four conventional coach seats. There are known methods of removing seats from a bus when it is necessary to make space for conventional wheelchairs, but this still reduces the seating capacity of the bus when transporting a wheelchair and the removed bus seats must be stored outside of the bus or in the luggage compartment. A disadvantage is that some coaches require considerable time to remove and store their conventional seats, so that a disabled person in a wheelchair may use the coach. Another disadvantage, is that it is not always convenient to remove seats and leave them behind at a the location where they were removed, as according to varying circumstances a coach may need to take its removed seats with it, as it may be necessary for those removed seats to be reinstalled for a future journey, once the disabled person in a wheelchair disembarks. Where the coach is substantially full of passengers, the stowage of removed seats compromises the available luggage space.

There are also situations where coaches are engaged for a group of passengers, such as for tourism or sports club trips for a number of days or weeks. In such situation a passenger, may incur illness or injury during the coach trip which is not so bad to prevent travel, but makes boarding and alighting coach difficult. The prior art method of removing seats to allow for strapping down of wheelchairs, is usually not feasible in such situations.

WO 03/026548 (Baribunma Holdings) discloses an improved apparatus for securing a self-propelled wheelchair to the floor of a vehicle for transport. Whilst this method is preferable to strapping down a conventional wheelchair, the self-propelled wheelchair still occupies considerable space within the vehicle. Also, this method requires the disabled person's own wheelchair to have an anchoring mechanism that matches the anchoring element in the vehicle. Generally this method is intended for use in specially modified smaller vans, where the disabled person is either a passenger or the driver of the van. Due to the considerable space occupied by the self-propelled wheelchair, it cannot be used in a multi-seat larger bus without comprising the space that could otherwise be used for regular seating within the bus.

The term "bus" as used herein includes, but is not limited to, mini-buses, public buses and coaches.

The present invention seeks to overcome at least one of the disadvantages of the prior art.

SUMMARY OF INVENTION

In a first aspect the present invention consists in a seat for a vehicle, said seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the

interior floor of said vehicle, said seat having wheels to enable it to be rolled within said vehicle when not anchored to the floor of the vehicle, the seat being temporarily removable from the vehicle for the purpose of seating a person in the seat whilst it is outside of the vehicle, before moving the seat back into the vehicle whilst the person remains seated in it, said wheels are retractable from a lowered position to a raised position , wherein in use when said wheels are in said lowered position and a person sitting in the seat is placed in the vehicle, said seat may be rolled to a position over said anchoring element, and then said wheels are raised thereby causing said seat to lower so that said anchoring mechanism may anchor to said anchoring element.

Preferably when said wheels are in said raised position they are stowed substantially below the base of said seat, and when they are in the lowered position they are extended so as to be disposed outwardly away from the base of the seat.

Preferably the wheels comprise two front wheels and two rear caster wheels, the front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels.

Preferably said anchoring mechanism comprises at least one anchoring projection that fits into a corresponding hook on the anchoring element, and at least one retractable pin that fits into a corresponding hole in the anchoring element.

Preferably in one embodiment a lever is operated to manually retract the wheels into the raised position, and to extend the wheels into the lowered position. Preferably in another embodiment electromechanical actuator is used to retract the wheels into the raised position, and to extend the wheels into the lowered position.

Preferably said vehicle is a bus, and said person is a disabled person.

In a second aspect the present invention consists in a method of transporting a person in a vehicle, said vehicle comprising a seat that is releasably anchored to an anchoring element disposed on the interior floor of said vehicle by an anchoring mechanism, said seat having wheels to enable it to be rolled inside said vehicle when not anchored to the interior floor of the vehicle, said wheels are retractable from a lowered rolling configuration to a raised anchoring configuration which allows said seat to be anchored to the interior floor of said vehicle, the said method comprising releasing the anchoring mechanism from said anchoring element and lowering said wheels to said lowered rolling configuration to thereby allow rolling of said seat

within said vehicle to allow removal from same, seating said person in said seat whilst it is outside said vehicle, moving said seat back into said vehicle whilst said person remains seated in it, rolling said seat to a position over said anchoring element, retracting said wheels to said raised anchoring configuration and anchoring said seat via said anchoring mechanism to said anchoring element.

In a third aspect the present invention consists in a seat for a bus, said seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said bus, said seat having wheels to enable it to be rolled within said bus when not anchored to the interior floor of the bus, said seat being temporarily removable from the bus for the purpose of seating a person in said seat whilst it is outside of the vehicle, before moving said seat back into said bus whilst the person remains seated in it, wherein said wheels are retractable between a lowered rolling configuration and a raised anchoring configuration, , wherein in use when said wheels are in said lowered rolling configuration and a person sitting in said seat is placed in said bus, said seat may be rolled to a position over said anchoring element, and then said wheels are retracted to said anchoring configuration thereby allowing said seat to lower so that said anchoring mechanism may be anchored to said anchoring element.

Preferably said wheels are retracted into the raised anchoring configuration they are stowed substantially below the base of said seat, and when they are in the lowered rolling configuration they are extended so as to be disposed outwardly away from the base of said seat.

Preferably said seat is of a similar size and shape to other regular seats in said bus, and when said seat has its wheels retracted to said anchoring configuration and said seat is anchored to said anchoring element, said seat occupies a same amount of space as to said other regular seats.

Preferably the wheels comprise two front wheels and two rear caster wheels, said front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels, when the wheels are being moved from the lowered rolling configuration to the raised anchoring configuration.

Preferably in one embodiment a lever is operated to manually retract the wheels into said raised anchoring configuration, and to extend the wheels into said lowered rolling configuration. Preferably in another embodiment an electromechanical actuator is used to retract the wheels into said raised anchoring configuration, and to extend the wheels into said lowered rolling configuration.

In a fourth aspect the present invention consists in a method of transporting a person in a bus, the bus comprising a plurality of regular seats and at least one rolling seat that is releasably anchored to anchoring element disposed on the interior of the bus by an anchoring mechanism, said rolling seat having wheels to enable it to be rolled when not anchored to the interior of the bus, said wheels are retractable from a lowered rolling configuration to a raised anchoring configuration which allows said rolling seat to be anchored to the interior floor of said bus, said method comprising releasing the anchoring mechanism from said anchoring element and lowering said wheels to said lowered rolling configuration to thereby allow rolling of said rolling seat within said bus to allow removal from same, seating said person in said rolling seat whilst it is outside said bus, moving said rolling seat back into said bus whilst said person remains seated in it, rolling said rolling seat to a position over said anchoring element, retracting said wheels to said raised anchoring configuration and anchoring said rolling seat via said anchoring mechanism to said anchoring element.

Preferably said rolling seat is of a similar size and shape to the regular seats in the bus, and when the rolling seat is in said raised anchoring configuration and said rolling seat is anchored to the interior of the bus, the rolling seat occupies the same amount of space as the other regular seats in the bus.

In a fifth aspect the present invention consists in a bus comprising a plurality of regular seats and at least one rolling seat, said rolling seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said bus, said rolling seat having wheels to enable it to be rolled within said bus when not anchored to the interior floor of the bus, said rolling seat being temporarily removable from the bus for the purpose of seating a person in said rolling seat whilst it is outside of said bus, before moving said seat back into said bus whilst the person remains seated in it, wherein said wheels are retractable between a lowered rolling configuration and a raised anchoring configuration, , wherein in use when said wheels are in said lowered rolling configuration and a person sitting in said rolling seat is placed in said bus, said rolling seat may be rolled to a position over said anchoring

element, and then said wheels are retracted to said anchoring configuration thereby allowing said rolling seat to lower so that said anchoring mechanism may be anchored to said anchoring element.

Preferably said rolling seat is of a similar size and shape to the plurality of regular seats in the bus, and when said rolling seat is in said raised anchoring configuration and said rolling seat is anchored to anchoring element, said rolling seat occupies a similar space to the other regular seats in the bus.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a side view of a vehicle seat for a disabled person in accordance with the present invention, with its wheels in a lowered rolling configuration.

Fig. 2 is a side view of the seat shown in Fig. 1, with its wheels lowered for rolling the seat, showing some hidden detail of the mechanism that retracts the wheels.

Fig. 3 is a side view of the seat shown in Fig. 1, with its wheels raised for anchoring the seat, showing some hidden detail of the mechanism that retracts the wheels.

Fig. 4 is a side view of the seat shown in Fig. 1, anchored to the floor of a bus.

Fig. 5 is a rear view of the seat shown in Fig. 1, anchored to the floor of a bus.

Fig. 6 is a perspective view of an anchor element for anchoring the seat shown in Fig. 1.

Fig.7 is a front perspective view of the seat shown in Fig. 1, but with the wheels in a retracted configuration.

Fig.8 is a front perspective view of the seat shown in Fig. 1.

Fig. 9 is a front perspective view of the seat shown in Fig. 1 with the wheels in a retracted configuration and anchored to the anchoring element.

Fig.10 is a rear perspective view of the seat shown in Fig. 9.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figs. 1 to 5, 7 and 8 show a vehicle seat 1 for a disabled person in accordance with the present invention. Seat 1 comprises a base 4 that supports a lower cushion 3, a back rest 2, and a pair of arm rests 5. In this embodiment, seat 1 is for use in coach type buses. Seat 1 is of similar size and shape to the other regular seats (not shown) in the coach in that its lower cushion 3

One retractable pin 17 is positioned on each side 18 of base 4, between front and rear projections 15, 16, a short distance from the bottom of base 4. Retractable pins 17 slide in corresponding holes in sides 18 and are biased by springs (not shown) such that they normally protrude outwardly from each side 18. A handle 19 is attached to the top of a sliding rod 20 at the back of seat 1. A cable mechanism 21, shown in hidden details in Figs. 2 and 3, connects the bottom of rod 20 to retractable pins 17 to retract pins 17 flush with sides 18 when handle 19 is manually lifted.

Figs. 4 and 5 show seat 1 releasably anchored to the floor 23 of the bus by means of its anchoring mechanism 15, 16, 17 engaging an anchoring element 22 attached to the floor 23. Referring to Fig. 6, anchoring element 22 comprises a horizontal base plate 24 that bolts to floor 23, and two vertical side plates 25 parallel to the sides 18 of seat base 4, spaced apart slightly wider than base 4. Two rear hooks 26 are formed in the rear end of side plates 25, each with an opening facing the rear of anchoring element 22. Two front hooks 27 are attached near the front of anchoring element 22, spaced apart inside side plates 25, and each with an opening facing the rear of anchoring element 22. Each side plate 25 has a hole 28 through it. Seat 1 engages anchor plate 22 by front anchoring projections 15 fitting into front hooks 27, rear anchoring projections 16 fitting into rear hooks 26, and retractable pins 17 fitting into holes 28.

The method of operation of seat 1, in accordance with the present invention, will now be described. Starting with an empty seat 1 anchored to the bus floor 23 as shown in Figs. 4 and 5, seat 1 is released from anchor element 22 by lifting handle 19 to retract pins 17 clear of side plates 25 and pulling seat 1 a short distance backwards until projections 15 and 16 are clear of hooks 26 and 27. Lever 14 is then operated to lower wheels 6 and 7, which raises seat 1 and enables it to be rolled using handle 10. Seat 1 is then temporarily removed from the bus, and rolled on the ground outside of the bus to position it as required.

A disabled person is then seated in seat 1 whilst it is outside of the bus. Typically the disabled person will initially be seated in a conventional wheelchair. The person is then transferred to seat 1 with aid of other people or a lifting means. If required, the conventional wheelchair can be collapsed and stowed in the luggage compartment of the bus. Seat 1 is then moved back into the bus, by rolling and lifting. It is then anchored back into anchor element 22 using the reverse of the procedure for releasing it, as follows. Seat 1 is rolled over anchor element 22 and lowered by raising wheels 6 and 7 with handle 19 lifted to retract pins 17. Seat 1 is then

CLAIMS:

1. A seat for a vehicle, the seat being releasably anchored to the interior of the vehicle by an anchoring mechanism and having wheels to enable it to be rolled when not anchored to the interior of the vehicle, the seat being temporarily removable from the vehicle for the purpose of seating a person in the seat whilst it is outside of the vehicle, before moving the seat back into the vehicle whilst the person remains seated in it.
2. A seat for a vehicle as claimed in claim 1, wherein the seat is of similar size and shape to other regular seats in the vehicle.
3. A seat for a vehicle as claimed in claim 2, wherein the seat is constructed by modifying a regular seat of the vehicle.
4. A seat for a vehicle as claimed in claim 1, wherein an anchoring element is attached to the interior of the vehicle, and the anchoring mechanism engages the anchoring element to anchor the seat.
5. A seat for a vehicle as claimed in claim 4, wherein the anchoring element is attached to the floor of the vehicle.
6. A seat for a vehicle as claimed in claim 4, wherein the anchoring mechanism comprises at least one anchoring projection that fits into a corresponding hook on the anchoring element, and at least one retractable pin that fits into a corresponding hole in the anchoring element.
7. A seat for a vehicle as claimed in claim 1, wherein the wheels are retractable from a lowered position for rolling the seat, to a raised position for anchoring the seat.
8. A seat for a vehicle as claimed in claim 7, wherein the wheels comprise two front wheels and two rear caster wheels, the front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels.
9. A seat for a vehicle as claimed in claim 8, wherein a lever is operated to manually retract the wheels into the raised position, and to extend the wheels into the lowered position.
10. A seat for a vehicle as claimed in claim 8, wherein an electromechanical actuator is used to retract the wheels into the raised position, and to extend the wheels into the lowered position.

11. A seat for a vehicle as claimed in claim 1, wherein the vehicle is a bus.

12. A seat for a vehicle as claimed in claim 1, wherein the person is a disabled person.

13. A method of transporting a person in a vehicle, the vehicle comprising a seat that is releasably anchored to the interior of the vehicle by an anchoring mechanism and having wheels to enable it to be rolled when not anchored to the interior of the vehicle, the method comprising releasing the anchoring mechanism and removing the seat from the vehicle, seating the person in the seat whilst it is outside of the vehicle, moving the seat back into the vehicle whilst the person remains seated in it, and anchoring the seat to the interior of the vehicle.

14. A vehicle comprising at least one seat for a person, the seat being releasably anchored to the interior of the vehicle by an anchoring mechanism and having wheels to enable it to be rolled when not anchored to the interior of the vehicle, the seat being temporarily removable from the vehicle for the purpose of seating the person in the seat whilst it is outside of the vehicle, before moving the seat back into the vehicle whilst the person remains seated in it.

15. A seat for a bus, the seat being releasably anchored to the interior of the bus by an anchoring mechanism and having wheels to enable it to be rolled when not anchored to the interior of the bus, the seat being temporarily removable from the bus for the purpose of seating a person in the seat whilst it is outside of the bus before moving the seat back into the bus whilst the person remains seated in it, wherein the wheels are retractable between a lowered rolling configuration and a raised anchoring configuration.

16. A seat for a bus as claimed in claim 15, wherein when said wheels are in raised anchoring configuration they are stowed substantially below the seat base, and when they are in the lowered rolling configuration they are extended so as to be disposed outwardly away from the seat base.

17. A seat for a bus as claimed in claim 15, wherein said seat is of a similar size and shape to other regular seats in the bus, and when the seat is in said raised anchoring configuration and said seat is anchored to the interior of the bus, the seat occupies a similar floor space to said other regular seats in the bus.

18. A seat for a bus as claimed in claim 15, wherein the wheels comprise two front wheels and two rear caster wheels, the front wheels being attached to a footrest that pivots upwards to

retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels, when the wheels are being moved from the lowered rolling configuration to the raised anchoring configuration.

19. A seat for a bus as claimed in claim 18, wherein a lever is operated to manually retract the wheels into the raised anchoring configuration, and to extend the wheels into the lowered rolling configuration.

20. A seat for a bus as claimed in claim 18, wherein an electromechanical actuator is used to retract the wheels into the raised position, and to extend the wheels into the lowered position.

21. A method of transporting a person in a bus, the bus comprising a plurality of regular seats and at least one rolling seat that is releasably anchored to the interior of the bus by an anchoring mechanism and having wheels to enable it to be rolled when not anchored to the interior of the bus, the method comprising releasing the anchoring mechanism and removing the rolling seat from the vehicle, seating the person in the rolling seat whilst it is outside of the vehicle, moving the rolling seat back into the vehicle whilst the person remains seated in it, and anchoring the rolling seat to the interior of the vehicle, wherein the wheels are retractable between a lowered rolling configuration and a raised anchoring configuration.

22. A method of transporting a person in a bus as claimed in claim 21, wherein said rolling seat is of a similar size and shape to the regular seats in the bus, and when the rolling seat is in said raised anchoring configuration and said rolling seat is anchored to the interior of the bus, the rolling seat occupies a similar floor space to the other regular seats in the bus.

23. A bus comprising a plurality of regular seats and at least one rolling seat, the rolling seat being releasably anchored to the interior of the bus by an anchoring mechanism and having wheels to enable it to be rolled when not anchored to the interior of the bus, the rolling seat being temporarily removable from the bus for the purpose of seating a person in the seat whilst it is outside of the bus, before moving the rolling seat back into the bus whilst the person remains seated in it, wherein the wheels are retractable between a lowered rolling configuration and a raised anchoring configuration.

24. A bus as claimed in claim 23, wherein said rolling seat is of a similar size and shape to the plurality of regular seats in the bus, and when the rolling seat is in said raised anchoring

configuration and said rolling seat is anchored to the interior of the bus, the rolling seat occupies a similar floor space to the other regular seats in the bus.

four conventional coach seats. There are known methods of removing seats from a bus when it is necessary to make space for conventional wheelchairs, but this still reduces the seating capacity of the bus when transporting a wheelchair and the removed bus seats must be stored outside of the bus or in the luggage compartment. A disadvantage is that some coaches require considerable time to remove and store their conventional seats, so that a disabled person in a wheelchair may use the coach. Another disadvantage, is that it is not always convenient to remove seats and leave them behind at a the location where they were removed, as according to varying circumstances a coach may need to take its removed seats with it, as it may be necessary for those removed seats to be reinstalled for a future journey, once the disabled person in a wheelchair disembarks. Where the coach is substantially full of passengers, the stowage of removed seats compromises the available luggage space.

There are also situations where coaches are engaged for a group of passengers, such as for tourism or sports club trips for a number of days or weeks. In such situation a passenger, may incur illness or injury during the coach trip which is not so bad to prevent travel, but makes boarding and alighting coach difficult. The prior art method of removing seats to allow for strapping down of wheelchairs, is usually not feasible in such situations.

WO 03/026548 (Baribunma Holdings) discloses an improved apparatus for securing a self-propelled wheelchair to the floor of a vehicle for transport. Whilst this method is preferable to strapping down a conventional wheelchair, the self-propelled wheelchair still occupies considerable space within the vehicle. Also, this method requires the disabled person's own wheelchair to have an anchoring mechanism that matches the anchoring element in the vehicle. Generally this method is intended for use in specially modified smaller vans, where the disabled person is either a passenger or the driver of the van. Due to the considerable space occupied by the self-propelled wheelchair, it cannot be used in a multi-seat larger bus without comprising the space that could otherwise be used for regular seating within the bus.

The term "bus" as used herein includes, but is not limited to, mini-buses, public buses and coaches.

The present invention seeks to overcome at least one of the disadvantages of the prior art.

SUMMARY OF INVENTION

The invention is defined in the independent claims. Some optional features of the invention are defined in the dependent claims. In a first example, there is a seat for a vehicle, said seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the

interior floor of said vehicle, said seat having wheels to enable it to be rolled within said vehicle when not anchored to the floor of the vehicle, the seat being temporarily removable from the vehicle for the purpose of seating a person in the seat whilst it is outside of the vehicle, before moving the seat back into the vehicle whilst the person remains seated in it, said wheels are retractable from a lowered position to a raised position , wherein in use when said wheels are in said lowered position and a person sitting in the seat is placed in the vehicle, said seat may be rolled to a position over said anchoring element, and then said wheels are raised thereby causing said seat to lower so that said anchoring mechanism may anchor to said anchoring element.

Preferably when said wheels are in said raised position they are stowed substantially below the base of said seat, and when they are in the lowered position they are extended so as to be disposed outwardly away from the base of the seat.

Preferably the wheels comprise two front wheels and two rear caster wheels, the front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels.

Preferably said anchoring mechanism comprises at least one anchoring projection that fits into a corresponding hook on the anchoring element, and at least one retractable pin that fits into a corresponding hole in the anchoring element.

Preferably in one embodiment a lever is operated to manually retract the wheels into the raised position, and to extend the wheels into the lowered position. Preferably in another embodiment electromechanical actuator is used to retract the wheels into the raised position, and to extend the wheels into the lowered position.

Preferably said vehicle is a bus, and said person is a disabled person.

In a second example, there is a method of transporting a person in a vehicle, said vehicle comprising a seat that is releasably anchored to an anchoring element disposed on the interior floor of said vehicle by an anchoring mechanism, said seat having wheels to enable it to be rolled inside said vehicle when not anchored to the interior floor of the vehicle, said wheels are retractable from a lowered rolling configuration to a raised anchoring configuration which allows said seat to be anchored to the interior floor of said vehicle, the said method comprising releasing the anchoring mechanism from said anchoring element and lowering said wheels to said lowered rolling configuration to thereby allow rolling of said seat

within said vehicle to allow removal from same, seating said person in said seat whilst it is outside said vehicle, moving said seat back into said vehicle whilst said person remains seated in it, rolling said seat to a position over said anchoring element, retracting said wheels to said raised anchoring configuration and anchoring said seat via said anchoring mechanism to said anchoring element.

In a third example, there is a seat for a bus, said seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said bus, said seat having wheels to enable it to be rolled within said bus when not anchored to the interior floor of the bus, said seat being temporarily removable from the bus for the purpose of seating a person in said seat whilst it is outside of the vehicle, before moving said seat back into said bus whilst the person remains seated in it, wherein said wheels are retractable between a lowered rolling configuration and a raised anchoring configuration, , wherein in use when said wheels are in said lowered rolling configuration and a person sitting in said seat is placed in said bus, said seat may be rolled to a position over said anchoring element, and then said wheels are retracted to said anchoring configuration thereby allowing said seat to lower so that said anchoring mechanism may be anchored to said anchoring element.

Preferably said wheels are retracted into the raised anchoring configuration they are stowed substantially below the base of said seat, and when they are in the lowered rolling configuration they are extended so as to be disposed outwardly away from the base of said seat.

Preferably said seat is of a similar size and shape to other regular seats in said bus, and when said seat has its wheels retracted to said anchoring configuration and said seat is anchored to said anchoring element, said seat occupies a same amount of space as to said other regular seats.

Preferably the wheels comprise two front wheels and two rear caster wheels, said front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels, when the wheels are being moved from the lowered rolling configuration to the raised anchoring configuration.

Preferably in one embodiment a lever is operated to manually retract the wheels into said raised anchoring configuration, and to extend the wheels into said lowered rolling configuration. Preferably in another embodiment an electromechanical actuator is used to retract the wheels into said raised anchoring configuration, and to extend the wheels into said lowered rolling configuration.

In a fourth example there is a method of transporting a person in a bus, the bus comprising a plurality of regular seats and at least one rolling seat that is releasably anchored to anchoring element disposed on the interior of the bus by an anchoring mechanism, said rolling seat having wheels to enable it to be rolled when not anchored to the interior of the bus, said wheels are retractable from a lowered rolling configuration to a raised anchoring configuration which allows said rolling seat to be anchored to the interior floor of said bus, said method comprising releasing the anchoring mechanism from said anchoring element and lowering said wheels to said lowered rolling configuration to thereby allow rolling of said rolling seat within said bus to allow removal from same, seating said person in said rolling seat whilst it is outside said bus, moving said rolling seat back into said bus whilst said person remains seated in it, rolling said rolling seat to a position over said anchoring element, retracting said wheels to said raised anchoring configuration and anchoring said rolling seat via said anchoring mechanism to said anchoring element.

Preferably said rolling seat is of a similar size and shape to the regular seats in the bus, and when the rolling seat is in said raised anchoring configuration and said rolling seat is anchored to the interior of the bus, the rolling seat occupies the same amount of space as the other regular seats in the bus.

In a fifth example there is a bus comprising a plurality of regular seats and at least one rolling seat, said rolling seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said bus, said rolling seat having wheels to enable it to be rolled within said bus when not anchored to the interior floor of the bus, said rolling seat being temporarily removable from the bus for the purpose of seating a person in said rolling seat whilst it is outside of said bus, before moving said seat back into said bus whilst the person remains seated in it, wherein said wheels are retractable between a lowered rolling configuration and a raised anchoring configuration, , wherein in use when said wheels are in said lowered rolling configuration and a person sitting in said rolling seat is placed in said bus, said rolling seat may be rolled to a position over said anchoring

element, and then said wheels are retracted to said anchoring configuration thereby allowing said rolling seat to lower so that said anchoring mechanism may be anchored to said anchoring element.

Preferably said rolling seat is of a similar size and shape to the plurality of regular seats in the bus, and when said rolling seat is in said raised anchoring configuration and said rolling seat is anchored to anchoring element, said rolling seat occupies a similar space to the other regular seats in the bus.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a side view of a vehicle seat for a disabled person, with its wheels in a lowered rolling configuration.

Fig. 2 is a side view of the seat shown in Fig. 1, with its wheels lowered for rolling the seat, showing some hidden detail of the mechanism that retracts the wheels.

Fig. 3 is a side view of the seat shown in Fig. 1, with its wheels raised for anchoring the seat, showing some hidden detail of the mechanism that retracts the wheels.

Fig. 4 is a side view of the seat shown in Fig. 1, anchored to the floor of a bus.

Fig. 5 is a rear view of the seat shown in Fig. 1, anchored to the floor of a bus.

Fig. 6 is a perspective view of an anchor element for anchoring the seat shown in Fig. 1.

Fig.7 is a front perspective view of the seat shown in Fig. 1, but with the wheels in a retracted configuration.

Fig.8 is a front perspective view of the seat shown in Fig. 1.

Fig. 9 is a front perspective view of the seat shown in Fig. 1 with the wheels in a retracted configuration and anchored to the anchoring element.

Fig.10 is a rear perspective view of the seat shown in Fig. 9.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figs. 1 to 5, 7 and 8 show a vehicle seat 1 for a disabled person. Seat 1 comprises a base 4 that supports a lower cushion 3, a back rest 2, and a pair of arm rests 5. In this embodiment, seat 1 is for use in coach type buses. Seat 1 is of similar size and shape to the other regular seats (not shown) in the coach in that its lower cushion 3

One retractable pin 17 is positioned on each side 18 of base 4, between front and rear projections 15, 16, a short distance from the bottom of base 4. Retractable pins 17 slide in corresponding holes in sides 18 and are biased by springs (not shown) such that they normally protrude outwardly from each side 18. A handle 19 is attached to the top of a sliding rod 20 at the back of seat 1. A cable mechanism 21, shown in hidden details in Figs. 2 and 3, connects the bottom of rod 20 to retractable pins 17 to retract pins 17 flush with sides 18 when handle 19 is manually lifted.

Figs. 4 and 5 show seat 1 releasably anchored to the floor 23 of the bus by means of its anchoring mechanism 15, 16, 17 engaging an anchoring element 22 attached to the floor 23. Referring to Fig. 6, anchoring element 22 comprises a horizontal base plate 24 that bolts to floor 23, and two vertical side plates 25 parallel to the sides 18 of seat base 4, spaced apart slightly wider than base 4. Two rear hooks 26 are formed in the rear end of side plates 25, each with an opening facing the rear of anchoring element 22. Two front hooks 27 are attached near the front of anchoring element 22, spaced apart inside side plates 25, and each with an opening facing the rear of anchoring element 22. Each side plate 25 has a hole 28 through it. Seat 1 engages anchor plate 22 by front anchoring projections 15 fitting into front hooks 27, rear anchoring projections 16 fitting into rear hooks 26, and retractable pins 17 fitting into holes 28.

The method of operation of seat 1 will now be described. Starting with an empty seat 1 anchored to the bus floor 23 as shown in Figs. 4 and 5, seat 1 is released from anchor element 22 by lifting handle 19 to retract pins 17 clear of side plates 25 and pulling seat 1 a short distance backwards until projections 15 and 16 are clear of hooks 26 and 27. Lever 14 is then operated to lower wheels 6 and 7, which raises seat 1 and enables it to be rolled using handle 10. Seat 1 is then temporarily removed from the bus, and rolled on the ground outside of the bus to position it as required.

A disabled person is then seated in seat 1 whilst it is outside of the bus. Typically the disabled person will initially be seated in a conventional wheelchair. The person is then transferred to seat 1 with aid of other people or a lifting means. If required, the conventional wheelchair can be collapsed and stowed in the luggage compartment of the bus. Seat 1 is then moved back into the bus, by rolling and lifting. It is then anchored back into anchor element 22 using the reverse of the procedure for releasing it, as follows. Seat 1 is rolled over anchor element 22 and lowered by raising wheels 6 and 7 with handle 19 lifted to retract pins 17. Seat 1 is then

CLAIMS:

1. A seat for a vehicle, said seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said vehicle, said seat having wheels to enable it to be rolled within said vehicle when not anchored to the floor of the vehicle, the seat being temporarily removable from the vehicle for the purpose of seating a person in the seat whilst it is outside of the vehicle, before moving the seat back into the vehicle whilst the person remains seated in it, said wheels are retractable from a lowered position to a raised position , wherein in use when said wheels are in said lowered position and a person sitting in the seat is placed in the vehicle, said seat is configured to be rolled to a position over said anchoring element, and then for said wheels to be raised thereby for said seat to lower so that said anchoring mechanism may anchor to said anchoring element.

2. A seat for a vehicle as claimed in claim 1, configured so that when said wheels are in said raised position they are stowed substantially below the base of said seat, and when they are in the lowered position they are extended so as to be disposed outwardly away from the base of the seat.

3. A seat for a vehicle as claimed in claim 1, wherein the wheels comprise two front wheels and two rear caster wheels, the front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels.

4. A seat for a vehicle as claimed in claim 1, wherein said anchoring mechanism comprises at least one anchoring projection for fitting into a corresponding hook on the anchoring element, and at least one retractable pin for fitting into a corresponding hole in the anchoring element.

5. A seat for a vehicle as claimed in claim 1, wherein a lever is operable to manually retract the wheels into the raised position, and to extend the wheels into the lowered position.

6. A seat for a vehicle as claimed in claim 1, wherein an electromechanical actuator is configured to retract the wheels into the raised position, and to extend the wheels into the lowered position.

7. A seat for a vehicle as claimed in claim 1, wherein said vehicle is a bus.

8. A seat for a vehicle as claimed in claim 1, wherein said person is a disabled person.

9. A method of transporting a person in a vehicle, said vehicle comprising a seat that is releasably anchored to an anchoring element disposed on the interior floor of said vehicle by an anchoring mechanism, said seat having wheels to enable it to be rolled inside said vehicle when not anchored to the interior floor of the vehicle, said wheels are retractable from a lowered rolling configuration to a raised anchoring configuration which allows said seat to be anchored to the interior floor of said vehicle, the said method comprising releasing the anchoring mechanism from said anchoring element and lowering said wheels to said lowered rolling configuration to thereby allow rolling of said seat within said vehicle to allow removal from same, seating said person in said seat whilst it is outside said vehicle, moving said seat back into said vehicle whilst said person remains seated in it, rolling said seat to a position over said anchoring element, retracting said wheels to said raised anchoring configuration and anchoring said seat via said anchoring mechanism to said anchoring element.

10. A seat for a bus, said seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said bus, said seat having wheels to enable it to be rolled within said bus when not anchored to the interior floor of the bus, said seat being temporarily removable from the bus for the purpose of seating a person in said seat whilst it is outside of the vehicle, before moving said seat back into said bus whilst the person remains seated in it, wherein said wheels are retractable between a lowered rolling configuration and a raised anchoring configuration, wherein in use when said wheels are in said lowered rolling configuration and a person sitting in said seat is placed in said bus, said seat is configured to be rolled to a position over said anchoring element, and then for said wheels to be retracted to said anchoring configuration thereby allowing said seat to lower so that said anchoring mechanism may be anchored to said anchoring element.

11. A seat for a bus as claimed in claim 10, configured so that when said wheels are retracted into the raised anchoring configuration they are stowed substantially below the base of said seat, and when they are in the lowered rolling configuration they are extended so as to be disposed outwardly away from the base of said seat.

12. A seat for a bus as claimed in claim 10, wherein said seat is of a similar size and shape to other regular seats in said bus, and configured so that when said seat has its wheels retracted to said anchoring configuration and said seat is anchored to said anchoring element, said seat occupies a same amount of space as to said other regular seats.

13. A seat for a bus as claimed in claim 10, wherein the wheels comprise two front wheels and two rear caster wheels, said front wheels being attached to a footrest that pivots upwards to retract the front wheels, and the rear caster wheels being attached to arms that pivot upwards to retract the rear caster wheels, when the wheels are being moved from the lowered rolling configuration to the raised anchoring configuration.

14. A seat for a bus as claimed in claim 13, wherein a lever is operable to manually retract the wheels into said raised anchoring configuration, and to extend the wheels into said lowered rolling configuration.

15. A seat for a bus as claimed in claim 13, wherein an electromechanical actuator is configured to retract the wheels into said raised anchoring configuration, and to extend the wheels into said lowered rolling configuration.

16. A method of transporting a person in a bus, the bus comprising a plurality of regular seats and at least one rolling seat that is releasably anchored to anchoring element disposed on the interior floor of the bus by an anchoring mechanism, said rolling seat having wheels to enable it to be rolled when not anchored to the interior of the bus, said wheels are retractable from a lowered rolling configuration to a raised anchoring configuration which allows said rolling seat to be anchored to the interior floor of said bus, said method comprising releasing the anchoring mechanism from said anchoring element and lowering said wheels to said lowered rolling configuration to thereby allow rolling of said rolling seat within said bus to allow removal from same, seating said person in said rolling seat whilst it is outside said bus, moving said rolling seat back into said bus whilst said person remains seated in it, rolling said rolling seat to a position over said anchoring element, retracting said wheels to said raised anchoring configuration and anchoring said rolling seat via said anchoring mechanism to said anchoring element.

17. A method of transporting a person in a bus as claimed in claim 16, wherein said rolling seat is of a similar size and shape to the regular seats in the bus, and when the rolling seat is in said raised anchoring configuration and said rolling seat is anchored to the interior of the bus, the rolling seat occupies the same amount of space as the other regular seats in the bus.

18. A bus comprising a plurality of regular seats and at least one rolling seat, said rolling seat having an anchoring mechanism for releasably anchoring same to an anchoring element disposed on the interior floor of said bus, said rolling seat having wheels to enable it to be rolled within said bus when not anchored to the interior floor of the bus, said rolling seat being temporarily removable from the bus for the purpose of seating a person in said rolling seat whilst it is outside of said bus, before moving said seat back into said bus whilst the person remains seated in it, wherein said wheels are retractable between a lowered rolling configuration and a raised anchoring configuration, wherein in use when said wheels are in said lowered rolling configuration and a person sitting in said rolling seat is placed in said bus, said rolling seat is configured to be rolled to a position over said anchoring element, and then for said wheels to be retracted to said anchoring configuration thereby allowing said rolling seat to lower so that said anchoring mechanism may be anchored to said anchoring element.

19. A bus as claimed in claim 18, wherein said rolling seat is of a similar size and shape to the plurality of regular seats in the bus, and configured so that when said rolling seat is in said raised anchoring configuration and said rolling seat is anchored to anchoring element, said rolling seat occupies a similar space to the other regular seats in the bus.