



US 20220134915A1

(19) **United States**

(12) **Patent Application Publication**  
**GUO**

(10) **Pub. No.: US 2022/0134915 A1**

(43) **Pub. Date: May 5, 2022**

(54) **TETHER ASSEMBLY AND CHILD SAFETY SEAT**

**Publication Classification**

(71) Applicant: **WONDERLAND SWITZERLAND AG**, Steinhausen (CH)

(51) **Int. Cl.**  
**B60N 2/28** (2006.01)

(72) Inventor: **Zhengwen GUO**, Dongguan (CN)

(52) **U.S. Cl.**  
CPC ..... **B60N 2/2806** (2013.01)

(73) Assignee: **WONDERLAND SWITZERLAND AG**, Steinhausen (CH)

(57) **ABSTRACT**

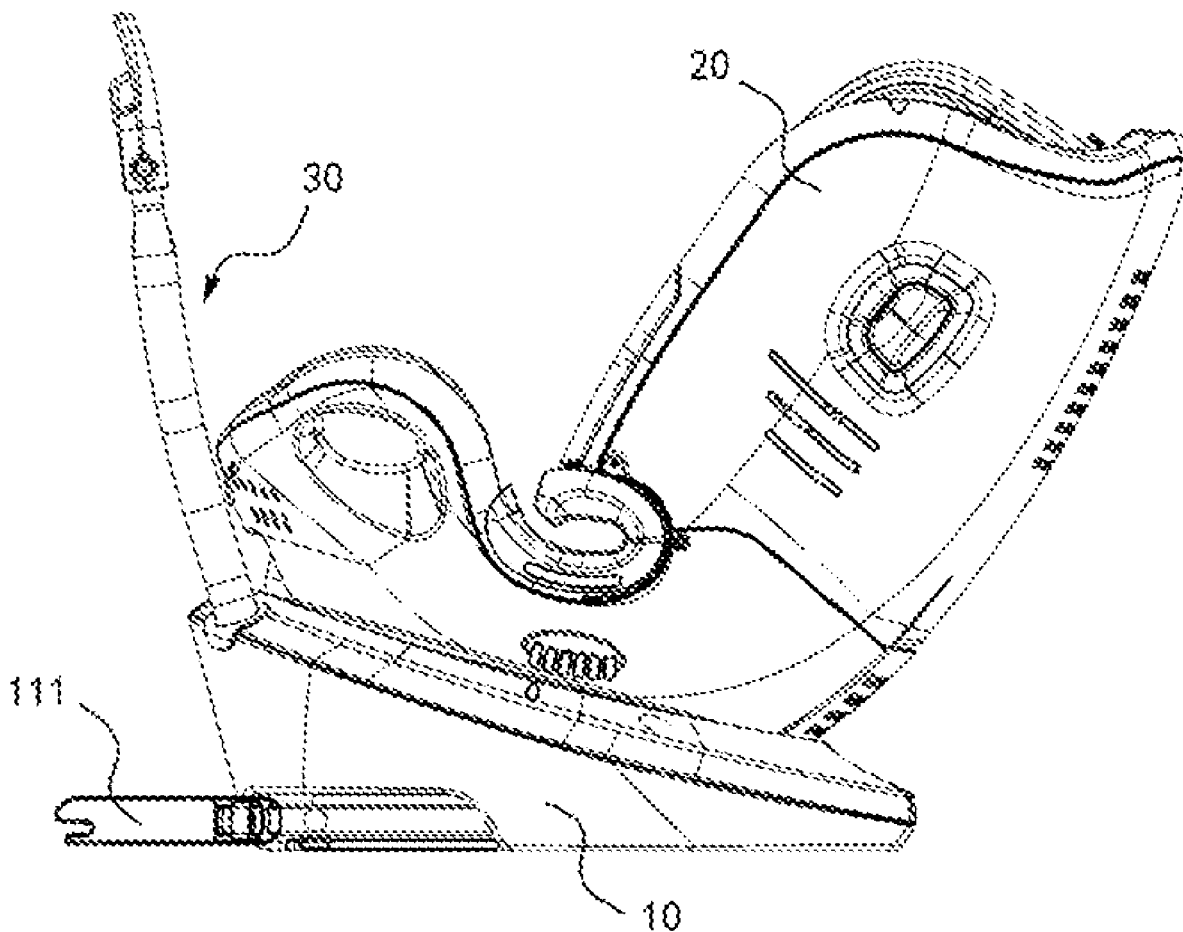
(21) Appl. No.: **17/512,915**

The disclosure provides a tether assembly for fixing a child safety seat to a vehicle. The tether assembly comprises: an adjuster for adjusting a length of the tether assembly; a tether fixing portion being fixable to a corresponding fixing portion of the vehicle; a top tether comprising at least two belts, the top tether connects the child safety seat to the tether fixing portion via the adjuster, and at least one belt of the top tether passes through the adjuster to form at least two free ends. The tether assembly of the disclosure may be tightened in at least two directions, thereby making the mounting of the tether assembly more convenient.

(22) Filed: **Oct. 28, 2021**

(30) **Foreign Application Priority Data**

Oct. 29, 2020 (CN) ..... 202011187523.3



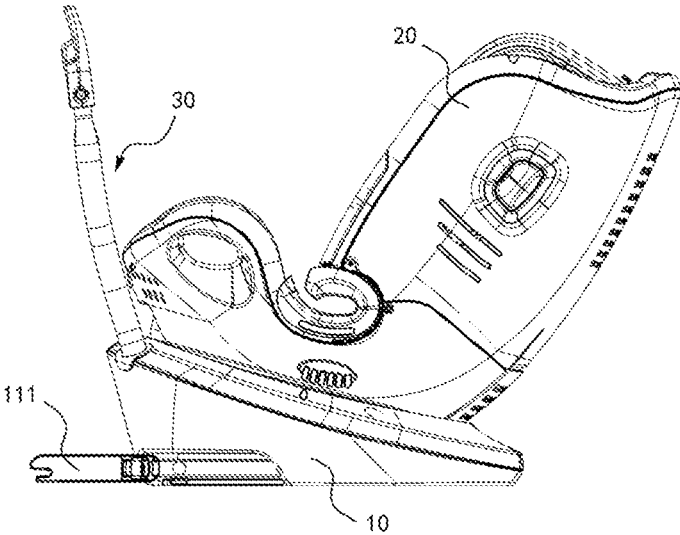


Fig. 1

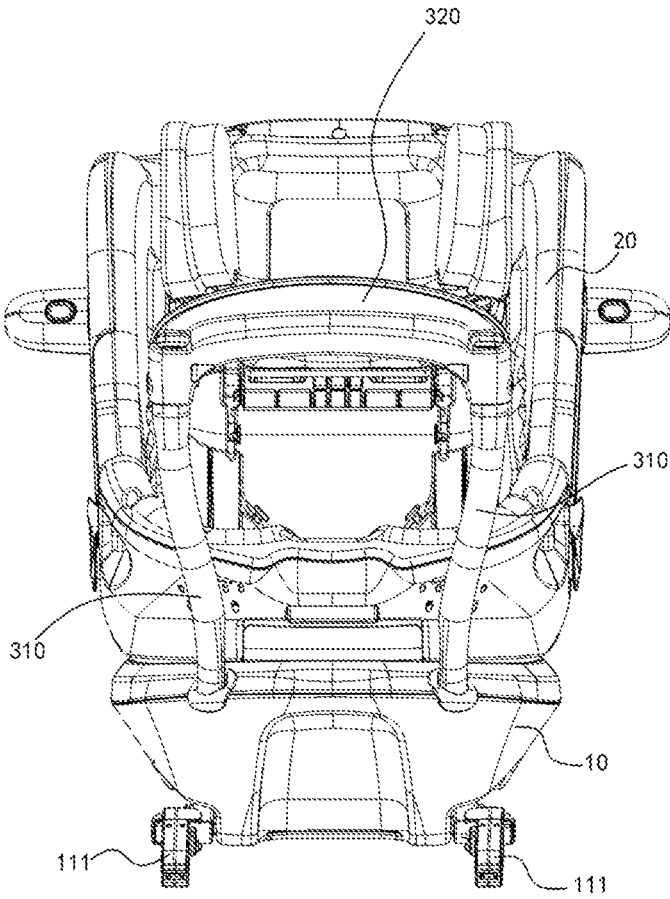


Fig. 2

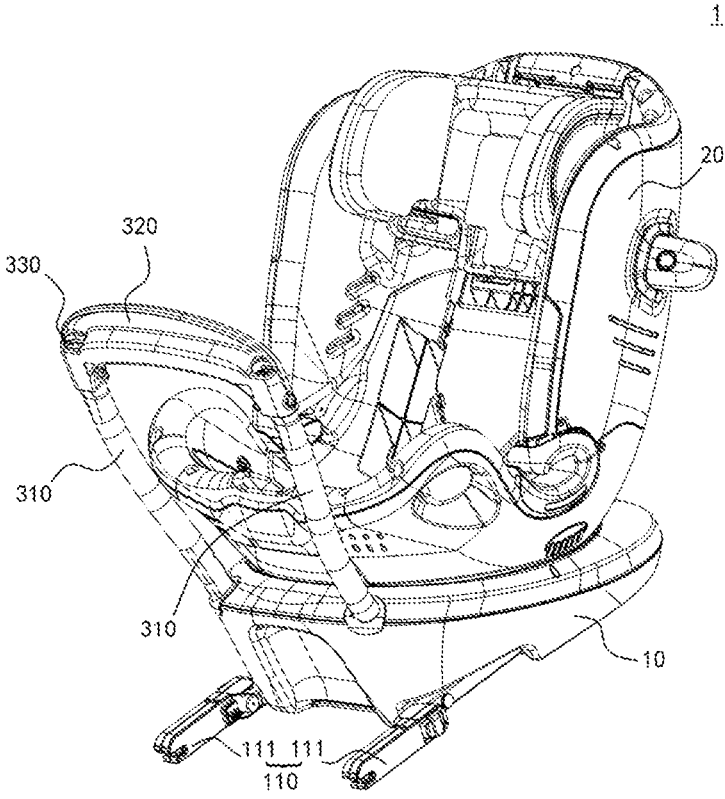


Fig. 3

430

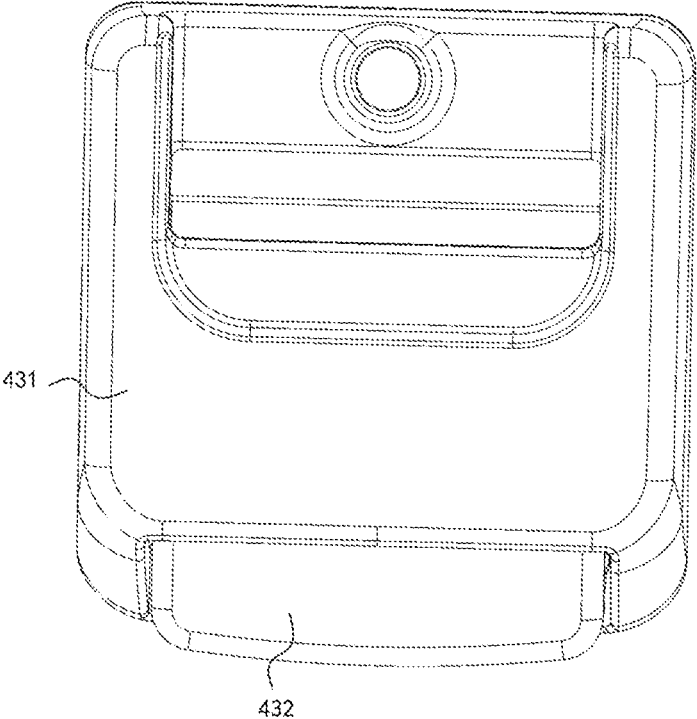


Fig. 4

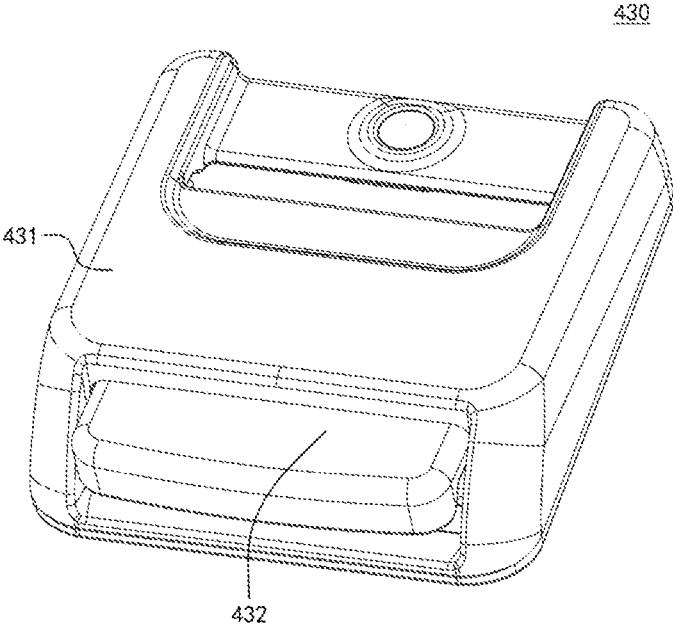


Fig. 5

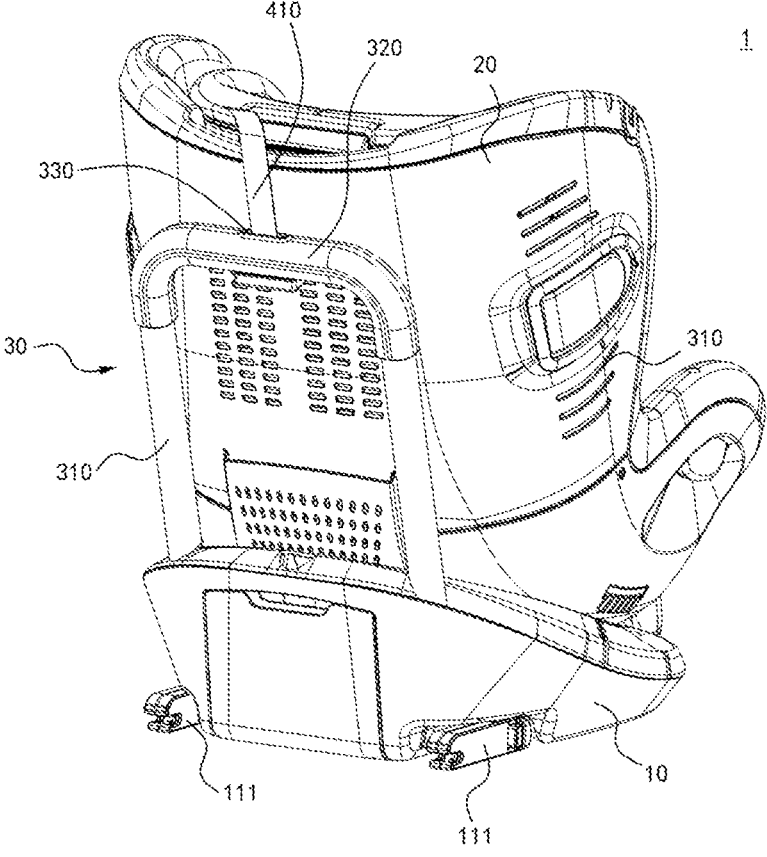


Fig. 6

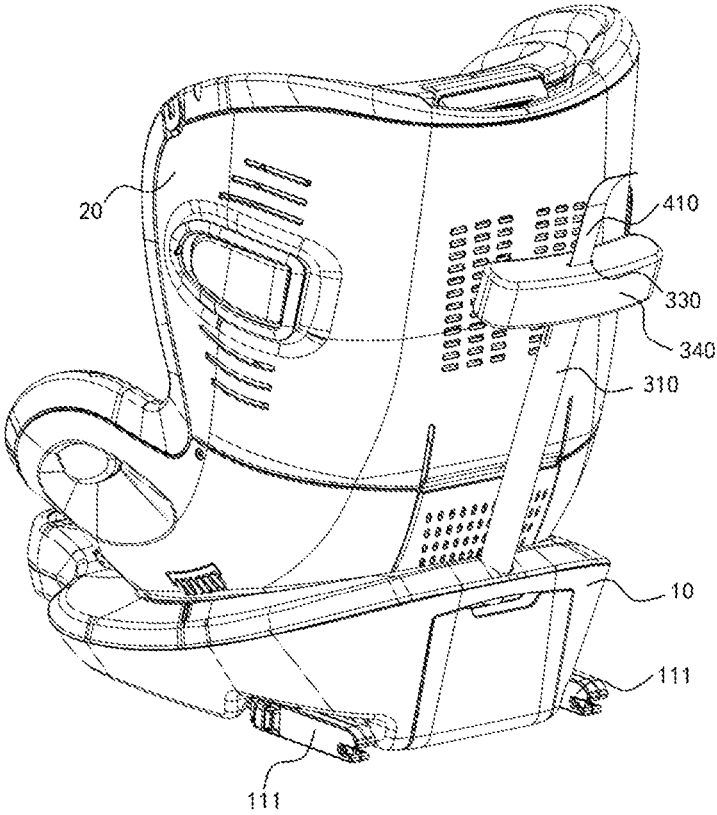


Fig. 7



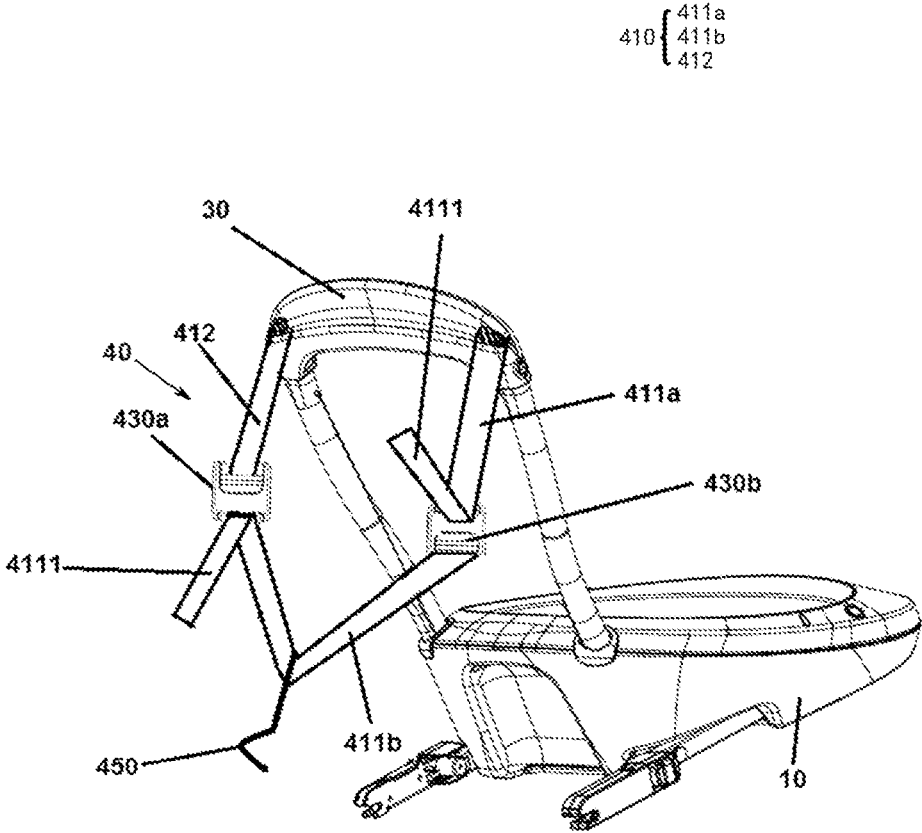


Fig. 8

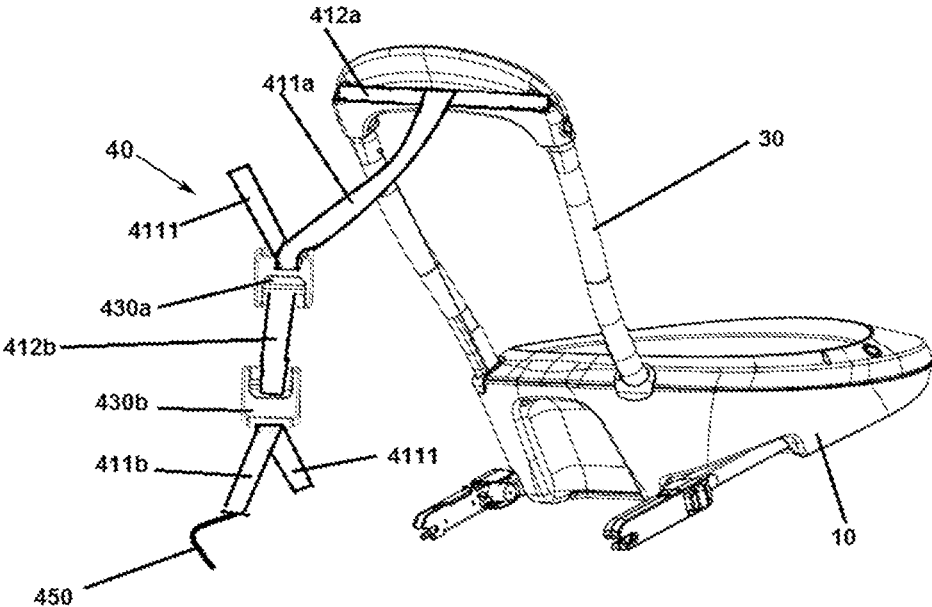


Fig. 9

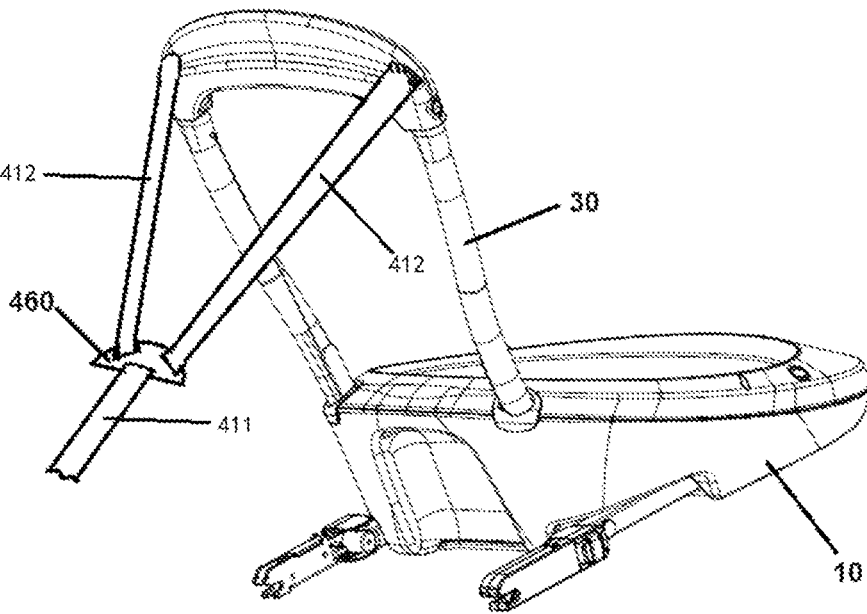


Fig. 10

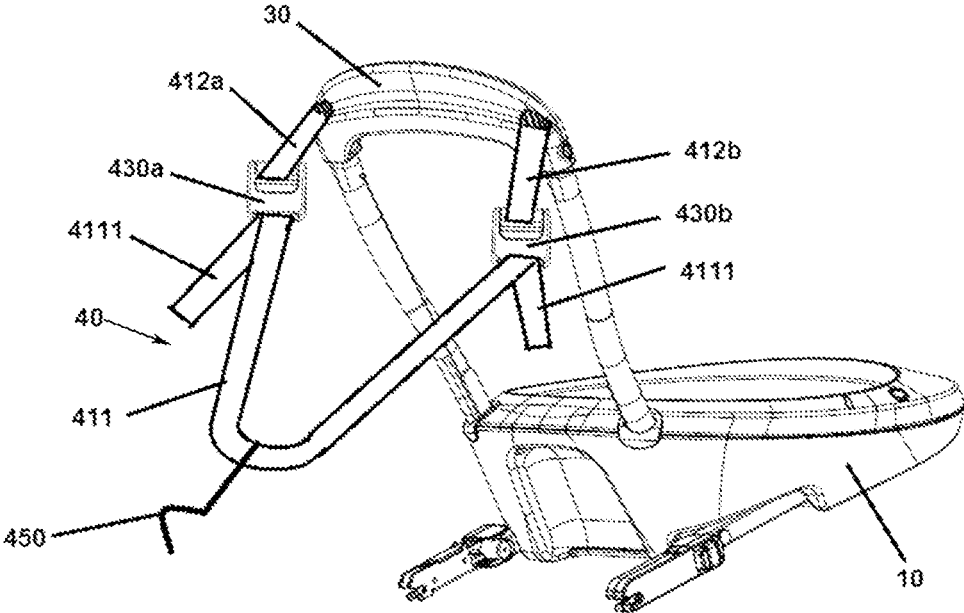


Fig. 11

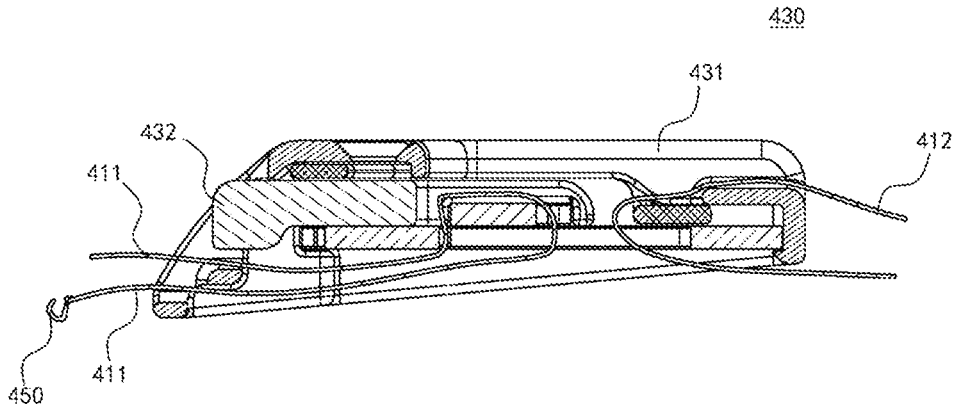


Fig. 12

40

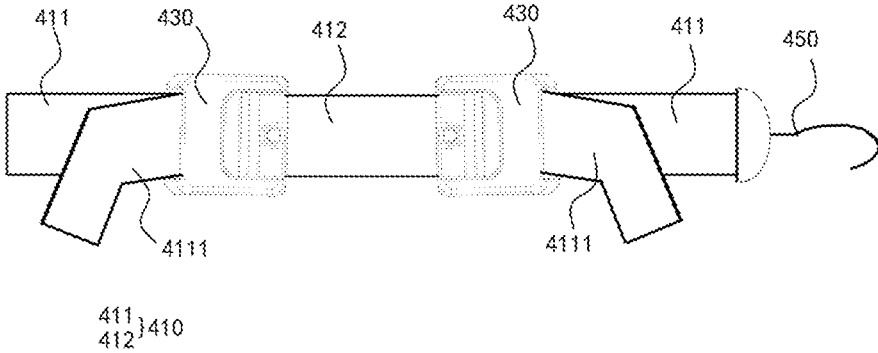


Fig. 13

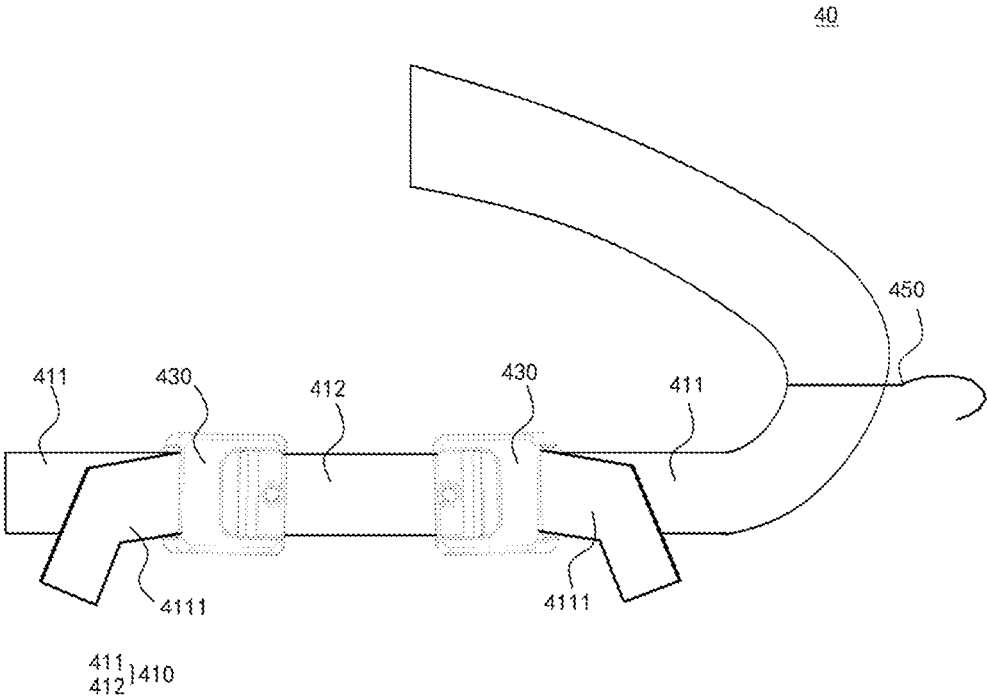


Fig. 14

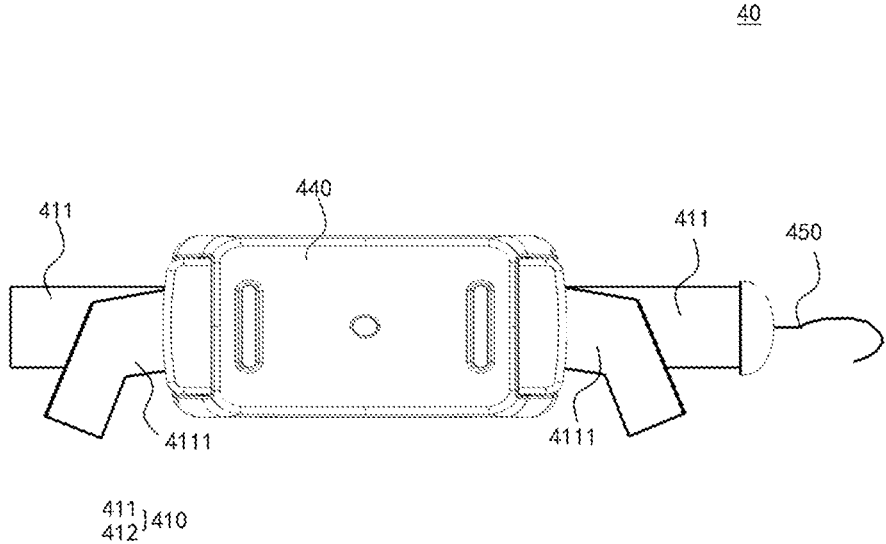


Fig. 15



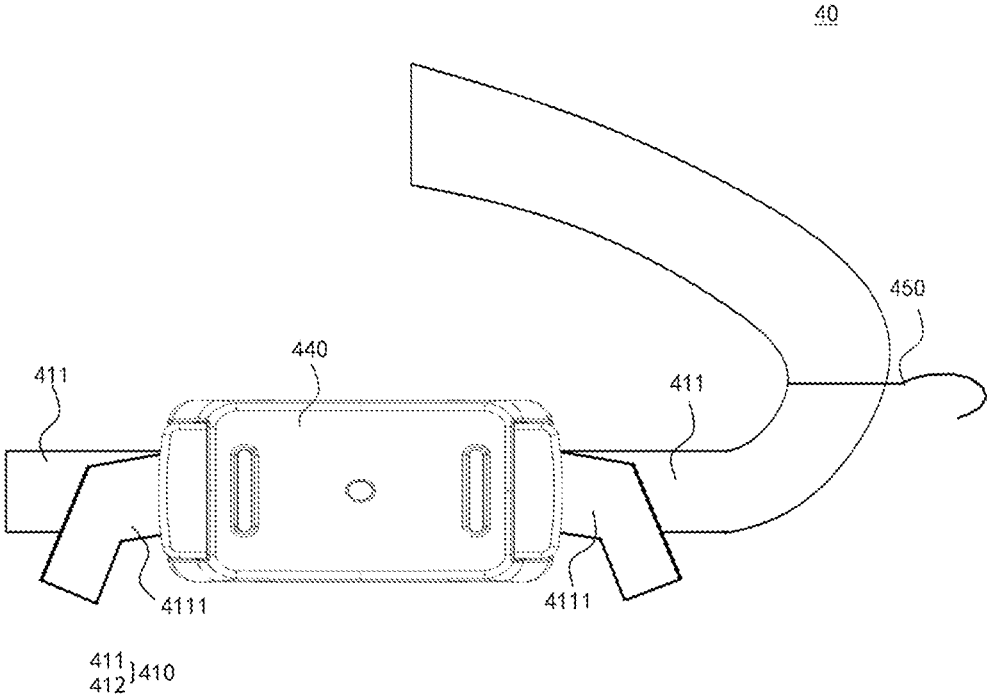


Fig. 16

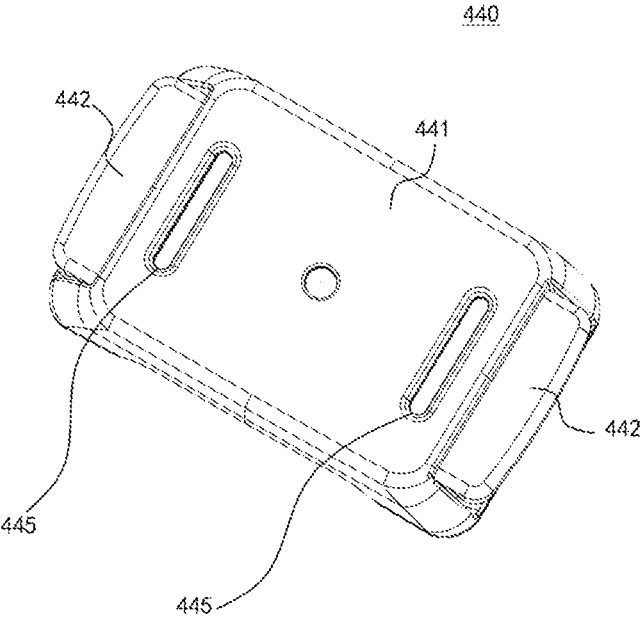


Fig. 17

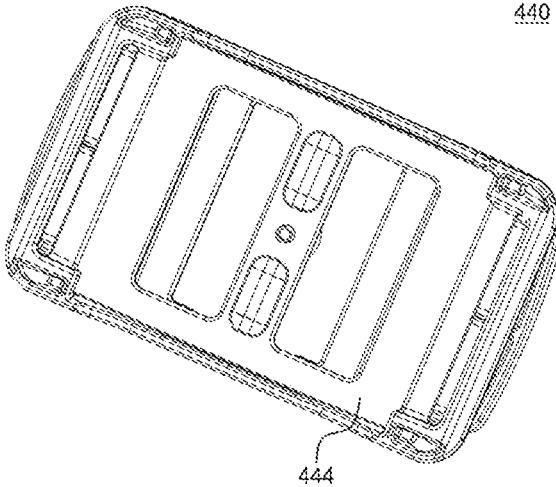


Fig. 18

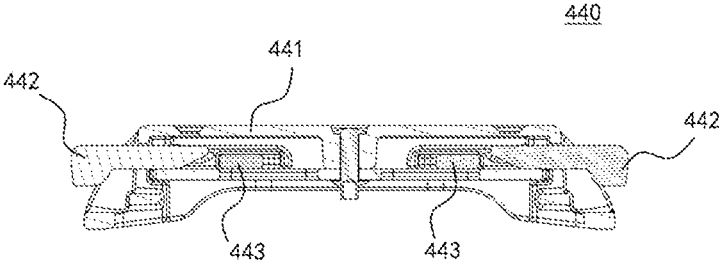


Fig. 19

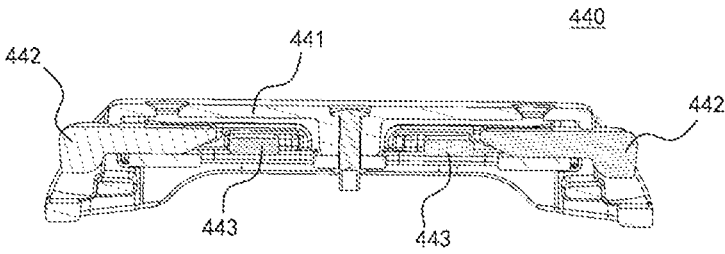


Fig. 20

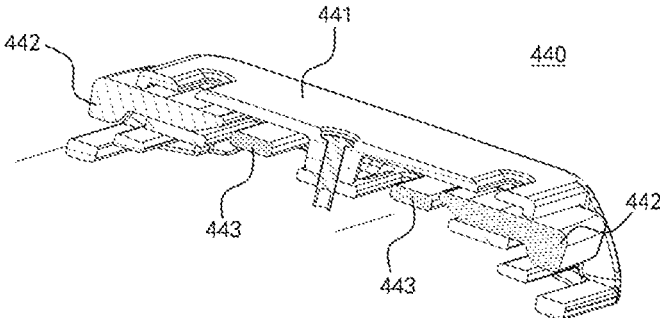


Fig. 21

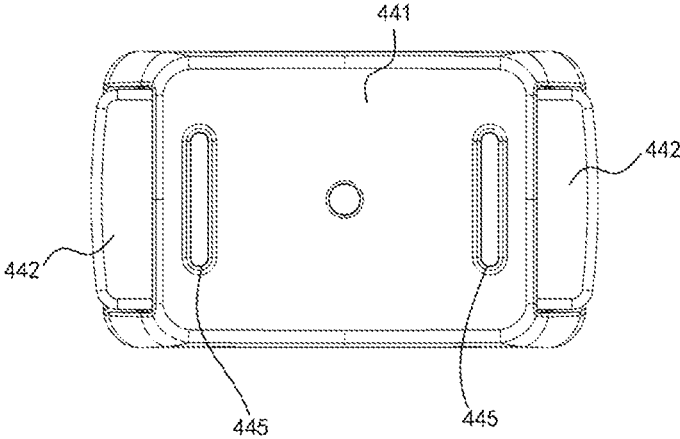


Fig. 22

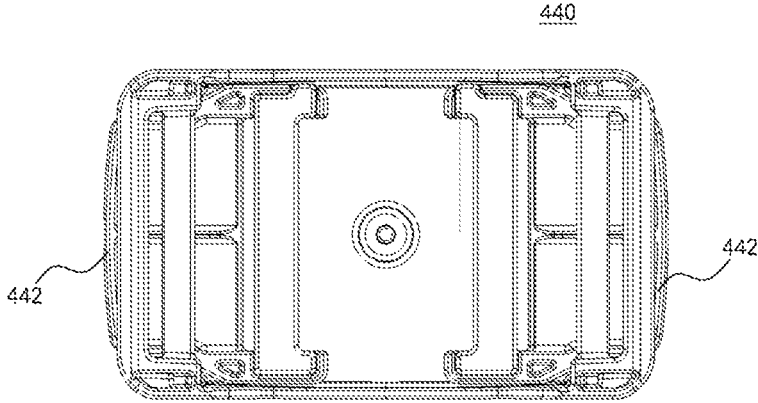


Fig. 23



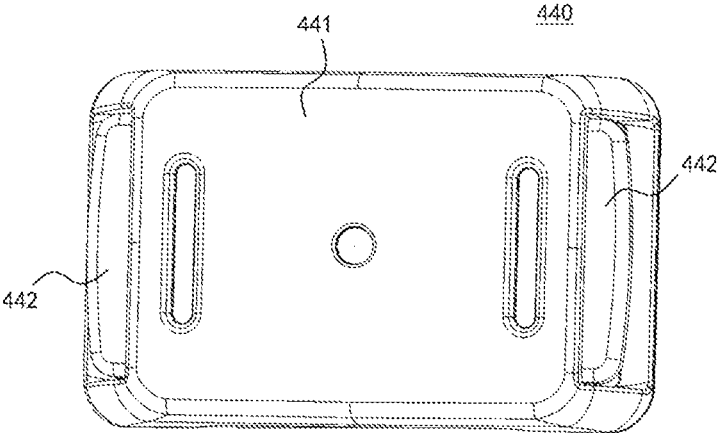


Fig. 24

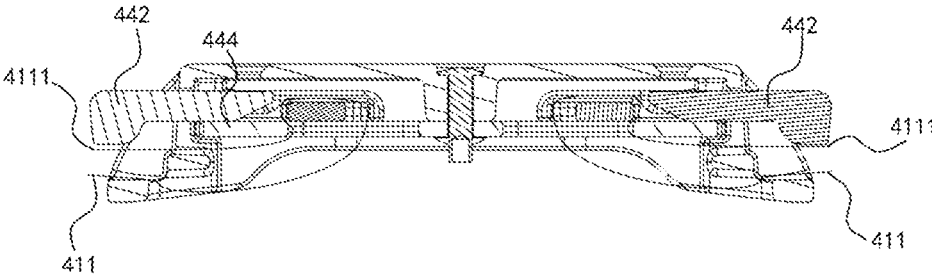


Fig. 25

## TETHER ASSEMBLY AND CHILD SAFETY SEAT

### TECHNICAL FIELD

[0001] The disclosure relates to a tether assembly, and particularly to a tether assembly which can be adjusted in multiple ways. Furthermore, the disclosure also relates to a child safety seat.

### BACKGROUND

[0002] A child safety seat is a seat specially designed for children. By assembling the child safety seat in a car for a child to sit on the child safety seat, the child is restrained by the child safety seat so to ensure the child safe.

[0003] An existing child safety seat usually comprises a base and a seat disposed on the base. An ISOFIX interface is directly disposed on a side of the base, and a top tether is directly fixed on a back of the seat. By respectively connecting the top tether and the ISOFIX interface of the child safety seat to corresponding installation places in the car, the child safety seat may be fixed. The ISOFIX interface is fixed on both sides of the base, and the top tether interface is fixed on an upper part of the child safety seat. Through three-point fixation, the child safety seat can be firmly fixed on the car seat and will not turn over when subjected to an impact.

[0004] The top tether needs to be tightened after it is fixed in place, so as to firmly connecting it to other parts of the child safety seat. However, in the traditional way, the length of the top tether can only be adjusted in one direction, moreover, in different types of cars, it may be difficult to apply sufficient tension due to limited space. Therefore, there is a need for a tether assembly which can easily tighten the top tether in a variety of ways and a child safety seat with such tether assembly.

### SUMMARY

[0005] An object of the disclosure is to provide a tether assembly and a child safety seat which can reduce or eliminate at least one of the above-mentioned defects.

[0006] In order to achieve the above mentioned object, in an aspect, the disclosure provides a tether assembly for fixing a child safety seat to a vehicle, wherein the tether assembly comprises: an adjuster for adjusting a length of the tether assembly; a tether fixing portion being fixable to a corresponding fixing portion of the vehicle; a top tether including at least two belts, the top tether connects the child safety seat to the tether fixing portion via the adjuster, and at least one belt of the top tether passing through the adjuster to form at least two free ends.

[0007] In an embodiment, the child safety seat includes a base, a seat disposed above the base, and a top rod erected at a rear of the base.

[0008] In an embodiment, the adjuster is a one-way adjuster, the top tether includes three belts, one ends of a first belt and a second belt of the three belts are respectively fixed to both sides of the child safety seat, the other ends of the first belt and the second belt of the three belts are respectively connected to both ends of a third belt of the three belts via two one-way adjusters, the tether fixing portion is fixedly or slidably connected to any one of the three belts, and the top tether passes through the two one-way adjusters to form two free ends.

[0009] In an embodiment, the two one-way adjusters are oriented in a same direction, such that the two free ends extend in the same direction.

[0010] In an embodiment, the two one-way adjusters are oriented in opposite directions, such that the two free ends extend in the opposite directions.

[0011] In an embodiment, the tether fixing portion is fixedly or slidably connected to the first belt or the second belt.

[0012] In an embodiment, the tether fixing portion is fixedly or slidably connected to the third belt.

[0013] In an embodiment, the adjuster is a two-way adjuster or a one-way adjuster, and the at least two free ends are formed by the top tether passing through the two-way adjuster or the one-way adjuster.

[0014] In an embodiment, the top tether includes three belts, one ends of a first belt and a second belt of the three belts are respectively fixed to both sides of the child safety seat, the other ends of the first belt and the second belt of the three belts are connected to one end of a third belt of the three belts via a connecting member.

[0015] In an embodiment, the top tether further includes a fourth belt, the third belt is connected to the fourth belt via two one-way adjusters or one two-way adjuster, and the tether fixing portion is fixedly or slidably connected to the fourth belt.

[0016] In an embodiment, the top tether includes three belts, both ends of a first belt of the three belts are respectively fixed to both sides of the child safety seat, one end of a second belt of the three belts is fixedly or slidably connected to the first belt, one end of a third belt of the three belts is connected to the other end of the second belt via two one-way adjusters or one two-way adjuster, and the tether fixing portion is fixedly or slidably connected to the other end of the third belt.

[0017] In an embodiment, the top tether includes two belts, one ends of the two belts are respectively fixed to both sides of the child safety seat, the other ends of the two belts are respectively connected to the adjuster, the tether fixing portion is fixedly or slidably connected to one of the two belts, the adjuster is a two-way adjuster, and the two-way adjuster can adjust a length of the tether assembly in two opposite directions.

[0018] In an embodiment, the top tether includes two belts, one end of a first belt of the two belts is fixed to the child safety seat, the other end of the first belt is connected to one end of a second belt of the two belts via two one-way adjusters or one two-way adjuster, and the tether fixing portion is fixedly or slidably connected to the other end of the second belt.

[0019] In an embodiment, the two one-way adjusters are oriented in opposite directions, and the two one-way adjusters are connected to each other by a connecting belt.

[0020] In an embodiment, the adjuster has a locked position and a released position, in the locked position, the top tether passing through the adjuster is clamped by the adjuster, and in the released position, the adjuster allows the top tether passing through the adjuster to move relative to the adjuster.

[0021] According to another aspect of the disclosure, a child safety seat is provided. The child safety seat comprises: a base provided with an anchor part protruding backwardly; a seat coupled to the base; a top rod fixed to a

rear of the base; and the tether assembly mentioned above, the top tether of the tether assembly is fixed to the top rod.

**[0022]** In an embodiment, the top rod includes two vertical rods and a fixing portion, and each of tops of the two vertical rods is provided with an opening.

**[0023]** In an embodiment, the top rod includes two vertical rods and a fixing portion, and an upper surface of the fixing portion is centrally provided with an opening.

**[0024]** In an embodiment, the top rod includes one vertical rod and one accommodating portion, and an upper surface of the accommodating portion is centrally provided with an opening.

**[0025]** According to another aspect of the disclosure, a tether assembly for fixing a child safety seat to a vehicle is provided, wherein the tether assembly comprises: a two-way adjuster being able to adjust a length of the tether assembly in two opposite directions; a tether fixing portion being fixable to a corresponding fixing portion of the vehicle; a top tether including more than a plurality of belts separated from each other, wherein the top tether connects the two-way adjuster to the child safety seat, and connects the two-way adjuster to the tether fixing portion.

**[0026]** In an embodiment, the two-way adjuster includes: an adjuster housing having two first openings facing opposite directions; two buttons respectively disposed at the two first openings and movable in directions of entering and leaving the adjuster housing; a fixed sheet fixed on a bottom of the adjuster housing and formed with two second openings; two locking members disposed inside the adjuster housing and being movable along with the two buttons to form a locked position and a released position.

**[0027]** In an embodiment, the plurality of belts include two belts, the two belts being able to enter the adjuster housing via the two second openings, pass through a gap between the two locking members and the fixed sheet, and extend out of the adjuster housing to form free ends extending in two opposite directions, and wherein in the locked position, the two locking members and the fixed sheet respectively clamp the two belts, and in the released position, the two locking members and the fixed sheet allow the two belts to move.

**[0028]** In an embodiment, in the released position, when the free ends are pulled, the tether assembly is shortened, and when portions of the two belts other than the free ends are pulled, the tether assembly extends longer.

**[0029]** In an embodiment, a spring is disposed between the two buttons for respectively applying force to the two buttons for moving out of the adjuster housing.

**[0030]** In an embodiment, two tightening indicating windows are formed on an upper surface of the adjuster housing to respectively indicate whether the two belts are tightened.

**[0031]** The disclosure has at least one of the following beneficial effects:

**[0032]** The tether assembly of the disclosure can be tightened in at least two directions, such that the mounting of the tether assembly is more convenient. Meanwhile, because the tightening force may be applied more easily, may also be assuredly tightened, and the safety of the tether assembly may be improved. The tether assembly of the disclosure can be adjusted in length by a more extent. The tether assembly of the disclosure can be tightened on different sides of the child safety seat, such that no matter the child safety seat is placed on which side of the vehicle seat, tightening operation can be conveniently performed.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0033]** By considering the following detailed description of the preferred embodiments of the disclosure in conjunction with the accompanying drawings, various objectives, features and advantages of the disclosure will become more apparent. The drawings are merely exemplary illustrations of the disclosure and are not necessarily drawn to scale. In the drawings, the same reference numerals always refer to the same or similar parts, in which:

**[0034]** FIG. 1 is a side view of a child safety seat of an embodiment of the disclosure;

**[0035]** FIG. 2 is a front view of the child safety seat of the embodiment of the disclosure;

**[0036]** FIG. 3 is a perspective view of the child safety seat of the embodiment of the disclosure;

**[0037]** FIG. 4 is a plan view of an adjuster of a tether assembly of the disclosure;

**[0038]** FIG. 5 is a perspective view of the adjuster of the tether assembly of the disclosure;

**[0039]** FIG. 6 is a perspective view of another embodiment of the child safety seat of the disclosure;

**[0040]** FIG. 7 is a perspective view of a further embodiment of the child safety seat of the disclosure;

**[0041]** FIG. 8 is a schematic view of an embodiment of the tether assembly of the disclosure;

**[0042]** FIG. 9 is a schematic view of another embodiment of the tether assembly of the disclosure;

**[0043]** FIG. 10 is a schematic view of a further embodiment of the tether assembly of the disclosure;

**[0044]** FIG. 11 is a schematic view of an additional embodiment of the tether assembly of the disclosure;

**[0045]** FIG. 12 is a section view of the adjuster of the tether assembly of the disclosure;

**[0046]** FIG. 13 is a schematic view of another embodiment of the tether assembly of a child safety seat of the disclosure;

**[0047]** FIG. 14 is a schematic view of another embodiment of the tether assembly of the child safety seat of the disclosure;

**[0048]** FIG. 15 is a schematic view of another embodiment of the tether assembly of the child safety seat of the disclosure;

**[0049]** FIG. 16 is a schematic view of another embodiment of the tether assembly of the child safety seat of the disclosure;

**[0050]** FIG. 17 is a perspective view of a two-way adjuster of the child safety seat of the disclosure;

**[0051]** FIG. 18 is another perspective view of the two-way adjuster of the child safety seat of the disclosure;

**[0052]** FIG. 19 is a section view of the two-way adjuster of the child safety seat of the disclosure, in which a button is not pressed;

**[0053]** FIG. 20 is a section view of the two-way adjuster of the child safety seat of the disclosure, in which a button is pressed;

**[0054]** FIG. 21 is a perspective section view of the two-way adjuster of the child safety seat of the disclosure;

**[0055]** FIG. 22 is a top view of the two-way adjuster of the child safety seat of the disclosure, in which a button is not pressed;

**[0056]** FIG. 23 is a bottom view of the two-way adjuster of the child safety seat of the disclosure, in which a button is not pressed;

[0057] FIG. 24 is a top view of the two-way adjuster of the child safety seat of the disclosure, in which a button is pressed;

[0058] FIG. 25 is a schematic section view of the two-way adjuster of the child safety seat of the disclosure.

#### DETAILED DESCRIPTION

[0059] In order to further explain the principle and structure of the disclosure, the preferred embodiments of the disclosure will be described in detail with reference to the accompanying drawings. However, these embodiments are only for illustrative and explanatory purposes, and cannot be used to limit the patent protection scope of the disclosure.

[0060] The terms used in the disclosure are only for the purpose of describing specific embodiments, and are not intended to limit the disclosure. The singular forms of “a”, “said” and “the” used in the disclosure and the appended claims are also intended to include plural forms, unless the context clearly indicates other meanings. It should also be understood, the terms “and/or” as used herein refers to and includes any or all possible combinations of one or more associated listed items.

[0061] The following is a more detailed description of the various concepts and implementations of the tether assembly and the child safety seat. The seat of the child safety seat may be rotated between a rearward position, a lateral position and a forward position for facilitating use. It should be understood, the various concepts introduced above and discussed in more detail below can be implemented in a variety of ways. Furthermore, examples of specific implementations and applications are mainly for illustrative purposes, so that those skilled in the art can implement implementations and alternatives that are obvious to those skilled in the art.

[0062] FIG. 1 is a side view of an embodiment of a child safety seat of the disclosure, and FIG. 2 is a front view of the embodiment of the child safety seat of the disclosure.

[0063] The child safety seat 1 may comprise a base 10, a seat 20 disposed above the base 10, and a top rod 30 erected at the rear of the base 10.

[0064] The base 10 may be provided with an anchor part 110 protruding backwardly. The anchor part 110 may be an ISOFIX connector (a connector which can be fixed to an ISOFIX interface), and includes two anchoring arms 111.

[0065] The child safety seat 1 may comprises a tether assembly 40. Optionally, the tether assembly 40 may also be a separate assembly other than the child safety seat 1. The tether assembly 40 may be a Top Tether connector (a connector which can be fixed to a Top Tether interface).

[0066] The top rod 30 may be fixed to the rear of the base 10. Specifically, the top rod 30 may be substantially vertically erected at the rear of the base 10. An upper portion of the top rod 30 may be provided with an opening 330. In different embodiments, the top rod 30 may be provided with one or two openings 330. A top tether 410 (will be described in detail below) of the tether assembly 40 is fixed to the child safety seat 1 through the opening 330. For example, the top tether 410 extends into the top rod 30 through the opening 330 and is fixed therein.

[0067] In an embodiment, the top rod 30 may include two vertical rods 310 and one fixing portion 320, and tops of the two vertical rods 310 are each provided with an the opening 330.

[0068] One ends of two belts (e.g., a connecting belt 412 and an adjusting belt 411) of the top tether 410 may respectively be fixed to the top rod 30 via the two vertical rods 310. One connecting belt 412 and two adjusting belts 411 of the top tether 410 are connected to each other via two adjusters 430, and a tether fixing portion 450 is fixedly or movably connected to one of the adjusting belts 411, such that the tether assembly 40 formed as a whole into a Y shape or a V shape. Moreover, one ends of the belts may move a certain distance within the top rod 30.

[0069] One ends of two belts (e.g., two connecting belts 412) of the top tether 410 may be respectively fixed to the top rod 30 through the two vertical rods 310. Moreover, two adjusters 430 are fixed to the other ends of the two belts. Both ends of one adjusting belt 411 respectively pass through the two adjusters 430 to form two free ends 4111, and the tether fixing portion 450 is fixedly or movably connected to the adjusting belts 411, such that the tether assembly 40 is formed as a whole into a Y shape or a V shape.

[0070] One ends of two belts (e.g., two connecting belts 412) in the top tether 410 may be respectively fixed to the top rod 30 through two vertical rods 310. A connecting member 460 is fixed to the other ends of the two belts. One end of one of the adjusting belts 411 is fixed to the connecting member 460. The other end of this adjusting belt 411 may pass through one adjuster 430, and another adjusting belt 411 may pass through another adjuster 430 to form two free ends 4111, such that the tether assembly 40 is formed as a whole into a Y shape or a V shape. The above two adjusters 430 may be connected to each other (e.g., via the connecting belts 412).

[0071] In an embodiment, both ends of one belt in the top tether 410 (e.g., the connecting belt 412) are fixed to the top rod 30 respectively through the two vertical rods 310. The adjusting belts 411 are fixedly or slidably connected to the belt (optionally, connected to other adjusting belt 411, the connecting belt 412 and the adjuster 430), such that the tether assembly 40 is formed as a whole into a T shape.

[0072] In an embodiment, as shown in FIG. 6, the top rod 30 may include two vertical rods 310 and one fixing portion 320.

[0073] Specifically, the top rod 30 includes: two vertical rods 310, symmetrically erected at the rear of the base 10; a fixing portion 320, coupled to top ends of the two vertical rods 310, and an accommodating portion 340, disposed centrally on a lower surface of the fixing portion 320.

[0074] One end of one belt (e.g., a connecting belt 412) in the top tether 410 may be fixed to the top rod 30. The end of the belt may move a limited distance within the top rod 30.

[0075] In an embodiment, as shown in FIG. 7, the top rod 30 may include one vertical rod 310 and one accommodating portion 340.

[0076] One end of one belt (e.g., a connecting belts 412) in the top tether 410 may be fixed to the top rod 30. The end of the belt may move a certain distance within the accommodating portion 340. In this application, two adjusters 430 may be replaced by one two-way adjuster 440 (will be explained hereinbelow). One adjuster 430 may also be replaced by one two-way adjuster 440.

[0077] The vertical rod **310** and the fixing portion **320** may be made of different materials, for example, the vertical rod **310** is made of a metal, and the fixing portion **320** is made of a plastic.

[0078] The seat **20** is rotatably disposed on the base **10**, and may rotate relative to the base **10** along an axis substantially perpendicular to an upper surface of the base **10** by an angle range. A lower surface and the upper surface of the base **10** may form an angle, such that the seat **20** is tilted forward.

[0079] FIG. **8** is a schematic view of an embodiment of the tether assembly of the disclosure.

[0080] The tether assembly **40** may comprise: at least two adjusters **430**; a top tether **410**, fixed to the child safety seat **1**, and passing through at least two adjusters **430** to form a same number of free end **4111** as that of the at least two adjusters; a tether fixing portion **450**, coupled to the top tether **410** and may be fixed to a vehicle. The at least two adjusters **430** each may lock and release the top tether **410** passing therethrough.

[0081] In an embodiment, the tether assembly **40** has two adjusters **430**. However, the tether assembly **40** may have more than two adjusters **430**.

[0082] As shown in FIG. **12**, the connecting belt **412** may extend into the adjuster **430** from a side, and bypass a fixing portion on the adjuster **430**, and then extend out of the adjuster **430** from a lower side. In this way, the connecting belt **412** may be fixed to the adjuster **430**. The adjusting belt **411** (e.g., connected to the tether fixing portion **450**) may enter the adjuster **430** from an opening on the lower side of the adjuster **430**, bypass a portion of the button **432**, downwardly pass a gap formed between the button **432** and the adjuster housing **431**, and finally extends from a left side of the adjuster **430** to form a free end **4111**. When the button **432** is pressed rightward, the gap formed between the button **432** and the adjuster housing **431** becomes larger, so that the adjusting belt **411** may move freely relative to the adjuster **430**. When the button **432** is released, the gap formed between the button **432** and the adjuster housing **431** becomes smaller (e.g., by an elastic force of a return spring), such that the adjusting belt **411** is clamped (stuck) by the button **432** and the adjuster housing **431** and cannot move freely relative to the adjuster **430**.

[0083] FIG. **4** is a plan view of the adjuster of the tether assembly of the disclosure, and FIG. **5** is a perspective view of the adjuster of the tether assembly of the disclosure.

[0084] In an embodiment, one end of the adjuster **430** may be designed as an adjusting end, and the adjusting end may be designed as a button, for example.

[0085] In an additional embodiment, the adjuster **430** may include the adjuster housing **431** and the button **432**. The button **432** may have an opening on one side, and for example, the opening is located above or below the button **432**. A weaved tether (e.g., the adjusting belt **411** which will be explained hereinbelow) may enter the button **432** from the opening and pass through a variable-width slit defined by the button **432** and the housing **431**, and then extend out from the opening.

[0086] The adjuster **430** may be provided with a reset mechanism such as a spring and the like, so that when the button **432** is not pressed, the slit tend to shrink, so that the weaved tether passing through the adjuster **430** is stuck and cannot move relative to the adjuster **430**. Moreover, when the button **432** is pressed, the slit tends to increase, so that

the weaved tether passing through the adjuster **430** may move relative to the adjuster **430**.

[0087] The adjuster **430** may also have some other structures. For example, the weaved tether may enter the adjuster **430** from one side and extend out from the other side. The specific structure of the adjuster **430** is not limited here, as long as it can make the adjuster have a function of adjusting the length of the weaved tether passing through it, and can lock the weaved tether when no adjustment is needed.

[0088] The adjuster **430** may be provided with a fixing portion on the other side, such that another weaved tether may be fixedly connected to the adjuster **430**.

[0089] The adjuster **430** may be formed with an opening to expose a mark indicating that the adjuster **430** is locked or released. For example, the mark is a symbol of different colors.

[0090] The tether fixing portion **450** may be a hook (or a hook-shaped anchor), which can be fixedly or slidably disposed at a distal end of the top tether **410**.

[0091] The two adjusters **430** of the tether assembly **40** may be arranged in opposite directions, such that two free ends **4111** formed by the top tether **410** passing through the two adjusters **430** extend out in opposite directions. It would be understood, since the top tether **410** is flexible, the directions of the adjusters **430** arranged on the top tether **410** may change. Therefore, the two adjusters **430** are arranged in opposite directions means that after the tether assembly **40** fixes the child safety seat **1** to a vehicle, in a state that the tether assembly **40** is tightened, the two adjusters **430** are arranged in a manner of having substantially reversed directions. The two free ends **4111** in opposite directions means that after the tether assembly **40** fixes the child safety seat **1** to a vehicle, the two free ends **4111** are in basically reversed directions when they just extend out from the two adjusters **430**. Due to action of gravity, the two free ends **4111** will be in a dropping posture, for example. Optionally, the tether assembly **40** may have only one adjuster **430**.

[0092] The two adjusters **430** of the tether assembly **40** may be arranged in a same direction, such that the two free ends **4111** formed by the top tether **410** passing through the two adjusters **430** extend out in the same direction.

[0093] As shown in FIG. **8**, in an embodiment, the top tether **410** may include a first adjusting belt **411a**, a second adjusting belt **411b**, a first adjuster **430a**, a second adjuster **430b**, and a connecting belt (or first connecting belt) **412**. The first adjusting belt **411a**, the second adjusting belt **411b** and the connecting belt **412** may be related to each other (e.g., directly connected or indirectly connected to each other via the first adjuster **430a** and the second adjuster **430b**) so as to constitute the top tether **410**.

[0094] One end of the connecting belt **412** is fixed to one side of the top rod **30** (e.g., the inside of one vertical rod **310**), and the other end of the connecting belt **412** is fixed to the first adjuster **430a**.

[0095] One end of the first adjusting belt **411a** is fixed to the other side of the top rod **30** (e.g., the inside of the other vertical rod **310**), and the other end of the first adjusting belt **411a** passes through the second adjuster **430b** to form one free end **4111** extending toward the child safety seat **1**.

[0096] One end of the second adjusting belt **411b** is fixed to the second adjuster **430b**, and the other end of the second adjusting belt **411b** passes through the first adjuster **430a** to form one free end **4111** extending away from the child safety seat **1**.

[0097] One end of the tether fixing portion **450** may be slidably or fixedly connected to the second adjusting belt **411b**, and the other end of the tether fixing portion is formed as a hook.

[0098] In this way, the tether assembly **40** can be tightened in two opposite directions, such that the tether assembly **40** may be mounted more easily, moreover, because the tightening force may be applied more easily, the tether assembly **40** may also be assuredly tightened, thereby improving safety of the tether assembly. In addition, the length of the tether assembly **40** can be adjusted in a larger range.

[0099] Optionally, in this embodiment, the top tether **410** may have only one adjuster **430**. Optionally, in this embodiment, the top tether **410** may have three adjusters **430**. Optionally, the adjusters **430** may be two-way adjusters (as will be explained hereinbelow).

[0100] As shown in FIG. 9, in an embodiment, the top tether **410** may have a first adjusting belt **411a**, a second adjusting belt **411b**, a first adjuster **430a**, a second adjuster **430b**, a first connecting belt **412a**, and a second connecting belt **412b**.

[0101] Both ends of the first connecting belt **412a** are respectively fixed to both sides of the top rod **30**, for example, fixed on the two vertical rods **310** or fixed to the inner side of the two vertical rods **310**.

[0102] One end of the first adjusting belt **411a** is slidably or fixedly connected to the first connecting belt **412a**, and the other end of the first adjusting belt **411a** passes through the first adjuster **430a** to form one free end **4111** extending toward the child safety seat **1**.

[0103] Both ends of the second connecting belt **412b** are respectively fixed to the first adjuster **430a** and the second adjuster **430b**.

[0104] One end of the second adjusting belt **411b** passes through the second adjuster **430b** to form one free end **4111** extending out of the child safety seat **1**, and the tether fixing portion **450** is fixed to the other end of the second connecting belt **412b**.

[0105] In this way, the tether assembly **40** occupies a relative small space, and can be mounted in the relatively narrow compartment of the vehicle.

[0106] Optionally, in this embodiment, the top tether **410** may have only one adjuster **430**. Optionally, in this embodiment, the top tether **410** may have three adjusters **430**. Optionally, one adjuster **430** may be a two-way adjuster (as will be explained hereinbelow).

[0107] As shown in FIG. 10, the tether assembly may further comprise a connecting member **460** for connecting two connecting belts **412** and one adjusting belt **411** together. The two connecting belts **412** may be fixed to a side of the connecting member **460**, and one adjusting belt **411** may be fixed to the other side of the connecting member **460**. The connecting member **460** may be an iron sheet with three elongated holes formed therein.

[0108] Optionally, in this embodiment, the top tether **410** may have only one adjuster **430**. Optionally, in this embodiment, the top tether **410** may have three adjusters **430**. Optionally, one adjuster **430** may be a two-way adjuster (as will be explained hereinbelow).

[0109] FIG. 11 is a schematic view of an additional embodiment of the tether assembly of the disclosure.

[0110] The tether assembly **40** may comprise a first adjuster **430a**, a second adjuster **430b**, and one adjusting belt **411**. The first adjuster **430a** and the second adjuster **430b** are

arranged in a same direction. Both ends of the adjusting belt **411** respectively pass through the first adjuster **430a** and the second adjuster **430b** to form two free ends **4111** extending in a same direction (the direction away from the child safety seat). The first adjuster **430a** and the second adjuster **430b** may be fixed to both sides of the top rod **30** via a connecting belt **412**. The tether fixing portion **450** is slidably connected to the adjusting belt **411**.

[0111] In this way, when the child safety seat **1** is placed on the right side seat and the left side of the vehicle, the tether assembly **40** can be adjusted by the adjuster on the closer side, so it is more convenient to apply force. Adjustments performed by two adjusters have similar effects. In addition, two adjusters may make the adjustable range of the length of the tether assembly **40** wider.

[0112] Optionally, in this embodiment, the top tether **410** may have only one adjuster **430**. Optionally, in this embodiment, the top tether **410** may have three adjusters **430**. Optionally, one adjuster **430** may be a two-way adjuster (as will be explained hereinbelow).

[0113] FIG. 13 is a schematic view of an embodiment of the tether assembly **40** of the child safety seat of the disclosure. The tether assembly **40** may comprise a top tether **410**, an adjuster **430**, and a tether fixing portion **450**. The top tether **410** may include an adjusting belt **411** and a connecting belt **412**. The adjusting belt **411** may pass through the adjuster **430** to extend for forming a free end **4111**. The adjuster **430** may have a button. When the button is not pressed, the adjuster **430** locks the adjusting belt **411**, and when the button is pressed, the adjuster **430** releases the adjusting belt **411**. At this time, pulling the free end **4111** may shorten a length of the adjusting belt **411**, and pulling the adjusting belt **411** may increase the length of the adjusting belt **411**.

[0114] FIG. 14 is a schematic view of another embodiment of the tether assembly **40** of the child safety seat of the disclosure. The tether assembly **40** may have two adjusters **430**. The two adjusters **430** may be arranged in opposite directions. The top tether **410** may include two adjusting belts **411** and one connecting belt **412**. The connecting belt **412** is connected between the two adjusters **430**. The two adjusting belts **411** respectively pass through the two adjusters **430** to form two free ends **4111** toward opposite directions, such that the length of the tether assembly **40** may be adjusted in two opposite directions by pulling the two free ends **4111**.

[0115] In an embodiment, the tether fixing portion **450** is fixed to an end of one of the two adjusting belts **411**, and the other one of the two adjusting belts **411** is fixed on the top rod **30**.

[0116] In another embodiment, the tether fixing portion **450** is slidably connected to one of the two adjusting belts **411**, and the other one of the two adjusting belts **411** is fixed on the top rod **30**.

[0117] In a further embodiment, the tether assembly **40** further comprises a two-way adjuster **441**. The two-way adjuster **441** may adjust the length of the tether assembly **40** in two opposite directions. In other words, the two adjusting belts **411** may respectively pass through the two-way adjuster **441** from both ends to form two free ends **4111** toward opposite directions, such that the length of the tether assembly **40** may be adjusted in two opposite directions by pulling the two free ends **4111**.

[0118] FIG. 15 is a schematic view of another embodiment of the tether assembly of the child safety seat of the disclosure, and FIG. 16 is a schematic view of another embodiment of the tether assembly of the child safety seat of the disclosure. The embodiments shown in FIG. 15 and FIG. 16 are respectively similar to the embodiments shown in FIG. 13 and FIG. 14 except that a two-way adjuster 440 is used to replace the two adjusters 430 and the connecting belt 412.

[0119] FIG. 17 is a perspective view of a two-way adjuster of the child safety seat of the disclosure; FIG. 18 is another perspective view of the two-way adjuster of the child safety seat of the disclosure; FIG. 19 is a section view of the two-way adjuster of the child safety seat of the disclosure, in which a button is not pressed; FIG. 20 is a section view of the two-way adjuster of the child safety seat of the disclosure, in which a button is pressed; FIG. 21 is a perspective section view of the two-way adjuster of the child safety seat of the disclosure; FIG. 22 is a top view of the two-way adjuster of the child safety seat of the disclosure, in which a button is not pressed; FIG. 23 is a bottom view of the two-way adjuster of the child safety seat of the disclosure, in which a button is not pressed; FIG. 24 is a top view of the two-way adjuster of the child safety seat of the disclosure, in which a button is pressed; FIG. 25 is a schematic section view of the two-way adjuster of the child safety seat of the disclosure.

[0120] The two-way adjuster 440 may include: an adjuster housing 441 having two first openings facing opposite directions; two buttons 442 respectively disposed at the two first openings and capable of moving in directions into and away from the adjuster housing 441; fixed sheets 443 fixed at a bottom of the adjuster housing 441 and formed with two second openings; two locking members 444 disposed inside the adjuster housing 441 and respectively move along with the two buttons 442 to a locked position and a released position, wherein two belts (e.g., top belts 410) may respectively enter the adjuster housing 441 via the two second openings, pass through a gap between the two locking members 444 and the fixed sheet 443, and extend out of the adjuster housing 441 to form two free ends extending in opposite directions, and wherein in the locked position, the two locking members 444 and the fixed sheet 443 respectively clamp the two belts, and in the released position, the two locking members 444 and the fixed sheet 443 allow the two belts to move.

[0121] A spring may be disposed between the two buttons 442, so as to respectively apply force to the two buttons 442 for restoring the adjuster housing 441.

[0122] An upper surface of the adjuster housing 441 may be formed with two tightening indicating windows 445 to respectively indicate whether the two belts are tightened. Different positions on the upper surfaces of the two buttons 442 may be marked with different colors, such that when the buttons 442 are in the locked position, the tightening indicating windows 445 show one color (e.g., green) on the upper surface of the buttons 442, and when the buttons 442 are in the released position, the tightening indicating windows 445 show the other one color (e.g., red) on the upper surface of the buttons 442. Alternatively, the tightening indicating windows 445 may also be disposed at other positions of the adjuster housing 441, such as a side surface, a bottom surface and both ends, and the application is not limited thereto. The tightening indicating windows 445 may

also be used to provide information in other ways, such as lines, graphic marks, and the present application is not limited thereto. The tightening indicating windows 445 may also be formed of a transparent material so that the inside of the adjuster housing 441 can be seen.

[0123] The two-way adjuster 440 may adjust the length of the top tether 410 in different directions.

[0124] As shown in FIG. 25, when the top tether 410 passes through the two-way adjuster 440, it firstly enters the adjuster housing 441 upward from the openings of the locking members 444, then passes upward through an inner side of the fixed sheet 443 and the buttons 442 (the middle in FIG. 25), then bypasses the fixed sheet 443, and extends downward again on outside of the fixed sheet 443 (left and right sides in FIG. 25) to pass through the gap between the fixed sheet 443 and the locking members 444, and finally extends out of the adjuster housing 441 downward below the locking members 444.

[0125] In this way, when the top tether 410 is tightened, the top tether 410 may be clamped between the locking members 444 and the fixed sheet 443 (because when the adjusting belts 111 is tensioned, the top tether 410 pulls the fixed sheet 443 outward, such that the fixed sheet 443 and the locking members 444 tend to be closer to each other), so as to realize positioning of the top tether 410. Moreover, when the length of the top tether 410 needs to be adjusted, the buttons 442 may be pressed, so as to bring the fixed sheet 443 away from the locking members 444, and the top tether 410 is released, accordingly a length adjustment may be performed.

[0126] When the two-way adjuster 440 is used, the two top belts 410 passing through the two-way adjuster 440 respectively extend into the top rod 30 and are connected to the tether fixing portion 450, such that the length of the tether assembly 40 can be adjusted in different directions.

[0127] After considering the description and practicing the disclosure, those skilled in the art will easily think of other embodiments of the disclosure. For example, the tether assembly may be connected to the base 10, and may also be connected to the seat 20. The disclosure is intended to cover any variants, uses or adaptable changes of the embodiments. These variants, uses or adaptable changes follow the general principles of the present disclosure and include those in the technical field not related in the disclosure. The description and the embodiments are only regarded as exemplary, and the true scope and spirit of the disclosure shall only be defined by the claims attached below.

[0128] Although the disclosure has been provided by with reference to typical embodiments, the terms used are illustrative and exemplary rather than restrictive. Since the disclosure can be implemented in various forms without departing from the spirit and essence of the disclosure, it should be understood, the above-mentioned embodiments are not limited to any of the foregoing details, but shall be interpreted in the broadest sense within the scope defined by the claims. Therefore, any variation falling within the scope of the claims or their equivalents shall be covered by the claims.

#### REFERENCE NUMERAL LIST

- [0129] Child Safety Seat 1
- [0130] Base 10
- [0131] Anchor Part 110
- [0132] Anchor Arm 111



[0133] Seat 20  
 [0134] Top Rod 30  
 [0135] Vertical Rod 310  
 [0136] Fixing Portion 320  
 [0137] Opening 330  
 [0138] Accommodating Portion 340  
 [0139] Tether Assembly 40  
 [0140] Top Tether 410  
 [0141] Adjusting Belt 411  
 [0142] First Adjusting Belt 411a  
 [0143] Second Adjusting Belt 411b  
 [0144] Free End 4111  
 [0145] Connecting Belt 412  
 [0146] First Connecting Belt 412a  
 [0147] Second Connecting Belt 412b  
 [0148] Adjuster 430  
 [0149] First Adjuster 430a  
 [0150] Second Adjuster 430b  
 [0151] Housing 431  
 [0152] Button (Adjusting End) 432  
 [0153] Two-Way Adjuster 440  
 [0154] Adjuster Housing 441  
 [0155] Button 442  
 [0156] Fixed Sheet 443  
 [0157] Locking Member 444  
 [0158] Tightening Indicating Window 445  
 [0159] Tether Fixing Portion 450  
 [0160] Connecting Member 460

What is claimed is:

1. A tether assembly for fixing a child safety seat to a vehicle, wherein the tether assembly comprises:

- an adjuster for adjusting a length of the tether assembly;
- a tether fixing portion being fixable to a corresponding fixing portion of the vehicle;
- a top tether comprising at least two belts, the top tether connects to the child safety seat and the tether fixing portion via the adjuster, and
- at least one belt of the top tether passing through the adjuster to form at least two free ends.

2. The tether assembly according to claim 1, wherein the child safety seat comprises a base, a seat disposed above the base, and a top rod erected at a rear of the base.

3. The tether assembly according to claim 1, wherein the adjuster is a one-way adjuster, the top tether comprises three belts, one ends of a first belt and a second belt of the three belts are respectively fixed to both sides of the child safety seat, the other ends of the first belt and the second belt of the three belts are respectively connected to both ends of a third belt of the three belts via two one-way adjusters, the tether fixing portion is fixedly or slidably connected to any one of the three belts, and the top tether passes through the two one-way adjusters to form two free ends.

4. The tether assembly according to claim 3, wherein the two one-way adjusters are oriented in a same direction, such that the two free ends extend in the same direction.

5. The tether assembly according to claim 3, wherein the two one-way adjusters are oriented in opposite directions, such that the two free ends extend in the opposite directions.

6. The tether assembly according to claim 3, wherein the tether fixing portion is fixedly or slidably connected to the first belt or the second belt.

7. The tether assembly according to claim 3, wherein the tether fixing portion is fixedly or slidably connected to the third belt.

8. The tether assembly according to claim 1, wherein the adjuster is a two-way adjuster or a one-way adjuster, and the at least two free ends are formed by the top tether passing through the two-way adjuster or the one-way adjuster.

9. The tether assembly according to claim 8, wherein the top tether comprises three belts, one ends of a first belt and a second belt of the three belts are respectively fixed to both sides of the child safety seat, the other ends of the first belt and the second belt of the three belts are connected to one end of a third belt of the three belts via a connecting member.

10. The tether assembly according to claim 9, wherein the top tether further comprises a fourth belt, the third belt is connected to the fourth belt via two one-way adjusters or one two-way adjuster, and the tether fixing portion is fixedly or slidably connected to the fourth belt.

11. The tether assembly according to claim 8, wherein the top tether comprises three belts, both ends of a first belt of the three belts are respectively fixed to both sides of the child safety seat, one end of a second belt of the three belts is fixedly or slidably connected to the first belt, one end of a third belt of the three belts is connected to the other end of the second belt via two one-way adjusters or one two-way adjuster, and the tether fixing portion is fixedly or slidably connected to the other end of the third belt.

12. The tether assembly according to claim 1, wherein the top tether comprises two belts, one ends of the two belts are respectively fixed to both sides of the child safety seat, the other ends of the two belts are respectively connected to the adjuster, the tether fixing portion is fixedly or slidably connected to one of the two belts, the adjuster is a two-way adjuster, and the two-way adjuster is able to adjust a length of the tether assembly in two opposite directions.

13. The tether assembly according to claim 8, wherein the top tether comprises two belts, one end of a first belt of the two belts is fixed to the child safety seat, the other end of the first belt is connected to one end of a second belt of the two belts via two one-way adjusters or one two-way adjuster, and the tether fixing portion is fixedly or slidably connected to the other end of the second belt.

14. The tether assembly according to claim 10, wherein the two one-way adjusters are oriented in opposite directions, and the two one-way adjusters are connected to each other by a connecting belt.

15. The tether assembly according to claim 1, wherein the adjuster has a locked position and a released position, in the locked position, the top tether passing through the adjuster is clamped by the adjuster, and in the released position, the adjuster allows the top tether passing through the adjuster to move relative to the adjuster.

16. A child safety seat comprising:

- a base provided with an anchor part protruding backwardly;
- a seat coupled to the base;
- a top rod fixed to a rear of the base; and
- a tether assembly comprising:
  - an adjuster for adjusting a length of the tether assembly;
  - a tether fixing portion being fixable to a corresponding fixing portion of a vehicle;
  - a top tether comprising at least two belts, the top tether connects to the child safety seat and the tether fixing portion via the adjuster,
  - at least one belt of the top tether passing through the adjuster to form at least two free ends; and

the top tether of the tether assembly is fixed to the top rod.

**17.** The child safety seat according to claim **16**, wherein the top rod comprises two vertical rods and a fixing portion, and each of tops of the two vertical rods is provided with an opening.

**18.** The child safety seat according to claim **16**, wherein the top rod comprises two vertical rods and a fixing portion, and an upper surface of the fixing portion is centrally provided with an opening.

**19.** The child safety seat according to claim **16**, wherein the top rod comprises one vertical rod and one accommodating portion, and an upper surface of the accommodating portion is centrally provided with an opening.

**20.** A tether assembly for fixing a child safety seat to a vehicle, wherein the tether assembly comprises:

a two-way adjuster being able to adjust a length of the tether assembly in two opposite directions;

a tether fixing portion being fixable to a corresponding fixing portion of the vehicle; and

a top tether comprising more than one belt separated from each other, wherein the top tether connects the two-way adjuster to the child safety seat, and connects the two-way adjuster to the tether fixing portion.

**21.** The tether assembly according to claim **20**, wherein the two-way adjuster comprises:

an adjuster housing having two first openings facing opposite directions;

two button respectively disposed at the two first openings and movable in directions of entering and leaving the adjuster housing;

a fixed sheet fixed on a bottom of the adjuster housing and formed with two second openings; and

two locking members disposed inside the adjuster housing and being movable along with the two buttons to form a locked position and a released position.

**22.** The tether assembly according to claim **21**, wherein two of the belts are able to enter the adjuster housing via the two second openings, pass through gaps between the two locking members and the fixed sheet, and extend out of the adjuster housing to form free ends extending in two opposite directions, and

wherein in the locked position, the two locking members and the fixed sheet respectively clamp the two belts, and in the released position, the two locking members and the fixed sheet allow the two belts to move.

**23.** The tether assembly according to claim **22**, wherein in the released position, when the free ends are pulled, the tether assembly is shortened, and when portions of the two belts other than the free ends are pulled, the tether assembly extends longer.

**24.** The tether assembly according to claim **21**, wherein a spring is disposed between the two buttons for respectively applying force to the two buttons for moving out of the adjuster housing.

**25.** The tether assembly according to claim **21**, wherein two tightening indicating windows are formed on an upper surface of the adjuster housing to respectively indicate whether two of the belts are tightened.

\* \* \* \* \*