A device for lifting and transporting disabled persons comprising a wheeled base rack on which a first upright support column is fixed while a second support column is movable on the first column. The second column carries arm rests and a seat which is mounted pivotably and releasably.

14 Claims, 8 Drawing Figures
LIFTING AND TRANSPORTING DEVICE FOR DISABLED PERSONS

The present invention relates to devices for the indoor transportation of disabled persons and more particularly for transporting a disabled person from one seat to another.

A patient who is lying in bed and is paralyzed or who for any other reason is unable to stand on his legs may be unnecessarily forced to stay in the same place for an extended period of time, either in the case of a patient staying at a nursing institution or at home. It is relatively strenuous for a single attendant to help a patient from one seat to another. An apparently simple transfer operation, such as helping a patient who is sitting on a bed to move over to a wheelchair, is tiring for the attendant and involves phases of risk to the patient, especially if the patient lacks sufficient arm strength and coordinating ability to assist himself during the transfer.

In order to remedy these difficulties rather complicated devices, for example telpher-like lifting devices, have previously been proposed. Wheel-chairs having a particular design for this purpose have also been proposed, but such wheel-chairs have been relatively complicated and ungainly.

The invention is based upon the knowledge that the aforementioned drawbacks may be eliminated by providing a unit which may be raised and lowered on a basic rolling rack having a vertical supporting column, such unit including an elbow rest, and optionally also a foot rest, together with a supporting surface that may be pushed underneath the patient when sitting on a bed, or having an other seat in a manner slightly analogous to this application in the transportation of goods.

The invention will be more fully described hereinafter with reference to the accompanying drawings in which FIGS. 1 and 2 illustrate a first embodiment, FIGS. 3 and 4 illustrate a second embodiment, FIGS. 5 and 6 illustrate a third embodiment, and FIGS. 7 and 8 illustrate a fourth embodiment of the invention.

The first embodiment of the lifting and transporting device according to the invention is illustrated in FIG. 1 in an elevational view and the same device is shown in Figure in a plan view. FIG. 3 illustrates the second embodiment seen in an elevational view, and FIG. 4 shows the device according to FIG. 3 in a plan view. FIG. 5 shows the third embodiment in an elevational view, and FIG. 6 illustrates this embodiment in a plan view. FIG. 7 shows the fourth embodiment in an elevational view, and FIG. 8 illustrates this embodiment in a plan view.

The lifting and transporting device according to FIG. 1 comprises a relatively low basic rack 1, for example made as a framework of tubes. In the embodiment shown the basic rack 1 is substantially rectangular, open at one short side thereof and provided with wheels 2 pivotally mounted in bearings at the corners thereof. A vertical first column 3 is inserted at the opposite short side of the basic rack and a second column 4 is displacemantly mounted relative to said first column, a seating surface 5 being connected to the second column through an arm 6, which can be pivotally supported by the column 4 in a restricted manner, for example through a hinge, not shown, or through a hook means 7, whereby the seat may be folded upwardly and unhooked, respectively. The second column 4 is provided with two elbow rests 8 at the top thereof and the column may, in a manner known per se, be adjusted to the desired level of altitude by a knob 9 through a screw-nut means, not shown, provided inside the column. For rapid re-setting the knob 9 may be provided with a handle 10, that may be folded upwardly. Finally, a foot rest shaped as a sheet metal unit 11 is provided in the lower part of the basic rack 1.

When the device described above with reference to FIGS. 1 and 2 is operated to transfer a sitting, disabled patient the seat surface 5 is first adjusted to the suitable height, whereupon the surface is pushed underneath the bottom of the patient between his legs. Then the column 4 and thus the seat surface 5 may be raised by the knob 9 so that the weight of the patient is transferred to the seat surface and thus the patient may be freely moved, for example from a bed. By making the basic frame 1 very low it may even be freely pushed underneath relatively low furniture and may without obstruction be pushed for example underneath a bed. By selecting the supporting point of the column essentially in the middle of one short side of the basic frame a favorable and safe weight distribution is obtained.

A support for the back, not shown, is releasable from one or both ends of the arms and may be provided between the free ends of the arms 6, said support for example being shaped as a saddle-girth or the like. Furthermore, the lifting and transporting device according to FIGS. 1 and 2 may be provided with suitable handles, not shown, for moving the chair.

By using the device according to FIGS. 3 and 4 it is possible to drive so close to a water-closet, a bath-tub or the like, that a patient positioned on the seat of the lifting and transporting device easily may be lowered or in an other manner be transferred to the water-closet or other seating means positioned by a shower-closet, a bath-tub or the like. Furthermore, the patient may be laterally transferred to the seat and reversing may easily be accomplished by the aid of easily accessible handles.

To accomplish these objects, the lifting and transporting device according to FIGS. 3 and 4 is provided with a basic rack that can be rolled, and in contrast to the rack just described comprises a front part 12 supporting the first column 3 and two of the wheels 2. The rest of the wheels or rolls 2 are each positioned at the free end of one arm 13a, 13b, said arms being pivotally connected to the front part 12 of the basic rack through vertical pin 14. The arms 13a, 13b are normally held in the position illustrated in full lines by blocking means (not shown), the arms being parallel to each other, but by releasing the blocking means the arms may be swung outwardly for example to the position shown in dotted lines. Thereby the advantage is obtained of enabling easy manouevring of the lifting and transporting device close to a water-closet or the like, which is wider than the normal distance between the two wheel arms 36. In the illustrated embodiment the columns 3 and 4 form the piston and the cylinder, respectively, of a lifting device actuated by a pressurized medium. A pumping arm 15 is used for the displacement of the columns, said arm being conveniently accessible to the patient.

In order to facilitate the lateral alighting and entering of the patient, the elbow rests may be individually displaceable. To obtain this object two sleeves 16 are pro-
The invention is not intended to be limited to these exemplifying embodiments but may be modified in the details thereof within the scope of the invention.

What is claimed is:

1. A lifting and transporting device for disabled persons comprising:
   a. a base member,
   b. a first substantially vertical column mounted on said base member,
   c. a second column telescopically mounted relative to said first column,
   d. a seat,
   e. said second column having a first means for supporting said seat in an operative position at a substantially right angle relative to said second column and for permitting movement of said seat to an inoperative position,
   f. said seat being saddle-shaped and having a narrow part coupled to said first seat supporting means in close proximity to said second column,
   g. said second column having a second means located above said seat for supporting a pair of laterally spaced armrests in an operative position substantially parallel to each other and to a surface upon which the device rests,
   h. power means for displacing said second column relative to said first column, and
   i. means for operating said power means, said operating means being located approximately at the top of said second column for enabling a person sitting on the seat to operate the power means.

2. A device according to claim 1, wherein the means for displacing the columns is included within at least one of the columns and a knob is provided at the end of the second column, said knob being rotatably mounted around an axis substantially co-axial with the column and serving to cause the displacement of the columns at least in one displacement direction by the turning thereof.

3. A device according to claim 1, wherein the means for displacing the columns comprises a screw secured to one column, and a nut secured to the other column.

4. A device according to claim 1, wherein the columns form a cylinder and a piston in a lifting device actuated by a pressurized medium.

5. A lifting device according to claim 1, wherein the base comprises a front part having a pair of front wheels thereon and two arms pivotally mounted about substantially vertical axes on said front part, said arms carrying adjacent the free end thereof a pair of rear wheels in such a way that the distance between the rear wheels may be varied by pivoting the arms in a direction towards or away from each other.

6. A lifting device according to claim 5, wherein the arms are normally held substantially parallel to each other by a blocking means and have a distance between the rear wheels of the arms essentially corresponding to the distance between the front wheels.

7. A device according to claim 1, wherein the arm rests comprise a loop essentially having a U-shape, the body part of which is connected to the upper part of the second column and the legs of which extend backwardly relative to said columns.

8. A device according to claim 1, wherein the second column in the upper end thereof supports two essentially horizontally positioned guides for tubular shaped

The essentially new according to FIGS. 5 and 6 lies in the transverse foot rests 23 being provided at the lower end of a tube or a bar 24, said bar being telescopically displasable in the longer, vertical leg 25 of a supporting means of substantially reverse L-shape and the shorter horizontal leg 26 of which is connected to the upper end of the column 4 in a suitable manner. The lower leg 25 engages through a heel 27 at the lower end thereof an axial supporting and sliding band 28 on the outer jacket of the hydraulic cylinder 3. The fastening means 7 for the seat 5 extends radially through an extended axial slot or recess (not shown) in the side of the tube 25. The tube or the bar 24 may be locked relative to the tube 25 by a handle or a knob 29 in such a manner that the seat surface and the foot rest are adjustable together in the height direction to a suitable initial position no matter how for the piston 4 extends from the cylinder 3.

The vertical distance from the seat surface to the foot rest may be adjustable, in a manner not shown, to fit patients for example having different physical structures.

A suitable support for the back 30 being rigid or made e.g., from the saddle girth is at one or both of its ends releasably connected to the ends of the elbow rest 8 having U-shape.

The embodiment according to FIGS. 7 and 8 only differs from the one described above in that the basic frame 1 of the lifting and transporting device is provided with fixedly secured or releasably connected columns or a substantially Y-shaped column 32 to which a water-closet seat essentially having the shape of a horse shoe is connected and opened in the front thereof towards the columns 3, 4 so that the seat surface 5 with the narrower part thereof may be freely raised and lowered in relation to the water-closet seat in the manner illustrated in FIGS. 7 and 8. The bottom side of the water-closet seat and or the columns or the column 31 are designed for insertion of a conventional pelvis 33 beneath the water-closet seat.
elements having stop members shaped as handles at their ends to limit the pushing movement of each element relative to the guides, whereby the guides are positioned at such a distance from each other and form such an angle with each other that the elements serve as arm rests for the person utilizing the device.

9. A device according to claim 8 including means for bridging said tubular shaped elements, means for displaceably fastening said bridging means on said tubular shaped elements at various locations therealong whereby said bridging means supports the back and stomach of the person utilizing the device.

10. A device as defined in claim 1 wherein said arm rests are displaceable for movement to an inoperative position to facilitate the transfer of disabled persons.

11. A device according to claim 1, wherein the second column has a guide means parallel to the longitudinal direction thereof to guide a unit which is adjustable in the height direction and lockable in a desired distance between the foot rest and the seat independently of the displacement of the column, said unit in the lower part thereof comprising a rail having preferably laterally extending parts serving as a foot rest and the upper part of the unit having a mounting for the seat.

12. A device according to claim 11, wherein the distance between the foot rest and the seat is adjustable since the rail may be adjusted relative to the mounting.

13. A device according to claim 11, wherein the foot rest is telescopically supported and adjustable in the vertical direction relative to the seat.

14. A device according to claim 1, wherein the base comprises another two columns to support a water-closet seat having an open front, said water-closet seat with the main opening thereof being centered relative to the seat, said seat being of such a shape and dimension that it may be pushed down in a vertical movement through the main opening of the water-closet seat from above, whereby guides are provided in connection with said water-closet seat, columns and base for a collecting vessel that is insertable underneath the water-closet seat.