

REPLACED SHEETS		SG
☒	Description : paged1..... to paged9.....	
☒	Claim(s) : paged10..... to paged11.....	
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TITLE OF THE INVENTION

Child Safety Seat for Automobile ✓

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention relates to a child safety seat for an automobile which is mounted on an original seat of an automobile for safely seating a child in the automobile, and more particularly, it relates to an improvement of a belt which is provided on such a child
10 safety seat for an automobile for holding the body of the child.

Description of the Background Art

 In general, a child safety seat for an automobile comprises a crotch belt which is located between the
15 thighs of a seated child to upwardly extend from a seat surface, and shoulder belts which extend from a backrest portion to be passed along the shoulders of the child. A buckle is mounted on an end of the crotch belt so that the shoulder belts are detachably coupled to the buckle. The
20 safety seat may also comprise hip belts which are passed along the hips of the child, to be also detachably coupled to the buckle. The hip belts may be integrally formed with the shoulder belts.

 The aforementioned shoulder belts and the like are
25 coupled to the buckle after the child is seated on the



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child safety seat for an automobile. The shoulder belts and the like are detached from the buckle when the child is helped out from the seat.

Before the child is seated on the aforementioned
5 child safety seat for an automobile, the crotch belt is in an arbitrary state on the seat surface, for example. In other words, the crotch belt may be bent in any form, or twisted. Therefore, the buckle which is mounted on the end of the crotch belt is in any position and any state on
10 the seat surface, for example, while arbitrarily directing its front and back sides.

When the child is seated in this state, the crotch belt and the buckle may be located under the buttocks of the child, to feel uncomfortable. In order to avoid this,
15 the user must separate the crotch belt and the buckle from the seat surface before seating the child, so that the same are not located under its buttocks. If the crotch belt and the buckle are undesirably located under the buttocks of the child, the user must draw out the buckle
20 from under its buttocks with the crotch belt. Such operations are relatively troublesome.

Further, the user must confirm the front and back sides of the buckle in front of the body of the child, to couple the shoulder belts and the like to the same.

25 However, the crotch belt which is provided with the buckle



is so easily twisted to reverse the buckle that the user simply holding the buckle may have to turn over the same for coupling the shoulder belts thereto. In this case, the user must turn over the buckle in a direction for
5 returning the crotch belt as twisted to its original state. This also complicates the operation for coupling the shoulder belts to the buckle.

Even if the buckle is in a correct direction, the user may inadvertently couple the shoulder belts to the
10 buckle in a twisted state of the crotch belt. In this case, the crotch belt feels uncomfortable between the thighs of the seated child. In addition, the crotch belt may injure the body of the child when an impact is applied to the automobile by abrupt braking or the like.

15 While the crotch belt is adapted to hold the body of the child with the shoulder belts when an impact is applied to the automobile by abrupt braking or the like to fling out the child from the safety seat, it is preferable to relieve the body of the child from nipping by the
20 crotch belt at this time.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a child safety seat for an automobile, which can solve the aforementioned problems and satisfy the
25 aforementioned requirement.



The present invention is directed to a child safety seat for an automobile comprising a crotch belt which is located between the thighs of a seated child to upwardly extend from a seat surface, a buckle which is mounted on an end of the crotch belt, and a shoulder belt which is passed along the shoulder of the child to be detachably coupled to the buckle. In order to solve the aforementioned technical problems, a cushion member is provided along back surfaces of the crotch belt and the buckle, with toughness for making the crotch belt self-sustainable.

In the child safety seat for an automobile according to the present invention, the cushion member is provided along the back surfaces of the crotch belt and the buckle, whereby the crotch belt is maintained in a self-sustaining state independently of the seat surface, while the buckle is maintained in a correct position and a correct condition by the cushion member.

According to the present invention, therefore, it is possible to avoid the aforementioned complicated operations of separating the crotch belt and the buckle from the seat surface before seating the child, drawing out the crotch belt and the buckle from under the buttocks of the child and correctly directing the buckle in an untwisted state of the crotch belt. When the child is



simply seated on the inventive child safety seat for an automobile, the crotch belt is naturally located between its thighs to position the buckle in front of the child in a proper condition. Even if the body of the child as
5 seated hits the buckle or the crotch belt, deformation caused in the cushion member reduces an impact which may be applied to the child. Even if the cushion member is temporarily deformed, the same returns to the original state on the basis of its elasticity when the child is
10 seated on a prescribed position, to restore the crotch belt, and the buckle to proper positions.

As hereinabove described, the buckle is maintained in a proper position and a proper condition after the child is seated, whereby the shoulder belt can be easily coupled
15 to the buckle.

Further, the cushion member is positioned along the back surfaces of the crotch belt and the buckle. When an impact is applied to the automobile by abrupt braking or the like such that the crotch belt and the buckle may nip
20 the body of the child, it is possible to sufficiently relax this impact by the cushion member.

The foregoing and other objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description of the
25 present invention when taken in conjunction with the



accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a sectional view showing a buckle assembly 8 provided in a child safety seat for an automobile according to an embodiment of the present invention;

Fig. 2 is a rear elevational view showing a cover 13 for the buckle assembly 8 shown in Fig. 1;

Fig. 3 is a perspective view showing a child safety seat 1 for an automobile comprising the buckle assembly 8 shown in Fig. 1; and

Fig. 4 is a perspective view showing a child seated on the child safety seat 1 for an automobile shown in Fig. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figs. 3 and 4 are perspective views showing a child safety seat 1 for an automobile according to an embodiment of the present invention. Fig. 3 independently shows the safety seat 1, and Fig. 4 shows a child seated on this safety seat 1.

The safety seat 1 comprises a seat portion 2 and a backrest portion 3. Shoulder belts 4 are drawn out from the backrest portion 3 to be passed along the shoulders of the child. According to this embodiment, hip belts 5 are provided by the same belts as the shoulder belts 4. The belts providing the shoulder and hip belts 4 and 5 are



inserted in tongue plates 6. A buckle assembly 8 is provided to upwardly project from a seat surface 7 which is formed on an upper surface of the seat portion 2. Fig. 1 is a sectional view showing this buckle assembly 8.

5 As shown in Fig. 1, the buckle assembly 8 comprises a crotch belt 9 which upwardly extends from the seat surface 7 shown by a phantom line. A lower end of this crotch belt 9 is fixed to the seat portion 2 by an anchor plate 10. A buckle 11 is mounted on an upper end of the crotch
10 belt 9. As shown in Fig. 4, the aforementioned tongue plates 6 are detachably coupled to this buckle 11, thereby detachably coupling the shoulder and hip belts 4 and 5 to the buckle 11.

 A cushion member 12 is provided along back surfaces
15 of the crotch belt 9 and the buckle 11. The cushion member 12 is made of foam resin, for example, with toughness for making the crotch belt 12 self-sustainable. The buckle assembly 8 is covered with a flexible cover 13. This cover 13 exposes only a principal part of the buckle
20 11, to enable attachment/detachment of the tongue plates 6 to/from the buckle 11.

 Fig. 2 is a rear elevational view showing the cover 13. The cover 13 comprises a bag portion 14 covering an upper portion of the cushion member 12 and a base portion
25 of the buckle 11. Ends of a portion downwardly extending



from the bag portion 14 are overlapped with each other on a back side of the cushion member 12, and the overlapped portions 15 are connected with each other by a velvet fastener, for example. Thus, the cover 13 can be easily removed to be washed when the same is soiled, for example.

Due to presence of the cushion member 12, the crotch belt 9 is brought into a self-sustaining state, whereby the overall buckle assembly 8 enters a self-sustaining state. When the child is seated on this safety seat 1, therefore, the buckle 11 is maintained in front of its body in a correct condition. Thus, it is possible to easily attach/detach the tongue plates 6 to/from the buckle 11. Further, the cushion member 12 relieves the body of the child from nipping which may be caused when an impact is applied to the automobile.

While the present invention has been described with reference to the embodiment shown in the drawings, some modifications are also available within the scope of the present invention.

While the safety seat 1 according to the aforementioned embodiment comprises the hip belts 5, for example, the present invention is also applicable to a safety seat having no such hip belts. Alternatively, the hip belts may be provided by belts which are independent of the shoulder belts.



In the buckle assembly 8, on the other hand, the cover 13 may be omitted so that the cushion member 12 is directly joined to the back surfaces of the crotch belt 9 and the buckle 11.

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WHAT IS CLAIMED IS:

1. A child safety seat for an automobile,
comprising:

a seat portion (2) providing a seat surface (7) to be
in contact with the buttocks of a seated child;

5 a backrest portion (3) for supporting the back of
said child;

a crotch belt (9) being located between the thighs of
said child to upwardly extend from said seat surface (7);

a buckle (11) being mounted on an end of said crotch
10 belt (9);

a shoulder belt (4) being drawn out from said
backrest portion (3) and passed along the shoulder of said
child to be detachably coupled to said buckle (11); and

a cushion member (12) being provided along back
15 surfaces of said crotch belt (9) and said buckle (11) with
toughness for making said crotch belt (9) self-
sustainable.

2. A child safety seat for an automobile in
accordance with claim 1, wherein said cushion member (12)
comprises foam resin.

3. A child safety seat for an automobile in





accordance with claim 1, further comprising a flexible cover (13) for covering said crotch belt (9) and said cushion member (12) while exposing at least a part of said buckle (11).

5 4. A child safety seat for an automobile in accordance with claim 3, wherein said cover (13) is attachable to/detachable from said crotch belt (9) and said cushion member (12).

10 5. A child's safety seat for an automobile or the like comprising a seat portion (2) and flexible, self-supporting crotch belt (9) extending from the seat portion (2) for location between the thighs of a child seated on said seat portion and provided with a coupler for coupling with couplers
15 provided on shoulder and/or hip belts (4, 5) provided on or used with said seat.



ABSTRACT OF THE DISCLOSURE

A cushion member (12) is provided along back surfaces of a crotch belt (9) upwardly extending from a seat surface (7) and a buckle (11) mounted on its end. Due to
5 toughness of the cushion member (12), the crotch belt (9) is made self-sustainable. Thus, a shoulder belt (4) can be easily attached to/detached from the buckle (11), to feel comfortable to a child.

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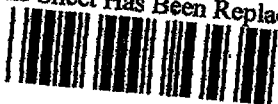
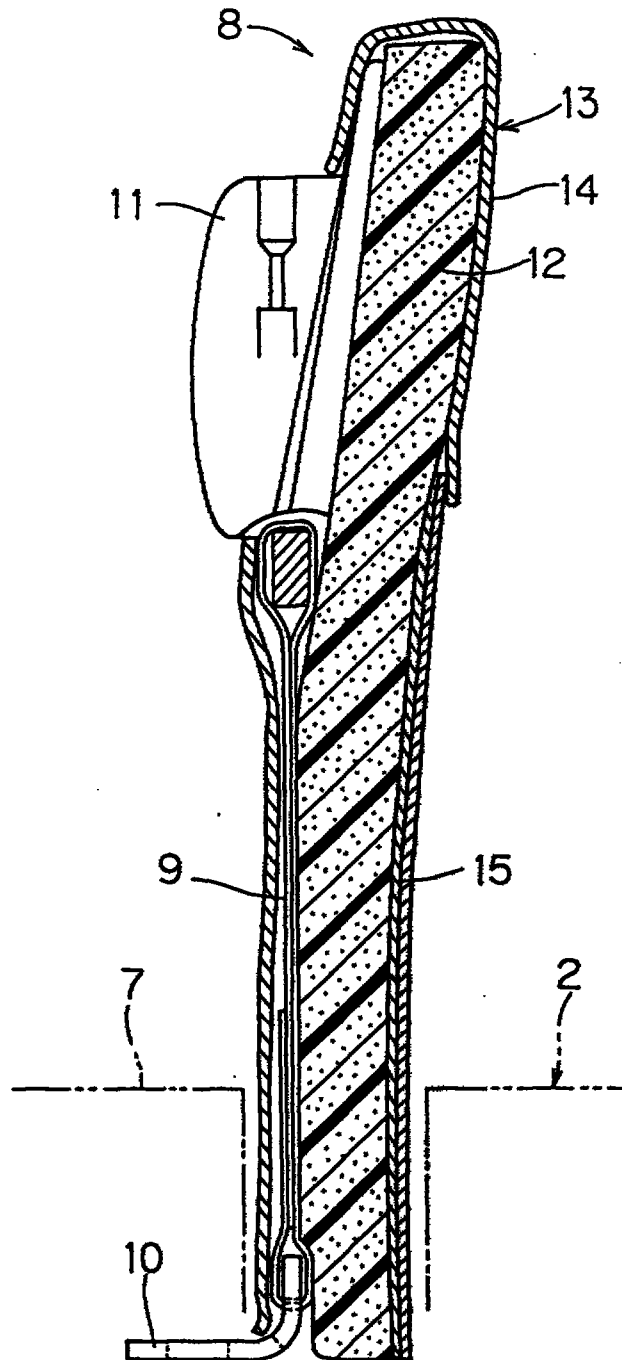


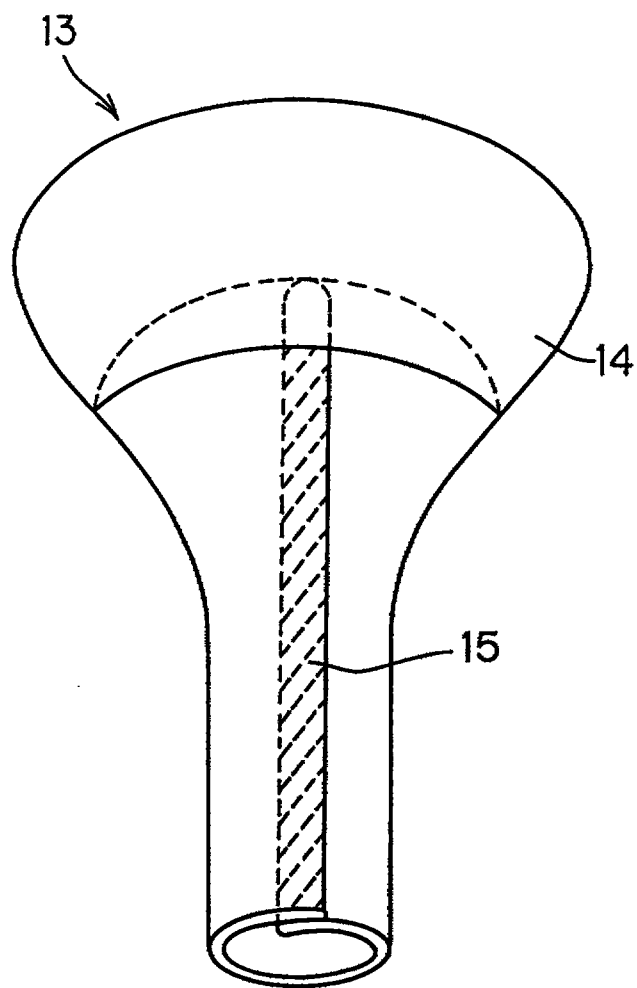
FIG. 1



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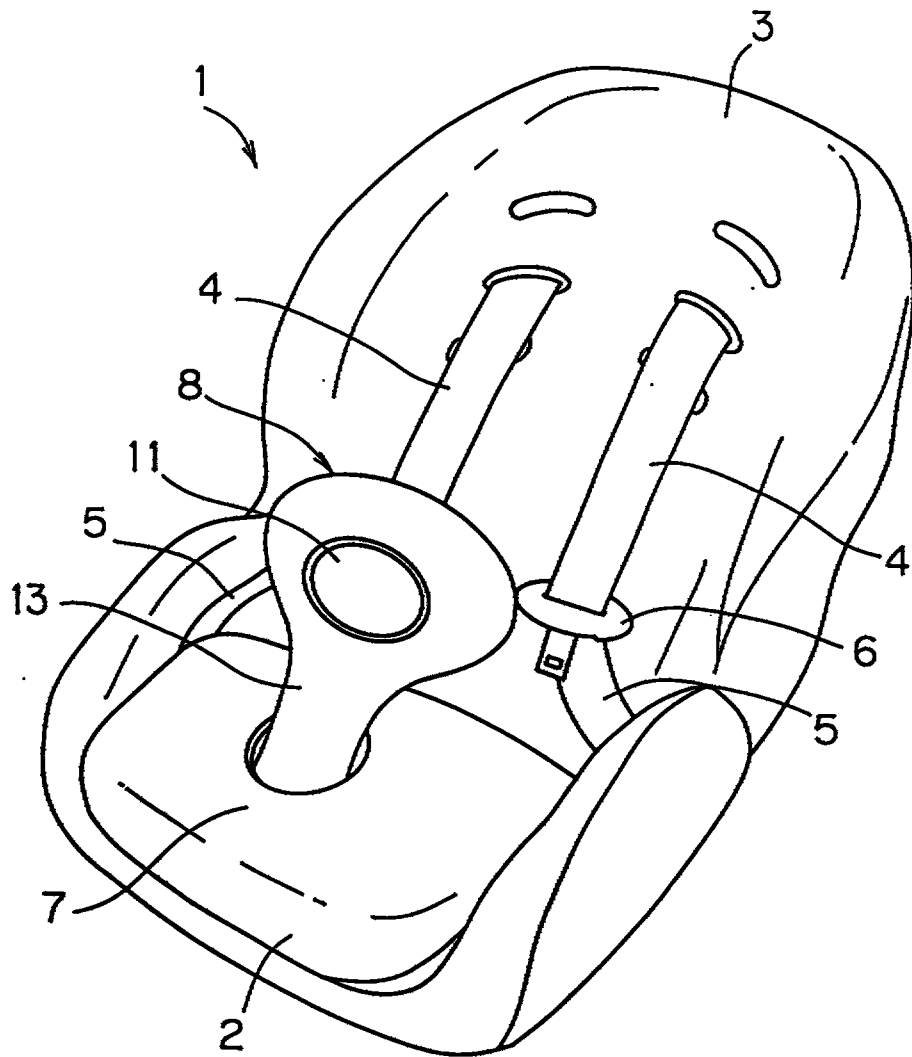
FIG. 2



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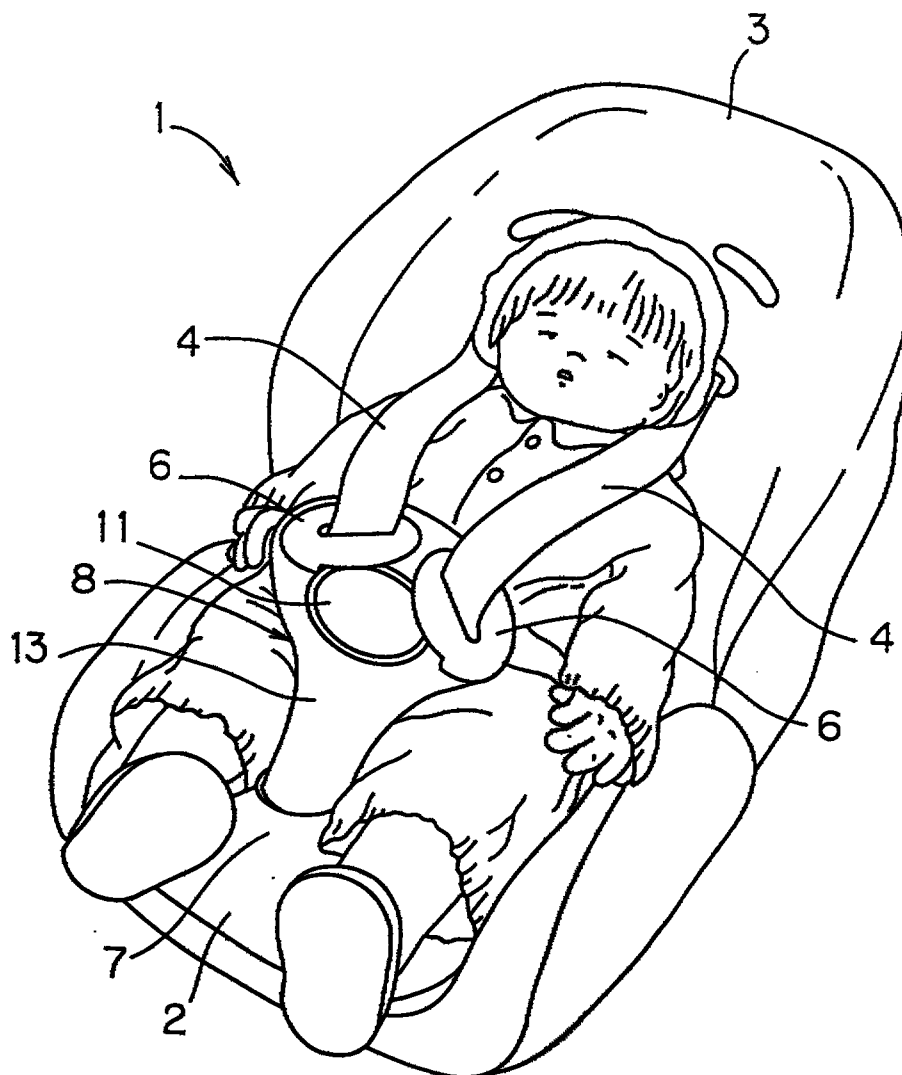
FIG. 3



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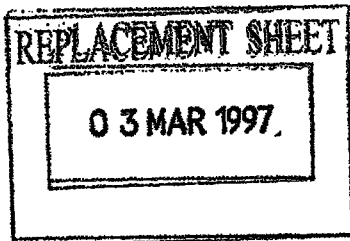


FIG. 4



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REPLACED SHEETS		SG
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☒	Drawing(s) : paged to paged	4
☒	Abstract : paged to paged	12
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TITLE OF THE INVENTION

Child Safety Seat for Automobile

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a child safety seat for an automobile which is mounted on an original seat of an automobile for safely seating a child in the automobile, and more particularly, it relates to an improvement of a belt which is provided on such a child safety seat for an automobile for holding the body of the child.

Description of the Background Art

In general, a child safety seat for an automobile comprises a crotch belt which is located between the thighs of a seated child to upwardly extend from a seat surface, and shoulder belts which extend from a backrest portion to be passed along the shoulders of the child. A buckle is mounted on an end of the crotch belt so that the shoulder belts are detachably coupled to the buckle. The safety seat may also comprise hip belts which are passed along the hips of the child, to be also detachably coupled to the buckle. The hip belts may be integrally formed with the shoulder belts.

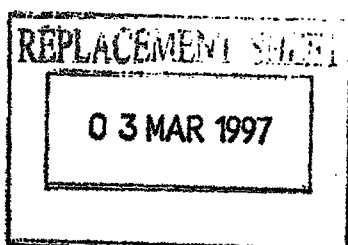
The aforementioned shoulder belts and the like are coupled to the buckle after the child is seated on the

REPLACEMENT SHEETS		SG
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child safety seat for an automobile. The shoulder belts and the like are detached from the buckle when the child is helped out from the seat.

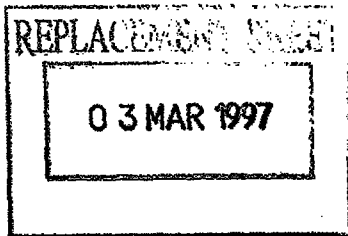
Before the child is seated on the aforementioned child safety seat for an automobile, the crotch belt is in an arbitrary state on the seat surface, for example. In other words, the crotch belt may be bent in any form, or twisted. Therefore, the buckle which is mounted on the end of the crotch belt is in any position and any state on the seat surface, for example, while arbitrarily directing its front and back sides.

When the child is seated in this state, the crotch belt and the buckle may be located under the buttocks of the child, to feel uncomfortable. In order to avoid this, the user must separate the crotch belt and the buckle from the seat surface before seating the child, so that the same are not located under its buttocks. If the crotch belt and the buckle are undesirably located under the buttocks of the child, the user must draw out the buckle from under its buttocks with the crotch belt. Such operations are relatively troublesome.

Further, the user must confirm the front and back sides of the buckle in front of the body of the child, to couple the shoulder belts and the like to the same. However, the crotch belt which is provided with the buckle

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is so easily twisted to reverse the buckle that the user simply holding the buckle may have to turn over the same for coupling the shoulder belts thereto. In this case, the user must turn over the buckle in a direction for returning the crotch belt as twisted to its original state. This also complicates the operation for coupling the shoulder belts to the buckle.

Even if the buckle is in a correct direction, the user may inadvertently couple the shoulder belts to the buckle in a twisted state of the crotch belt. In this case, the crotch belt feels uncomfortable between the thighs of the seated child. In addition, the crotch belt may injure the body of the child when an impact is applied to the automobile by abrupt braking or the like.

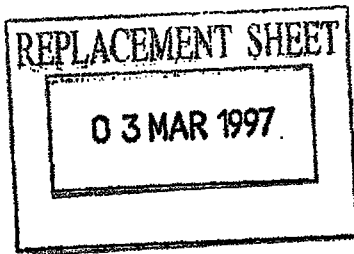
While the crotch belt is adapted to hold the body of the child with the shoulder belts when an impact is applied to the automobile by abrupt braking or the like to fling out the child from the safety seat, it is preferable to relieve the body of the child from nipping by the crotch belt at this time.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a child safety seat for an automobile, which can solve the aforementioned problems and satisfy the aforementioned requirement.

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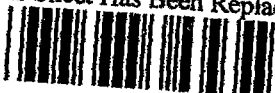
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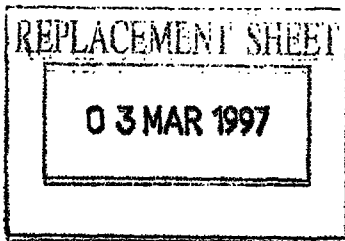
The present invention is directed to a child safety seat for an automobile comprising a crotch belt which is located between the thighs of a seated child to upwardly extend from a seat surface, a buckle which is mounted on an end of the crotch belt, and a shoulder belt which is passed along the shoulder of the child to be detachably coupled to the buckle. In order to solve the aforementioned technical problems, a cushion member is provided along back surfaces of the crotch belt and the buckle, with toughness for making the crotch belt self-sustainable.

In the child safety seat for an automobile according to the present invention, the cushion member is provided along the back surfaces of the crotch belt and the buckle, whereby the crotch belt is maintained in a self-sustaining state independently of the seat surface, while the buckle is maintained in a correct position and a correct condition by the cushion member.

According to the present invention, therefore, it is possible to avoid the aforementioned complicated operations of separating the crotch belt and the buckle from the seat surface before seating the child, drawing out the crotch belt and the buckle from under the buttocks of the child and correctly directing the buckle in an untwisted state of the crotch belt. When the child is

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simply seated on the inventive child safety seat for an automobile, the crotch belt is naturally located between its thighs to position the buckle in front of the child in a proper condition. Even if the body of the child as seated hits the buckle or the crotch belt, deformation caused in the cushion member reduces an impact which may be applied to the child. Even if the cushion member is temporarily deformed, the same returns to the original state on the basis of its elasticity when the child is seated on a prescribed position, to restore the crotch belt and the buckle to proper positions.

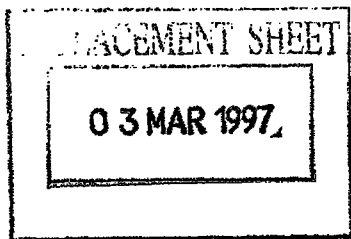
As hereinabove described, the buckle is maintained in a proper position and a proper condition after the child is seated, whereby the shoulder belt can be easily coupled to the buckle.

Further, the cushion member is positioned along the back surfaces of the crotch belt and the buckle. When an impact is applied to the automobile by abrupt braking or the like such that the crotch belt and the buckle may nip the body of the child, it is possible to sufficiently relax this impact by the cushion member.

The foregoing and other objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description of the present invention when taken in conjunction with the

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accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a sectional view showing a buckle assembly 8 provided in a child safety seat for an automobile according to an embodiment of the present invention;

Fig. 2 is a rear elevational view showing a cover 13 for the buckle assembly 8 shown in Fig. 1;

Fig. 3 is a perspective view showing a child safety seat 1 for an automobile comprising the buckle assembly 8 shown in Fig. 1; and

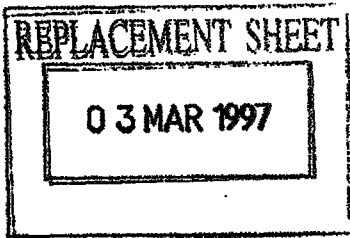
Fig. 4 is a perspective view showing a child seated on the child safety seat 1 for an automobile shown in Fig. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figs. 3 and 4 are perspective views showing a child safety seat 1 for an automobile according to an embodiment of the present invention. Fig. 3 independently shows the safety seat 1, and Fig. 4 shows a child seated on this safety seat 1.

The safety seat 1 comprises a seat portion 2 and a backrest portion 3. Shoulder belts 4 are drawn out from the backrest portion 3 to be passed along the shoulders of the child. According to this embodiment, hip belts 5 are provided by the same belts as the shoulder belts 4. The belts providing the shoulder and hip belts 4 and 5 are





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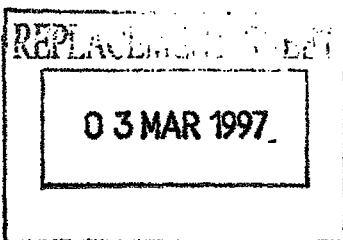
inserted in tongue plates 6. A buckle assembly 8 is provided to upwardly project from a seat surface 7 which is formed on an upper surface of the seat portion 2. Fig. 1 is a sectional view showing this buckle assembly 8.

As shown in Fig. 1, the buckle assembly 8 comprises a crotch belt 9 which upwardly extends from the seat surface 7 shown by a phantom line. A lower end of this crotch belt 9 is fixed to the seat portion 2 by an anchor plate 10. A buckle 11 is mounted on an upper end of the crotch belt 9. As shown in Fig. 4, the aforementioned tongue plates 6 are detachably coupled to this buckle 11, thereby detachably coupling the shoulder and hip belts 4 and 5 to the buckle 11.

A cushion member 12 is provided along back surfaces of the crotch belt 9 and the buckle 11. The cushion member 12 is made of foam resin, for example, with toughness for making the crotch belt 12 self-sustainable. The buckle assembly 8 is covered with a flexible cover 13. This cover 13 exposes only a principal part of the buckle 11, to enable attachment/detachment of the tongue plates 6 to/from the buckle 11.

Fig. 2 is a rear elevational view showing the cover 13. The cover 13 comprises a bag portion 14 covering an upper portion of the cushion member 12 and a base portion of the buckle 11. Ends of a portion downwardly extending





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from the bag portion 14 are overlapped with each other on a back side of the cushion member 12, and the overlapped portions 15 are connected with each other by a velvet fastener, for example. Thus, the cover 13 can be easily removed to be washed when the same is soiled, for example.

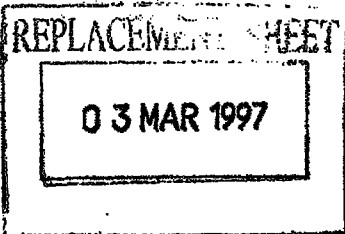
Due to presence of the cushion member 12, the crotch belt 9 is brought into a self-sustaining state, whereby the overall buckle assembly 8 enters a self-sustaining state. When the child is seated on this safety seat 1, therefore, the buckle 11 is maintained in front of its body in a correct condition. Thus, it is possible to easily attach/detach the tongue plates 6 to/from the buckle 11. Further, the cushion member 12 relieves the body of the child from nipping which may be caused when an impact is applied to the automobile.

While the present invention has been described with reference to the embodiment shown in the drawings, some modifications are also available within the scope of the present invention.

While the safety seat 1 according to the aforementioned embodiment comprises the hip belts 5, for example, the present invention is also applicable to a safety seat having no such hip belts. Alternatively, the hip belts may be provided by belts which are independent of the shoulder belts.

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In the buckle assembly 8, on the other hand, the cover 13 may be omitted so that the cushion member 12 is directly joined to the back surfaces of the crotch belt 9 and the buckle 11.

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WHAT IS CLAIMED IS:

1. A child safety seat for an automobile, comprising:
 - a seat portion (2) providing a seat surface (7) to be in contact with the buttocks of a seated child;
 - a backrest portion (3) for supporting the back of said child;
 - a crotch belt (9) being located between the thighs of said child to upwardly extend from said seat surface (7);
 - a buckle (11) being mounted on an end of said crotch belt (9);
 - a shoulder belt (4) being drawn out from said backrest portion (3) and passed along the shoulder of said child to be detachably coupled to said buckle (11); and
 - a cushion member (12) being provided along back surfaces of said crotch belt (9) and said buckle (11) with toughness for making said crotch belt (9) self-sustainable.
2. A child safety seat for an automobile in accordance with claim 1, wherein said cushion member (12) comprises foam resin.
3. A child safety seat for an automobile in

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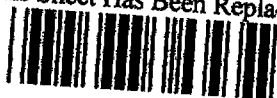
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accordance with claim 1, further comprising a flexible cover (13) for covering said crotch belt (9) and said cushion member (12) while exposing at least a part of said buckle (11).

4. A child safety seat for an automobile in accordance with claim 3, wherein said cover (13) is attachable to/detachable from said crotch belt (9) and said cushion member (12).

5. A child's safety seat for an automobile or the like comprising a seat portion (2) and flexible, self-supporting crotch belt (9) extending from the seat portion (2) for location between the thighs of a child seated on said seat portion and provided with a coupler for coupling with couplers provided on shoulder and/or hip belts (4, 5) provided on or used with said seat.

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CHILD SAFETY SEAT FOR AUTOMOBILE

ABSTRACT OF THE DISCLOSURE

A cushion member (12) is provided along back surfaces of a crotch belt (9) upwardly extending from a seat surface (7) and a buckle (11) mounted on its end. Due to toughness of the cushion member (12), the crotch belt (9) is made self-sustainable. Thus, a shoulder belt (4) can be easily attached to/detached from the buckle (11), to feel comfortable to a child.

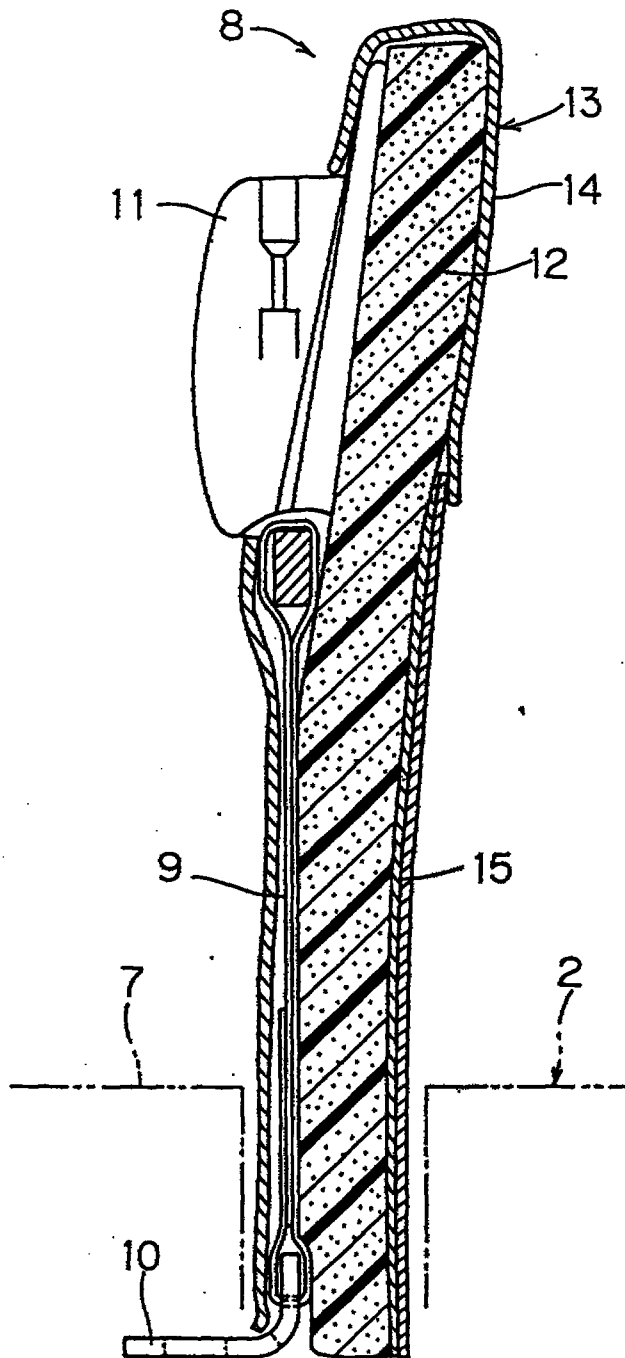
FIGURE 1.

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FIG. 1

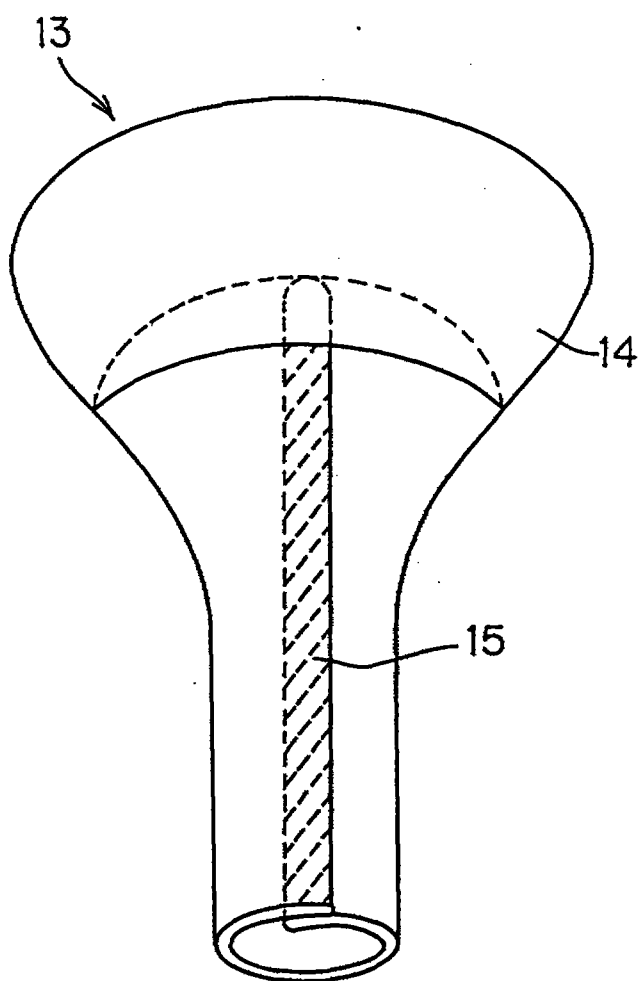


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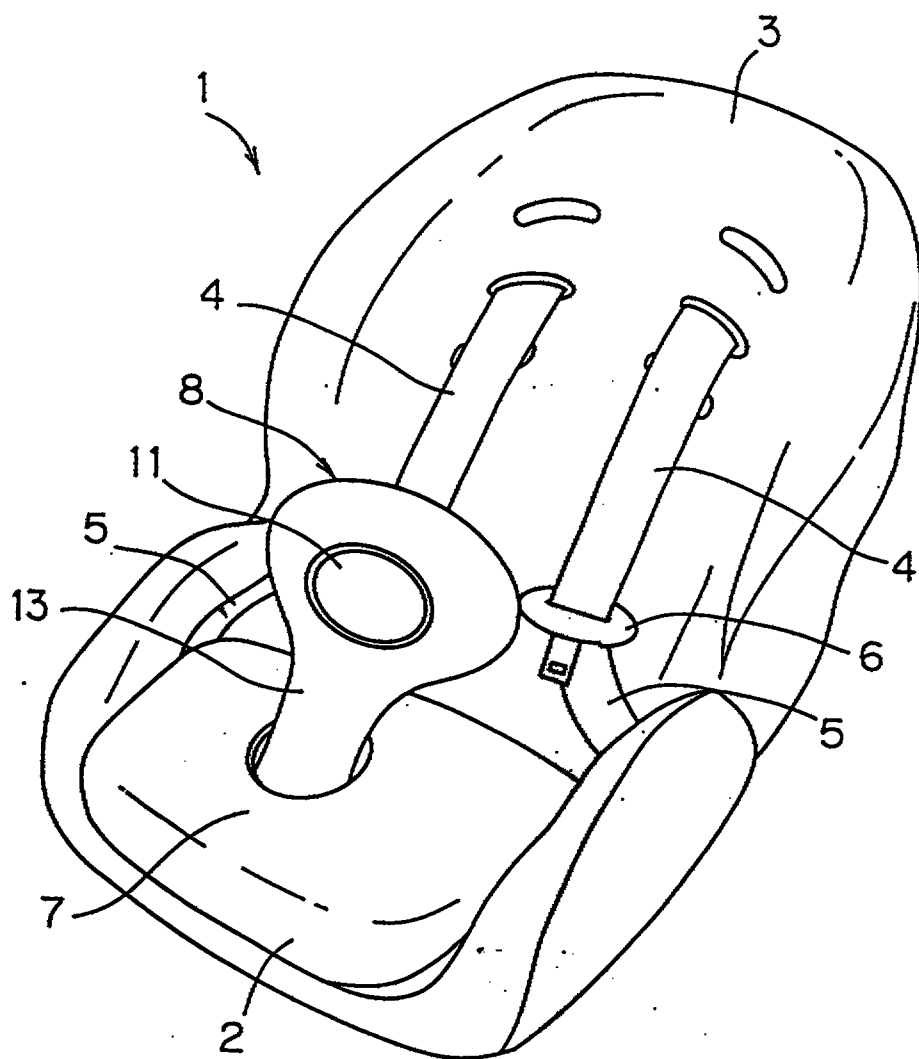
FIG. 2



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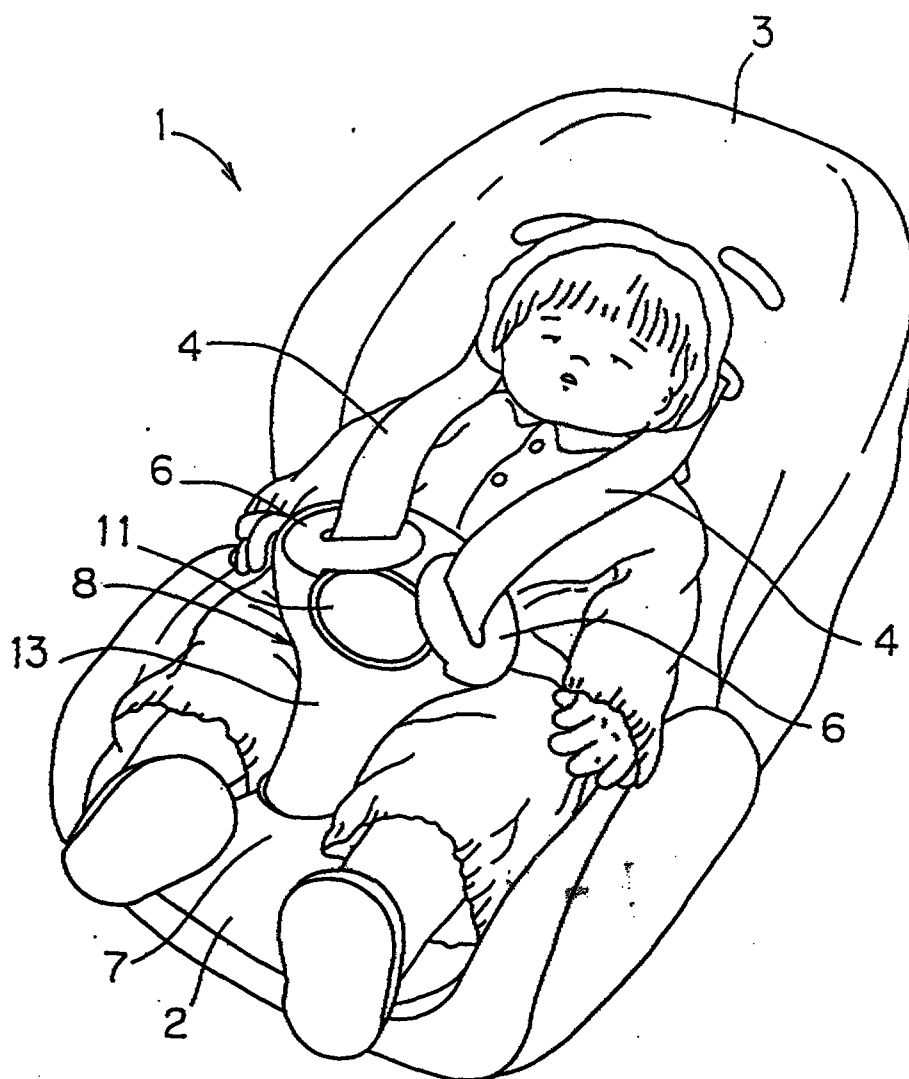
FIG. 3



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FIG. 4



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REPLACEMENT SHEET

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The present invention relates to a child safety seat for an automobile.

In general, a child safety seat for an automobile comprises a crotch belt which is locatable between the thighs of a child seated in the seat to upwardly extend from a surface of the seat, and shoulder belts which extend from a backrest portion and are passable along the child's shoulders. A buckle is mounted on an end of the crotch belt so that the shoulder belts may be detachably coupled to the buckle. The safety seat may also comprise hip belts which are passed along the child's hips, to be also detachably coupled to the buckle. The hip belts may be integrally formed with the shoulder belts.

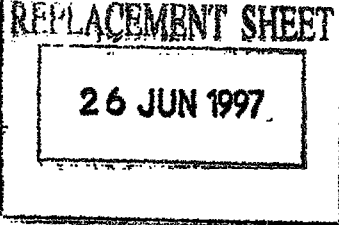
The aforementioned shoulder belts and the like are coupled to the buckle after the child is seated on the

REPLACED SHEETS		SG
☒	Description : paged 1 to paged 10	
☒	Claim(s) : paged 11 to paged 12	
☒	Drawing(s) : paged 1 to paged 4	
☐	Abstract : paged to paged	
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REPLACEMENT SHEETS		SG
☒	Description : paged 1 to paged 10	
☒	Claim(s) : paged 11 to paged 12	
☒	Drawing(s) : paged 1 to paged 4	
☐	Abstract : paged to paged	
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child safety seat for an automobile. The shoulder belts and the like are detached from the buckle when the child is helped out from the seat.

Before the child is seated on the aforementioned child safety seat for an automobile, the crotch belt is in an arbitrary state on the seat surface, for example. In other words, the crotch belt may be bent in any form, or twisted. Therefore, the buckle which is mounted on the end of the crotch belt is in any position and any state on the seat surface, for example, while arbitrarily directing its front and back sides.

When the child is seated in this state, the crotch belt and the buckle may be located under the buttocks of the child, ^{causing discomfort} ~~to feel uncomfortable~~. In order to avoid this, the user must separate the crotch belt and the buckle from the seat surface before seating the child, so that the same are not located under its buttocks. If the crotch belt and the buckle are undesirably located under the buttocks of the child, the user must draw out the buckle from under its buttocks with the crotch belt. Such operations are relatively troublesome.

Further, the user must confirm the front and back sides of the buckle ^{are} ~~in~~ front of the body of the child, to couple the shoulder belts and the like to the same. However, the crotch belt which is provided with the buckle

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is so easily twisted to reverse the buckle that the user simply holding the buckle may have to turn over the same for coupling the shoulder belts thereto. In this case, the user must turn over the buckle in a direction for returning the crotch belt as twisted to its original state. This also complicates the operation for coupling the shoulder belts to the buckle.

Even if the buckle is ^{facing} in a correct direction, the user may inadvertently couple the shoulder belts to the buckle in a twisted state of the crotch belt. In this case, the crotch belt ^{causes discomfort} ~~feels uncomfortable~~ between the thighs of the seated child. In addition, the crotch belt may injure the body of the child when an impact is applied to the automobile by abrupt braking or the like.

While the crotch belt is adapted to hold the body of the child with the shoulder belts when an impact is applied to the automobile by abrupt braking or the like ^{tending} ~~to~~ fling out the child from the safety seat, it is preferable to relieve the body of the child from nipping by the crotch belt at this time.

~~SUMMARY OF THE INVENTION~~

~~Accordingly, an object of the present invention is to provide a child safety seat for an automobile, which can solve the aforementioned problems and satisfy the aforementioned requirement.~~



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US-A-4880277 discloses a child safety seat for an automobile comprising: a seat portion providing a seat surface for contact with the buttocks of a child seated on the seat; a backrest portion for supporting the back of the child; a belt-stop mechanism comprising a cushioned pad and a shaft attached to a central portion of the front surface of the seat floor so as to be capable of being erected for locating between the thighs of the child and prostrated, the belt-stop mechanism having belt-stop grooves; and shoulder belts extendable from the backrest portion and passable along the child's shoulders to be detachably coupled to the belt-stop mechanism.

An object of the invention is to overcome or lessen the effects of at least one of the aforementioned problems.

Accordingly, the invention provides a child safety seat for an automobile, comprising:

- a seat portion providing a seat surface for contact with the buttocks of a child seated on said seat;

- a backrest portion for supporting the back of said child;

- a crotch belt locatable between the thighs of

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said child;

a buckle mounted on an end of said crotch belt;
shoulder belts extendable from said backrest
portion and passable along said child's shoulders to
be detachably coupled to said buckle;

a cushion member self supportingly upwardly
standing from said seat surface along respective back
surfaces of said crotch belt and said buckle; and

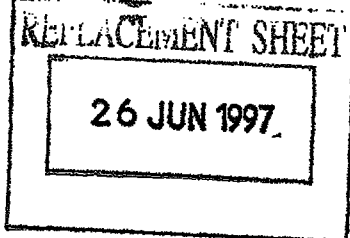
a flexible cover attached to and covering said
crotch belt and said cushion member while exposing at
least a part of said buckle such that said crotch belt
and said buckle are held along said cushion member
with said crotch belt upwardly extending from said
seat surface.

The cushion member may comprise foam resin.

The cover may be detachable from said crotch belt and
said cushion member.

In order that the invention may be well understood, an
embodiment thereof, which is given by way of example
only, will now be described with reference to the





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accompanying drawings, in which:

~~BRIEF DESCRIPTION OF THE DRAWINGS~~

Fig. 1 is a sectional view showing a buckle assembly
provided in a child safety seat for an automobile;
~~according to an embodiment of the present invention;~~

Fig. 2 is a rear elevational view showing a cover ~~for~~
for the buckle assembly shown in Fig. 1;

Fig. 3 is a perspective view showing a child safety
seat for an automobile comprising the buckle assembly
shown in Fig. 1; and

Fig. 4 is a perspective view showing a child seated
on the child safety seat for an automobile shown in Fig.
3.

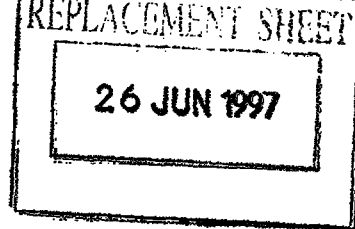
~~DESCRIPTION OF THE PREFERRED EMBODIMENTS~~

Figs. 3 and 4 are perspective views showing a child
safety seat 1 for an automobile. ~~According to an embodiment~~
~~of the present invention,~~ Fig. 3 independently shows the
safety seat 1, and Fig. 4 shows a child seated on this
safety seat 1.

The safety seat 1 comprises a seat portion 2 and a
backrest portion 3. Shoulder belts 4 are drawn out, ^{or extended,} from
the backrest portion 3 to be passed along the shoulders of
the child. ~~According to this embodiment,~~ Hip belts 5 are
provided by the same belts as the shoulder belts 4. The
belts providing the shoulder and hip belts 4 and 5 are

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inserted in tongue plates 6. A buckle assembly 8 is provided to upwardly project from a seat surface 7 which is formed on an upper surface of the seat portion 2. Fig. 1 is a sectional view showing this buckle assembly 8.

As shown in Fig. 1, the buckle assembly 8 comprises a crotch belt 9 which upwardly extends from the seat surface 7 shown by a phantom line. A lower end of this crotch belt 9 is fixed to the seat portion 2 by an anchor plate 10. A buckle 11 is mounted on an upper end of the crotch belt 9. As shown in Fig. 4, the aforementioned tongue plates 6 are detachably coupled to this buckle 11, thereby detachably coupling the shoulder and hip belts 4 and 5 to the buckle 11.

A cushion member 12 is provided along back surfaces of the crotch belt 9 and the buckle 11. The cushion member 12 is made of foam resin, for example, with toughness for making the crotch belt 12 self-sustainable. The buckle assembly 8 is covered with a flexible cover 13. This cover 13 exposes only a principal part of the buckle 11, to enable attachment/detachment of the tongue plates 6 to/from the buckle 11.

Fig. 2 is a rear elevational view showing the cover 13. The cover 13 comprises a bag portion 14 covering an upper portion of the cushion member 12 and a base portion of the buckle 11. Ends of a ^{Cover}portion downwardly extending

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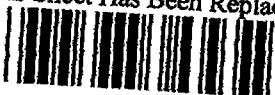
from the bag portion 14 are overlapped with each other on a back side of the cushion member 12, and the overlapped portions 15 are connected with each other by a velcro or burr fastener, for example. Thus, the cover 13 can be easily removed to be washed when the same is soiled, for example.

Due to presence of the cushion member 12, the crotch belt 9 is ^{held by the cover 13 along the cushion member 12 and is} brought into a self-sustaining state, whereby the overall buckle assembly 8 enters a self-sustaining, ^{or self-supporting,} state. When the child is seated on this safety seat 1, ^{held along the cushion member 12 and} therefore, the buckle 11 is maintained in front of ~~the child's~~ ^{the child's} body in a correct condition. Thus, it is possible to easily attach/detach the tongue plates 6 to/from the buckle 11. Further, the cushion member 12 relieves the body of the child from nipping which may be caused when an impact is applied to the automobile.

While the ^{safety seat 1} ~~present invention~~ has been described with reference to ~~the embodiment shown in~~ the drawings, some modifications are also available within the scope of the ^{claims.} ~~present invention.~~

While the ^{forementioned} ~~safety seat 1 according to the~~ ~~forementioned embodiment~~ comprises the hip belts 5, for example, the ~~present invention is also applicable to a~~ safety seat ^{may have} ~~having~~ no such hip belts. Alternatively, the hip belts may be provided by belts which are independent of the shoulder belts.

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The child safety seat 1 for an automobile described above comprises a crotch belt 9 which is locatable between the thighs of a child seated on the seat 1 to upwardly extend from the seat surface 7, a buckle 11 which is mounted on an end of the crotch belt 9, and shoulder belts which are passable along the shoulder of the child to be detachably coupled to the buckle 11. A cushion member 12 is provided along back surfaces of the crotch belt 9 and the buckle 11, with toughness to self-supporting upwardly stand from the seat surface 7 for making the crotch belt 9 upwardly extend from the seat surface 7 while the buckle 11 is maintained in a correct position and a correct condition by the cushion member 12.

Therefore, it is possible to avoid the aforementioned complicated operations of separating the crotch belt and the buckle from the seat surface before seating the child, drawing out the crotch belt and the buckle from under the buttocks of the child and correctly directing the buckle in an untwisted state of the crotch belt. When the child is simply seated on the child safety seat 1 for an automobile described herein with reference to the figures, the crotch belt 9 is naturally located between its thighs to position the buckle 11 in front of the child in a proper condition.

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Even if the body of the child as seated hits the buckle 11 or the crotch belt 9, deformation caused in the cushion member 12 reduces an impact which may be applied to the child. Even if the cushion member 12 is temporarily deformed, the same returns to the original state on the basis of its elasticity when the child is seated in a prescribed position, to restore the crotch belt 9 and the buckle 11 to proper positions.

As hereinabove described, the buckle 11 is maintained in a proper position and a proper condition after the child is seated, whereby the shoulder belts 4 can be easily coupled to the buckle 11.

Further, the cushion member 12 is positioned along the back surfaces of the crotch belt 9 and the buckle 11. When an impact is applied to the automobile by abrupt braking or the like such that the crotch belt 9 and the buckle 11 may nip the body of the child, it is possible to sufficiently relax this impact by the cushion member 12.

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CLAIMS:

1. A child safety seat for an automobile, comprising:

a seat portion (2) providing a seat surface (7) for contact with the buttocks of a child seated on said seat;

a backrest portion (3) for supporting the back of said child;

a crotch belt (9) locatable between the thighs of said child;

a buckle (11) mounted on an end of said crotch belt (9);

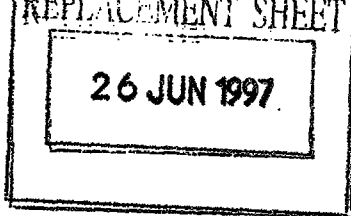
shoulder belts (4) extendable from said backrest portion (3) and passable along said child's shoulders to be detachably coupled to said buckle (11);

a cushion member (12) self supportingly upwardly standing from said seat surface (7) along respective back surfaces of said crotch belt (9) and said buckle (11); and

a flexible cover (13) attached to and covering said crotch belt (9) and said cushion member (12) while exposing at least a part of said buckle (11) such that said crotch belt (9) and said buckle (11) are held along said cushion member (12) with said crotch belt (9) upwardly extending from said seat surface (7).

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2. A child safety seat for an automobile in accordance with claim 1, wherein said cushion member (12) comprises foam resin.

3. A child safety seat for an automobile in accordance with claim 1 or 2, wherein said cover (13) is detachable from said crotch belt (9) and said cushion member (12).

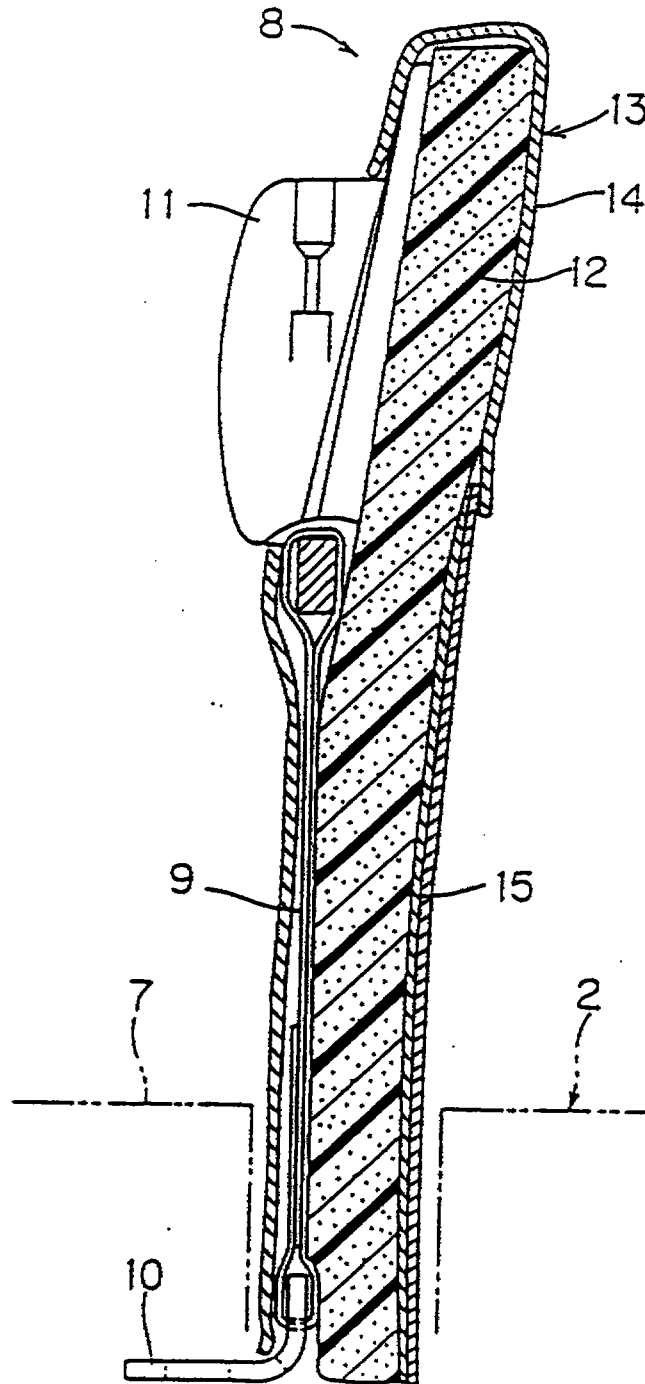
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FIG. 1



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FIG. 2

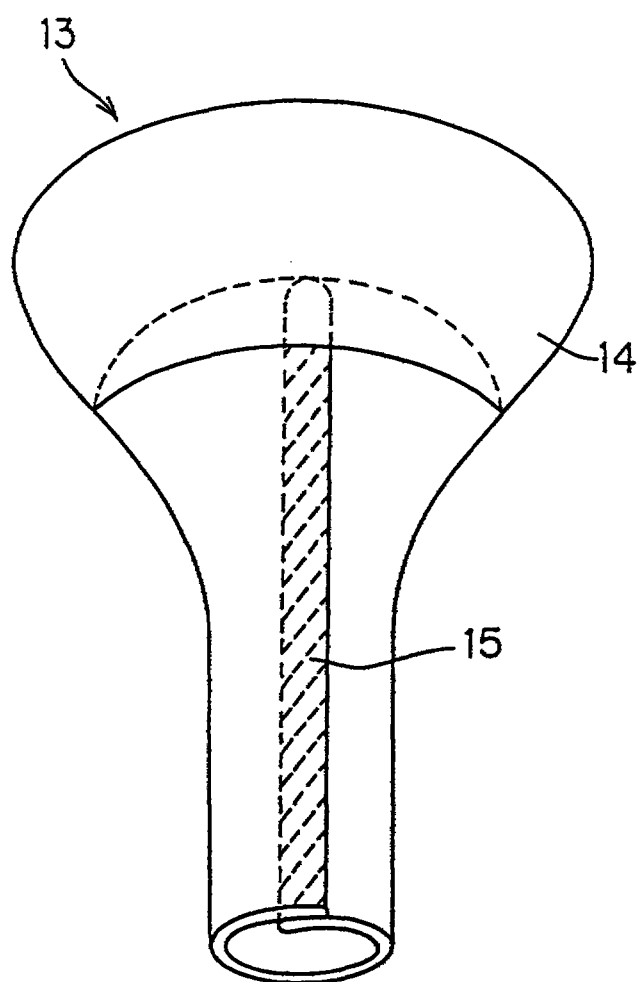
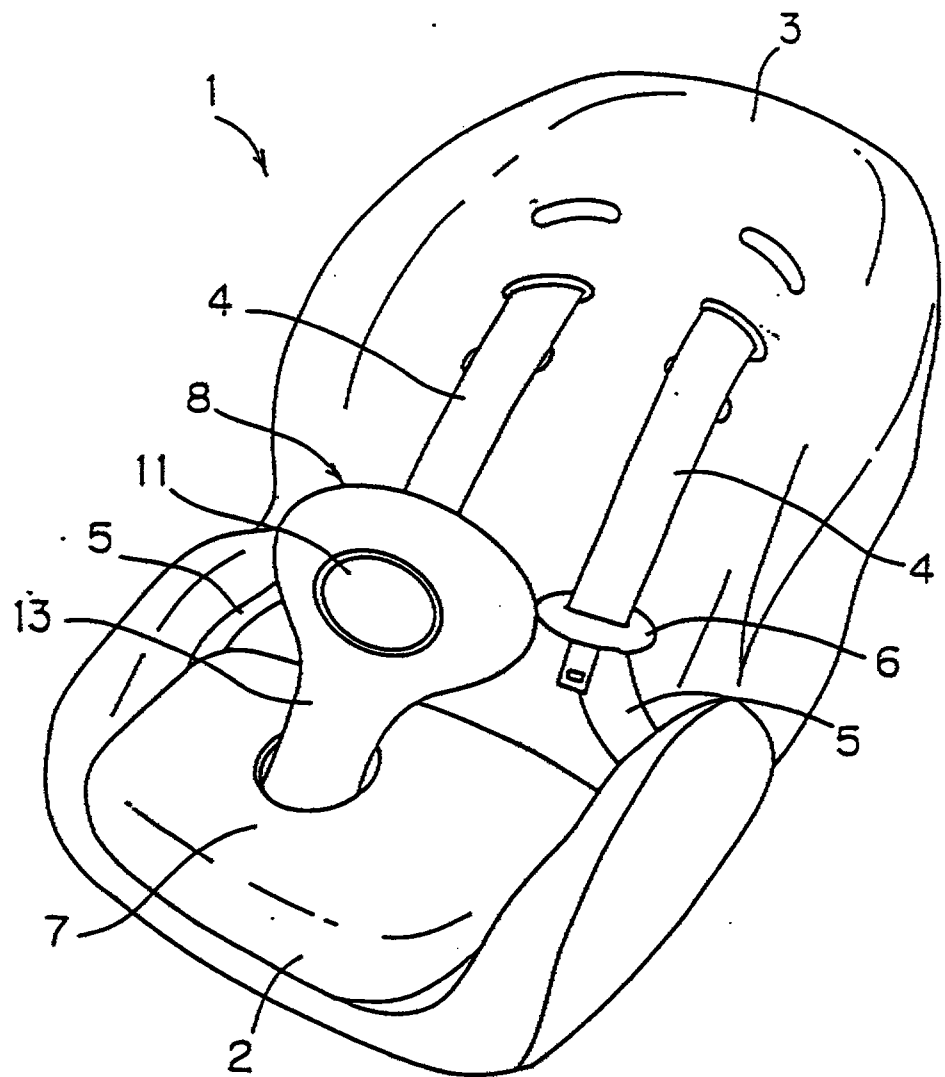


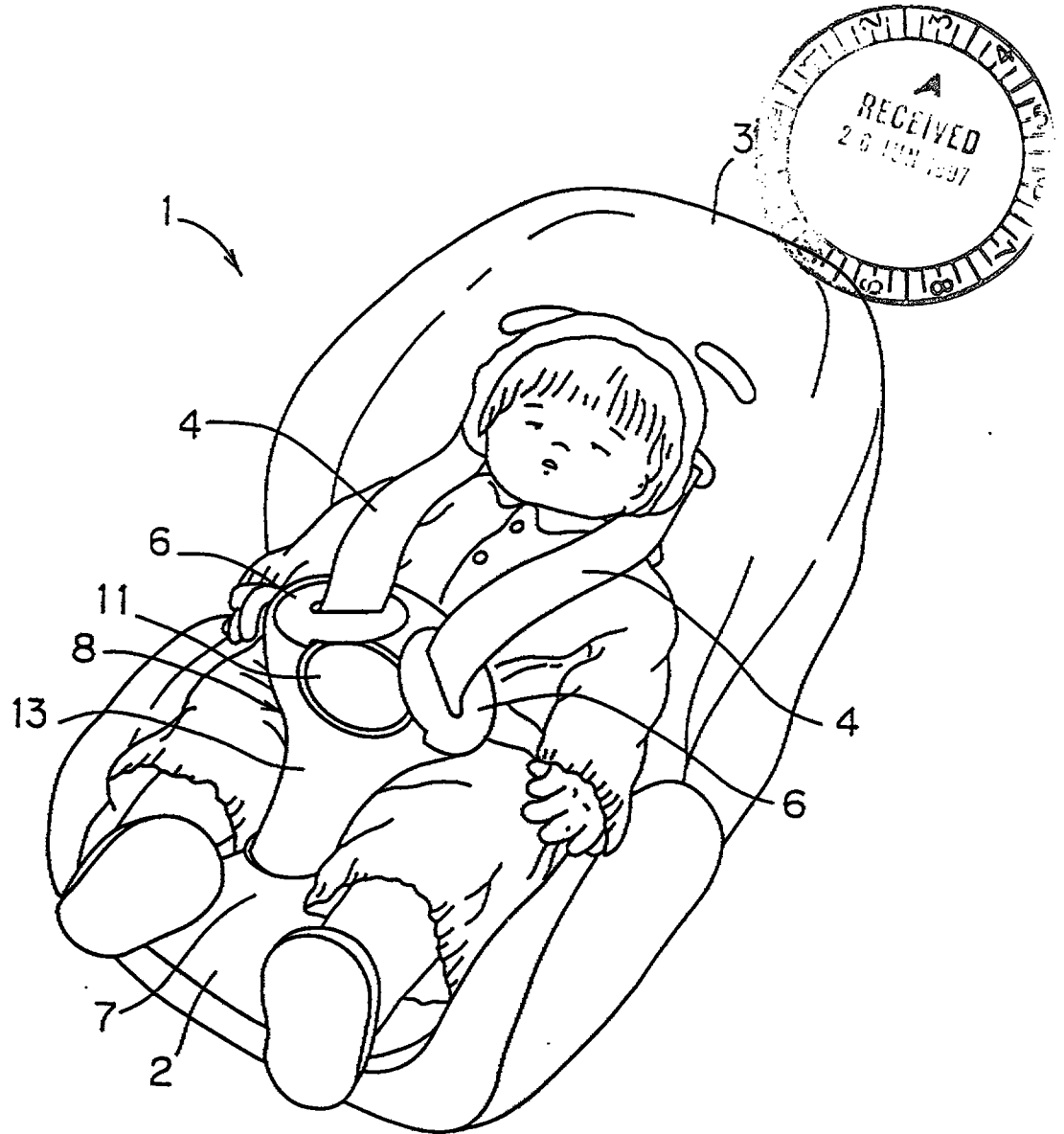
FIG. 3



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FIG. 4



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CHILD SAFETY SEAT FOR AUTOMOBILE

The present invention relates to a child safety seat for an automobile.

In general, a child safety seat for an automobile comprises a crotch belt which is locatable between the thighs of a child seated in the seat to upwardly extend from a surface of the seat, and shoulder belts which extend from a backrest portion and are passable along the child's shoulders. A buckle is mounted on an end of the crotch belt so that the shoulder belts may be detachably coupled to the buckle. The safety seat may also comprise hip belts which are passed along the child's hips, to be also detachably coupled to the buckle. The hip belts may be integrally formed with the shoulder belts.

The aforementioned shoulder belts and the like are coupled to the buckle after the child is seated on the child safety seat for an automobile. The shoulder belts and the like are detached from the buckle when the child is helped out from the seat.

Before the child is seated on the aforementioned child safety seat for an automobile, the crotch belt is in an arbitrary state on the seat surface, for example. In other words, the crotch belt may be bent in any form, or twisted. Therefore, the buckle which is mounted on the end of the crotch belt is in any position and any state on the seat surface, for example, while arbitrarily directing its front and back sides.

When the child is seated in this state, the crotch belt and the buckle may be located under the buttocks of the child, causing discomfort. In order to avoid this, the user must separate the crotch belt and the buckle from the seat surface before seating the child, so that the same are not located under its buttocks. If the crotch belt and the buckle are undesirably located under the buttocks of the child, the user

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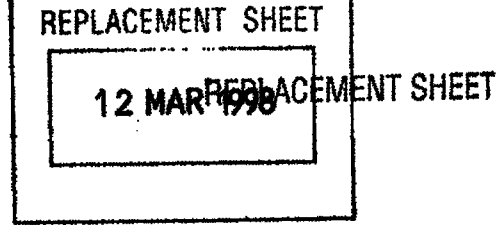
must draw out the buckle from under its buttocks with the crotch belt. Such operations are relatively troublesome.

Further, the user must confirm the front and back sides of the buckle are in front of the body of the child, to couple the shoulder belts and the like to the same. However, the crotch belt which is provided with the buckle is so easily twisted to reverse the buckle that the user simply holding the buckle may have to turn over the same for coupling the shoulder belts thereto. In this case, the user must turn over the buckle in a direction for returning the crotch belt as twisted to its original state. This also complicates the operation for coupling the shoulder belts to the buckle.

Even if the buckle is facing in a correct direction, the user may inadvertently couple the shoulder belts to the buckle in a twisted state of the crotch belt. In this case, the crotch belt causes discomfort between the thighs of the seated child. In addition, the crotch belt may injure the body of the child when an impact is applied to the automobile by abrupt braking or the like.

While the crotch belt is adapted to hold the body of the child with the shoulder belts when an impact is applied to the automobile by abrupt braking or the like tending to fling out the child from the safety seat, it is preferable to relieve the body of the child from nipping by the crotch belt at this time.

US-A-4880277 discloses a child safety seat for an automobile comprising: a seat portion providing a seat surface for contact with the buttocks of a child seated on the seat; a backrest portion for supporting the back of the child; a belt-stop mechanism comprising a cushioned pad and a shaft attached to a central portion of the front surface of the seat floor so as to be capable of being erected for locating between the thighs of the child and prostrated, the belt-stop mechanism having belt-stop grooves; and shoulder belts extendable from the backrest portion and passable along the child's shoulders



to be detachably coupled to the belt-stop mechanism.

An object of the invention is to overcome or lessen the effects of at least one of the aforementioned problems.

Accordingly, the invention provides a child safety seat for an automobile, comprising:

- a seat portion providing a seat surface for contact with the buttocks of a child seated on said seat;

- a backrest portion for supporting the back of said child;

- a crotch belt locatable between the thighs of said child;

- a buckle mounted on an end of said crotch belt;

- shoulder belts extendable from said backrest portion and passable along said child's shoulders to be detachably coupled to said buckle;

- a cushion member self supportingly upwardly standing from said seat surface along respective back surfaces of said crotch belt and said buckle; and

- a flexible cover attached to and covering said crotch belt and said cushion member while exposing at least a part of said buckle such that said crotch belt and said buckle are held along said cushion member with said crotch belt upwardly extending from said seat surface.

The cushion member may comprise foam resin.

The cover may be detachable from said crotch belt and said cushion member.

In order that the invention may be well understood, an embodiment thereof, which is given by way of example only, will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a sectional view showing a buckle assembly provided in a child safety seat for an automobile;

Fig. 2 is a rear elevational view showing a cover for the buckle assembly shown in Fig. 1;

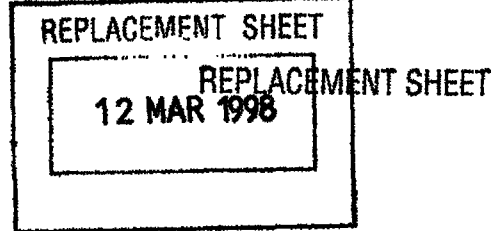


Fig. 3 is a perspective view showing a child safety seat for an automobile comprising the buckle assembly shown in Fig. 1; and

Fig. 4 is a perspective view showing a child seated on the child safety seat for an automobile shown in Fig. 3.

Figs. 3 and 4 are perspective views showing a child safety seat 1 for an automobile. Fig. 3 independently shows the safety seat 1, and Fig. 4 shows a child seated on this safety seat 1.

The safety seat 1 comprises a seat portion 2 and a backrest portion 3. Shoulder belts 4 are drawn out, or extended, from the backrest portion 3 to be passed along the shoulders of the child. Hip belts 5 are provided by the same belts as the shoulder belts 4. The belts providing the shoulder and hip belts 4 and 5 are inserted in tongue plates 6. A buckle assembly 8 is provided to upwardly project from a seat surface 7 which is formed on an upper surface of the seat portion 2. Fig. 1 is a sectional view showing this buckle assembly 8.

As shown in Fig. 1, the buckle assembly 8 comprises a crotch belt 9 which upwardly extends from the seat surface 7 shown by a phantom line. A lower end of this crotch belt 9 is fixed to the seat portion 2 by an anchor plate 10. A buckle 11 is mounted on an upper end of the crotch belt 9. As shown in Fig. 4, the aforementioned tongue plates 6 are detachably coupled to this buckle 11, thereby detachably coupling the shoulder and hip belts 4 and 5 to the buckle 11.

A cushion member 12 is provided along back surfaces of the crotch belt 9 and the buckle 11. The cushion member 12 is made of foam resin, for example, with toughness for making the crotch belt 12 self-sustainable. The buckle assembly 8 is covered with a flexible cover 13. This cover 13 exposes only a principal part of the buckle 11, to enable attachment/detachment of the tongue plates 6 to/from the buckle 11.

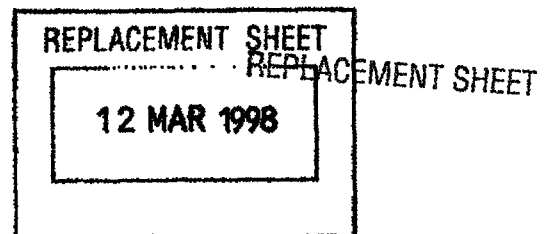


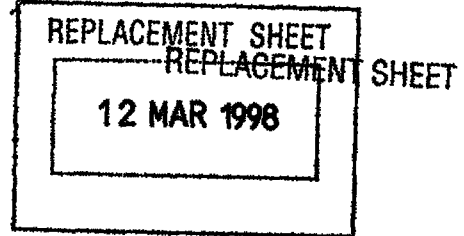
Fig. 2 is a rear elevational view showing the cover 13. The cover 13 comprises a bag portion 14 covering an upper portion of the cushion member 12 and a base portion of the buckle 11. Ends of a cover portion downwardly extending from the bag portion 14 are overlapped with each other on a back side of the cushion member 12, and the overlapped portions 15 are connected with each other by a velcro or burr fastener, for example. Thus, the cover 13 can be easily removed to be washed when the same is soiled, for example.

Due to presence of the cushion member 12, the crotch belt 9 is held by the cover 13 along the cushion member 12 and is brought into a self-sustaining state, whereby the overall buckle assembly 8 enters a self-sustaining, or self-supporting, state. When the child is seated on this safety seat 1, therefore, the buckle 11 is held along the cushion member 12 and maintained in front of the child's body in a correct condition. Thus, it is possible to easily attach/detach the tongue plates 6 to/from the buckle 11. Further, the cushion member 12 relieves the body of the child from nipping which may be caused when an impact is applied to the automobile.

While the safety seat 1 has been described with reference to the drawings, some modifications are also available within the scope of the claims.

While the aforementioned safety seat 1 comprises the hip belts 5, for example, the safety seat may have no such hip belts. Alternatively, the hip belts may be provided by belts which are independent of the shoulder belts.

The child safety seat 1 for an automobile described above comprises a crotch belt 9 which is locatable between the thighs of a child seated on the seat 1 to upwardly extend from the seat surface 7, a buckle 11 which is mounted on an end of the crotch belt 9, and shoulder belts which are passable along the shoulder of the child to be detachably coupled to the buckle 11. A cushion member 12 is provided along back surfaces of the



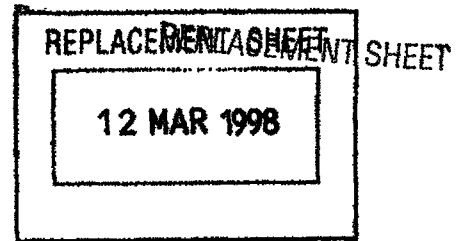
crotch belt 9 and the buckle 11, with toughness to self-supporting upwardly stand from the seat surface 7 for making the crotch belt 9 upwardly extend from the seat surface 7 while the buckle 11 is maintained in a correct position and a correct condition by the cushion member 12.

Therefore, it is possible to avoid the aforementioned complicated operations of separating the crotch belt and the buckle from the seat surface before seating the child, drawing out the crotch belt and the buckle from under the buttocks of the child and correctly directing the buckle in an untwisted state of the crotch belt. When the child is simply seated on the child safety seat 1 for an automobile described herein with reference to the figures, the crotch belt 9 is naturally located between its thighs to position the buckle 11 in front of the child in a proper condition.

Even if the body of the child as seated hits the buckle 11 or the crotch belt 9, deformation caused in the cushion member 12 reduces an impact which may be applied to the child. Even if the cushion member 12 is temporarily deformed, the same returns to the original state on the basis of its elasticity when the child is seated in a prescribed position, to restore the crotch belt 9 and the buckle 11 to proper positions.

As hereinabove described, the buckle 11 is maintained in a proper position and a proper condition after the child is seated, whereby the shoulder belts 4 can be easily coupled to the buckle 11.

Further, the cushion member 12 is positioned along the back surfaces of the crotch belt 9 and the buckle 11. When an impact is applied to the automobile by abrupt braking or the like such that the crotch belt 9 and the buckle 11 may nip the body of the child, it is possible to sufficiently relax this impact by the cushion member 12.

**CLAIMS:**

1. A child safety seat for an automobile, comprising:
 - a seat portion (2) providing a seat surface (7) for contact with the buttocks of a child seated on said seat;
 - a backrest portion (3) for supporting the back of said child;
 - a crotch belt (9) locatable between the thighs of said child;
 - a buckle (11) mounted on an end of said crotch belt (9);
 - shoulder belts (4) extendable from said backrest portion (3) and passable along said child's shoulders to be detachably coupled to said buckle (11);
 - a cushion member (12) self supportingly upwardly standing from said seat surface (7) along respective back surfaces of said crotch belt (9) and said buckle (11); and
 - a flexible cover (13) attached to and covering said crotch belt (9) and said cushion member (12) while exposing at least a part of said buckle (11) such that said crotch belt (9) and said buckle (11) are held along said cushion member (12) with said crotch belt (9) upwardly extending from said seat surface (7).
2. A child safety seat for an automobile in accordance with claim 1, wherein said cushion member (12) comprises foam resin.
3. A child safety seat for an automobile in accordance with claim 1 or 2, wherein said cover (13) is detachable from said crotch belt (9) and said cushion member (12).

CHILD SAFETY SEAT FOR AUTOMOBILE**ABSTRACT OF THE DISCLOSURE**

A cushion member (12) is provided along back surfaces of a crotch belt (9) upwardly extending from a seat surface (7) and a buckle (11) mounted on its end. Due to toughness of the cushion member (12), the crotch Belt (9) is made self-sustainable. Thus, a shoulder belt (4) can be easily attached to/detached from the buckle (11), to feel comfortable to a child.

FIGURE 1.