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(54) **INFANT SEAT INSERT**

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(57) **ABSTRACT**

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A infant seat insert in accordance with the present invention includes a backing that is positioned against the back wall of an infant seat, a plurality of first attachment parts that are attached to predetermined locations on the backing, and multiple support cushions. The support cushions include opposing head cushions which are formed with a hollow and include a lower collar portion, opposing torso cushions and a pelvis cushion. The head cushions, torso cushions and pelvis cushion each have a respective second attachment part fixed thereto, which allows for attachment of each respective cushion to the backing. When attached to the backing, the head cushions, torso cushions and pelvis cushions cooperate to establish a support space for the infant. When the infant is placed in the support space for transport, the hollows and lower collar portions of the head cushions prevent lolling of the infant's head, while the pelvis cushion and torso cushions prevent slumping of the infant within the child seat.

(21) Appl. No.: **09/870,977**

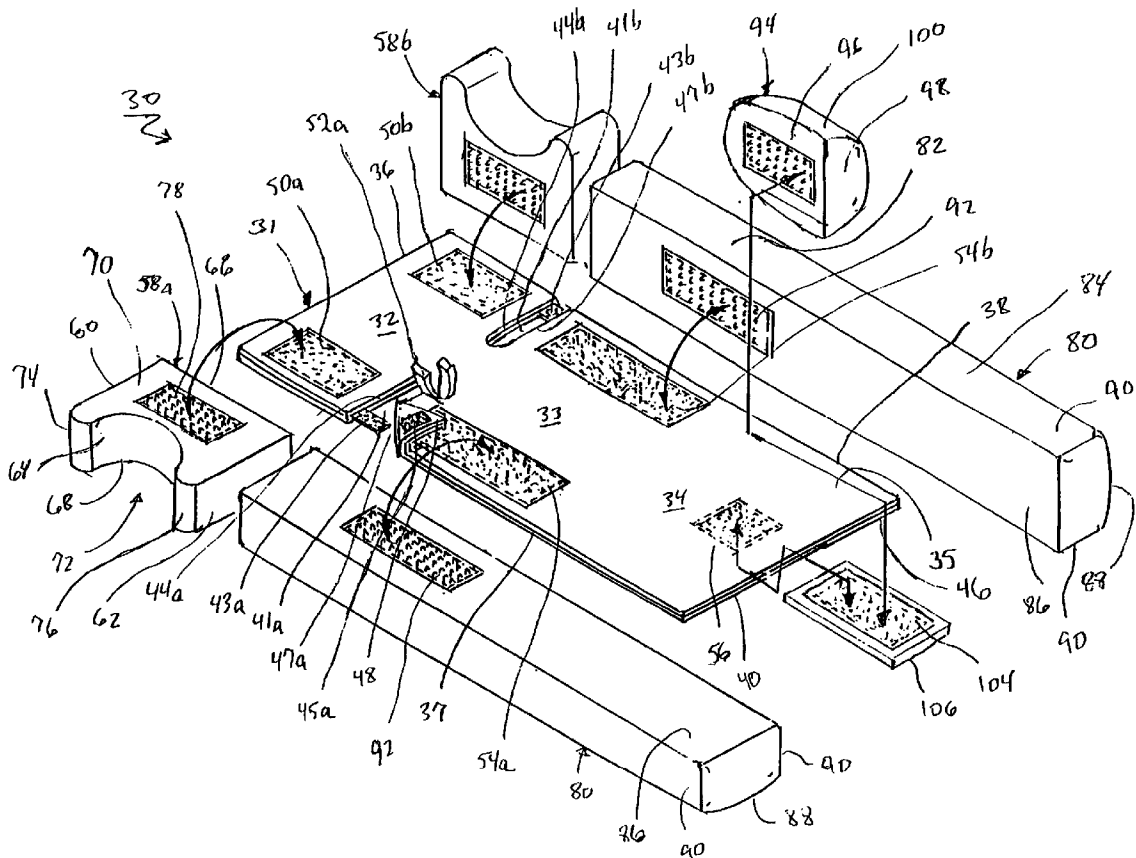
(22) Filed: **May 30, 2001**

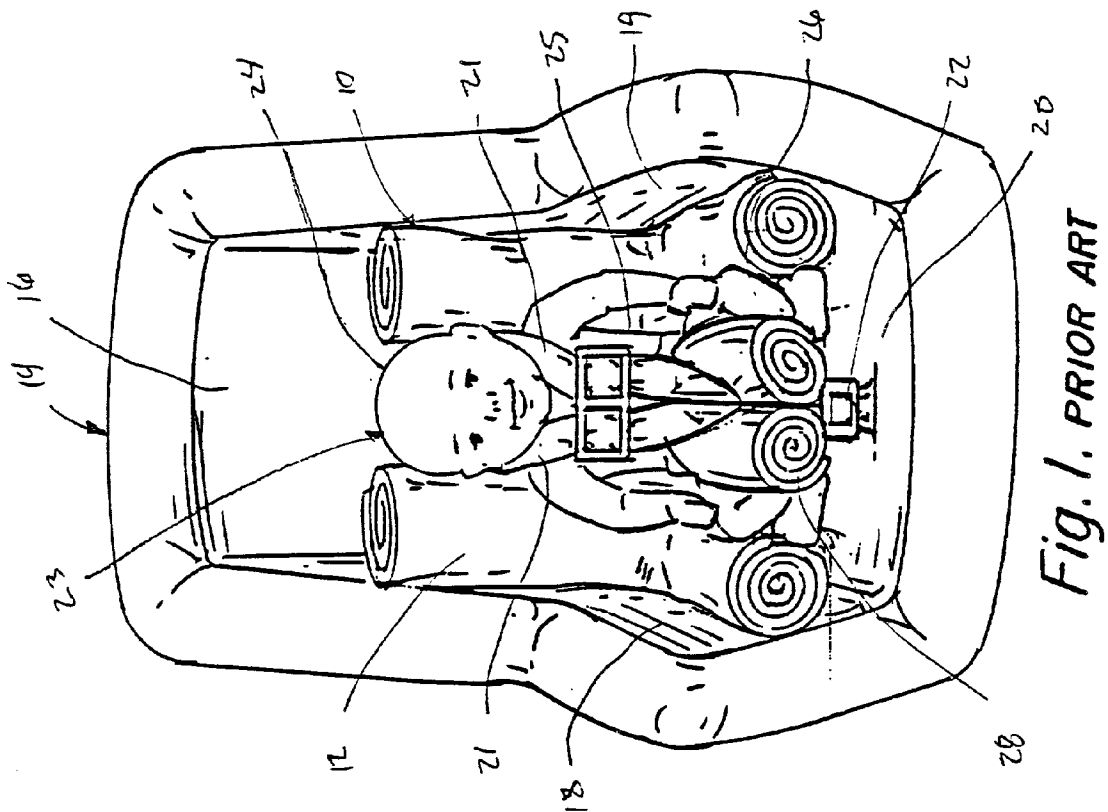
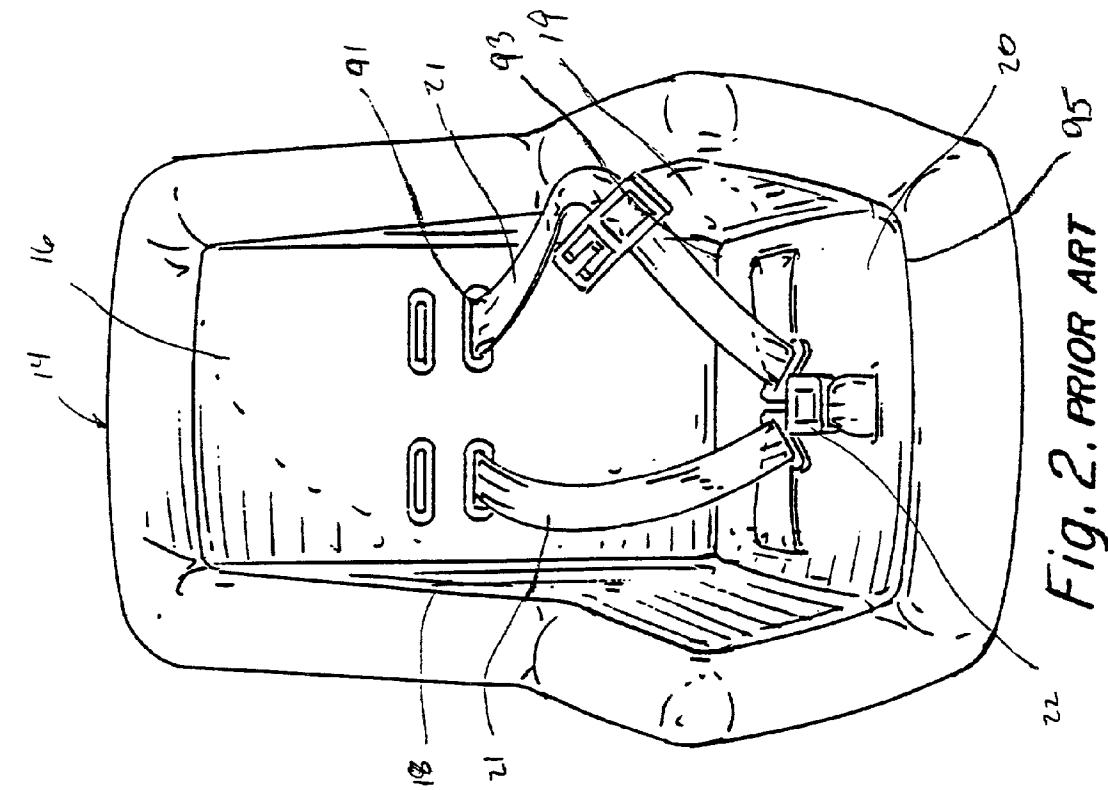
**Related U.S. Application Data**

(63) Non-provisional of provisional application No. 60/208,367, filed on May 30, 2000.

**Publication Classification**

(51) **Int. Cl.<sup>7</sup> ..... A47C 31/00**





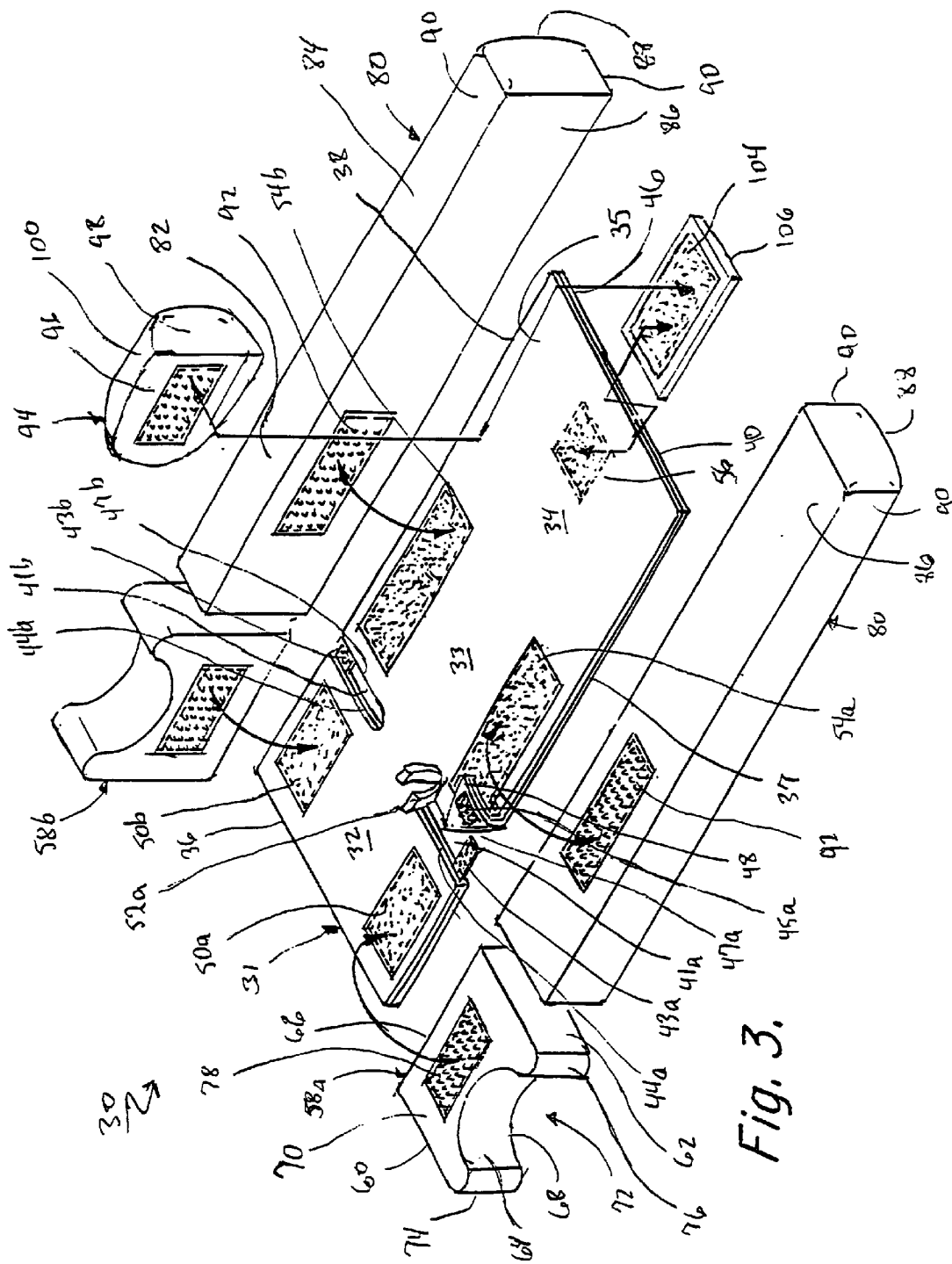


Fig. 3.

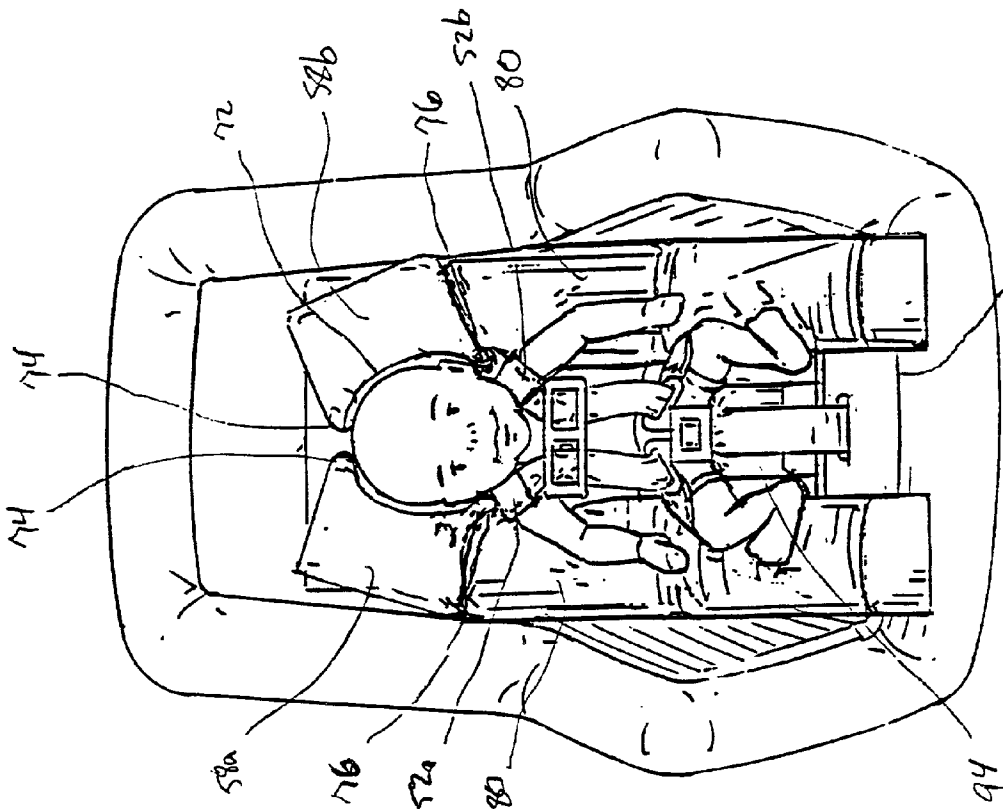


Fig. 5.

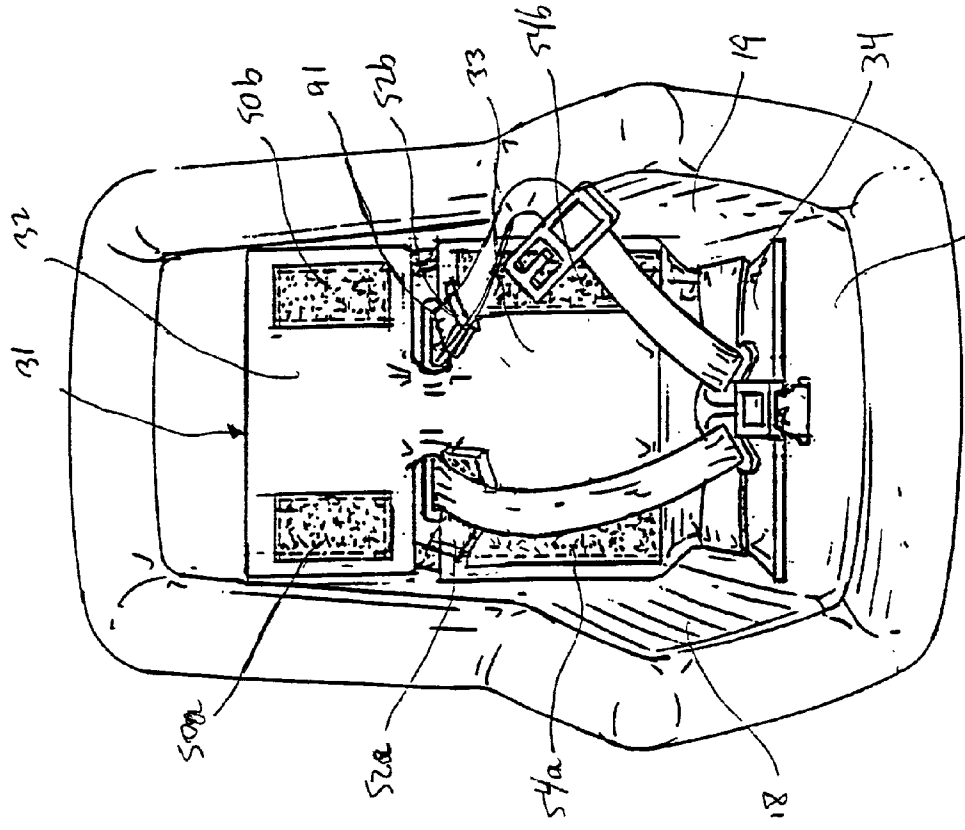


Fig. 4.

## INFANT SEAT INSERT

[0001] This application claims priority from Provisional Application Ser. No. 60/208,367, which was filed May 30, 2000.

## FIELD OF THE INVENTION

[0002] The present invention pertains to car seats for infants. The invention is particularly, but not exclusively, useful as an insert for a car seat that maintains a proper posture for, but not limited to, a premature/low birthweight infant by supporting the infant's head, trunk and pelvis when the infant is seated therein.

## BACKGROUND OF THE INVENTION

[0003] It is well known that the use of restraining belts, or seat belts, provide an increased measure of safety for passengers within a moving vehicle. Typically, however, seat belts are sized and designed to be used by adults, and they may be ineffective when used by children. For this purpose, car seats for children have become well known in the prior art. Car seats provide increased safety for children by providing a structure which adapts to the smaller size of a child, yet allows for use of the standard seat belt to secure the car seat to the vehicle seat.

[0004] Even car seats, however, must be adapted to the needs of children, taking into consideration the size and physical development of the child. With respect to infants, the structure of the car seats must account for the undeveloped musculature of the infant, as well as the inability of the infant to sit unassisted.

[0005] Premature/low birthweight infants present an even greater vehicle safety problem. This is because car seats that are sized for infants may still be too big for a premature infant. Accordingly, when premature infants are placed in the car seat, the infant slumps down and thereby establishes an incorrect posture during transport. Further, premature infant neck muscles are even weaker than those of a normal infant. Without added support for the head, the infant's head will loll when the premature infant is seated in the car seat. This is an undesirable condition with potentially serious health consequences.

[0006] To compensate for the size of the infant, fabric items such as blankets, clothing and towels are rolled or wadded up and then wedged between the sides of the infant and the car seat to properly position the infant for transport. With such an arrangement, however, the items may become unwound and/or dislodged while the car is in motion. If the driver is alone in the vehicle, it is difficult to know whether the item has come loose, as car seats are placed in the back seat of vehicles in a rear-facing position. What is needed is a car seat insert that closely conforms to a premature/low birthweight infant's body, and that also conforms to the car seat so that the infant is securely positioned within the car seat with a good posture and does not interfere with the safety function of the car seat.

[0007] U.S. Pat. No. 5,916,089, which issued to Ive for an invention entitled "Support Article For Use With Infant Carrier Device", discloses a pad for a child seat with a first section having a raised cushion assembly, a pair of cushion elements for the torso that are adjustable, and a crotch support. Importantly, however, the Ive patent does not

disclose head support means that are formed with hollows in order to more closely conform to the infant's head. Instead, Ive discloses an elongated support pillow which does not closely conform to the infant's head. With this configuration, the support pillow presents the same problems as a rolled-up blanket or towel with respect to preventing lolling of the infant's head.

[0008] U.S. Pat. No. 4,383,713, which issued to Roston for an invention entitled "Orthopedic Support Apparatus for Infants", discloses a device in which a pillow having an outer flange and formed with a central aperture is attached to a planar sheet. Roston further discloses a pair of lateral supports for supporting the infant's torso. The flange for the pillow as disclosed by Roston, however, is not formed with hollows in order to closely conform to a premature infant's head and prevent lolling of the head. Further, Roston does not disclose any manner of supporting the infant's pelvis when the infant is placed in the support apparatus.

[0009] In light of the above, it is an object of the present invention to provide an insert for an infant seat that provides support for an infant's head to prevent lolling of the head when the infant is placed in the seat. It is another object of the present invention to provide an infant seat insert that provides support to position an infant's pelvis in a manner which prevents the infant from slumping when the infant is seated therein. Another object of the present invention is to provide an insert for an infant seat that can be adjusted to closely conform to the shape of the infant's body. Yet another object of the present invention is to provide an infant seat insert that can be used with other devices for infant transport and restraint, such as strollers and infant carriers. Another object of the present invention is to provide an infant seat insert that can easily be placed and removed from the infant seat. Another object of the present invention is to provide an infant seat insert that is comparatively cost effective to manufacture. A final object of the present invention is to provide an infant seat insert that can be manufactured in a range of costs, according to the types of materials used, in order to target various economic consumer levels.

## SUMMARY OF THE INVENTION

[0010] An infant seat insert in accordance with the present invention includes a backing and a plurality of first attachment parts that are secured to predetermined locations on the backing. The infant seat insert also includes a plurality of multiple support cushions, with each support cushion having a respective second attachment part that can be releasably attached to a first attachment part on the backing.

[0011] The support cushions include a pair of head cushions. Each head cushion is formed with a hollow on the inside surface of the head cushion. This further establishes a lower collar portion on both head cushions. For attachment of the head cushions to the backing, the second attachment part for each respective head cushion is mated to a corresponding first attachment part on the backing. Once the head cushions are attached to the backing, the above-described structure of the head cushions allows for the lower collar portion to engage the neck of the infant while the hollow simultaneously conforms to the shape of the infants head. This prevents lolling of the infants head when the infant is seated therein.

[0012] The support cushions for the insert of the present invention also include a pelvis cushion and a pair of opposing torso cushions. A second attachment part is attached to the back of both the pelvis cushion and to each torso cushion, to allow for releasable placement of the pelvis cushion and torso cushions on the backing in a similar manner as for the above-described head cushions.

[0013] During operation, the backing is placed against the backwall of a vehicle infant seat, and the infant is placed in the seat. The head cushions are positioned around the infant's head so that the hollow closely conforms to the infant's head and the lower collar portion softly engages the infant's neck, to thereby prevent lolling of the infant's head. The pelvis cushion is placed between the infant's legs so that it abuts the infant's pelvis and is attached to the backing, and the torso cushions are attached to the backing on each side of the infant's torso. Once attached, the lower portions of the torso cushions extend beyond the bottom edge of the backing and gently abut the outer surfaces of the infant's legs. When positioned in this manner, the torso cushions, pelvis cushion and head cushions cooperate to establish a support space for the infant and thereby prevent lolling of the infant's head and slumping of the infant's body while the infant is seated in the car seat for transport.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The novel features of this invention will be best understood from the accompanying drawings, taken in conjunction with the accompanying description, in which similar characters refer to similar parts, and in which:

[0015] FIG. 1 is a prior art front elevational view of an infant positioned in an infant seat with rolled up fabric items.

[0016] FIG. 2 is a front elevational view of the infant seat of FIG. 1 with the infant and fabric items removed.

[0017] FIG. 3 is an isometric exploded view of the infant seat insert assembly of the present invention.

[0018] FIG. 4 is a front elevational view of the insert backing of FIG. 3 positioned in an infant seat, with the cushions removed for clarity.

[0019] FIG. 5 is the same view as FIG. 4, with the cushions included and with an infant seated in the infant seat.

#### WRITTEN DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] With reference now to FIGS. 1 and 2, an infant seat insert, as currently known in the prior art, is shown and generally designated by reference character 10. As shown, the insert essentially consists of a plurality of rolled fabric items 12 such as towels, for example, which are used in conjunction with an infant seat 14.

[0021] The infant seat is formed with a back wall 16, side walls 18, 19 and a bottom wall 20. A pair of infant seat belts 21, 21 extend from back wall and are selectively buckled to the bottom wall at a buckle 22 in a manner well known in the prior art. With an infant 23 seated in the infant seat, the head 24 and torso 25 rest against the back wall, while the infant legs 26 rest upon the bottom wall, as shown in FIG. 1. The seat belts are placed over the torso and connected to the buckle.

[0022] There are different seat belt configurations for the prior art infant seat shown in FIGS. 1-2 and 4-5. Some seat belts (not shown) extend both from the back wall and the side walls and connect to the buckle in what is known as a "five-point harness" in the prior art. Other seat belts extend from the back wall and terminate in a "T-shield" (not shown), and the T-shield is then connected to buckle 22. Other, "3-point harness" and "tray shield" are also known in the prior art. It is to be appreciated, however, that the infant seat insert of the present invention is adapted to fit infant seats with all of the different belt configurations as mentioned above and known in the prior art, in addition to the belt configuration shown in the Figures.

[0023] With the infant secured with the infant seat as described above, the fabric items are rolled or wadded up and wedged between the infant and the back wall, side walls and bottom wall of the infant seat. This conforms the fabric items into a somewhat L-shaped configuration. A separate clothing item 28 is further rolled up, formed into a U-shape, or merely wadded up, and placed between the infant seat belts and the infant pelvis (not shown in FIGS. 1 and 2).

[0024] Referring now to FIGS. 3-5, the infant seat insert assembly of the present invention is shown and is generally designated 30. The insert includes a backing 31 with an upper section 32, a middle section 33 and a lower section 34, as well as a front face 35 which opposes an underside 46. The backing is preferably rectangular in shape and is bounded by a top edge 36, a pair of opposing side edges 37, 38 and a bottom edge 40. In an alternative embodiment of the invention, however, the lower section 34 of the insert backing can have a decreasing transverse taper from middle section 33 to bottom edge 40, in order to avoid interfering with lap seat belts on certain infant seat models (not shown).

[0025] As shown in FIGS. 3-5, notch 41a is cut into side edge 37 between upper section 32 and middle section 33 and extends therefrom approximately two thirds toward the centerline of the backing. Similarly, notch 41b is cut into side edge 38. Tab 43a is attached to the backing at the upper side 44a of notch 41a, and tab 43a extends downwardly from upper side 44a, across the notch and past lower side 47a. A tab patch 45a is attached to the underside 46 of the backing immediately below the lower side 47a of the notch (notch corner 48 of the backing is upturned in FIG. 3, to show the structure of tab patch 45a), and tab 43a is removably attached to tab patch 45a. The structure of upper side 44b and lower side 47b of notch 41b, tab 43b and tab patch 45b (not shown) is similar to that described above.

[0026] Proceeding toward the top edge 36 of the backing from the notches, the upper section includes a pair of opposing upper attachment parts 50a, 50b that are mounted to the front face. Specifically, upper attachment part 50a is mounted to the front face proximate side edge 37 so that it is positioned directly above notch 41a and between notch 41a and top edge 36 of backing 31. Similarly, upper attachment part 50b is mounted proximate side edge 38 and between notch 41b and the backing top edge.

[0027] Proceeding downwardly from the notches into the middle section 34, a pair of opposing middle attachment parts 54a, 54b are mounted to the front face. Middle attachment part 54a is mounted proximate side edge 37 and directly below notch 41a, and middle attachment part 54b is mounted proximate side edge 38 and directly below notch 41b.

[0028] A pair of chafing wraps **52a**, **52b** are mounted to the front face of the backing (Wrap **52b** is omitted in **FIG. 3** for clarity). Wrap **52a** is mounted to the front face immediately below notch **41a** and inboard of attachment part **54a**. Wrap **52b** is similarly mounted near notch **41b** and middle attachment part **54b**, as shown in **FIGS. 4 and 5**.

[0029] In the lower section **34** of the insert backing, a lower attachment part **56** (shown in phantom) is mounted to underside **46** of the backing proximate bottom edge **40**, so that the lower attachment part is transversely centered on the backing.

[0030] The insert assembly of the present invention includes a pair of head cushions **58a**, **58b** that are sized and shaped to closely conform to an infant head and neck. Specifically, each head cushion has a top side **60**, a bottom side **62**, an inner side **64** and an outer side **66**. Head cushion **58a** further has a front side **68** and a mating side **70**. The inner side of head cushion is formed with a recessed hollow **72** and the recessed hollow establishes an upper collar portion **74** and a lower collar portion **76** on the inner side of the head cushion.

[0031] A head cushion attachment part **78** is attached to the mating side of the head cushion. To releasably attach the head cushions to the backing, the head cushion attachment parts **78**, **78** for each cushion are mated to a respective upper attachment part **50a**, **50b** on the upper section of the backing. The hollow and lower collar portion of the head cushions allow for placement of the head cushions in a manner that more closely conforms to the shape of an infant's head and neck (as best seen in **FIG. 5**). This prevents any lolling of the head when the head cushions are mated to the backing and an infant is seated in the infant seat. The shape of the head cushions can be modified according the design needs, aesthetics and end user requirements, provided the inner sides of the head cushions are formed with a recessed hollows and the lower collar portion closely conforms to the head and neck area of the infant when the head cushion is mated to the backing.

[0032] A pair of opposing torso cushions **80,80** are also included in the insert assembly of the present invention. Each torso cushion is somewhat-oblong shaped with an upper portion **82** that merges into a lower portion **84** and formed with a flat torso rear surface **86**, torso front surface **88** and two torso side surfaces **90, 90**. The length of the torso cushion is sized to be correspond to the distance from the lower seat belt aperture **91** to the lower edge **93** of the rear wall, plus the distance from lower edge **93** to front edge **95** of the bottom wall. A torso attachment part **92** is fixed to torso rear surface **86** in the upper portion of the torso cushion.

[0033] To attach the torso cushions **80, 80** to the backing, each torso attachment part is mated to a respective middle attachment part **54a**, **54b**. Once attached to the backing, the torso cushions are positioned under notches **41a**, **41b** and oriented longitudinally along the respective side edges **37**, **38**. The lower portion of each torso cushion extends downwardly past the bottom edge **40** of the insert. In the preferred embodiment, once the torso cushions as oriented relative to the backing as discussed above, the cushions are sewn thereon to the permanently attach the torso cushions to the backing.

[0034] To prevent the infant from slumping when seated within the infant seat, the insert of the present invention

includes a pelvis cushion **94**. The pelvis cushion is formed with a somewhat D-shaped, flat pelvis cushion back side **96**, a flat pelvis cushion bottom side **98**, and a spherical front side **100**, and a pelvis attachment part **102** is attached to the pelvis cushion bottom side.

[0035] To mate the pelvis cushion to the backing, a tongue attachment part **104** is sewn onto a tongue **106**, as best seen in **FIG. 3**. Next, a portion of the tongue attachment part is mated to the lower attachment part on the underside of the backing. Finally, the pelvis attachment part **102** is mated to a portion of the tongue attachment part.

[0036] In the preferred embodiment, the pelvis cushion is attached to the front face so that the arcuate portion of the D-shaped pelvis cushion back side is facing toward the backing middle section. With this configuration, the pelvis cushion closely conforms to the pelvis to thereby prevent slumping of the infant when seated in the infant seat. It is to be appreciated, however, that other polygonal shapes are envisioned for the pelvis cushion, provided the cushion closely conforms to the pelvis when attached to the tongue as described above.

[0037] In the preferred embodiment, the head cushions, torso cushions, pelvis cushion and backing are made of a polyurethane material (such as Isotonic™ by Carpenter Company), which is further covered with a cloth material, such a cotton/synthetic fiber mixture. This allows for increased comfort of the infant and allows the cushions and backing to be cleaned in a quick and easy manner. It is to be appreciated, however, that other materials could be used in place of polyurethane, such as urethane foam, rubber products, or plastic filler materials, bladders, gel fillers or granular materials. The tabs, tab patches and attachment parts are made with fabric and Velcro® material and sewn to the backing/cushions in a manner known in the art. Other attachment means, however, could be used. Examples are snaps, safety pins, clips and zippers.

[0038] To secure the backing to the infant seat **16**, the insert is placed into seat **16** so that the upper section **32** and middle section **33** are against the back wall **16** and the lower section **34** rests upon the bottom wall **20**. Infant seat belts **21, 21** are slipped into a respective notch **41a**, **41b**, as best seen in **FIG. 4**. Next, tab **43a** is fastened to the tab patch **45a** and tab **43b** is fastened to tab patch **45b**. The use of Velcro® for the tabs and tab patches allows for slight adjustment as necessary to snugly nest the backing against the infant seat back wall and bottom wall.

[0039] To secure the infant in the infant seat for transport, the infant is placed in the infant seat so that the torso and head of the infant rest against the upper section and the torso and pelvis rests against the middle section of the backing. When in this position, the infant legs **26** will rest upon the lower section **34** of the backing. Next the chafing wraps are wrapped around seat belts **21, 21** to cover the seat belts. The wraps inhibit chafing or irritation of the infant's skin when the infant is seated in the infant seat insert assembly, as best seen in **FIG. 4**.

[0040] The head cushions are attached to the upper section of the backing on opposing sides of the infant head so that the head is positioned between the head cushions. Importantly, the recessed hollow areas closely conform to the infant head and the lower collar portions closely conform to

the infant neck area, as discussed above and best seen in **FIG. 5**. This prevents lolling of the infant head when the infant is seated in the infant seat.

[0041] The torso cushions are attached to the middle section on opposite sides of the infant torso as discussed above. This places a torso cushion between the infant and infant seat side walls **18, 19** and thereby prevents any transverse motion of the torso and pelvis for the infant when seated in the insert assembly. Finally, the pelvis cushion is attached to the lower section of the backing as described above to position the pelvis cushion between the infant pelvis and the infant seat buckle. The D-shape of the pelvis cushion bottom side engages the infant pelvis and retains the pelvis against the back wall of the infant seat, thereby preventing slumping of the infant when seated therein.

[0042] When configured as described above, the head cushions, torso cushions and pelvis cushion for the insert assembly of the present invention combine to define a support space that closely corresponds to the overall shape of the infant body to provide a safe posture for the infant during transport and that enables the car seat to protect the way it was designed.

[0043] While the particular infant seat insert, as herein shown and disclosed in detail, is fully capable of obtaining the objects and providing the advantages above stated, it is to be understood that the presently preferred embodiments are merely illustrative of the invention. As such, no limitations are intended other than as defined in the appended claims.

What is claimed is:

1. For an infant seat that includes a backwall and infant seat belts or an infant seat having openings through which vehicle seat belts extend, an insert assembly positioned within said infant seat and comprising:

a backing placed against said backwall;

a plurality of first attachment parts secured to predetermined locations on said backing; and,

multiple support cushions having shapes corresponding to selected portions of the body of an infant, said cushions having second attachment parts which are releasably attached to said first attachment parts, said cushions, in combination, defining a support space corresponding to an infant's body.

2. The insert assembly of claim 1 wherein said cushions include a head cushion positioned to be immediately adjacent a side of an infant's head when said infant is placed within said support space when said head cushion is attached to said backing.

3. The insert assembly of claim 2 wherein said head cushion includes a hollow that conforms to the side of the infant's head.

4. The insert assembly of claim 3 wherein said head cushion includes a lower collar portion which is positioned to engage an infant's neck area when said infant is placed within said support space.

5. The insert assembly of claim 4 further comprising at least one chafing strap, said chafing strap being fixed to said backing proximate said lower collar portion and being wrapped around said vehicle seat belts when said infant is placed within said support space.

6. The insert assembly of claim 1 wherein said backing includes a bottom edge and wherein said support cushions include a pelvis cushion selectively attached to said backing proximate said bottom edge to be positioned next to an infant's pelvis area when said infant is placed within said support space.

7. The insert assembly of claim 6 wherein said backing has two opposing side edges and wherein said cushions include at least one torso cushion selectively attached to said backing proximate one of said side edges to position said torso cushion against an infant's torso when said infant is placed within said support space.

8. The insert assembly of claim 7 wherein said torso cushion extends below said bottom edge for engagement with the outer surfaces of the infant's outer legs when said infant is placed within said support space.

9. A method for transporting a premature/lower birth-weight infant in a vehicle which comprises the steps of:

(A) providing an infant seat that includes a backwall and infant seat belts or openings through which vehicle seat belts extend;

(B) placing a backing against said backwall;

(C) fixing a plurality of first attachment parts to predetermined locations on said backing;

(D) furnishing a plurality of multiple support cushions having shapes corresponding to selected portions of the body of said infant;

(E) attaching each of a plurality of second attachment parts to a respective support cushions; and,

(F) releasably mounting said support cushions to said backing in a manner which defines a support space closely corresponding to said body of said infant.

10. The method of claim 9 wherein said step (D) further includes the step of:

(G) forming a hollow in two of said support cushions, said forming step further establishing a lower collar portion in said support cushions that include said hollow; and,

(H) positioning said support cushions from said step (G) around the head of said infant so that said hollows closely conform to said infant's head.

11. The method of claim wherein step (H) causes said lower collar portion to engage the neck area of said infant.

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