FOOT MASSAGING TREADMILL

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Filed: Jan. 18, 2008

A foot massaging treadmill including a supporting base mounted close to the floor. The supporting base includes a supporting board, an endless running belt slidably extending around the supporting board, and driving rollers for driving the running belt to move around the supporting board in a longitudinal direction of the supporting board. The upper surface of the running belt forms a user supporting surface. The supporting surface of the running belt provides a plurality of upward protrusions for applying pressure force to the user's foot soles. The treadmill massages the user's foot soles by the protrusions. Thus, the user will feel comfortable even after a long time of exercise.
FOOT MASSAGING TREADMILL

REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to China application no. 200710004008.5, filed on Jan. 19, 2007.

TECHNICAL FIELD

[0002] The present disclosure relates to a treadmill, especially to a treadmill which provides foot massage to the foot soles of a user of the treadmill.

BACKGROUND ART

[0003] In recent years, treadmills or running machines become popular for in-door physical exercising. A traditional treadmill mainly comprises a horizontal or slanted supporting base and a frame with handrails. The supporting base comprises an elongated rigid supporting board. Driving rollers are mounted proximate to one or both of the longitudinal ends of the supporting board. An elastic endless running belt extends around the supporting board and the driving rollers, thus providing a slanted flat running surface. When the user is running on the running surface, the running belt is driven by the driving rollers to move in a direction reverse to the forwarding direction of the user. Thus the user can walk or run on the treadmill.

[0004] In traditional treadmills, the supporting board and/or the running belt are substantially flat. When walking or running on the treadmills, the user’s foot soles consecutively contact with the flat running surface of the treadmill. In this way, the user will feel fatigue or pain on his or her feet after a long time of walking or running on the treadmill, no matter whether he or she wears shoes or not. If the fatigue or pain is serious, the user needs to have special massage to the feet to release the stress. In addition, according to current medical study, regular contacting and massaging the reflection areas or acupuncture points of the foot sole can, at a certain extent, improve the condition of human body and prevent illness.

[0005] Therefore, it is desirable to have a treadmill which can massage the user’s feet when the user is exercising on the treadmill. It is expected that, by this treadmill, the user can exercise his or her body and feel comfortable on his or her feet even after a long time of exercising.

SUMMARY OF DISCLOSURE

[0006] An object of the present disclosure is to overcome the disadvantages of the prior art. To this end, the present invention provides a foot massaging treadmill comprising a supporting base mounted close to the floor, wherein the supporting base comprises a supporting board, an endless running belt slidably extending around the supporting board, and driving rollers for driving the running belt to move around the supporting board in a longitudinal direction of the supporting board, with the upper surface of the running belt forming a user supporting surface, and wherein the supporting surface of the running belt provides a plurality of upward protrusions for applying pressure force to the user’s foot soles.

[0007] The protrusions can be provided on the outer surface of the running belt and the supporting board is substantially flat. In this case, the protrusions can be integrally formed on the running belt. Alternatively, the protrusions are single pieces formed separately and are then removably attached to the running belt. Alternatively, some of the protrusions are integrally formed on the running belt, and the remaining protrusions are single pieces formed separately and are then removably attached to the running belt.

[0008] Alternatively, the protrusions are provided on the upper surface of the supporting board and the running belt is substantially flat. In this case, the protrusions can be integrally formed on the supporting board. Alternatively, the protrusions are single pieces formed separately and are then removably attached to the supporting board. Alternatively, some of the protrusions are integrally formed on the supporting board, and the remaining protrusions are single pieces formed separately and are then removably attached to the supporting board.

[0009] Preferably, the treadmill further comprises a frame mounted to the front side of the supporting base. The frame may include handrails.

[0010] Preferably, the treadmill further comprises a control panel mounted to the frame.

[0011] Preferably, the protrusions are regularly distributed. In this case, the protrusions have the same separating distance and the same arranging pattern.

[0012] Alternatively, the protrusions are irregularly distributed. In this case, the protrusions have different separating distances and/or different arranging patterns.

[0013] Preferably, the protrusions have the same shape and size. Alternatively, the protrusions have different shapes and/or sizes.

[0014] Alternatively, the protrusions comprises a plurality of sets of protrusions, the shape and/or the size of each set of protrusions are different from that of other sets of protrusions. In this case, the plurality of sets of protrusions can be arranged in an alternating manner. Alternatively, the outer surface of the running belt is divided into a plurality of zones, each zone containing a set of protrusions of the same shape and size, and the shapes and/or the sizes of the protrusions in different zones are different from each other.

[0015] Alternatively, the running belt comprises a plurality of zones, the protrusions are provided in some of the zones.

[0016] Preferably, the top surfaces of the protrusions, which are in contact with the user’s foot soles, have smooth transition shapes.

[0017] Preferably, the protrusions are formed by an elastic rubber material.

[0018] Preferably, the running belt and the protrusions are covered with an elastic protective layer.

[0019] Preferably, the protrusions are sized for stimulating the acupuncture points or the reflection areas of the foot soles. For example, the protrusions each have a lateral size of a few millimeters. The arranging density of the protrusions may be about two hundred to about one thousand protrusions per square meter.

[0020] Preferably, the protrusions each have a hemisphere shape. Other shapes for the protrusions are also possible.

[0021] According to the present disclosure, the treadmill provides massage to the user’s foot soles by the protrusions. Thus, the user will feel comfortable even after a long time of exercising.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0022] The present invention will be described in details with reference to the drawings in which:

[0023] FIG. 1 is a perspective view of a complete treadmill according to the first embodiment of the present disclosure;
FIG. 2A is a top view of a running belt of the treadmill of the first embodiment of the present disclosure;

FIG. 2B is a side view of the running belt of the treadmill of the first embodiment of the present disclosure;

FIG. 2C is a partly enlarged side view of the encircled portion of the running belt shown in FIG. 2B;

FIG. 3A is a perspective view of the running belt of the treadmill of the first embodiment of the present disclosure;

FIG. 3B is a partly enlarged view of the encircled portion of the running belt shown in FIG. 3A;

FIG. 3C is a sectional view taken along the line I-I of FIG. 3B;

FIG. 4 is a perspective view of a complete treadmill of the second embodiment of the present disclosure;

FIG. 5A is a perspective view of a running belt of the treadmill of the second embodiment of the present disclosure;

FIG. 5B is a side view of the running belt shown in FIG. 5A;

FIG. 5C is a partly enlarged side view of the encircled portion of the running belt shown in FIG. 5B;

FIG. 6 is an exploded perspective view of the treadmill of the third embodiment of the present disclosure;

FIG. 7A is a perspective view of the treadmill of the third embodiment of the present disclosure;

FIG. 7B is a sectional view of a supporting board of the treadmill of the third embodiment of the present invention taken along the line I-I of FIG. 7A, wherein the running belt is attached to the supporting board; and

FIG. 8 is a perspective view of the treadmill of the third embodiment of the present invention, with the supporting board being partly shown.

As shown in the figures, the front end of the supporting base 200 is mounted to the upright stands 3 at its opposite sides by fasteners 6 such as screws, such that, when the supporting base 200 rests on the floor, it remains horizontal or slanted. The base frame 7 is optionally provided to the lower end of the upright stands 3 for contacting with the floor.

Optionally, a back frame 8 is provided at the back end of the supporting base 200 so as to be opposite to the base frame 7. The treadmill 1 is in contact with the floor by the base frame 7 and the back frame 8. A main switch, a control circuit and the like for the treadmill may be provided in the back frame 8.

Preferably, the slanted angle of the supporting base 200 is adjustable, so that the supporting base 200 is in a horizontal direction or in a longitudinal slanted direction within a range of slanted angle.

The handrails 4 are mounted to the upright stands 3, as shown in the figures, and optionally provide support means to be grasped by the user’s hands. Preferably, the crossbar 5, which attaches to the handrails 4, carries the control panel 50 in a known manner. The control panel 50 may be integrated with various keys, buttons, electric interfaces and displays, such as keys for adjusting the running speed and displays for indicating the exercising parameters. For example, as well known in the art, the heart beats of the user can be sensed by sensors provided in the handrails 4, the running speed and total running distance can be calculated based on the output of an electric motor for driving the driving rollers, and the weight of the user can be measured by force sensors mounted in the supporting base 200. Then, all these parameters can be displayed on the displays of the control panel 50, and the user may read out the exercise condition and adjust the exercise intensity and/or time.

In the treadmill according to the embodiments of the present invention, the supporting board 12 is generally a lengthened board made of a rigid material such as plastic, rigid resin or metal, such that it has sufficient strength for carrying the running user via the running belt and bearing the shocks from the user’s feet.

One or more driving rollers are driven by the electric motor. For example, two driving rollers may be provided at the front and back ends of the supporting board respectively and rotatably mounted between the side bars 9, wherein only the front driving roller is connected with the electric motor via a transmission or speed reduction mechanism and the back driving roller is just a follower. Alternatively, both driving rollers are driven by the electric motor in a synchronized manner. The running belt 11 is driven by the driving rollers to run circulatively around the supporting board. Preferably, the moving direction and/or speed of the running belt 11 are adjustable. In most cases, during running, the supporting surface of the running belt 11 moves backwardly, so that the user walks or runs on the supporting surface in a regular way. However, sometimes the user may intend to walk reversely, and in this case the supporting surface of the running belt should move forwardly. The forward moving speed of the supporting surface should be limited to become too high, to avoid the user falling off the treadmill.

Preferably, shielding covers 10 are mounted to the front end of the supporting base 200 at right and left sides, for shielding the rotating components of the transmission mechanism from being touched or contacted by the user when exercising or manipulating the treadmill.
As an important feature of the present invention, the supporting surface of the running belt 11 is provided with or formed with upward protrusions which are intended to act on the user's foot soles for massaging the foot soles, especially the acupoints or the reflection areas of the foot soles.

The protrusions are either formed on the outer surface of the running belt 11, or formed on the upper surface of the supporting board 12 which carries the running belt 11. These two conditions will be described below respectively.

In the treadmill of the first embodiment of the present disclosure as shown in FIG. 1, the running belt 11 extends around the driving rollers and the supporting board in the supporting base 200 in a known manner, and the protrusions are formed or provided on the running belt 11. When the user is running or walking, the running belt 11 is driven by the driving rollers to slidingly run with respect to the supporting board.

FIGS. 2A to 2C show the running belt 11 of the treadmill of the first embodiment of the present invention, wherein FIG. 2A shows a top view of the running belt 11 and FIG. 2B shows a side view of the running belt 11. It can be seen that the running belt 11 is an endless loop belt. FIG. 2C is an enlarged side view showing the circled portion of FIG. 2B. As shown in FIGS. 2B and 2C, the running belt 11 of the treadmill of the first embodiment of the present invention is formed by an elastic loop substrate. The substrate is a flat endless belt substrate. A plurality of upward protrusions 30 are formed or provided on the outer surface of the running belt 11. As shown in FIGS. 2A and 2B, the plurality of protrusions 30 are irregularly (randomly) disposed on the outer surface of the running belt 11, so as to randomly massage the user's foot soles. For example, the separating distances between the protrusions 30 as well as the arranging order or pattern of the protrusions are variable.

However, the plurality of protrusions 30 may also be disposed on the outer surface of the running belt 11 regularly. In other words, the protrusions 30 are disposed in a predetermined order or pattern. For example, the separating distance between the protrusions 30 as well as the arranging order or pattern of the protrusions may be constant.

In this context, when describing the directions relating to the running belt 11, inside (or inner) refers to a side in contact with the driving rollers or the supporting board. On the other hand, outside (or outer) refers to the opposite side facing away from the inside.

Preferably, the outer surfaces of the protrusions 30, or the surfaces facing outside, are formed with smooth transition contours, or in other words, without any sharp edge or point, so that when the user stands on the running belt 11, he or she will not feel uncomfortable or be hurt by the protrusions.

In the first embodiment of the present disclosure, the plurality of protrusions 30 may have completely different shapes and/or sizes. Of course, this structure will result in a high manufacture cost. Alternatively, the protrusions 30 may comprise a plurality of sets of protrusions, the shape and/or the size of each set of protrusions are different from that of other sets of protrusions. For example, from the top view (as shown in FIG. 2A), the protrusions 30 may have at least one shape selected from a group consisting of: circular, elliptical, triangle, oblong, square, irregular shapes and the like. Circular shape is preferable. Top surfaces of the protrusions 30, which are to be contacted with the user’s foot soles, have smooth transition shapes. For example, from a side view (as shown in FIGS. 2B and 2C) it can be seen that the cross sections of the protrusions 30 are preferably of semicircular, circular, rounded or similar shapes. Further, the protrusions 30 may have different sizes. For example, the protrusions 30 have different heights.

Optionally, the heights of the protrusions 30 are set in a manner that, when the user stands on the running belt 11 for walking or running, with his or her feet being bare or with socks only or with thin and elastic shoes on his or her feet, the user will not feel pain or discomfort on his or her feet. Meanwhile, the protrusions 30 may have different outer surface areas.

The plural sets of protrusions 30 can be arranged in an alternating or mixed manner. Alternatively, the outer surface of the running belt 11 can be divided into a plurality of zones, each zone including only one set of protrusions with the same shape and size and the protrusions in different zones having different shapes and/or sizes.

FIG. 3A shows a perspective view of the running belt 11 of the treadmill of the first embodiment of the present disclosure. As shown in FIG. 3A, the protrusions 30 are disposed on the running belt 11 in an irregular manner.

In the treadmill of the first embodiment of the present disclosure, the running belt 11 is formed in a manner known in the art. For example, the running belt 11 comprises a fabric layer and elastomeric layers formed on the inner and outer sides of the fabric layer respectively. The fabric layer may be formed by woven fibers of any suitable materials such as polyester. The elastomeric layers are formed by any suitable materials such as rubbers, plastics, resins and polymers and are adhered to the fabric layer through any suitable process such as molding or casting. The inside and outside surfaces of the running belt 11 are substantially flat surfaces.

As shown in FIGS. 2C and 3C, the protrusions 30 are provided on the outer surface of the running belt 11. In the embodiment shown in FIG. 3C, the protrusions 30 are integrally formed on the running belt 11. In this case, the material of the protrusions 30 may be the same as that of the outer layer (or the above mentioned elastomeric layer) of the running belt 11, so that the protrusions can be integrally formed with the running belt in the same processing step. Optionally, the protrusions 30 can be individual pieces formed separately and then removably mounted to the running belt 11 in any suitable manner such as by snap-locks, screws or the like. In this case, the running belt 11 is preferably formed with engaging features for cooperating with corresponding connection features of the protrusions 30. For example, the engaging features can be recesses, screw threads or the like while the connection features can be inserts to be inserted into the recesses, corresponding screw threads or the like. Optionally, some of the protrusions 30 are integrally formed on the running belt 11, while the remaining protrusions are removably mounted to the running belt 11. For example, protrusions which are larger or smaller than normal protrusions, protrusions having particular massaging functions, or protrusions which are likely to be damaged, can be removably mounted to the running belt 11 at corresponding locations. If some protrusions 30 are removably mounted to the running belt 11, the material of these protrusions 30 can be different from that of the corresponding part of the running belt 11. For example, the material of these protrusions can be harder or softer than that of the running belt 11.

Preferably, the protrusions 30 are formed by an elastic rubber material.
It should be noted that, in this context, the massage to the foot soles should be such massage which, when the user is walking or running on the treadmill 1, creates pressure forces to the structures or acupoints of the foot soles of the user by the contact between the protrusions 30 and the foot soles.

Optionally, after the protrusions 30 are formed or mounted to the outer surface of the running belt 11, an elastic protective layer is applied to cover the outer surface of the running belt 11 and the protrusions 30. The protective layer can be formed by any suitable materials such as rubber, resin or the like. The protective layer, on one hand, reduces the wear of the protrusions 30 during exercising, and on the other hand, prevents the user’s foot soles from receiving excessive pressure from the protrusions 30.

FIGS. 4 and 5A to 5B show the treadmill of the second embodiment of the present disclosure. Throughout the drawings, same or similar parts are represented by same reference numerals and their detailed explanation is omitted. FIG. 4 shows a perspective view of the whole treadmill of the second embodiment of the present disclosure. FIG. 5A shows the running belt used in the treadmill of the second embodiment of the present disclosure, with the running belt being mounted in the treadmill in a known manner. As shown in FIG. 5A, the second embodiment is different from the first embodiment in that the plurality of protrusions 30 disposed on the outer surface of the running belt 11 has the same shape and size.

FIGS. 5B and 5C show a side view and partly enlarged side view of the running belt 11 of FIG. 5A respectively. As shown in these two figures, the outer surface of the running belt 11 is formed or provided with the protrusions 30 of the same shape and size, and the protrusions 30 are disposed in a constant separating distance. The running belt 11 can be the same as the running belt 11 of the first embodiment and will not explained further.

FIGS. 6, 7A and 7B show the treadmill of the third embodiment of the present disclosure. As shown in FIG. 6, the third embodiment is different from the first and second embodiments in that, in the third embodiment, the protrusions are not provided on the running belt, but are provided on the supporting board. Specifically, the supporting board 12 is not a flat supporting board as in the former embodiments, and the side of the supporting board 12, which is in contact with the running belt 11, is provided with a plurality of upward protrusions 30. In this case, as shown in FIG. 6, the running belt 11 can adopt the common flat running belt used in the prior art.

FIG. 7B shows an enlarged sectional view of the supporting board 12 taken along the line I-I of FIG. 7A. As shown in this figure, the plurality of protrusions 30 are provided on the upper surface of the supporting board 12, which upper surface being in contact with the inner surface of the running belt 11.

The supporting board 12 can be formed by any suitable material known in the art, such as plank, rigid resin, metal or other rigid materials. The protrusions 30 can be integrally formed on the supporting board 12, so that the protrusions can be integrally formed with the supporting board in the same processing step. Optionally, the protrusions 30 can be individual pieces formed separately and then removably mounted to the supporting board 12 in any suitable manner such as by snap-locks, screws or the like. In this case, the supporting board 12 is preferably formed with engaging features for cooperating with corresponding connection features of the protrusions 30. For example, the engaging features can be recesses, screw threads or the like while the connection features can be inserts to be inserted into the recesses, corresponding screw threads or the like. Optionally, some of the protrusions 30 are integrally formed on the supporting board 12, while the remained protrusions are removably mounted to the supporting board 12. For example, protrusions which are larger or smaller than normal protrusions, protrusions having particular massaging functions, or protrusions which are likely to be damaged, can be removably mounted to the supporting board 12 at corresponding locations. If some protrusions 30 are removably mounted to the supporting board 12, the material of these protrusions 30 can be different from that of the corresponding part of the supporting board 12. For example, the material of these protrusions can be harder or softer than that of the supporting board 12.

The features about the shape, size and arranging manner of the protrusions as described in the first and second embodiments are also applicable in the third embodiment. For example, in the treadmill of the third embodiment, the protrusions 30 can be provided to the supporting board 12 in a manner similar to that of the protrusions 30 provided on the running belt 11 in the first or second embodiment. For example, the protrusions 30 can be irregularly distributed on the supporting board 12, as shown in FIG. 6. Further, the separating distances between the protrusions 30 and their arranging patterns can be variable.

The protrusions 30 can also be regularly distributed on the supporting board 12. For example, the separating distance between the protrusions 30 and their arranging pattern are constant.

Furthermore, in FIG. 6, the protrusions 30 are shown as having different shapes and/or sizes. Optionally, the protrusions 30 may have the same shape and/or size.

It should be noted that, the protrusions are intended to apply direct pressure force to the acupoints or the reflection areas of the foot soles to stimulate the acupoints or the reflection areas. Thus, the size(s) of the protrusions should be predetermined for this purpose. Preferably, protrusions with a lateral size of a few millimeters are preferable for stimulating the acupoints of the foot soles. In this case, the arranging density of the protrusions may be about two hundred to about one thousand protrusions per square meter. Meanwhile, protrusions with a hemisphere shape are suitable for stimulating the acupoints of the foot soles.

In the above discussed embodiments, the protrusions 30 provided on the running belt 11 or on the supporting board 12 are discretely raised blocks. However, the protrusions 30 may also be formed in other manners, so long as they can provide contact massage to foot soles of the user in exercising. For example, the protrusions 30 can be raised long ribs which are perpendicular to the moving direction of the running belt 11 or form any desired angle with the moving direction. The ribs can extend in any desired length on the outer surface of the running belt or on the upper surface of the supporting board 12.

In the above discussed embodiments, the protrusions 30 are disposed on the whole surface of the running belt 11 or the supporting board 12. However, it is understood that the protrusions 30 can also be provided on one or more zones of the running belt 11 or the supporting board 12, rather than on the whole running belt 11 or supporting board 12. In this
case, in the zones without any protrusion, the running belt or the supporting board is substantially flat.

The present invention is described with reference to its preferred embodiments which are not intended to restrict the scope of the present invention. A skilled in the art will readily recognize that modifications and changes can be made to the embodiments without departing from the spirit of the present invention, and accordingly all these modifications and changes may be regarded as falling within the scope of the present invention.

1. A foot massaging treadmill comprising a supporting base mounted close to the floor, wherein the supporting base comprises a supporting board, an endless running belt slidably extending around the supporting board, and driving rollers for driving the running belt to move around the supporting board in a longitudinal direction of the supporting board, with the upper surface of the running belt forming a user supporting surface, and wherein the supporting surface of the running belt provides a plurality of upward protrusions for applying pressure force to the user's foot soles.

2. The foot massaging treadmill according to claim 1, wherein the protrusions are provided on the outer surface of the running belt and the supporting board is substantially flat.

3. The foot massaging treadmill according to claim 2, wherein the protrusions are integrally formed on the running belt.

4. The foot massaging treadmill according to claim 2, wherein the protrusions are single pieces formed separately and are removably attached to the running belt.

5. The foot massaging treadmill according to claim 2, wherein some of the protrusions are integrally formed on the running belt, and the remaining protrusions are single pieces formed separately and are removably attached to the running belt.

6. The foot massaging treadmill according to claim 1, wherein the protrusions are provided on the upper surface of the supporting board and the running belt is substantially flat.

7. The foot massaging treadmill according to claim 6, wherein the protrusions are integrally formed on the supporting board.

8. The foot massaging treadmill according to claim 6, wherein the protrusions are single pieces formed separately and are removably attached to the supporting board.

9. The foot massaging treadmill according to claim 6, wherein some of the protrusions are integrally formed on the supporting board, and the remaining protrusions are single pieces formed separately and are removably attached to the supporting board.

10. The foot massaging treadmill according to claim 1, wherein the treadmill further comprises a frame mounted to the front side of the supporting base.

11. The foot massaging treadmill according to claim 10, wherein the frame comprises handrails.

12. The foot massaging treadmill according to claim 10, wherein the treadmill further comprises a control panel mounted to the frame.

13. The foot massaging treadmill according to claim 1, wherein the protrusions are regularly distributed.

14. The foot massaging treadmill according to claim 13, wherein the protrusions have the same separating distance and the same arranging pattern.

15. The foot massaging treadmill according to claim 1, wherein the protrusions are irregularly distributed.

16. The foot massaging treadmill according to claim 15, wherein the protrusions have different separating distances and/or different arranging patterns.

17. The foot massaging treadmill according to claim 1, wherein the protrusions have the same shape and size.

18. The foot massaging treadmill according to claim 1, wherein the protrusions have different shapes and/or sizes.

19. The foot massaging treadmill according to claim 1, wherein the protrusions comprises a plurality of sets of protrusions, the shape and/or the size of each set of protrusions are different from that of other sets of protrusions.

20. The foot massaging treadmill according to claim 19, wherein the plurality of sets of protrusions are arranged in an alternating manner.

21. The foot massaging treadmill according to claim 19, wherein the outer surface of the running belt is divided into a plurality of zones, each zone containing a set of protrusions of the same shape and size, and the shapes and/or the sizes of the protrusions in different zones are different from each other.

22. The foot massaging treadmill according to claim 1, wherein the running belt comprises a plurality of zones, the protrusions are provided in some of the zones.

23. The foot massaging treadmill according to claim 1, wherein the top surfaces of the protrusions, which are to be in contact with the user's foot soles, have smooth transition shapes.

24. The foot massaging treadmill according to claim 1, wherein the protrusions are formed by an elastic rubber material.

25. The foot massaging treadmill according to claim 2, wherein the running belt and the protrusions are covered with an elastic protective layer.

26. The foot massaging treadmill according to claim 1, wherein the protrusions are sized for stimulating the acupuncture points or the reflection areas of the foot soles.

27. The foot massaging treadmill according to claim 26, wherein the protrusions each have a lateral size of a few millimeters, and the arranging density of the protrusions is about two hundred to about one thousand protrusions per square meter.

28. The foot massaging treadmill according to claim 1, wherein the protrusions each have a hemisphere shape.