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(54) **CHILD BOOSTER SEAT**

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(57) **ABSTRACT**

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A child booster seat comprising a seat portion, a back portion including a cavity opening onto a top surface thereof, and a rear surface defining a slot in communication with the cavity with first retaining means adjacent thereto, and a headrest having a stem integral therewith including second retaining means and being adapted to be inserted in the cavity such as to maintain a height of the headrest by the engagement of the second retaining means with the first retaining means through the elongated slot. Also, a child seat comprising a seat portion having a bottom surface and side walls, a cup holder including a leg having fastening means, and at least one complementary fastening receptacle in the bottom surface opening in a side wall and being adapted to retain the leg, so that the cup holder can be detachably mounted in the receptacle while protruding beyond the side wall.

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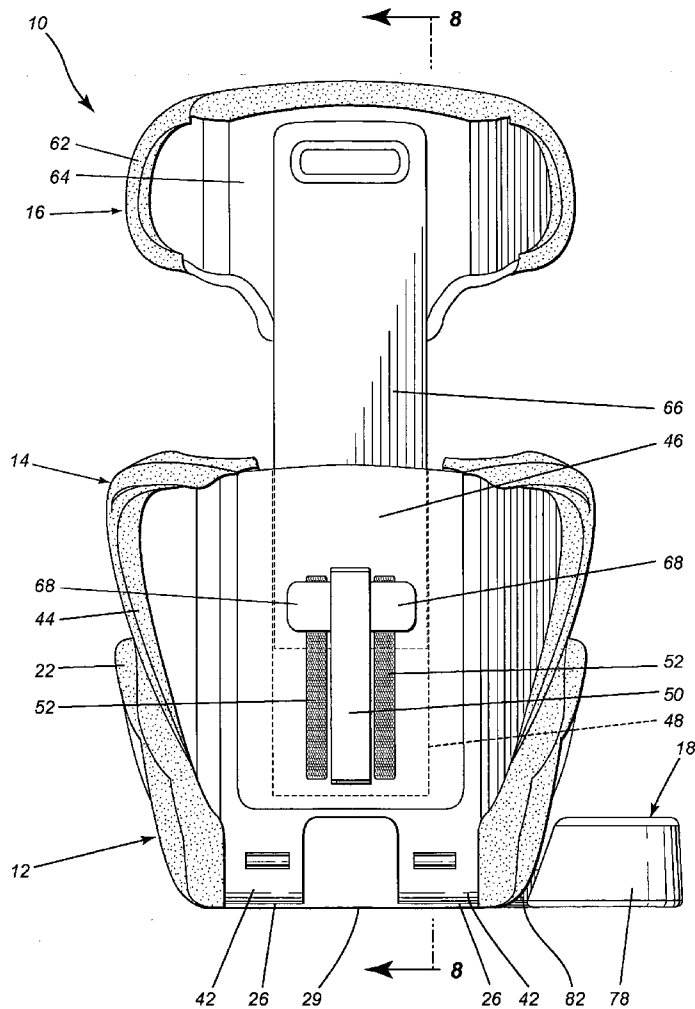
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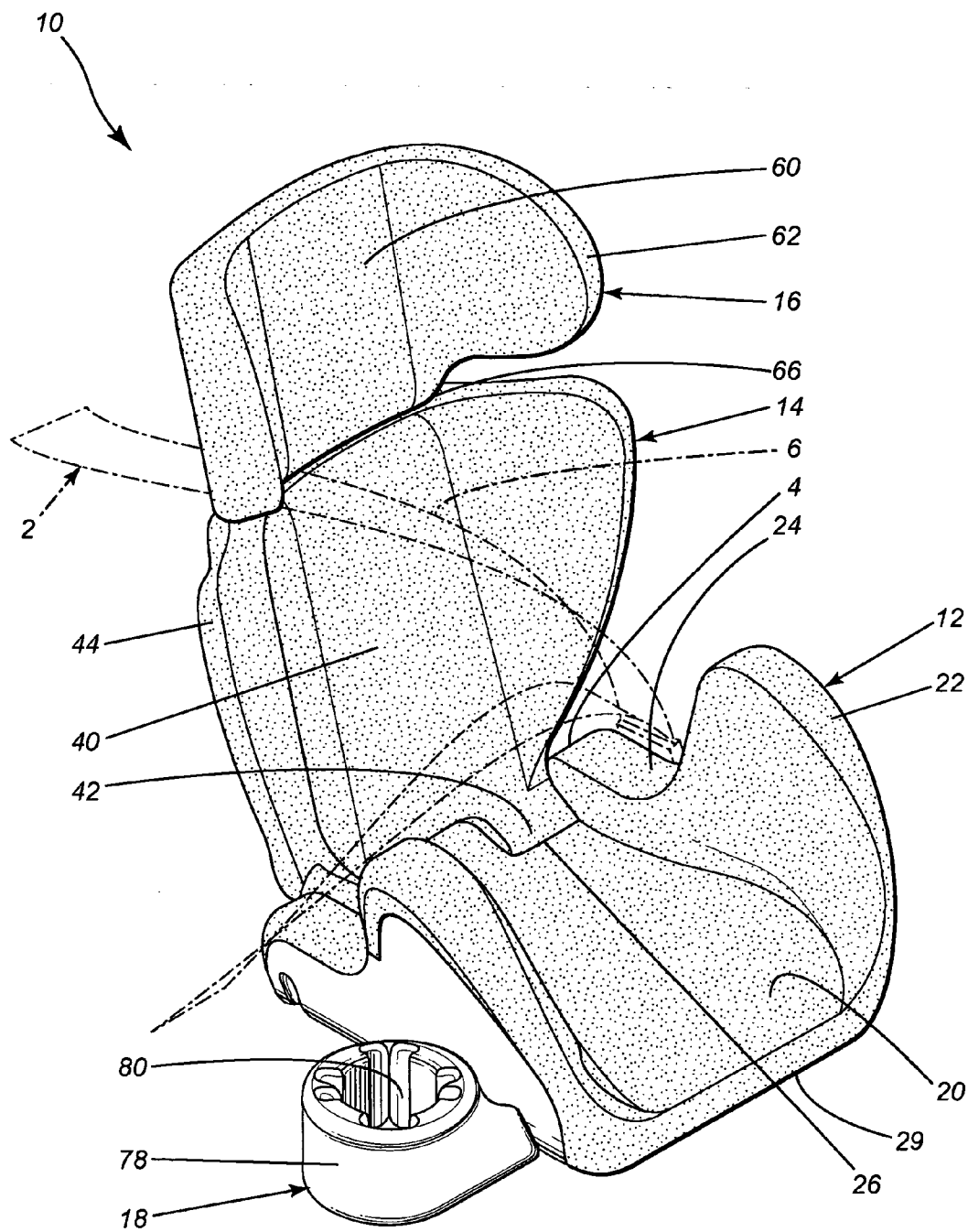


Fig-1

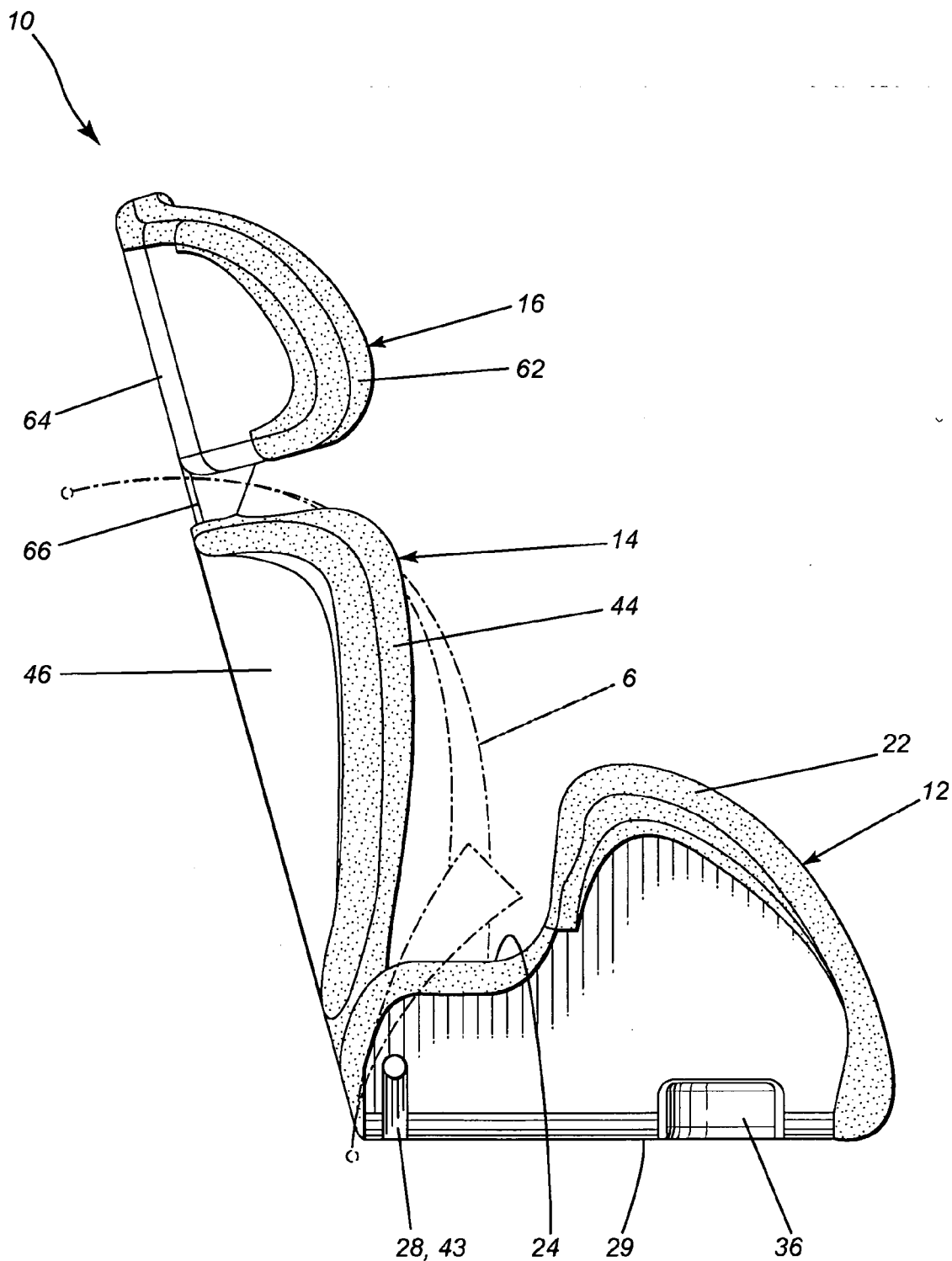


Fig-2

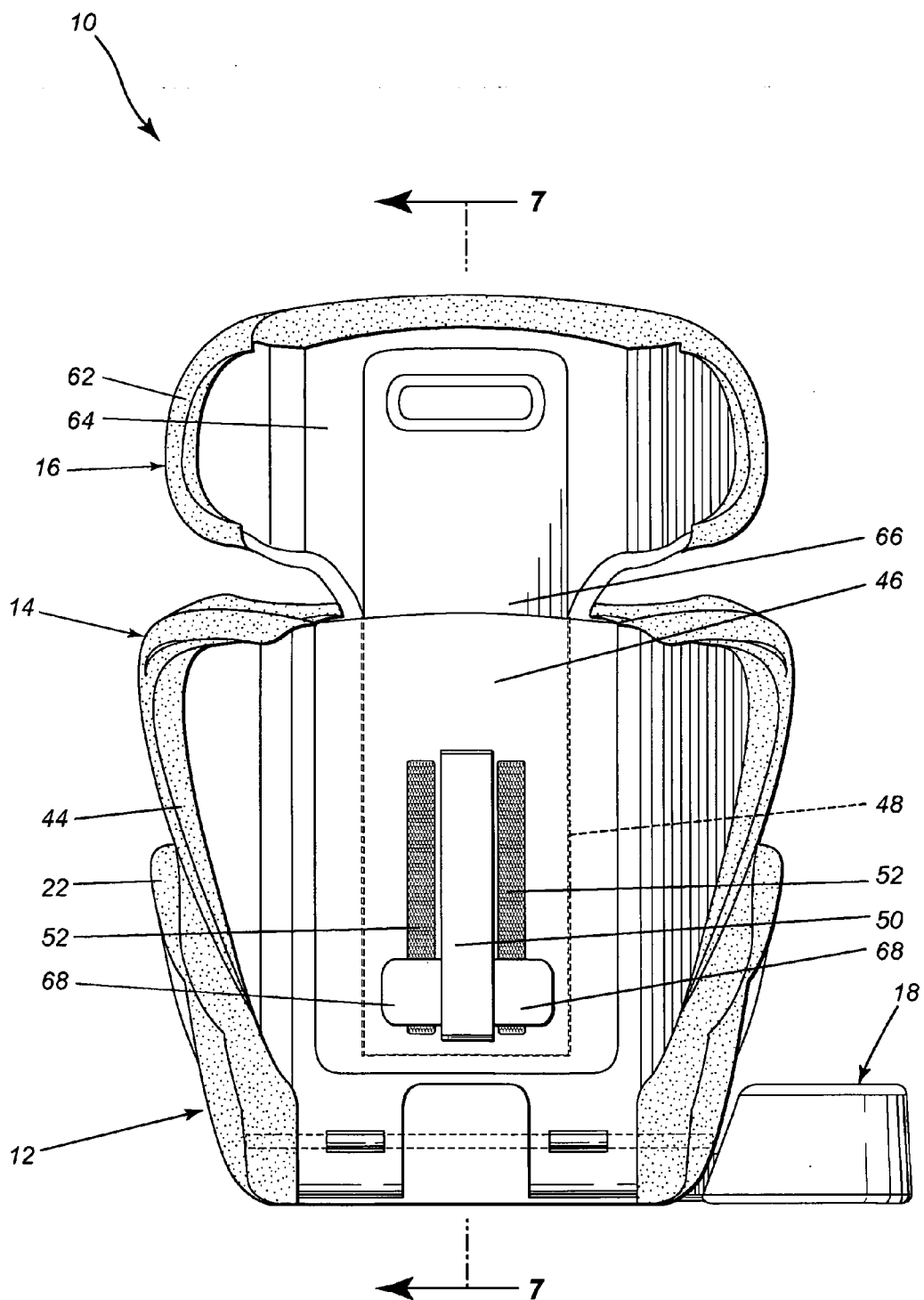


Fig-3

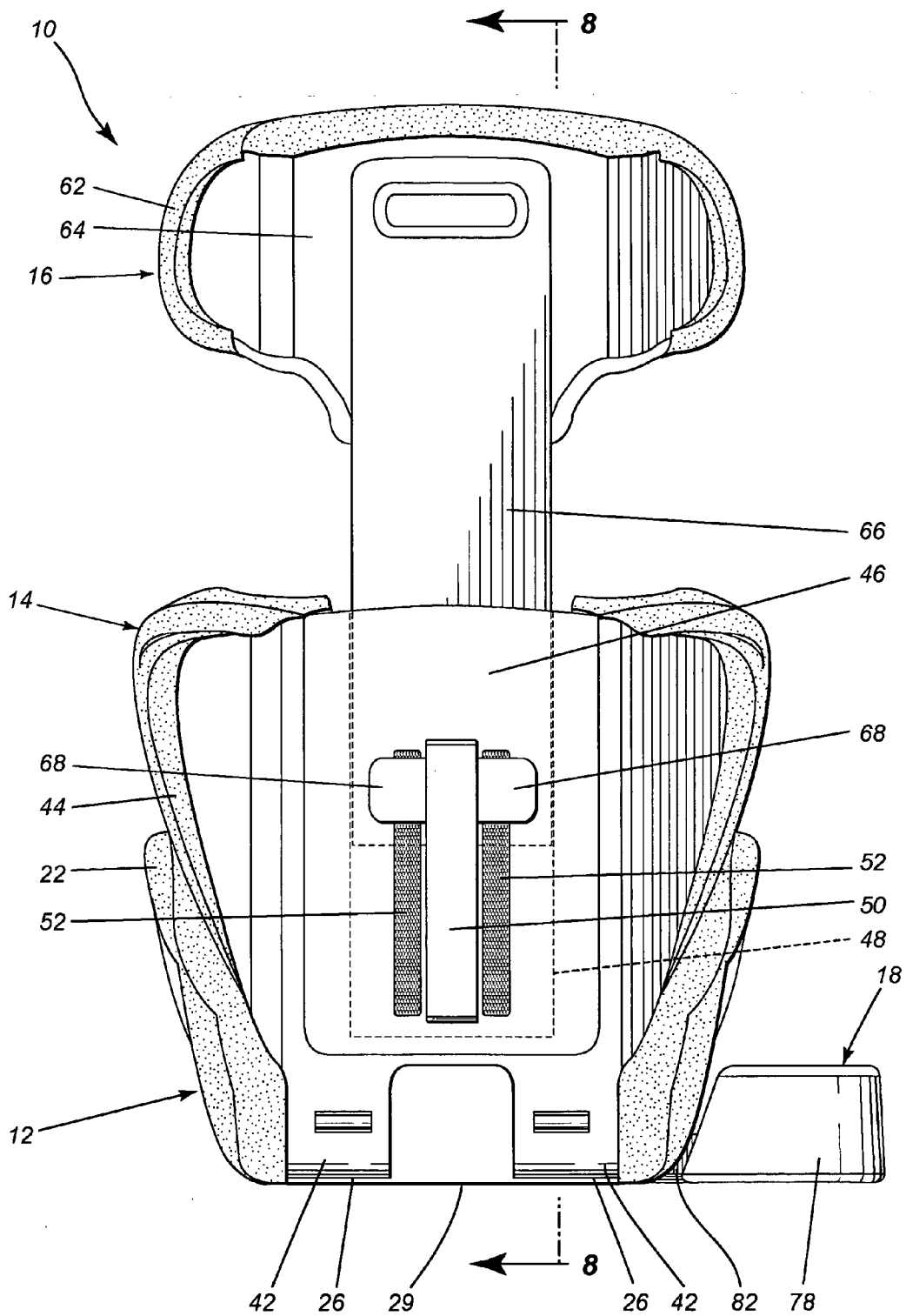


Fig-4

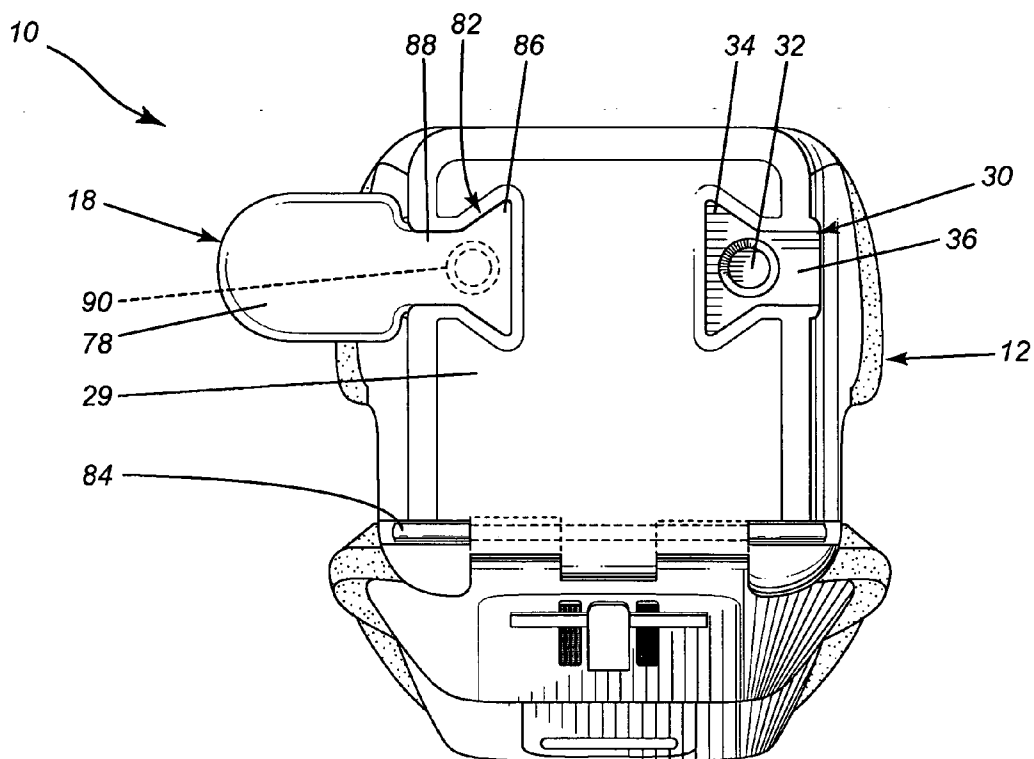


Fig-5

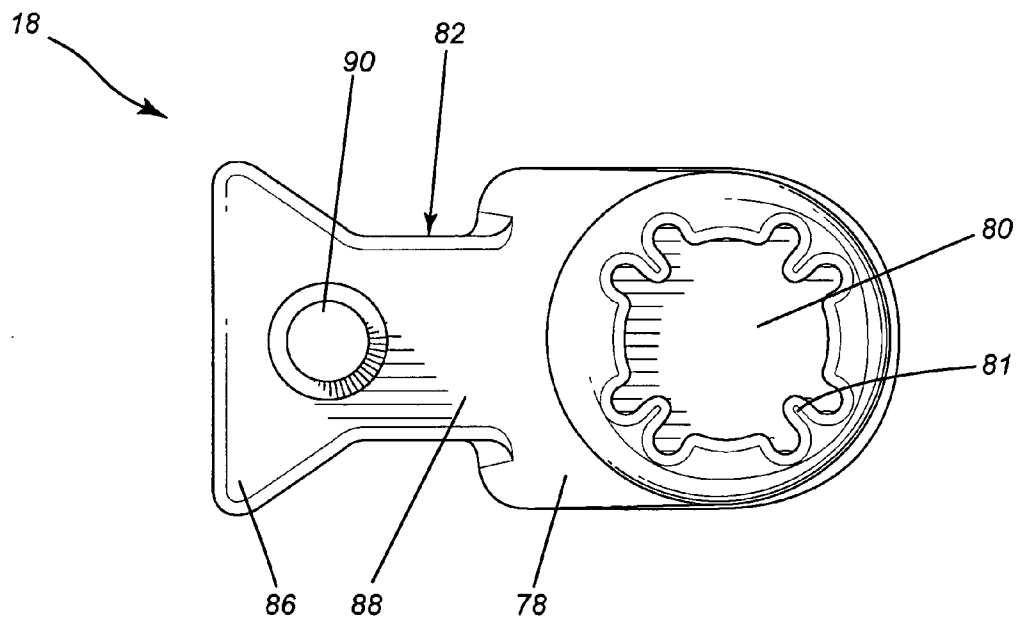


Fig-6

CHILD BOOSTER SEAT

FIELD OF THE INVENTION

[0001] The present invention relates to child restraint systems for use in motor vehicles, and more particularly to a child booster seat for use in an automobile.

BACKGROUND OF THE INVENTION

[0002] Children between 3 and 12 years of age generally require a booster seat in order to be able to be safely restrained in a car seat. Such seats are usually designed to use a car seat belt designed for adults so that the belt can be properly positioned to restrain the child. Booster seats are traditionally molded as a rigid shell. Such booster seats present a number of disadvantages, one of which is the fact that they cannot be adjusted to allow a better fit either with the child sitting therein or with the car seat they are installed on.

[0003] CA 2,300,922A1, published Mar. 4, 1999 by Reithmeier et al., shows a booster seat with an angularly adjustable back rest and a headrest which is slidably mounted onto a vertically extending guiding device integral with the back rest. However, the guiding device approximately doubles the height of the back rest, which implies larger packaging and more space required to store the booster seat when it is not in use. In addition, the headrest is shaped as a pair of side guards linked by a surface extending behind the flat guiding device. The head resting surface is the guiding device which is not shaped for comfort.

[0004] DE 29510642U1 published Jun. 6, 1996 by Schröder, shows a booster seat having an angularly adjustable back rest and a headrest that is vertically adjustable. However, the restraining means to maintain the height of the headrest are easily accessible to the child, with a possible risk of injury thereto. Belt guides are located at the extremities of the side guards of the headrest, advancing the belt away from the child with a possibility of placing it too high when the headrest is elevated, thereby diminishing the seat belt efficiency. In addition, the shape of the seat is not likely to be able to properly maintain a sleeping child in a position where the seat belt can be effective.

[0005] It is also desirable to provide a booster seat with means for holding a beverage container. U.S. Pat. No. 5,964,502 issued Oct. 12, 1999 to Stephens, presents a cup holder that is held on by a strap attached to a seat cover. While the cup holder is easily removable, this configuration does not offer the stability brought by a rigidly fixed cup holder, thereby increasing the risk of spills.

[0006] It is against this background and the desire to solve the problems of the prior art that the present invention has been developed.

SUMMARY OF INVENTION

[0007] It is therefore an aim of the present invention to provide a child booster seat having an angularly adjustable back portion.

[0008] It is another aim of the present invention to provide a child booster seat having a vertically adjustable headrest.

[0009] It is another aim of the present invention to provide a child booster seat that can be easily stored using a minimum of space.

[0010] It is a further aim of the present invention to provide a child booster seat that can comfortably and effectively maintain a child in a position in which the child can be safely restrained by a car seat belt.

[0011] It is yet another aim of the present invention to provide a child booster seat with a cup holder that is stably installed at a first position thereof yet easily removed and installed at a second position thereof.

[0012] Therefore, in accordance with the present invention, there is provided a child booster seat adapted to be installed on a vehicle seat and retained thereon by a seat belt provided therewith, the child booster seat comprising a seat portion defining a seating surface, a back portion having a front back-rest surface and a rear surface with a top surface extending therebetween, the back portion defining an elongated cavity opening towards the top surface, and the rear surface defining an elongated slot in communication with the elongated cavity with first retaining means adjacent thereto, a headrest having a head-rest surface and a rear surface, and an elongated stem integral with the headrest extending in a direction generally parallel to the rear surface thereof and defining a bottom end including second retaining means, the elongated stem being adapted to be inserted in the elongated cavity such as to have the head-rest surface located at a desired height with respect to the seating surface, the height being maintained by the engagement of the second retaining means with the first retaining means through the elongated slot.

[0013] According to another aspect of the present invention, there is also provided a child seat for use in a vehicle, the seat comprising a seat portion having a top seating surface, a bottom surface and first and second side walls, a cup holder having a body defining a top open end, a bottom end, and a leg extending from the bottom end and having a top surface substantially parallel to the top end of the cup holder and including fastening means, and at least two complementary fastening receptacles in the bottom surface of the seat portion, at least one of the receptacles opening in one of the first and second side walls, each receptacle being adapted to detachably receive and retain the leg of the cup holder, whereby the cup holder can be mounted in the at least one of the receptacles with the leg and cup holder protruding beyond the one of the first and second side walls.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Having thus generally described the nature of the invention, reference will now be made to the accompanying drawings, showing by way of illustration a preferred embodiment thereof and in which:

[0015] FIG. 1 is a perspective view of a child booster seat according to a preferred embodiment of the present invention;

[0016] FIG. 2 is a side view of the child booster seat of FIG. 1;

[0017] FIG. 3 is a rear view of the child booster seat of FIG. 1;

[0018] FIG. 4 is a rear view of the child booster seat of FIG. 1 but with a headrest thereof in an elevated position;

[0019] FIG. 5 is a bottom view of the child booster seat of FIG. 1; and

[0020] FIG. 6 is a top view of a cup holder of the child booster seat of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] Referring now to the drawings, a preferred embodiment of a child booster seat generally indicated at 10 comprises a seat portion 12, a back portion 14, a headrest 16 and a cup holder 18. The child booster seat 10 is designed so that the seat 10 and a child seating therein are restrained on a vehicle seat by a seat belt 2 integral with the vehicle and the vehicle seat. The child booster seat 10 is designed to accommodate children generally between 3 and 12 years old, with a maximum weight capacity of 100 pounds and a maximum height of 60 inches tall.

[0022] As can be best seen in FIGS. 1 and 2, the seat portion 12 includes a seating surface 20 which is slightly curved so as to provide comfortable seating. A pair of armrests 22 extends vertically from the seating surface 20. Each armrest 22 includes a groove 24 adjacent to the back portion 14 of the seat 10 which is designed to receive a lap portion 4 of the seat belt 2. A rear end of the seat portion 12 preferably includes two mortises 26 traversed by a bore 28. A bottom surface 29 designed to appropriately rest against a vehicle seat surface opposes the seating surface 20. The bottom surface 29 comprises a pair of channels 30, each channel 30 having a triangular portion 34 and a rectangular portion 36 extending through one of the armrests 22, as shown in FIGS. 2 and 5. The triangular portion 34 of each channel 30 includes an aperture 32 which is preferably cylindrical.

[0023] As can be best seen in FIGS. 1 and 2, the back portion 14 comprises a back-rest surface 40 appropriately curved to provide comfort. A bottom end of the back portion 14 is preferably formed into a pair of tenons 42 traversed by a bore 43. The tenons 42 are designed to engage the mortises 26 of the seat portion 12 so that a pin 84 (shown in FIG. 5) can be inserted through the aligned bores 28,43 to form a pivot joint between the seat portion 12 and the back portion 14. A lip (not shown) is provided along the outer edges of the bore 28 of the seat portion in order to prevent the pin 84 from sliding out. This mortise and tenon joint held by a pin allows the back portion 14 to be angularly adjusted to fit an inclination of a back rest of the vehicle seat. This type of joint also provides an easy assembly of the seat and back portions. The seat and back portion can be easily taken apart simply by slidably removing the pin 84 from the bores 28,43 for packaging or storage in a reduced space. It also provides easy switching between the use of the seat portion with the back portion and the use of the seat portion alone to suit a bigger child. It is understood that the pivot joint can be constituted of a single or more than two mortise and tenon joints, as well as any other equivalent type of joint.

[0024] A pair of sides 44 extend forwardly from the back-rest surface 40 and provide additional support to insure that the child remains properly placed in the seat 10, particularly when the child is asleep. The sides 44 are also

shaped so as to be able to have a shoulder portion 6 of the seat belt 2 placed over one of the sides 44. A rear surface 46 shown in FIGS. 3 and 4 is opposite the back-rest surface 40. The rear surface 46, sides 44 and back-rest surface 40 enclose a rectangular elongated cavity 48 opening into a top end of the back portion 14. A vertically extending elongated slot 50 in communication with the cavity 48 is preferably provided on the rear surface 46. A pair of Velcro®-type strips 52 extend parallel and adjacent to the elongated slot 50, one strip 52 being located on each side thereof.

[0025] The headrest 16 comprises a head-rest surface 60 as shown in FIG. 1, properly shaped so as to be comfortable. A pair of side wings 62 extend forwardly from the headrest 16 and provide support for the child in a manner similar to the sides 44. The side wings 62 are designed so as to leave a gap between the side wings 62 and the sides 44 of the back portion 14 in order to be able to receive the shoulder portion 6 of the belt 2 therein. The sides 44 and side wings 62 can also provide additional protection during both a side impact and a frontal impact.

[0026] As shown in FIGS. 3 and 4, a rear surface 64 is opposite the head-rest surface 60. An elongated stem or panel 66 integral with the headrest 16 extends downwardly therefrom in a manner generally parallel to the rear surface 64. The elongated panel 66 is designed so as to tightly slide in the cavity 48 of the back portion 14. A pair of Velcro®-type flaps 68 are attached to a bottom end of the elongated panel 66 and protrude through the elongated slot 50 to engage the Velcro®-type strips 52 set on the rear surface 46 of the back portion 14. This configuration provides easy adjustment of the height of the headrest 16. The elongated panel 66 is slid vertically in the cavity 48 of the back portion 14 to the correct headrest height and is locked in that position by the use of the Velcro®-type flaps 68 on the Velcro®-type strips 52.

[0027] The cup holder 18 comprises a body 78 including a cup-receiving cavity 80 at a top end thereof as shown in FIG. 6. The cup-receiving cavity 80 is preferably formed with fingers 81 to allow beverage containers of various shapes to be inserted in any direction, as well as to accommodate beverage containers of various sizes. The cup-receiving cavity 80 is also preferably insulated in order to be able to better maintain the temperature of the beverage container retained therein. The cup holder 18 includes a leg 82 extending parallel to and along a bottom end thereof. The leg 82 includes a triangular portion 86 and a rectangular portion 88, with the triangular portion 86 including a preferably cylindrical stud 90.

[0028] The triangular and rectangular portions 86,88 of the leg 82 are designed to snugly fit respectively into the triangular and rectangular portions 34,36 of the channel 30. The position and size of the stud 90 is such as to engage the aperture 32 in the triangular portion 34 of the channel 30 to form a snap-like joint. The cup holder 18 can therefore be placed on either side of the seat 10. It is understood that additional channels can be provided on the bottom surface of the seat portion to allow for alternative positioning of the cup holder 18. It is also considered to use alternative but equivalent restraining means to removably attach the cup holder 18 onto the seat portion 12 or the back portion 14 of the seat 10.

[0029] The seat 10 is preferably made of expanded polypropylene (EPP), which allows for a solid structure

while offering comfortable seating and back and head support without the need for additional padding. Preferably, beads of EPP are used to mold the seat **10** by a counter-pressure fill technique, followed by steam fusion and heat curing to obtain the final shape. The seat portion **12**, the back portion **14** and the headrest **16** with the integral elongated panel **66** are each preferably molded as a unitary member. A plasticized corrugated panel is preferably laminated on each of the rear surfaces **46,64** of the back portion **14** and headrest **16** for reinforcement as well as to increase the life thereof. The car seat **10** is covered with an appropriate material in the manner already known in the art. It is understood that other materials as well as other manufacturing techniques can be used, as long as the seat **10** as well as the cover comply with all regulations and requirements applicable, such as CMVSS (Canadian Motor Vehicle Safety Standards) and FMVSS (Federal Motor Vehicle Safety Standards).

[0030] In use, the seat **10** is positioned on the vehicle seat with the headrest **16** being adjusted at a desired height in the manner previously described, and the child is installed therein. The seat belt **2** is placed so as to maintain the seat **10** and the child sitting therein securely onto the vehicle seat. The lap portion **4** of the seat belt **2** is set in the grooves **24** and properly positioned on the lap of the child. The shoulder portion **6** of the seat belt **2** is located on top of one of the sides **44** so that it is correctly directed over the shoulder of the child.

[0031] It will be appreciated that the invention is not limited to the specific embodiments described, which are merely illustrative. Modifications and variations will be readily apparent to those skilled in the art. Accordingly, the scope of the invention is deemed to be in accordance with the claims as set forth below.

What is claimed is:

1. A child booster seat adapted to be installed on a vehicle seat and retained thereon by a seat belt provided therewith, the child booster seat comprising:

- a seat portion defining a seating surface;
- a back portion having a front back-rest surface and a rear surface with a top surface extending therebetween, the back portion defining an elongated cavity opening towards the top surface, and the rear surface defining an elongated slot in communication with the elongated cavity with first retaining means adjacent thereto;
- a headrest having a head-rest surface and a rear surface; and
- an elongated stem integral with the headrest extending in a direction generally parallel to the rear surface thereof and defining a bottom end including second retaining means, the elongated stem being adapted to be inserted in the elongated cavity such as to have the head-rest surface located at a desired height with respect to the seating surface, the height being maintained by the engagement of the second retaining means with the first retaining means through the elongated slot.

2. The child booster seat according to claim 1, wherein the first retaining means comprise a pair of elongated generally parallel strips including one of hook and loop means and extending on the rear surface of the back portion with the elongated slot therebetween, and the second retaining means comprise a pair of elongated flaps including the other of

hook and loop means and extending from the bottom end of the elongated stem in a direction generally perpendicular to the pair of elongated strips when the stem is inserted in the cavity.

3. The child booster seat according to claim 1, wherein the seat portion includes a rear end defining at least one mortise with a first bore passing therethrough, the back portion includes a bottom end defining a tenon for each mortise, each of the tenons having a second bore passing there-through and being engaged in the corresponding mortise so that the first and second bores are aligned, and the child booster seat further comprises a pin passing through the first and second bores to form a pivot connection between the seat and back portions.

4. The child booster seat according to claim 1, wherein the seat portion further includes a left side and a right side, each side defining an armrest extending upwardly from the seating surface, and each armrest including a groove adapted to receive a lap portion of the seat belt, whereby the seat belt retains the child booster seat and a child sitting on the seating surface.

5. The child booster seat according to claim 1, wherein the back portion further includes a left side and a right side, each side extending forwardly beyond the back-rest surface to define a pair of protruding side walls, each side wall being adapted to guide a shoulder portion of the seat belt over a shoulder of a child sitting on the seating surface, whereby the seat belt retains the child booster seat and the child.

6. The child booster seat according to claim 1, wherein at least one of the seat portion, the back portion and the headrest is a one-piece molded member made of expanded polypropylene.

7. A child seat for use in a vehicle, the seat comprising:

- a seat portion having a top seating surface, a bottom surface and first and second side walls;
- a cup holder having a body defining a top open end, a bottom end, and a leg extending from the bottom end and having a top surface substantially parallel to the top end of the cup holder and including fastening means; and

at least two complementary fastening receptacles in the bottom surface of the seat portion, at least one of the receptacles opening in one of the first and second side walls, each receptacle being adapted to detachably receive and retain the leg of the cup holder;

whereby the cup holder can be mounted in the at least one of the receptacles with the leg and cup holder protruding beyond the one of the first and second side walls.

8. The child seat according to claim 7, wherein the fastening means include a male part of a snap-like joint and each of the complementary fastening receptacles include a female part of the snap-like joint.

9. The child seat according to claim 7, wherein the top open end defines a cup receiving cavity including a plurality of fingers so that the cavity is adapted to receive a beverage container having any one of a plurality of sizes and any one of a plurality of shapes.

10. The child seat according to claim 7, wherein the cup holder is insulated.

11. The child seat according to claim 7, wherein the seat portion is an integrally molded member made of expanded polypropylene.

12. The child seat according to claim 7, wherein each of the first and second side walls defines an armrest extending upwardly from the seating surface, each armrest including a groove adapted to receive a lap portion of a seat belt, whereby the seat belt retains the child booster seat and a child sitting on the seating surface.

13. The child seat according to claim 7, wherein the seat portion includes a rear end defining at least one mortise with a first bore passing therethrough, the child seat further comprises a back portion including a bottom end defining a tenon for each mortise, each of the tenons having a second bore passing therethrough and being engaged in the corresponding mortise so that the first and second bores are aligned, and a pin passing through the first and second bores to form a pivot connection between the seat and back portions.

14. The child seat according to claim 13, wherein the back portion includes a front back-rest surface and a pair of side surfaces extending forwardly and beyond the back-rest surface to define a pair of protruding side walls, each side wall of the back portion being adapted to guide a shoulder portion of a seat belt of a vehicle over the shoulder of a child sitting on the seating surface, whereby the seat belt retains the child booster seat and the child.

15. The child seat according to claim 7, wherein the child seat further comprises:

a back portion having a front back-rest surface and a rear surface with a top surface extending therebetween, the

back portion defining an elongated cavity opening towards the top surface, and the rear surface defining an elongated slot in communication with the elongated cavity with first retaining means adjacent thereto;

a headrest having a head-rest surface and a rear surface; and

an elongated stem integral with the headrest extending in a direction generally parallel to the rear surface thereof and defining a bottom end including second retaining means, the elongated stem being adapted to be inserted in the elongated cavity such as to have the head-rest surface located at a desired height with respect to the seating surface, the height being maintained by the engagement of the second retaining means with the first retaining means through the elongated slot.

16. The child seat according to claim 15, wherein the first retaining means comprise a pair of elongated generally parallel strips including one of hook and loop means and extending on the rear surface of the back portion with the elongated slot therebetween, and the second retaining means comprise a pair of elongated flaps including the other of hook and loop means and extending from the bottom end of the elongated stem in a direction generally perpendicular to the pair of elongated strips when the elongated stem is inserted in the elongated cavity.

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