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(54) Baby dinning chair

(57) The present invention discloses a baby dining chair comprising a seat (2), front legs (3) and rear legs (4), the seat (2) being movably connected to either the front legs (3) or the rear legs (4) so as to form a supporting structure, wherein the seat (2) is lockably connected to either the front legs (3) or the rear legs (4) by means of a hookswitch (8). The seat (2) is able to slide, by one end thereof, along the extending direction of the front legs (3) or the rear legs (4) after it is unlocked from either the front legs (3) or the rear legs (4) through the hookswitch (8), which enables the baby dining chair to be folded. When the baby dining chair is on an unfolded status, if user pushes the guide rods towards their inner side, the insert will be driven by the guide rods accordingly and unlocked from the first locking hole, which brings the seat in a freedom status. Turning over the seat can make the pin move along the sliding chute until it is stuck in the lowest end of the sliding chute, which brings the chair into the folded status. Using of a chute-type hookswitch by the present invention makes the baby dining chair more smoothly in its folding procedure without getting stuck.

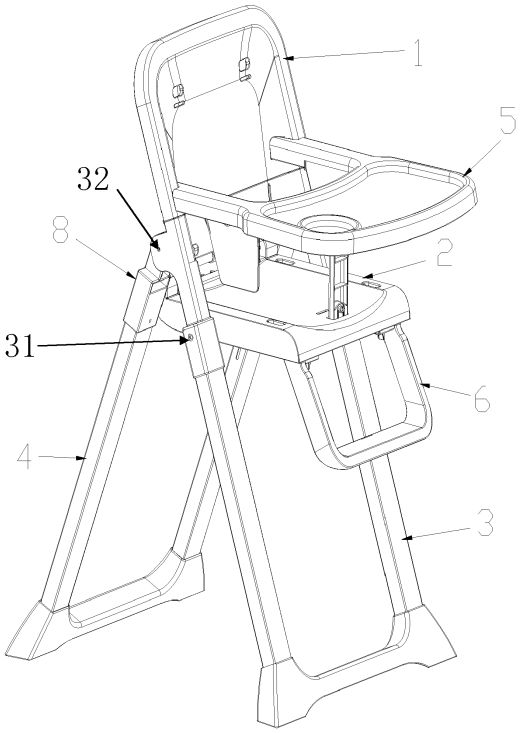

Fig. 1

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Description

Field of the Invention

[0001] The present invention relates to a baby dining chair. More specifically, the invention relates to a foldable baby dining chair.

Background of the Invention

[0002] Conventional foldable baby dinning chairs are often hindered when they are folded because the structure thereof cannot guarantee that the both sides of the chair seat are able to move up and down simultaneously along legs of the chair and sometimes the folding movement will get stuck on front legs of the chair. Besides, conventional baby dining chair are complex in structure and inconvenient to use, which will brings unnecessary trouble to users.

Summary of the Invention

[0003] An aim of the present invention is to provide such a baby dining chair that is with more humanized design and can be folded more smoothly.

[0004] In view of the above problems in prior arts, the present invention provides a baby dining chair comprising a seat, front legs and rear legs. The seat is movably connected to either the front legs or the rear legs so as to form a supporting structure. The seat is lockably connected to either the front legs or the rear legs by means of a hookswitch. The seat is able to slide, by one end thereof, along the extending direction of the front legs or the rear legs after it is unlocked from either the front legs or the rear legs through the hookswitch, which enables the baby dining chair to be folded.

[0005] According to the present invention, the above solution is advantageous on that, because the seat, front legs and rear legs are connected by the hookswitch which enables each of these parts to cooperatively move and fold, the baby dining chair will not get stuck when it is folded and both sides of the chair seat can smoothly move up and down at the same time.

[0006] In one embodiment of the present invention, the hookswitch comprises a housing, a guide rod, an insert and a spring. The front legs or the rear legs are provided with a first locking hole to be connected with the hookswitch. One end of the insert is resiliently connected with the inner side of the housing through the spring and the other end of the insert is able to engage with the first locking hole. One end of the guide rod is connected with the insert.

[0007] The hookswitch is further provided with a pin and the front legs or the rear legs are further provided with a sliding chute. The sliding chute is in communication with the first locking hole and extends along the extension direction of the front legs or the rear legs. One end of the pin is fixedly connected with the housing and the other end of the pin is received in the sliding chute which therefore forms a movable connection with the sliding chute.

[0008] Advantageously, because a special structure of a chute-type hookswitch is adopted, the baby dining chair of the present invention can be folded more smoothly without getting stuck.

[0009] In some embodiments, the baby dining chair further comprises a pedal frame. The pedal frame is connected to the second end of the seat by a hookswitch such that, when a pin of the hookswitch is retracted back, the pedal frame can rotate about a joint connected to the second end of the seat towards the direction of the seat and contact with the bottom side of the seat.

[0010] The above embodiments are advantageous on that, when a baby sitting on the chair, he or she can place feet on the pedal frame comfortably without a feeling of hanging of the feet. Moreover, such a retractable design can make the baby dining chair more flexible and convenient when it is folded and unfolded.

[0011] In some embodiments, the bottom side of the seat is further provided with a hook wedge. This hook wedge is provided at the boundary of a contact surface between the bottom side of the seat and the contacted pedal frame for securing the pedal frame to the bottom side of the seat.

[0012] Such a structure is advantageous on that the pedal frame will occupy less space when it is folded.

[0013] In some embodiments, the chair further comprises a backrest and a dinner plate. The backrest is formed into one piece with the front legs and located upstream to the extending direction of the front legs. The dinner plate is connected to the backrest by a hook wedge.

[0014] Such a structure is beneficial on that the dinner plate is detachable so as to make the dining chair more flexible and convenient when it is folded or unfolded.

[0015] In some embodiments, the chair further comprises a bracket. The bracket is connected between the dinner plate and the seat.

[0016] This bracket is beneficial on that it adds an additional support to the dinner plate which will make the dinner plate more stable. Moreover, because the bracket is movable, it is also very flexible and convenient when in use.

[0017] In some embodiments, the chair further comprises lateral plates which are movably connected to the dinner plate and located by two lateral sides of the baby dining chair. With such a structure, the chair according to the present invention can advantageously prevent baby's legs from stretching out of the chair and avoid the risk of baby's falling die to improper sitting posture. The lateral plates can be used as suitable components for baby's safety.

Brief Description of the Drawings

[0018]

Fig. 1 is a schematic view of a baby dining chair of an embodiment according to the present invention;

Fig. 2 is a partially exploded perspective view of a baby dining chair in an embodiment according to the present invention;

Fig. 3 is a schematic view of a hookswitch in an embodiment according to the present invention;

Fig. 3a is a sectional view of a hookswitch in an embodiment according to the present invention;

Fig. 4 is a partially exploded view of the hookswitch as shown in Fig. 3;

Fig. 5 is a schematic view of a pedal frame in an embodiment according to the present invention;

Fig. 6 is a partially exploded view of the rear side of the pedal frame as shown in Fig. 5;

Fig. 7 is a partially exploded view of the front side of the pedal frame as shown in Fig. 5;

Fig. 8 is a bottom view of the pedal frame as shown in Fig. 5;

Fig. 9 is a schematic view of a dinner plate in an embodiment according to the present invention;

Fig. 10 is a schematic view of a lateral plate of the dinner plate as shown in Fig. 9; and

Fig. 11 is a schematic view showing the connection relationship between a dinner plate and an auxiliary rod as a hook.

Detailed Description of the Embodiments

[0019] The present invention will be described in further detail with reference to the accompanying drawings.

[0020] Figure 1 is a schematic view showing a baby dining chair in an embodiment according to the present invention. Fig. 2 is a partially exploded perspective view of a baby dining chair in an embodiment according to the present invention;

[0021] As shown in Figs. 1 and 2, the baby dining chair mainly comprises a backrest 1, a seat 2, front legs 3, rear legs 4, a dinner plate 5, and a pedal frame 6. In order to describe the chair more conveniently, hereinafter the rear side of the seat 2 is defined as the first end 21 and the front side of the seat 2 is defined as the second end 22.

[0022] The backrest 1 and the front legs 3 are joined together or manufactured in one piece (shown as a rectangle frame). The seat 2 is movably connected to the front legs 3 and rear legs 4 so as to form a supporting structure (As shown in the figures, the front legs 3 and the rear legs 4 are connected at their upper end through a rotation shaft to form a inverted V-shape.). On one hand, the seat 2 is connected to the front legs 3 through a rotation shaft 31. The rear legs 4, on the other hand, are connected to a hookswitch 8. And the front legs 3 and the rear legs 4 are connected by a rotation shaft 32 to form an inverted V-shape. When the seat 2 is unlocked from the rear legs 4 through the hookswitch 8, the two sides of the seat 2 is able to rotate about the rotation shaft 31 which connects the front legs 3 and the seat 2 and then slide along the extended direction of the front legs 3 so as to make the baby dining chair folded. The first end 21 of the seat 2 is connected to the rear legs 4 by a hookswitch 8. The seat 2 is connected to the front legs 3 by the rotation shaft 31. Dinner plate 5 is fixedly connected to the backrest 1. A holder 52 formed in the bottom side of the dinner plate 5 is mounted to the second end 22. A pedal frame 61 is mounted under the second end 22 of the seat 2.

[0023] In the embodiment of the present invention as shown in Fig. 3, Fig. 3a and Fig. 4, the hookswitch 8 which connects the first end 21 of the seat 2 to the rear legs 4 comprises a housing 81, a guide rod 82, an insert 83 and a spring 84. The rear legs 4 are provided with a first locking hole 86 to be connected with the hookswitch 8. One end of the insert 83 is resiliently connected with the inner side of the housing 81 through the spring 84 and the other end of the insert 83 is able to engage with the first locking hole 86. One end of the guide rod 82 is connected with the insert 83.

[0024] In order to prevent the hookswitch 8 from causing the seat 2 completely detached from the rear legs when the chair is folded, the hookswitch 8 also includes a pin 85 and the rear legs 4 also include a sliding chute 87. The sliding chute 87 is in communication with the first locking hole 86 and extends along the extending direction of the rear legs 4. One end of the pin 85 is fixedly connected to the housing 81 and the other end of the pin 85 is received in the sliding chute 87 so as to form a movable connection with the sliding chute 87.

[0025] As shown in Fig. 4, the insert 83 is provided with a slot at its lower side. The guide rod 82 has one end which protrudes into the slot at the lower side of the insert 83. One end of the pin 85 penetrates into a hole provided at the upper part of the insert 83. The other end of the pin 85 is connected to the housing 81 through the spring 84. When the spring 84 reaches the maximum compression distance, the pin 85 will be disengaged from the first locking hole 86. The guide rod 82, the insert 83, the spring 84 and the pin 85 are received inside the housing 81. One end of the guide rod 82 protrudes out of an opening provided in the middle part of the housing 81 and can be actuated by hands of users. The other end of the guide rod 82 is within the housing 81 and be plugged into the insert 83. The spring 84 is disposed inside the insert 83. The pin 85 enters into a hollow cylinder of the insert 83 by passing through the spring 84. One end of the insert 83 is provided with a cylindrical protrusion 88 which be

stuck in the first locking hole 86 in order to prevent the seat 2 from turning back. The sliding chute 87 is configured to be a narrow track in which the end part of the pin 85 can be received. The first locking hole 86 is located upstream of the sliding chute 87. According to the preferred embodiment of the hookswitch 8 as shown in Fig. 3 and Fig. 4, the sliding chute 87 is arranged on the rear legs 4 and it enables the rear end 21 of the seat 2 to slide along the extending direction of the rear legs through the engagement with the pin 85. This configuration makes slide of the seat 2 more precisely and is more conducive to the baby dining chair's status after the chair is folded. The front legs 3 and the rear legs 4 are connected by a rotation shaft 32 on their upper part so as to form an inverted V-shape. The second end 22 of the seat 2 is also connected to the front legs 3 through a rotation shaft 31. These two rotation shafts, together with the hookswitch 8 as described above, constitute a chute-type hookswitch mechanism.

[0026] When the baby dining chair is in an unfolded using status, if user pushes the two guide rods 82 from their outer sides towards inner sides, inserts 83 will be accordingly driven inward which will cause the cylindrical protrusion 88 of the inserts 83 released (unlocked) from the first locking hole 86 and thus make the seat 2 in a movable status. Then, by turning the seat 2, the pin 85 will move along the sliding chute 87 and thus continue turning back. At the same time, the front legs 3 and rear legs 4 move together through the rotation shaft 32 which results in decrease of the angle between the two legs. The relative movement of the second end 22 of the seat 2 and the front legs 3 through the rotation shaft 31 also results in decrease of the angle between the seat 2 and the front legs 3.

[0027] Both sides of the seat 2 are connected to the front legs 3 by rotation shaft 31. The rear legs 4 are connected to the hookswitch 8. The minimum distance between the actuating ends of the guide rods 82 is set as twice of the maximum operating range of the guide rod 82. This maximum operating range should correspond to the distance that can be manipulated by one hand of an adult so as to ease the operation by a hand. In addition, when a user pushes the guide rod 82, the seat 2 is released (unlocked) to a freedom status. Then, after user's fingers are released from the guide rod 82, the inserts 83 will spring back with the guide rod 82 due to the elastic force applied by the spring 84 which is compressed between the insert 83 and the housing 81. Thereby, the guide rod 82 is reset.

[0028] As mentioned above, the seat 2 is in a freedom status after the guide rod 82 is pushed. At this point, the first end 21 of the seat 2 turns down and drives the pin 85 moving along the sliding chute 87 until the pin 85 is stuck in the lowest end of the sliding chute 87. Therefore, the baby dining chair is completely in a folded status.

[0029] Through co-working of the two rotation shaft 31 and 32 with the chute-type hookswitch, fold of the baby dining chair is more smoothly without making user feel of the stuck in the folding procedure. When folding the chair, it is more convenient to push the guide rod 82 by tilting the chair slightly onwards. Moreover, the rotation shafts can make the rear legs 4 folded toward the front legs 3 when in folding, which makes the dining chair just standing when it is completely folded.

[0030] As a preferred embodiment of the invention, an auxiliary rod 7 is connected between the upper ends of the two rear legs 4. The two ends of the auxiliary rod 7 are fixedly connected to the rear legs 4. When the baby dining chair is in use, the auxiliary rod 7 can form a face support or line support structure together with the hookswitch 8. When the baby dining chair is unfolded, the auxiliary rod 7 is in abutment to the housing 81. Furthermore, the support structure between the hookswitch 8 and auxiliary rod 7 can also be designed as a concave shape so that it can form a face support acting like a bearing shaft. Such structure can prevent the hookswitch 8 from being damaged due to too much stress. Meanwhile, the auxiliary rod 7 can also play a role of stabilizing the chair seat in order to prevent a baby from falling to the ground when he or she is sitting on the front part of the seat 2.

[0031] As shown in Fig. 5, Fig. 6, Fig. 7 and Fig. 8, despite working as a part of the chute-type hookswitch, the seat 2 has a second end 22 under which a pedal member 6 is provided. Furthermore, the second end 22 of the seat 2 is also provided on its upper side with a bracket 52 for connecting with the dinner plate 5.

[0032] The pedal member 6 comprises a pedal frame 61 and a pedal hookswitch 62. The pedal frame 61 is connected to the second end 22 of the seat 2 by the pedal hookswitch 62. When an insert of the pedal hookswitch 62 is retracted, the pedal frame 61 rotates about a joint connected to the second end 22 of the seat 2 towards the seat 2 and then contacts with the bottom side of the seat 2. The pedal frame 61 is a wide U-shaped frame structure and includes a second locking hole 611 as well as a slope slide-guiding member 612. As a preferred embodiment, at the bottom side of the seat there mounted a hook wedge in order to facilitate secure of the pedal frame 61 to the bottom of the seat 2. The hook wedge is arranged at the boundary of the contact surface between the bottom of the seat 2 and the pedal frame 61, which is used to secure the pedal frame 61 to the bottom of seat 2. The pedal hookswitch 62 mainly comprises the following 3 assemblies. The first assembly is comprised of a rotation shaft slot 621 and a slot cover 622. This assembly is connected to the pedal frame 61 through a rotation shaft while the pedal frame is also connected to a lock slot 623 through the above rotation shaft. The second assembly is comprised of the lock slot 623, a lock slot cover 624 and a second clutch 625 mounted in the lock slot 623. This second assembly is used to lock the pedal frame 61 at a certain angle. The third assembly comprises a hook wedge structure 626 for securing the pedal frame 61 when the pedal frame 61 is folded onto the bottom of the seat 2. The second clutch 625 in the lock slot 623 has one end designed as a cylindrical pro-

trusion 629 to be stuck in the second locking hole 611 of the pedal frame 61. Furthermore, inside the second clutch 625 there are also provided with a second button 627 and a second spring 628. The lock slot cover 624 is provided with an opening so that a part of the second button 627 can extend outside the lock slot cover 624 through the opening to facilitate the user to operate the second button 627. The rotation shaft slot 621 and the lock slot 623 are mounted at both sides of the U-shaped ends of the pedal frame 61. When in use, the user can firstly release the pedal frame 61 from the hook wedge structure 626. Then, during the rotation for unfolding the pedal frame 61, the slope slide-guiding member 612 of pedal frame 61 comes into contact with the cylindrical protrusion 629 of the second clutch 625 and guide the protrusion 629 smoothly stuck into the second locking hole 611 so as to secure the pedal frame 61. After the pedal frame 61 is fixed, if a user pushes the second buttons 627 from outer sides towards the inner sides, the second clutches 625 will accordingly be driven by the second buttons 627 and thus translate to the inner sides. This movement will release the cylindrical protrusion 629 of the second clutch 625 from the second locking hole 611, which brings the pedal frame 61 into a freedom status.

[0033] The second spring 628 acts similar to the aforementioned spring 84. After a user pushes the second button 627 to release the second clutch 625 from the second locking hole 611, if the user's fingers are released from the second button 627, elastic force of the second spring 627 compressed between the inner side of the lock slot 623 and the second button 627 will cause the second clutch 625 bring back the second buttons 627 to its original position.

[0034] Function of the pedal frame 61 is that it can make a baby place his or her feet on the pedal frame 61 comfortably without a feeling of hanging of the feet. Besides, such a retractable design makes the baby dining chair more flexible and convenient when it is folded or unfolded.

[0035] As shown in Fig. 9, a foldable dinner plate 5 can be provided above the seat 2. This dinner plate 5 has two elongate poles 51 which pass through two openings set in the backrest 1 and are buckled at the back sides of the backrest 1 by means of hook wedge. With such arrangement, the dinner plate 5 is fixed to the backrest 1. Furthermore, the dinner plate 5 is also provided with a bracket 52 connected at the bottom side of the dinner plate 5 through a rotation shaft. The bracket 52 is connected between the dinner plate 5 and the seat 2. As described above, on the second end 22 of seat 2 is provided with an interface for connecting to the other end of the bracket 52. The dinner plate 5 can be more stable in both horizontal and vertical directions with connection to the bracket 52.

[0036] As shown in Fig. 10, the baby dining chair further comprises lateral plates 53 that are foldably connected to the dinner plate 5. The lateral plates 53 are located at two sides of the chair and are rotatable about a shaft 51a set in the elongate poles 51. When the lateral plates 53 rotate down to a position vertical to the elongate poles 51, tails of the plates 53 will return into slots set in the elongate poles 51 and inverted wedge 54 will tighten the lateral plate 53 by virtue of elasticity of plastic.

[0037] By pressing the inverted wedge 54 inward, the lateral plate 53 can be lifted up. After the tails of the lateral plate 53 are disengaged from the slots, tails of the lateral plates 53 can be stuck in the slots by pressing inward down the lateral plates 53. Then, the dinner plate 5 is folded into a plane that can be hung on a hook 71 set on the auxiliary rod 7. As shown in Fig. 2, the auxiliary rod 7 may be provided with a hook 71. As shown in Fig. 11, a hanging hole 91 may also be designed on the corresponding position of the bottom of the dinner plate 5 at the place where it is overlapped with the auxiliary rod 7 when it is folded. The hanging hole 91 can engage with the hook 71 of the auxiliary rod 7. Consequently, the dinner plate 5 can be folded when not in use, which makes it easy to carry.

[0038] It should be noted that the present invention is not limited to the sole embodiments of as described above. On the contrary, it will encompass all the alternative embodiments thereof.

[0039] For example, in the above description, the first end 21 of the seat 2 is lockably connected to the rear legs 4 by means of a hookswitch 8. After the first end 21 of the seat 2 is unlocked from the rear legs 4 through the hookswitch 8, the seat 2 is able to turn back down and slide along the extending direction of the rear legs 4 so as to enable the baby dining chair to be folded. However, it would be also expected that the seat 2 can similarly be lockably connected to the front legs through a hookswitch. In this case, the first end 21 of the seat 2 can be rotatably connected to the rear legs 4 through a rotation shaft while the middle or front part of the seat 2 is connected to the front legs through the hookswitch 8. Meanwhile, the hookswitch 8 can be provided beneath the middle of front part of the seat with the corresponding first locking hole and sliding chute being arranged on the front legs 3.

Claims

1. A baby dining chair comprising a seat (2), front legs (3) and rear legs (4), the seat (2) being movably connected to either the front legs (3) or the rear legs (4) so as to form a supporting structure, wherein
   the seat (2) is lockably connected to either the front legs (3) or the rear legs (4) by means of a hookswitch (8),
   the seat (2) being able to slide, by its first end, along the extending direction of the front legs (3) or the rear legs (4) after it is unlocked from either the front legs (3) or the rear legs (4) through the hookswitch (8), which enables the baby dining chair to be folded.

2. A baby dining chair as claimed in claim 1, wherein the hookswitch (8) comprises a housing (81), a guide rod (82), an insert (83) and a spring (84), and the front legs (3) or the rear legs (4) are provided with a first locking hole (86) to be connected with the hookswitch (8);
one end of the insert (83) being resiliently connected with the inner side of the housing (81) through the spring (84) and the other end of the insert (83) being able to engage with the first locking hole (86); and one end of the guide rod (82) being connected with the insert (83).

3. A baby dining chair as claimed in claim 2, wherein the hookswitch (8) is further provided with a pin (85) and the front legs (3) or the rear legs (4) are further provided with a sliding chute (87);
the sliding chute (87) being in communication with the first locking hole (86) and extending along the extension direction of the front legs (3) or the rear legs (4); and one end of the pin (85) being fixedly connected with the housing (81) and the other end of the pin (85) being received in the sliding chute (87) therefore forming a movable connection with the sliding chute (87).

4. A baby dining chair as claimed in claim 2 or claim 3, wherein
two lateral sides of the seat (2) are connected to the front legs (3) or the rear legs (4) by two hookswitches (8), and the minimum distance between the actuating ends of the two guide rods (82) of the hookswitches is twice as the maximum compression distance of the spring (84).

5. A baby dining chair as claimed in claim 1 further comprising an auxiliary rod (7), two ends of the auxiliary rod (7) being fixedly connected to the front legs (3) and/or the rear legs (4) so that, when the baby dining chair is in use, the auxiliary rod (7) can form a face support or line support structure together with the hookswitch (8).

6. A baby dining chair as claimed in claim 1 further comprising a pedal frame (61), the pedal frame (61) being connected to the second end of the seat (2) by a hookswitch (62) such that, when a pin of the hookswitch (62) is retracted back, the pedal frame (61) can rotate about a joint connected to the second end of the seat towards the direction of the seat (2) and contact with the bottom side of the seat (2).

7. A baby dining chair as claimed in claim 6, wherein the bottom side of the seat (2) is further provided with a hook wedge, the hook wedge being provided at the boundary of a contact surface between the bottom side of the seat (2) and the contacted pedal frame (61) for securing the pedal frame (61) to the bottom side of the seat (2).

8. A baby dining chair as claimed in claim 1 further comprising a backrest (1) and a dinner plate (5), the backrest (1) being formed into one piece with the front legs (3) and located upstream to the extending direction of the front legs (3), and the dinner plate (5) being connected to the backrest (1) by a hook wedge.

9. A baby dining chair as claimed in claim 8 further comprising a bracket (52) connected between the dinner plate (5) and the seat (2).

10. A baby dining chair as claimed in claim 8 further comprising lateral plates (53) which are movably connected to the dinner plate (5) and located by two lateral sides of the baby dining chair.

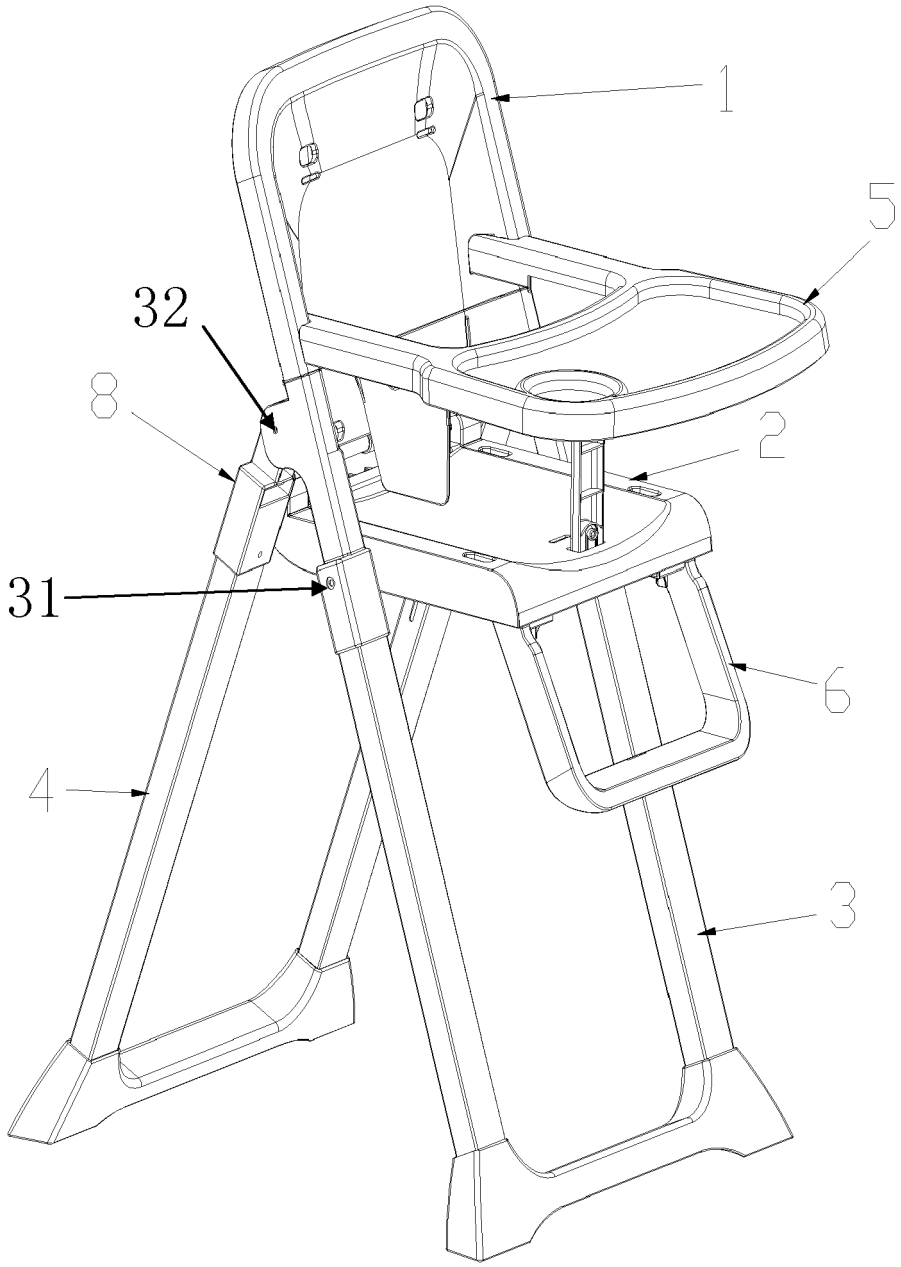

Fig. 1

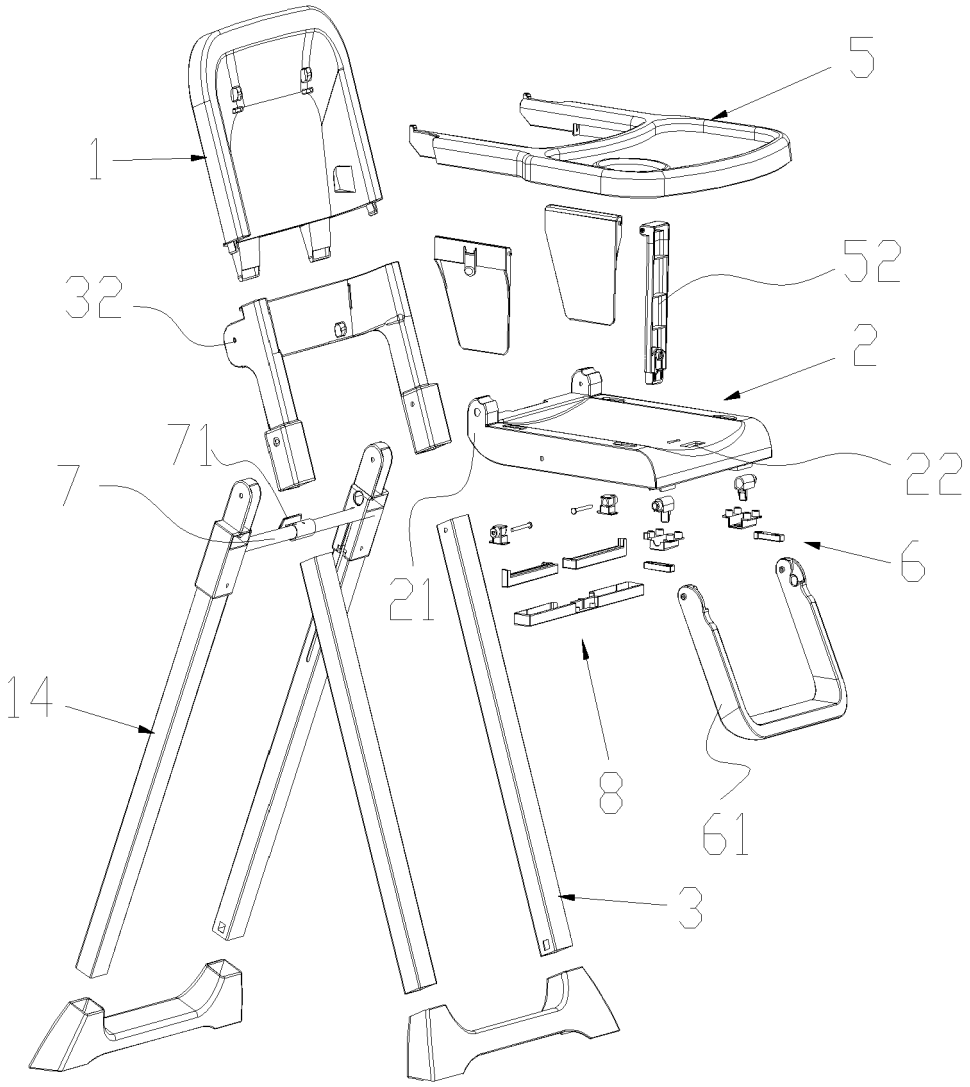

Fig. 2

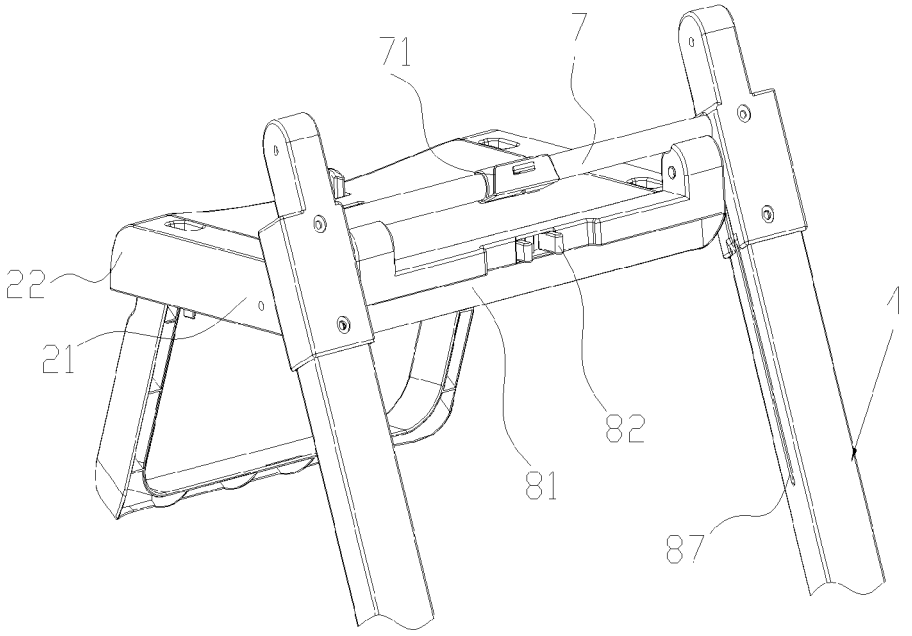

Fig. 3

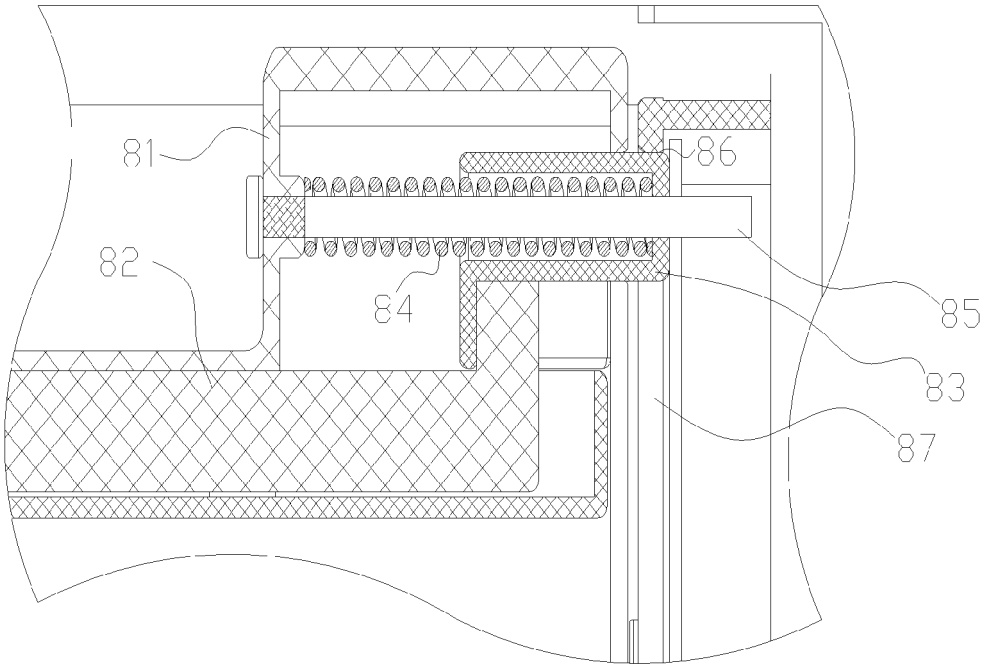

Fig. 3a

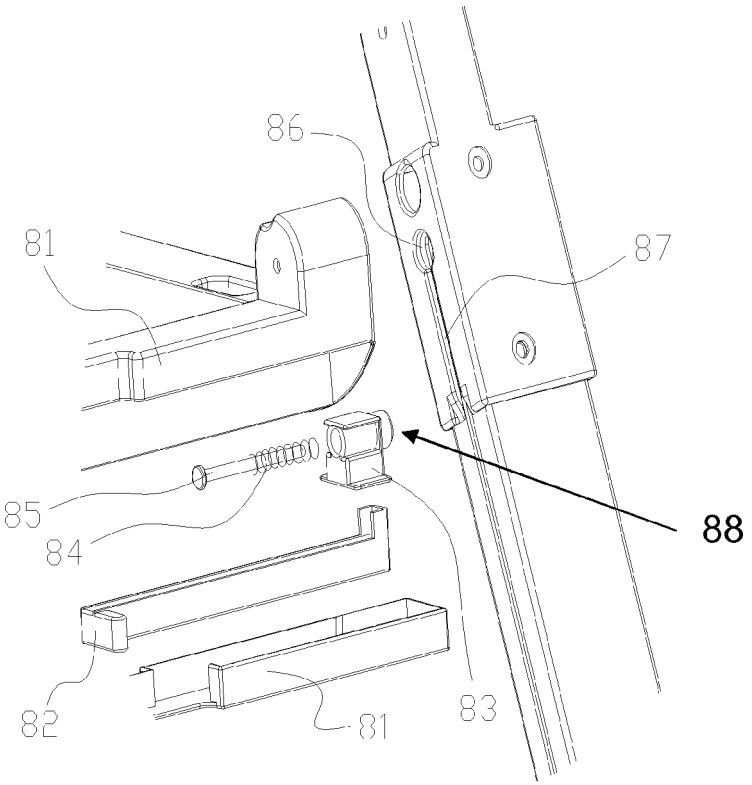

Fig. 4

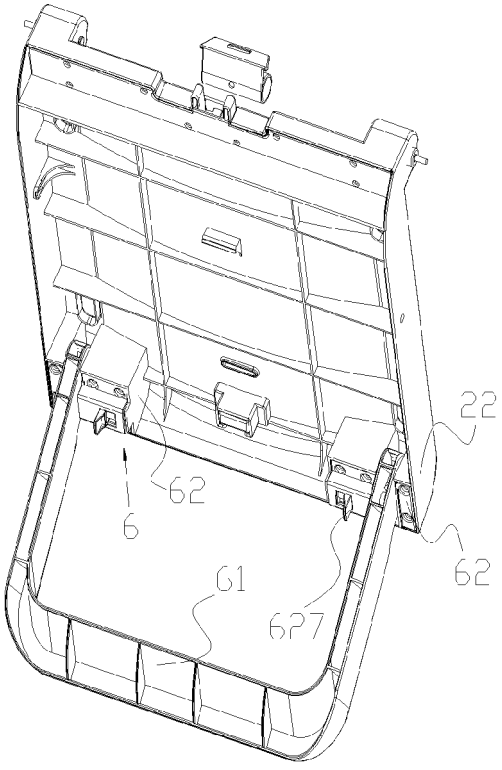

Fig. 5

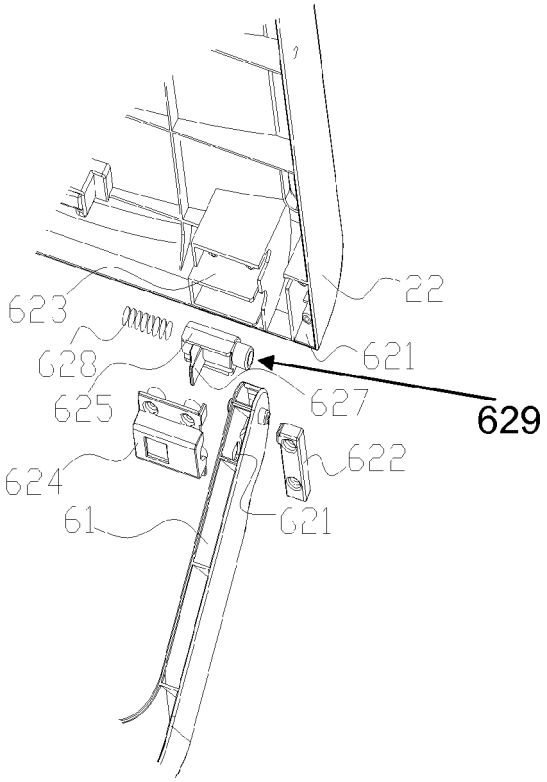
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Fig. 6

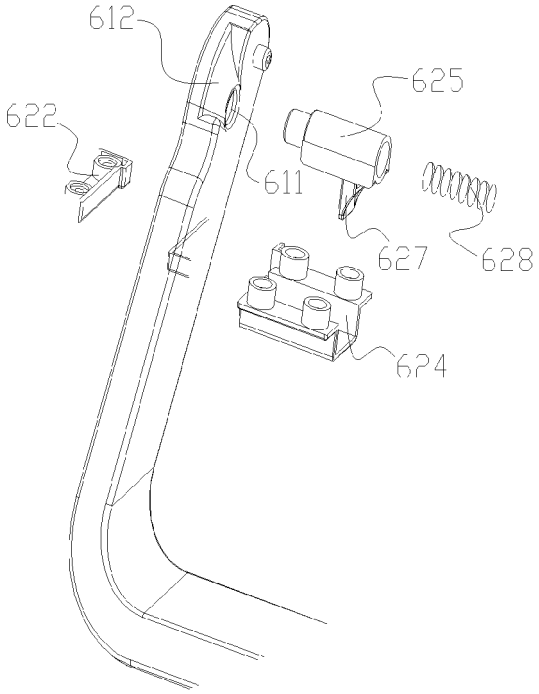
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Fig. 7

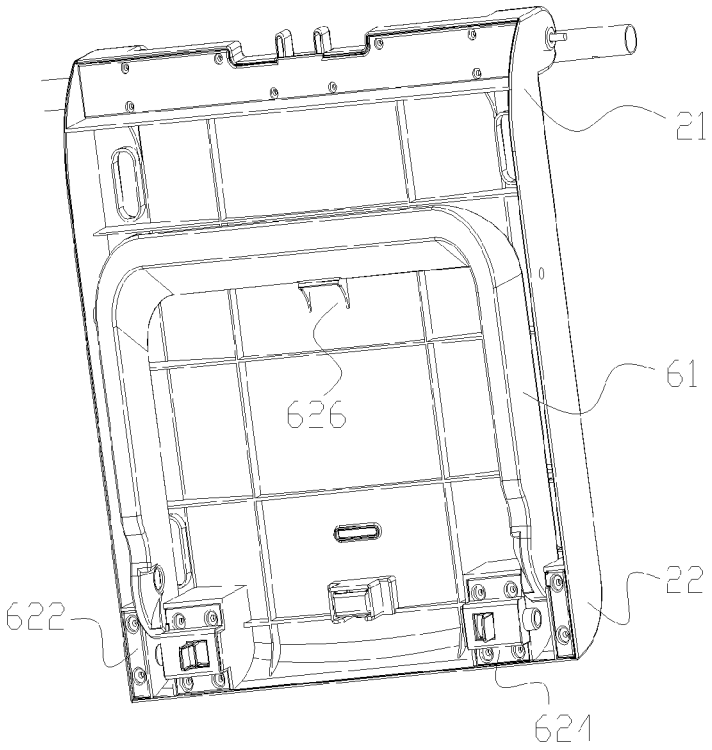

Fig. 8

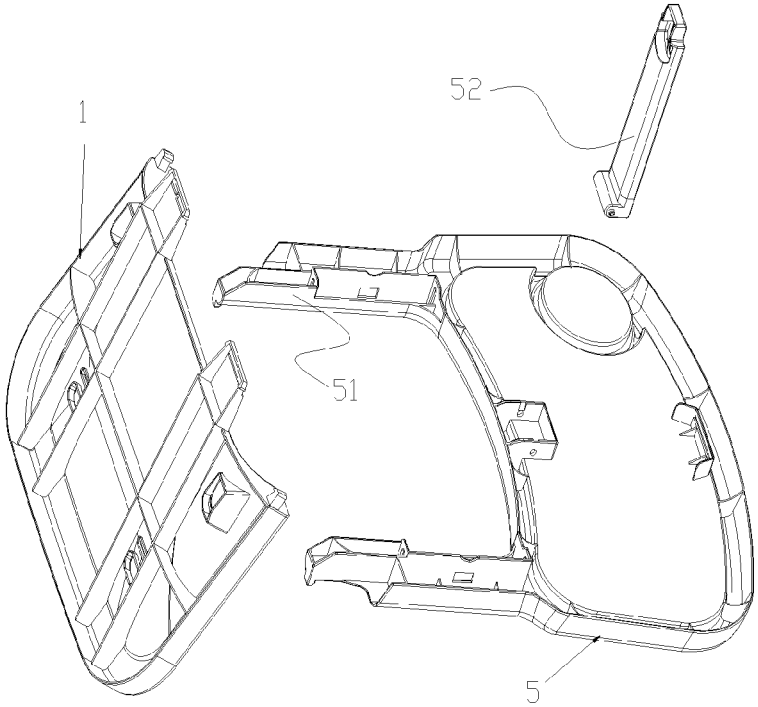

Fig. 9

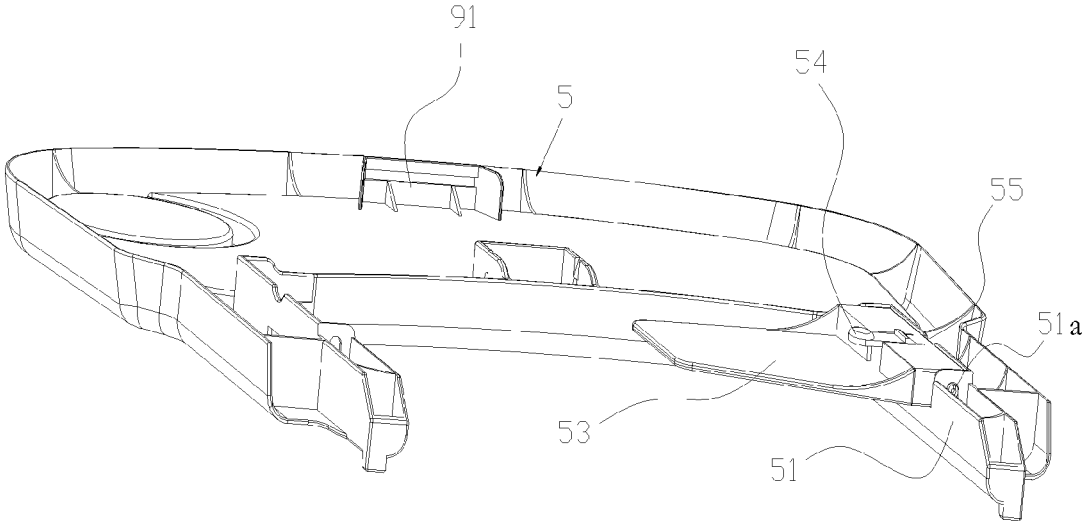

Fig. 10

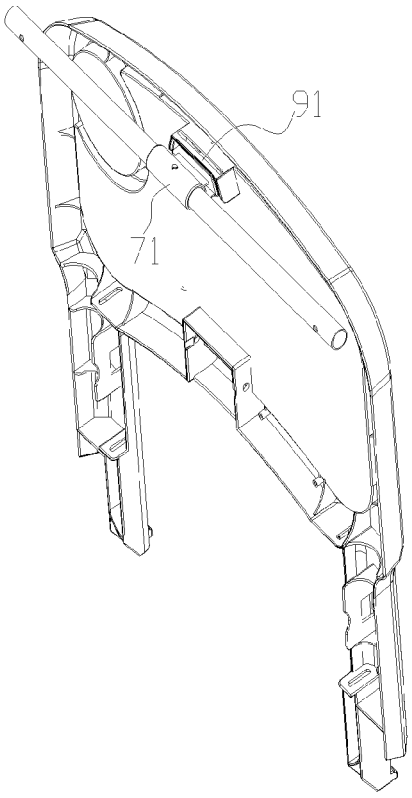

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 13 15 4838

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 February 2014	Lehe, Jörn

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