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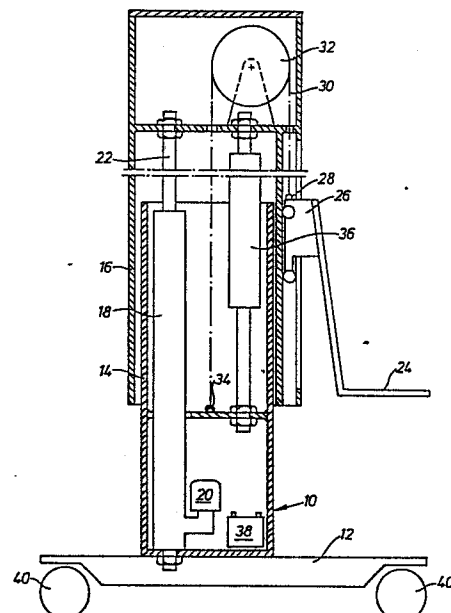
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54 Patient lifting device.

57 A patient lifting device shows an upper column part (16) which is displaceable relative to a lower column part (14) by means of a jack (18) driven from a chargeable battery (38) via an electric motor (20). A lifting platform (24) is arranged on a carriage (26) which is suspended in the one end of a chain (30) running over a wheel (32) journaled in the upper column part (16) and with its other end (34) is anchored to the lower column part (14). By this the lifting height of the platform (24) becomes twice as large as the stroke of the jack (18). A gas spring (36) is arranged in parallel with the jack (18) to unload the force which acts on the jack (18) on raising and lowering of a patient.



Description

Mobile patient lifting device

The invention relates to a mobile patient lifting device comprising a lower part, an upper part which is raiseable and lowerable relative to the lower part, a chargeable battery, a jack which is driven by electricity from the battery and arranged to raise and lower the upper part, and a lifting platform for the patient.

Such a patient lifting device is known through e.g. the European patent application publication No.198946, where the lifting platform is stationarily connected to the upper part and thus moves as much as the jack, i.e. the lifting height is equal to the stroke of the jack. When the known lifting device has been used to lift a patient from chair-height of the platform into and out of a bath tub and then shall be used to lift another patient sitting on the floor, the lifting platform must first be loosened manually from the upper part and be lowered relative to that part and then be fastened to the upper part, so that the lifting platform comes flush with the floor. Then the patient can be lifted to chair-height but not longer, since the stroke of the jack will not be sufficient. The jack is driven by electricity. In order that the patient lifting device shall be mobile, the power source of the jack is constituted by a battery arranged on the patient lifting device. The battery is suitably chargeable.

The object of the invention is to improve the known patient lifting device so that it obtains a sufficient lifting height to carry out all said lifts between different levels without the lifting platform having to be adjusted manually relative to the upper part, simultaneously as the current consumption of the jack must be kept so low that the patient lifting device can be used during a longer period before the battery must be charged again.

This object is reached by the patient lifting device according to the invention thereby that the lifting platform is arranged on a carriage means which is guided for movement in vertical direction, that the carriage means is suspended in the one end of a chain or similar hauling means, which runs over a wheel journalled in the upper part and with its other end is anchored to the lower part, and that a so-called gas spring is arranged between the lower part and the upper part to unload the force which acts on the jack on raising and lowering of a patient.

By this a changing is achieved so that the lifting height of the lifting platform becomes twice as large as the stroke of the jack, which is sufficient for the said object to be attained. The changing implies, however, that the force on the jack from the lifting platform is doubled, which brings with it that the current consumption of the electric motor driving the jack becomes so large that the electric motor in practice cannot be driven by a chargeable battery located on the patient lifting device. Therefore, the gas spring, the force of which being substantially constant during the whole stroke of the gas spring as is characteristic for gas springs, is arranged to unload the force on the jack. It has proved that the

jack can be unloaded so much by the gas spring, that the current consumption on practical use with the patient lifting device becomes so low, that the electric motor advantageously can be driven by the chargeable battery located on the patient lifting device.

An embodiment of a patient lifting device according to the invention will now be described below in connection with the accompanying drawing, the figure of which showing a longitudinal sectional view of the device.

The numeral 10 designates a lower part showing a base 12 and a lower column part 14, on which an upper column part 16 is displaceably journalled. The upper column part 16 is raiseable and lowerable by means of a jack 18, which is driveable by an electric motor 20 driving a longitudinal screw in the jack 18. The screw engages a nut fastened to a rod 22 of the jack, so that the rod 22 is displaced in its longitudinal direction, when the screw rotates.

A lifting platform 24 is fastened to a carriage 26, which is guided for movement in vertical direction in the upper column part 16. The carriage 26 is suspended in the one end 28 of a chain 30, which runs over a chain wheel 32 rotatably journalled in the upper column part 16. The other end 34 of the chain is anchored to the lower part. By this arrangement the platform 24 will obtain a lifting height twice as large as the stroke of the jack 18.

The jack 18 is unloaded by a gas spring 36 which is arranged in parallel with the jack 18 between the upper column part 16 and the lower part 10. The gas spring 36 is arranged to lift the upper column part with a force which is substantially equal to the weight of the parts of the device moving in vertical direction with the same speed as the rod 22 plus the double weight of the carriage 26 and the platform 24 plus 75 kiloponds, which is the weight of an average patient. By this the jack 18 will be loaded by an up force of substantially 75 kiloponds, when the platform 24 is unloaded and by a down force of substantially 75 kiloponds, when the platform 24 is loaded by a patient with a weight of 75 kilogrammes.

The electric motor 20 is driven by a chargeable battery 38. The base 12 is provided with wheels 40 so that the device is mobile along the floor.

Claims

1. Mobile patient lifting device comprising a lower part (10), an upper part (16) which is raiseable and lowerable relative to the lower part, a chargeable battery (38), a jack (18) which is driven by electricity from the battery and arranged to raise and lower the upper part (16), and a lifting platform (24) for the patient, **characterized** in that the lifting platform (24) is arranged on a carriage means (26) which is guided for movement in vertical direction, that

the carriage means (26) is suspended in the one end (26) of a chain (30) or similar hauling means, which runs over a wheel (32) journalled in the upper part (16) and with its other end (34) is anchored to the lower part (10), and that a so-called gas spring (36) is arranged between the lower part (10) and the upper part (16) to unload the force which acts on the jack (18) on raising and lowering of a patient.

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2. Patient lifting device according to claim 1, **characterized** in that the lower part (10) shows a lower column part (14) and that the upper part is constituted by an upper column part (16), which is displaceably journalled on the lower column part (14), the carriage means (26) being guided in the upper column part (16) for its movement in vertical direction.

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