A multifunctional wheelchair with a urine and stool collection system

TECHNICAL FIELD

The present invention relates to the field of wheelchair technology, and particularly relates to a multi-functional wheelchair with a urine and stool collection and treatment system.

BACKGROUND TECHNOLOGY

As China gradually enters an aging society, an increasing number of people are entering old age. Some elderly individuals struggle with self-care in toileting matters and require assistance from caregivers. Daily care routines involve particularly demanding tasks such as cleaning up after using the bathroom. Moreover, many seniors experience mobility difficulties due to physical conditions, while existing wheelchairs lack urine and feces collection capabilities, significantly increasing caregiving demands. To address these challenges, this invention introduces a multifunctional wheelchair equipped with an integrated urine and feces collection system.

INVENTION

In view of the above shortcomings in the prior art, the present invention provides a multi-functional wheelchair with urine and feces collection and treatment system, which has simple and reasonable structure and is easy to operate.

A multifunctional wheelchair with an incontinence collection and processing system, comprising: a wheelchair body; an incontinence collection and processing system mounted on a base bracket at the bottom of the wheelchair body; side armrests provided on both sides of the wheelchair body, each equipped with a control console containing a controller; a control lever mounted on the top of the console; and a central toilet opening located in the middle of the wheelchair body;

The urine and feces collection system comprises a pipeline and a collection box. The pipeline's top features a flushing port, while its bottom connects to the collection box's top via a plastic telescopic hose. A flushing mechanism is installed on the pipeline's side away from the collection box. The pipeline has first and second clasp rings on opposite sides. The collection box's sides are equipped with side panels fixed to the wheelchair's base frame, featuring sliding rails. The collection box's sides contain matching sliders that engage with these rails. The top of the collection box includes a first compartment door, storage box, first limit rod, and second limit rod. The storage box is positioned on both sides of the first compartment door, while the first and second limit rods are installed on opposite sides of the pipeline. The first limit rod connects to the first clasp ring, and the second limit rod links to the second clasp ring. An electric telescopic rod near the first limit rod is fixed to the pipeline's outer wall, with the collection box's rear side housing a second compartment door.

As a preferred option, the flushing port and the toilet seat port are mutually matched.

As a preferred option, the collection box is provided with a smooth arc-shaped partition inside.

As a preferred option, the bin door is made of transparent material.

As a preferred option, the bin door one and the bin door two are closed by a latch.

As a preferred option, the second bin door is provided with a handle.

As a preferred option, the electric telescopic rod is electrically connected to the controller.

The beneficial effects of the present invention are as follows:

The invention adds a urine and stool collection and treatment system to the wheelchair, so that the user can solve the urine and stool without getting up, reducing the workload of nursing staff; the urine and stool collection and treatment system is controlled by an electric telescopic rod, which is convenient for disassembly and cleaning.

FIGURE CAPTIONS

To better illustrate the technical solutions of the embodiments of the present invention, a brief introduction to the accompanying drawings used in the embodiments will be provided below. It should be understood that the following drawings only demonstrate certain embodiments of the present invention and should not be construed as limiting the scope. Ordinary skilled persons in the art can obtain other relevant drawings based on these without requiring inventive effort.

Fig 1 is a schematic diagram of the structure of the present invention;

Fig 2 is a schematic diagram of the structure of the urine and feces collection and treatment system according to the present invention;

Fig 3 is a side structure schematic diagram of the urine and feces collection and treatment system;

Fig 4 is a front structure schematic diagram of the urine and feces collection and treatment system;

Fig 5 is a cross-sectional view along line A-A in Figure 4;

1. Wheelchair body; 11. Armrest; 12. Control console; 13. Control lever; 14. Toilet opening; 2. Pipe; 21. Flush port; 22. Extending hose; 23. First buckle ring; 24. Second buckle ring; 3. Collection bin; 31. Sliding block; 32. First compartment door; 33. First limit rod; 34. Second limit rod; 35. Second compartment door; 36. Arc-shaped partition; 37. Handle; 4. Flush mechanism; 5. Baffle plate; 6. Storage box; 7. Electric telescopic rod; 8. Lock fastener.

SPECIFIC IMPLEMENTATION METHODS

To better illustrate the objectives, technical solutions, and advantages of the present invention, the following detailed description will be provided with reference to the

accompanying drawings from the embodiments of the present invention. It should be noted that the described embodiments represent only a portion of the invention's implementations rather than all possible ones. The directional terms "center", "upper", "lower", "left", "right", "vertical", "horizontal", "inside", and "outside" are based on the positions shown in the drawings. These descriptions are provided for clarity and convenience of explanation, and should not be construed as limiting the scope of the invention.

As shown in the accompanying drawings, a multi-functional wheelchair with an integrated urine and feces collection system comprises a main body 1 and a dedicated collection unit mounted on a base bracket at the wheelchair's bottom. The main body 1 features handrails 11 on both sides, each equipped with a control console 12 containing an internal controller. A control lever 13 is positioned at the console's top, while the center of the wheelchair body 1 contains a central toilet opening 14.

The urine and feces collection system comprises a conduit 2 and a collection tank 3. The top of the conduit 2 is equipped with a flushing port 21 that corresponds to the toilet opening 14. The bottom of the conduit 2 connects to the top of the collection tank 3 via a plastic telescopic hose 22. A flushing device 4 is installed on the conduit 2's side away from the collection tank 3. The conduit 2 features first and second snap-on rings 23 and 24 on its opposite sides respectively;

The collection box 3 is equipped with side panels 5 fixed to the base bracket of the wheelchair body 1. These panels feature sliding grooves, while matching sliders 31 on both sides facilitate waste disposal. Inside the box, a smooth curved partition 36 prevents debris accumulation and ensures easy cleaning. The top section contains compartment door 32 made of transparent material for monitoring waste levels, flanked by storage boxes 6 for daily items like toilet paper. First and second limit rods 33/34 are installed along pipe 2, connected to first and second buckles 23/24 respectively. An electric telescopic rod 7 near the first limit rod 31 is wirelessly linked to the controller, its tip securely attached to pipe 2's exterior. The rear section has compartment door 35 with handle 37, sensor, and alarm connected to the controller. When waste reaches preset levels, the alarm activates to alert caregivers. Both doors remain locked via latch 8.

Working principle:

During use, the patient sits on the wheelchair base 1 and defecates through the toilet opening 14. This opening connects to the flushing port 21 of the pipeline 2, allowing waste to be collected in the collection box 3. The patient can retrieve daily necessities like toilet paper from the storage box 6. Caregivers can monitor the waste status in the collection box 2 via the compartment door 32, and the alarm system will alert them when cleaning is required.

During cleaning, control lever 13 activates the electric telescopic rod 7 to lower the pipe 2. The plastic telescopic hose 22 at the bottom of the pipe folds, while the first buckle ring 23 descends along the first limit rod 33 and the second buckle ring 24 along the second limit rod 34. These limit rods ensure the pipe descends smoothly without damaging components. The waste collection system is then pulled out via handle 37, allowing slider 31 on the collection box 3 to move along the baffle 5's track for extraction. After opening bin door one 32 and bin door two 35 for cleaning, the waste collection system is pushed beneath the toilet seat opening 14. Finally, control lever 13 reactivates the electric telescopic rod 7 to raise it back up.

The invention adds a urine and stool collection and treatment system to the wheelchair, so that the user can solve the problem without getting up, reducing the workload of nursing staff; the urine and stool collection and treatment system is controlled by an electric telescopic rod, which is convenient for disassembly and cleaning.

The above is only the preferred embodiment of the invention, and is not intended to limit the invention. Any modification, equivalent substitution and improvement made within the spirit and principle of the invention shall be included in the scope of protection of the invention.