



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.12.2015 Bulletin 2015/52

(51) Int Cl.:
A47D 13/04 (2006.01)

(21) Application number: **15172965.4**

(22) Date of filing: **19.06.2015**

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

(72) Inventors:
• **LEI, Dexiang**
Zhang Zhou City
Fujian Province (CN)
• **ZHONG, Jiangpeng**
Zhang Zhou City
Fujian Province (CN)

(30) Priority: **20.06.2014 CN 201410277760**

(74) Representative: **Hellmich, Wolfgang**
Lortzingstrasse 9
81241 München (DE)

(71) Applicant: **O'SK Baby & Children Products (Fujian) Co., Ltd.**
Zhang Zhou City, Fujian (CN)

(54) **BABY WALKER WITH INFINITE-ADJUSTMENT FUNCTION**

(57) A baby walker with an infinite-adjustment function includes an upper plate (1) and a lower plate (2). A backrest (3) is provided on the upper plate (1), and a wheel set (4) is 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). The telescopic structure (5) comprises a fixed seat (501) and a movable arm (501,502), the fixed seat (501) being in telescopic connection to the movable arm (501,502). A rotary ad-

justing 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) being provided on one surface of the adjusting wheel (9); and the end of the movable arm (501,502), connected to the fixed seat (501), is provided with a positioning column (505) having one end extended into the adjusting groove (11). An adjusting member (12) is connected to the adjusting wheel (9).

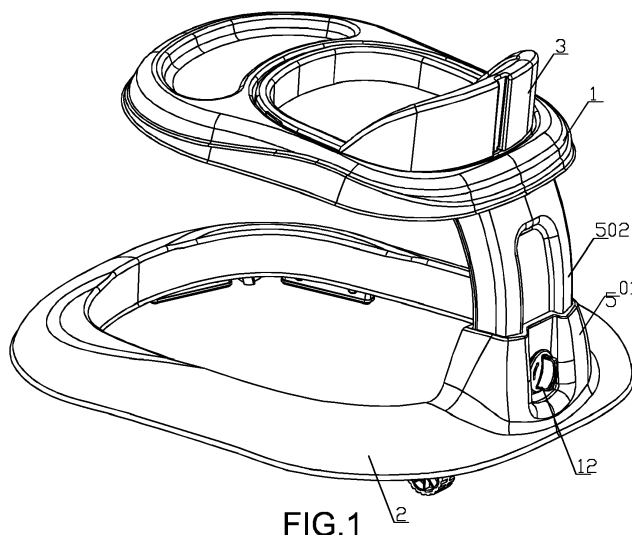


FIG.1

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.

SUMMARY OF THE INVENTION

[0003] 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.

[0004] The present invention may employ the following technical solutions.

[0005] 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;

[0006] The telescopic structure includes a fixed seat and a movable arm, the fixed seat being in telescopic connection to the movable arm;

[0007] 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.

[0008] To solve the problem, the present invention may further employ the following improvement measures.

[0009] As an improvement, the fixed seat is fixed on the lower plate and the movable arm is connected to the upper plate.

[0010] As an improvement, the fixed seat is integrated

with the lower plate.

[0011] As an improvement, the fixed seat is fixed on the upper plate and the movable arm is fixed on the lower plate.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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

[0017]

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

[0018] The present invention will be specifically described as below by specific embodiments.

Embodiment 1:

[0019] 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.

[0020] 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.

[0021] 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.

[0022] 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.

[0023] 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.

[0024] 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.

[0025] 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.

[0026] 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:

[0027] 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.

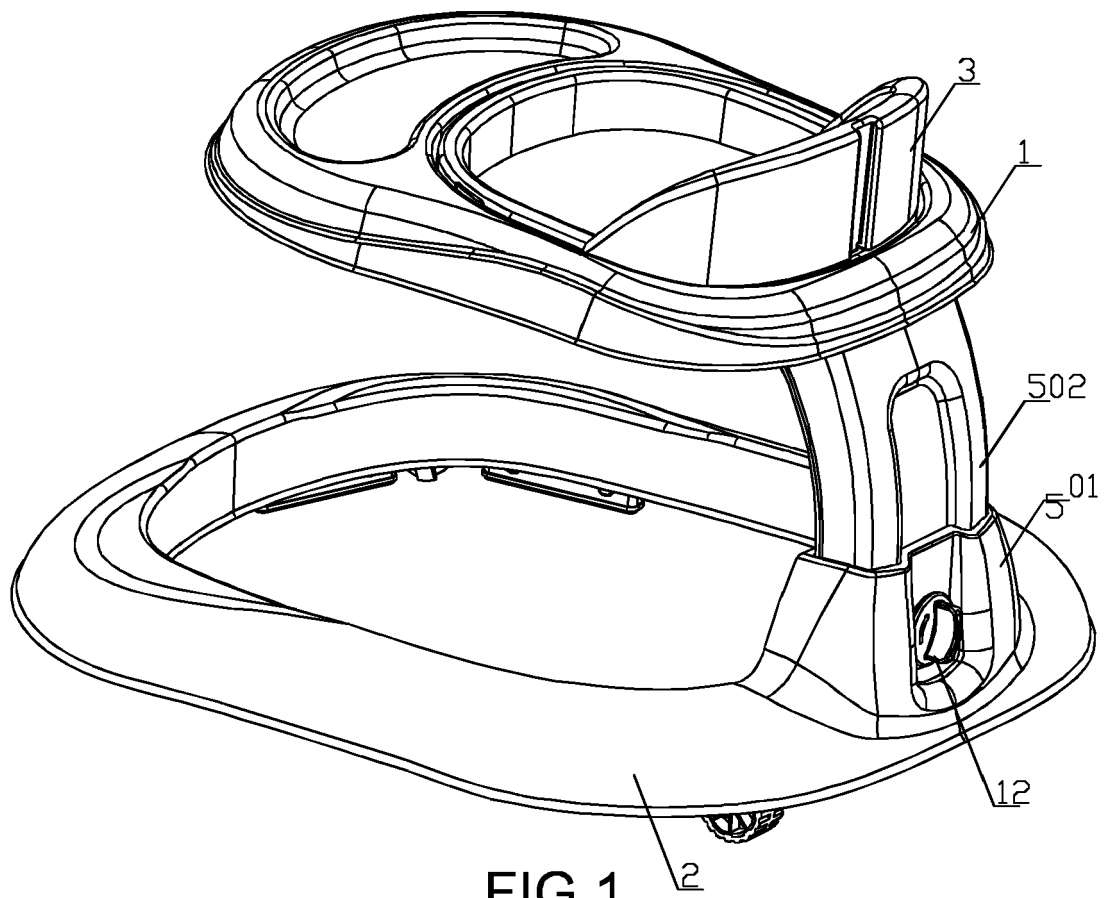
[0028] As the baby walker with an infinite-adjustment function provided by the present invention has an infinite-adjustment function, and the adjusting groove is disposed along the involute, the position of the positioning column may be changed, when the upper plate is ascended or descended, so that 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.

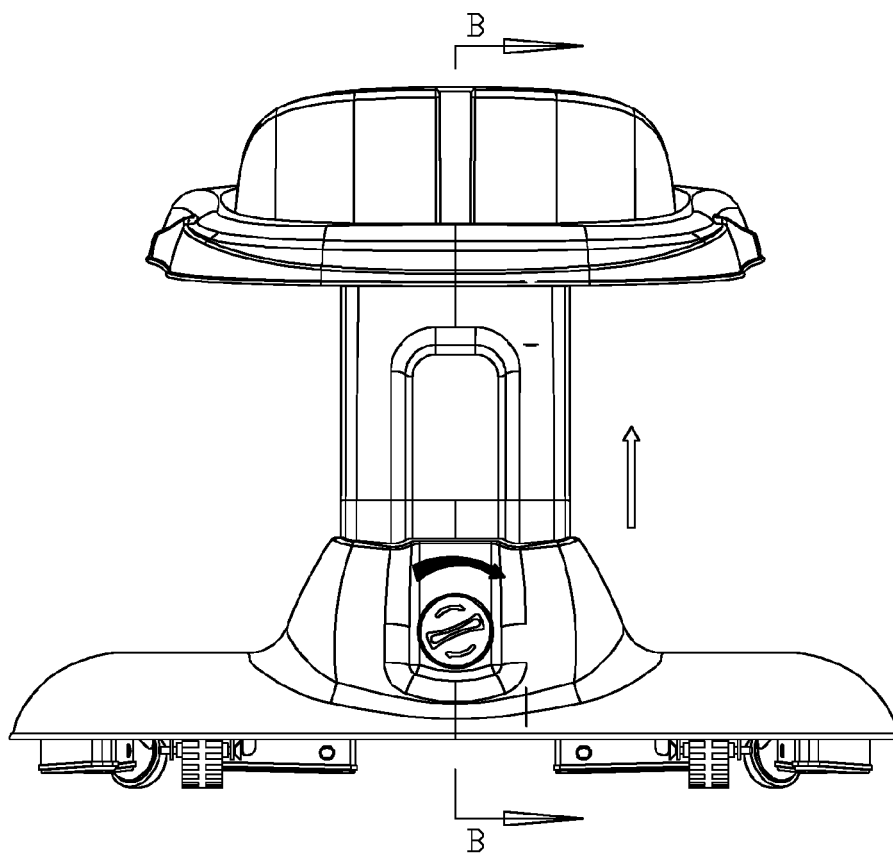
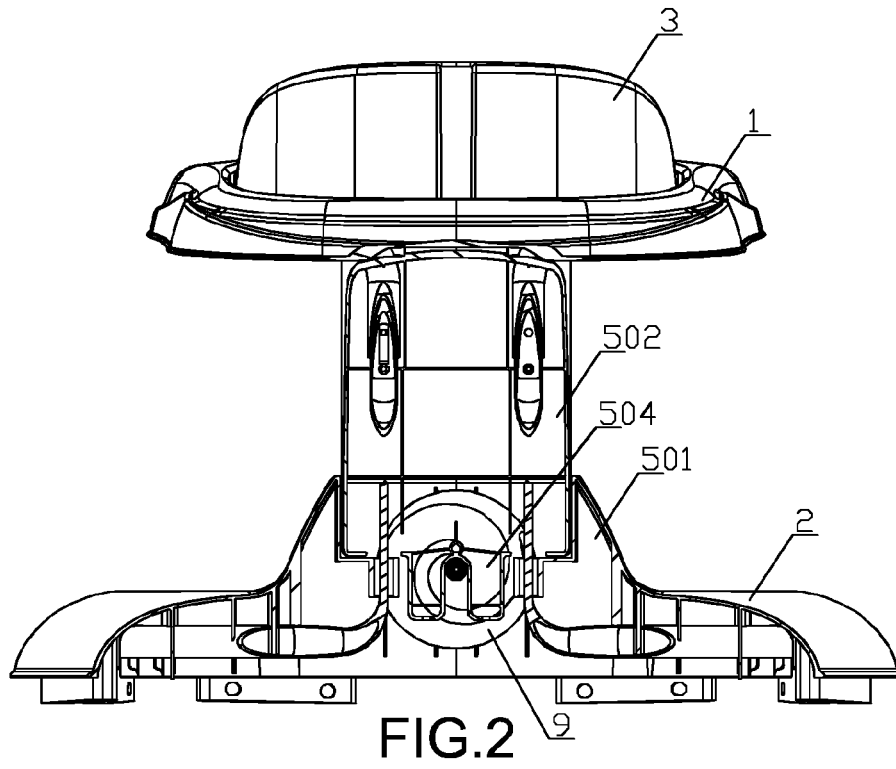
Claims

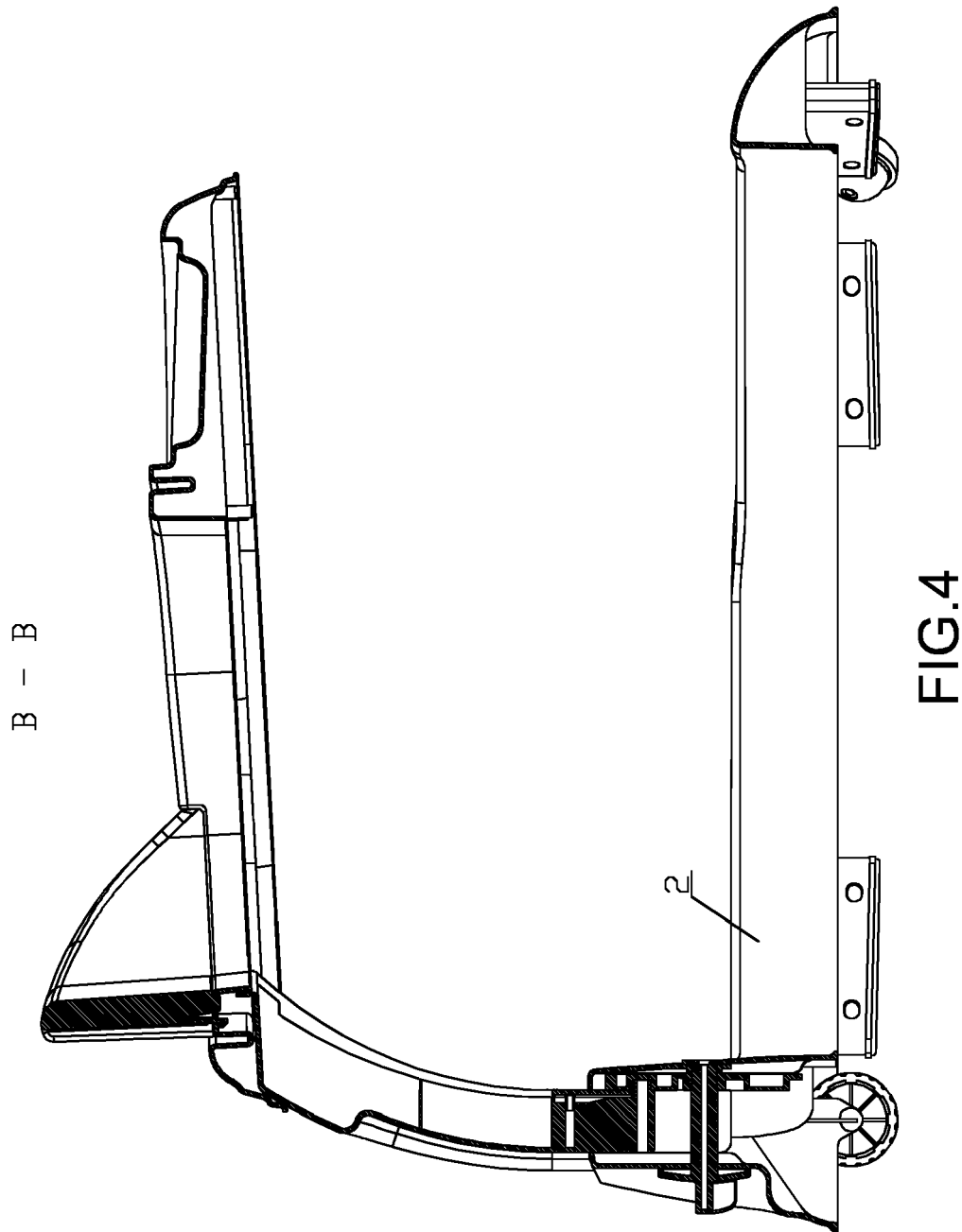
1. Baby walker with an infinite-adjustment function, including an upper plate and a lower plate (2), wherein a backrest (3) is provided on the upper plate, and a wheel set (4) is provided on the lower plate (2); and the upper plate is connected to the lower plate (2) by a telescopic structure (5) capable 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 according 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).







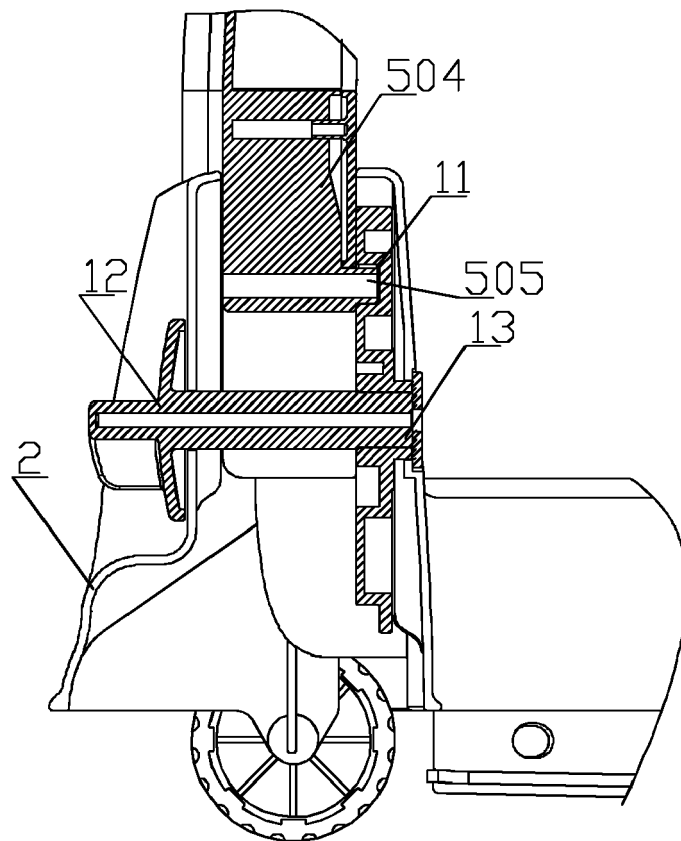


FIG.5

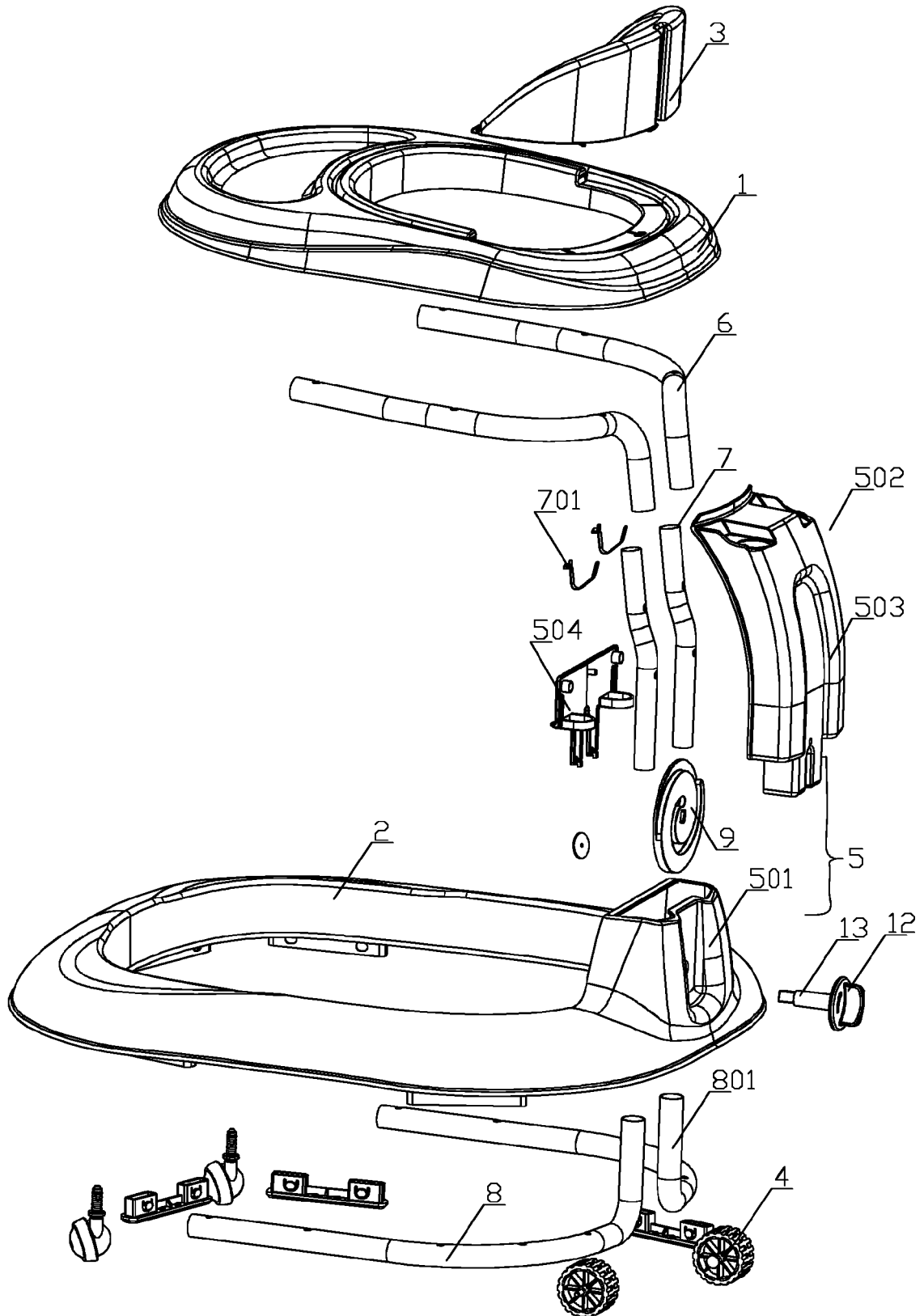


FIG.6

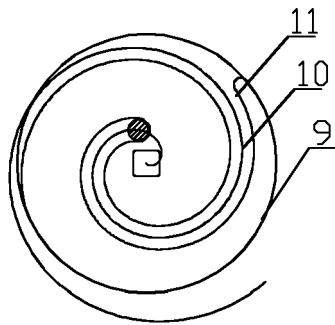


FIG. 7

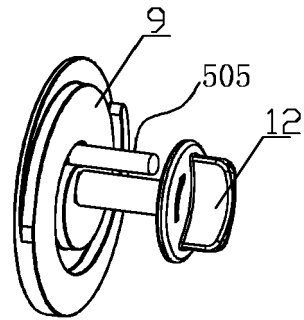


FIG. 8

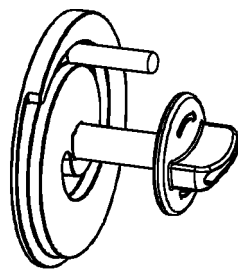


FIG. 9

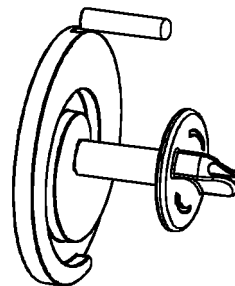


FIG. 10



EUROPEAN SEARCH REPORT

Application Number
EP 15 17 2965

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	CN 201 356 319 Y (ZHONGSHAN LERADO DAILY ARTICLE [CN]) 9 December 2009 (2009-12-09) * figures *	1-8	INV. A47D13/04
A	US 6 048 290 A (CHEN ER-JUI [TW] ET AL) 11 April 2000 (2000-04-11) * column 3, lines 9-13; claim 1; figures *	1-8	
A	US 5 356 196 A (CHUANG RUEY-CHANG [TW]) 18 October 1994 (1994-10-18) * abstract; figures *	1	
A	WO 2011/010890 A2 (KIM JONG TAE [KR]) 27 January 2011 (2011-01-27) * abstract; figures *	1	
A	CN 102 772 069 A (GOODBABY CHILD PRODUCTS CO LTD) 14 November 2012 (2012-11-14) * figures *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		15 October 2015	Amghar, Norddin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

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

EP 15 17 2965

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-10-2015

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CN 201356319	Y	09-12-2009	NONE	
US 6048290	A	11-04-2000	CN 2343913 Y US 6048290 A	20-10-1999 11-04-2000
US 5356196	A	18-10-1994	NONE	
WO 2011010890	A2	27-01-2011	CN 102469883 A EP 2457470 A2 JP 2012533397 A KR 20110010073 A US 2012119039 A1 WO 2011010890 A2	23-05-2012 30-05-2012 27-12-2012 31-01-2011 17-05-2012 27-01-2011
CN 102772069	A	14-11-2012	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82