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(54) **VEHICLE SEAT**

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(57) **ABSTRACT**

A vehicle seat, includes: a seat cushion which can be fixed to a seat main body and in which an occupant can be seated; a releasing member, operable to release the fixing of the seat cushion to the seat main body; a detector, operable to detect the release of the fixing; and a disabling member, operable to disable an air bag for protecting the occupant when the detector detects the release of the fixing.

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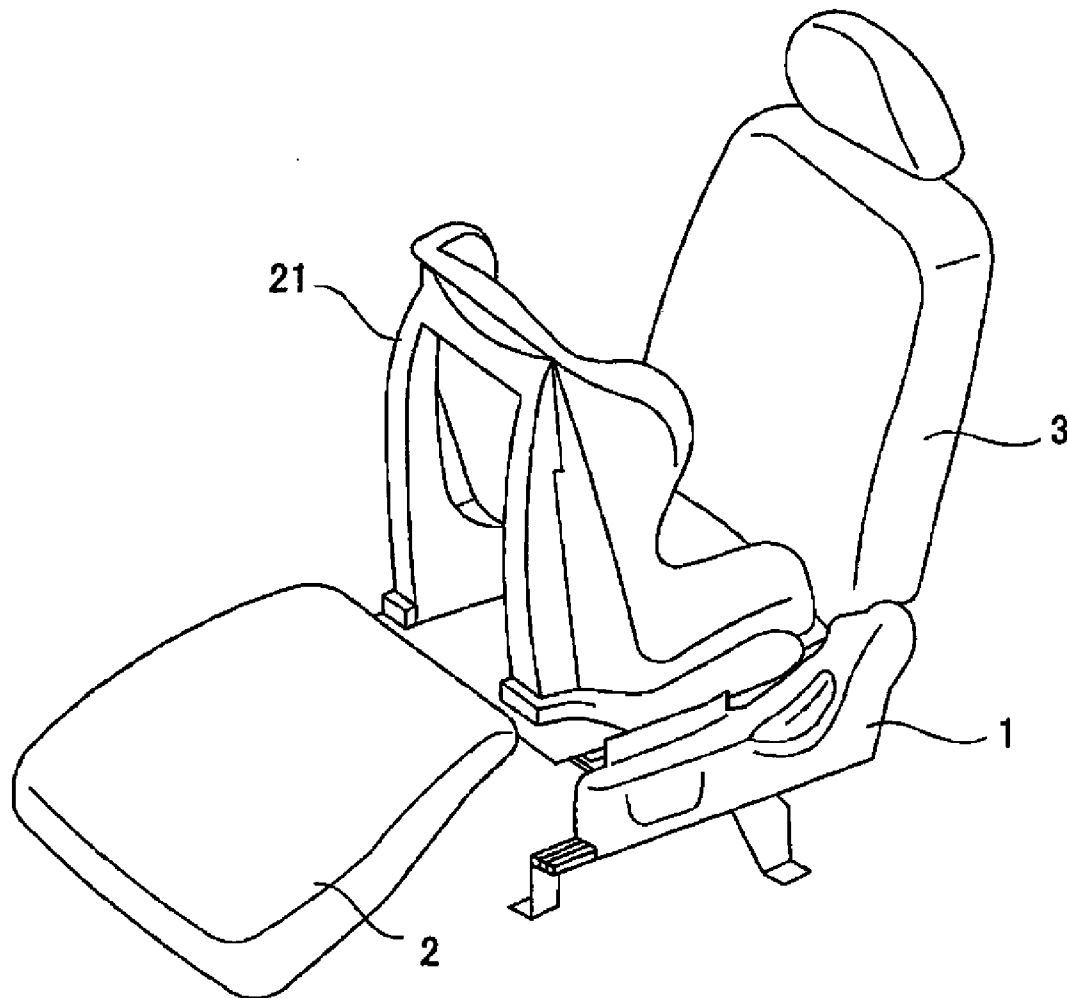


FIG. 1A

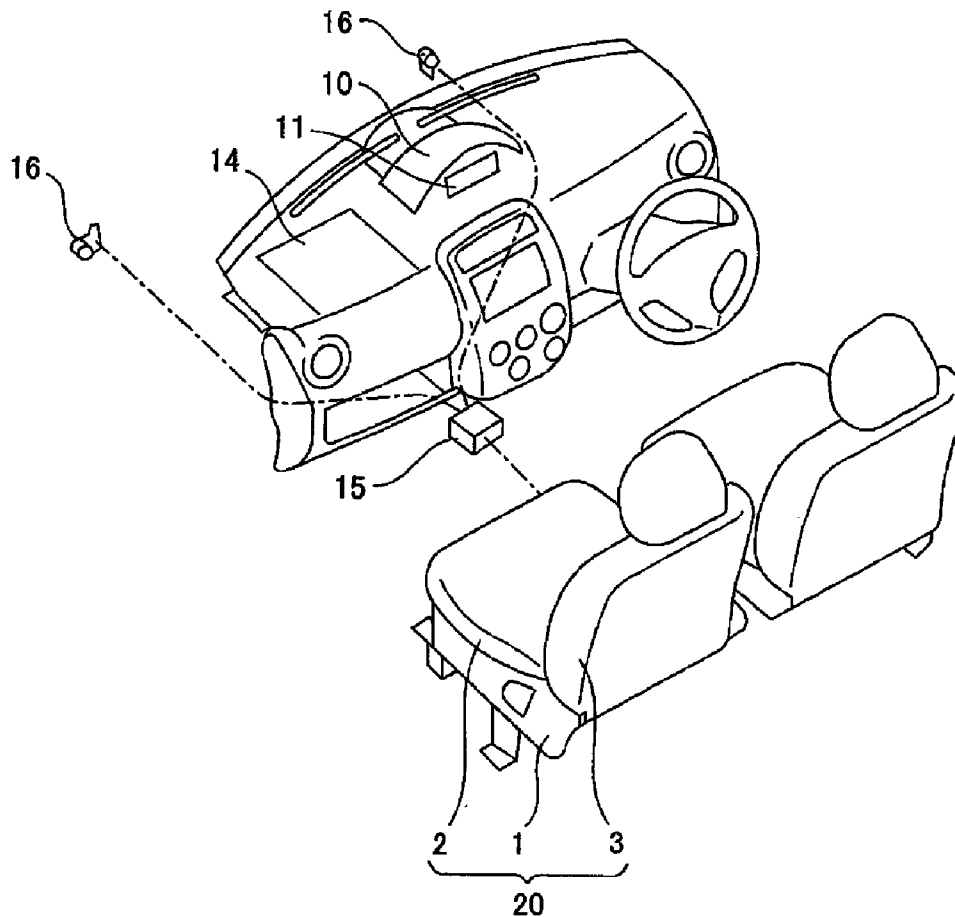


FIG. 1B

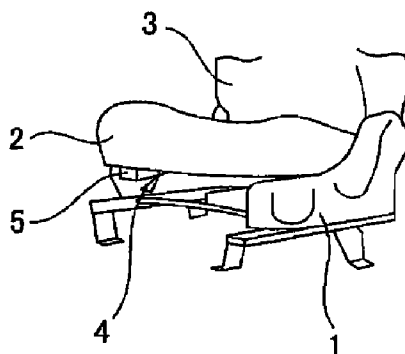


FIG. 1C

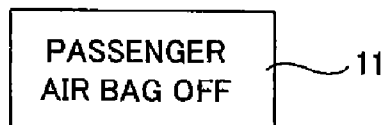


FIG. 2

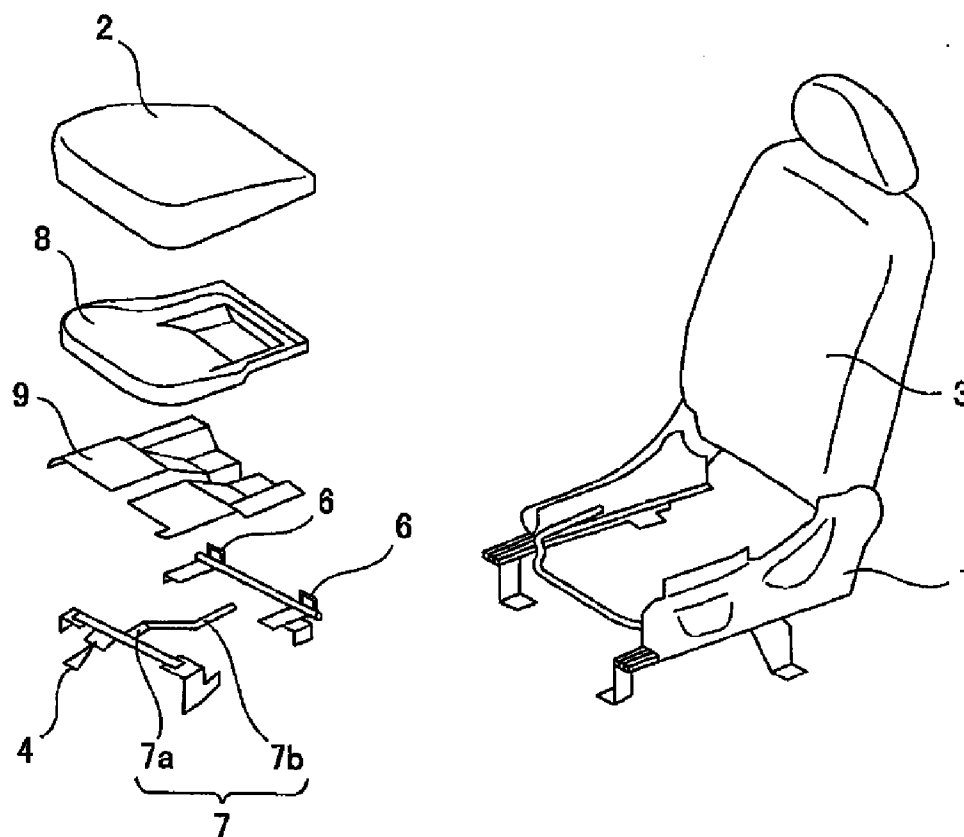


FIG. 3

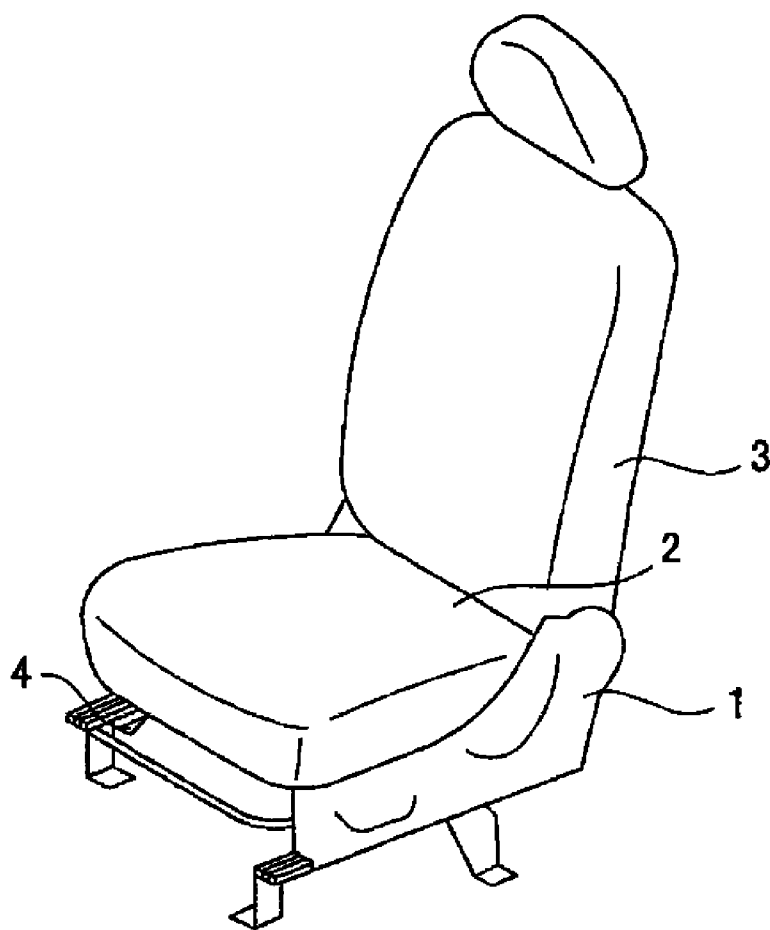


FIG. 4

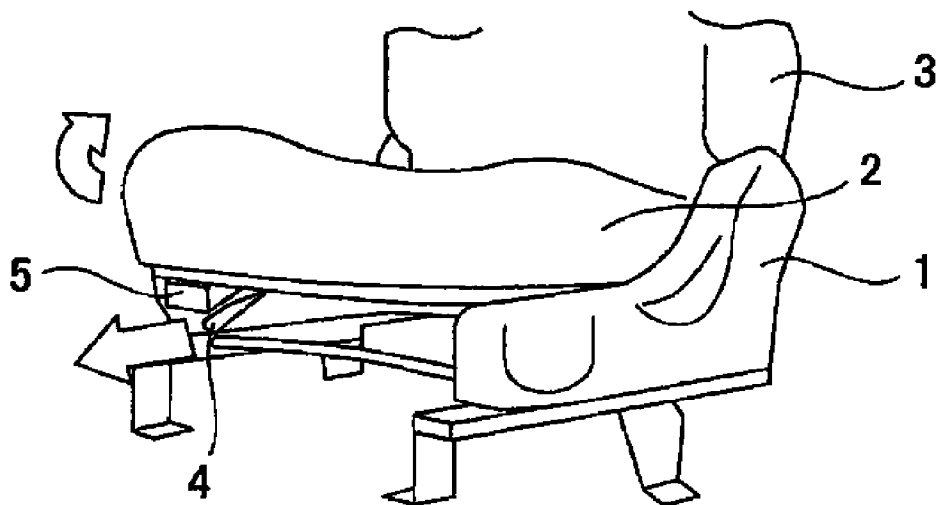


FIG. 5

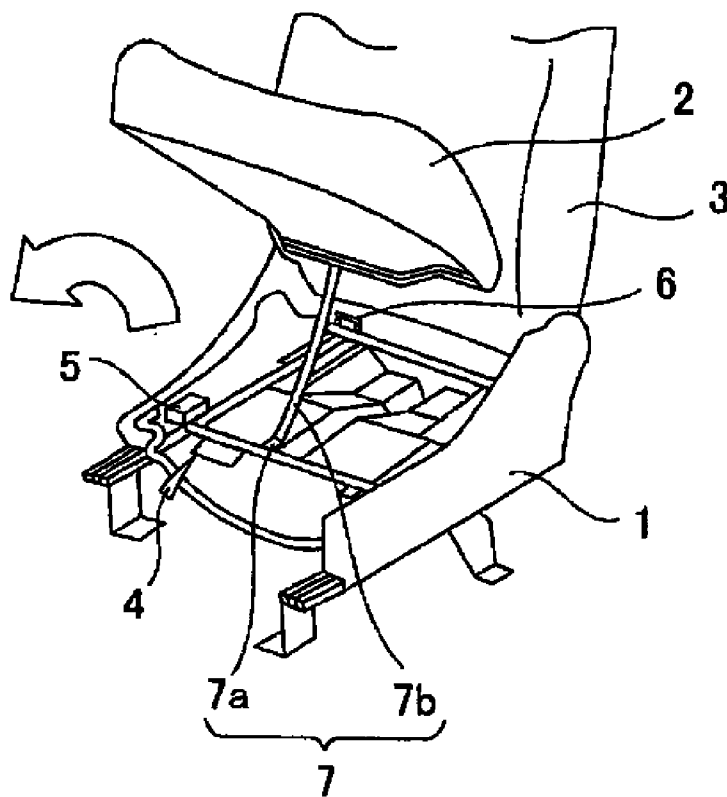


FIG. 6

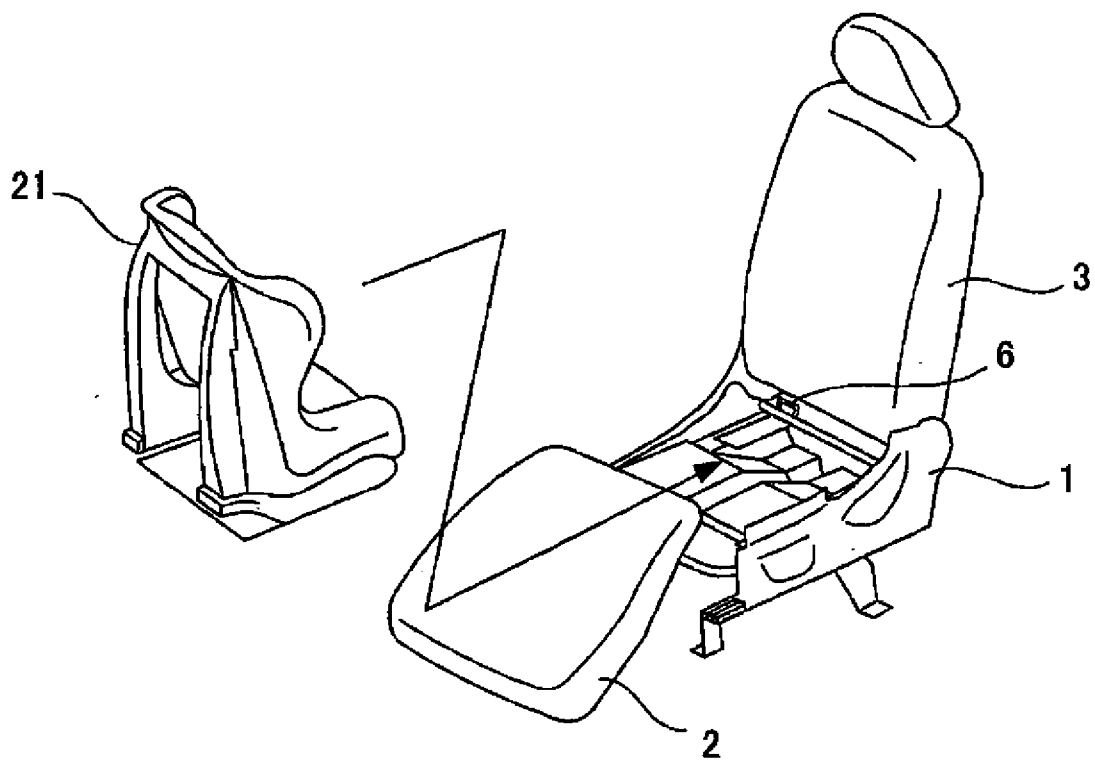
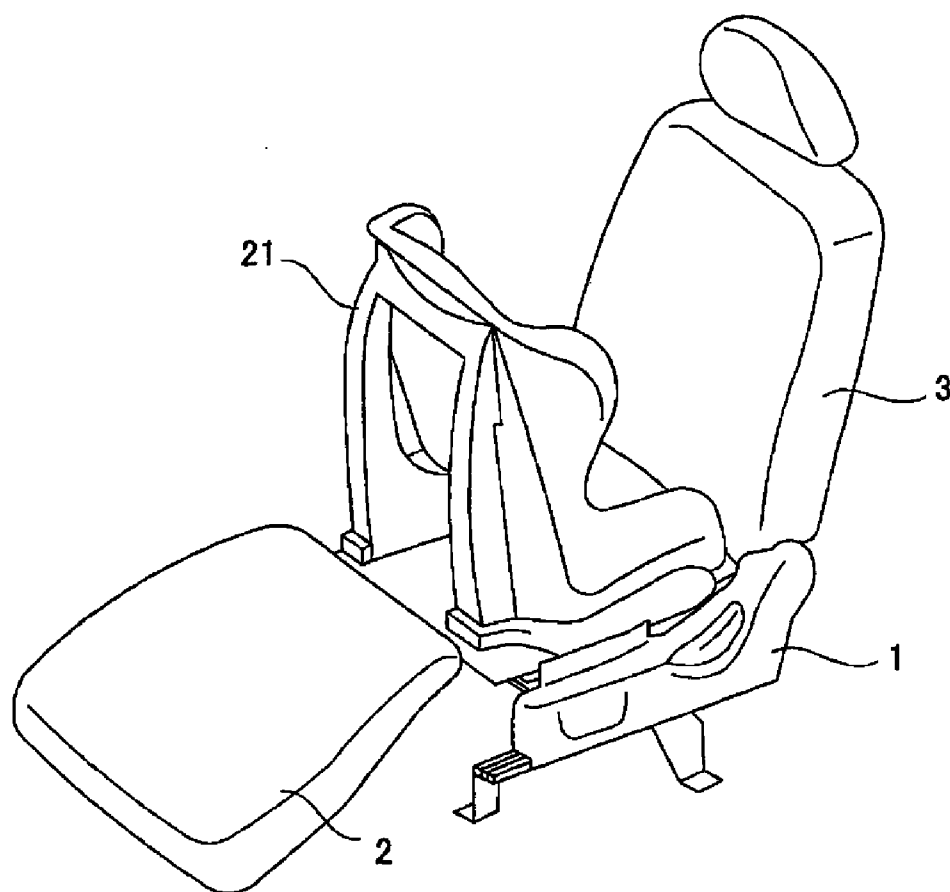


FIG. 7



VEHICLE SEAT

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a vehicle seat.

[0002] There have been developed various attaching constructions of child seats (CRS) which are used to allow an infant or child to be safely seated therein when the driver has to drive a motor vehicle with the infant or child riding together in the vehicle. For example, JP-A-2001-270355 discloses a vehicle seat of the related art in which a fastening unit to which a fixing attachment on a child seat is fastened is disposed within a space produced by separating two combined seat cushions transversely. In recent years, there is an increasing tendency to install in a vehicle a front passenger air bag for protecting a passenger seated in a front seat from an impact produced when the vehicle is involved in a collision. When the front passenger air bag is activated (deployed) with the child seat installed to face rearwards due to a small infant, since there is a possibility that impact produced when the air bag is deployed is transmitted to the child seat, a rear seat is recommended as a seat in which the child seat is to be installed.

[0003] On the other hand, there have been developed various systems of the related art for automatically or manually (via a switch) disabling the front passenger air bag when the child seat is installed in the front passenger seat.

[0004] As systems of the related art for automatically deactivating the front passenger air bag, there exists a system which includes a transmitter for transmitting data signals signaling the direction in which the child seat is disposed, a receiver for receiving the data signals and a controller for controlling the operation of the front passenger air bag according to the data signals so received.

[0005] According to the disclosed vehicle seat of the related art, although the child seat can be installed in the rear seat, however, when the child seat is installed in the rear seat, the safety of the infant restrained in the child seat so installed cannot be confirmed visually by the driver. Due to this, there are more and more drivers who want to install the child seat in the front passenger seat. In the event that the aforementioned vehicle seat of the related art is used for the front passenger seat, the child seat can be installed in the front passenger seat. In the event that the front passenger air bag is installed in the vehicle, however, there exists a risk that the air bag is activated with the child seat so installed.

[0006] With the system of the related art for automatically deactivating the front passenger air bag, although the front passenger air bag can automatically be disabled by determining the direction in which the child seat is disposed, the system can be applied only to child seats equipped with a transmitter, this limiting the selection of child seats by the users.

[0007] In addition, with the system of the related art for disabling the front passenger air bag by the switch (manually), although the air bag can be disabled, there exists a possibility that the system fails to be switched off due to an erroneous operation of the manual switch.

SUMMARY

[0008] It is therefore an object of the invention to provide a vehicle seat in which various types of child seats can be installed and which can automatically disable the front passenger air bag.

[0009] In order to achieve the object, according to the invention, there is provided a vehicle seat, comprising:

[0010] a seat cushion which can be fixed to a seat main body and in which an occupant can be seated;

[0011] a releasing member, operable to release the fixing of the seat cushion to the seat main body;

[0012] a detector, operable to detect the release of the fixing; and

[0013] a disabling member, operable to disable an air bag for protecting the occupant when the detector detects the release of the fixing.

[0014] The vehicle seat may further include: a shifting member, operable to shift the seat cushion so as to create a space in the seat main body; and a fastening unit to which a child seat is fastened. The fastening unit may be disposed below a seatback which can support the back of the occupant, and face the space. The child seat fastened to the fastening unit may be disposed in the space.

[0015] The shifting member may shift forwards the seat cushion.

[0016] The seat main body may be for a front passenger seat.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIGS. 1A to 1C are explanatory diagrams showing an interior of a passenger compartment of a vehicle in which a vehicle seat according to the invention is installed.

[0018] FIG. 2 is an exploded perspective view showing the vehicle seat according to the invention in an exploded fashion.

[0019] FIG. 3 is a perspective view of the vehicle seat according to the invention.

[0020] FIG. 4 is a diagram explaining the release of a fixed seat cushion provided on the vehicle seat according to the invention.

[0021] FIG. 5 is a diagram explaining a forward movement of the seat cushion provided on the vehicle seat according to the invention.

[0022] FIG. 6 is a perspective view explaining the installation of a child seat in the vehicle seat according to the invention.

[0023] FIG. 7 is a perspective view showing a state in which the child seat is installed in the vehicle seat according to the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0024] Hereinafter, an embodiment of a vehicle seat according to the invention will be described by reference to the drawings.

[0025] FIG. 1 shows explanatory diagrams which show an interior of a passenger compartment of a vehicle in which a vehicle seat according to the invention is installed, of which FIG. 1A shows the whole interior of the passenger compartment, FIG. 1B shows the vehicle seat, and FIG. 1C shows a warning lamp provided on the dashboard. FIG. 2 is an exploded perspective view showing the vehicle seat according to the invention in an exploded fashion. FIG. 3 is a perspective view of the vehicle seat according to the invention, FIG. 4 is a diagram explaining the release of a fixed seat cushion provided on the vehicle seat, and FIG. 5 is a diagram explaining a forward movement of the seat cushion provided on the vehicle seat. FIG. 6 is a perspective view explaining the installation of a child seat in the vehicle seat according to the

invention, and FIG. 7 is a perspective view showing a state in which the child seat is installed in the vehicle seat according to the invention.

[0026] A vehicle seat 20 according to the invention is, as is shown in FIG. 1A, used for a front passenger seat. The vehicle seat 20 includes a seat cushion 2 which is fixed to a vehicle seat main body 1 with a latch (not shown) or the like and in which an occupant is seated, and a seatback 3 which supports the back of the occupant. As is shown in FIGS. 1A, 1B, 2, 3, 4 and 5, a strap 4 for releasing the fixing (the latch or the like) of the seat cushion 2 and a detector 5 such as a displacement sensor for detecting the release of fixing of the seat cushion 2 are provided underneath the seat cushion 2.

[0027] As is shown in FIGS. 5, 6, the vehicle seat 20 includes further a fastening unit 6 to which a fixing attachment (not shown) on a child seat 21 is fastened. This fastening unit 6 is disposed below the seat back 3 and is disposed in a position which comes to face a space where the seat cushion 2 is disposed when the fixing of the seat cushion 2 is released by the strap 4 so that the seat cushion 2 is shifted forward by a shifting mechanism 7, which will be described later. This fastening unit 6 is fastened to a vehicle seat main body 1. As the fixing attachment and the fastening unit 6, ISOFIX fixing attachments and fastening units can be raised which adopt the fixing system of the CRS specified by ISO (International Organization for Standardization). A warning lamp 11 is disposed on a dashboard 10 in front of the vehicle seat 20 for indicating the deactivation of a front passenger air bag 14 in association with the release of fixing of the seat cushion 2.

[0028] As is shown in FIGS. 2, 5, a shifting mechanism (a link mechanism) 7 for shifting forwards only the seat cushion 2. This shifting mechanism 7 is fixed to the vehicle seat main body 1 underneath a front side of the seat cushion 2 and has a first shaft 7a which extends in a longitudinal direction of the seat cushion 2 and a second shaft 7b which is fixed rotatably to the first shaft 7a at one end and is fixed to an underside of a rear end portion of the seat cushion 2 at the other end thereof. The second shaft 7b extends in the longitudinal direction of the seat cushion 2. In addition, as is shown in FIG. 2, a cushion pan 8 and a cushion cover 9 are disposed underneath the seat cushion 2.

[0029] As is shown in FIG. 1A, in the passenger compartment, the front passenger air bag 14 is disposed within the dashboard 10 in front of the front passenger seat (the vehicle seat) 20. This air bag 14 is controlled by a control unit 15. A sensor 16 for sensing impact inputted into the vehicle is disposed within an engine compartment, not shown. Impact data sensed by this sensor 16 is inputted into the control unit 15. The air bag 14 is controlled based on the data so inputted. The control unit 15 also includes a disabling function to disable the front passenger air bag 14.

[0030] The installation of the child seat in the vehicle seat 20 will be described.

[0031] Firstly, as is shown in FIG. 4, the strap 4 is pulled forwards. This releases the fixing of the seat cushion 2. In addition, a spring or the like which is an elastic member is disposed between the vehicle seat main body 1 and the seat cushion 2, and when the seat cushion 2 is biased upwards, the seat cushion 2 is lifted upwards from a fixing position of the seat cushion 2 by releasing the fixing of the seat cushion 2. Furthermore, the release of fixing of the seat cushion 2 is detected by the detector 5, and the control unit 15 disables the front passenger air bag 14. In addition, the warning lamp 11 is

illuminated (refer to FIG. 1C), whereby the driver can verify visually the disablement of the front passenger air bag.

[0032] Following this, as is shown in FIGS. 5, 6, only the seat cushion 2 is shifted forwards by the shifting mechanism 7, whereby the child seat 21 can be disposed in the space where the seat cushion just has been disposed. Furthermore, since the fastening unit 6 is disposed in the position which faces the space, in the event that the child seat 21 includes a fixing attachment which is fastened to the fastening unit 6, the seat cushion 2 has to be shifted, the front passenger air bag 14 can be disabled in a more ensured fashion.

[0033] Following this, the child seat 21 is fixed to (installed in) the vehicle seat 20, as is shown in FIG. 7.

[0034] Consequently, according to the vehicle seat 20 according to the invention, the seat cushion 2 which is fixed to the vehicle seat main body 1 and in which the occupant is seated, the strap 4 for releasing the fixing of the seat cushion 2, the shifting mechanism 7 for shifting forwards the seat cushion 2, the detector 5 for detecting the release of the fixing of the seat cushion 2 and the control unit 15 having the disabling function to disable the front passenger air bag 14 are provided, and the control unit 15 disables the front passenger air bag 14 in association with the release of the fixing of the seat cushion 2, whereby the installation of the child seat 21 in the vehicle seat 20 is allowed to occur only when the fixing of the seat cushion 20 is released, and the front passenger air bag 14 can automatically be disabled in an ensured fashion when the child seat 21 is installed in the vehicle seat 20. Even when a switch for disabling the front passenger air bag 14 is provided, the operation of the air bag 14 due to the failure to disable the air bag 14 can be prevented. In addition, since the child seat 21 may only have to be such as to be disposed in the space where the seat cushion 2 has just been disposed after the seat cushion has been released from the fixed condition by the strap 4 being pulled and the seat cushion 2 has then been shifted forwards by the shifting mechanism 7, various types of child seats 21 can be installed in the vehicle seat 20.

[0035] Furthermore, due to the vehicle seat 20 being the front passenger seat, the child seat 21 can be disposed in the vicinity of the driver, whereby the driver can confirm easily visually the safety of the infant restrained in the child seat 21.

[0036] In addition, while in the embodiment, the invention is described as being applied to the vehicle seat 20 including the shift mechanism 7 for shifting forwards the seat cushion 2, the invention can be applied to a vehicle seat including sliding rails on which the seat cushion can be shifted forwards. Even in the event that the invention is applied to such a vehicle seat, the same function and advantage as those provided by the aforesaid vehicle seat 20 according to the invention can also be provided.

[0037] While in the embodiment, the invention is described as being applied to the vehicle seat 20 including the fastening unit 6 to which the ISOFIX compatible child seat 21 can be fastened, the invention can be applied to a vehicle seat including no such fastening unit. Even in the event that the invention is applied to such a vehicle seat, since the child seat can be fixedly installed in the vehicle seat using the seat belt and the air bag can be disabled by the shift of the seat cushion, the same function and advantage as those provided by the aforesaid vehicle seat 20 according to the invention can also be provided.

What is claimed is:

1. A vehicle seat, comprising:
 - a seat cushion which can be fixed to a seat main body and in which an occupant can be seated;
 - a releasing member, operable to release the fixing of the seat cushion to the seat main body;
 - a detector, operable to detect the release of the fixing; and
 - a disabling member, operable to disable an air bag for protecting the occupant when the detector detects the release of the fixing.
2. The vehicle seat as set forth in claim 1, further comprising:

- a shifting member, operable to shift the seat cushion so as to create a space in the seat main body; and
 - a fastening unit to which a child seat is fastened, wherein the fastening unit is disposed below a seatback which can support the back of the occupant, and faces the space, and
 - the child seat fastened to the fastening unit is disposed in the space.
3. The vehicle seat as set forth in claim 2, wherein the shifting member shifts forwards the seat cushion.
 4. The vehicle seat as set forth in claim 1, wherein the seat main body is for a front passenger seat.

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