(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 900 351 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
23.04.2014 Bulletin 2014/17

(21) Application number: **06743454.8**

(22) Date of filing: **21.04.2006**

(51) Int Cl.:
A61G 7/02 *(2006.01)* ***A61G 7/00*** *(2006.01)*

(86) International application number:
PCT/ES2006/000197

(87) International publication number:
WO 2006/134183 (21.12.2006 Gazette 2006/51)

(54) **BED FOR SICK AND DISABLED PERSONS**

BETT FÜR KRANKE UND KÖRPERBEHINDERTE PERSONEN

EQUIPEMENT DE LIT POUR MALADES ET HANDICAPES

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

(30) Priority: **16.06.2005 ES 200501455**

(43) Date of publication of application:
19.03.2008 Bulletin 2008/12

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Description

OBJECT OF THE INVENTION

[0001] The present invention, according to the title of this descriptive report, refers to a bed assembly for sick and disabled persons that has been designed to improve the hygiene and the cleaning process of any person that cannot take care of his/herself without said person having to be moved as it is the standard practice, that is, the person in question can remain in the bed that is the object of the present invention.

[0002] The present invention contributes the means and functionality necessary to facilitate the tasks and of the care takers that clean and maintain said disabled persons in a state of hygiene, in a manner that minimizes the inconveniences caused by this care, since all the tasks necessary to accomplish this function can be done without having to move the disabled person from the bed.

BACKGROUND OF THE INVENTION

[0003] Currently, there are several procedures in use to carry out these clearing tasks on disabled and sick persons, unable to move, that entail transporting the disabled person from the bed where he or she habitually lies to the place where his or her personal cleaning and hygienic routines are carried out, procedures that are accompanied by known discomfort and upheaval for the person receiving the care.

[0004] However, due to the weight of the person receiving care and for safety, in most cases this moving is done by means of special cranes, that due to their high cost can only be afforded by large clinics and hospitals, and causing obvious inconveniences and disturbances to the patient, as mentioned before.

[0005] Another problem that arises from providing this type of care, is that in most cases, the care takers of this disabled persons have just enough strength to carry out the hygienic and cleaning tasks, that cause them considerable fatigue and difficulty, and therefore pain and suffering for the disabled person while trying to cater to their needs.

[0006] >

[0007] Document US 1874826 discloses a hospital bed eqquiped with a mechanism for easily and conveniently handling a patient in lying position.

DESCRIPTION OF THE INVENTION

[0008] In order to achieve the objectives and avoid the inconveniences as mentioned above, the present invention proposes a bed assembly for disabled persons characterized in that it comprises a base structure which supports a first bed assembly which incorporates a lower bed assembly that can be pulled out to move in a horizontal plane to extract it together with its bed frame outside of the base structure, while remaining associated to it, and a second upper bed assembly that also incorporates another assembly with its corresponding bed frame and, initially, without a mattress, that sits above the first bed assembly.

[0009] This second upper bed assembly is characterized in that it includes vertical guide means so the upper bed assembly can be placed, in a stable manner, in a horizontal plane at the desired height to be able to clean the patient and/or disabled person and maintain him or her in a hygienic state.

[0010] In this manner, while the disabled person is laying on the mattress of the lower bed on which there are some transversal wide and resistant straps, and said lower bed being inside the base structure, the upper bed assembly will be placed in a low position (if it is not already) until it comes into contact with the lower bed assembly, and while it is in this position, the transversal straps will be hooked by their ends to the bed frame of the upper bed assembly, and with this maneuver the disabled person becomes associated and bound to said upper bed, after which maneuver the bed is elevated until the desired height is reached and the tasks involving washing and cleaning the disabled person, that has obviously been raised together with the upper bed, and is now resting on the transversal straps.

[0011] Another characteristic of the present invention is that it incorporates a bath assembly having a third assembly that moves vertically to collect waste water and excrement produced while washing and cleaning the disabled person. To this effect, this bath assembly will be placed below the upper bed assembly close to it, after having previously pulled the lower bed assembly out from the base structure.

[0012] The assembly object of the present invention is further complemented by an additional independent cart that will be placed underneath the bath assembly to collect waste water and excrement. To this effect said bath assembly is provided with a sloping bottom that empties through its outlet which opens in turns on to the recipient part of said additional cart.

[0013] Once the disabled person has been washed and cleaned, the independent cart is extracted and the bath assembly is placed in plane below that occupied by the lower bed assembly. This operation is followed by placing the upper bed in a lower position until it encounters and contacts the lower bed assembly that is inside the base structure. At this point in the process, the disabled person is again supported by the mattress of the lower bed assembly on which the transversal belts or straps are interposed, that can now be unhooked from the bed frame of the upper bed assembly, that can at this point be made to acquire a lifted position, but without the disabled person that is now laying again on the lower bed assembly.

[0014] We see then, that the caretaker washing and tiding up the disabled person did not have to move the patient directly, that is, the caretaker did not need to exert him or herself physically.

[0015] The base structure is characterized in that it comprises two longitudinal beams that correspond to the sides of the bed assembly object of the invention, a head part and a foot part, each having their respective tubular transversal beams, from each of which two pairs of tubes project vertically, the outer tubes being higher that the inner tubes.

[0016] The outer tubes projecting from the head part of the base structure are associated by means of a low bridge, while the inner columns projecting from the foot part are linked by another low bridge.

[0017] Another characteristic of the present invention is that the means used to raise and lower the upper bed consist in each of the tubes of the head part and the foot part contain inside them a device or mechanism whose function is to raise or lower said upper bed, so that the bed assembly includes an extension portions at its corners that connect to their respective tubes inside pieces that are guided inside the so-called guide tubes, and to this effect the tubes are fitted with vertical grooves that communicate the inside of said columns with the outside.

[0018] Inside each pair of the outer guide tubes associated to the foot part or the head part of the bed assembly, there is an axle spindle to which one of the guide tube inside pieces is threaded, also connected to this inside piece is the end of a chain that is also coupled to the lower sprockets located in the lower part of the guide tubes, and that correspond to the inside of the transversal beams, while the opposite end of said chain is connected to the inside piece of the other guide tube of the same pair, that is also fitted with an upper sprocket in its upper part to which the aforementioned chain is also connected and naturally also goes through the inside of the transversal beams belonging to the head part and the foot part.

[0019] Being the axle spindles rotating, the guide tube inside pieces that are threaded to them will simultaneously drag with them the paired support pieces by means of the chains, raising or lowering the upper bed according to the direction in which said axle spindles are being turned.

[0020] The inner guide tubes also incorporate another mechanism similar to the one described, and which function is to raise and lower the bath assembly through its supporting frame.

[0021] All the axle spindles rotate by means of small motors that transmit their movement by means of pulleys and belts, while being attached to a small arms integral with to the respective upper portions of the respective vertical guide tubes.

[0022] This not withstanding, the motor element could be any such element, for instance a pneumatic or hydraulic cylinder. In that case the axle spindle and motor would be substituted by a cylinder that would be located inside the tubes instead of the axle spindles. In this case, even chains and sprockets could be omitted, in which case cylinders would be incorporated to all the vertical guide tubes and their movements would be synchronized.

[0023] Other characteristics of the present invention refer to the structure formed by the two bed frames and their means to be assembled.

[0024] Each of said bed frames comprises two lateral support pieces centered and integral with the longitudinal beams and two end collapsible frames connected to said centered arms in an articulated manner, said frames corresponding to the body and lower limbs of the disabled or sick user.

[0025] The frame of the lower bed assembly incorporates, at least, one mechanism actuated by a motor which function is to fold and unfold the collapsible frames at different tilt angles according to need, in such a manner that when the bed is inside the base structure below the upper bed, the collapsible action of said frames will be transmitted to the collapsible frames of the upper bed, and in this case, said frames can be connected by means of small plates fitted with articulated means at their ends.

[0026] The bed frame of the upper bed assembly, which is not equipped with a mattress, includes, at the least a central transversal strap secured to both lateral support pieces and, at least, two other transversal straps secured to the lateral sections of the end frames, in such a manner that the straps can be attached or detached at will.

[0027] Another characteristic of the present invention is that the lower bed assembly is associated to the base structure by means of its frame.

[0028] To this effect, the frame incorporates two parallel beams that fit inside corresponding guide tubes integral with the base structure, and offering the possibility of incorporating also lineal ball bearings to achieve a smoother guiding motion. Said guide tubes are naturally located on the side from which the lower bed assembly is pulled out from the main assembly.

[0029] The base structure also includes two wheels coupled to the fixed support pieces and two wheels coupled to the rotating support pieces that are equipped with a break and thus make handling the bed assembly object of the invention an easy task.

[0030] The independent trolley is characterized in that it is determined from a base platform provided with wheels, above which there is a lidded container which function is to collect waste water and excrement, said container is located between the two bridges that arise from the base structure. A handle intended to handle the assembly arises from one of said bridges.

[0031] The container can be raised or lowered to adjust it to the desired height by means of two vertical spindles that rotate through a motor element affixed to one of the two bridges integral with the platform. The container has a tap to empty it of its contents.

[0032] To facilitate the application and use of the trolley, the longitudinal beam of the base structure located on the opposite side of that from which the lower bed assembly is extracted, is susceptible to incorporate a centered bridge, through which the trolley will be inserted without having to raise it from the floor.

[0033] Other characteristic of the present invention is that the different elements of the assembly are assembled in a manner that makes them easily disassembled, this is particularly true of the base structure, in which the manner in which the vertical columns, crosspieces and longitudinal beams are achieved by the characteristic affixing support elements.

[0034] The sick or disabled person is always on the lower bed frame on which the transversal straps are always across, the bath assembly below said bed frame and the upper bed frame placed in the at rest position, which is always in the lower position with the straps unhooked from the corresponding sides, which permits that the articulated lower bed frame and its mattress - patient included- the articulations of the lower bed frame can be actuated without the upper bed frame being inconvenienced in any way, since the upper frame, having the transversal straps loosened on its sides, leave the surface free and empty and the sides of said structure always at a lower plane than that where the patient is resting

[0035] Therefore, when the caretaker needs to raise the occupant the only action required is to hook the loose straps to the sides of the upper bed frame and raise the patient to the desired position. The next step is to move the lower assembly with its bed frame and mattress included laterally to leave the central space of the bed structure free and thus be able to raise the bath assembly to the desired height.

[0036] The transversal straps with the patient in an elevated position can be exchanged without inconveniencing the patient and be able to wash the body parts resting on the initially elevated straps, and once this operation has been concluded other dry straps are set in place of the wet ones in the initial position.

[0037] The next action is to lower the bath assembly to its low position, move the lower rack containing its bed frame, mattress included inside the base structure and immediately after lower the upper bed frame until he patient comes into contact with the mattress surface and the sides are lower than the mattress surface. The straps are unhooked once this position has been reached, but there is no longer need to move the block of the upper bed because it will no longer be an obstacle to any articulation action of the lower bed frame in such a manner that the upper bed frame and is rack will be arranged around the lower bed frame.

[0038] The next section contains a description of the figures intended to facilitate the understanding of the contents of this descriptive report and is an integral part of it. Said description and figures are included for illustrative and not limiting purposes.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039]

Figure 1.- Shows a perspective view of the bed assembly for sick and disabled persons object of the invention. It basically comprises a base structure, an extractable lower bed assembly, an upper bed which height is adjustable and a mattress where the disabled person is washed and cleaned, a bath assembly where waste water and excrement are collected during the cleaning operations and independent trolley that is the final recipient of said waste water and excrement.

Figure 2.- Shows a perspective view of the base structure.

Figure 3.- Represents another view of the bed assembly object of the invention showing, essentially, a regulating device that actuates on the collapsible frames of a bed rack that is part of the lower bed assembly.

Figure 4.- Shows another perspective view of the bed assembly object of the invention in which the upper bed is set to a raised position and the bath assembly.

Figure 5.- Represents a view of the base structure showing essentially the mechanisms that enables the vertical movement of the bath assembly so it can be set at the desired height.

Figure 6.- Shows a view similar to the previous one showing the mechanism that raises and lowers the upper bed.

Figure 7.- Shows a view of the bed assembly in which the lower bed assembly is in the pulled out position.

Figure 8.- Shows a perspective view the independent trolley which function is to collect the waste water and excrement.

DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTIONÓN

[0040] Considering the numbering system adopted in the figures, the bed assembly for sick and disabled persons is determined by a base structure 1 which supports un upper bed assembly 2 without a mattress, which height can be adjusted, a lower bed assembly 3 that can be pulled out towards one of the sides, a bath assembly 4 which height is also adjustable and that is always set below the upper bed assembly 2, a bath assembly intended to collect waste water and excrement once the sick or disabled person has been washed and cleaned while lying on the bed frame 5 of the upper bed assembly 2 and an independent trolley 6 that will be the final recipient of said waste water and excrement.

[0041] The upper bed assembly comprises, to begin with, a rack 7 and the aforementioned bed frame 5, while the lower bed assembly 3, comprises, in addition to rack 8 and bed frame 9, a mattress 10.

[0042] The base structure 1 comprises, to begin with, two tubular longitudinal beams 11 that correspond to the two sides of the bed assembly object of the invention, a head part and a foot part, each with their respective tubular transversal beams 12, from each of which arise two

pairs of vertical guide tubes, one pair consisting on outer vertical tubes 13 of greater height that arise from the vicinity of the ends of the transversal beams 12 and the other pair consisting of inner vertical tubes 14 shorter and arising from points that are further from the end of said transversal tubes 12.

[0043] The two outer vertical tubes 13 of the head part are linked by means of a short bridge 15, while the inner vertical tubes 14 of the foot part are linked by means of another shorter bridge 16 similar to the previous bridge.

[0044] The free ends of the other vertical tubes are covered with domed lids 17.

[0045] Joined to the transversal beam 12 of the base structure head part there are two rotating support pieces 18 with wheels 19 that also include a break 20, while joined to the transversal beam 12 belonging to the foot part there are two other fixed support pieces 21 with other wheels 19.

[0046] The transversal beams 12, longitudinal beams 11 and the outer gruide tubes 13 are joined together in a manner that allows them to be disassembled by the characteristic affixing support pieces 22 and screws.

[0047] The inner guide tubes 14 are also joined to the transversal beams 12, in a fashion that allows for disassembly, by other affixing support pieces 23 and other screws.

[0048] Raising and lowering the upper bed assembly 2 to place it in the desired stable horizontal position is achieved by means of a mechanism determined from guiding elements 24 and 25 that are located inside external columns 13, said guiding elements 24 having projecting portions 26 that fit in the corresponding longitudinal grooves 28 of vertical tubes 13, in such a manner that when said projections are coupled by means of pins to other terminal elements 27 integral with the corners of rack 7 of said upper bed assembly 2.

[0049] Raising and lowering the upper bed assembly 2 is then achieved when guiding elements 24 and 25 travel simultaneously. To make this possible, there are coaxial axle spindles 29 inside the two outer guide tubes 13 that are placed opposite to each other in a diagonal arrangement and to which two of the aforementioned support pieces 24 are coupled, each of them connected to the end of chain 30 that runs along the internal part of the transversal beams 12 coupled to two lower sprockets 31 located in said transversal beams 12 aligned to the inside of vertical tubes 13, a third upper sprocket 32 being located in the uppermost part of outer tubes 13 which have no spindles, and said third sprocket that has no the spindles, this third sprocket 32 also coupled to the respective chain 30, which free end finally connects to the respective guiding body 25 found in columns 13 that do not incorporate said axle spindles 29. Said third sprocket 32 is coupled into a piece shaped as an inverted cup 33 crossed by a short axis.

[0050] The coaxial spindles 29 rotate by means of small motors 34 that transmit their movement by means of pulleys 35 and belts 36, while affixed to elongated support pieces 37 perpendicularly integral with the upper portions of the respective vertical vertical tubes 13 to which said spindles 29 are incorporated.

[0051] Therefore when the coaxial spindles 29 are made to rotate, the guiding elements 24 that are threaded to them drag the other two matching 25 through the chains 30, raising or lowering the upper bed assembly 2 depending on which direction they are rotated.

[0052] The inner vertical guide tubes 14 incorporate another mechanism similar to the one described to raise and lower the bath assembly 4 through its supporting rack 38, the reference points of said mechanisms coinciding.

[0053] Bed frames 5 and 9 of the upper bed assembly 2 and lower bed assembly 3 comprise two lateral centered and support pieces 39 and 40 that re joined by means of screws to the longitudinal beams of the respective racks 7 and 8 and two collapsible end frames shaped in a general "U" shape 42 and 43 that are connected in an articulated manner by their free ends to the centered support pieces 39 and 40.

[0054] The bed frame of the lower bed assembly 3 incorporates conventional mechanisms 44 which function is to be able to position, in an independent manner the collapsible frames 43 at various tilt angles according to what is needed at the time and to suit the bed occupant. When this lower bed assembly 3 is below the upper bed assembly 2 and in contact with each other, the movement provided by said mechanism or mechanisms 44 will also be transmitted to the collapsible frames 42 of the upper bed assembly 2. In this case both bed frames 5 and 9 can be associated by means of lateral plates 45 fitted with articulated means at their ends.

[0055] Each of said mechanisms 44 comprises, basically, a fixed transversal body 46 to which a motor 47 is connected, and which shaft is connected to a longitudinal spindle 48 by means of two different threaded sections (one on the left and one o the right) to which the corresponding nut elements 49 and 50 are coupled, and where pairs of parallel plates 51 and 52 are in turn articulated that converge towards a shared transversal shaft 53 where the arms of the respective frames 43 rest in order to collapse upwards or downwards when spindle 48 is made to turn in one way or the other.

[0056] The bed frame 5 of the upper bed assembly 2 includes a wide transversal strap 54 fixed to the two fixed side support pieces 39 and two additional straps 54 fixed to the arms of the two end frames 42. This affixing arrangement can be disassembled and is achieved by screws 55 that fit tightly the end orifices of said transversal straps 54.

[0057] On the other hand, the bed frame of the lower bed assembly 3 includes a set of transversal slats 56 fixed to the lateral support pieces 40 and the frames arms 43.

[0058] The independent trolley 6 comprises a base platform 57 equipped with wheels 58, platform 57 from which two vertical bridges 59 arise and between said

bridges there is a container 60 with a removable lid 61 and also having projections 62 at its base that are threaded to a pair of vertical spindles 63 coupled at their ends to parts that are integral with the platform 57 and to the upper part of the bridges 59.

[0059] A motor 64 is affixed to one of the bridges and transmits its rotating motion to one of the spindles 63 to cause the assembly to raise and lower the recipient 60. Both spindles 63 are linked together by means of a shared belt 65 and two end pulleys 66 placed at the lower ends of spindles 63 below platform 57.

[0060] The container 60 incorporates a tap 67 that serves to empty said container after having washed and clean the disabled person.

[0061] Finally, the trolley 6 incorporates a handle 68 to push it and handle it that arises from one of the vertical bridges 59 integral with the base platform 57.

[0062] One of the longitudinal beams of the base structure 1 incorporates a centered bridge 69 through which the trolley 6 can be inserted inside the base structure 1 to place it below the bath assembly 4 to be able to comfortably collect the waste water and excrement while washing and cleaning the disabled person.

[0063] To this effect the bath assembly 4 has a sloping bottom that discharges it contents through discharged outlet 70 which faces the mouth or inlet of the container 60, raising it to the required height until is near discharge 70.

[0064] The lid 61 is a flat piece with a handle that complements frontal groove 72 of the container 60 and a small internal perimetral flange 73 near its mouth to facilitate its movement.

[0065] The lower bed assembly 3 at the base structure 1 comprises a pair of parallel transversal bars 71 integral with its rack 8, bars 71 that adjust to the support pieces guide 41 integral with the base structure 1 in correspondence to the side through which the lower bed assembly 3 is pulled out.

[0066] The arrangement as described, and with the disabled person laying on the mattress 10 of the lower bed assembly 3, on which the wide and resistant transversal straps 54 are, and with said lower bed assembly 3 inside the base structure 1, the upper bed assembly 2 will be placed (provided it has not been placed thus already) in a lower position until it comes into contact with the lower bed assembly 3. At this point in the operation, the transversal straps 54 will be hooked by their end orifices to the screws 55 of the bed frame 5 of upper bed assembly 2, and this operation will associated the disabled person to said upper bed assembly 2, once this has been achieved, the bed assembly 2 will be raised until it reaches the desired height so the disabled person can be washed and cleaned in a comfortable manner.

[0067] Once the washing and cleaning operation has been completed the upper bed assembly 2 will be returned to a lower position until it, again, comes into contact with lower bed assembly 3 set in place inside the base structure 1. At this point the disabled person is returned to a laying position over mattress 10 of the lower bed assembly 3 on which the transversal belts or straps are interposed 54, straps that are then unhooked from the bed frame 5 of the upper bed assembly 2, which can also be placed in a raised position, but without the disabled person, who is now laying again on the lower bed assembly. The transversal straps 54 can also be hooked to other similar lugs 55 solidarious to the bed frame 9 of the lower bed assembly 3 when the disabled person is laying on it.

Claims

1. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** intended to facilitate the care of disabled persons, that comprises a base structure fitted with wheels that supports the following elements:

   - an upper bed assembly (2) without a mattress and which height is adjustable so it can be positioned in the desired horizontal plane in a stable manner;
   - a lower bed assembly (3) with a mattress (10), this bed can be pulled out at least from one side of the base structure (1); mattress (10) where the disabled person normally is laid on, with a transversal straps (54) between the mattress and the person;
   - a bath assembly the height of which is adjustable (4) and is always positioned below the upper bed assembly (2) to collect the waste water and excrement after the disabled person has been washed and cleaned while lying on the upper bed assembly (2);

   all of it intended to enable washing and cleaning the disabled person without moving him or her by placing the upper bed in a lower position (if not already thus placed) until the upper bed (2) comes into contact with the lower bed assembly (3); at that moment, the transversal straps are hooked by their ends to the upper bed (2) as to the upper bed is raised, together with the disabled person lying on it, until a proper height is reached and the bath assembly (4) can be set close to it.

2. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 1, **characterized in that**:

   Both the upper bed (2) and the bath assembly (4) are raised and lowered by a motor operated mechanism, this mechanism comprising:

   two groups of vertical guide tubes, the outer (13) and the inner one (14) which are fixed to the head part and the foot part of the base

structure (1); said guide tubes having inside pieces with a projecting portion (26) that moves up and down through the longitudinal guide (28) of said tubes (13 and 14); the projecting portions (26) being connected to an extension portions (27) at the four corners of the upper bed (2) and bath (4) frame (7 and 38); , the bath assembly and the upper bed can be raised and lowered independently from each other, the upper bed being connected to the outer guide tubes assembly (13) (longer type tubes group), and the bath assembly (4) being connected to the inner guide tubes (14), (shorter type tubes group).

3. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 2, **characterized in that** the guiding elements are connected to linear motor actuators, such as oleohydraulic cylinders or pneumatic cylinders that actuate simultaneously and synchronically over each guide tube (13 and 14).

4. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 2, **characterized in that** the inside pieces of the guide tubes being raised and lowered by means of chains (30), each of which is coupled to
a pair of lower sprockets (31) located below the tubes (13 and 14) facing the inside part of said tubes,
and to a pair of upper sprockets inside the pair of tubes that are diagonally opposite each other in each group of the two guide tube types,
the other respective diagonally opposed pair of tubes incorporating each one of which a coaxial axle spindles (29) coupled to the respective inside piece of the guide tube (24); one end of each chain (30) being connected to an inside guide tube piece (24), and the other end of the chain being connected to the other inside piece (25) of the two guide tube types located at the same end of the base structure (1); the axle spindles (29) rotation being transmitted by respective synchronized motors.

5. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 4, **characterized in that** the motors (34) are implemented in an arm (37) coupled perpendicularly on the upper ends of the respective diagonally opposed tubes (13 and 14); the movement of the motor being transmitted by means of pulleys (35) and belts (36).

6. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 4 or 5, **characterized in that** the diagonally facing columns that incorporate the upper sprockets (32), including reinforcement parts shaped like an inverted cup space (33), inside of which said upper sprockets (32) are located.

7. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to any of the previous claims, **characterized in that** the lower bed assembly (3) is linked to the base structure (1) by two transversal guide tubes (71) that are near the head part and the foot part of the base structure respectively; these parts of the base structure comprising a guide support pieces (41) integral with the base structure (1) and to which respective transversal guide tubes are adjusted and guided (71) integral with the lower bed frame (8).

8. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 7, **characterized in that** the guide tubes of the lower bed assembly (3) incorporate linear ball bearings that facilitate the removal and insertion of said lower bed (3).

9. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to any of the previous claims, **characterized in that** the base structure (1) comprise two longitudinal beams (11) and two transversal beams (12); the pairs of outer (13) and inner (14) vertical guide tubes being assembled on a transversal beam and in such a manner that they can be disassembled by the connecting support pieces (22) and (23) with screws; the outer guide tube support pieces (22) are used to fasten associate the longitudinal beams (11), the transversal beams (12) and the external vertical guide tubes (13), while the other inner guide tube support pieces (23) serve to fix the internal vertical guide tubes (14) to the transversal beams (12).

10. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 9, **characterized in that** the pair of external vertical guide tubes (13) on the head part of the base structure, as well as the pair of internal vertical guide tubes (14) at the foot part of the base structure are connected each other through their free ends by means of short in height bridges (15 and 16 respectively)being the other vertical guide tubes free ends covered with domed lids (17).

11. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to any of the previous claims, **characterized in that** the bed frames (5 and 9) of the upper bed assembly (2) and the lower bed assembly (3) comprise a centered arms (39 and 40) integral with the longitudinal beams of the bed frame structure (7 and 8); being the centered arms generally "U"-shaped and articulated at their ends to the other parts of the longitudinal beam (42 and 43).

12. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 11, **characterized in that** it incorporates at least three transversal straps

(54) which function is to support the disabled person while being washed and cleaned: one strap that it is affixed by its ends to the centered support arms of the longitudinal beam and the two other straps that are affixed to the other respective arms.

13. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 12, **characterized in that** the transversal straps (54) are affixed in a removable manner to the bed frame structures (5 and 9) by means of screws (55) that fit inside end orifices of those said transversal straps (54).

14. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claims 4 and 9, **characterized in that** the chains (30) that are part of the raising and lowering mechanism of the upper bed (2) and the bath assembly (4), run inside the lower part of the transversal beam (12) of the base structure (1), as well as through the inside of the vertical guide tubes (13 and 14).

15. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 11, **characterized in that** the lower bed frame (8) includes at least one conventional collapsible mechanism (44) that acts at least over one outer part of the longitudinal beams (42) of said lower bed assembly (3), so said parts (42) can be positioned in the desired position; and the collapsible action of said parts (42) can be transmitted to the collapsible parts (43) of the upper bed frame (5) as the upper bed assembly is near the lower bed assembly in overlaying planes on the base structure (1).

16. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to any of the previous claims, **characterized in that** comprises an independent cart (6) fitted with wheels (58) that include at least one container (60) fitted with a lid (61) regulated in height; the longitudinal beam base structure (1) having a bridge arm (69) through said cart can pass under it; said container (60) comprising a tap (67) to discharge its contents; all of which is intended to enable the collection of waste water and excrement of the disabled person laying on the upper bed frame (5), said waste water and excrement first falling inside the bath receptacle assembly (4) and then are discharged through its outlet (70) to the aforementioned container (60).

17. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to claim 16, **characterized in that** raising and lowering function of the container (60) is regulated by means of a mechanism comprising two vertical spindles(63), one of which is connected to a motor (64) which makes the connected spindles rotate by means of two pulleys (66) and a transmission belt (65); said spindles being coupled to a extension piece (62) integral with the base of the container (60).

18. **BED ASSEMBLY FOR** SICK **AND DISABLED PERSONS,** according to claim 17, **characterized in that** the cart (6) includes a base platform (15) and two vertical bridge structures (59), between which the container (60) is located; motor (64) being fastened to one of said bridge structures and to an outer portion of the vertical spindles (63) while the opposite end is fastened to a part of the platform (57); the cart (6) having a handle (68) that projects from one of said bridges.

19. **BED ASSEMBLY FOR SICK AND DISABLED PERSONS,** according to any one of claims 16 to 18, **characterized in that** the lid (61) is a flat piece complemented by a frontal groove (72) of the container (60) and a small internal perimeter flange (73) near its mouth.

Patentansprüche

1. Bettanordnung für kranke und behinderte Personen, die dazu dient, die Pflege von behinderten Personen zu vereinfachen, und einen Basisaufbau umfasst, der mit Rädern ausgestattet ist und die folgenden Elemente hält:

   - eine obere Bettanordnung (2), die keine Matratze aufweist und deren Höhe eingestellt werden kann, sodass sie in einer gewünschten horizontalen Ebene stabil positioniert werden kann,
   - eine untere Bettanordnung (3), die eine Matratze (10) aufweist und von wenigstens einer Seite des Basisaufbaus (1) herausgezogen werden kann, wobei die behinderte Person normalerweise derart auf die Matratze (10) gelegt wird, dass Querbänder (54) zwischen der Matratze und der Person angeordnet sind,
   - eine Badanordnung (4), deren Höhe eingestellt werden kann und die immer unter der oberen Bettanordnung (2) positioniert ist, um abtropfendes Wasser und Exkremente zu sammeln, nachdem die behinderte Person gewaschen und gereinigt wurde, während sie auf der oberen Bettanordnung (2) liegt,

   wobei dies alles dazu dient, dass die behinderte Person gewaschen werden kann, ohne sie zu bewegen, indem das obere Bett zu einer unteren Position (sofern es nicht bereits an dieser positioniert ist) positioniert wird, bis das obere Bett (2) in einen Kontakt mit der unteren Bettanordnung (3) kommt, wobei zu diesem Zeitpunkt die Querbänder mit ihren Enden

an dem oberen Bett (2) eingehakt werden und dann das obere Bett zusammen mit der darauf liegenden behinderten Person gehoben wird, bis eine geeignete Höhe erreicht wird und die Badanordnung (4) nahe dazu angeordnet werden kann.

2. Bettanordnung für kranke und behinderte Personen nach Anspruch 1, **dadurch gekennzeichnet, dass**:

sowohl das obere Bett (2) als auch die Badanordnung (4) durch einen motorbetriebenen Mechanismus gehoben und gesenkt werden, wobei dieser Mechanismus umfasst:

zwei Gruppen von vertikalen Führungsrohren, nämlich eine äußere (13) und eine innere (14), die an dem Kopfteil und an dem Fußteil des Basisaufbaus (1) fixiert sind, wobei die Führungsrohre innere Teile mit jeweils einem Vorsprungsteil (26) aufweisen, der sich durch eine Längsführung (28) der Rohre (13 und 14) nach oben und nach unten bewegt, wobei die Vorsprungsteile (26) mit Erweiterungsteilen (27) an den vier Ecken der Rahmen (7 und 38) des oberen Betts (2) und des Bads (4) verbunden sind, wobei die Badanordnung und das obere Bett unabhängig voneinander gehoben und gesenkt werden können, wobei das obere Bett mit der Anordnung der äußeren Führungsrohre (13) (mit der Gruppe der längeren Rohre) verbunden ist und die Badanordnung (4) mit den inneren Führungsrohren (14) mit der Gruppe der kürzeren Rohre) verbunden ist.

3. Bettanordnung für kranke und behinderte Personen nach Anspruch 2, **dadurch gekennzeichnet, dass** die Führungselemente mit linearen Motorstellgliedern wie etwa ölhydraulischen Zylindern oder pneumatischen Zylindern verbunden sind, die gleichzeitig und synchron an allen Führungsrohren (13 und 14) wirken.

4. Bettanordnung für kranke und behinderte Personen nach Anspruch 2, **dadurch gekennzeichnet, dass** die inneren Teile der Führungsrohre mittels Ketten (30) gehoben und gesenkt werden, die jeweils mit einem Paar von unteren Zahnrädern (31), die unter den Rohren (13 und 14) angeordnet sind und dem inneren Teil der Rohre zugewandt sind, und mit einem Paar von oberen Zahnrädern in dem Paar von Rohren, die in jeder Gruppe von zwei Führungsrohrtypen einander diagonal gegenüberliegen, gekoppelt sind, wobei das entsprechend andere diagonal gegenüberliegende Paar von Rohren jeweils eine koaxiale Achsenspindel (29) enthält, die mit dem entsprechenden inneren Teil (24) des Führungsrohrs gekoppelt ist, wobei ein Ende jeder Kette (30) mit einem inneren Teil (24) eines Führungsrohrs verbunden ist und das andere Ende der Kette mit dem anderen inneren Teil (25) der zwei Führungsrohrtypen verbunden ist, die an dem gleichen Ende des Basisaufbaus (1) angeordnet sind, wobei die Drehung der Achsenspindeln (29) durch entsprechende synchronisierte Motoren übertragen wird.

5. Bettanordnung für kranke und behinderte Personen nach Anspruch 4, **dadurch gekennzeichnet, dass** die Motoren (34) in einem Arm (37) implementiert sind, der senkrecht mit den oberen Enden der entsprechenden diagonal gegenüberliegenden Rohre (13 und 14) gekoppelt ist, wobei die Bewegung des Motors mittels Scheiben (35) und Riemen (36) übertragen wird.

6. Bettanordnung für kranke und behinderte Personen nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** die einander diagonal zugewandten Säulen mit den darin aufgenommenen oberen Zahnrädern (32) Verstärkungsteile (33) mit einer umgekehrten Napfform aufweisen, in denen die oberen Zahnräder (32) angeordnet sind.

7. Bettanordnung für kranke und behinderte Personen nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die untere Bettanordnung (3) mit dem Basisaufbau (1) durch zwei transversale Führungsrohre (71) verbunden ist, die jeweils nahe dem Kopfteil und dem Fußteil des Basisaufbaus angeordnet sind, wobei diese Teile des Basisaufbaus Führungshalteteile (41) umfassen, die einstückig mit dem Basisaufbau (1) sind und an denen entsprechende transversale Führungsrohre (71), die einstückig mit dem unteren Bettrahmen (8) sind, eingestellt und geführt werden.

8. Bettanordnung für kranke und behinderte Personen nach Anspruch 7, **dadurch gekennzeichnet, dass** die Führungsrohre der unteren Bettanordnung (3) Linearkugellager enthalten, die das Ausziehen und Einschieben des unteren Betts (3) erleichtern.

9. Bettanordnung für kranke und behinderte Personen nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Basisaufbau (1) zwei Längsbalken (11) und zwei Querbalken (12) umfasst, wobei die Paare von äußeren (13) und inneren (14) vertikalen Führungsrohren entfernbar an einem Querbalken mittels verbindender Halteteile (22) und (23) unter Verwendung von Schrauben montiert sind, wobei die Halteteile (22) für die äußeren Führungsrohre verwendet werden, um die assoziierten Längsbalken (11), die Querbalken (12) und die äußeren, vertikalen Führungsrohre (13) zu befestigen, während die anderen Halteteile (23) für die inneren

Führungsrohre dazu dienen, die inneren, vertikalen Führungsrohre (14) an den Querbalken (12) zu fixieren.

10. Bettanordnung für kranke und behinderte Personen nach Anspruch 9, **dadurch gekennzeichnet, dass** das Paar von äußeren, vertikalen Führungsrohren (13) an dem Kopfteil des Basisaufbaus sowie das Paar von inneren, vertikalen Führungsrohren (14) an dem Fußteil des Basisaufbaus an ihren freien Enden mittels Brücken (15 und 16) mit einer geringen Höhe miteinander verbunden sind, wobei die freien Enden der anderen vertikalen Führungsrohre mit gewölbten Deckeln (17) bedeckt sind.

11. Bettanordnung für kranke und behinderte Personen nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Bettrahmen (5 und 9) der oberen Bettanordnung (2) und der unteren Bettanordnung (3) zentrierte Arme (39 und 40) einstückig mit den Längsbalken des Bettrahmenaufbaus (7 und 8) umfassen, wobei die zentrierten Arme allgemein "U"-förmig sind und an ihren Enden gelenkig mit anderen Teilen der Längsbalken (42 und 43) verbunden sind.

12. Bettanordnung für kranke und behinderte Personen nach Anspruch 11, **dadurch gekennzeichnet, dass** diese wenigstens drei Querbänder (54) umfasst, die dazu dienen, die behinderte Person zu halten, während sie gewaschen wird, wobei ein Band an seinen Enden mit den zentrierten Haltearmen des Längsbalkens fixiert wird und die zwei anderen Bänder an den entsprechenden anderen Armen fixiert werden.

13. Bettanordnung für kranke und behinderte Personen nach Anspruch 12, **dadurch gekennzeichnet, dass** die Querbänder (54) entfernbar an den Bettrahmenaufbauten (5 und 9) unter Verwendung von Schrauben (55) fixiert werden, die in Endöffnungen der Querbänder (54) gepasst werden.

14. Bettanordnung für kranke und behinderte Personen nach den Ansprüchen 4 und 9, **dadurch gekennzeichnet, dass** die Ketten (30), die Teil des Hebe- und Senkmechanismus des oberen Betts (2) und der Badanordnung (4) sind, im Inneren des unteren Teils des Querbalkens (12) des Basisaufbaus (1) sowie durch das Innere der vertikalen Führungsrohre (13 und 14) verlaufen.

15. Bettanordnung für kranke und behinderte Personen nach Anspruch 11, **dadurch gekennzeichnet, dass** der untere Bettrahmen (8) wenigstens einen herkömmlichen, klappbaren Mechanismus (44) umfasst, der wenigstens auf einen äußeren Teil der Längsbalken (42) der unteren Bettanordnung (3) wirkt, sodass die Teile (42) an der gewünschten Position positioniert werden können, wobei die Klappwirkung dieser Teile (42) auf die klappbaren Teile (43) des oberen Bettrahmens (5) übertragen werden kann, wenn sich die obere Bettanordnung in der Nähe der unteren Bettanordnung in einander überlagernden Ebenen des Basisaufbaus (1) befindet.

16. Bettanordnung für kranke und behinderte Personen nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** diese einen unabhängigen Wagen (6) mit Rädern (58) umfasst, der wenigstens einen Behälter (60) mit einem in der Höhe geregelten Deckel (61) umfasst, wobei der Längsbalken-Basisaufbau (1) einen Brückenarm (69) aufweist, unter dem der Wagen hindurchgehen kann, wobei der Behälter (60) einen Hahn (67) zum Ausführen des Inhalts umfasst, wobei all dies dazu dient, das Sammeln von abtropfendem Wasser und Exkrementen der auf dem oberen Bettrahmen (5) liegenden behinderten Person zu ermöglichen, wobei das abtropfende Wasser und die Exkremente zuerst in die Badbehälteranordnung (4) fallen und dann über deren Auslass (70) zu dem oben genannten Behälter (60) geführt werden.

17. Bettanordnung für kranke und behinderte Personen nach Anspruch 16, **dadurch gekennzeichnet, dass** die Hebe- und Senkfunktion des Behälters (60) mittels eines Mechanismus mit zwei vertikalen Spindeln (63) geregelt wird, von denen eine mit einem Motor (64) verbunden ist, der die verbundenen Spindeln mittels zweier Scheiben (66) und eines Treibriemens (65) dreht, wobei die Spindeln mit einem Erweiterungsteil (62) gekoppelt sind, der einstückig mit der Basis des Behälters (60) ist.

18. Bettanordnung für kranke und behinderte Personen nach Anspruch 17, **dadurch gekennzeichnet, dass** der Wagen (6) eine Basisplattform (15) und zwei vertikale Brückenaufbauten (59) umfasst, zwischen denen der Behälter (60) angeordnet ist, wobei der Motor (64) an einem der Brückenaufbauten und an einem äußeren Teil der vertikalen Spindeln (63) befestigt ist, während das gegenüberliegende Ende an einem Teil der Plattform (57) befestigt ist, wobei der Wagen (6) einen Griff (68) aufweist, der von einer der Brücken vorsteht.

19. Bettanordnung für kranke und behinderte Personen nach einem der Ansprüche 16 bis 18, **dadurch gekennzeichnet, dass** der Deckel (61) ein flaches Teil ist, das einer vorderen Rille (72) des Behälters (60) und einem kleinen Innenumfangsflansch (73) in der Nähe von dessen Öffnung entspricht.

Revendications

1. Equipement de lit pour malades et handicapés destiné à faciliter les soins des personnes handicapées qui comprend une structure de base dotée de roues soutenant les éléments suivants :

- un ensemble de lit supérieur (2) sans un matelas et dont la hauteur est réglable de manière à pouvoir se positionner dans le plan horizontal souhaité d'une manière stable ;
- un ensemble de lit inférieur (3) avec un matelas (10), ce lit pouvant être extrait d'au moins un côté de la structure de base (1) ; le matelas (10) où la personne handicapée est normalement allongée, avec des sangles transversales (54) entre le matelas et la personne ;
- un ensemble de bain dont la hauteur est réglable (4) et est toujours positionné en-deçà de l'ensemble de lit supérieur (2) pour recueillir les eaux usées et les excréments une fois que la personne handicapée a été lavée et toilettée tout en étant allongée sur l'ensemble de lit supérieur (2) ;

tout cela étant destiné à permettre de laver et toiletter la personne handicapée sans la déplacer en plaçant le lit supérieur dans une position inférieure (s'il ne se trouve pas déjà dans cette position) jusqu'à ce que le lit supérieur (2) entre en contact avec l'ensemble de lit inférieur (3) ; à ce moment, les sangles transversales sont accrochées par leurs extrémités au lit supérieur (2) tandis que le lit supérieur est relevé, avec la personne handicapée allongée sur celui-ci jusqu'à ce qu'une hauteur adéquate soit atteinte et que l'ensemble de bain (4) puisse être disposé à proximité de celui-ci.

2. Equipement de lit pour malades et handicapés selon la revendication 1, **caractérisé en ce que** :

tant le lit supérieur (2) que l'ensemble de bain (4) sont relevés et abaissés par un mécanisme actionné par un moteur, ce mécanisme comprenant :

deux groupes de tubes de guidage verticaux, l'un extérieur (13) et l'autre intérieur (14) qui sont fixés à la partie de tête et à la partie de pied de la structure de base (1) ; lesdits tubes de guidage possédant des pièces intérieures avec une partie saillante (26) qui se déplace de haut en bas au travers du guide longitudinal (28) desdits tubes (13 et 14) ; les parties saillantes (26) étant raccordées à une partie d'extension (27) à hauteur des quatre coins des châssis (7 et 38) du lit supérieur (2) et du bain (4) ; l'ensemble de bain et le lit supérieur pouvant être relevés et abaissés indépendamment l'un de l'autre, le lit supérieur étant raccordé à l'ensemble de tubes de guidage extérieurs (13) (groupe de tubes de type plus long) et l'ensemble de bain (4) étant raccordé aux tubes de guidage intérieurs (14) (groupe de tubes de type plus court).

3. Équipement de lit pour malades et handicapés selon la revendication 2, **caractérisé en ce que** les éléments de guidage sont raccordés à des actionneurs motorisés linéaires tels que des cylindres oléohydrauliques ou des cylindres pneumatiques qui sont actionnés de manière simultanée et synchrone sur chaque tube de guidage (13 et 14).

4. Équipement de lit pour malades et handicapés selon la revendication 2, **caractérisé en ce que** les pièces intérieures des tubes de guidage étant relevées et abaissées au moyen de chaînes (30) dont chacune est couplée à une paire de pignons inférieurs (31) situées en dessous des tubes (13 et 14) faisant face à la partie intérieure desdits tubes, et à une paire de pignons supérieurs à l'intérieur de la paire de tubes qui sont opposés diagonalement l'un à l'autre dans chaque groupe des deux types de tubes de guidage, l'autre paire de tubes respective, diagonalement opposée, incorporant chacune une broche d'axe coaxial (29) couplée à la pièce intérieure respective du tube de guidage (24) ; une extrémité de chaque chaîne (30) étant raccordée à une pièce intérieure du tube de guidage (24) et l'autre extrémité de la chaîne étant raccordée à l'autre pièce intérieure (25) des deux types de tube de guidage situés à la même extrémité de la structure de base (1) ; la rotation des broches axiales (29) étant transmise par des moteurs synchronisés respectifs.

5. Équipement de lit pour malades et handicapés selon la revendication 4, **caractérisé en ce que** les moteurs (34) sont disposés dans un bras (37) couplé de manière perpendiculaire sur les extrémités supérieures des tubes opposés diagonalement respectifs (13 et 14) ; le mouvement du moteur étant transmis au moyen de poulies (35) et de courroies (36).

6. Equipement de lit pour malades et handicapés selon la revendication 4 ou 5, **caractérisé en ce que** les colonnes se faisant face diagonalement qui incorporent les pignons supérieurs (32) comprennent des pièces de renforcement en forme d'espace concave inversé (33) à l'intérieur duquel sont logés lesdits pignons supérieurs (32).

7. Equipement de lit pour malades et handicapés selon l'une des revendications précédentes, **caractérisé en ce que** l'ensemble de lit inférieur (3) est raccordé

à la structure de base (1) par deux tubes de guidage transversaux (71) qui sont situés respectivement à proximité de la partie de tête et de la partie de pied de la structure de base ; ces parties de la structure de base comprenant des pièces de support de guidage (41) intégrées à la structure de base (1), sur lesquelles des tubes de guidage transversaux respectifs sont ajustés et guidés (71) intégralement avec le châssis de lit inférieur (8).

8. Équipement de lit pour malades et handicapés selon la revendication 7, **caractérisé en ce que** les tubes de guidage de l'ensemble de lit inférieur (3) comprennent des roulements à bille linéaires qui facilitent l'enlèvement et l'insertion dudit lit inférieur (3).

9. Équipement de lit pour malades et handicapés selon l'une des revendications précédentes, **caractérisé en ce que** la structure de base (1) comprend deux faisceaux longitudinaux (11) et deux faisceaux transversaux (12) ; les paires des tubes de guidage verticaux extérieurs (13) et intérieurs (14) étant assemblées sur un faisceau transversal de manière telle qu'elles puissent être désassemblées par les pièces de support de liaison (22) et (23) avec des vis; les pièces de support des tubes de guidage extérieurs (22) sont utilisées pour raccorder par serrage les faisceaux longitudinaux (11), les faisceaux transversaux (12) et les tubes de guidage verticaux externes (13) tandis que les autres pièces de support des tubes de guidage internes (23) servent à fixer les tubes de guidage verticaux internes (14) aux faisceaux transversaux (12).

10. Équipement de lit pour malades et handicapés selon la revendication 9, **caractérisé en ce que** la paire de tubes de guidage verticaux externes (13) sur la partie de tête de la structure de base ainsi que la paire de tubes de guidage verticaux internes (14) à hauteur de la partie de pied de la structure de base sont raccordées l'une à l'autre par leurs extrémités libres au moyen de ponts de faible hauteur (respectivement 15 et 16) les autres extrémités libres des tubes de guidage verticaux étant recouvertes de couvercles bombés (17).

11. Équipement de lit pour malades et handicapés selon l'une des revendications précédentes, **caractérisé en ce que** les cadres de lit (5 et 9) de l'ensemble de lit supérieur (2) et de l'ensemble de lit inférieur (3) comprennent un bras centré (39 et 40) intégré avec les faisceaux longitudinaux de la structure du cadre de lit (7 et 8), les bras centrés étant généralement en forme de U et articulés à leurs extrémités aux autres parties du faisceau longitudinal (42 et 43).

12. Équipement de lit pour malades et handicapés selon la revendication 11, **caractérisé en ce qu'**il comprend au moins trois sangles transversales (54) dont la fonction consiste à soutenir la personne handicapée pendant qu'on la lave et qu'on la toilette : une sangle qui est fixée par ses extrémités aux bras de support centrés du faisceau longitudinal et les deux autres sangles qui sont fixées aux autres bras respectifs.

13. Équipement de lit pour malades et handicapés selon la revendication 12, **caractérisé en ce que** les sangles transversales (54) sont fixées de manière amovible aux structures du cadre de lit (5 et 9) au moyen de vis (55) qui s'insèrent à l'intérieur des orifices d'extrémités de ces dites sangles transversales (54).

14. Équipement de lit pour malades et handicapés selon l'une des revendications 4 et 9, **caractérisé en ce que** les chaînes (30) qui font partie du mécanisme de relèvement et d'abaissement du lit supérieur (2) et de l'ensemble de bain (4) s'étendent à l'intérieur de la partie inférieure du faisceau transversal (12) de la structure de base (1) ainsi qu'à l'intérieur des tubes de guidage verticaux (13 et 14).

15. Equipement de lit pour malades et handicapés selon la revendication 11, **caractérisé en ce que** le cadre de lit inférieur (8) comprend au moins un mécanisme pliable classique (44) qui agit au moins sur une partie extérieure des faisceaux longitudinaux (42) dudit ensemble de lit inférieur (3), de telle sorte que lesdites pièces (42) puissent être positionnées dans la position souhaitée ; et l'action pliable desdites pièces (42) peut être transmise aux pièces pliables (43) du cadre de lit supérieur (5) lorsque l'ensemble de lit supérieur est proche de l'ensemble de lit inférieur dans les plans se chevauchant sur la structure de base (1).

16. Équipement de lit pour malades et handicapés selon l'une des revendications précédentes **caractérisé en ce qu'**il comprend un chariot indépendant (6) doté de roues (58) qui comprend au moins un récipient (60) doté d'un couvercle (61) réglable en hauteur ; la structure de base du faisceau longitudinal (1) possédant un bras en pont (69) sous lequel ledit chariot peut passer ; ledit récipient (60) comprenant un bouchon (67) pour évacuer son contenu ; tout cela étant destiné à permettre la collecte des eaux usées et des excréments de la personne handicapée allongée sur le cadre de lit supérieur (5), lesdits eaux usées et excréments tombant d'abord à l'intérieur de l'ensemble de collecteur du bain (4), avant d'être évacués par l'intermédiaire de sa sortie (70) vers le récipient (60) précité.

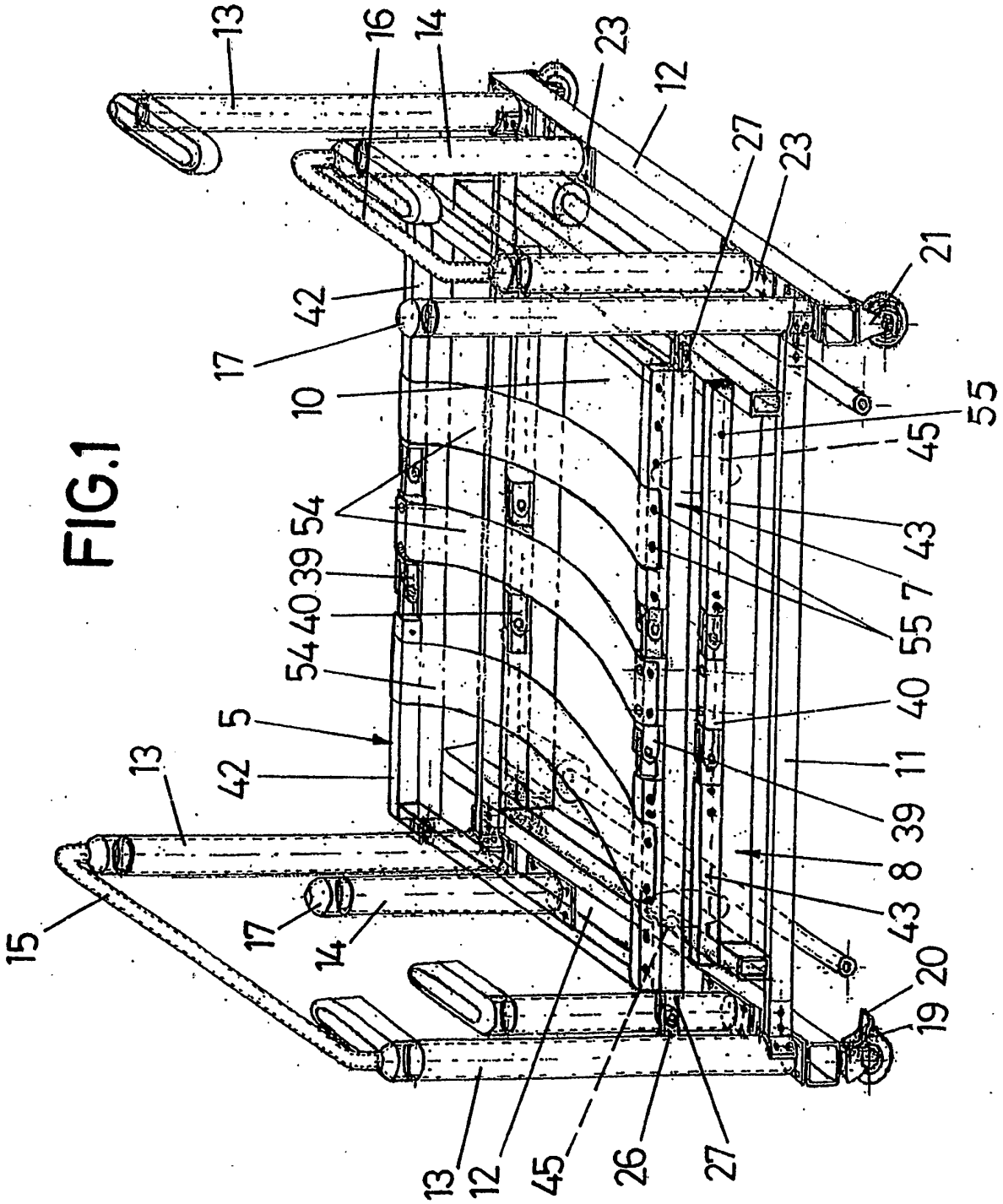
17. Équipement de lit pour malades et handicapés selon la revendication 16 **caractérisé en ce que** la fonction de relèvement et d'abaissement du récipient

(60) est réglée au moyen d'un mécanisme comprenant deux broches verticales (63) dont une est raccordée à un moteur (64) qui fait tourner les broches raccordées au moyen de deux poulies (66) et d'une courroie de transmission (65) ; lesdites broches étant couplées à une pièce de rallonge (62) faisant partie intégrante de la base du récipient (60).

18. Équipement de lit pour malades et handicapés selon la revendication 17, **caractérisé en ce que** le chariot (6) comprend une plate-forme de base (15) et deux structures en pont verticales (59) entre lesquelles le récipient (60) est situé ; le moteur (64) étant fixé à l'une desdites structures en pont et à une partie extérieure des broches verticales (63) tandis que l'extrémité opposée est fixée à une partie de la plateforme (57), le chariot (6) possédant une poignée (68) qui déborde d'un desdits ponts.

19. Équipement de lit pour malades et handicapés selon l'une des revendications 16 à 18, **caractérisé en ce que** le couvercle (61) est une pièce plate complétée d'une nervure frontale (72) du récipient (60) et d'un petit rebord périphérique interne (73) à proximité de son embouchure.

FIG.1


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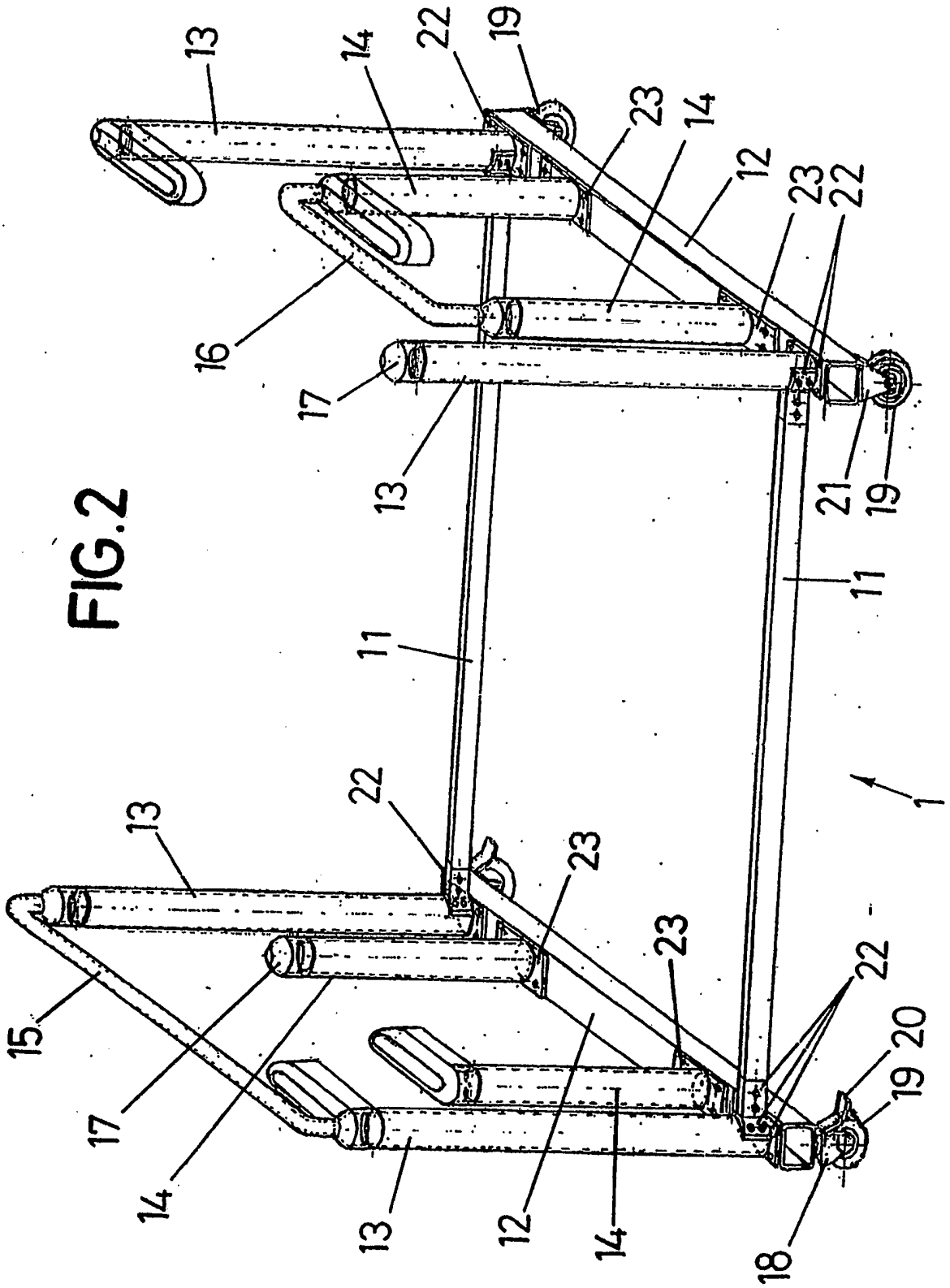

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FIG.2

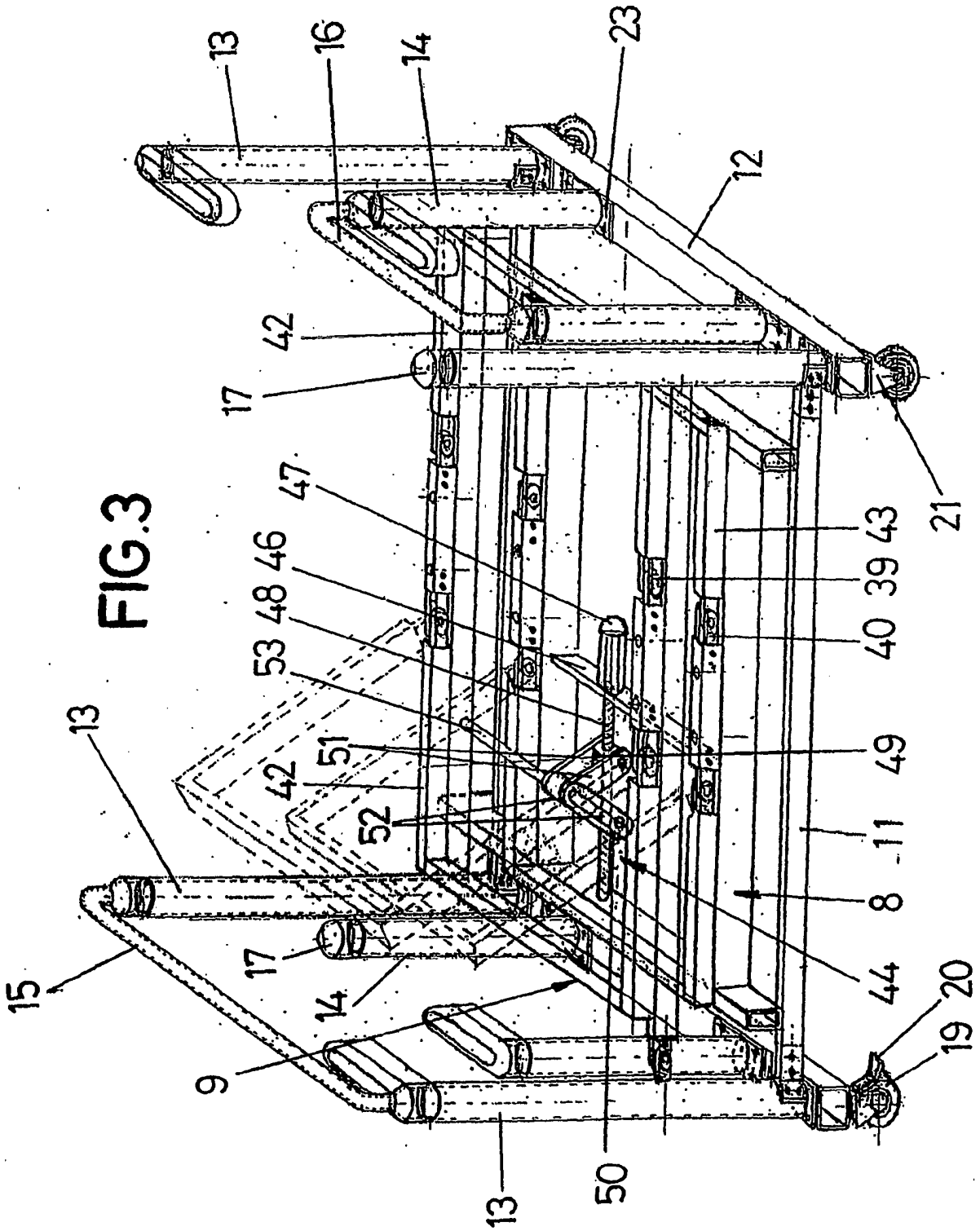
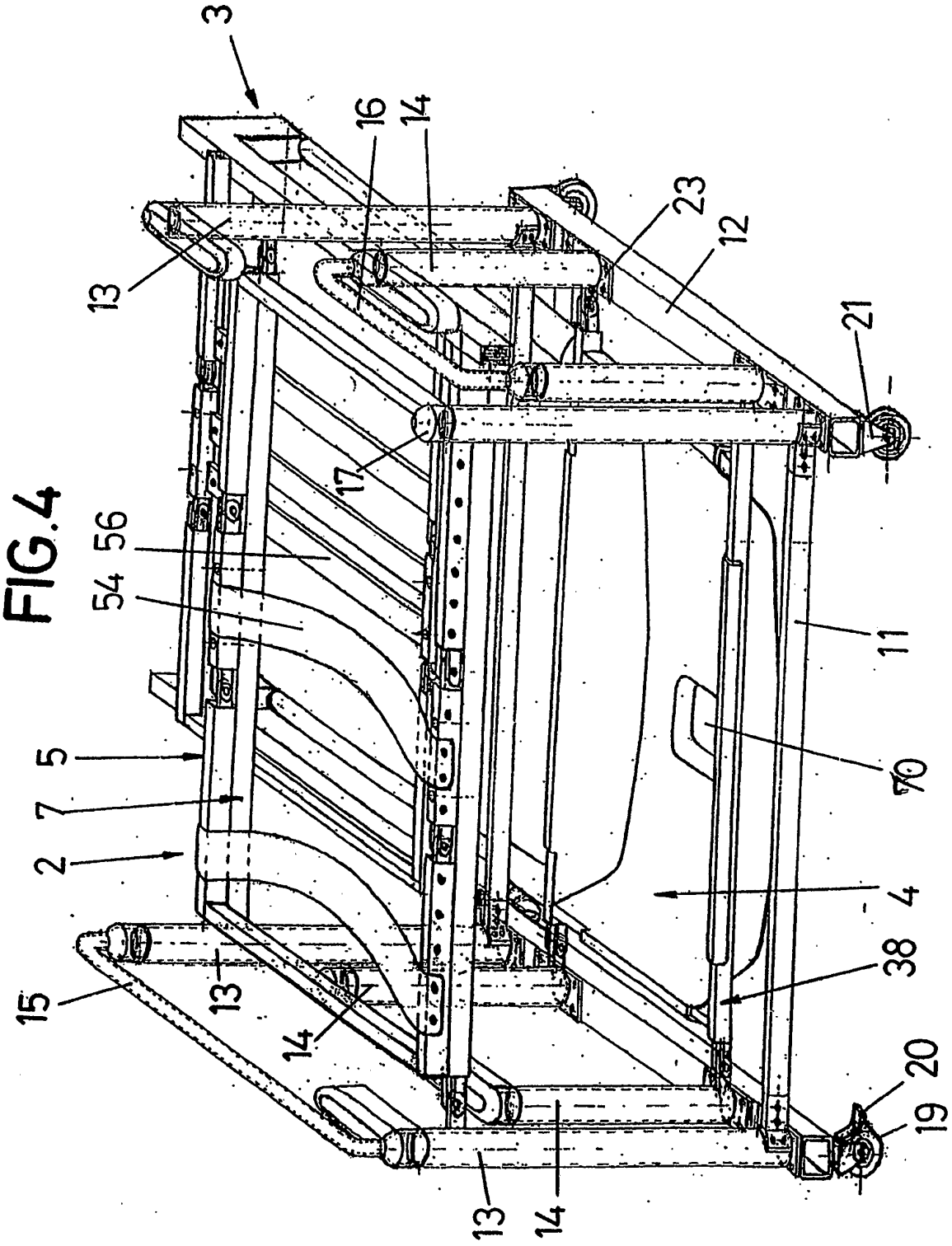

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FIG.3

FIG.4



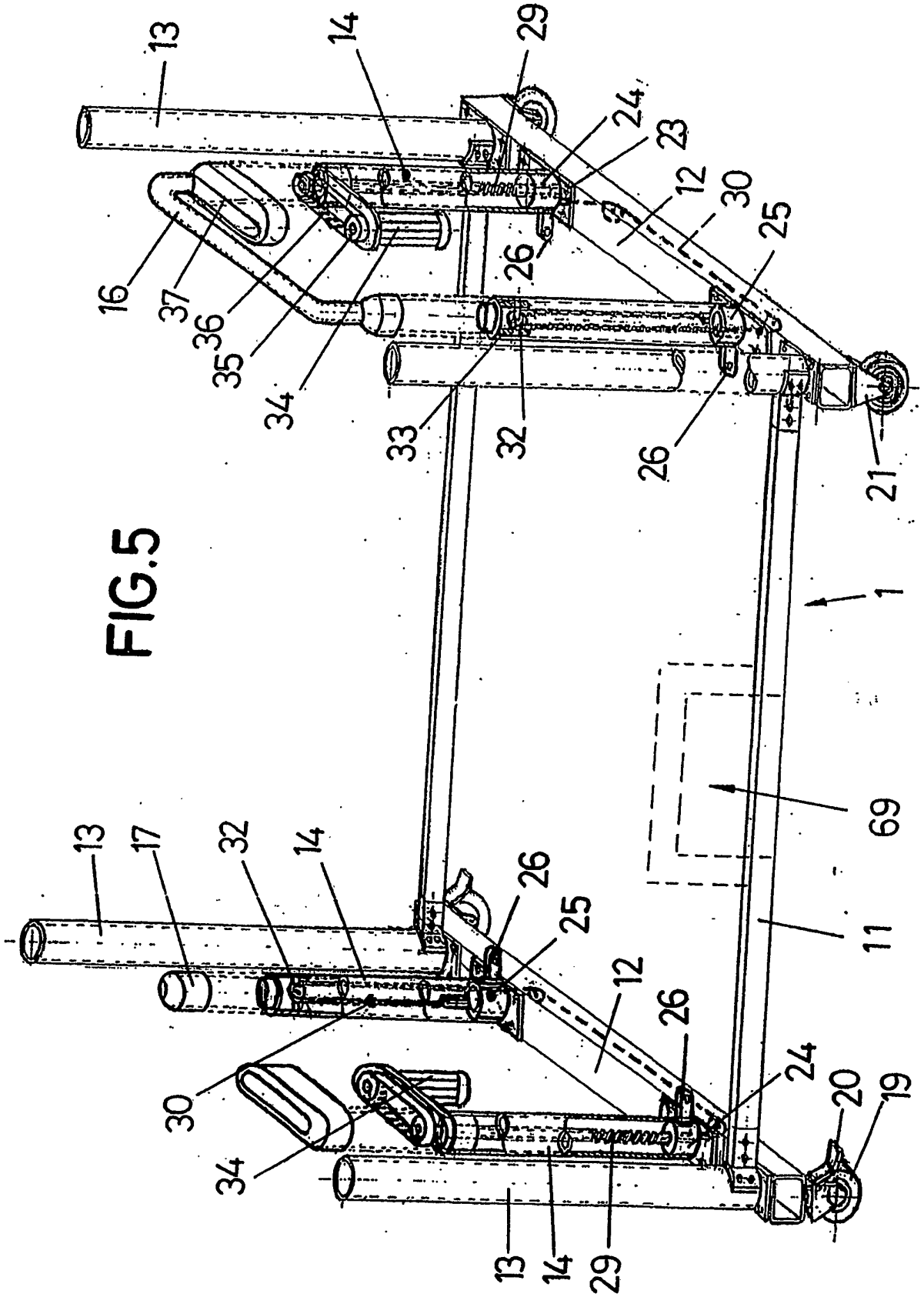

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FIG.5

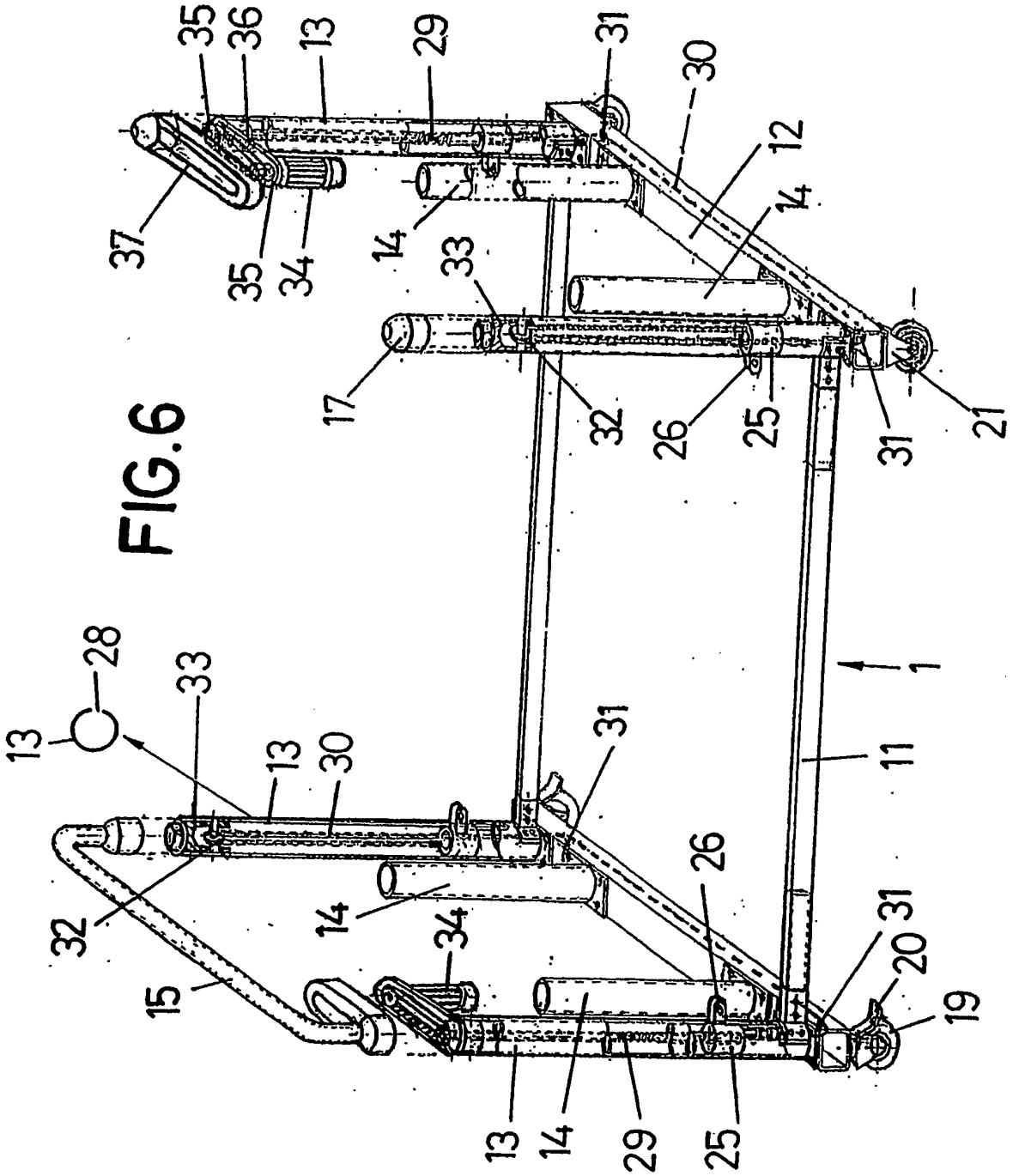

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FIG.6

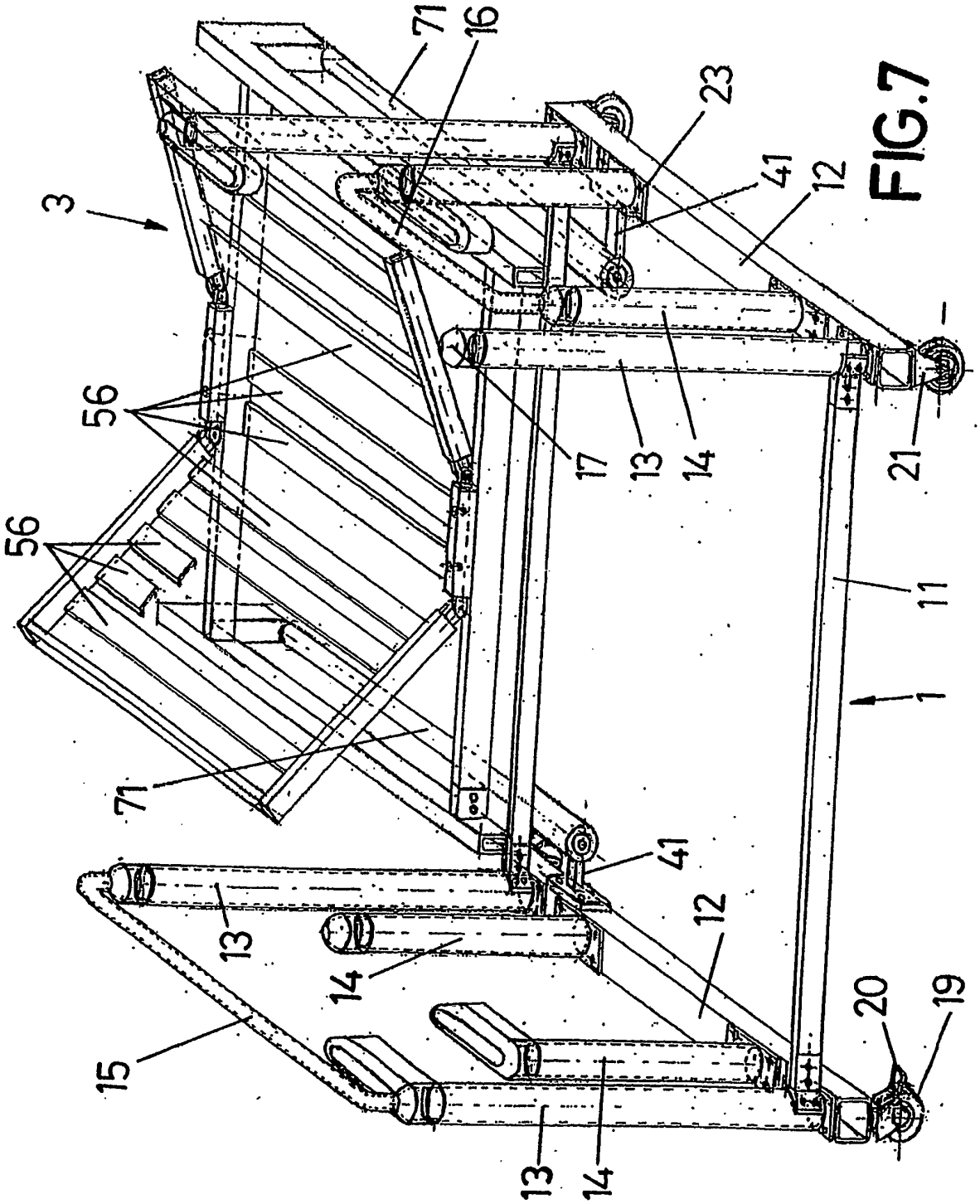


FIG.7

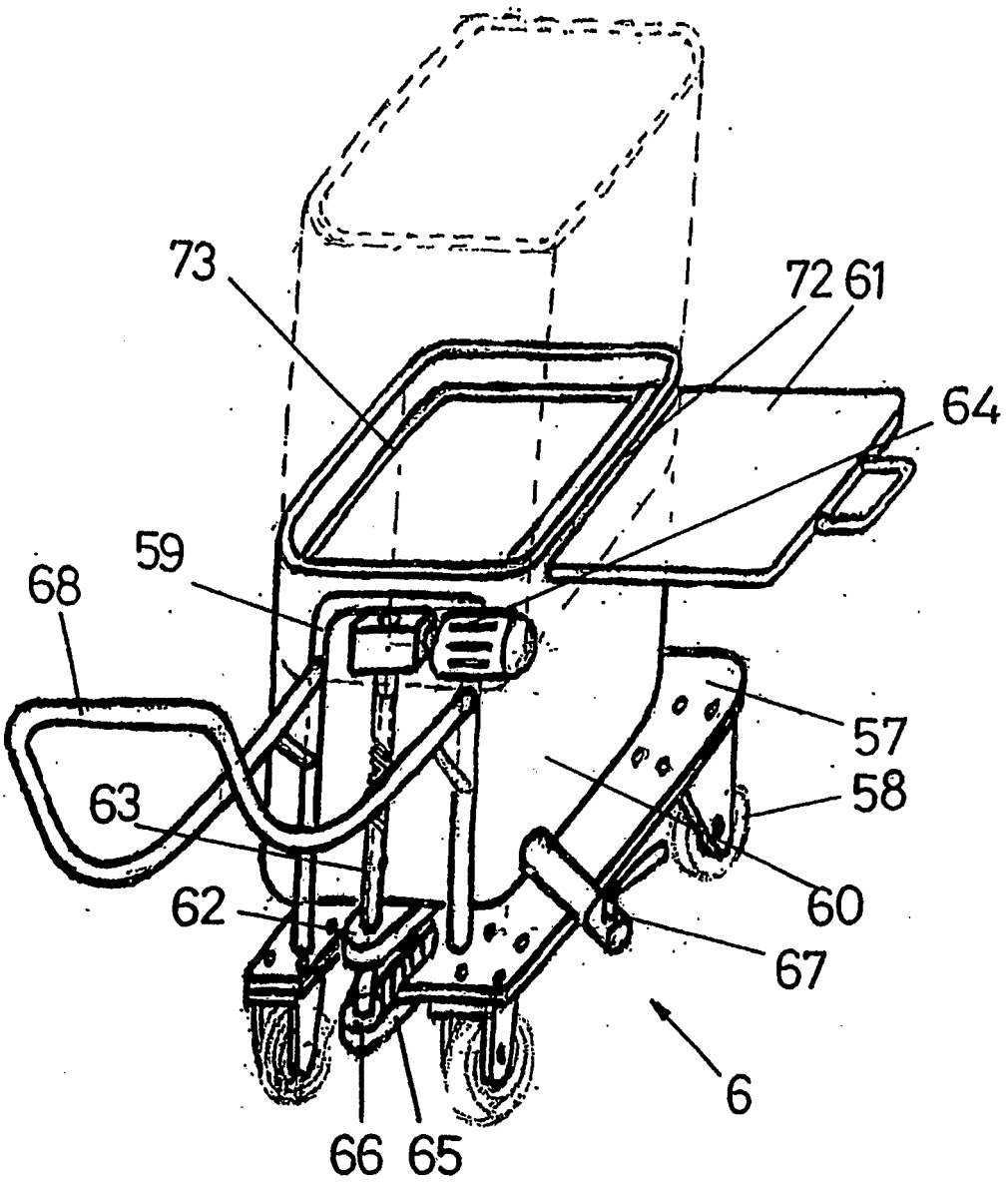


FIG.8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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