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(54) **Baby walker with infinite-adjustment function**

Laufkinder mit Stufenloser Anpassungsfunktion

Déambulateur pour bébés avec fonction à réglage infini

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(56) References cited:
**WO-A2-2011/010890 CN-A- 102 772 069
CN-Y- 201 356 319 US-A- 5 356 196
US-A- 6 048 290**

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a baby walker with an infinite-adjustment function, belonging to the technical field of baby walkers.

BACKGROUND OF THE INVENTION

[0002] In the prior art, baby walkers are tools for babies to practice walking and also devices for babies to play. An existing baby walker generally consists of an upper plate and a lower plate, a backrest being provided on the upper plate, a rotary wheel set being provided on the lower plate; and the upper plate is in adjustable connection to the lower plate. However, for a baby walker in the prior art, the height of the upper plate with respect to the ground is definitely adjustable. As babies are different in height due to different degrees of growth and development, a baby walker with a definite-adjustment function cannot fit a baby in height easily, flexibly and properly. Furthermore, a baby walker in the prior art is relatively complicated in structure.

[0003] An example of baby walker is shown in CN201356319Y.

SUMMARY OF THE INVENTION

[0004] A technical problem to be solved by the present invention is to provide a baby walker with an infinite-adjustment function. The baby walker with an infinite-adjustment function may allow infinite-adjustment on the height and is simple in structure.

[0005] The present invention may employ the following technical solutions.

[0006] A baby walker with an infinite-adjustment function is provided, including an upper plate and a lower plate, a backrest being provided on the upper plate, a wheel set being provided on the lower plate; and the upper plate is connected to the lower plate by a telescopic structure capable of adjusting a space between the upper plate and the lower plate;

The telescopic structure includes a fixed seat and a movable arm, the fixed seat being in telescopic connection to the movable arm;

A rotary adjusting wheel is provided on the fixed seat, the adjusting wheel being placed vertically, an adjusting groove disposed along an involute being provided on one surface of the adjusting wheel; and the end of the movable arm, connected to the fixed seat, is provided with a positioning column having one end extended into the adjusting groove; and an adjusting member is connected to the adjusting wheel.

[0007] To solve the problem, the present invention may further employ the following improvement measures.

[0008] As an improvement, the fixed seat is fixed on the lower plate and the movable arm is connected to the

upper plate.

[0009] As an improvement, the fixed seat is integrated with the lower plate.

[0010] As an improvement, the fixed seat is fixed on the upper plate and the movable arm is fixed on the lower plate.

[0011] As an improvement, an upper coil pipe is provided in the upper plate, a lower coil pipe is provided in the lower plate, and a support pipe is provided in the movable arm; and the upper coil pipe is fixedly connected to the upper end of the support pipe, and the lower end of the support pipe is in telescopic connection to a bent portion of the lower plate.

[0012] As an improvement, the movable arm includes an outer support cover and an inner support cover, the inner support cover being sheathed with the support pipe and fixed on the outer support cover.

[0013] As an improvement, the adjusting member is an adjusting knob, the adjusting wheel being connected to the adjusting knob through a rotating shaft which is mounted on the fixed seat, the adjusting wheel being located within the fixed seat, the adjusting knob being located outside the fixed seat.

[0014] As an improvement, the upper end of the fixed seat is provided with an opening, the end of the movable arm connected to the fixed seat being fitted with the opening; and the end of the movable arm connected to the fixed seat is inserted into a chamber of the fixed seat through the opening, the chamber being fitted in size with the end of the movable arm connected to the fixed seat.

[0015] The above technical solutions have the following advantages:

1. as the baby walker with an infinite-adjustment function provided by the present invention has an infinite-adjustment function, the position of the positioning column may be changed, when the upper plate is ascended or descended, so that the height of the upper plate changes smoothly; furthermore, the baby walker is linear, so it may fit the height of a baby easily, flexibly and properly, so that it is easier to meet the demand of adjustment; and

2. the baby walker with an infinite-adjustment function provided by the present invention requires fewer components and is simple in structure and easy in manufacturing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

Fig. 1 is a structural diagram of a baby walker with an infinite-adjustment function according to the present invention;

Fig. 2 is a schematic diagram of an internal structure of the baby walker;

Fig. 3 is a schematic diagram of the baby walker in one visual direction;

Fig. 4 is a cutaway view of Fig. 2 along B-B;

Fig. 5 is a partially enlarged view of Fig. 4;

Fig. 6 is an exploded view of components of the baby walker;

Fig. 7 is a schematic diagram of an adjusting wheel; and

Figs. 8, 9 and 10 are schematic diagrams when a positioning column is located at different positions on the adjusting wheel, respectively.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The present invention will be specifically described as below by specific embodiments.

Embodiment 1:

[0018] As illustrated in Figs. 1-8, a baby walker with an infinite-adjustment function is provided, like a conventional baby walker, including an upper plate 1 and a lower plate 2, a backrest 3 being provided on the upper plate 1, a wheel set 4 being provided on the lower plate 2. The upper plate 1 is connected to the lower plate 2 by a telescopic structure 5 capable of adjusting a space between the upper plate 1 and the lower plate 2.

[0019] The telescopic structure 5 includes a fixed seat 501 and a movable arm 502. The fixed seat 501 is in telescopic connection to the movable arm 502. In this embodiment, the upper end of the fixed seat 501 is provided with an opening. The end of the movable arm 502 connected to the fixed seat 501 is fitted with the opening. The end of the movable arm 502 connected to the fixed seat 501 is inserted into a chamber of the fixed seat 501 through the opening. The chamber 503 is fitted in size with the end of the movable arm 502 connected to the fixed seat 501.

[0020] The fixed seat 501 is fixed on the lower plate 2, and the movable arm 502 is connected to the upper plate 1. The fixed seat 501 is integrated with the lower plate 2. In this embodiment, the fixed seat 501 is a plastic shell.

[0021] In this embodiment, an upper coil pipe 6 is provided in the upper plate 1 and secured with the upper plate. A lower coil pipe 8 is provided in the lower plate 2 and secured with the lower plate. A support pipe 7 is provided in the movable arm 502. A V-shaped spring piece 701 is disposed in the support pipe 7. The upper coil pipe 6 is fixedly connected to the upper end of the support pipe 7. The lower end of the support pipe 7 is in telescopic connection to a bent portion 801 of the lower coil pipe 8. The lower end of the support pipe 7 may also

be inserted into the bent portion 801 of the lower coil pipe 8. The bent portion 801 of the lower coil pipe 8 is located in the fixed seat 501.

[0022] The movable arm 501 includes an outer support cover 503 and an inner support cover 504. The inner support cover 504 is sheathed with the support pipe 7 and fixed on the outer support cover 503.

[0023] A rotary adjusting wheel 9 is provided on the fixed seat 501, the adjusting wheel 9 being placed vertically. An adjusting groove 11 disposed along an involute 10 is provided on one surface of the adjusting wheel 9. The involute 10 is provided on a plane where the one surface of the adjusting wheel 9 is located. The end of the movable arm 502, connected to the fixed seat 501, is provided with a positioning column 505 having one end extended into the adjusting groove 11. Certainly, the positioning column 505 may also be integrated with a component on the movable arm 502. An adjusting member 12 is connected to the adjusting wheel 9. The adjusting wheel 9 is driven to rotate by an external force through the adjusting member 12. Certainly, the adjusting member may also be integrated with the adjusting wheel. As an improvement in this embodiment, the adjusting member 12 is an adjusting knob. The adjusting wheel 9 is connected to the adjusting knob through a rotating shaft 13 which is mounted on the fixed seat 501. The adjusting wheel is located within the fixed seat 501, while the adjusting knob is located outside the fixed seat 501.

[0024] When in operating, when the adjusting knob is rotated clockwise, the rotation of the adjusting wheel against the gravity of the upper plate allows the movable arm to ascend gradually, thereby realizing upward adjustment; and when the adjusting knob is rotated counterclockwise, the movable arm may be descended gradually, thereby realizing downward adjustment. Therefore, it is convenient and easy for adjustment. Fig. 8 is a diagram showing a position relation between the adjusting wheel and the positioning column when the upper plate is in a lowest position. Fig. 9 is a diagram showing a position relation between the adjusting wheel and the positioning column when the upper plate is in a middle position. Fig. 10 is a diagram showing a position relation between the adjusting wheel and the positioning column when the upper plate is in a highest position.

[0025] The following describes the working principle. The infinite-adjustment function of the present invention is realized on the basis of the principle of the involute. The fixed seat is in telescopic connection to the movable arm, that is, the fixed seat and the movable arm may be movable. When the adjusting wheel is rotated, the adjusting groove rotates along with the adjusting wheel. However, as one end of the positioning column is located within the adjusting groove, the position of the positioning column is changed. This change in position embodies in the vertical direction, the positive direction or the negative direction only. As a result, the position of the positioning column is changed and the position of the movable arm is also changed. In this embodiment, the support pipe is

also changed, so the height of the upper plate may be changed to realize the function of ascending or descending. As the adjusting groove is disposed along the involute, the position of the positioning column may be changed until the height of the upper plate changes smoothly. Furthermore, the baby walker is linear, so it may fit the height of a baby easily, flexibly and properly even if there is a baby in the baby walker. It is easier to meet the demand of adjustment. The present invention uses fewer components and is simple in structure and low in cost.

Embodiment 2:

[0026] This embodiment is characterized in that the fixed seat is fixed on the upper plate and the movable arm is fixed on the lower plate. The position of the fixed seat and the position of the movable arm are exchanged with respect to those in Embodiment 1, but the implementation principle is the same as that in Embodiment 1.

[0027] As the baby walker with an infinite-adjustment function provided by the present invention has an infinite-adjustment function, and the adjusting groove is disposed along the involute, the position of the positioning column may be changed, when the upper plate is ascended or descended, so that the height of the upper plate changes smoothly; furthermore, the baby walker is linear, so it may fit the height of a baby easily, flexibly and properly. The baby walker requires fewer components and is simple in structure and easy in manufacturing.

Claims

1. Baby walker with an infinite-adjustment function, including an upper plate and a lower plate (2), wherein a backrest (3) is provided on the upper plate, and a wheel set (4) is provided on the lower plate (2); and the upper plate is connected to the lower plate (2) by a telescopic structure (5) capable of adjusting a space between the upper plate and the lower plate (2); the telescopic structure (5) comprises a fixed seat (501) and a movable arm (502), the fixed seat (501) is in telescopic connection to the movable arm (502); a rotary adjusting wheel (9) is provided on the fixed seat (501), the adjusting wheel is placed vertically, an adjusting groove (11) disposed along an involute (10) is provided on one surface of the adjusting wheel; and the end of the movable arm (502), connected to the fixed seat (501), is provided with a positioning column (505) having one end extended into the adjusting groove (11); and an adjusting member (12) is connected to the adjusting wheel.

2. Baby walker with an infinite-adjustment function ac-

cording to claim 1, wherein the fixed seat (501) is fixed on the lower plate (2) and the movable arm (502) is connected to the upper plate.

3. Baby walker with an infinite-adjustment function according to claim 2, wherein the fixed seat (501) is integrated with the lower plate (2).
4. Baby walker with an infinite-adjustment function according to one of claims 1 to 3, wherein the fixed seat (501) is fixed on the upper plate and the movable arm (502) is fixed on the lower plate (2).
5. Baby walker with an infinite-adjustment function according to one of claims 2 to 4, wherein an upper coil pipe (6) is provided in the upper plate, a lower coil pipe is provided in the lower plate (2), and a support pipe (7) is provided in the movable arm (502); the upper coil pipe (6) is fixedly connected to the upper end of the support pipe (7), and the lower end of the support pipe (7) is in telescopic connection to a bent portion (801) of the lower plate (2).
6. Baby walker with an infinite-adjustment function according to claim 5, wherein the movable arm (502) comprises an outer support cover and an inner support cover (504), the inner support cover (504) being sheathed with the support pipe (7) and fixed on the outer support cover.
7. Baby walker with an infinite-adjustment function according to one of claims 1 to 6, wherein the adjusting member (12) is an adjusting knob, the adjusting wheel is connected to the adjusting knob through a rotating shaft (13) which is mounted on the fixed seat (501), the adjusting wheel is located within the fixed seat (501), the adjusting knob is located outside the fixed seat (501).
8. Baby walker with an infinite-adjustment function according to one of claims 1 to 7, wherein the upper end of the fixed seat (501) is provided with an opening, the end of the movable arm (502) connected to the fixed seat (501) is fitted with the opening; and the end of the movable arm (502) connected to the fixed seat (501) is inserted into a chamber (503) of the fixed seat (501) through the opening, the chamber (503) is fitted in size with the end of the movable arm (502) connected to the fixed seat (501).

Patentansprüche

1. Ein Lauflerner mit einer stufenlosen Anpassungsfunktion, der eine obere Platte und eine untere Platte (2) beinhaltet, wobei eine Lehne (3) auf der oberen Platte vorgesehen ist und ein Radsatz (4) auf der unteren Platte (2) vorgesehen ist; die obere Platte

ist mit der unteren Platte (2) durch eine ausziehbare Anordnung (5), die geeignet ist, einen Abstand zwischen der oberen Platte und der unteren Platte (2) einzustellen, verbunden;

wobei die ausziehbare Anordnung (5) einen feststehenden Sitz (501) und einen beweglichen Arm (502) umfasst, wobei der feststehende Sitz (501) ausziehbar mit dem beweglichen Arm (502) verbunden ist; wobei ein drehbares Einstellrad (9) auf dem feststehenden Sitz (501) vorgesehen ist, wobei das Einstellrad (9) vertikal platziert ist, wobei eine Einstellspur (11), die entlang einer Evolvente (10) verläuft, auf einer Fläche des Einstellrads vorgesehen ist; und wobei das Ende des beweglichen Arms (502), das mit dem feststehenden Sitz (501) verbunden ist, mit einer Positioniersäule (505) versehen ist, deren eines Ende in die Einstellspur (11) hineinragt; und wobei ein Einstellelement (12) mit dem Einstellrad verbunden ist.

2. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß Anspruch 1, wobei der feststehende Sitz (501) auf der unteren Platte (2) befestigt ist und der bewegliche Arm (502) mit der oberen Platte verbunden ist.
3. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß Anspruch 2, wobei der feststehende Sitz (501) in die untere Platte (2) integriert ist.
4. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß einem der Ansprüche 1 bis 3, wobei der feststehende Sitz (501) auf der oberen Platte befestigt ist und der bewegliche Arm (502) auf der unteren Platte befestigt ist.
5. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß einem der Ansprüche 2 bis 4, wobei eine obere Rohrschlange (6) in der oberen Platte vorgesehen ist, eine untere Rohrschlange in der unteren Platte (2) vorgesehen ist und ein Lagerrohr (7) im beweglichen Arm (502) vorgesehen ist; wobei die obere Rohrschlange (6) starr mit dem oberen Ende des Lagerrohrs (7) verbunden ist und das untere Ende des Lagerrohrs (7) ausziehbar mit einem gebogenen Abschnitt (801) der unteren Platte (2) verbunden ist.
6. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß Anspruch 5, wobei der bewegliche Arm (502) eine äußere Stützabdeckung und eine innere Stützabdeckung (504) umfasst, wobei die innere Stützabdeckung (504) von dem Lagerrohr (7) ummantelt wird und an der äußeren Stützabdeckung befestigt ist.
7. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß einem der Ansprüche 1 bis 6, wobei das

Einstellelement (12) ein Einstellknopf ist, wobei das Einstellrad mit dem Einstellknopf über eine rotierende Achse, die auf dem befestigten Sitz (501) montiert ist, verbunden ist, wobei sich das Einstellrad innerhalb des befestigten Sitzes (501) befindet, wobei sich der Einstellknopf außerhalb des befestigten Sitzes (501) befindet.

8. Lauflerner mit einer stufenlosen Anpassungsfunktion gemäß einem der Ansprüche 1 bis 7, wobei das obere Ende des befestigten Sitzes (501) mit einer Öffnung versehen ist, wobei das Ende des beweglichen Arms (502), das mit dem feststehenden Sitz (501) verbunden ist, zur Öffnung passt; und wobei das Ende des beweglichen Arms (502), das mit dem feststehenden Sitz (501) verbunden ist, durch die Öffnung in eine Kammer (503) des feststehenden Sitzes (501) eingeführt ist, wobei die Kammer (503) der Größe nach zum Ende des beweglichen Arms (502) passt, der mit dem feststehenden Sitz (501) verbunden ist.

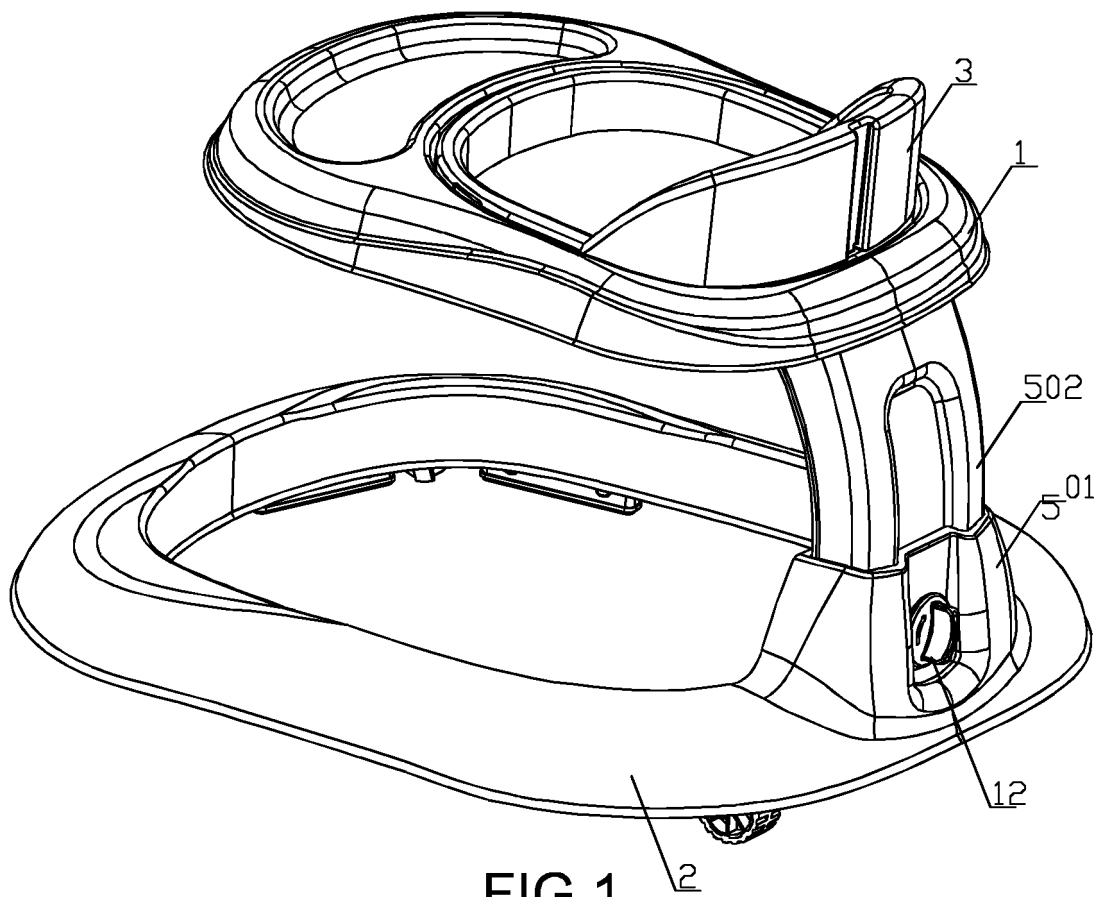
Revendications

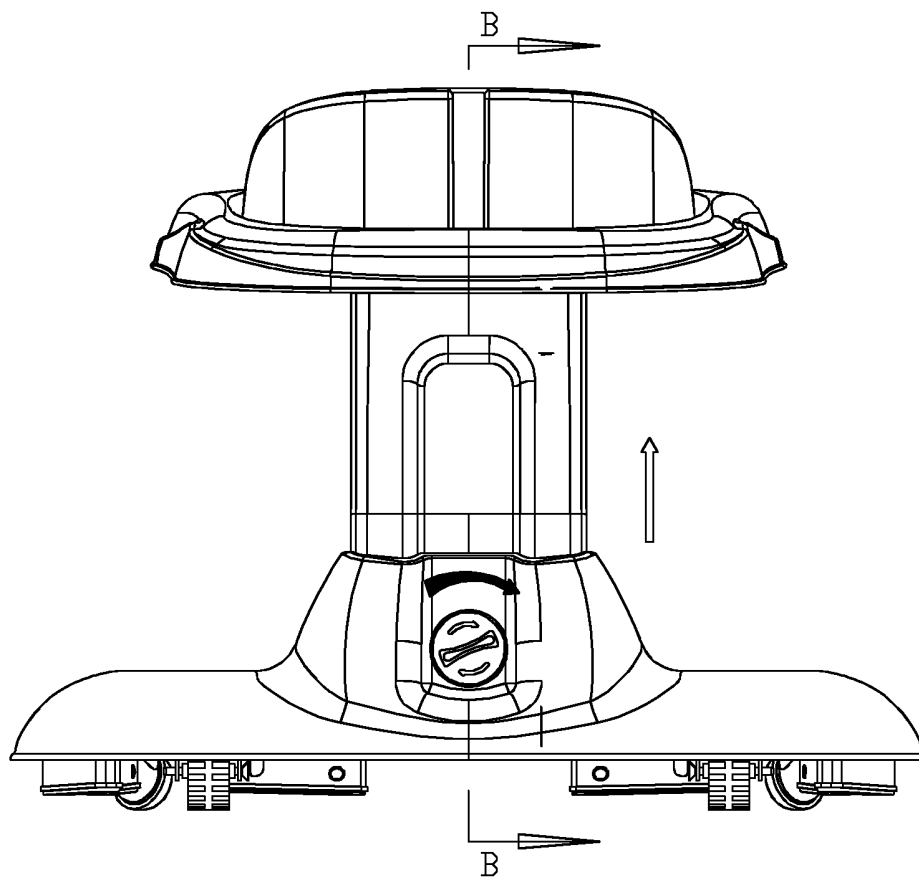
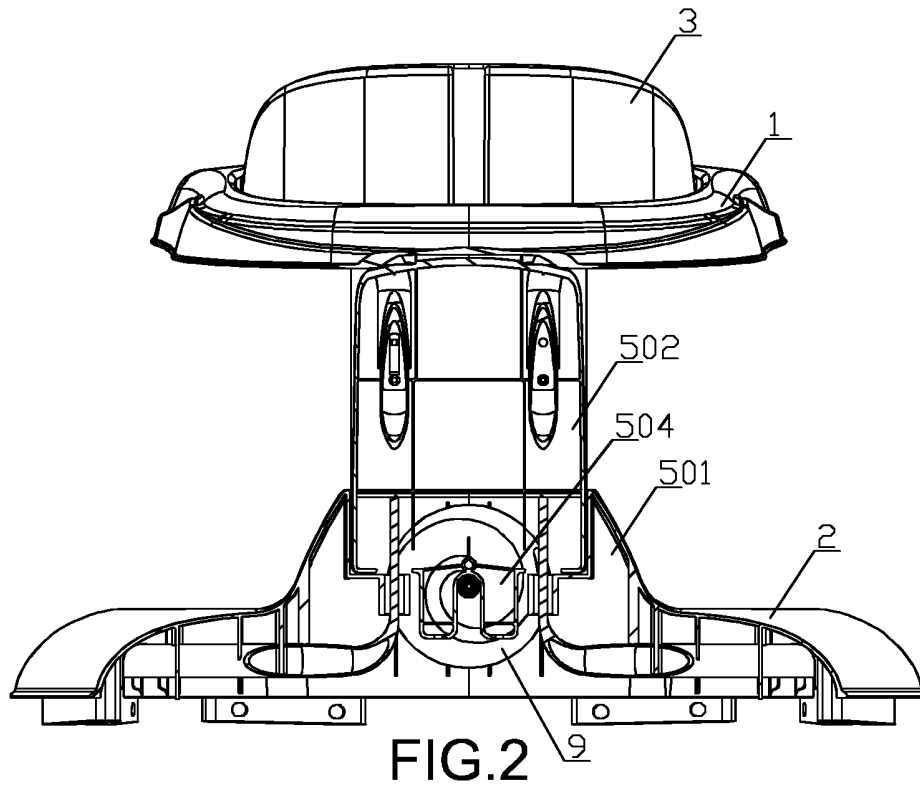
1. Déambulateur pour bébé avec fonction à réglage infini, comprenant une plaque supérieure et une plaque inférieure (2), dans lequel un dossier (3) est prévu sur la plaque supérieure et dans lequel un ensemble de roues (4) est prévu sur la plaque inférieure (2); et la plaque supérieure est reliée à la plaque inférieure (2) par une structure télescopique (5) capable de régler un espace entre la plaque supérieure et la plaque inférieure (2); la structure télescopique (5) comprend un siège fixe (501) et un bras mobile (502), le siège fixe (501) étant en connexion télescopique avec le bras mobile (502); une roue de réglage rotative (9) est prévue sur le siège fixe (501), la roue de réglage étant placée verticalement, une rainure de réglage (11) disposée le long d'une courbe développante (10) est prévue sur une surface de la roue de réglage; et l'extrémité du bras mobile (502), reliée au siège fixe (501), est pourvue d'une colonne de positionnement (505) ayant une extrémité déployée dans la rainure de réglage (11); et un élément de réglage (12) est relié à la roue de réglage.
2. Déambulateur pour bébé avec fonction à réglage infini selon la revendication 1, dans lequel le siège fixe (501) est fixé sur la plaque inférieure (2) et le bras mobile (502) est relié à la plaque supérieure.
3. Déambulateur pour bébé avec fonction à réglage infini selon la revendication 2, dans lequel le siège fixe (501) est intégré avec la plaque inférieure (2).

4. Déambulateur pour bébé avec fonction à réglage infini selon l'une quelconque des revendications 1 à 3, dans lequel le siège fixe (501) est fixé sur la plaque supérieure et le bras mobile (502) est fixé sur la plaque inférieure (2). 5
5. Déambulateur pour bébé avec fonction à réglage infini selon l'une quelconque des revendications 2 à 4, dans lequel un tube amortisseur (6) supérieur est prévu dans la plaque supérieure, un tube amortisseur inférieur est prévu dans la plaque inférieure (2) et un tube porteur (7) est prévu dans le bras mobile (502); 10
le tube amortisseur (6) supérieur est relié fixement à l'extrémité supérieure du tube porteur (7) et l'extrémité inférieure du tube porteur (7) est en connexion télescopique avec une partie fléchie (801) de la plaque inférieure (2). 15
6. Déambulateur pour bébé avec fonction à réglage infini selon la revendication 5, dans lequel le bras mobile (502) comprend un cache de maintien extérieur et un cache de maintien intérieur (504), le cache de maintien intérieur (504) étant gainé avec le tube porteur (7) et fixé sur le cache de maintien extérieur. 20 25
7. Déambulateur pour bébé avec fonction à réglage infini selon l'une quelconque des revendications 1 à 6, dans lequel l'élément de réglage (12) est un bouton de réglage, la roue de réglage est reliée au bouton de réglage au travers d'un arbre tournant (13) fixé sur le siège fixe (501), la roue de réglage est positionnée à l'intérieur du siège fixe (501), le bouton de réglage est positionné à l'extérieur du siège fixe (501). 30 35
8. Déambulateur pour bébé avec fonction à réglage infini selon l'une quelconque des revendications 1 à 7, dans lequel l'extrémité supérieure du siège fixe (501) est pourvue d'une ouverture, l'extrémité du bras mobile (502) reliée au siège fixe (501) est ajustée avec l'ouverture; et l'extrémité du bras mobile (502) reliée au siège fixe (501) est insérée dans une chambre (503) du siège fixe (501) au travers de l'ouverture, la chambre (503) étant ajustée en taille avec l'extrémité du bras mobile (502) reliée au siège fixe (501). 40 45

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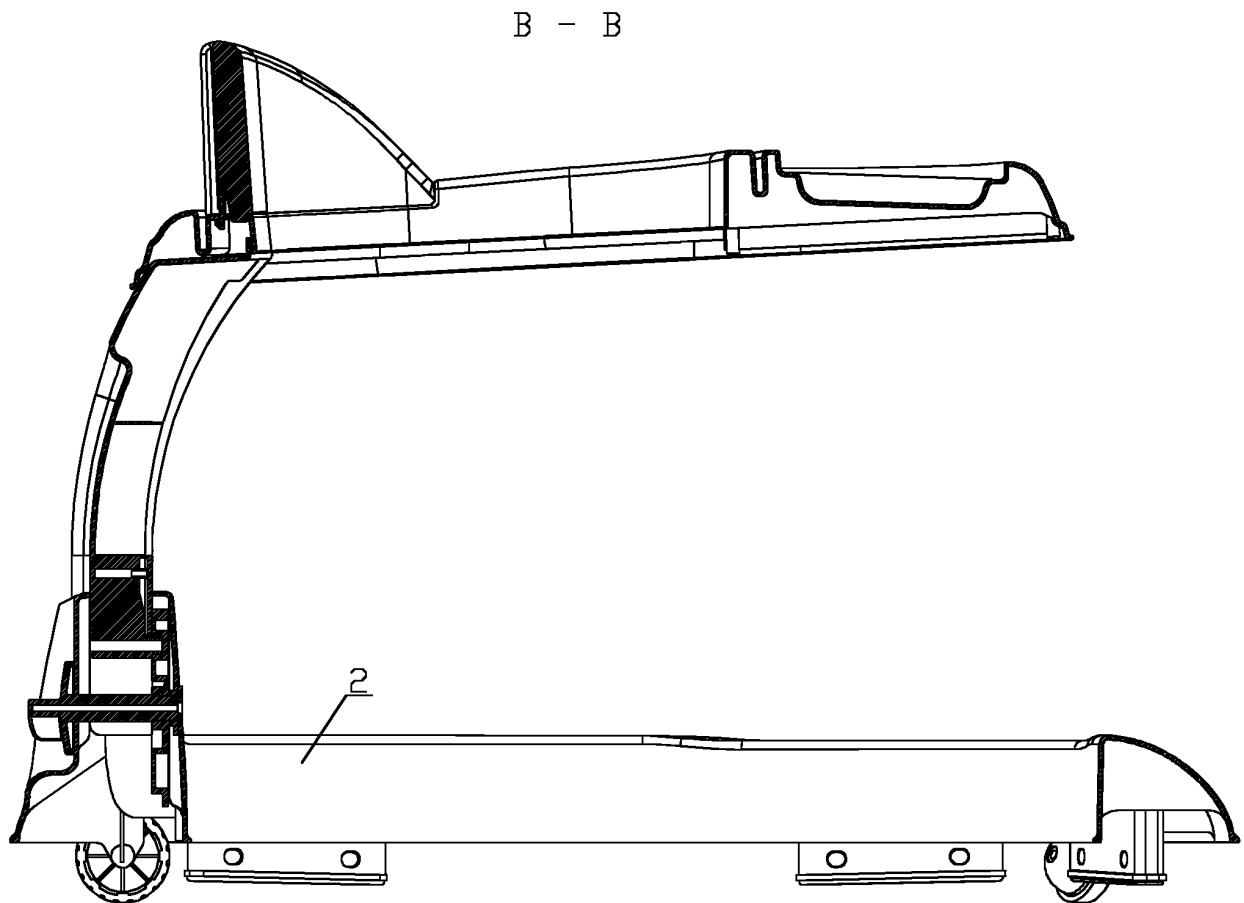


FIG.4

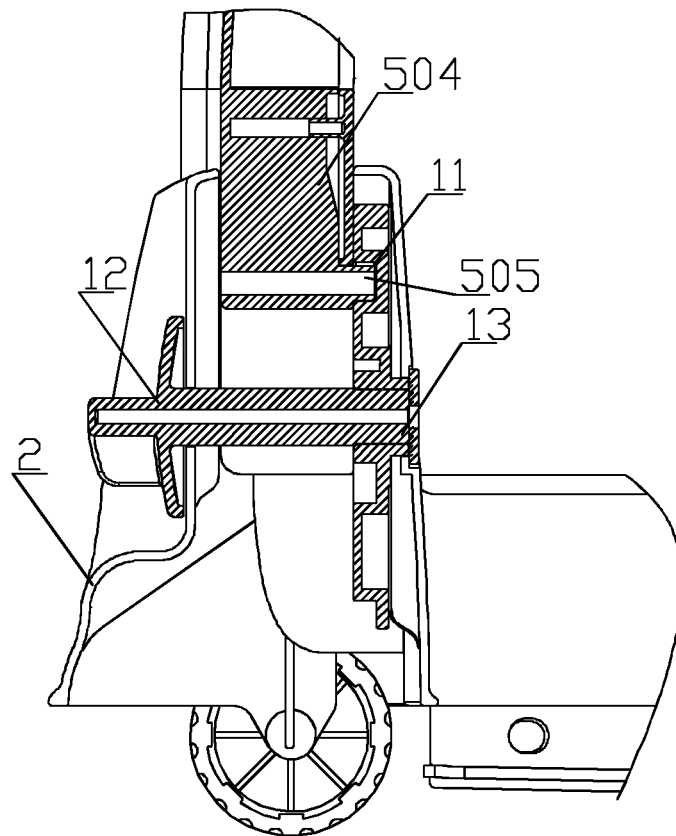


FIG.5

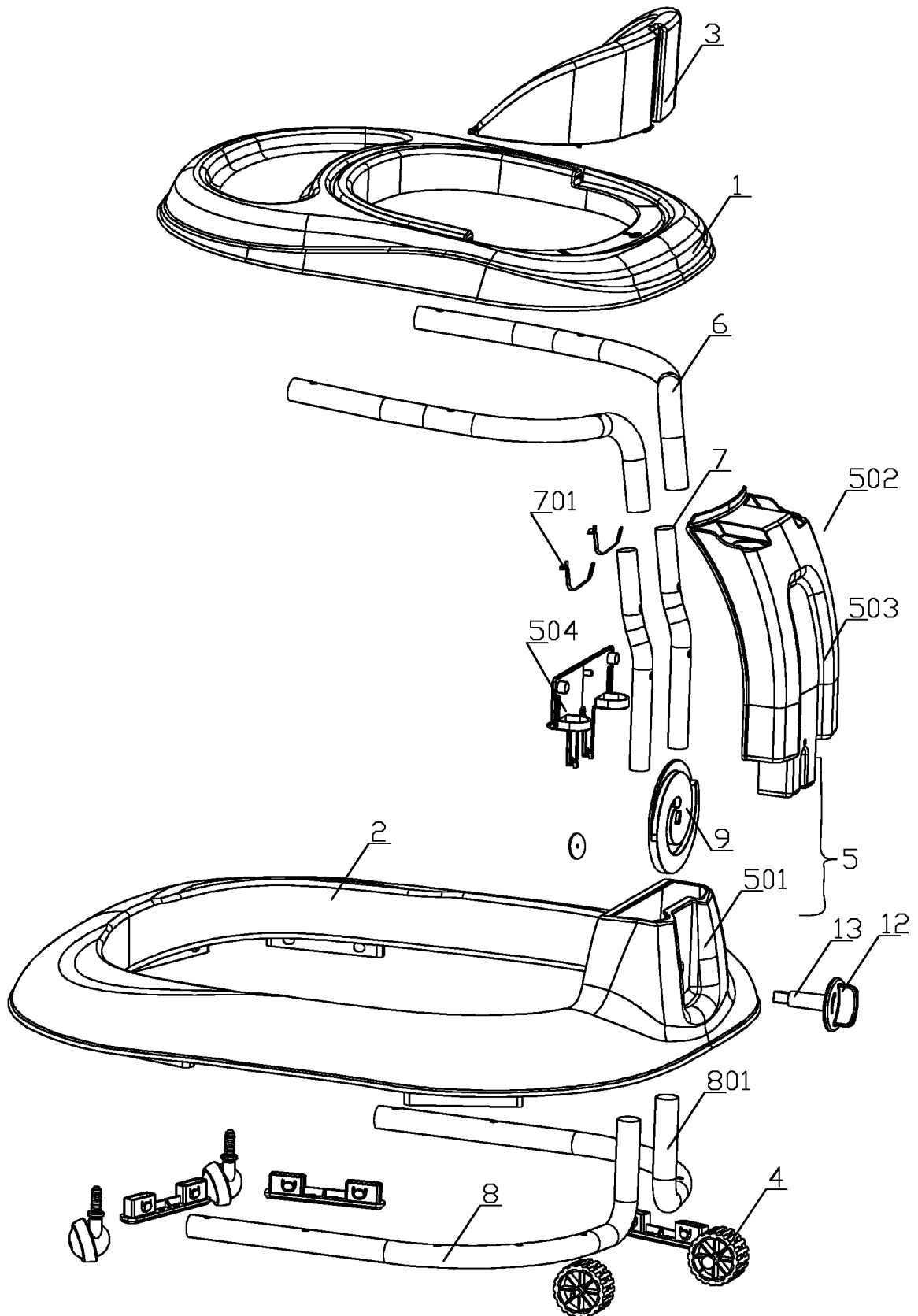


FIG.6

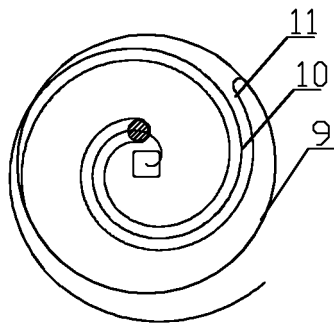


FIG. 7

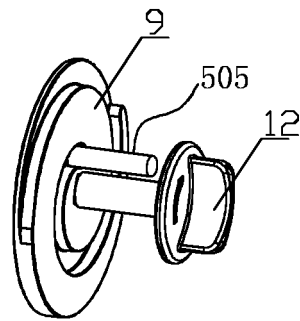


FIG. 8

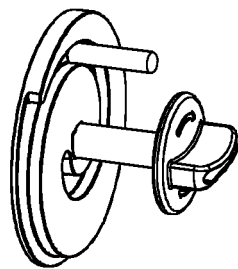


FIG. 9

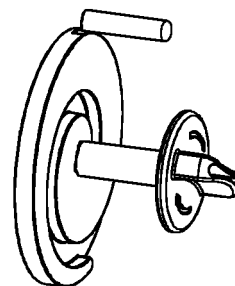


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201356319 Y [0003]