A shock/impact absorbing structure of a treadmill wherein a second roller set is positioned correspondingly at the internal side of the first roller set and includes a front and a rear roller disposed at the front and rear ends of the supporting board. A shock/impact absorber is positioned around the second roller set. The top side of the shock/impact absorber is directed to the internal side of the running belt. When the operator steps on the running belt, the shock/impact absorber is forced to be moved in rotation by the running belt such that the shock/impact absorber has a certain region in constant contact with the supporting board, thereby providing a direct shock/impact absorbing interface for the running belt. In this way, the noise can be reduced and the injuries during the exercise sessions can be avoided.
FIG. 1
PRIOR ART
SHOCK/IMPACT ABSORBING STRUCTURE OF A TREADMILL

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention relates to a treadmill, and more particularly to a treadmill with a rotatably movable shock/impact absorber under the running belt for reducing the noise and avoiding the injuries during the exercise sessions.

[0003] 2. Description of the Related Art

[0004] Due to the change of the current social structure, most people have a hectic life. Therefore, the exercise time is much reduced. Meanwhile, indoor sport (fitness) apparatuses become more and more popular. The treadmill is regarded as one of the most popular fitness apparatuses.

[0005] As shown in FIGS. 1 and 2, a conventional treadmill includes a machine body 11, a base frame 12 positioned on the machine body 11, a front and a rear roller 13, 14 attached to the base frame 12, and a deck 16 for supporting an running belt 15 around the front and rear rollers 13, 14. The deck 16 is made of hard material like wood that does not achieve the shock/impact absorbing effect when the user walks or runs in place on the treadmill. In other words, the user walks or runs uncomfortably on the treadmill as if he stands on a concrete ground. Moreover, the noise of vibration is loud. Meanwhile, the reactive force created easily causes unexpected sport injuries.

[0006] Accordingly, it is desirable to develop a treadmill with the shock/impact absorbing structure. As shown in FIG. 3, a shock/impact absorber 17 is fitted to the top side of the deck 16 for fulfilling the shock/impact absorbing function. Such a treadmill is disclosed, for example, in PCT WO 03/031664 A1. The shock/impact absorber 17 is fitted to the top side of the deck 16 and positioned at the bottom side of the running belt 15. When moving around the front and rear rollers 13, 14, the running belt 15 is constantly in contact with the stationary shock/impact absorber 17, thereby creating an extremely great frictional resistance that results in a problematic operation of the running belt 15. What is more important is the fact that the shock/impact absorber 17 will be worn out gradually and downward by the frictional force from the surface, thereby considerably reducing the service life. This is the greatest disadvantage of the above-mentioned structure.

[0007] As shown in FIG. 4, another treadmill according to U.S. Pat. No. 6,077,200 includes a plurality of rubber pads 18 between the deck 16 and the base frame 12 or cushioning/elastic elements 19 at the bottom of the base frame 12. Besides, further treadmills of prior arts are provided with air bag or hydraulic cylinder for achieving the shock/impact absorbing effect. However, the above-mentioned conventional components are not capable of counteracting the reactive force of the deck directly and effectively. Especially when the running speed increases, there is not enough time to counteract the reactive force. As a result, further improvements are required.

SUMMARY OF THE INVENTION

[0008] An object of the invention is to eliminate the above-mentioned drawbacks of traditional treadmills during exercise sessions and to provide a shock/impact absorbing structure of a treadmill that permits a direct shock/impact absorption and achieves a comfortable and noiseless operation. Moreover, the operator is not susceptible to exercise injuries to ankles and knees.

[0009] Another object of the invention is to provide a shock/impact absorbing structure of a treadmill with a shock/impact absorber that is inactively and simultaneously moved by the running belt. Therefore, the contact surface won’t create the sliding friction so that a smooth operation of the running belt is ensured. Moreover, the service life of the shock/impact absorber can be prolonged.

[0010] In order to achieve the above-mentioned object, the invention includes a shock/impact absorbing structure of a treadmill that includes:

[0011] a) a machine body;

[0012] b) a base frame positioned on the machine body and having longitudinal bars at both sides thereof;

[0013] c) a supporting board interposed between both of the longitudinal bars, a first roller set being positioned at the front and rear ends of the longitudinal bars; and

[0014] d) a running belt positioned around the first roller set,

wherein a second roller set is positioned correspondingly at the internal side of the first roller set and includes a front and a rear roller disposed at the front and rear ends of the supporting board; and

wherein a shock/impact absorber is in the shape of a conveyor belt and is positioned around the second roller set, and wherein the top side of the shock/impact absorber is directed to the internal side of the running belt, whereby, when the operator steps on the running belt, the shock/impact absorber is forced to be moved in rotation by the running belt such that the shock/impact absorber has a certain region in constant contact with the supporting board, thereby providing a direct shock/impact absorbing interface for the running belt.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The accomplishment of this and other objects of the invention will become apparent from the following descriptions and its accompanying figures of which:

[0016] FIG. 1 is a perspective view of a conventional treadmill;

[0017] FIG. 2 is a cross-sectional view taken along the line 2-2 in FIG. 1;

[0018] FIG. 3 is a cross-sectional view of another conventional treadmill;

[0019] FIG. 4 is a side view of a further conventional treadmill;

[0020] FIG. 5 is a perspective view of the treadmill in accordance with a preferred embodiment of the invention;

[0021] FIG. 6 is a perspective view of the main structure of the invention;

[0022] FIG. 7 is a cross-sectional view taken along the line 7-7 in FIG. 6 wherein the feet of the operator do not step on the running belt;

[0023] FIG. 8 is an enlarged view of a circled portion of FIG. 7;

[0024] FIG. 9 is a cross-sectional view taken along the line 7-7 in FIG. 6 wherein the shock/impact absorber is moved by the running belt; and
FIG. 10 is an enlarged view of a circled portion of FIG. 9.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

First of all, referring to FIGS. 5 through 8, a treadmill 20 in accordance with a preferred embodiment of the invention includes a machine body 21, a base frame 22, a supporting board 26, and a running belt 25.

The machine body 21 can be motorized or non-motorized. Or it can be a machine used for rehabilitation by walking exercise. The types of the treadmill are not restricted thereto and won’t be described more hereinafter.

The base frame 22 is fitted to the machine body 21 and includes longitudinal bars 221 at both sides thereof.

The supporting board 26 can be wooden board or composite board and is interposed between the longitudinal bars 221. A first roller set 23 is positioned correspondingly at the front and rear ends of the longitudinal bars 221. The first roller set 23 includes a front roller 231 and a rear roller 232.

If the treadmill is motorized, the front roller 231 is connected via transmission elements to a motor (not shown in the drawings) within the machine body 21 so as to be driven by the motor.

The running belt 25 is positioned around the first roller set 23.

The above-mentioned structure belongs to the prior art and is necessary for the conventional treadmill. It is not the object of the invention so that no further descriptions thereto are given hereinafter. The features of the invention are detailed as follows:

A second roller set 24 is positioned correspondingly at the internal side of the first roller set 23 and includes a front and a rear roller 241, 242 disposed at the front and rear ends of the supporting board 26.

A shock/impact absorber 27 is in the shape of a conveyor belt and is positioned around the second roller set 24. The shock/impact absorber 27 is made of material selected from rubber, EVA foaming material, PU foaming material, or combinations thereof, but should not be limited thereto. The equivalent material is applicable as well.

The connection of the above-mentioned shock/impact absorber 27 to the second roller set 24 is identical to the connection of the running belt 25 to the first roller set 23. Unlike the conventional shock/impact absorber 17 that is unmovably mounted on the surface of the supporting deck, the shock/impact absorber 27 is movably mounted around the second roller set 24 such that the top side of the shock/impact absorber 27 is directed to the internal side of the running belt 25. When the running belt 25 is actuated as shown in FIGS. 7 and 8, it is moved around in the clockwise direction. The shock/impact absorber 27 remains unmoved when the feet of the operator do not step thereon. At that time, the running belt 25 is operated in an idle state. Moreover, a gap S is created between the running belt 25 and the shock/impact absorber 27 such that the bottom of the running belt 25 won’t rub against the shock/impact absorber 27. When the operator steps on the running belt 25, the bottom of the running belt 25 is forced by the weight of the operator to be in contact with the top of the shock/impact absorber 27. In this way, a pushing interface 28 is created between the active running belt 25 and the inactive shock/impact absorber 27 as shown in FIGS. 9 and 10. As a result, the shock/impact absorber 27 can be moved by the running belt 25 in the clockwise direction when the operator steps thereon. In this way, the internal side of the running belt 25 does not rub against the top side of the shock/impact absorber 27 such that the wear is avoided for prolonging the service life.

In addition, the shock/impact absorber 27 is movable in operation. Therefore, it is avoidable that a cavity is created at a certain position where the operator stands. In this way, a comfortable and stable running and stepping is ensured.

The shock/impact absorber 27 is made of flexible and tough material and formed in a shape of a conveyor belt. The material is selected from a group consisting of rubber, EVA foaming material, PU foaming material, etc., but it should not be limited thereto. In other words, any material or form having the shock/impact absorbing function is applicable. According to another embodiment in FIGS. 8 and 10, a wear-resistant layer 271 is disposed at the internal side of the shock/impact absorber 27. The wear-resistant layer 271 is made of flexible material such as resin, high strength canvas, PVC or reinforced plastic so that the friction acting on the top side of the supporting board 26 can be reduced when the shock/impact absorber 27 is moved.

By use of the above-mentioned technical features, the shock/impact can be directly absorbed when the treadmill is operated. Accordingly, the operator will feel more comfortable in use and becomes less susceptible to injuries at the same time. Moreover, a smooth operation of the running belt is ensured due to the reduction of the friction, thereby prolonging the service life of the entire treadmill.

Many changes and modifications in the above-described embodiments of the invention can, of course, be carried out without departing from the scope thereof. Accordingly, to promote the progress in science and the useful arts, the invention is disclosed and is intended to be limited only by the scope of the appended claims.

What is claimed is:

1. A shock/impact absorbing structure of a treadmill, comprising:
   a) a machine body;
   b) a base frame positioned on the main body and having longitudinal bars at both sides thereof;
   c) a supporting board interposed between both of the longitudinal bars, a first roller set being positioned correspondingly at the front and rear ends of the longitudinal bars; and
   d) a running belt positioned around the first roller set, wherein a second roller set is positioned correspondingly at the internal side of the first roller set and includes a front and a rear roller disposed at the front and rear ends of the supporting board; and
   wherein a shock/impact absorber is in the shape of a conveyor belt and is positioned around the second roller set, and wherein the top side of the shock/impact absorber is directed to the internal side of the running belt, whereby, when the operator steps on the running belt, the shock/impact absorber is forced to be moved in rotation by the running belt such that the shock/impact absorber has a certain region in constant contact with the supporting board, thereby providing a direct shock/impact absorbing interface for the running belt.

2. The shock/impact absorbing structure of a treadmill as recited in claim 1 wherein the shock/impact absorber is made of material selected from rubber, EVA foaming material, PU foaming material or combinations thereof.

3. The shock/impact absorbing structure of a treadmill as recited in claim 2 wherein a wear-resistant layer is positioned at the internal side of the shock/impact absorber.

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