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

(11) **EP 3 777 807 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
03.04.2024 Bulletin 2024/14

(21) Application number: **18914174.0**

(22) Date of filing: **02.05.2018**

(51) International Patent Classification (IPC):
A61G 5/08 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A61G 5/006; A61G 5/0866; A61G 5/1059;
A61G 5/0875; A61G 5/1002; A61G 5/1094

(86) International application number:
PCT/CN2018/085247

(87) International publication number:
WO 2019/196146 (17.10.2019 Gazette 2019/42)

(54) MULTIFUNCTIONAL WHEELCHAIR

MULTIFUNKTIONALER ROLLSTUHL

FAUTEUIL ROULANT MULTIFONCTIONNEL

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **13.04.2018 CN 201810331080**

(43) Date of publication of application:
17.02.2021 Bulletin 2021/07

(73) Proprietors:
- **Tao, Guomin**
  Shenzhen, Guangdong 518000 (CN)
- **Zhang, Wenhao**
  Shenzhen, Guangdong 518000 (CN)

(72) Inventor: **TAO, Guomin**
Shenzhen, Guangdong 518000 (CN)

(74) Representative: **Anohins, Vladimirs et al**
Agency Tria Robit
P.O. Box 22
1010 Riga (LV)

(56) References cited:
EP-A2- 1 430 862
CN-A- 105 147 176
CN-A- 105 147 176
CN-A- 106 726 206
CN-U- 202 490 113
CN-U- 205 612 649
GB-A- 2 048 791
US-A1- 2004 160 103

EP 3 777 807 B1

Description

[0001] This application claims priority to Chinese patent application No. 201810331080.7 filed on April 13, 2018 , and claims the priority of the application.

TECHNICAL FIELD

[0002] This application relates to medical care equipment, and in particular, to a multifunctional wheelchair used by a patient who is bedridden for a long time or who cannot move independently.

BACKGROUND

[0003] At present, a wheelchair designed for a person who is bedridden for a long time or have difficulty in moving has a single function, which can only meet some use requirements such as moving by using the wheelchair for a user. In addition, since the structure is fixed and unchangeable, the user often needs many persons to carry and hold at the same time, which causes pressure on family members and nursing workers of a patient, wastes time and effort, and makes the user feel uncomfortable. A plurality of family members or nursing workers take care of the patient at the same time, causing great economic pressure to the family.

[0004] British patent application GB 2048791 A discloses a wheelchair including a frame with four wheels and a seat mounted on the frame for forward and rearward adjustment in a horizontal plane by means of slides. The seat is mounted on a pivotal parallelogram linkage. The seat includes a tilt able backrest portion and raisable arms. Auxiliary drive wheels are driven by an electric motor. Chinese patent CN 105147176 A discloses a seat-type close stool frame. The seat-type close stool frame includes a fixed seat, a sitting plate, a support rod assembly and a driving device. A close stool hole is formed in the center of the sitting plate, the two ends of the support rod assembly are connected to the fixed seat and the sitting plate through hinges, the support rod assembly includes a front support rod assembly body and a rear support rod assembly body, the driving device is used for driving the support rod assembly to rotate and/or used for driving the sitting plate to be lifted up and dropped down, the driving device is in drive connection with any one of the front support rod assembly body and the rear support rod assembly body or is connected to the portion between the fixed seat and any one of the sitting plate, the front support rod assembly body and the rear support rod assembly body. Therefore, a multifunctional wheelchair with comprehensive functions, a flexible structure, and a reduced number of auxiliary staffs is urgently needed.

SUMMARY

[0005] This application is intended to overcome the defects of the prior art and provide a multifunctional wheelchair.

[0006] In order to achieve the above objective, this application adopts the following technical solutions.

[0007] A multifunctional wheelchair is provided, including a base with wheels, and further including an adjustable lifting device connected above the base, the adjustable lifting device including a seat plate, a backrest hinged to a rear end of the seat plate, a lower connecting plate connected to the base, and a support structure hinged between the seat plate and the lower connecting plate, the support structure including a front support bar assembly and a rear support bar assembly; and the adjustable lifting device further including a driving mechanism for driving the rotation of the support structure and/or for driving the lifting of the seat plate, the driving mechanism generating a rotary motion or a linear motion, so that a parallelogram mechanism formed by the seat plate, the front support bar assembly, the lower connecting plate, and the rear support bar assembly is in an unfolded state or a stored state. The adjustable lifting device further includes: a front baffle hinged to a front end of the seat plate; a front armrest hinged to a middle portion of the front end of the seat plate; and a neck pillow disposed at an outer end of the backrest; and the front support bar assembly includes a left front support bar and a right front support bar, and the rear support bar assembly includes a left rear support bar and a right rear support bar.

[0008] The further technical solution is as follows. An upper support plate of the base is provided with a sliding groove, and a pulley slidably matched with the sliding groove is disposed below the lower connecting plate, to form a slidable and detachable connection between the adjustable lifting device and the base; alternatively, the lower connecting plate is the upper support plate of the base, to form an integrated structure; alternatively, the lower connecting plate is fixedly connected to the upper support plate provided on the base.

[0009] The further technical solution is as follows. The slidable and detachable connection adopts a sliding groove locking structure, specifically including a pair of blocks, two sliding grooves, two shock absorbers, and two locking blocks that are respectively disposed at the front and back of the base, the two locking blocks extending downward through an upper panel of the base and being connected above an unlocking rack, the unlocking rack being slidably connected below the upper panel of the base through a guide bar, a self-locking spring that abuts below the unlocking rack being

sleeved on the guide bar, and the blocks abutting against a fixed protrusion on a lower surface of the lower connecting plate of the adjustable lifting device.

[0010] The further technical solution is as follows. A center of the seat plate is provided with a defecation through hole; a sliding groove or a bracket is provided below the seat plate, and the sliding groove or bracket is located below the defecation through holefor sliding connection or support of an excrement container.

[0011] The further technical solution is as follows. The driving mechanism is an electric motor with a speed reduction mechanism, the speed reduction mechanism being provided with an output shaft and being connected to a rotating shaft of either the front support bar assembly or the rear support bar assembly through transmission;

alternatively, the driving mechanism is a manual forcing bar generating rotational power, and an outer end of the rotating shaft of either the front support bar assembly or the rear support bar assembly is provided with a torque connecting portion, the manual forcing bar being connected to the torque connecting portion through transmission;
alternatively, the driving mechanism is a linear power mechanism disposed between the lower connecting plate and any of the seat plate, the front support bar assembly, and the rear support bar assembly, the linear power mechanism being an electric push bar, an air cylinder, an oil cylinder, or a ball screw transmission mechanism;
alternatively, the driving mechanism is an air bag disposed between the lower connecting plate and the seat plate, and an air pump connected to an air channel of the air bag;
alternatively, the driving mechanism is a magnetic mechanism disposed between the low connecting plate and the seat plate, the magnetic mechanism including a lower coil fixed onto the lower connecting plate, an upper coil fixed below the seat plate, and a driving circuit electrically connected to the upper coil and the lower coil, the upper coil and the lower coil generating a magnetic field of a same level, thereby generating a repulsive force for the seat plate to rise upward.

[0012] The further technical solution is as follows. An infusion stand is hinged to a left side and/or right side of the base, the infusion stand being a bar-shaped structure with axial length adjustment.

[0013] The further technical solution is as follows. A stay bar bracket is connected to the base, the stay bar bracket being a door-shaped frame structure and including a left side bar and a right side bar connected to a left rear side and a right rear side of the base and a transverse push bar connected to rear ends of the left side bar and the right side bar, when the backrest and the seat plate are in a 180-degree unfolded state, the transverse push bar being snapped into a transverse slot disposed on a back surface of the backrest.

[0014] The further technical solution is as follows. Right-angle armrests are hinged to two sides of the base, the right-angle armrests being in a stored state when rotated forward by 90 degrees.

[0015] The further technical solution is as follows. Top portions of the adjustable armrests are both provided with sockets for externally connecting a tray table.

[0016] The further technical solution is as follows. A front end of the base is provided with a footrest.

[0017] In comparison to the prior art, the beneficial effects are as follows.

[0018] The multifunctional wheelchair of this application has the following significant advantages compared with a traditional wheelchair.

[0019] Due to the structure that the base is matched with the adjustable lifting device in this application, a height and an angle of the wheelchair body both can be adjusted, which has wider applicability. The wheelchair is suitable for beds of various heights and meets various usage requirements of lying, sitting, moving, folding and so on. The slidable and detachable structure facilitates separate use of the wheelchair body and the base, which has a lighter weight and can reduce physical strength of the nursing worker and the family member of the patient. In addition, in a case of fewer mobile working conditions, a plurality of wheelchair bodies may share a base to reduce expenses. Since the adjustable lifting device further includes a seat plate with a defecation through hole in the center, a front baffle for supporting the calf part, a front armrest for the user to lean on, and a neck pillow for supporting a head, which has higher security while increasing comfort. Since a variety of power-driven mechanisms can be used, a manufacturer may make flexible choices depending on different costs and production priorities. The base is additionally provided with a stay bar bracket for pushing the wheelchair, an armrest for supporting an elbow of a user, an external tray table for placing items, and a footrest for supporting the feet, which has comprehensive functions and is solid and durable.

[0020] To enable the above objects, features and advantages of this application to be understood more clearly, this application will be further described in detail below with reference to the accompanying drawings and specific implementations.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

FIG. 1 is a structural diagram of a specific embodiment of a multifunctional wheelchair in a folded state according to this application.

FIG. 2 is a structural diagram (in a lie-down state) of a specific embodiment of a multifunctional wheelchair in an unfolded state shown in FIG. 1.

FIG. 3 is a structural diagram (in a sit-up state) of a specific embodiment of a multifunctional wheelchair in an unfolded state shown in FIG. 1.

FIG. 4 is a side view of FIG. 2.

FIG. 5 is a partial view of a base of the multifunctional wheelchair shown in FIG. 1 according to this application.

FIG. 6 is a bottom three-dimensional structural view of an adjustable lifting device of a multifunctional wheelchair according to this application.

FIG. 7 is a schematic diagram of a simplified supporting structure and driving mechanism of the adjustable lifting device of FIG. 6 that are in an unfolded state.

FIG. 8 is a side view (in which casters are in disassembled state) of FIG. 5.

FIG. 9 is a bottom three-dimensional structural view of FIG. 5.

REFERENCE NUMERALS

[0022]

1	Base	10	Footrest
11	Infusion stand	12	Block
13	Sliding groove	14	Shock absorber
15	Locking block	16	Armrest bar
17	Wheel	18	Self-locking spring
19	Unlocking rack	111	First electric push bar
112	Second electric push bar	113	Third electric push bar
114	Stay bar	115	Armrest side connecting plate
116	Footrest connecting bar	117	Lower armrest connecting bar
2	Adjustable lifting device	21	Front baffle
22	Front armrest	23	Neck pillow
3	Seat plate	31	Defecation through hole
4	Backrest		
5	Lower connecting plate	51	Upper rolling shaft
52	Roller	53	Transition support arm
54	Transition support rotating shaft	55	Roller groove
56	Connector	57	Front lower support shaft
58	Push shaft 5	9	Front upper support shaft
6	Support structure		
61	Front support bar assembly	62	Rear support bar assembly
63	Rear lower support shaft	64	Rear upper support shaft
7	Stay bar bracket	71	Left side bar
72	Transverse push bar		
8	Right-angle armrest	9	External tray table

DETAILED DESCRIPTION

[0023] In the following specific description, many specific details are provided to give a full understanding of this application. However, this application may alternatively be implemented in other manners different from those described herein. Therefore, the protection scope of this application is not limited to the specific embodiments disclosed below.

[0024] As shown in FIG. 1, a multifunctional wheelchair is provided, including a base 1 with wheels 17, and further including an adjustable lifting device 2 connected above the base 1.

[0025] As shown in FIG. 2 to FIG. 4, the adjustable lifting device 2 includes a seat plate 3, a backrest 4 hinged to a rear end of the seat plate 3, a lower connecting plate 5 connected to the base 1, and a support structure 6 hinged between the seat plate 3 and the lower connecting plate 5. The support structure 6 includes a front support bar assembly 61 and a rear support bar assembly 62. The front support bar assembly 61 includes a left front support bar and a right

front support bar, and the rear support bar assembly 62 includes a left rear support bar and a right rear support bar. The adjustable lifting device 2 further includes a driving mechanism for driving the rotation of the support structure 6 and/or for driving the lifting of the seat plate 3, the driving mechanism generating a rotary motion or a linear motion, so that a parallelogram mechanism formed by the seat plate 3, the front support bar assembly 61, the lower connecting plate 5, and the rear support bar assembly 62 is in an unfolded state or a stored state. When in the unfolded state, the multi-functional wheelchair of this application is in a working state, and can assist a nursing worker or a family member caring for a patient to perform daily cleaning activities for a user. When in the stored state, the multifunctional wheelchair of this application is folded and stored, with the smallest volume, and can be easily folded in any corner, thereby reducing the space occupation.

[0026] As shown in FIG. 4 and FIG. 5, two sets of front and rear wheels 17 are symmetrically installed under the base 1. The wheels 17 and the base 1 are detachably connected through threads, and a connection height can be adjusted as needed by artificially increasing or decreasing the degree of thread engagement. Due to the different bed heights applicable to this application, when the height of the adjustable lifting device 2 cannot meet the usage requirements, the wheels 17 on the base 1 are used to assist in adjusting the overall height of the multifunctional wheelchair. The height adjustment range is suitable for most of the beds for use on the market and can be widely applicable.

[0027] In Embodiment 1, as shown in FIG. 6 and FIG. 7, a front lower support shaft 57, a front upper support shaft 59, a rear lower support shaft 63, and a rear upper support shaft 64 constitute four hinge positions of the support structure 6. A first electric push bar 111 is an electric telescopic bar. A fixed end of the first electric push bar 111 is hinged to a fixed bracket (located on the lower connecting plate 5 and as a part of the lower connecting plate 5) of the adjustable lifting device 2, and a movable end thereof is sleeved on an outer ring of a push shaft 58 through a connector 56. Two ends of the push shaft 58 are each provided with a roller 52. The roller 52 rolls in a roller groove 55 disposed on the left front support bar and the right front support bar. The fixed bracket of the adjustable lifting device 2 is further provided with a transition support rotating shaft 54. Two ends of the transition support rotating shaft 54 are hinged to the fixed bracket. Transition support arms 53 perpendicular to an axis of the transition support rotating shaft are disposed near the two ends of the transition support rotating shaft 54. The top of the transition support arm 53 is provided with an upper rolling shaft 51 with a smaller diameter. Two ends of the push shaft 58 are pivotally connected to a middle section of the transition support arm 53, respectively. During the ascent of the adjustable lifting device 2, an outer surface of the roller 52 is in contact with the roller groove 55. When the movable end of the first electric push bar 111 stretches out, the roller 52 is driven to roll in the roller groove 55, and a parallelogram formed by the seat plate 3, the front support bar assembly 61, the lower connecting plate 5, and the rear support bar assembly 62 is propped up. When the adjustable lifting device 2 ascends to a predetermined height (close to the maximum open state), the roller 52 is separated from the roller groove 55 without producing a support force. The upper rolling shaft 51 at the top of the transition support arm 53 is contact with two side edges of the roller groove 55 to produce the supporting force. In this case, an arm of force becomes larger, and a reaction force applied to the first electric push bar 111 becomes smaller, so that the adjustable lifting device 2 can be more stable in an open state. The advantage of such a supporting structure is that the initial force can be increased during the ascent of the adjustable lifting device 2 and the stroke of the electric push bar can be shortened. The electric push bar is forced gently in the maximum state, ensuring the structural stability of each component, thereby increasing service life. The upper roller 51 preferably adopts a stepped structure, that is, diameters at two ends are less than that of the middle part.

[0028] In other embodiments, the upper support plate of the base 1 of the multifunctional wheelchair of this application is provided with a sliding groove 13, and a pulley slidably matched with the sliding groove 13 is provided below the lower connecting plate 5, to form a slidable and detachable connection between the adjustable lifting device 2 and the base 1.

[0029] As shown in FIG. 5, FIG. 8, and FIG. 9, in other embodiments, the adjustable lifting device 2 and the base 1 adopt a sliding groove locking structure for detachable connection. An upper surface of the base 1 is provided with: four blocks 12 (one pair each at the front and back), two sliding grooves 13, two shock absorbers 14, and two locking blocks 15. The two locking blocks 15 extends downward through an upper panel (that is, the upper surface) of the base 1 and is connected above an unlocking rack 19. The unlocking rack 19 is slidably connected below the upper panel of the base 1 through a guide bar. A self-locking spring 18 that abuts below the unlocking rack 19 is sleeved on the guide bar. The shock absorber 14 is internally provided with a spring for cushioning and shock absorption, so as to reduce the secondary damage to the user caused by inertia in the assembly process. The block 12 is used to abut against a fixed protrusion (not shown in the figure, there are two sets, two near the front end, and two near the rear end, corresponding to the number of blocks 12) on a lower surface of the lower connecting plate 5 of the adjustable lifting device 2, which is used for limiting after assembly. When the multifunctional wheelchair is used in combination, the lower connecting plate 5 of the adjustable lifting device 2 is slid in along the sliding groove 13 from the rear end of the base 1 toward a horizontal direction of the front end under the restriction of the two sliding grooves 13. When the fixed protrusion on the lower surface of the lower connecting plate 5 acts on a guiding inclined surface of the locking block 15, the locking block 15 is pressed down, and after the fixed protrusion near the rear end crosses the uppermost end of the locking block 15, the locking block 15 automatically pops up through the spring force produced on the unlocking rack 19 by the self-locking

spring 18, and the fixed protrusion near the rear end is placed between the rear block 12 and the locking block 15 to form an assembled state. Due to the use of the sliding groove 13 and the shock absorber 14, the labor-saving and safety in the assembly process are ensured, and due to the use of the block 12 and the locking block 15, solid and reliable assembly is ensured. When the combined multifunctional wheelchair is disassembled, pressure is applied to the locking block 15, and the locking block 15 is pressed down until the upper surface is flush with the upper surface of the lower connecting plate 5. The elastic force of the shock absorber 14 faces the opposite direction of the assembly, so that the adjustable lifting device 2 is unlocked from the base 1, and then the adjustable lifting device 2 is dragged by external force to complete the disassembly. Such a structure saves time and effort in the disassembly process, and the operation can be completed by a single person. During specifically disassembling, the user steps down with feet (or presses down with other working tools) on the crossbar part of the unlocking rack 19 to apply downward pressure on the unlocking rack 19, thereby alleviating the spring force of the self-locking spring 18 and driving the locking block 15 to be pressed down until the upper surface is flush with the upper surface of the lower connecting plate 5. The elastic force of the shock absorber 14 faces the opposite direction of the assembly, so that the adjustable lifting device 2 is unlocked (that is, in an unassembled combined state) from the base 1, and then the adjustable lifting device 2 is dragged by external force to complete the disassembly. This pedal unlocking structure can reduce the work intensity of the disassembling personnel, and is convenient and reliable. The structure of the block 12 in this embodiment is an inverted L shape to form a limiting cavity for accommodating the fixed protrusion. In the assembled state, the adjustable lifting device 2 can be prevented from being separated from the base 1 upward.

[0030] In other embodiments, the lower connecting plate 5 is the upper supporting plate of the base 1, and the multi-functional wheelchair forms an integrated structure.

[0031] Alternatively, the lower connecting plate 5 is fixedly connected, in a manner such as connected through threads, welding, and the like, to the upper supporting plate provided on the base 1. The purpose is also to obtain a multifunctional wheelchair with an integrated structure to ensure the reliability and durability of the wheelchair.

[0032] As shown in FIG. 2, the adjustable lifting device 2 further includes:

a front baffle 21 hinged to the front end of the seat plate 3, when the wheelchair is in a sit-up working state, the front baffle 21 cooperating with the tilt of the calf portion of the user to provide support for legs;
a front armrest 22 hinged at a middle portion of the front end of the seat plate 3, when the wheelchair is in a sit-up working state, the front armrest 22 rotating from a horizontal state to a vertical state for the user to hold, to relieve the nervous mood of the user during the movement of the wheelchair; and
a neck pillow 23 disposed at an outer end of the backrest 4, where the neck pillow 23 may be customized according to usage requirements of the user, fixedly connected to the outer end of the backrest 4, or integrated with the outer end of the backrest 4, or the outer end of the backrest 4 is provided with an insertion slot, and a matching insertion post is provided below the neck pillow 23 for movable connection.

[0033] As shown in FIG. 9, in other embodiments, a fixed end of a second electric push bar 112 is fixedly connected to a bracket on the lower surface of the base 1, a movable end thereof is hinged to a lower armrest connecting bar 117, the lower armrest connecting bar 117 is fixedly connected to an armrest bar 16 through the armrest side connecting plate 115 that is fixedly connected, and the armrest side connecting plate 115 is perpendicular to the armrest bar 16. The armrest bar 16 is in a stored state when being in a horizontal state, and the movable end of the second electric push bar 112 is in an extended state. In the working state, the movable end of the second electric push bar 112 is stored, thereby driving the lower armrest connecting bar 117 to rotate. While the lower armrest connecting bar 117 rotates, the armrest bar 16 is driven to rotate upward through the armrest side connecting plate 115 that is fixedly connected. The armrest bar 16 is propped up for the user to support the elbow.

[0034] A further technical solution is shown in FIG. 9. A footrest connecting bar 116 is sleeved in a middle portion of the lower armrest connecting bar 117, one end of the footrest connecting bar 116 is hinged to the lower armrest connecting bar 117, and the other end thereof is hinged to a middle portion below a front footrest 21. In the working state, the movable end of the second electric push bar 112 is stored, thereby driving the lower armrest connecting bar 117 to rotate. The footrest connecting bar 116 is driven to rotate by the armrest lower connecting bar 117 while rotating, so that the connected front footrest 21 is rotated toward the front from the rear, which allows the user to relax legs when sitting.

[0035] A further technical solution is shown in FIG. 8. A fixed end of a third electric push bar 113 is fixedly connected to the fixed bracket of the base 1, and a movable end thereof is hinged to a lower end of a stay bar 114. It can be seen from FIG. 1 to FIG. 3 that the stay bar 114 is vertically and fixedly connected to a left side bar 71 and a right side bar. When the backrest 4 is unfolded at an angle greater than 90 degrees, the third electric push bar 113 rotates, and then drives the stay bar 114, the left side bar 71, and the right side bar to rotate upward. When a transverse push bar 72 is in contact with the lower surface of the backrest 4, the driving mechanism stops driving and reaches a stable state to provide the backrest 4 with enough supporting force, thereby ensuring the back of the user to be stably supported.

[0036] All of the electric push bars in the above embodiments can be replaced by other linear power mechanisms, for

example, a ball screw mechanism or a screw mechanism with a motor, and a cylinder or oil cylinder connected to a pressure source.

[0037] In other embodiments, the center of the seat plate 3 is provided with a defecation through hole 31 for daily excretion by the user in a wheelchair. A sliding groove or a bracket is provided below the seat plate 3. The sliding groove or the bracket is located below the defecation through hole 31 for sliding connection or support of the excrement container. The excrement container may be a bedpan, a disposable excretion bag, or the like according to specific requirements.

[0038] In other embodiments, the driving mechanism of the multifunctional wheelchair of this application is an electric motor with a speed reduction mechanism. The speed reduction mechanism is provided with an output shaft and is connected to a rotating shaft of either the front support bar assembly 61 or the rear support bar assembly 62 through transmission.

[0039] In other embodiments, the driving mechanism is a manual forcing bar generating rotational power, and an outer end of the rotating shaft of either the front support bar assembly 61 or the rear support bar assembly 62 is provided with a torque connecting portion. The manual forcing bar is connected to the torque connecting portion through transmission.

[0040] In other embodiments, the driving mechanism is a linear power mechanism disposed between the lower connecting plate 5 and any of the seat plate 3, the front support bar assembly 61, and the rear support bar assembly 62. The linear power mechanism is an electric push bar, an air cylinder, an oil cylinder, or a ball screw transmission mechanism.

[0041] In other embodiments, the driving mechanism is an air bag disposed between the lower connecting plate 5 and the seat plate 3, and an air pump connected to an air channel of the air bag.

[0042] In other embodiments, the driving mechanism is a magnetic mechanism disposed between the low connecting plate 5 and the seat plate 3. The magnetic mechanism includes a lower coil fixed onto the lower connecting plate 5, an upper coil fixed below the seat plate 3, and a driving circuit electrically connected to the upper coil and the lower coil. The upper coil and the lower coil produce a magnetic field of a same level, thereby generating a repulsive force for the seat plate 3 to rise upward.

[0043] As shown in FIG. 2 to FIG. 3, an infusion stand 11 is hinged to the left and/or right side of the base 1. The infusion stand 11 is a bar-shaped structure with axial length adjustment. When the user needs to defecate on the multifunctional wheelchair of this application or perform other daily cleaning tasks during the infusion, the infusion stand 11 is stretched from the stored state to a required height and used to hang an infusion bottle/bag.

[0044] In other embodiments, a stay bar bracket 7 is connected to the base 1. The stay bar bracket 7 is a door-shaped frame structure and includes a left side bar 71 and a right side bar connected to a left rear side and a right rear side of the base 1 and a transverse push bar 72 connected to rear ends of the left side bar 71 and the right side bar. The stay bar bracket 7 is used for a nursing worker or the patient's family member to push the wheelchair to move from the rear of the wheelchair. When the backrest 4 and the seat plate 3 are in a 180-degree unfolded state, the transverse push bar 72 is snapped into a transverse slot provided on the back surface of the backrest 4, and a part of the backrest 4 is provided with an upward support force to ensure the safety of the patient in a lie-down state such as washing hair and bathing for use.

[0045] In other embodiments, right-angle armrests 8 are hinged to two sides of the base 1, the right-angle armrests 8 being in a stored state when rotated forward by 90 degrees. The right-angle armrest 8 is in use when being in an upright state and used for the user to lean on. Still further, the top of the right-angle armrest 8 is provided with a socket for an external tray table 9. When the user needs to eat, read, bathe, and do other things on the multifunctional wheelchair, the external tray table 9 is used to place necessary items and utensils.

[0046] In other embodiments, the front end of the base 1 is provided with a footrest 10 for supporting the feet, which is more convenient for a person with difficulty in excreting such as the elderly or bedridden people to use, and can relieve the pressure of defecation.

[0047] This application also discloses the following technical solutions.

[0048] A labor-saving short-stroke connecting bar structure is provided, which may be used for lifting and lowering items such as tables and chairs, especially suitable for aproduct structure with small space. The specific structure is as follows. The labor-saving short-stroke connecting bar structure includes an upper connecting plate (which is seat plate in the embodiments of FIG. 1 to FIG. 9), a lower connecting plate, and a support structure hinged between the upper connecting plate and the lower connecting plate. The support structure includes a front support bat assembly and a rear support bar assembly, and further includes a driving mechanism for driving the support structure to rotate. The driving mechanism produces a linear motion, so that a parallelogram mechanism formed by the upper connecting plate, the front support bar assembly, the lower connecting plate, and the rear support bar assembly is in an unfolded state or a stored state. The front support bar assembly includes a left front support bar and a right front support bar, and the rear support bar assembly includes a left rear support bar and a right rear support bar. The driving mechanism is an electric telescopic bar. A fixed end of the electric telescopic bar is hinged to the lower connecting plate, a movable end of the electric telescopic bar is sleeved on an outer ring of a push shaft through a connector. Two ends of the push shaft are each provided with a roller, and the roller rolls in a roller groove disposed on the left front support bar and the right front

support bar. The lower connecting plate is also provided with a transition support rotating shaft. Two ends of the transition support rotating shaft are hinged to the lower connecting plate. Transition support arms perpendicular to an axis of the transition support rotating shaft are disposed near the two ends of the transition support rotating shaft. The top of the transition support arm is provided with an upper rolling shaft, and two ends of the push shaft are pivotally connected to a middle section of the transition support arm, respectively. During the ascent, an outer surface of the roller is in contact with the roller groove. When a movable end of an electric push bar stretches out, the roller is driven to roll in the roller groove, and a parallelogram formed by the upper connecting plate, the front support bar assembly, the lower connecting plate, and the rear support bar assembly is propped up. When the adjustable lifting device ascends to a predetermined height (close to the maximum open state), the roller is separated from the roller groove without producing a support force. The upper rolling shaft at the top of the transition support arm is contact with two side edges of the roller groove to produce the supporting force. In this case, an arm of force becomes larger, and a reaction force applied to the first electric push bar becomes smaller, so that the adjustable lifting device can be more stable in an open state. The advantage of such a supporting structure is that the initial force can be increased during the ascent of the adjustable lifting device and the stroke of the electric push bar can be shortened. The electric push bar is forced gently in the maximum state, ensuring the structural stability of each component, thereby increasing service life. The upper roller preferably adopts a stepped structure, that is, diameters at two ends are less than that of the middle part.

[0049] The labor-saving short-stroke connecting bar structure of this application may be used in a multifunctional wheelchair, which is specifically shown in the embodiments of FIG. 1 to FIG. 9, and may also be used in structures of various chairs such as student seats, car seats, and the like.

[0050] This application further discloses a linkage connecting bar mechanism for a seat. The seat includes a base, armrest bars hinged to two sides of the base, and a footrest hinged to a front end of the base, and further includes a linear driving mechanism disposed between the base and the armrest bar. A fixed end of the linear driving mechanism is fixedly connected to a bracket of the base, a movable end thereof is hinged to a lower armrest connecting bar, and the lower armrest connecting bar is fixedly connected to the armrest bar through an armrest side connecting plate that is fixedly connected. The armrest bar is in a stored state when being in a horizontal state, and the movable end of the linear driving mechanism is in an extended state. In the working state, the movable end of the linear driving mechanism is stored, thereby driving the lower armrest connecting bar to rotate. While the lower armrest connecting bar rotates, the armrest bar is driven to rotate upward through the armrest side connecting plate that is fixedly connected. The armrest bar is propped up for the user to support the elbow.

[0051] The further technical solution is as follows. A footrest connecting bar is sleeved in a middle portion of the lower armrest connecting bar, one end of the footrest connecting bar is hinged to the lower armrest connecting bar, and the other end thereof is hinged to a middle portion below a front footrest. In the working state, the movable end of the linear driving mechanism is stored, thereby driving the lower armrest connecting bar to rotate. The footrest connecting bar is driven to rotate by the armrest lower connecting bar while rotating, so that the connected front footrest is rotated toward the front from the rear, which allows the user to relax legs when sitting.

[0052] The linkage connecting bar structure for a seat of this application may be used in a multifunctional wheelchair, which is specifically shown in the embodiments of FIG. 1 to FIG. 9 , and may also be used in structures of various chairs such as folding seats, car seats, and the like.

[0053] Based on the above, for the multifunctional wheelchair of this application, due to the structure that the base is matched with the adjustable lifting device, a height and an angle of the wheelchair body both can be adjusted, which has wider applicability. The wheelchair is suitable for beds of various heights and meets various usage requirements of lying, sitting, moving, folding and so on. The slidable and detachable structure facilitates separate use of the wheelchair body and the base, which has a lighter weight and can reduce physical strength of the nursing worker and the family member of the patient. In addition, in a case of fewer mobile working conditions, a plurality of wheelchair bodies may share a base to reduce expenses. Since the adjustable lifting device further includes a seat plate with a defecation through hole in the center, a front baffle for supporting the calf part, a front armrest for the user to lean on, and a neck pillow for supporting a head, which has higher security while increasing comfort. Since a variety of power-driven mechanisms can be used, a manufacturer may make flexible choices depending on different costs and production priorities. The base is additionally provided with a stay bar bracket for pushing the wheelchair, an armrest for supporting an elbow of a user, an external tray table for placing items, and a footrest for supporting the feet, which has comprehensive functions and is solid and durable.

[0054] The foregoing embodiments are merely used to further describe the technical content of this application and facilitate understanding, which does not represent that the implementations of this application are limited thereto. The protection scope of this application shall be defined by the claims.

Claims

1. A multifunctional wheelchair, comprising a base (1) with wheels (17) and an adjustable lifting device (2) connected above the base (1), wherein the adjustable lifting device (2) comprises a seat plate (3), a backrest (4) hinged to a rear end of the seat plate (3), a lower connecting plate (5) connected to the base (1), and a support structure (6) hinged between the seat plate (3) and the lower connecting plate (5), the support structure (6) comprises a front support bar assembly (61) and a rear support bar assembly (62); and the adjustable lifting device (2) further comprises a driving mechanism for driving the rotation of the support structure (6) and/or for driving the lifting of the seat plate (3), the driving mechanism generating a rotary motion or a linear motion, so that a parallelogram mechanism formed by the seat plate (3), the front support bar assembly (61), the lower connecting plate (5), and the rear support bar assembly (62) is in an unfolded state or a stored state;
characterized in that the adjustable lifting device (2) further comprises:

   a front baffle (21) hinged to a front end of the seat plate (3);
   a front armrest (22) hinged to a middle portion of the front end of the seat plate (3); and
   a neck pillow (23) disposed at an outer end of the backrest (4); and
   the front support bar assembly (61) comprises a left front support bar and a right front support bar, and the rear support bar assembly (62) comprises a left rear support bar and a right rear support bar.

2. The multifunctional wheelchair according to claim 1, wherein an upper support plate of the base (1) is provided with a sliding groove (13), and a pulley slidably matched with the sliding groove (13) is disposed below the lower connecting plate (5), to form a slidable and detachable connection between the adjustable lifting device (2) and the base (1);

   alternatively, the lower connecting plate (5) is the upper support plate of the base (1), to form an integrated structure;
   alternatively, the lower connecting plate (5) is fixedly connected to the upper support plate provided on the base(1).

3. The multifunctional wheelchair according to claim 1, wherein a center of the seat plate (3)is provided with a defecation through hole (31); and
a sliding groove or a bracket is provided below the seat plate (3), and the sliding groove or bracket is located below the defecation through hole (31) for sliding connection or support of an excrement container.

4. The multifunctional wheelchair according to any of claims 1 to 3, wherein

   the driving mechanism is an electric motor with a speed reduction mechanism, the speed reduction mechanism being provided with an output shaft and being connected to a rotating shaft of either the front support bar assembly (61) or the rear support bar assembly (62) through transmission;
   alternatively,
   the driving mechanism is a manual forcing bar generating rotational power, and an outer end of the rotating shaft of either the front support bar assembly (61) or the rear support bar assembly (62) is provided with a torque connecting portion, the manual forcing bar being connected to the torque connecting portion through transmission;
   alternatively,
   the driving mechanism is a linear power mechanism disposed between the lower connecting plate (5) and any of the seat plate (3), the front support bar assembly (61), and the rear support bar assembly (62), the linear power mechanism being an electric push bar, an air cylinder, an oil cylinder, or a ball screw transmission mechanism;
   alternatively,
   the driving mechanism is an air bag disposed between the lower connecting plate (5) and the seat plate (3), and an air pump connected to an air channel of the air bag;
   alternatively,
   the driving mechanism is a magnetic mechanism disposed between the low connecting plate (5) and the seat plate (3), the magnetic mechanism comprising a lower coil fixed onto the lower connecting plate (5), an upper coil fixed below the seat plate (3), and a driving circuit electrically connected to the upper coil and the lower coil, the upper coil and the lower coil generating a magnetic field of a same level, thereby generating a repulsive force for the seat plate (3) to rise upward.

5. The multifunctional wheelchair according to any of claims 1 to 3, wherein an infusion stand (11) is hinged to a left side and/or right side of the base (1), the infusion stand (11) being a bar-shaped structure with axial length adjustment.

6. The multifunctional wheelchair according to any of claims 1 to 3, wherein a stay bar bracket (7) is connected to the base (1), the stay bar bracket (7) being a door-shaped frame structure and comprising a left side bar (71) and a right side bar connected to a left rear side and a right rear side of the base (1) and a transverse push bar (72) connected to rear ends of the left side bar (71) and the right side bar, when the backrest (4) and the seat plate (3) are in a 180-degree unfolded state, the transverse push bar (72) being snapped into a transverse slot disposed on a back surface of the backrest (4).

7. The multifunctional wheelchair according to any of claims 1 to 3, wherein right-angle armrests (8) are hinged to two sides of the base (1), the right-angle armrests (8) being in a stored state when rotated forward by 90 degrees.

8. The multifunctional wheelchair according to claim 7, wherein top portions of the right-angle armrests (8) are both provided with sockets for externally connecting a tray table (9).

9. The multifunctional wheelchair according to claim 1, wherein a front end of the base (1) is provided with a footrest (10).

Patentansprüche

1. Multifunktionaler Rollstuhl, umfassend eine Basis (1) mit Rädern (17) und eine verstellbare Hebevorrichtung (2), die oberhalb der Basis (1) verbunden ist, wobei die verstellbare Hebevorrichtung (2) eine Sitzplatte (3), eine Rückenlehne (4), die an einem hinteren Ende der Sitzplatte (3) angelenkt ist; eine untere Verbindungsplatte (5), die mit der Basis (1) verbunden ist, und eine Stützstruktur (6), die zwischen der Sitzplatte (3) und der unteren Verbindungsplatte (5) angelenkt ist, umfasst, wobei die Stützstruktur (6) eine vordere Stützstangenanordnung (61) und eine hintere Stützstangenanordnung (62) umfasst; wobei die verstellbare Hebevorrichtung (2) ferner einen Antriebsmechanismus zum Antreiben der Drehung der Stützstruktur (6) und/oder zum Antreiben des Anhebens der Sitzplatte (3) umfasst, wobei der Antriebsmechanismus eine Drehbewegung oder eine linearbewegung erzeugt, so dass ein Parallelogrammmechanismus, der durch die Sitzplatte (3), die vordere Stützstangenanordnung (61), die untere Verbindungsplatte (5) und die hintere Stützstangenanordnung (62) gebildet wird, sich in einem ungefalteten Zustand oder in einem verstauten Zustand befindet;
dadurch gekennzeichnet, dass die verstellbare Hebevorrichtung (2) weiterhin umfasst:

   ein vorderes Leitblech (21), das an einem vorderen Ende der Sitzplatte (3) angelenkt ist;
   eine vordere Armlehne (22), die an einem mittleren Abschnitt des vorderen Endes der Sitzplatte (3) angelenkt ist; und
   ein Nackenkissen (23), das an einem äußeren Ende der Rückenlehne (4) angeordnet ist; und
   wobei die vordere Stützstangenanordnung (61) eine linke vordere Stützstange und eine rechte vordere Stützstange umfasst und die hintere Tragstangenanordnung (62) eine linke hintere Stützstange und eine rechte hintere Stützstange umfasst.

2. Multifunktionaler Rollstuhl nach Anspruch 1, wobei eine obere Stützplatte der Basis (1) mit einer Gleitrille (13) versehen ist, wobei eine mit der Gleitrille (13) gleitend zusammenpassende Riemenschiebe unterhalb der unteren Verbindungsplatte (5) angeordnet ist, um eine gleitende und lösbare Verbindung zwischen der verstellbaren Hebevorrichtung (2) und der Basis (1) zu bilden;

   alternativ, die untere Verbindungsplatte (5) die obere Stützplatte der Basis (1) ist, um eine integrierte Struktur zu bilden;
   alternativ, die untere Verbindungsplatte (5) fest mit der auf der Basis (1) vorgesehenen oberen Stützplatte verbunden ist.

3. Multifunktionaler Rollstuhl nach Anspruch 1, wobei eine Mitte der Sitzplatte (3) mit einem Defäkationsdurchgangsloch (31) versehen ist; und
   wobei unter der Sitzplatte (3) eine Gleitrille oder ein Halter vorgesehen ist, wobei die Gleitrille oder der Halter unterhalb des Defäkationsdurchgangslochs (31) zur gleitenden Verbindung oder Abstützung eines Exkrementbehälters angeordnet ist.

4. Multifunktionaler Rollstuhl nach einem der Ansprüche 1 bis 3, wobei

der Antriebsmechanismus ein Elektromotor mit einem Geschwindigkeitsreduzierungsmechanismus ist, wobei der Geschwindigkeitsreduzierungsmechanismus mit einer Abtriebswelle versehen ist und durch eine Übertragung mit einer Drehwelle entweder der vorderen Stützstangenanordnung (61) oder der hinteren Stützstangenanordnung (62) verbunden ist;
alternativ,
der Antriebsmechanismus eine manuelle Druckstange ist, die eine Drehkraft erzeugt, wobei ein äußeres Ende der Drehwelle entweder der vorderen Stützstangenanordnung (61) oder der hinteren Stützstangenanordnung (62) mit einem Drehmomentverbindungsabschnitt versehen ist, wobei die manuelle Druckstange mit dem Drehmomentverbindungsabschnitt durch eine Übertragung verbunden ist;
alternativ,
der Antriebsmechanismus ein linearer Kraftmechanismus ist, der zwischen der unteren Verbindungsplatte (5) und entweder der Sitzplatte, der vorderen Stützstangenanordnung oder der hinteren Stützstangenanordnung angeordnet ist, wobei der lineare Kraftmechanismus eine elektrische Schubstange, ein Luftzylinder, ein Ölzylinder oder ein Kugelumlaufspindel-Übertragungsmechanismus ist;
alternativ,
der Antriebsmechanismus ein Luftsack und eine Luftpumpe ist, wobei der Luftsack zwischen der unteren Verbindungsplatte (5) und der Sitzplatte (3) angeordnet ist, wobei die Luftpumpe mit einem Luftkanal des Luftsacks verbunden ist;
alternativ,
der Antriebsmechanismus ein magnetischer Mechanismus ist, der zwischen der unteren Verbindungsplatte (5) und der Sitzplatte (3) angeordnet ist, wobei der magnetische Mechanismus eine untere Spule, die auf der unteren Verbindungsplatte (5) befestigt ist, eine obere Spule, die unter der Sitzplatte (3) befestigt ist, und einen Antriebsschaltung, der elektrisch mit der oberen Spule und der unteren Spule verbunden ist, umfasst, wobei die obere Spule und die untere Spule ein Magnetfeld gleicher Polarität erzeugen, wodurch eine Abstoßungskraft für das Anheben der Sitzplatte (3) erzeugt wird.

5. Multifunktionaler Rollstuhl nach einem der Ansprüche 1 bis 3, wobei ein Infusionsständer (11) an einer linken und/oder rechten Seite der Basis (1) angelenkt ist, wobei der Infusionsständer (11) eine stabförmige Struktur mit axialer Längenverstellung ist.

6. Multifunktionaler Rollstuhl nach einem der Ansprüche 1 bis 3, wobei eine Haltestangenhalterung (7) mit der Basis (1) verbunden ist, wobei die Haltestangenhalterung (7) eine türförmige Rahmenkonstruktion ist, wobei die Haltestangenhalterung eine linke Seitenstange (71) und eine rechte Seitenstange, die mit einer linken Rückseite und einer rechten Rückseite der Basis (1) verbunden sind, und eine quer verlaufende Schubstange (72), die mit den hinteren Enden der linken Seitenstange (71) und der rechten Seitenstange verbunden ist, umfasst, wobei die quer verlaufende Schubstange (72) in einen Querschlitz einrastet, der auf einer Rückseite der Rückenlehne (4) angeordnet ist, wenn sich die Rückenlehne (4) und die Sitzplatte (3) in einem um 180 Grad ungefalteten Zustand befinden.

7. Multifunktionaler Rollstuhl nach einem der Ansprüche 1 bis 3, wobei an zwei Seiten der Basis (1) rechtwinklige Armlehnen (8) angelenkt sind, wobei sich die rechtwinkligen Armlehnen (8) im verstauten Zustand befinden, wenn sie um 90 Grad nach vorne gedreht sind.

8. Multifunktionaler Rollstuhl nach Anspruch 7, wobei die oberen Abschnitte der rechtwinkligen Armlehnen (8) beide mit Buchsen zum externen Anschluss eines Tabletttisches (9) versehen sind.

9. Multifunktionaler Rollstuhl nach Anspruch 1, wobei ein vorderes Ende der Sitzplatte (1) mit einer Fußstütze (10) versehen ist.

Revendications

1. Fauteuil roulant multifonctionnel, comprenant une base (1) avec des roues (17) et un dispositif de levage réglable (2) connecté au-dessus de la base (1), dans lequel le dispositif de levage réglable (2) comprend une plaque de siège (3), un dossier (4) articulé sur une extrémité arrière de la plaque de siège (3), une plaque de liaison inférieure (5) reliée à la base (1), et une structure de support (6) articulée entre la plaque de siège (3) et la plaque de liaison inférieure (5), la structure de support (6) comprend un ensemble barre de support avant (61) et un ensemble barre

de support arrière (62) ; et le dispositif de levage réglable (2) comprend en outre un mécanisme d'entraînement pour entraîner la rotation de la structure de support (6) et/ou pour entraîner le levage de la plaque de siège (3), le mécanisme d'entraînement générant un mouvement rotatif ou un mouvement linéaire, de telle sorte qu'un mécanisme de parallélogramme formé par la plaque de siège (3), l'ensemble barre de support avant (61), la plaque de liaison inférieure (5) et l'ensemble barre de support arrière (62) est dans un état déplié ou un état stocké ;
caractérisé en ce que le dispositif de levage réglable (2) comprend en outre :

un déflecteur avant (21) articulé sur une extrémité avant de la plaque de siège (3) ;
un accoudoir avant (22) articulé sur une partie médiane de l'extrémité avant de la plaque de siège (3) ; et
un oreiller cervical (23) disposéà une extrémité extérieure du dossier (4) ; et
l'ensemble barre de support avant (61) comprend une barre de support avant gauche et une barre de support avant droite, et l'ensemble barre de support arrière (62) comprend une barre de support arrière gauche et une barre de support arrière droite.

2. Fauteuil roulant multifonctionnel selon la revendication 1, dans lequel une plaque de support supérieure de la base (1) est pourvue d'une rainure coulissante (13), et une poulie adaptée de manière coulissante à la rainure coulissante (13) est disposée sous la plaque de liaison inférieure (5), pour former une connexion coulissante et détachable entre le dispositif de levage réglable (2) et la base (1) ;

alternativement, la plaque de liaison inférieure (5) est la plaque de support supérieure de la base (1), pour former une structure intégrée ;
alternativement, la plaque de liaison inférieure (5) est reliée de manière fixe à la plaque de support supérieure prévue sur la base (1).

3. Fauteuil roulant multifonctionnel selon la revendication 1, dans lequel un centre de la plaque de siège (3) est pourvu d'un trou traversant de défécation (31) ; et
une rainure coulissante ou un support est disposé au-dessous de la plaque de siège (3), et la rainure coulissant ou le support est situé dessous le trou traversant de défécation (31) pour une connexion coulissante ou un support d'un conteneur à excréments.

4. Fauteuil roulant multifonctionnel selon l'une quelconque des revendications 1 à 3, dans lequel

le mécanisme d'entraînement est un moteur électrique avec un mécanisme de réduction de vitesse, le mécanisme de réduction de vitesse étant pourvu d'un arbre de sortie et étant reliéà un arbre rotatif soit de l'ensemble barre de support avant (61), soit de l'ensemble barre de support arrière (62) par l'intermédiaire transmission;
alternativement,
le mécanisme d'entraînement est une barre de forçage manuel générant une puissance de rotation, et une extrémité extérieure de l'arbre rotatif de l'ensemble barre de support avant (61) ou de l'ensemble barre de support arrière (62) est dotée d'une partie de connexion de couple, la barre de forçage manuel étant reliée à la partie de connexion de couple par l'intermédiaire d'une transmission ;
alternativement,
le mécanisme d'entraînement est un mécanisme de puissance linéaire disposé entre la plaque de liaison inférieure (5) et l'un quelconque parmi la plaque de siège (3), l'ensemble barre de support avant (61) et l'ensemble barre de support arrière (62), le mécanisme de puissance linéaire étant une barre de poussée électrique, un cylindre pneumatique, un cylindre à huile ou un mécanisme de transmission à vis à billes ;
alternativement,
le mécanisme d'entraînement est un airbag disposé entre la plaque de liaison inférieure (5) et la plaque de siège (3), et une pompe à air reliée à un canal d'air de l'airbag ;
alternativement,
le mécanisme d'entraînement est un mécanisme magnétique disposé entre la plaque de liaison inférieure (5) et la plaque de siège (3), le mécanisme magnétique comprenant une bobine inférieure fixée sur la plaque de liaison inférieure (5), une bobine supérieure fixée en dessous de la plaque de siège (3), et un circuit d'entraînement connectéélectriquement à la bobine supérieure et à la bobine inférieure, la bobine supérieure et la bobine inférieure générant un champ magnétique d'un même niveau, générant ainsi une force répulsive permettant à la plaque de siège (3) de s'élever vers le haut.

5. Fauteuil roulant multifonctionnel selon l'une quelconque des revendications 1 à 3, dans lequel un support de perfusion (11) est articulé sur un côté gauche et/ou droit de la base (1), le support de perfusion (11) étant une structure en

forme de barre avec réglage de longueur axiale.

6. Fauteuil roulant multifonctionnel selon l'une quelconque des revendications 1 à 3, dans lequel un support de barre de maintien (7) est reliéà la base (1), le support de barre de maintien (7) étant une structure de cadre en forme de porte et comprenant une barre latérale gauche (71) et une barre latérale droite reliées à un côté arrière gauche et à un côté arrière droit de la base (1) et une barre de poussée transversale (72) reliée aux extrémités arrière de la barre latérale gauche (71) et de la barre latérale droite, lorsque le dossier (4) et la plaque de siège (3) sont dans un état dépliéà 180 degrés, la barre de poussée transversale (72) étant encliquetée dans une fente transversale disposée sur une surface arrière du dossier (4).

7. Fauteuil roulant multifonctionnel selon l'une quelconque des revendications 1 à 3, dans lequel les accoudoirs à angle droit (8) sont articulés sur deux côtés de la base (1), les accoudoirs à angle droit (8) étant dans un état rangé lorsqu'ils sont tournés vers l'avant de 90 degrés.

8. Fauteuil roulant multifonctionnel selon la revendication 7, dans lequel les parties supérieures des accoudoirs à angle droit (8) sont toutes deux dotées de prises pour connecter extérieurement une table à plateau (9).

9. Fauteuil roulant multifonctionnel selon la revendication 1, dans lequel une extrémité avant de la base (1) est dotée d'un repose-pieds (10).

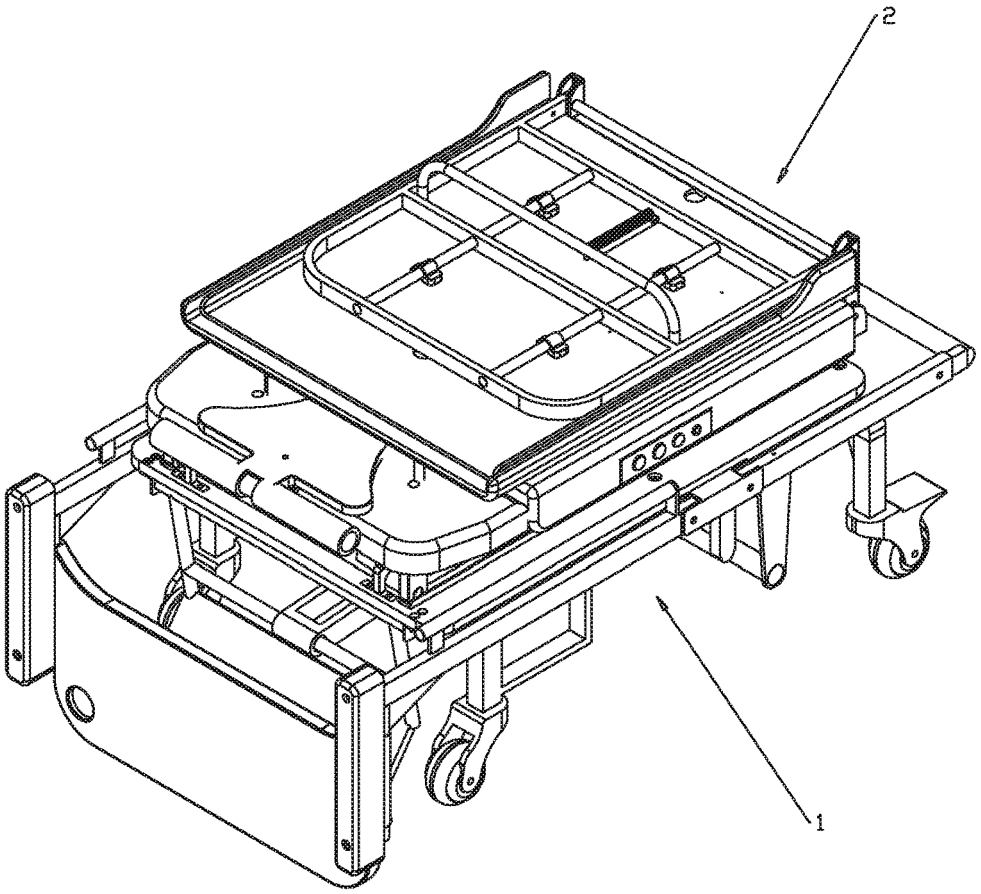

FIG. 1

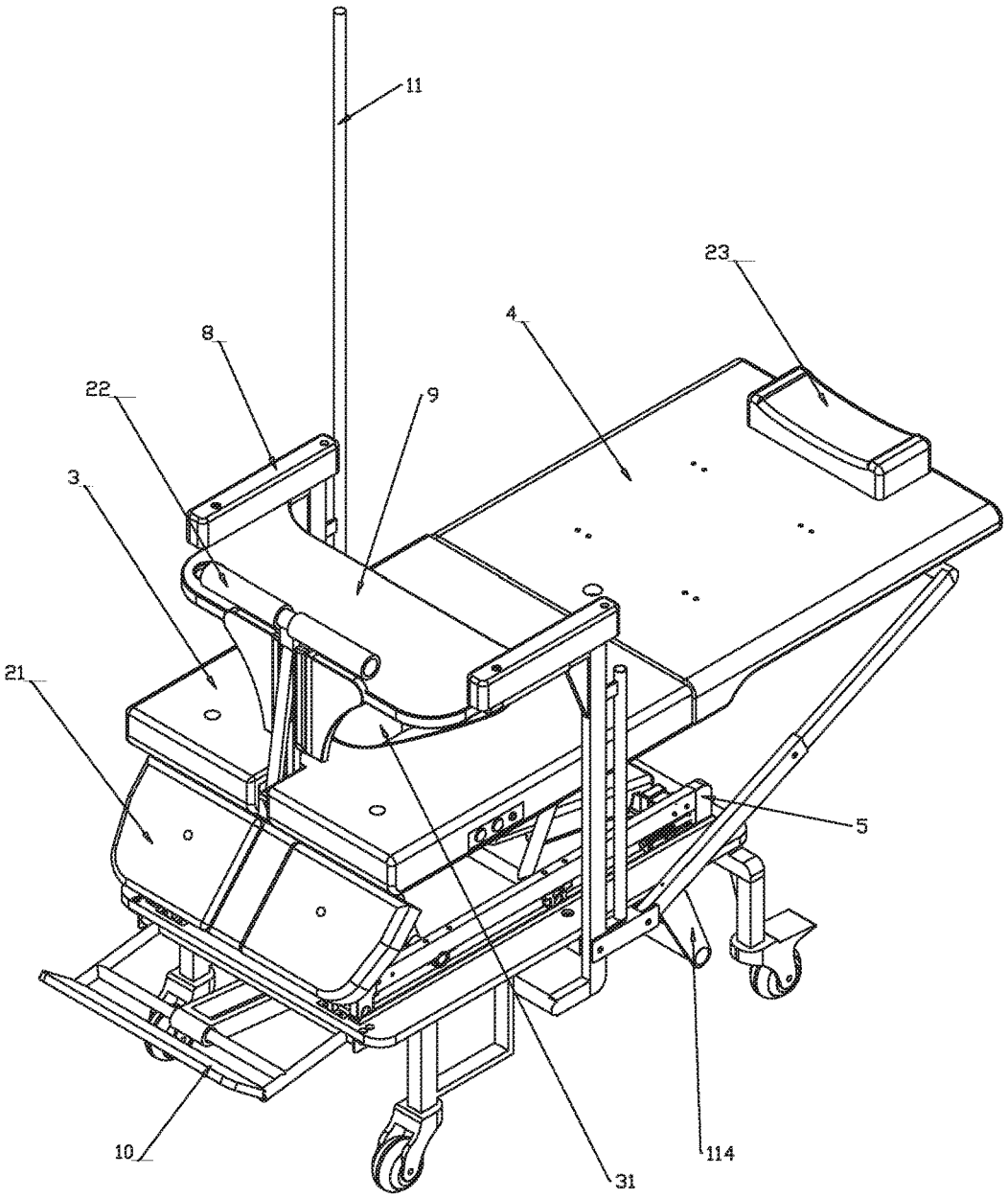

FIG. 2

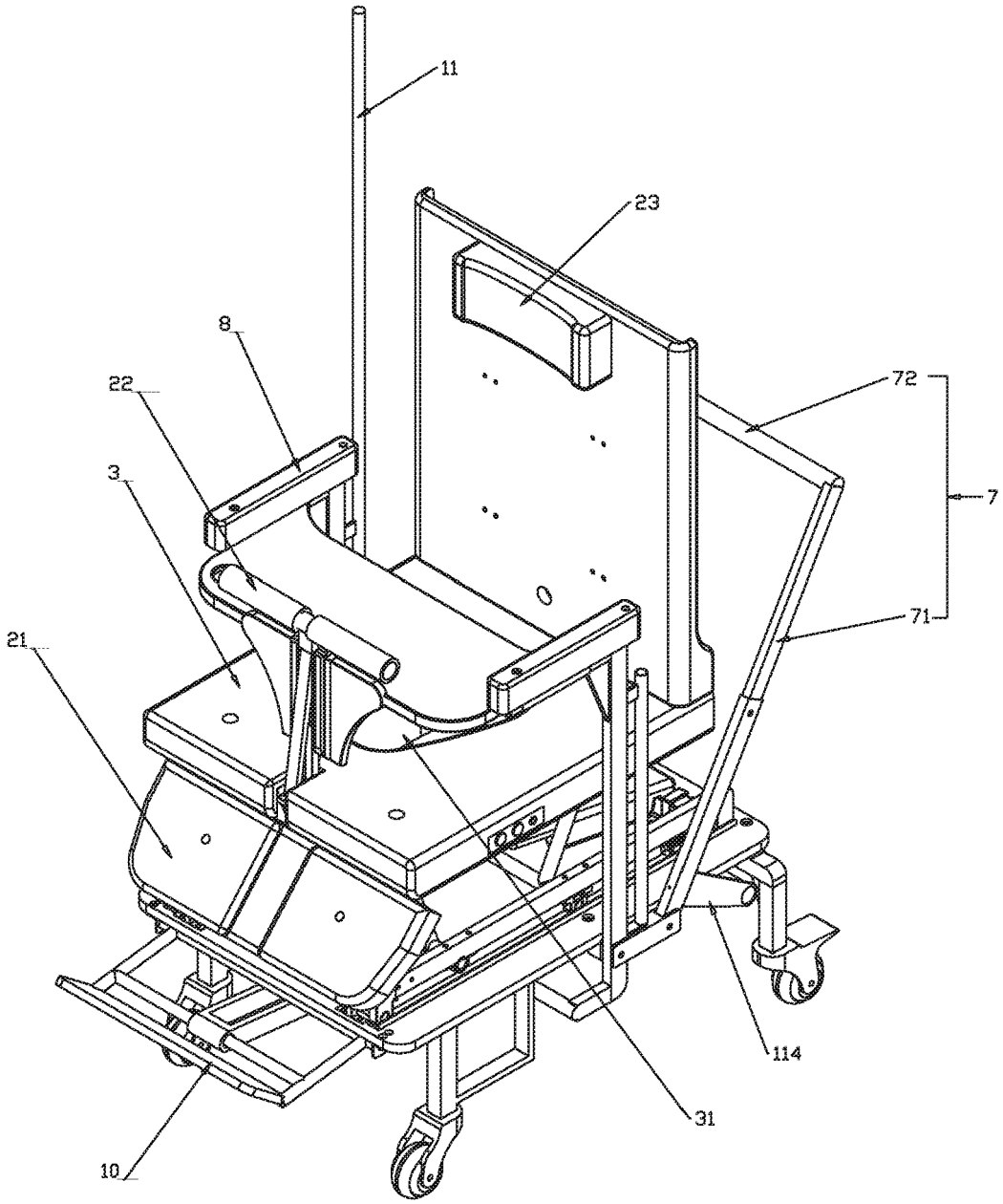

FIG. 3

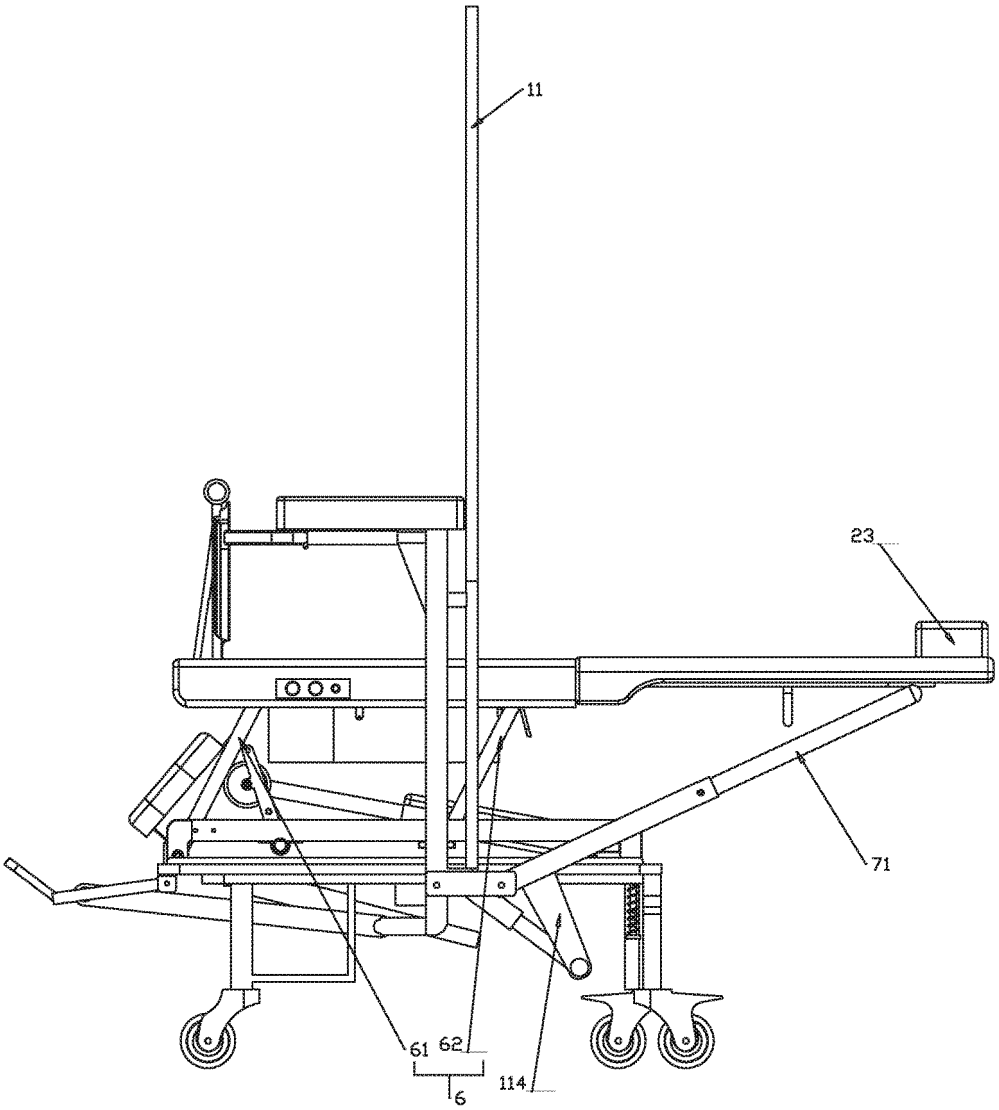

FIG. 4

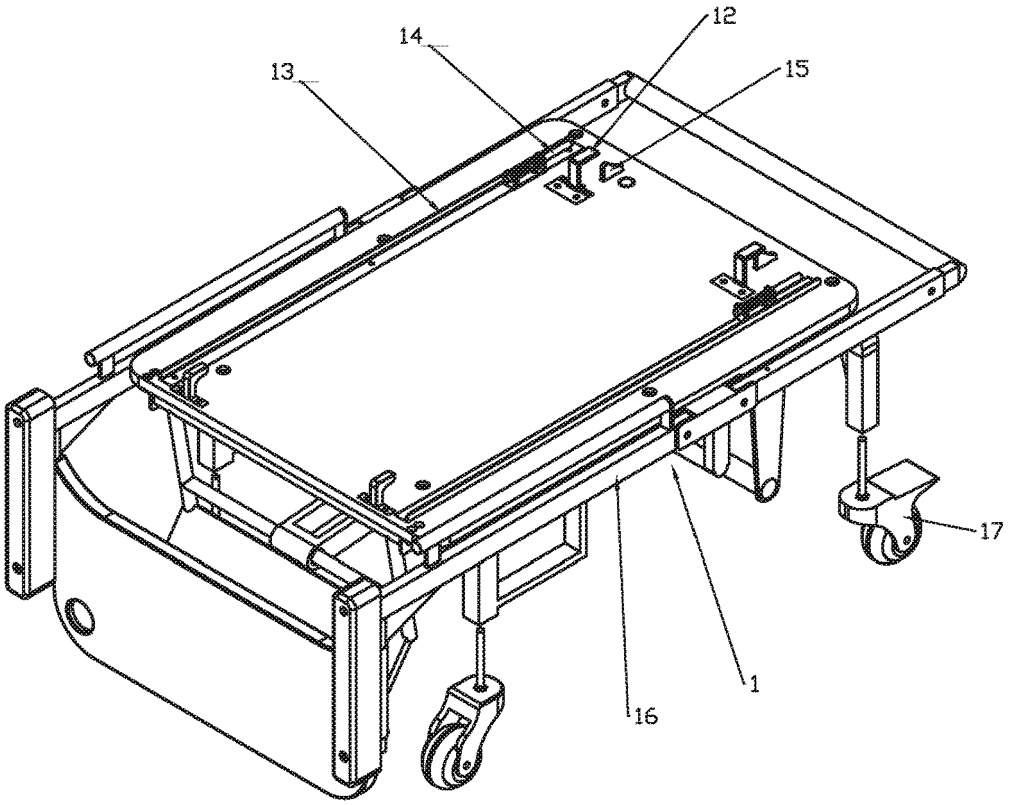

FIG. 5

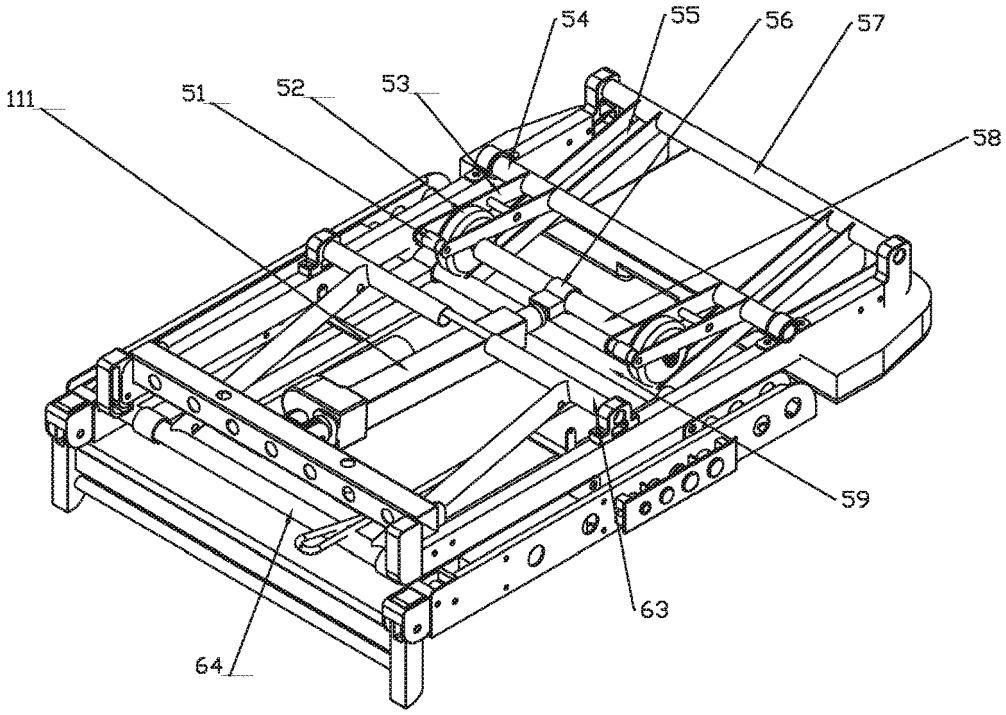

FIG. 6

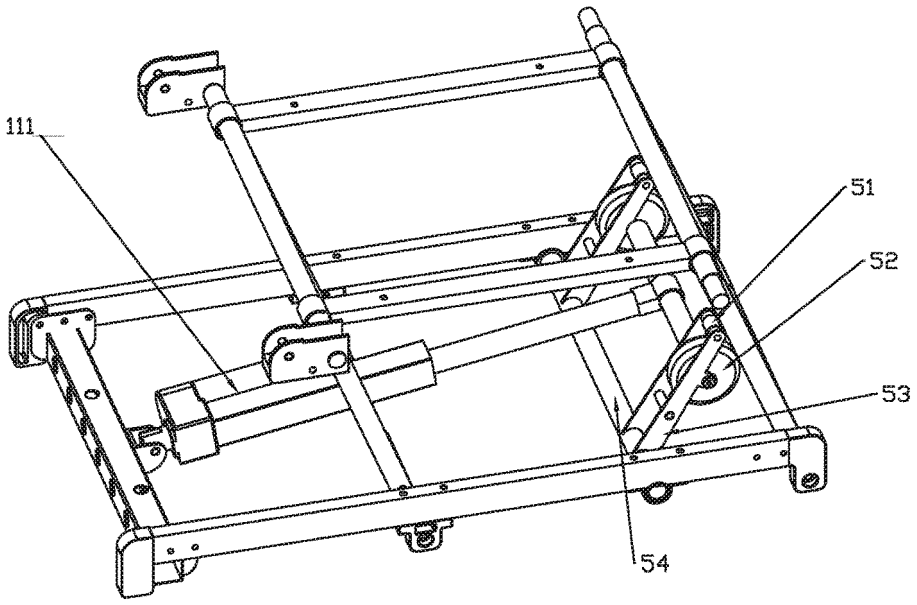

FIG. 7

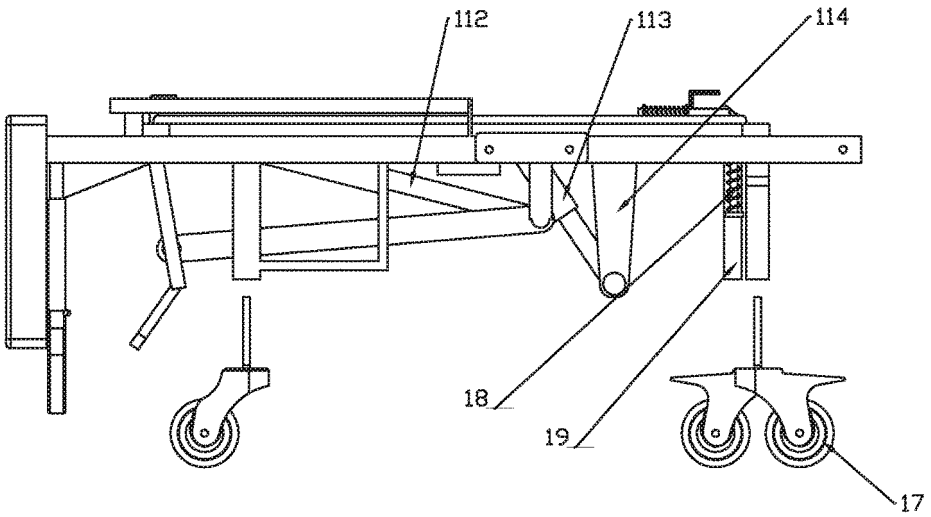

FIG. 8

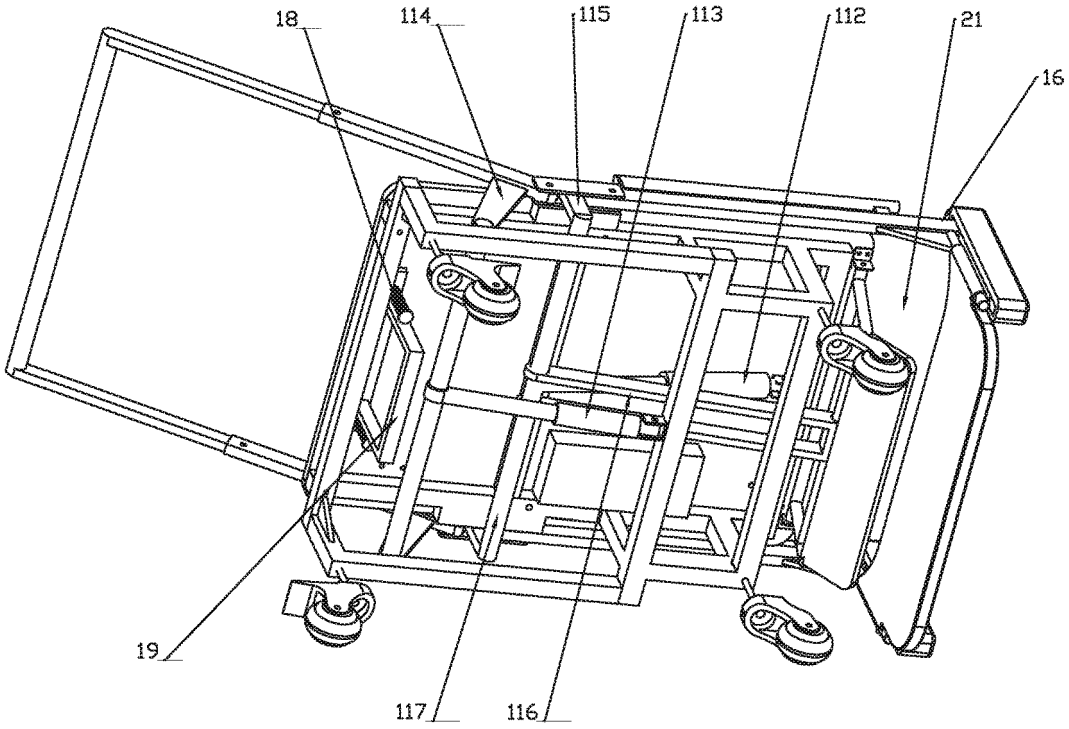

FIG. 9

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 201810331080 **[0001]**
- GB 2048791 A **[0004]**
- CN 105147176 A **[0004]**