A pedal lifting mechanism for use in an elliptical trainer includes a base, a lift bracket pivotally connected with the base for supporting pedals of the elliptical trainer thereon, and an inclination adjusting device mounted in front of the lift bracket. When a driver of the inclination adjusting device is actuated, a driving rod of the inclination adjusting device is changed in its length by the driver, such that a frame of the inclination adjusting device, which is pivotally connected between the driving rod and the lift bracket, is driven by the driving rod to move the lift bracket upwards and downwards relative to the base. Thus, the inclination angle of each of two pedals of the elliptical trainer is adjusted to change the paths of the pedals of the elliptical trainer.
PEDAL LIFTING MECHANISM FOR ELLIPTICAL TRAINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to elliptical trainers and more particularly, to a pedal lifting mechanism for an elliptical trainer.

2. Description of the Related Art

An elliptical trainer is a well-developed cardio-respiratory fitness exercise machine for shuffling the feet back and forth within the elliptically shaped paths to simulate walking, running, or stair climbing for achieving the purpose of exercising leg and thigh muscles. However, the conventional elliptical trainer has a monotonous operation because the pedals are moved along fixed paths, such that the conventional elliptical trainer can only be used to exercise the specific parts of the leg and thigh muscles.

Taiwan Patent No. 1294294 discloses an elliptical trainer, comprising two pedals, a guide track bracket, and an inclination adjusting device. The inclination adjusting device includes a screw rod, a nut member screwingly coupled to the screw rod so as to be moved by the rotary motion of the screw rod, and a support rod connected with the screw member so as to be biased by the actuation of the nut member. Thus, when the support rod is biased, the guide track bracket can be controlled by the support rod to change the angle relative to the ground, thereby adjusting the slope of the pedals. Besides, Taiwan Patent No. M405355 discloses a lift device for an elliptical trainer, comprising a driver and a lift bracket pivotally connected with a retractable rod of the driver, such that the lift bracket can be biased by the driver to adjust the angle relative to the ground for changing the slope of the pedals.

According to the aforesaid prior arts, the inclination adjusting device or the lift device is difficult to be assembled within a limited space, and therefore this problem may lead to a complicated structure and high manufacturing cost.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a pedal lifting mechanism for an elliptical trainer, which is simple in structure and easy to be assembled, and has low manufacturing cost.

To achieve this object of the present invention, a pedal lifting mechanism for an elliptical trainer comprises a base for being placed on a support surface, a lift bracket having a rear end pivotally connected with the base, and an inclination adjusting device including a driver mounted on the base and spaced from a front end of the lift bracket, a driving rod having a front end connected with the driver to be changed in length through the actuation of the driver, and a frame pivotally connected with the front end of the lift bracket and a rear end of the driving rod so as to drive the lift bracket to bias upwards and downwards relative to the base through the actuation of the driving rod. By means of the biasing motion of the lift bracket upwards and downwards relative to the base, the paths of two pedals which are supported on the lift bracket can be changed to achieve the purpose of exercising different parts of the leg and thigh muscles; and further, by means of the space arrangement between the lift bracket and the inclination adjusting device, the structure of the pedal lifting mechanism can be simplified, and the manufacturing cost of the pedal lifting mechanism can be reduced.

Preferably, the lift bracket includes two lift tubes located at the left and right sides of the base, a bridge coupled between the front ends of the lift tubes and pivotally connected with the support frame, and a connecting tube connected with the rear ends of the lift tubes and provided with two ends pivotally connected with the base.

Preferably, the driving rod has a screw rod having one end connected with the driver so as to be rotated by the driver, and a sleeve screwed to the screw rod and pivotally connected with the frame so as to be movable along an axial direction of the screw rod by a rotary motion of the screw rod for enabling the driving rod to change its length.

Preferably, the frame includes a main rod pivotally connected between the front end of the lift bracket and the rear end of the driving rod, a shaft connected with the bottom end of the main rod, and two rollers rotatably connected with two ends of the shaft and abutted against the support surface, thereby enhancing the structural stabilization.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an elliptical trainer equipped with a pedal lifting mechanism according to a preferred embodiment of the present invention;

FIG. 2 is a perspective view of the pedal lifting mechanism according to the preferred embodiment of the present invention;

FIG. 3 is a lateral view of the elliptical trainer, showing the lift bracket isn’t raised;

FIG. 4 is an enlarged view of parts of the elliptical trainer of FIG. 3, showing the lift bracket isn’t raised;

FIG. 5 is another lateral view of the elliptical trainer, showing the lift bracket is raised; and

FIG. 6 is an enlarged view of parts of the elliptical trainer of FIG. 5, showing the lift bracket is raised.

DETAILED DESCRIPTION OF THE INVENTION

As shown in FIG. 1, an elliptical trainer 10 equipped with a pedal lifting mechanism 20 in accordance with a preferred embodiment of the present invention comprises a main frame 12, a flywheel set 14, two pedal sets 16, and two handles 18. Since the elliptical trainer 10 is a well-known exercise machine, the structures of and the relationships among the aforesaid components aren’t further detailedly described hereunder. As shown in FIG. 2, the pedal lifting mechanism 20 in accordance with the preferred embodiment of the present invention comprises a base 30, a lift bracket 40, and an inclination adjusting device 50.

The base 30 is used to be placed on a support surface G (such as the ground) for installation of the main frame 12 of the elliptical trainer 10.

The lift bracket 40 includes two lift tubes 42 located at the left and right sides of the base 30 for engagement of the
pedal sets 16, a bridge 44 having two ends respectively coupled to the front ends of the lift tubes 42, and a connecting tube 46 connected with the rear ends of the lift tubes 42 and provided with two ends pivotally connected with two L-shaped lugs 32 of the base 30. After the pedal lifting mechanism 20 is assembled, as shown in FIG. 4, the lift bracket 40 is higher in elevation than the base 30.

[0022] As shown in FIGS. 4 and 5, the inclination adjusting device 50 includes a driver 60, a driving rod 70, and a frame 80. The driver 60 is mounted on the base 30 and spaced from the front end of the lift bracket 40. A screw rod 72 provided by the driving rod 70 has one end connected with the driver 60 so as to be rotated by the actuation of the driver 60, and a sleeve 74 provided by the driving rod 70 is screwed to the screw rod 72 so as to be movable along an axial direction of the screw rod 72 by the rotary motion of the screw rod 72. The frame 80 includes a main rod 82 having a top end pivotally connected with the bridge 44 of the lift bracket 40 and a middle part pivotally connected with the rear end of the sleeve 74 of the driving rod 70, a shaft 84 transversely connected with the bottom end of the main rod 82, and two rollers 86 rotatably connected with two ends of the shaft 84 and abutted against the support surface G for enhancing the structural stabilization.

[0023] To adjust the paths of the pedal sets 16, the driver 60 is operated to rotate the screw rod 72 of the driving rod 70 to drive the sleeve 74 of the driving rod 70 to move and push the frame 80, such that the frame 80 is stably moved backwards as the rollers 86 roll backwards on the support surface G. During the movement of the frame 80, the lift tubes 42 of the lift bracket 40 are pivotally moved upwards around the center of the connecting tube 46 to create a predetermined angle relative to the support surface G, as shown in FIGS. 5 and 6. As a result, the inclination angle of the pedal sets 16 is changed in response to the rise of the lift tube 42 of the lift bracket 40, so that the pedal sets 16 can be forced by a pressure from the user’s foot to move along different paths, thereby exercising different parts of the leg and thigh muscles.

[0024] As indicated above, since the inclination adjusting device 50 and the lift bracket 40 are arranged in a front-back manner, the pedal lifting mechanism 20 of the present invention can be assembled with less necessary components and without space restrictions to achieve the purpose of simple structure, easy assembly, and low manufacturing cost. Further, when the pedal lifting mechanism 20 of the present invention is in use, the user can adjust the pedal sets 16 to a desired position for exercising according to actual needs.

[0025] The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:
1. A pedal lifting mechanism used in an elliptical trainer, the pedal lifting mechanism comprising:
   a base for being placed on a support surface;
   a lift bracket having a rear end pivotally connected with the base;
   and
   an inclination adjusting device including a driver mounted on the base and spaced from a front end of the lift bracket, a driving rod having a front end connected with the driver to be changed in length through an actuation of the driver, and a frame pivotally connected with the front end of the lift bracket and a rear end of the driving rod for driving the lift bracket to pivot upwards and downwards relative to the base through the actuation of the driving rod.
2. The pedal lifting mechanism as claimed in claim 1, wherein the lift bracket includes two lift tubes located at left and right sides of the base, a bridge coupled between front ends of the lift tubes and pivotally connected with the frame, and a connecting tube connected with rear ends of the lift tubes and provided with two ends pivotally connected with the base.
3. The pedal lifting mechanism as claimed in claim 1, wherein the driving rod has a screw rod having one end connected with the driver so as to be rotated by the driver, and a sleeve screwed to the screw rod and pivotally connected with the frame so as to be movable along an axial direction of the screw rod by a rotary motion of the screw rod for driving the frame.
4. The pedal lifting mechanism as claimed in claim 1, wherein the frame includes a main rod pivotally connected between the front end of the lift bracket and the rear end of the driving rod, a shaft connected with a bottom end of the main rod, and two rollers rotatably connected with two ends of the shaft for being abutted against the support surface.
5. The pedal lifting mechanism as claimed in claim 1, wherein the lift bracket is higher in elevation than the base.

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