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U1S S1061

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EP 0296759 A2 US 5375277 A US 4760615 A

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INT CL[6] A61G 1/00 1/003 1/013 1/017 1/04 7/10 7/14

(54) Apparatus For Raising a Person

(57) A system for raising a person lying on the ground includes a lifting seat 10 comprising a back rest 12 coupled to a seat portion 18. At either side of the back rest 12 and seat portion 18 there are provided side supports 14, 16, 20 and 22. The system is such that in use it can be slid onto a person lying on his/her side, rotated such that the back rest 12 lies on the ground, with the supports 14 - 22 supporting the person during rotation to a back-lying position. The back rest 12 can then be rotated upwardly to bring the person into a sitting position (Figs 2-7).

The apparatus has a further embodiment (30, Fig 8) having a shaped support (32) pivotally coupled to a shaped base (34) and having a lifting means e.g. an air bag to raise a person from a lying to a substantially upright position.

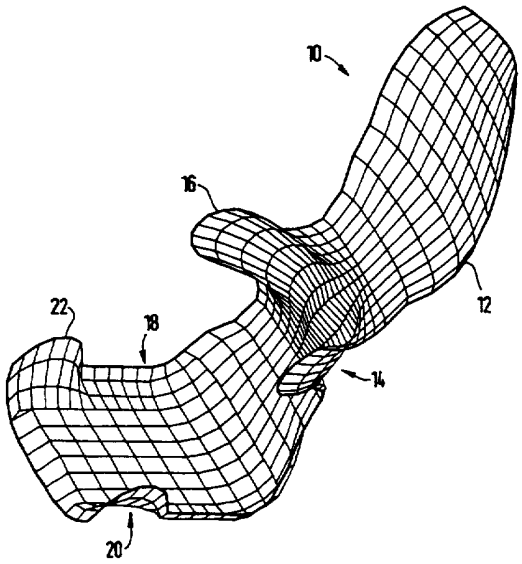

Fig. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

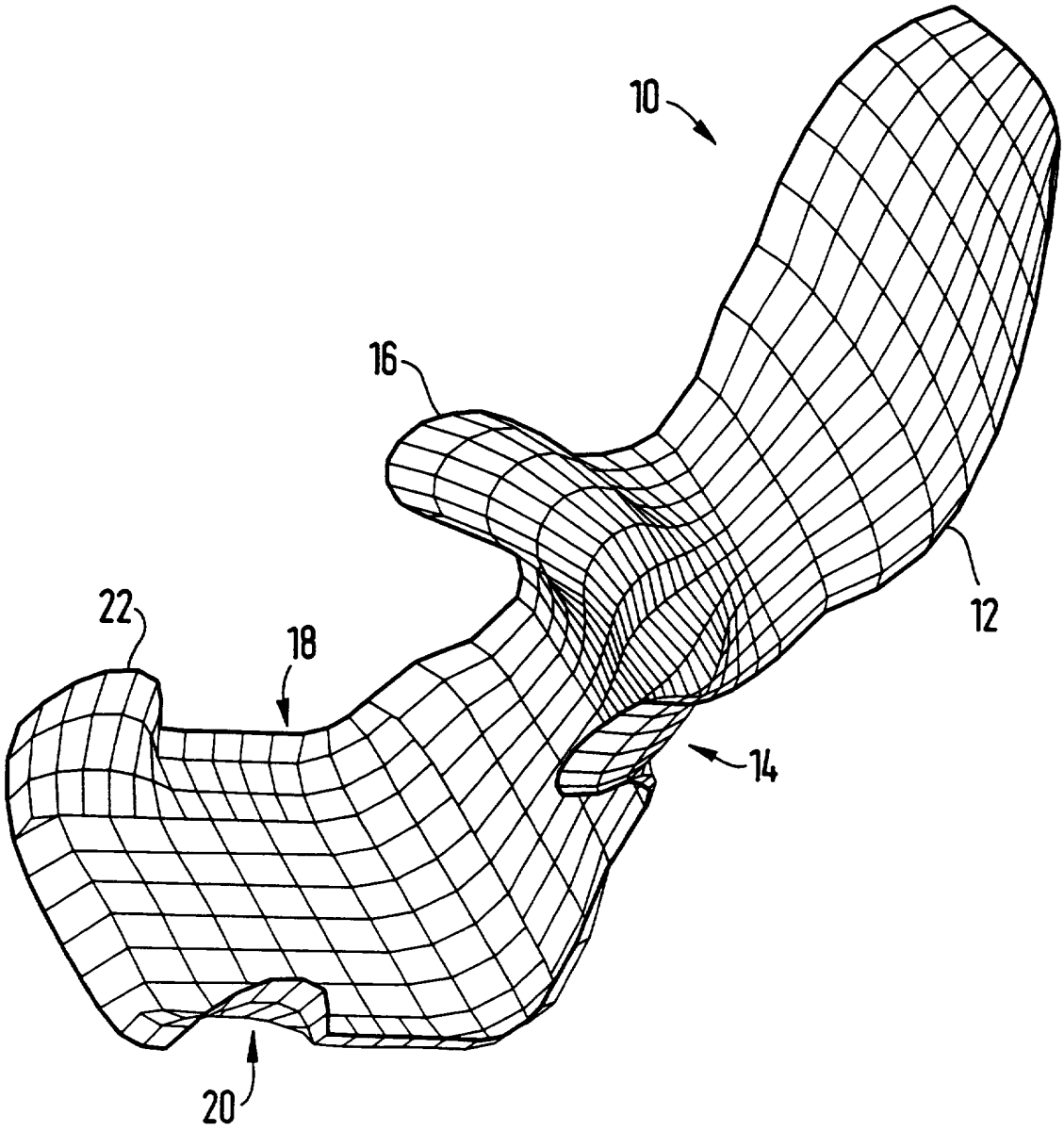

Fig. 1

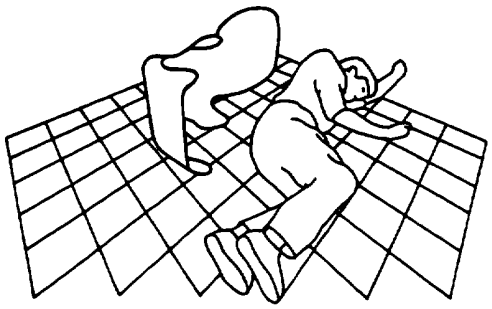

Fig.2

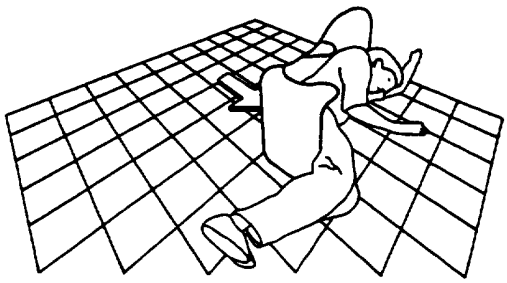

Fig.3

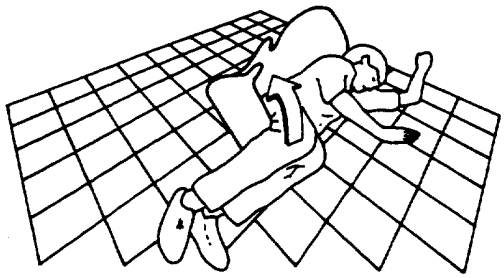

Fig.4

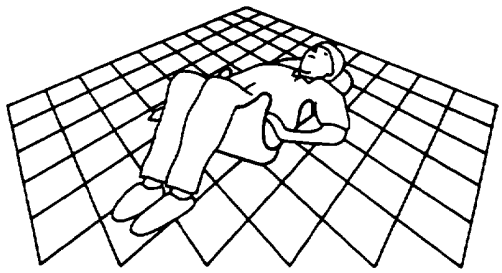

Fig.5

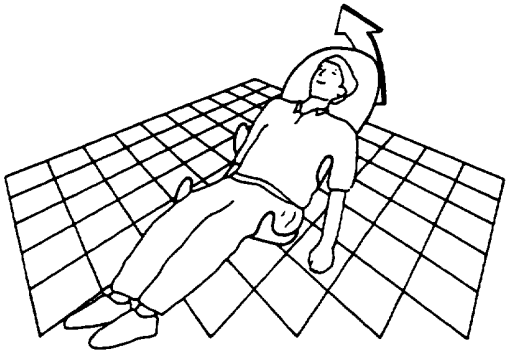

Fig.6

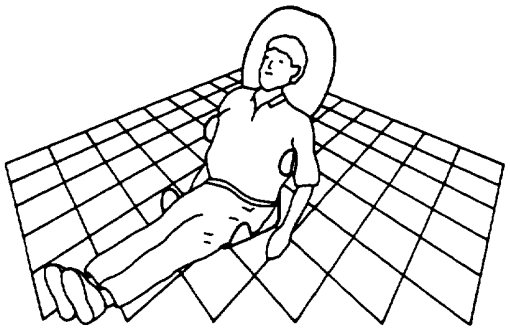

Fig.7

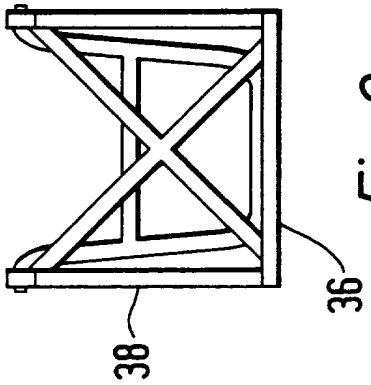

Fig. 9

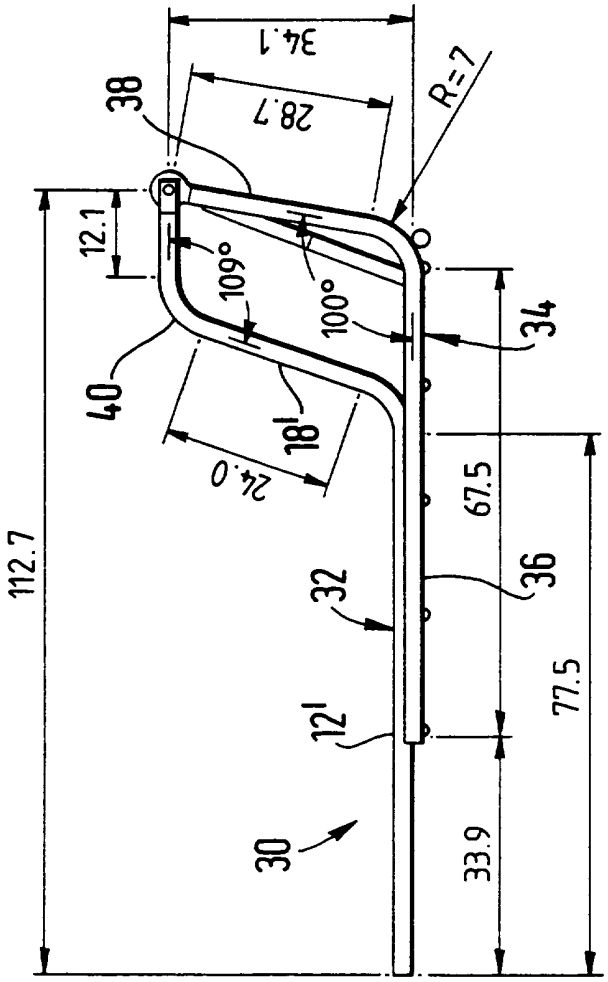

Fig. 8

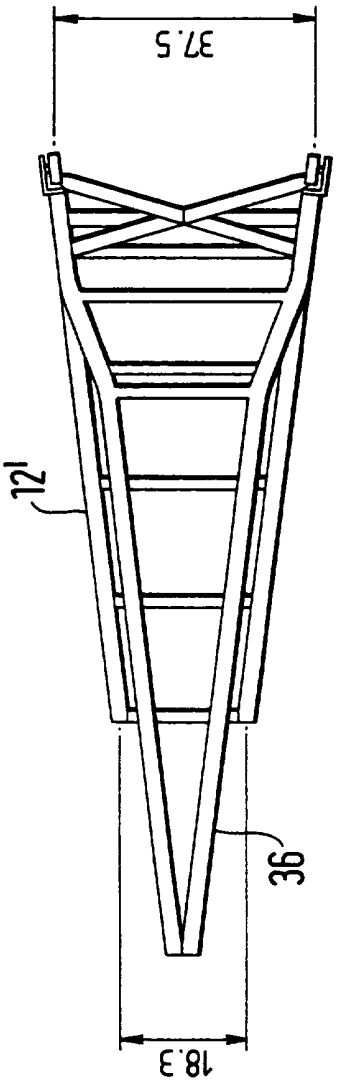

Fig. 10

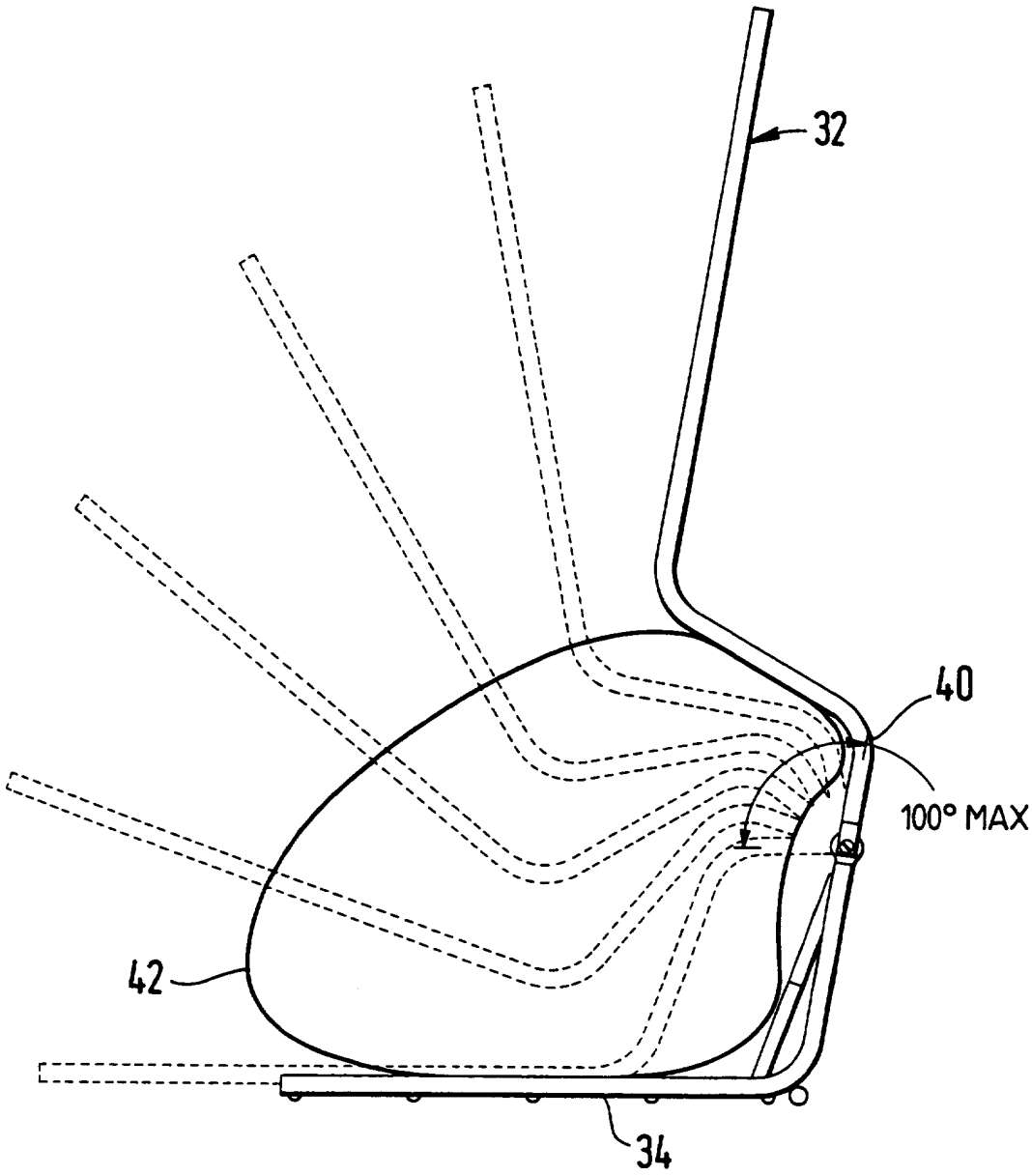

Fig.11

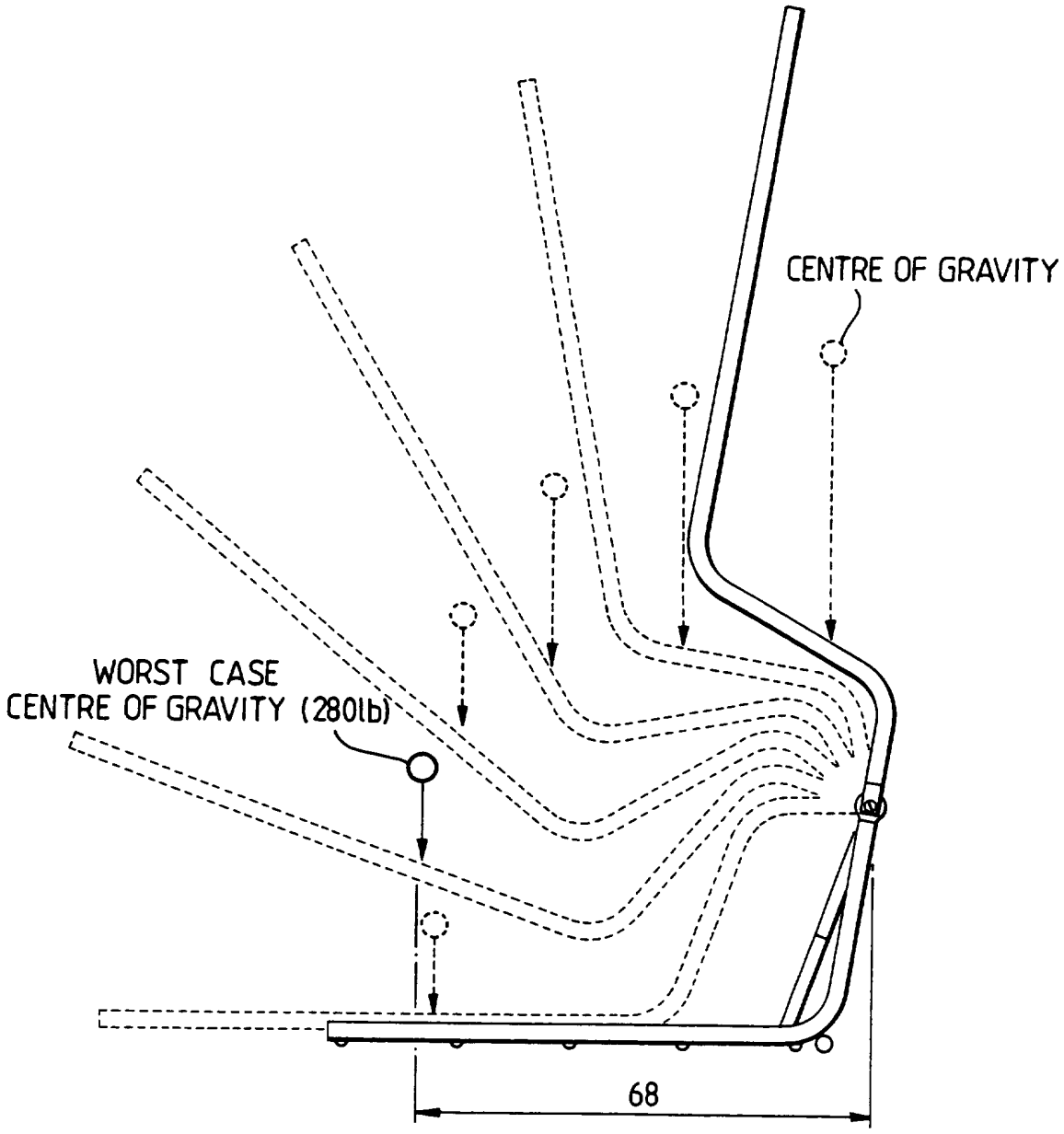

Fig. 12

APPARATUS FOR RAISING A PERSON

The present invention relates to apparatus for raising a person, particularly from a lying position.

At present there are severe difficulties in dealing with people who fall either in public areas or in private areas, in particular people who are prone to fall such as the elderly and disabled. Raising people from the ground when in a partly or greatly incapacitated state simply by human force is strenuous and can be damaging to the person doing the lifting, especially when this is a frequent task.

Devices are known for raising people, which primarily involve hoists and slings. As well as being uncomfortable and degrading to the fallen person, they are not commonly available due to their bulk and cost. Their lack of availability can also cause problems such as pressure sores which can arise within half an hour if a person is lying awkwardly on a hard surface.

The present invention seeks to provide an improved raising system for raising a person from a lying position.

According to an aspect of the present invention, there is provided apparatus for raising a person lying on the ground including a back rest; a seat portion disposed at an angle to the back rest; at least one side support on one or both of the back rest and seat portion, the or at least one side support being slidable under a person; the back rest having a curved rear surface allowing the apparatus to be tilted to a first position in which the back rest lies on the ground, the side support or supports acting to support the patient during tilting to the first position, thereby to lay the person on his or her back, the back rest being movable from the first position to a second substantially upright position.

In its simplest form, the apparatus can be a moulded plastics member of very

simple form and therefore relatively cheap. The shape and structure of the apparatus is such that a person lying on the ground can be simply moved from a side-lying position to a back-lying position and then raised naturally to, for example, a sitting position. No straps or hoists are required in the preferred embodiment, thereby substantially reducing any degrading feeling.

Preferably, the apparatus includes a curved outer surface between the back rest and seat portion, enabling the apparatus to be tilted from the first position to the second position. Thus, the person can be simply raised from the back-lying position into a sitting position. In the preferred embodiment, the back rest is extended also to provide a support for the person's head and, in the preferred embodiment, to provide means by which a helper can raise the back rest to the upright position. It will be apparent that the centre of gravity of the person is not moved substantially and that a significant lever action is provided to reduce the lifting force required, thereby considerably reducing the effort needed to be exerted by the helper.

Preferably, side supports are provided both on the back rest and seat positions. The side supports can ensure that the person can easily be tilted from a side-lying position to a back-lying position. Side supports on the seat portion of the apparatus allow the person's legs to be raised on tilting of the back rest to the first position.

Side supports are preferably provided on both sides of the back rest and/or seat portion, thereby enabling the apparatus to be used for a person lying on his/her left side or right side, without having to rotate the person to one or other of his/her left or right sides, as would be necessary with apparatus having side supports only on one side thereof.

In an embodiment, there is provided lifting means for lifting the back rest from

the first position to the upright position. The lifting means could provide the entire lifting force required for raising the person or could provide an assisting force for reducing the lifting force required to be exerted by a helper.

When lifting means are provided, the back rest and seat portion are preferably in the form of a unitary member, the apparatus including a base pivotally coupled to the unitary member, a lifting means being disposed to act between the unitary member and the base.

The lifting means may be hydraulic, mechanical, electrical or of any other suitable form. The lifting means can include one or more fluid pressure struts or an inflatable bag.

There is preferably provided control means for controlling the amount of lift produced by the lifting means.

Means for locking the unitary member in the second position may be provided. The advantage of this is that the lifting means and/or helper need not exert any further lifting force on actuation of the locking means. The unitary member is preferably lockable into a plurality of upright positions. in dependence upon need and wishes of the user.

In a preferred embodiment, the seat portion is raised above ground level when the back rest is in the second position. This is preferably at a similar height to a wheelchair, such that the person can be slid directly onto a wheelchair or other chair without any further lifting of the person.

Preferably, at least one of the side supports is removable, thereby enabling the person to be slid sideways from the apparatus to a wheelchair or other chair.

According to another aspect of the present invention, there is provided apparatus for moving a person including a support member shaped to support a person both in a substantially lying position and in a substantially upright position, a base member to which the support member is pivotally coupled and lifting means operable to move the support member between the lying and upright positions.

An embodiment of the present invention is described below, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram in perspective of an embodiment of person raising apparatus;

Figures 2 to 7 are views of the apparatus of Figure 1 during its use to raise a person lying on the ground;

Figure 8 is a side elevational view of a second embodiment of person raising apparatus;

Figure 9 is a base view of the apparatus of Figure 8;

Figure 10 is a rear view of the apparatus of Figure 8:

Figure 11 is a schematic diagram of the apparatus of Figure 8 showing various degrees of lifting of a support member of the apparatus; and

Figure 12 is a view similar to Figure 11 showing the change in the centre of gravity of a person.

Referring to Figure 1, the embodiment of apparatus shown (hereinafter referred to as the lifting seat) is formed of a unitary piece of material, preferably plastics

material, which is relatively thin and contoured to provide the various operating portions of the seat 10.

The seat 10 includes a back rest 12 which is slightly concave when viewed from its front side. At an intermediate position along the back rest 12, there are provided two side supports 14, 16 which extend towards the front of the back rest 12.

A seat portion 18 extends from the lower end of the back rest 12 and is also provided with side supports 20, 22. The seat 10 is also curved between the back rest 12 and seat portion 18. One or more of the side supports 14, 16, 20, 22 may be omitted in other embodiments. For example, in a simpler version, side supports may be provided only on one side of the lifting seat 10. Similarly, the side support(s) on the back rest 12 or those on the seat portion 18 may be omitted.

Referring to Figure 2, the lifting seat 10 is designed to lift a person who has fallen to the ground and is unable to raise himself/herself. With the design of seat shown in Figure 1, the person is first moved to a "recovery" position, that is on his/her side with knees raised to be in front of the person, thereby to place the person in a resting position. This "recovery" position is common in situations of this kind.

As can be seen in Figure 3, the lifting seat 10 is placed on its side against the ground and then slid towards the lying person, such that the relevant side supports 14 - 22 are slid underneath the person. As shown in Figure 4, the lifting seat 10 is then rotated on the back rest 12, the side supports 14 - 22 supporting the person during the rotating action, thereby to rotate the person to a position in which the person is lying on his/her back with knees raised, as can be seen in Figure 5.

The lifting seat 10 can then be rotated onto the seat portion 18 so as to bring the back rest 12 into a substantially upright position, as shown in Figure 7. For this purpose, the back rest 12 is preferably of a sufficient length both to support the person's head and also to provide a gripping member to be used by a helper raising the person.

It will be apparent from Figure 7 that the weight of the person on the seat portion 18 will enable the person to rest on the lifting seat 10 in the sitting position thereby to assist recovery of the person or subsequent moving of the person by nurses or other people.

The centre of gravity of the person remains relatively unchanged during the operation shown in Figures 2 to 7. This substantially reduces the rotating and lifting forces which must be exerted by a helper and thereby enables a single helper, even an aged person, to raise the fallen person.

The front, support surface of the lifting seat 10 is preferably covered with a relatively soft material for comfort. The rear surface of the lifting seat 10 is, as will be apparent from Figures 1 to 7, contoured to facilitate rotation of the lifting seat both sideways and into the upright position.

In the preferred embodiment, the front support surface of the lifting seat 10 is designed such that a person can slide relatively easily sideways across the support surface but cannot slide lengthways down the seat 10. The latter feature can be particularly useful when the side supports 14, 16 do not support the person in a vertical direction in the manner shown in the embodiment of Figure 7.

Suitable material for the support surface of the lifting seat 10 may be a velour material suitably oriented, or a ribbed surface. Other materials and shapes will be apparent to the skilled person.

Another embodiment of lifting seat 30 is shown in Figures 8 to 12. In this embodiment, a seat portion 32 has a similar shape and configuration to the lifting seat 10 shown in Figures 1 to 7. In Figure 8, the side supports 14 - 22 are not shown but could also be provided.

The seat portion 32 is pivotally coupled to a base member 34, which includes a ground support 36 and a side member 38 integral with the base member 34. The side member 38 is pivotally coupled to a flange 40 depending from the seat portion 18' of the seat portion 32.

Figures 9 and 10 show that the embodiment of lifting seat 30 is formed from a plurality of tubular or rod sections to reduce weight of the device. Although in Figure 9 the base member is shown to be rectangular, it may be curved to facilitate rotation of the lifting seat 30.

The lifting seat 30 is provided with a lifting mechanism which lifts the seat portion 32 relative to the base member 34. This can be seen from Figure 11, in which the lifting mechanism is an inflatable air bag 42. The air bag can be inflated by any suitable means, for example a gas cylinder, electrical or other automatic pump, or a mechanical pump.

As can be seen in Figure 11, as the bag inflates, it applies pressure between the base member 34 and seat portion 32, causing the seat portion 32 to pivot gradually towards an upright position.

Other raising mechanisms include a hydraulic jack, which may be hand operated, a gas strut, which could be used by itself or in combination with another lifting mechanism such as the air bag, a pressurized gas cylinder in combination with the air bag 42 and so on.

Figure 11 shows that in the preferred embodiment the angle of the flange 40 relative to the horizontal is preferably no more than 100°, although this maximum angle is dependent entirely upon the application and user requirements. In the preferred embodiment, a controller (not shown) controls the raising of the seat portion 32 and enables seat portion 32 to be stopped at any suitable angle.

The air bag 42 may have a plurality of air chambers. This can facilitate control of the air bag during inflation and can provide slow deflation, for example should it be punctured.

A lock, latch or the like may be provided to lock the seat portion 32 in the upright position, thereby ending the need for any lifting action by the lifting means. In the preferred embodiment, the lock, latch or other system is preferably of such type that the seat portion 32 can be locked in a plurality of different positions, possibly in an infinite number of angles. With such a feature, the air bag 42 may be removable for use with other devices. As the air bag and pressurization system represent a substantial proportion of the cost of such a system, this can reduce overall cost.

As can be seen in Figure 12, the lifting seat 30 raises the centre of gravity of the person in the seat, thereby carrying out most of the lifting action required to bring the person into a normal sitting position. This sitting position is preferably such that the person in the seat can be slid onto a wheelchair or other chair without any further lifting being required. In this case, any side supports provided on seat portion 32 are preferably removable to allow lateral sliding of the person on the lifting seat 30.

In the embodiment of Figures 8 to 12, there may be provided a sensor mechanism which does not allow raising of the seat portion 32 until the lifting seat 30 is detected to be in the back-lying position shown in Figure 8. The

skilled reader would immediately be able to identify suitable sensors for this purpose.

In both embodiments described herein, there may be provided a belt or strap to secure the person into the seat.

The embodiment of Figures 8 to 12 can be modified for other applications, for example any application in which a person requires assistance in moving from a substantially lying position to a substantially upright position. Typical applications may be for a reclining chair for use by an elderly or disabled person; in a bed, to assist a person to get up from the bed; or in a bath or the like.

The dimensions given in the Figures, which are in centimetres, are for illustration only.

CLAIMS

1. Apparatus for raising a person lying on the ground including a back rest; a seat portion disposed at an angle to the back rest; at least one side support on one or both of the back rest and seat portion, the or at least one side support being slidable under a person; the back rest having a curved rear surface allowing the apparatus to be tilted to a first position in which the back rest lies on the ground, the side support or supports acting to support the patient during tilting to the first position, thereby to lay the person on his or her back, the back rest being movable from the first position to a second substantially upright position.

2. Apparatus according to claim 1, including a curved outer surface between the back rest and seat portion.

3. Apparatus according to claim 1 or 2, including side supports on both the back rest and seat portion.

4. Apparatus according to any preceding claim, wherein side supports are provided on both sides of the back rest and/or seat portion.

5. Apparatus according to any preceding claim, including lifting means for lifting the back rest from the first position to the upright position.

6. Apparatus according to claim 5, wherein the back rest and seat portion are in the form of a unitary member, the apparatus including a base pivotally coupled to the unitary member, the lifting means being disposed to act between the unitary member and the base.

7. Apparatus according to claim 5 or 6, wherein the lifting means is

hydraulic, mechanical or electrical.

8. Apparatus according to claim 5 or 6, wherein the lifting means includes one or more fluid pressure struts.

9. Apparatus according to claim 5 or 6, wherein the lifting means includes an inflatable bag.

10. Apparatus according to any one of claims 5 to 9, including control means for controlling the amount of lift produced by the lifting means.

11. Apparatus according to any one of claims 5 to 10, including locking means to lock the unitary member in the second position.

12. Apparatus according to any preceding claim, wherein the seat portion is raised above ground level when the back rest is in the second position.

13. Apparatus according to any preceding claim, wherein the side support or at least one of the side supports is removable.

14. Apparatus for moving a person including a support member shaped to support a person both in a substantially lying position and in a substantially upright position, a base member to which the support members are pivotally coupled and lifting means operable to move the support member between lying and upright positions.

15. Apparatus for raising a person lying on the ground substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

16. Apparatus for moving a person substantially as hereinbefore described with reference to and as illustrated in Figures 8 to 12 of the accompanying drawings.

The Patent Office

13

Application No: GB 9619237.2 **Examiner:** Dave McMunn
Claims searched: 1-13 **Date of search:** 1 November 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B8H (HLX)

Int Cl (Ed.6): A61G 1/00, 1/003, 1/013, 1/017, 1/04, 7/10, 7/14

Other: -

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	EP 0,296,759 A2	(DIXIE). See whole doc	1
A	US 5,375,277	(CARR & TAYLOR). Note Figs 4 & 7	1
A	US 4,760,615	(FURNISS). Note Figs 3 & 5	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.