

SEAT FOR AN EMERGENCY AND SPECIAL VEHICLE**Field of the invention**

5 The invention relates to an emergency and special vehicle with a passenger compartment for transporting or conveying people, whereby a seat with a seat cushion and a backrest is arranged on a securely mounted seat mount with a sliding device to move the seat in the passenger compartment, whereby the seat mount is fastened to only one side panel and/or to only one wheel well; the seat mount of the seat is
10 provided with multiple locking positions to lock the seat in place at various distances from the side panel of the passenger compartment. Furthermore, the invention relates to a seat for an emergency and special vehicle, whereby a seat with a seat cushion and a backrest in a passenger compartment for transporting or conveying people is arranged on a securely mounted seat mount with a sliding device to move the seat in the
15 passenger compartment, whereby the seat mount is fastened to only one side panel and/or to only one wheel well and the seat is laterally movable on the seat mount and is provided with multiple locking positions to lock the seat in place at various distances from the side panel of the passenger compartment.

Description

Emergency and special vehicles such as ambulances or fire trucks often have a compartment in which people are transported. This includes in particular so-called box
 5 bodies. The people sit in the passenger compartment on seats which are attached to a seat mount in the passenger compartment. In ambulances, stretcher trolleys are also used to transport sick or injured persons. The seats and stretcher trolleys are attached next to each other at the same time in the passenger compartment of the ambulance. Paramedics or doctors have difficulty approaching a sick or injured person who is lying
 10 on the stretcher trolley to provide medical care in such constellations. For this reason, the seat must be arranged to save as much space as possible.

Background of the invention

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An ambulance seat for ambulances and special vehicles with a seat cushion and a backrest is known from DE 20 2009 015 652 U1 which is attached to a side panel and/or a frame of the vehicle, wherein the seat cushion is foldably connected via a hinge to the backrest so that the seat cushion is essentially horizontal in one working position and
 20 essentially vertical and folded up against the backrest in a standby position, and a safety belt to restrain one person to the ambulance seat in the event of an accident involving the vehicle. In addition to the vehicle seats for emergency and service personnel in the driver's cab, an emergency vehicle such as an ambulance, for example, requires an additional seat for use as an ambulance seat. This seat is preferably attached to a side
 25 panel of the ambulance. This seat is then available for a doctor, caregiver, or even for a patient. The person sitting there is restrained in the vehicle during the trip by a safety belt to prevent injuries in case of an accident or when braking suddenly. To provide as much space as possible, the seat cushion is designed so it can be pushed away or folded up and down. These seats are not designed to be suitable for children. If it is necessary
 30 for a child to sit on such a seat, then an additional child seat must be used. Due to the lack of storage space available in emergency vehicles, such child seats are often not

carried on board anyway. When a child is transported on such a seat, the child is often inadequately or poorly secured, or may not be secured at all, in the event of an accident or an emergency braking maneuver.

- 5 DE 32 19 710 A1 discloses a vehicle seat for at least two persons. The vehicle seat comprises a base frame with supports, which are connected by rails. At least two seat cushion parts with backrest parts hinge-mounted on them are arranged on the rails. At least one seat cushion part is mounted on the rails such that it can be moved laterally and locked in place. The rails are designed to be straight with respect to their height
10 over the contact surface of the seat, and both parts of the seat cushion can be moved in basically the same manner over the rails.

- DE10 2007 044 319 A1 describes a vehicle seat with a seat part and a base frame connected to the seat part, wherein the base frame has at least one first rail element
15 for displacing the seat part. The first rail element in a first plane and at least one second rail element for displacing the seat part in a second plane are connected to each other by means of a rotating device such that their mutual alignment is variable.

- Objects such as clothing or similar items are often lying on the seat cushion because
20 there is not much space available in the passenger compartment. The known seats for at ambulances and special vehicles have the disadvantage that the seat cushion must be hidden to create space. This is accomplished by moving or folding up the seat cushion. The seat is not available any more in this case. In rail systems for seats, the rails or corresponding base frames do not change their position in the passenger compartment.
25 They remain in place and represent an obstacle.

Disclosure of the invention

The objective of the invention is thus to enable the space in a passenger compartment of an emergency or special vehicle to be used optimally and safely in spite of an
5 additional seat.

According to the invention, the objective is achieved in that, for the type of emergency and special vehicle stated at the beginning, the seat is laterally movable on the seat mount with multiple locking positions to lock the seat at various distances from a side
10 panel of the passenger compartment via a sliding device designed to telescope. Furthermore, the objective is achieved accordingly in that a seat for the type of emergency and special vehicle stated at the beginning is provided with a telescopic sliding device for the movable seat.

Due to the ability to move the seat laterally in the passenger compartment of an
15 emergency and special vehicle, the little space available when loading can be used for a different purpose during the trip. The seat is pushed to the side for this purpose. The seat is not moved on a base frame or similar device in this case. Instead, the entire telescopic sliding device of the seat mount is moved together with the seat. The seat mount is formed like a telescopic arm, on the end of which the seat is fastened. In a
20 completely retracted state of the telescopic sliding device of the seat mount, the seat is located as close as possible to the side panel of the passenger compartment. This enables free passage between a stretcher and the seat without the base frame getting in the way. When the sliding device is extended, a medical attendant, for example, can come very close to a patient on a stretcher. In particular, it is very helpful during
25 transport when the medical attendant is located in close proximity to the patient to provide care and speak with the patient.

An advantage of the invention is that the seat mount is only attached to one side panel and/or wheel well. The seat mount is often fastened to the floor of the passenger
30 compartment. This makes it difficult to place something under the seat. In addition, the area under the seat can only be cleaned between the spaces in the seat mount. This

makes cleaning the passenger compartment more difficult. By attaching the seat mount to the side panel, space is created below the seat to stow objects and to improve cleanability. The space available in the passenger compartment of an emergency and special vehicle like an ambulance is extremely limited. Every space imaginable is utilized in such vehicles. For this reason, it is expedient to arrange the sliding device on a wheel well. In particular, this prevents space from being used unnecessarily in this passenger compartment and instead creates a space in the passenger compartment that would otherwise be very difficult or cumbersome to use.

The telescopic sliding device only permits lateral movement. This lateral movement is prevented during the trip in the vehicle by the locking positions. The sliding device can also be actuated electrically and/or hydraulically in this case. An electric motor or a hydraulic drive, respectively, is necessary for this purpose. A remote control can also help the person move the seat laterally to free up their hands for other purposes.

The sliding device is designed to be telescopic. The sliding device thus forms a collapsible or extendable arm. Square or round profiles of various diameters that are suitably inserted into each other, for example, are suitable for this purpose. However, rail-like elements with or even without bearings that can be pushed into each other are also suitable for use. The seat can then be moved to the side stably against the side panel of the passenger compartment. During motion, at least two profiles of the same type but with different perimeter lengths engage each other. This can also be achieved using at least two tube profiles with different diameters. As a result of this, the seat can be guided linearly and laterally on the seat mount along these profiles or tubes.

In an advantageous embodiment of the emergency and special vehicle according to the invention, the seat mount is designed to pivot vertically and/or horizontally. Through the ability to pivot, it is possible to move the seat horizontally in the free space available. As a result of this, a medical attendant can reach many items without having to get out of the seat. Furthermore, the seat can be adjusted to a desired height for a medical attendant, as a result of which the attendant can assume a pleasant and comfortable sitting position.

A person can easily get their fingers pinched in and/or otherwise injured by the telescopic sliding device. In another advantageous embodiment of the emergency and special vehicle according to the invention, a bellows is provided on the sliding device as protection against injury for this reason.

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An advantageous embodiment of the emergency and special vehicle according to the invention is achieved by making the variable sliding distance of the seat greater than 200 mm. As a result of this, the seat is guided as far away from the seat mount as possible. In this case it can be guided very closely next to a stretcher while transporting a patient. Due to the forces that can act on such a seat, the current state of the art uses a base frame, for example, which is fastened at a minimum of two points located as far away from each other as possible to be able to move the seat laterally by more than 200 mm. It is certainly possible to avoid the spaced two-point attachment using the telescopic sliding device.

In a preferred embodiment of the emergency and special vehicle according to the invention, the seat is designed to rotate and/or fold. As a result of this, a medical attendant accompanying the patient in the passenger compartment has the greatest possible freedom of motion, for example to care for a patient during transport. This also enables this medical attendant to reach medications or medical equipment stored in cabinets more easily without having to leave the seat.

Further embodiments and advantages result from the subject of the dependent claims and the drawings with the accompanying descriptions. Embodiments are explained in more detail in the following with references to the accompanying drawings. The invention should not be restricted to this list of exemplary embodiments alone. They are only intended to illustrate the invention. The present invention should refer to all objects that a person skilled in the art would deem obvious now and in the future to realize the invention. **Brief description of the drawings**

- Fig. 1 Shows a schematic diagram of the passenger compartment of an ambulance vehicle according to the invention with a laterally movable seat pushed in from the rear.
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- Fig. 2 Shows a schematic diagram of the passenger compartment according to Fig. 1 with a laterally movable seat from the front.
- Fig. 3 Shows a schematic diagram of the passenger compartment according to Fig. 1 and 2 with a laterally movable seat in a perspective view.
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- Fig. 4 Shows a schematic diagram of the passenger compartment of an ambulance vehicle with a laterally movable seat from the rear according to the previous figures, but with the seat pulled out.
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- Fig. 5 Shows a schematic diagram of the passenger compartment according to Fig. 4 with a laterally movable seat from the front.
- Fig. 6 Shows a schematic diagram of the passenger compartment according to Fig. 4 and 5 with a laterally movable seat in a perspective view.
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Preferred embodiments

In Fig. 1, 10 designates the passenger compartment of an ambulance vehicle 12. The ambulance vehicle 12 is shown from the rear. Due to the limited ability to demonstrate the invention, only one side panel 14 is shown. A floor 16 and two wheel wells 18, 20 can be seen in the drawing. Splash guards 22, 24 are arranged below the wheel wells 18, 20. A stretcher table 26 for loading a stretcher trolley 28 for a patient is mounted on the floor 16. A seat mount 30 is mounted on the wheel well 18. The seat mount 30 is equipped with a telescopic sliding device 32. The telescopic sliding device 32 comprises at least two nested profiles 33 which are designed to slide into or over each other.

A seat 34 is mounted on this telescopic sliding device 32. The profiles 33, which slide into or over each other, of the sliding device 32 form a telescopic arm, on whose one end the seat 34 is arranged. The seat mount 30 is only fastened to one wheel well 18 so that the telescopic sliding device 32 extends laterally from it into the free space, intermediate space 46. Instead of the wheel well 18, the seat mount 30 can also be fastened to the corresponding side panel 14, which is located on the side of the wheel well 18. The seat mount 30 can also be fastened in combination to the wheel well 18 and the side panel 14. The seat 34 comprises a seat cushion 36 and a backrest 38 with a headrest 39. Safety belts not visible in the figure are attached to the backrest 38. The seat 34 can be pivoted around a vertical axis A (see Fig. 2) on the telescopic sliding device 32 by means of a rotary plate assembly 40. The seat cushion 36 is designed to swivel around an axis B (see Fig. 2) so that it can be folded up against the backrest 38.

The telescopic sliding device 32 is also provided with locking positions 41. A spring-loaded pin 42 of the sliding device 32 engages the locking holes 44 at specific positions to lock the seat 34 in place. The displacement of the sliding device 32 can be variably adjusted in this manner. The seat 34 can be moved laterally by means of the sliding device 32 of the seat mount 30. The appropriate position is finally determined by means of the locking positions 41.

When the sliding device 32 is in the collapsed state as shown in Fig. 1, additional usable space 46 is formed between the seat 34 and the stretcher trolley 28 and/or the stretcher table 26. This space can be used, for example, to enable patients on the stretcher trolley 28 to be reached as well as possible from many sides.

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Fig. 2 also shows a schematic diagram of the passenger compartment 10 according to Fig. 1 with a laterally movable seat 34 from the front. The same reference signs are used in Fig. 2 wherever they correspond to the reference signs used in Fig. 1. For the sake of clarity, only the side panel 14 is shown here. This diagram does not show the other side panels or roof. The splash guards 22, 24 are arranged below the two wheel wells 18, 20. The stretcher table 26 with stretcher trolley 28 for a patient is arranged on the floor 16. The seat mount 30 is mounted on the wheel well 18. The telescopic sliding device 32 is provided on the seat mount 30. The telescopic sliding device 32 comprises at least two nested profiles 33 which are designed to slide into or over each other.

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The seat 34 is mounted on the rotary plate assembly 40 of the telescopic sliding device 32 and can pivot around the vertical axis A. The seat 34 comprises the seat cushion 36 which folds along the axis B and the backrest 38 with the headrest 39. The seat cushion 36 is designed to swivel around the axis B so that it can be folded up against the backrest 38 to save space.

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The telescopic sliding device 32 is provided with the locking positions 41 (see also Fig. 1). The spring-loaded pin 42 of the sliding device 32 engages the locking holes 44 to lock the seat 34 in place. The displacement of the sliding device 32 can be set to different positions in this manner. The seat 34 can be moved laterally via the the sliding device 32.

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When the sliding device 32 is in the collapsed state as shown in Fig. 2, the additional usable space 46 is formed between the seat 34 and the stretcher trolley 28 and/or the stretcher table 26.

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Fig. 3 shows a perspective view of the passenger compartment 10 of the ambulance vehicle 12, as it is also shown in Fig. 1 and 2. The laterally movable seat 34 on the sliding device 32 is in the collapsed position. Wherever this Fig. 3 corresponds to the previous figures, the same reference signs will be used. In this view the passenger compartment 10 of the ambulance vehicle 12 is especially clear. The seat 34 mounted to the seat mount 30 on the wheel well 18. The sliding device 32 allows the seat 34 to be moved laterally. The lateral displacement of the seat 34 can be locked in position in the corresponding locking positions 41. In the side panel 14 opposite the seat 34, a sliding door 48 and a door 50 are provided through which it is possible to enter the passenger compartment 10. The space 46 is relatively large in the collapsed state so that a passable walkway is formed between the stretcher table 26 and seat 34.

Fig. 4 shows a schematic diagram of the passenger compartment 10 of the ambulance vehicle 12 with the laterally movable seat 34 from the rear according to the previous figures. However, the seat 34 is pushed to the side. Again, only the side panel 14 of the passenger compartment 10 is shown. Wherever Fig. 4 corresponds to the previous figures, the same reference signs will be used. The seat mount 30 is mounted on the wheel well 18. The seat mount 30 is equipped with the telescopic sliding device 32, over which the seat 34 is moved to the side. The seat 34 is pivot-mounted on the rotary plate assembly 40. The telescopic sliding device 32 is also provided with locking positions 41. The spring-loaded pin 42 of the sliding device 32 interacts with the locking holes 44 to lock the seat 34 in the desired position. The displacement of the sliding device 32 can be locked in variable positions in this manner. The seat 34 can be moved using this telescopic sliding device 32 at least 200 mm to the side, and thus cover the space 46.

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Fig. 4 shows a schematic diagram of the passenger compartment according to Fig. 4 with the laterally movable seat in a frontal view. Wherever this Fig. 5 corresponds to Fig. 4, the same reference signs will be used. The splash guards 22, 24 are arranged below the two wheel wells 18, 20. The stretcher table 26 with stretcher trolley 28 for a patient is arranged on the floor 16. The seat mount 30 is also mounted on the wheel well 18. The telescopic sliding device 32 is arranged on the seat mount 30. The

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telescopic sliding device 32 comprises at least two profiles 33 which are designed to slide into or over each other. The seat 34 is shown in this diagram with the telescopic sliding device 32 pulled out.

- 5 The seat 34 is mounted on the rotary plate assembly 40 of the telescopic sliding device 32 and can pivot around the vertical axis A. The seat 34 comprises the seat cushion 36 which folds along the axis B and the backrest 38 with the headrest 39. The seat cushion 36 can be swiveled around the axis B. The telescopic sliding device 32 is provided as before with the locking positions 41 (see also Fig. 1). The spring-loaded pin 42 of the
10 sliding device 32 engages the locking holes 44 to lock the seat 34 in place. The displacement of the sliding device 32 can be set to different positions in this manner. The seat 34 can be moved laterally via the the sliding device 32.

- Analogous to Figures 4 and 5, Fig. 6 shows the passenger compartment 10 of the
15 ambulance vehicle 12 in a perspective view. The seat 34 is moved laterally by means of the sliding device 32. Wherever this Fig. 6 corresponds to the previous figures, the same reference signs will be used. The seat 34 mounted to the seat mount 30 on the wheel well 18. Through the sliding device 32, the seat 34 is moved laterally so that the space 46 disappears. The pull-out distance, meaning the sliding distance, is 200 mm long to
20 optimally utilize the space. The lateral displacement of the seat 34 is locked in position in the corresponding locking positions 41. In the side panel 14 opposite the seat 34, a sliding door 48 and a door 50 are provided through which it is possible to enter the passenger compartment 10.

List of reference signs

10	Passenger compartment
12	Ambulance vehicle
14	Side panel
16	Floor
18, 20	Wheel well
22, 24	Splash guard
26	Stretcher table
28	Stretcher trolley
30	Seat mount
32	Sliding device
33	Profile
34	Seat
36	Seat cushion
38	Backrest
39	Headrest
40	Rotating plate assembly
41	Locking positions
42	Spring-loaded pin
44	Locking holes
46	Space
48	Sliding door
50	Door

CLAIMS

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1. An emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people, whereby a seat (34) with a seat cushion (36) and a backrest (38) is arranged on a securely mounted seat mount (30) with a sliding
10 device (32) to move the seat (34) in the passenger compartment (10), whereby the seat mount (30) is fastened to only one side panel (14) and/or to only one wheel well (18); the seat mount (30) of the seat (34) is provided with multiple locking positions (41) to lock the seat (34) in place at various distances from the side panel (14) of the passenger compartment (10), **characterized in that** the sliding device
15 (32) is designed to be telescopic.
2. Emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people according to claim 1, **characterized in that** the telescopic sliding device (32) of the seat mount (30) is designed to pivot vertically and/or horizontally.
- 20 3. Emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people according to one of Claims 1 or 2, **characterized in that** the sliding device (32) is provided with a bellows as protection against injury.
4. Emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people according to one of claims 1 to 3, **characterized in**
25 **that** the sliding device (32) comprises a rail for the laterally movable seat (34).
5. Emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people according to one of Claims 1 to 4, **characterized in**

that the seat (34) is provided with an adjusting device with which the seat (34) on the sliding device (32) can be rotated and/or is adjustable in height.

6. Emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people according to one of Claims 1 to 5, **characterized in**
5 **that** the variable sliding distance of the seat (34) is greater than 200 mm.
7. Emergency and special vehicle (12) with a passenger compartment (10) for transporting or conveying people according to one of Claims 1 to 6, **characterized in**
that the seat (34) is designed to rotate and/or fold.
8. Emergency and special vehicle (12) with a passenger compartment (10) for
10 transporting or conveying people according to one of Claims 1 to 7, **characterized in**
that the emergency and special vehicle is designed as an ambulance vehicle with a stretcher holder to transport a patient stretcher.
9. A seat (34) for an emergency and special vehicle (12), whereby the seat (34) with a
seat cushion (36) and a backrest (38) is securely mounted on a sliding device to
15 move the seat (34) on a securely mounted seat mount (30) in a passenger
compartment (10) for transporting or conveying persons, whereby the seat mount
(30) is only fastened to one side panel (14) and/or to one wheel well (18) and the
seat (34) can be moved laterally on the seat mount (30) with multiple locking
positions (41) to lock the seat (34) at various distances from the side panel (14) of
20 the passenger compartment (10), **characterized in that** the sliding device (32) for
the seat (34) is designed to be telescopic.