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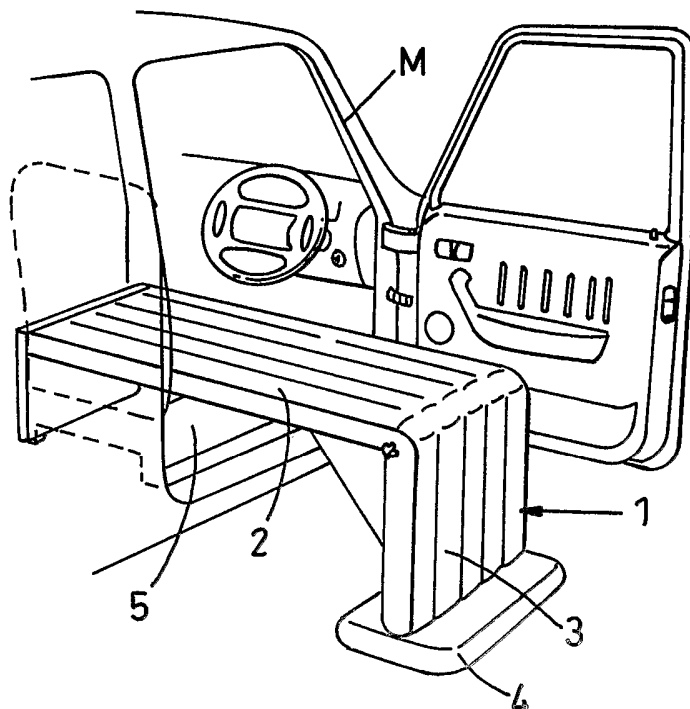
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(54) Title: DEVICE FOR ASSISTING DISABLED AND ELDERLY PERSONS TO GET INTO AND OUT OF A SITTING POSITION



(57) Abstract: A device for assisting a person to get into and out of a sitting position on a seat. The device comprises a first part (2,20) arranged to co-operate with a seat (S) to enable a person to move in a sitting position between that part and the seat, and a second part (3,21) arranged to support the device on the ground and to hold the first part in a horizontal or generally a horizontal position. The first part extends laterally from the seat to enable a person to get on to and off said first part at a location beside the seat from or to either a standing position or a seated position.

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**DEVICE FOR ASSISTING DISABLED AND ELDERLY PERSONS TO GET INTO  
AND OUT OF A SITTING POSITION**

This invention relates to devices for assisting persons, particularly disabled and elderly persons, to get into and out of a sitting position on a seat.

The invention has been devised primarily to overcome or reduce the  
5 difficulties experienced by disabled and elderly persons in getting into and out  
of vehicles, such as motorcars. This may involve moving from a standing  
position outside the car to a sitting position on a seat inside it. There are  
several different ways of doing this but generally they all involve stooping,  
bending the legs and swinging at least one leg into or out of the vehicle, all of  
10 which actions are difficult if not impossible to perform for persons lacking  
mobility in their bodies. Likewise, moving from a seated position in a car to a  
standing position outside it is difficult for such persons.

Getting into and out of a car may also involve transferring between a  
sitting position in a wheelchair and a sitting position in the car. This too is a  
15 difficult movement for disabled and elderly persons.

Various arrangements have previously been proposed for assisting  
persons to get into and out of motorcars, including swivel seats and sliding  
seats installed in the cars themselves and pelvic lifting bars and other lifting  
devices, all of which are usually powered by electric motors.

20 The invention is not concerned solely with the difficulties experienced  
by disabled and elderly persons in getting into and out of motorcars. Such

persons often have difficulty moving between a wheelchair and a chair or bed in their homes.

The object of the present invention is to provide a new or improved device for assisting persons to get into and out of a sitting position on a seat.

5 A particular aim of the invention is to provide a device for assisting persons to get into and out of motorcars and to transfer between a wheelchair and a seat.

A further particular aim of the invention is to provide a pneumatically powered device for this purpose.

10 According to the invention there is provided a device for assisting a person to get into and out of a sitting position on a seat which comprises a first part arranged to cooperate with a seat to enable a person to move in a sitting position between that part and the seat, and a second part arranged to support the device on the ground and to hold the first part in a horizontal or generally  
15 horizontal position in which it cooperates with, and extends laterally from the seat to enable a person to get on to and off said first part at a location beside the seat from or to either a standing position or a seated position.

Preferably the two parts of the device are movable relative to one another between an erected position for use of the device and a collapsed  
20 position for stowage of the device.

At least one of the said parts of the device may be in the form of an

inflatable element or/and at least one of the parts may be a rigid element.

Preferably at least the second part is an inflatable element formed so that when inflated it provides a rigid support for the device on the ground, the element being deflatable for stowage of the device.

5           In a preferred embodiment of the invention both parts of the device are provided by an inflatable structure. This structure is preferably formed by a single inflatable bag which is of inverted L-shape when in the inflated condition (the horizontal and vertical limbs constituting, respectively, the first and second parts of the device), the two parts of the structure being movable  
10 relative to one another and collapsible on deflation of the bag for stowage of the device.

In another arrangement according to the invention both parts of the device each comprises a rigid element, the two elements being connected together by means permitting movement between them between the erected  
15 position and the collapsed position, and means being provided for releasably locking the elements in the erected position. In this case, each rigid element maybe a panel or board in which the two elements are connected together by hinge means. In a preferred embodiment of this arrangement, one rigid element maybe a panel or a board and the other rigid element may be one or more  
20 support legs.

The locking means may be a strut extending between the two

elements, the strut being collapsible or disconnectible to permit collapsing of the elements. Alternatively, the device may be secured in an erected position for use by way of a stopping means configured to prevent movement of the two elements from the erected position.

5           The idea of the invention is that the device is normally stowed away with the two parts in the collapsed configuration. When a person needs assistance in getting into a sitting position on a seat either from a standing position or from, for example, a wheelchair, the device is erected. The device is then placed in position with the first part cooperating with the seat,  
10 conveniently simply resting on the seat, and extending horizontally to a location at one side of the seat and with the second part in contact with the ground and supporting the first part in that position. The person, if standing, can then sit on the first part or, if seated in a wheelchair, can then move, or be moved, in a sitting position on to the first part, in both cases the person then moving along it  
15 to a position on the seat. The first part is then collapsed by deflating the bag – the portion beneath the person may be left there and the remainder folded up – or, in the case of the embodiment where both parts of the device comprise a rigid element, removing the parts and moving them to the collapsed position.

In order to assist the person to get out of the sitting position on the seat  
20 the procedure is reversed. The device is erected to enable the person to move on to and along the first part to a location at one side of the seat where he or she can then rise from the sitting position or move on to a wheelchair.

If there is a restricted headroom above the seat as in for example a motor car, the invention has the advantage that a person can perform the actions of sitting down and rising from a sitting position at a location beside the seat where there is no restriction on the headroom which would make these actions difficult, and the person can easily transfer in the sitting position between the device and the seat.

In order to ensure that the first part of the device is held in a horizontal or generally horizontal position when the device is in use whilst catering for seats at different heights from the ground, the second part of the device may be provided with means for raising and lowering it relative to the ground. In the case of a pneumatically operable device these means preferably comprise an inflatable structure, for example a bag, provided at the lower end of the second part in the manner of a foot, and in the case of a device comprising rigid elements these means may be a mechanical extension, for example a telescopically adjustable leg, or telescopically adjustable legs, provided on the relevant element.

A pneumatically operable device according to the invention is conveniently provided with operating means for inflating and deflating the inflatable part or parts of the device. These means preferably include control means for controlling the supply of air or gas under pressure to said part or parts and for venting air from said part or parts. Where the said first and second parts of the device are provided by an inflatable structure and a further

inflatable structure is provided for raising and lowering the second part of the device, the control means is preferably arranged to control the supply of air or gas to the two structures independently so that the device can first be erected and then the height of the first part can be adjusted. However, the control  
5 means may be operable to vent both structures simultaneously to collapse the device.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

FIGURES 1, 2, 3 and 4 show a preferred form of device embodying  
10 the invention at successive stages of its use for assisting a person to get into a motorcar,

FIGURE 5 is a more detailed perspective view, partly cut-away, of the device showing it in the erected position,

FIGURE 6 is a perspective view of another form of device embodying  
15 the invention

FIGURE 7 is a perspective view showing the device of FIGURE 6 in use,

FIGURE 8 is a perspective view of another form of device embodying the invention showing it in the erected position,

20 FIGURE 9 is a perspective view of a further form of device embodying the invention showing it in the erected position, and



Figures 10 and 11 show two variations of parts of the device which can be used with the device as shown in Figures 6-9

FIGURES 1 to 7 of the drawings show a pneumatically powered device according to the invention. The device comprises an inflatable bag 1 which when inflated is of inverted L-shape as viewed from the side, the horizontal limb constituting a first part 2 for cooperation with a seat S in a motor car M and the vertical limb constituting a second part 3 for supporting the first part on the ground.

The second part 3 of the device has attached to its lower end a further inflatable bag 4 which can be inflated or deflated to raise or lower the second part 3 and thereby allow the first part to be positioned horizontally irrespective of the height of the car seat S above the ground.

The first part 2 of the device is connected or connectible by a pipe 5 to a supply of compressed air (not shown) which may be an air pump powered by electricity from the car battery or a compressed air cylinder. The pipe is connected to an inlet connector 6 incorporated in the wall of the bag 1 and is connected to the air supply through a valve (not shown) which may be incorporated in a hand control unit and is operable to control the supply of compressed air to the bag and the venting of air from the bag to inflate and deflate it.

The interior of the bag 1 communicates with the interior of the bag 4 through, first, a manually operable valve 7 and a pipe 8 and, second, a normally closed one-way valve 9.

The device is stowed in the motorcar M ready for use. When a person  
5 (who may be the driver as shown, or a passenger) wishes to get into the car, the bag 3 is inflated so that it assumes the inverted L-shape shown in FIGURES 1,2,3 and 5 with the outer portion of the first part 2 of the bag 1 resting on the relevant seat S. If this part 2 is not horizontal, the valve 7 is opened so that air flows through the pipe 8 into the bag 1 and inflates it to an extent sufficient to  
10 raise the second part 3 of the bag 1 and thereby move the first part 2 to a horizontal position as shown in FIGURE 1. The valve 9 remains closed during inflation of the bag 4.

If the person is in a wheelchair W as shown in FIGURE 2, he or she can move in the sitting position from the wheelchair on to the first part 2 of the  
15 device. Alternatively, if the person is standing he or she can simply sit on the first part.

The person then slides sideways in a sitting position along the first part 2 to a position above the seat S in the car as shown in FIGURE 3, whereupon the bag 1 is deflated. If the bag 4 has been inflated, deflation of the bag 1  
20 causes the valve 9 to open so that the bag 4 is also deflated at the same time. The person is therefore left sitting on the deflated outer portion of the first part

2 of the bag 1, the rest of the device being folded up and stowed in the car as shown in FIGURE 4.

To enable the person to get out of the car the procedure is reversed. Thus, the device is unfolded, the bag 1 (and with it if necessary the bag 4) is  
5 inflated so that the person can slide sideways out of the car to a position in which he or she can transfer back to the wheelchair W or assume a standing position outside the car.

The device illustrated in FIGURES 6 and 7 comprises two rigid panels 20, 21 which constitute, respectively, a first part and a second part of the  
10 device. These panels may be made of wood or a plastics material so that the first panel 20 has a smooth upper surface with a low coefficient of friction. The first panel 20 is hinged adjacent one end to one end of the second panel 21 so that the panels are movable between an erected position as shown in the drawings in which they are of inverted L-shape in side view, and a collapsed  
15 position in which they lie flat against one another. A toggle-like strut 22 is connected between the panels, this strut comprising two links connected together by a pivot 23 at their one ends and pivotally connected at their other ends to the respective panels so that the links are movable between a collapsed position and an extended position corresponding to the collapsed and erected  
20 positions of the panels. A locking device (not shown) is provided for locking the two links in the extended position.

The device is normally stowed in its collapsed position. When it is to be used to help a person get into or out of a motorcar M, the device is erected by opening the panels 20,21 to the inverted L-shape and locking the strut 22 in the extended position to prevent relative movement between the panels. The  
5 outer portion of the first panel 20 is placed on the seat S of the car with the lower end of the second panel 21 resting on the ground and thereby supporting the first panel in a horizontal position. If desired the second panel may be provided with an adjustable extension to enable it to be raised and lowered so that the first panel can be kept horizontal irrespective of the height of the car  
10 seat S above the ground.

With the device in this position the person can then take up a sitting position on the first panel 20 either by sitting on it from a standing position or by moving on to it already in a sitting position from, for example, a wheelchair. The person then slides sideways in the sitting position over the smooth upper  
15 surface of the panel 20 into the car and the first panel 20 is pulled from beneath the person leaving him or her sitting on the car seat.

The person can get out of the car by adopting the reverse procedure. Thus, the panel is pushed into position partially underneath the person who then slides out of the car to a position where he or she can stand up or transfer back  
20 to a wheelchair.

The device is then collapsed by releasing the locking device of the

strut 22 and bringing the panels 20,21 together.

FIGURE 8 shows a non pneumatically powered device according to the invention. The device comprises a first part 2 being a panel for cooperation with a seat S, such as a seat in a motor car, and a second part 3 for supporting the first part on the ground. The panel may be made of wood or a plastics material so that the panel has a smooth upper surface with a low coefficient of friction. For the purpose of illustration, the panel 2 is shown as being transparent to enable clear understanding of the features on the underside of the panel. In practice the board may be transparent or opaque. The support 3 is attached to the panel 2 by hinge means 30 allowing the panel to tilt relative to the support. The panel shown is of an elongated shape and extends from a narrower portion A, which co operates with the seat S, to a wider portion B where connection to the support 3 is made, and continues to a further narrower portion C. It shall of course be appreciated that other shaped panels would suffice. In the erected position shown in figures 8 and 9, the ends of the narrower portions A and C are angled downwards relative to the plane of panel 2 to aid co operation of the panel with the seat S and to aid transferral of a person onto or off the panel. The term angled downwards includes curvature of the panel downwards relative to the plane of the panel in the erected position. Rigid support 3 is shown here as two telescopic legs 35 which are connected by welding or other means to a single member 31 being shorter in length than the width of the panel at B. The single member 31 is attached to the wider portion

B of the panel by hinge means 30. The device is secured in the erected position by the abutment of means in the form of support member 32 with stopper 33. In addition, when the device is in the erected position, the support member 32 also contacts the panel 2 to provide additional support and rigidity. Following  
5 use, the device can be collapsed by moving the telescopic legs 35 in the direction of arrow 36 so that they lie adjacent to panel 2.

This enables the device to be stowed in a more compact form. An aperture 38 is located in the centre of the panel close to portion C to enable the device to be carried easily.

10 When transfer out of a motor car is desired, the device is placed on the exterior of the car adjacent to a motor car seat and panel 2 tilted until angled portion A is in co operation with the motor car seat. The legs can then be adjusted until the panel 2 is in contact with support member 32 and stopper 33 thus providing a rigid structure for sliding a person in the sitting position from the car seat  
15 along the panel towards the exterior of the car. Once positioned near portion C of the panel, the person can then further transfer to a wheel chair or stand up without headroom restriction of the motor car. The device can then be picked up by the aperture 38 and tilted into a position suitable for carrying or stowing. Likewise, the device can be erected in a similar manner to aid transferral of  
20 person into a motor car seat.

It will be appreciated that this embodiment would serve equally as well for

transferral between other seating structures and is not restricted to transferral into or out of a motor car.

FIGURE 9 shows an alternative non pneumatically powered device similar to  
5 that shown in FIGURE 8 having a panel 2 and a support 3. The same reference numerals are used for the same features as shown in Figure 8. The differences in the device shown is that one telescopic leg 40 is attached to a central part of a panel 2, and means for securing the device in the erected position is by way of a rigid L shaped bar 41 attached to the hinge means 30 which can be inserted  
10 into an aperture (not shown) located on the underside of the panel.

Figures 10 and 11 show two further forms of the panel 2 which can be used in accordance with the invention.

The devices illustrated in the drawings are not limited in their uses to assisting persons to get into and out of motorcars. They could be used for  
15 assisting persons to get into chairs or on to beds in their homes particularly from wheelchairs.

Devices according to the invention have the advantages that they may be used by a driver and any passenger to facilitate entry to and exit from a motorcar and their use is not restricted to any particular car. A pneumatic  
20 device has the advantages that it is compact, can be stowed in a motorcar, is portable, simple, light and convenient to use.

CLAIMS

1. A device for assisting a person to get into and out of a sitting position on a seat which comprises a first part arranged to cooperate with a seat to enable a person to move in a sitting position between that part and the seat, and a second  
5 part arranged to support the device on the ground and to hold the first part in a horizontal or generally horizontal position in which it cooperates with, and extends laterally from the seat to enable a person to get on to and off said first part at a location beside the seat from or to either a standing position or a seated position.
- 10 2. A device as claimed in claim 1, wherein the two parts of the device are movable relative to one another between an erected position for use of the device and a collapsed position for stowage of the device.
3. A device as claimed in claim 1 or claim 2, wherein at least one part of the device comprises a rigid element.
- 15 4. A device as claimed in any one of claims 1 to 3, wherein at least one part of the device comprises an inflatable element.
5. A device as claimed in claim 1 or claim 2, wherein both parts of the device comprise inflatable elements.
6. A device as claimed in any of claims 1 to 4 wherein the two elements are  
20 connected by hinge means.
7. A device according to claim 3 or claim 6, comprising one rigid element being a panel or board and another rigid element being one or more support



legs.

8. A device according to claim 7, wherein said one or more support legs are height adjustable.

9. A device according to any one of claims 1 to 8 having means for securing  
5 the device in an erected position.

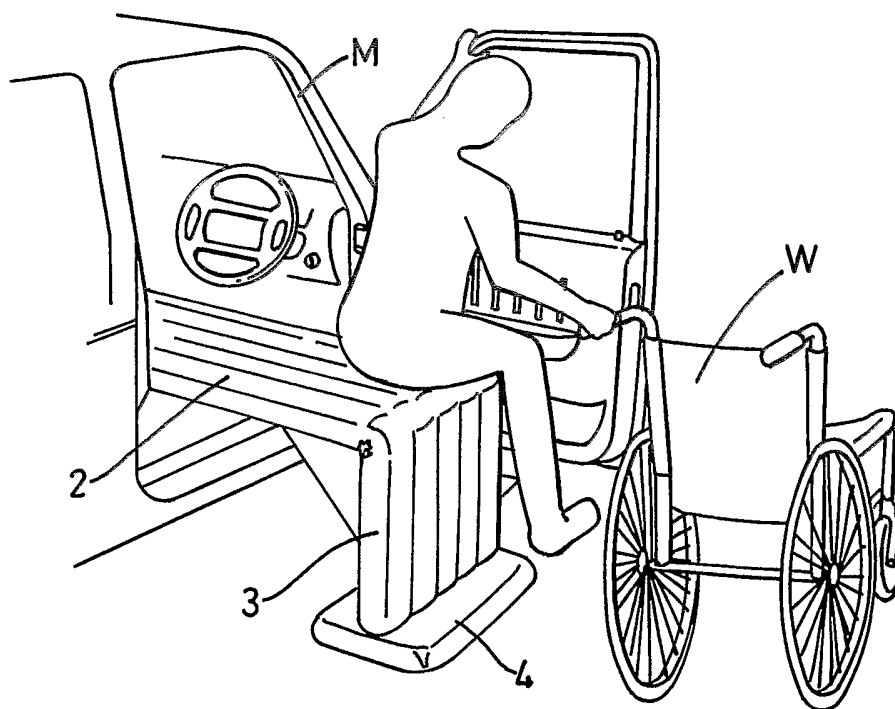
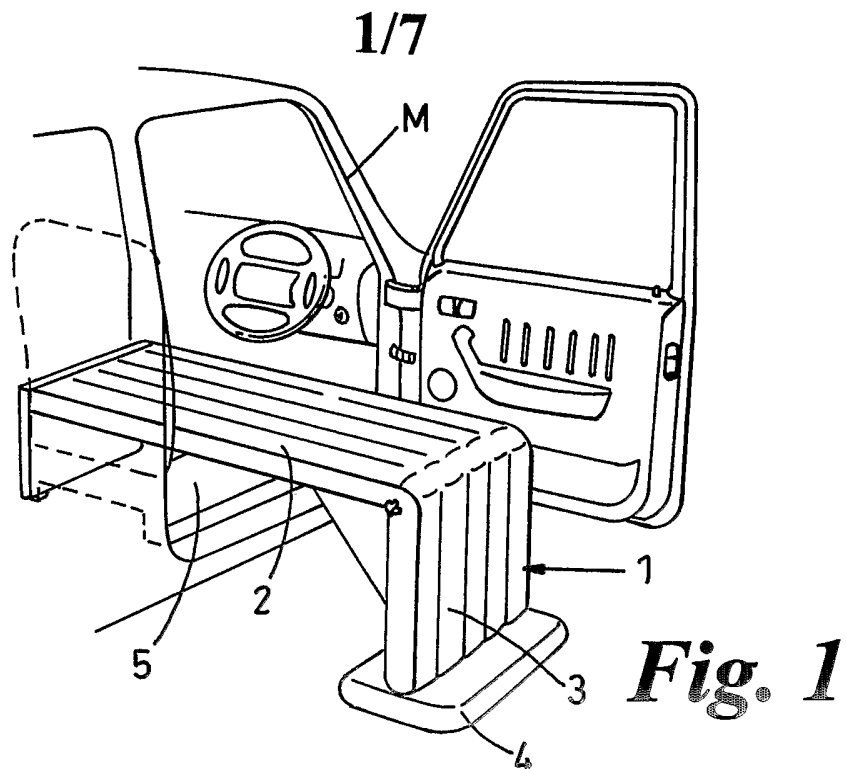
10. A device according to claim 9, wherein said means for securing the device in an erected position is by locking means comprising a strut extending between the two parts.

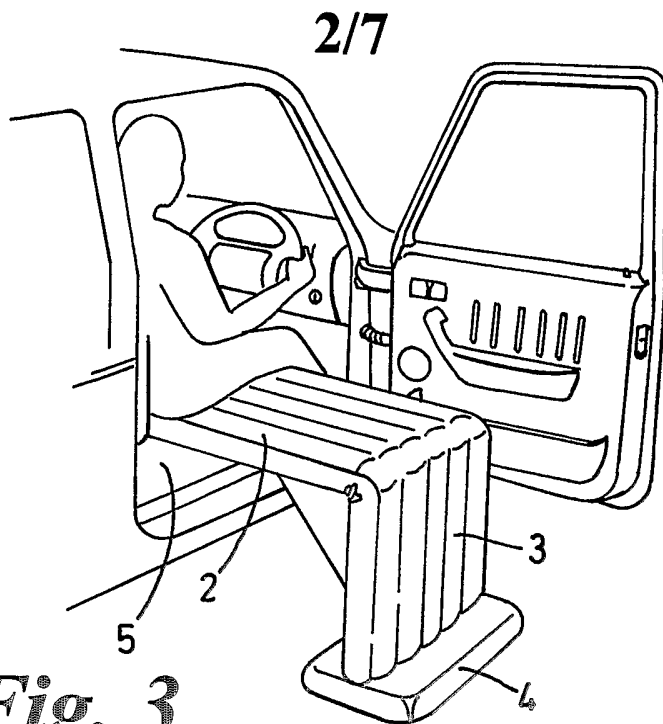
11. A device according to claim 10, wherein said means for securing the device  
10 in an erected position comprises the abutment of an engagement element on one part with a portion of the other part.

12. A device according to any one of claims 7 to 11, wherein the board or panel has one or more end portions angled downwards relative to the plane of the board or panel in the erected position to either aid co cooperation between  
15 the panel and a seat, and/or aid transferral of a person onto or off the panel.

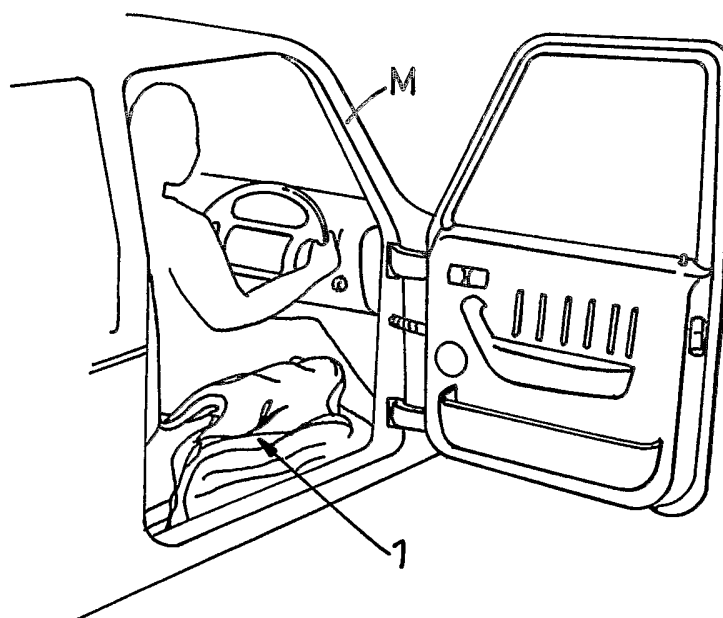
13. A device according to claim 4 or claim 5, wherein erection of the device is by inflation means.

14. A device according to any one of claims 4, 5 or 13 wherein said device is installed within a vehicle and which can be erected from within the vehicle  
20 by inflation means.

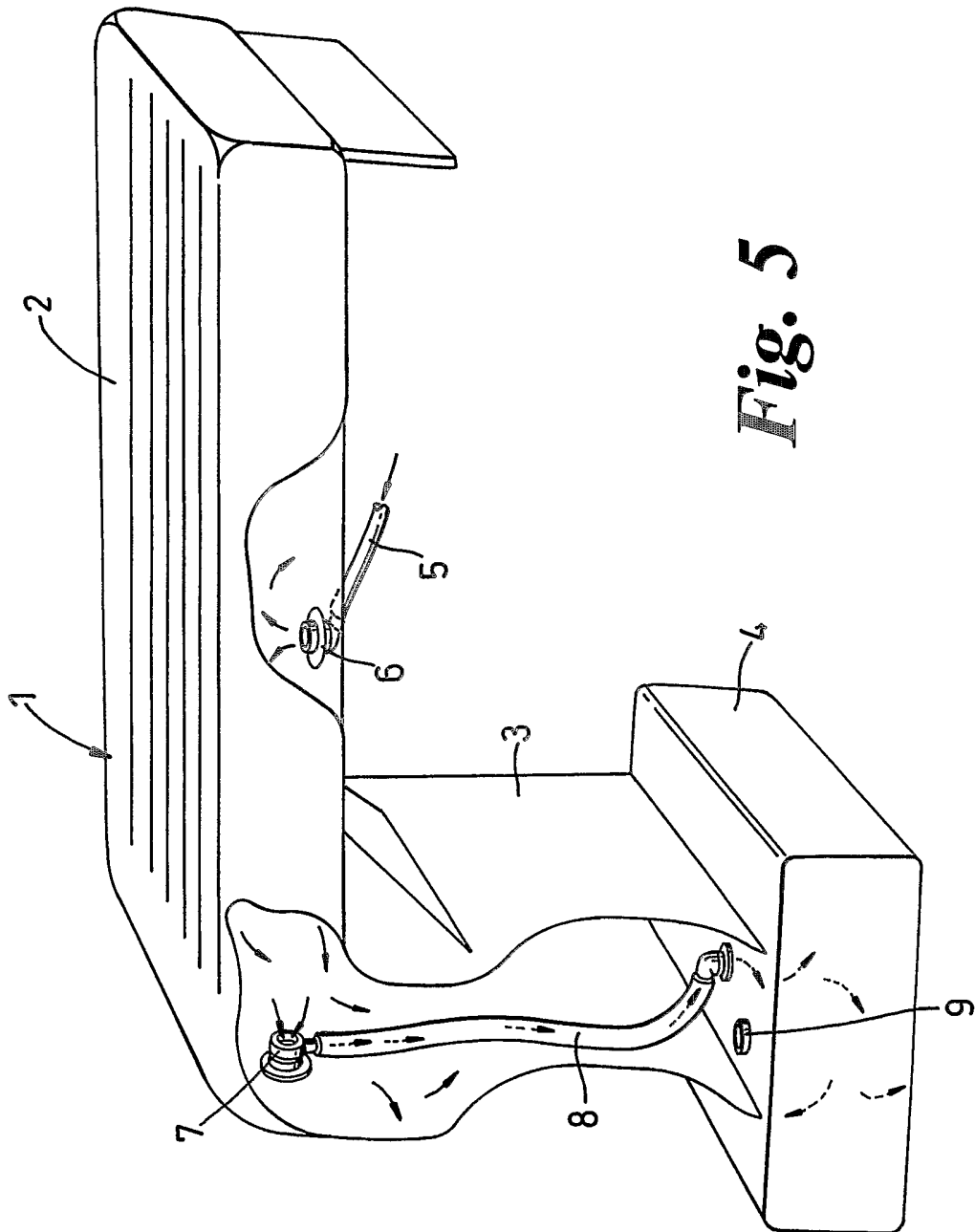




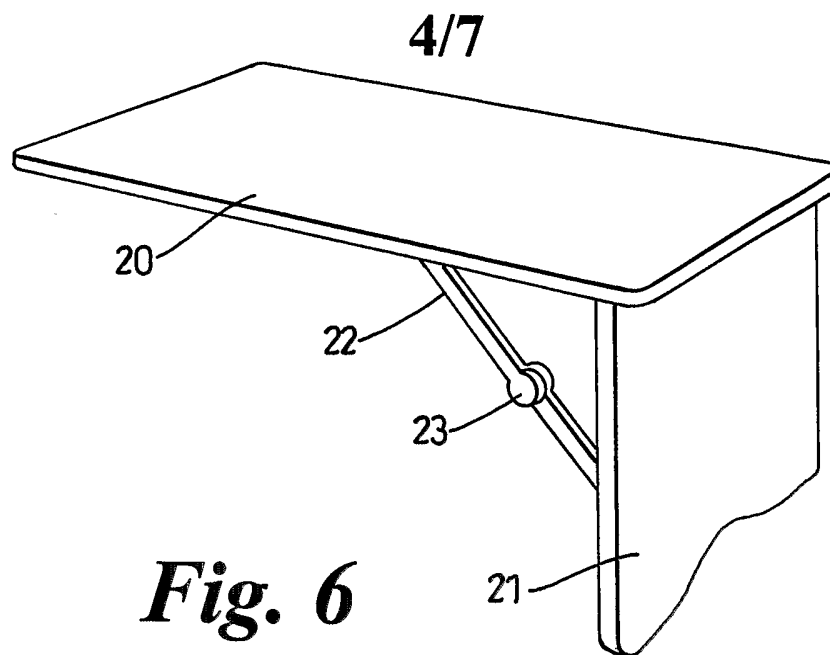
**Fig. 3**



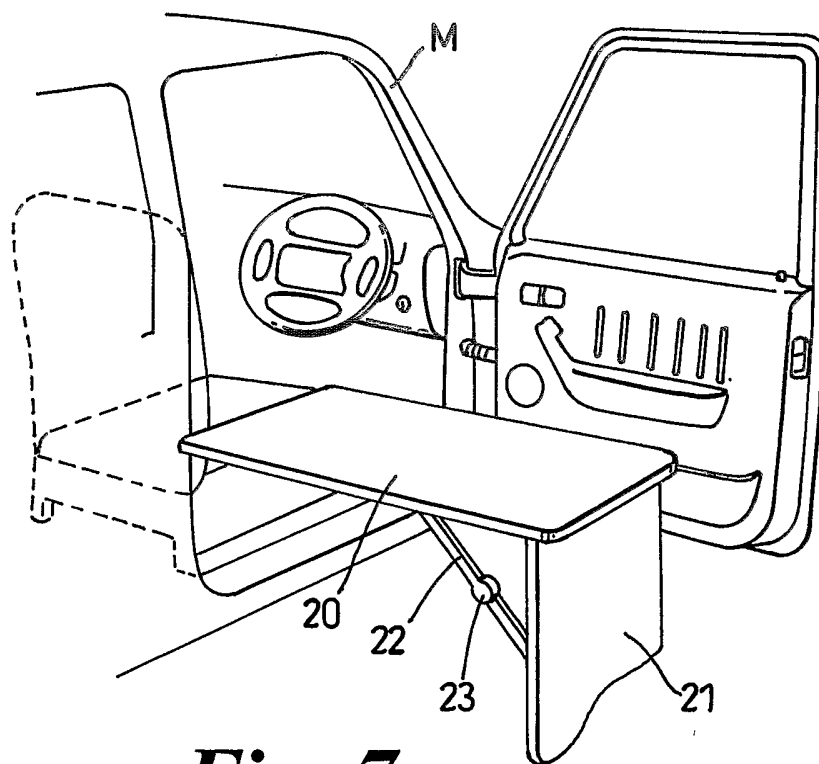
**Fig. 4**



**Fig. 5**

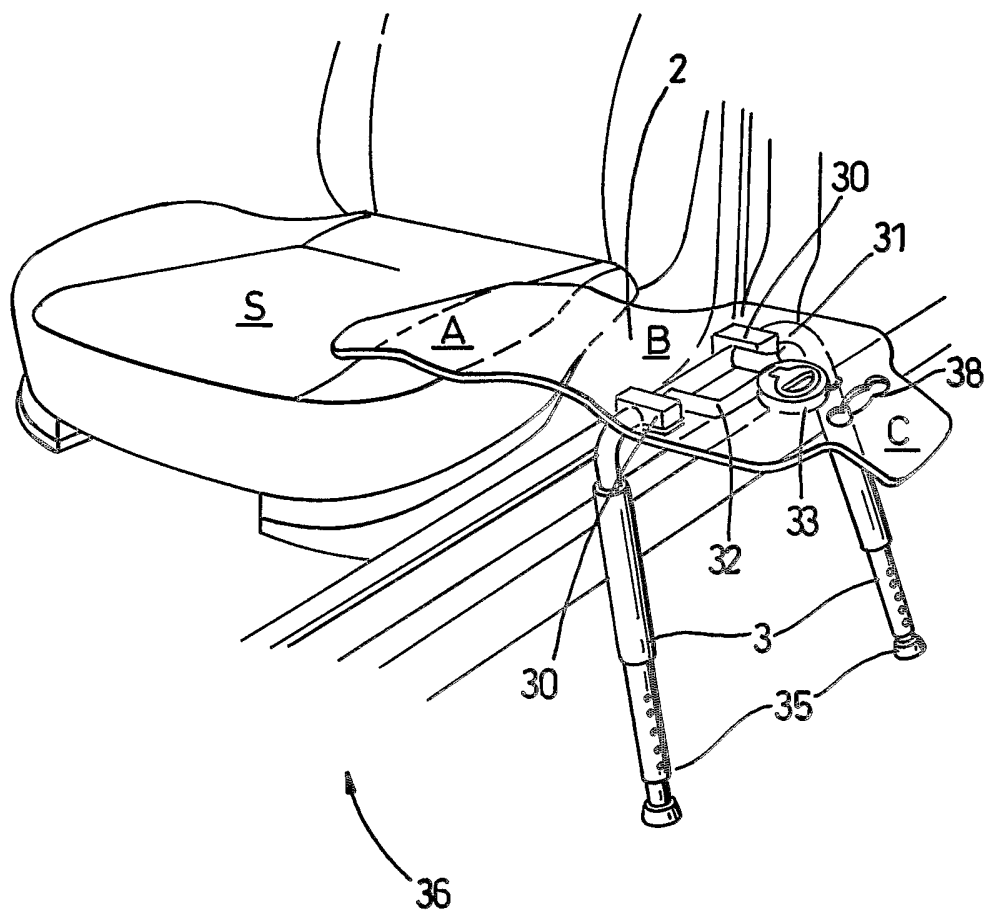


**Fig. 6**



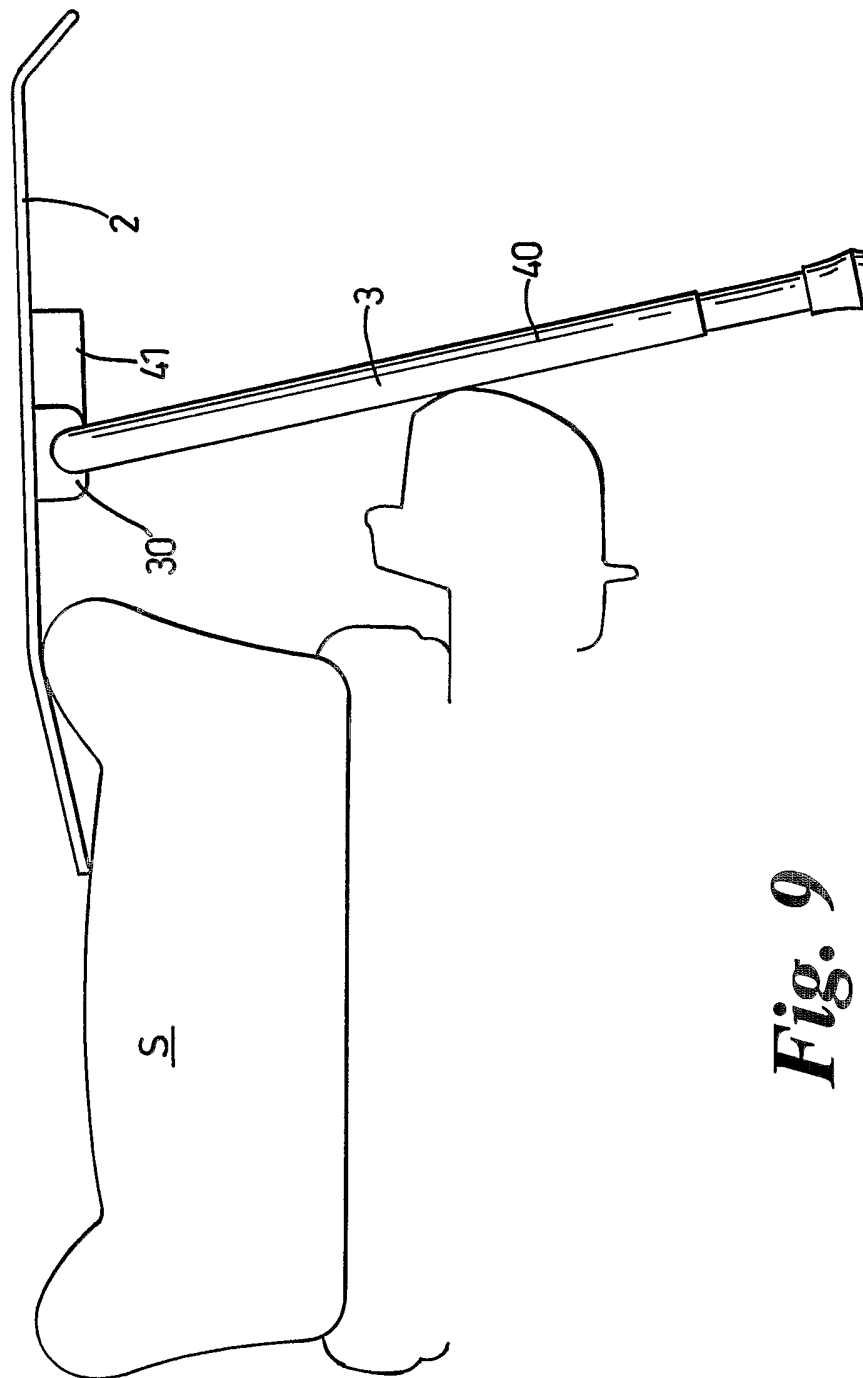
**Fig. 7**

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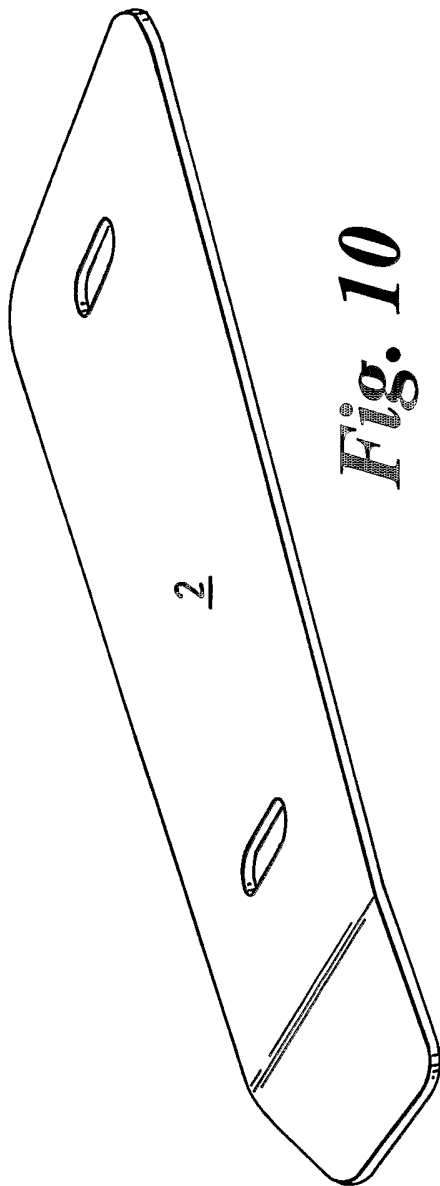


*Fig. 8*

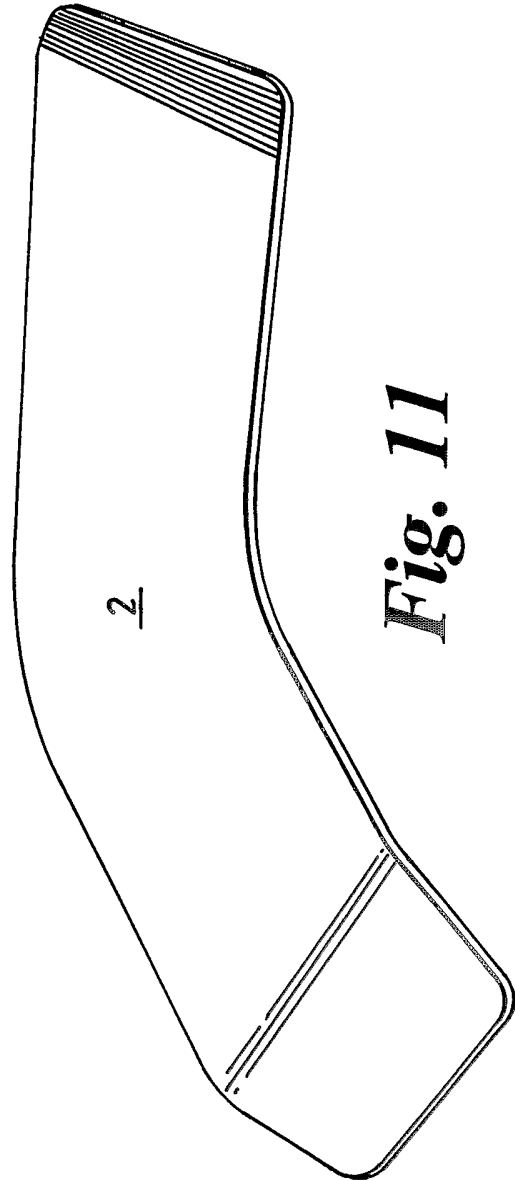
6/7



*Fig. 9*



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INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/000646

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61G3/06

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)  
IPC 7 A61G A47B

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

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

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 261 605 A (MANGAR AIDS LTD) 26 May 1993 (1993-05-26) page 4, line 19 - line 33 page 5, line 20 -page 7, line 5; figures 1,4-6	1-5,9, 13,14
X	US 5 619 762 A (MEIN JAKE) 15 April 1997 (1997-04-15) column 2, line 26 - line 37; figures 1-3	1,3,7,9, 12
X	US 6 408 465 B1 (FLEMING ROBERT J) 25 June 2002 (2002-06-25) column 2, line 9 - line 17; figures 1,3	1-3,6-12
X	US 4 584 731 A (CARTER DENNIS L) 29 April 1986 (1986-04-29) column 1, line 53 -column 2, line 2; figures	1-3,6-9, 12

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

11 May 2004

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Information on patent family members

International Application No  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2261605	A	26-05-1993	NONE
US 5619762	A	15-04-1997	NONE
US 6408465	B1	25-06-2002	NONE
US 4584731	A	29-04-1986	NONE