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(54) **LEFT-RIGHT FOLDABLE WHEELCHAIR**

(57) A left-right foldable wheelchair, comprising side frames (10), wheel assemblies, a seat assembly (30), and a locking mechanism. Each of the side frames (10) comprises a bottom support rod (11), a seat support rod (12), a rear vertical rod (13), and a front connecting rod (14). The seat assembly (30) comprises first to fourth rods extending along a left-right direction. The first rod (31), the second rod (32), the third rod (33), the fourth rod (34), and the seat support rods (12) on both sides form a first six-rod connection mechanism. The seat assembly (30) further comprises a first connecting rod (35) and a second connecting rod (36) which are arranged in an X-shaped cross configuration. A front end portion of the first connecting rod (35) is rotatably connected to a middle portion of the first rod (31), a rear end portion of the first connecting rod (35) is rotatably connected to a middle portion of the fourth rod (34), a front end portion of the second connecting rod (36) is rotatably connected to a middle portion of the second rod (32), and a rear end portion of the second connecting rod (36) is rotatably connected to a middle portion of the third rod (33). When the locking mechanism is unlocked, the side frames (10) on both sides can be moved closer to each other along the left-right direction, causing the first and second connecting rods to drive the first six-rod connection mechanism to actuate, thereby achieving left-right folding. The structure is novel and occupies minimal space after folding.

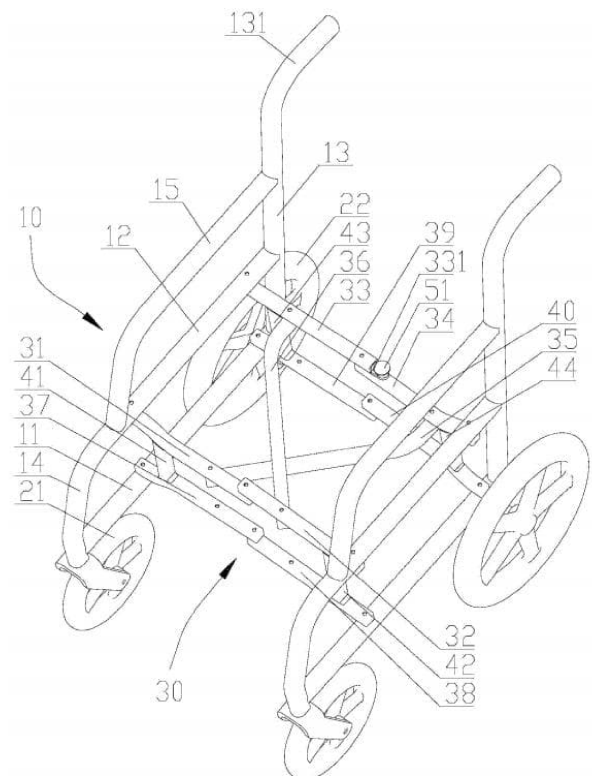


FIG. 1

Description

TECHNICAL FIELD

[0001] The present disclosure belongs to the technical field of medical appliances, in particular to a left-right foldable wheelchair.

BACKGROUND

[0002] A wheelchair is a medical appliance that assists a patient in treatment and rehabilitation. For convenience of storage, a foldable wheelchair appears in the market. Most of the foldable wheelchairs are in a front-rear folding mode. During folding or unfolding, a specific operation space is required in a front-rear direction. In some cases, the foldable wheelchair is not applicable, and some foldable wheelchairs are in a left-right folding mode. However, this type of solution generally has problems of large space occupied after folding and weak rigidity during unfolding, and has specific potential safety hazards when in use.

SUMMARY

[0003] An objective of the present disclosure is to overcome one or more disadvantages in the prior art, and provide a left-right foldable wheelchair that is novel in structure and small in occupied space after folding.

[0004] To achieve the foregoing objective, a technical solution adopted in the present disclosure is as follows: a left-right foldable wheelchair, including two side frames disposed on a left side and a right side, and a seat assembly disposed between the two side frames, each of the side frames including a bottom support rod extending along a horizontal direction, a seat support rod disposed above the bottom support rod in parallel, a rear upright rod connected to rear end portions of the bottom support rod and the seat support rod and extending along a vertical direction, and a front connecting rod connected to front end portions of the bottom support rod and the seat support rod, where

the seat assembly includes a first rod, a second rod, a third rod, and a fourth rod that extend along a left-right direction, a left end portion of the first rod is rotatably connected to a front end portion of the seat support rod of the side frame on the left side, a right end portion of the second rod is rotatably connected to a front end portion of the seat support rod of the side frame on the right side, a left end portion of the third rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the left side, and a right end portion of the fourth rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the right side; a right end portion of the first rod is rotatably connected to a left end portion of the second rod, and a right end

portion of the third rod is rotatably connected to a left end portion of the fourth rod, so that the first rod, the second rod, the third rod, the fourth rod, and the seat support rods on both sides form a first six-rod connection mechanism;

the seat assembly further includes a first connecting rod and a second connecting rod which are arranged in an X-shaped cross configuration, a front end portion of the first connecting rod is rotatably connected to a middle portion of the first rod, a rear end portion of the first connecting rod is rotatably connected to a middle portion of the fourth rod, a front end portion of the second connecting rod is rotatably connected to a middle portion of the second rod, a rear end portion of the second connecting rod is rotatably connected to a middle portion of the third rod, and when the side frames on both sides move closer to each other along the left-right direction, the first six-rod connection mechanism is able to be driven to actuate by using the first connecting rod and the second connecting rod, thereby achieving left-right folding of the foldable wheelchair.

[0005] Preferably, the first rod and the second rod are located on a same vertical plane, and the third rod and the fourth rod are on a same vertical plane.

[0006] Preferably, the first rod and the second rod are staggered in an up-down direction, the third rod and the fourth rod are staggered in the up-down direction, the first rod and the fourth rod are located on a same horizontal plane, and the second rod and the third rod are located on a same horizontal plane.

[0007] Further preferably, the second connecting rod, the first rod, and the fourth rod are located on the same horizontal plane.

[0008] Preferably, the foldable wheelchair further includes a locking mechanism configured to lock the foldable wheelchair in an unfolded state, the locking mechanism includes a locking hole and a locking pin, the locking hole is disposed at the left end portion of the fourth rod, the locking pin is pluggably disposed at the right end portion of the third rod and corresponds to the locking hole, when the locking pin is inserted into the locking hole, the locking mechanism is locked, and when the locking pin is detached from the locking hole, the locking mechanism is unlocked.

[0009] Further preferably, the locking pin is located above the fourth rod.

[0010] Further preferably, a connecting plate extending horizontally towards the right is disposed at the right end portion of the third rod, the locking pin is pluggably disposed through the connecting plate, and an upper end face of the locking pin is flush with a highest point of the third rod.

[0011] Preferably, the seat assembly further includes a fifth rod, a sixth rod, a seventh rod, and an eighth rod that extend along the left-right direction, a left end portion of the fifth rod is rotatably connected to a front end portion of

the bottom support rod of the side frame on the left side, a right end portion of the sixth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the right side, a left end portion of the seventh rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the left side, and a right end portion of the eighth rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the right side; and a right end portion of the fifth rod is rotatably connected to a left end portion of the sixth rod, and a right end portion of the eighth rod is rotatably connected to a left end portion of the seventh rod, so that the fifth rod, the sixth rod, the seventh rod, the eighth rod, and the bottom support rods on both sides form a second six-rod connection mechanism.

[0012] Further preferably, the fifth rod is located directly below the first rod, the sixth rod is located directly below the second rod, the seventh rod is located directly below the third rod, and the eighth rod is located directly below the fourth rod.

[0013] Further preferably, the fifth rod and the sixth rod are staggered in an up-down direction, the seventh rod and the eighth rod are staggered in the up-down direction, the fifth rod and the eighth rod are located on a same horizontal plane, and the sixth rod and the seventh rod are located on a same horizontal plane.

[0014] Further preferably, the seat assembly further includes a first vertical rod, a second vertical rod, a third vertical rod, and a fourth vertical rod, two end parts of the first vertical rod are respectively connected to the first rod and the fifth rod, two end parts of the second vertical rod are respectively connected to the second rod and the sixth rod, two end parts of the third vertical rod are respectively connected to the third rod and the seventh rod, and two end parts of the fourth vertical rod are respectively connected to the fourth rod and the eighth rod, so that the first rod mechanism and the second rod mechanism are connected to each other to form a stable support frame.

[0015] Further preferably, the first vertical rod and the third vertical rod are disposed near the side frame on the left side, and the second vertical rod and the fourth vertical rod are disposed near the side frame on the right side.

[0016] Preferably, an upper end portion of the rear upright rod extends rearward and upwardly to form a handle portion.

[0017] Preferably, the side frame further includes a grab rail, a front end portion of the grab rail extends forward and downward and is connected to the front end portion of the seat support rod, and a rear end portion of the grab rail extends rearward and is connected to a middle portion of the rear upright rod.

[0018] To achieve the foregoing objective, a technical solution adopted in the present disclosure is as follows: a left-right foldable wheelchair, including two side frames disposed on a left side and a right side, wheel assemblies connected to bottoms of the side frames, a seat assembly

disposed between the two side frames, and a locking mechanism configured to lock the foldable wheelchair in an unfolded state, each of the side frames including a bottom support rod extending along a horizontal direction, a seat support rod disposed above the bottom support rod in parallel, a rear upright rod connected to rear end portions of the bottom support rod and the seat support rod and extending along a vertical direction, and a front connecting rod connected to front end portions of the bottom support rod and the seat support rod, an upper end portion of the rear upright rod extending rearward and upwardly to form a handle portion, the side frame further including a grab rail, a front end portion of the grab rail extending forward and downward and being connected to a front end portion of the seat support rod, a rear end portion of the grab rail extending rearward and being connected to a middle portion of the rear upright rod, and the wheel assemblies including a front wheel assembly connected to a bottom of the front connecting rod and a rear wheel assembly connected to a bottom of the rear upright rod, where

the seat assembly includes a first rod, a second rod, a third rod, and a fourth rod that extend along a left-right direction, the first rod and the second rod are located on a same vertical plane, the third rod and the fourth rod are located on a same vertical plane, a left end portion of the first rod is rotatably connected to a front end portion of the seat support rod of the side frame on the left side, a right end portion of the first rod is rotatably connected to a left end portion of the second rod, a right end portion of the second rod is rotatably connected to a front end portion of the seat support rod of the side frame on the right side, a left end portion of the third rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the left side, a right end portion of the third rod is rotatably connected to a left end portion of the fourth rod, and a right end portion of the fourth rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the right side, so that the first rod, the second rod, the third rod, the fourth rod, and the seat support rods on both sides form a first six-rod connection mechanism, the first rod and the second rod are staggered in an up-down direction, the third rod and the fourth rod are staggered in the up-down direction, the first rod and the fourth rod are located on a same horizontal plane, and the second rod and the third rod are located on a same horizontal plane;

the seat assembly further includes a fifth rod, a sixth rod, a seventh rod, and an eighth rod that extend along a left-right direction, the fifth rod is located directly below the first rod, the sixth rod is located directly below the second rod, a left end portion of the fifth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the left side, a right end portion of the fifth rod is rotatably

connected to a left end portion of the sixth rod, and a right end portion of the sixth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the right side; the seventh rod is located directly below the third rod, the eighth rod is located directly below the fourth rod, a left end portion of the seventh rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the left side, a right end portion of the eighth rod is rotatably connected to a left end portion of the seventh rod, and a right end portion of the eighth rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the right side, so that the fifth rod, the sixth rod, the seventh rod, the eighth rod, and the bottom support rods on both sides form a second six-rod connection mechanism; the fifth rod and the sixth rod are staggered in an up-down direction, the seventh rod and the eighth rod are staggered in the up-down direction, the fifth rod and the eighth rod are located on a same horizontal plane, and the sixth rod and the seventh rod are located on a same horizontal plane;

the seat assembly further includes a first vertical rod, a second vertical rod, a third vertical rod, and a fourth vertical rod, two end portions of the first vertical rod are respectively connected to the first rod and the fifth rod, two end portions of the second vertical rod are respectively connected to the second rod and the sixth rod, two end portions of the third vertical rod are respectively connected to the third rod and the seventh rod, and two end portions of the fourth vertical rod are respectively connected to the fourth rod and the eighth rod, so that the first six-rod connection mechanism and the second six-rod connection mechanism are mutually connected to form a stable support frame; the first vertical rod and the third vertical rod are disposed near the side frame on the left side, and the second vertical rod and the fourth vertical rod are disposed near the side frame on the right side;

the seat assembly further includes a first connecting rod and a second connecting rod which are arranged in an X-shaped cross configuration, a front end portion of the first connecting rod is rotatably connected to a middle portion of the first rod, a rear end portion of the first connecting rod is rotatably connected to a middle portion of the fourth rod, a front end portion of the second connecting rod is rotatably connected to a middle portion of the second rod, and a rear end portion of the second connecting rod is rotatably connected to a middle portion of the third rod; the second connecting rod, the first rod, and the fourth rod are located on the same horizontal plane; and the locking mechanism includes a locking pin pluggably disposed at the right end portion of the third rod, the locking pin is located above the fourth rod and corresponds to a locking hole disposed at the left end portion of the fourth rod, when the locking pin is

inserted into the locking hole, the locking mechanism is locked, when the locking pin is detached from the locking hole, the locking mechanism is unlocked, a connecting plate extending horizontally towards the right is disposed at the right end portion of the third rod, the locking pin is pluggably disposed through the connecting plate, and an upper end face of the locking pin is flush with a highest point of the third rod.

[0019] Because the foregoing technical solutions are used, compared with the prior art, the foldable wheelchair has the following advantages:

The seat assembly includes a first rod, a second rod, a third rod, and a fourth rod that extend along a left-right direction, the first rod and the second rod are located on a same vertical plane, the third rod and the fourth rod are located on a same vertical plane, a left end portion of the first rod is rotatably connected to a front end portion of the seat support rod of the side frame on the left side, a right end portion of the first rod is rotatably connected to a left end portion of the second rod, a right end portion of the second rod is rotatably connected to a front end portion of the seat support rod of the side frame on the right side, a left end portion of the third rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the left side, a right end portion of the third rod is rotatably connected to a left end portion of the fourth rod, and a right end portion of the fourth rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the right side, so that the first rod, the second rod, the third rod, the fourth rod, and the seat support rods on both sides can form a first six-rod connection mechanism. The seat assembly further includes a first connecting rod and a second connecting rod which are arranged in an X-shaped cross configuration, a front end portion of the first connecting rod is rotatably connected to a middle portion of the first rod, a rear end portion of the first connecting rod is rotatably connected to a middle portion of the fourth rod, a front end portion of the second connecting rod is rotatably connected to a middle portion of the second rod, and a rear end portion of the second connecting rod is rotatably connected to a middle portion of the third rod. When the locking mechanism is unlocked, the side frames on both sides can move closer to each other along the left-right direction, so that the first connecting rod and the second connecting rod drive the first six-rod connection mechanism to actuate, thereby achieving left-right folding of the foldable wheelchair. The structure is novel. Because each rod piece of the seat assembly is relatively short, the foldable wheelchair is smaller in occupied space after folding.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]

FIG. 1 is a solid schematic diagram according to a preferred embodiment of the present disclosure, and

in this case, the foldable wheelchair is in an unfolding state;

FIG. 2 is top view of FIG. 1;

FIG. 3 is a schematic diagram of an intermediate state during transition of a foldable wheelchair to a foldable state in FIG. 2; and

FIG. 4 is a schematic diagram after transition of a foldable wheelchair to a foldable state in FIG. 2.

[0021] Reference numerals: 10: side frame; 11: bottom support rod; 12: seat support rod; 13: rear upright rod; 131: handle portion; 14: front connecting rod; 15: grab rail; 21: front wheel assembly; 22: rear wheel assembly; 30: seat assembly; 31: first rod; 32: second rod; 33: third rod; 331: connecting plate; 34: fourth rod; 35: first connecting rod; 36: second connecting rod; 37: fifth rod; 38: sixth rod; 39: seventh rod; 40: eighth rod; 41: first vertical rod; 42: second vertical rod; 43: third vertical rod; 44: fourth vertical rod; and 51: locking pin.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0022] Preferred embodiments of the present disclosure are described in detail below with reference to accompanying drawings, so that advantages and features of the present disclosure can be more readily understood by those skilled in the art.

[0023] Front-rear, up-down, and left-right directions described in the present disclosure are front-rear, up-down, and left-right directions observed during riding by a user.

[0024] As shown in FIG. 1 to FIG. 4, a left-right foldable wheelchair provided in the present disclosure includes two side frames 10 disposed on a left side and a right side, wheel assemblies connected to bottoms of the side frames 10, a seat assembly 30 disposed between the two side frames 10, and a locking mechanism configured to lock the foldable wheelchair in an unfolded state. Each of the side frames 10 includes a bottom support rod 11 extending along a horizontal direction, a seat support rod 12 disposed above the bottom support rod 11 in parallel, a rear upright rod 13 connected to rear end portions of the bottom support rod 11 and the seat support rod 12 and extending along a vertical direction, and a front connecting rod 14 connected to front end portions of the bottom support rod 11 and the seat support rod 12. The wheel assemblies include a front wheel assembly 21 connected to a bottom of the front connecting rod 14 and a rear wheel assembly 22 connected to a bottom of the rear upright rod 13. The seat assembly 30 includes a first rod 31, a second rod 32, a third rod 33, and a fourth rod 34 that extend along a left-right direction. The first rod 31 and the second rod 32 are located on a same vertical plane and have equal lengths. The third rod 33 and the fourth rod 34 are located on a same vertical plane and have equal lengths. A left end portion of the first rod 31 is rotatably connected to a front end portion of the seat support rod 12 of the side frame 10 on the left side, a right end portion of the first rod

31 is rotatably connected to a left end portion of the second rod 32, a right end portion of the second rod 32 is rotatably connected to a front end portion of the seat support rod 12 of the side frame 10 on the right side, a left end portion of the third rod 33 is rotatably connected to a rear end portion of the seat support rod 12 of the side frame 10 on the left side, a right end portion of the third rod 33 is rotatably connected to a left end portion of the fourth rod 34, and a right end portion of the fourth rod 34 is rotatably connected to a rear end portion of the seat support rod 12 of the side frame 10 on the right side, so that the first rod 31, the second rod 32, the third rod 33, the fourth rod 34, and the seat support rods 12 on both sides form a first six-rod connection mechanism. The seat assembly 30 further includes a first connecting rod 35 and a second connecting rod 36 which are arranged in an X-shaped cross configuration (a projection in the up-down direction is X-shaped). A front end portion of the first connecting rod 35 is rotatably connected to a middle portion of the first rod 31. A rear end portion of the first connecting rod 35 is rotatably connected to a middle portion of the fourth rod 34. A front end portion of the second connecting rod 36 is rotatably connected to a middle portion of the second rod 32. A rear end portion of the second connecting rod 36 is rotatably connected to a middle portion of the third rod 33.

[0025] An advantage of such arrangement is that when the locking mechanism is unlocked, the side frames on both sides can move closer to each other along the left-right direction, so that the first connecting rod and the second connecting rod drive the first six-rod connection mechanism to actuate, thereby achieving left-right folding of the foldable wheelchair. The structure is novel. Because each rod piece (the first rod, the second rod, the third rod, or the fourth rod) of the seat assembly is relatively short, the foldable wheelchair is smaller in occupied space after folding. In addition, the first rod and the second rod can further play a role in assist to support a seat below the seat.

[0026] To improve rigidity during unfolding of the foldable wheelchair and improve a support force of the seat assembly, the first rod 31 and the second rod 32 are staggered in an up-down direction, the third rod 33 and the fourth rod 34 are staggered in the up-down direction, the first rod 31 and the fourth rod 34 are located on a same horizontal plane, and the second rod 32 and the third rod 33 are located on a same horizontal plane. Further, the second connecting rod 36, the first rod 31, and the fourth rod 34 are located on the same horizontal plane, so as to enhance compactness and save space.

[0027] To further improve rigidity during unfolding of the foldable wheelchair, in this embodiment, the seat assembly 30 further includes a fifth rod 37, a sixth rod 38, a seventh rod 39, and an eighth rod 40 that extend along a left-right direction, the fifth rod 37 is located directly below the first rod 31 and has a length equal to that of the first rod 31, the sixth rod 38 is located directly below the second rod 32 and has a length equal to that of

the second rod 32, a left end portion of the fifth rod 37 is rotatably connected to a front end portion of the bottom support rod 11 of the side frame 10 on the left side, a right end portion of the fifth rod 37 is rotatably connected to a left end portion of the sixth rod 38, and a right end portion of the sixth rod 38 is rotatably connected to a front end portion of the bottom support rod 11 of the side frame 10 on the right side. The seventh rod 39 is located directly below the third rod 33 and has a length equal to that of the third rod 33, the eighth rod 40 is located directly below the fourth rod 34 and has a length equal to that of the fourth rod 34, a left end portion of the seventh rod 39 is rotatably connected to a rear end portion of the bottom support rod 11 of the side frame 10 on the left side, a right end portion of the eighth rod 40 is rotatably connected to a left end portion of the seventh rod 39, and a right end portion of the eighth rod 40 is rotatably connected to a rear end portion of the bottom support rod 11 of the side frame 10 on the right side, so that the fifth rod 37, the sixth rod 38, the seventh rod 39, the eighth rod 40, and the bottom support rods 11 on both sides form a second six-rod connection mechanism. Specifically, the fifth rod 37 and the sixth rod 38 are staggered in an up-down direction, the seventh rod 39 and the eighth rod 40 are staggered in the up-down direction, the fifth rod 37 and the eighth rod 40 are located on a same horizontal plane, and the sixth rod 38 and the seventh rod 39 are located on a same horizontal plane.

[0028] Further, the seat assembly 30 further includes a first vertical rod 41, a second vertical rod 42, a third vertical rod 43, and a fourth vertical rod 44, two end portions of the first vertical rod 41 are respectively connected to the first rod 31 and the fifth rod 37, two end portions of the second vertical rod 42 are respectively connected to the second rod 32 and the sixth rod 38, two end portions of the third vertical rod 43 are respectively connected to the third rod 33 and the seventh rod 39, and two end portions of the fourth vertical rod 44 are respectively connected to the fourth rod 34 and the eighth rod 40, so that the first six-rod connection mechanism and the second six-rod connection mechanism are mutually connected to form a stable support frame. In addition, the first vertical rod 41 and the third vertical rod 43 are disposed near the side frame 10 on the left side, and the second vertical rod 42 and the fourth vertical rod 44 are disposed near the side frame 10 on the right side.

[0029] In this embodiment, the locking mechanism includes a locking pin 51 pluggably disposed at the right end portion of the third rod 33, the locking pin 51 is located above the fourth rod 34 and corresponds to a locking hole (unshown in figures) disposed at the left end portion of the fourth rod 34, when the locking pin 51 is inserted into the locking hole, the locking mechanism is locked, and when the locking pin 51 is detached from the locking hole, the locking mechanism is unlocked.

[0030] Further, a connecting plate 331 extending horizontally towards the right is disposed at the right end portion of the third rod 33, the locking pin 51 is pluggably

disposed through the connecting plate 331, and an upper end face of the locking pin 51 is flush with a highest point of the third rod 33.

[0031] To improve comfort when in use, in this embodiment, an upper end portion of the rear upright rod 13 extends rearward and upwardly to form a handle portion 131. The side frame 10 further includes a grab rail 15, a front end portion of the grab rail 15 extends forward and downward and is connected to the front end portion of the seat support rod 12, and a rear end portion of the grab rail 15 extends rearward and is connected to a middle portion of the rear upright rod 13.

[0032] The foregoing embodiments are only for illustrating the technical concept and features of the present disclosure. An objective is to enable those skilled in the art to understand the content of the present disclosure and implement the present disclosure accordingly, and shall not be used to limit the protection scope of the present disclosure. Any equivalent changes or modifications made in accordance with the spirit and essence of the present disclosure shall fall within the protection scope of the present disclosure.

Claims

1. A left-right foldable wheelchair, comprising two side frames disposed on a left side and a right side, and a seat assembly disposed between the two side frames, each of the side frames comprising a bottom support rod extending along a horizontal direction, a seat support rod disposed above the bottom support rod in parallel, a rear upright rod connected to rear end portions of the bottom support rod and the seat support rod and extending along a vertical direction, and a front connecting rod connected to front end portions of the bottom support rod and the seat support rod, wherein

the seat assembly comprises a first rod, a second rod, a third rod, and a fourth rod that extend along a left-right direction, a left end portion of the first rod is rotatably connected to a front end portion of the seat support rod of the side frame on the left side, a right end portion of the second rod is rotatably connected to a front end portion of the seat support rod of the side frame on the right side, a left end portion of the third rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the left side, and a right end portion of the fourth rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the right side; a right end portion of the first rod is rotatably connected to a left end portion of the second rod, and a right end portion of the third rod is rotatably connected to a left end portion of the fourth rod,

- so that the first rod, the second rod, the third rod, the fourth rod, and the seat support rods on both sides form a first six-rod connection mechanism; and the seat assembly further comprises a first connecting rod and a second connecting rod which are arranged in an X-shaped cross configuration, a front end portion of the first connecting rod is rotatably connected to a middle portion of the first rod, a rear end portion of the first connecting rod is rotatably connected to a middle portion of the fourth rod, a front end portion of the second connecting rod is rotatably connected to a middle portion of the second rod, a rear end portion of the second connecting rod is rotatably connected to a middle portion of the third rod, and when the side frames on both sides move closer to each other along the left-right direction, the first six-rod connection mechanism is able to be driven to actuate by using the first connecting rod and the second connecting rod, thereby achieving left-right folding of the foldable wheelchair.
2. The left-right foldable wheelchair according to claim 1, wherein the first rod and the second rod are located on a same vertical plane, and the third rod and the fourth rod are on a same vertical plane.
 3. The left-right foldable wheelchair according to claim 1, wherein the first rod and the second rod are staggered in an up-down direction, the third rod and the fourth rod are staggered in the up-down direction, the first rod and the fourth rod are located on a same horizontal plane, and the second rod and the third rod are located on a same horizontal plane.
 4. The left-right foldable wheelchair according to claim 2, wherein the second connecting rod, the first rod, and the fourth rod are located on the same horizontal plane.
 5. The left-right foldable wheelchair according to claim 1, wherein the foldable wheelchair further comprises a locking mechanism configured to lock the foldable wheelchair in an unfolded state, the locking mechanism comprises a locking hole and a locking pin, the locking hole is disposed at the left end portion of the fourth rod, the locking pin is pluggably disposed at the right end portion of the third rod and corresponds to the locking hole, when the locking pin is inserted into the locking hole, the locking mechanism is locked, and when the locking pin is detached from the locking hole, the locking mechanism is unlocked.
 6. The left-right foldable wheelchair according to claim 5, wherein the locking pin is located above the fourth rod.
 7. The left-right foldable wheelchair according to claim 5, wherein a connecting plate extending horizontally towards the right is disposed at the right end portion of the third rod, the locking pin is pluggably disposed through the connecting plate, and an upper end face of the locking pin is flush with a highest point of the third rod.
 8. The left-right foldable wheelchair according to claim 1, wherein the seat assembly further comprises a fifth rod, a sixth rod, a seventh rod, and an eighth rod that extend along the left-right direction, a left end portion of the fifth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the left side, a right end portion of the sixth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the right side, a left end portion of the seventh rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the left side, and a right end portion of the eighth rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the right side; and a right end portion of the fifth rod is rotatably connected to a left end portion of the sixth rod, and a right end portion of the eighth rod is rotatably connected to a left end portion of the seventh rod, so that the fifth rod, the sixth rod, the seventh rod, the eighth rod, and the bottom support rods on both sides form a second six-rod connection mechanism.
 9. The left-right foldable wheelchair according to claim 8, wherein the fifth rod is located directly below the first rod, the sixth rod is located directly below the second rod, the seventh rod is located directly below the third rod, and the eighth rod is located directly below the fourth rod.
 10. The left-right foldable wheelchair according to claim 8, wherein the fifth rod and the sixth rod are staggered in an up-down direction, the seventh rod and the eighth rod are staggered in the up-down direction, the fifth rod and the eighth rod are located on a same horizontal plane, and the sixth rod and the seventh rod are located on a same horizontal plane.
 11. The left-right foldable wheelchair according to claim 8, wherein the seat assembly further comprises a first vertical rod, a second vertical rod, a third vertical rod, and a fourth vertical rod, two end portions of the first vertical rod are respectively connected to the first rod and the fifth rod, two end portions of the second vertical rod are respectively connected to the second rod and the sixth rod, two end portions of the third vertical rod are respectively connected to the third rod and the seventh rod, and two end portions of the fourth vertical rod are respectively connected to the fourth rod and the eighth rod, so that the first six-rod

connection mechanism and the second six-rod connection mechanism are mutually connected to form a stable support frame.

12. The left-right foldable wheelchair according to claim 11, wherein the first vertical rod and the third vertical rod are disposed near the side frame on the left side, and the second vertical rod and the fourth vertical rod are disposed near the side frame on the right side. 5
13. The left-right foldable wheelchair according to claim 1, wherein an upper end portion of the rear upright rod extends rearward and upwardly to form a handle portion. 10
14. The left-right foldable wheelchair according to claim 1, wherein the side frame further comprises a grab rail, a front end portion of the grab rail extends forward and downward and is connected to the front end portion of the seat support rod, and a rear end portion of the grab rail extends rearward and is connected to a middle portion of the rear upright rod. 15 20
15. A left-right foldable wheelchair, comprising two side frames disposed on a left side and a right side, wheel assemblies connected to bottoms of the side frames, a seat assembly disposed between the two side frames, and a locking mechanism configured to lock the foldable wheelchair in an unfolded state, each of the side frames comprising a bottom support rod extending along a horizontal direction, a seat support rod disposed above the bottom support rod in parallel, a rear upright rod connected to rear end portions of the bottom support rod and the seat support rod and extending along a vertical direction, and a front connecting rod connected to front end portions of the bottom support rod and the seat support rod, an upper end portion of the rear upright rod extending rearward and upwardly to form a handle portion, the side frame further comprising a grab rail, a front end portion of the grab rail extending forward and downward and being connected to a front end portion of the seat support rod, a rear end portion of the grab rail extending rearward and being connected to a middle portion of the rear upright rod, and the wheel assemblies comprising a front wheel assembly connected to a bottom of the front connecting rod and a rear wheel assembly connected to a bottom of the rear upright rod, wherein 25 30 35 40 45 50

the seat assembly comprises a first rod, a second rod, a third rod, and a fourth rod that extend along a left-right direction, the first rod and the second rod are located on a same vertical plane, the third rod and the fourth rod are located on a same vertical plane, a left end portion of the first rod is rotatably connected to a front end portion 55

of the seat support rod of the side frame on the left side, a right end portion of the first rod is rotatably connected to a left end portion of the second rod, a right end portion of the second rod is rotatably connected to a front end portion of the seat support rod of the side frame on the right side, a left end portion of the third rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the left side, a right end portion of the third rod is rotatably connected to a left end portion of the fourth rod, and a right end portion of the fourth rod is rotatably connected to a rear end portion of the seat support rod of the side frame on the right side, so that the first rod, the second rod, the third rod, the fourth rod, and the seat support rods on both sides form a first six-rod connection mechanism, the first rod and the second rod are staggered in an up-down direction, the third rod and the fourth rod are staggered in the up-down direction, the first rod and the fourth rod are located on a same horizontal plane, and the second rod and the third rod are located on a same horizontal plane; the seat assembly further comprises a fifth rod, a sixth rod, a seventh rod, and an eighth rod that extend along a left-right direction, the fifth rod is located directly below the first rod, the sixth rod is located directly below the second rod, a left end portion of the fifth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the left side, a right end portion of the fifth rod is rotatably connected to a left end portion of the sixth rod, and a right end portion of the sixth rod is rotatably connected to a front end portion of the bottom support rod of the side frame on the right side; the seventh rod is located directly below the third rod, the eighth rod is located directly below the fourth rod, a left end portion of the seventh rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the left side, a right end portion of the eighth rod is rotatably connected to a left end portion of the seventh rod, and a right end portion of the eighth rod is rotatably connected to a rear end portion of the bottom support rod of the side frame on the right side, so that the fifth rod, the sixth rod, the seventh rod, the eighth rod, and the bottom support rods on both sides form a second six-rod connection mechanism; the fifth rod and the sixth rod are staggered in an up-down direction, the seventh rod and the eighth rod are staggered in the up-down direction, the fifth rod and the eighth rod are located on a same horizontal plane, and the sixth rod and the seventh rod are located on a same horizontal plane; 60 65 70 75 80 85 90 95

the seat assembly further comprises a first vertical rod, a second vertical rod, a third vertical

rod, and a fourth vertical rod, two end portions of the first vertical rod are respectively connected to the first rod and the fifth rod, two end portions of the second vertical rod are respectively connected to the second rod and the sixth rod, two end portions of the third vertical rod are respectively connected to the third rod and the seventh rod, and two end portions of the fourth vertical rod are respectively connected to the fourth rod and the eighth rod, so that the first six-rod connection mechanism and the second six-rod connection mechanism are mutually connected to form a stable support frame; the first vertical rod and the third vertical rod are disposed near the side frame on the left side, and the second vertical rod and the fourth vertical rod are disposed near the side frame on the right side; the seat assembly further comprises a first connecting rod and a second connecting rod which are arranged in an X-shaped cross configuration, a front end portion of the first connecting rod is rotatably connected to a middle portion of the first rod, a rear end portion of the first connecting rod is rotatably connected to a middle portion of the fourth rod, a front end portion of the second connecting rod is rotatably connected to a middle portion of the second rod, and a rear end portion of the second connecting rod is rotatably connected to a middle portion of the third rod; the second connecting rod, the first rod, and the fourth rod are located on the same horizontal plane; and the locking mechanism comprises a locking pin pluggably disposed at the right end portion of the third rod, the locking pin is located above the fourth rod and corresponds to a locking hole disposed at the left end portion of the fourth rod, when the locking pin is inserted into the locking hole, the locking mechanism is locked, when the locking pin is detached from the locking hole, the locking mechanism is unlocked, a connecting plate extending horizontally towards the right is disposed at the right end portion of the third rod, the locking pin is pluggably disposed through the connecting plate, and an upper end face of the locking pin is flush with a highest point of the third rod.

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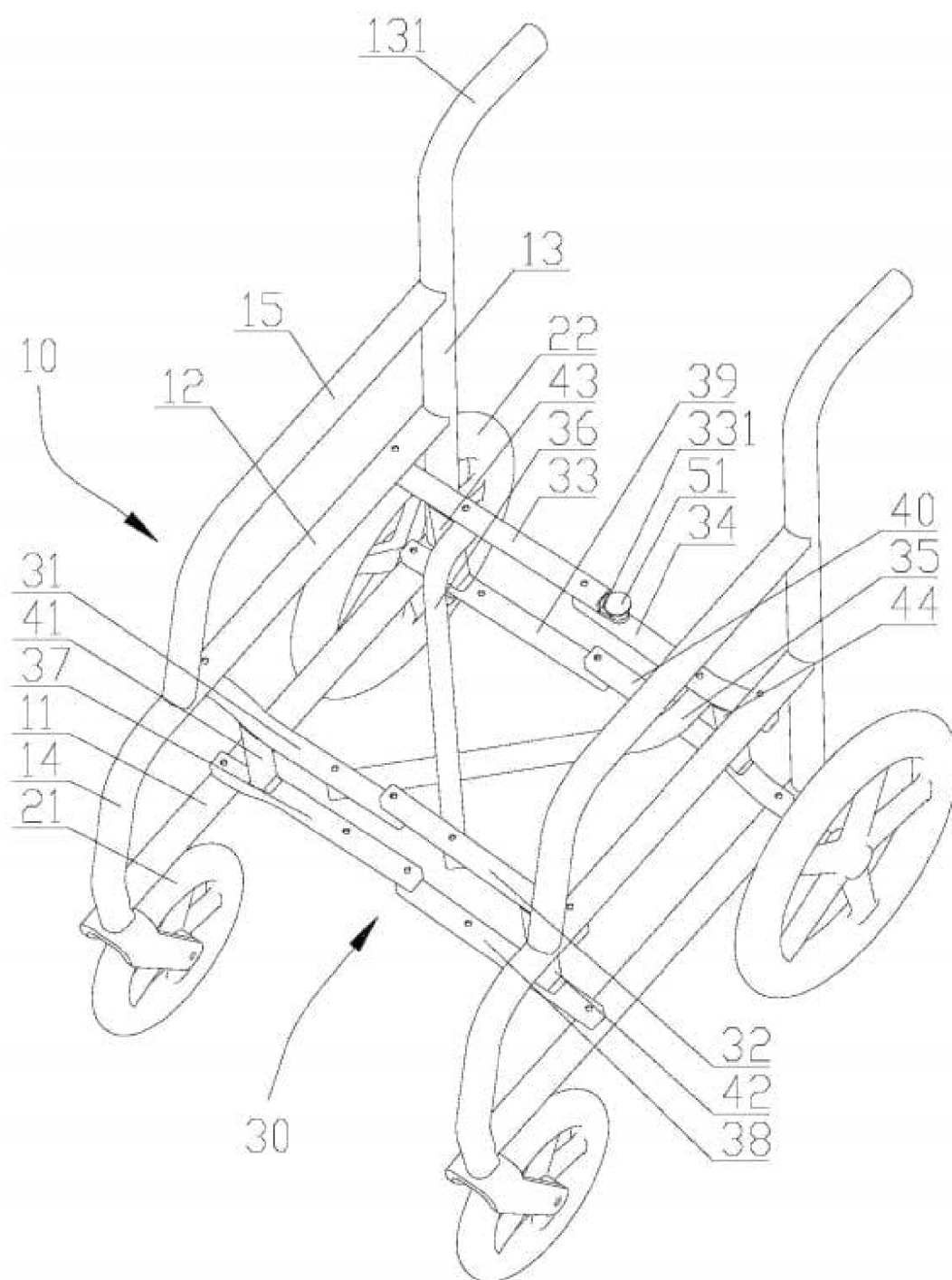


FIG. 1

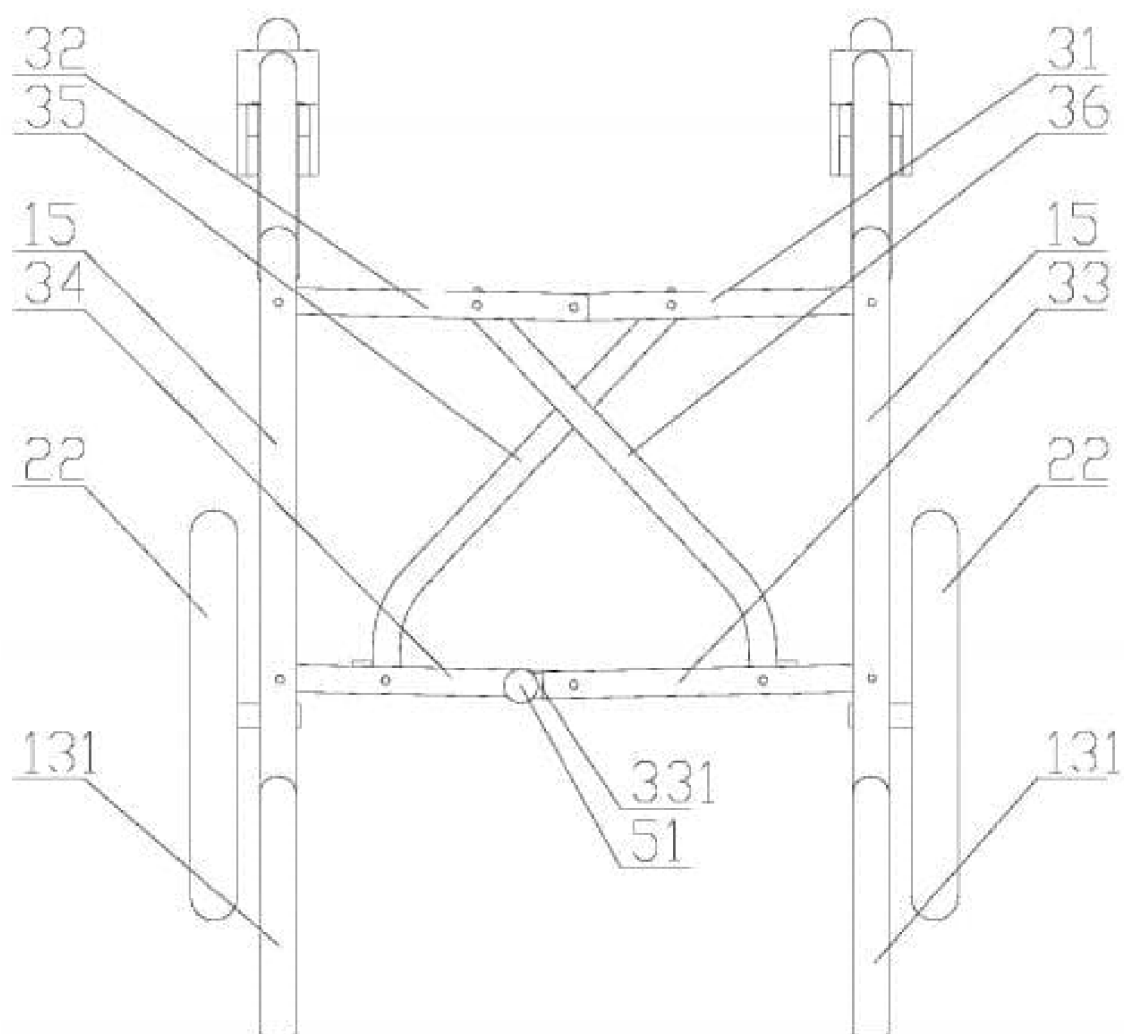


FIG. 2

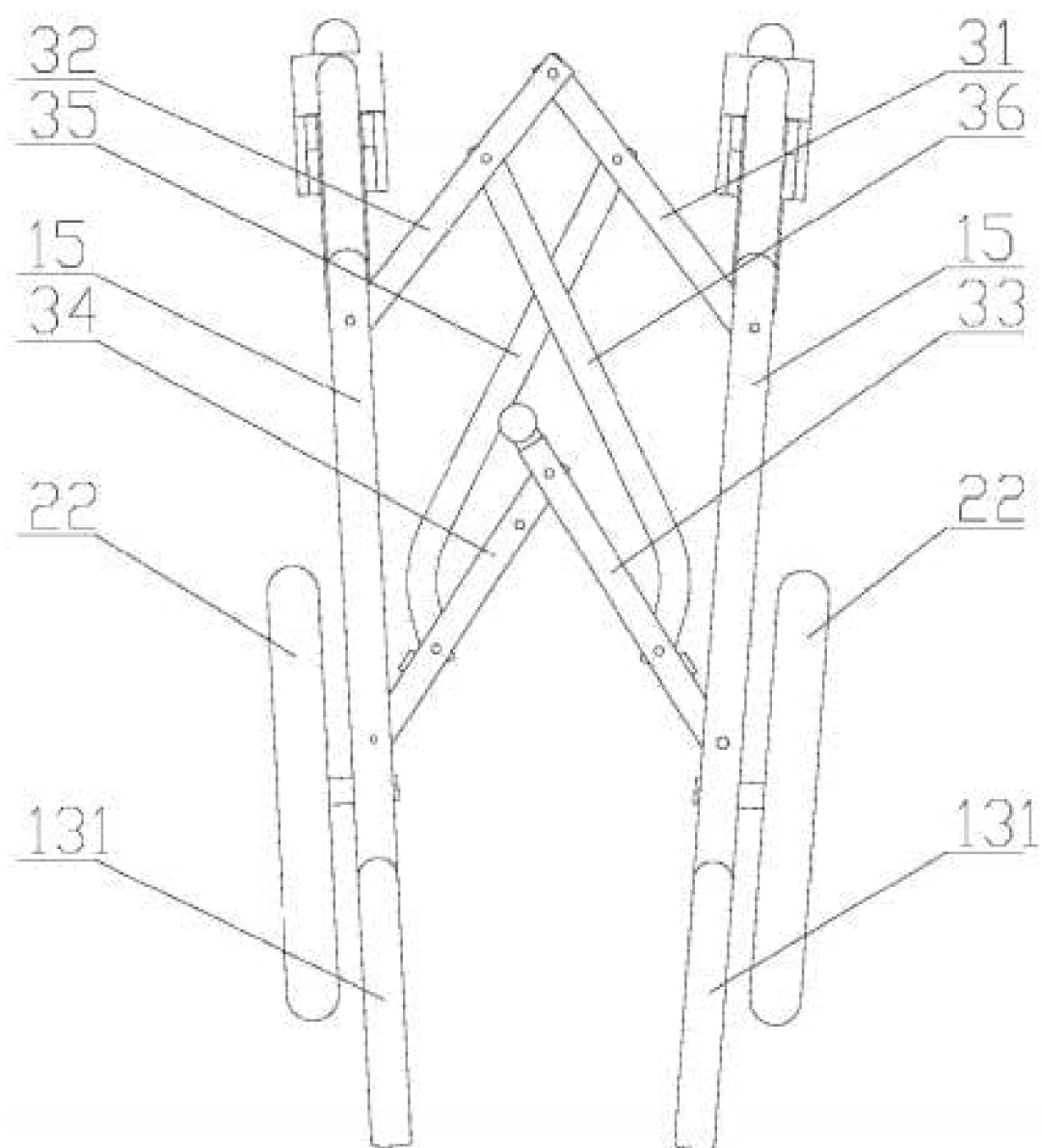


FIG. 3

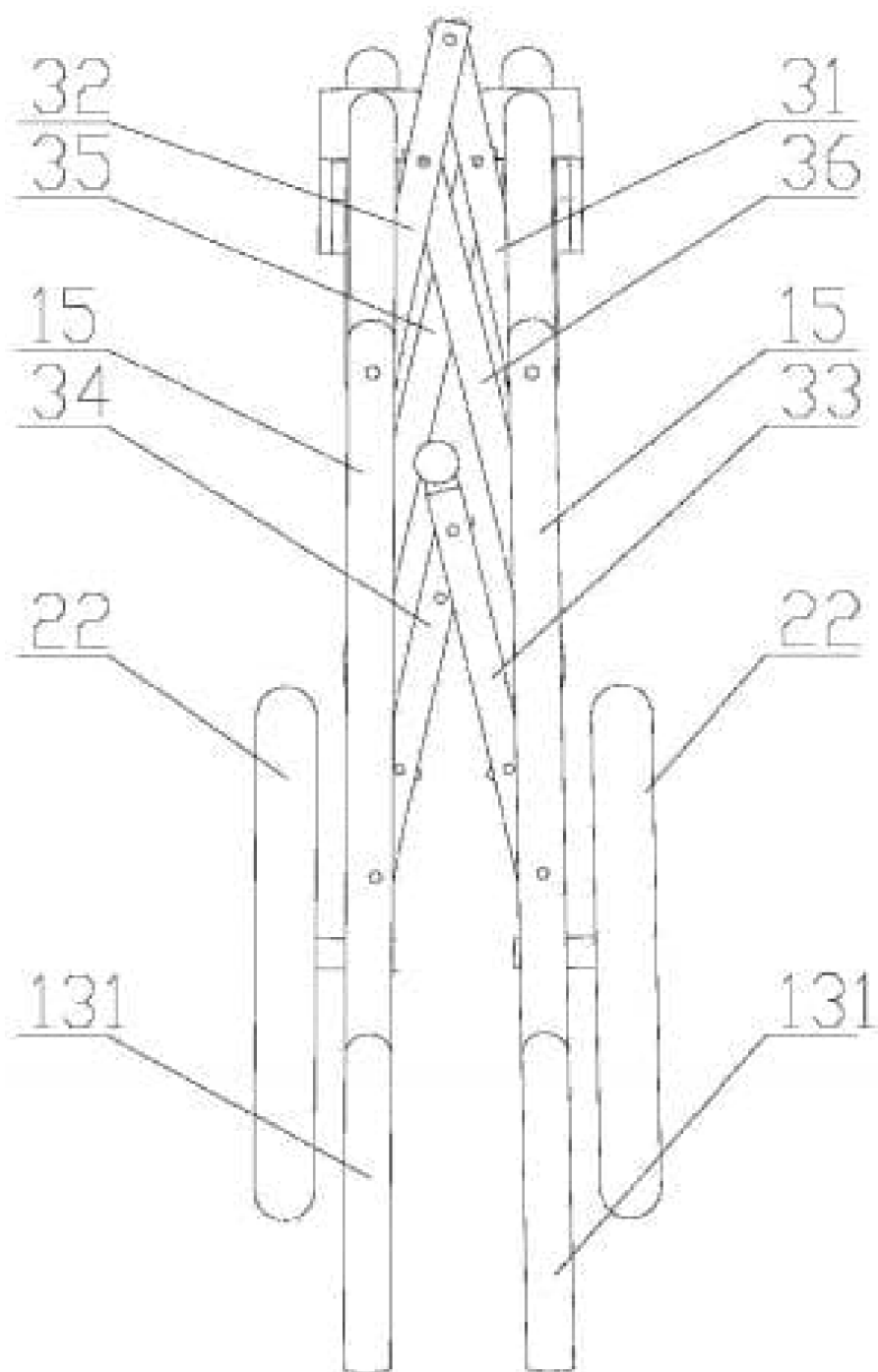


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/140975

A. CLASSIFICATION OF SUBJECT MATTER

A61G5/08(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A61G5,B62B7

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, ENTXTC, ENTXT, VEN, CNKI: 折叠, 轮椅, 推车, 支架, 座位, 锁定, 撑杆, 连杆, 关节, 交叉, 剪叉, 剪式, 叉状, 叉剪, 转动, 枢轴, fold, wheelchair, cart, support, lock, brace, connecting rod, joint, cross, scissor, rotate, pivot

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 117731494 A (SUZHOU DIANTIE INDUSTRIAL DESIGN CO., LTD. et al.) 22 March 2024 (2024-03-22) description, paragraphs 26-33, and figures 1-4	1-15
Y	JP 2015181520 A (NISSHIN IRYOKI KK) 22 October 2015 (2015-10-22) description, paragraphs 17-62, and figures 1-8	1-15
Y	GB 215551 A (ALFRED HERBERT DAVIS) 15 May 1924 (1924-05-15) description, page 2, right-hand column, line 94 to page 3, right-hand column, line 61, and figures 1-4	1-15
A	CN 208198494 U (GOODBABY CHILD PRODUCTS CO., LTD.) 07 December 2018 (2018-12-07) entire document	1-15
A	JP 2014034347 A (APRICA CHILDREN'S PRODUCTS KK) 24 February 2014 (2014-02-24) entire document	1-15
A	KR 20210011643 A (SAMWOO TS CO., LTD.: KIM BOO GON) 02 February 2021 (2021-02-02) entire document	1-15

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"D" document cited by the applicant in the international application	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"E" earlier application or patent but published on or after the international filing date	"&" document member of the same patent family
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

21 March 2025

Date of mailing of the international search report

21 March 2025

Name and mailing address of the ISA/CN

China National Intellectual Property Administration (ISA/
CN)
China No. 6, Xitucheng Road, Jimenqiao, Haidian District,
Beijing 100088

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/140975

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2018042795 A1 (SWANY CORP.) 15 February 2018 (2018-02-15) entire document	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2024/140975

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				JP	2018023493 A 15 February 2018
				JP	6713168 B2 24 June 2020