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(54) A bed, in particular nursing bed

(57) The invention relates to a bed, in particular nursing bed, provided with a bed frame (1), that is supported, in a cantilever fashion, by a supporting and guiding device (6) positioned on one side of said frame (1), wherein said frame is vertically adjustable by means of a drive means (13,13A). According to the invention said frame (1) has, at its supported side (1A), a supporting lever (2) extending from the plane of the said frame (1), said lever (2) being, adjacent its upper end (3), pivotally attached to a bracket (4A) that is mounted for up and down movements along said supporting and guiding device (6), while bearing adjacent its lower end (14) onto a guiding surface (15A) that changes, at a location where a downward bed frame movement passes beyond a (lower) operative horizontal position, from a vertical plane into a plane that slopes towards the non supported side of said frame.

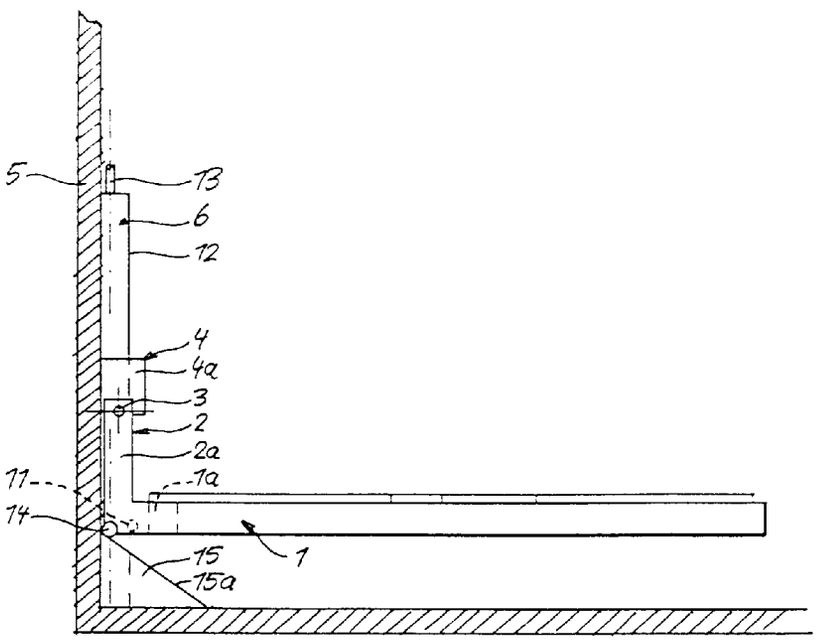

FIG 1

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Description

The invention relates to a bed, in particular nursing bed, provided with a bed frame, that is supported, in a cantilever fashion, by a supporting and guiding device positioned on one side of said frame, wherein said frame is vertically adjustable by means of a drive means.

Such a bed is known from EP-A-0 418 415. With this well-known bed, the bed frame is guided with two adjacent strengthened corners directly along the supporting and guiding device upwardly and downwardly. In the non use situation the bed is lifted, while in the horizontal position, onto the ceiling of the concerning room, for which purpose the supporting and guiding device extends through the entire height of said room.

The present invention aims at improving this bed in such a manner that the bed frame may in the non use situation, by making use of the drive means for the height adjustment, be tilted upwardly into a standing position along the supporting and guiding device.

According to the invention this aim is achieved in that said frame has, at its supported side, a supporting lever extending from the plane of the said frame, said lever being, adjacent its upper end, pivotally attached to a bracket that is mounted for up and down movements along said supporting and guiding device, while bearing adjacent its lower end onto a guiding surface that changes, at a location where a downward bed frame movement passes beyond a (lower) operative horizontal position, from a vertical plate into a plane that slopes towards the non supported side of said frame.

With a bed so designed the bed frame may, in a situation where it takes or reaches its lower operative horizontal position, be folded away by simply having the drive means continue rotating in the direction corresponding to the descending adjustment movement. At the location where the descending bed frame passes its lower operative position, the supporting point at the lower end of the arm moves from the vertically extending part of the guiding surface to the sloping part of the same, as a result of which the lever and the frame are caused to make an upward swinging movement around the vertically downwardly moving upper end of the arm.

The bed according to the invention is particular suitable for use in nursing homes and may, in a state of non use, be hidden from view within a wall unit, such as is known per se with a conventional foldaway bed.

In a practical embodiment the bracket is formed by a substantially U-shaped carriage, that engages a supporting and guiding column which is attached to the supporting wall in a mid position relative to the supported bed frame side, the supporting lever comprising two parallel arms the upper ends of which are pivotally attached, on opposite sides, to the outer sides of the opposite flanges of the U-shaped carriage.

In a preferred embodiment supporting rollers are provided within the space between the two arms of the supporting lever, in a position adjacent the lower end of said lever, said rollers bearing on the front wall of the supporting and guiding column that is functioning as a vertical guiding surface.

Further advantages and features will be hereinafter further explained by way of example with reference to the accompanying drawings, in which:

fig. 1 shows a side view of the bed according to the invention in a lower horizontal or use position;
fig. 2 shows a side view of the bed according to the invention in an upper horizontal position;
fig. 3 shows a side view as shown in fig. 1 and 2, but now with the bed in the vertical folded away position;
fig. 4 is a cross-sectional view through the supporting and guiding column and the bracket engaging the same;
fig. 5 is a cross-sectional view along the line V-V of fig. 4 and
fig. 6 shows a perspective view of the bed frame with the supporting lever provided thereon.

The bed shown in the drawing has a frame 1 that is provided, in the centre of one (short) side 1a, with a double armed supporting lever 2 extending perpendicularly from the plane of the frame.

The two arms 2a of the double armed supporting lever 2 have their upper ends pivotally connected - about pivot pins 3 - to the outer sides of the opposite flanges 4a of a bracket of a carriage 4 that has a substantially U-shaped cross section, the web of which is indicated at 4b.

The U-shaped bracket engages a supporting and guiding column 6 that is fixedly attached to a supporting wall 5.

On either side of the supporting and guiding column 6 (see fig. 4) there is attached, e.g. by welding, a guiding rod 7 that is provided, on its side turned away from the supporting wall 5, with teeth 7a, while the opposite side is smooth. On the inner side of each of the two opposite flanges 4a of the bracket there are mounted two vertically spaced pairs of rollers 8, 8a and 9, 9a respectively, of which the rollers 8a and 9a, that are furthermost spaced from the supporting wall, are provided with teeth that mesh with those (7a) of the respective guiding rods 7. The lower guiding rollers 9 are rotatably mounted on the inwardly projecting ends of the pivot pins 3, by means of which the arms 2a are pivotally connected to the flanges 4a.

The guiding roller assembly 8, 9, 8a, 9a described hereinabove allows the bracket 4 and the bed frame carried by it to be vertically moved, under low resistance, along the supporting and guiding column 6. A support roller assembly 11 is provided adjacent the lower end of the supporting lever 2, between the two arms 2a of the latter, said roller assembly bearing, throughout the adjustment trajectory between an upper horizontal operative position (fig. 2) and a lower horizontal operative po-

sition (fig. 1), onto the front wall 12 of the supporting and guiding column 6 acting as a vertical guiding surface.

At least the guiding rollers of one roller pair of the upper and lower pairs of toothed rollers 8a, 8a and 9a, 9a respectively (i.e. the rollers 9a of the lower roller pair 9a, 9a in the example shown in the drawings) are coupled by a torsion tube 10, due to which also an excentrically loaded bed frame will remain horizontal and be movable smoothly along the supporting and guiding column 6 without jamming of the bracket 4.

The drive means for adjusting the bracket 4 along the supporting and guiding column 6 consists, in a well-known manner (see the above mentioned European patent specification), of an electromotor (not shown) driven vertical screw spindle 13 and a running nut 13a cooperating therewith, the latter being fixedly mounted within the vertical space between the column 6 and a flange 4a of the bracket.

The screw spindle 13 extends, like the column 6, downwardly up to near floor level, so that the bracket 4 may move further downwardly along the column 6 beyond its position corresponding with the lower operative position of the bed frame. This continued downward movement causes two auxiliary guiding rollers 14 provided on the outer side of the lower ends of the arms 2a to abut against the upper, downwards sloping guiding surfaces 15a of two auxiliary supports 15 that are provided in the dihedral angle between the supporting wall 15 and the floor.

A movement of the auxiliary guiding rollers 14 (which are in a free position when in the adjustment trajectory between the upper and lower operative positions of the frame 1) along the downwards sloping guiding surfaces 15a causes the supporting arm 2 to carry out a anti-clockwise (as seen in fig. 3) swinging movement about the pivot point 3 that is simultaneously moving vertically downwardly, whereby the roller assembly 11 is lifted out of engagement from the vertical guiding surface 12 and the bed frame will be ultimately tilted into a vertical position (fig. 3).

It should be noted that alternative drive means may be used instead of the shown drive means with (electric) drive motor, screw spindle and running nut.

Claims

1. A bed, in particular nursing bed, provided with a bed frame, that is supported, in a cantilever fashion, by a supporting and guiding device positioned on one side of said frame, wherein said frame is vertically adjustable by means of a drive means, characterized in that said frame has, at its supported side, a supporting lever extending from the plane of the said frame, said lever being, adjacent its upper end, pivotally attached to a bracket that is mounted for up and down movements along said supporting and guiding device, while bearing adjacent its lower end onto a guiding surface that changes, at a location where a downward bed frame movement passes beyond a (lower) operative horizontal position, from a vertical plate into a plane that slopes towards the non supported side of said frame.

2. A bed according to claim 1, characterized in that said bracket is formed by a substantially U-shaped carriage, that engages a supporting and guiding column which is attached to the supporting wall in a mid position relative to the supported bed frame side, the supporting lever comprising two parallel arms the upper ends of which are pivotally attached, on opposite sides, to the outer sides of the opposite flanges of the U-shaped carriage.

3. A bed according to claim 2, characterized in that supporting rollers are provided within the space between the two arms of the supporting lever, in a position adjacent the lower end of said lever, said rollers bearing on the front wall of the supporting and guiding column that is functioning as a vertical guiding surface.

4. A bed according to claims 2-3, characterized in that (auxiliary) guiding rollers are provided at the free ends of the two arms of the supporting lever, said rollers being adapted to cooperate, in the area below the height adjustment trajectory, with downwardly sloping guiding surfaces provided on either side of the supporting and guiding column and the two arms.

5. A bed according to claims 1-4, characterized in that a guiding rod is provided on either side of the supporting and guiding column, said guiding rods extending each between the rollers of two vertically spaced pairs of guiding rollers, that are mounted on the inner side of the adjacent U-flange of said bracket.

6. A bed according to claim 5, characterized in that said guiding rods have teeth on one side and that the guiding rollers on that side are provided with corresponding teeth.

7. A bed according to claim 6, characterized in that the teeth are provided on the bed frame facing side of the guiding rods.

8. A bed according to claim 7, characterized in that at least two side by side positioned guiding rollers with teeth are coupled with one another by a torsion tube.

9. A bed according to claims 1-8, in which a fixed-motor driven screw spindle is used for the adjustment movement, which spindle is cooperating with a run-

ning nut attached to the bed, characterized in that the running nut is provided within the clearance space between the fixed supporting and guiding column and the bracket, and attached to the bracket.

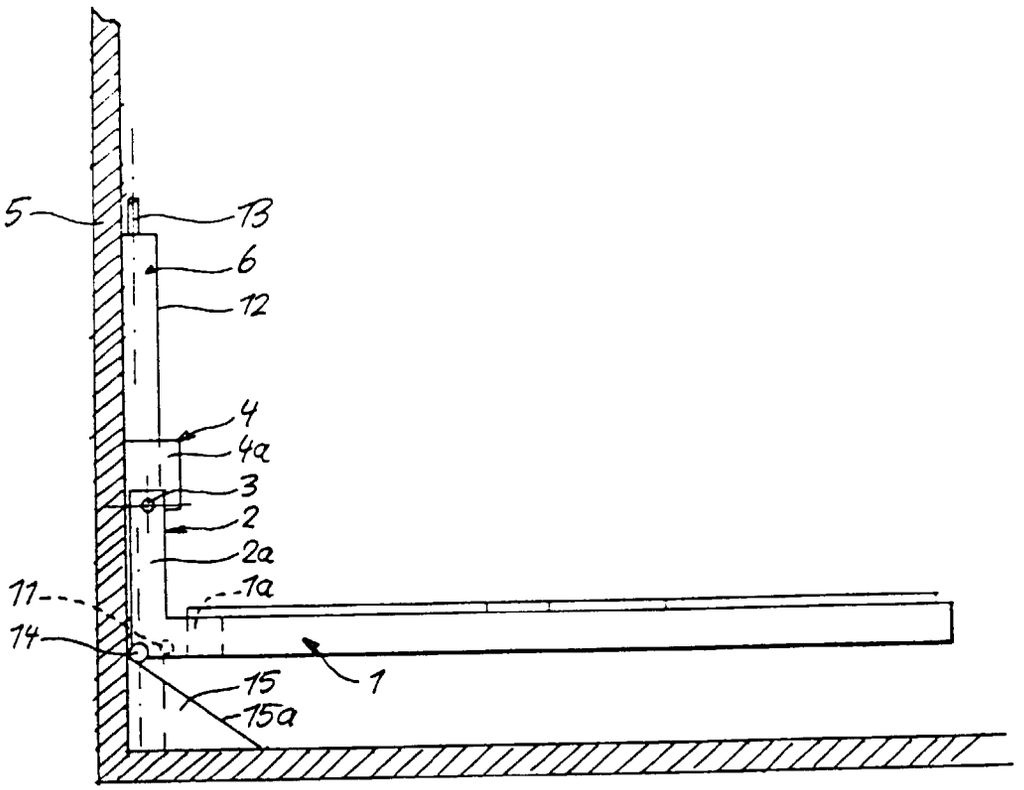

FIG 1

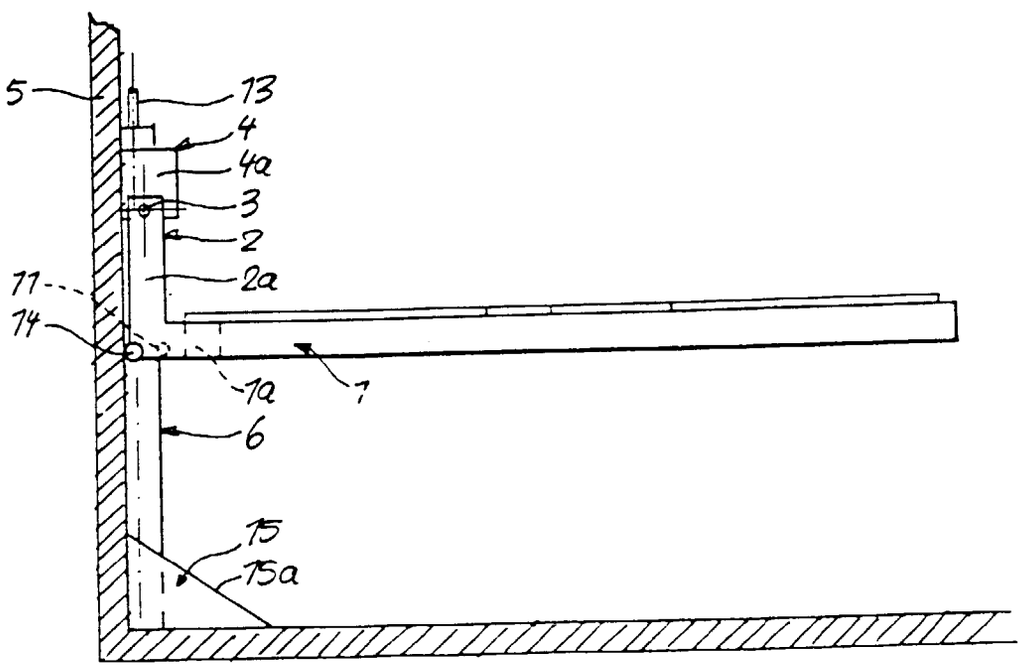

FIG 2

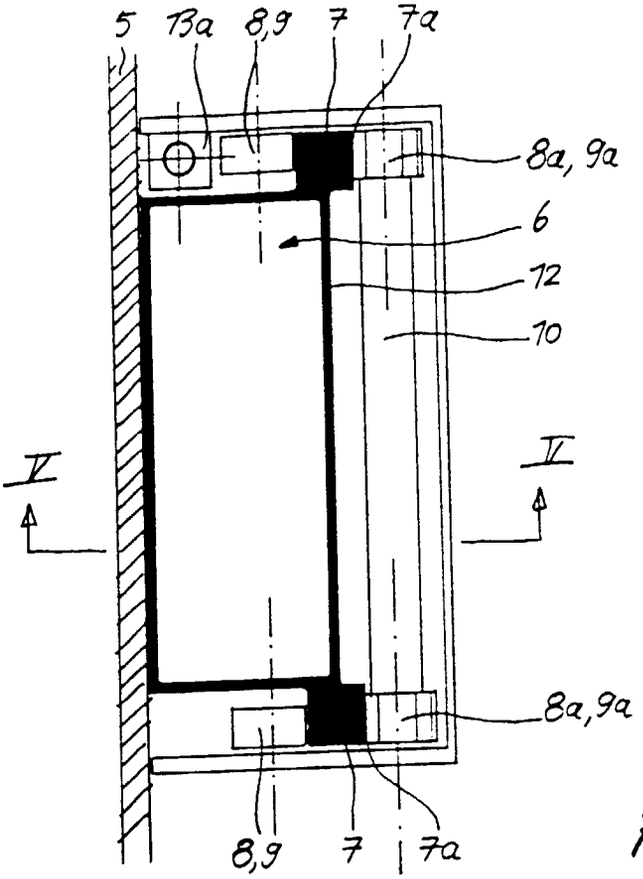

FIG 4

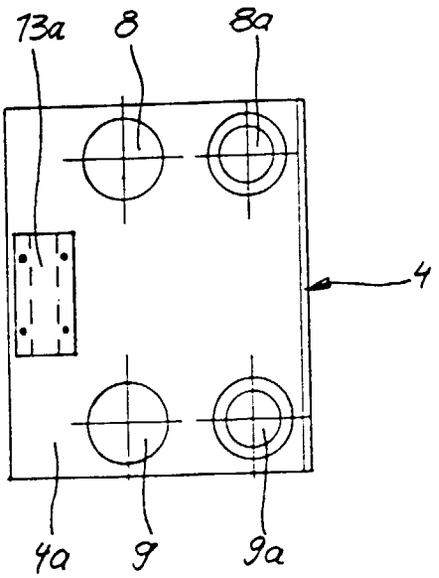

FIG 5

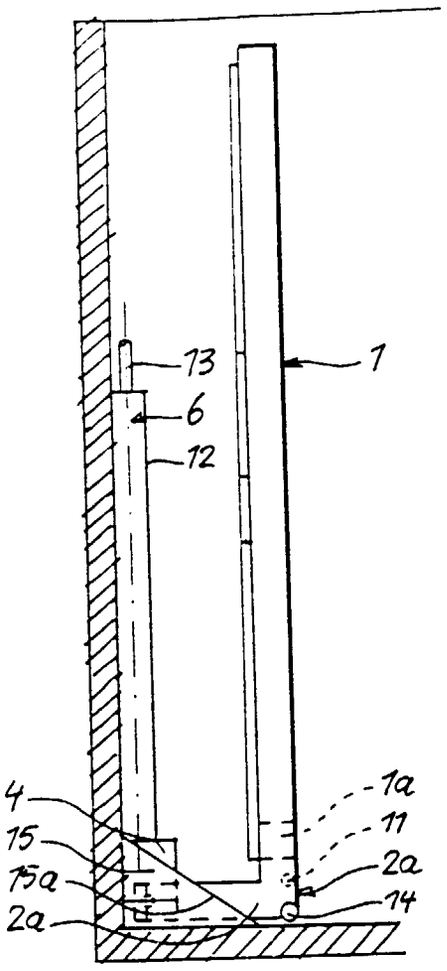

FIG 3

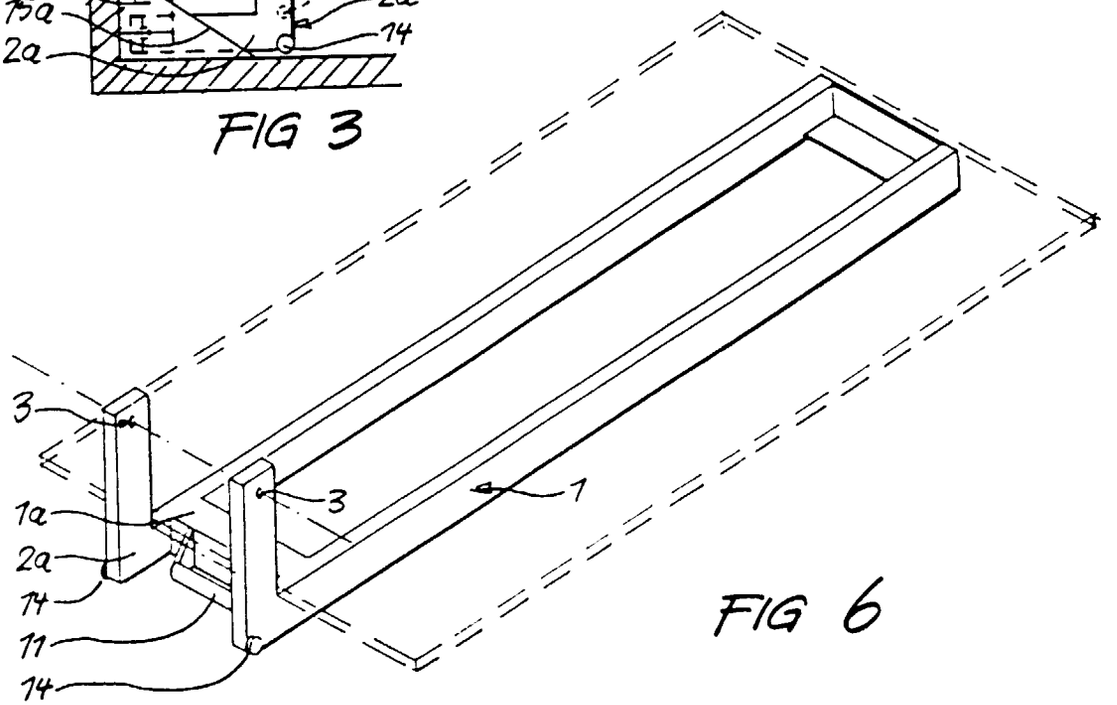

FIG 6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 0528

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,A	EP-A-0 418 415 (VILSMEIER) 27 March 1991 * column 2, line 26 - column 6, line 41; figures 1,6 *	1,3,5,9	A47C17/38 A47C17/84
A	EP-A-0 011 531 (LECART) 28 May 1980 * the whole document *	1,4	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 June 1996	VandeVondele, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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