



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.12.2008 Bulletin 2008/50

(51) Int Cl.:
A63B 23/035 (2006.01) A63B 23/04 (2006.01)

(21) Application number: **07109769.5**

(22) Date of filing: **06.06.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

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(54) **Adjustable exercise device**

(57) An exercise device includes two cranks rotatably coupled to a rear portion of a post and each having a rod, two handles having a middle portion pivoted to a front portion of the post with a spindle, two foot supports pivotally coupled to the handles and each having a middle portion pivotally coupled to the rod of the cranks with a link, and two levers pivotally coupled to the rod and the handle and spaced away from the spindle for forming a polygonal coupling structure and for allowing the foot supports to be moved elliptically relative to the post of the base. The levers may be adjustably coupled to the handles for adjusting the moving stroke of the foot supports.

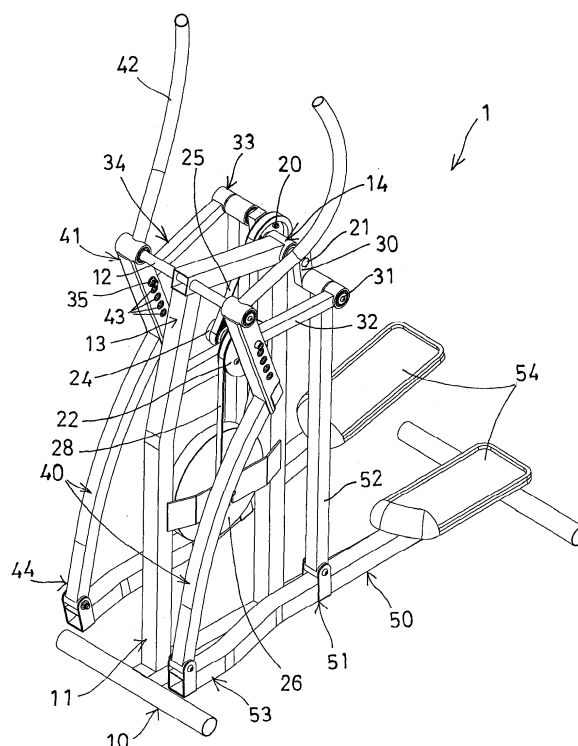


FIG. 1

Description

[0001] The invention relates to an elliptical exercise device including changeable or adjustable or different moving strokes.

[0002] Typical stepping exercisers comprise a pair of handles pivotally attached to a base, and a pair of foot supports coupled to the handles and to be stepped by the users. However, the moving stroke of the exercise devices may not be changed or adjusted.

[0003] The invention provide an exercise device according to claim 1 which is adjustable to different moving strokes.

[0004] Further advantageous embodiments are laid down in further claims.

[0005] In the following the invention will be described in greater detail with reference to an embodiments shown in the drawings.

FIGS. 1, 2 are perspective views of an exercise device;

FIGS. 3, 4 are partial exploded views of the exercise device;

FIGS. 5, 6, 7, 8, 9 are side plan views of the exercise device.

[0006] Referring to FIGS. 1-5, an exercise device 1 comprises a base 10, an post 11 extended up from the base 10, a spindle 12 disposed on the front portion 13 of the post 11, a wheel 20 attached to the rear portion 14 of the post 11 with a shaft 21 which is spaced away from the spindle 12, a rotary member 22 attached to the middle portion of the post 11 with an axle 23, a follower 24 secured to the axle 23 and coupled to the wheel 20 with a coupling device or belt 25. A flywheel 26 is attached to the post 11 with a rod 27 which is coupled to the rotary member 22 with another coupling device or belt 28 for resisting the wheel 20 and the shaft 21. The other hydraulic or pneumatic or magnetic retarding devices may also apply the resistive force against the wheel 20 and the shaft 21.

[0007] Two cranks 30 are secured to the shaft 21 and each include a rod 31 spaced from the shaft 21, two handles 40 include an upper or middle portion 41 attached to the spindle 12, a hand grip 42 provided on top, and one or more orifices 43 formed in the middle portion 41. Two foot supports 50 each include a middle portion 51 pivotally coupled to the rod 31 of the cranks 30 with a link 52 and movable cyclically by the cranks 30, a front portion 53 coupled the lower portion 44 of the handles 40, and a foot pedal 54 disposed on the rear portion. Two levers 32 each include one or first or rear end portion 33 pivotally coupled to the rod 31 of the cranks 30, and each include the other or second or front end portion 34 coupled to the middle portions 41 of the handles 40 with a securing device 35 which is spaced away from the spindle

12, for forming a polygonal pivot coupling structure. The securing device 35 may be adjustably coupled to either of the orifices 43 of the handles 40 with the securing device 35, for adjusting the distance between the spindle 12 of the post 11 and the front portion 34 of the levers 32, and for adjusting the moving strokes of the foot supports 50. The moving stroke of the foot supports 50 may be increased when the front portion 34 of the levers 32 are closer to the spindle 12 of the post 11, and may be decreased when the front portion 34 of the levers 32 are adjusted away from the spindle 12 of the post 11.

[0008] The handles 40 may be swung by the users, and the middle portions 51 of the foot supports 50 may be moved cyclically by the cranks 30, such that the foot pedals 54 of the foot supports 50 may be moved elliptically relative to the post 11 of the base 10. The coupling of the levers 32 between the handles 40 and the cranks 30 and/or the link 52 may form a polygonal pivot coupling structure together with the handles 40 and the foot supports 50 and the links 52 for allowing the swinging stroke of the handles 40 and the foot supports 50 to be controlled by the cranks 30. The wheel 20 and the rotary member 22 and the follower 24 and the flywheel 26 or a magnetic retarding device may be a resisting means or device for retarding the wheel 20 and the shaft 21 and the cranks 30 and the foot supports 50 and the handles 40. The front portion 34 of the levers 32 may be solidly coupled to the middle portions 41 of the handles 40 with the securing device 35 at the predetermined position (FIG. 8) without being adjusted relative to the middle portions 41 of the handles 40 for such as marketing purposes, or the securing device 35 may be slidably engaged in a channel 44 of the handle 40, and an adjusting device 60 having a motor 62 and/or a reduction gearing 63 coupled to the securing device 35 for adjusting the front portion 34 of the levers 32 toward or away from the spindle 12 (FIG. 9).

Claims

1. An exercise device comprising:

- a post (11) extended from a base (10),
- a spindle (12) disposed on the post,
- two handles (40) including a middle portion (41) attached to the spindle and each including a hand grip and a lower portion,
- two foot supports (50) each including a front portion pivotally coupled to the lower portion of the handles and each including a foot pedal,

characterized in that:

- two cranks (30) are rotatably coupled to the rear portion of the post with a shaft (21) which is spaced away from the spindle (12),
- a rod (31) is attached to each crank and spaced away from the shaft,

- the foot supports each include a middle portion (51) pivotally coupled to the rod (31) of the cranks with a link, and
 - two levers (32) each include a first end pivotally coupled to the rod (31) of the crank and a second end coupled to the middle portion (41) of the handle and spaced away from the spindle (12) for forming a polygonal coupling structure together with the handles (40) and the foot supports (50) and the links. 5 10
2. An exercise device as claimed in claim 1, wherein the second ends of the levers are each coupled to the middle portions of the handles with a securing device. 15
 3. An exercise device as claimed in claim 2, wherein the handles each include a first orifice formed in the middle portion of the handle for engaging with the securing device. 20
 4. An exercise device as claimed in claim 3, wherein the handles each include at least one second orifice formed in the middle portion for engaging with the securing device. 25
 5. An exercise device as claimed in one of claims 1 to 4 further comprising a resisting device for resisting the shaft and the cranks. 30
 6. An exercise device as claimed in claim 5, wherein the resisting device includes a wheel rotatably attached to the rear portion of the post with the shaft.
 7. An exercise device as claimed in claim 6, wherein the resisting device includes a rotary member rotatably attached to the post with an axle and coupled to the wheel. 35
 8. An exercise device as claimed in claim 7, wherein a follower is attached to the axle and moved in concert with the axle, and the follower is coupled to the wheel with a coupling device. 40
 9. An exercise device as claimed in claim 7 or 8, wherein a flywheel is rotatably attached to the post with a rod and coupled to the rotary member with a coupling device. 45
 10. An exercise device as claimed in one of claims 1 to 9, wherein the second ends of the levers are slidably coupled to the middle portions of the handles with an adjusting device. 50

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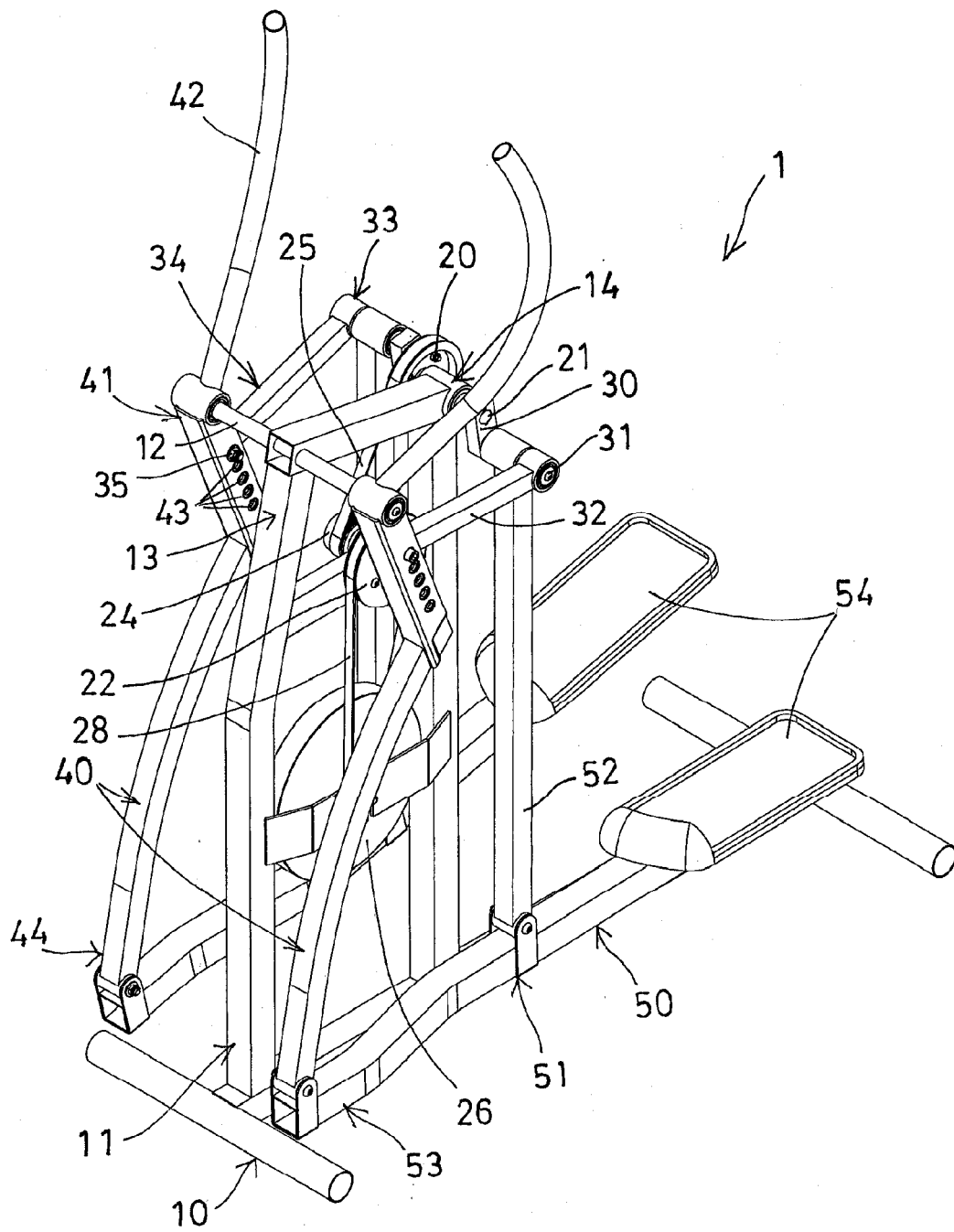
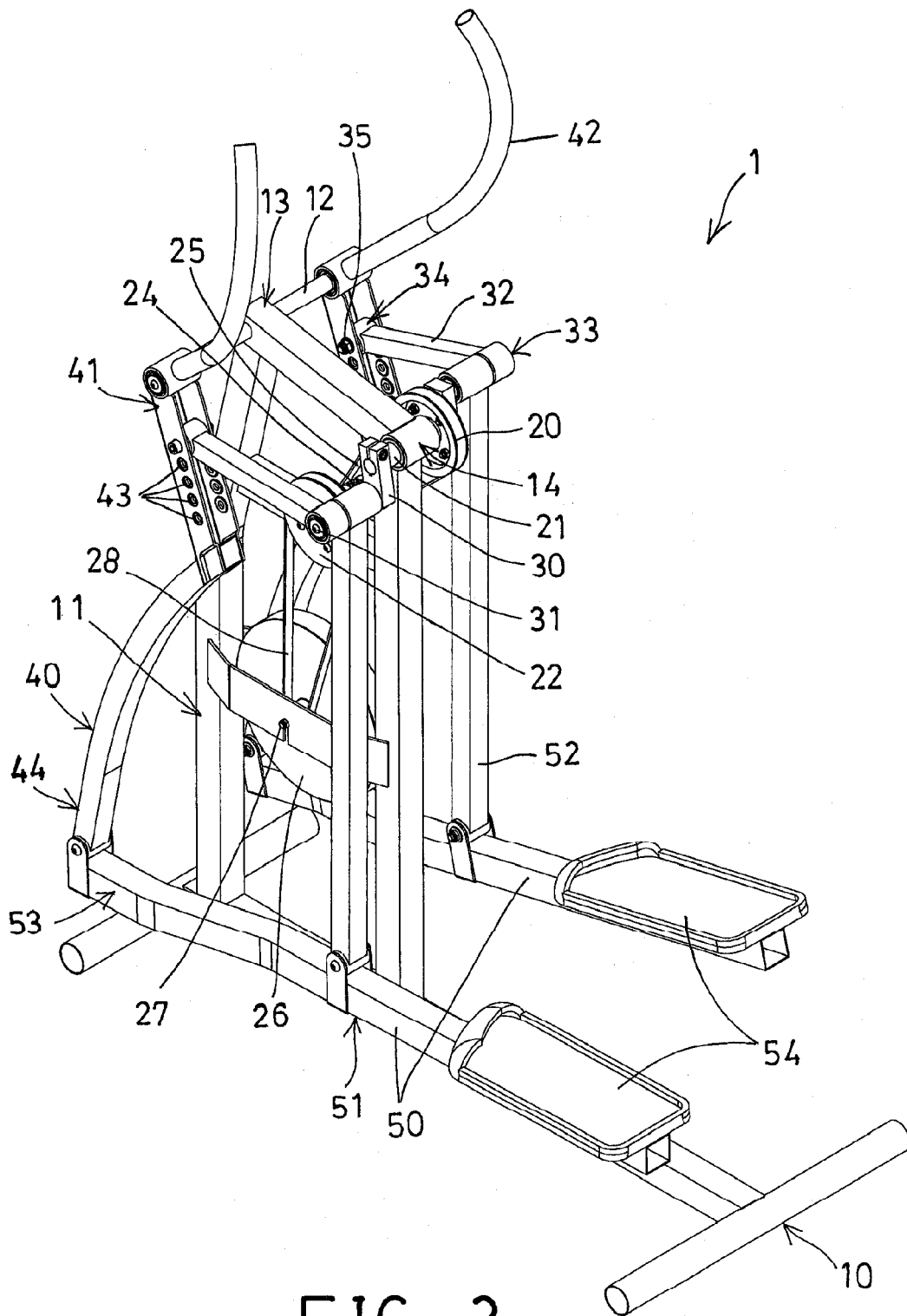


FIG. 1



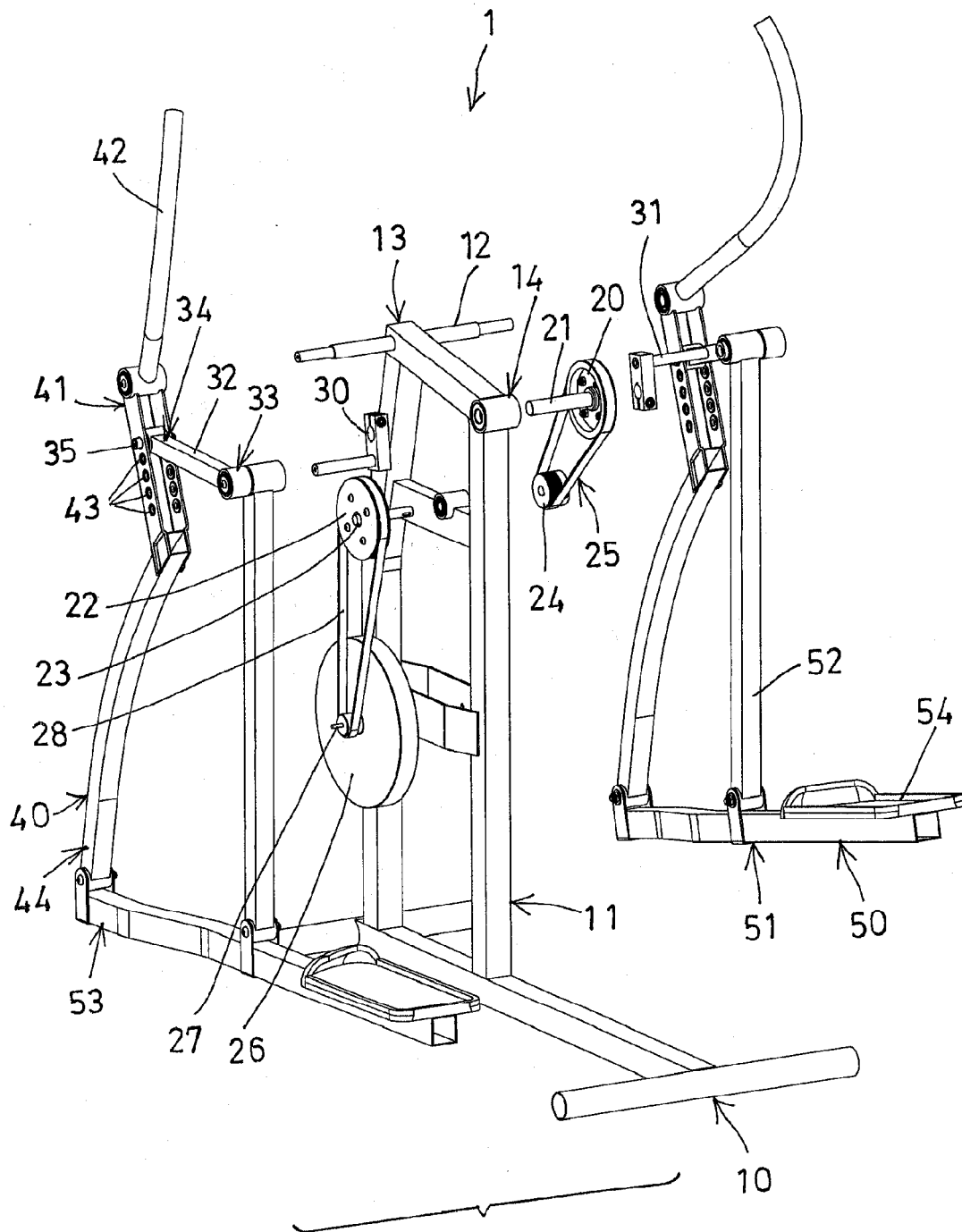


FIG. 4

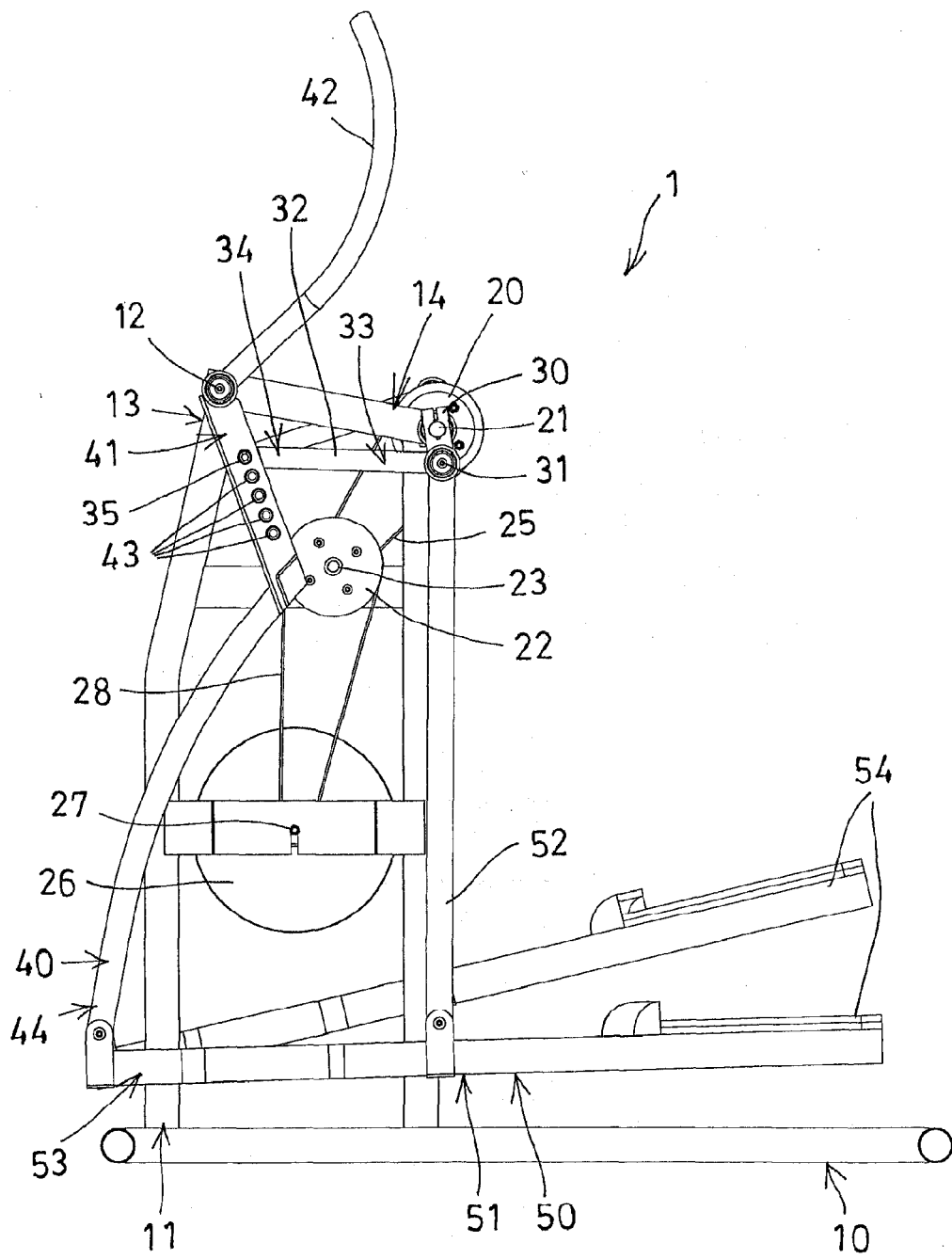


FIG. 5

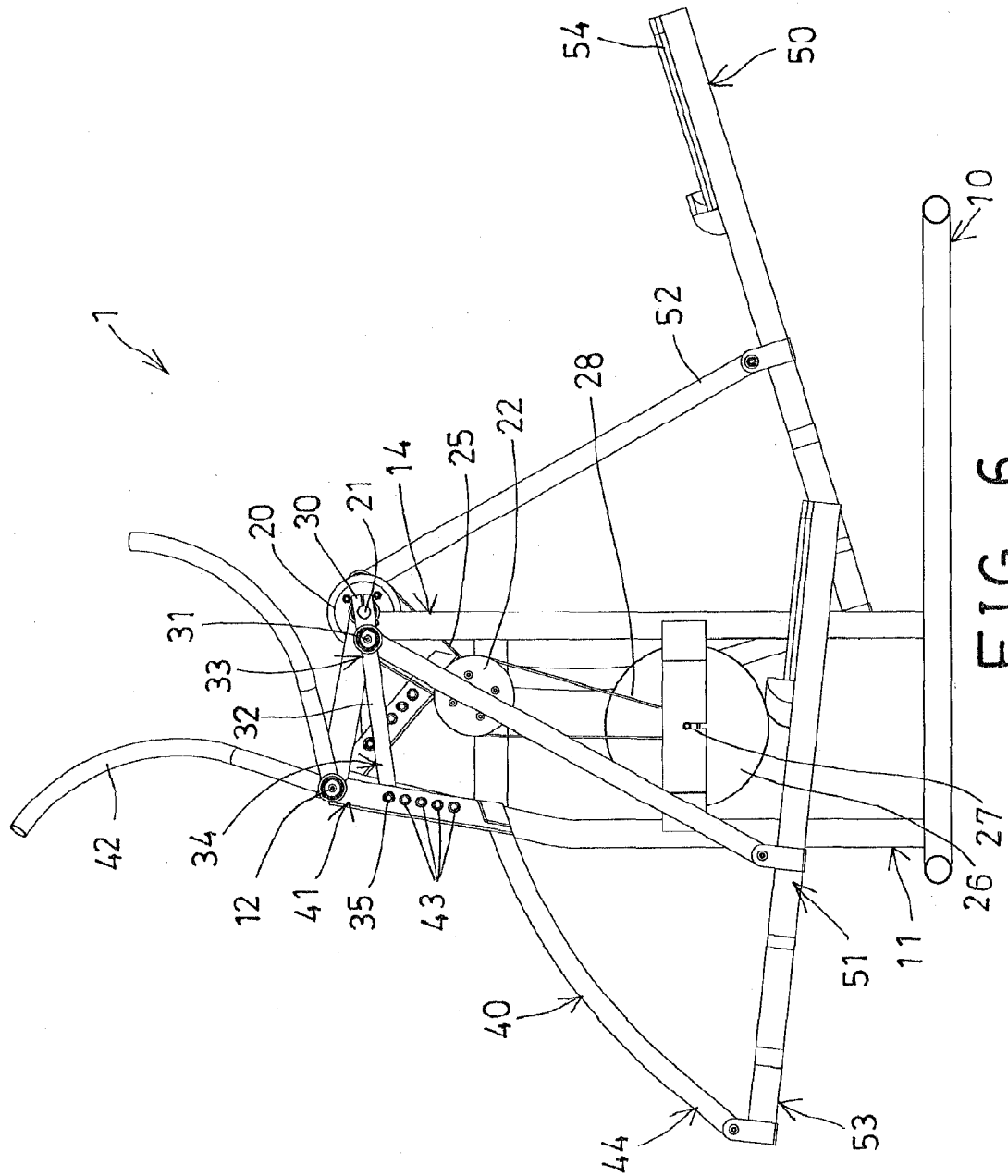


FIG. 6

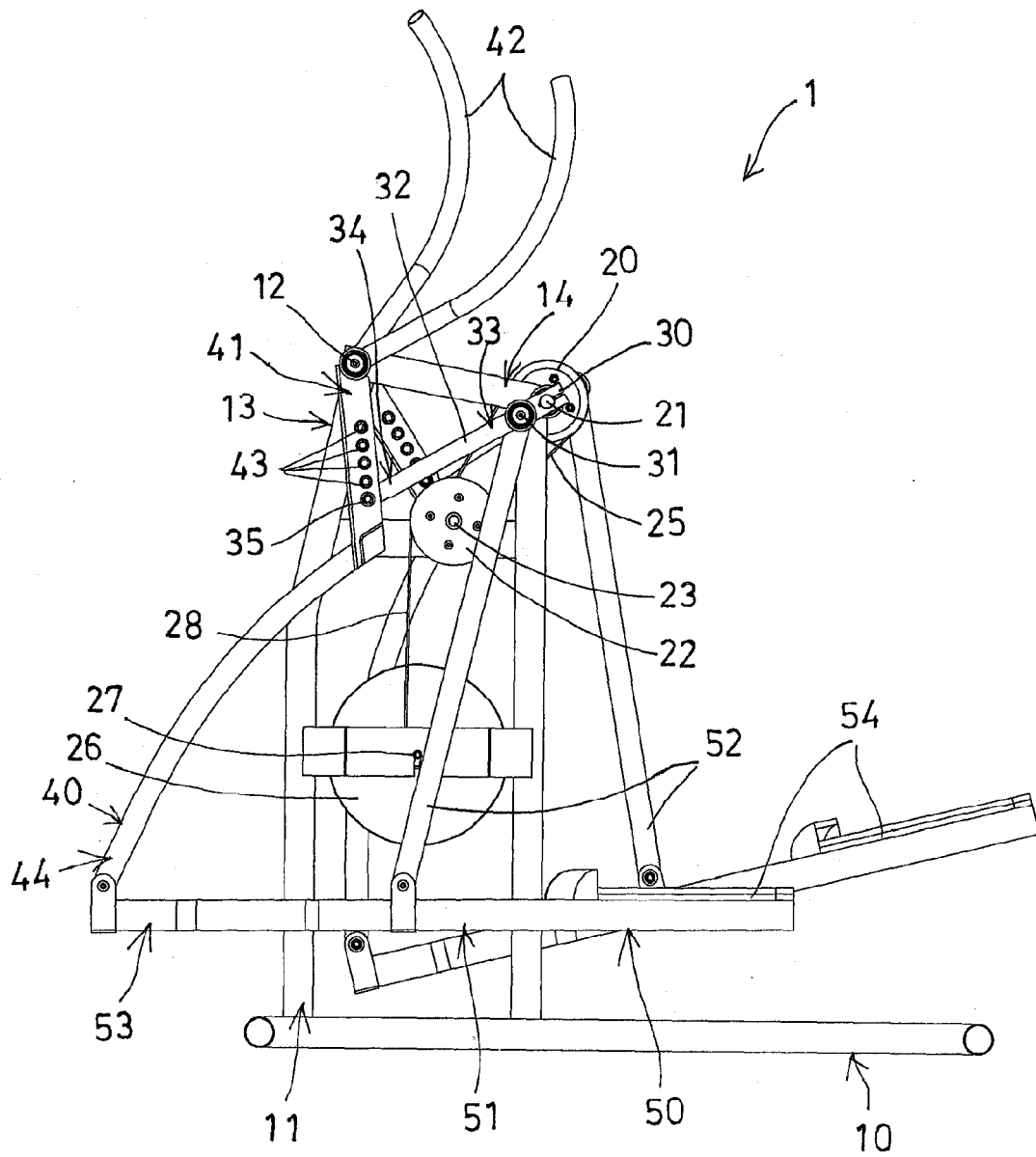


FIG. 7

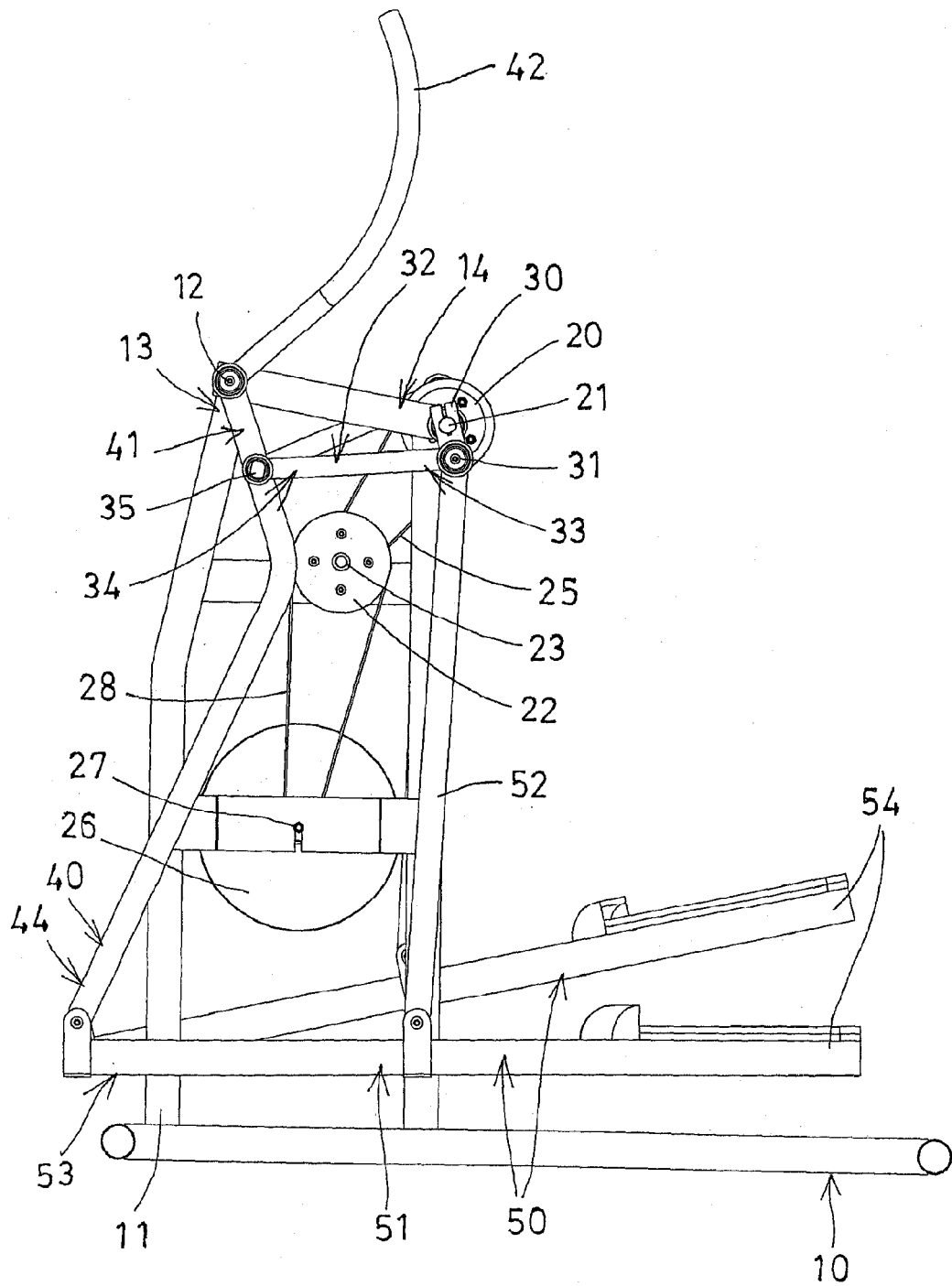


FIG. 8

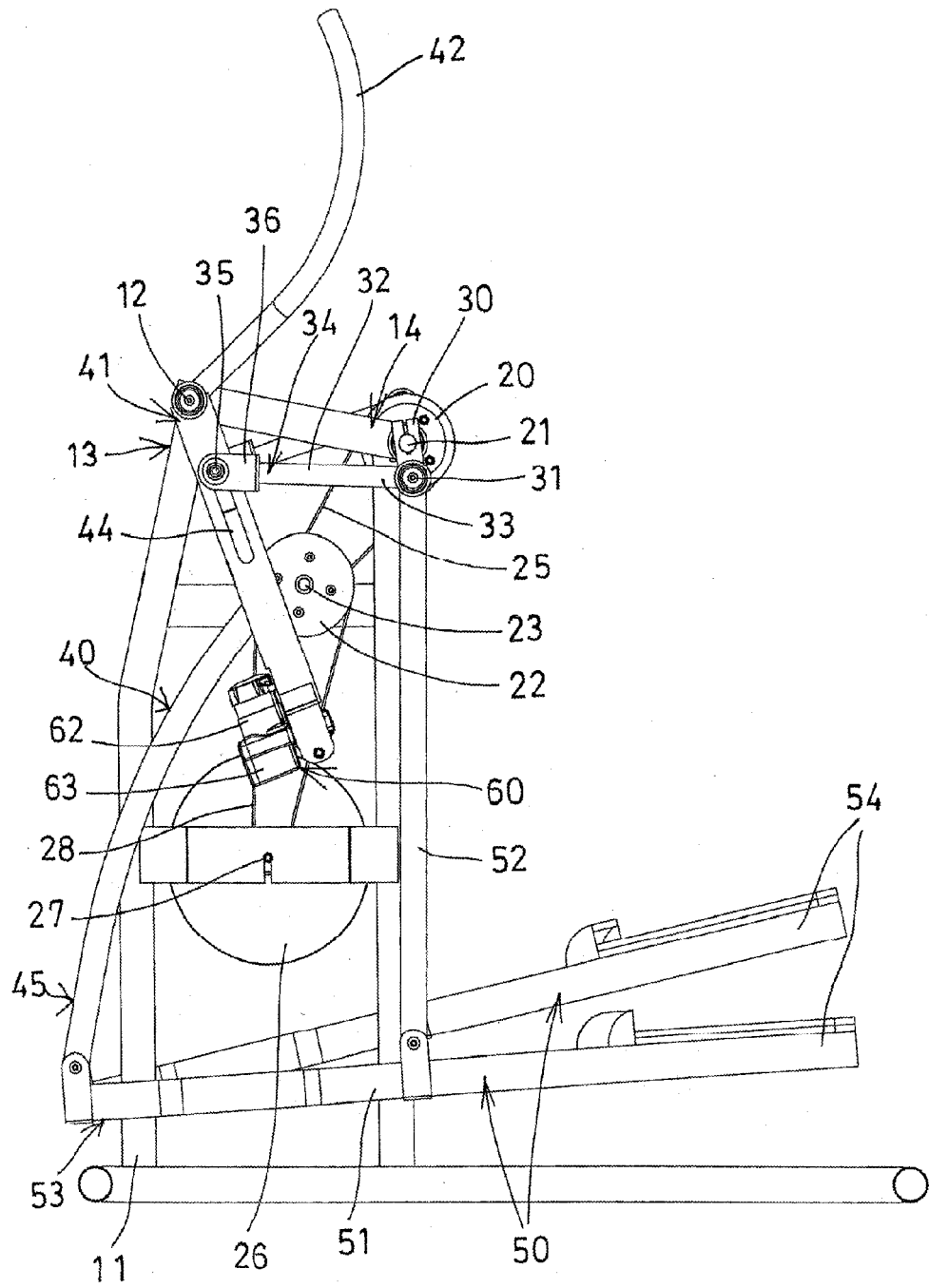


FIG. 9



DOCUMENTS CONSIDERED TO BE RELEVANT			
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X	US 6 045 487 A (MILLER LARRY [US]) 4 April 2000 (2000-04-04) * column 2, line 25 - column 7, line 35; figures 1,2 *	1-10	INV. A63B23/035 A63B23/04
A	----- US 2007/042871 A1 (WU HUNG-SHENG [TW] ET AL) 22 February 2007 (2007-02-22) * paragraph [0006] - paragraph [0033]; figures 1-9 *	1-10	
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A	----- US 2003/096677 A1 (CHU YU MING [TW]) 22 May 2003 (2003-05-22) * paragraph [0004] - paragraph [0018]; figures 1-5 *	1-10	TECHNICAL FIELDS SEARCHED (IPC) A63B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 September 2007	Examiner Oelschläger, Holger
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 10 9769

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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19-09-2007

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