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(54) **FOLDING MECHANISM FOR A HANDRAIL FRAME ASSEMBLY OF A TREADMILL**

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(57) **ABSTRACT**

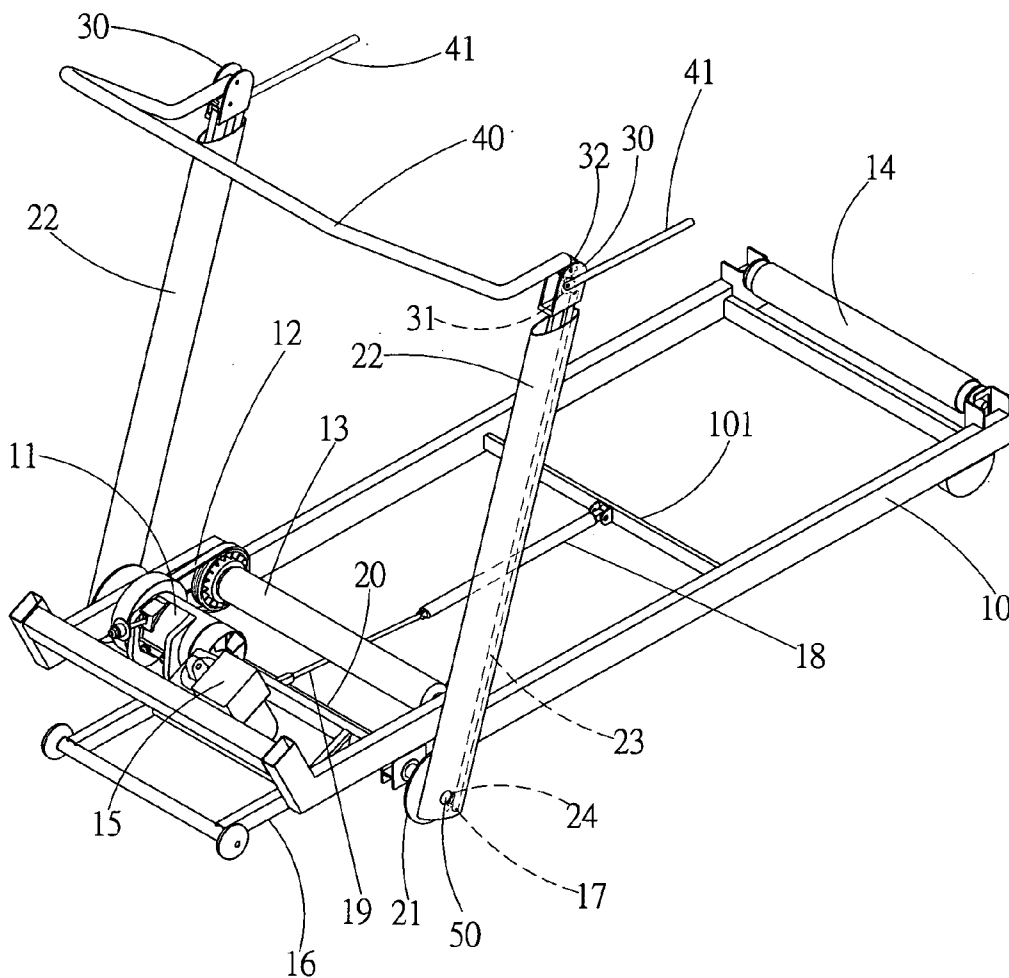
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A folding mechanism for a handrail frame assembly of a treadmill having a coupling cross shaft with a rotational disc at each side thereof for pivotally coupling to the hollow handrail frame assembly. A pull rod is received within the handrail frame assembly. In this way, two handles and a console support at the top end of the handrail frame assembly move by use of the corresponding action of the pull rod toward each other or away from each other in position when the handrail frame assembly is folded in a storage position or moved in an upright position.



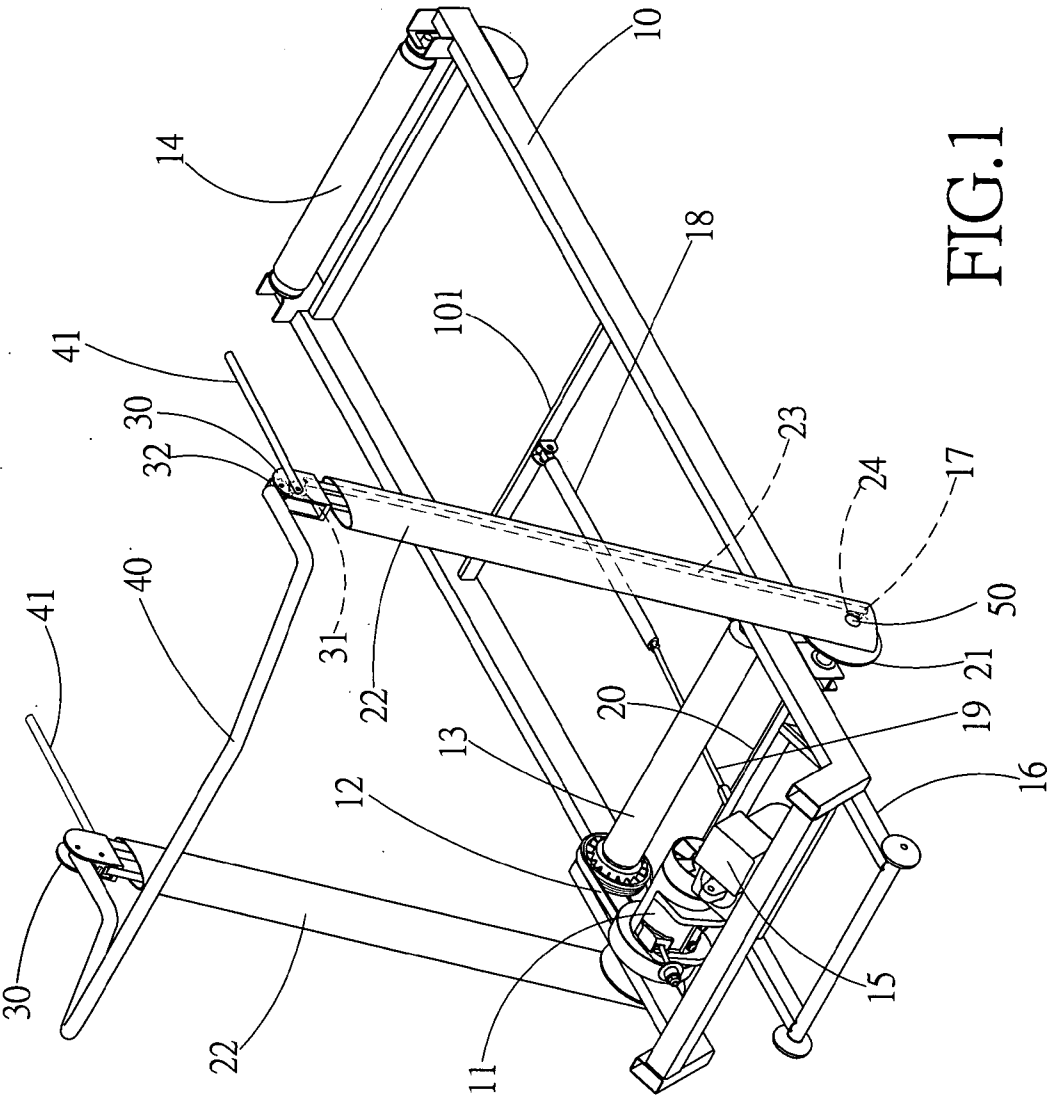


FIG.1

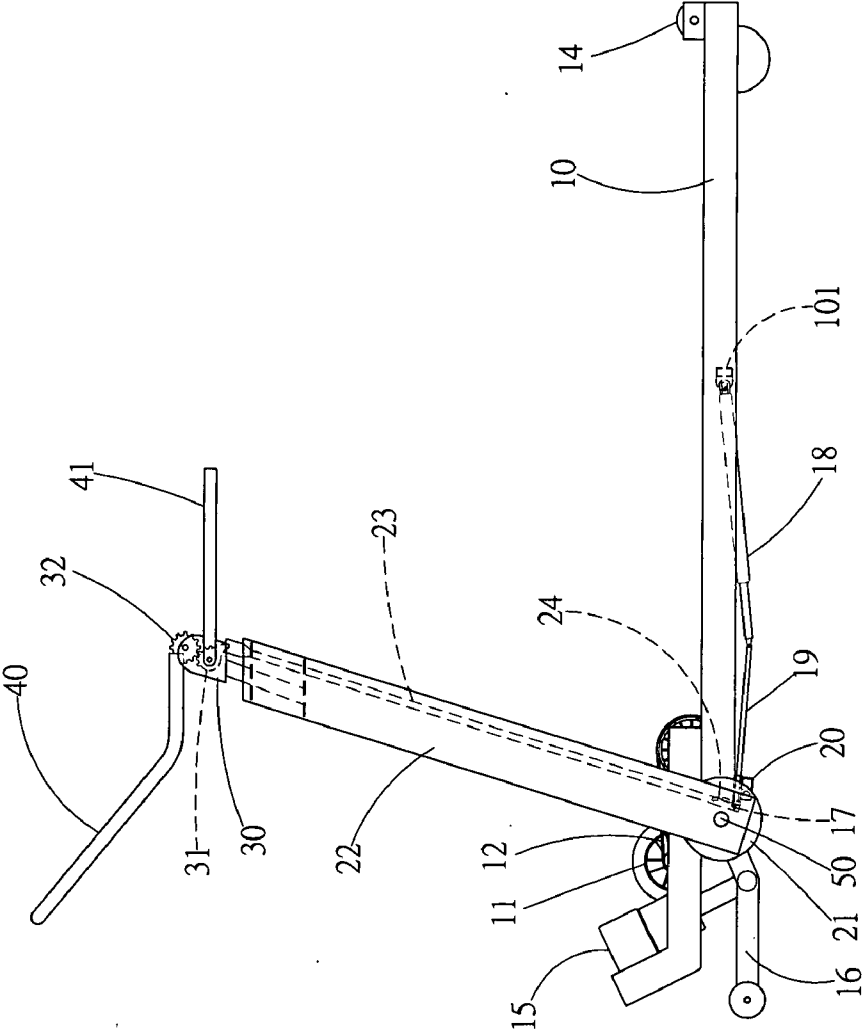


FIG.2

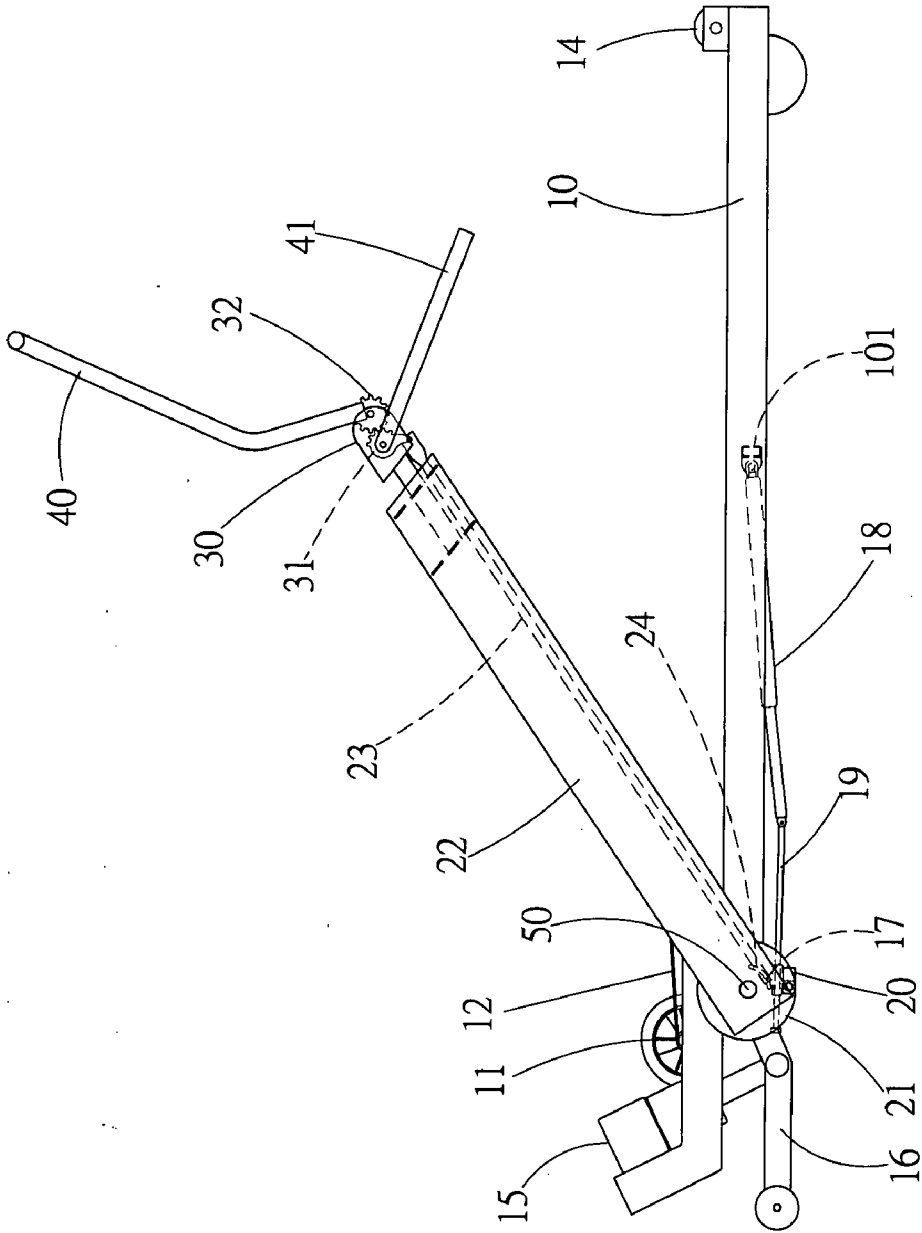


FIG.3

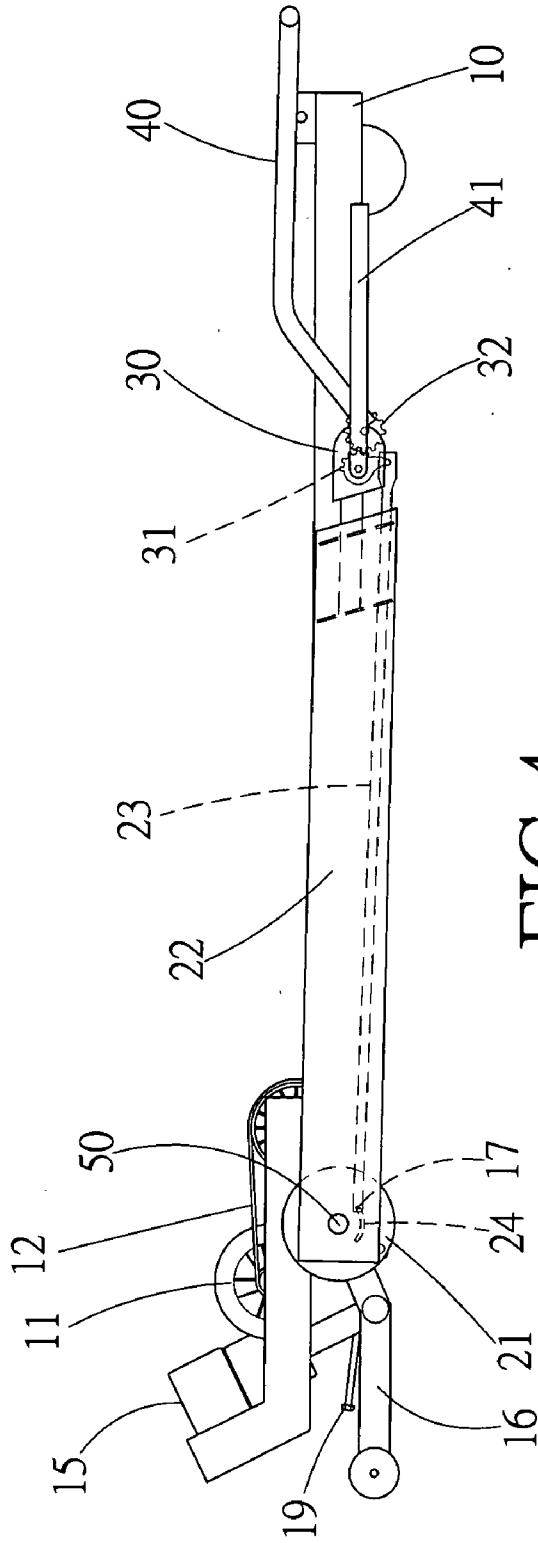


FIG. 4

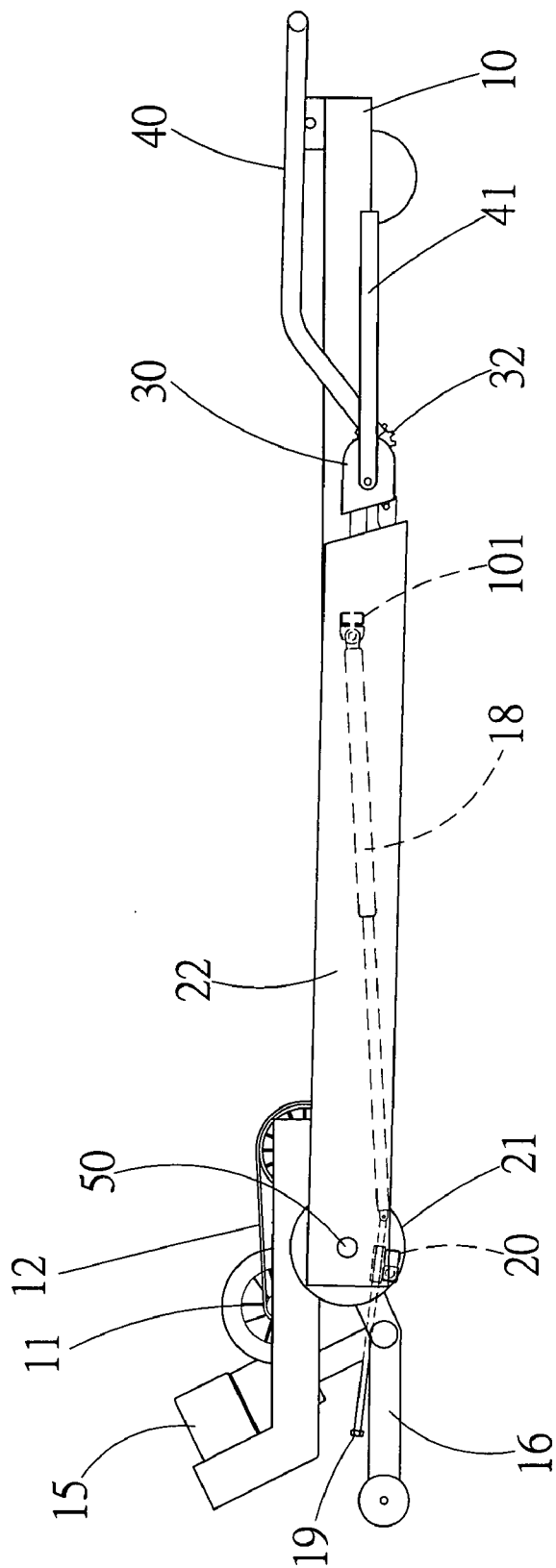


FIG. 5

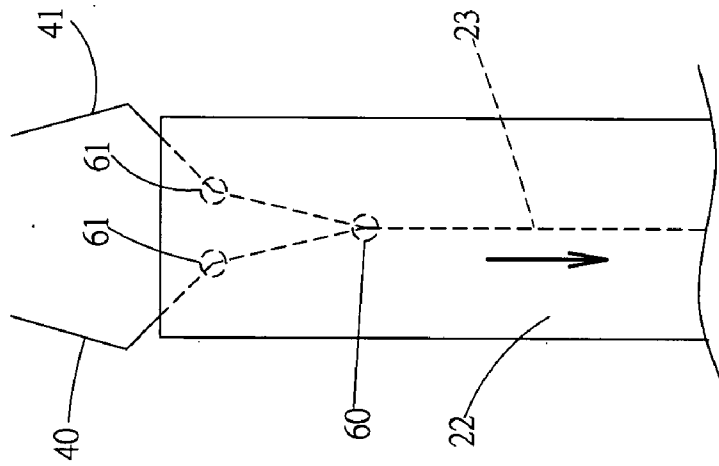


FIG. 6

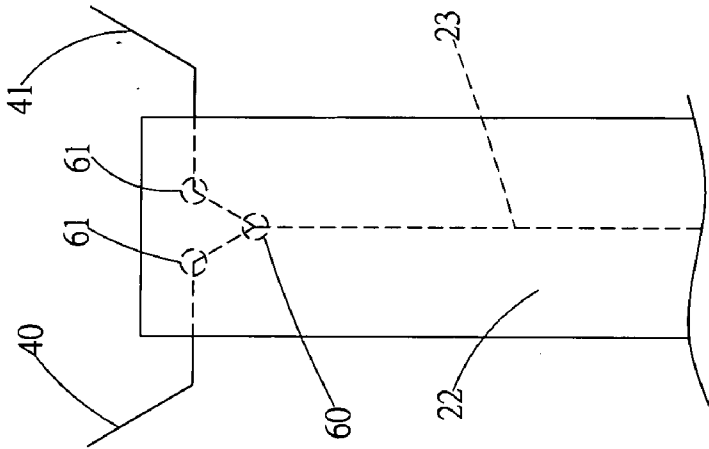


FIG. 7

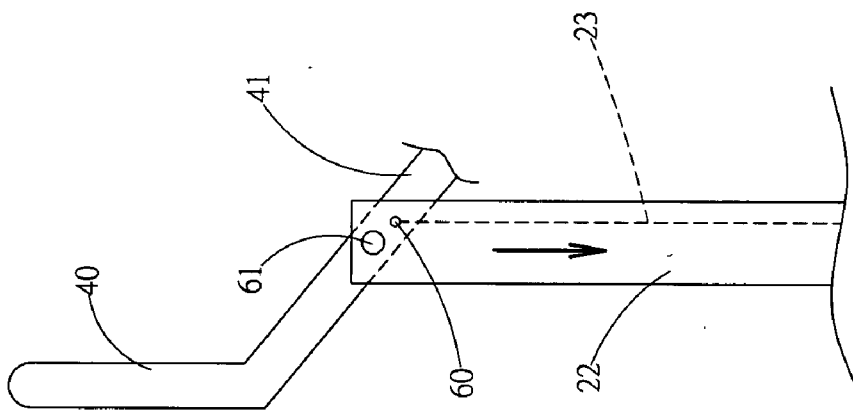


FIG. 8

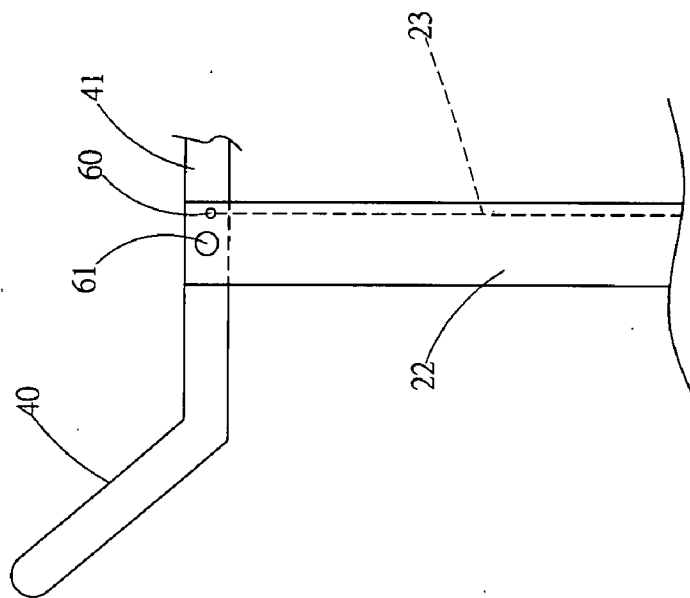


FIG. 9



**FOLDING MECHANISM FOR A HANDRAIL FRAME ASSEMBLY OF A TREADMILL**

**BACKGROUND OF THE INVENTION**

**[0001]** 1. Fields of the Invention

**[0002]** The invention relates to a folding mechanism for a handrail frame assembly of a treadmill, and more particularly, to a folding mechanism through which two handles and a console support at the top end of the handrail frame assembly can be folded in a storage position or moved in an upright position.

**[0003]** 2. Description of the Related Art

**[0004]** As well-known, the treadmill has a large volume and a great weight. It is therefore common that the handrail frame assembly is folded toward the platform frame whereupon the platform frame is folded upwards in an upright position for achieving the completely folding effect to facilitate the transportation and the storage. Of course, this structure belongs to basic accessories of a treadmill. Therefore, the invention is aimed to improve the conventional folding mechanism for a handrail frame assembly of a treadmill.

**[0005]** In fact, a console support is often fitted to the top end of the handrail frame assembly for mounting electric control instruments (not shown). Meanwhile, a handle is disposed at each side corresponding to the operator's direction for a firm grip of the operator.

**[0006]** However, the console support and the handles at each side trouble the operator to carry out a folding process with more than two steps for solving the problem of space occupied by them after the platform frame is folded up in a storage position. To the contrary, the operator has to perform the reverse complicated process to bring the handrail frame assembly, the console support, and the handle at each side thereof back to their operation position. This process gives the operator much trouble. Thus, the conventional folding mechanism required a further improvement.

**SUMMARY OF THE INVENTION**

**[0007]** It is a primary object of the invention to eliminate the above-mentioned drawbacks and to provide a folding mechanism for a handrail frame assembly of a treadmill that moves with the handrail frame assembly for bringing the handles and the console support toward each other or away from each other in position so as to improvement the convenience in use.

**[0008]** According to the invention, a folding mechanism for a handrail frame assembly of a treadmill includes a coupling cross shaft with a rotational disc at each side thereof for pivotally coupling to the hollow handrail frame assembly. A pull rod is received within the handrail frame assembly. In this way, two handles and a console support at the top end of the handrail frame assembly move by use of the corresponding action of the pull rod toward each other or away from each other in position when the handrail frame assembly is folded in a storage position or moved in an upright position.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0009]** The accomplishment of this and other objects of the invention will become apparent from the following description and its accompanying drawings of which:

**[0010]** FIG. 1 is a perspective view of a preferred embodiment of the invention;

**[0011]** FIG. 2 is a side view of FIG. 1;

**[0012]** FIG. 3 is a side view of FIG. 1 with the handrail frame assembly moved toward the platform frame;

**[0013]** FIG. 4 is a side view of FIG. 1 with the handrail frame assembly in a folded position;

**[0014]** FIG. 5 is another side view of FIG. 1 with the handrail frame assembly in a folded position;

**[0015]** FIG. 6 is a schematic drawing of another embodiment of the invention;

**[0016]** FIG. 7 is a schematic drawing of the movement according to FIG. 6;

**[0017]** FIG. 8 is a schematic drawing of a further embodiment of the invention; and

**[0018]** FIG. 9 is a schematic drawing of the movement according to FIG. 8.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

**[0019]** The present invention will now be described in more detail hereinafter with reference to the accompanying drawings that show various embodiments of the invention.

**[0020]** Referring to FIGS. 1 and 2, a platform frame 10 includes a transmission motor 11 at one side thereof for driving a continuous moving belt (not shown) into rotation by use of a transmission belt 12, a front roller 13, and a rear roller 14. Meanwhile, a lifting motor 15 is employed to move an adjusting support 16 upward and downward for adjusting the supporting angle of the platform frame 10. Moreover, a through pivot 50 is disposed at the bottom of the platform frame 10 for a pivotal connection with a handrail frame assembly 22.

**[0021]** A coupling cross shaft 20 with a rotational disc 21 at each side thereof is positioned at the bottom of the front side of the platform frame 10 and employed to pivotally couple to the hollow handrail frame assembly 22. The top end of the handrail frame assembly 22 is provided with a receiving seat receiving seat 30. Thereafter, a pull rod 23 is received within the handrail frame assembly 22 such that the top end of the pull rod 23 is pivotally connected to a first transmission gear 31 pivotally disposed within the receiving seat 30. Meanwhile, the other end of the pull rod 23 is fixed by a positioning pin 17 extending from the platform frame 10 and passing through an annular groove 24 of the rotational disc 21. Moreover, a second transmission gear 32 coupled with a console support 40 is pivotally attached to the receiving seat 30. Two handles 41 and the first transmission gear 31 are coaxially mounted to the opposing external sides of the receiving seat 30.

**[0022]** Moreover, a pneumatic cylinder 18 is pivotally mounted on a strengthening bar 101 in the middle of the platform frame 10 while the other end of the pneumatic cylinder 18 is connected with a push element 19 for constantly applying a certain pressure or a push force to the coupling cross shaft 20.

**[0023]** Now, please refer to FIGS. 3 through 5. When the handrail frame assembly 22 is moved in direction to the platform frame 10 in a horizontal position, the handrail frame assembly 22 and the rotational disc 21 are moved in a coupled state. Therefore, the annular groove 24 is moved therewith. Since the positioning pin 17 remains unmoved, the pull rod 23 will be pushed outwards in direction of the receiving seat 30. In this way, the first and second transmission gears 31, 32 create a corresponding rotation such that the handle 41 and the console support 40 coaxially disposed with respect to the first and second transmission gears 31, 32 are moved inwards

in a folded up position. In the beginning of the folded-up process, the pneumatic cylinder **18** can provide a proper pushing force. After the folded-up process, the pneumatic cylinder **18** further applies a proper pressure to the coupling cross shaft **20** so as to prevent the handrail frame assembly **22** from an unwanted lifting.

[0024] As shown in FIGS. **6** through **9**, the invention can easily change the coupling elements to let the pull rod **23** in cooperation with a mechanically used slide bar **60** and an in-place pivot **61** for creating an inverse coupled movement. In match of the basic components of the invention, the same effect can be easily achieved. Thus, the invention proves to be an excellent product with a practical effect.

[0025] 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 folding mechanism for a handrail frame assembly of a treadmill having a platform frame with a transmission motor at one side thereof for driving a continuous moving belt into rotation by use of a transmission belt, a front roller, and a rear roller, a lifting motor being employed to move an adjusting support upward and downward, a through pivot being disposed at the bottom of the platform frame for a pivotal connection with the handrail frame assembly,

wherein a coupling cross shaft with a rotational disc at each side thereof is employed to pivotally coupled to the hollow handrail frame assembly, and wherein a pull rod is received within the handrail frame assembly;

whereby two handles and a console support at the top end of the handrail frame assembly move by use of the corresponding action of the pull rod toward each other or away from each other in position when the handrail frame assembly is folded in a storage position or moved in an upright position,

wherein a pneumatic cylinder is pivotally mounted on a strengthening bar in the middle of the platform frame while the other end of the pneumatic cylinder is con-

nected with a push element configured to constantly apply both a pushing force to assist a manual folding process and continued pressure on the coupling cross shaft after folding to keep the handrail frame assembly from unwanted unfolding.

2. (canceled)

3. A folding mechanism for a handrail frame assembly of a treadmill having a platform frame with a transmission motor at one side thereof for driving a continuous moving belt into rotation by use of a transmission belt, a front roller, and a rear roller, a lifting motor being employed to move an adjusting support upward and downward, a through pivot being disposed at the bottom of the platform frame for a pivotal connection with the handrail frame assembly,

wherein a coupling cross shaft with a rotational disc at each side thereof is positioned at the bottom of the front side of the platform frame and employed to pivotally coupled to the hollow handrail frame assembly, and wherein the top end of the handrail frame assembly is provided with a receiving seat receiving seat;

wherein a pull rod is received within the handrail frame assembly such that the top end of the pull rod is pivotally connected to a first transmission gear pivotally disposed within the receiving seat;

wherein the other end of the pull rod is fixed by a positioning pin extending from the platform frame and passing through an annular groove of the rotational disc, and wherein a second transmission gear coupled with a console support is pivotally attached to the receiving seat while two handles and the first transmission gear are coaxially mounted to the opposing external sides of the receiving seat,

wherein a pneumatic cylinder is pivotally mounted on a strengthening bar in the middle of the platform frame while the other end of the pneumatic cylinder is connected with a push element configured to constantly apply both a pushing force to assist a manual folding process and continued pressure on the coupling cross shaft after folding to keep the handrail frame assembly from unwanted unfolding.

4. (canceled)

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