture.

Operation

Assuming that a patient is lying on his back atop the apparatus, his head reclining on the cushion 78, arms on cushions 80, and feet on cushion 82, switch 65 is manipulated from the "off" to the "on" position. The power emanating from the thus energized motor 56 is transmitted to the shaft 30 via speed reducing device 58, sprockets 60 and 62, and chain connection 64 to drive sprocket wheels 34 clockwise.

The speed reduction is preferably such that the wheels 34 rotate at approximately eight revolutions per minute, which has been found by numerous tests to be most effective. Should the massaging action be too violent with the body relaxed and the weight of the patient bearing against the rotating massage balls as they pass by, the patient may raise his body slightly as is understood.

Because of the depressed position of foot rest 82, massaging of the calf of either or both legs of the patient is facilitated. The soles and heels

of each foot may be acted upon by flexing the knees.

In other words, without entering into a redundant description of just how it is done, it should be evident that the device affords the user means whereby he may at will, shift his body into various positions so that many parts thereof, for example the legs, arms and hands, thigh, feet, buttocks, abdomen, and so on, may be subjected to the massaging action of the apparatus.

Body shifting may be safely undertaken without stopping the motor, if desired. Switch 65 is located within easy reach of the patient so that the motor may be shut off at any time.

The semi-circular contour of the lugs 42 enables the ball assembly to ride smoothly over the runner plate 70, the arcuate edge 72 of the latter being provided to compensate for any sagging of the upper stretches of belts 40. The primary purpose of plate 70 of course, is to maintain the upper stretch of the moving massage assembly in a horizontal position, regardless of the weight imposed thereupon.

The mechanical massaging apparatus illustrated and described obviously may be modified without departing from the spirit of the present invention, the scope of the latter being limited only by the appended claims.

What we claim is:

1. Massaging apparatus of the character described, including in combination a base frame, a first pair of transversely spaced sprocket wheels each provided wtih a circular series of evenly spaced semi-circular grooves in its peripheral edge, a first driven cross shaft whereon said sprockets are mounted, bearing blocks mounted on said frame for rotatably supporting said driven shaft, a second pair of similar sprocket wheels, a second cross shaft whereon the latter sprockets are mounted, bearing blocks also mounted on said frame for rotatably supporting the latter cross shaft, a pair of endless belts each trained about one of the first and one of the second pairs of said sprocket wheels, a plurality of transverse spindles extending between the belts and each having its opposite ends secured to one of them, a predetermined number of resilient spherical massage elements rotatably supported on each of said spindles, means for supporting the upper stretches of said belts, means for driving said belts, and cushioned head, foot, and arm rests for the comfort of the patient being treated.

2. Massaging apparatus of the character described, including in combination a base frame, a first pair of transversely spaced sprocket wheels, a first cross shaft whereon said sprockets are mounted, bearing blocks mounted on longitudinal rails included in said base frame for rotatably supporting the end portions of said cross shaft, a second pair of similar sprocket wheels, a second cross shaft whereon the latter sprockets are mounted, a circular series of evenly spaced semi-circular grooves provided in the peripheral edges of all of said sprocket wheels, an endless belt trained over one of the first and one of the second pairs of sprocket wheels, a plurality of evenly spaced spindles extending between said belts, the ends of said spindles being supported in perforated ears secured to the belts, a predetermined number of sponge rubber balls provided with bearing sleeves rotatably mounted on each spindle, a horizontally disposed supporting plate for the upper stretches of said belts, means for driving said belts at a selected rate of speed, and cushioned members removably supported on said base for supporting portions of the user's body not being subjected to the action of the said apparatus.

3. The apparatus of claim 2 wherein said base includes a lower frame, a similar upper frame, said frames being horizontally disposed and connected at each corner by vertical posts to form a rigid structure of skeleton form; wherein two side angle rails are rigidly secured at their ends to a pair of said posts; wherein the said bearing blocks for the two cross shafts are mounted on the horizontally disposed flange portions of said side rails; wherein the base frame aforesaid is encased within suitable side and end panels; and wherein a manually operable switch for starting and stopping the means for driving said belts is mounted on the outer face of one of said side panels.

4. The apparatus of claim 2 wherein each of said pair of endless belts is of sturdy flexible material and is provided at predetermined spaced intervals with semi-circular metallic lugs projecting from one side thereof, perforated metallic ear members projecting from the other side thereof opposite each said lug, wherein a countersunk screw simultaneously secures each opposed lug and ear to said belt, and wherein each perforated ear member supports one end of one of said spindles.

5. The apparatus of claim 2 wherein the supporting means for the upper stretches of said belts comprises a horizontally disposed runner plate terminating at one end in a downwardly curved portion; wherein said plate is rigidly secured to and supported by the inturned flanges of the side walls of a substantially channel-shaped bracket the base portion of which is supported by the side rails of said base frame; and wherein the means for driving said belts at a selected approximate rate of speed includes a motor, a speed reducing device driven thereby, a small sprocket on the end of the output shaft of said device, a large sprocket rigidly secured to that cross shaft whereon are mounted said first pair of transversely spaced sprocket wheels, and an endless chain connection between said small and said larger sprocket.

6. The apparatus of claim 2 wherein said cushioned members include a head rest, a pair of arm rests, and a foot rest removably supported on the upper angle frame of said base, said members being so positioned relative to one another and relative to the exposed assembly of massaging elements that none of the moving mechanism of the apparatus except the massaging elements can possibly come into contact with the body of the user, and wherein said head rest is upwardly inclined, said arm rests are horizontally disposed, and said foot rest is also horizontally disposed but in a plane lower than that of the arm rests.

7. Massaging apparatus of the character described, comprising in combination: a rectangular base frame supported at each corner by a pedestal, said frame including a pair of longitudinal side rails; a first cross shaft; bearing blocks mounted on said rails for rotatably supporting said shaft; a second cross shaft; other bearing blocks likewise mounted on said rails for rotatably supporting the second cross shaft; a pair of transversely spaced sprocket wheels rigidly secured to said first shaft with one wheel adjacent each end of the shaft; a pair of transversely spaced sprocket wheels rigidly secured to said second shaft with one wheel adjacent each end of the shaft, all of said sprocket wheels having a

circular series of evenly spaced semi-circular grooves formed in their peripheral edges; a pair of endless belts each connecting one of the first-named with one of the second-named pair of sprocket wheels, each of said belts having evenly spaced lugs secured thereto on one side thereof for engaging said grooves of the sprocket wheels; a plurality of horizontally disposed evenly spaced spindles extending between said belts; means for mounting the opposite end portions of each said spindle on one of said belts, said means including perforated ear members each secured by countersunk screws to said belts opposite one of said lugs; a predetermined member of sponge rubber balls each provided with a thin metallic bearing sleeve rotatably mounted on each of said spindles; means including a motor, a speed reducer, and a chain and sprocket assembly for driving said belts at a predetermined rate of speed; a manually operable switch for starting and stopping said motor; a bracket secured to said base frame for supporting said motor; a horizontally disposed plate terminating at one end in a downwardly curved portion for supporting the upper stretches of said belts in a substantially horizontal plane; and head, arm and foot rest members so mounted that none of the movable mechanism aforesaid except the rubber ball elements will contact the body of a person using the apparatus.

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