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(54) **CHILD SAFETY SEAT**

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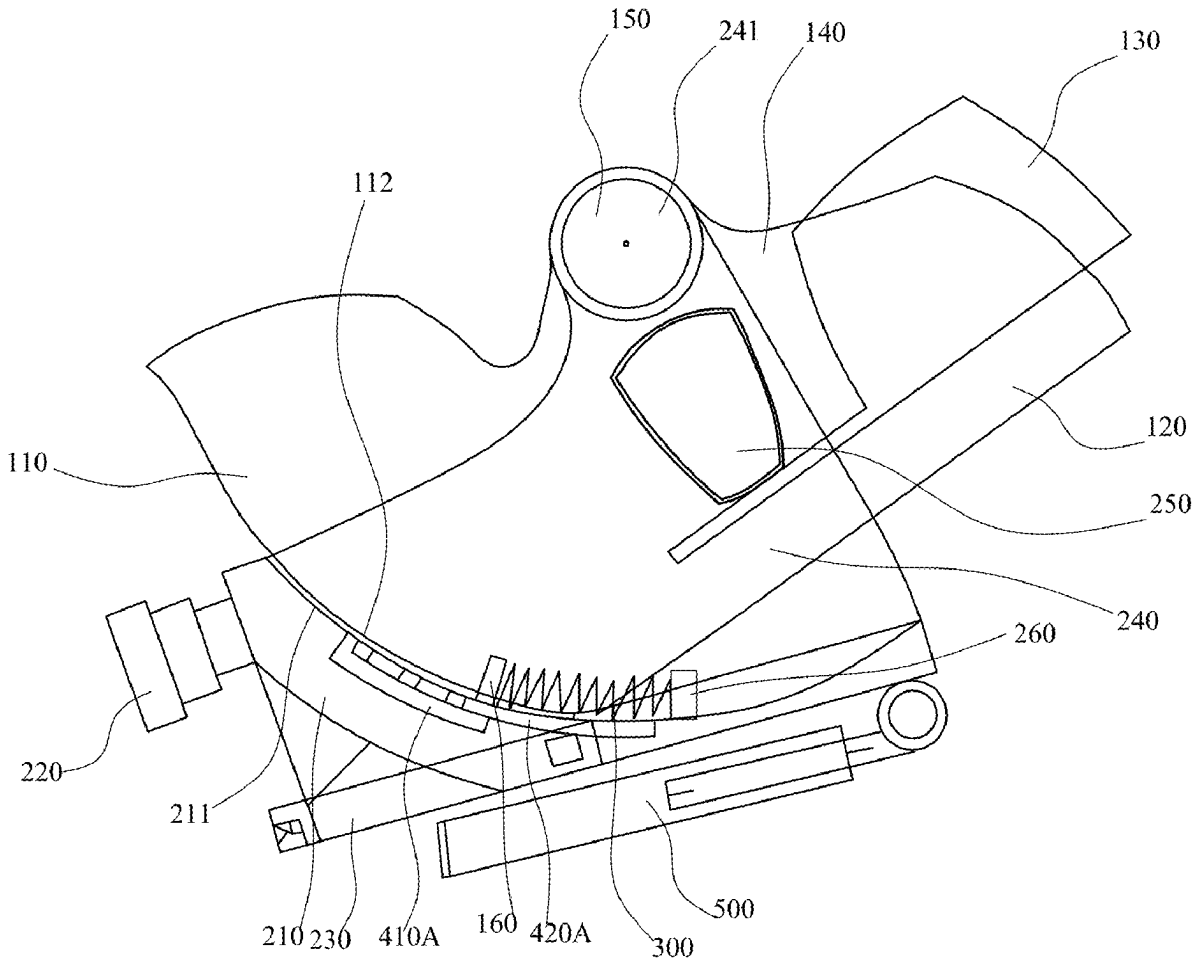
(57) **ABSTRACT**

The present disclosure relates to a child safety seat, for being fixed to a vehicle seat, including: a base for being fixed to the vehicle seat; a seat body for seating a child and pivotally connected to the base about a pivot axis, wherein a seating gravity point of the seat body together with the child is located below the pivot axis when the child is seated in the seat body; and a buffer structure disposed between the base and the seat body, for buffering a pivotal movement of the seat body relative to the base.



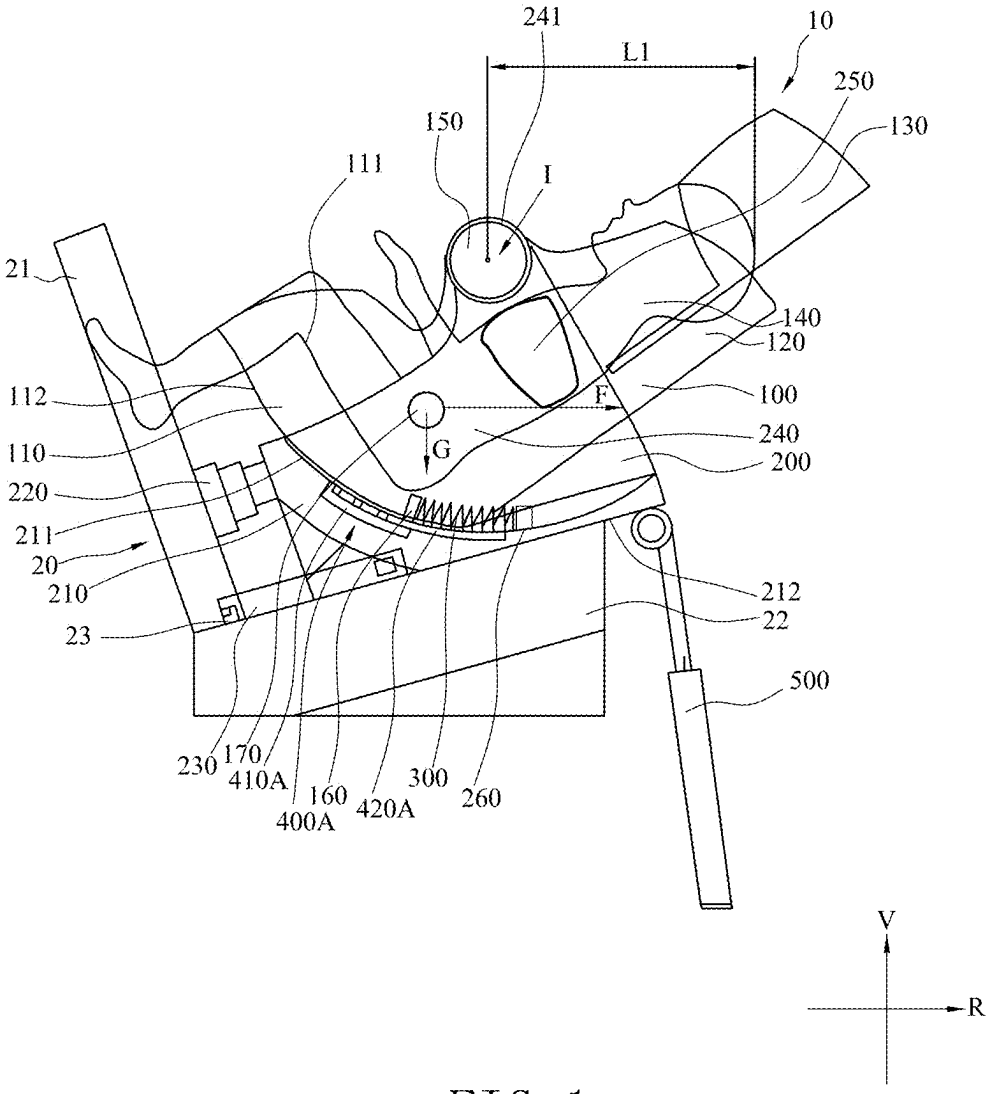

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FIG. 1

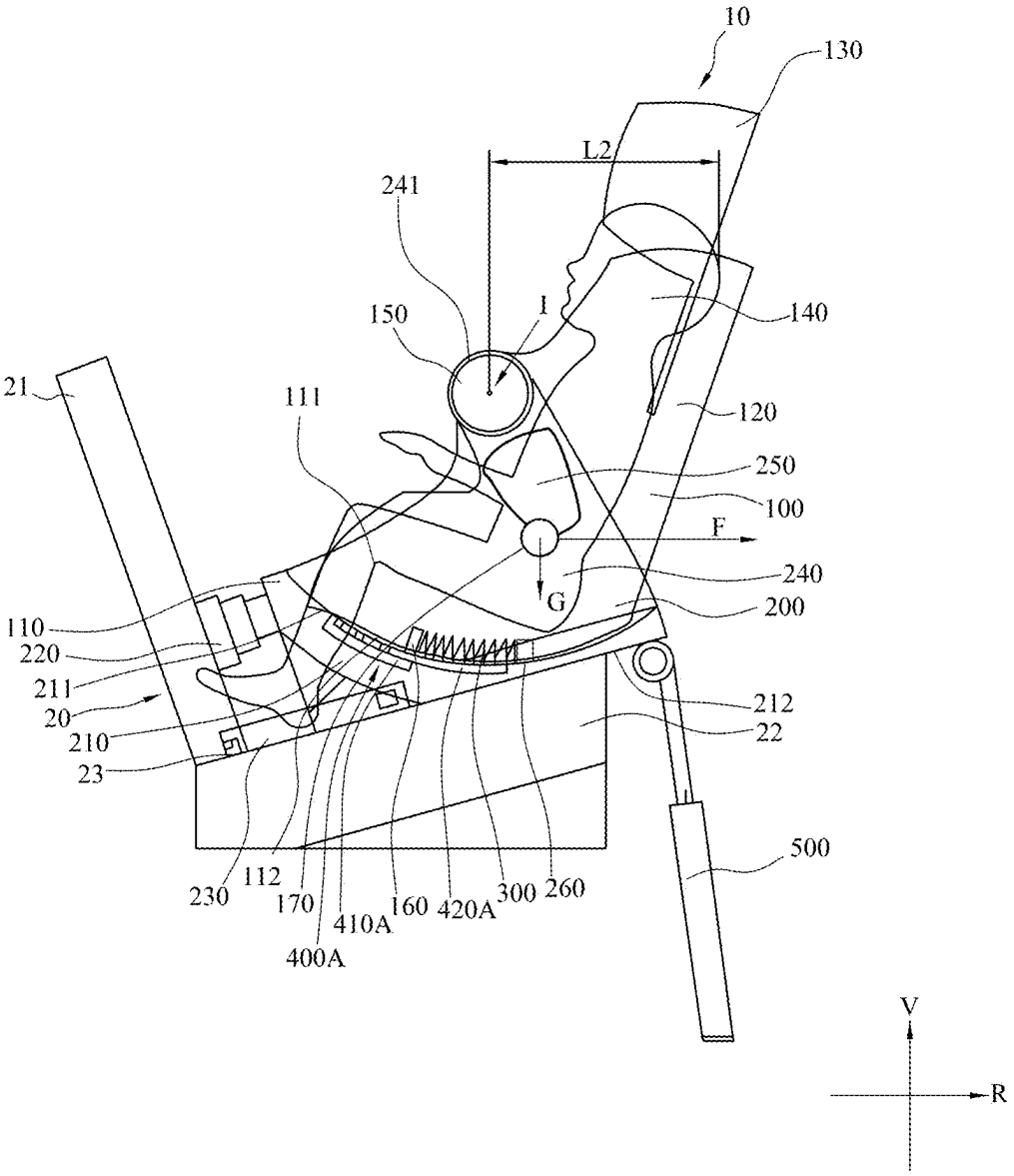
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FIG. 2

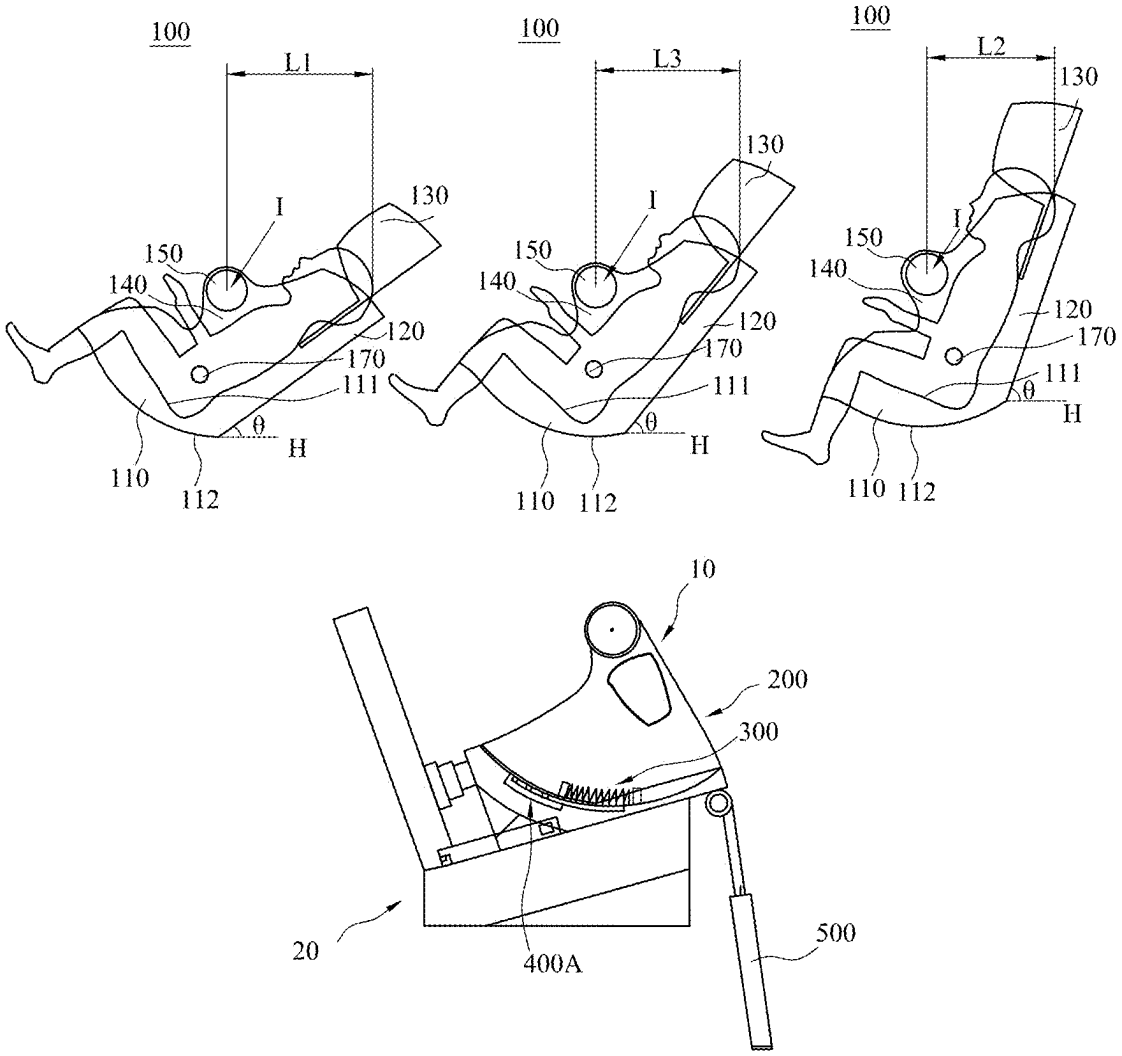
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FIG. 3

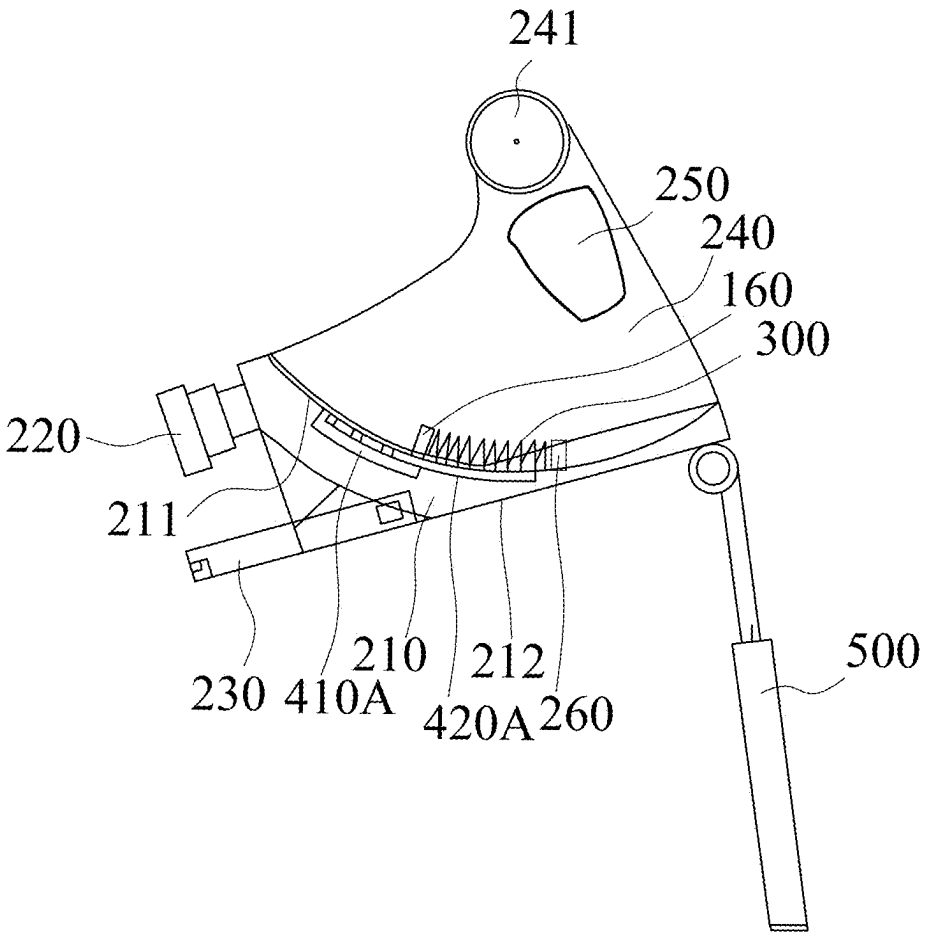

FIG. 4

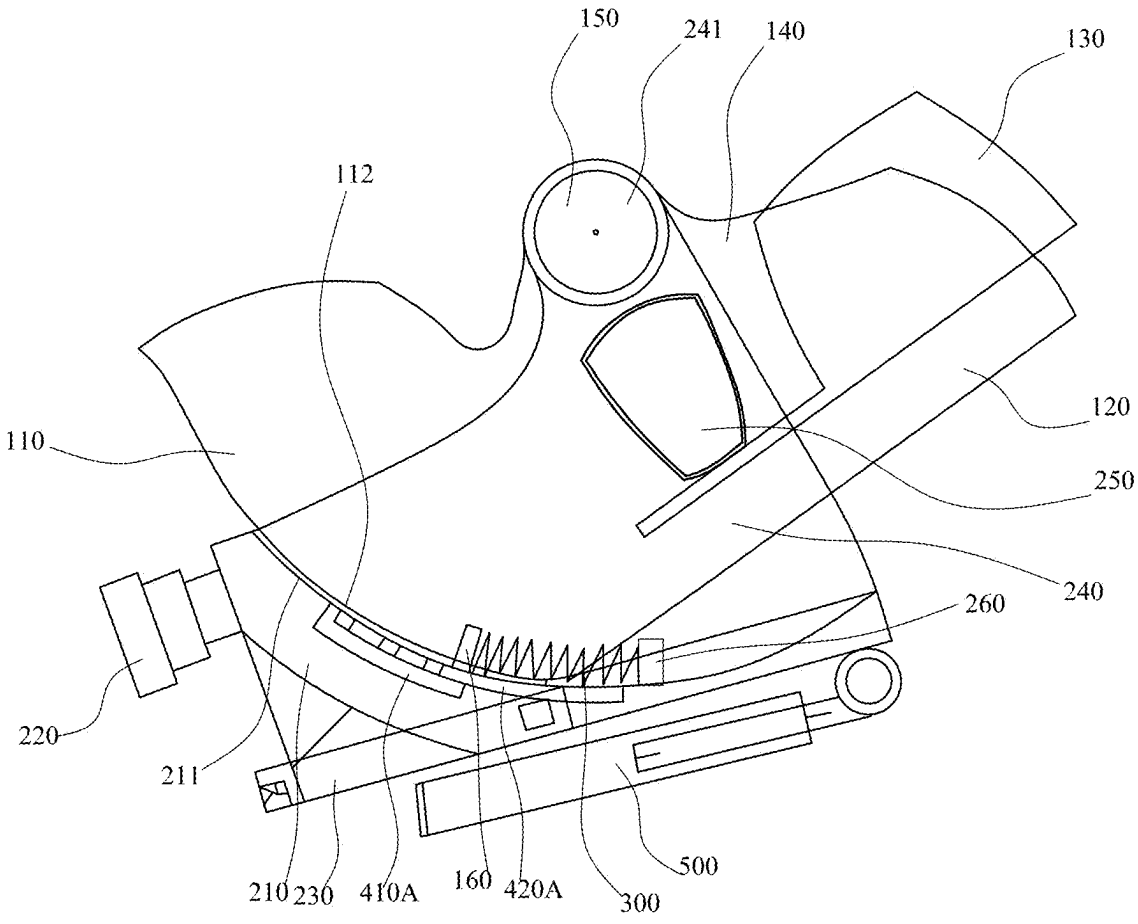
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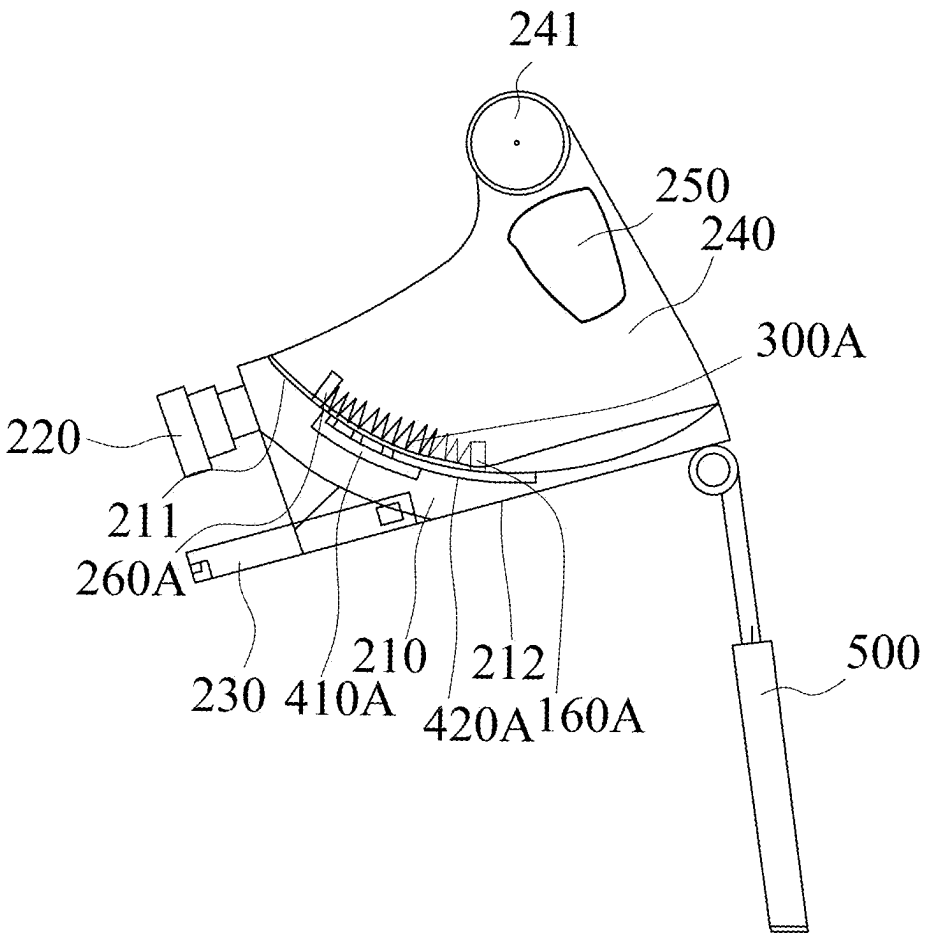
FIG. 5


200
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420A
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160A
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FIG. 6

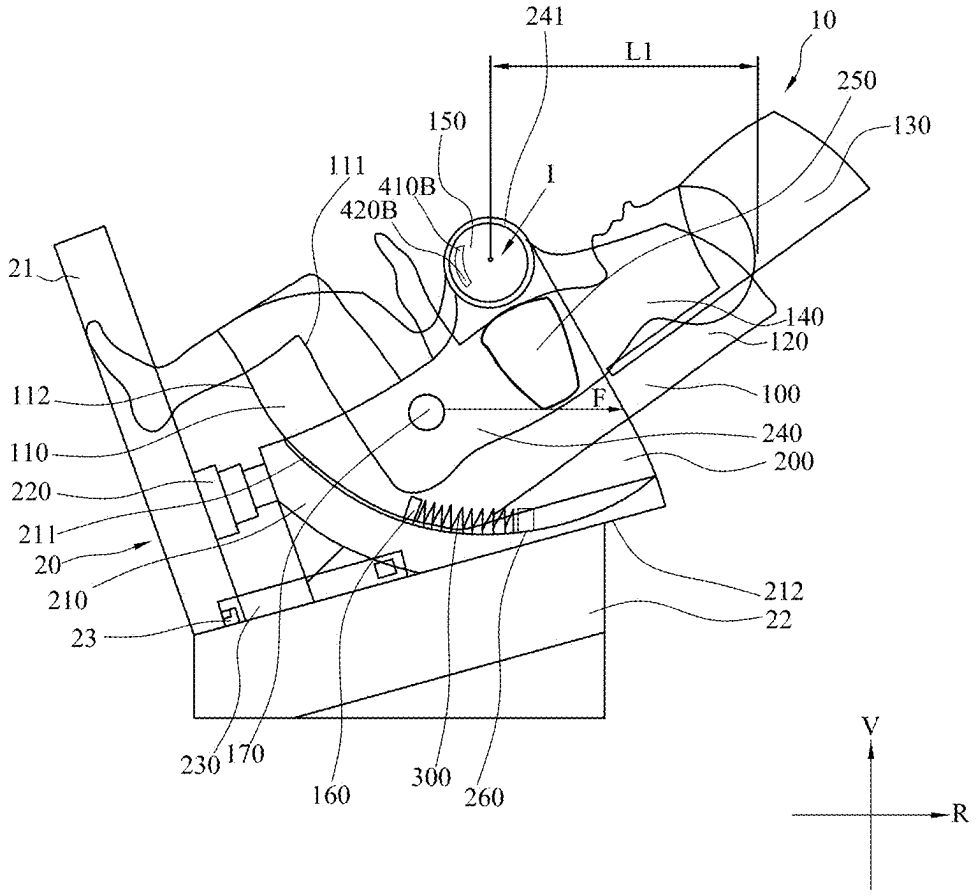
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FIG. 7

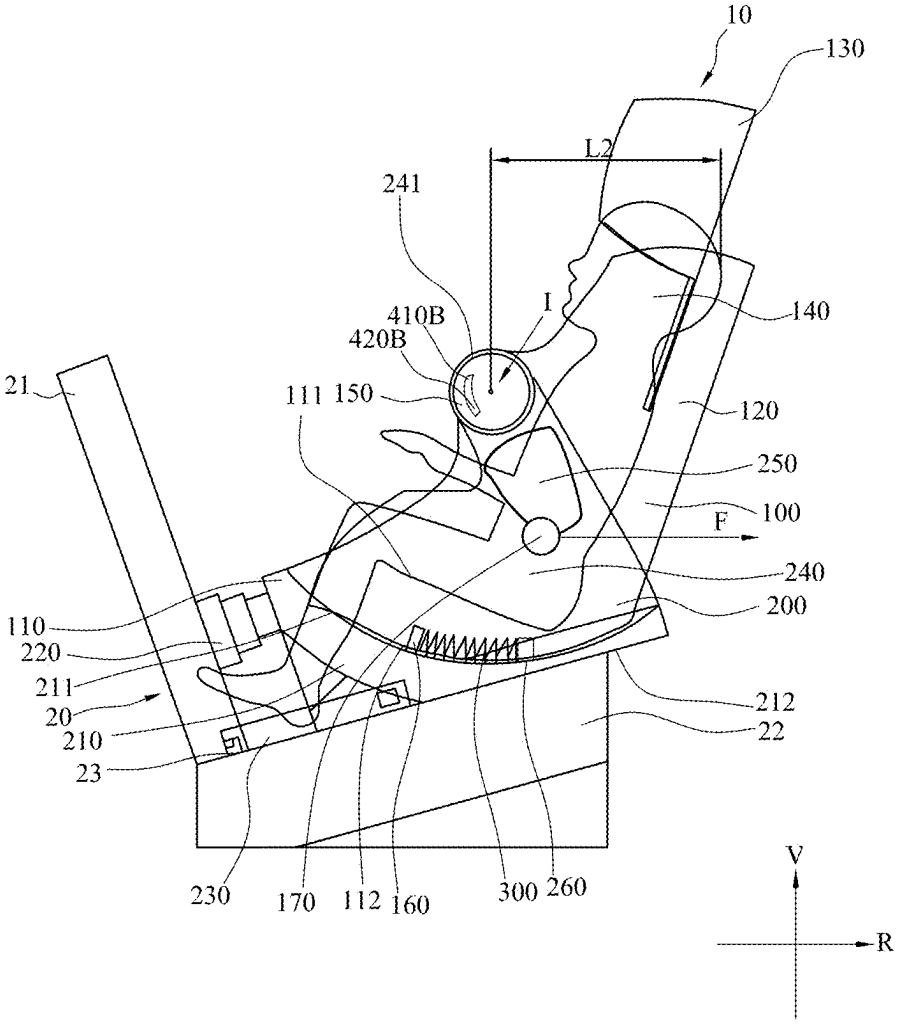
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FIG. 8

CHILD SAFETY SEAT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 63/555,368, entitled "Child Restrain System" and filed on Feb. 19, 2024, and Chinese Application No. 202410393120.6, entitled "CHILD SAFETY SEAT" and filed on Apr. 1, 2024, all of which are incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to a child safety seat, particularly a buffered child safety seat, which may be fixed to a seat of a transport vehicle, in particular a car.

BACKGROUND

[0003] At present, fixation methods for car safety seats are complex. Standardized fixation systems, such as ISOFIX, require additional load legs, top tethers, or low tethers, aiming to address an issue of head displacement.

SUMMARY

[0004] The present disclosure provides a child safety seat, for being fixed to a vehicle seat, including: a base for being fixed to the vehicle seat; a seat body for seating a child and pivotally connected to the base about a pivot axis, wherein a seating gravity point of the seat body together with the child is located below the pivot axis when the child is seated in the seat body; and a buffer structure disposed between the base and the seat body, for buffering a pivotal movement of the seat body relative to the base.

[0005] In an embodiment, the child safety seat includes a position locking structure disposed between the seat body and the base, for locking the seat body at various angles relative to the base.

[0006] In an embodiment, the base includes a base body for being fixed to the vehicle seat and side portions extending upward from both sides of the base body, wherein pivot connection portions are respectively provided on the side portions, and the seat body is disposed in a receiving space formed between the base body and the side portions, the seat body having a pivot portion cooperating with the pivot connection portions, wherein centers of the pivot connection portions and the pivot portion form the pivot axis to enable the pivotal movement of the seat body relative to the base.

[0007] In an embodiment, the seat body has side wings for lateral protection of the child, and the pivot portion is provided on the side wings.

[0008] In an embodiment, the pivot connection portion is configured to be hollow.

[0009] In an embodiment, the position locking structure is disposed between the base body of the base and a seat portion of the seat body, the position locking structure including: a positioning portion located on the base body; a locking portion located on the seat portion and movable relative to the positioning portion, wherein the positioning portion is configured to: in a normal use state, adjustably lock an angle of the seat body by positioning the locking portion; and in a collision state, release the locking portion to allow the seat body to pivot, such that an angle of the seat body in the collision state is greater than an angle of the seat body before the collision state, so as to achieve the pivotal adjustment of the seat body to a relatively upright angle.

[0010] In an embodiment, the buffer structure is a compression spring, the seat body has an abutment portion for abutting one end of the compression spring, the abutment portion being integrally formed with the locking portion, and the other end of the compression spring is fixed to a fixation portion provided on the base.

[0011] In an embodiment, the buffer structure is a tension spring, the seat body has a pulling portion for pulling one end of the tension spring, the pulling portion being integrally formed with the locking portion, and the other end of the tension spring is fixed to a fixation portion provided on the base.

[0012] In an embodiment, the position locking structure is disposed between the pivot connection portion of the base and the pivot portion of the seat body, the position locking structure including: a positioning portion located on the pivot connection portion; a locking portion located on the pivot portion and movable relative to the positioning portion, wherein the positioning portion is configured to: in a normal use state, adjustably lock an angle of the seat body by positioning the locking portion; and in a collision state, release the locking portion to allow the seat body to pivot, such that an angle of the seat body in the collision state is greater than an angle of the seat body before the collision state, so as to achieve the pivotal adjustment of the seat body to a relatively upright angle.

[0013] In an embodiment, the positioning portion and the locking portion are configured as corresponding wave portions, tooth portions, or snap portions for engaging with each other, wherein in the event of a collision, the positioning portion and the locking portion are disengaged.

[0014] In an embodiment, in a normal use state, an angle between the seat body and a horizontal plane is smaller than an angle in a collision state.

[0015] In an embodiment, in the collision state, the angle between the seat body and the horizontal plane is 50 degrees to 90 degrees.

[0016] In an embodiment, the base has, on a side facing a backrest of the vehicle seat: a retractable standardized fixation system for fixing the child safety seat to the vehicle seat; and a support member for adjusting a distance between the base and the backrest.

[0017] In an embodiment, the base has, on a side away from the backrest of the vehicle seat: a support leg that may be pivotally folded to a lower side of the base when the child safety seat is not fixed to the vehicle seat, and that supports the child safety seat when the child safety seat is fixed to the vehicle seat.

[0018] In an embodiment, the base is provided with lateral protection devices that can bounce up on both sides thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. **1** is a side view of a child safety seat according to a first embodiment of the present disclosure in a normal use state;

[0020] FIG. **2** is a side view of the child safety seat according to the first embodiment of the present disclosure in a collision state;

[0021] FIG. **3** is an exploded side view of the child safety seat according to the first embodiment of the present disclosure;

[0022] FIG. **4** is a side view of a base of the child safety seat according to the first embodiment of the present disclosure;

[0023] FIG. **5** is a side view of the child safety seat according to the first embodiment of the present disclosure;

[0024] FIG. **6** is a side view of a buffer structure according to another embodiment of the present disclosure;

[0025] FIG. **7** is a side view of a child safety seat according to a second embodiment of the present disclosure in a normal use state;

[0026] FIG. **8** is a side view of the child safety seat according to the second embodiment of the present disclosure in a collision state.

REFERENCE NUMBERS ARE LISTED AS FOLLOWS

[0027] **10** child safety seat
[0028] **100** seat body
[0029] **110** seat portion
[0030] **111** upper side
[0031] **112** lower side
[0032] **120** backrest
[0033] **130** headrest
[0034] **140** side wing
[0035] **150** pivot portion
[0036] **160** abutment portion
[0037] **160**A pulling portion
[0038] **170** seating gravity point
[0039] **200** base
[0040] **210** base body
[0041] **211** upper side
[0042] **212** lower side
[0043] **220** support member
[0044] **230** standardized fixation system (ISOFIX)
[0045] **240** side portion
[0046] **241** pivot connection portion
[0047] **250** lateral protection device
[0048] **260** fixation portion
[0049] **260**A fixation portion
[0050] **300** buffer structure, compression spring
[0051] **300**A buffer structure, tension spring
[0052] **400**A, **400**B position locking structure
[0053] **410**A, **410**B positioning portion
[0054] **420**A, **420**B locking portion
[0055] **500** support leg
[0056] **20** vehicle seat
[0057] **21** backrest
[0058] **22** seat portion
[0059] **23** standardized fixation system interface
[0060] G gravity
[0061] F inertial force
[0062] L**1**, L**2**, L**3** distance
[0063] I pivot axis
[0064] R travelling direction
[0065] V vertical direction
[0066] H horizontal plane
[0067] θ angle

DETAILED DESCRIPTION

[0068] Although the present disclosure has been illustrated and described with reference to specific embodiments, the present disclosure should not be limited to the details shown. Rather, various modifications may be made to these details within a scope of the equivalent claims without departing from ta spirit of the present disclosure.

[0069] Directional descriptions such as "front", "rear", "upper" and "lower" mentioned in the present disclosure are for ease of understanding only. The present disclosure is not limited to these directions and may be adjusted according to actual circumstances. Although the present disclosure has been described with reference to exemplary embodiments, the terms used are explanatory and exemplary, rather than restrictive.

[0070] FIG. **1** is a side view of a child safety seat **10** according to a first embodiment of the present disclosure in a normal use state. According to the present disclosure, the child safety seat **10** is detachably fixed to a vehicle seat **20** of a vehicle, such as a car, during use. For example, a standardized fixation system **230** of the child safety seat **10**, such as ISOFIX, is inserted into a standardized fixation system interface **23** provided between a backrest **21** and a seat portion **22** of the vehicle seat **20** to secure the child safety seat **10**.

[0071] According to the present disclosure, the child safety seat **10** includes a seat body **100** and a base **200**. The seat body **100** is configured to seat a child. After the child is seated in the seat body **100**, the child faces the backrest **21** of the vehicle seat **20**, that is, the child sits in the seat body **100** facing rearward, opposite to a traveling direction R of the vehicle.

[0072] According to the present disclosure, the seat body **100** includes a seat portion **110**, a headrest **130**, and two side wings **140**. The seat portion **110** is configured to seat the child. A backrest **120** is configured to support the child's back. The headrest **130** is configured to support the child's head, and the headrest **130** may be adjusted relative to the backrest **120** to accommodate children of different heights. The two side wings **140** are configured to protect the child from both sides. The side wings **140** may be integrally formed with the seat portion **110** and the backrest **120** to provide better structural strength. According to the present disclosure, the seat portion **110** has an upper side **111** and a lower side **112**, where the child sits on the upper side **111**, and the lower side **112** is designed to be at least partially arc-shaped.

[0073] According to the present disclosure, the base **200** includes a base body **210**, a support member **220**, a standardized fixation system **230**, and two side portions **240**. The base body **210** is placed on the seat portion **22** of the vehicle seat **20**. The support member **220** is movably (e.g., telescopically or pivotally) supported between the base body **210** and the backrest **21** of the vehicle seat **20** in an unlocked state, for adjusting space for legs of children of different ages, and is fixedly supported between the base body **210** and the backrest **21** of the vehicle seat **20** in a locked state to provide additional support force to the child safety seat **10**. The standardized fixation system **230** may extend to be inserted into the standardized fixation system interface **23** of the vehicle seat **20** and retracted into the base body **210** when the child safety seat **10** is separated from the vehicle seat **20**. The two side portions **240** extend respectively upward in the vertical direction V from the base body **210** along both sides in the traveling direction R and may be designed to be integrally formed with the base body **210** according to the present disclosure, for example. Additionally, lateral protection devices **250** may be provided on the two side portions **240**. The lateral protection devices **250** are

folded against the side portions **240** in a folded state and protrude from the side portions **240** along both sides in the traveling direction R in an unfolded state to provide additional lateral protection for the child. The base body **210** has an upper side **211** and a lower side **212**. The base body **210** is placed on the seat portion **22** of the vehicle seat **20** in sake of the flat lower side **212**, and the upper side **211** of the base body **210** is designed to be arc-shaped corresponding to the lower side **112** of the seat portion **110** of the seat body **100**. According to this embodiment, a foldable support leg **500** is also provided on the front side of the lower side **212** of the base body **210** along the traveling direction R. The support leg **500**, in the unfolded state shown in FIG. **1**, is supported at its lower end on, for example, a floor of the car to provide additional support force.

[0074] According to the present disclosure, the two side portions **240** are respectively provided with pivot connection portions **241** at their upper sides. The pivot connection portions **241** cooperate with pivot portions **150** provided on the two side wings **140** of the seat body **100** (obscured by the pivot connection portions **241** in FIG. **1**) to enable the seat body **100** to pivot relative to the base **200**. The pivot connection portions **241** and the pivot portions **150** together form a pivot connection point between the seat body **100** and the base **200** and constitute a rotation center where the seat body **100** is rotatable relative to the base **200**. The rotation center has a pivot axis I. For example, the pivot connection portions **241** may be designed as hollow rings, and the pivot portions **150** may be shape-fitted into the hollow rings to slide or rotate within the hollow rings, for example, with the aid of balls. The hollow pivot connection portions **241** additionally provide, for example, a handle position, making it convenient for a user to use them as handles when moving the base **200**. The structure and cooperation of the pivot connection portions **241** and the pivot portions **150** may be designed in any manners, as long as they enable the connection between the seat body **100** and the base **200** and allow the seat body **100** to pivot relative to the base **200**. The present disclosure is not limited thereto.

[0075] According to the present disclosure, the seat body **100** may be detached from the base **200**, for example, to carry or store the seat body **100** and the base **200** separately. During normal use while the vehicle is in motion, the pivot portions **150** of the seat body **100** are detachably connected to the pivot connection portions **241** of the base **200**, so that the seat body **100** may pivot relative to the base **200** when being assembled on the base **200**.

[0076] As can be seen from FIG. **1**, in the normal use state, the child is in a semi-reclined position after sitting in the seat body **100**. Since the child's body is in close contact with the seat body **100** in this case, the child and the seat body **100** may be regarded as forming a single entity. A seating gravity point **170** of the child corresponds to an action point of the gravity G of the seat body **100** together with the child. The seating gravity point **170** is located below the pivot axis I when viewed along a vertical direction V. At this time, the child's seating posture is relatively comfortable due to the semi-reclined state, which is conducive to the child's rest and sleep during the ride and does not compress the child's spine for a long time. Along the traveling direction R, a distance L**1** between a frontmost part of the child's head and the pivot axis I is relatively long. When the vehicle is subjected to a collision, the base **200** remains stationary due to its fixed connection with the vehicle seat **20**, while the seat body **100** and the child together are subjected to an inertial force F along the traveling direction R, causing the seat body **100** to pivot forward relative to the base **200** about the pivot axis I along the traveling direction R. The child can thus change from the semi-reclined posture shown in FIG. **1** to a relatively upright posture, which will be described in detail in FIG. **2**.

[0077] According to the present disclosure, the child safety seat **10** is configured as a buffered child safety seat **10** with a buffering function. The child safety seat **10** has a buffer structure **300**. The buffer structure **300** is disposed between the base **200** and the seat body **100** to buffer forward pivotal movement of the seat body **100** relative to the base **200** along the traveling direction R.

[0078] According to this embodiment, the buffer structure **300** is configured as a compression spring **300**. The seat body **100**, particularly at the lower side **112** of the seat portion **110**, is provided with an abutment portion **160** for abutting one end of the compression spring **300**. The abutment portion **160** may also be fixedly connected to the compression spring **300**. The other end of the compression spring is fixed to a fixation portion **260**, which is provided on the base body **210** of the base **200**, for example, on the upper side **211** of the base body **210**. The abutment portion **160** and the fixation portion **260** are merely illustrative in the drawings, and the present disclosure is not limited thereto.

[0079] According to the present disclosure, the child safety seat **10** includes a position locking structure **400**A. The position locking structure **400**A is disposed between the seat body **100** and the base **200** to lock the seat body **100** at various angles relative to the base **200**, that is, to lock the seat body **100** at various reclining angles relative to the base **200**. The position locking structure **400**A may be integrally formed with either the seat body **100** or the base **200**; or independently formed and connected to the seat body **100** and the base **200**, respectively.

[0080] According to this embodiment, the position locking structure **400**A is disposed between the base body **210** of the base **200** and the seat portion **110** of the seat body **100**. The position locking structure **400**A includes a positioning portion **410**A fixed to the upper side **211** of the base body **210**, and a locking portion **420**A fixed to the lower side **112** of the seat portion **110** and movable relative to the positioning portion **410**A within the positioning portion **410**A. According to this embodiment, the positioning portion **410**A is configured to: in the normal use state, adjustably lock the angle of the seat body **100** by positioning the locking portion **420**A; and in the collision state, release the locking portion **420**A to allow the seat body **100** to pivot, so that an angle of the seat body **100** in the collision state is greater than an angle of the seat body **100** before the collision state, thereby achieving a relatively upright pivotal angle of the seat body **100** relative to the base **200** (see FIG. **2**).

[0081] According to an embodiment, the abutment portion **160** may be formed with the locking portion **420**A integrally, separately, or in combination. According to the present disclosure, the abutment portion **160** may be fixedly provided on the seat portion **110**, or the locking portion **420**A may be fixedly provided on the seat portion **110**, or both the abutment portion **160** and the locking portion **420**A may be fixedly provided on the seat portion **110**. Additionally, the abutment portion **160** or the locking portion **420**A may also be directly formed by the seat portion **110**, for example, by

molding the abutment portion **160** and/or the locking portion **420**A from the seat portion **110**.

[0082] According to this embodiment, the positioning portion **410**A and the locking portion **420**A may be configured as corresponding wave portions, tooth portions, or snap portions, etc., for being releasably engaged with each other. The present disclosure is not limited thereto.

[0083] When a collision occurs, the positioning portion **410**A and the locking portion **420**A are disengaged due to the inertial force F. That is, the seat body **100** pivots forward relative to the base **200** along the traveling direction R due to the inertial force F of the seat body **100** and the child together. Thus, the locking portion **420**A, fixed to the seat portion **110** of the seat body **100**, overcomes the locking force applied by the positioning portion **410**A to the locking portion **420**A and disengages from the positioning portion **410**A along the traveling direction R. In this case, the abutment portion **160**, connected to or separated from the locking portion **420**A, cooperates with the fixation portion **260** on the base **200** to apply pressure to the compression spring **300**. Thus, the compression spring **300** buffers the forward pivoting of the seat body **100**, thereby preventing the child from being injured or frightened by a rapid pivoting.

[0084] According to the present disclosure, the compression spring **300** may be fixed at only one end or at both ends. Particularly when fixed at both ends, the effect of the compression spring **300**, such as elastic force and elastic modulus, needs to be considered during the disengagement of the locking portion **420**A from the positioning portion **410**A. In this case, the compression spring **300** may provide a buffering effect as early as possible. The compression spring **300** may also provide a buffering effect only after the locking portion **420**A has disengaged from the positioning portion **410**A, which can advantageously allow the locking portion **420**A to disengage quickly from the positioning portion **410**A.

[0085] According to one embodiment, the compression spring **300** may also not be fixed at both ends but only radially limited. For example, limiting posts (not shown) may be provided on the seat body **100** and the base **200**, respectively; and the two ends of the compression spring **300** may be sleeved outside the limiting posts, so that the compression spring **300** is advantageously not squeezed out during compression.

[0086] According to the present disclosure, the buffer structure **300** may also be integrally formed with the position locking structure **400**A. For example, the positioning portion **410**A of the position locking structure **400**A may have buffering properties. For example, the positioning portion **410**A may be made of rubber, synthetic materials, or other flexible materials. During the disengagement of the locking portion **420**A from the positioning portion **410**A, the rubber may provide a certain buffering force, such as friction, thereby buffering the pivoting of the seat body **100**. In this case, the independent buffer structure **300**, such as the compression spring **300**, may be omitted, advantageously saving costs.

[0087] FIG. **2** is a side view of the child safety seat **10** according to the first embodiment of the present disclosure in a collision state. In this case, the vehicle seat **20** together with the base **200** of the child safety seat **10** fixed thereto suddenly decelerates as the vehicle speed decreases. Since the seat body **100** of the child safety seat **10** is pivotally connected to the base **200** above the seating gravity point **170**, the seat body **100** maintains a higher speed along the traveling direction R due to the inertial force F and may achieve a certain acceleration relative to the base **200**, causing the seat body **100** to pivot relative to the base **200** about the pivot axis I. The seating gravity point **170** thus moves forward along the traveling direction R from the position shown in FIG. **1**. As a result, the backrest **120** of the seat body **10** becomes relatively upright along the vertical direction V, and a distance L**2** between the frontmost part of the child's head and the pivot axis I is shorter than the distance L**1** therebetween in the normal use state shown in FIG. **1**. Therefore, the child's back and head may be better supported by the backrest **120** and the headrest **130**, improving the pressure and shaking on the head and neck.

[0088] FIG. **3** is an exploded side view of the child safety seat **10** according to the first embodiment of the present disclosure. A lower part of FIG. **3** shows the vehicle seat **20** and the base **200** of the child safety seat **10** fixed thereto. An upper part of FIG. **3** shows, from left to right, the seat body **100** of the child safety seat **10** transitioning from the normal use state to the collision state. In the normal use state, for example, an angle θ of the seat body **100** relative to a horizontal plane H may be adjusted to a semi-reclined position, such as 35 degrees (left figure), and fixed at this angle **0**. When subjected to a collision, the seating gravity point **170** moves forward along the traveling direction R from left to right in FIG. **3**. At this time, the angle θ of the seat body **100** automatically changes first to 50 degrees (middle figure) and then to 70 degrees (right figure), while the spring **300** is compressed to provide buffering, allowing the child to receive better protection and support. In the collision state, the angle θ of the seat body **100** may also automatically change only to 50 degrees (middle figure). In the normal use state, the distance L**1** (35 degrees) or the distance L**3** (50 degrees) between the frontmost part of the child's head and the pivot axis I is greater than the distance L**2** (70 degrees) in the collision state. The above angles θ are only examples, and the present disclosure is not limited thereto. The angle θ may be any angle between 0 and 90 degrees.

[0089] According to some embodiments of the present disclosure, in the normal use state of the child safety seat **10**, the angle θ of the seat body **100** relative to the horizontal plane H may be adjusted by the child's caregiver as needed, for example, adjusted to a specific angle θ between a first critical angle and a second critical angle for normal use and fixed at this angle θ. For example, the first critical angle for normal use is the most reclined, such as 35 degrees, and a second critical angle for the normal use is more upright, such as 50 degrees. When subjected to a collision, the seating gravity point **170** moves forward along the traveling direction R. At this time, the angle θ of the seat body **100** automatically changes to exceed the second critical angle for the normal use and up to a third critical angle, such as 70 degrees, while the spring **300** is compressed to provide buffering, allowing the child to receive better protection and support. In the normal use state, the distance L**1** (35 degrees) or the L**3** (50 degrees) between the frontmost part of the child's head and the pivot axis I is greater than the distance L**2** (70 degrees) in the collision state. The above angles θ are only examples, and the present disclosure is not limited thereto. The angle θ may be any angle between 0 and 90 degrees.

[0090] According to some embodiments of the present disclosure, the compression spring **300** is configured such that the compression spring **300** is compressed only when the angle θ of the seat body **100** relative to the horizontal plane H exceeds the second critical angle for the normal use, to provide buffering to the seat body **100** when the vehicle is subjected to a collision and the seat body **100** continues to pivot forward due to the inertial force F.

[0091] For example, the seat body **100** has an abutment portion **160** for abutting one end of the compression spring **300**, and the abutment portion **160** is integrally formed with the locking portion **420**A. The other end of the compression spring **300** is fixed to a fixation portion **260**, which is provided on the base body **210** of the base **200**, for example, on the upper side **211** of the base body **210**. Between the first critical angle of 35 degrees and the second critical angle of 50 degrees, the abutment portion **160** does not abut against the compression spring **300** until the angle θ of the seat body **100** relative to the horizontal plane H exceeds the second critical angle of 50 degrees for the normal use, at which point the compression spring **300** is abutted by the abutment portion **160** and compressed. That is, between the first critical angle of 35 degrees and the second critical angle of 50 degrees for the normal use, the compression spring **300** is not in the movement path of the locking portion **420**A.

[0092] According to the present disclosure, a chance of the abutment between the abutment portion **160** and the compression spring **300** may be adjusted as needed and is not limited thereto. For example, the abutment may also occur between 30 degrees and 50 degrees.

[0093] FIG. **4** is a side view of the base **200** of the child safety seat **10** according to the first embodiment of the present disclosure. FIG. **4** independently shows the base **200** to better illustrate a structure of the base **200**. The standardized fixation system **230** extends from the base **200**, the support member **220** is designed as a telescopic support pad, and the support leg **500** pivots downward from the front side of the lower side **212** of the base body **210** to be supported on the floor of the vehicle (not shown).

[0094] FIG. **5** is a side view of the child safety seat **10** according to the first embodiment of the present disclosure. Unlike FIG. **4**, the seat body **100** is combined with the base **200**, that is, the pivot portions **150** of the seat body **100** are connected to the pivot connection portions **241** of the base **200** in a coordinated manner to enable the seat body **100** to pivot relative to the base **200**. The headrest **130** is mostly retracted into the child safety seat **10** relative to the backrest **120**, the support leg **500** is folded close to the base body **210**, and the standardized fixation system **230** is also retracted into the child safety seat **10**. In this case, the child safety seat **10** is, for example, removed from the car and is in a combined, transportable state.

[0095] FIG. **6** is a side view of a buffer structure **300**A according to another embodiment of the present disclosure. According to this embodiment, one end of the buffer structure **300**A, such as a tension spring **300**A, is fixed to the seat body **100**, and the other end thereof is fixed to the base **200**. For example, in the collision state, a pulling portion **160**A for pulling one end of the tension spring **300**A forward is located on the seat body **100**, for example, on the locking portion **420**A fixed to the seat body **100** as shown in the figure. The other end of the tension spring **300**A is fixed to a fixation portion **260**A on the base **200**. Thus, when the seat body **100** is subjected to an impact force, the seat body **100** pivots to stretch the tension spring **300**A, and the tightening force of the tension spring **300**A forms a reaction force to buffer the impact force.

[0096] According to the present disclosure, the compression spring **300** and the tension spring **300**A may also be leaf springs, elastic plastic strips, etc. The specific implementations of the compression spring **300** and the tension spring **300**A may be modified, converted, etc., with reference to each other, without departing from the scope of the present disclosure.

[0097] FIGS. **7** and **8** are side views of the child safety seat **10** according to a second embodiment of the present disclosure. To avoid repetition, components identical to those in FIGS. **1** and **2** will not described in detail.

[0098] FIG. **7** is a side view of the child safety seat **10** according to the second embodiment of the present disclosure in the normal use state. Illustratively, FIG. **7** is a position locking structure **400**B disposed between a pivot connection portion **214** of the base **200** and a pivot portion **150** of the seat body **100**. The position locking structure **400**B includes a positioning portion **410**B located on the pivot connection portion **214**, and a locking portion **420**B located on the pivot portion **150** and movable relative to the positioning portion **410**A within the positioning portion **410**A. The positioning portion **410**B is configured to: in the normal use state, adjustably lock the angle of the seat body **100** by positioning the locking portion **420**B; and in the collision state, release the locking portion **420**B to allow the seat body **100** to pivot, so that the angle of the seat body **100** in the collision state is greater than the angle of the seat body **100** before the collision state, thereby achieving a relatively upright pivotal angle of the seat body **100** (see FIG. **8**).

[0099] According to this embodiment, the positioning portion **410**B and the locking portion **420**B may be configured as corresponding wave portions, tooth portions, or snap portions, etc., for being engaged with each other, and the present disclosure is not limited thereto. The positioning portion **410**B and the locking portion **420**B may be provided at the periphery or on opposite sides of the pivot connection portion **241** and the pivot portion **150**.

[0100] FIG. **8** is a side view of the child safety seat **10** according to the second embodiment of the present disclosure in a collision or emergency braking state. According to the second embodiment, the support leg **500** of the first embodiment may also be omitted, and only the buffer structure **400**B and the seat rotation structure according to the present disclosure may be used. In this way, during a collision, the child safety seat **10** rotates in the opposite direction to improve head displacement, thereby eliminating the need for a load leg, top tethers, or low tethers. This can simplify the use for consumers and allow the protection of the child to be achieved using only the standardized fixation system, ISOFIX.

[0101] Since the present disclosure may be implemented in various forms without departing from the spirit and essence of the disclosure, it should be understood that the aforementioned embodiments are not limited to any of the foregoing details. Instead, they should be interpreted in a broadest sense within the scope defined by the claims. Therefore, all changes falling within the scope of the claims or their equivalents shall be covered by the claims.

What is claimed is:

1. A child safety seat, for being fixed to a vehicle seat, comprising:

a base for being fixed to the vehicle seat;

a seat body for seating a child and pivotally connected to the base about a pivot axis, wherein a seating gravity point of the seat body together with the child is located below the pivot axis when the child is seated in the seat body; and

a buffer structure disposed between the base and the seat body, for buffering a pivotal movement of the seat body relative to the base.

2. The child safety seat according to claim **1**, wherein:

the child safety seat comprises a position locking structure disposed between the seat body and the base, for locking the seat body at various angles relative to the base.

3. The child safety seat according to claim **2**, wherein:

the base comprises a base body for being fixed to the vehicle seat and side portions extending upward from both sides of the base body, wherein pivot connection portions are respectively provided on the side portions, and

the seat body is disposed in a receiving space formed between the base body and the side portions, the seat body having a pivot portion cooperating with the pivot connection portions, wherein centers of the pivot connection portions and the pivot portion form the pivot axis to enable the pivotal movement of the seat body relative to the base.

4. The child safety seat according to claim **3**, wherein:

the seat body has side wings for lateral protection of the child, and the pivot portion is provided on the side wings.

5. The child safety seat according to claim **3**, wherein:

the position locking structure is disposed between the base body of the base and a seat portion of the seat body, the position locking structure comprising:

a positioning portion located on the base body;

a locking portion located on the seat portion and movable relative to the positioning portion, wherein

the positioning portion is configured to: in a normal use state, adjustably lock an angle of the seat body by positioning the locking portion; and in a collision state, release the locking portion to allow the seat body to pivot, such that an angle of the seat body in the collision state is greater than an angle of the seat body before the collision state.

6. The child safety seat according to claim **5**, wherein:

the buffer structure is a compression spring, the seat body has an abutment portion for abutting one end of the compression spring, the abutment portion being integrally formed with the locking portion, and the other end of the compression spring is fixed to a fixation portion provided on the base.

7. The child safety seat according to claim **5**, wherein:

the buffer structure is a tension spring, the seat body has a pulling portion for pulling one end of the tension spring, the pulling portion being integrally formed with the locking portion, and the other end of the tension spring is fixed to a fixation portion provided on the base.

8. The child safety seat according to claim **3**, wherein:

the position locking structure is disposed between the pivot connection portion of the base and the pivot portion of the seat body, the position locking structure comprising:

a positioning portion located on the pivot connection portion;

a locking portion located on the pivot portion and movable relative to the positioning portion, wherein

the positioning portion is configured to: in a normal use state, adjustably lock an angle of the seat body by positioning the locking portion; and in a collision state, release the locking portion to allow the seat body to pivot, such that an angle of the seat body in the collision state is greater than an angle of the seat body before the collision state.

9. The child safety seat according to claim **5**, wherein:

the positioning portion and the locking portion are configured as corresponding wave portions, tooth portions, or snap portions for engaging with each other, wherein in the event of a collision, the positioning portion and the locking portion are disengaged.

10. The child safety seat according to claim **8**, wherein:

the positioning portion and the locking portion are configured as corresponding wave portions, tooth portions, or snap portions for engaging with each other, wherein in the event of a collision, the positioning portion and the locking portion are disengaged.

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