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INDICATOR ASSEMBLY OF A SUPPORTING LEG DEVICE FOR A SAFETY SEAT AND SAFETY SEAT

Abstract

An indicator assembly of a supporting leg device for a safety seat and a safety seat are provided. The indicator assembly includes: an indicator housing having an indicator window; an indicating member including a first area and a second area which are adjacent to each other; a first elastic member driving the indicating member to pivot to a first position; an pushing member including a ground contact end that protrudes from the bottom of the supporting leg device; a traction member movably positioned within a hollow sleeve, wherein a first end of the traction member protrudes from the upper end of the sleeve and is fixed to the indicating member, and a second end of the traction member protrudes from the lower end of the sleeve and is configured that an upward movement of the pushing member drives an upward movement of the second end of the traction member.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS [0001] This application is a continuation of U.S. patent application Ser. No. 18/037,867, filed on May 19, 2023, which is a National Stage application of P CT/EP2022/050159, filed on Jan. 5, 2022, which claims the benefit of Chinese Application No. 202110006101.X, filed on Jan. 5, 2021, both of which are incorporated herein by reference in their entirety.

TECHNICAL FIELD
[0002] This disclosure relates to the technical field of a safety seat, and more particularly, to an indicator assembly of a supporting leg device for a safety seat.
BACKGROUND
[0003] A child safety seat is a kind of seat specially designed for children at different ages and effectively improving safety of the children in a vehicle.
SUMMARY
[0004] An indicator assembly of a supporting leg device for a safety seat is proposed. The indicator assembly includes: an indicator housing positioned at a top of the supporting leg device and having an indicator window that is formed by penetrating the indicator housing; an indicating member including a first area and a second area which are adjacent to each other and have different colors or patterns, the indicating member being pivotally accommodated in the indicator housing so that the first area and the second area can be alternatively exposed from the indicator window; a first elastic member contacting with the indicating member and driving the indicating member to pivot to a first position; an pushing member inside the supporting leg device and movable up and down relative to a bottom of the supporting leg device, the pushing member including a ground contact end that protrudes from the bottom of the supporting leg device; a traction member movably positioned within a hollow sleeve, wherein the sleeve has an upper end configured to be immobile relative to the top of the supporting leg device, and a lower end configured to be immobile relative to the bottom of the supporting leg device; a first end of the traction member protrudes from the upper end of the sleeve and is fixed to the indicating member, so that the indicating member is pulled so as to pivot to a second position, and a second end of the traction member protrudes from the lower end of the sleeve and is configured that an upward movement of the pushing member drives an upward movement of the second end of the traction member; wherein when the ground contact end of the pushing member does not touch the ground, the indicating member pivots to the first position and the first area is exposed from the indicating window; and when the ground contact end of the pushing member touches the ground, the pushing member moves upward relative to the bottom of the supporting leg device to drive the second end of the traction member to move upward, the first end of the traction member moves downward relative to the top of the supporting leg device to pull the indicating member, the indicating member pivots to the second position, and the second area is exposed from the indicating window.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate examples of the present disclosure, together with the description serve to explain principles of the present disclosure.

[0006] In the drawings,

[0007] FIG. **1** is a perspective view of a base and a supporting leg device for a safety seat.

[0008] FIG. **2** is an enlarged view of an indicator housing of an indicator assembly of the supporting leg device for the safety seat according to the present disclosure.

[0009] FIG. **3** is a perspective view of supporting leg device of the indicator assembly according to the present disclosure.

[0010] FIG. **4** shows a part of members of the indicator assembly inside the supporting leg device.

[0011] FIG. **5** is a front cross-sectional view of the first embodiment of the indicating assembly according to the present disclosure.

[0012] FIG. **6** is a perspective view of the indicator assembly after removing the first tube and the second tube in FIG. **5**.

[0013] FIG. **7** is a front cross-sectional view of the second embodiment of the indicator assembly according to the present disclosure.

[0014] FIG. **8** is a perspective view of the indicator assembly after removing the first tube and the second tube in FIG. **7**.

[0015] FIG. **9** is a perspective view at another angle of the indicator assembly after removing the first tube and the second tube in FIG. **7**.

[0016] FIG. **10** is an enlarged perspective view of a pushing member in FIG. **7**.

[0017] FIG. **11** is a front cross-sectional view of the third embodiment of the indicator assembly according to the present disclosure.

[0018] FIG. **12** is a perspective view of the indicator assembly after removing the first tube and the second tube in FIG. **11**.

[0019] FIG. **13** is a perspective view at another angle of the indicator assembly after removing the first tube, the second tube and some members in FIG. **11**.

[0020] FIG. **14** is a cross-sectional view of the indicator assembly after removing the first tube and the second tube in FIG. **11**.

REFERENCE NUMBERS ARE LISTED AS FOLLOWS

[0021] **10** supporting leg device [0022] **11** top [0023] **12** bottom [0024] **20** first tube [0025] **30** second tube [0026] **31** upper end [0027] **40** frame [0028] **100** indicating member [0029] **101** first area [0030] **102** second area [0031] **103** pivot shaft [0032] **110** indicator housing [0033] **111** indicator window [0034] **120** first elastic member [0035] **130** sleeve upper end fixing member [0036] **200** pushing member [0037] **201** ground contact end [0038] **202** upper part [0039] **210** second elastic member [0040] **300** traction member [0041] **301** first end [0042] **302** second end [0043] **310** sleeve [0044] **311** upper end [0045] **312** lower end [0046] **313** first loop [0047] **314** second loop [0048] **310**A first section [0049] **310**B second section [0050] **310**C node [0051] **400** remaining member [0052] **401** sleeve remaining part [0053] **500** sleeve lower end fixing member [0054] **600** driving member [0055] **601** upper part [0056] **610** third elastic member [0057] **700** post member

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0058] The present disclosure will be described in detail with reference to the accompanying drawings. For ease of description, the terms “upper”, “lower”, “top”, “bottom” and other terms in the present disclosure refer to the orientation in the accompanying drawings.

[0059] It is provided with a supporting leg device for a child's safety seat, which is installed on a

base of the child's safety seat and supported on a ground of the vehicle, thus enhance the anti-overturning and anti-impact capability of child's safety seat and protect child safe. However, it is not convenient for the user to lean over and check whether the supporting leg device has touched the ground of the vehicle. Accordingly, it is necessary to develop an indicator assembly of the supporting leg device for the safety seat, to inform thus user whether the device has been already assembled well, so as to avoid the above problem.

[0060] In an embodiment shown in FIG. **1**, a supporting leg device **10** is disposed at the front end of a base of a safety seat. In use, a bottom **12** of the supporting leg device **10** may be supported on a ground in a vehicle. The supporting leg device **10** includes a first tube **20** and a second tube **30**. The second tube **30** is slidably disposed in the first tube **20**, so that the supporting leg device **10** can be expanded and contracted. Therefore, when the safety seat is placed on a car seat, the bottom **12** of the supporting leg device can reach the ground in the vehicle by adjusting the length of the supporting leg device **10**.

[0061] Hereinafter, a structure for displaying whether the supporting leg device **10** touches the ground will be described in detail. The indicator assembly according to the present disclosure is attached to the supporting leg device **10**.

[0062] The indicator assembly includes an indicator housing **110** that is positioned at a top **11** of the supporting leg device **10**, more particularly connected to the upper end of the first tube **20**, and has an indicator window **111**; an indicating member **100** that is pivotally accommodated in the indicator housing **110**; a first elastic member **120** that is disposed in the indicator housing **110** to come into contact with an indicating member **100** and drive the indicating member **100** to pivot in a first direction; a pushing member **200** and a traction member **300**, which both are located inside the supporting leg device **10**.

[0063] As shown in FIG. **1**, the indicator housing **110** may be formed as a connecting portion for connecting the supporting leg device **10** and the base of the safety seat. Therefore, the indicator housing **110** may be integrally formed with the supporting leg device **10** and the base of the safety seat, to have sufficient strength therebetween, so as to ensure that the supporting leg device **10** plays a supporting role on the safety seat. Of course, for the convenience of manufacturing and transportation, the indicator housing **110**, the supporting leg device **10**, and the base of the safety seat may be separately manufactured, and then assembled together by screwing, riveting or welding.

[0064] An indicator window **111** is formed on the indicator housing **110** and penetrates through the indicator housing **110**. In the embodiments shown in FIGS. **1** and **2**, the indicator window **111** is formed on the top of the indicator housing **110**, so that a user can observe the indicator window **111** more conveniently from above. However, it should be understood that the indicator window **111** may also be formed at the side of the indicator housing **110**, so that the user can laterally observe the indicator window **111**.

[0065] The indicating member **100** is pivotably accommodated in the indicator housing **110**. As shown in FIG. **4**, the indicating member **100** includes a first area **101** and a second area **102** on the outer surface thereof. By means of the pivoting of the indicating member **100**, the first area and the second area can be alternatively exposed from the indicator window **111**. The first area **101** and the second area **102** may have different colors, such as red and green; or have different patterns, such as characters or figures, so as to be able to display different states of the indicator assembly. For example, when the supporting leg device **10** does not touch the ground, the first area **101** of the indicating member **100** is exposed from the indicator window **111**; and when the supporting leg device **10** touches the ground, the second area **102** of the indicating member **100** is exposed from the indicator window **111**. Therefore, the user can clearly know whether the supporting leg device **10** touches the ground.

[0066] In order to facilitate for the pivoting of the indicating member **100**, pivot shafts **103**, as shown in FIG. **4**, may be formed on both sides of the indicating member **100**, and are rotatably

supported on the indicator housing **110** or at the top **11** of the supporting leg device **10** (i.e., the first tube **20**) or on a frame **40** placed at the top **11** of the supporting leg device **10** (i.e., the first tube **20**), as shown in FIGS. **3** and FIG. **5**, so that the indicating member **100** pivots within the indicator housing **110** around the pivot shafts **103**. In other embodiments, the indicating member **100** may also pivot by other means such as sliding rails.

[0067] When the supporting leg device **10** does not touch the ground, in order to ensure that the first area **101** is exposed from the indicator window **111**, a first elastic member **120** is also disposed in the indicator housing **110**, and drives the indicating member **100** to pivot to a first position along a first direction; when the indicating member **100** is at the first position, the first area **101** is exposed from the indicator window **111**. The first elastic member **120** is made of an elastic material and may be a spring, an elastic sheet or any elastic element capable of providing driving force. Furthermore, the first elastic member **120** may be integrally formed with the indicating member **100**, or the first elastic member and the indicating member may be separately formed and then assembled together. The first elastic member **120** may have any shape.

[0068] When the supporting leg device **10** touches the ground, mainly by means of the pushing member **200** and the traction member **300**, the indicating member **100** is driven to pivot to a second position along a second direction opposite to the first direction. When the indicating member **100** is at the second position, the second area **102** is exposed from the indicator window **111**.

[0069] Subsequently, the pushing member **200** and the traction member **300** will be described in general.

[0070] The pushing member **200** is positioned inside the supporting leg device **10** and is movable up and down relative to the bottom **12** of the supporting leg device **10**. The pushing member **200** includes a ground contact end **201** that protrudes from the bottom **12** of the supporting leg device **10** and touches the ground. The bottom of the ground contact end **201** may be made of a thermoplastic elastomer (TPE) material to play a role of preventing sliding and avoiding impact. Since the ground contact end **201** extends from the bottom **12** of the supporting leg device **10**, when the supporting leg device **10** touches the ground, the ground contact end **201** first touches the ground, thereby subjecting an upward acting force from the ground, so that the ground contact end **201** and the pushing member **200** are moved upward relative to the bottom **12** of the supporting leg device **10** until the ground contacting end **201** is completely retracted into the bottom **12** of the supporting leg device **10**.

[0071] The traction member **300** is movably positioned in a hollow sleeve **310**. The traction member **300** is a flexible elongated member such as a pulling wire, and made of tensile materials such as metal, fabric, rubber, or plastic. The sleeve **310** is a hollow tube, which is wrapped around the traction member **300** to guide the movement of the traction member **300**, so that when one end of the traction member **300** is pulled out of the sleeve **310**, the other end of the traction member **300** will be pulled into the sleeve **310**. The sleeve **310** may be made of materials such as metal, fabric, rubber or plastic, having certain elasticity and certain rigidity. The sleeve **310** has elasticity to ensure that the sleeve **310** can be bent and deformed accordingly when the supporting leg device **10** is retracted, so that the sleeve **310** cannot hinder the expansion and contraction of the supporting leg device **10**. The sleeve **310** has rigidity to ensure that the sleeve **310** can guide the movement of the traction member **300**, and that the entire length of the sleeve **310** cannot be changed due to the movement of the traction member **300**.

[0072] The sleeve **310** has an upper end **311** configured to be immobile relative to the top **11** of the supporting leg device **10**, and a lower end **312** configured to be immobile relative to the bottom **12** of the supporting leg device **10**. A first end **301** of the traction member **300** extends from the upper end **311** of the sleeve **310** and is fixed to the indicating member **100**, so that the indicating member **100** can be pulled to pivot to the second position in the second direction opposite to the first direction. The second end **302** of the traction member **300** protrudes from the lower end **312** of the sleeve **310** and is arranged such that the upward movement of the pushing member **200** can drive

the upward movement of the second end **302** of the traction member **300**.
[0073] The upper end **311** of the sleeve **310** is configured in various manners to be immobile relative to the top **11** of the supporting leg device **10**. For example, in another embodiment, as shown in FIG. **5**, a sleeve upper end fixing member **130** may be fixed to the top **11** of the supporting leg device **10**; and the upper end **311** of the sleeve **310** is fixed to the sleeve upper end fixing member **130**. The sleeve upper end fixing member **130** may be fixed to the top **11** of the supporting leg device **10** via a frame **40**. The sleeve upper end fixing member **130** and the frame **40** can be fixed by means of various conventional connection methods such as screws and rivets. Certainly, the upper end **311** of the sleeve **310** can also be directly fixed to the top **11** of the supporting leg device **10** or to other components arranged at the top **11**.
[0074] On another aspect, as for that the lower end **312** of the sleeve **310** is configured to be immobile relative to the bottom **12** of the supporting leg device **10**, and the second end **302** of the traction member **300** is configured such that the upward movement of the pushing member **200** can drive the upward movement of the second end **302** of the traction member **300**, the above can be implemented in various manners, which will be described in detail below by taking an example.
[0075] Hereinafter, it will be described how the pushing member **200** and the traction member **300** drive the indicating member **100** to pivot to the second position in the second direction.
[0076] When the supporting leg device **10** touches the ground, the ground contact end **201** of the pushing member **200** first touches the ground, so that the pushing member **200** moves upward relative to the bottom **12** of the supporting leg device **10**, so as to drive the upward movement of the second end **302** of the traction member **300**, and the first end **301** of the traction member **300** moves downward relative to the top **11** of the supporting leg device **10** to pull the indicating member **100**, so as to allow the indicating member **100** to withstand the acting force of the first elastic member **120** to pivot to the second direction, so that the second area **102** of the indicating member **100** is exposed from the indicator window **111**.
[0077] It should be noted that since the two ends of the sleeve **310** are respectively fixed with respect to the top **11** and the bottom **12** of the supporting leg device **10**, when the supporting leg device **10** is retracted to change a distance between the top **11** and the bottom **12** of the supporting leg device **10**, only the distance between the two ends of the sleeve **310** changes. However, as long as the supporting leg device **10** does not touch the ground, this change cannot get the traction member **300** within the sleeve **310** pulled, and the indicating member **100** cannot pivot to the second position. In addition, when the supporting leg device **10** is extended to the maximum, the distance between the two ends of the sleeve **310** is the largest, so that the sleeve **310** may have a length that is set to be longer than the length of the sleeve as required in this case, so as to ensure that the extension of the supporting leg device **10** cannot be limited by the length of the sleeve **310**.
[0078] In addition, for attractive appearance and ease of use, the sleeve **310** is entirely positioned inside the supporting leg device **10**, as shown in FIGS. **5**, **7** and **11**, but the sleeve **310** can also be partially or completely provided outside the supporting leg device **10**.
[0079] In order to allow a person skilled in the art to understand the present disclosure more clearly, several preferred examples of the present disclosure will be described in detail.
[0080] FIGS. **5** to **6** show the first embodiment of the present disclosure.
[0081] In this embodiment, the lower end **312** of the sleeve **310** is positioned close to an upper end **31** of a second tube **30**; the upper end **31** of the second tube **30** is provided with a remaining member **400**, and the lower end **312** of the sleeve **310** may be fixed to the remaining member **400**. In this way, since the remaining member **400** provided on the second tube **30** is immobile relative to the lower end of the second tube **30**, the lower end **312** of the sleeve **310** fixed to the remaining member **400** may be immobile relative to the lower end of the second tube **30** (i.e., the bottom **12** of the supporting leg device **10**). Certainly, the lower end **312** of the sleeve **310** may also be directly fixed to an inner wall of the upper end **31** of the second tube **30** or provided on other components at the upper end **31**.

[0082] Meanwhile, in the case that the lower end **312** of the sleeve **310** is positioned close to the upper end **31** of the second tube **30**, in order to realize that the upward movement of the pushing member **200** can drive the upward movement of the second end **302** of the traction member **300**, the pushing member **200** moves upward along a longitudinal direction of the supporting leg device **10** from the ground contact end **201** until a height of the upper part **202** of the pushing member exceeds beyond a height of the lower end **312** of the sleeve **310**, and the second end **302** of the traction member **300** is fixed to the upper part **202** of the pushing member **200**. In the case that the lower end **312** of the sleeve **310** is fixed to the remaining member **400**, the upper part **202** of the pushing member **200** needs to pass through the remaining member **400**, as shown in FIGS. **5** and **6**. Since the pushing member **200** extends from the lower end of the second tube **30** (i.e., the bottom **12** of the supporting leg device **10**) to the upper end **31** of the second tube **30**, that is to say, the pushing member **200** almost extends along the entire length of the second tube **30**, so that in FIGS. **5** and **6**, the pushing member **200** may be shown as a sheet-like elongated member, but also be a rod member.

[0083] It should be noted that the “height” mentioned in the present disclosure refers to a height from the bottom **12** of the supporting leg device **10**.

[0084] The pushing member **200** may be connected to a second elastic member **210** that forces the pushing member **200** to move downward relative to the bottom **12** of the supporting leg device **10**. Thus, when the supporting leg device **10** leaves from the ground, under the action of the second elastic member **210**, the pushing member **200** moves downward relative to the bottom **12** of the supporting leg device **10**, and the ground contact end **201** thereof extend out of the bottom **12** of the supporting leg device **10** once more, at the same time, the upper part **202** and the second end **302** of the traction member **300** also move downward, so that the traction member at the second end **302** may retract downward into the sleeve **310**; accordingly, the traction member at the first end **301** may move upward to extend out of the sleeve **310**, so that under the action of the first elastic member **120**, the indicating member **100** pivots to the first position along the first direction.

[0085] The second elastic member **210** is made of an elastic material, and may include a spring, an elastic piece, or any elastic element capable of providing a driving force. Although FIGS. **5** and **6** show that the second elastic member **210** is a tension spring provided at the pushing member **200**, but the present disclosure is not limited thereto, the second elastic member **210** may be provided at any suitable position of the pushing member **200** as long as the pushing member **200** is forced to move downward.

[0086] FIGS. **7** to **10** show the second embodiment of the present disclosure.

[0087] In this embodiment, the lower end **312** of the sleeve **310** is positioned close to the bottom **12** of the supporting leg device **10**; the bottom **12** of the supporting leg device **10** includes a sleeve lower end fixing member **500**, and the lower end **312** of the sleeve **310** is fixed to the sleeve lower end fixing member **500**. In this way, since the sleeve lower end fixing member **500** is immobile relative to the bottom **12** of the supporting leg device **10**, the lower end **312** of the sleeve **310** fixed to the sleeve lower end fixing member **500** is immobile relative to the bottom **12** of supporting leg device **10**. The lower end **312** of the sleeve **310** may also be directly fixed to the bottom **12** of the supporting leg device **10** or the inner wall of the lower end of the second tube **30**.

[0088] Meanwhile, in the case that the lower end **312** of the sleeve **310** is positioned close to the bottom **12** of the supporting leg device **10**, in order to realize that the upward movement of the pushing member **200** drives the upward movement of the second end **302** of the traction member **300**, the pushing member **200** extends upward along the longitudinal direction of the supporting leg device **10** from the ground contact end **201** until a height of the upper part **202** of the pushing member exceeds beyond a height of the lower end **312** of the sleeve **310**, and the second end **302** of the traction member **300** is fixed to the upper part **202** of the pushing member **200**. FIG. **10** is a perspective view showing a solution of the pushing member **200**. Certainly, the pushing member **200** may be achieved by virtue of other solutions as long as the above requirements can be

satisfied. In this example, since the lower end **312** of the sleeve **310** is not high, the height of the pushing member **200** extending upward does not need to be high. The sleeve lower end fixing member **500** is positioned under the upper part **202** of the pushing member **200**, as shown in FIGS. **7-9**.

[0089] The pushing member **200** in this example may also be connected with a second elastic member **210**, which is not shown through, the second elastic member **210** forces the pushing member **200** to move downward relative to the bottom **12** of the supporting leg device **10**.

[0090] FIGS. **11** to **14** show the third embodiment of the present disclosure.

[0091] In this embodiment, the lower end **312** of the sleeve **310** is positioned close to the bottom **12** of the supporting foot device. For example, the lower end **312** of the sleeve **310** may be directly fixed to the inner wall of the lower end of the second tube **30** or other components provided at the bottom **12** of the supporting leg device **10**, so that the lower end **312** of the sleeve **310** is immobile relative to the bottom of the supporting leg device **10**.

[0092] Meanwhile, in the case that the lower end **312** of the sleeve **310** is positioned close to the bottom **12** of the supporting leg device **10**, in order to realize that the upward movement of the pushing member **200** drives the upward movement of the second end **302** of the traction member **300**, the pushing member **200** is provided with a driving member **600** which extends upward in the longitudinal direction of the supporting leg device **10** so that a height of an upper part **601** of the driving member exceeds beyond a height of the lower end **312** of the sleeve **310**, and the second end **302** of the traction member **300** is fixed to the upper part **601** of the driving member **600**. In this example, since the lower end **312** of the sleeve **310** is not high, the height of the driving member **600** extending upward does not need to be high.

[0093] The driving member **600** is connected to a third elastic member **610** which forces the driving member **600** to move downward relative to the bottom **12** of the supporting leg device **10**. Thus, when the supporting leg device **10** leaves from the ground, under the action of the third elastic member **610**, the driving member **600** moves downward relative to the bottom **12** of the supporting leg device **10**, so that the pushing member **200** also moves downward, and the ground contact end **201** thereof extends from the bottom **12** of the supporting leg device **10** once more. At the same time, the upper part **601** of the driving member **600** and the second end **302** of the traction member **300** also move downward, so that the traction member at the second end **302** may be retracted downward into the sleeve **310**. Accordingly, the traction member at the first end **301** may move upward and extend out of the sleeve **310**, so that under the action of the first elastic member **120**, the indicating member **100** pivots to the first position in the first direction.

[0094] The third elastic member **610** is made of an elastic material, and may include a spring, an elastic piece, or any elastic element capable of providing a driving force. Although FIGS. **11** to **14** show that the third elastic member **610** is a compression spring provided on the driving member **600**, but the present disclosure is not limited thereto. The third elastic member **610** may be provided at any suitable position of the driving member **600** or the pushing member **200** as long as the pushing member **200** is finally forced to move downward.

[0095] Furthermore, in the second and third embodiments of the present disclosure, since the lower end **312** of the sleeve **310** is positioned close to the bottom **12** of the supporting leg device **10**, when the upper end **311** of the sleeve **310** is fixed to the top **11** of the supporting leg device **10** or the components at this location, the supporting leg device **10** extends to the maximum and retracts to the minimum, a distance between the two ends of the sleeve **310** changes greatly. In order to ensure that the extension of the supporting leg device **10** is not limited by the length of the sleeve **310**, the length of the sleeve **310** is often set to be longer, so that when the supporting leg device **10** is retracted, the sleeve **310** is wound inside the supporting leg device **10**. In order to avoid affecting the expansion and contraction of the supporting leg device **10** due to that the sleeve **310** is wound together, two ways in the present disclosure are used to adjust the sleeve **310**.

[0096] The first manner is shown in FIGS. **7-9**, a remaining member **400** is provided at the upper

end **31** of the second tube **30**, and the sleeve **310** is wound to be a first loop **313** in a space under the remaining member **400** within the supporting leg device **10**. The lower part of the remaining member **400** extends from a sleeve remaining part **401**, and the first loop **313** is suspended on the sleeve remaining part **401**.

[0097] The second manner is shown in FIGS. **11**-**14**, the sleeve **310** includes a first section **310**A close to the upper end **311** and a second section **310**B close to the lower end **312**. The first section **310**A is a leather sleeve, and the second section **310**B is a spring sleeve, and the first section **310**A and the second section **310**B are connected at a node **310**C. In this way, due to the great rigidity of the leather sleeve, the first section **310**A is basically not wound. On the contrary, due to the great elasticity of the spring sleeve, winding is likely to occur at the second section **310**B, thereby effectively limiting the length of the sleeve that may be wound.

[0098] The second section **310**B of the sleeve **310** may be wound to be a second loop **314**. The second loop **314** is wound on a post member **700** within the supporting leg device **10**. The post member **700** may be formed on an inner wall of the supporting leg device **10**, or may be formed on other components within the supporting leg device **10** as shown in FIGS. **11** and **12**.

[0099] An advantageous effect of the present disclosure is that the indicator assembly of the supporting leg device for the safety seat according to the present disclosure allows the user to check whether the supporting leg device has touched the ground of the vehicle without leaning over, and thus ensure that the safety seat is firmly supported by the supporting leg device.

[0100] As the present features may be embodied in several forms without departing from the characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its scope as defined in the appended claims, and therefore all changes and modifications that fall within the metes and bounds of the claims, or equivalents of such metes and bounds are therefore intended to be embraced by the appended claims.

[0101] The example embodiments of the disclosure presented in this patent application are not to be interpreted to pose limitations to the applicability of the appended claims. The verb “to comprise” is used in this patent application as an open limitation that does not exclude the existence of also unrecited features. The features recited in depending claims are mutually freely combinable unless otherwise explicitly stated. The novel features which are considered as characteristic of the disclosure are set forth in particular in the appended claims.

Claims

1. A supporting leg device for a safety seat, comprising: an indicator window positioned at an upper part of the supporting leg device; an indicating member comprising a first area and a second area for displaying different states, which can move between a first position and a second position relative to the supporting leg device, wherein the first area is displayed at the indicator window when the indicating member is in the first position and the second area is displayed at the indicator window when the indicating member is in the second position; a first elastic member connected to the indicating member and biasing the indicating member toward the first position; a pushing member positioned inside the supporting leg device and movable up and down relative to a bottom of the supporting leg device, the pushing member comprising a ground contact end which can extend below the bottom of the supporting leg device; and a traction member having a first end and a second end, wherein the first end is connected to the pushing member and the second end is connected to the indicating member; wherein an upward movement of the ground contact end relative to the bottom of the supporting leg device causes the pushing member to pull the traction member, thereby making the indicating member move from the first position to the second position.

2. The supporting leg device for a safety seat according to claim 1, wherein the traction member is

a flexible member.

3. The supporting leg device for a safety seat according to claim 1, wherein the second end of the traction member is fixed at the upper part of the pushing member above the ground contact end, and when the ground contact end of the pushing member is pushed into the bottom of the supporting leg device by a ground, the pushing member moves upward relative to the bottom of the supporting leg device, so as to drive the second end of the traction member to move upward, thereby making the first end of the traction member move downward relative to the ground contact end and pull the indicating member to move from the first position to the second position.

4. The supporting leg device for a safety seat according to claim 1, wherein the pushing member is connected with a second elastic member, and the second elastic member forces the pushing member to move downward relative to the bottom of the supporting leg device.

5. The supporting leg device for a safety seat according to claim 1, wherein the traction member can move through a hollow sleeve, the sleeve has an upper end configured to be immobile relative to a top of the supporting leg device, and a lower end configured to be immobile relative to the bottom of the supporting leg device.

6. The supporting leg device for a safety seat according to claim 5, wherein the supporting leg device comprises: a first tube, the indicator window being positioned at the upper end of the first tube; and a second tube slidably disposed inside the first tube, so that the supporting leg device can be expanded and contracted; wherein the lower end of the sleeve is connected with the second tube, so that the lower end of the sleeve and the second tube can move up and down relative to the first tube.

7. The supporting leg device for a safety seat according to claim 6, wherein the lower end of the sleeve is positioned at a bottom or an upper end of the second tube.

8. The supporting leg device for a safety seat according to claim 6, wherein the second tube is provided with a remaining member, the lower end of the sleeve is fixed to the remaining member, and the second end of the traction member is fixed to the upper part of the pushing member extending above the remaining member.

9. The supporting leg device for a safety seat according to claim 8, wherein the remaining member is provided at the upper end of the second tube.

10. The supporting leg device for a safety seat according to claim 8, wherein the sleeve is wound into at least one loop below the remaining member.

11. The supporting leg device for a safety seat according to claim 10, wherein the second tube has a sleeve remaining part inside, and the at least one loop is fixed to the sleeve remaining part.

12. The supporting leg device for a safety seat according to claim 6, wherein the sleeve comprises a first section and a second section, wherein the first section is a rigid sleeve and the second section is an elastic spring sleeve, and the first section and the second section are both positioned inside the first tube and connected at a node.

13. The supporting leg device for a safety seat according to claim 1, wherein the second end of the traction member is connected to a driving member arranged on the pushing member, and the driving member is connected to a third elastic member, and the third elastic member forces the driving member to move downward relative to the bottom of the supporting leg device.

14. The supporting leg device for a safety seat according to claim 1, wherein the traction member is wound into at least one loop inside the supporting leg device, and a length of the traction member is greater than that of the supporting leg device.

15. The supporting leg device for a safety seat according to claim 14, wherein the supporting leg device has a remaining member inside, and the at least one loop is fixed to the remaining member.

16. The supporting leg device for a safety seat according to claim 2, wherein the supporting leg device comprises: a first tube, the indicator window being positioned at an upper end of the first tube; and a second tube slidably disposed inside the first tube, so that the supporting leg device can be expanded and contracted; wherein the pushing member is positioned at a bottom of the second

tube, and the ground contact end can extend below the bottom of the second tube, and the second tube has a remaining member inside, and the traction member is fixed to the remaining member.

17. The supporting leg device for a safety seat according to claim 2, wherein when the ground contact end moves upward relative to the bottom of the supporting leg device, and wherein moving directions of the first end and the second end are different.

18. A supporting leg device for a safety seat, comprising: a first tube; a second tube slidably disposed inside the first tube, so that the supporting leg device can be expanded and contracted; an indicating member positioned on the first tube and comprising a first area and a second area for displaying different states, which can move between a first position and a second position relative to the supporting leg device, wherein the indicating member displays the first area when the indicating member is in the first position and the second area when the indicating member is in the second position; a pushing member positioned inside the second tube and movable up and down relative to the second tube, the pushing member comprising a ground contact end which can extend and retract below a bottom of the second tube; a traction member, which is a flexible member and has a first end and a second end, wherein the first end is connected with the pushing member and the second end is connected with the indicating member; and a sleeve, which is a hollow tube and is wrapped outside the traction member for guiding a movement of the traction member, wherein the traction member is movably in the sleeve, the sleeve has an upper end configured to be immobile relative to a top of the first tube, and a lower end configured to be immobile relative to the bottom of the second tube, and the sleeve forms a winding structure inside the supporting leg device, wherein when the ground contact end touches a ground and moves upward relative to the bottom of the second tube, the pushing member pulls the first end of the traction member upward to drive the second end to pull the indicating member to move from the first position to the second position.

19. The supporting leg device for a safety seat according to claim 18, wherein, the second tube has a sleeve remaining part, and the winding structure is fixed to the sleeve remaining part.

20. A safety seat comprising a supporting leg device, the supporting leg device comprising: an indicator window positioned at an upper part of the supporting leg device; an indicating member comprising a first area and a second area for displaying different states, which can move between a first position and a second position relative to the supporting leg device, wherein the first area is displayed at the indicator window when the indicating member is in the first position and the second area is displayed at the indicator window when the indicating member is in the second position; a first elastic member connected to the indicating member and biasing the indicating member toward the first position; a pushing member positioned inside the supporting leg device and movable up and down relative to a bottom of the supporting leg device, the pushing member comprising a ground contact end which can extend below the bottom of the supporting leg device; and a traction member having a first end and a second end, wherein the first end is connected to the pushing member and the second end is connected to the indicating member; wherein an upward movement of the ground contact end relative to the bottom of the supporting leg device causes the pushing member to pull the traction member, thereby making the indicating member move from the first position to the second position.