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(54) **MINIATURIZED TRACK EXERCISING DEVICE**

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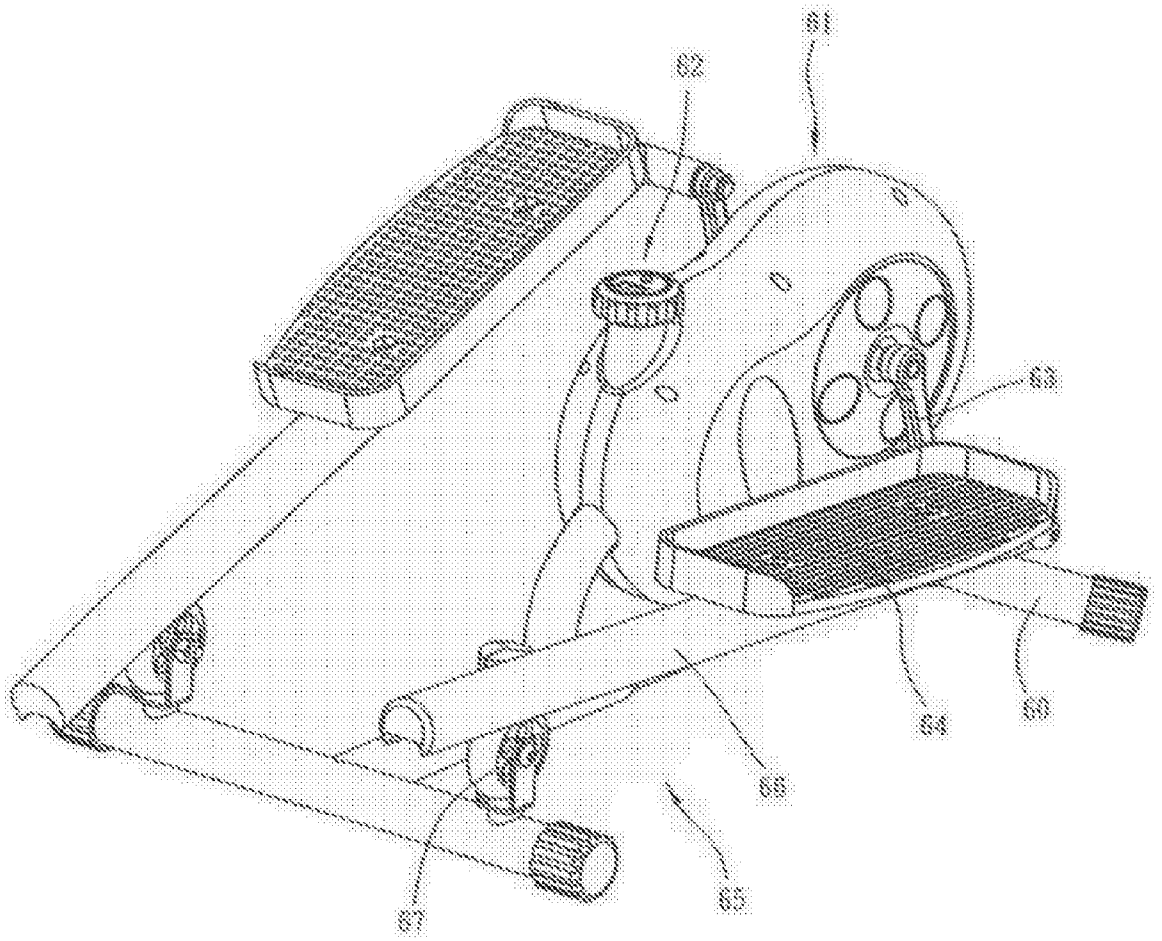
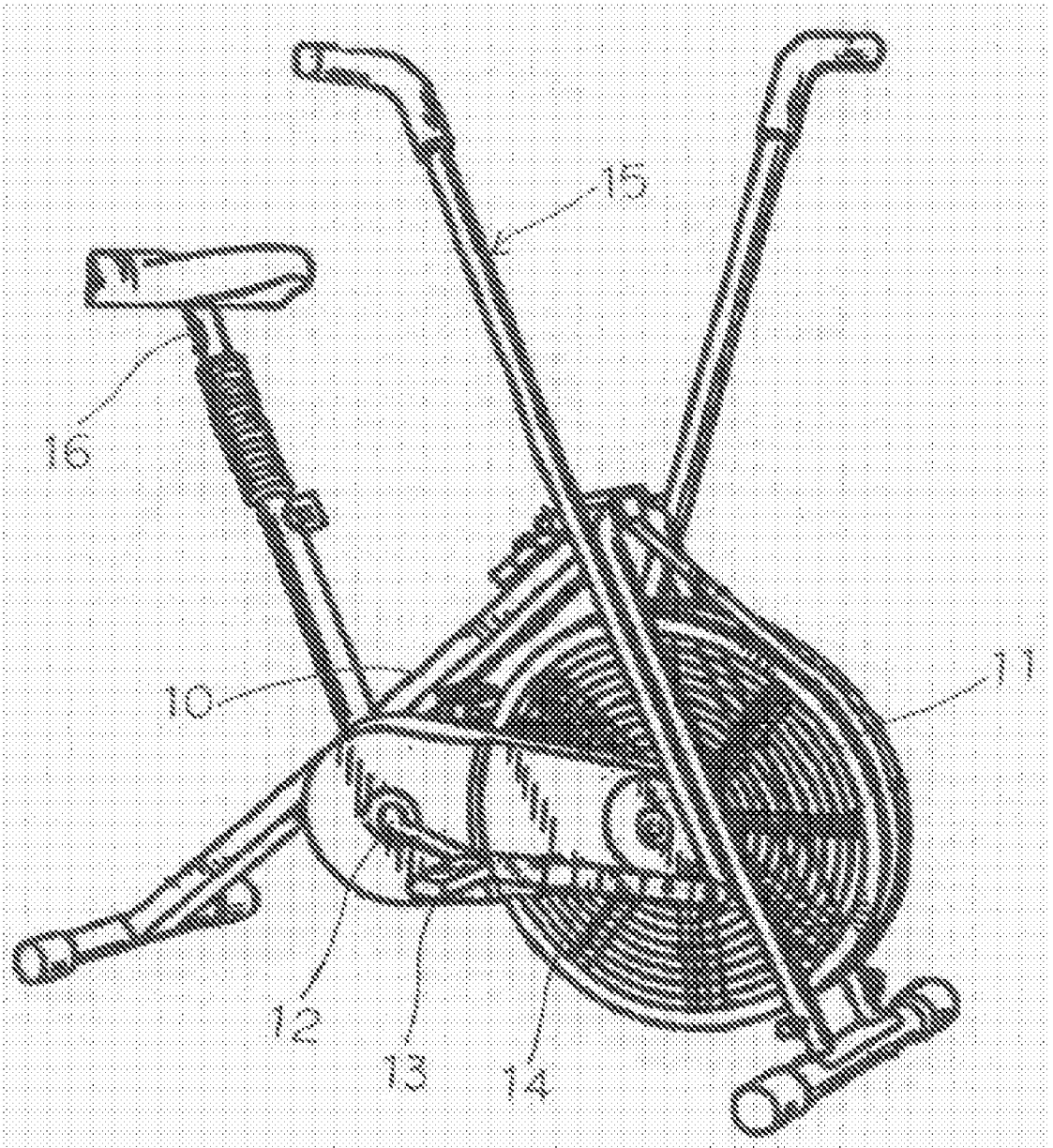
(57) **ABSTRACT**

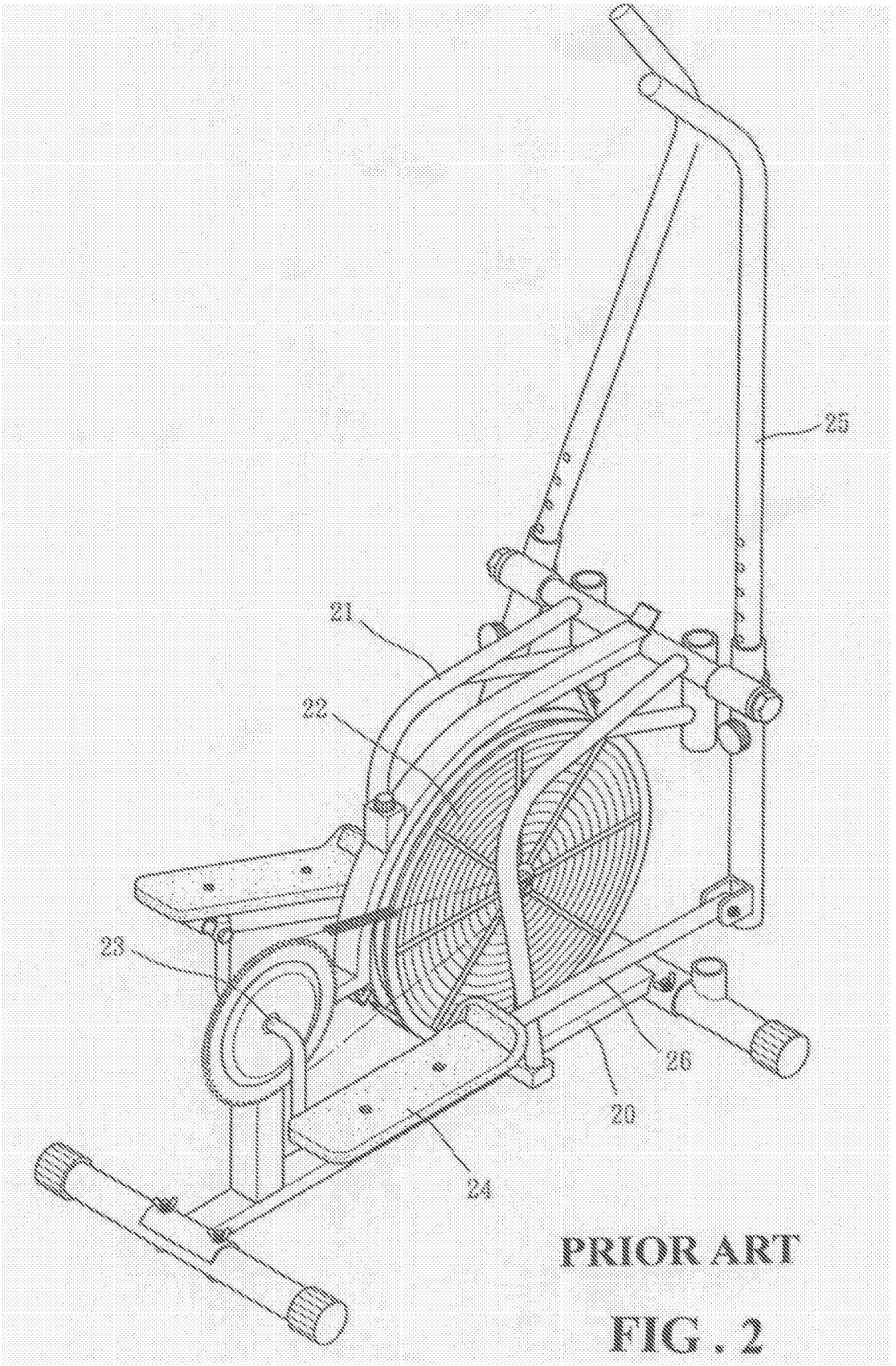
A miniaturized track exercising device includes a chassis on which a counterweight wheel set is provided. The counterweight wheel set is provided with a resistance adjusting unit. Two crank arms extend in opposite directions and are arranged on opposite sides of the counterweight wheel set. Each crank arm is pivotally connected to a pedal in an offset manner. The pedals are provided with a guide rail unit that is opposite to the crank arms with respect to the pedals and that provides a pivot joint and a fulcrum. Thus, when the pedals are being treaded, with the counterweight wheel set inducing a sufficient resistance that is adjusted with the resistance adjusting unit and the guide rail unit providing support against gravitational force acting on the pedals while the pedals undergo track motion, the pedals are constrained by the guide rail unit to generate an elliptical track motion.





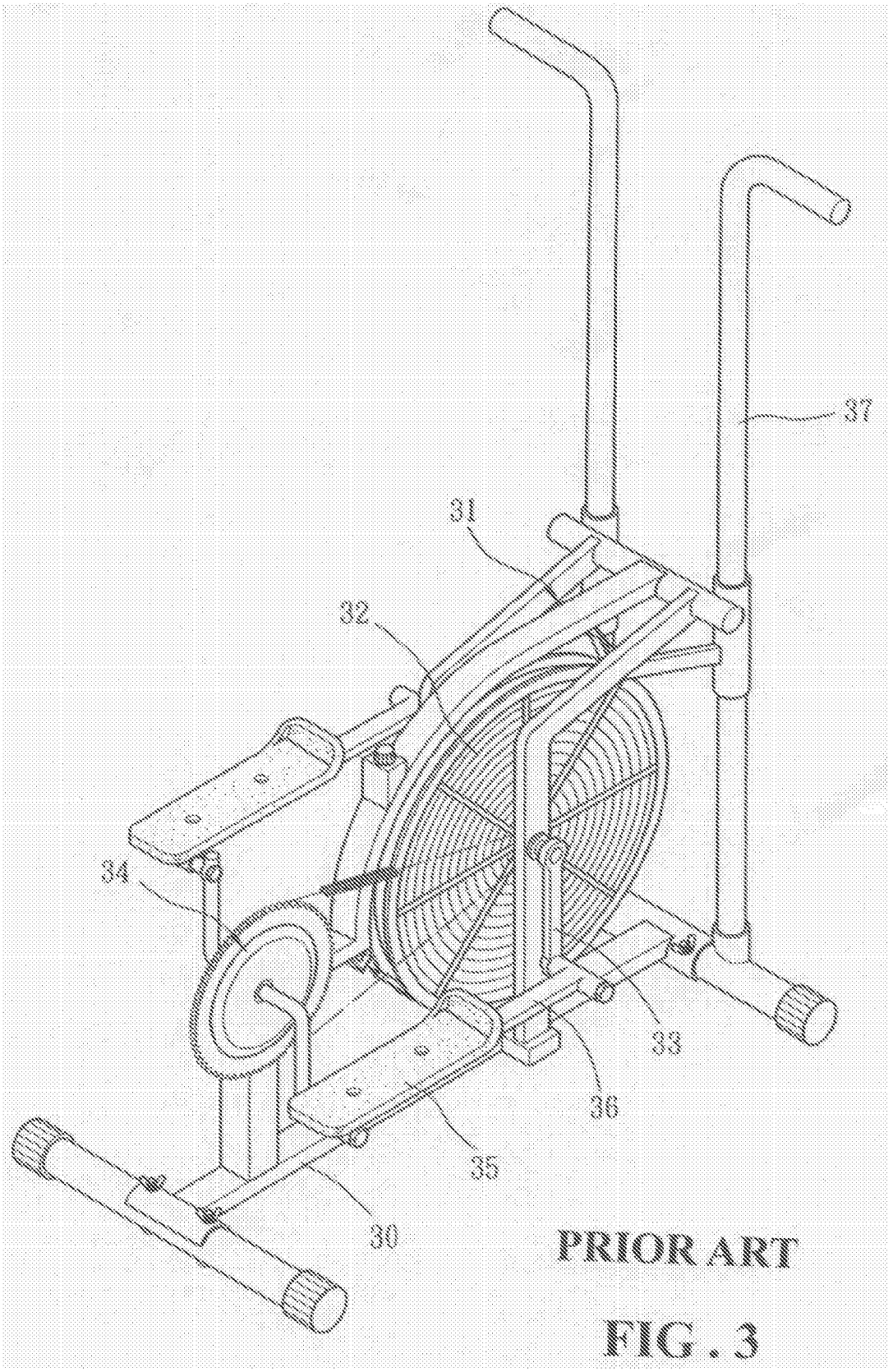
PRIOR ART

FIG. 1



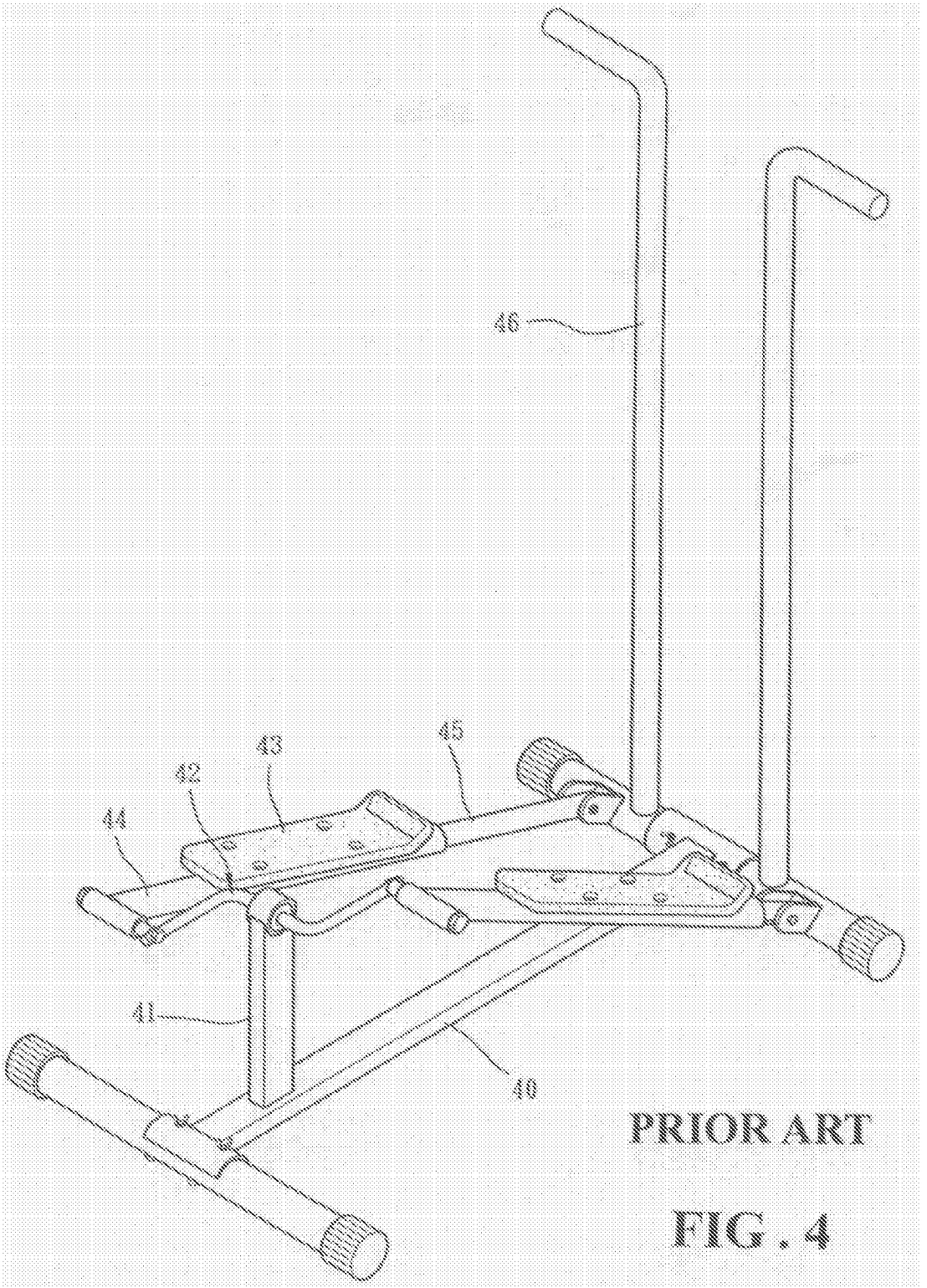
PRIOR ART

FIG . 2



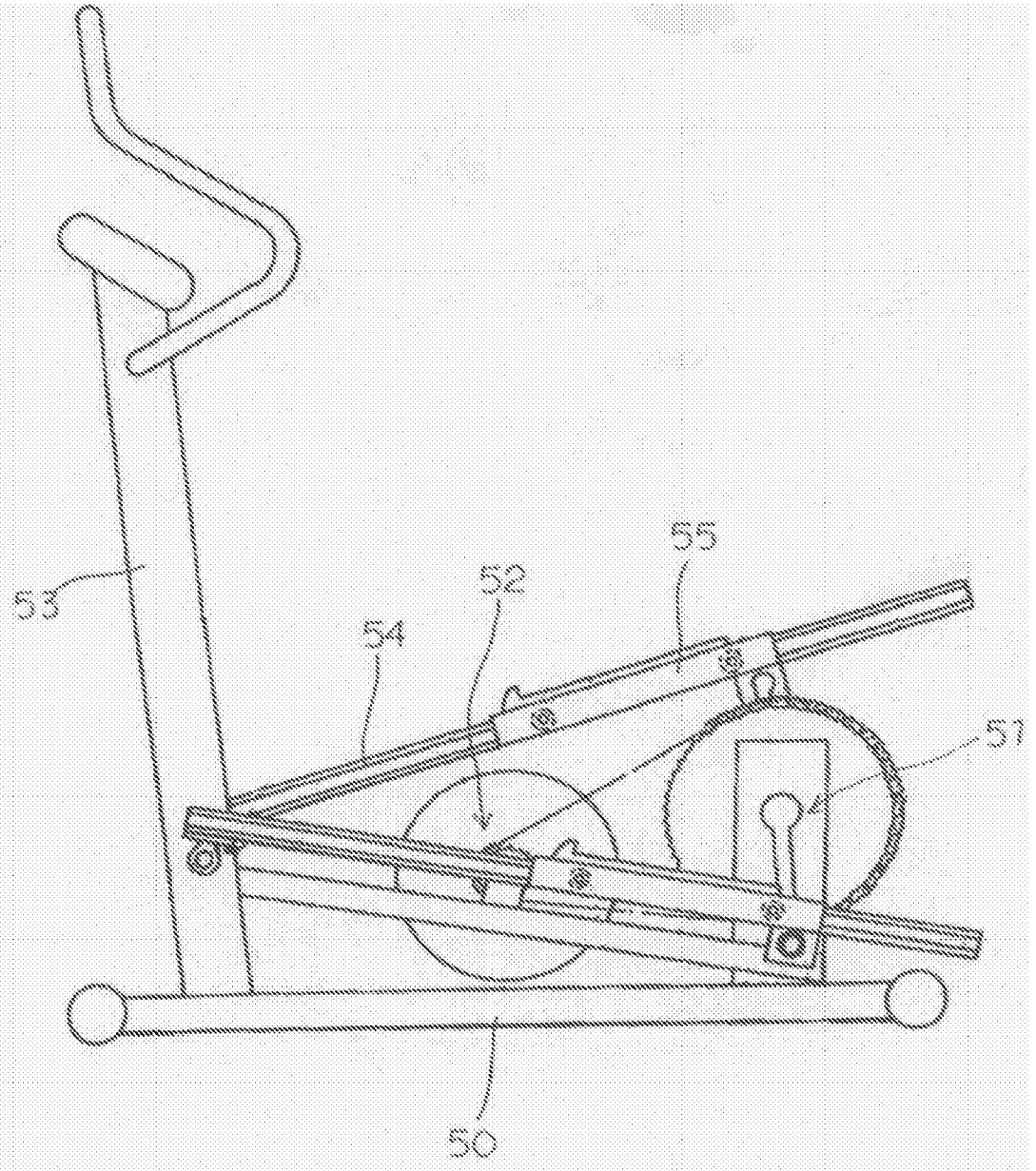
PRIOR ART

FIG. 3



PRIOR ART

FIG. 4



PRIOR ART

FIG. 5

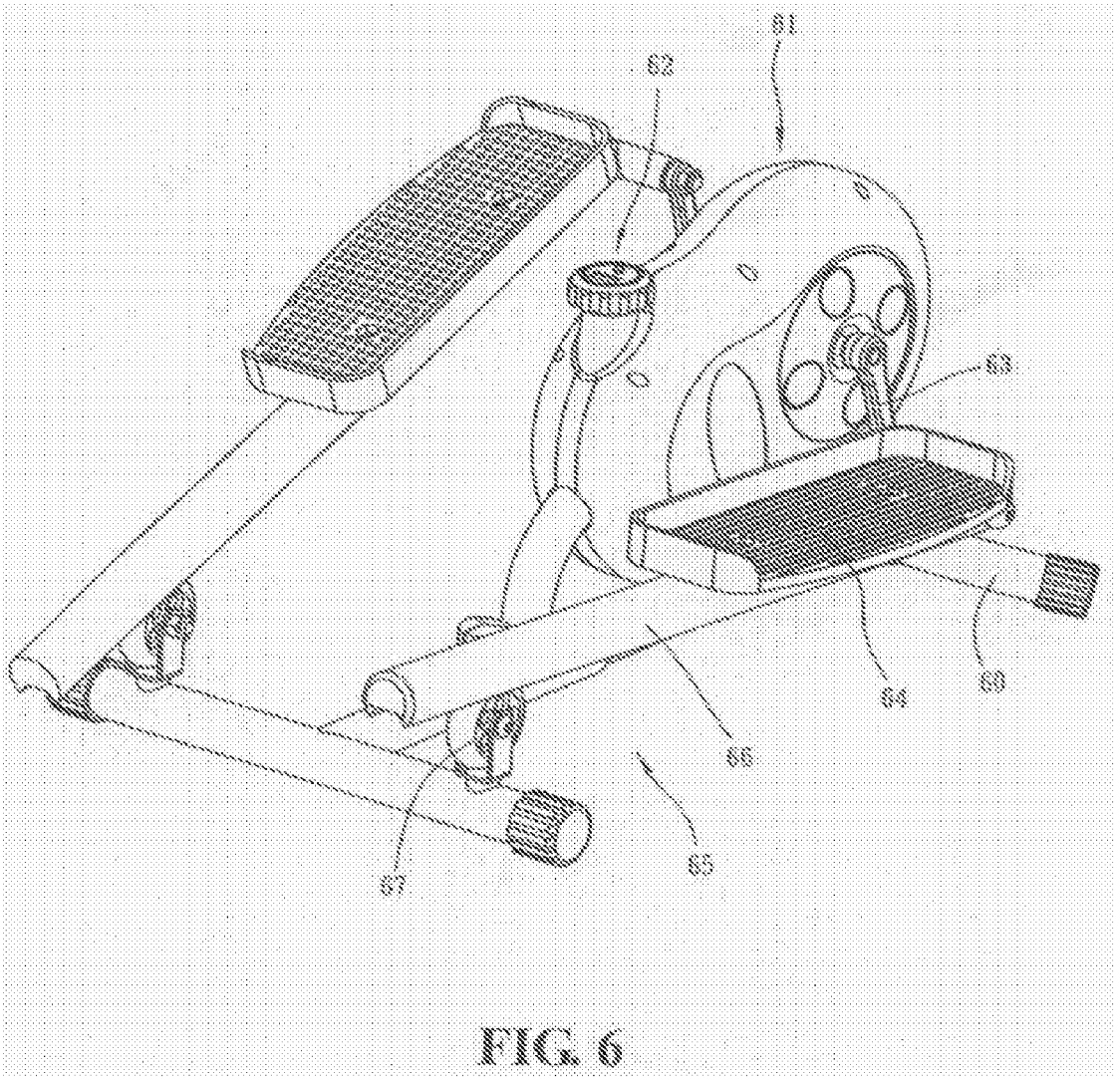


FIG. 6

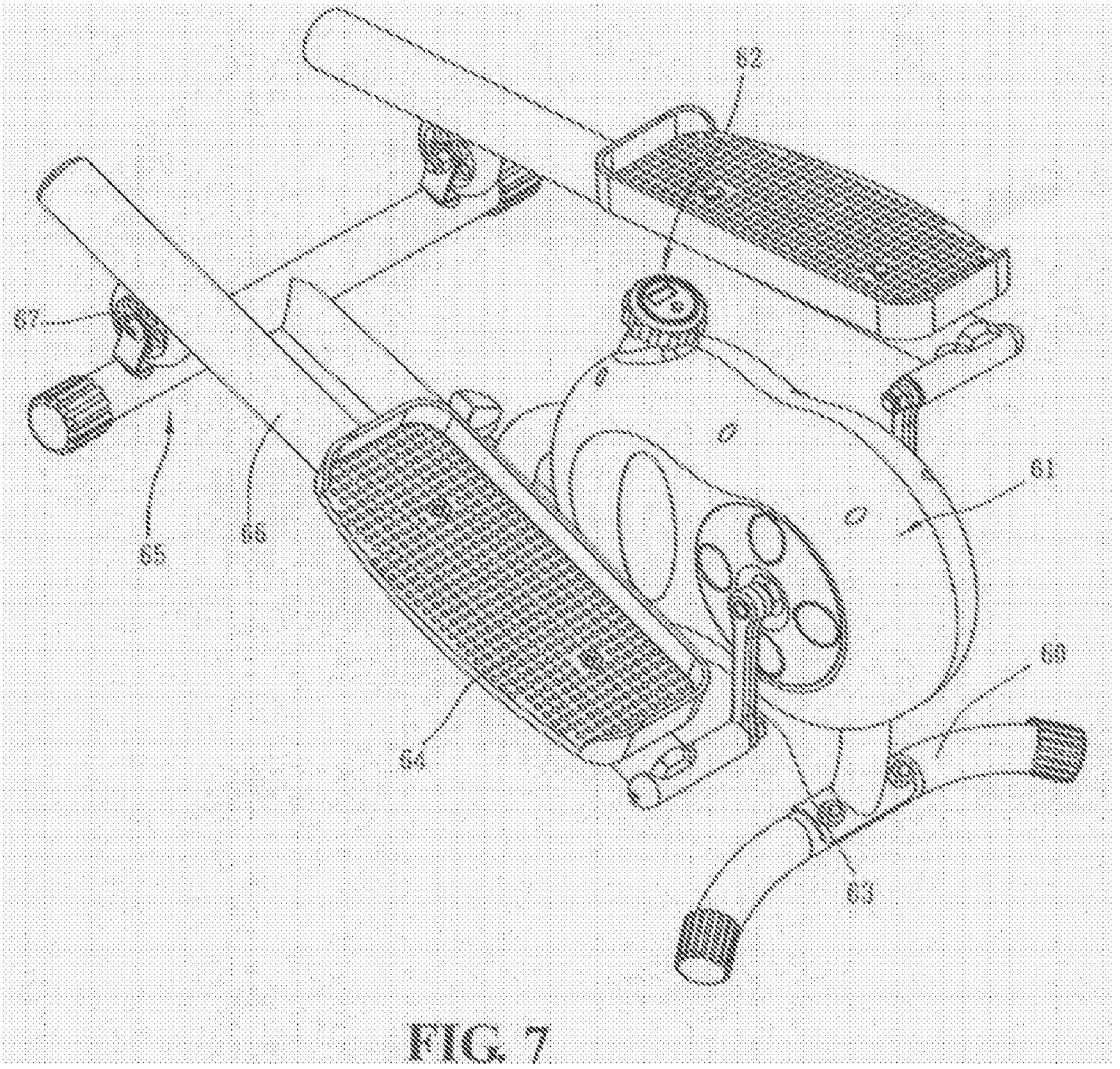


FIG. 7

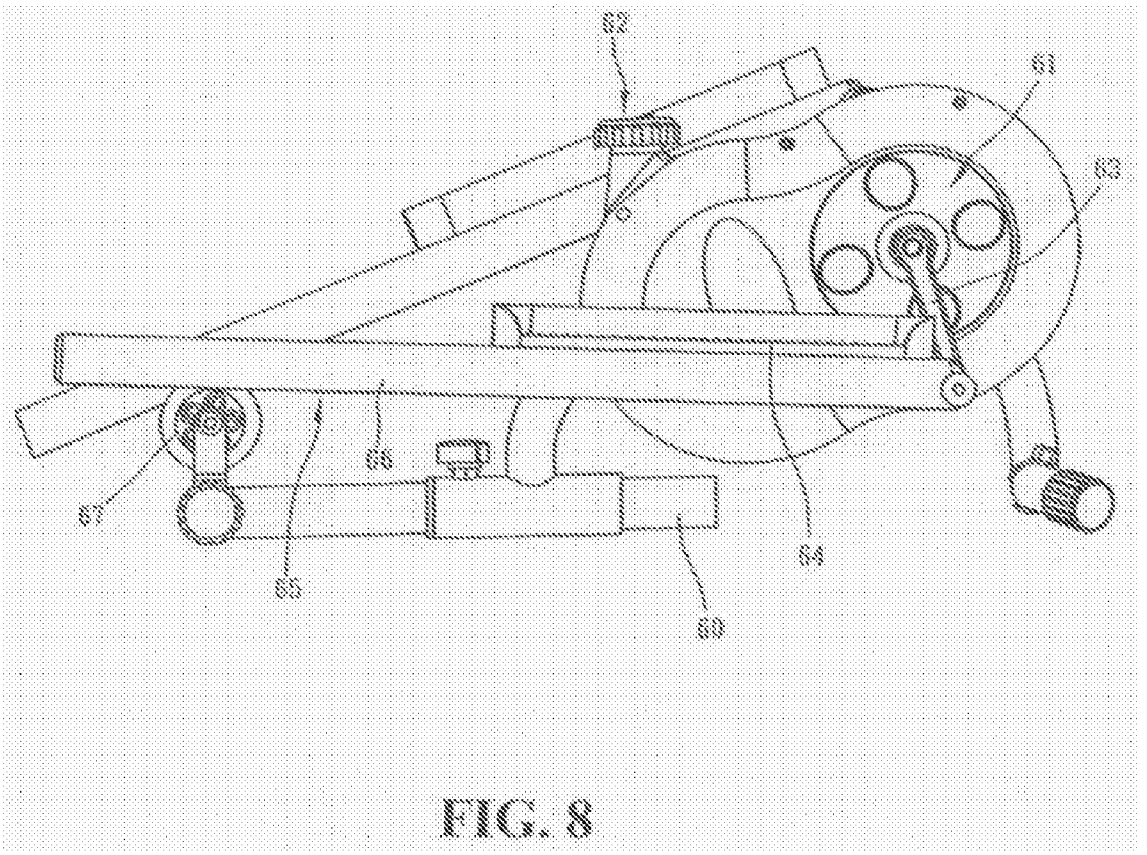


FIG. 8

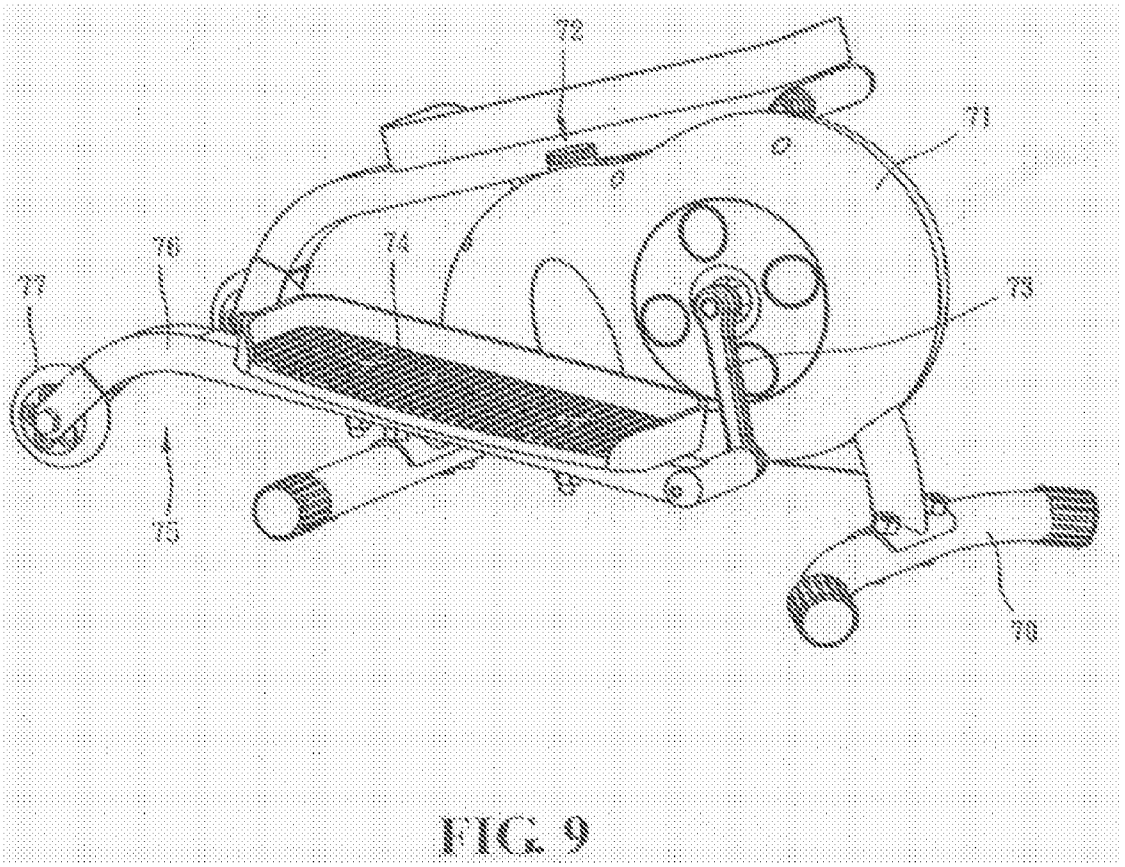


FIG. 9

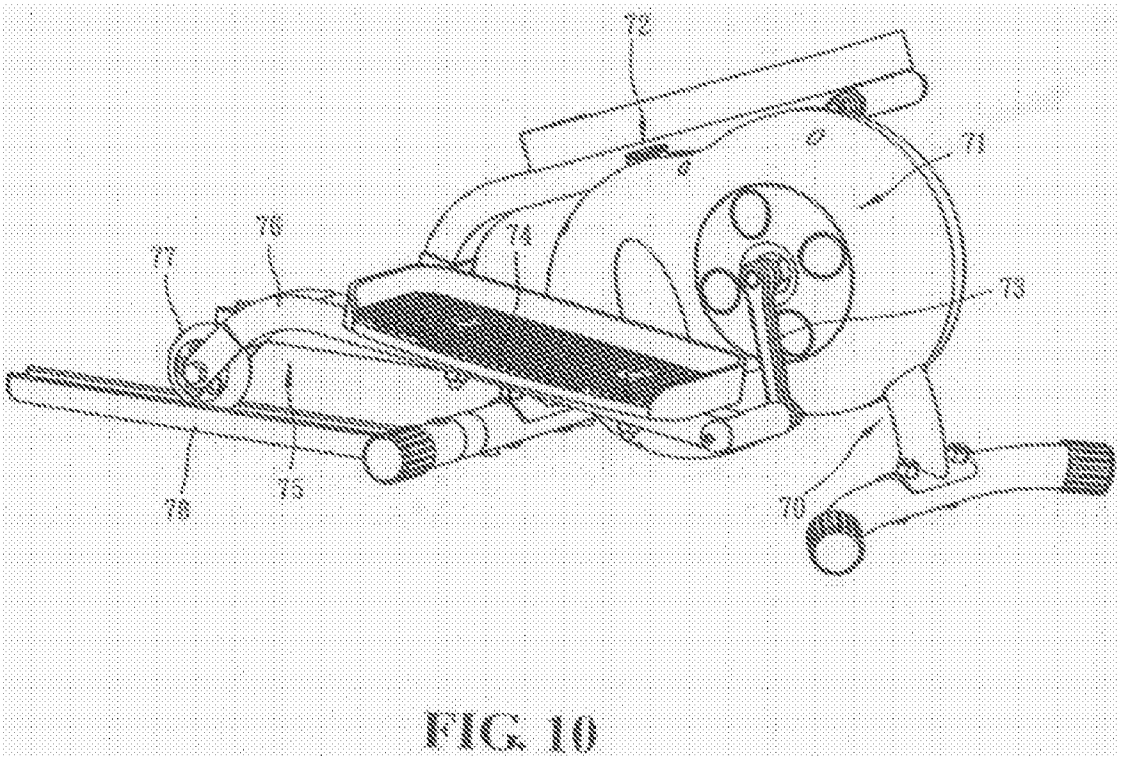


FIG. 10

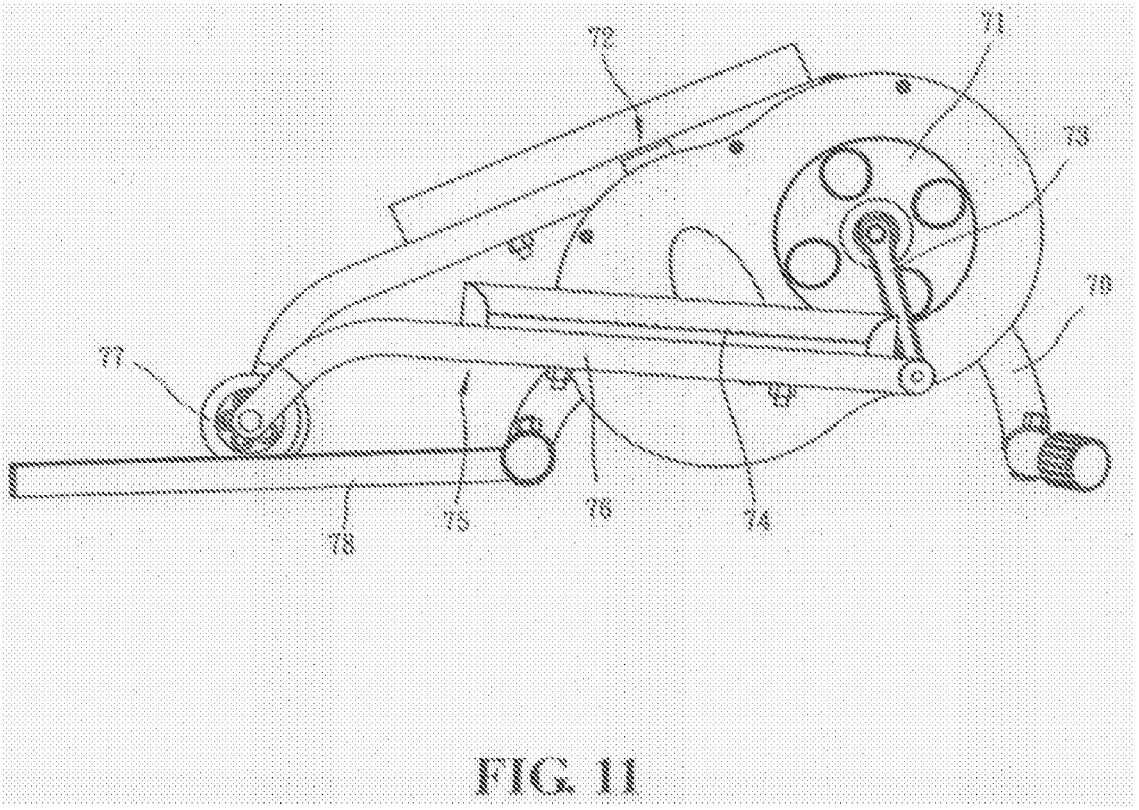


FIG. 11

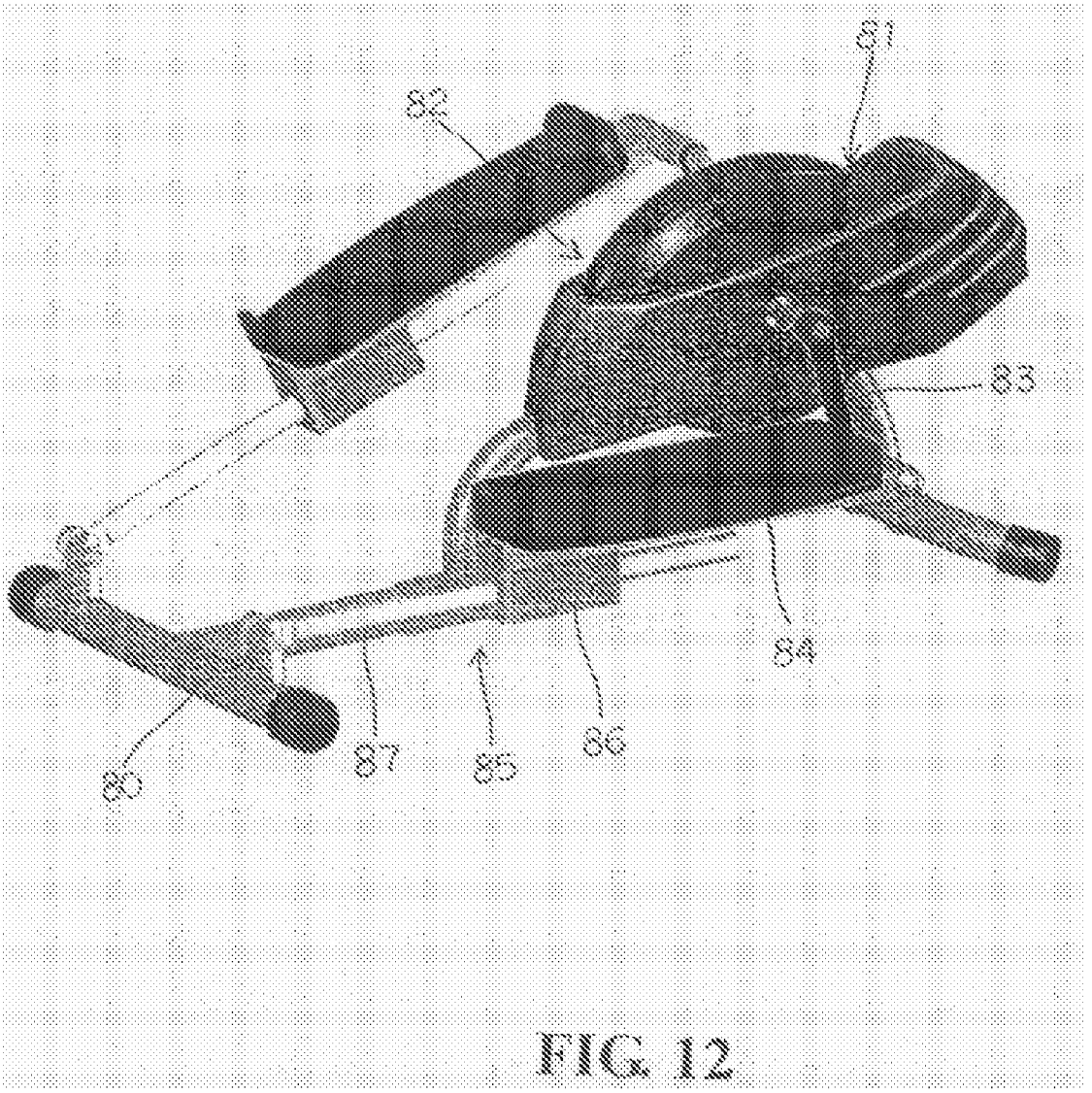


FIG. 12

MINIATURIZED TRACK EXERCISING DEVICE

BACKGROUND OF THE INVENTION

[0001] (a) Technical Field of the Invention

[0002] The present invention relates to the field of physical exercising or fitness equipment, and in particular to an elliptical track exercising device having a reduced volume and effectively increasing exercising amount.

[0003] (b) Description of the Prior Art

[0004] To cope with the substantial reduction of exercising sites and time that am available for modern people, a variety of exercising device or fitness equipment is available in the market for carrying out different types of physical trainings. Among the exercising devices available in the market, a track exercising device is operated by having the feet treading and skidding back and fro to effect training of strength of legs. The track exercising device has been developed from the early vane-type stationary bicycle to the recent elliptic track exercising device. FIG. **1** of the attached drawings shows a conventional vane-type stationary bicycle, which comprises a home or chassis **10** that stands on the ground. A vane assembly **11** for inducing a wind resistance is mounted on the frame **10**. The vane assembly **11** is driven by a crank assembly **12** that is arranged in the rear portion. The crank **12** are provided at opposite sides thereof two pedals **13** that are provided with linking bars **14**. Handgrips **15**, which can rock back and fro, are provided at opposite sides of a front end of the frame **10**. Lower ends of the handgrips **15** are respectively pivoted to the linking bars **14** of the pedals **13** to form driving coupling therebetween. A central portion of the frame **10** is raised upward and is provided with a seat assembly **16**, whereby a user may sit on the seat assembly **16** and treads the pedals **13** with hands holding and rocking the handgrips **15** back and fro. Since the pedals **13** are directly coupled to the center of the crank assembly **12**, they just undergo rotation along circular tracks. This means the amount of exercise is less. In addition, the seat assembly **16** and the handgrips **15** are must for the known device and this means it is in general not possible to significantly reduce the overall volume of the device, which leads to troubles in storage and transportation.

[0005] To improve the drawback of being of less amount, of exercise for the conventional vane type stationary bicycle, other types of exercising devices have been developed and an example, given in FIG. **2**, is a magnetism-controlled track exercising device, comprising an I-shaped base **20** having a front end on which a suspension frame **21** is provided. A magnetism control wheel set **22** and a crank set **23** are respectively arranged at front and rear sides of the suspension frame **21**. Pedals **24** are respectively located on opposite sides and rear ends of the pedals **24** are rotatably connected to the crank set **23** so as to induce motion along an elliptic track, which helps increasing the amount of exercising. Further, handgrips **25** are located on opposite sides of and are pivotally coupled to the front end of the suspension frame **21**. Lower ends of the handgrips **25** are pivoted to links **26** that are connected to the front ends of the pedals **24** so that the user may stand on the pedals **24** for doing exercise and keeping balance by holding the handgrips **25**. However, once again, the overall volume of the known device cannot be significantly reduced, and this causes problems in installation, use, and storage of the device.

[0006] Further referring to FIG. **3**, which illustrates a dual-crank type track exercising device, comprising a chassis **30** having a front section on which a suspension frame **31** is arranged. A flywheel set **32** is arranged in the suspension frame **31** and has crank arms **33** on opposite sides thereof. The chassis **30** is provided at a rear section thereof with a crank set **34** that drives the flywheel set **32**. Pedals **35** are arranged on opposite sides of the crank set **34**. A link **36** is connected to a front end of each pedal **35** and is also connected to the respective crank arm **33**, so that the pedals **35** can reciprocate back and fro between the crank arms **33** of the flywheel set **32** and the crank set **34**. To keep safety and balance of a rider, handgrips **37** are provided at front end of both the suspension frame **31** and the chassis **30** to be held by the rider. When the crank arms **33** and the crank set **34** are rotated to the topmost positions, the pedals **35** have the gravity centers thereof located at very high position whereby without holding the handgrips **37**, the rider may be subject to high potential of risk. In this respect, the handgrips **37** are a must for the known device.

[0007] FIG. **4** of the attached drawings illustrates a slide type track exercising device, comprising a chassis **40** and a vertical post **41** is arranged at a rear end of the chassis **40**. A crank set **42** is rotatably mounted to a top end of the post **41**. A guide tube **44**, which carries a pedal **43**, is provided at each side of the crank set **42**. The guide tube **44** contains therein a compression spring is in telescopic connection with a slide bar **45** that is pivoted to the chassis **40**. Thus, when the pedals **43** are stepped to depress the guide tubes **44** downward, the compression springs provide the slide bars **45** with the effect simulating damping motion. This simplifies the structure, but lacks of the rotational inertia effected by the vane or flywheel, so that the operation is not smooth, and the result of exercising is poor. Further since the operation is not smooth and the resistance of damping is not adjustable, handgrips **46** are still needed for the user to maintain balance. As a result, it cannot reduce the space occupied.

[0008] FIG. **5** illustrates a further conventional slide type track exercising device, which comprises a chassis **50** having a rear end to which a crank set **51** is mounted and a flywheel set **52** is arranged in front of and in driving coupling with the crank set **51**. The flywheel **52** provides resistance to effect exercising. A handgrip post **53** is erected at a front end of the chassis **50**. A guide bar **54** is provided at and pivoted to opposite sides of a lower section of the handgrip post **53** and a slidable pedal **55** is slidably mounted on each guide bar **54**. The slidable pedal **55** is pivoted at a rear end thereof to the crank set **51** so that when the crank set **51** is rotated, the slidable pedals **55** slide along the guide bars to effect the greatest extent of track exercising. However, the pedals **55** are not fixed with respect to the guide bars **54** and thus the handgrip post **53** is a must for the user to keep balance. Thus, the overall volume cannot be reduced, leading to the same problems of storage, use, and transportation.

[0009] The known pedaling type track exercising devices provides the users with exercising by pedaling action. Since in all the known devices, the support point or fulcrum and the pivot point are "floating" rather than stationary, when the device is operated to take track motion, the gravity center of the pedals are located in front of the user so that the user cannot control the balance thereof and thus handgrips located in front of the chassis are required to support the

user. On the other hand, the known sliding type uses the slidable pedals sliding along the guide bars to realize exercising. Again, since the pedals are "floating" and are not properly supported, when the device is operated to take track motion, the user is not able to control balance so that again, handgrips are needed in the front of the chassis for supporting the user.

[0010] In other words, the conventional pedaling type track, exercising devices realize exercising by pedaling action. To increase the resistance thereof, a large size vane is needed. Also, crank set and chain are used to drive the vane. All these complicate the construction and enlarge the overall volume. In addition, the gravity center is put at a high altitude, causing negative effect on the operation safety. The handgrips that allow the user to keep balance also increase the overall volume of the track exercising device, causing problems in flexibility of space use and inconvenience of use, installation, storage, and transportation.

SUMMARY OF THE INVENTION

[0011] The primary purpose of the present invention is to provide a miniaturized track exercising device, which has reduced overall volume and has enhanced operation safety.

[0012] The above objective is realized with the following technical solution. A miniaturized track exercising device comprises a chassis on which a counterweight wheel set is provided. The counterweight wheel set is provided with a resistance adjusting unit for adjusting the resistance induced by the counterweight wheel set. Two crank arms extend in opposite directions and are arranged on opposite sides of the counterweight wheel set. Each crank arm is pivotally connected to a pedal in an offset manner. The pedals are provided with a guide rail unit that is opposite to the crank arms with respect to the pedals and that provides a pivot joint and a fulcrum. As such, with the above described means, the present invention may adjust the resistance against the rotation of the counterweight wheel set by means of the resistance adjusting unit and the guide rail unit, provides support against gravitational force acting on the pedals while the pedals undergo track motion, so that the user may stably stand on the pedal to take the track motion without the handgrips to maintain balance. Thus, reduction of overall volume and putting the gravity center at a lower altitude are realized. And, exercising result can also be enhanced with safety.

[0013] The foregoing object and summary provide only a brief introduction to the present invention. To fully appreciate these and other objects of the present invention as well as the invention itself, all of which will become apparent to those skilled in the art, the following detailed description of the invention and the claims should be read in conjunction with the accompanying drawings. Throughout the specification and drawings identical reference numerals refer to identical or similar parts.

[0014] Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. **1** is a perspective view of a vane type conventional stationary bicycle;

[0016] FIG. **2** is a perspective view of a conventional magnetism-controlled track exercising device;

[0017] FIG. **3** is a perspective view of a conventional dual-crank type track exercising device;

[0018] FIG. **4** is a perspective view of a conventional slide type track exercising device;

[0019] FIG. **5** is a perspective view of another conventional slide type track exercising device;

[0020] FIG. **6** is a perspective view illustrating a miniaturized track exercising device constructed in accordance with the present invention;

[0021] FIG. **7** is another perspective view of the miniaturized track exercising device of the present invention;

[0022] FIG. **8** is a side elevational view illustrating the operation of the miniaturized track exercising device of the present invention;

[0023] FIG. **9** is a perspective view illustrating a miniaturized track exercising device in accordance with another embodiment of the present invention;

[0024] FIG. **10** is a perspective view illustrating a miniaturized track exercising device in accordance with a further embodiment of the present invention;

[0025] FIG. **11** is a side elevational view of the miniaturized hack exercising device shown in FIG. **10**; and

[0026] FIG. **12** is a perspective view illustrating a miniaturized track exercising device in accordance with yet a further embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] The following descriptions are of exemplary embodiments only, and are not intended to limit the scope, applicability or configuration of the invention in any way. Rather, the following description provides a convenient illustration for implementing exemplary embodiments of the invention. Various changes to the described embodiments may be made in the function and arrangement of the elements described without departing from the scope of the invention as set forth in the appended claims.

[0028] With reference to the drawings, and in particular to FIGS. **6-8**, which show a miniaturized track exercising device in accordance with the present invention the track exercising device comprises a chassis **60** having a front portion and a rear portion. A counterweight wheel set **61** is mounted on the rear portion and a resistance adjusting unit **62** is provided at a front portion of the counterweight wheel set **61** to allow adjustment of the resistance that is provided by the counterweight wheel set **61** by a user in accordance with the physical condition and the extent of training to be taken by user. Crank arms **63**, which extend in opposite directions, are provided on opposite sides of the counterweight wheel set **61**, and each crank arm **63** pivotally carries a pedal **64** in an eccentric manner. The pedals **64** are provided at front ends thereof with a guide rail unit **65**, which serves as pivot point and fulcrum. The guide rail unit **65** comprises a rail bar **66** that has a semi-circular cross-section and extends in a frontward from an underside of each

pedal **64**. The guide rail unit **65** also comprises two fulcrum rollers **67** rotatably mounted to the front portion of the chassis **60** at locations corresponding to the two rail bars **66** to support the rail bars **66** thereon in a rolling manner.

[0029] With such an arrangement, by setting and adjusting the resistance induced by the counterweight wheel set **61** with the resistance adjusting unit **62** and by supporting the gravity of the load on the pedals **64** with the guide rail unit **65**, when a user treads the pedals **64**, the pedals **64** are subject to constraints by the crank arms **63** to move with the rail bars **66** sliding with respect to the fulcrum rollers **67** thereby generating an elliptic track motion. As such, a compact and safe miniaturized track exercising device is realized.

[0030] To practically operate the miniaturized track exercising device in accordance with the present invention, referring to FIGS. **6-8** again, the user steps on the pedals **64**. Due to the fact that the counterweight wheel set **61** is provided with an adjustable resistance adjusting unit **62**, the pedals **64** on which the user stands are not allowed to rotate arbitrarily so that the user may stably stand thereon. Since the guide rail unit **65**, which serves as a pivot point and a fulcrum, is located in front of the pedals **64**, the range of movement of the guide rail unit **65** is less than what located at the rear portion. And since the guide rail unit **65** is supported by the fulcrum rollers **67** and is guided in a friction manner with the rail bars **66**, the user may effectively control the balance thereof. Therefore, the device of the present invention needs no handgrip. This helps reducing the overall length of the chassis **60**, making the construction simplified and the overall volume reduced, and eventually facilitating exploitation of the space required for use, installation, storage and transportation. In addition, the device of the present invention has a gravity center set at a lower location, which makes the operation and use of the device safer.

[0031] In accordance with another embodiment of the present invention, as illustrated in FIG. **9**, the track exercise device comprises a chassis **70** having a tear portion in which a counterweight wheel set **71** is mounted. A resistance adjusting unit **72** is provided at a front portion of the counterweight wheel set **71**. Two crank arms **73**, which extend in opposite directions, are arranged on opposite sides of the counterweight wheel set **71**. Each crank arm **73** is arranged at the rear side of and pivoted to a pedal **74** in an onset manner. The pedals **74** are provided at front sides thereof a guide rail unit **75** serving as a pivot point and fulcrum. The guide rail unit **75** comprises a rail bar **76** extending in the frontward direction from an underside of each pedal **74**. A fulcrum roller **77** is provided at a hunt end of each rail bar **76** for rolling on the ground. Thus being supported by the ground and pivoting about the fulcrum roller **77**, the pedals **74** are constrained by the crank arms **73** and the rail bars **76** to take an elliptical motion, featuring the same effectiveness and advantages as the previous embodiment.

[0032] In a further embodiment of the present invention, as illustrated in FIGS. **10** and **11**, to enhance the smooth movement of the fulcrum rollers **77** of the rail bars **76**, channels **78** having an upward facing opening are provided at locations in front of and on opposite sides of the chassis **70** for receiving and guiding the rollers **77** so that the fulcrum rollers **77** may roil in a more controlled and smooth manner. In addition, the channels **78** can be made selectively foldable inward to reduce the space required for storage and transportation.

[0033] Further, as illustrated in FIG. **12**, a further embodiment of the miniaturized track exercising device in accordance with the present invention comprises a chassis **80**, which has a rear portion in which a counterweight wheel set **81** is mounted. A resistance adjusting unit **82** is provided at a front portion of the counterweight wheel set **81**. Two crank arms **83**, which extend in opposite directions, are arranged on opposite sides of the counterweight wheel set **81**. Each crank arm **73** is arranged at the rear side of and pivoted to a pedal **84** in an offset manner. The pedals **84** are provided at front sides thereof a guide rail unit **85** serving as a pivot point and fulcrum. The guide rail unit **75** comprises a guide collar **86** mounted to an underside of each pedal **84** and a rail bar **87** slidably extending through the guide collar **86** in the frontward direction. A front end of each rail bar **87** is pivoted to the front end of the chassis **80** so that the pedals **84** are driven by the crank arms **83** and are constrained by the guide rail unit **85** to effect an elliptic track motion, and once again, featuring reduced volume and enhanced safety.

[0034] Although the present invention has been described with reference to the preferred embodiments thereof, it is apparent to those skilled in the art that a variety of modifications and changes may be made without departing from the scope of the present invention which is intended to be defined by the appended claims.

[0035] It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

[0036] While certain novel features of this invention have been shown and described and are pointed out in the annexed claim, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

I claim:

1. A miniaturized track exercising device comprising a chassis on which a counterweight wheel set is provided, the counterweight wheel set being provided with a resistance adjusting unit, two crank arms extending in opposite directions and arranged on opposite sides of the counterweight wheel set, each crank arm being pivotally connected to a pedal in an offset manner, the pedals being provided with a guide rail unit that is opposite to the crank arms with respect to the pedals and that provides a pivot joint and a fulcrum, whereby when the pedals are being treaded, with the counterweight wheel set inducing a sufficient resistance that is adjusted with the resistance adjusting unit and the guide rail unit providing support against gravitational force acting on the pedals while the pedals undergo track motion, the pedals are constrained by the guide rail unit to generate an elliptical track motion.

2. The miniaturized track exercising device as claimed in claim **1**, wherein the guide rail unit comprises a rail bar having a semi-circular cross-section and extending in a frontward direction from an underside of each pedal, two fulcrum rollers being rotatably mounted to a front portion of the chassis and respectively engaging in a rolling manner with and supporting the respective rail bar.

3. The miniaturized track exercising device as claimed in claim **1**, wherein the guide rail unit comprises a rail bar extending in a frontward direction from an underside of each pedal and having a front end to which a fulcrum roller is rotatably mounted for and adapted to roll on a fixture surface, whereby being supported on the ground and with the fulcrums as pivot joints, the pedals are constrained by the crank arms and the rail bars to undergo elliptical motion.

4. The miniaturized truck exercising device as claimed in claim **3**, wherein the guide rail unit comprises channels having upward facing openings and arranged at a front end and opposite sides of the chassis to movably receive the fulcrum rollers therein respectively for making rolling of the fulcrum rollers smooth, the channels being foldable inward to reduce space occupied thereby.

5. The miniaturized track exercising device as claimed in claim **1**, wherein the guide rail unit comprises a guide collar mounted to an underside of each pedal and a rail bar slidably extending in a frontward direction through the collar, a front end of the rail bar being pivoted to a front end of the chassis whereby the pedals are constrained by the crank arms and are movable along the guide rail unit to thereby induce an elliptic motion.

* * * * *