(19) Europäisches Patentamt
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(11) **EP 2 462 996 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
24.09.2014 Bulletin 2014/39

(51) Int Cl.:
A63B 22/00 *(2006.01)*

(21) Application number: **11192252.2**

(22) Date of filing: **06.12.2011**

(54) **Stepper, twister or stepper and twister exercising device**

Übungsgerät mit Stepperbewegung, Drehbewegung oder Stepper- und Drehbewegung

Appareil d'exercice équipé de fonctions step, de twist ou de step et de twist combinées

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **08.12.2010 TW 099142744**

(43) Date of publication of application:
13.06.2012 Bulletin 2012/24

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(56) References cited:
WO-A1-2008/156379 **US-A1- 2006 084 553**

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Printed by Jouve, 75001 PARIS (FR)

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a stepper structure.

2. Description of the Prior Art

[0002] A conventional stepper has a single exercise function, such as TW Publication No. 324954 used for an up-and-down step exercise, and TW Publication No. M271593 used for an oblique step exercise. From the document US 2006/084553 A1 a twisting stepper is known, which only allows for a combined step and twist exercise. The user may feel unexciting after a period of time because the function of the stepper is unchangeable. This will influence the user's will to exercise more. From the document WO 2008/156379 A1 an exercising device is known, which allows the user to select between step, twist or twist and step exercises. This is achieved by using a complicated switch structure comprising a gearbox with several plates and with plates extending sideward. While this solves the problem of fixed exercise type, this solution has the drawback of a complicated, large and difficult to manufacture structure. Accordingly, the inventor of the present invention has devoted himself based on his many years of practical experiences to solve these problems.

SUMMARY OF THE INVENTION

[0003] The primary object of the present invention is to provide a changeable stepper structure which can attract the user to exercise for a long time.

[0004] Another object of the present invention is to provide a stepper structure which can be used for an up-and-down step exercise and a waist swing exercise.

[0005] These objects are solved by a stepper comprising a structure according to claim 1. Preferred embodiments are outlined in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006]

Fig. 1 is an exploded view according to a first embodiment of the present invention;

Fig. 2 is a partial perspective view according to the first embodiment of the present invention;

Fig. 3 is a perspective view according to the first embodiment of the present invention;

Fig. 4 is a side view according to the first embodiment of the present invention used for a step exercise;

Fig. 5 is a top view according to the first embodiment of the present invention used for a step exercise;

Fig. 6 is a rear view according to the first embodiment of the present invention used for a step exercise;

Fig. 7 is a side view according to the first embodiment of the present invention used for a waist swing exercise;

Fig. 8 is a top view according to the first embodiment of the present invention used for a waist swing exercise;

Fig. 9 is a rear view according to the first embodiment of the present invention used for a waist swing exercise;

Fig. 10 is a schematic view showing a belt to link the link unit of the present invention;

Fig. 11 is a schematic view showing a cable to link the link unit of the present invention;

Fig. 12 is a schematic view showing a chain to link the link unit of the present invention;

Fig. 13 is an exploded view according to a second embodiment of the present invention;

Fig. 14 is a partial perspective view according to the second embodiment of the present invention;

Fig. 15 is a perspective view according to the second embodiment of the present invention;

Fig. 16 is a side view according to the second embodiment of the present invention used for a step exercise;

Fig. 17 is a top view according to the second embodiment of the present invention used for a step exercise;

Fig. 18 is a rear view according to the second embodiment of the present invention used for a step exercise;

Fig. 19 is a side view according to the second embodiment of the present invention used for a waist swing exercise;

Fig. 20 is a top view according to the second embodiment of the present invention used for a waist swing exercise; and

Fig. 21 is a rear view according to the second embodiment of the present invention used for a waist swing exercise.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0007] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings.

[0008] Referring to Fig. 1, Fig. 2 and Fig. 35, the stepper structure of the present invention comprises a base (10), a rotation seat (20), two pedals (30), a link unit (40), and a switch unit (50).

[0009] The base (10) has a middle rod (11). The middle rod (11) has a shaft (15) at a central section thereof. The base (10) has a first limit portion (12) in front of the shaft (15). The first limit portion (12) may be a connection part (such as a through hole) for connection of the switch unit (50). The base (10) has a second limit portion (13) behind the shaft (15). The second limit portion (13) may be a connection part (such as a through hole) for connection of the switch unit (50).

[0010] The rotation seat (20) comprises a horizontal seat rod (21) and a vertical rod (25) extending upward from a front end of the seat rod (21). The seat rod (21) has a rear section which is pivotally connected to the shaft (15). The rotation seat (20) has a first limit portion (22) in front of the shaft (15). The first limit portion (22) may be a connection part (such as a through hole) for connection of the switch unit (50). The first limit portion (22) corresponds in position to the first limit portion (12) to provide a limit function for the switch unit (50). The seat rod (21) comprises a pair of support bars (24) extending from two sides of the front end of the seat rod (21). The vertical rod (25) comprises a pair of pivot rods (26) which extend from two sides of an upper end of the vertical rod (25) and are parallel to the support bars (24). The two pedals (30) are pivotally connected to the two pivot rods (26).

[0011] Each pedal (30) comprises a pivot sleeve (31) at a front end thereof. The pivot sleeve (31) is fitted on the relative pivot rod (26). Each pedal (30) has a link plate (32) which extends downward from the pivot sleeve (31) for connection of the link unit (40). Between the two pedals (30) and two sides of the rotation seat (20) is provided with a pair of resistance members (35) which may be retractable hydraulic cylinders. Each resistance member (35) has a pair of universal joints (36) at two ends thereof, so that the two resistance members (35) are pivotally connected between the two support bars (24) of the seat rod (21) of the seat (20) and the rear ends of the two pedals (30).

[0012] The link unit (40) is pivotally connected to the shaft (15) and located above the rotation seat (20). The link unit (40) comprises a driving wheel (41) which is pivotally connected to the shaft (15). The driving wheel (41) is selected from one of a belt pulley (as shown in Fig. 1 and Fig. 2), a V-shaped belt pulley (as shown in Fig. 10), a pulley (as shown in Fig. 11) and a chain wheel (as shown in Fig. 12). The driving wheel (41) has a notch (42) corresponding to the first limit portion (22) of the rotation seat (20) for avoidance of the switch unit (50) when the driving wheel (41) turns or the rotation seat (20) swings, as shown in Fig. 5 and Fig. 8. The driving wheel (41) has a second limit portion (43) behind the shaft (15). The second limit portion (43) may be a connection part (such as a through hole) for connection of the switch unit (50). The second limit portion (43) corresponds in position to the second limit portion (13) of the base (10). The rear section of the rotation seat (20) won't interfere with the range of the second limit portion (13, 43). The driving wheel 41 is connected with a flexible link member (45). The flexible link member (45) is selected from one of a belt (as shown in Fig. 1 and Fig. 2), a V-shaped belt (as shown in Fig. 10), a cable or a CPRD (as shown in Fig. 11) and a chain (as shown in Fig. 12). Two ends of the flexible link member (45) are respectively connected to the link plates (32) of the two pedals (30).

[0013] The switch unit (50) comprises a limit member (55). The limit member (55) may be an insertion pin which is selectively connected to the first limit portions (12, 22) or the second limit portions (13, 43). The switch unit (50) further comprises a fixing frame (51) connected on the base (10). The upper end of the shaft (15) of the base (10) is connected to the fixing frame (51). The fixing frame (51) has a second limit portion (53) behind the shaft (15) and corresponding in position to the second limit portion (13) of the base (10). The second limit portion (53) may be a connection part (such as a through hole) for connection of the limit member (55). The limit member (55) is selectively connected to the second limit portions (53, 43, 13) or the first limit portions (22, 12) to confine rotation of the driving wheel (41) or left and right swing of the rotation seat (20).

[0014] Thereby, the present invention is assembled to constitute a stepper for different forms of exercise, enhancing exercise fun.

[0015] As shown in Fig. 3 through Fig. 6, when in use, the limit member (55) of the switch unit (50) is inserted in the first limit portions (22, 12) of the rotation seat (20) and the base (10) as shown in Fig. 4, such that there are two interconnections to confine left and right swing of the rotation seat (20). The driving wheel (41) of the link unit (40) is pivotally connected with the shaft (15), so the driving wheel (41) drives the flexible link member (45) by means of the two pedals (30) for left and right rotation. When the user steps one pedal (30) down, the pedal (30) will compress the resistance member (35) to generate damping. The two pedals (30) have a link relationship through the flexible link member (45) and the link plates (32), so that the other pedal (30) is lifted up. In this way, the two pedals (30) provide an interlaced up-and-down exercise.

[0016] As shown in Fig. 7 through Fig. 9, when the limit member (55) of the switch unit (50) is inserted in the

second limit portions (53, 43, 13) of the fixing frame (51), the driving wheel (41) and the base (10) as shown in Fig. 7, the driving wheel (41) of the link unit (40) and the base (10) have the shaft (15) and the limit member (55) as two fixed points to confine rotation of the driving wheel (41). The rotation seat (20) and the base (10) are connected by the shaft (15), so the rotation seat (20) can be swung left and right. When the user steps one pedal (30) down, the pedal (30) will compress the resistance member (35) to generate damping. The two pedals (30) are linked by the flexible link member (45) and the link plates (32), so that the other pedal (30) is lifted up and the rotation seat (20) is swung toward one side. In this way, when the two pedals (30) are moved up and down, the present invention also has a waist swing function for a different form of exercise.

[0017] Fig. 13, Fig. 14 and Fig. 15 show another embodiment of the present invention. A link unit (60) comprises a driving plate (61) and two link members (65). The driving plate (61) is pivotally connected to the shaft (15). The driving plate (61) has a second limit portion (63) behind the shaft (15). The second limit portion (63) may be a connection part (such as a through hole) for connection of the limit member (55). The second limit portion (63) corresponds in position to the second limit portion (13) of the base (10). Two ends of the driving plate (61) are pivotally connected to the two link members (65). The two link members (65) may be steel link rods. The other ends of the two link members (65) are pivotally connected to the link plates (32) of the two pedals (30), respectively. When the driving plate (61) of the link unit (60) is swung left and right, the two pedals (30) are simultaneously pushed through the link members (65) for the two pedals (30) to generate an interlaced link relationship.

[0018] When the limit member (55) is inserted in the first limit portions (22, 12) of the rotation seat (20) to confine left and right swing of the rotation seat (20), the driving plate (61) of the link unit (60) can be swung relative to the base (10) and the two pedals (30) can provide an interlaced up-and-down exercise, as shown in Fig. 16, Fig. 17 and Fig. 18. when the limit member (55) of the switch unit (50) is inserted in the second limit portions (53, 63, 13) of the fixing frame (51), the driving plate (61) and the base (10) to confine left and right swing of the driving plate (61), the rotation seat 920) can be swung left and right relative to the base (10) to provide a waist swing and step exercise, as shown in Fig. 19, Fig. 20 and Fig. 21.

[0019] Although particular embodiments of the present invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the scope of the present invention. Accordingly, the present invention is not to be limited except as by the appended claims.

Claims

1. A stepper structure, comprising a base (10), a rotation seat (20), two pedals (30), a link unit (40), and a switch unit (50):

   the base (10) having a shaft (15) at a central section thereof, the base (10) having a first limit portion (12), the base (10) having a second limit portion (13) behind the shaft (15);
   the rotation seat (20) comprising a seat rod (21) and a vertical rod (25) at a front end of the seat rod (21), the seat rod (21) having a rear section which is pivotally connected to the shaft (15), the rotation seat (20) having a first limit portion (22)
   the two pedals (30) being pivotally connected to two sides of the vertical rod (25),
   the link unit (40, 60) being pivotally connected to the shaft (15), the link unit (40, 60) linking the two pedals (30) to move up and down, the link unit (40, 60) having a second limit portion (43, 63) behind the shaft (15), the second limit portion (43, 63) of the link unit (40, 60) corresponding in position to the second limit portion (13) of the base (10);
   the switch unit (50) comprising a fixing frame (51) an upper end of the shaft (15) of the base (10) being connected to the fixing frame (51), the fixing frame (51) having a second limit portion (53) behind the shaft (15), the second limit portion (53) of the switch unit (50) corresponding in position to the second limit portion (13) of the base (10), the switch unit (50) further having a limit member (55) which is selectively connected to the first limit portions (12, 22) or the second limit portions (13, 43, 53) to confine rotation of a driving wheel (41) of the link unit (40) or left and right swing of the rotation seat (20);
   characterized in that
   the first limit portion (12) of the base (10) is in front of the shaft (15); the first limit portion (22) of the rotation seat (20) is in front of the shaft (15); the first limit portion (22) of the rotation seat (20) corresponds in position to the first limit portion (12) of the base (10); the seat rod (21) comprises a pair of support bars (24) extending from two sides of the front end of the seat rod (21); a pair of resistance members (35) is connected between rear ends the two pedals (30) and the two support bars (24); and the fixing frame (51) is connected on the base (10),

2. The stepper structure as claimed in claim 1, wherein the link unit (40) comprises a driving wheel (41) which is pivotally connected to the shaft (15), the driving wheel (41) having a notch (42) corresponding to the first limit portion (22) of the rotation seat (20), the

driving wheel (41) having the second limit portion (43) behind the shaft (15), the second limit portion (43) of the driving wheel (41) corresponding in position to the second limit portion (13) of the base (10), the driving wheel (41) being connected with a flexible link member (45), two ends of the flexible link member (45) being respectively connected to the two pedals (30).

3. The stepper structure as claimed in claim 1, wherein the link unit (60) comprises a driving plate (61) and two link members (65), the driving plate (61) being pivotally connected to the shaft (15), the driving plate (61) having a second limit portion (63) behind the shaft (15), the second limit portion (63) of the driving plate (61) corresponding in position to the second limit portion (13) of the base (10), two ends of the driving plate (61) being pivotally connected to the two link members (65).

Patentansprüche

1. Stepperanordnung mit einer Basis (10), einem Drehsitz (20), zwei Pedalen (30), einer Verbindungseinheit (40) und einer Umschalteinheit (50):

wobei die Basis (10) einen Schaft (15) beinhaltet, der sich in einem zentralen Abschnitt davon befindet, und die Basis (10) einen ersten Begrenzungsabschnitt (12) aufweist und die Basis (10) einen zweiten Begrenzungsabschnitt (13) aufweist, der hinter dem Schaft (15) ausgebildet ist,
wobei der Drehsitz (20) eine Sitzstange (21) und eine vertikale Stange (25) an einem vorderen Ende der Sitzstange (21) umfasst, wobei die Sitzstange (21) einen hinteren Abschnitt aufweist, der schwenkbar mit dem Schaft (15) verbunden ist, wobei der Drehsitz (20) einen ersten Begrenzungsabschnitt (22) aufweist,
wobei die beiden Pedale (30) schwenkbar an den beiden Seiten der vertikalen Stange (25) befestigt sind,
wobei die Verbindungseinheit (40, 60) schwenkbar mit dem Schaft (15) verbunden ist, wobei die Verbindungseinheit (40, 60) die beiden Pedale (30) verbindet, sodass sich diese auf- und abwärts bewegen können, wobei die Verbindungseinheit (40, 60) einen zweiten Begrenzungsabschnitt (43, 63) umfasst, der sich hinter dem Schaft (15) befindet, wobei der zweite Begrenzungsabschnitt (43, 63) der Verbindungseinheit (40, 60) in seiner Position mit dem zweiten Begrenzungsabschnitt (13) der Basis (10) übereinstimmt,
wobei die Umschalteinheit (50) einen Befestigungsrahmen (51) umfasst,
wobei ein oberes Ende des Schafts (15) der Basis (10) mit dem Befestigungsrahmen (51) verbunden ist, wobei der Befestigungsrahmen (51) einen zweiten Begrenzungsabschnitt (53) hinter dem Schaft (15) aufweist, wobei der zweite Begrenzungsabschnitt (53) der Umschalteinheit (50) in seiner Position mit dem zweiten Begrenzungsabschnitt (13) der Basis (10) übereinstimmt, wobei die Umschalteinheit (50) außerdem ein Begrenzungselement (55) aufweist, das wahlweise mit den ersten Begrenzungsabschnitte (12, 22) oder den zweiten Begrenzungsabschnitte (13, 43, 53) verbunden ist, um eine Drehbewegung des Antriebsrads (41) der Verbindungseinheit (40) oder eine Links-Rechts-Schwingbewegung des Drehsitzes (20) zu beschränken,
dadurch gekennzeichnet, dass
sich der erste Begrenzungsabschnitt (12) der Basis (10) vor dem Schaft (15) befindet, sich der erste Begrenzungsabschnitt (22) des Drehsitzes (20) vor dem Schaft (15) befindet, der erste Begrenzungsabschnitt (22) des Drehsitzes (20) in seiner Position mit dem ersten Begrenzungsabschnitt (12) der Basis (10) korrespondiert, die Sitzstange (21) ein Paar Haltestangen (24) umfasst, die aus zwei Seiten des vorderen Endes der Sitzstange (21) hervorstehen, wobei ein Paar von Widerstandselementen (35) zwischen den hinteren Enden der beiden Pedale (30) und den beiden Haltestangen (24) angebracht ist, und wobei der Befestigungsrahmen (51) an der Basis (10) angebracht ist,

2. Stepperanordnung nach Anspruch 1, wobei die Verbindungseinheit (40) ein Antriebsrad (41) beinhaltet, das schwenkbar mit dem Schaft (15) verbunden ist, wobei das Antriebsrad (41) eine Nut (42) aufweist, die dem ersten Begrenzungsabschnitt (22) des Drehsitzes (20) entspricht, wobei der zweite Begrenzungsabschnitt (43) des Antriebsrades (41) hinter dem Schaft (15) angeordnet ist, wobei der zweite Begrenzungsabschnitt (43) des Antriebsrads (41) in seiner Position dem zweiten Begrenzungsabschnitt (13) der Basis (10) entspricht, wobei das Antriebsrad (41) mit einem flexiblen Verbindungselement (45) verbunden ist, wobei die zwei Enden des flexiblen Verbindungselements (45) jeweils mit den beiden Pedalen (30) verbunden sind.

3. Stepperanordnung nach Anspruch 1, wobei die Verbindungseinheit (60) eine Antriebsplatte (61) und zwei Verbindungselemente (65) umfasst, wobei die Antriebsplatte (61) schwenkbar mit dem Schaft (15) verbunden ist, wobei die Antriebsplatte (61) einen zweiten Begrenzungsabschnitt (63) hinter dem Schaft (15) aufweist, wobei der zweite Begrenzungsabschnitt (63) der Antriebsplatte (61) in seiner Posi-

tion dem zweiten Begrenzungsabschnitt (13) der Basis (10) entspricht, wobei zwei Enden der Antriebsplatte (61) schwenkbar mit den beiden Verbindungselementen (65) verbunden sind.

Revendications

1. Structure de stepper comprenant une base (10), un siège de rotation (20), deux pédales (30), une unité de liaison (40) et une unité de commutateur (50),
la base (10) ayant une broche (15) sur une station centrale de celle-ci, la base (10) ayant une première portion de limite (12), la base (10) ayant une seconde portion de limite (13) derrière la broche (15),
le siège de rotation (20) comprenant une tige de siège (21) et une tige verticale (25) à une extrémité frontale de la tige de siège (21), la tige de siège (21) ayant une section arrière qui est reliée de manière pivotante à la broche (15), le siège de rotation (20) ayant une première portion de limite (22),
les deux pédales (30) étant reliées de manière pivotante aux deux côtés de la tige verticale (25),
l'unité de liaison (40, 60) étant reliée de manière pivotante à la broche (15), l'unité de liaison (40, 60) reliant les deux pédales (30) pour les déplacer vers le haut et vers le bas, l'unité de liaison (40, 60) ayant une seconde portion de limite (43, 63) derrière la broche (15), la seconde portion de limite (43, 63) de l'unité de liaison (40, 60) correspondant en position à la seconde portion de limite (13) de la base (10),
l'unité de commutateur (50) comprenant un cadre de fixation (51), une extrémité supérieure de la broche (15) de la base (10) étant reliée au cadre de fixation (51), le cadre de fixation (51) ayant une seconde portion de limite (53) derrière la broche (15), la seconde portion de limite (53) de l'unité de commutateur (50) correspondant en position à la seconde portion de limite (13) de la base (10), l'unité de commutateur (50) ayant de plus un organe de limite (55) qui est relié de manière sélective aux premières portions de limite (12, 22) ou aux secondes portions de limite (13, 43, 53) pour limiter la rotation de la roue d'entraînement (41) de l'unité de liaison (40) ou le pivotement à gauche et à droite du siège de rotation (20),
caractérisée en ce que
la première portion de limite (12) de la base (10) est devant la broche (15), la première portion de limite (22) du siège de rotation (20) est devant la broche (15), la première portion de limite (22) du siège de rotation (20) correspond en position à première portion de limite (12) de la base (10), la tige de siège (21) comprend une paire de barres de support (24) qui s'étendent à partir de deux côtés de l'extrémité frontale de la tige de siège (21), une paire d'éléments de résistance (35) est reliée entre des extrémités postérieures des deux pédales et les deux barres de support (24) et le cadre de fixation (51) est relié sur la base (10).

2. Structure de stepper selon la revendication 1, l'unité de liaison (40) comprenant une roue d'entraînement (41) qui est reliée de manière pivotante à la broche (15), la roue d'entraînement (41) ayant une encoche (42) qui correspond à la première portion de limite (22) du siège de rotation (20), la roue d'entraînement (41) ayant la seconde portion de limite (43) derrière la broche (15), la seconde portion de limite (43) de la roue d'entraînement (41) correspondant en position à la seconde portion de limite (13) de la base (10), la roue d'entraînement (41) étant reliée avec un élément de liaison flexible (45), deux extrémités de l'élément de liaison flexible (45) étant reliées respectivement aux deux pédales (30).

3. Structure de stepper selon la revendication 1, l'unité de liaison (40) comprenant une plaque d'entraînement (61) et deux éléments de liaison (65), la plaque d'entraînement (61) étant reliée de manière pivotante à la broche (15), la plaque d'entraînement (61) ayant une seconde portion de limite (63) derrière la broche (15), la seconde portion de limite (63) de la plaque d'entraînement (61) correspondant en position à la seconde portion de limite (13) de la base (10), deux extrémités de la plaque d'entraînement (61) étant reliées de manière pivotante aux deux éléments de liaison (65).

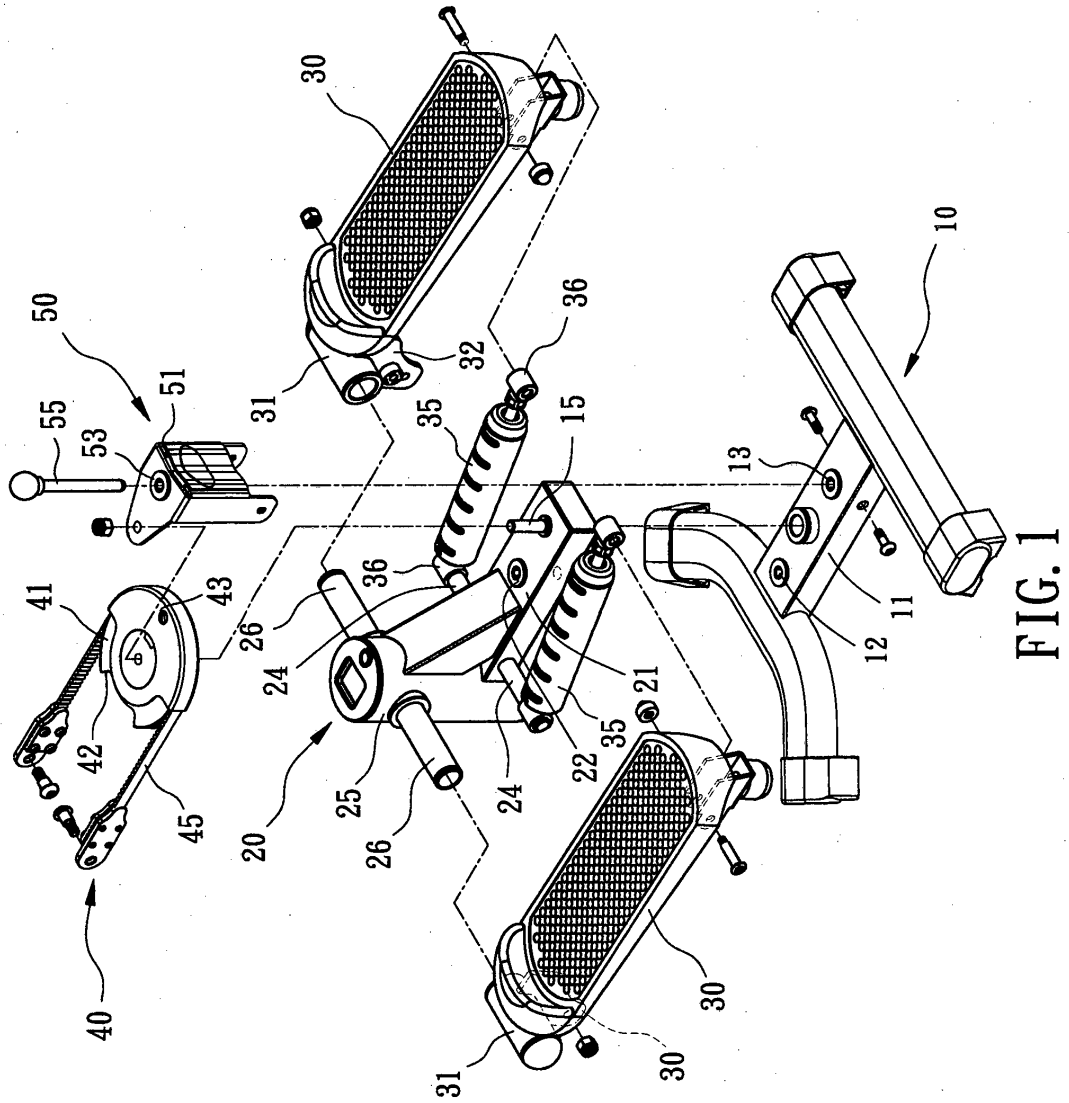

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FIG. 1

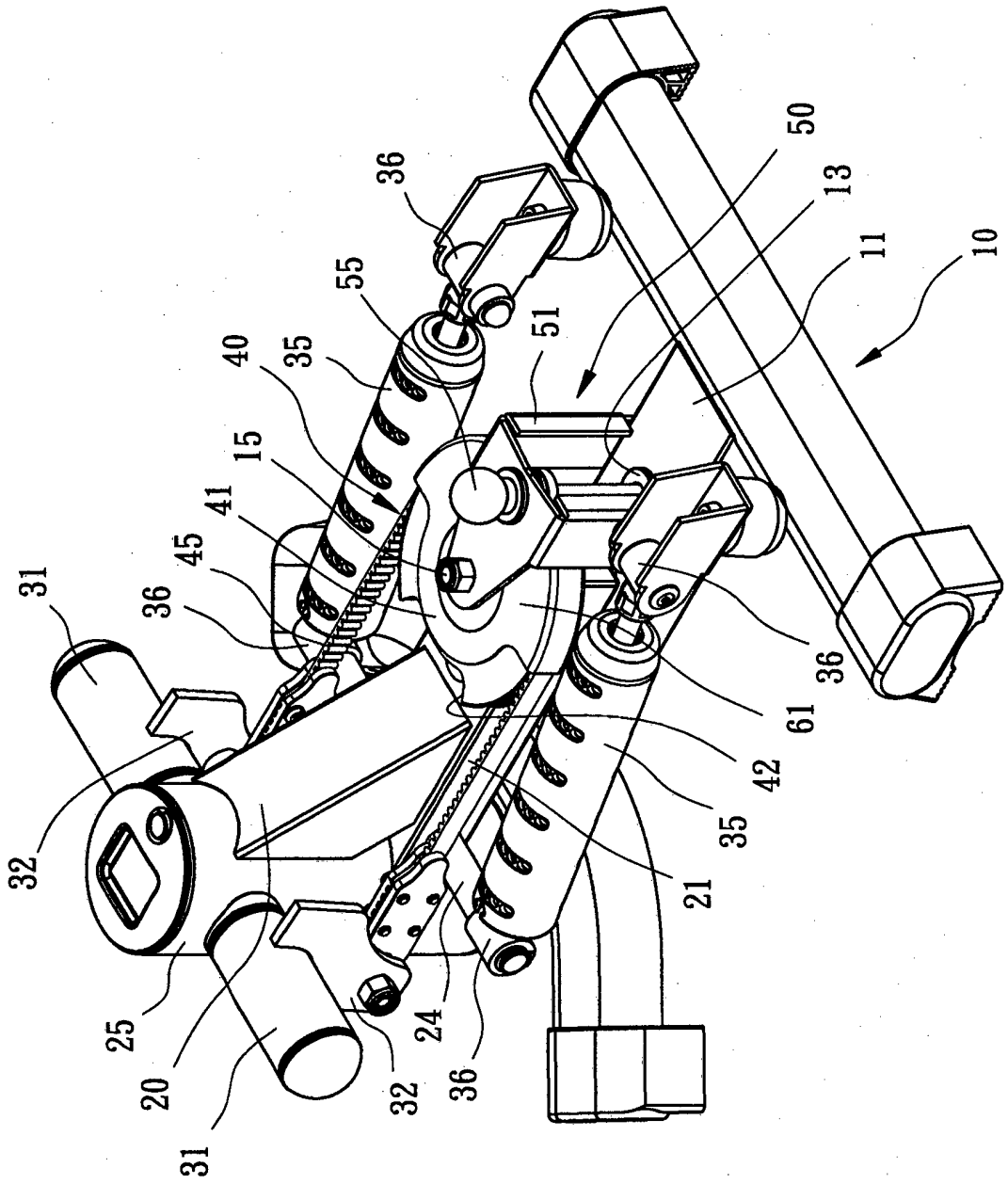

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FIG. 2

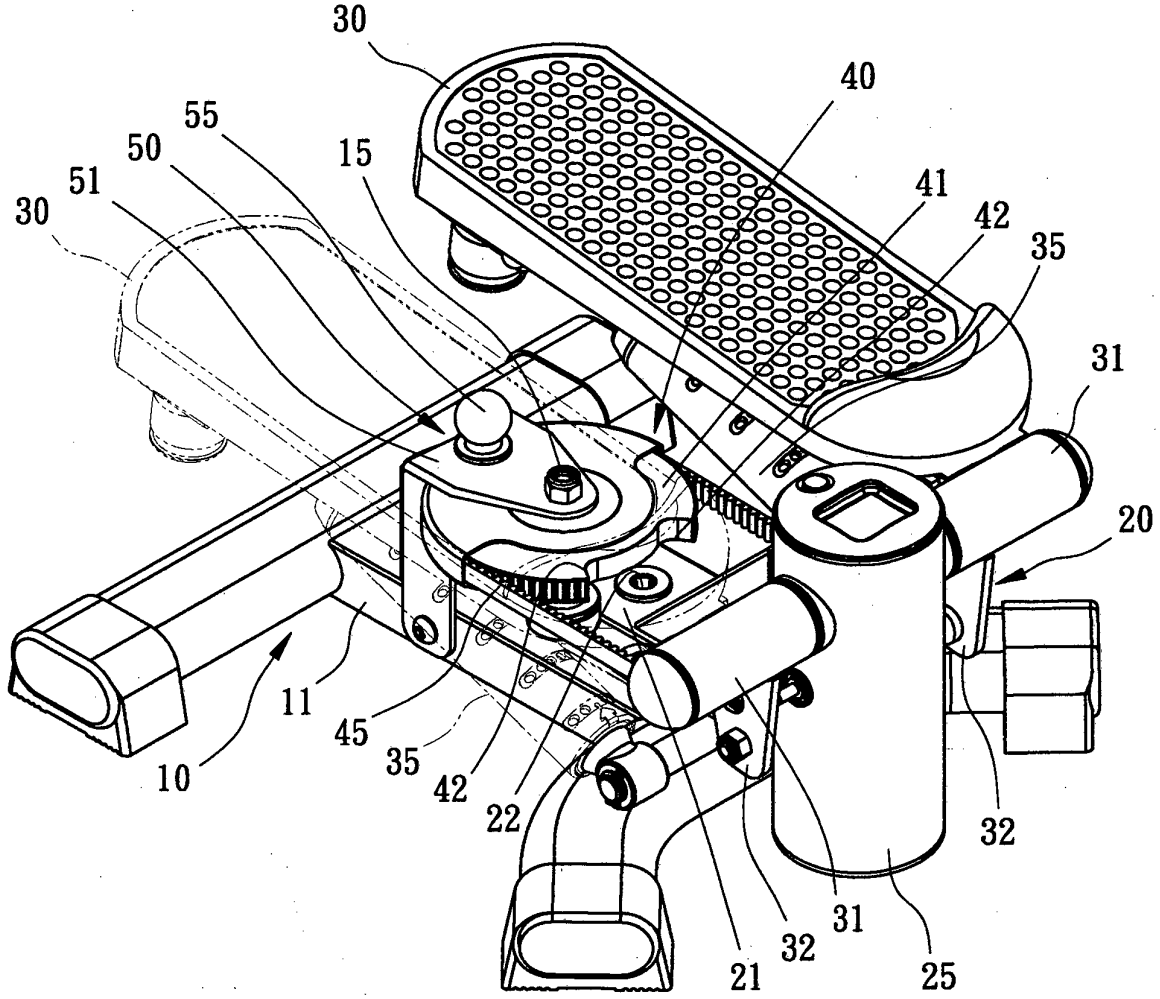


FIG. 3

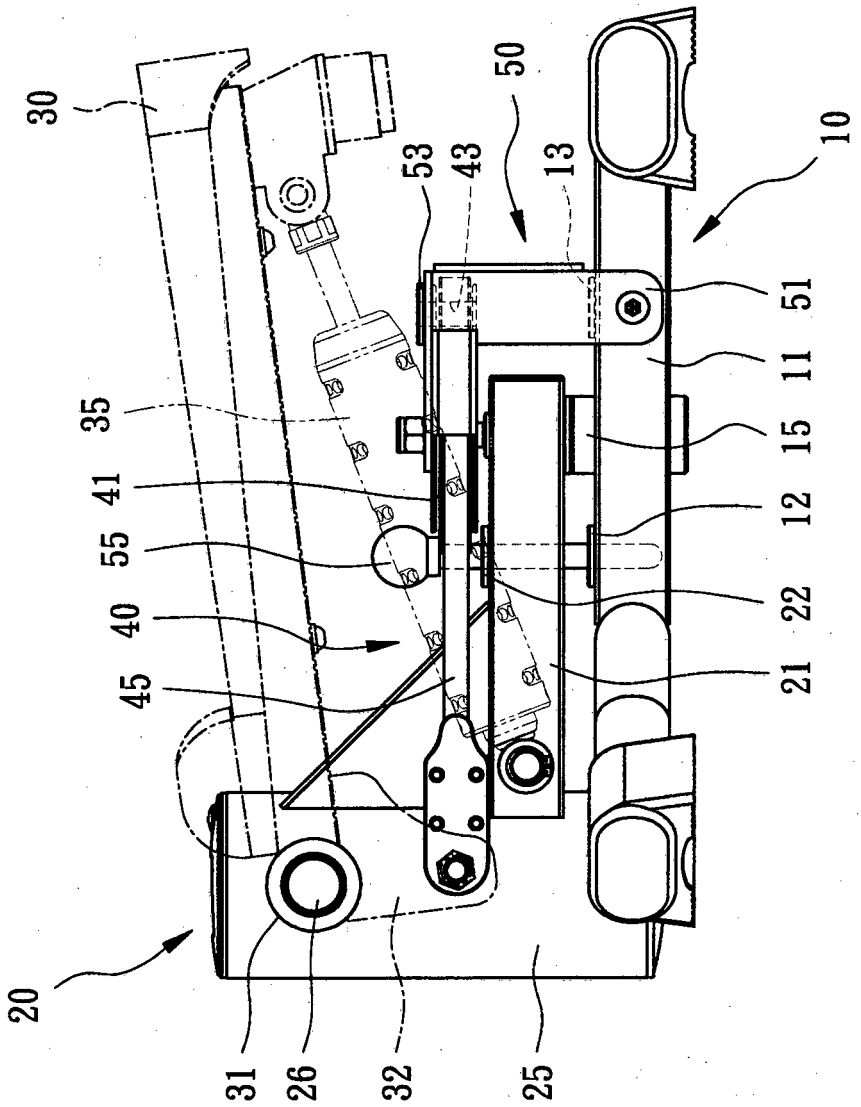


FIG. 4

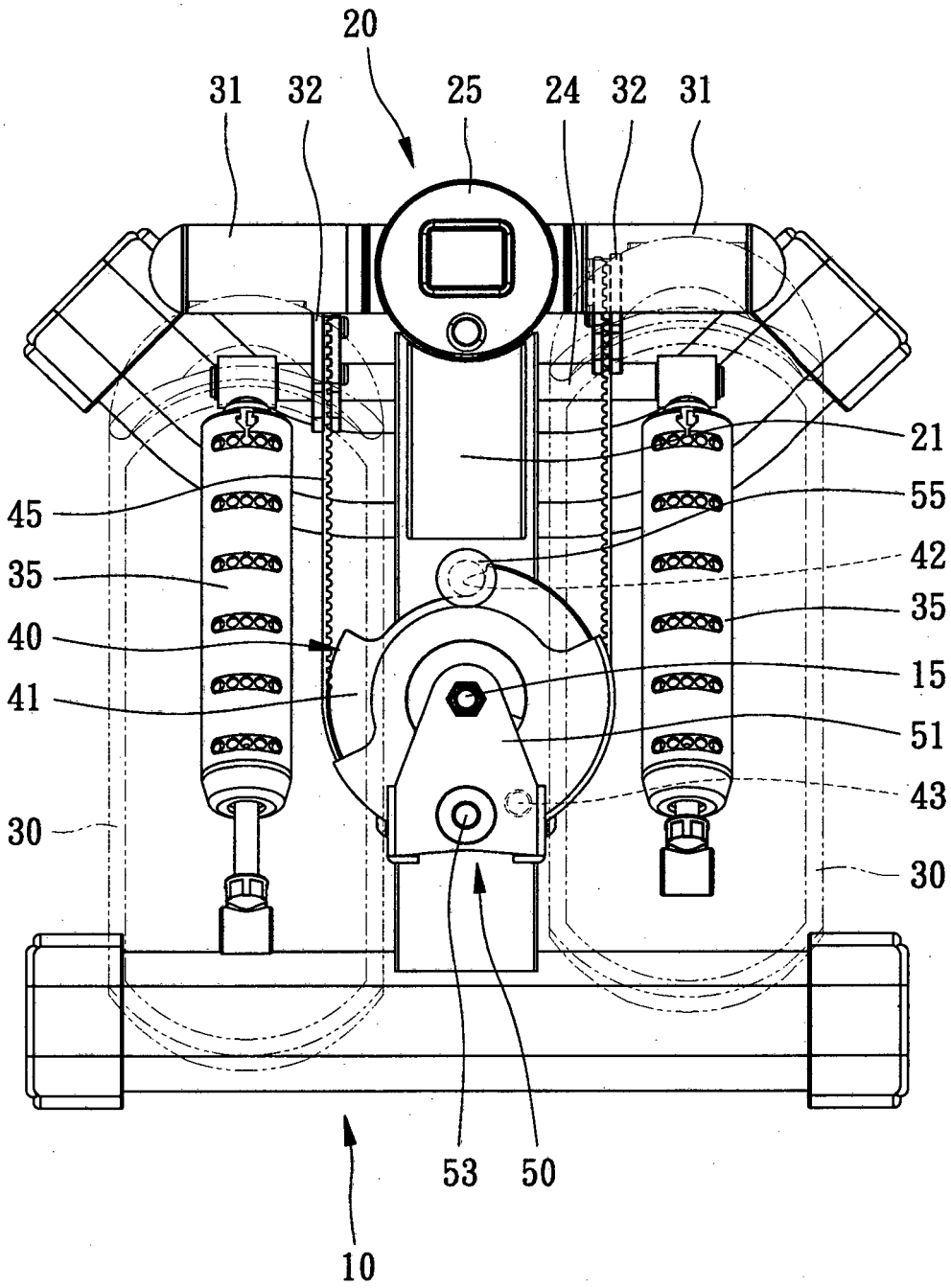


FIG. 5

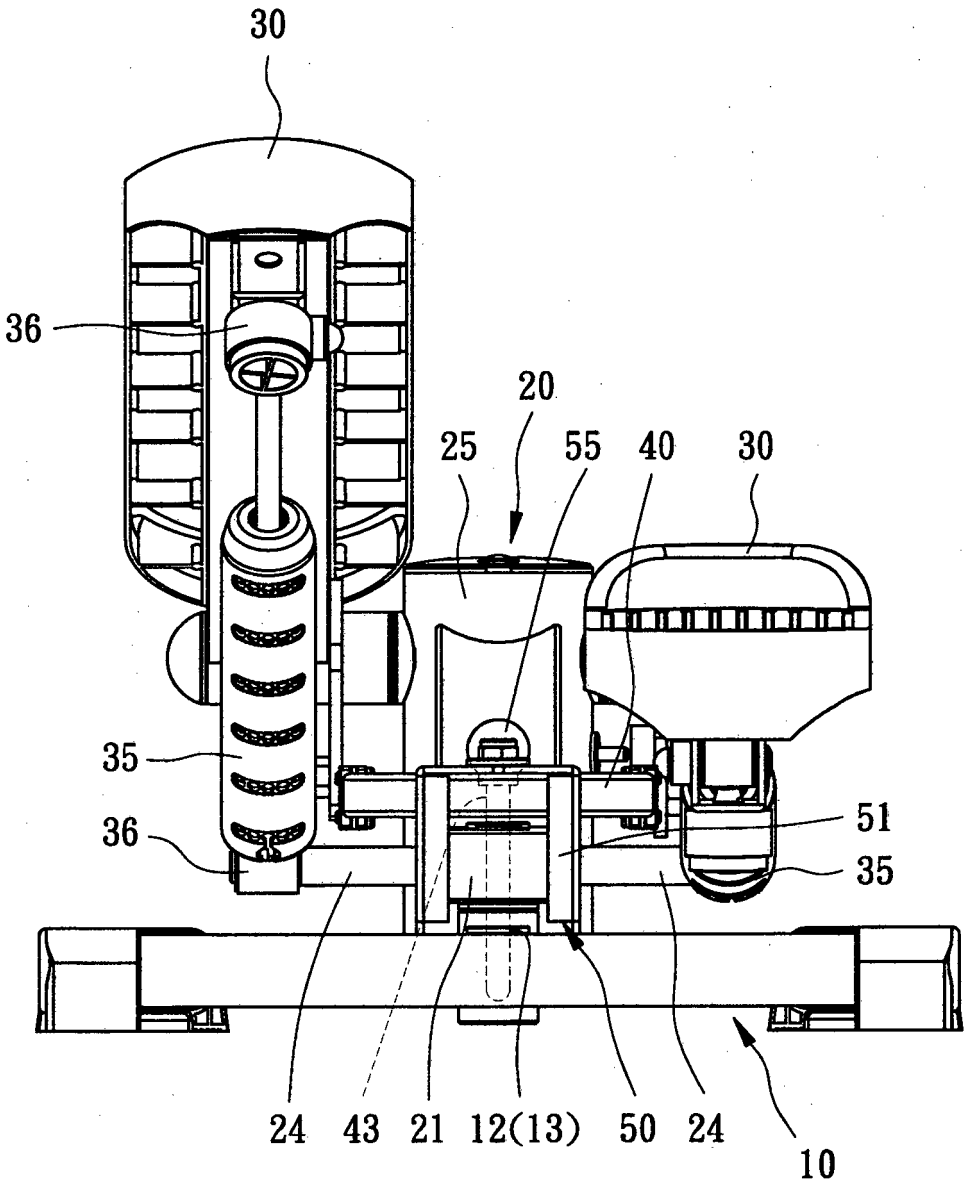


FIG. 6

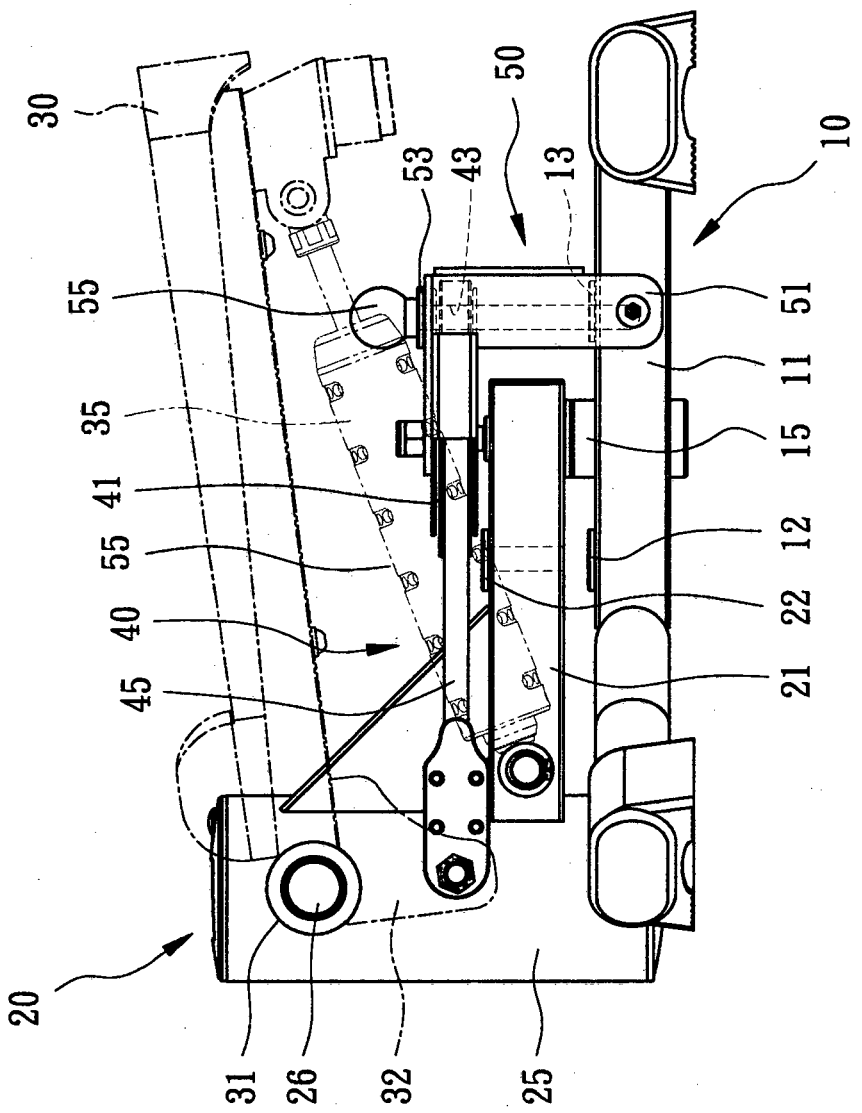


FIG. 7

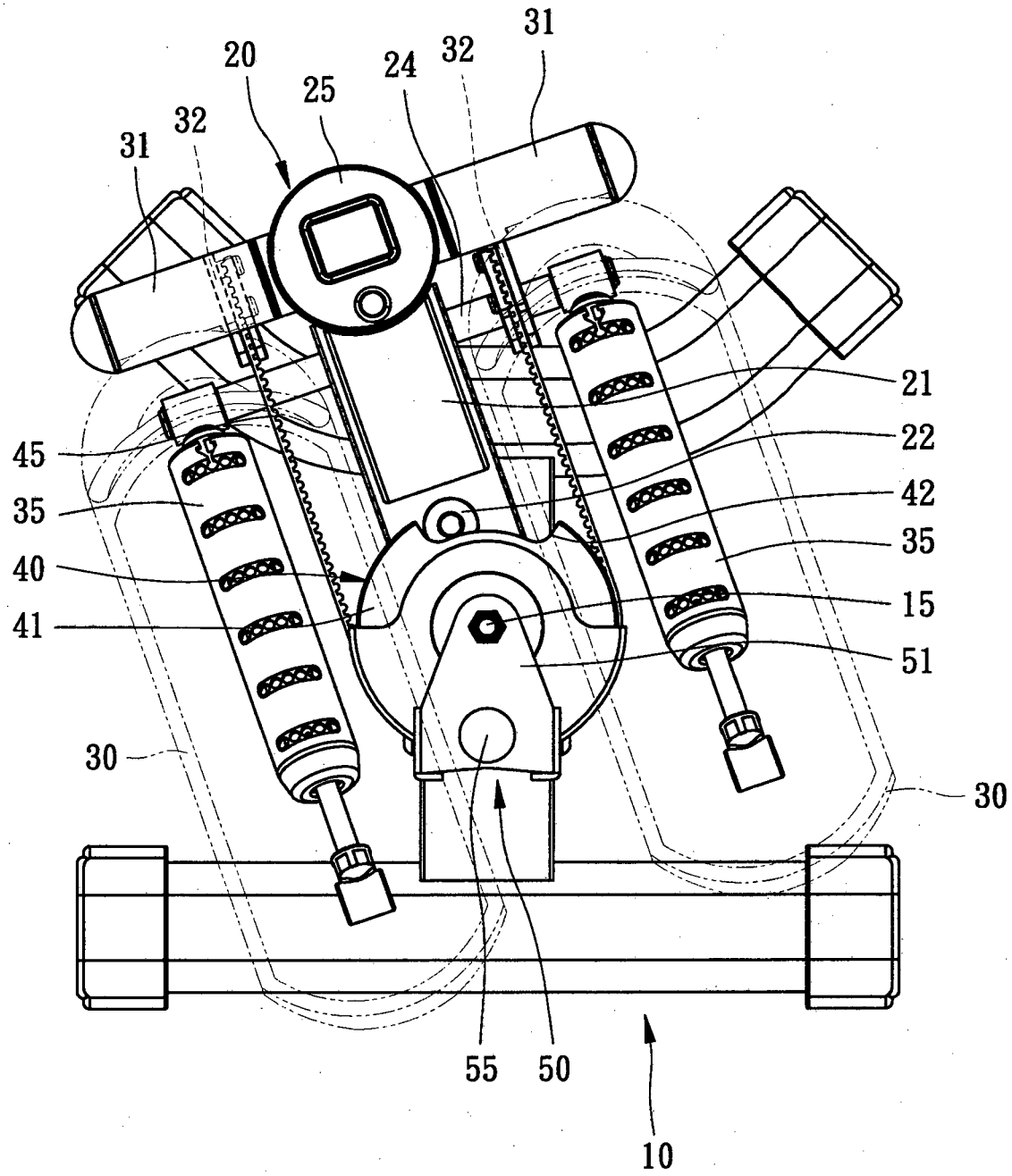


FIG. 8

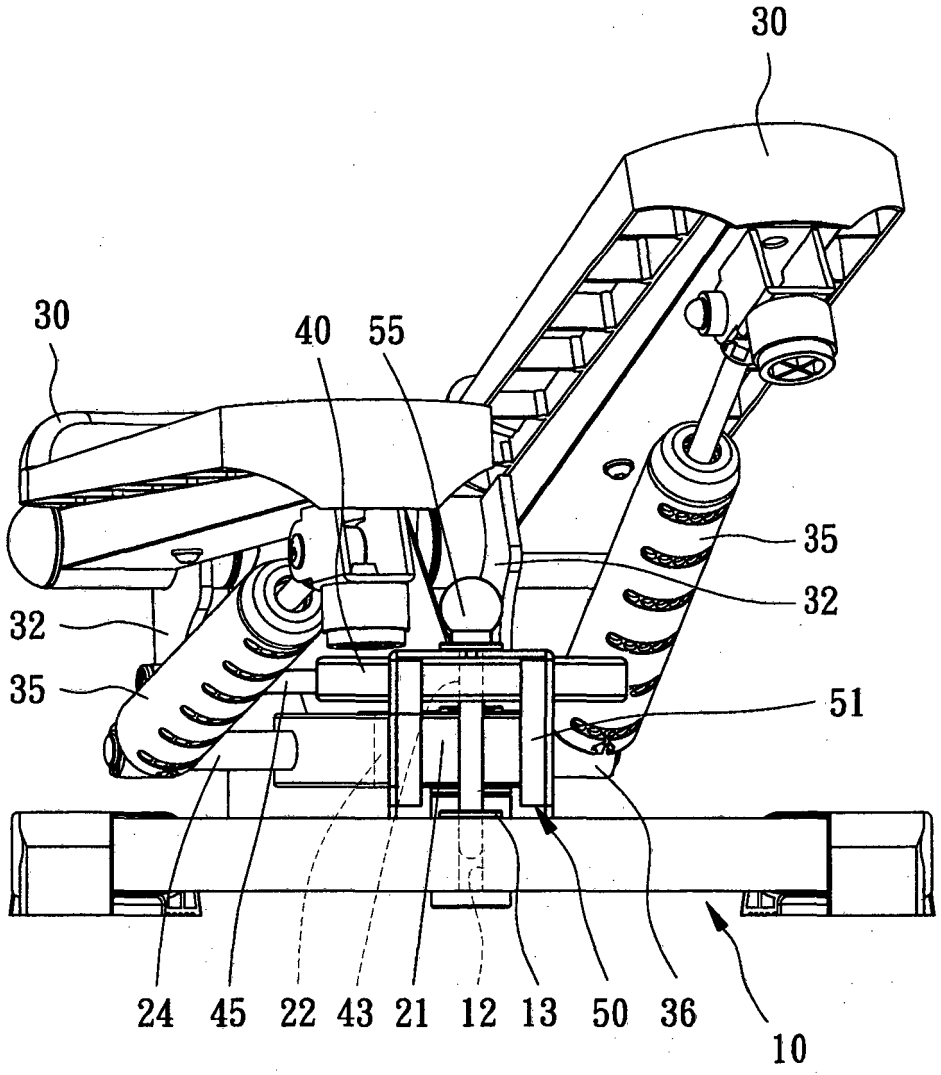


FIG. 9

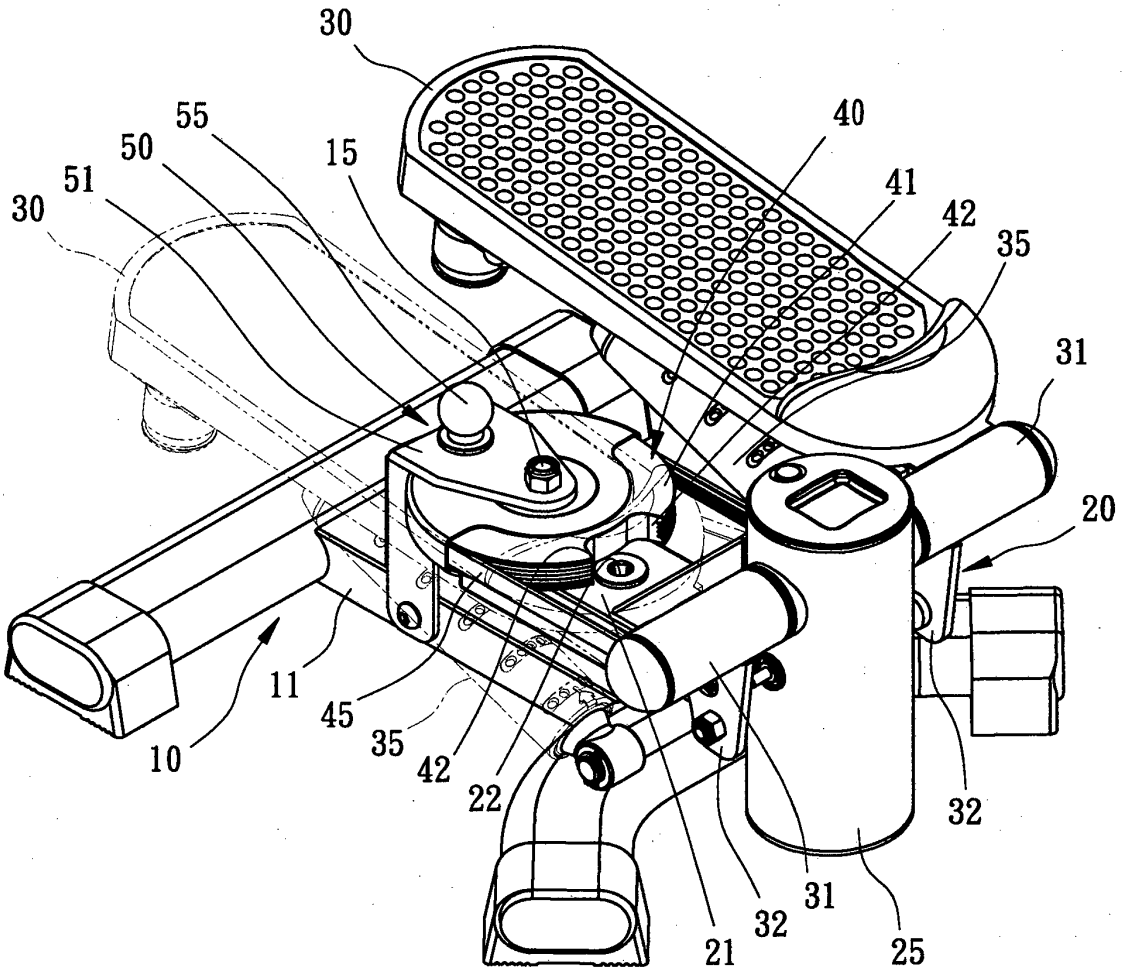


FIG. 10

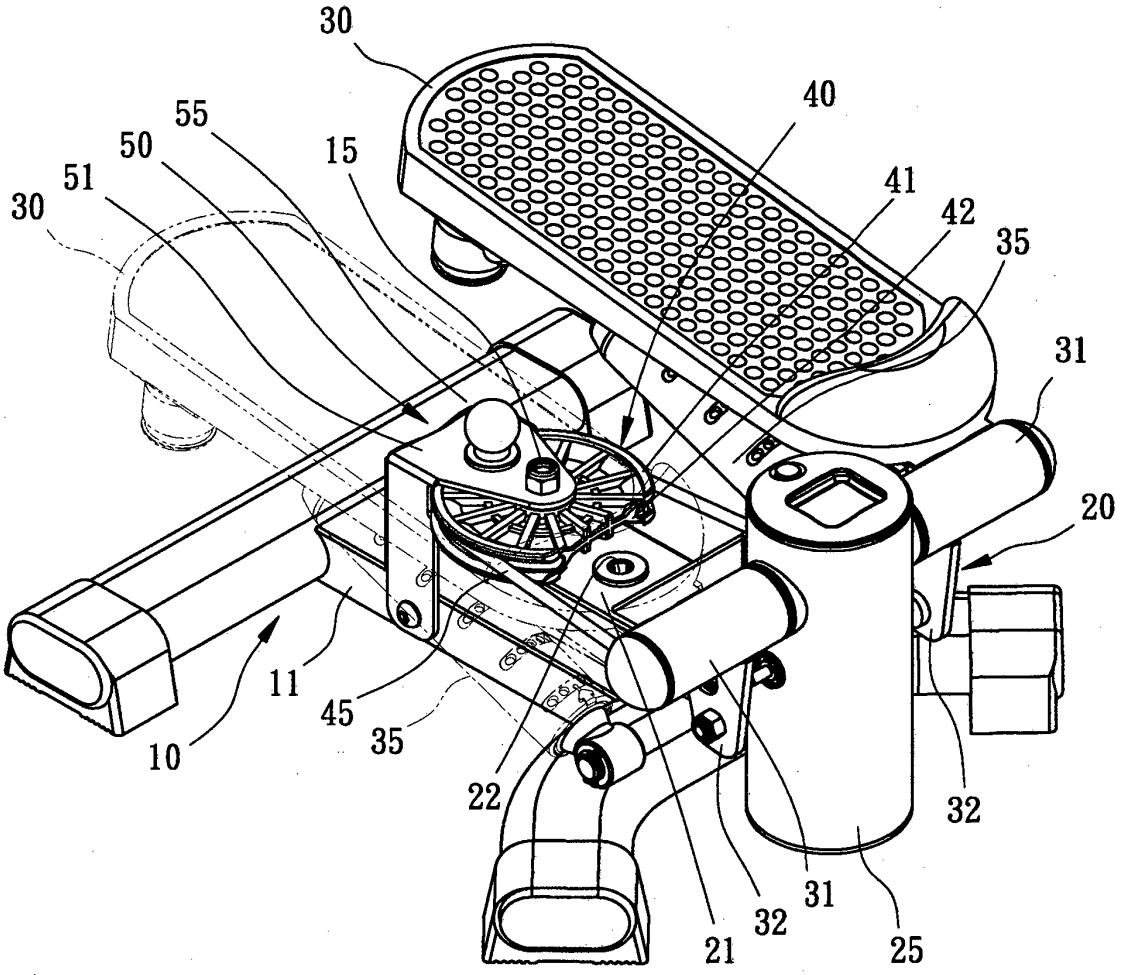


FIG. 11

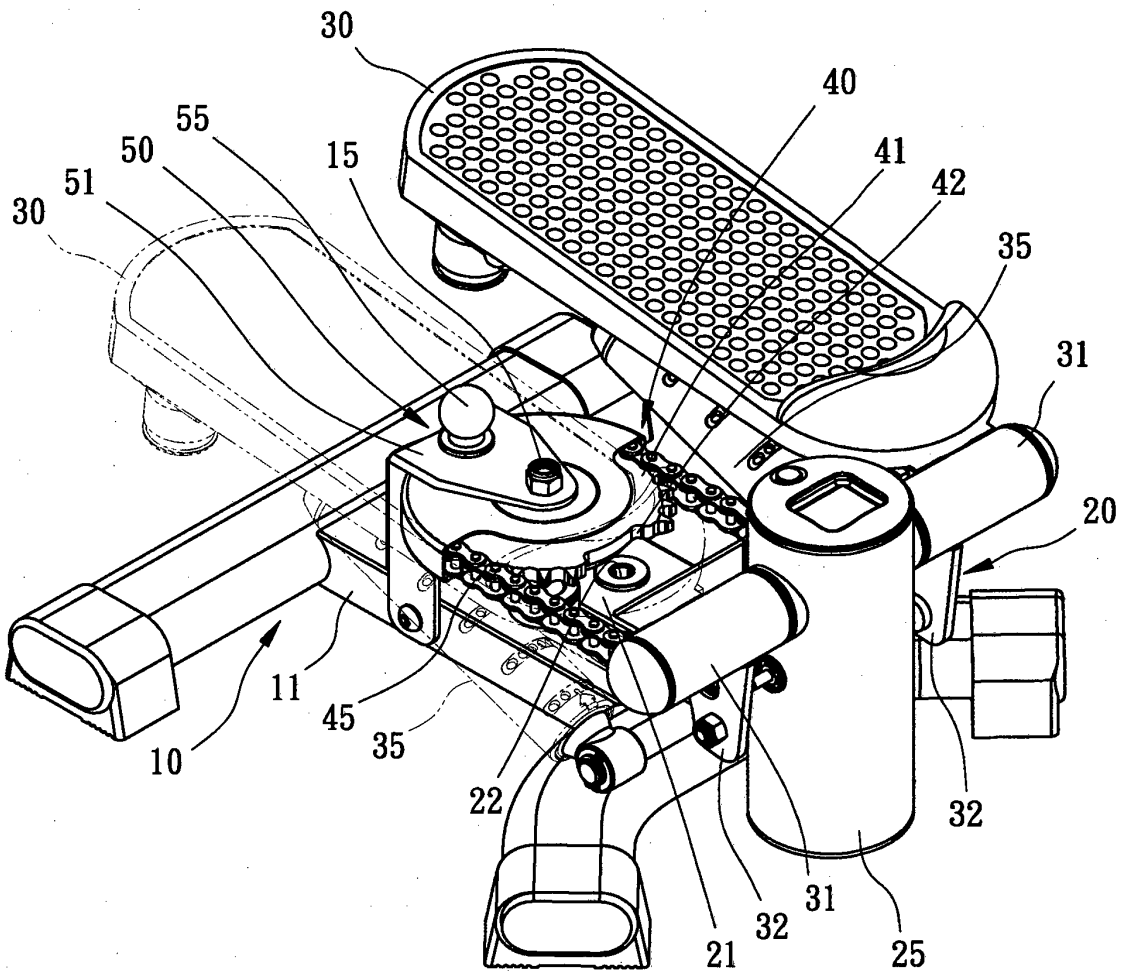


FIG. 12

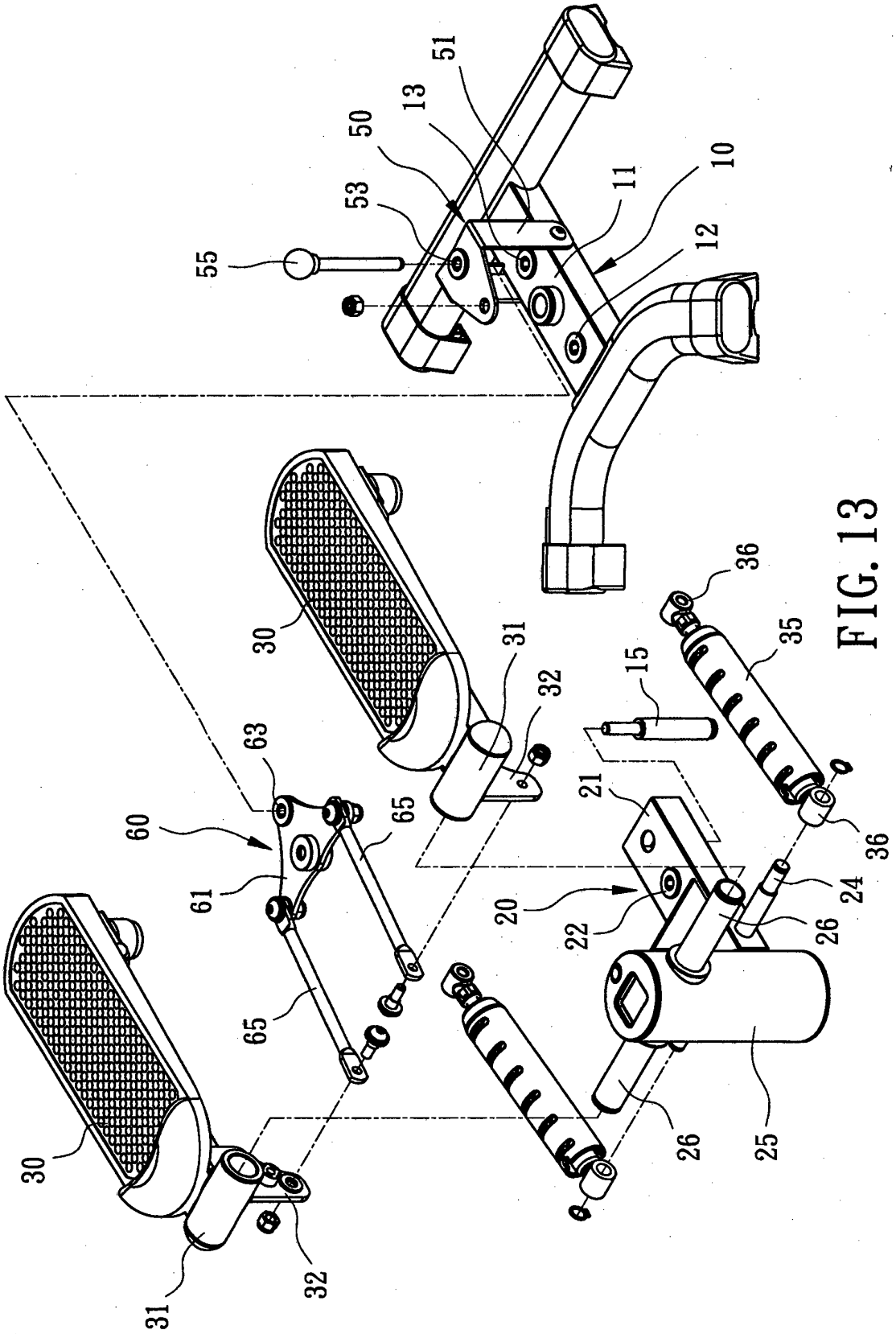


FIG. 13

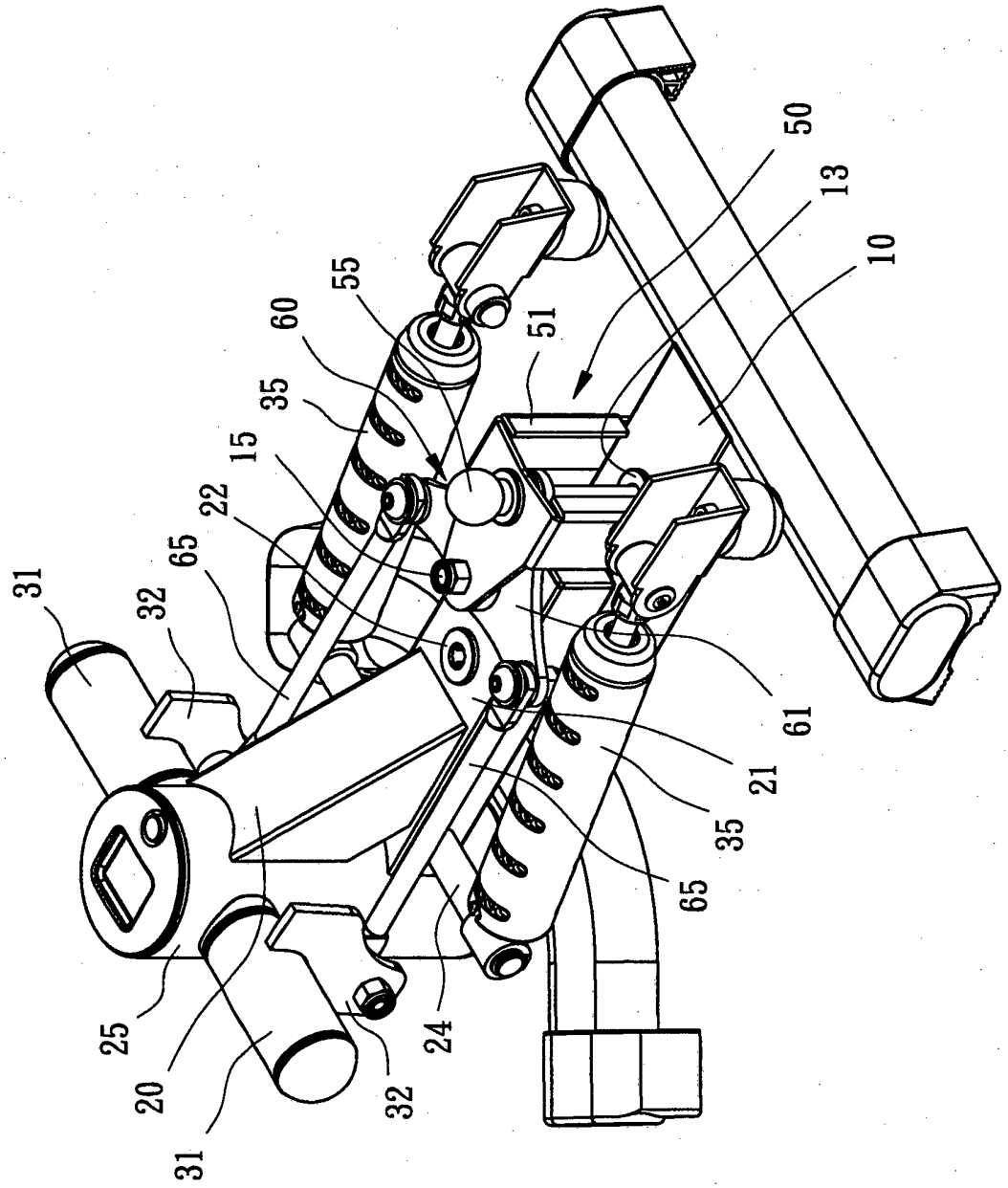


FIG. 14

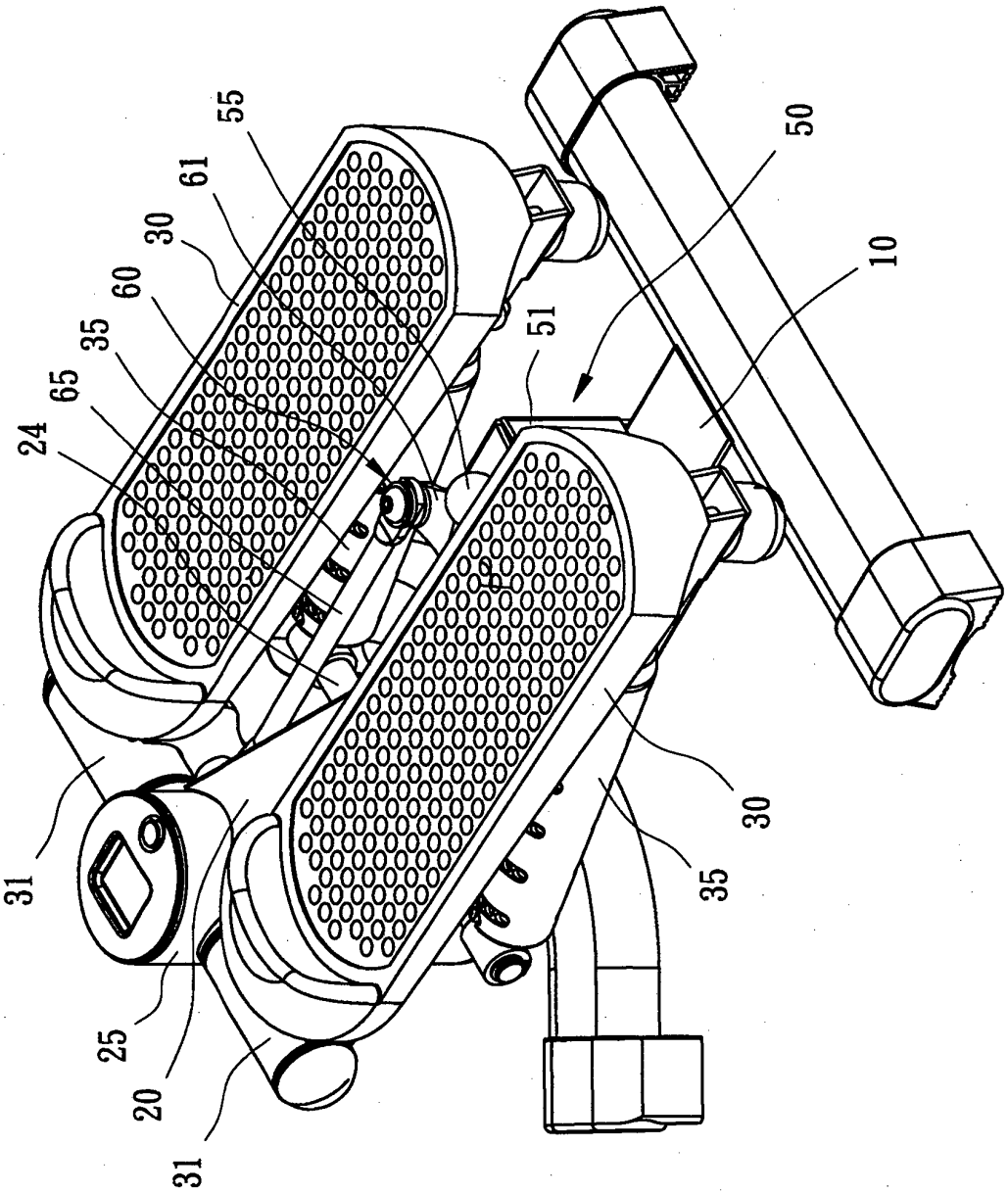


FIG. 15

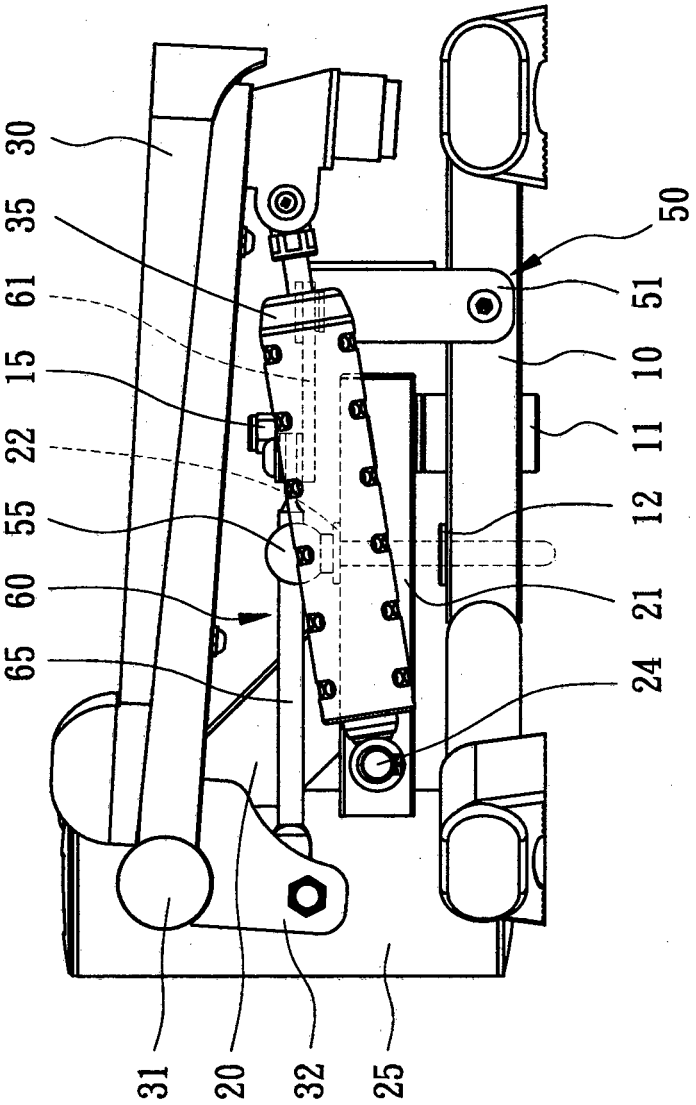


FIG. 16

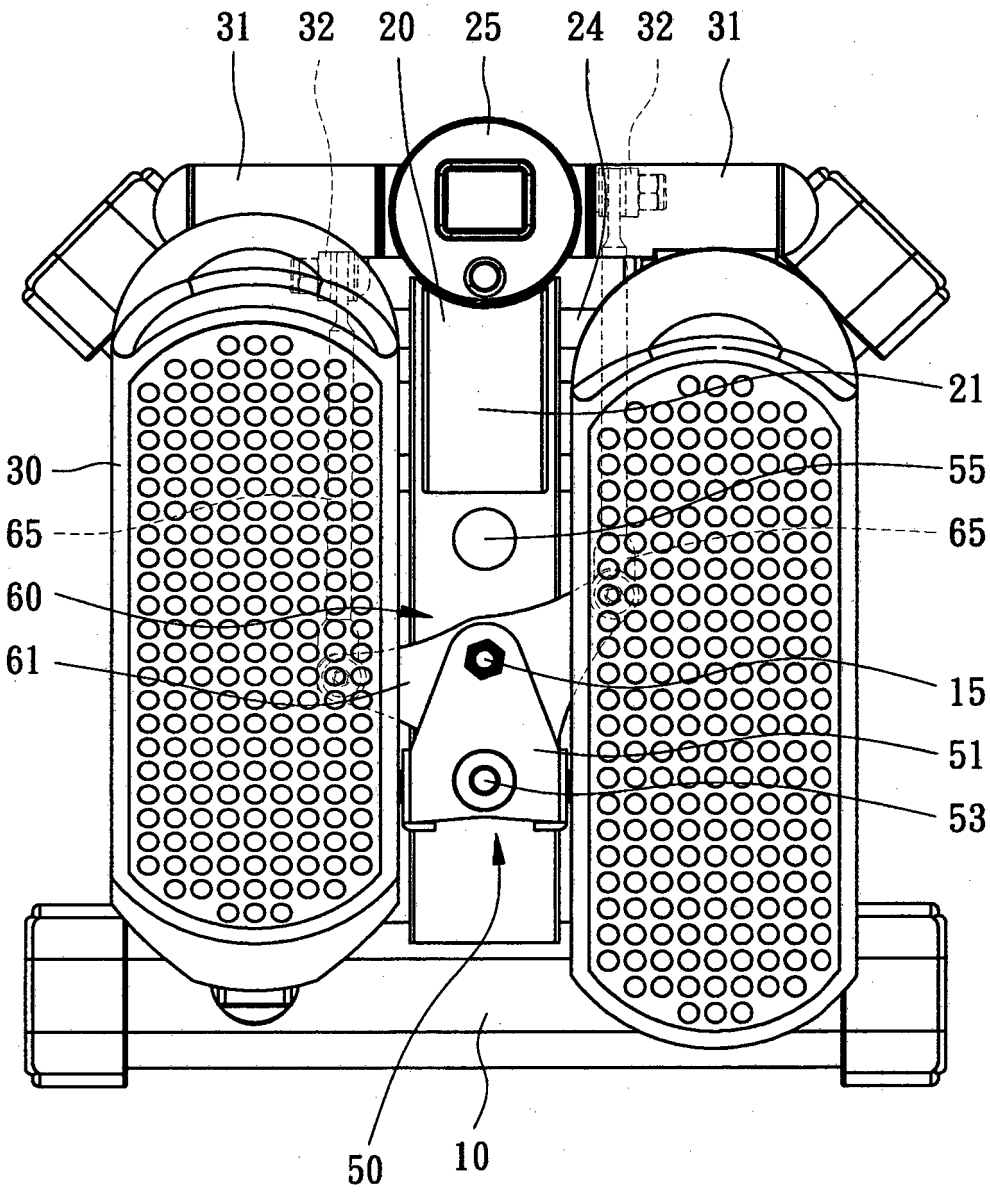


FIG. 17

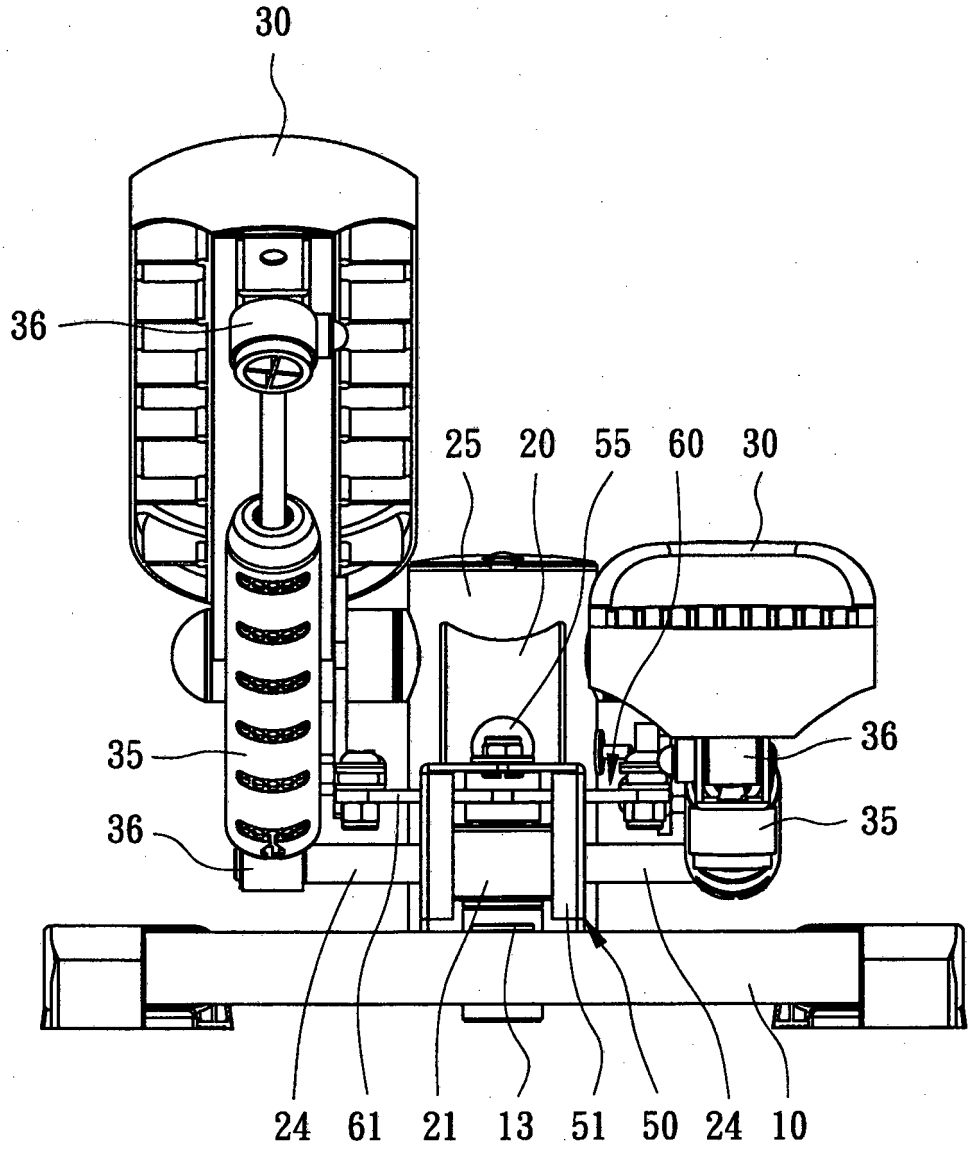


FIG. 18

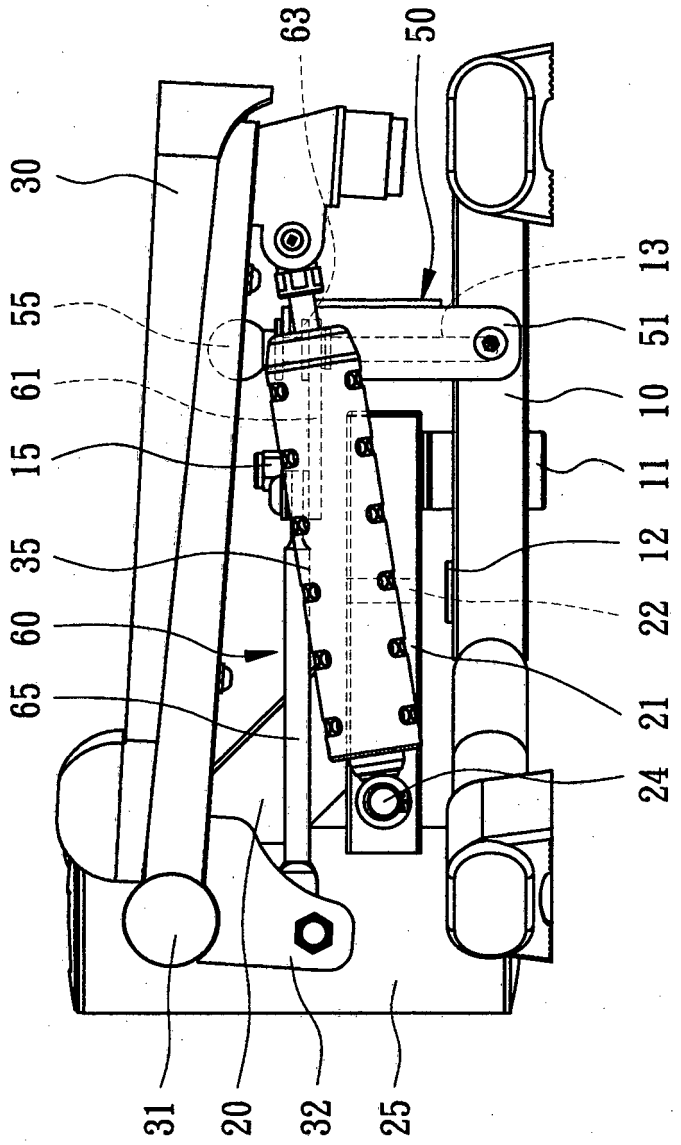


FIG. 19

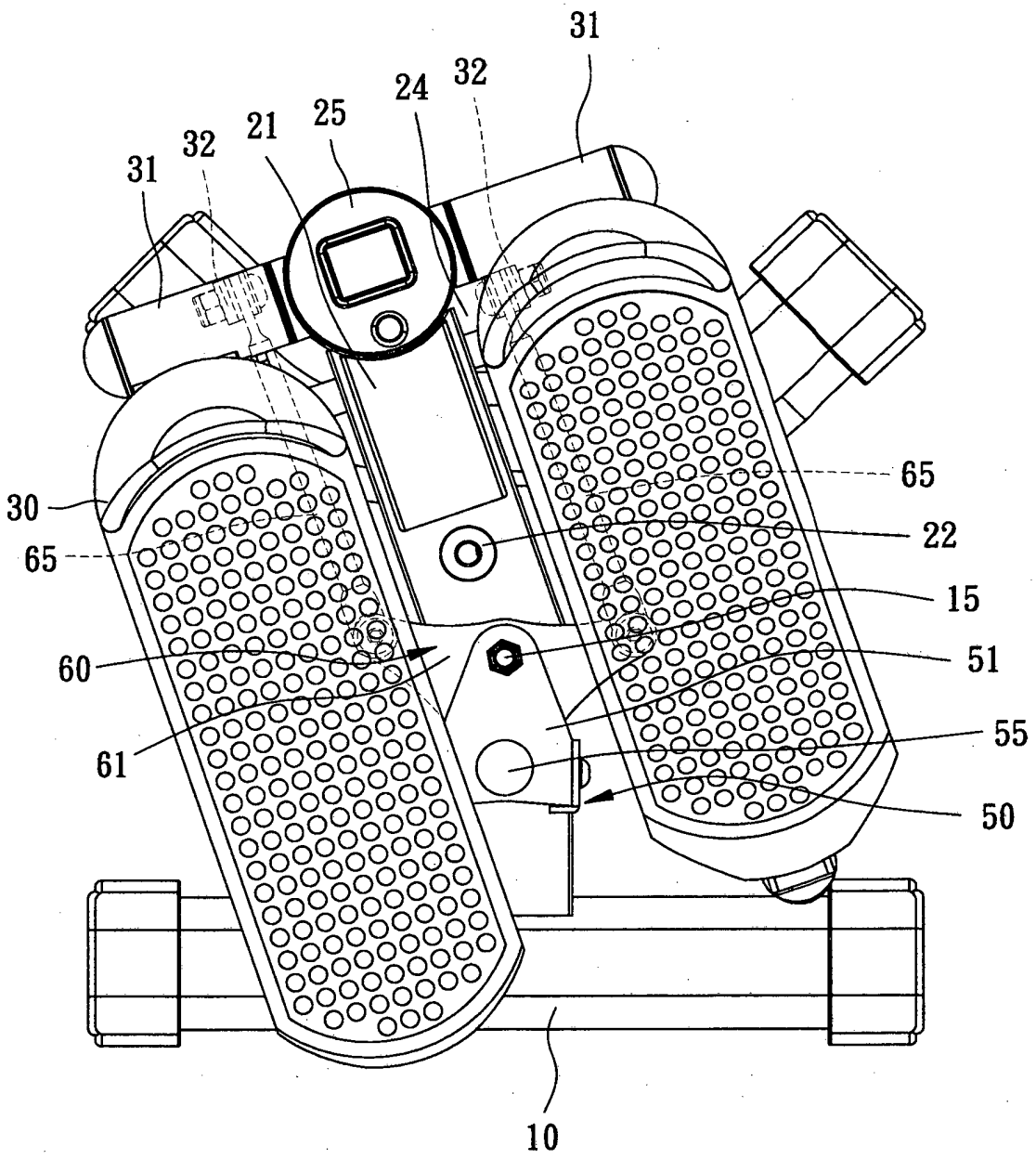


FIG. 20

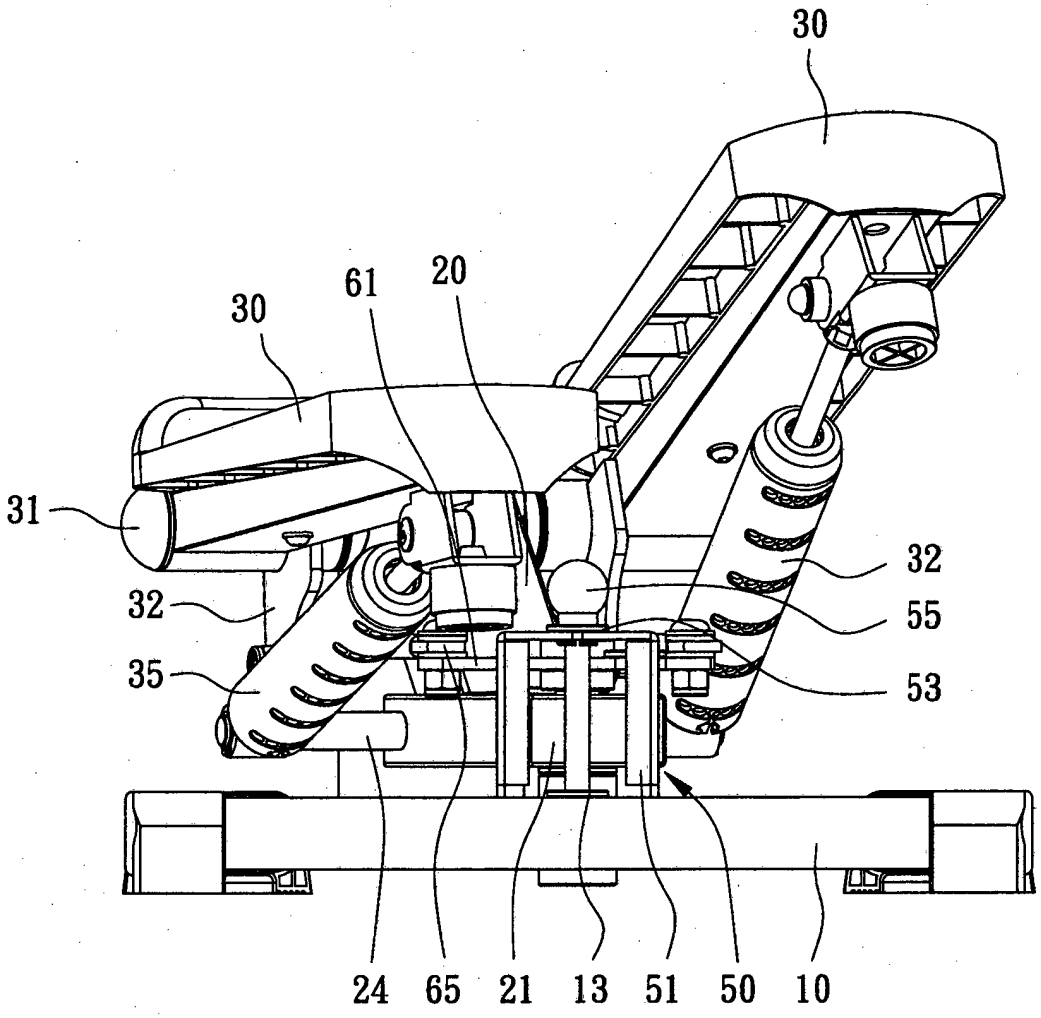


FIG. 21

REFERENCES CITED IN THE DESCRIPTION

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