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(54) **CHAIR FOR A CHAIR LIFT AND CHAIR LIFT**

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(75) **Inventor: Josef Sutter, Bregenz (AT)**

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Correspondence Address:
LERNER GREENBERG STEMER LLP
P O BOX 2480
HOLLYWOOD, FL 33022-2480 (US)

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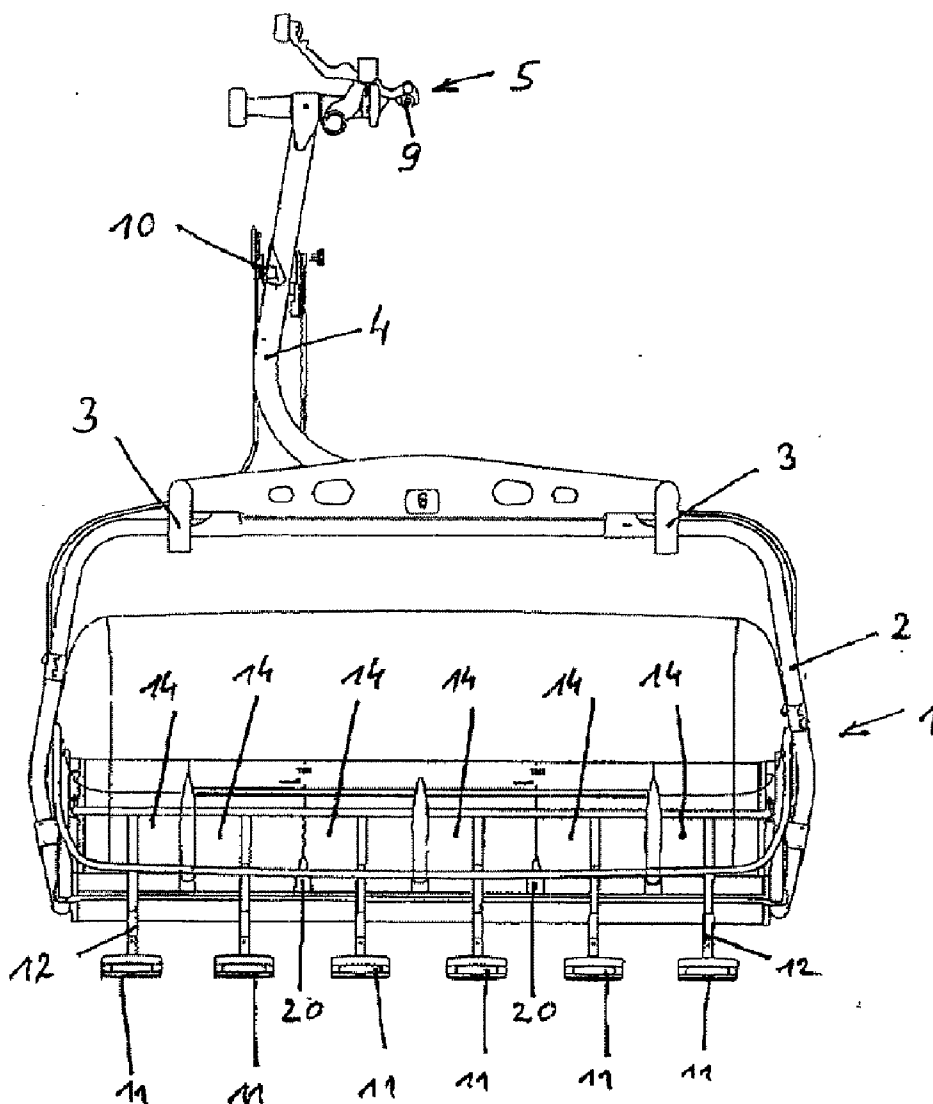
(57) **ABSTRACT**

A chair of a chair lift has a seat, a safety bar which extends transversely over the seat and can be pivoted from an open position into a closed position, and a footrest. The footrest is supported on the safety bar by way of a supporting bar. In the closed position of the safety bar, the supporting bar extends in the central region in front of the seat downwards from the safety bar to the footrest. The footrests form a plate-like support for the passengers' feet or sports equipment.

(73) **Assignee: INNOVA PATENT GMBH, Wolfurt (AT)**

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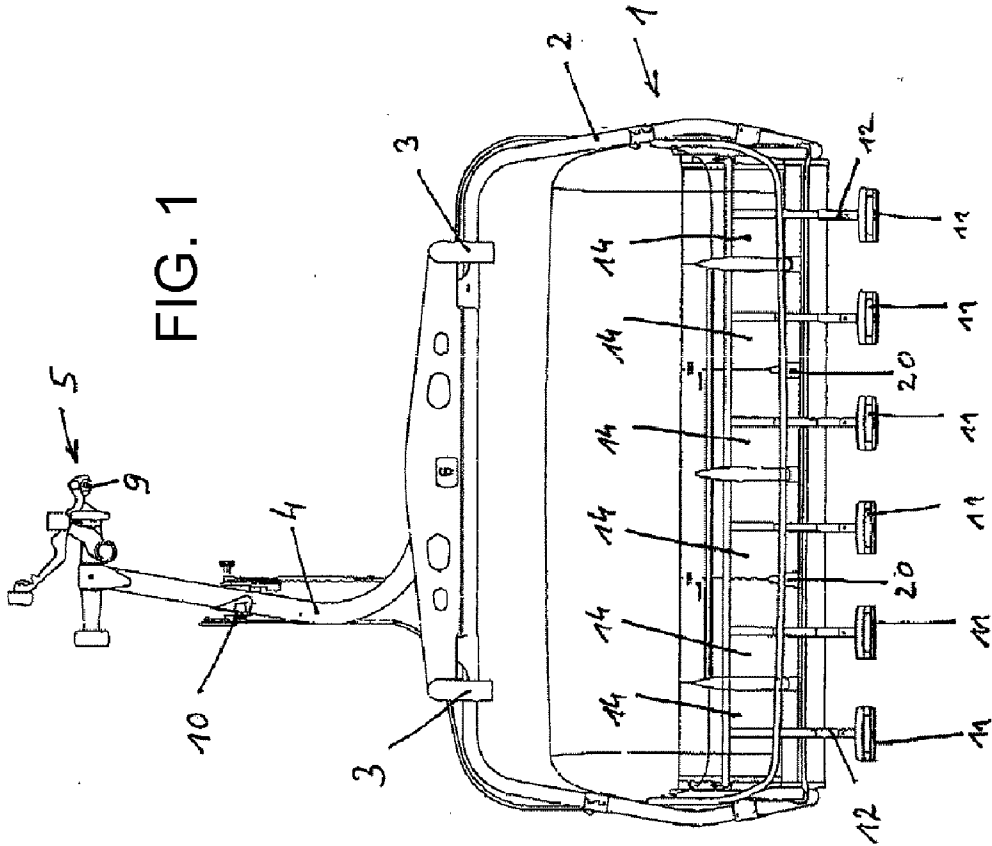
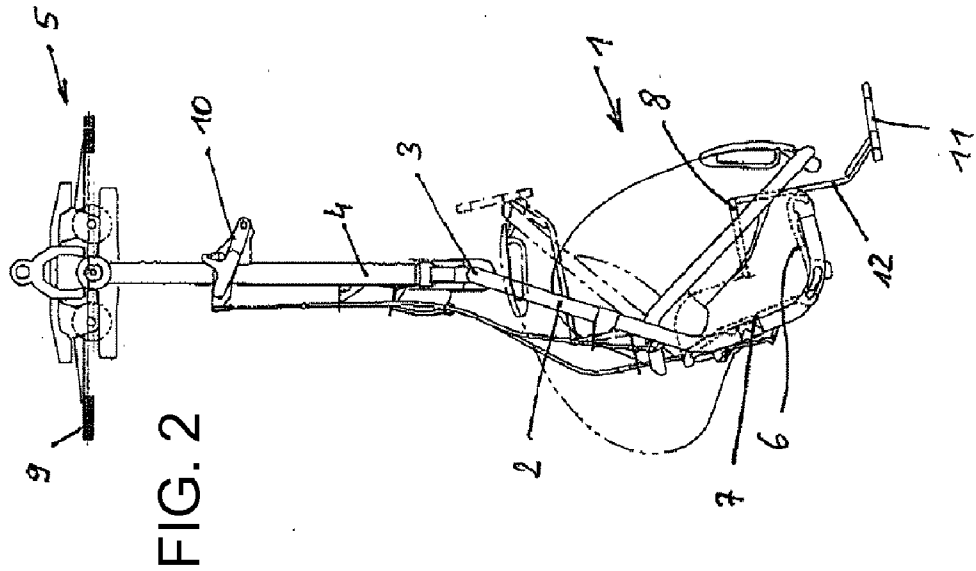


FIG. 4

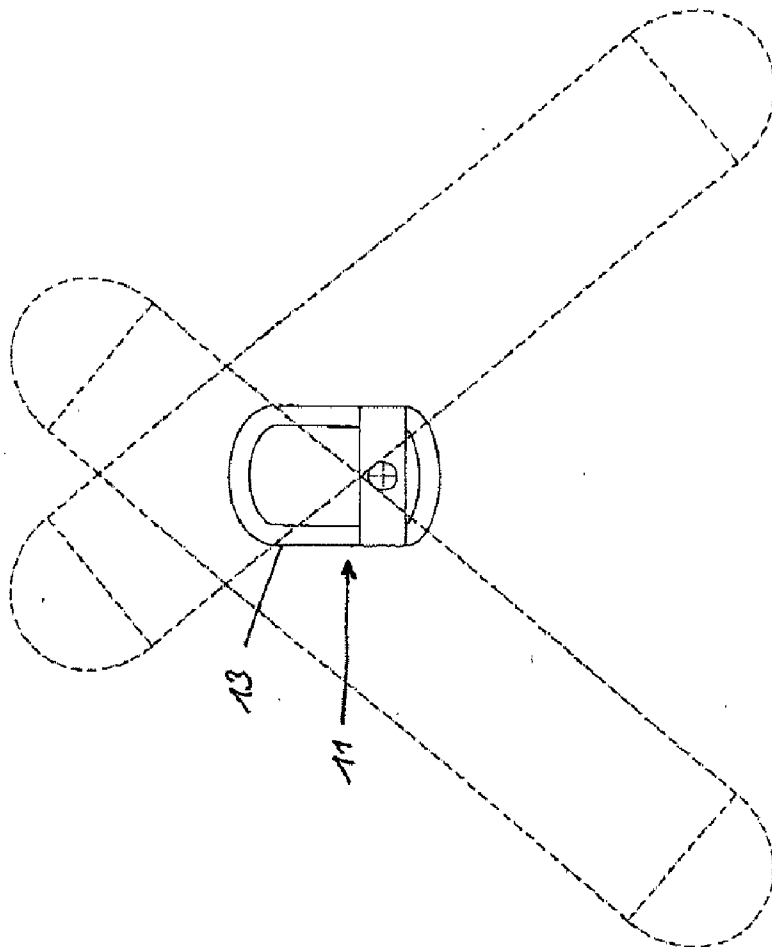
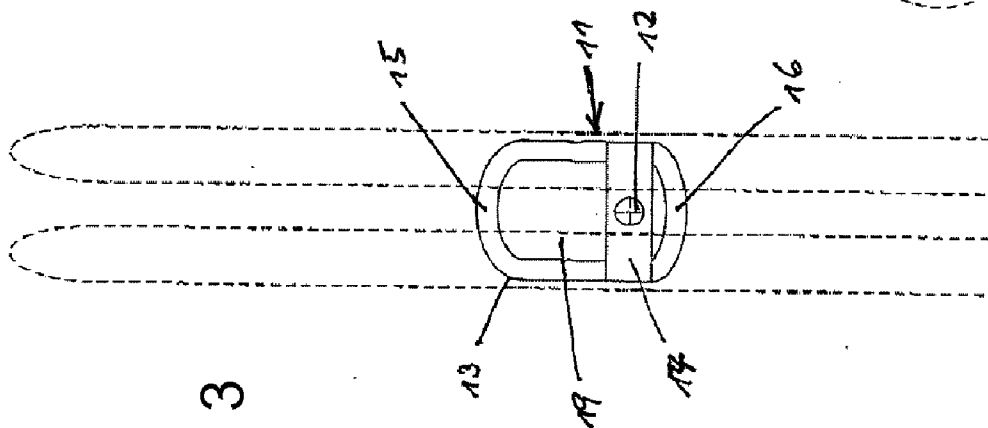


FIG. 3



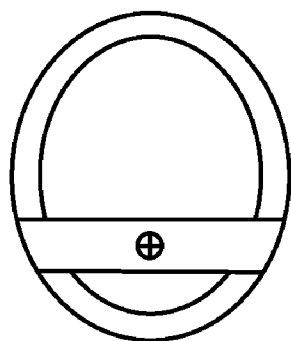


FIG. 5A

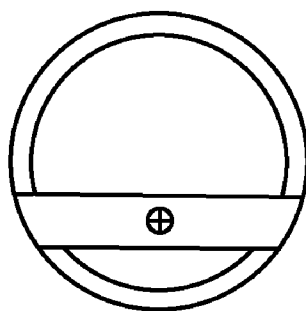


FIG. 5B

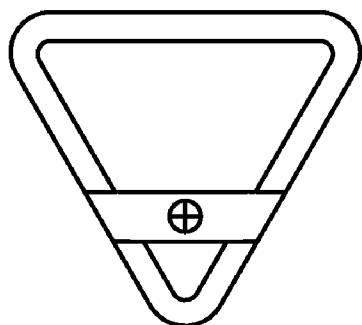


FIG. 5C

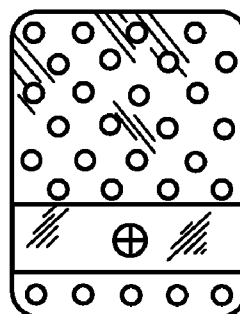


FIG. 5D

CHAIR FOR A CHAIR LIFT AND CHAIR LIFT

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority, under 35 U.S.C. §119, of Austrian patent application A 1586/2008, filed Oct. 9, 2008; the prior application is herewith incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The invention relates to a chair of a chair lift with at least one seat, with a safety bar which extends transversely over the seat and which can be pivoted from an open position into a closed position, and with a footrest. The invention furthermore relates to a chair lift with chairs of this type.

[0003] Chairs for chair lifts have at least one seat, generally up to eight or more, for example ten, seats located next to one another. In order to prevent the passengers from falling out from or slipping off the chair, the chairs have safety bars which extend across the entire width of the chair. The safety bars can be pivoted from a position in which they are located above the passengers (open position) into a position in which a crossbar extends in front of the passengers over their thighs (closed position).

[0004] The safety bars are frequently provided with footrests on which the passengers can rest and support their feet, if appropriate with skis or a snowboard fastened thereto. See, for example, commonly assigned U.S. Pat. No. 6,691,624 B2 and its Austrian counterpart AT 411 523 B, and Austrian patent AT 411 046 B. The footrests are fastened to the safety bar of the chairs via supporting bars and extend downwards between or in front of the seats from the safety bar. The footrests themselves comprise rods or tubes which protrude laterally away from the supporting bar and are fastened to the lower end of the supporting bars. As a result, the central region below a seat is substantially free, and the passenger can place his feet, if appropriate with the skis or a snowboard fastened thereto, onto the footrests which protrude from the side toward the center of the seat. Since a passenger therefore has to share a supporting bar having the two rods or tubes protruding laterally away therefrom with an adjacently seated passenger, undesirable contact between the sports equipment of the adjacent passengers occurs time and again.

[0005] Since, in accordance with the regulations, the distance between the safety bar and seat surface is dimensioned in such a manner that even tall passengers having longer legs have a comfortable amount of space under the safety bar, said distance is generally too large for shorter people, and therefore said shorter people may slip through under the crossbar, in particular if, due to their shorter legs, they cannot support their feet on the footrests. In order to reduce this slipping-through risk for smaller people, it is known from U.S. Pat. No. 6,691,624 B2 and its Austrian counterpart AT 411 523 B, and Austrian patent AT 411 046 B to arrange securing parts, in particular protective panels, on the safety bars, said securing parts, in the closed position of the safety bar, extending in the direction toward the center of the front edge of the respective seat surfaces. After the safety bar has been pivoted into its closed position, said protective panels are located between the passengers' thighs.

[0006] If, therefore, yet another protective element is located between the passengers' legs, lateral yielding and

subsequent depositing of the sports equipment on the footrest becomes all the more difficult. Added to this is the fact that, during the closing of the safety bar, the passengers now have to concentrate on a number of matters. Firstly on spreading the thighs in order to make room for the protective panel and secondly on moving the sports equipment in the opposite direction in order to allow the footrest to close without obstruction, and to do all of this without colliding with the neighbor.

SUMMARY OF THE INVENTION

[0007] It is accordingly an object of the invention to provide a lift chair and a chair lift which overcomes the above-mentioned disadvantages of the heretofore-known devices and methods of this general type.

[0008] With the foregoing and other objects in view there is provided, in accordance with the invention, a chair for a chair lift, comprising:

[0009] at least one seat;

[0010] a safety bar extending transversely over said at least one seat, said safety bar being pivotally mounted between an open position and a closed position;

[0011] a supporting bar connected to said safety bar and extending downwardly in a central region of said seat in front of said seat when said safety bar is pivoted in the closed position; and

[0012] a footrest attached to a free end of said supporting bar in the central region below said seat when said safety bar is pivoted in the closed position.

[0013] In other words, the objects of the invention are achieved in that, in the closed position of the safety bar, the supporting bar extends in the central region in front of the seat downwards from the safety bar to the footrest.

[0014] The invention is therefore based on replacing the protective element by the central supporting bar for the footrest, thus easing the burden on the passenger's concentration during the closing of the safety bar since he now only has to concentrate on the supporting tube with the footrest, said supporting tube moving between his legs. The supporting tube between the legs nevertheless provides security against slipping through under the safety bar, and a footrest permitting comfortable transportation for the passenger on a chair is present.

[0015] Owing to the fact that each passenger now has his own footrest, undesirable contact between the sports equipment of the adjacent passengers can also be largely avoided.

[0016] If use is made of a standard footrest appearing, for example, in the manner as illustrated in U.S. Pat. No. 6,691,624 B2 and its Austrian counterpart AT 411 523 B, and Austrian patent AT 411 046 B, when the safety bar is closed the feet with the sports equipment have to be moved relatively far apart, which may again cause collisions with the sports equipment of seat neighbors. In order to avoid this, the width of the footrests has to be reduced. Then, however, snowboarders, for example, no longer have a sufficiently sized support for their boards.

[0017] In order to avoid this, in a preferred embodiment of the invention, the footrests have a plate-like support. In a preferred development of the invention, the support surface formed by the support extends in the direction of travel upstream and/or downstream of the connection of the footrest to the supporting bar.

[0018] As mentioned above, the footrest in the prior art is formed by rods or tubes which extend laterally from the

supporting bar. This firstly only forms a linear support which secondly only extends to the sides of the supporting bar. By means of the design according to the invention of the footrest with a two-dimensional support which preferably extends upstream and/or downstream of the connection of the footrest to the supporting bar, with the fact that the passengers very rarely keep their skis or snowboards precisely parallel to the direction of travel being taken into consideration, the support surface is enlarged and the passengers are provided with more options and more flexible options of placing their feet and/or sports equipment on the footrests.

[0019] A wide variety of contour shapes are possible structurally for the footrests. Simple shapes which are preferred within the context of the invention are substantially rectangular or elliptical contour shapes. Of course, rectangular or other “angular” contour shapes are preferably provided with rounded corners. However, for example, V-shaped or kidney-shaped contours are also possible. A preferred embodiment can also consist in the footrest having a rearwardly tapering shape, and in particular being wedge-shaped. As a result, upon contact with the footrest, the feet or sports equipment are gently pushed apart during the closing of the safety bar.

[0020] Within the context of the invention, there are a wide variety of options for producing the footrest. A preferred option consists in that the footrest comprises a frame which has an opening the center. Such a frame may be composed, for example, of an arcuate and/or composite tube or bar. The opening in the center or in the region of the center automatically ensures that snow cannot accumulate on the footrest.

[0021] An alternative option which is likewise preferred within the context of the invention consists in that the footrest comprises a plate which is preferably provided with one or more apertures. Of course, a grid or the like is also conceivable.

[0022] The footrest can define a substantially planar support surface or a curved support surface. Within the meaning of the invention, a substantially planar support surface is also defined, for example, by a frame which is composed of an arcuate and/or composite tube or bar and has an opening in the center. The contour formed by the frame or the upper side thereof defines a plane or “support surface” on which the passenger can place his feet or sports equipment.

[0023] A curved support surface can be formed, for example, by a curved plate which preferably has apertures through which snow can drop.

[0024] In a preferred embodiment of the invention, the chair according to the invention can have separating elements rising over the seat surfaces between the seat surfaces. The separating elements cause a passenger to notice immediately if he is sitting in the transition region from one seat to an adjacent seat. He will then immediately correct his sitting position even before the safety bar is pivoted into its closed position. The passenger’s legs are then automatically in a position in which unpleasant collisions with the supporting bar for the footrests are largely avoided.

[0025] Other features which are considered as characteristic for the invention are set forth in the appended claims.

[0026] Although the invention is illustrated and described herein as embodied in a chair for a chair lift and chair lift, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

[0027] The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0028] FIG. 1 is a front view of a chair according to the invention;

[0029] FIG. 2 is a side view of the chair of FIG. 1;

[0030] FIG. 3 is a top view of an embodiment of a footrest according to the invention in use by a skier;

[0031] FIG. 4 is a top view of the footrest indicating its use by two snowboarders; and

[0032] FIGS. 5A-5D show four alternative embodiments of the footrest.

DETAILED DESCRIPTION OF THE INVENTION

[0033] Referring now to the figures of the drawing in detail and first, particularly, to FIGS. 1 and 2 thereof, a chair 1 according to the invention has a frame 2 which is coupled via a joint 3 with a supporting rod 4 and a clamping device 5 to a traction cable 9. The illustrated chair 1 has six seats 14 which are located next to one another and have a seat surface 6 and a backrest 7. In order to prevent passengers from falling from the chair 1, a safety bar 8 can be moved from an upper and open position (illustrated in dashed lines in FIG. 2) into a lower and closed position (illustrated in FIGS. 1 and 2). The safety bar 8 can be closed and opened either automatically with the aid of a mechanism 10, which interacts with a device (e.g., cam rail) provided in the stations, or manually by the passengers. In addition, the chair may also have a hood.

[0034] With the aid of the endless and encircling supporting cable 9 (merely indicated in FIG. 1), the chairs 1 are conveyed from a valley station, possibly through one or more intermediate stations, to a mountain station and back again. In this case, the chairs 1 can either be decoupled from the traction cable 9 and coupled again to the latter in the stations with a clamping device 5, as illustrated by way of example in FIG. 1, or it is also possible for the chairs 1 to be clamped fixedly to the traction cable 9.

[0035] The chair 1 has a number of footrests 11 corresponding to the number of seats 14. The footrests are connected to the safety bar 8 via supporting bars 12. The supporting bars 12 run downwards from the safety bar 8 centrally in front of the respective seat 14 such that, when the safety bar 8 is closed, a passenger has the supporting bars 12 between his legs. As a result, each passenger is secured by a supporting bar 12 from slipping through between the seat surface 6 and the safety bar 8.

[0036] In the exemplary embodiment illustrated, the footrests 11 comprise a tube which forms a substantially rectangular, closed frame 13. Of course, instead of a tube, a solid bar or the like may also be used. In order to protect the sports equipment, the tube may be entirely or partially covered with a covering, for example made of plastic. The front side 15 and the rear side 16 of the frame 13 and the edges of the frame 13 are rounded in order to avoid injury to the passengers or damage to the sports equipment.

[0037] The frame 13 is connected to the supporting bar 12 via a mounting plate 17. The mounting plate 17 is fastened to the frame 13 in such a manner that the frame 13—as seen in

the direction of travel—extends both upstream and also downstream of the supporting bar **12**. The length by which the frame **13** extends upstream and downstream of the supporting bar **12** may differ in accordance with the particular requirements. It is also possible for the frame **13** to extend exclusively upstream or downstream of the supporting bar **12**. The rear side **16** of the frame may also become narrower in wedge-shaped manner to the rear such that the feet or sports equipment are gently pressed apart upon contact with the footrest **11** during the closing of the safety bar. Of course, said wedge-shaped region may also extend into the front region of the footrest **11** or else may be located only in the front region thereof.

[0038] By means of the frame **13**, an opening **19** through which snow can drop is formed in the center such that, despite the substantially plate-like contour of the frame **13**, snow does not accumulate on the footrest.

[0039] It can be seen in FIGS. **3** and **4** that, despite its smaller lateral extent in comparison to prior art footrests, the footrest **11** according to the invention has a sufficiently large support surface for skis or snowboards. This is relevant in particular to snowboards, since the latter, during travel on the chair lift, are generally not oriented parallel to but rather obliquely to the direction of travel, and the region which extends upstream and/or downstream of the supporting bar **12** can serve as a support surface for the sports equipment.

[0040] Since, in the closed position of the safety bar **8**, the supporting bars **12** extend between the passengers' thighs and prevent in particular shorter people, such as children, from slipping through under the safety bar **8**, it is important, however, that the supporting bars **12** are arranged between the passengers' thighs, which, in turn, presupposes a correct sitting position of the passengers on the seats **14**. In addition, in particular if the safety bar **8** is closed automatically, the supporting bar **12** is to be prevented from pressing against a passenger's leg because the latter is not sitting correctly on his seat **14** and a leg is located entirely or partially under the supporting bar **12** during the closing of the safety bar **8**.

[0041] In order for the passengers to sit down correctly on the seats **14**, separating elements **20** rising over the seat surfaces **6** are arranged between the seats **14**, specifically between the seat surfaces **6** of the seats **14**. The separating elements **20** cause a passenger to notice immediately if he is not sitting correctly in the center of a seat **14**, and therefore he can correct his sitting position even before the safety bar **8** is automatically or manually closed.

[0042] In addition, in order to get passengers, in particular children, to spread their legs apart somewhat and to sit down correctly on the seats **14** so that the supporting bar **12** can easily be arranged between the legs, a central region may be arranged in the region of the front edge **21** of each or at least some seats **14**, said region differing with regard to its graphical design from the regions arranged laterally next thereto. Said central region may be a marking, for example a graphic, in particular a picture, a pattern, a logo, for example a company logo, or the like. In a simple embodiment, the marking may constitute a geometrical figure with greater or lesser simplicity (for example a circle, cross, triangle, square or line) which already per se identifies the region to be left free. The marking may also be, for example, a picture of a comic figure or of a mascot in order, in particular, to motivate children to leave said region free by their attention being drawn,

at least as they get into the chair **1**, to the picture and being prompted to sit down correctly on the seat **14** and to spread their legs apart somewhat.

[0043] In summary, an exemplary embodiment of the invention can be depicted as follows: A chair of a chair lift has at least one seat **14**, a safety bar **8** which extends transversely over the seat **14** and can be pivoted from an open position into a closed position, and a footrest **11** which is arranged on the safety bar **8** by means of a supporting bar **12**. In the closed position of the safety bar **8**, the supporting bar **12** extends in the central region in front of the seat **14** downwards from the safety bar **8** to the footrest **11**. The footrests **11** form a plate-like support for the passengers' feet or sports equipment.

1. A chair for a chair lift, comprising:
 - at least one seat;
 - a safety bar extending transversely over said at least one seat, said safety bar being pivotally mounted between an open position and a closed position;
 - a supporting bar connected to said safety bar and extending downwardly in a central region of said seat in front of said seat when said safety bar is pivoted in the closed position; and
 - a footrest attached to a free end of said supporting bar in the central region below said seat when said safety bar is pivoted in the closed position.
2. The chair according to claim 1, wherein said footrest is formed as a plate-shaped support.
3. The chair according to claim 1, wherein said footrest has a substantially rectangular contour.
4. The chair according to claim 1, wherein said footrest has a substantially circular or elliptical contour.
5. The chair according to claim 1, wherein said footrest has a rearwardly tapering shape.
6. The chair according to claim 5, wherein said footrest is substantially wedge-shaped.
7. The chair according to claim 1, wherein said footrest comprises a frame formed with an opening in a center thereof.
8. The chair according to claim 7, wherein said frame comprises an arcuate and/or composite tube or bar.
9. The chair according to claim 1, wherein said footrest is a plate.
10. The chair according to claim 9, wherein said plate is formed with apertures.
11. The chair according to claim 1, wherein said footrest defines a substantially planar support surface.
12. The chair according to claim 2, wherein said footrest defines a curved support surface.
13. The chair according to claim 1, wherein said footrest projects forward and/or rearward, in a direction of travel, from a connection thereof to said supporting bar.
14. The chair according to claim 1, wherein said at least one seat is one of a plurality of seats, and wherein separating elements rising over a seat surface of said seats are disposed between said seats.
15. The chair according to claim 1, wherein said seat surface has, in the region of the front edge thereof, a central region that differs with regard to a graphical design thereof from laterally adjoining regions.
16. The chair according to claim 15, wherein said central region of the seat surface of said seat has a graphic in the region of the front edge thereof.
17. The chair according to claim 16, wherein the graphic is a picture, a pattern, or a marking.
18. A chair lift, comprising:
 - lift stations including a valley station and a mountain station;

a traction cable extending between said valley station and said mountain station; and
a plurality of chairs according to claim 1 connected permanently or selectively couplable to said traction cable

for transporting persons between said valley station and said mountain station.

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