



(11)

EP 4 772 076 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
08.07.2026 Bulletin 2026/28

(51) International Patent Classification (IPC):
A47D 13/10^(2006.01) A47D 9/02^(2006.01)

(21) Application number: **24870608.7**

(52) Cooperative Patent Classification (CPC):
A47D 9/02; A47D 13/10

(22) Date of filing: **20.09.2024**

(86) International application number:
PCT/CN2024/120052

(87) International publication number:
WO 2025/067064 (03.04.2025 Gazette 2025/14)

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(71) Applicant: **ZHONGSHAN CITY TONGYIN BABY CO., LTD.**
Guangdong 528400 (CN)

(72) Inventors:
• **LIU, Shangcheng**
Zhongshan, Guangdong 528400 (CN)
• **LIU, Weibing**
Zhongshan, Guangdong 528400 (CN)

(30) Priority: **28.09.2023 CN 202322672185 U**
28.09.2023 CN 202311280935
26.08.2024 CN 202411182364
26.08.2024 CN 202422082469 U

(74) Representative: **Petraz, Gilberto Luigi et al**
GLP S.r.l.
Viale Europa Unità, 171
33100 Udine (IT)

(54) **INFANT ROCKING DEVICE**

(57) The present invention discloses an infant rocking device, including a support base, a seat body, a drive mechanism, and a connecting mechanism, wherein the connecting mechanism is arranged between the seat body and the support base and configured to limit a movement trajectory of the seat body, the drive mechanism is arranged on the support base, and the seat body is configured to be driven by the drive mechanism to perform circular motion relative to the support base on a vertical plane or an inclined plane. The infant rocking device provided by the present invention has a large movement trajectory, a simple structure, low production costs, and provides better entertainment and user experience.

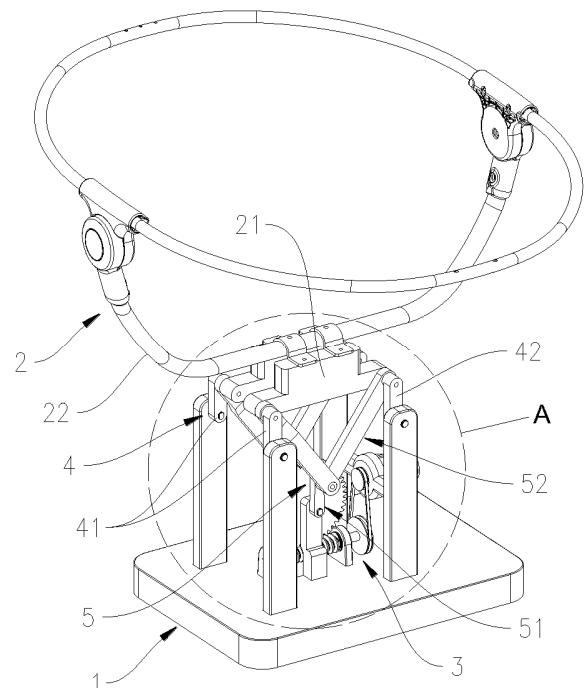


FIG. 1

EP 4 772 076 A1

Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of children's products, and in particular, to an infant rocking device.

BACKGROUND

[0002] For many years, parents have frequently used infant care equipment such as infant cradles or rockers to hold, soothe, and amuse infants. Existing infant care equipment generally has a repetitive swinging structure, that is, a seat surface is driven to swing left-right or back-and-forth repeatedly via a swing arm. Influenced by the swing arm, although its horizontal movement range is sufficient, it may only move slightly up and down relative to the ground, the height lift and drop are extremely limited, and a jerky sensation is prone to occur at the left-right or back-and-forth limit positions, resulting in insufficient user experience and poor entertainment.

[0003] In the prior art, some infant care equipment with multi-drive structures have also appeared, which may achieve horizontal movement and lifting movement with relatively large movement trajectories. For example, Chinese Patent No. CN200980138791.1 discloses an infant care apparatus, which combines a horizontal reciprocating motion assembly and a vertical reciprocating motion assembly, specifically using two sets of motors and two sets of crank transmission mechanisms, and coordinating horizontal movement and vertical movement through a controller, thereby obtaining multiple visually distinct movement trajectories. Similarly, a jerky sensation is also prone to occur at the movement limit positions in different directions. Moreover, its structure is extremely complex, consumes a large amount of material, and has high production and maintenance costs.

[0004] For another example, Chinese Patent No. CN201310086301.6 discloses an infant swinging device. A drive mechanism drives a seat support portion to swing left and right repeatedly via a double swing arm, and may also drive a housing via a lifting mechanism to cause the drive mechanism and the seat support portion to move up and down, which is also a multi-drive structure. Herein, the drive mechanism drives the swinging motion according to an adjustable frequency, and the swinging motion driven by the drive mechanism may be combined with the vertical movement of the housing to generate multiple programmable different motion modes on a vertical plane, such as a "rainbow-shaped" motion mode, a horizontal or inclined sliding mode, a "circular" motion mode, and a "bouncing" motion mode. Similarly, a jerky sensation is also prone to occur at the movement limit positions in different directions. Moreover, its structure is extremely complex, consumes a large amount of material, and has high production and maintenance costs. Meanwhile, the frequency of its swinging motion is directly affected by the

length of the swing arm. If a comfortable swinging frequency is to be achieved, a swing arm with a relatively long length needs to be provided, which will cause the overall height of the infant swinging device to be relatively high, and is also not conducive to split packaging and transportation, and will also affect its aesthetics.

SUMMARY

[0005] In order to overcome at least one of the defects of the aforementioned prior art, the present invention provides an infant rocking device, which has a large movement trajectory, a simple structure, low production costs, and better entertainment and user experience.

[0006] The technical solution adopted by the present invention to solve the problems thereof is:

[0007] An infant rocking device includes a support base, a seat body, a drive mechanism, and a connecting mechanism, where

[0008] the connecting mechanism is arranged between the seat body and the support base and configured to limit a movement trajectory of the seat body, the drive mechanism is arranged on the support base, and the seat body is configured to be driven by the drive mechanism to perform circular motion relative to the support base on a vertical plane or an inclined plane.

[0009] In the above solution, the connecting mechanism is arranged between the seat body and the support base, and the movement trajectory of the seat body is limited by the connecting mechanism. Under the driving action of the drive mechanism, the seat body is capable of performing circular motion relative to the support base on a vertical plane or an inclined plane. Compared with the existing repetitive swinging structure, the seat body of the infant rocking device has a greater lifting height and provides better entertainment. Compared with the existing multi-drive structure, it has a relatively simple structure, consumes less material, and has lower production and maintenance costs. On the other hand, by utilizing the characteristic of performing synchronized circular motion, the horizontal movement speed and the lifting movement speed of the seat body alternate with each other, and the overall movement is smooth without a jerky sensation, thereby achieving a riding experience that cannot be achieved in the prior art.

[0010] Further, the connecting mechanism includes a first connecting rod and a second connecting rod. The first connecting rod and the second connecting rod are pivotally connected between the seat body and the support base, respectively, thereby achieving limitation on the movement trajectory of the seat body.

[0011] Further, a distance between two pivoting axes of the first connecting rod is equal to a distance between two pivoting axes of the second connecting rod. A distance between a pivoting axis between the first connecting rod and the seat body and a pivoting axis between the second connecting rod and the seat body is equal to a distance between a pivoting axis between the first connecting rod

and the support base and a pivoting axis between the second connecting rod and the support base, so as to ensure that the seat body maintains a constant orientation angle of its riding surface during the circular motion.

[0012] Further, the seat body includes a mounting base and a seat frame that are connected. The mounting base supports the seat frame. The first connecting rod and the second connecting rod are pivotally connected to the mounting base, respectively.

[0013] Further, two sets of the connecting mechanism are provided and are oppositely arranged on two opposite outer sides of the mounting base. A plurality of first connecting posts are provided on the support base. The plurality of first connecting posts are divided into two groups and oppositely arranged. The two first connecting rods and the two second connecting rods are pivotally connected to inner sides of different first connecting posts correspondingly. The mounting base is movable within an accommodation space enclosed by the plurality of first connecting posts when the drive mechanism drives the seat body to perform circular motion. In this way, interference between structures is avoided, stability during movement is improved, and unilateral force-induced downward torsion is prevented. Moreover, the space between the first connecting posts is fully utilized, which is conducive to reducing the overall height of the product, thereby achieving a better comprehensive effect.

[0014] Further, a height of the mounting base is greater than the distance between the two pivoting axes of the first connecting rod; and/or, the height of the mounting base is greater than the distance between the two pivoting axes of the second connecting rod.

[0015] Further, the seat frame is detachably connected above the mounting base, so as to facilitate split packaging and transportation.

[0016] Further, the infant rocking device further includes a transmission mechanism, wherein the transmission mechanism includes an eccentric rotating portion and a connecting portion, the eccentric rotating portion is rotatably arranged relative to the support base about a first pivot axis, the drive mechanism drives the eccentric rotating portion to rotate, the connecting portion is connected to the seat body or the connecting mechanism, and the connecting portion is pivotally connected to the eccentric rotating portion about a second pivot axis; a distance between the first pivot axis and the second pivot axis is equal to the distance between the two pivoting axes of the first connecting rod, and is also equal to the distance between the two pivoting axes of the second connecting rod. Thus, the drive mechanism only needs to continuously output power to the eccentric rotating portion in one direction, that is, its performance requirements for the motor are not high, and an ordinary motor may be directly used. It is also unnecessary to use a more expensive programmable control chip, resulting in lower overall costs.

[0017] Further, the connecting portion includes a third connecting rod and a fourth connecting rod. The third

connecting rod and the fourth connecting rod are arranged at an included angle. A first end of the third connecting rod and a first end of the fourth connecting rod are both pivotally connected to the eccentric rotating portion about a second pivot axis. A second end of the third connecting rod is connected to the seat body or the first connecting rod. A second end of the fourth connecting rod is connected to the seat body or the second connecting rod. In this way, the overall support strength of the connecting portion is enhanced.

[0018] Further, the second end of the third connecting rod and the first connecting rod of the connecting mechanism are pivotally connected to the seat body about a third pivot axis. The second end of the fourth connecting rod and the second connecting rod of the connecting mechanism are pivotally connected to the seat body about a fourth pivot axis. In this way, the installation structure of each connecting rod is simplified, some pivot shafts are saved, and the transmission of driving force is facilitated, making its motion smoother.

[0019] Further, the drive mechanism includes a motor, a worm, and a worm gear. The motor is drivingly connected to the worm, and the worm gear meshes with the worm. The eccentric rotating portion includes a rotating rod. A first end of the rotating rod is fixedly connected to a rotating shaft of the worm gear, and a second end of the rotating rod is pivotally connected to the connecting portion.

[0020] Further, two sets of the transmission mechanism are provided and are oppositely arranged on two opposite sides of the worm gear. The first ends of the two rotating rods are fixedly connected to two ends of the rotating shaft of the worm gear, respectively.

[0021] Further, the drive mechanism further includes a first roller, a second roller, and a belt. The first roller is mounted on an output shaft of the motor. The second roller is mounted on a rotating shaft of the worm. The belt is wound around the first roller and the second roller. A diameter of the first roller is smaller than a diameter of the second roller.

[0022] Further, the drive mechanism includes a first drive mechanism and a second drive mechanism. The first connecting rod is configured to be driven by the first drive mechanism to perform circular motion relative to the support base. The second connecting rod is configured to be driven by the second drive mechanism to perform circular motion relative to the support base.

[0023] Further, the infant rocking device further includes a transmission mechanism. The transmission mechanism includes a first transmission assembly and a second transmission assembly. The drive mechanism drives the first transmission assembly to operate and drives the second transmission assembly to operate. The first transmission assembly is connected to the first connecting rod and drives the first connecting rod to perform circular motion. The second transmission assembly is connected to the second connecting rod and drives the second connecting rod to perform circular

motion.

[0024] Further, one set of the connecting mechanism is provided. The first connecting rod and the second connecting rod are diagonally and oppositely arranged on two opposite sides of the mounting base.

[0025] Further, one worm gear is provided. Two sets of the transmission mechanism are provided and are oppositely arranged on two opposite sides of the worm gear. The rotating rods of the two transmission mechanisms are fixedly connected to the two ends of the rotating shaft of the worm gear, respectively.

[0026] Further, two worm gears are provided. The two worm gears are arranged at intervals along an axial direction of the worm. Two sets of the transmission mechanism are provided and are oppositely arranged on two opposite sides of the two worm gears. Rotating rods of different transmission mechanisms are fixedly connected to rotating shafts of different worm gears, respectively.

[0027] Further, two worm gears are provided. The two worm gears are arranged at intervals along an axial direction of the worm. Four sets of the transmission mechanism are provided and are arranged in two pairs. First ends of rotating rods of every two sets of the transmission mechanism are fixedly connected to two ends of a rotating shaft of a corresponding worm gear, respectively.

[0028] Further, the connecting portion includes a third connecting rod. A first end of the third connecting rod is pivotally connected to the second end of the rotating rod. A second end of the third connecting rod and the first connecting rod of the connecting mechanism are pivotally connected to the seat body about a third pivot axis, or the second end of the third connecting rod and the second connecting rod of the connecting mechanism are pivotally connected to the seat body about a fourth pivot axis.

[0029] Further, the drive mechanism includes a motor, a worm, and a worm gear. The motor is drivingly connected to the worm, and the worm gear meshes with the worm. The infant rocking device further includes a rotating rod. A first end of the rotating rod is fixedly connected to a rotating shaft of the worm gear, and a second end of the rotating rod is pivotally connected to the seat body.

[0030] Further, the seat body includes a swing member, a mounting base, and a seat frame that are connected. The swing member supports the mounting base, and the mounting base supports the seat frame. The swing member includes a first part and a second part. The second part is connected to the first part, and the second part is configured to be connected to the mounting base. The first connecting rod, the second connecting rod, and the rotating rod are all pivotally connected to the first part.

[0031] Further, the first part at least includes a first segment, a second segment, and a third segment. The first segment, the second segment, and the third segment are integrally formed and are located in a same

plane. The first connecting rod is pivotally connected to the first segment or is pivotally connected to a connection portion between the first segment and the third segment. The second connecting rod is pivotally connected to the third segment or is pivotally connected to a connection portion between the second segment and the third segment. The rotating rod is pivotally connected to the second segment or is pivotally connected to a connection portion between the first segment and the second segment.

[0032] Further, one worm gear is provided. Two rotating rods are provided. Two swing members are provided. Two sets of the connecting mechanism are provided. The two rotating rods are fixedly connected to two ends of a rotating shaft of the worm gear, respectively. One rotating rod, one swing member, and one set of the connecting mechanism are arranged in a one-to-one correspondence.

[0033] Further, the infant rocking device further includes an auxiliary spring configured to provide an upward auxiliary force. One end of the auxiliary spring is connected to the swing member, and the other end of the auxiliary spring is connected to the support base.

[0034] Further, at least two fifth connecting posts are provided on the support base. At least two auxiliary springs are provided. The two auxiliary springs are arranged opposite to each other in an inverted V-shape. One end of each of the two auxiliary springs is connected to the swing member, and the other end of each of the two auxiliary springs is connected to a different one of the fifth connecting posts.

[0035] Further, the drive mechanism includes a motor, a worm, and two worm gears. The motor is drivingly connected to the worm. The two worm gears are arranged at intervals along an axial direction of the worm and mesh with the worm, respectively. A first end of the first connecting rod is fixedly connected to a rotating shaft of one of the worm gears. A second end of the first connecting rod is pivotally connected to the seat body. A first end of the second connecting rod is fixedly connected to a rotating shaft of the other one of the worm gears. A second end of the second connecting rod is pivotally connected to the seat body.

[0036] Further, the seat body includes a mounting base and a seat frame that are connected, the mounting base supports the seat frame, the mounting base includes two connecting frames, two sets of the connecting mechanism are provided, one connecting frame and one set of the connecting mechanism are arranged in a one-to-one correspondence, first ends of the two first connecting rods are fixedly connected to two ends of a rotating shaft of the one of the worm gears, respectively, second ends of the two first connecting rods are pivotally connected to the different connecting frames, respectively, first ends of the two second connecting rods are fixedly connected to two ends of a rotating shaft of the other one of the worm gears, respectively, and second ends of the two second connecting rods are pivotally connected to the different

connecting frames, respectively.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037]

FIG. 1 is a first structural schematic diagram of an infant rocking device according to Embodiment 1 of the present invention;

FIG. 2 is a partial enlarged view of portion A shown in FIG. 1;

FIG. 3 is a second structural schematic diagram of the infant rocking device according to Embodiment 1 of the present invention;

FIG. 4 is a partial enlarged view of portion B shown in FIG. 3;

FIG. 5 is a schematic diagram showing a state where the infant rocking device according to Embodiment 1 of the present invention performs circular motion to a rightmost position;

FIG. 6 is a schematic diagram showing a state where the infant rocking device according to Embodiment 1 of the present invention performs circular motion to a lowest position;

FIG. 7 is a schematic diagram showing a state where the infant rocking device according to Embodiment 1 of the present invention performs circular motion to a leftmost position;

FIG. 8 is a structural schematic diagram of an infant rocking device according to Embodiment 2 of the present invention;

FIG. 9 is a partial enlarged view of portion C shown in FIG. 8;

FIG. 10 is an exploded schematic diagram of the infant rocking device according to Embodiment 2 of the present invention;

FIG. 11 is a structural schematic diagram of an infant rocking device according to Embodiment 3 of the present invention;

FIG. 12 is a partial enlarged view of portion D shown in FIG. 11;

FIG. 13 is an exploded schematic diagram of the infant rocking device according to Embodiment 3 of the present invention;

FIG. 14 is a structural schematic diagram of an infant rocking device according to Embodiment 4 of the present invention;

FIG. 15 is a partial enlarged view of portion E shown in FIG. 14;

FIG. 16 is an exploded schematic diagram of the infant rocking device according to Embodiment 4 of the present invention;

FIG. 17 is a structural schematic diagram of an infant rocking device according to Embodiment 5 of the present invention;

FIG. 18 is a partial enlarged view of portion F shown in FIG. 17;

FIG. 19 is a partial exploded schematic diagram of

the infant rocking device according to Embodiment 5 of the present invention;

FIG. 20 is an exploded schematic diagram of a part of the structure of the infant rocking device according to Embodiment 5 of the present invention with the seat body removed;

FIG. 21 is a structural schematic diagram of a swing member according to Embodiment 5 of the present invention;

FIG. 22 is a structural schematic diagram of an infant rocking device according to Embodiment 6 of the present invention;

FIG. 23 is a partial enlarged view of portion G shown in FIG. 22;

FIG. 24 is an exploded schematic diagram of the infant rocking device according to Embodiment 6 of the present invention.

[0038] The meanings of the reference numerals are as follows:

1: support base; 11: first connecting post; 12: second connecting post; 13: third connecting post; 14: cross rod; 15: fourth connecting post; 16: fifth connecting post; 17: lower mounting box; 18: upper mounting box; 2: seat body; 21: mounting base; 211: connecting frame; 22: seat frame; 23: swing member; 231: first part; 2311: first segment; 2312: second segment; 2313: third segment; 232: second part; 3: drive mechanism; 31: motor; 32: worm; 33: worm gear; 34: first roller; 35: second roller; 36: belt; 4: connecting mechanism; 41: first connecting rod; 42: second connecting rod; 5: transmission mechanism; 51: eccentric rotating portion; 511: rotating rod; 52: connecting portion; 521: third connecting rod; 522: fourth connecting rod; 6: auxiliary spring; 100: first pivot axis; 200: second pivot axis; 300: third pivot axis; 400: fourth pivot axis; 500: fifth pivot axis; 600: sixth pivot axis.

DETAILED DESCRIPTION

[0039] For a better understanding and implementation, the technical solutions in the embodiments of the present invention are clearly and completely described below in conjunction with the attached drawings of the present invention.

[0040] In the description of the present invention, it is to be noted that the terms "up", "down", "front", "back", "left", "right", "vertical", "horizontal", "top", "bottom", "inside", "outside" and other orientation or position relationships are based on the orientation or position relationships shown in the attached drawings. It is only intended to facilitate description of the present invention and simplify description, but not to indicate or imply that the referred device or element has a specific orientation, or is constructed and operated in a specific orientation. Therefore, they should not be construed as a limitation of the present invention.

[0041] Unless otherwise defined, all terms including technical and scientific terms used herein have the same

meaning as commonly understood by those skilled in the art to which the present invention belongs. The terms used herein in the specification of the present invention are used only to describe specific embodiments and are not intended as a limitation of the invention.

Embodiment 1

[0042] Referring to FIGS. 1 to 4, the present invention discloses an infant rocking device, including: a support base 1, a seat body 2, a drive mechanism 3, a connecting mechanism 4, and a transmission mechanism 5. The support base 1 serves as a bearing body and is configured to be supported on the ground. The connecting mechanism 4 is arranged between the seat body 2 and the support base 1. The function of the seat body 2 is to carry an infant. The main function of the connecting mechanism 4 is to limit the movement trajectory of the seat body 2 relative to the support base 1. When necessary, the connecting mechanism 4 is configured to also provide certain support for the seat body 2. The drive mechanism 3 is arranged on the support base 1. In particular, the seat body 2 is configured to be driven by the drive mechanism 3 to perform circular motion relative to the support base 1 on a vertical plane or an inclined plane. The drive mechanism 3 is configured to output power to act on the seat body 2. In this case, the seat body 2 drives the connecting mechanism 4 to act simultaneously. Alternatively, the drive mechanism 3 is configured to output power to act on the connecting mechanism 4. In this case, the connecting mechanism 4 drives the seat body 2 to act simultaneously.

[0043] It should be noted that, as shown in FIGS. 1, 5, 6, and 7, performing circular motion on a vertical plane means that the movement trajectory of the seat body 2 is circular and includes simultaneous lifting movement and lateral movement. Restricted and influenced by the connecting mechanism 4, the circular motion of the seat body 2 corresponds to the circular motion of the connecting mechanism 4. Referring to FIG. 1 and using the direction shown in FIG. 1 as a reference example, when an infant sits on the seat body 2, the infant's face may face forward and upward or forward. Under the driving action of the drive mechanism 3, the seat body 2 simultaneously performs lifting movement and left-right movement driven or restricted by the circular motion of the connecting mechanism 4. That is, the plane (vertical plane) in which the movement trajectory of the seat body 2 lies is perpendicular to the riding orientation surface. Certainly, in other examples, based on different design or usage needs, when an infant sits on the seat body 2 with the face facing forward and upward or forward, under the driving action of the drive mechanism 3, the seat body 2 simultaneously performs lifting movement and front-rear movement driven or restricted by the circular motion of the connecting mechanism 4. That is, the plane (vertical plane) in which the movement trajectory of the seat body 2 lies is changed to be parallel to the riding orientation surface.

[0044] Certainly, in other embodiments, the seat body 2 is configured to also be configured to perform circular motion relative to the support base 1 on an inclined plane. In this case, the movement trajectory of the seat body 2 is also on the inclined plane, and the seat body 2 also includes simultaneous lateral movement and lifting movement. The plane (inclined plane) in which the movement trajectory of the seat body 2 lies may also be perpendicular or parallel to the riding orientation surface. Preferably, an included angle between the inclined plane and a horizontal plane is between 70° and 90°. More preferably, the included angle between the inclined plane and the horizontal plane is between 80° and 90°. For ease of understanding, the following description will elaborate in detail based on the seat body 2 performing circular motion on a vertical plane.

[0045] It should be noted that the infant may also lie on the seat body 2. In this case, the infant's face may face upward, and the aforementioned riding orientation surface refers to the surface toward which the infant's body faces when lying down.

[0046] Therefore, in the above invention, the movement trajectory of the seat body 2 relative to the support base 1 is limited by the connecting mechanism 4. Under the driving action of the drive mechanism 3, the seat body 2 performs synchronized circular motion relative to the support base 1 on a vertical plane or an inclined plane. Compared with the existing repetitive swinging structure, the seat body 2 of the infant rocking device has a greater lifting height and provides better entertainment. Compared with the existing multi-drive structure, it has a relatively simple structure, consumes less material, and has lower production and maintenance costs. On the other hand, by utilizing the characteristic of performing synchronized circular motion, the lateral movement speed and the lifting movement speed of the seat body 2 alternate with each other, and the overall movement is smooth without a jerky sensation, thereby achieving a riding experience that cannot be achieved in the prior art. In this way, an infant rocking device with a large movement trajectory, a simple structure, low cost, and better entertainment and user experience is obtained.

[0047] With reference to FIGS. 1 and 2, in this embodiment, the connecting mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. The first connecting rod 41 and the second connecting rod 42 are pivotally connected between the seat body 2 and the support base 1, respectively. In this way, under the driving action of the drive mechanism 3, the movement trajectory of the seat body 2 is limited by using the rotational trajectories of the first connecting rod 41 and the second connecting rod 42.

[0048] Preferably, a distance between two pivoting axes of the first connecting rod 41 is equal to a distance between two pivoting axes of the second connecting rod 42. A distance between a pivoting axis between the first connecting rod 41 and the seat body 2 and a pivoting axis between the second connecting rod 42 and the seat body

2 is equal to a distance between a pivoting axis between the first connecting rod 41 and the support base 1 and a pivoting axis between the second connecting rod 42 and the support base 1.

[0049] For ease of understanding, the pivoting axis between the first connecting rod 41 and the seat body 2 is defined as a third pivot axis 300. The pivoting axis between the second connecting rod 42 and the seat body 2 is defined as a fourth pivot axis 400. The pivoting axis between the first connecting rod 41 and the support base 1 is defined as a fifth pivot axis 500. The pivoting axis between the second connecting rod 42 and the support base 1 is defined as a sixth pivot axis 600. In this case, the distance between the third pivot axis 300 and the fourth pivot axis 400 is equal to the distance between the fifth pivot axis 500 and the sixth pivot axis 600. The distance between the third pivot axis 300 and the fifth pivot axis 500 is equal to the distance between the fourth pivot axis 400 and the sixth pivot axis 600. It may also be understood as follows: on the plane where the movement trajectory of the connecting mechanism 4 lies, a line connecting the third pivot axis 300 and the fourth pivot axis 400, a line connecting the fourth pivot axis 400 and the fifth pivot axis 500, a line connecting the fifth pivot axis 500 and the sixth pivot axis 600, and a line connecting the sixth pivot axis 600 and the third pivot axis 300 form a parallelogram.

[0050] In this way, under the driving action of the drive mechanism 3, the third pivot axis 300 rotates about the fifth pivot axis 500, and the fourth pivot axis 400 rotates about the sixth pivot axis 600. The movement trajectory of the third pivot axis 300 is the same as the movement trajectory of the fourth pivot axis 400, thereby causing the movement trajectory of the seat body 2 to be the same as the movement trajectories of the third pivot axis 300 and the fourth pivot axis 400. That is, the movement trajectory of the seat body 2 is also circular, thereby maintaining a constant angle of the riding orientation surface of the seat body 2.

[0051] The infant rocking device may further include a transmission mechanism 5. The transmission mechanism 5 may be arranged between the drive mechanism 3 and the seat body 2, or the transmission mechanism 5 may be arranged between the drive mechanism 3 and the connecting mechanism 4. The transmission mechanism 5 includes an eccentric rotating portion 51 and a connecting portion 52. The eccentric rotating portion 51 is rotatably arranged relative to the support base 1 about a first pivot axis 100. The connecting portion 52 is connected to the seat body 2 or the connecting mechanism 4, and the connecting portion 52 is pivotally connected to the eccentric rotating portion 51 about a second pivot axis 200. A distance between the first pivot axis 100 and the second pivot axis 200 is equal to a distance between two pivoting axes of the first connecting rod 41, and is also equal to a distance between two pivoting axes of the second connecting rod 42. During use, the drive mechanism 3 drives the eccentric rotating portion 51 to rotate,

and the eccentric rotating portion 51 drives the connecting mechanism 4 and the seat body 2 to perform circular motion relative to the support base 1 via the connecting portion 52.

[0052] In the prior art, in order to reduce the jerky sensation, there are high performance requirements for the motor in the drive mechanism. The motor used needs to be a servo motor, and the speed of the servo motor is controlled to reduce the jerky sensation at movement limit positions. Moreover, a more expensive programmable control chip is also required to control the repeated actions of its dual-drive mechanism to achieve a "circular" motion mode, which undoubtedly greatly increases its production cost. In the present invention, the drive mechanism 3 only needs to continuously output power in one direction, that is, its performance requirements for the motor are not high. An ordinary motor may be directly used, and there is no need to use a more expensive programmable control chip, resulting in lower overall costs.

[0053] Referring to FIGS. 1 and 3, in this embodiment, preferably, the drive mechanism 3 and the seat body 2 are connected via the transmission mechanism 5. During use, the drive mechanism 3 drives the transmission mechanism 5 to operate, and the transmission mechanism 5 drives the seat body 2 to perform circular motion under the limiting action of the connecting mechanism 4.

[0054] In other embodiments, the drive mechanism 3 and the connecting mechanism 4 is also configured to be connected via the transmission mechanism 5. During use, the drive mechanism 3 drives the transmission mechanism 5 to operate, the transmission mechanism 5 drives the connecting mechanism 4 to operate, and the connecting mechanism 4 drives the seat body 2 to perform circular motion.

[0055] In this embodiment, specifically, the seat body 2 includes a mounting base 21 and a seat frame 22 that are connected, and the mounting base 21 supports the seat frame 22. A first end of the first connecting rod 41 is pivotally connected to the mounting base 21 of the seat body 2, and a second end of the first connecting rod 41 is pivotally connected to the support base 1. Similarly, a first end of the second connecting rod 42 is pivotally connected to the mounting base 21 of the seat body 2, and a second end of the second connecting rod 42 is pivotally connected to the support base 1. In this way, various components are connected via the mounting base 21, so that forces are concentrated on the mounting base 21. It is only necessary to specially strengthen the strength of the mounting base 21, which facilitates processing and production. Preferably, the seat frame 22 is detachably connected above the mounting base 21. In this way, the seat frame 22 may be removed during packaging, so as to facilitate split packaging and transportation. At this time, the mounting base 21 may be integrated and installed on the support base 1 together with the drive mechanism 3, the connecting mechanism 4, and the transmission mechanism 5.

[0056] Referring to FIGS. 2 and 4, in this embodiment, two sets of the connecting mechanism 4 are provided. The two sets of connecting mechanisms 4 are oppositely arranged and are respectively arranged on two opposite outer sides of the mounting base 21, so as to improve the stability during the movement of the seat body 2 and avoid downward torsion caused by unilateral force. Since two sets of the connecting mechanism 4 are provided, that is, two first connecting rods 41 are provided, and similarly two second connecting rods 42 are provided. A plurality of first connecting posts 11 are provided on the support base 1. The plurality of first connecting posts 11 are divided into two groups and oppositely arranged. Two first connecting posts 11 of each group are pivotally connected to the first connecting rod 41 and the second connecting rod 42 in the connecting mechanism 4 of each group, respectively. Preferably, the two first connecting rods 41 and the two second connecting rods 42 are pivotally connected to inner sides of different first connecting posts 11 correspondingly. In particular, when the drive mechanism 3 drives the seat body 2 to perform circular motion, the mounting base 21 is movable within an accommodation space enclosed by the plurality of first connecting posts 11.

[0057] Specifically, taking the direction shown in FIG. 2 as a reference, the first connecting rod 41 and the second connecting rod 42 of the same group are arranged at intervals along a left-right direction. The first connecting rod 41 and the second connecting rod 42 of one group are pivotally connected to a front side of the mounting base 21. The first connecting rod 41 and the second connecting rod 42 of the other group are pivotally connected to a rear side of the mounting base 21. The first connecting posts 11 of the same group are also arranged at intervals along the left-right direction. Under the driving action of the drive mechanism 3, the mounting base 21 is capable of performing circular motion about a pivoting axis between the first connecting rod 41 and the first connecting post 11 and a pivoting axis between the second connecting rod 42 and the first connecting post 11. A part of the movement trajectory of the mounting base 21 is located within the accommodation space enclosed by the plurality of first connecting posts 11.

[0058] In this way, interference between structures is avoided, stability during movement is improved, and downward torsion caused by unilateral force is prevented. Moreover, the space between the first connecting posts 11 is fully utilized, which is conducive to reducing the overall height of the product, thereby achieving a better comprehensive effect.

[0059] It should be noted that the number of first connecting posts 11 may be changed according to the number of connecting rods possessed by the connecting mechanism 4. For example, when each set of connecting mechanism 4 includes more than three connecting rods arranged in parallel, three first connecting posts 11 may be correspondingly provided for the same group. The number of first connecting posts 11 may also be changed

according to the number of connecting rods pivotally connected to a single first connecting post 11. For example, when the first connecting rod 41 and the second connecting rod 42 of the same group are both hinged to the same first connecting post 11, only two first connecting posts 11 may be provided at this time. The width of the first connecting post 11 needs to be correspondingly changed to accommodate the gap between the first connecting rod 41 and the second connecting rod 42, or a cross post needs to be added on the first connecting post 11 to accommodate the gap between the first connecting rod 41 and the second connecting rod 42. Based on this, the present invention does not limit the specific number of first connecting posts 11.

[0060] Preferably, a height of the mounting base 21 is greater than a distance between two pivoting axes of the first connecting rod 41; and/or, the height of the mounting base 21 is greater than a distance between two pivoting axes of the second connecting rod 42. In this way, when a protective cover enclosing the first connecting posts 11 is installed, the seat frame 22 mounted on the mounting base 21 will not collide with the protective cover during movement.

[0061] It should be noted that, in other preferred embodiments, the connecting mechanism 4 may also adopt other structures to limit the circular movement trajectory of the seat body 2, such as a matching structure of a ring groove and multiple sliders or rollers, etc. The connecting mechanism 4 is not limited herein.

[0062] Referring to FIGS. 1 and 2, in this embodiment, two sets of the transmission mechanism 5 are provided. The two sets of transmission mechanisms 5 are respectively arranged on two opposite sides of the seat body 2, and in particular, are arranged on two opposite sides of the mounting base 21, so as to ensure that the driving force received by the seat body 2 is relatively uniform and stable. That is, two eccentric rotating portions 51 are provided, and two connecting portions 52 are also provided. At this time, the drive mechanism 3 synchronously drives the two eccentric rotating portions 51 to rotate circularly about the first pivot axis 100, and the two eccentric rotating portions 51 drive the connecting portions 52 and cause the seat body 2 to perform synchronized circular motion.

[0063] Specifically, the distance between the first pivot axis 100 and the second pivot axis 200 is equal to the distance between the two pivoting axes of the first connecting rod 41, and is also equal to the distance between the two pivoting axes of the second connecting rod 42. That is: the distance between the first pivot axis 100 and the second pivot axis 200 is equal to the distance between the third pivot axis 300 and the fifth pivot axis 500, and is also equal to the distance between the fourth pivot axis 400 and the sixth pivot axis 600. In addition, the distance between the first pivot axis 100 and the fifth pivot axis 500 is equal to the distance between the second pivot axis 200 and the third pivot axis 300. The distance between the first pivot axis 100 and the sixth pivot axis

600 is equal to the distance between the second pivot axis 200 and the fourth pivot axis 400. In this way, during the circular motion of the seat body 2, the second pivot axis 200 rotates about the first pivot axis 100, the third pivot axis 300 rotates about the fifth pivot axis 500, and the fourth pivot axis 400 rotates about the sixth pivot axis 600. The movement trajectories of the second pivot axis 200, the third pivot axis 300, and the fourth pivot axis 400 are the same. The driving force of the eccentric rotating portion 51 may be smoothly transmitted to the seat body 2, avoiding the occurrence of a self-locking phenomenon.

[0064] In this embodiment, preferably, the connecting portion 52 includes a third connecting rod 521 and a fourth connecting rod 522. The third connecting rod 521 and the fourth connecting rod 522 are arranged at an included angle. A first end of the third connecting rod 521 and a first end of the fourth connecting rod 522 are both pivotally connected to the eccentric rotating portion 51 about the second pivot axis 200. A second end of the third connecting rod 521 and a second end of the fourth connecting rod 522 are respectively connected to the seat body 2. In this way, the third connecting rod 521, the fourth connecting rod 522, and the seat body 2 form an included-angle support structure with each other, thereby enhancing the overall support strength of the connecting portion 52.

[0065] It is understandable that when the connecting portion 52 is connected to the connecting mechanism 4, the second end of the third connecting rod 521 and the second end of the fourth connecting rod 522 will be respectively connected to the connecting mechanism 4. Specifically, the second end of the third connecting rod 521 will be connected to the first connecting rod 41, and the second end of the fourth connecting rod 522 will be connected to the second connecting rod 42.

[0066] In particular, the second end of the third connecting rod 521 and the first connecting rod 41 are pivotally connected to the seat body 2 about the third pivot axis 300. The second end of the fourth connecting rod 522 and the second connecting rod 42 are pivotally connected to the seat body 2 about the fourth pivot axis 400. That is, the third connecting rod 521 and the first connecting rod 41 share a common pivot shaft, and the fourth connecting rod 522 and the second connecting rod 42 also share a common pivot shaft. In this way, the installation structure is simplified, and some pivot shafts are saved. In addition, the driving force acts directly at the third pivot axis 300 and the fourth pivot axis 400 via the third connecting rod 521 and the fourth connecting rod 522, causing the two force application points to respectively coincide with the pivoting axis of the first connecting rod 41 and the pivoting axis of the second connecting rod 42, facilitating the transmission of the driving force and making the motion smoother.

[0067] Specifically, the second end of the third connecting rod 521 and the first connecting rod 41 are pivotally connected to an outer side of the mounting base 21 via a same pivot shaft. The second end of the fourth

connecting rod 522 and the second connecting rod 42 are pivotally connected to the outer side of the mounting base 21 via a same pivot shaft.

[0068] In other embodiments, the connecting portion 52 may also be a single-rod structure, that is, the connecting portion 52 includes a vertical rod. An upper end of the vertical rod is connected to the seat body 2, and a lower end of the vertical rod is pivotally connected to the eccentric rotating portion 51, which may also achieve the function of transmitting the driving force by using the connecting portion 52. Alternatively, the connecting portion 52 may also be other structures capable of transmitting the rotational driving force of the eccentric rotating portion 51 to the seat body 2. The specific configuration of the connecting portion 52 is not limited herein.

[0069] Referring to FIGS. 2 and 4, in this embodiment, the drive mechanism 3 includes a motor 31, a worm 32, a worm gear 33, a first roller 34, a second roller 35, and a belt 36. The first roller 34, the second roller 35, and the belt 36 constitute a transmission component and are connected between the motor 31 and the worm 32. Specifically, the first roller 34 is mounted on an output shaft of the motor 31. The second roller 35 is mounted on a rotating shaft of the worm 32. The belt 36 is wound around the first roller 34 and the second roller 35, thereby realizing a driving connection between the motor 31 and the worm 32. In particular, a diameter of the first roller 34 is smaller than a diameter of the second roller 35. The worm gear 33 meshes with the worm 32. The eccentric rotating portion 51 includes a rotating rod 511. A first end of the rotating rod 511 is fixedly connected to a rotating shaft of the worm gear 33. At this time, the first pivot axis 100 is collinear with an axis of the rotating shaft of the worm gear 33. The rotating rod 511 rotates with the rotation of the worm gear 33. A second end of the rotating rod 511 is pivotally connected to the connecting portion 52. Specifically, the third connecting rod 521 and the fourth connecting rod 522 are pivotally connected to the second end of the rotating rod 511 via a same pivot shaft. In this way, the worm gear and worm structure is used to achieve power output, and its self-locking function is utilized to control the seat body 2 to remain at the current position after the motor 31 is powered off, preventing loosening due to accidental power loss and improving safety.

[0070] It should be noted that the driving connection between the motor 31 and the worm 32 may also be achieved by other means, for example: the motor 31 and the worm 32 are connected via a coupling, or the motor 31 and the worm 32 may also be connected via a gear reducer. The driving connection method between the motor 31 and the worm 32 is not limited herein.

[0071] Specifically, the support base 1 is provided with two second connecting posts 12 and two third connecting posts 13. A cross rod 14 is also arranged between the two first connecting posts 11. The two second connecting posts 12 and the two third connecting posts 13 are all located within the accommodation space enclosed by the

plurality of first connecting posts 11, to further fully utilize the space between the first connecting posts 11. The motor 31 is mounted on the cross rod 14. The worm gear 33 is rotatably mounted between the two second connecting posts 12. The worm 32 is rotatably mounted between the two third connecting posts 13. A rotation axis of the worm gear 33 is perpendicular to the plane in which the circular motion of the seat body 2 lies. A rotation axis of the worm 32 is parallel to the plane in which the circular motion of the seat body 2 lies.

[0072] Preferably, the two sets of transmission mechanism 5 are also oppositely arranged on two opposite sides of the worm gear 33. The first ends of the two rotating rods 511 are fixedly connected to two ends of the rotating shaft of the worm gear 33, respectively, so that forces on the two ends of the rotating shaft of the worm gear 33 are balanced, extending its overall service life. Specifically, the rotating rod 511 is located on an outer side of the second connecting post 12 to avoid interference.

[0073] In other embodiments, the eccentric rotating portion 51 may also be a pin column eccentrically arranged on one side of the worm gear 33. The connecting portion 52 is pivotally connected to the pin column. This pin column may also perform circular motion as the worm gear 33 rotates. At this time, the pin column is rotatable relative to the support base 1 about the axis of the rotating shaft of the worm gear 33, that is, the first pivot axis 100 is also collinear with the axis of the rotating shaft of the worm gear 33. In addition, to avoid interference, only one pin column will be provided, that is, the eccentric rotating portion 51 cannot be arranged in pairs. Alternatively, the eccentric rotating portion 51 may also be other structures capable of outputting rotational driving force to the connecting portion 52. The specific configuration of the eccentric rotating portion 51 is not limited herein.

[0074] In other preferred embodiments, the driving methods for the first connecting rod 41 and the second connecting rod 42 may also be: (1) The transmission mechanism 5 includes a first transmission assembly and a second transmission assembly. The drive mechanism 3 drives the first transmission assembly to operate and drives the second transmission assembly to operate. The first transmission assembly is connected to the first connecting rod 41 and drives the first connecting rod 41 to perform circular motion. The second transmission assembly is connected to the second connecting rod 42 and drives the second connecting rod 42 to perform circular motion. Herein, the connection between the first transmission assembly and the first connecting rod 41, and the connection between the second transmission assembly and the second connecting rod 42 may be of a gear transmission type or a swing arm transmission type. (2) The drive mechanism 3 includes a first drive mechanism and a second drive mechanism. The first drive mechanism is drivingly connected to the first connecting rod 41 and drives the first connecting rod 41 to perform circular motion. The second drive mechanism is drivingly

connected to the second connecting rod 42 and drives the second connecting rod 42 to perform circular motion. It should be noted that, in these two sets of solutions, the rotation speed of the first connecting rod 41 performing circular motion relative to the support base 1 is the same as the rotation speed of the second connecting rod 42 performing circular motion relative to the support base 1.

[0075] In this embodiment, for ease of understanding, the working process of the present invention is as follows: Taking FIG. 1 as an example, with the infant rocking device performing circular motion to the highest point as a starting point, at this time, the motor 31 starts to be powered on and outputs power. The motor 31 drives the first roller 34 to rotate. The first roller 34 drives the second roller 35 to rotate via the belt 36. The second roller 35 drives the worm 32 to rotate synchronously. The worm 32 drives the worm gear 33 to rotate clockwise. The worm gear 33 drives the rotating rod 511 to rotate synchronously, causing the second end of the rotating rod 511 to perform circular motion about the axis of the rotating shaft of the worm gear 33 (i.e., the first pivot axis 100). The second end of the rotating rod 511 drives the third connecting rod 521 and the fourth connecting rod 522 to move clockwise. The third connecting rod 521 and the fourth connecting rod 522 drive the mounting base 21 to move synchronously, causing the first connecting rod 41 to rotate clockwise about its pivoting axis with the first connecting post 11 (i.e., the fifth pivot axis 500), and causing the second connecting rod 42 to rotate clockwise about its pivoting axis with the first connecting post 11 (i.e., the sixth pivot axis 600), thereby causing the seat body 2 to perform clockwise circular motion relative to the support base 1. During this motion process, the infant rocking device sequentially goes through the states shown in FIG. 5, FIG. 6, and FIG. 7, and then returns to the state shown in FIG. 1, and then maintains the cycle in response to the continuous power output of the motor 31.

Embodiment 2

[0076] Referring to FIGS. 8 to 10, this embodiment also discloses an infant rocking device. The difference between this embodiment and Embodiment 1 lies in: the number of connecting mechanisms 4 is different, the number of connecting rods of the connecting portion 52 is different, and the corresponding number of first connecting posts 11 is different.

[0077] Referring to FIGS. 9 and 10, in this embodiment, similarly, the connecting mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. The first connecting rod 41 and the second connecting rod 42 are pivotally connected between the seat body 2 and the support base 1, respectively. The difference is that only one set of the connecting mechanism 4 is provided, and based on this, the first connecting rod 41 and the second connecting rod 42 are diagonally and oppositely arranged on two opposite sides of the mounting base 21.

Compared with Embodiment 1, this embodiment has only one first connecting rod 41 and one second connecting rod 42. Arranging the first connecting rod 41 and the second connecting rod 42 diagonally facilitates structural simplification and cost savings on the basis of satisfying stability.

[0078] The term "diagonally and oppositely arranged" means: in a direction parallel to the first pivot axis 100, the second pivot axis 200, the third pivot axis 300, the fourth pivot axis 400, the fifth pivot axis 500, or the sixth pivot axis 600, the first connecting rod 41 and the second connecting rod 42 are arranged at intervals; and in a direction perpendicular to the fifth pivot axis 500 or the sixth pivot axis 600, the first connecting rod 41 and the second connecting rod 42 are also arranged at intervals. For example, taking the direction shown in FIG. 9 as a reference, one specific example may be: the first connecting rod 41 is located at the left rear side of the mounting base 21, and the second connecting rod 42 is located at the right front side of the mounting base 21.

[0079] Based on the number and arrangement of the first connecting rod 41 and the second connecting rod 42 described above, two first connecting posts 11 are provided on the support base 1. The two first connecting posts 11 are also arranged diagonally and opposite to each other. One of the first connecting posts 11 corresponds in position to and is pivotally connected to the first connecting rod 41. The other first connecting post 11 corresponds in position to and is pivotally connected to the second connecting rod 42. Also preferably, the first connecting rod 41 and the second connecting rod 42 are pivotally connected to inner sides of different first connecting posts 11 correspondingly. The mounting base 21 is movable within an accommodation space between the two first connecting posts 11 when the drive mechanism 3 drives the seat body 2 to perform circular motion.

[0080] Referring to FIGS. 9 and 10, in this embodiment, for the specific structure of the drive mechanism 3, reference may be made to the relevant description in Embodiment 1. Herein, one worm gear 33 is also provided. Two sets of the transmission mechanism 5 are also provided and are oppositely arranged on two opposite sides of the worm gear 33. Each set of transmission mechanism 5 also includes an eccentric rotating portion 51 and a connecting portion 52. The eccentric rotating portion 51 also includes a rotating rod. The rotating rods 511 of the two transmission mechanisms 5 are fixedly connected to the two ends of the rotating shaft of the worm gear 33, respectively.

[0081] It is understandable that the installation method of the motor 31 may also adopt the solution shown in Embodiment 3, or other known solutions. The installation method of the motor 31 is not limited herein.

[0082] The difference is that the connecting portion 52 only includes a third connecting rod 521. The third connecting rod 521 is preferably arranged obliquely. A first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. A second end of

the third connecting rod 521 and the first connecting rod 41 of the connecting mechanism 4 are pivotally connected to the seat body 2 about the third pivot axis 300, or the second end of the third connecting rod 521 and the second connecting rod 42 of the connecting mechanism 4 are pivotally connected to the seat body 2 about the fourth pivot axis 400. That is to say, based on the existence of two third connecting rods 521, the second end of one third connecting rod 521 and the first connecting rod 41 of the connecting mechanism 4 are pivotally connected to the seat body 2 about the third pivot axis 300, and the second end of the other third connecting rod 521 and the second connecting rod 42 of the connecting mechanism 4 are pivotally connected to the seat body 2 about the fourth pivot axis 400.

[0083] Certainly, according to design needs, the third connecting rod 521 may also be arranged vertically or horizontally. The arrangement direction of the third connecting rod 521 is not limited herein. In addition, the second end of the third connecting rod 521 may also be fixedly connected relative to the seat body 2.

[0084] Specifically, with reference to FIGS. 9 and 10 and using the direction shown in FIG. 9 as a reference, in the transmission mechanism 5 located behind the worm gear 33, the first end of the rotating rod 511 is fixedly connected to a rear end of the rotating shaft of the worm gear 33, and the first pivot axis 100 is collinear with the axis of the rotating shaft of the worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the first pivot axis 100. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511 about the second pivot axis 200. The second end of the third connecting rod 521 and the first connecting rod 41 are pivotally connected to a left side of the mounting base 21 about the third pivot axis 300. In the transmission mechanism 5 located in front of the worm gear 33, the first end of the rotating rod 511 is fixedly connected to a front end of the rotating shaft of the worm gear 33, and the first pivot axis 100 is collinear with the axis of the rotating shaft of the worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the first pivot axis 100. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511 about the second pivot axis 200. The second end of the third connecting rod 521 and the second connecting rod 42 are pivotally connected to a right side of the mounting base 21 about the fourth pivot axis 400.

[0085] In this way, compared with Embodiment 1, in the infant rocking device of this embodiment, overall, only one first connecting rod 41, one second connecting rod 42, two rotating rods 511, two third connecting rods 521, and two first connecting posts 11 need to be provided, thereby saving one first connecting rod 41, one second connecting rod 42, two fourth connecting rods 522, and two first connecting posts 11. On the basis of satisfying stability, the overall structure is relatively simple, with

fewer parts and lower cost.

[0086] It is understandable that, as described in Embodiment 1, the eccentric rotating portion 51 may also be other structures capable of outputting rotational driving force to the connecting portion 52. The specific configuration of the eccentric rotating portion 51 is not limited herein.

[0087] It should be noted that, for other structures not described, reference may be made to the relevant descriptions in Embodiment 1, and will not be repeated here.

[0088] In this embodiment, for ease of understanding, the working process of the infant rocking device of this embodiment is as follows:

Taking FIGS. 8 and 9 as an example, with the infant rocking device performing circular motion to the lowest point as a starting point, at this time, the motor 31 starts to be powered on and outputs power. The motor 31 drives the first roller 34 to rotate. The first roller 34 drives the second roller 35 to rotate via the belt 36. The second roller 35 drives the worm 32 to rotate synchronously. The worm 32 drives the worm gear 33 to rotate clockwise. The worm gear 33 drives the rotating rod 511 to rotate synchronously, causing the second end of the rotating rod 511 to perform circular motion about the axis of the rotating shaft of the worm gear 33 (i.e., the first pivot axis 100). The second end of the rotating rod 511 drives the third connecting rod 521 to move clockwise. The third connecting rod 521 drives the mounting base 21 to move synchronously, causing the first connecting rod 41 to rotate clockwise about its pivoting axis with the first connecting post 11 (i.e., the fifth pivot axis 500), and causing the second connecting rod 42 to rotate clockwise about its pivoting axis with the first connecting post 11 (i.e., the sixth pivot axis 600), thereby causing the seat body 2 to perform clockwise circular motion relative to the support base 1.

Embodiment 3

[0089] Referring to FIGS. 11 to 13, this embodiment also discloses an infant rocking device. The difference between this embodiment and Embodiment 2 lies in that: two worm gears 33 are provided, and each worm gear 33 drives one set of transmission mechanism 5, respectively.

[0090] In this embodiment, similarly to Embodiment 2, only one set of connecting mechanism 4 is provided. The connecting mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. The first connecting rod 41 and the second connecting rod 42 are pivotally connected between the seat body 2 and the support base 1, respectively. The first connecting rod 41 and the second connecting rod 42 are diagonally and oppositely arranged on two opposite sides of the mounting base 21. Two sets of transmission mechanism 5 are also provided. Each set of transmission mechanism 5 also includes an eccentric rotating portion 51 and a connect-

ing portion 52. The eccentric rotating portion 51 also includes a rotating rod. The connecting portion 52 also only includes a third connecting rod 521. The difference is that two worm gears 33 are provided. The two worm gears 33 are arranged at intervals along the axial direction of the worm 32. The two sets of transmission mechanism 5 are oppositely arranged on two opposite sides of the two worm gears 33. The rotating rods 511 of different transmission mechanisms 5 are fixedly connected to rotating shafts of different worm gears 33, respectively.

[0091] Specifically, with reference to FIGS. 11 and 12 and using the direction shown in FIG. 12 as a reference, in the transmission mechanism 5 located behind the worm gear 33, the first end of the rotating rod 511 is fixedly connected to a rear end of the rotating shaft of the left worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the left worm gear 33. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. The second end of the third connecting rod 521 and the first connecting rod 41 are pivotally connected to the left side of the mounting base 21 about the third pivot axis 300. In the transmission mechanism 5 located in front of the worm gear 33, the first end of the rotating rod 511 is fixedly connected to a front end of the rotating shaft of the right worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the right worm gear 33. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. The second end of the third connecting rod 521 and the second connecting rod 42 are pivotally connected to the right side of the mounting base 21 about the fourth pivot axis 400.

[0092] In this way, compared with Embodiment 1 or 2, the infant rocking device of this embodiment adopts a driving method with dual worm gears 33 to form two power points arranged at intervals, which may increase the driving force.

[0093] It is understandable that, as described in Embodiment 1, in other embodiments, the eccentric rotating portion 51 may also be a pin column eccentrically arranged on one side of the worm gear 33. The connecting portion 52 is pivotally connected to the pin column. This pin column may also perform circular motion as the worm gear 33 rotates. At this time, the pin column is rotatable relative to the support base 1 about the axis of the rotating shaft of the worm gear 33, that is, the first pivot axis 100 is also collinear with the axis of the rotating shaft of the worm gear 33. Alternatively, the eccentric rotating portion 51 may also be other structures capable of outputting rotational driving force to the connecting portion 52. The specific configuration of the eccentric rotating portion 51 is not limited herein.

[0094] Referring to FIG. 12 and using the direction shown in FIG. 12 as a reference, it is understandable

that, since two worm gears 33 and two sets of transmission mechanism 5 are used, and the two worm gears 33 are arranged at intervals along the axial direction of the worm 32, therefore, based on the definition of the first pivot axis 100 and the second pivot axis 200 in Embodiment 1, there will be two first pivot axes 100 arranged in parallel and two second pivot axes 200 arranged in parallel at this time. To avoid ambiguity, it is defined herein: the axis of the rotating shaft of the right worm gear 33 is the first pivot axis 100, the pivoting axis between the right rotating rod and the right third connecting rod is the second pivot axis 200, the axis of the rotating shaft of the left worm gear 33 is a seventh pivot axis, and the pivoting axis between the left rotating rod and the left third connecting rod is an eighth pivot axis.

[0095] In addition, referring to FIGS. 12 and 13, another difference is that the support base 1 is provided with a fourth connecting post 15, and the motor 31 is mounted on the fourth connecting post 15.

[0096] It should be noted that, for other structures not described, reference may be made to the relevant descriptions in Embodiment 1 or 2, and will not be repeated here.

[0097] In this embodiment, for ease of understanding, the working process of the infant rocking device of this embodiment is as follows:

Taking FIGS. 11 and 12 as an example, with the infant rocking device performing circular motion to the lowest point as a starting point, at this time, the motor 31 starts to be powered on and outputs power. The motor 31 drives the first roller 34 to rotate. The first roller 34 drives the second roller 35 to rotate via the belt 36. The second roller 35 drives the worm 32 to rotate synchronously. The worm 32 drives the two worm gears 33 to rotate clockwise synchronously. Different worm gears 33 drive different rotating rods 511 to rotate synchronously, respectively, causing the second ends of the different rotating rods 511 to perform circular motion about the axes of the rotating shafts of the different worm gears 33, respectively. The second ends of the rotating rods 511 drive the third connecting rods 521 to move clockwise. The third connecting rods 521 drive the mounting base 21 to move synchronously, causing the first connecting rod 41 to rotate clockwise about its pivoting axis with the first connecting post 11 (i.e., the fifth pivot axis 500), and causing the second connecting rod 42 to rotate clockwise about its pivoting axis with the first connecting post 11 (i.e., the sixth pivot axis 600), thereby causing the seat body 2 to perform clockwise circular motion relative to the support base 1.

Embodiment 4

[0098] Referring to FIGS. 14 to 16, this embodiment also discloses an infant rocking device. The difference between this embodiment and Embodiment 3 lies in that: two sets of connecting mechanism 4 are provided, four sets of transmission mechanism 5 are provided, and

each worm gear 33 drives two sets of transmission mechanism 5, respectively.

[0099] This embodiment combines the solutions of Embodiment 1 and Embodiment 3, and possesses the advantages of both Embodiment 1 and Embodiment 3: namely, avoiding downward torsion caused by forces on unilateral corners, and forming two power points arranged at intervals, which may increase the driving force.

[0100] In this embodiment, similarly to Embodiment 1, two sets of connecting mechanism 4 are provided. The two sets of connecting mechanisms 4 are oppositely arranged and are respectively arranged on two opposite outer sides of the mounting base 21, so as to improve the stability during the movement of the seat body 2 and avoid downward torsion caused by unilateral force. Since two sets of connecting mechanism 4 are provided, that is, two first connecting rods 41 are provided, and similarly two second connecting rods 42 are provided. A plurality of first connecting posts 11 are provided on the support base 1. The plurality of first connecting posts 11 are divided into two groups and oppositely arranged. Two first connecting posts 11 of each group are pivotally connected to the first connecting rod 41 and the second connecting rod 42 in the connecting mechanism 4 of each group, respectively. Preferably, the two first connecting rods 41 and the two second connecting rods 42 are pivotally connected to inner sides of different first connecting posts 11 correspondingly. In particular, when the drive mechanism 3 drives the seat body 2 to perform circular motion, the mounting base 21 is movable within an accommodation space enclosed by the plurality of first connecting posts 11.

[0101] In this embodiment, similarly to Embodiment 3, two worm gears 33 are provided. The two worm gears 33 are arranged at intervals along the axial direction of the worm 32. Each worm gear 33 drives at least one set of transmission mechanism 5, respectively. Each set of transmission mechanism 5 also includes an eccentric rotating portion 51 and a connecting portion 52. The eccentric rotating portion 51 also includes a rotating rod. The connecting portion 52 also only includes a third connecting rod 521. The difference is that four sets of transmission mechanism 5 are provided and are arranged in two pairs. The first ends of the rotating rods 511 of every two sets of transmission mechanism 5 are fixedly connected to two ends of a rotating shaft of a corresponding worm gear 33, respectively.

[0102] Specifically, with reference to FIGS. 14 and 15 and using the direction shown in FIG. 15 as a reference, in the set of transmission mechanism 5 located at the left rear, the first end of the rotating rod 511 is fixedly connected to a rear end of the rotating shaft of the left worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the left worm gear 33. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. The second end of the third connecting rod 521 and the first

connecting rod 41 located at the left rear are pivotally connected to the left rear side of the mounting base 21 about the third pivot axis 300. In the set of transmission mechanism 5 located at the left front, the first end of the rotating rod 511 is fixedly connected to a front end of the rotating shaft of the left worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the left worm gear 33. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. The second end of the third connecting rod 521 and the first connecting rod 41 located at the left front are pivotally connected to the left front side of the mounting base 21 about the third pivot axis 300. In the set of transmission mechanism 5 located at the right rear, the first end of the rotating rod 511 is fixedly connected to a rear end of the rotating shaft of the right worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the right worm gear 33. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. The second end of the third connecting rod 521 and the second connecting rod 42 located at the right rear are pivotally connected to the right rear side of the mounting base 21 about the fourth pivot axis 400. In the set of transmission mechanism 5 located at the right front, the first end of the rotating rod 511 is fixedly connected to a front end of the rotating shaft of the right worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the right worm gear 33. The first end of the third connecting rod 521 is pivotally connected to the second end of the rotating rod 511. The second end of the third connecting rod 521 and the second connecting rod 42 located at the right front are pivotally connected to the right front side of the mounting base 21 about the fourth pivot axis 400.

[0103] In this way, compared with Embodiment 1, 2, or 3, the infant rocking device of this embodiment adopts a driving method that combines dual worm gears 33, four sets of transmission mechanism 5, and two sets of connecting mechanism 4. This improves stability during movement and avoids downward torsion caused by unilateral force. Moreover, the space between the first connecting posts 11 is fully utilized, which is conducive to reducing the overall height of the product, thereby achieving a better comprehensive effect. It also forms two power points arranged at intervals, which may increase the driving force.

[0104] It is understandable that, as described in Embodiment 1, the eccentric rotating portion 51 may also be other structures capable of outputting rotational driving force to the connecting portion 52. The specific configuration of the eccentric rotating portion 51 is not limited herein.

[0105] Referring to FIG. 15 and using the direction shown in FIG. 15 as a reference, it is understandable that, since two worm gears 33 and four sets of trans-

mission mechanism 5 are used, and the two worm gears 33 are arranged at intervals along the axial direction of the worm 32, therefore, based on the definition of the first pivot axis 100 and the second pivot axis 200 in Embodiment 1, there will be two first pivot axes 100 arranged in parallel and two second pivot axes 200 arranged in parallel at this time. To avoid ambiguity, it is defined herein: the axis of the rotating shaft of the right worm gear 33 is the first pivot axis 100, the pivoting axis between the right rotating rod and the right third connecting rod is the second pivot axis 200, the axis of the rotating shaft of the left worm gear 33 is a seventh pivot axis, and the pivoting axis between the left rotating rod and the left third connecting rod is an eighth pivot axis.

[0106] It should be noted that, for other structures not described, reference may be made to the relevant descriptions in Embodiment 1, 2, or 3, and will not be repeated here.

[0107] In this embodiment, for ease of understanding, the working process of the infant rocking device of this embodiment is as follows:

[0108] Taking FIGS. 14 and 15 as an example, with the infant rocking device performing circular motion to the lowest point as a starting point, at this time, the motor 31 starts to be powered on and outputs power. The motor 31 drives the first roller 34 to rotate. The first roller 34 drives the second roller 35 to rotate via the belt 36. The second roller 35 drives the worm 32 to rotate synchronously. The worm 32 drives the two worm gears 33 to rotate clockwise synchronously. The different worm gears 33 drive two different rotating rods 511 to rotate synchronously, respectively, causing the second ends of the four rotating rods 511 to perform circular motion in pairs about the axes of the rotating shafts of the different worm gears 33, respectively. The second ends of the four rotating rods 511 drive four different third connecting rods 521 to move clockwise, respectively. The four third connecting rods 521 drive the mounting base 21 to move synchronously, causing the two first connecting rods 41 to rotate clockwise about their pivoting axes with the first connecting posts 11 (i.e., the fifth pivot axis 500), and causing the two second connecting rods 42 to rotate clockwise about their pivoting axes with the first connecting posts 11 (i.e., the sixth pivot axis 600), thereby causing the seat body 2 to perform clockwise circular motion relative to the support base 1.

Embodiment 5

[0109] Referring to FIGS. 17 to 21, this embodiment also discloses an infant rocking device. The difference between this embodiment and Embodiment 1, 2, 3, or 4 lies in that: the rotating rod 511 is directly pivotally connected to the seat body 2. Specifically, the first connecting rod 41, the second connecting rod 42, and the rotating rod 511 are all pivotally connected to a swing member 23 in the seat body 2; and the infant rocking device further includes an auxiliary spring 6 configured to provide an

upward auxiliary force.

[0110] In this embodiment, similarly to Embodiment 1, the infant rocking device also includes a support base 1, a seat body 2, a drive mechanism 3, and a connecting mechanism 4. The support base 1 serves as a bearing body and may be supported on the ground. The connecting mechanism 4 is arranged between the seat body 2 and the support base 1. The function of the seat body 2 is to carry an infant. The main function of the connecting mechanism 4 is to limit the movement trajectory of the seat body 2 relative to the support base 1. When necessary, the connecting mechanism 4 may also provide certain support for the seat body 2. The drive mechanism 3 is arranged on the support base 1. In particular, the seat body 2 is configured to be driven by the drive mechanism 3 to perform circular motion relative to the support base 1 on a vertical plane or an inclined plane. The drive mechanism 3 is configured to output power to act on the seat body 2. In this case, the seat body 2 drives the connecting mechanism 4 to act simultaneously.

[0111] Thus, the infant rocking device of this embodiment may also solve the same technical problems as described in Embodiment 1 and achieve the same technical effects.

[0112] In addition, referring to FIGS. 18 to 20, similarly to Embodiment 1, the connecting mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. The first connecting rod 41 and the second connecting rod 42 are pivotally connected between the seat body 2 and the support base 1, respectively. In this way, under the driving action of the drive mechanism 3, the movement trajectory of the seat body 2 is limited by using the rotational trajectories of the first connecting rod 41 and the second connecting rod 42.

[0113] Similarly preferred as in Embodiment 1, a distance between two pivoting axes of the first connecting rod 41 is equal to a distance between two pivoting axes of the second connecting rod 42. A distance between a pivoting axis between the first connecting rod 41 and the seat body 2 and a pivoting axis between the second connecting rod 42 and the seat body 2 is equal to a distance between a pivoting axis between the first connecting rod 41 and the support base 1 and a pivoting axis between the second connecting rod 42 and the support base 1.

[0114] Similarly preferred as in Embodiment 1, two sets of connecting mechanism 4 are provided. The two sets of connecting mechanisms 4 are oppositely arranged to improve the stability during the movement of the seat body 2 and avoid downward torsion caused by unilateral force. Since two sets of connecting mechanism 4 are provided, that is, two first connecting rods 41 are provided, and similarly two second connecting rods 42 are provided.

[0115] Similarly preferred as in Embodiment 1, the drive mechanism 3 includes a motor 31, a worm 32, a worm gear 33, a first roller 34, a second roller 35, and a belt 36. The connection relationships of the various

components in the drive mechanism 3 may be referred to the relevant description in Embodiment 1. Herein, one worm gear 33 is also provided.

[0116] The difference is that the mounting of the drive mechanism 3 on the support base 1 adopts a different solution: in this embodiment, a lower mounting box 17 is provided on the support base 1. The lower mounting box 17 is connected to an upper mounting box 18. The worm 32 and the worm gear 33 are arranged between the lower mounting box 17 and the upper mounting box 18. The worm gear 33 is centrally arranged relative to the support base 1. The two sets of connecting mechanism 4 are respectively arranged on two opposite sides of the upper mounting box 18. The two first connecting rods 41 and the two second connecting rods 42 are all pivotally connected to the upper mounting box 18.

[0117] The difference is that the transmission mechanism 5 only includes a rotating rod 511. A first end of the rotating rod 511 is fixedly connected to a rotating shaft of the worm gear 33. A second end of the rotating rod 511 is pivotally connected to the seat body 2. Herein, the first pivot axis 100 is collinear with the axis of the rotating shaft of the worm gear 33, thereby causing the rotating rod 511 to be rotatably arranged relative to the support base 1 about the first pivot axis 100. The second end of the rotating rod 511 is pivotally connected to the seat body 2 about a second pivot axis 200. The rotating rod 511 drives the seat body 2 to perform synchronized circular motion in response to the drive mechanism 3 driving the rotating rod 511 to perform circular motion. In this way, the structure of the transmission mechanism 5 may be simplified, as only the rotating rod 511 needs to be provided, thereby saving costs.

[0118] Referring to FIGS. 17 to 19, in this embodiment, preferably, the seat body 2 includes a swing member 23, a mounting base 21, and a seat frame 22 that are connected. The swing member 23 supports the mounting base 21, and the mounting base 21 supports the seat frame 22. The first connecting rod 41, the second connecting rod 42, and the rotating rod 511 are all pivotally connected to the swing member 23. In this way, the swing member 23 is configured to drive the mounting base 21 and the seat frame 22 to perform circular motion.

[0119] It is understandable that, as described in Embodiment 1, in other embodiments, the eccentric rotating portion 51 may also be a pin column eccentrically arranged on one side of the worm gear 33. The seat body 2 is pivotally connected to the pin column, specifically, the swing member 23 is pivotally connected to the pin column. This pin column may also perform circular motion as the worm gear 33 rotates. At this time, the pin column is rotatable relative to the support base 1 about the axis of the rotating shaft of the worm gear 33, that is, the first pivot axis 100 is also collinear with the axis of the rotating shaft of the worm gear 33. In addition, to avoid interference, only one pin column will be provided, that is, the eccentric rotating portion 51 cannot be arranged in pairs. Alternatively, the eccentric rotating portion 51 may also

be other structures capable of outputting rotational driving force to the connecting portion 52. The specific configuration of the eccentric rotating portion 51 is not limited herein.

[0120] Referring to FIGS. 18 to 20, in order to improve the support strength and motion stability, two rotating rods 511 are provided, two swing members 23 are provided, and two sets of connecting mechanism 4 are provided. The two rotating rods 511 are fixedly connected to two ends of the rotating shaft of the worm gear 33, respectively. One rotating rod 511, one swing member 23, and one set of connecting mechanism 4 are arranged in a one-to-one correspondence.

[0121] Specifically, taking the direction shown in FIG. 18 as a reference, one rotating rod 511, one swing member 23, and one set of connecting mechanism 4 are located on a rear side of the upper mounting box 18. In this set of structure, a first end of the rear rotating rod 511 is pivotally connected to a rear end of the rotating shaft of the worm gear 33, and a second end of the rear rotating rod 511 is pivotally connected to the rear swing member 23. A first end of the rear first connecting rod 41 and a first end of the rear second connecting rod 42 are pivotally connected to the rear side of the upper mounting box 18, respectively. A second end of the rear first connecting rod 41 and a second end of the rear second connecting rod 42 are pivotally connected to the rear swing member 23, respectively. Another rotating rod 511, another swing member 23, and another set of connecting mechanism 4 are located on a front side of the upper mounting box 18. In this set of structure, a first end of the front rotating rod 511 is pivotally connected to a front end of the rotating shaft of the worm gear 33, and a second end of the front rotating rod 511 is pivotally connected to the front swing member 23. A first end of the front first connecting rod 41 and a first end of the front second connecting rod 42 are pivotally connected to the front side of the upper mounting box 18, respectively. A second end of the front first connecting rod 41 and a second end of the front second connecting rod 42 are pivotally connected to the front swing member 23, respectively.

[0122] Referring to FIGS. 18 and 21, the swing member 23 includes a first part 231 and a second part 232. The second part 232 is connected to the first part 231. The second part 232 is configured to be connected to the mounting base 21. The first connecting rod 41, the second connecting rod 42, and the rotating rod 511 are all pivotally connected to the first part 231. Preferably, the first part 231 is of an integrally formed inverted triangular shape. The first connecting rod 41 and the second connecting rod 42 are pivotally connected to two upper corners of the first part 231, respectively. The rotating rod 511 is pivotally connected to a lower corner of the first part 231. Specifically, the first part 231 includes a first segment 2311, a second segment 2312, and a third segment 2313. A lower end of the first segment 2311 is connected to a lower end of the second segment 2312. One end of the third segment 2313 is connected to an

upper end of the first segment 2311, and the other end of the third segment 2313 is connected to an upper end of the second segment 2312. The first segment 2311, the second segment 2312, and the third segment 2313 are integrally formed and lie in the same plane. The first connecting rod 41 is pivotally connected to a connection portion between the third segment 2313 and the first segment 2311. The second connecting rod 42 is pivotally connected to a connection portion between the third segment 2313 and the second segment 2312. The rotating rod 511 is pivotally connected to a connection portion between the first segment 2311 and the second segment 2312. The connection portion between the third segment 2313 and the first segment 2311 and the connection portion between the third segment 2313 and the second segment 2312 are the two upper corners of the first part 231. The connection portion between the first segment 2311 and the second segment 2312 is the lower corner of the first part 231.

[0123] In this way, compared to a method where three rods are stacked and pivotally connected to the first connecting rod 41, the second connecting rod 42, and the rotating rod 511 respectively (which would have a total of six pivot points, and its overall thickness would be at least the sum of the thicknesses of two rods), the swing member 23 provided in this embodiment, as a single component, pivotally connects the first connecting rod 41, the second connecting rod 42, and the rotating rod 511. Overall, only three pivot points need to be provided to achieve pivotal connection with the first connecting rod 41, the second connecting rod 42, and the rotating rod 511. This saves three pivot points and the thickness of at least one rod. When two swing members 23 are used, a total of six pivot points and the thickness of at least two rods are saved. Thus, the overall thickness may be made relatively thin, and the cost is lower.

[0124] It should be noted that an intermediate area enclosed by the first segment 2311, the second segment 2312, and the third segment 2313 is configured to form a sealed region, and reinforcing ribs may be formed in the sealed region. That is, when viewing the first part 231 as a whole, it may also be considered that the intermediate area of the first part 231 forms a partially recessed portion. Certainly, the intermediate area enclosed by the first segment 2311, the second segment 2312, and the third segment 2313 may also be in a hollowed-out form.

[0125] Since the first part 231 adopts an integrated structure, it is further preferable that the first part 231 and the second part 232 are also integrally formed, thereby overall improving the strength and stability of the swing member 23 and controlling its cost.

[0126] In other preferred embodiments, the swing member 23 may also adopt other structural forms. For example, the first part 231 may be T-shaped or cross-shaped. In this case, the second segment 2312 is arranged vertically, and the first segment 2311 and the third segment 2313 are arranged horizontally and are respectively connected to two sides of the second segment 2312

(at this time, it might be considered that the first segment 2311 and the third segment 2313 are the same horizontal segment). The first connecting rod 41 is pivotally connected to the first segment 2311. The second connecting rod 42 is pivotally connected to the third segment 2313. The rotating rod 511 is pivotally connected to the second segment 2312. Alternatively, the first part 231 may also be U-shaped. In this case, the second part 232 may be connected above the first part 231. The specific pivotal connection positions of the first connecting rod 41, the second connecting rod 42, and the rotating rod 511 on the first part 231 are determined according to the setup requirements. Alternatively, the first part 231 may also be rectangular or trapezoidal. In this case, the first part 231 will also include a fourth segment. The specific pivotal connection positions of the first connecting rod 41, the second connecting rod 42, and the rotating rod 511 on the first part 231 are determined according to the setup requirements.

[0127] Referring to FIGS. 17 to 19, the infant rocking device further includes an auxiliary spring 6. The auxiliary spring 6 is configured to provide an upward auxiliary force. One end of the auxiliary spring 6 is connected to the swing member 23, and the other end of the auxiliary spring 6 is connected to the support base 1. In this way, the auxiliary spring 6 is configured to provide an upward auxiliary force when driving the swing member 23 to rise, playing a labor-saving role, making it easier for the drive mechanism 3 to drive the seat body 2 to swing upward in a circular motion.

[0128] Specifically, to provide the upward auxiliary force more stably, at least two auxiliary springs 6 are provided. Based on the number of swing members 23 being two, the number of auxiliary springs 6 is preferably four. Herein, every two auxiliary springs 6 are arranged in pairs and correspond to one swing member 23. In each pair of auxiliary springs 6, the two auxiliary springs 6 are arranged opposite to each other in an inverted V-shape. One end of each of the two auxiliary springs 6 is connected to the swing member 23, and the other end of each of the two auxiliary springs 6 is connected to the support base 1. Specifically, four fifth connecting posts 16 are provided on the support base 1. The other ends of different auxiliary springs 6 are respectively connected to different fifth connecting posts 16, thereby achieving relative connection of the auxiliary springs 6 between the swing member 23 and the support base 1.

[0129] Regarding the specific connection scheme between the auxiliary spring 6 and the swing member 23, and between the auxiliary spring 6 and the fifth connecting post 16, optionally, two first hanging posts are provided on the first part 231 in each swing member 23. The two first hanging posts are arranged at intervals at the lower corner of the first part 231. A second hanging post is provided at an upper end of each fifth connecting post 16. One end of the auxiliary spring 6 is connected to the first hanging post, and the other end of the auxiliary spring 6 is connected to the second hanging post. Certainly, other

methods may also be used to achieve the connection between the auxiliary spring 6 and the swing member 23, and between the auxiliary spring 6 and the fifth connecting post 16, which are not limited herein.

[0130] It should be noted that, for other structures not described, reference may be made to the relevant descriptions in Embodiment 1, and will not be repeated here.

[0131] In this embodiment, for ease of understanding, the working process of the infant rocking device of this embodiment is as follows:

[0132] Taking FIGS. 17 and 18 as an example, with the infant rocking device performing circular motion to the highest point as a starting point, at this time, the motor 31 starts to be powered on and outputs power. The motor 31 drives the first roller 34 to rotate. The first roller 34 drives the second roller 35 to rotate via the belt 36. The second roller 35 drives the worm 32 to rotate synchronously. The worm 32 drives the worm gear 33 to rotate clockwise. The worm gear 33 drives the two rotating rods 511 to rotate synchronously, causing the second end of each rotating rod 511 to perform circular motion about the axis of the rotating shaft of the worm gear 33 (i.e., the first pivot axis 100). The second ends of the two rotating rods 511 drive the two swing members 23 to move clockwise. The swing members 23 drive the mounting base 21 and the seat frame 22 to move synchronously, causing the first connecting rod 41 to rotate clockwise about its pivoting axis with the upper mounting box 18 (i.e., the fifth pivot axis 500), and causing the second connecting rod 42 to rotate clockwise about its pivoting axis with the upper mounting box 18 (i.e., the sixth pivot axis 600), thereby causing the seat body 2 to perform clockwise circular motion relative to the support base 1.

Embodiment 6

[0133] Referring to FIGS. 22 to 24, this embodiment also discloses an infant rocking device. The difference between this embodiment and Embodiment 1, 2, 3, 4, or 5 lies in that: two worm gears 33 are provided, the transmission mechanism 5 is omitted, and the first connecting rod 41 and the second connecting rod 42 are fixedly connected to the rotating shafts of different worm gears 33, respectively.

[0134] In this embodiment, similarly to Embodiment 1, the infant rocking device also includes a support base 1, a seat body 2, a drive mechanism 3, and a connecting mechanism 4. The support base 1 serves as a bearing body and may be supported on the ground. The connecting mechanism 4 is arranged between the seat body 2 and the support base 1. The function of the seat body 2 is to carry an infant. The main function of the connecting mechanism 4 is to limit the movement trajectory of the seat body 2 relative to the support base 1. When necessary, the connecting mechanism 4 may also provide certain support for the seat body 2. The drive mechanism 3 is arranged on the support base 1. In particular, the seat

body 2 is configured to be driven by the drive mechanism 3 to perform circular motion relative to the support base 1 on a vertical plane or an inclined plane. The drive mechanism 3 is configured to output power to act on the seat body 2. In this case, the seat body 2 drives the connecting mechanism 4 to act simultaneously.

[0135] Thus, the infant rocking device of this embodiment may also solve the same technical problems as described in Embodiment 1 and achieve the same technical effects.

[0136] In addition, referring to FIGS. 22 and 23, similarly to Embodiment 1, the connecting mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. The first connecting rod 41 and the second connecting rod 42 are pivotally connected between the seat body 2 and the support base 1, respectively. In this way, under the driving action of the drive mechanism 3, the movement trajectory of the seat body 2 is limited by using the rotational trajectories of the first connecting rod 41 and the second connecting rod 42.

[0137] Similarly preferred as in Embodiment 1, a distance between two pivoting axes of the first connecting rod 41 is equal to a distance between two pivoting axes of the second connecting rod 42. A distance between a pivoting axis between the first connecting rod 41 and the seat body 2 and a pivoting axis between the second connecting rod 42 and the seat body 2 is equal to a distance between a pivoting axis between the first connecting rod 41 and the support base 1 and a pivoting axis between the second connecting rod 42 and the support base 1.

[0138] Similarly preferred as in Embodiment 1, two sets of connecting mechanism 4 are provided. The two sets of connecting mechanisms 4 are oppositely arranged to improve the stability during the movement of the seat body 2 and avoid downward torsion caused by unilateral force. Since two sets of connecting mechanism 4 are provided, that is, two first connecting rods 41 are provided, and similarly two second connecting rods 42 are provided.

[0139] Unlike Embodiment 1 but similar to Embodiments 3 or 4, the drive mechanism 3 includes a motor 31, a worm 32, a worm gear 33, a first roller 34, a second roller 35, and a belt 36. Two worm gears 33 are provided, and the two worm gears 33 are arranged at intervals along the axial direction of the worm 32. The connection relationships of the various components in the drive mechanism 3 may be referred to the relevant descriptions in Embodiments 3 or 4.

[0140] In this embodiment, what is special is that, based on the two worm gears 33, a first end of the first connecting rod 41 is fixedly connected to a rotating shaft of one of the worm gears 33, and a second end of the first connecting rod 41 is pivotally connected to the seat body 2. A first end of the second connecting rod 42 is fixedly connected to a rotating shaft of the other one of the worm gears 33, and a second end of the second connecting rod 42 is pivotally connected to the seat body 2.

[0141] Since both worm gears 33 are pivotally connected to the support base 1, and the first end of the first connecting rod 41 and the first end of the second connecting rod 42 are fixedly connected to the rotating shafts of different worm gears 33, respectively, the first connecting rod 41 shares a rotating shaft with one of the worm gears 33, and the second connecting rod 42 shares a rotating shaft with the other one of the worm gears 33. In this way, the pivotal connection between the first connecting rod 41 and the support base 1, and the pivotal connection between the second connecting rod 42 and the support base 1 are achieved.

[0142] Referring to FIGS. 23 and 24, based on the provision of two sets of connecting mechanism 4, preferably, the seat body 2 includes a mounting base 21 and a seat frame 22 that are connected. The mounting base 21 supports the seat frame 22. The mounting base 21 includes two connecting frames 211. One connecting frame 211 and one set of connecting mechanism 4 are arranged in a one-to-one correspondence. First ends of the two first connecting rods 41 are fixedly connected to two ends of a rotating shaft of the one of the worm gears 33, respectively. Second ends of the two first connecting rods 41 are pivotally connected to the different connecting frames 211, respectively. First ends of the two second connecting rods 42 are fixedly connected to two ends of a rotating shaft of the other one of the worm gears 33, respectively. Second ends of the two second connecting rods 42 are pivotally connected to the different connecting frames 211, respectively. The first connecting rod 41 is located on an outer side of the worm gear 33. The second connecting rod 42 is located on an outer side of the worm gear 33. The connecting frame 211 is located on outer sides of the first connecting rod 41 and the second connecting rod 42. An avoidance space is formed between the two connecting frames 211. During circular motion of the seat body 2, the worm gear 33, the first connecting rod 41, and the second connecting rod 42 are movable relative to each other at the avoidance space.

[0143] Specifically, taking the direction shown in FIG. 23 as a reference, in the connecting mechanism 4 located behind the worm gear 33, a first end of the first connecting rod 41 is fixedly connected to a rear end of the rotating shaft of the left worm gear 33, thereby causing the first connecting rod 41 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the left worm gear 33. A second end of the first connecting rod 41 is pivotally connected to a left end of the connecting frame 211 located at the rear. A first end of the second connecting rod 42 is fixedly connected to a rear end of the rotating shaft of the right worm gear 33, thereby causing the second connecting rod 42 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the right worm gear 33. A second end of the second connecting rod 42 is pivotally connected to a right end of the connecting frame 211 located at the rear. In the connecting mechanism 4 located in front of the worm gear 33, a first end of the first connecting rod 41 is fixedly

connected to a front end of the rotating shaft of the left worm gear 33, thereby causing the first connecting rod 41 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the left worm gear 33. A second end of the first connecting rod 41 is pivotally connected to a left end of the connecting frame 211 located at the front. A first end of the second connecting rod 42 is fixedly connected to a front end of the rotating shaft of the right worm gear 33, thereby causing the second connecting rod 42 to be rotatably arranged relative to the support base 1 about the axis of the rotating shaft of the right worm gear 33. A second end of the second connecting rod 42 is pivotally connected to a right end of the connecting frame 211 located at the front.

[0144] It should be noted that, in other preferred embodiments, when only one set of connecting mechanism 4 is provided, the arrangement of the first connecting rod 41 and the second connecting rod 42 in the connecting mechanism 4 may refer to the arrangement in Embodiment 3. At this time, one end of a rotating shaft of one worm gear 33 is fixedly connected to the first connecting rod 41, and one end of a rotating shaft of the other worm gear 33 is fixedly connected to the second connecting rod 42.

[0145] In this way, compared to Embodiment 1, 2, 3, 4, or 5, in the infant rocking device of this embodiment, a dual worm gear 33 configuration combined with a direct connection drive method between the worm gears 33 and the connecting mechanism 4 is adopted, forming two spaced-apart power points, which may increase the driving force. Moreover, the overall structure is simpler, with fewer components, further reducing the cost. Furthermore, the scheme of dual connecting frames 211 and dual connecting mechanisms 4 avoids interference issues between structures, improves stability during motion, and prevents unilateral force from causing downward torsion.

[0146] It should be noted that, for other structures not described, reference may be made to the relevant descriptions in Embodiment 1, 2, 3, 4, or 5, which will not be repeated here.

[0147] In this embodiment, for ease of understanding, the working process of the infant rocking device of this embodiment is as follows:

Taking FIGS. 22 and 23 as an example, with the infant rocking device performing circular motion to the highest point as a starting point, at this time, the motor 31 starts to be powered on and outputs power. The motor 31 drives the first roller 34 to rotate. The first roller 34 drives the second roller 35 to rotate via the belt 36. The second roller 35 drives the worm 32 to rotate synchronously. The worm 32 drives the two worm gears 33 to rotate clockwise synchronously. The different worm gears 33 drive the two first connecting rods 41 and the two second connecting rods 42 to rotate synchronously, respectively, causing the two first connecting rods 41 to rotate clockwise about the axis of the rotating shaft of one of the worm gears 33, and causing the two second connecting rods 42 to rotate

clockwise about the axis of the rotating shaft of the other worm gear 33, thereby causing the seat body 2 to perform clockwise circular motion relative to the support base 1.

[0148] As may be seen from any of the above Embodiments 1 to 6, the infant rocking device of the present invention also has the effect that, under the action of the connecting mechanism 4 restricting the movement trajectory of the seat body 2, circular motion of the seat body 2 may be achieved only through the drive of one motor 31, thereby achieving lateral movement and lifting movement of the seat body 2. The structure is simple, the cost is low, and the noise is low. In addition, in some usage scenarios, as needed, the seat body 2 may not perform complete circular motion, such as performing semicircular or arc-shaped motion. At this time, it may be achieved by forward and reverse rotation of the motor 31; or it may be achieved by stopping and starting the motor 31 to achieve segmented arc motion, thereby composing circular motion.

[0149] The technical means disclosed in the solution of the present invention are not limited to those disclosed in the embodiments mentioned above but also include technical solutions consisting of any combination of the above technical features. It should be noted that for those skilled in the art, multiple improvements and modifications may be made without departing from the principles of the present invention. These improvements and modifications are also considered to be within the scope of protection of the present invention.

Claims

1. An infant rocking device, comprising: a support base, a seat body, a drive mechanism, and a connecting mechanism, wherein the connecting mechanism is arranged between the seat body and the support base and configured to limit a movement trajectory of the seat body, the drive mechanism is arranged on the support base, and the seat body is configured to be driven by the drive mechanism to perform circular motion relative to the support base on a vertical plane or an inclined plane.
2. The infant rocking device according to claim 1, wherein the connecting mechanism comprises a first connecting rod and a second connecting rod, and the first connecting rod and the second connecting rod are pivotally connected between the seat body and the support base, respectively.
3. The infant rocking device according to claim 2, wherein a distance between two pivoting axes of the first connecting rod is equal to a distance between two pivoting axes of the second connecting rod, and a distance between a pivoting axis between the first connecting rod and the seat body and a pivoting axis between the second connecting rod

and the seat body is equal to a distance between a pivoting axis between the first connecting rod and the support base and a pivoting axis between the second connecting rod and the support base.

4. The infant rocking device according to claim 3, wherein the seat body comprises a mounting base and a seat frame that are connected, the mounting base supports the seat frame, and the first connecting rod and the second connecting rod are pivotally connected to the mounting base, respectively.
5. The infant rocking device according to claim 4, wherein two sets of the connecting mechanism are provided and are oppositely arranged on two opposite outer sides of the mounting base, the support base is provided with a plurality of first connecting posts, the plurality of first connecting posts are divided into two groups and oppositely arranged, the two first connecting rods and the two second connecting rods are pivotally connected to inner sides of different first connecting posts correspondingly, and the mounting base is movable within an accommodation space enclosed by the plurality of first connecting posts when the drive mechanism drives the seat body to perform circular motion.
6. The infant rocking device according to claim 5, wherein a height of the mounting base is greater than the distance between the two pivoting axes of the first connecting rod; and/or, the height of the mounting base is greater than the distance between the two pivoting axes of the second connecting rod.
7. The infant rocking device according to claim 4, wherein the seat frame is detachably connected above the mounting base.
8. The infant rocking device according to claim 4, further comprising a transmission mechanism, wherein the transmission mechanism comprises an eccentric rotating portion and a connecting portion, the eccentric rotating portion is rotatably arranged relative to the support base about a first pivot axis, the drive mechanism drives the eccentric rotating portion to rotate, the connecting portion is connected to the seat body or the connecting mechanism, and the connecting portion is pivotally connected to the eccentric rotating portion about a second pivot axis; a distance between the first pivot axis and the second pivot axis is equal to the distance between the two pivoting axes of the first connecting rod, and is also equal to the distance between the two pivoting axes of the second connecting rod.
9. The infant rocking device according to claim 8, wherein the connecting portion comprises a third connecting rod and a fourth connecting rod, the third

connecting rod and the fourth connecting rod are arranged at an included angle, a first end of the third connecting rod and a first end of the fourth connecting rod are both pivotally connected to the eccentric rotating portion about the second pivot axis, a second end of the third connecting rod is connected to the seat body or the first connecting rod, and a second end of the fourth connecting rod is connected to the seat body or the second connecting rod.

10. The infant rocking device according to claim 9, wherein the second end of the third connecting rod and the first connecting rod of the connecting mechanism are pivotally connected to the seat body about a third pivot axis, and the second end of the fourth connecting rod and the second connecting rod of the connecting mechanism are pivotally connected to the seat body about a fourth pivot axis.
11. The infant rocking device according to claim 8, wherein the drive mechanism comprises a motor, a worm, and a worm gear, the motor is drivingly connected to the worm, the worm gear meshes with the worm, the eccentric rotating portion comprises a rotating rod, a first end of the rotating rod is fixedly connected to a rotating shaft of the worm gear, and a second end of the rotating rod is pivotally connected to the connecting portion.
12. The infant rocking device according to claim 11, wherein one worm gear is provided, two sets of the transmission mechanism are provided and are oppositely arranged on two opposite sides of the worm gear, and the first ends of the two rotating rods are fixedly connected to two ends of the rotating shaft of the worm gear, respectively.
13. The infant rocking device according to claim 11, wherein the drive mechanism further comprises a first roller, a second roller, and a belt, the first roller is mounted on an output shaft of the motor, the second roller is mounted on a rotating shaft of the worm, the belt is wound around the first roller and the second roller, and a diameter of the first roller is smaller than a diameter of the second roller.
14. The infant rocking device according to claim 3, wherein the drive mechanism comprises a first drive mechanism and a second drive mechanism, the first connecting rod is configured to be driven by the first drive mechanism to perform circular motion relative to the support base, and the second connecting rod is configured to be driven by the second drive mechanism to perform circular motion relative to the support base.
15. The infant rocking device according to claim 3, further comprising a transmission mechanism,

wherein the transmission mechanism comprises a first transmission assembly and a second transmission assembly, the drive mechanism drives the first transmission assembly to operate and drives the second transmission assembly to operate, the first transmission assembly is connected to the first connecting rod and drives the first connecting rod to perform circular motion, and the second transmission assembly is connected to the second connecting rod and drives the second connecting rod to perform circular motion.

16. The infant rocking device according to claim 11, wherein one set of the connecting mechanism is provided, the first connecting rod and the second connecting rod are diagonally and oppositely arranged on two opposite sides of the mounting base.
17. The infant rocking device according to claim 16, wherein one worm gear is provided, two sets of the transmission mechanism are provided and are oppositely arranged on two opposite sides of the worm gear, and the rotating rods of the two transmission mechanisms are fixedly connected to the two ends of the rotating shaft of the worm gear, respectively.
18. The infant rocking device according to claim 16, wherein two worm gears are provided, the two worm gears are arranged at intervals along an axial direction of the worm, two sets of the transmission mechanism are provided and are oppositely arranged on two opposite sides of the two worm gears, and rotating rods of different transmission mechanisms are fixedly connected to rotating shafts of different worm gears, respectively.
19. The infant rocking device according to claim 11, wherein two worm gears are provided, the two worm gears are arranged at intervals along an axial direction of the worm, four sets of the transmission mechanism are provided and are arranged in two pairs, and first ends of rotating rods of every two sets of the transmission mechanism are fixedly connected to two ends of a rotating shaft of a corresponding worm gear, respectively.
20. The infant rocking device according to any one of claims 17 to 19, wherein the connecting portion comprises a third connecting rod, a first end of the third connecting rod is pivotally connected to the second end of the rotating rod, and a second end of the third connecting rod and the first connecting rod of the connecting mechanism are pivotally connected to the seat body about a third pivot axis, or the second end of the third connecting rod and the second connecting rod of the connecting mechanism are pivotally connected to the seat body about a

fourth pivot axis.

21. The infant rocking device according to claim 2 or 3, wherein the drive mechanism comprises a motor, a worm, and a worm gear, the motor is drivingly connected to the worm, the worm gear meshes with the worm, and the infant rocking device further comprises a rotating rod, a first end of the rotating rod is fixedly connected to a rotating shaft of the worm gear, and a second end of the rotating rod is pivotally connected to the seat body.
22. The infant rocking device according to claim 21, wherein the seat body comprises a swing member, a mounting base, and a seat frame that are connected, the swing member supports the mounting base, the mounting base supports the seat frame, the swing member comprises a first part and a second part, the second part is connected to the first part, the second part is configured to be connected to the mounting base, and the first connecting rod, the second connecting rod, and the rotating rod are all pivotally connected to the first part.
23. The infant rocking device according to claim 22, wherein the first part at least comprises a first segment, a second segment, and a third segment, the first segment, the second segment, and the third segment are integrally formed and are located in a same plane, the first connecting rod is pivotally connected to the first segment or is pivotally connected to a connection portion between the first segment and the third segment, the second connecting rod is pivotally connected to the third segment or is pivotally connected to a connection portion between the second segment and the third segment, and the rotating rod is pivotally connected to the second segment or is pivotally connected to a connection portion between the first segment and the second segment.
24. The infant rocking device according to claim 22, wherein one worm gear is provided, two rotating rods are provided, two swing members are provided, two sets of the connecting mechanism are provided, the two rotating rods are fixedly connected to two ends of a rotating shaft of the worm gear, respectively, and one rotating rod, one swing member, and one set of the connecting mechanism are arranged in a one-to-one correspondence.
25. The infant rocking device according to claim 22, further comprising an auxiliary spring configured to provide an upward auxiliary force, one end of the auxiliary spring is connected to the swing member, and the other end of the auxiliary spring is connected to the support base.

26. The infant rocking device according to claim 25, wherein at least two fifth connecting posts are provided on the support base, at least two auxiliary springs are provided, the two auxiliary springs are arranged opposite to each other in an inverted V-shape, wherein one end of each of the two auxiliary springs is connected to the swing member, and the other end of each of the two auxiliary springs is connected to a different one of the fifth connecting posts. 5 10
27. The infant rocking device according to claim 2 or 3, wherein the drive mechanism comprises a motor, a worm, and two worm gears, the motor is drivingly connected to the worm, the two worm gears are arranged at intervals along an axial direction of the worm and mesh with the worm, respectively, a first end of the first connecting rod is fixedly connected to a rotating shaft of one of the worm gears, a second end of the first connecting rod is pivotally connected to the seat body, a first end of the second connecting rod is fixedly connected to a rotating shaft of the other one of the worm gears, and a second end of the second connecting rod is pivotally connected to the seat body. 15 20 25
28. The infant rocking device according to claim 27, wherein the seat body comprises a mounting base and a seat frame that are connected, the mounting base supports the seat frame, the mounting base comprises two connecting frames, two sets of the connecting mechanism are provided, one connecting frame and one set of the connecting mechanism are arranged in a one-to-one correspondence, first ends of the two first connecting rods are fixedly connected to two ends of a rotating shaft of the one of the worm gears, respectively, second ends of the two first connecting rods are pivotally connected to the different connecting frames, respectively, first ends of the two second connecting rods are fixedly connected to two ends of a rotating shaft of the other one of the worm gears, respectively, and second ends of the two second connecting rods are pivotally connected to the different connecting frames, respectively. 30 35 40 45

50

55

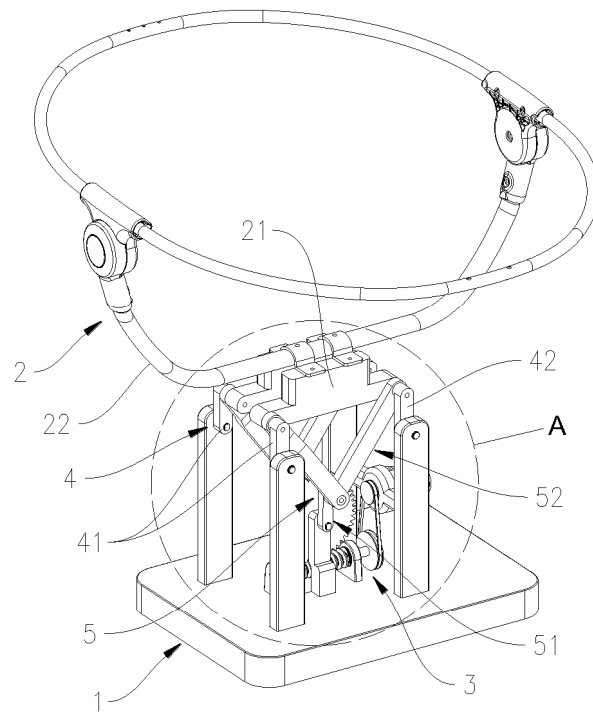


FIG. 1

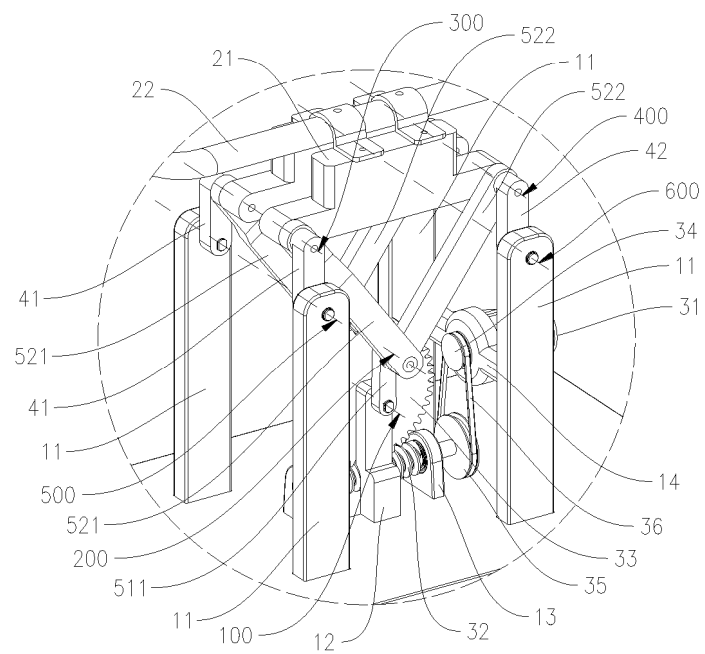


FIG. 2

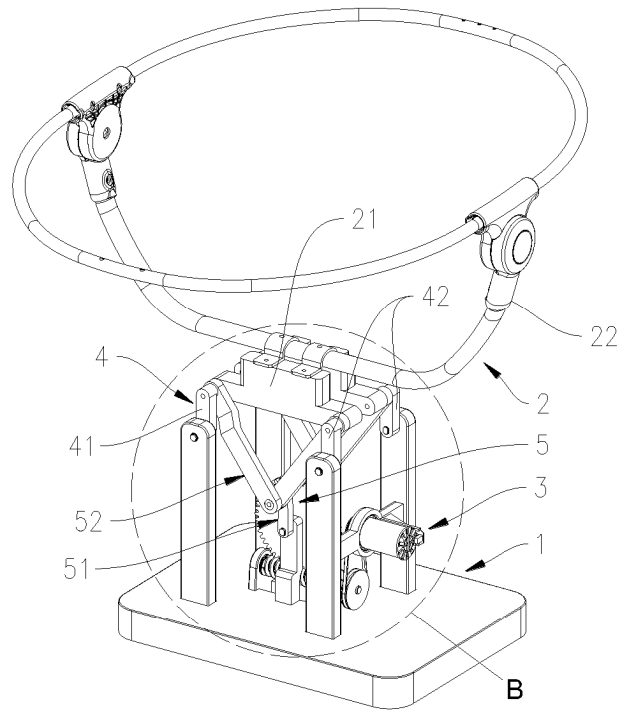


FIG. 3

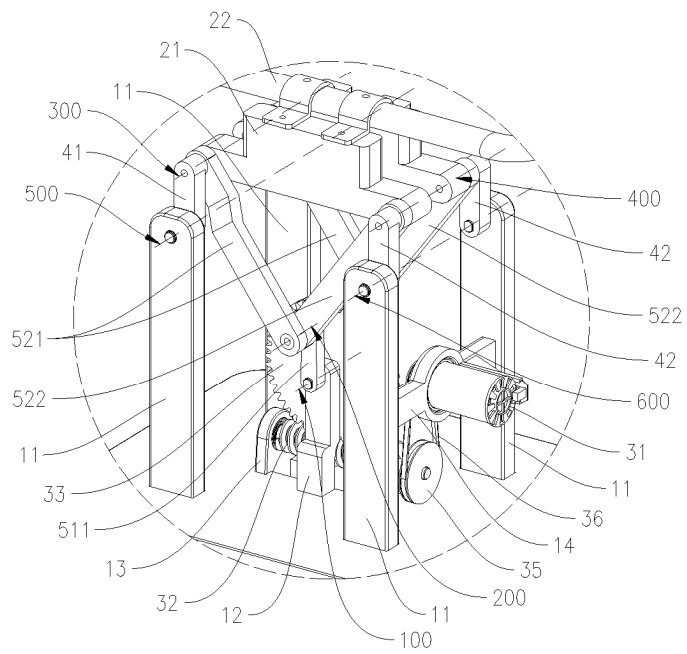


FIG. 4

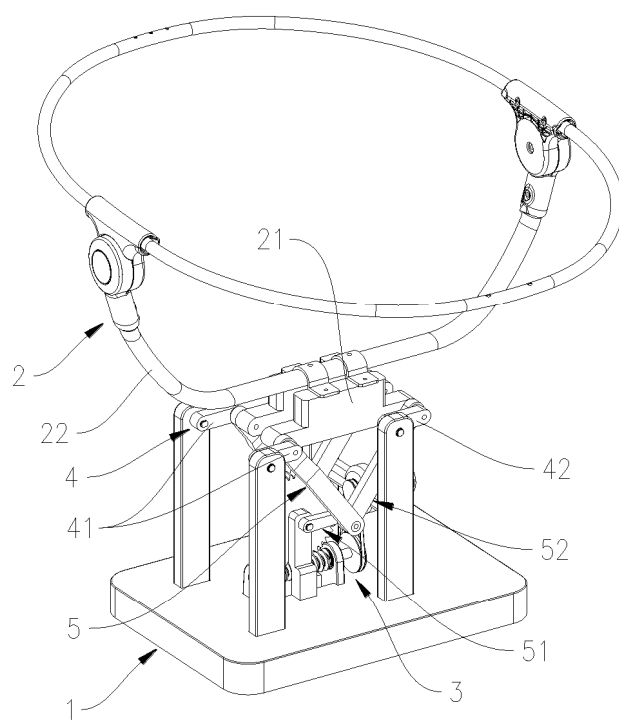


FIG. 5

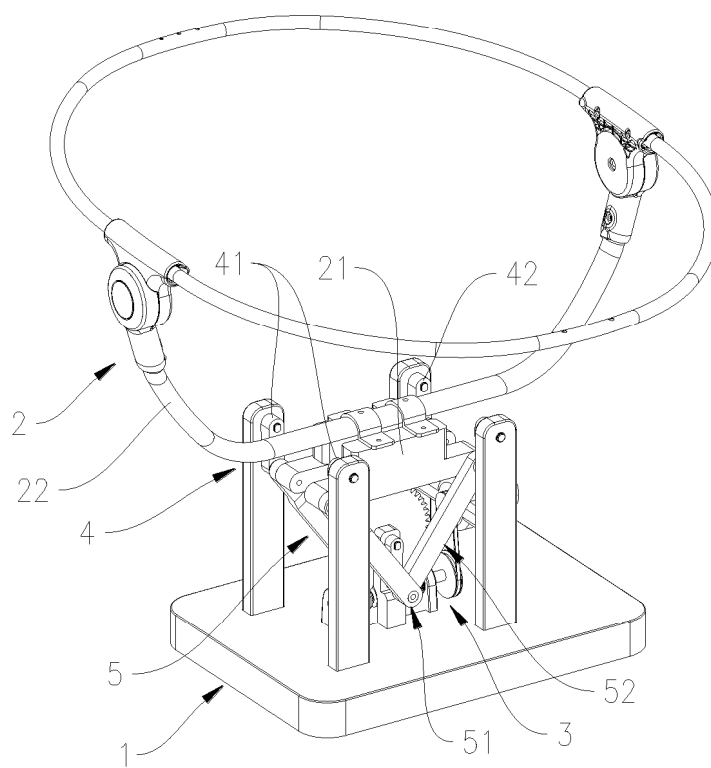


FIG. 6

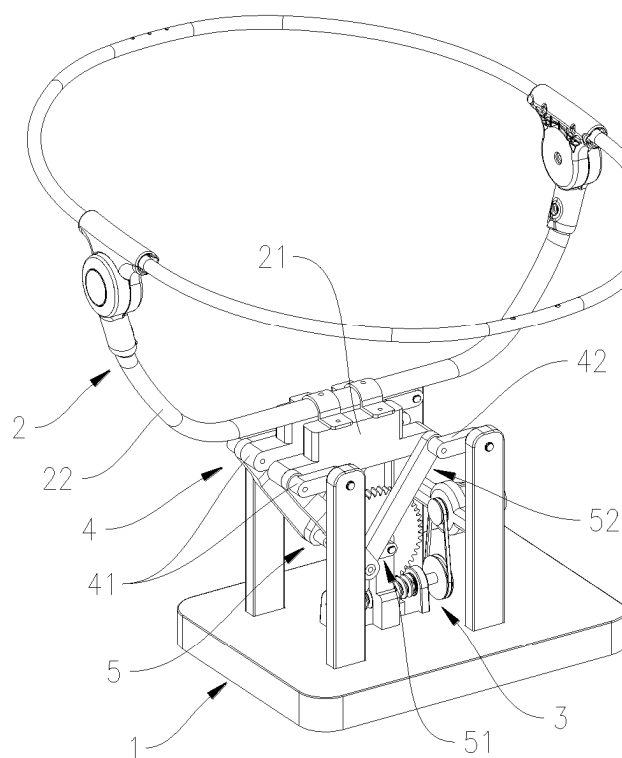


FIG. 7

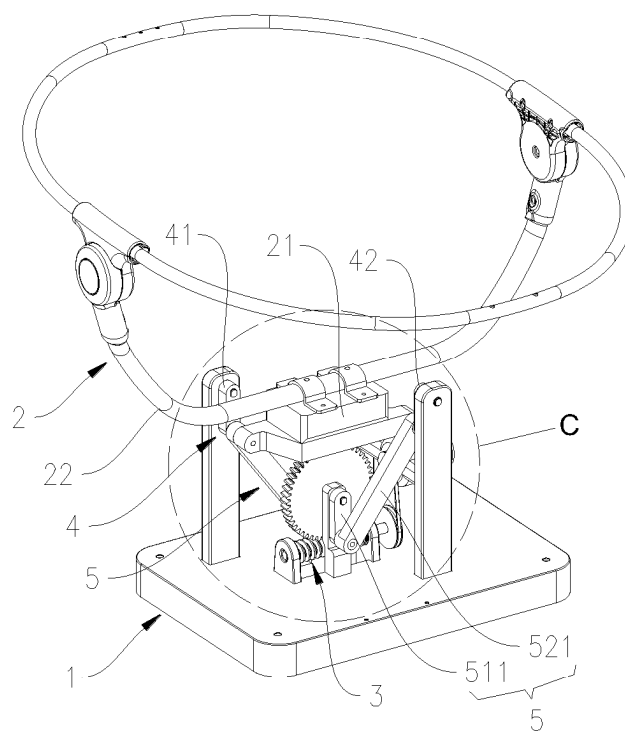


FIG. 8

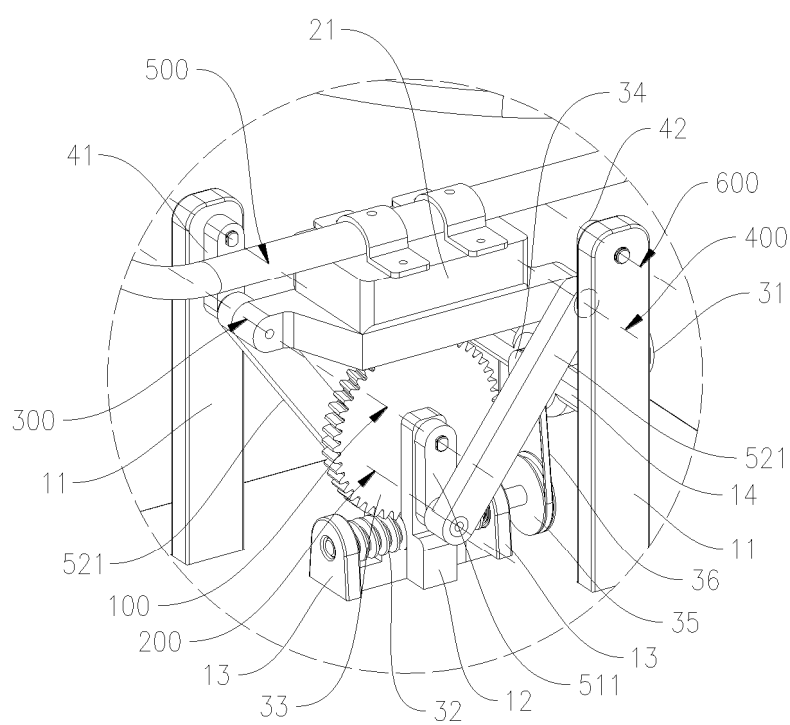


FIG. 9

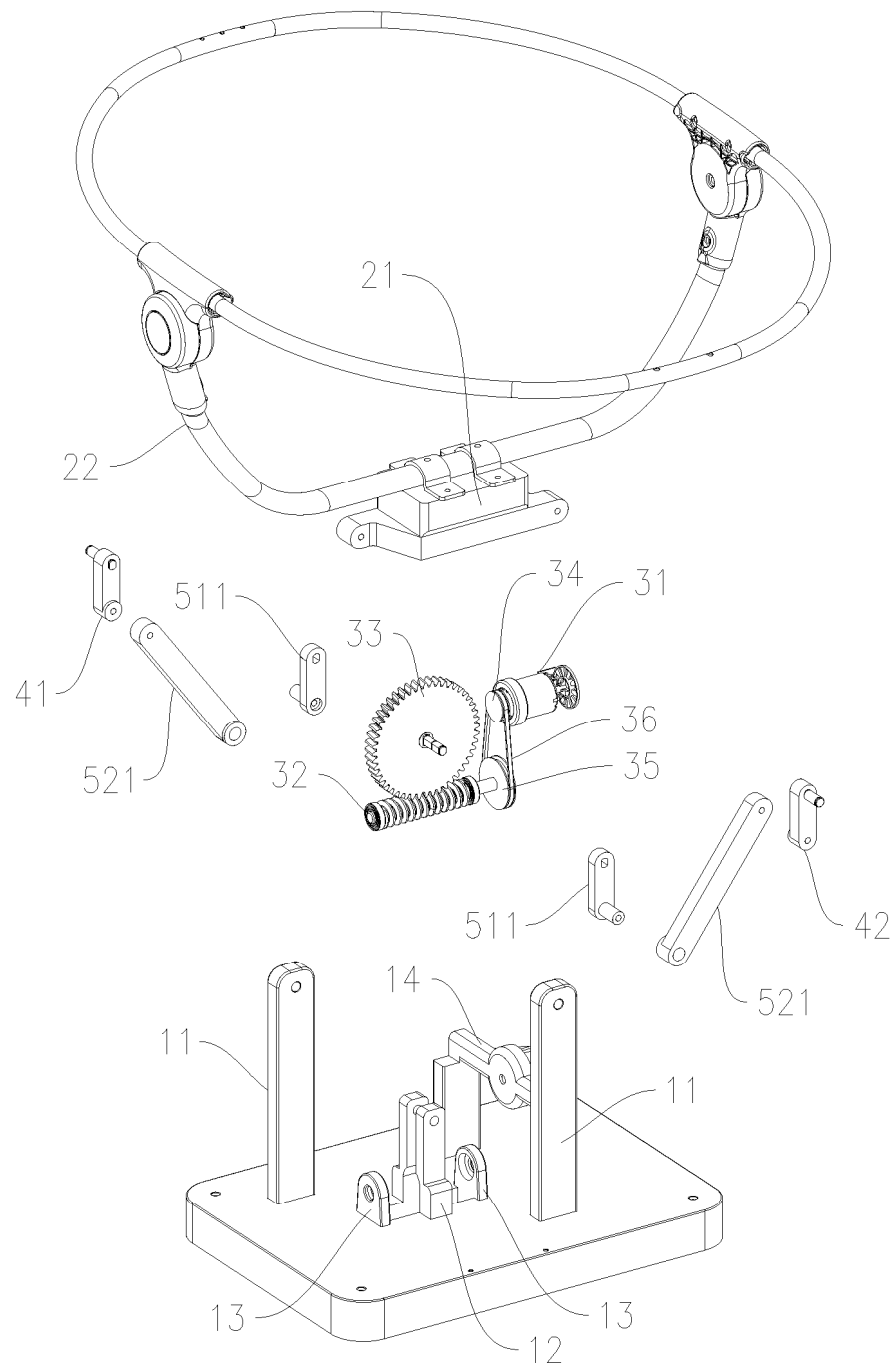


FIG. 10

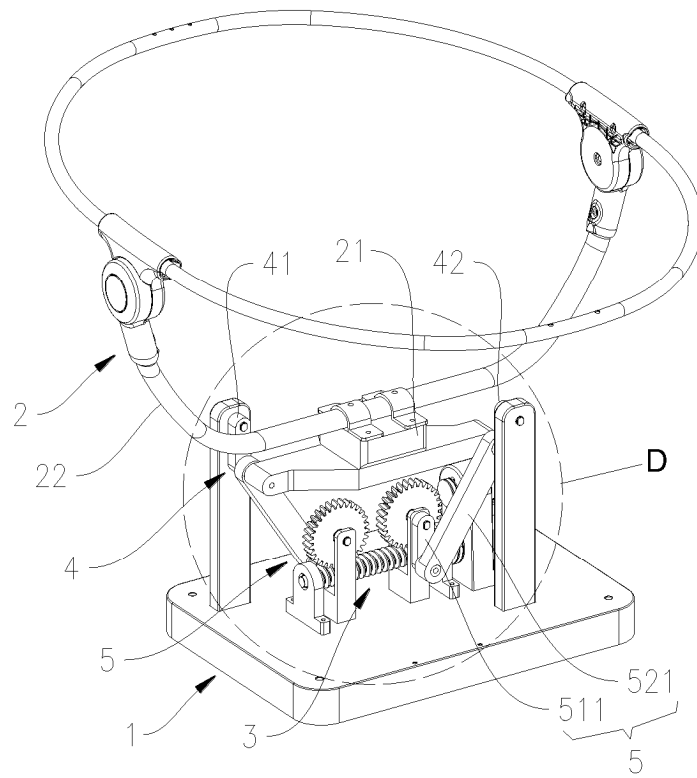


FIG. 11

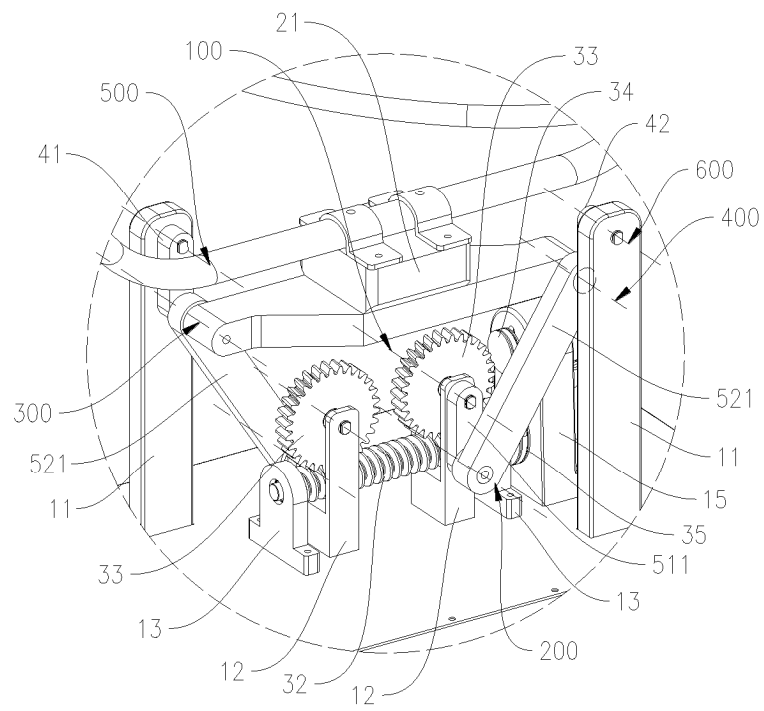


FIG. 12

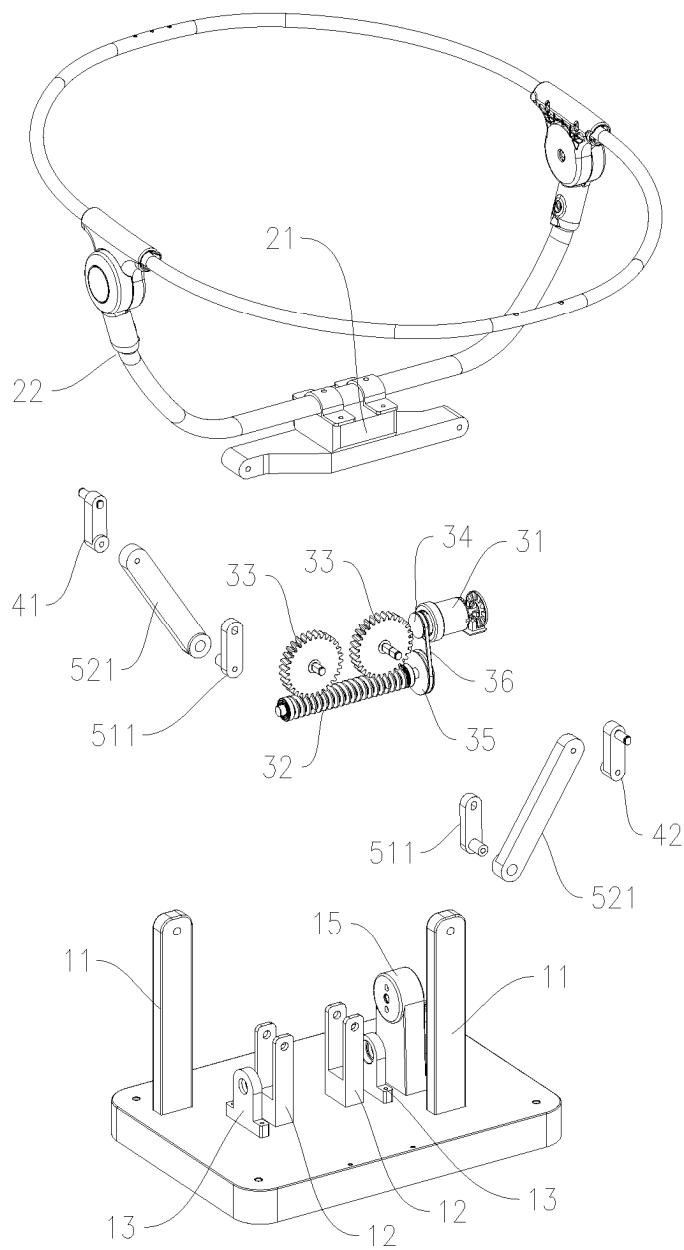


FIG. 13

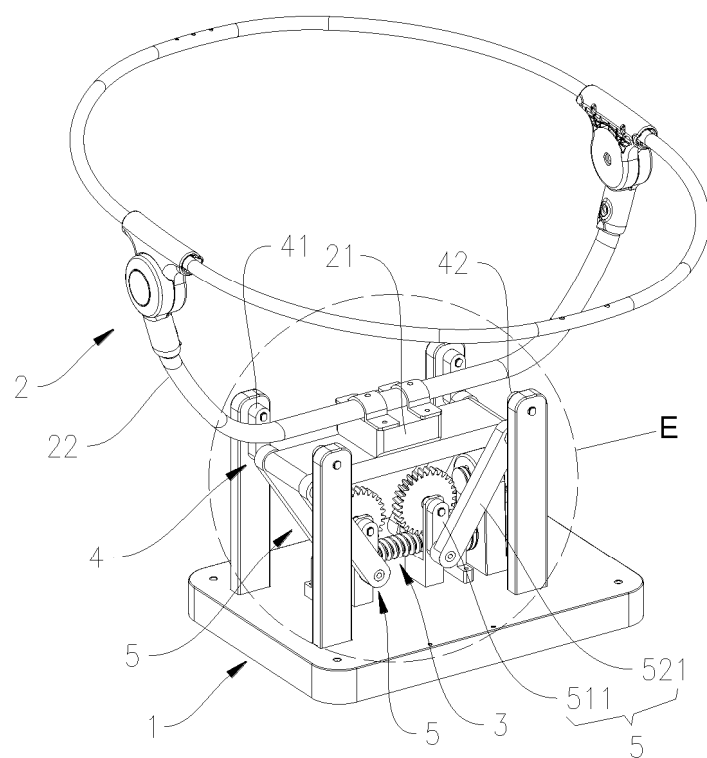


FIG. 14

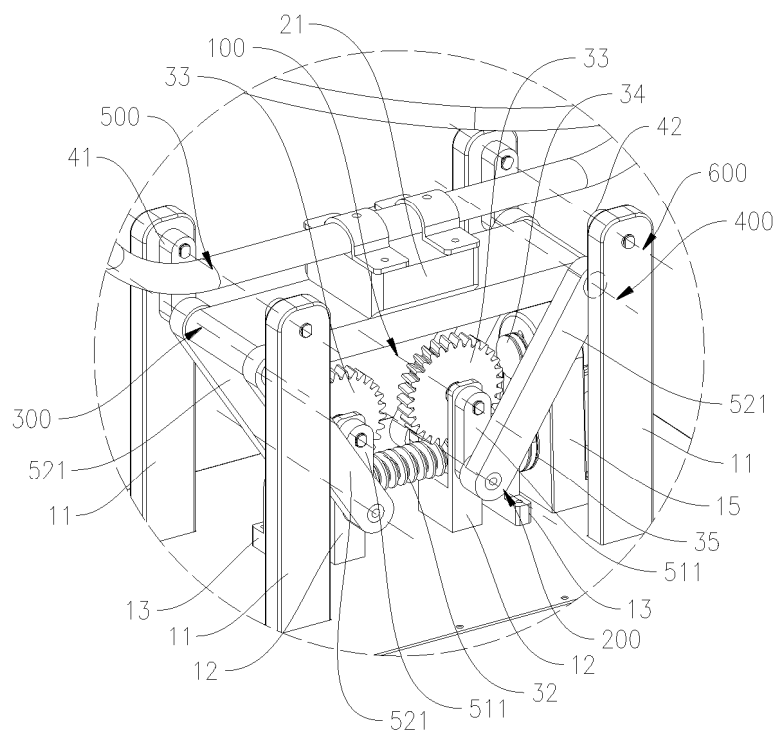


FIG. 15

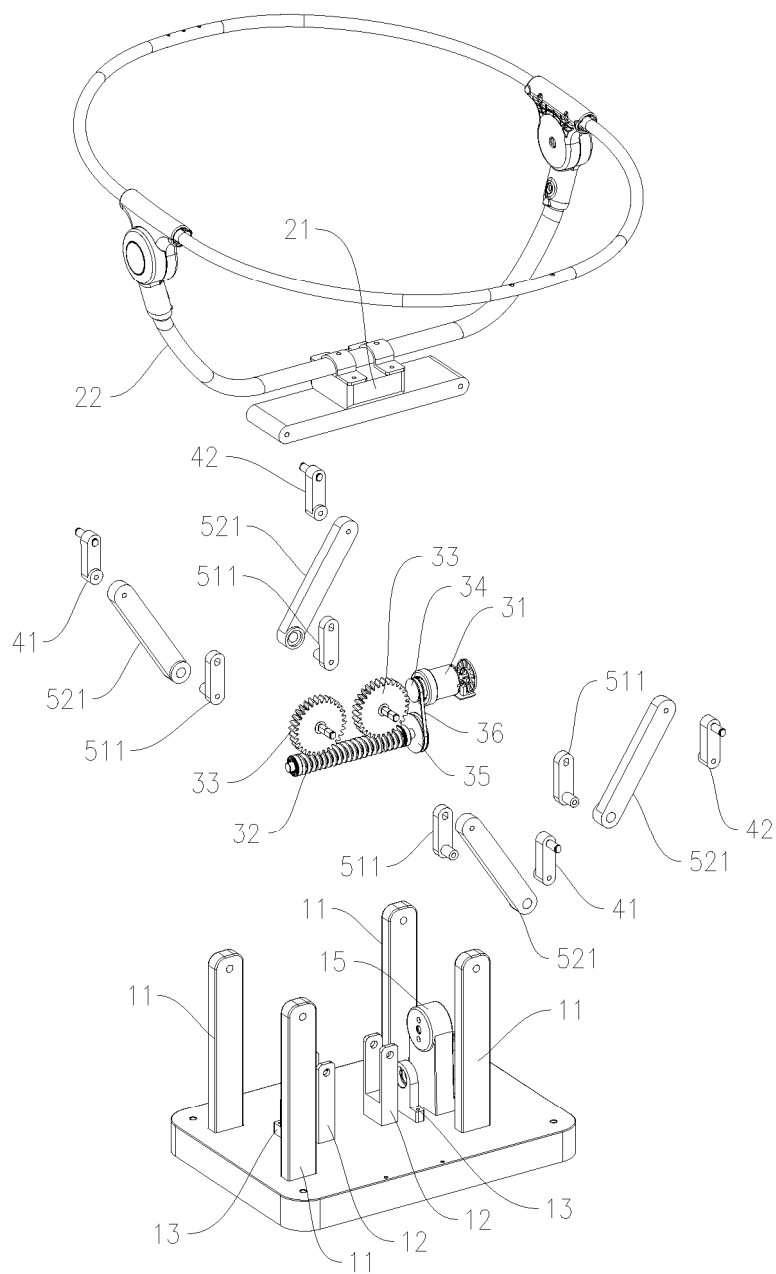


FIG. 16

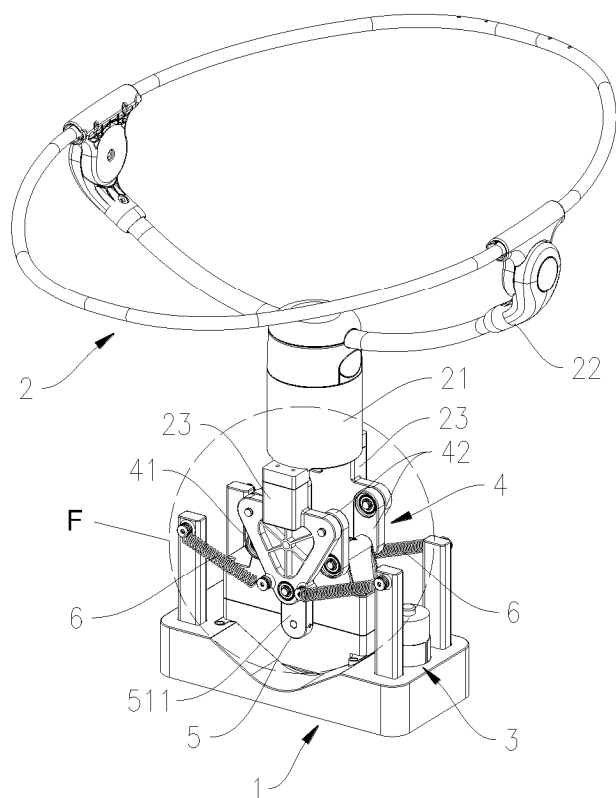


FIG. 17

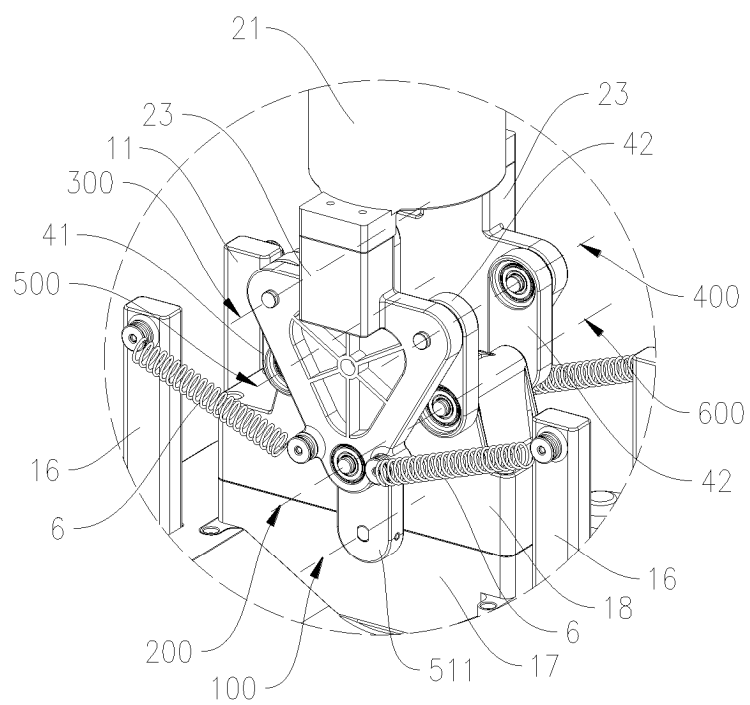


FIG. 18

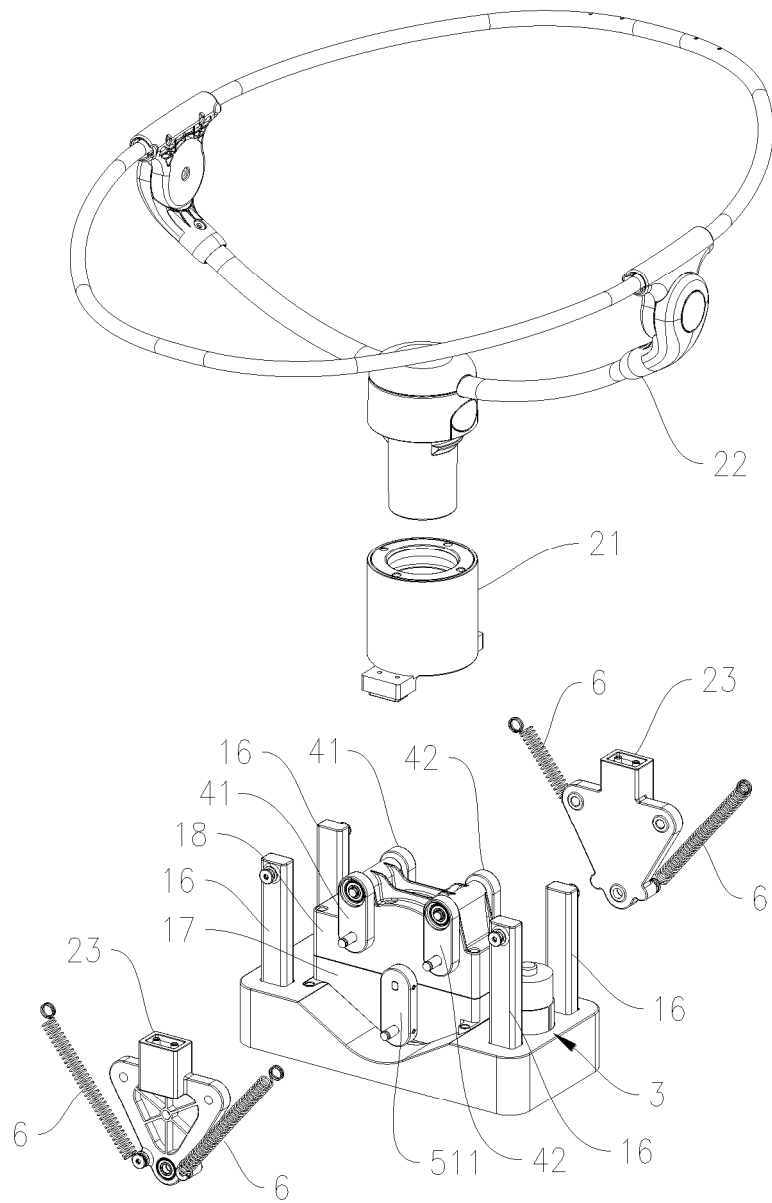


FIG. 19

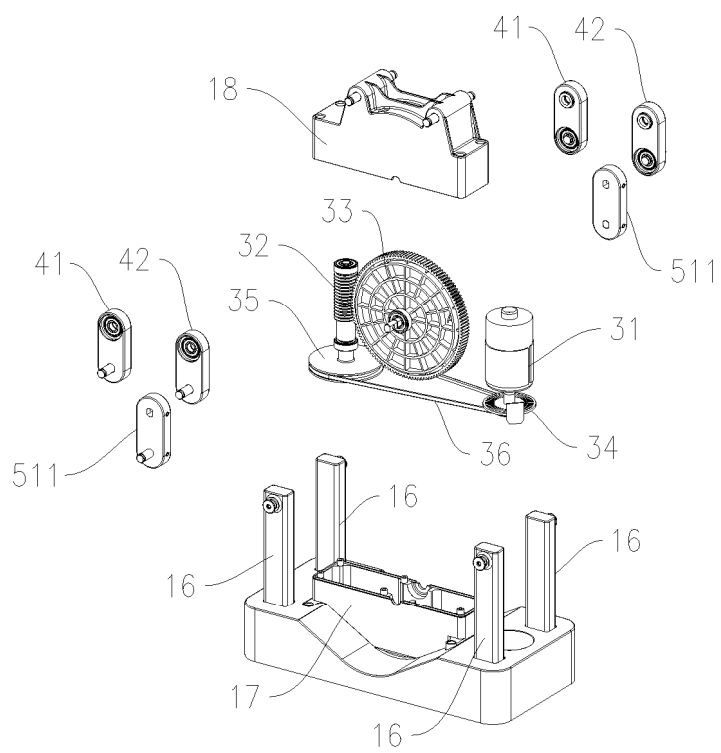


FIG. 20

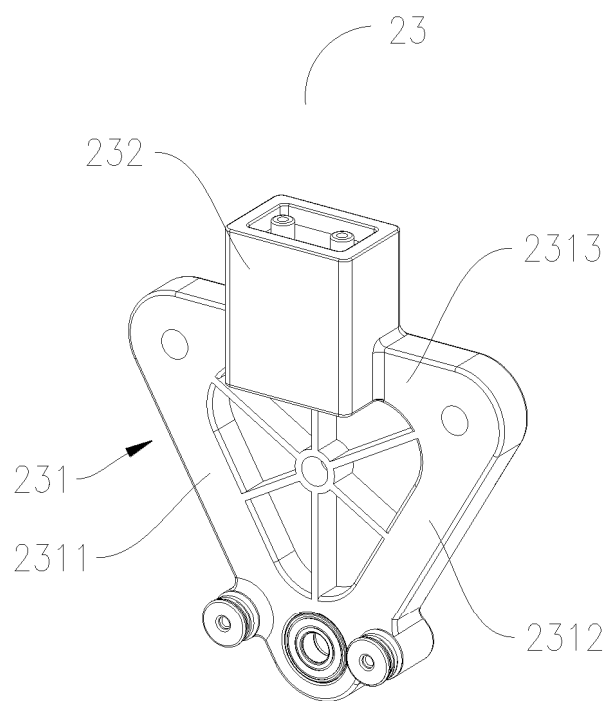


FIG. 21

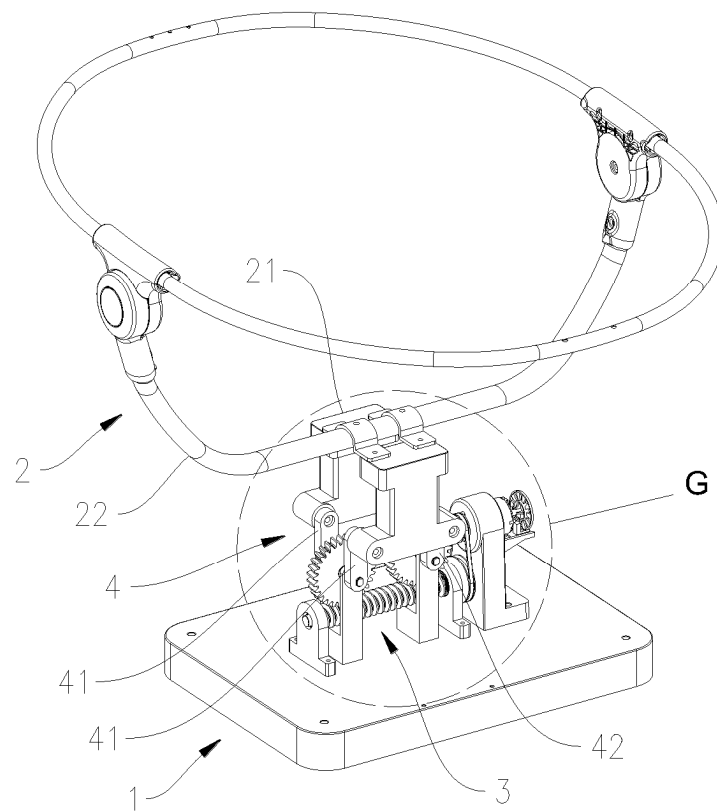


FIG. 22

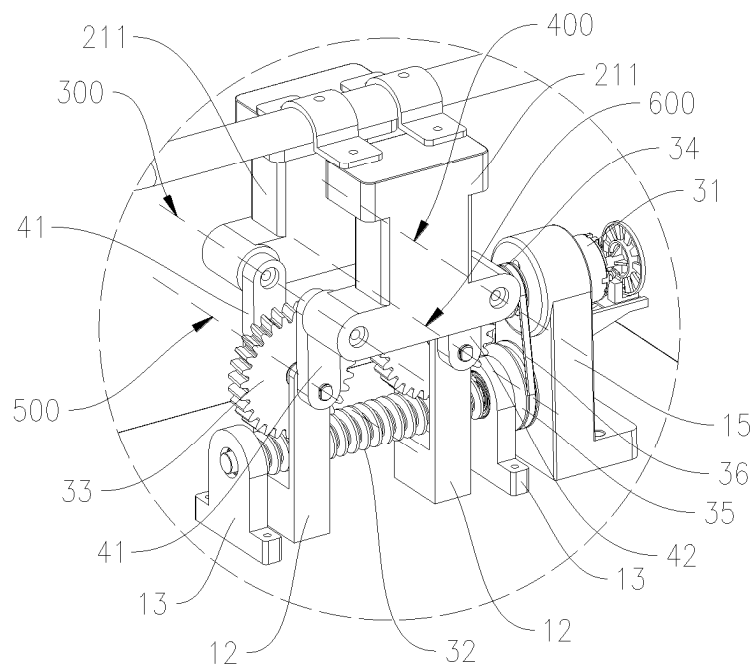


FIG. 23

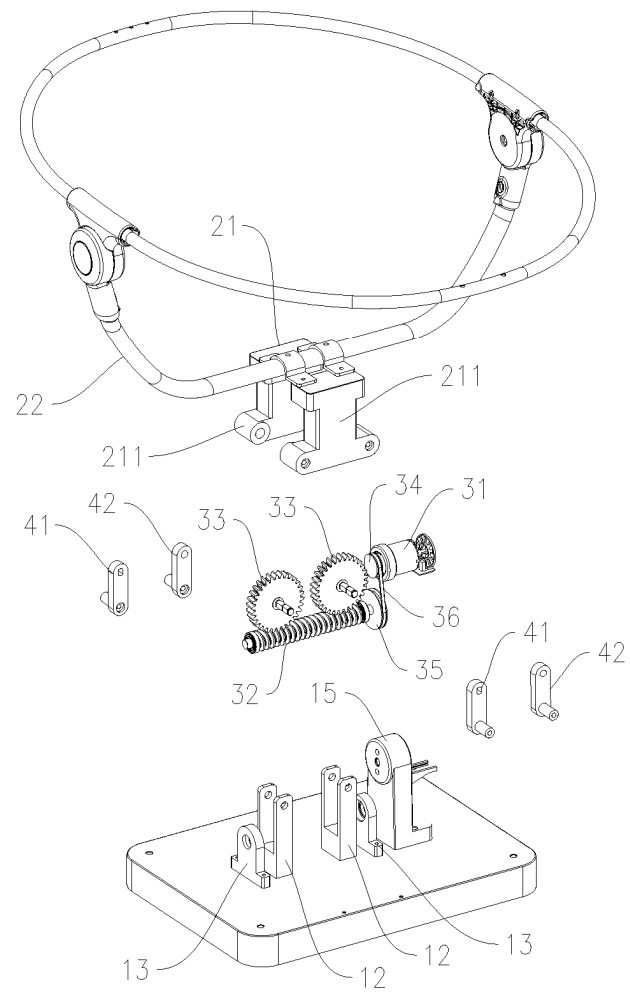


FIG. 24

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/120052

A. CLASSIFICATION OF SUBJECT MATTER

A47D13/10(2006.01)i; A47D9/02(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A47D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, CNTXT, CNKI: 摇动, 摇摆, 摇椅, 摇篮, 婴儿, 儿童, 孩子, 圆周, 环形, 旋转, 运动, 路径, 轨迹, 连杆, 偏心, 蜗杆, 蜗轮: VEN, USTXT, EPTXT, WOTXT: shake, rock, chair, cradle, infant, baby, child, circular, loop, rotate, move, track, path, connect, rod, worm, gear

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 117137287 A (ZHONGSHAN CITY TOGYIBABY CO., LTD.) 01 December 2023 (2023-12-01) claims 1-15, description, paragraphs 36-70, and figures 1-7	1-15, 19-21, 27-28
X	CN 103211446 A (WONDERLAND NURSERYGOODS HONG KONG CO., LTD.) 24 July 2013 (2013-07-24) description, paragraphs 46-53, and figures 1-10	1-7
X	CN 102058278 A (GRACO CHILDRENS PRODUCTS INC) 18 May 2011 (2011-05-18) description, paragraphs 25-114, and figures 1-24B	1
PY	CN 117137287 A (ZHONGSHAN CITY TOGYIBABY CO., LTD.) 01 December 2023 (2023-12-01) claims 1-15, description, paragraphs 36-70, and figures 1-7	16-18
Y	CN 103211446 A (WONDERLAND NURSERYGOODS HONG KONG COMPANY LIMITED) 24 July 2013 (2013-07-24) description, paragraphs 46-53, and figures 1-10	16-18

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"D" document cited by the applicant in the international application	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"E" earlier application or patent but published on or after the international filing date	"&" document member of the same patent family
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 06 December 2024	Date of mailing of the international search report 11 December 2024
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/120052

5

10

15

20

25

30

35

40

45

50

55

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 116746782 A (SUZHOU LEQI INTELLIGENT TECHNOLOGY CO., LTD.) 15 September 2023 (2023-09-15) entire document	1-28
A	CN 210902309 U (HENAN CHILDREN'S HOSPITAL ZHENGZHOU CHILDREN'S HOSPITAL) 03 July 2020 (2020-07-03) entire document	1-28
A	CN 219229474 U (MITONG INTELLIGENT TECHNOLOGY (YANGZHOU) CO., LTD.) 23 June 2023 (2023-06-23) entire document	1-28
A	KR 20210065266 A (KOREA INSTITUTE OF INDUSTRIAL TECHNOLOGY) 04 June 2021 (2021-06-04) entire document	1-28

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2024/120052

5

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report				Publication date (day/month/year)		Patent family member(s)			Publication date (day/month/year)	
CN	117137287	A	01 December 2023	CN	221129422	U			14 June 2024	
CN	103211446	A	24 July 2013	US	2013184088	A1			18 July 2013	
				EP	2617329	A1			24 July 2013	
				EP	2617329	B1			14 May 2014	
				US	8845440	B2			30 September 2014	
				CN	103211446	B			28 October 2015	
CN	102058278	A	18 May 2011	EP	2322062	A1			18 May 2011	
				US	2010201171	A1			12 August 2010	
				US	8187111	B2			29 May 2012	
				JP	2011101801	A			26 May 2011	
CN	116746782	A	15 September 2023	None						
CN	210902309	U	03 July 2020	None						
CN	219229474	U	23 June 2023	WO	2023115824	A1			29 June 2023	
KR	20210065266	A	04 June 2021	KR	102319267	B1			02 November 2021	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 200980138791 [0003]
- CN 201310086301 [0004]