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(54) Rebounder antistatic provisions.

(57) In its preferred form, the invention comprises an electrically conductive path leading from the mat of a rebounder to the ground, forming an earth to facilitate diffusion of any static charge built up in the mat.

FIG.1

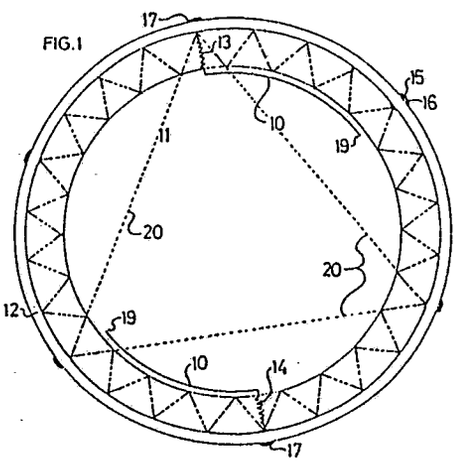
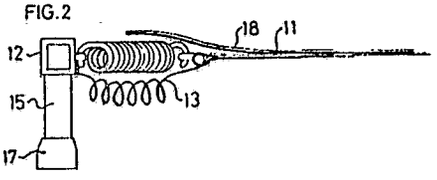


FIG.2



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Description

Rebounder Antistatic Provisions

This invention relates to rebounders, with particular application to use with rebounders having mats formed of a synthetic fibre.

It is an object of the present invention to provide an improved and/or novel rebounder, and preferably also to go at least partway towards reducing or preventing build up of a static electrical charge in and around the user of a rebounder as the result of the rebounding movement, and/or removing or reducing any existing charge, or at least to provide the public with a useful choice.

In one aspect the invention provides a rebounder having a mat suspended within a frame by a plurality of springs, including an electrically conductive path extending from said mat to ground contacting elements, forming in normal use an electrical earth by which a static charge associated with said mat can be dispersed.

Preferably the springs are arranged around the periphery of the mat in pairs, each pair comprising two springs attached to said frame at substantially a common point, and said pairs being arranged in triplets to form apices of substantially triangular patterns of support across said rebounder.

Preferably the two springs of each pair are wound oppositely ie: one clockwise, and the other anticlockwise.

Preferably adjacent springs at adjacent apices are attached to the periphery of the mat at substantially common points, such that the springs and the cleats on frame and mat form a substantially continuous chain around the mat.

Preferably there are 48 springs.

Preferably the electrically conductive path includes one or more wires set substantially adjacent to the periphery of the mat, and extending in a concentric arc at least partway around the mat.

More preferably there are two wires, diametrically opposed on the mat.

Preferably the wires extend closkwise around the mat from the point at which contact is made with the surrounding frame.

Preferably the connection between mat and frame has elasticity.

More preferably the connection between mat and frame is a wire coiled in the form of a spring.

Preferably at least one wire is coiled clockwise, and at least one anticlockwise.

In another aspect the invention provides footing for a rebounder wherein one or more of the rebounder support feet are electrically conductive, and one or more feet solely provide stability in use.

In a further aspect the invention provides insulation means between a rebounder mat and the user of said rebounder, comprising an electrically non-conductive mat or film between said rebounder mat and said user.

In a further aspect the invention provides a substantially circular rebounder having a mat suspended within a frame by a plurality of springs, and having principle lines of support arranged in substantially equilateral triangular patterns, with a regular rotational displacement betwen said patterns about the mat centre.

Other aspects of the invention will be made apparent in the following description of embodiments of the invention

The following is a description of preferred forms of the apparatus, given by way of example only, with reference to the accompanying drawings, in which:

Figure 1: shows a rebounder of the present invention in plan view.

Figure 2: shows a part of a rebounder of the present invention in side view and in section.

Figure 3: shows details of a part of a rebounder of the present invention in plan view.

It has been found with rebounders presently available that use of the apparatus can result in a significant build up of a static electrical charge in and around the mat, and a user thereof. This is due in part to the use of synthetic fibre in the weave of the mat, which inherently contains and readily builds up such a charge when stretched and vibrated. Synthetic fibre mats are used in preference to canvas or other natural fibre mats, in which the problem of static electricity generation is significantly lesser although still present, because such natural fibre mats produce a drum-like resonance in use, which is generally not found desirable. The buildup of an electrical charge of this type in the user of the apparatus, and in the apparatus itself, is commonly found to be similarly undesirable. It is therefore of importance to reduce or remove such a charge as it is created in a rebounder, and/or the user of a rebounder.

It has also been found with rebounder presently available that jarring can occur while rebounding, due to uneven support of the mat giving areas of high and low tension which results in successive bounces on the mat being irregular. The effects of static build up combined with the jarring experienced on a poorly supported mat can be that the benefits to be gained from rebounding are largely outweighed, and the vitality of the user is not significantly increased by use of the apparatus.

Rebounders of the present invention have several features which are believed to go at least partway towards overcoming the above difficulties.

The present invention in its preferred form comprises a circular mat 11 held in a circular frame 12 of approximately 1 metre diameter, supported at a height of approximately 20 cm on legs or stands.

The springs supporting the mat are arranged in pairs extending from common cleats on the frame 12, where the angle between them is preferably 60°. Additionally the right spring of each pair is attached to the mat 11 by the same cleat as the left spring of the adjacent pair, such that the springs and cleats form a substantially unbroken 'chain' around the rebounder between the mat and the frame.

As shown by the dotted lines 20, the pairs of springs are arranged to form the apices of equilat-

eral tringular patterns of support with other pairs of springs across the mat. In a mat having 48 springs as shown in Figure 1, there are 8 such tringles of support (6 springs in each) with a regular rotational displacement of 15° about the mat centre between one and the next. Each pair of springs is additionally diametrically opposed to another pair on the opposite side of the mat, and as a consequence provides support directly across the centre of the mat, as well as across intermediate and peripheral regions. The even and regular pattern of support provided by this arrangement is found to substantially reduce jarring. It will be appreciated that other patterns, having different numbers of springs, could be made according to the principles of the present invention. The example described above is however seen as preferable at present, as it not only provides an even and regular support pattern across the mat, but also provides a regular array of points around the circumference for static discharge from the mat, and is believed to be better radionically than other patterns.

The radionic effect is believed to be further improved if the springs are provided alternately as clockwise and anticlockwise springs, with the preferred arrangement for the Northern hemisphere being for the right spring of each pair to be wound clockwise from the surrounding frame to the mat, and the left spring of each pair to be wound anticlockwise. A Northern hemisphere arrangement is shown in Figure 3. The opposite arrangement is preferred for the Southern hemisphere.

While the springs can act as discharge points for static electricity built up in the mat 11, it is preferred that the apparatus also includes wires 10 of copper or similarly conductive material, incorporated into the fabric of the mat 11 as shown in Figure 1, starting at two opposed points 19 approximately 5-10 mm in from the edge and extending in an anticlockwise arc around the mat (viewed from above as in Figure 1) of approximately 60°. They then turn to the edge of the mat and extend therefrom to the rebounder frame 12, one spiralling clockwise 13 and the other anticlockwise 14. This spiral has an advantage in that it provides resilience in this connection between mat and frame, which could otherwise be broken by movement of the mat in use.

It is also found to have positive radionic effects.

The wires might be woven into the fabric of the mat, or alternatively fixed to either the top or bottom surface of the mat. Metal tapes or plates might be used instead of wires, or wire cables might be used, but wire is seen as preferable.

The frame 12 is metal, and consequently conducts the charge from the wires 10 to the support legs 15.

The support legs 15 should be capped by plastic or rubber feet 16 to avoid scuffing and damage to the floor on which the rebounder stands. This presents a difficulty, in that such feet are not generally electrically conductive, and therefore prevent discharge of static electricity. Electrically conductive rubber feet can be used, but these are significantly more expensive than ordinary rubber or plastic feet. Conductive, antistatic plastic feet can also be obtained, but these have a hard, slippery surface which does not grip the floor. Consequently two support legs of the six in the preferred rebounder have antistatic plastic feet 17, while the other four have standard non-conductive plastic feet to grip the floor and hold the rebounder in place.

Preferably the conductive feet are on the legs nearest the points at which the wires 10 contact the frame 12, but this is not essential, as the whole frame is conductive, and a charge transmitted to it at any point can flow to any support leg. Similarly, only one conductive antistatic foot is required, although two are preferred.

The length of the arc around which the wires extend in the mat is not essentially 60°, and may be varied. It may be found more effective in discharging a static electricity build up for the wires to extend 15° to 180° or some other distance around the mat, but the 60° length is found to be preferable for the purposes of this invention. While no limitation on the length of the wires, or the number of wires, forms part of the scope of the invention, it appears preferable at the present time for two opposite wires in an approximately 60° arc to be used.

In addition to the above, means may be used to insulate the user from the synthetic fibre mat. While a static charge is generated on the user of a rebounder by movement through the air, the principle source of such a charge is the mat itself. A number of means could be provided for effecting insulation of the user from the mat but the simplest, and most preferable is probably to provide a cover mat 18 of some insulating material such as rubber, over the synthetic fibre mat 11. Preferably the cover mat 18 is of greater diameter than the rebounder mat 11, so as to cover the suspension springs to some extent. The cover mat 18 may be fixed to the rebounder mat 11 in some fashion, such as by clasps or stitching, but this is not essential.

It will be appreciated that a variety of changes might be made to the above examples within the general scope of the invention.

Apart from variability in the length of wires and number of wires mentioned above, the type of wire and the placement of the wire relative to the edge of the mat may also vary. Changes may also be necessary for use with different sizes and types of rebounders. The invention may be used, possibly with modifications, on natural fibre mats as well.

Other changes might also be made within the general spirit and scope of the invention, as characterised by the following claims:

Claims

1. A rebounder having a mat suspended within a frame by a plurality of springs, characterised in that an electrically conductive path extends from said mat to ground contacting elements, forming in normal use an electrical earth by which a static charge associated with said mat can be dispersed.

2. A rebounder as claimed in claim 1, further characterised in that said path includes said

springs, said springs being arranged around the periphery of said mat in pairs, each said pair comprising two springs attached to said frame at substantially a common point, and said pairs being arranged in triplets to form apices of substantially tringular patterns of support across said rebounder.

3. A rebounder as claimed in claim 2, further characterised in that there are 48 said springs, arranged in 24 said pairs, forming apices of 8 said substantially triangular patterns of support.

4. A rebounder as claimed in any one of claims 1 to 3, further characterised in that said path includes one or more wires incorporated into said mat.

5. A rebounder as claimed in claim 4 further characterised in that two said wires are provided, substantially oppositely disposed on said mat.

6. A rebounder as claimed in claim 4 or claim 5, further characterised in that said mat is substantially circular, and said one or more wires extend near the periphery of said mat in one or more arcs about the centre of the mat.

7. A rebounder as claimed in any one of claims 1 to 6 characterised in that said frame is supported on legs, said legs having feet, wherein one or more said feet are electrically conductive, and said electrically conductive path includes one or more said legs.

8. A rebounder as claimed in claim 7, further characterised in that one or more said feet are not electrically conductive, and are primarily adapted to provide stability in use.

9. A rebounder as claimed in any one of claims 1 to 8 further characterised in that said mat is covered by insulation means comprising an electrically non-conductive mat or film placed in normal use on or over said mat.

10. A rebounder as claimed in any one of claims 1 to 9, further characterised in that said electrically conductive path includes a plurality of electrically conductive elements extending from said mat to said frame, said elements being helically coiled and having elasticity, one or more said elements being coiled clockwise, and one or more other said elements being coiled anticlockwise.

FIG.1

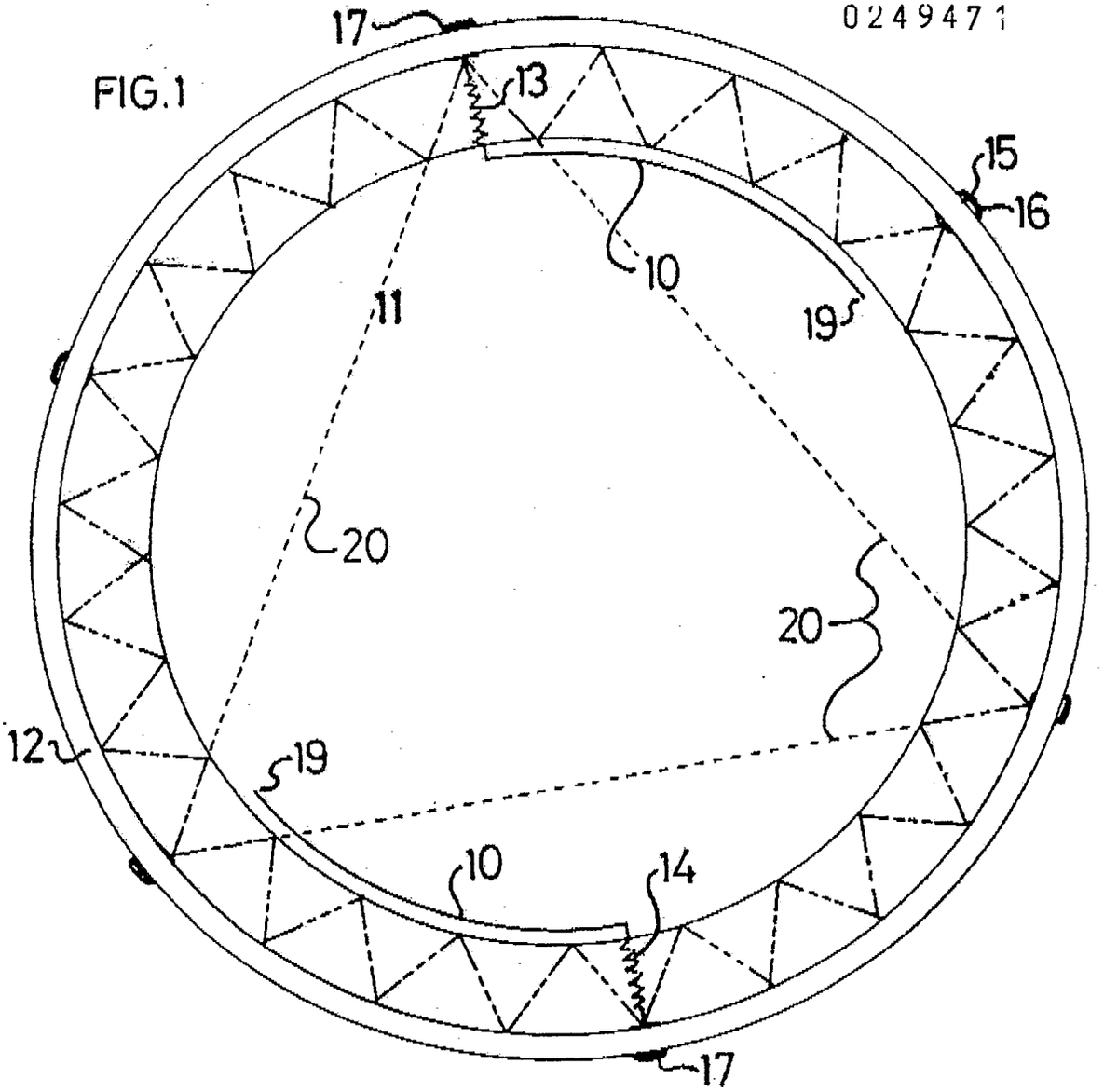

FIG.2

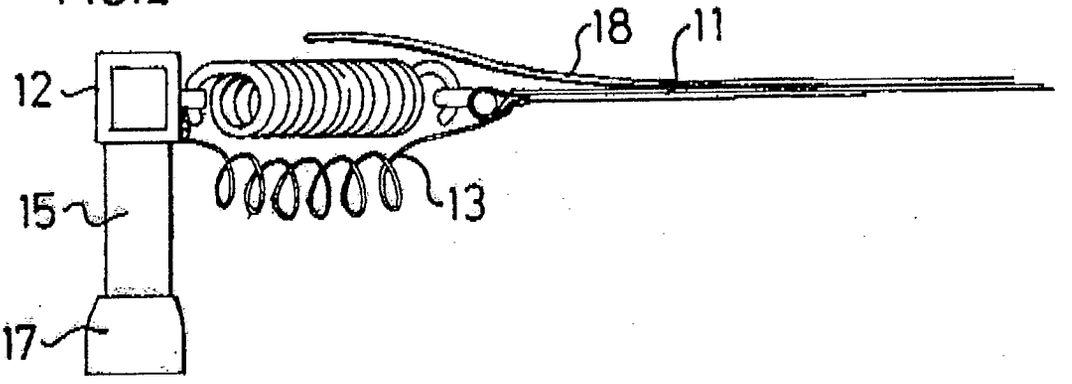

FIG. 3