

[54] EXERCISE TREADMILL AND BELT SUPPORT APPARATUS

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[58] Field of Search198/184; 272/69, 56.5 SS

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[57] ABSTRACT

A simplified treadmill and belt support used for exercise purposes and for use as part of an ergometric system. An endless belt is driven over a support surface composed of a fabric such as canvas which is impregnated with wax. A suitable drive assembly causes continuous movement of the belt.

11 Claims, 3 Drawing Figures

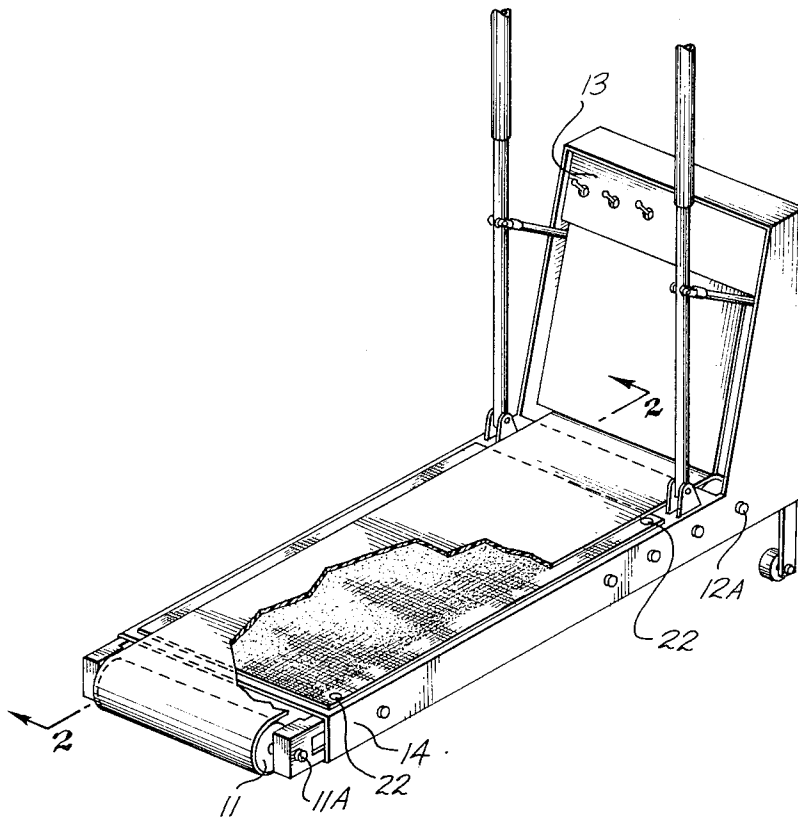


Fig. 1.

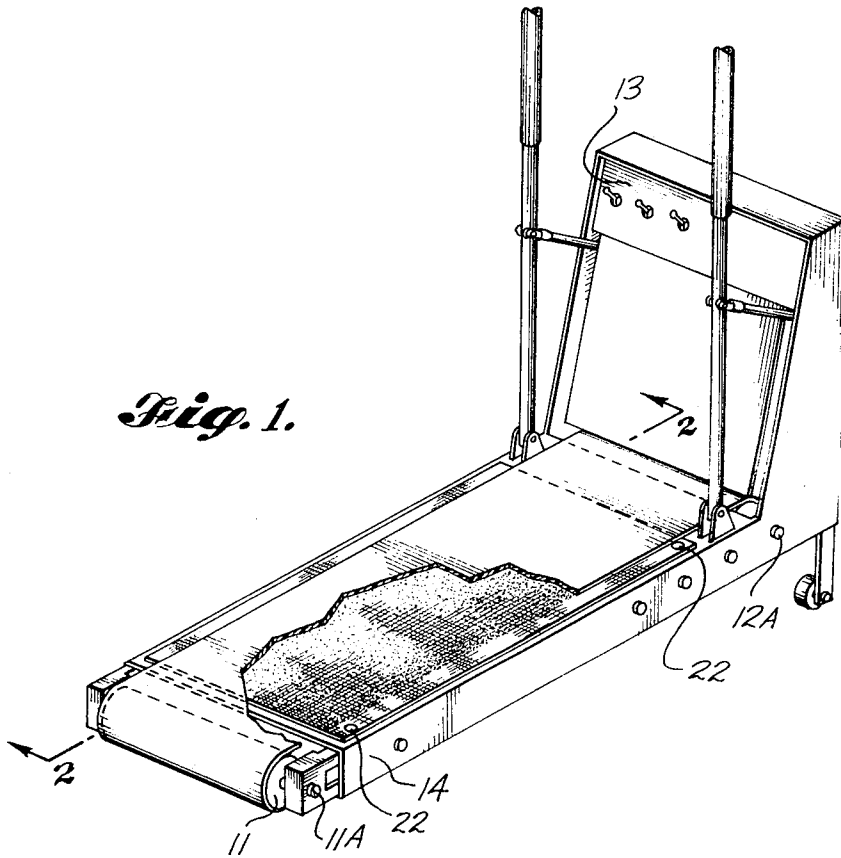


Fig. 2.

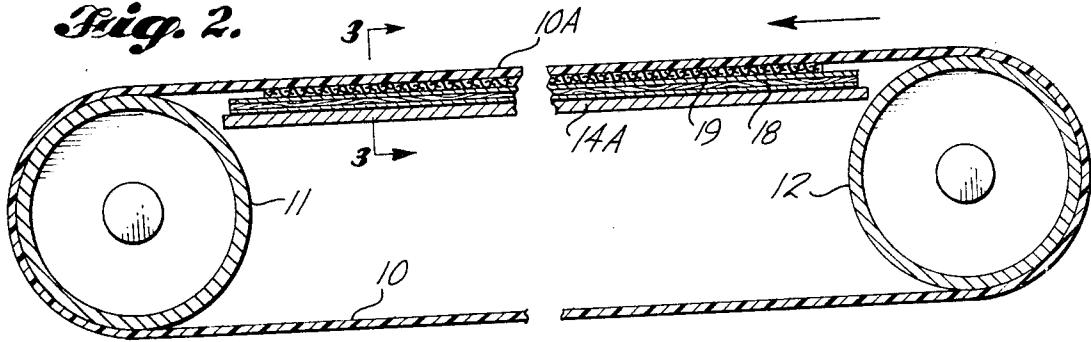
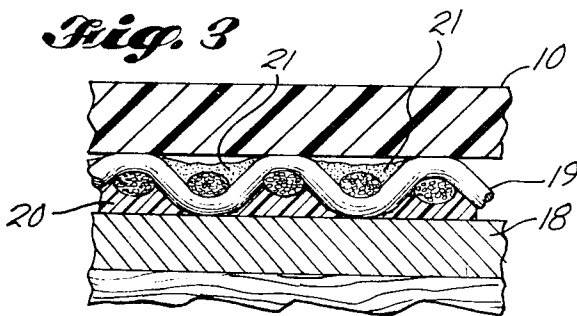


Fig. 3.



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EXERCISE TREADMILL AND BELT SUPPORT APPARATUS

Various types of ergometric systems are in use at the present time. Treadmills having a moving endless belt are widely used in such systems as well as in connection with exercise programs in general. In such treadmill assemblies an endless belt is driven at a selected speed so that an individual on the belt is forced to move at the rate determined by belt movement. Various types of treadmill assemblies are available with numerous arrangements being provided to support the belt beneath the feet of the user. The power required to drive the belt is dependent on the frictional forces involved and thus most treadmills utilize relatively expensive roller and bearing assemblies beneath the section of belt where the user walks or runs. It would be desirable to have a system wherein belt friction remains low without going to the expense of rollers or other similar arrangements.

It is thus an object of the present invention to provide a treadmill assembly having an improved support surface for the endless belt thereof.

Another object of the present invention is to provide a treadmill assembly utilizing an improved support surface for the endless belt and wherein such support surface requires a minimum of maintenance.

An additional object of the present invention is to provide a low cost support surface for the belt of a treadmill exercise apparatus.

The above and additional advantages are achieved through use of a system wherein a material such as canvas having a relatively rough surface is impregnated with a lubricant such as wax and is positioned beneath the portion of the endless belt walked upon by the user. The impregnation of the material is preferably done through the application of heat to cause the wax to melt and flow into the material. It has been found that if the amount of wax used is controlled so that the resultant composite material made of cloth and wax is irregular, the frictional forces involved are reduced.

The above and additional advantages and objects of the invention will be more clearly understood from the following description when read with reference to the accompanying drawings wherein,

FIG. 1 is a perspective view of an exercise treadmill assembly embodying the present invention.

FIG. 2 is a sectional side view of the belt and support apparatus illustrated in FIG. 1.

FIG. 3 is a greatly enlarged cross-sectional view of the belt and support material located therebeneath.

Turning now to the drawings it will be seen that the inventive concepts are incorporated in a treadmill assembly having an endless belt 10 which passes around the end rollers 11 and 12 supported on shafts 11A and 12A. The roller 12 is driven at a selected speed by a suitable drive mechanism (generally an electric motor and gear system) of the type which per se is well known in the art. A control panel 13 permits the user to select the speed at which the belt 10 is driven. The portion of the belt indicated at 10A is supported by the upper flat portion 14A of the support frame 14 which carries the shafts 11A and 12A. It will be seen that when the equipment is in use with a person walking or running on the belt, the upper portion of the belt 10A will be repeatedly impacted against the support surface 14. As the belt is driven the weight of the individual then continues to press the belt 10 against the supporting surface located beneath the belt. Frictional forces between the belt 10A and the support surface tend to generate heat which has in the past created various types of problems unless elaborate bearing and support systems are provided.

In accordance with the teachings of the present invention the flat support surface 14A is covered by a composite structure illustrated as being made of a rectangular piece of plywood 18 having a rough textured cloth material such as canvas 19 adhered thereto. In FIG. 3 the cloth 19 is held to the wood 18 by any suitable glue 20. The portion of the canvas surface 19 over which the belt 10 runs is impregnated with a suitable wax 21. Carnauba wax has been found to work well.

The plywood 18 can be held to the steel frame 14 in any suitable manner. The countersunk screws 22 work well and permit easy removal of the support surface assembly for maintenance or replacement.

It is preferable that the rough textured material 19 be impregnated with wax only to the extent necessary to coat the entire upper surface without destroying the textured aspects of the surface. That is, it will be observed in FIG. 3 that the wax impregnated material still has high points and valleys even though the entire surface is wax coated. While applicant is not certain as to all of the reasons why this arrangement results in a greatly reduced amount of friction being involved when a person walks or runs on the endless belt, it is believed that part of the reason may be due to the fact that the belt 10 rides on the high points of the composite support surface. The wax in the area of increased pressure may tend to melt momentarily due to this increased pressure. Any such melting would of course terminate shortly after the initiation thereof since the belt as soon as being driven against the support surface would move rearwardly (to the left in the drawings) and hence the pressure would be reduced on that area. Regardless of the reasons it has been found in practice that the frictional forces do not create a heat problem when this arrangement is used.

While various materials can be utilized it has been found in practice that canvas or similar cloth having a rough textured surface works well in combination with a nylon belt 10. Thus not only is the manufacturing cost low by comparison to the cost involved in the manufacture of other support surfaces typically used in treadmill assemblies, but it has also been found in practice that the upkeep associated with the resulting structure is negligible. While the wax can be of various types and applied in different ways it has been found in practice that ground carnauba wax spread over the canvas material, and then melted in place through the use of a hot iron, produces a highly desirable support surface. One such treadmill assembly using this arrangement as the bearing surface has provided trouble-free service for several thousand miles of "walking" without any need for replacement or re-waxing of the surface.

What is claimed is:

1. An exercise treadmill assembly comprising an endless belt, drive means for moving said belt, and support means disposed beneath a portion of the path traveled by said belt including an irregular surface at least a portion of which is wax coated, said belt being made of nylon and said support means including a piece of canvas having its upper surface impregnated with wax.

2. In an exercise treadmill, a movably mounted belt and a support assembly for said belt, said support assembly comprising a section of rough textured material having a wax coating thereon, and substantially planar support means disposed beneath said material adapted to hold said material in a substantially planar position beneath a portion of the path of travel of the belt of the treadmill.

3. The apparatus of claim 2 wherein said material is canvas.

4. The apparatus of claim 3 wherein said wax is carnauba wax.

5. The apparatus of claim 2 wherein said support means includes a sheet of wood.

6. In combination, a movably mounted belt, drive means for moving the belt, and means opposite one face of the belt defining a surface to support a portion of the belt against deflection normal to the face of the belt, which surface has a piece of interwoven fibrous material secured in superposition thereon, the fibrous strands of which define open-ended recesses therebetween, which recesses have a low melting point thermoplastic lubricant material deposited therein, which lubricant material coats the defining fibers of the recesses and is in a solidified state assumed from a fused in situ condition on the fibrous material.

7. The combination according to claim 6 wherein the surface is planar and substantially rigid, and the fibrous material is directly secured thereto.

8. The combination according to claim 7 wherein the fibrous material is bonded to the surface.

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9. The combination according to claim 6 wherein the lubricant material is a wax.

10. The combination according to claim 6 wherein the deposits of lubricant material substantially fill the recesses but are slightly depressed in the direction of the surface and with respect to portions of the strands defining the respective

recesses, so that said portions are elevated relatively thereabove to form high points for contact with the belt.

11. The combination according to claim 10 wherein the elevated portions are also coated with the lubricant material.

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