A VEHICLE SEAT

BACKGROUND

This invention relates to a vehicle seat, and in particular concerns a seat that could be used by a medical professional or other caregiver in a moving vehicle.

It is common for caregivers such as paramedics to need to administer medical assistance to a patient who is accommodated in a vehicle such as an ambulance, while the vehicle is in transit. In urgent cases, the vehicle may travel quickly, to reach a hospital or other medical facility as rapidly as possible so that more complete care can be given to the patient. The vehicle may therefore accelerate, brake and corner rapidly, and in a manner that is unpredictable to the caregiver.

It is common for paramedics and other medical professionals to sustain injuries in the course of treating a patient in the back of a rapidly-moving vehicle such as an ambulance.

It is an object of the invention to provide a seat that will allow a caregiver to administer help and treatment to a patient in the back of a moving vehicle, with a reduced possibility of sustaining injury.

Accordingly, one aspect of the present invention provides a seating arrangement in accordance with claim 1.

A further aspect of the present invention provides a seating arrangement in accordance with claim 15.

Preferred features of the invention are set out in the dependent claims.

BRIEF DESCRIPTION OF THE FIGURES

In order that the application may be more readily understood, embodiments thereof will now be described with reference to the accompanying figures, in which:

Figures 1 to 3 show a seat embodying the invention, with the squab in a deployed position;

Figures 4 and 5 show the seat of figures 1 to 3, with the squab in a stowed position;

Figures 6 and 7 show a base of the seat of figures 1 to 3;

Figure 8 shows a top view of the seat, with the squab and seat back removed;

Figures 9 and 10 show a wheel of the seat of figures 1 to 3;

Figure 11 shows components of a locking mechanism of the seat of figures 1 to 3;

Figure 12 shows a further top view of the seat, with the squab and seat back removed; and

Figure 13 shows a close-up view of part of figure 12.

DETAILED DESCRIPTION OF THE DISCLOSURE

With reference firstly to figure 1, a seat 1 embodying the present invention is shown. Further views of the seat 1 from different angles are shown in figures 2 and 3.

The seat 1 comprises a seat back 2, which may take any suitable form. The seat 2 also comprises a squab 3. In the embodiment shown, the squab 3 may be pivoted with respect to the back 2, between a deployed position and a stowed position. In the deployed position, shown in figures 1-3, the squab 3 may protrude into the space immediately in front of the seat back 2, to provide a surface on which a user may sit. In the stowed position, shown in figures 4 and 5, the squab 3 is pivoted, in this case upwardly, into a position in which it protrudes forwardly from the seat back 2 by a lesser amount, compared to the deployed position.

It is not essential for the squab 3 to be pivotable between stowed and deployed positions, and in other embodiments the squab 3 may be fixed or substantially fixed in place with respect to the seat back 2. However, as space is often at a premium in vehicles such as ambulances, it is preferred that the squab 3 may be moved into a stowed position, by pivoting or in any other way. In either case, in some embodiments, the squab 3 may be removed entirely from the seat back 2.

In embodiments where the squab 3 is pivotable with respect to the seat back 2, the squab 3 may be biased into the stowed position.

The seat 1 also includes a base 4, which in use supports the squab 3 and back 2 above the level of the vehicle floor (not shown).

The base 4 is supported on a plate 5, which is also shown in figure 1. The plate 5 is preferably arranged to be generally horizontal, and ideally is attached to the floor of the vehicle.

The base 4 and plate are shown in isolation in figures 6 and 7. A top end 8 of the base 4 has an attachment plate 38, which in use is attached to the squab 3 and/or seat back 2. The base 4 further comprises a pair of struts 25, which are spaced apart from each other. The struts 25 are generally planar, and parallel or substantially parallel with each other. In the example shown the planes of the struts 25 are arranged to be aligned with the normal forward direction of the seat 1.

It should be understood that any number of struts, having any suitable form, or indeed any other alternative support structure, may be employed in the base 4.

At a bottom end 7 of the base 4, the struts 25 are connected to connection flanges 26, which preferably lie generally parallel with the plate 5. Figure 8 shows a top view of the base 4, with the seat back 2 and squab 3 removed for the purposes of clarity. In this figure it can be seen that the connection flanges 26 protrude laterally outwardly from the struts 25. In addition, on one side, the connection flange 26 has a lock protrusion 43, which protrudes further laterally outwardly.

The base 4 is mounted with respect to the plate 5 in such a way that the base 4 can move through a certain distance, with respect to the plate 5, without becoming detached from the plate 5.

In the example shown, a pair of tracks 9 is formed in the plate 5. Each track 9 has an elongate opening 10, on the top side 37 of the plate 5. Beneath the level of the top side 37, there is a space 11 (shown in figure 10) below the opening 10 which becomes progressively wider.

The base 4 has a number of downwardly-protruding conical wheels, which are attached to the undersides of the connection flanges 26. One example of a suitable wheel 12 is shown in figure 9. A wheel shaft 39 has a roller bearing 40 near its lower end, and a conical wheel body 41 is mounted on the roller bearing 40 such that it can rotate around the shaft 39, about an axis which is aligned or generally aligned with a longitudinal axis of the shaft 39. The wheel body 41 flares outwardly as it extends away from the bottom surface 13 of the connection flange 26.

The wheels 12 are received in the spaces 11 of the tracks 9, as can be seen in figure 10, which shows a cutaway view of the plate 5, seen end-on. At its lower end 14, each wheel 12 is too wide to fit through the opening 10 of the track 9. The space 11 is wider than the wheel 12, so that the wheel body 41 can contact one of the flared internal side walls 42 of the space 11, but not both at the same time.

The skilled reader will understand that the base 4 can therefore slide along the tracks 9, with the wheels 12 travelling within the spaces 11 below the tracks 9, but that the base 4 cannot be lifted off or removed from the tracks 9.

The invention is not limited to this arrangement, and any mechanism that allows lateral movement of the base 4 with respect to the plate 5, without the base 4 and plate 5 becoming detached from each other, can be used.

In the example shown the base 4 includes four wheels 12, two being provided on each connection flange 26. However, any suitable number of wheels 12 may be used.

The base 4 also includes a locking mechanism 15, which can selectively lock the base 4 in place with respect to the plate 5. Figure 11 shows a close-up view of some of the components of the locking mechanism 15, in cut-away view.

In the embodiment shown, the locking mechanism 15 includes a guide portion 16 which protrudes upwardly from the top surface 17 of one of the connection flanges 26 (with reference to figure 8, in a preferred embodiment the guide portion 16 is provided on the lock protrusion 43 of one of the connection flanges 26). The guide portion 16 has an aperture 18 passing therethrough, which in the example shown is oriented perpendicular or substantially perpendicular to the plane of the plate 5. The aperture 18 passes all the way through the guide portion 16, and communicates with the bottom surface 13 of the connection flange 26.

The locking mechanism 15 also includes a first locking portion 21, which generally takes the form of a rod. The first locking portion 21 is fixed in place with respect to the guide portion 16, in this example through a threaded connection. In other embodiments the guide portion 16 and first locking portion 21 could be formed integrally.

In this example the first locking portion 21 is generally hollow, having a central bore passing therethrough. A second locking portion 30 takes the form of an elongate rod, which passes through the central bore of the first locking portion 21.

An upper part 31 of the first locking portion 21 has a pair of guide slots 32 formed on opposing sides thereof. The part of the second locking portion 30 that passes through the first locking portion 21 has a pair of outwardly protruding guide pins 29, which are received in, and may travel along, the guide slots 32.

A biasing mechanism (not shown) which preferably comprises one or more springs, is positioned within the first locking portion 21, and biases the second locking portion 30 in a downward direction with respect of the first locking portion 21.

When no significant external forces act on the locking mechanism 15, the second locking portion 30 will be biased downwardly with respect of the first locking portion 21, such that the guide pins 29

are positioned at the bottom of the respective guide slots 32. The guide pins 29 contact the bottom surfaces of the guide slots 32, which prevents further downward movement of the second locking portion 30 with respect of the first locking portion 21.

At its lower end, the second locking portion 30 has a bracing member 28. In the embodiment shown, the bracing member 28 takes the form of a rod or pin, which may have a rounded end.

The second locking portion 30 is configured such that, when the guide pins 29 are at the lower end of the respective guide slots 32, the bracing member 28 protrudes downwardly below the bottom surface 13 of the connection flange 26.

The length of the bracing member 28 is also such that, if the second locking portion 30 is moved upwardly with respect to the first locking portion 21, so that the locking pins 29 are at the top of the respective locking slots 32, the bracing member 28 is entirely contained within the first locking portion 21, and does not protrude (or does not significantly protrude) below the bottom surface 13 of the connection flange 26.

Returning to figures 1 to 5, and 7, a handle 23 is provided at the top end of the second locking portion 30. The handle 23 may take any suitable form, but is generally adapted so that it may be grasped by a user and used to pull the second locking portion 30 upwardly.

Preferably the handle 23 is (as in the example shown in the figures) located to one side of the seat 1. The handle 23 is therefore preferably not in front of, or behind, the seat, or positioned below a front part of the squab 3, as controls to allow a vehicle driver or passenger seat to slide backwards and forwards.

With reference to figure 7, for example, it can be seen that the length of the second locking portion 30 is such that the handle 23 is at a height above the plate 5 that is slightly below the height of the top of the squab 3, when the squab 3 is in the deployed position, as shown in figures 1 to 3.

In preferred embodiments, the handle 23 is positioned no more than 20cm, and more preferably no more than 15cm below the level of the top of the squab 3, i.e. no more than 15cm below the level that supports a seat occupant in a sitting position.

In other embodiments the handle 23 is positioned no more than 15cm below the level of the top of the squab 3.

Some seats may have a squab with a thickness that varies over its length. For instance, as can be seen most clearly in figure 3, in this example the squab 3 has a greater thickness at its front edge

than at its rear edge. In such examples, the handle is preferably positioned no more than 15cm below the top surface of the part of the squab that will, in use, support the user's buttocks, as this will determine the height of the user's shoulders when the user is sitting in the seat, and hence the level at which the user's hands will hang when the user's arms are relaxed. The skilled reader will understand that the user's "H point", i.e. the point about which the torso and thighs pivot, will be aligned or generally aligned with the position of the user's buttocks.

Alternatively, the handle is preferably positioned no more than 15cm below the top surface of the rearmost part of the squab.

In further examples, the handle is preferably positioned no more than 15cm below the lowest part of the top surface of the squab.

Preferably, the locking mechanism 15 includes a locking control element, which in the current example is the handle 23, which is the part of the locking mechanism 15 that is grasped and operated by the user to control the locking mechanism 15.

The locking control element is preferably all or substantially all less than 15cm lower than the level of the top of the squab 3. In the example, the handle 23 is all less than 15cm lower than the level of the top of the squab 3, whereas the second locking portion 30, which is not itself grasped and operated by the user, need not be within this range.

In some examples, the locking control element may be elongate, and for instance comprise a lever, having a grip portion at the top. In such examples, where the locking control element has an operating portion which comprises only a part of the locking control element, and where the operating portion is intended to be grasped and operated by the user, then the operating portion is no more than 15cm below the level of the top of the squab, but it is not necessary for other parts of the locking control element to be within this range. Preferably the whole of the operating portion of the locking control element is no more than 15cm below the level of the top of the squab.

As mentioned above Figure 8 shows the base 4 and support 6, with the seat back 2 and squab 3 removed for the purposes of clarity. In this position, the bracing member 28 of the second locking member 30 is received in a first locking aperture 24 of the plate 5, as shown in figure 11. As will be clear from this figure, with the bracing member 28 received in the locking aperture 24, the base 4 is locked in place with respect to the plate 5, and cannot slide laterally along the tracks 9 with respect to the plate 5. The seat 1 is also shown in this initial position in figures 1-3.

To move the seat 1 to a different position, an occupant of the seat 1 can grasp the handle 23 and raise the handle vertically, thus pulling the second locking portion 30 upwardly with respect to the

first locking portion 21, and withdrawing the bracing member 28 from the first locking aperture 24. The user may then slide the seat 1 and support 6 laterally with respect to the plate 5, along the tracks 9.

When the second locking member 30 is aligned with a further locking aperture 24, the user may release the handle 23. The second locking member 30 will then be driven downwardly by the biasing arrangement, so that the bracing member 28 enters the further locking aperture 24. This new position is shown in figures 4, 5, 7 and 12.

In Figure 12 a region is indicated by A, and region is shown in greater detail in Figure 13. As can be seen in this figure, the top side 37 of the plate 5 includes a series of spaced apart locking apertures 24, each of which is suitably sized to receive the bracing member 28.

In preferred embodiments the locking apertures 24 are equally spaced apart, although this is not essential. It will be understood that, in use, it is not necessary for the seat to be moved by a precise distance, so that the bracing member 28 is exactly aligned with any one of the locking apertures 24. Instead, when the user has moved the seat 1 to approximately the right location, the handle 23 can be released, and the locking element 28 will be biased into contact with the top side 37 of the plate 5. As the user continues to move the seat 1, the bracing member 28 will move along the top side 37 of the plate 5 until it becomes aligned with one of the locking apertures 24. At that point, the biasing arrangement will drive the bracing number 28 downwardly into the locking aperture 24, thus locking the seat 1 and support 6 in place with respect to the plate 5.

The elevation of the handle 23 above the level of the plate 5 is important for the user's safety. It is anticipated that the seat 1 may be used in an emergency vehicle such as an ambulance, for a caregiver such as a paramedic. The seat 1 may be positioned towards the front end of the main compartment of the ambulance, i.e. against the rear side of the bulkhead that separates this compartment from the driver's cabin.

The plate 5 may be arranged such that the tracks 9 lie generally perpendicular to the normal forward direction of travel of the vehicle. This means that the seat 1 can move laterally within the main compartment of the vehicle.

A patient may be positioned within the compartment on a bed or stretcher, and the paramedic may need to administer care or treatment to the patient while the ambulance is travelling at speed.

The paramedic will generally be seated towards the head end of the bed or stretcher. However, the paramedic may wish to move laterally with respect to the head end of the bed, particularly depending on the size of the patient or the treatment that needs to be administered.

The features of the seat 1 described above allow the paramedic to remain in the seat 1, in a normal sitting position, and to be secured into the seat 1, for instance using a seatbelt or other harness (not shown in the figures).

In preferred embodiments the seat includes a belt or harness to secure the occupant in place. This can comprise a 3 point harness, such as a conventional lap and diagonal type seatbelt, or any other suitable arrangement such as a 4 point harness. The belt or harness may be quick-release, which will be advantageous in an emergency vehicle.

While remaining in the normal sitting position, the user may grasp the handle 23 and pull it upwardly, to allow lateral movement of the seat 1 with respect to the plate 5. The user can push the seat to the left or right, and then release the handle 23 to lock the seat 1 in place in the new position. The user remains normally seated and securely fastened throughout this operation. The operation can also be done quickly and easily, and using only one of the user's hands.

By contrast, prior seats are generally fixed in place, or would require a user to operate controls that are at floor level, or substantially at floor level, in order to release the seat for lateral movement. This is the case, for instance, for the seat shown in GB2425721.

The skilled reader will readily understand how the features of the seat described above allow movement of the seat quickly, easily, and with improved safety for the seat occupant.

As discussed above, in the embodiment shown in the figures, the handle 23 is provided below the level of the top of the seat squab 3 (when the seat squab 3 is in the deployed position). However, it is not essential for the handle 23 to be in this position. Overall, it is important that the seat occupant may sit in the seat 1, in a normal sitting position, and be able to reach and operate the handle easily, while remaining in this normal seated position.

The positioning of the handle 23 in the figures is intended to be at a level where, if the user sits in the seat 1 and lets his/her arm hang downwardly, the user's hand will be approximately at the level of the handle 23.

The handle 23 may also be presented at higher level, however. In other embodiments, the second locking portion 30 may be longer, so that the handle is raised to be approximately level with the top of the seat squab 3. In further embodiments, the handle 23 may be at a higher level than this.

If the handle 23 is supported at the top end of an elongate rod or similar structure, for instance as shown in the figures, it is preferred that the rod is of the minimum possible height. This will reduce

the cost and weight of the seat, and will prevent the handle 23 from presenting an obstruction to a user getting in and out of the seat, or presenting a potential trip hazard. In the example shown, therefore, the handle 23 is at the lowest level at which it can be comfortably operated by a user while remaining in a normal sitting position. In preferred embodiments, the handle 23 is located at a height which is not higher than the top surface of the seat squab 3. This is not essential, however.

It is also not essential for the handle to be presented on an elongate rod, however. In other embodiments, the handle may be positioned on the side of the squab or seat back, for example, with a suitable mechanism allowing for operation of the handle to lock and unlock the seat for lateral movement. The skilled reader will readily appreciate how different handles may be arranged.

It should also be understood that the locking mechanism can be operated using any suitable mechanism, for instance a lever or switch which moves between two or more positions, a handle which may be rotated, one or more buttons, or any other suitable control mechanism.

A further aspect of the invention can be understood with reference to Figure 6. As described above, the base 4 includes a pair of struts 25, which extend upwardly to support the seat back 2 and squab 3. As mentioned above figure 6 shows a more detailed view of one strut 25. The bottom edge 33 of the strut 25 is, in the example shown, elongate and generally flat (this edge is attached to the connection flange 26, in the example shown in the figures). As the strut 25 rises upwardly from the bottom edge 33, the front and rear edges 34, 35 both curve rearwardly. The top edge 36 is, in the example shown, generally flat and straight. However, the top edge 36 is positioned rearwardly with respect to the bottom edge 33.

In other words, the seat 1 defines a forward direction, which is the direction in which a user would face when sitting in the seat 1 in the normal way. The bottom edge 33 of each strut 25 is positioned further forwardly than the top edge 36.

With reference to figures 1, 3 and 5, it can be seen that the top edge 36 of each strut 25 supports the rear part of the squab 3. In the example shown, the squab 3 may be pivoted between a deployed position (shown in figures 1-3) and a retracted position (shown in figures 4 and 5), and this pivoting takes place around a point which is at or near the rear of the squab 3.

For the seat 1 to slide easily along the tracks 9, it is preferred that, when significant load is applied to the seat 1, the centre of gravity of the seat 1 is relatively central with respect to the tracks 9. In particular, it is preferred that the centre of gravity is in a position which is between the tracks 9, when viewed directly from above.

With reference again to Figure 6, if the struts 25 extended directly vertically upwards, so the top and bottom edges 33, 36 were aligned with one another in the forward-backward direction, the centre of gravity of the seat itself (when unoccupied) might be positioned between the tracks.

However, with an occupant sitting in the seat, the centre of gravity of the occupant would be positioned considerably forwardly of the tracks. Since, for most adults, the mass of the occupant will be considerably larger than the mass of the seat, the combined centre of gravity of the occupant and seat is likely also to fall forwardly of the tracks 9.

Under these circumstances, if the occupant remained in the seat and attempted to slide the seat laterally on the tracks, an undesirable amount of friction may be generated, and the seat may even jam in place with respect to the tracks, preventing lateral movement by the user.

However, with the top edge 36 of each strut 25 being positioned rearwardly of the bottom edge 33, the squab 3 is positioned such that, when an occupant is received in the seat 1, the centre of gravity of the occupant will lie between the tracks 9, and preferably closer the forwardmost track 9 than the rearwardmost track 9. The combined centre of gravity of the occupant and seat is therefore likely to lie in the region between the tracks 9, thus facilitating easy sliding of the seat 1 with respect to the tracks.

The skilled reader will appreciate that the position of the centre of gravity will depend upon the mass of the occupant, and also the exact seating position of the occupant. It is difficult or impossible to ensure that, for any occupant or seating position, the combined centre of gravity of the occupant in seat will fall in the appropriate position. However, the base 4 is preferably configured such that, for the majority of adult occupants (both male and female) in a normal sitting position, the combined centre of gravity of the occupant in seat will fall between the tracks 9.

In general, where a user sits on a seat, against a back of the seat, the user's centre of gravity will be positioned in the region of the centre of the user's pelvis, which is likely to be 15 to 25 cm, and at least 10cm, from the front surface of the seat back.

In preferred embodiments of the invention, therefore, the seat is supported above the base such that a location 15 to 25 cm forwardly of the front surface of the seat back 2 is positioned between the tracks 9, when viewed directly from above. This distance may alternatively be 10 to 25 cm, 15 to 20 cm, 15 to 25 cm, or 20 to 25 cm.

In preferred embodiments, the bottom and top edges 33, 36 each have a front point, and the front point of the bottom edge 33 is positioned further forwardly than the front point of the top edge 36.

Alternatively, or in addition to this, preferably the bottom and top edges 33, 36 each have a rear point, and the rear point of the bottom edge 33 is positioned further forwardly than the rear point of the top edge 36.

Alternatively, or in addition to either or both of these, preferably the bottom and top edges 33, 36 each have a central point, which is midway between the front and rear points of the respective edge 33, 36, and the central point of the bottom edge 33 is positioned further forwardly than the central point of the top edge 36.

In embodiments, the bottom edge 33 of each strut 25 is further forward than the top edge 36 (by any of the above measures) by at least 10cm. More preferably, the bottom edge 33 of each strut 25 is further forward than the top edge 36 by at least 15cm. Yet more preferably, the bottom edge 33 of each strut 25 is further forward than the top edge 36 by at least 20cm.

Alternatively, or in addition, when the seat is engaged with the tracks, and the squab of the seat is in the deployed position, a point which is level with the top surface of the squab and is 20cm forward of the front surface of the seat back (at the point where the seat back meets the squab, or if the seat back does not meet the squab, at the point on the seat back that is level with the top surface of the squab), is directly above a position which lies between the tracks.

Alternatively, a point which is 25cm, 15cm or 10cm forward of the front surface of the seat back (as defined above) is directly above a position which lies between the tracks.

The skilled reader will appreciate that it is not necessary to provide a base having the configuration shown in the figures. In particular, it is not necessary for struts to have curved front and rear edges. The skilled reader will appreciate that there are many ways in which the seat may be supported above the plate such that the combined centre of gravity of the seat and user will be in an appropriate position during use.

In particular, it is not essential for the top of the base to be offset rearwardly with respect to the bottom of the base. Instead, for example, the base may rise generally vertically from the plate, and support a central region of the underside of the squab. In such an arrangement, when a user sits in the seat the combined centre of gravity of the seat and user may lie between the tracks. However, this is not preferred, because for a seat for use in an ambulance or other emergency vehicle, it is advantageous for the squab to be pivotable into a stowed position. It is therefore preferable for the base to support the seat in the region of the rear of the squab, so that the squab can be pivotable around a pivot point which is at or near its rear edge.

In prior art seats, where a user would need to vacate the seat in order to operate the controls to allow the seat to be moved, these considerations are not of great importance, because the seat will be moved when it is unoccupied, and hence relatively light. In these circumstances the position of the centre of gravity of the seat with respect to the floor is not of great importance. However, since the seat shown in the figures is adapted to be moved while the occupant remains in a normal seated position, considerations of the combined centre of gravity of the seat and occupant are of greater importance.

In the discussion above, a plate is provided, secured at or near floor level, with the plate having tracks formed therein along which the seat may travel.

In other embodiments, suitable tracks may be formed directly in a floor surface, with the seat being received in, and travelling along, these tracks.

As will be understood from the above, one use of the invention is in emergency vehicles, and it is expected that the seat will need to be installed in a standardised rear compartment of a vehicle, which does not have suitable tracks formed in the floor. The provision of a plate which includes these tracks, and which can be bolted or otherwise secured to the floor, therefore allows the tracks to be included in the vehicle.

In embodiments of the invention the seat (i.e. the seat back and squab) may be able to swivel with respect to the base. This feature will be an advantage in an emergency vehicle, as the user will be able to turn the seat to position him/herself at the best angle with respect to the patient. The ability of a seat to slide with respect to the floor, and also swivel, is a useful combination to allow the user to be positioned to treat patients of different sizes, who may be positioned on a bed or stretcher in a variety of positions, and who need attention or care at different parts of their bodies.

In embodiments the seat may be able to swivel with respect to the base around a pivot axis which passes through a point which is at or near the rear edge of the squab. However, the invention is not limited to this.

While the main example provided above relates to emergency vehicles, it should be understood that the invention is not limited to this, and seats embodying the invention may be provided in any setting where a seat occupant may wish to move the seat with respect to the floor while remaining in a seated position.

The skilled reader will appreciate that seats as described herein will provide significant advantages with respect to known seats, particularly in circumstances where the seat is occupied in a moving vehicle such as an ambulance.

When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

The invention may also broadly consist in the parts, elements, steps, examples and/or features referred to or indicated in the specification individually or collectively in any and all combinations of two or more said parts, elements, steps, examples and/or features. In particular, one or more features in any of the embodiments described herein may be combined with one or more features from any other embodiment(s) described herein.

Protection may be sought for any features disclosed in any one or more published documents referenced herein in combination with the present disclosure.

Although certain example embodiments of the invention have been described, the scope of the appended claims is not intended to be limited solely to these embodiments. The claims are to be construed literally, purposively, and/or to encompass equivalents.

CLAIMS

1. A seating arrangement, comprising:

a seat;

a floor arrangement, formed as part of a floor surface or adapted to be secured to a floor surface;

a base, having an upper end which is adapted to support the seat, and a lower end which is supported by the floor arrangement, such that a top surface of the seat is positioned at a first height with respect to the floor arrangement;

a sliding arrangement, allowing translational movement of the seat and base with respect to the floor arrangement; and

a locking arrangement, allowing the seat and base to be selectively locked in place with respect to the floor arrangement, such that the translational movement is prevented, the locking arrangement comprising a locking control element, which can manipulated by a user of the seating arrangement to operate the locking arrangements, and wherein the locking control element is positioned such that it can be reached and operated by the hand of an occupant of the seat, while sitting in a normal upright position.

2. A seating arrangement according to claim 1, wherein the locking control element is positioned at a second height with respect to the floor arrangement, the second height being less than 15cm lower than the first height, and preferably being less than 10cm lower than the first height.

3. A seating arrangement according to claim 1 or 2, wherein the locking control element is provided to one side of the seat.

4. A seating arrangement according to any preceding claim, further comprising a raising component, which is attached to or supported by the base, and which supports the locking control element at its upper end.

5. A seating arrangement according to claim 4, wherein the raising component is attached to or supported by a part of the base which is at or near the lower end thereof.

5. A seating arrangement according to any one of claims 1 to 3, wherein the locking control element is attached to or supported by a part of the seat or the base.

6. A seating arrangement according to any preceding claim, wherein the sliding arrangement comprises one or more elongate tracks, formed in one of the floor arrangement and the base, and

one or more cooperating elements, provided on the other one of the floor arrangement and the base, which are adapted to be received within, and slide along, the tracks.

7. A seating arrangement according to any preceding claim, wherein the locking arrangement comprises a lock element which may be moved between a first position and a second position, by moving or operating the locking control element.

8. A seating arrangement according to claim 7, in which the lock element protrudes from the base by a first distance in the first position, and protrudes from the base by a second, lesser distance in the second position.

9. A seating arrangement according to claim 8, wherein in the second position the lock element does not protrude, or substantially does not protrude, from the base.

10. A seating arrangement according to any one of claims 7 to 9, wherein the floor arrangement comprises a plurality of locking apertures, and wherein in the first position the lock element may protrude into one of the locking apertures, and in the second position the lock element is withdrawn from the locking apertures.

11. A seating arrangement according to any one of claims 7 to 10, further comprising a biasing arrangement which biases the lock element into the first position.

12. A seating arrangement according to any one of claims 7 to 11, wherein lifting the locking control element upwardly moves the lock element from the first position to the second position.

13. A seating arrangement according to claim 6, or any claim dependent thereon, wherein:

the seat has a squab and a seat back; and

a location on a top surface of the squab, which is at least 10cm forward of a point on the front surface of the seat back, at a height on the seat back which is level with the top surface of the squab, is directly above a point which lies between the tracks.

14. A seating arrangement according to claim 6 or 13, wherein:

the seat defines a forward direction, which is the direction in which an occupant of the seat will face when sitting in the seat in a normal sitting position; and

the tracks are oriented perpendicular or substantially perpendicular to the forward direction.

15. A seating arrangement, comprising:

a seat, having a squab and a seat back;

a floor arrangement, formed as part of a floor surface or adapted to be secured to a floor surface;

a base, having an upper end which is adapted to support the seat, and a lower end which is supported by the floor arrangement, such that a top surface of the seat is positioned at a first height with respect to the floor arrangement;

a sliding arrangement, allowing translational movement of the seat and base with respect to the floor arrangement, the sliding arrangement comprising comprises one or more elongate tracks formed in one of the floor arrangement and the base, and one or more cooperating elements, provided on the other one of the floor arrangement and the base, which are adapted to be received within, and slide along, the tracks; and

a locking arrangement, allowing the seat and base to be selectively locked in place with respect to the floor arrangement, such that the translational movement is prevented, wherein:

the seat defines a forward direction, which is the direction in which an occupant of the seat will face when sitting in the seat in a normal sitting position;

the tracks are oriented perpendicular or substantially perpendicular to the forward direction; and

a location on a top surface of the squab, which is at least 10cm forward of a point on the front surface of the seat back, at a height on the seat back which is level with the top surface of the squab, is directly above a point which lies between the tracks.

16. A seating arrangement according to claim 15, wherein the location on the top surface of the squab is at least 15cm forward of the point on the front surface of the seat back, and is preferably at least 20cm forward of the point on the front surface of the seat back.

17. A seating arrangement according to claim 15 or 16, wherein the squab is pivotable with respect to the seat back.

18. A seating arrangement according to claim 17, wherein the squab is pivotable with respect to the seat back around a pivot axis which is located at or near a rear edge of the squab.

19. A seating arrangement according to claim 18, wherein the base is connected to the seat in a region at or near the rear edge of the squab.

20. A seating arrangement according to any one of claims 15 to 19, wherein the base has a lower edge, which is supported by the floor arrangement and a top edge, which supports the seat, and wherein the lower edge is further forward than the top edge.

21. A seating arrangement according to claim 20, wherein the lower edge is further forward than the top edge by at least 10cm, more preferably by at least 15cm, and yet more preferably by at least 20cm.

22. A seating arrangement according to claim 20 or 21, wherein the base comprises two or more struts.