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(21) International Application Number: PCT/SE96/01018 (22) International Filing Date: 16 August 1996 (16.08.96) (30) Priority Data: 9503009-4 31 August 1995 (31.08.95) SE (71) Applicant (for all designated States except US): NEWLIFT I NYNÄSHAMN AB [SE/SE]; Åkervägen 10, S-149 45 Nynäshamn (SE). (72) Inventors; and (75) Inventors/Applicants (for US only): ERIKSSON, Mats [SE/SE]; Violstigen 3, S-148 92 Ösmo (SE). UD- DSTRAND, Bengt [SE/SE]; Tåppvägen 16, S-140 42 Stora Vika (SE). (74) Agent: FALCK, Magnus; Odengatan 34, S-113 51 Stockholm (SE).		(81) Designated States: CA, JP, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i> <i>In English translation (filed in Swedish).</i>
(54) Title: EQUIPMENT FOR TRANSPORTATION OF A WHEEL CHAIR-BOUND INDIVIDUAL FROM HIS OWN WHEEL CHAIR TO A CHAIR IN AN AIRPLANE		
(57) Abstract The object of the present invention is an equipment consisting of several devices in combination for the transportation of a wheel chair-bound individual from his/her own wheel chair to a chair in an airplane without the use of human lifting power. The wheel chair-bound individual is lifted up from his/her own wheel chair by means of a mechanical lifting device (figure 1A) and is put into a wheel chair designed for the airplane (figure 1E), which chair is rolled into the airplane and forwards to the desired row of seats. The wheel chair-bound individual sitting on the wheel chair seat with a lifting plate (12) belonging to the lifting device beneath the individual is thereafter pushed out onto rails (18) laid out on the airplane seats in question and pushed forwards to the desired chair. The wheel chair-bound individual thereafter lifts him/herself up by using as support the armrests of the chair so that the rails with the lifting plate can be drawn aside and the wheel chair-bound individual can be seated in his/her chair.		

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Equipment for transportation of a wheel chair-bound individual from his own wheel chair to a chair in an airplane.

5 The present invention relates to an equipment consisting of a combination of several devices for transporting a wheel chair-bound individual from his own wheel chair to a chair in an airplane. The invention is therefore aimed at entirely removing the utilization of human lifting power for the purpose of sparing the wheel chair-bound individual as well as the flight crew, cumbersome and demanding lifts during this transportation.

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The wheel chair used by the wheel chair-bound individual is normally too wide to be able to be rolled along the middle gangway in a conventional airplane. A wheel chair especially designed for this purpose must therefore be used. In order to avoid having to carry the wheel chair-bound individual from the passage way into the airplane the wheel chair-bound individual is therefore lifted over to the airplane wheel chair by flight personnel, whereafter the wheel chair is rolled forwards to the desired row of seats and the wheel chair-bound individual can be lifted over into his/her chair. In the event that the wheel chair-bound individual must be carried from ground level up along a mobile airplane staircase the transport becomes exceedingly demanding for the flight crew and of course especially troublesome for the wheel chair-bound individual.

20 An object of the present invention is to eliminate the use of human lifting power when transporting a wheel chair-bound individual from a wheel chair of his/her own into a airplane chair. The wheel chair-bound individual is lifted up from a wheel chair of his/her own by means of a mechanical lifting device and the wheel chair of his/her own is exchanged for a wheel chair adapted to the airplane and into which the wheel chair-bound individual is placed. If there is a passage way at the airport the wheelchair is thereafter rolled into the airplane and forwards to the desired row of seats. If a passage way is lacking, the airplane wheel chair with the wheel chair-bound individual is lifted up from the ground level and into the airplane by means of a wheel chair elevator according to SE-patent nr. 9500995-7. With the airplane wheel chair standing at the desired row of seats, the wheel chair-bound individual is then pushed from the wheel chair and out on tracks placed in the row of seats, to the desired chair. In this position the wheel chair-bound individual lifts him-/herself up by using as support the armrests of the chair whereupon the tracks can be drawn aside and the wheel chair-bound individual can be seated in his/her chair.

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Not during any phase of the transportation has any need for the use of human lifting power arisen with the exception of the short lift that the wheel chair-bound individual executes by his/her own to allow the tracks to be pulled away. Not in those cases either when a passage way is lacking at the airport, there has been no need of human lifting power to lift the wheel chair-bound individual sitting in the specially built airplane wheel chair needed. Upon lifting up of the airplane wheel chair from ground level in a mobile staircase a wheel chair elevator according to SE-patent nr. 9500995-7 can be used.

- 10 The invention will in the following be described more in detail in connection with enclosed drawings where Fig. 1 shows examples of devices that are included in an equipment according to the invention. Fig. 2 shows a device for the lifting up of a airplane wheel chair with the wheel chair-bound individual sitting therein from ground level and into the airplane, which device consists of a wheel chair elevator according to SE-patent nr. 9500995-7. Fig. 2. also shows how the wheel chair-bound individual is brought to the desired row of seats and thereafter to the desired chair.

In Fig. 1A a mechanical lifting device is shown in perspective which consists of two vertical supporting legs 1 and 2 which at their upper ends are connected by means of a horizontal lifting beam 3. Both of these legs rest at their lower ends upon a provided with wheels 4 equipped supporting beam 5 and are braced by means of the rods 6 and 7 respectively. The supporting beam wheel 4 makes it possible to roll the lifting device from one place to another. In the lifting beam 3 there are two swinging lifting arms 8 and 9 journaled in bearings in a plane perpendicular to the lifting beam 3. They are brought to swing by means of a crank mechanism 10 mounted on the lifting beam.

In Fig 1B there is shown a equipped with lifting belts 11 lifting plate 12 which plate is intended to be pushed in underneath the seat of the wheel chair-bound individual's seat when the latter is seated in his/her wheel chair. In Fig 1C there is shown how the lifting device has been rolled in over the wheel chair-bound individual sitting in his/her wheel chair with supporting legs 1 and 2 on either side of the wheel chair. The lifting belts 11 are fastened in the lifting arms 8 and 9 and the wheel chair-bound individual sitting on the lifting plate 12 is lifted up by means of the crank mechanism 10 to such an extent that the wheel chair of his/her own can be rolled aside.

Fig. 1D shows how the wheel chair-bound individual sitting on the lifting plate 12 hangs in the lifting belts 11 of the lifting arms 8 and 9. In order for the wheel chair-bound individual not to fall backwards a belt 13 is fastened around the back of the wheel chair-bound individual. In this position a wheel chair 14 shown in Fig. 1E is brought in underneath the wheel chair-bound individual, which wheel chair is specially designed to be enabled to roll in the middle passage of an airplane. The wheel chair-bound individual is lowered onto the airplane chair's seat 16 and is fastened tight to the chair, whereafter the lifting device can be rolled aside, see Fig. 1G. In the, in the example shown in Fig. 1E, the seat of the airplane chair is equipped with rolls 17 which enable the displacement of the seat across the direction of driving of the wheel chair.

The moving of the wheel chair-bound individual from his/her own wheel chair over into the airplane wheel chair suitably takes place in a particular room at the airport. At those airports that are equipped with passage ways out to the airplanes the wheel chair-bound individual is rolled into the airplane and forwards to the desired row of seats. Two rails are laid down in the airplane chairs and are fastened to the wheel chair so that the seat 16 with the wheel chair-bound individual can be rolled out on the rails and forwards to the desired airplane chair. There the wheel chair-bound individual lifts him-/herself up by using as support the armrests of the chair whereupon the seat 16 with tracks 18 and the lifting plate 12 can be drawn aside and the wheel chair-bound individual can be seated in his/her chair.

If passage ways are not extant at the airport the wheel chair-bound individual is elevated up from the ground level sitting in the airplane wheel chair up into the airplane by means of a wheel chair elevator according to SE-patent nr. 9500995-7 and is placed in the desired airplane chair as has been described above, see Fig. 2.

In an alternative embodiment of parts of the above described equipment the lifting plate 12 is equipped with rolls on its bottom side. The seat of the airplane wheel chair seat 16 is therein fixed and equipped with two in the seat embedded and across the driving direction of the wheel chair oriented grooves. When the wheel chair-bound individual is to be placed in the desired chair the lifting board 12 is rolled in the grooves in the wheel chair seat and out on the rails 18 placed out in the airplane chairs and forwards to the desired chair.

Claims

1. Equipment consisting of a number of devices in combination intended for being used in transporting a wheel chair-bound individual from his/her own wheel chair to a chair in an airplane,

Characterized in,

- a lifting device (Fig. 1A) intended to lift the wheel chair-bound individual up from his/her own wheel chair,
- an airplane wheel chair (Fig. 1E) in which the wheel chair-bound individual is intended to be put after the lifting from his/her own wheel chair and which is intended to be, rolled into the airplane, together with the wheel chair-bound individual and
- rails (18) intended to be placed in the desired row of chairs to which the airplane wheel chair has been rolled forwards.

2. Equipment according to claim 1, characterized in,
- that the lifting device (Fig. 1A) is equipped with a crank mechanism (10) by means of which two swingable arms (8, 9) mounted in bearings can be brought into a swingable lifting action.

3. Equipment according to claim 2, characterized in,
- a lifting plate (12) equipped with two lifting belts which is intended to be pushed in underneath the seat of the wheel chair-bound individual when the latter is sitting in his/her wheel chair and is to be moved over into the airplane wheel chair, in which position the lifting belts (11) are intended to be fastened in each lifting arm (8 and 9 respectively).

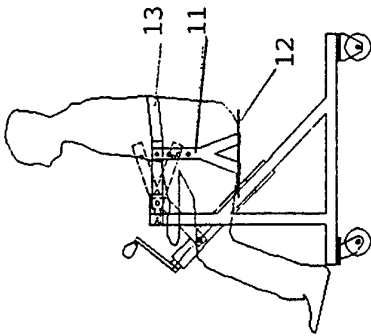
4. Equipment according to claim 3, characterized in,
- that the airplane wheel chair (14) is equipped with a seat (16) provided with rollers (17) which enables the seat to be displaced across the direction of movement of the wheel chair.

5. Equipment according to claim 4, characterized in,
- rails (18) intended to be placed onto the seats of the airplane chairs in the desired row of seats

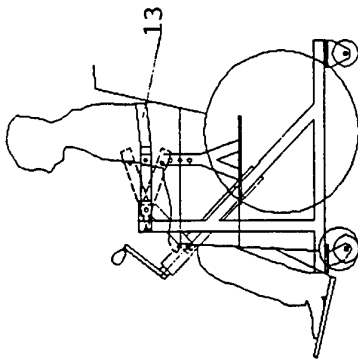
and at one end fastened to the wheel chair so that the seat of the airplane wheel chair (16) with the wheel chair-bound individual can be rolled out onto the rails and forwards to the desired airplane chair.

- 5 6. Equipment according to claim 3, characterized in,
- that the lifting plate (12) is equipped with rollers and
 - that the seat of the airplane chair (16) is fixed and provided with grooves
- 10 embedded in the seat and running across the direction of movement of the chair and in which the lifting plate (12) with the wheel chair-bound individual are intended to be rolled out on the rails (18) placed on the seats of the airplane chairs.
7. Equipment according to claim 1, characterized in,
- a wheel chair elevator (Fig. 2) according to SE-patent nr 9500995-7 by means
- 15 of which the airplane wheel chair (Fig. 1E) with the wheel chair-bound individual is lifted up from ground level and up into the airplane.

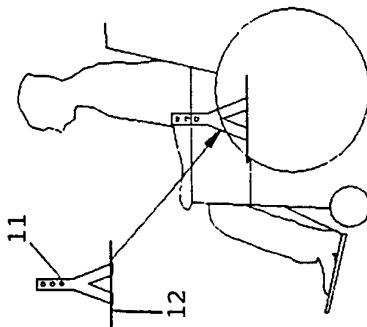
FIG. 1



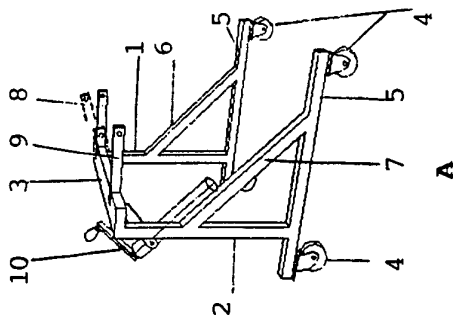
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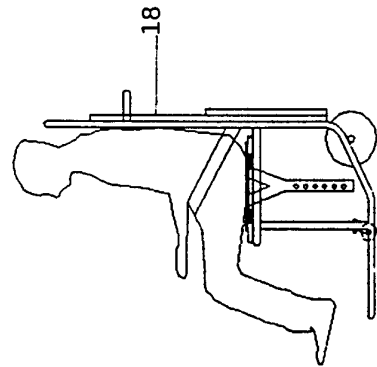
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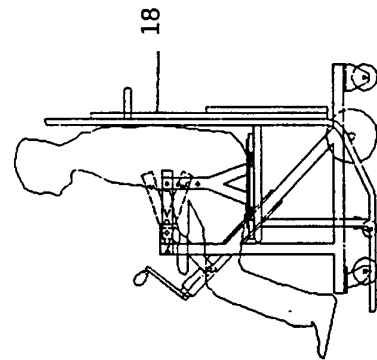
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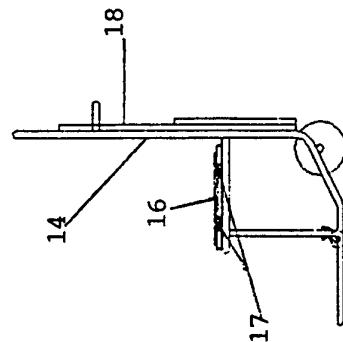
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G



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E

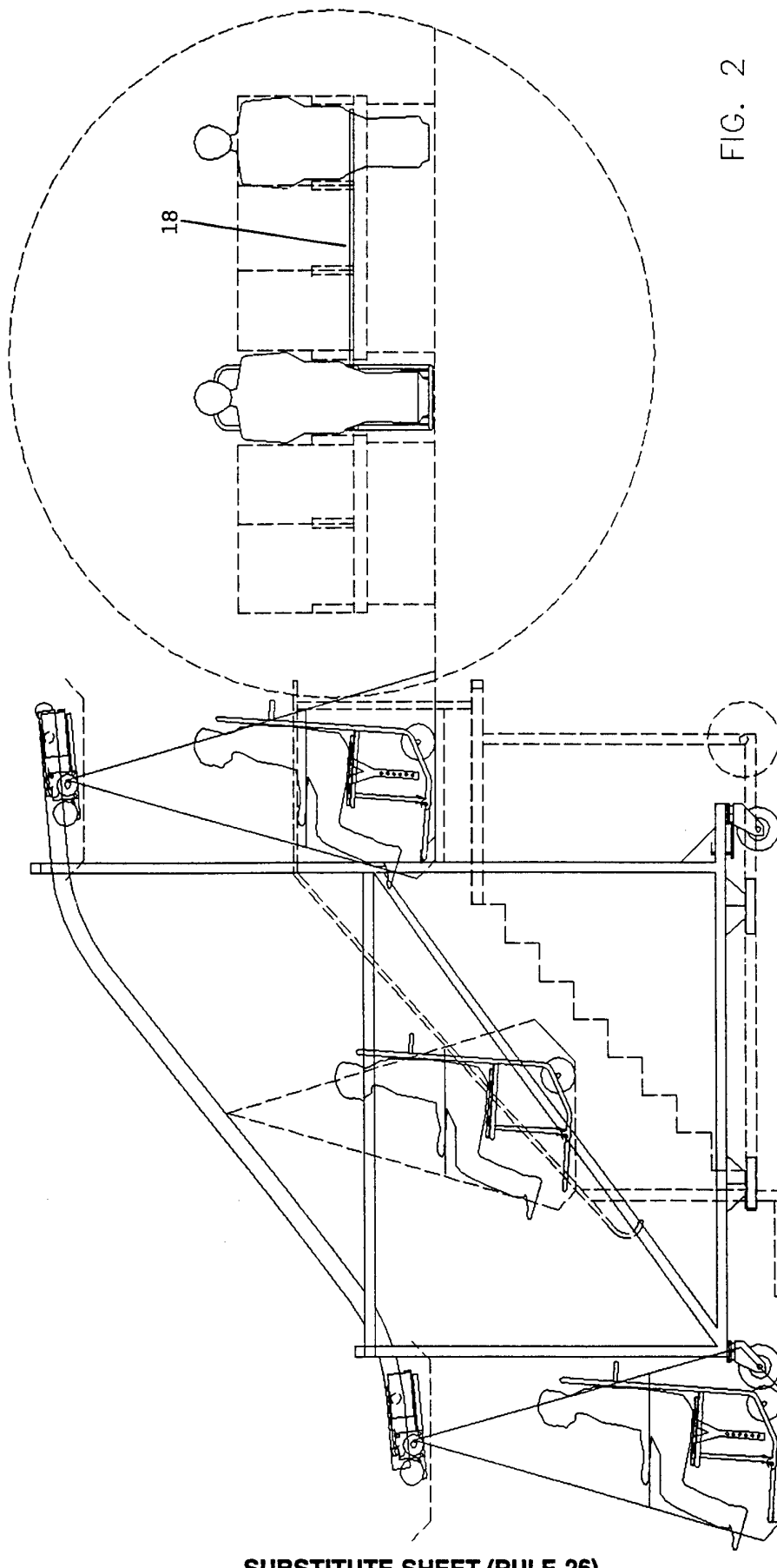


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 96/01018

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A61G 5/00, A61G 7/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A61G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	EP 0365455 A1 (MARCHAND, BERNARD), 25 April 1990 (25.04.90) --	1-3
X	EP 0007262 A1 (SEGUELA, MARIE-CLAUDE), 23 January 1980 (23.01.80) --	1,4-6

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

28/10/96

International application No.

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