

12 EUROPEAN PATENT APPLICATION

21 Application number: 86306567.8

51 Int. Cl.⁴: A 61 G 7/10

22 Date of filing: 26.08.86

30 Priority: 30.08.85 GB 8521674

43 Date of publication of application:
11.03.87 Bulletin 87/11

84 Designated Contracting States:
AT BE CH DE FR IT LI LU NL SE

71 Applicant: SOUTH COAST HYDRO BATHS LTD.
6 Gerald Road
Worthing West Sussex(GB)

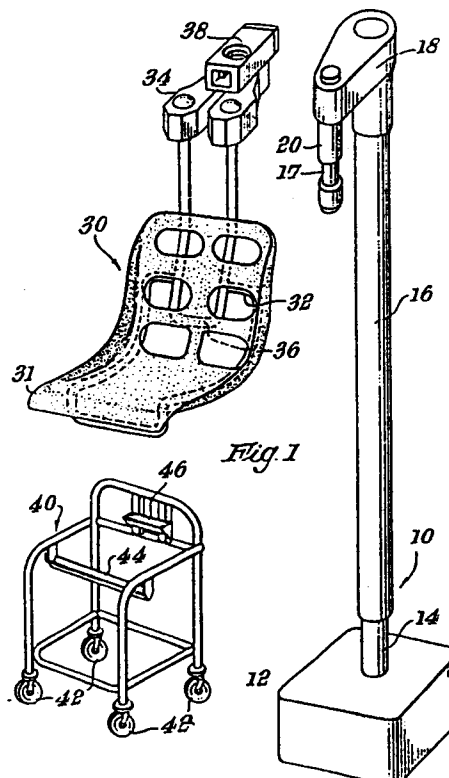
72 Inventor: Moger, Michael George
6 Gerald Road
Worthing west Sussex(GB)

72 Inventor: Neil-Smith, Clive
6 Gerald Road
Worthing West Sussex(GB)

74 Representative: Kirby, Harold Douglas Benson et al,
G.F. Redfern & Company Marlborough Lodge 14
Farncombe Road
Worthing West Sussex BN11 2BT(GB)

54 Lifting system.

57 A lifting system comprising a support for a load (30) and a lift (10), wherein the lift is attached to the support by a pin (20) extending into a vertical bore (38) of a member (34) mounted to either the support or the lift. The engagement between the pin and the member allows the support to pivot only about a vertical axis relative to the lift. A transporter (40) may be provided to engage the support, to facilitate movement of the load to and from the lift. The support is in one embodiment of a seat (31) for a person.



LIFTING SYSTEM

The present invention relates to a lifting sytem and particularly to a chair lift for use in hospitals and residential homes to lift an immobile patient into and out of a bath.

5 In such a system, it is of course important that the chair in which the patient sits is held firmly and cannot rotate about any horizontal axis so as to unbalance the patient.

 Accordingly, the invention provides a lifting system comprising a lift and support for a load, a member on one of the lift and support
10 having a vertically arranged bore to closely receive a pin of the other of the lift and support and having locking means to lock the pin in the bore.

 Preferably the support comprises a seat mounted on a rigid frame. The frame may include means for mounting the seat on a mobile
15 frame for manoeuvring the patient before and after the lifting operation.

 Preferably the member is on the support and ideally a part of the frame.

 The locking means may comprise a selectively operable element
20 horizontally slidably disposed in the member and a groove formed on the pin adapted to be engaged by said element when the pin is in the

bore. Preferably said element is C-shaped and said groove is annular, the arms of said C-shaped element being arranged to engage the groove on either side of the pin when it is positioned in the bore.

Thus in operation a patient seated on the seat carried by the mobile frame is positioned underneath the lift. The lift is lowered such that the pin engages the bore of the member and the locking means can be engaged to lock the pin in the bore.

Rotation of the member relative to a horizontal axis is prevented by the arrangement. Thus the lift can be operated and the patient will be raised on the seat without fear of being tipped out of the seat.

Where the pin is mounted on the lift it is preferably arranged rotatable about a vertical axis. Preferably the pin is mounted at the end of a horizontally arranged arm, itself rotatably mounted about a vertical axis on the lift.

Thus once the patient has been lifted by the lift, the arm can be rotated to position the patient above a bath and the pin and thus the member, frame and seat connected thereto can be rotated to position the patient squarely over the bath, whereupon the lift can be lowered to lower the patient into the bath.

The invention is further described hereinafter with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a lifting system in accordance with the invention;

Fig. 2 is a vertical section through a post and member of a lifting system according to the invention taken along the lines II- II of Fig 3; and

Fig. 3 is a section along the lines III-III in Fig. 2.

In Fig. 1 a lift 10 comprises a base 12 securely fixed to the ground. The lift 10 has a central post 14 on which is telescopically mounted a sleeve 16. The base 12 includes means to raise and lower the sleeve 16 with respect to the post 14 to effect a lifting operation. Said means is well known in the art and requires no further description here. On the top end of the sleeve 16 is rotatably mounted an arm 18 which at a radial distance from the sleeve 16 rotatably mounts a pin 20. Both the pin 20 and arm 18 are rotatable about vertical axes only.

A support 30 comprises a seat 31 mounted on a tubular frame 32 provided with a member 34 positioned above and behind the seat 31. The support 30 is a rigid arrangement.

A mobile frame 40 has wheels 42 and two angled sections 44,46 adapted to receive parts 34 and 36 of the frame 32 of the support 30.

The member 34 has a bore 38 adapted to receive the pin 20 of the lift 10. The frame 32 is so arranged that the parts 34,36 thereof seat in the angled sections 44,46 of the mobile frame 40 such that, when the frame 40 is on a horizontal floor the bore 38 is arranged with its axis vertical. Although it is not shown in the drawings, it is quite feasible that one or both of the angled sections 44,46 may be rendered adjustable such that where the floor on which the lift 10 is mounted is not horizontal, nevertheless the bore 38 can be arranged substantially vertical when the frame 40 is positioned appropriately.

With the support 30 on the mobile frame 40 the frame 40 is positioned underneath the arm 18 of the lift 10 such that the bore 38 is substantially immediately below the pin 20. The lift 10 is then lowered to engage the pin 20 into the bore 38.

Turning to Figs. 2 and 3, the pin 20 is provided with a tapered or chamfered end 22 and likewise the bore 38 in the member 34 is provided with a chamfered opening 39. Thus even if the floor should be non-horizontal or not entirely flat, the chamfers on the pin 20 and member 34 will allow the pin 20 to be channeled into the bore 38 working it into a vertical position.

In the member 34 there is mounted a C-shaped element 51 which is slidably disposed in a horizontally aligned groove 53 formed in the member 34. The groove 53 is arranged transversely of the bore 38 and the element 51 is urged by springs 55 to a position overlapping the bore 38. The springs 55 operate against an end plate 57 connected to the member 34 by, for instance, screws 59. A lever 60 is pivoted in the member 34 about a pin 62 channeled in the member 34. One end of the lever 60 is provided with a handle 64 operable by a user of the lift and the other end is provided with a pin 66 engaged in a slot 68 in the element 51.

Thus when the pin 20 is to be positioned in the bore 38, the operator first pivots the handle 64 in the direction of the arrow A in Fig. 2 to withdraw the element 51 from the region of the bore 38. The pin 20 is then lowered into the bore 38 until an annular groove 17 formed thereon aligns with the arms 54 of the element 51. The handle 64 will have previously been released once the nose of the pin 20 has been worked sufficiently far into the bore 38 to prevent the arms 54 hindering the further passage of the pin 20. Thus once the pin 20 reaches the position shown in Fig. 2 the springs 55 will shoot the element 51 into the position shown where the arms 54 lock around the groove 17. The extent of the engagement between the pin 20 and bore 38

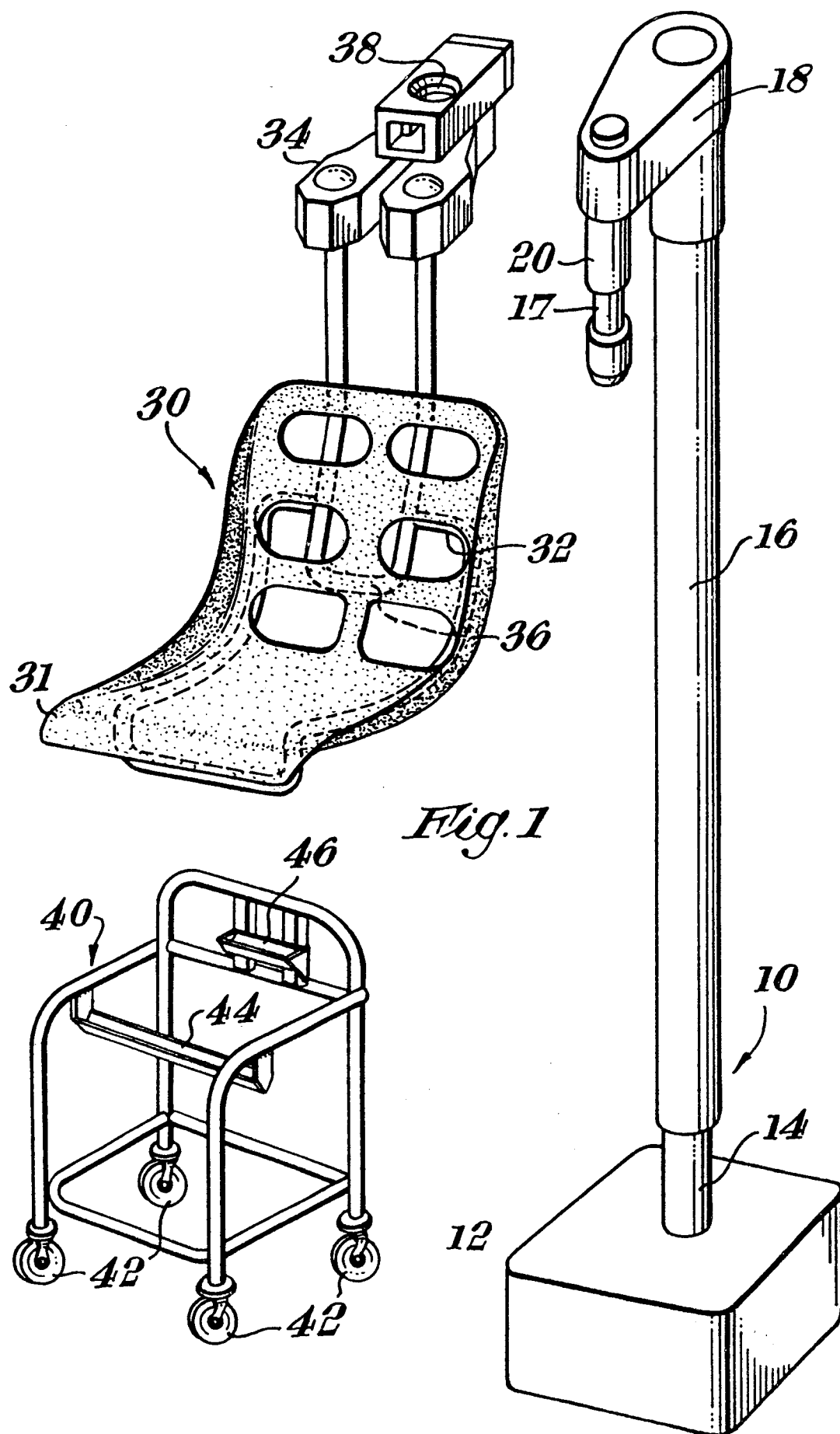
prevents anything other than very slight movement therebetween about a horizontal axis, thus when the lift 10 is operated to raise the sleeve 16 and hence the arm 18 and pin 20 there is no possibility of the seat 31 tipping forward, despite the leverage of the load tending
5 in this direction.

In this manner, a patient on the seat 31 can safely and securely be raised and lowered into a bath.

CLAIMS

1. A lifting system for a load comprising a lift and a support for a load, a member on one of the lift and the support having a vertically arranged bore to closely receive a pin of the other of the lift and the support and having locking means to lock the pin in the bore.
- 5 2. A lifting system according to Claim 1, wherein the support comprises a rigid frame having a seat mounted thereon.
3. A lifting system according to Claim 2, wherein the member is mounted on the frame.
4. A lifting system according to Claim 2 or Claim 3, wherein the frame
10 includes engagement means for attaching the frame to a transporter.
5. A lifting system according to any of the preceding Claims, wherein the locking means comprises an element mounted for horizontal sliding movement relative to the member between a first position, in which the element partially obstructs the bore, and a second position in which the
15 element is clear of the bore.
6. A lifting system according to Claim 5, wherein the pin has an annular groove, and the element is formed with two arms which engage the groove on opposite sides of the pin when the pin is in the bore and the element is in its first position.
- 20 7. A lifting system according to Claim 3, wherein the pin is mounted vertically at one end of a horizontal arm, the other end of the arm being supported for vertical movement and for pivoting about a vertical axis.
8. A lifting system according to Claim 7, wherein the horizontal arm is attached at one of its ends to a sleeve, the sleeve being mounted on a post
25 for vertical sliding motion relative thereto, means being provided to raise or lower the sleeve selectively.
9. A lifting system according to Claim 8, wherein the means to raise or lower the lift is power-operated.

1/2



2 / 2

