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(54) **Amplitude change-over device for a body vibration machine**

Vorrichtung zum Umstellen der Amplitude in einem Körpervibrationsgerät

Dispositif de changement d'amplitude pour un appareil à vibration de corps

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Description

[0001] This invention relates to an amplitude change-over device for a body vibration machine, particularly to one able to change and adjust the strength of amplitude and the value of gravitational acceleration for tallying with a user's requirement in training muscular strength by adjusting a single motor with same frequency to rotate clockwise or counterclockwise.

[0002] An amplitude change-over device for a body vibration machine according to the preamble of claim 1 is already known from EP 1 813 245 A.

[0003] In particular, EP 1 813 245 A provides an apparatus for the stimulation of the human body by means of vibrations comprising a vibrating plate, which can be activated to vibrate with a platform. The apparatus defines how the user is to position him- or herself during standard operation: a forward direction (and consequently also a backward direction) is defined by gripping devices (handles) and/or markings. I.e. the sagittal plane of the user in relation to the apparatus is defined. The apparatus comprises a vibration activator with at least one rotary driving mechanism in relation to a rotational axis and an electric motor, which can trigger an eccentric weight into a rotating motion, wherein the position of the rotational axis in relation to the vibrating plate is fixed. The rotational axis, or all rotational axes, is/are selected to extend transversely to the defined sagittal plane.

[0004] In reality, our daily activities are affected anytime and anyplace by gravity, and the influence of gravity is a basis for developing our muscular strength. Conventional weight training acted on a human body (gravity Fz) is to employ extra weight and load to be imposed upon the human body. Substantially human body can naturally enhance its muscular strength to cope with increase of weight and load imposed thereon. Dumbbells and other weight training apparatuses are extra loads for training muscular strength. During taking exercises, a man's body will carry out self-adjustment and correction in accordance with increase of extra loads and hence a man's muscular power can be strengthened and his body will become stronger than ever before.

[0005] Compared with conventional weight training, body vibration training does not need extra loads, so it will not be affected by gravity but by acceleration. When an object or a human body changes its velocity in a very short time, assimilation of acceleration will be expanded. According to a formula: Fz (gravity)= m (individual body weight) $\times$ a (gravitational acceleration, m/sec.^{2}), when acceleration (a) increases, a body working strength will also be actuated to increase. In comparison with conventional weight training (added with loads), vibration training without extra loads can attain an effect of exercise training faster than the conventional weight training; therefore, body vibration machines used for training a man's muscular power have been widely used.

[0006] A conventional body vibration machine 10, as shown in Figs. 1~4, includes a standing table 11, an upright post 15, a handrail 16 and a control faceplate 17 combined together.

[0007] The standing table 11 is positioned over a base plate 12, and a plurality of buffering and elastic support cylinders 13 are assembled between the base plate 12 and the standing table 11 to connect them together so that when a user stands on the standing table 11, the standing table 11 can produce a buffer effect. The standing table 11 has an intermediate portion of its underside secured with the outer casing of a motor 14, as shown in Fig. 3, and the motor 14 has a rotating shaft 140 with two opposite ends respectively fixed thereon with an eccentric plate 141. Thus, after the motor 14 is started to operate, the two eccentric plates 141 fixed on the opposite ends of the rotating shaft 140 will make the motor 14 produce eccentric vibration, and the standing table 11 secured with the outer casing of the motor 14 will be actuated to vibrate synchronously.

[0008] The upright post 15 extending upward is fixedly connected with a front end of the base plate 12.

[0009] The handrail 16 and the control faceplate 17 are fixed at the upper end of the upright post 15. When standing on the standing table 11, a user can hold the handrail 16 for supporting and controlling the working conditions of the body vibration machine 10 by means of the control faceplate 17.

[0010] In using of the conventional body vibration machine 10, as shown in Fig. 1, after a user stands on the standing table 11 and holds on the handrail 16, the motor 14 is started to operate and, by its eccentric vibration force, driving the standing table 11 to vibrate continuously, and simultaneously the user's body will be actuated to produce continuous vibration, thus achieving effect of exercise training.

[0011] However, the conventional body vibration machine 10 can produce only one single amplitude. Under the circumstances, if users of different body conditions need to use different-strength amplitudes, it is necessary to change the extent of the amplitude and for this purpose, the eccentric plate 141 at the opposite ends of the rotating shaft 140 of the motor 14 have to be replaced, thus increasing trouble in disassembling and replacing of the eccentric plates 141 and resulting in inconvenience in use. In another case, if the eccentric plates 141 are not to be replaced, then two motors with different amplitudes have to be used for change of amplitude, thus increasing producing cost and weight of the body vibration machine.

[0012] The objective of this invention is to offer an amplitude change-over device for a body vibration machine, able to change the extent of amplitude by using a single motor so that a user can choose proper amplitude for use according to exercise strength, principle of gradual progress and exercise adaptability.

[0013] The feature of this invention is two eccentric units respectively fixed on the opposite ends of a rotating shaft driven to rotate by a motor. Each eccentric unit consists of an eccentric driving plate secured with the rotating

shaft for rotating together and an eccentric driven plate movably fitted on the rotating shaft abutting one side of the driving plate. Either one of the driving plate or the driven plate has its surface bored with an arc-shaped slide groove with the rotating shaft acting as a pivot, and another one has a corresponding end of its surface fixed with a projecting stud inserted in the slide groove. The motor of this invention is a right-handed and left-handed one. By so designing, the motor can be chosen to rotate clockwise or counterclockwise to change an included angle between the driving plate and the driven plate for changing centrifugal force, and hence strength of amplitude can be optionally adjusted for use by changing the rotating directions of a single motor.

[0014] This invention will be better understood by referring to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a conventional body vibration machine;
Fig. 2 is an exploded perspective view of a standing table of the conventional body vibration machine;
Fig. 3 is a cross-sectional view of the standing table of the conventional body vibration machine;
Fig. 4 is an exploded perspective view of a motor and two eccentric plates of the conventional body vibration machine;
Fig. 5 is an exploded perspective view of a first preferred embodiment of a standing table of a body vibration machine in the present invention;
Fig. 6 is an exploded perspective view of the first preferred embodiment of a motor and two eccentric units of the body vibration machine in the present invention;
Fig. 7 is a side cross-sectional view of the first preferred embodiment of the eccentric units during the motor rotating clockwise in the present invention;
Fig. 8 is a front cross-sectional view of the first preferred embodiment of the eccentric units during the motor rotating clockwise in the present invention;
Fig. 9 is a side cross-sectional view of the first preferred embodiment of the eccentric units during the motor rotating counterclockwise in the present invention;
Fig. 10 is a front cross-sectional view of the first preferred embodiment of the eccentric units during the motor rotating counterclockwise in the present invention;
Fig. 11 is an exploded,perspective view of a second preferred embodiment of the motor and the eccentric units of a body vibration machine in the present invention;
Fig. 12 is an exploded perspective view of a third preferred embodiment of the rotating shaft to be driven by a motor in the present invention;
Fig. 13 is a front view of the third preferred embodiment of the rotating shaft driven by the motor in the present invention; and
Fig. 14 is a side cross-sectional view of the third preferred embodiment of the rotating shaft driven by the motor in the present invention.

[0015] A first preferred embodiment of an amplitude change-over device for a body vibration machine in the present invention, as shown in Figs. 5, 6 and 7, includes a standing table 20, a base plate 21, a motor 22, an upright post, a handrail, a control faceplate and two eccentric units 23 combined together.

[0016] The upright post, the handrail and he control faceplate are the same as those in the conventional body vibration machine, so their description are omitted here. Besides, those components can be saved in a body vibration machine, as a user can stand on the standing table, with a hand holding something stationary.

[0017] The standing table 20, as shown in Fig, 5, is positioned over the base plate 21, and a plurality of buffer and elastic support cylinders 200 are assembled between the base plate 21 and the standing table 20 to connect them together.

[0018] The motor 22 has its outer casing secured thereon with a fixing frame 220 to be firmly combined with an intermediate portion of the underside of the standing table 20, as shown in Fig. 8. The motor 22 can be a right-handed and left-handed one provided with a rotating shaft 221 having the opposite ends respectively and correspondingly fixed with the eccentric unit 23. Thus, when the motor 22 is started, the two opposite eccentric units 23 on the rotating shaft 221 driven by the motor 22 will be rotated to produce a centrifugal force, and the standing table 20 fixed with the outer casing of the motor 22 will be actuated to vibrate.

[0019] The improvements made in the invention are described below.

[0020] The two eccentric units 23 fixed on the opposite ends of the rotating shaft 221 driven by the motor 22 are respectively composed of an eccentric driving plate 230 and an eccentric driven plate 231.

[0021] The eccentric driving plate 230 is of a sector shape, having its eccentric portion secured with the rotating shaft 221 of the motor 22 for rotating together with the rotating shaft 221. The driving plate 230 is bored with an arc-shaped slide groove 2301 with the rotating shaft 221 acting as a pivot.

[0022] The eccentric driven plate 231 is also of a sector shaped, having its eccentric portion movably fitted on the rotating shaft 221 adjacent to one side of the driving plate 230, with a bush 232 fitted on the rotating shaft 221 to separate the driving plate 230 from the driven plate 231 so as to prevent them from producing surface contact friction. The driven plate 231 is provided with a projecting stud 2310 at one side facing the driving plate 230. The projecting stud 2310 has its outside fitted thereon with a sound-proof sleeve 2311 and then they are together inserted in the arc-shaped slide groove 2301 of the driving plate 230. After fitted on the rotating shaft 221, the driven plate 231 is fixed with the rotating shaft 221 by means of a rubber gasket 233 and a locking nut 234 for preventing

the driven plate 231 from slipping off the rotating shaft 221, and then two motor covers 222 are respectively fixed with the outer casing of the motor 22 for covering up both the driving plate 230 and the driven plate 231.

[0023] After foresaid components under the standing table 20 are combined together, the body vibration machine is finished assembling, as shown in Figs. 7 and 8. After a user stands on the standing table 20, the motor 22 is started to operate and drive the standing table 20, and the user's body to produce continuous vibration, thus attaining effect of exercise training. Two conditions of operating and using the body vibration machine are described as follows.

1. When the rotating shaft 221 of the motor 22 is controlled by the control faceplate to rotate clockwise, as shown in Figs. 7 and 8, both the motor 22 and the driving plates 230 will be driven to rotate clockwise simultaneously. When the motor 22 and the driving plates 230 are rotated to reach a limit location where one end of the arc-shaped slide groove 2301 of the driving plate 230 touches the projecting stud 2310 of the driven plate 231, the driven plate 231 will be hooked and actuated by the driving plate 230 to rotate together with the driving plate 230 synchronously. At this time, the driving plate 230 and the driven plate 231 are staggered in position with a large included angle. According to a formula: F (centrifugal force) = m (mass) $\times$ w^2 (angular velocity) $\times$ r (radius), the included angle and the centrifugal force are of reverse ratio. Therefore, the amplitude of the motor 22 and the standing table 20 becomes low.
2. When the control faceplate controls the rotating shaft 221 of the motor 22 to rotate counterclockwise, as shown in Figs. 9 and 10, the motor 22 and the driving plates 230 will synchronously rotate counterclockwise. When the driving plates 230 are rotated to reach a limit location where the other end of the arc-shaped slide groove 2301 of the driving plate 23 touches the projecting stud 2310 of the driven plate 231, the driven plate 231 will be hooked and actuated by the driving plate 230 to rotate together with the driving plate 230 synchronously. At this time, the driving plate 230 and the driven plate 231 are overlapped in position and their included angle becomes small, and according to the formula: F (centrifugal force) = m (mass) $\times$ w^2 (angular velocity) $\times$ (radius), the included angle and the centrifugal force are of reverse ratio; therefore, the centrifugal force is increased, and the amplitude of the motor 22 and the standing table 20 becomes high.

[0024] As can be understood from the above description, the amplitude of the standing table 20 and the motor 22 can be changed only by controlling the motor 22 to rotate clockwise or counterclockwise. Thus, by employing a single motor, the body vibration machine of this invention can produce two different-strength amplitudes to be optionally chosen for use in accordance with different body conditions of the users.

[0025] A second preferred embodiment of an amplitude change-over device for a body vibration machine in the present invention, as shown in Fig. 11, has almost the same structure as that described in the first preferred embodiment, except that the driven plate 231 instead of the driving plate 230 is bored with the arc-shaped slide groove 2301, while the driving plate 230 instead of the driven plate 231 is provided with the projecting stud 2310, thus equally enabling the driving plate 230 and the driven plate 231 to be mutually hooked and actuated to rotate together.

[0026] A third preferred embodiment of an amplitude change-over device for a body vibration machine in the present invention, as shown in Figs. 12, 13 and 14, is to have the rotating shaft 221, which has two eccentric units 23 fixed thereon, pivotally inserted and assembled on two support bases 224 located near one side of the motor 22. The driving shaft 223 of the motor 22 and the rotating shaft 221 have their corresponding ends respectively fixed thereon with a gear 225, and a driving belt 226 is connected with the two gears 225 for driving the rotating shaft 221 to rotate together with the driving shaft 223 of the motor synchronously.

[0027] While the preferred embodiments of the invention have been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the scope of the invention.

Claims

1. An amplitude change-over device for a body vibration machine comprising:

a standing table (20) positioned over a base plate (21), said base plate (21) and said standing table (20) fixed therebetween with a plurality of buffer support cylinders (200), a user standing on a topside of said standing table (20);
a motor (22) positioned under said standing table (20) and having its outer casing secured with an underside of said standing table (20), a rotating shaft (221) driven by said motor (22) having its opposite ends respectively fixed thereon with an eccentric unit (23), said rotating shaft (221) rotated eccentrically to actuate both said outer casing of said motor (22) and standing table (20) to produce continuous vibration when said motor (22) is started, said eccentric units (23) fixed on opposite ends of said rotating shaft (221) driven by said motor (22), each of said eccentric unit (23) composed of an eccentric driving plate (230) secured with said rotating

shaft (221) for rotating together and an eccentric driven plate (231) disposed near one side of said driving plate (230), and the size of included angle between said driving plate (230) and said driven plate (231) able to be adjusted for changing the amplitude of said motor (22) when said motor (22) is chosen to rotate clockwise or counterclockwise, thus the amplitude of vibration able to be changed by employing a single motor, **characterized by** said driven plate (231) having its eccentric portion movably fitted on said rotating shaft (221), either one of said driving plate (230) or said driven plate (231) having one surface bored with a slide groove (2301) with said rotating shaft (221) acting as a pivot, and another one having a corresponding end of its surface fixed with a projecting stud (2310) inserted in said slide groove (2301), said motor (22) being a right-handed and left-handed one changeable in rotating directions.

2. The amplitude change-over device for a body vibration machine as claimed in Claim 1, wherein said rotating shaft (221) between said driving plate 230) and said driven plate (231) is fitted thereon with a bush (232) for separating said driving plate (230) from said driven plate (231).

3. The amplitude change-over device for a body vibration machine as claimed in Claim 1, wherein said projecting stud (2310) has its outside fitted with a sound-proof sleeve (2311) and then they are together inserted in said slide groove (2301).

4. The amplitude change-over device for a body vibration machine as claimed in Claim 1, wherein said slide groove (2301) is bored in a surface of said driving plate (230), and said projecting stud (2310) is fixed on a surface of said driven plate (231).

5. The amplitude change-over device for a body vibration machine as claimed in Claim 1, wherein said slide groove (2301) is bored in a surface of said driven plate (231), and said projecting stud (2310) is disposed on an surface of said driving plate (230).

6. The amplitude change-over device for a body vibration machine as claimed in Claim 1 or 4 or 5, wherein said slide groove (2301) is arc-shaped.

7. The amplitude change-over device for a body vibration machine as claimed in Claim 1, wherein said rotating shaft (221) is directly driven by said motor (22).

8. The amplitude change-over device for a body vibration machine as claimed in Claim 1, wherein said rotating shaft (221) is pivotally inserted and assembled on two support bases (224) positioned near one side of said motor (22) and said rotating shaft (221) is driven by a driving shaft (223) of said motor (22) to rotate together with said driving shaft (223) synchronously by means of a transmitting unit.

9. The amplitude change-over device for a body vibration machine as claim in Claim 8, wherein said transmitting unit is composed of two gears (225) respectively fixed on said driving shaft (223) of said motor (22) and on said rotating shaft (221), and a belt (226) connecting said two gears (225) for driving them to rotate synchronously.

Patentansprüche

1. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät, die Folgendes umfasst:

einen Standtisch (20),der über einer Grundplatte (21) angeordnet ist, wobei die Grundplatte (21) und der Standtisch (20) mit mehreren Pufferstützzylindern (200) zwischen denselben befestigt sind, wobei ein Benutzer auf einer Oberseite des Standtischs (20) steht,
einen Motor (22), der unter dem Standtisch (20) angeordnet ist und sein äußeres Gehäuse an einer Unterseite des Standtischs (20) befestigt hat, wobei eine sich drehende Welle (221), die durch den Motor (22) angetrieben wird, ihre entgegengesetzten Enden jeweils mit einer Exzentereinheit (23) daran befestigt hat, wobei die sich drehende Welle (221) exzentrisch gedreht wird, um sowohl das äußere Gehäuse des Motors (22) als auch den Standtisch (20) anzutreiben, um eine kontinuierliche Vibration zu erzeugen, wenn der Motor (22) gestartet wird, wobei die Exzentereinheiten (23) an den entgegengesetzten Enden der durch den Motor (22) angetriebenen sich drehenden Welle (221) befestigt sind, wobei jede Exzentereinheit (23) aus einer exzentrischen Antriebsplatte (230), die an der sich drehenden Welle (221) befestigt ist, um sich gemeinsam zu drehen, und einer exzentrischen Abtriebsplatte (231), die nahe einer Seite der Antriebsplatte (230) angeordnet ist, besteht und die Größe des eingeschlossenen Winkels zwischen der Antriebsplatte (230) und der Abtriebsplatte (231) eingestellt werden kann, um die Amplitude des Motors (22) zu verändern, wenn gewählt wird, dass sich der Motor (22) im Uhrzeigersinn oder gegen den Uhrzeigersinn dreht, folglich die Vibrationsamplitude durch den Einsatz eines einzelnen Motors verändert werden kann, **dadurch gekennzeichnet, dass** der exzentrische Abschnitt der Abtriebsplatte (231) beweglich an der sich drehenden Welle (221)

befestigt ist, eine der Komponenten Antriebsplatte (230) oder Abtriebsplatte (231) eine Oberfläche hat, die mit einer Gleitrille (2301) gebohrt ist, wobei die sich drehende Welle (221) als Drehpunkt wirkt, und eine andere an einem entsprechenden Ende ihrer Oberfläche mit einem vorspringenden Zapfen (2310) versehen ist, der in die Gleitrille (2301) eingesetzt wird, wobei der Motor (22) ein rechtslaufender und ein linkslaufender ist, der in den Drehrichtungen verändert werden kann.

2. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1, wobei die sich drehende Welle (221) zwischen der Antriebsplatte (230) und der Abtriebsplatte (231) mit einer Buchse (232) an derselben versehen ist, um die Antriebsplatte (230) von der Abtriebsplatte (231) zu trennen.

3. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1, wobei der vorspringende Zapfen (2310) an seiner Außenseite mit einer schalldichten Muffe (2311) versehen ist und sie dann zusammen in die Gleitrille (2301) eingesetzt sind.

4. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1, wobei die Gleitrille (2301) in einer Oberfläche der Antriebsplatte (230) gebohrt ist und der vorspringende Zapfen (2310) an einer Oberfläche der Abtriebsplatte (231) befestigt ist.

5. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1, wobei die Gleitrille (2301) in einer Oberfläche der Abtriebsplatte (231) gebohrt ist und der vorspringende Zapfen (2310) an einer Oberfläche der Antriebsplatte (230) angeordnet ist.

6. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1 oder 4 oder 5, wobei die Gleitrille (2301) bogenförmig ist.

7. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1, wobei die sich drehende Welle (221) unmittelbar durch den Motor (22) angetrieben wird.

8. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 1, wobei die sich drehende Welle (221) an zwei Stützbasen (224), die nahe einer Seite des Motors (22) angeordnet sind, schwenkbar eingesetzt und montiert ist und die sich drehende Welle (221) durch eine Antriebswelle (223) des Motors (22) angetrieben wird, um sich mit Hilfe einer Übertragungseinheit gemeinsam mit der Antriebswelle (223) des Motors (22) synchron zu drehen.

9. Vorrichtung zum Umstellen der Amplitude für ein Körpervibrationsgerät nach Anspruch 8, wobei die Übertragungseinheit aus zwei Zahnrädern (225) besteht, die jeweils an der Antriebswelle (223) des Motors (22) und an der sich drehenden Welle (221) befestigt sind, und einem Riemen (226), der die zwei Zahnräder (225) verbindet, um sie anzutreiben, damit sie sich synchron drehen.

Revendications

1. Dispositif de changement d'amplitude pour machine de vibration corporelle comprenant :

une plate-forme (20) positionnée au-dessus d'un socle (21), ledit socle (21) et ladite plate-forme (20) étant fixés entre eux avec une pluralité de cylindres de support amortisseurs (200), un utilisateur se tenant debout sur une face supérieure de ladite plate-forme (20) ;
un moteur (22) positionné sous ladite plate-forme (20) et dont le carter extérieur est solidaire d'une face inférieure de ladite plate-forme (20), un arbre rotatif (221) entraîné par ledit moteur (22) et dont les extrémités opposées sont fixées respectivement sur celui-ci avec une unité excentrique (23), ledit arbre rotatif (221) étant mis en rotation de façon excentrique pour actionner à la fois ledit carter extérieur du moteur (22) et ladite plate-forme (20) pour produire une vibration continue quand ledit moteur (22) est mis en marche, lesdites unités excentriques (23) étant fixées sur des extrémités opposées de l'arbre rotatif (221) entraîné par ledit moteur (22), chacune desdites unités excentriques (23) étant composée d'une plaquette d'entraînement excentrique (230) solidaire dudit arbre rotatif (221) pour tourner avec celui-ci et d'une plaquette entraînée excentrique (231) disposée près d'un côté de ladite plaquette d'entraînement (230), et la taille de l'angle inclus entre ladite plaquette d'entraînement (230) et ladite plaquette entraînée (231) peut être réglée pour changer l'amplitude du moteur (22) quand on choisit de faire tourner ledit moteur (22) dans le sens horaire ou dans le sens anti-horaire, ainsi l'amplitude de vibration peut être changée en employant un seul moteur, **caractérisé en ce que** la partie excentrique de ladite plaquette entraînée (231) est montée de façon mobile sur ledit arbre rotatif (221), l'une ou l'autre desdites plaquette d'entraînement (230) et plaquette entraînée (231) ayant une surface dans laquelle a été percée une rainure de glissement (2301) où ledit arbre

rotatif (221) agit comme un pivot, et l'autre ayant une surface à une extrémité correspondante de laquelle est fixé un goujon saillant (2310) inséré dans ladite rainure de glissement (2301), ledit moteur (22) étant un moteur tournant à droite ou à gauche dont la direction de rotation peut être changée.

2. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, dans lequel ledit arbre rotatif (221) entre ladite plaquette d'entraînement (230) et ladite plaquette entraînée (231) est muni d'une douille (232) montée dessus pour séparer ladite plaquette d'entraînement (230) de ladite plaquette entraînée (231).

3. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, dans lequel l'extérieur dudit goujon saillant (2310) est revêtu d'un manchon silencieux (2311) et l'ensemble ainsi formé est inséré dans ladite rainure de glissement (2301).

4. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, dans lequel ladite rainure de glissement (2301) est pratiquée dans une surface de ladite plaquette d'entraînement (230), et ledit goujon saillant (2310) est fixé sur une surface de ladite plaquette entraînée (231).

5. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, dans lequel ladite rainure de glissement (2301) est pratiquée dans une surface de ladite plaquette entraînée (231), et ledit goujon saillant (2310) est disposé sur une surface de ladite plaquette d'entraînement (230).

6. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, 4 ou 5, dans lequel ladite rainure de glissement (2301) est en forme d'arc.

7. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, dans lequel ledit arbre rotatif (221) est directement entraîné par ledit moteur (22).

8. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 1, dans lequel ledit arbre rotatif (221) est inséré et assemblé de façon pivotante sur deux bases de support (224) positionnées près d'un côté dudit moteur (22) et ledit arbre rotatif (221) est entraîné par un arbre d'entraînement (223) dudit moteur (22) pour tourner en même temps que ledit arbre d'entraînement (223) de façon synchrone au moyen d'une unité de transmission.

9. Dispositif de changement d'amplitude pour machine de vibration corporelle selon la revendication 8, dans lequel ladite unité de transmission est composée de deux roues dentées (225) fixées respectivement sur ledit arbre d'entraînement (223) dudit moteur (22) et sur ledit arbre rotatif (221), et d'une courroie (226) reliant lesdites deux roues dentées (225) pour les entraîner en rotation synchronisée.

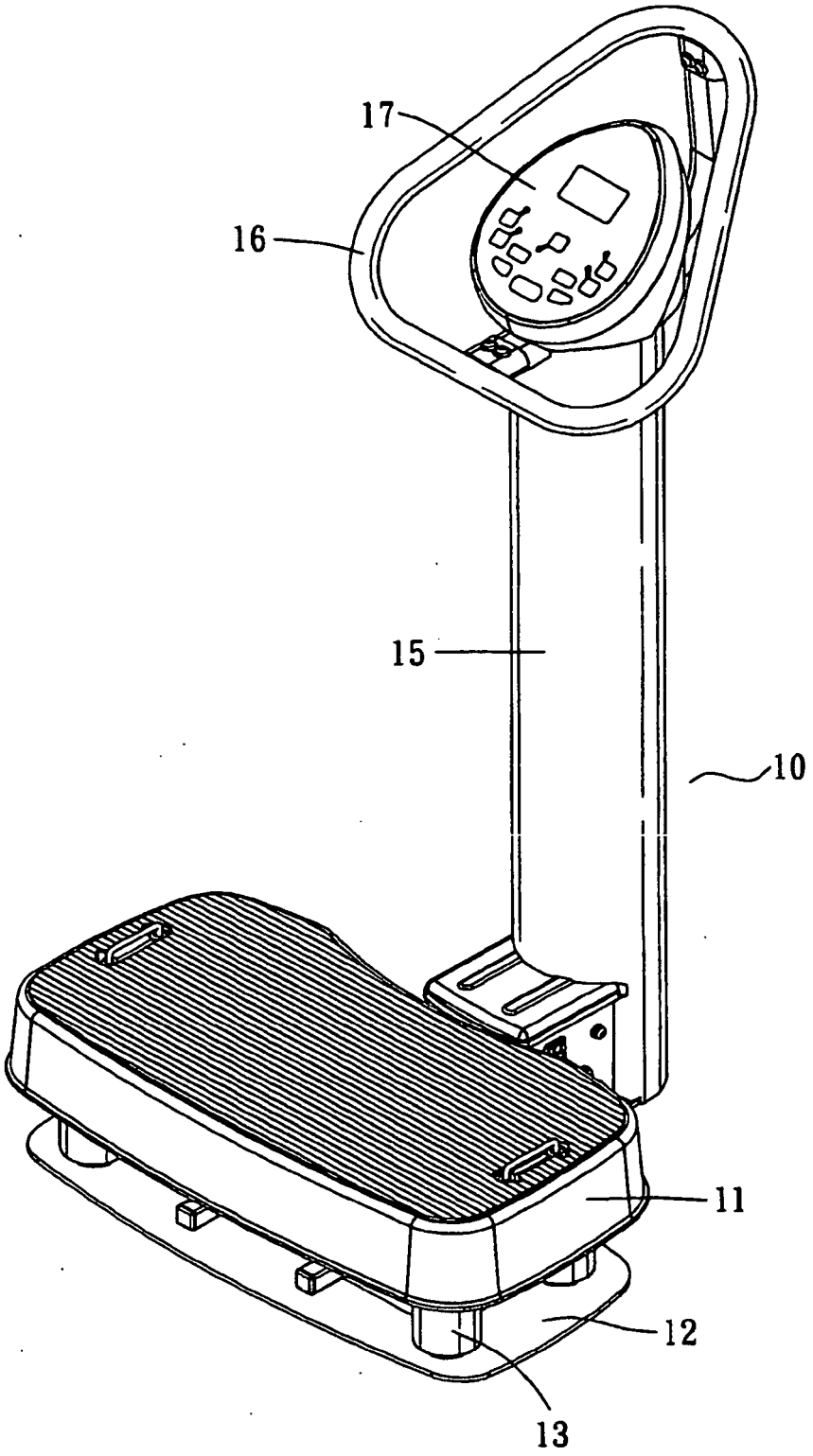

FIG. 1 (PRIOR ART)

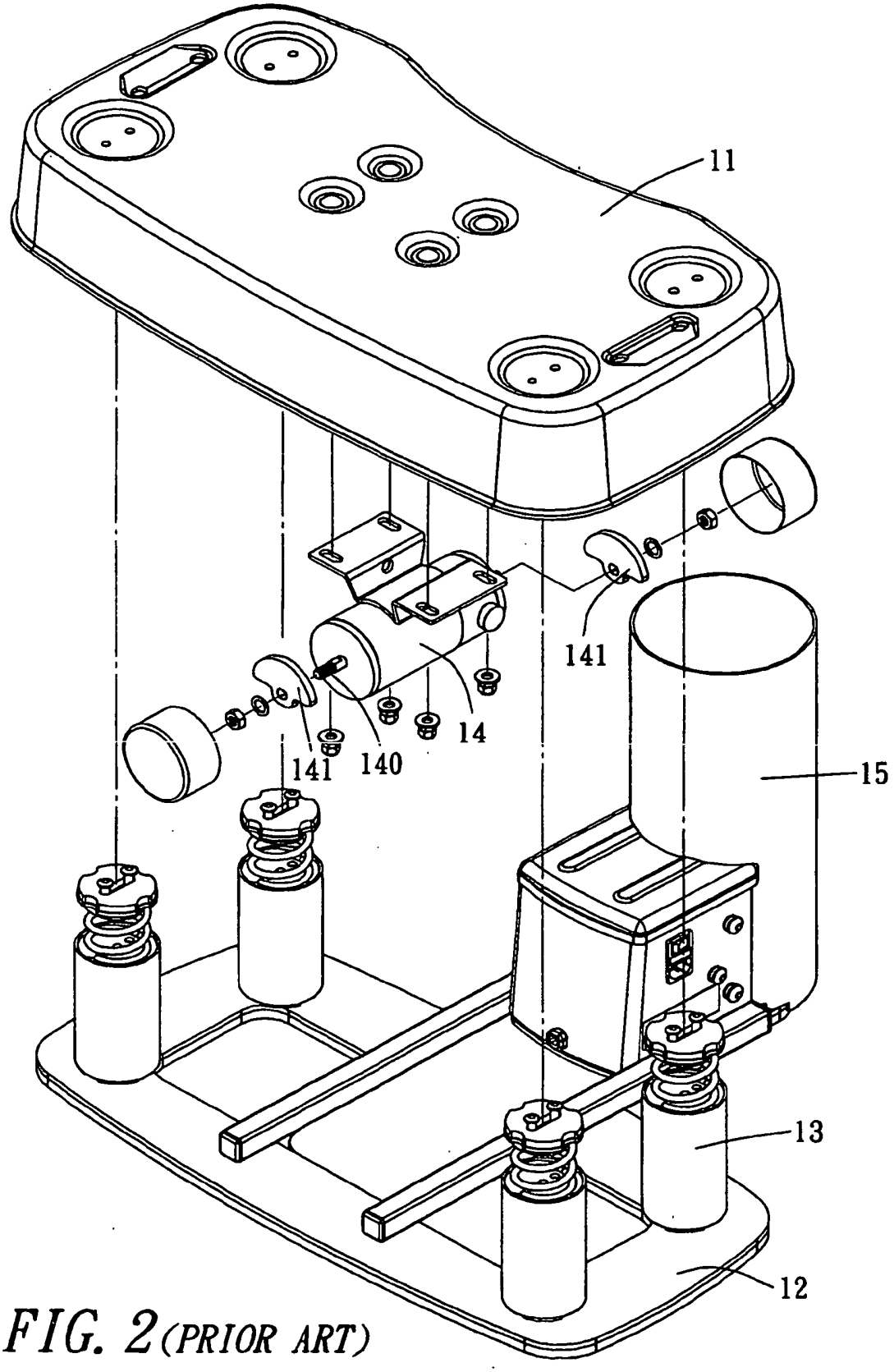

FIG. 2 (PRIOR ART)

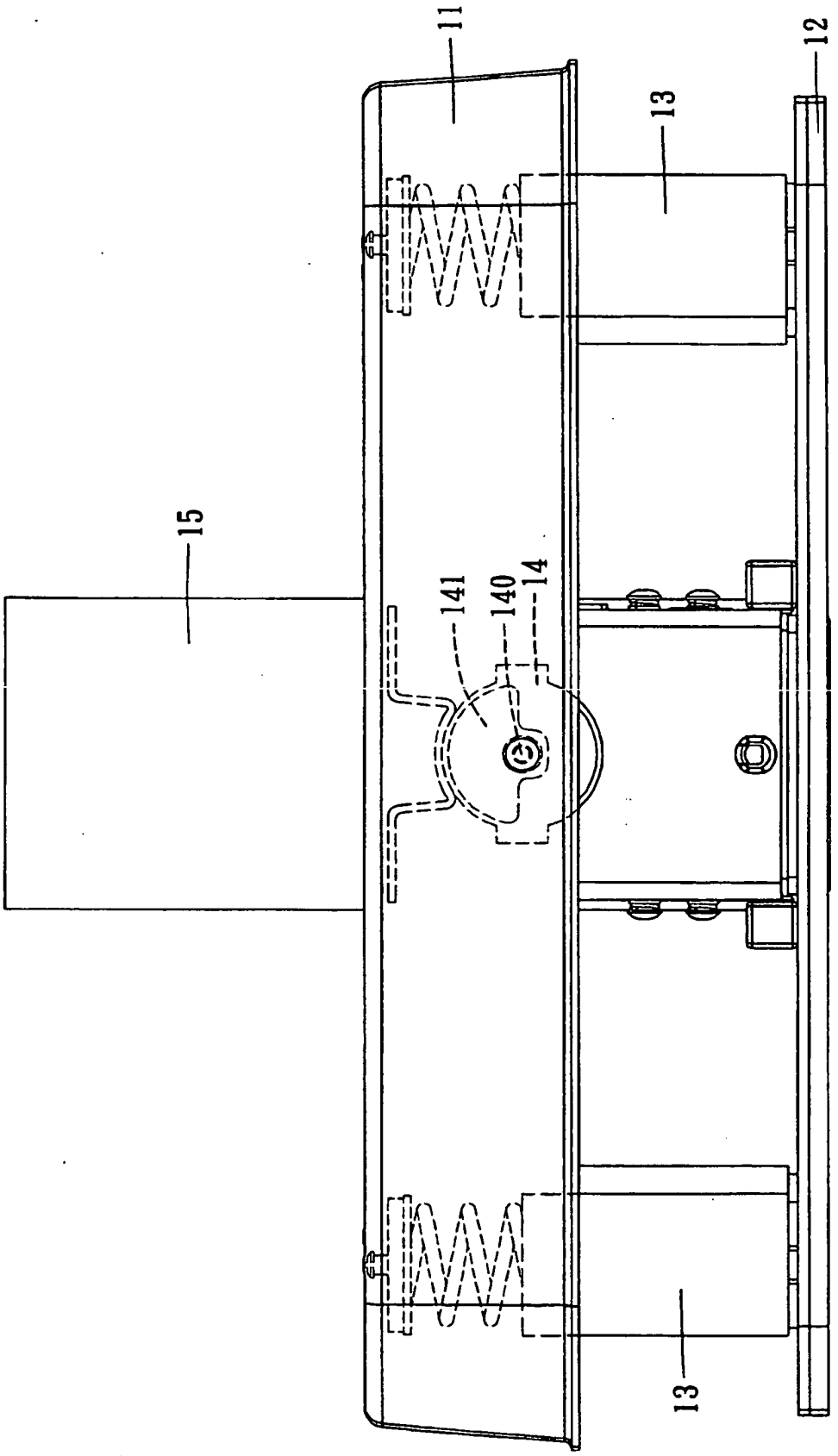

FIG. 3 (PRIOR ART)

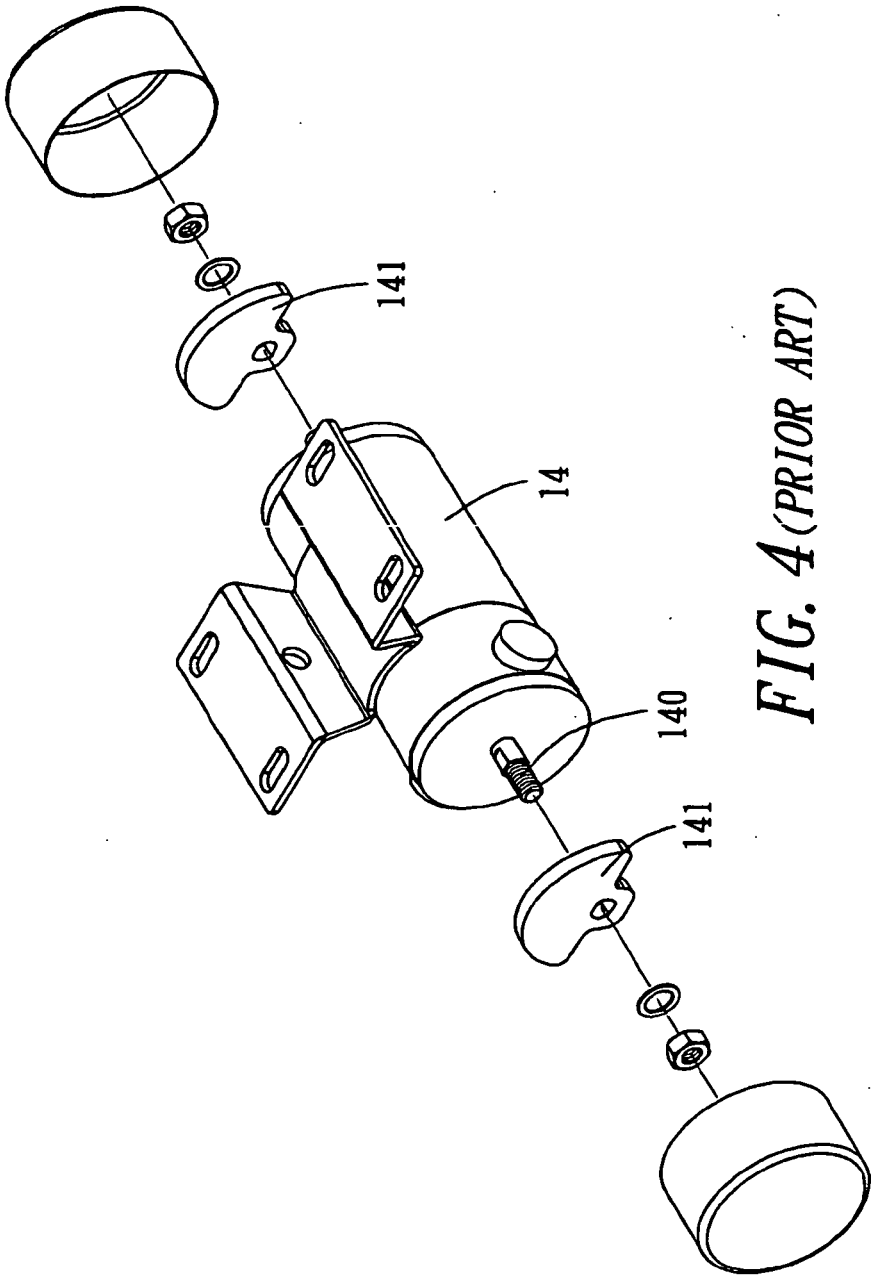

FIG. 4 (PRIOR ART)

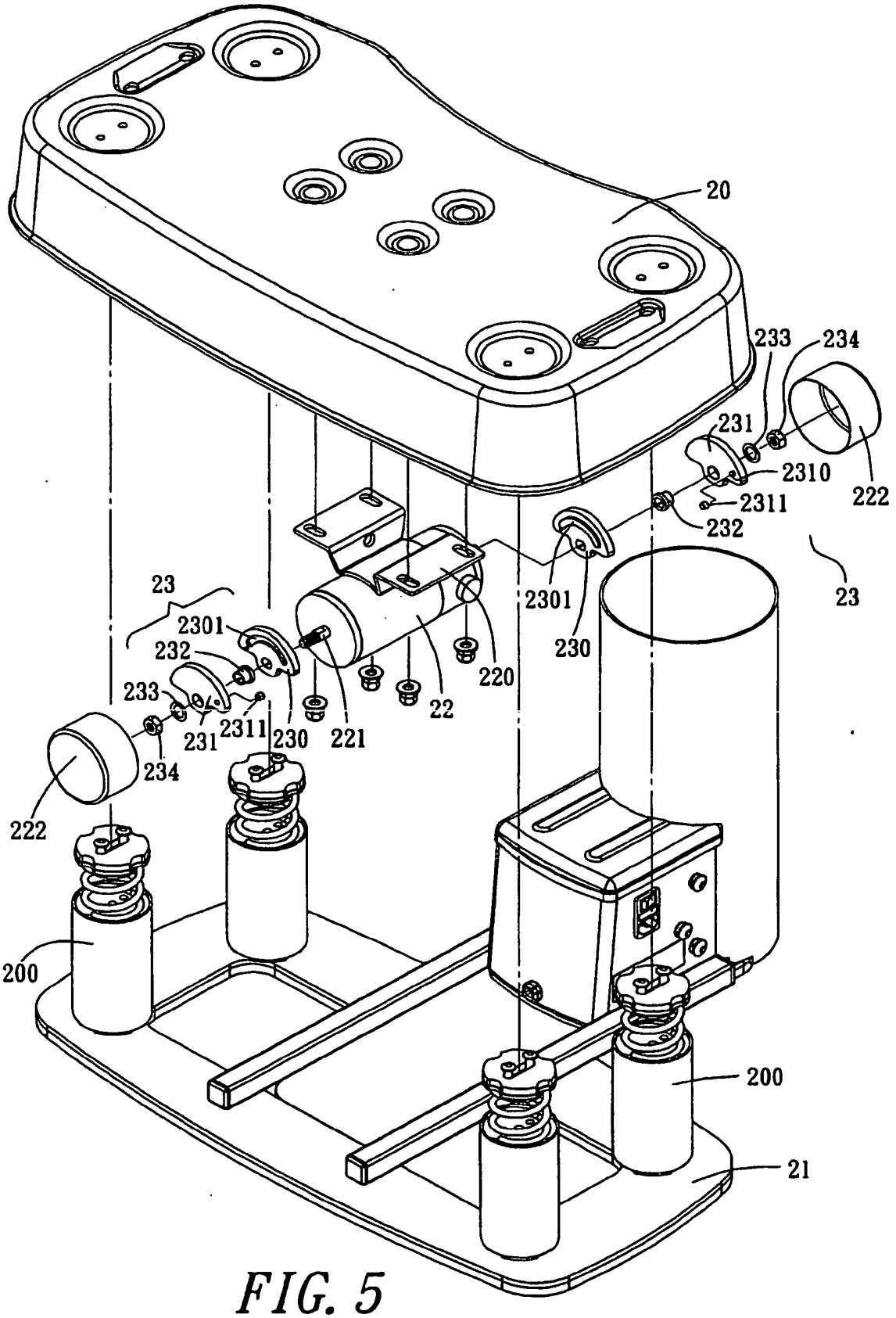
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FIG. 5

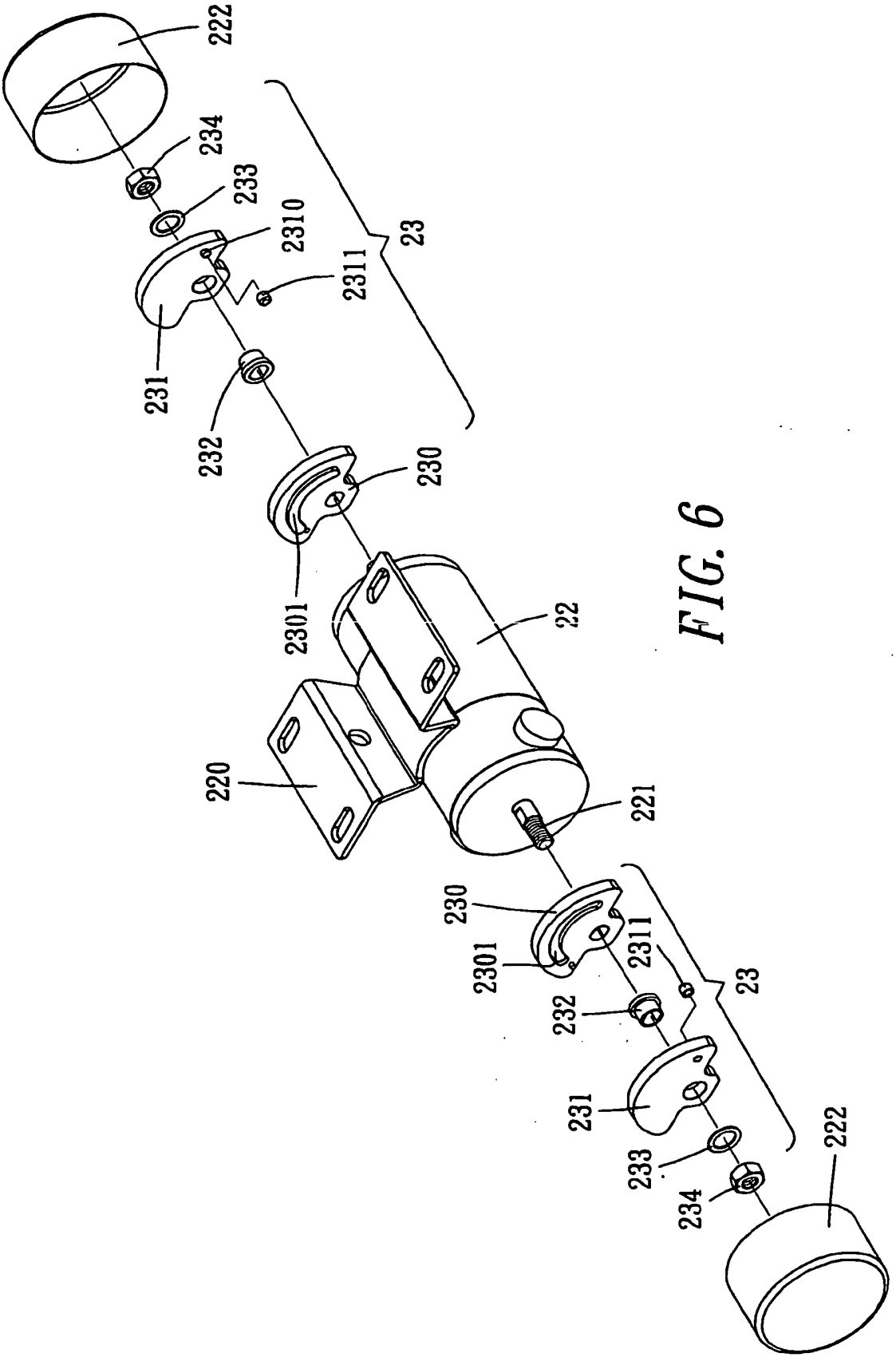
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FIG. 6

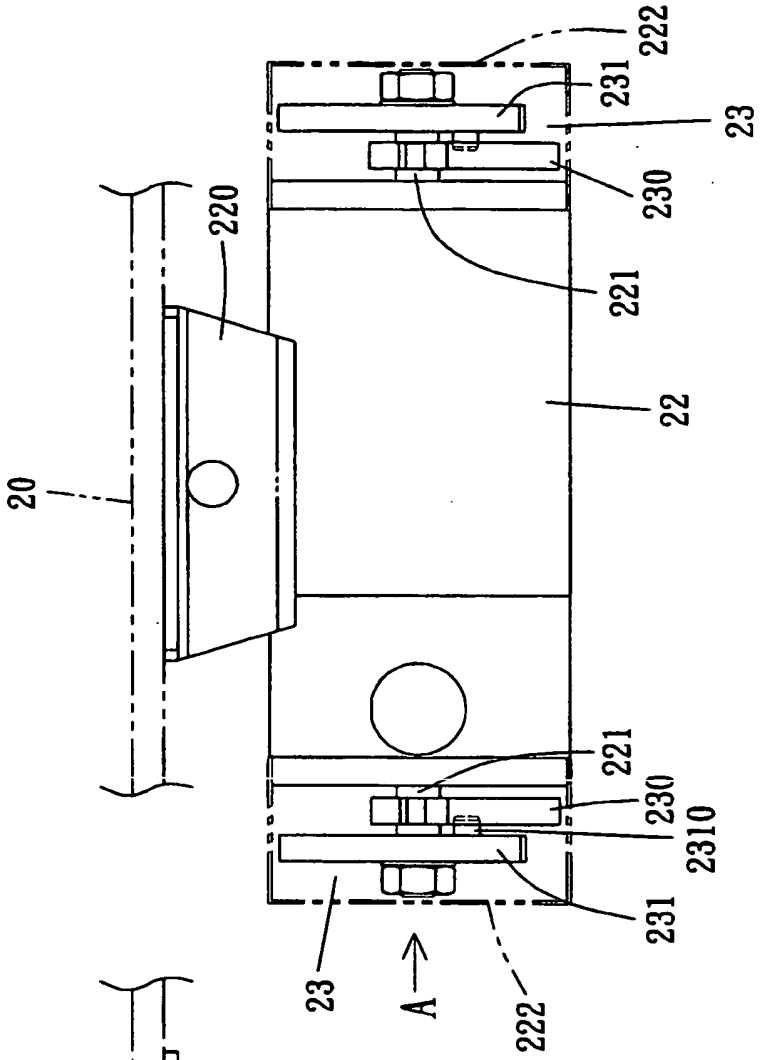
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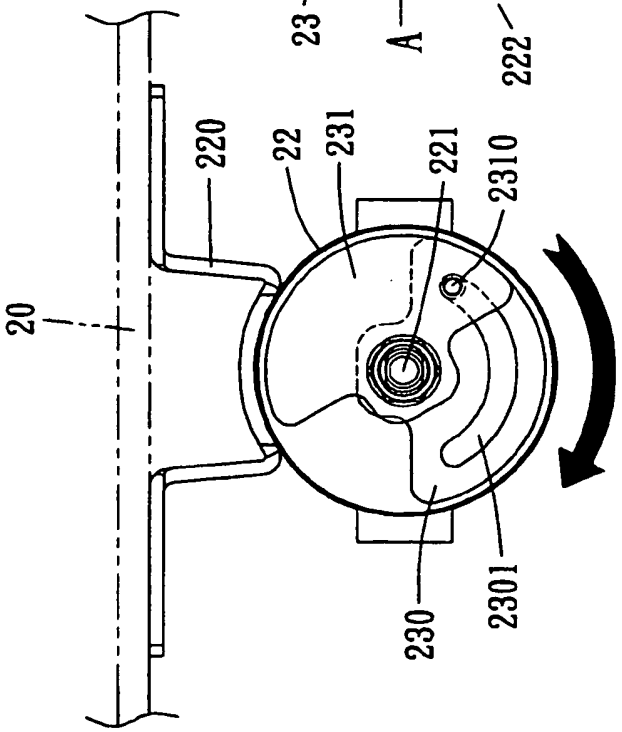
FIG. 7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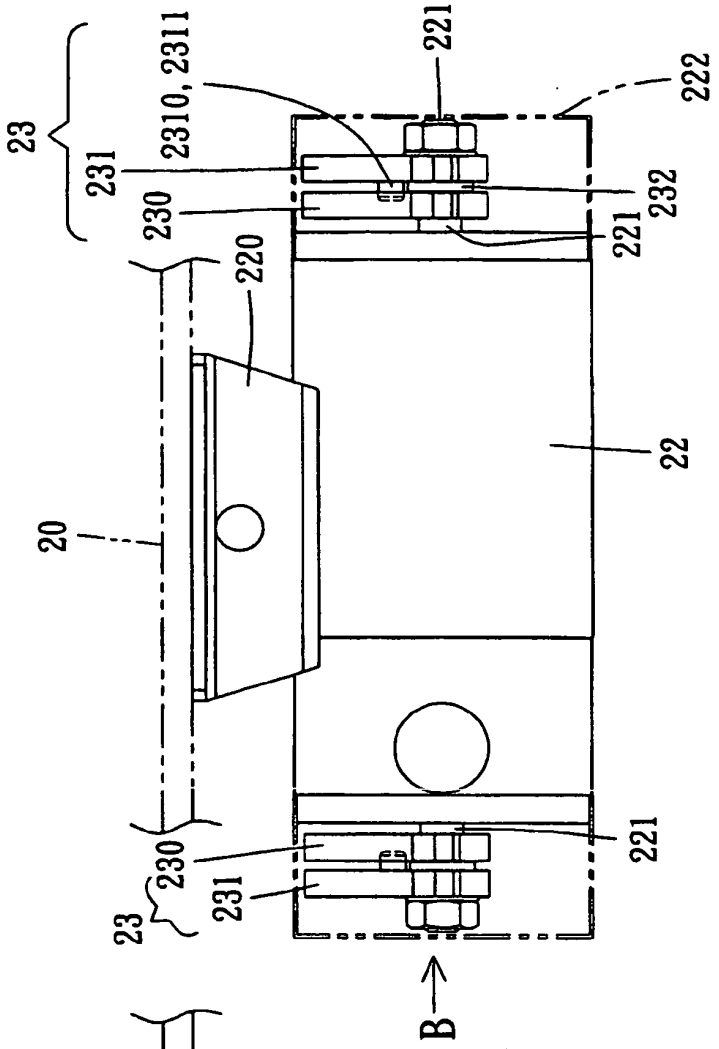
(A)

FIG. 8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23
221
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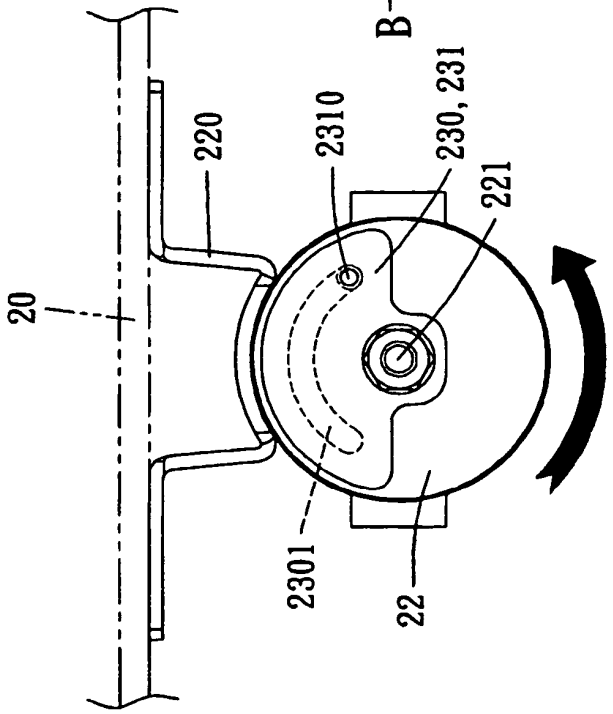
FIG. 9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230, 231
221
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(B)

FIG. 10

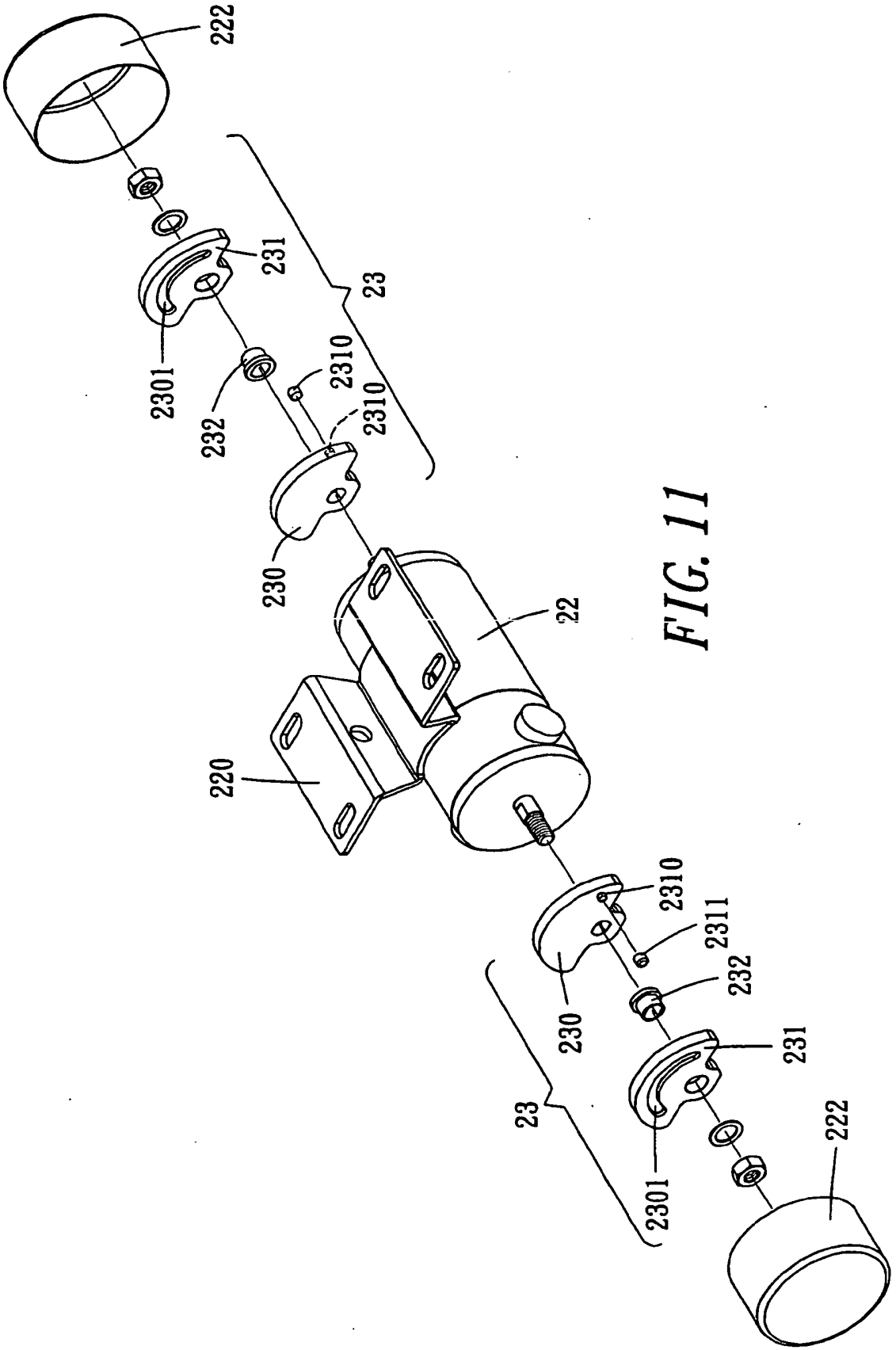
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FIG. 11

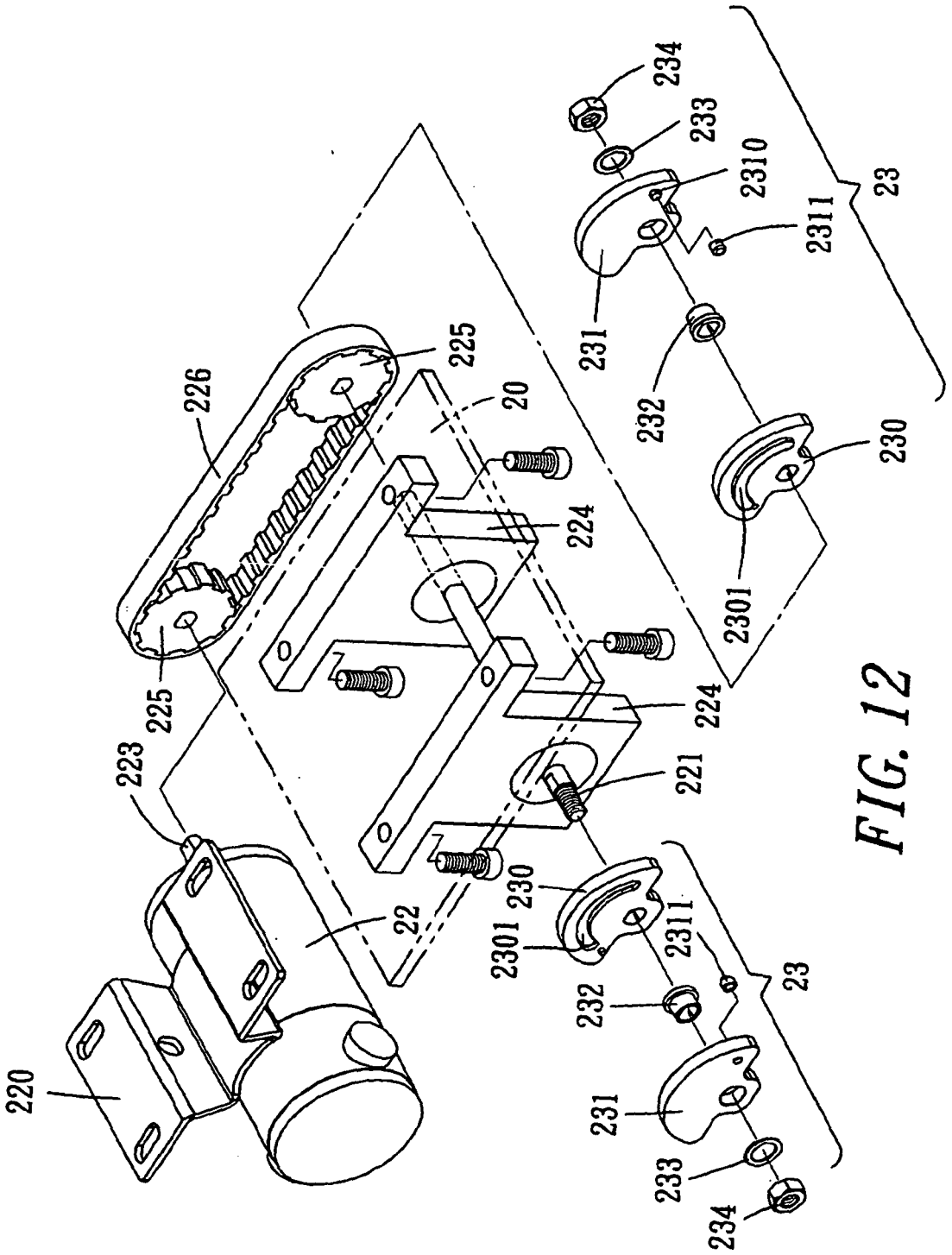
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FIG. 12

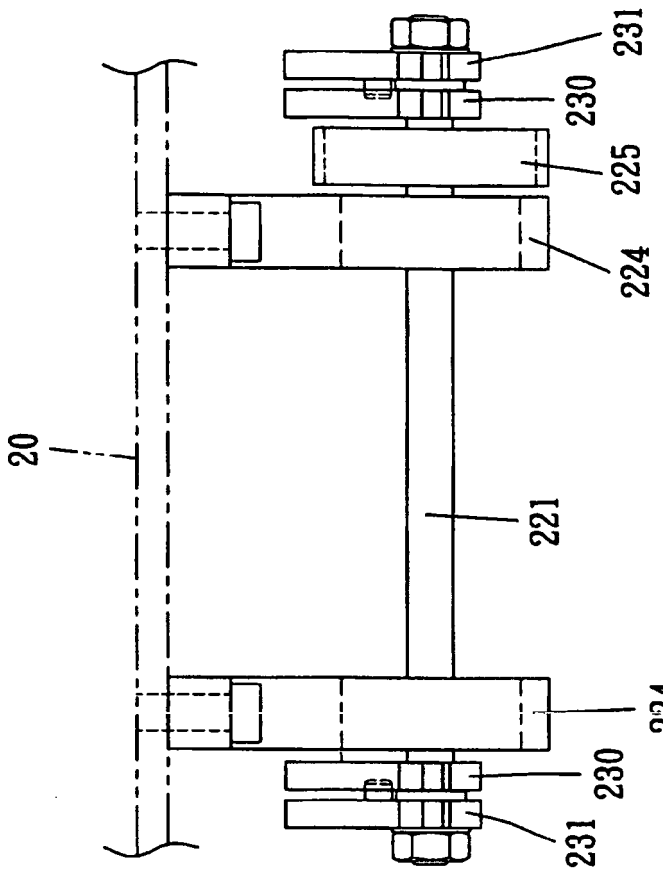

FIG. 13

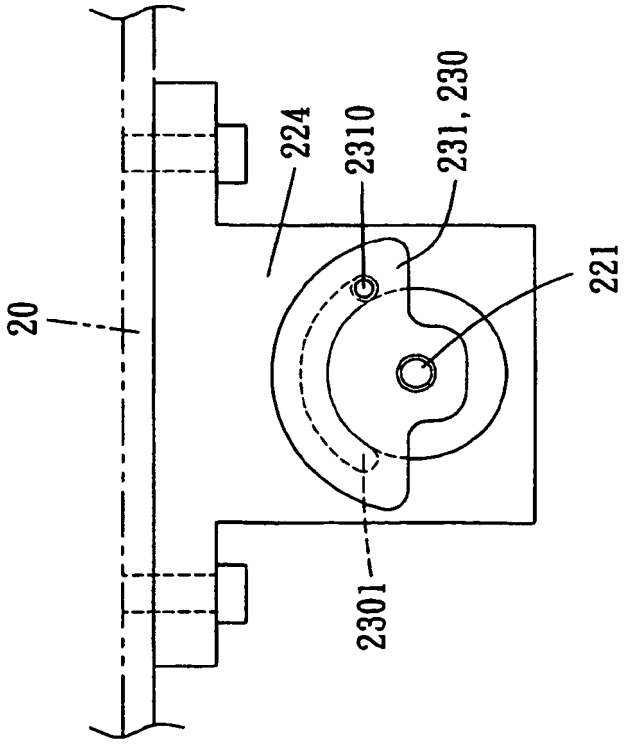

FIG. 14

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1813245 A **[0002] [0003]**