VEHICLE SEAT ASSEMBLY HAVING A MODULAR ACCESSORY SYSTEM AND METHOD OF MAKING THE SAME

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Abstract
The present invention relates to a vehicle seat assembly having an accessory system and method of making the same. In at least one embodiment, the vehicle seat assembly comprises a seat cushion and a seat back connected to the seat cushion such that the seat back is extendable in a generally upright position relative to the seat cushion. In this embodiment, the seat back comprises a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame. In this embodiment, an accessory support structure is secured to the seat frame between the seat frame and the trim cover and has spaced apart support members extending over at least 60 percent of the length or width of the seat back configured to selectively receive at least one vehicle occupant accessory assembly.
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CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. provisional application Ser. No. 60/911,642 filed Apr. 13, 2007.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention
[0003] The present invention relates to a vehicle seat assembly having a modular accessory system and method of making the same.
[0004] 2. Background Art
[0005] Vehicle seat assemblies are known. Generally speaking, most vehicle seat assemblies include three fundamental components: (a) a frame to support the seat assembly and mount it to a vehicle body within an occupant compartment; (b) a foam cushion to cover the frame; and (c) trim material to cover the foam cushion and provide a durable surface for contact with a seat assembly occupant.

SUMMARY OF THE INVENTION

[0006] According to at least one aspect of the present invention, a vehicle seat assembly is provided. In at least one embodiment, the vehicle seat assembly comprises a seat cushion and a seat back having a top and a bottom and being connected to the seat cushion such that the seat back is extendible in a generally upright position relative to the seat cushion. The seat back comprises a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame. The seat back has a front surface and an opposed rear surface. The vehicle seat assembly further comprises an accessory support structure disposed between the trim cover and the frame. The accessory support structure is secured to the seat frame and has spaced apart support members extending over at least 60 percent of the length or width of the seat back. The support members are configured to selectively receive at least one vehicle occupant accessory assembly.

[0007] In at least another embodiment, the vehicle seat assembly comprises a seat cushion and a seat back having a top and a bottom which is connected to the seat cushion such that the seat back is extendible in a generally upright position relative to the seat cushion. The seat back comprises a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame. The vehicle seat assembly further comprises an accessory support structure secured to the seat frame between the seat back and the trim cover. The accessory support structure has spaced apart support members that extend over at least 60 percent of the length or width of the seat back. The vehicle seat assembly further comprises at least one vehicle occupant accessory supported on the accessory support structure with the accessory assembly comprising a carrier selectively supportable on the support members and at least one vehicle occupant accessory supportable on the carrier.

[0008] According to at least another aspect of the present invention, a method of making a vehicle seat assembly is provided. In at least one embodiment, the method comprises providing a seat cushion, providing a seat back having a top and a bottom, and connecting the seat back bottom to the seat cushion such that the seat back is extendible in a generally upright position relative to the seat cushion. The seat back comprises a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame. The seat back has a front surface and an opposed rear surface. The method further comprises supporting an accessory support structure on the frame such that the accessory support structure extends over at least 60 percent of the length or width of the seat back and is disposed between the trim cover and the frame. The support members is configured to selectively receive at least one vehicle occupant accessory.

[0009] In at least one embodiment, the vehicle occupant accessory is an assembly comprising a carrier having attachment members that cooperate with receiving members on the support members. In at least a further embodiment, the assembly further comprises a vehicle occupant accessory supportable on the carrier.

[0010] In yet at least a further embodiment, the support structure is capable of supporting a plurality of carriers. The carriers can be the same size and populated with a variety of differing accessories, generally of the same or similar size, but with different functionality to fit various user's needs or lifestyle activities.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a rear perspective view of a vehicle seat assembly in accordance with an embodiment of the present invention, illustrating certain exemplary vehicle occupant accessories;
[0012] FIG. 2 is a view similar to FIG. 1 illustrating components in a different position;
[0013] FIG. 3 is a view similar to FIG. 1 illustrating another embodiment of the present invention, and certain other exemplary vehicle occupant accessories;
[0014] FIG. 4 is a view similar to FIG. 1 illustrating certain exemplary vehicle occupant accessories detached from the vehicle seat assembly;
[0015] FIG. 5 is an exploded sectional view of portions of the seat assembly illustrated in FIG. 1, illustrating certain other exemplary vehicle occupant accessories; and
[0016] FIG. 6 is a cross-sectional view of a portion of the seat assembly of FIG. 1 taken along line 6-6.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] As required, detailed embodiments of the present invention are disclosed herein. However, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms. The figures are not necessarily to scale, some features may be exaggerated or minimized to show details of particular components. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a representative basis for the claims and/or as a representative basis for teaching one skilled in the art to variously employ the present invention.

[0018] Moreover, except where otherwise expressly indicated, all numeral quantities in this description and in the claims are to be understood as modified by the word "about" in describing the broader scope of this invention. Practice within the numerical limits stated is generally preferred. Also, unless expressly stated to the contrary, the description of a group or class of materials may be suitable or preferred for a
given purpose in connection with the invention implies that mixtures of any two or more members of that group or class may be equally suitable or preferred.

[0019] Referring now to the Figures, where like numerals are used to designate like structure throughout the drawings, a schematic vehicle seat assembly in accordance with at least one embodiment of the present invention is generally shown at 10 in FIG. 1. While the vehicle seat assembly 10 is illustrated in FIG. 1 to be a bucket seat assembly, it should be understood that the principles of the invention are applicable to other types of seat assemblies, such as bench, captain as well as other types of seat assemblies.

[0020] As shown in FIG. 1, the vehicle seat assembly 10 includes a seat cushion 12 and a seat back 14. The seat back 14 has a top portion 18, a bottom portion 20, and an intermediate portion 22 extending between the top and bottom portions of the seat back. The seat back 14 has a rear surface 26 facing the back of the vehicle and an opposed front surface 28 facing the front of the vehicle. The bottom portion 20 of the seat back 14 is connected to the seat cushion 12 in any suitable manner, but is generally pivotally connected to enable the seat back to extend in a generally upright position relative to the seat cushion 12.

[0021] As schematically shown in FIGS. 5 and 6, in at least one embodiment, the seat back 14 comprises a seat back frame 32, a foam pad 34 supported by the seat back frame 32, and a trim cover 36 that extends about and covers the frame 32 and the foam pad 34. While not specifically illustrated, it should be understood that the seat cushion 12 can have a similar construction including a seat cushion frame, a foam pad and trim cover similar to that illustrated and described with respect to the seat back 14 herein.

[0022] The seat frame 32 may be constructed from any material suitable for application within a vehicle seat assembly, such as aluminum, steel, another metal alloy, or a suitable polymer. Further, the seat frame 32 may be manufactured using a technique commonly known in the art, relative to the type of material employed. By way of example, manufacturing techniques may include stamping, welding, fastening or molding a suitable material to form a seat frame 32.

[0023] The foam pad 34 can be made of any suitable type of foam, such as polyurethane foam, for instance. It should also be understood that the pad 34 could also be made of some, or even all, non-foam material. The seat foam pad 34 may be conventionally secured to the seat frame 32 in any suitable manner, such as by an adhesive.

[0024] In at least the illustrated embodiment, the trim cover 36, as set forth above, is adapted to engage the foam pad 34 and the frame 32 in a covering relationship. The trim cover 36 may include any suitable construction and material commonly known in the art. For instance, in at least one embodiment, trim cover 36 could comprise a relatively hard backing 37 and a relatively soft trim material, such as fabric 39, as shown in FIG. 1. In embodiments where a relatively hard backing 37 is employed, the backing could be made of a relatively hard plastic, such as PVC and ABS.

[0025] Another example of a suitable construction of the trim cover 36 is illustrated in FIG. 3 where the front, back and sides of the trim cover are made of fabric, such as cloth, leather or a polymer trim material. By way of example, some of the known trim materials includes cloth, leather or polymers of sufficient quality and thickness for use in seat trim applications. Polymer trim materials may include a flexible closed cell polymer skin material such as polyvinyl chloride (PVC), thermoplastic olefin (TPO) or thermoplastic urethane (TPU). Additionally, materials for use as the trim cover 36 may include a foam backing (not shown, but generally known in the art), which may be manufactured by a variety of polymeric foam materials.

[0026] Referring back to FIG. 1, a plurality of vehicle accessory assemblies 40, 42 and 44 are shown to be supported on the back surface 26 of the seat back 14. As will be discussed further below, at least one aspect of the present invention allows for the vehicle accessory assemblies 40-44 to be selectively secureable to the seat back 14, and more specifically, to an accessory ring 50 secured to the seat frame 32. While three vehicle accessory assemblies 40-44 are shown in the embodiment illustrated in FIG. 1, it should be understood that fewer, i.e., one or two, or more than three accessory assemblies could be supported on the seat back 14.

[0027] The vehicle occupant accessories supportable by the accessory ring 50 can be any accessories that the vehicle occupant would find useful to have while being a passenger in the vehicle, particularly a passenger in the back seat of the vehicle. For instance, the exemplary vehicle occupant accessories illustrated in FIG. 1 include a stowable, fold-down tray 40 or active platform, a storage accessory, such as a map pocket 42, having an openable biased flap, and another storage compartment, such as for storing sunglasses, pens, game cartridges, CD’s and the like, having an openable door, such as with a glove compartment. Other exemplary accessories include, but are not necessarily limited to, a series of trash bag holders 80 (FIG. 3) including a series of bag hooks 81, a bag or back pack 82 supportable by clips 77 on a carrier, a net 79 (FIG. 4), a media holder 86 (FIG. 5) having an adjustable holder 73, which can hold a portable DVD player, CD player, video game console, rear seat entertainment/information or the like, schematically illustrated at 88, or a series of individual hooks, shown schematically at 90. It should be understood that the vehicle occupant accessories and other assemblies illustrated and described herein are only exemplary and in no way to be understood to limit the present invention.

[0028] In the illustrated embodiment in FIG. 1, each of the vehicle accessory assemblies 40-44 are different from each other. While the exemplary assemblies 40-44 illustrated in FIG. 1 are all different from each other, it should be understood that two or more of the accessory assemblies could be the same.

[0029] As will be discussed further below, as the vehicle accessory assemblies 40-44 are selectively secureable to the seat back 14, in at least one aspect of the present invention, seat assemblies may be readily varied which can enable the seat to be designed and/or modified by the user, i.e., the vehicle owner, after being delivered from the vehicle assembly plant, for instance at the point of sale, i.e., the dealership. Moreover, varying seat assemblies can be easily made at the vehicle assembly plant.

[0030] To help enable the variability of seat assembly designs, the accessory ring 50 is disposed on the rear of the seat back 14. In the illustrated embodiments, the accessory ring 50 is secured to the frame 32 and is covered by the trim cover 36. In at least the embodiment illustrated in FIG. 5, the accessory ring 50 includes spaced apart rails 52 having a plurality of holes 54 for receipt of the accessory assemblies. It is should be understood that the holes 54 can have any suitable size and shape. In at least one embodiment, at least one, and in the specific embodiment illustrated in FIG. 5, three transverse members 56, 58 and 62 extend between and connect
rails 52. It should be understood that the accessory ring 50 can have any suitable shape, and embodiments are readily envisioned without any transverse member(s) 56, 58 and/or 42.

[0031] One or more of the transverse members 56, 58 and 62 and/or rails 52 can have holes 64 or other openings for securing the ring 50 to the frame 32. As can be readily understood, fasteners such as screws or rivets (not shown) can extend through holes 64 for securing the ring 50 to the frame 32. Further, as shown in the embodiment illustrated in FIGS. 5 and 6, a mounting bracket 68 having holes 35, secured to the frame 32, could be employed to help attach ring 50 to the frame 32. It should also be readily understood that other fastening mechanisms could be employed to secure the accessory ring 50 to the frame 32. For instance, accessory ring 50 could be welded to the frame 32.

[0032] As shown in FIG. 5, the accessory ring rails 52 are spaced apart from each other. In at least one embodiment, the accessory ring rails 52 are spaced apart 20 to 50 centimeters, and in at least another embodiment 25 to 40 cm.

[0033] As shown in the embodiment illustrated in FIG. 4, the auxiliary rails 52 extend generally the length of the intermediate portion 22 of the seat back 14. The length of the seat back 14 is generally between 65 to 115 cm, with the intermediate portion 22 of the seat back being about 40 to 80 cm. In at least one embodiment, the accessory rails 52 extend over at least 60 percent of the length L of the seat back 14, and in at least another embodiment between 65 and 90 percent of the length L of the seat back 14, and in at least another embodiment between 70 and 80 percent of the length L of the seat back 14. This length of the rails 52 provides a sufficient amount of space on the seat back 14 to provide a variety of vehicle occupant accessories. This provides the seat back with the ability/flexibility to be selectively configured to have a desired amount of, and variety of, vehicle occupant accessories. While the rails 52 are shown to extend over a substantial, at least 60%, of the length L of the seat back 14, it should be understood that the rails could extend similarly in the transverse direction, i.e., over at least 60% of the width W of the seat back.

[0034] The back surface 26 of the seat back 14 can be provided with openings 70 that generally align with the holes 54 on the accessory ring 50. The openings 70, as can be seen in FIG. 4, can be provided in the back surface 26 of the trim cover 36.

[0035] Each of the vehicle occupant accessories will include at least one attachment member, which is schematically illustrated in FIG. 4 to be one or more clips 74, which can be selectively insertable through openings 70 of the trim cover 36 and selectively engageable within one or more of the holes 54 of the accessory rails 52. While the attachment member(s) clip(s) 74 can comprise any suitable clip, the clip should be able to be selectively securable within, and removable from, the accessory rails 52. The attachment members or clips 40 could be made of any suitable material such as plastic or metal. Moreover, as will be explained further below, the clips 74 can be integrally formed on the vehicle accessory or, as will become evident below, on a carrier on which the accessory is secured. Furthermore, while the vehicle occupant accessory assemblies are described and illustrated as having attachment members such as clips 74 with the ring 50 having receiving members such as holes 54, it should be understood that the accessory assemblies could have the receiving members with the ring having the attaching members. Moreover, while clips 74 and holes 54 have been described as the attachment members and the receiving members, respectively, it should be understood that other attachment members such as tabs, hooks and other male-type attachment members, and other receiving members such as sockets, retaining arms and other female-type receiving members, could be used.

[0036] As shown in FIGS. 5 and 6, each accessory assembly can be provided with a carrier 92 which can include attachment members 74 for selectively securing the carrier, and thus the accessory, to the rails 52. The carriers 92 could have the accessories secured to them by any suitable means. The carriers 92 could be a permanent part of a specific dedicated vehicle accessory assembly or could be able to be selectively fitted with various vehicle accessories. Towards this end, the carriers 92 could include various holes 96, or other receiving members, to receive attachment members 98, such as clips, shown schematically on exemplary accessory hooks 90 and media holder 88, in FIG. 5. The carriers can be the same or different sizes.

[0037] Referring to FIG. 3, another embodiment of the vehicle seat assembly of the present invention is illustrated. In this embodiment, the seat back 14 is provided with or supports a bag or backpack 82 and a shopping bag holder 80, having a plurality of hooks 81 and a netted compartment 79. The bag 82 can be provided with hooks 71 that can be supported on clips 77 on carrier. It should be readily understood that various other vehicle accessories can be used beside the illustrated assemblies.

[0038] As discussed above, it is envisioned that a variety of various vehicle occupant accessories could be employed and the types of accessories are not to be limited by the disclosure herein, which should be considered exemplary.

[0039] Moreover, it should be understood that the accessory ring 50 can be made out of any suitable material and by any suitable process. For instance, the accessory ring 50 can be made of any suitable plastic or metallic material and could be made by any suitable molding process or stamping. Furthermore, the accessory ring 50 could have any suitable shape, including those not limited to a ring-shape.

[0040] While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A vehicle seat assembly comprising:
   a seat cushion;
   a seat back having a top and a bottom, the seat back bottom being connected to the seat cushion such that the seat back is extendable in a generally upright position relative to the seat cushion, the seat back comprising a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame, the seat back having a front surface and an opposed rear surface; and
   an accessory support structure secured to the seat frame between the seat back and the trim cover, the support structure having spaced apart support members extending over at least 60 percent of the length or width of the seat back, the support members being configured to selectively receive at least one vehicle occupant accessory assembly.
2. The vehicle seat assembly of claim 1 wherein the vehicle occupant accessory assembly comprises a carrier having attachment members that cooperate with receiving members on the support members to selectively support the vehicle occupant accessory assembly on the support members.

3. The vehicle seat assembly of claim 1 wherein the vehicle occupant accessory assembly comprises a carrier having a structure cooperating with opposing structure on the accessory support structure to selectively support the carrier on the support structure, the accessory assembly further comprising a vehicle occupant accessory supportable on the carrier.

4. The vehicle seat assembly of claim 1 wherein the accessory support structure is capable of receiving a plurality of vehicle occupant accessories.

5. The vehicle seat assembly of claim 4 wherein the accessory support structure is capable of receiving a plurality of carriers, each carrier capable of supporting a different type of vehicle occupant accessory.

6. The vehicle seat assembly of claim 1 wherein the accessory support structure comprises a ring structure comprising the spaced apart support members and at least one transverse member extending between and connecting the support members.

7. The vehicle seat assembly of claim 3 wherein the support members have a first pair of spaced apart openings which the carrier is snap-fittable into and the carrier has a second pair of openings which the accessory is snap-fittable into.

8. The vehicle seat assembly of claim 1 wherein the ring structure supports at least three carriers.

9. The vehicle seat assembly of claim 1 further comprising a mounting bracket secured to the frame, the accessory support structure being secured to the mounting bracket.

10. The vehicle seat assembly of claim 1 wherein the accessory support structure extends between 60 and 90 percent of the length of the seat back.

11. The vehicle seat assembly of claim 5 wherein at least one of the vehicle accessories comprises an entertainment system holder.

12. The vehicle seat assembly of claim 5 wherein at least one of the vehicle accessories comprises a stowable tray or active platform.

13. The vehicle seat assembly of claim 5 wherein at least one of the vehicle accessories comprises a bag holder.

14. A vehicle seat assembly comprising:

   a. a seat cushion;
   b. a seat back having a top and a bottom, the seat back bottom being connected to the seat cushion such that the seat back is extendable in a generally upright position relative to the seat cushion, the seat back comprising a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame, an accessory support structure secured to the seat frame between the seat frame and the trim cover, the accessory support structure having spaced apart support members extending over at least 60 percent of the length or width of the seat back; and
   c. at least one vehicle occupant accessory assembly supported on the accessory support structure, the accessory assembly comprising a carrier selectively supportable on the support members and at least one vehicle occupant accessory supportable on the carrier.

15. The vehicle seat assembly of claim 14 wherein the accessory support structure is capable of receiving a plurality of vehicle occupant accessories.

16. The vehicle seat assembly of claim 15 wherein the accessory support structure is capable of receiving a plurality of carriers, each carrier capable of receiving a different type of vehicle occupant accessory.

17. The vehicle seat assembly of claim 16 wherein the carriers comprises three separate carriers.

18. The vehicle seat assembly of claim 14 wherein the trim cover comprises at least in part a hard plastic structure extending along a rear of the seat assembly.

19. A method of making a vehicle seat assembly, the method comprising:

   a. providing a seat cushion;
   b. providing a seat back having a top and a bottom;
   c. connecting the seat back bottom to the seat cushion such that the seat back is extendable in a generally upright position relative to the seat cushion, the seat back comprising a seat frame, a foam pad supported by the seat frame, and a trim cover extending about the pad and the seat frame, the seat back having a front surface and an opposed rear surface; and
   d. supporting an accessory support structure on the frame between the cover and the frame such that the accessory support structure extends over at least 60 percent of the length or width of the seat back, with the support members being configured to selectively receive at least one vehicle occupant accessory.

20. The method of claim 19 wherein the accessory comprises a carrier having attachment members that cooperate with receiving members on the support members to selectively support the vehicle occupant accessory on the support members.

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