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(54) MULTIFUNCTIONAL MEDICAL FLOOR-STAND

(57) The present invention discloses a multifunctional floor-stand medical cart. The medical cart includes a vertical section fixedly connected and mounted on the floor and a horizontal section that is connected to an upper portion of the vertical section and extends to be located above a hospital bed. The horizontal section is provided with a supporting swing pipe connected to the ceiling. The vertical section or the horizontal section is provided with a medical gas pipe safety control device and a power supply safety control device. Medical gas pipes made of rigid tubes and a power supply extend into inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling respectively, for installation and connection with corresponding safety control devices, medical gas terminals, a power supply socket interface, and so on. A treatment monitoring functional assembly, a liquid medicine pump rack assembly, a nursing functional assembly, and a nursing function integrated device are installed on the medical cart. The medical cart is formed by an integrated structure or a split-type composite structure. The present invention has advantages such as safety and reliability in use, convenient maintenance and repair, a more complete and reasonable configuration of functional units, and being convenient for medical staff to operate and use.

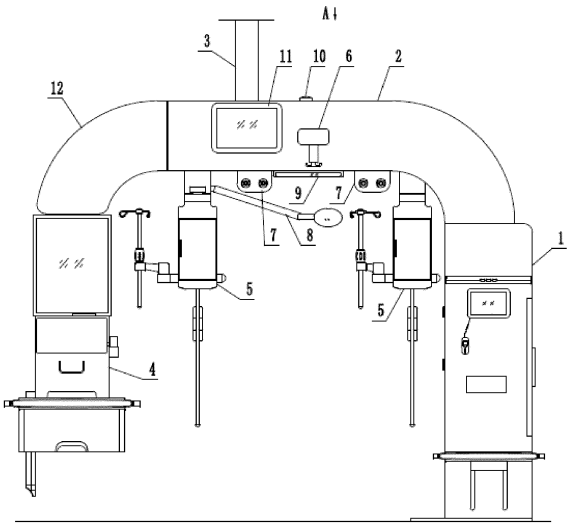

FIG. 1

EP 3 482 733 A1

Description

TECHNICAL FIELD

[0001] The present invention relates to hospital auxiliary therapeutic equipment, and particularly to a multifunctional floor-stand medical cart.

BACKGROUND

[0002] An intensive care unit (ICU) is an important subject in modern hospitals. ICU suspension bridges, as indispensable auxiliary medical equipment in the ICU, have been applied clinically. In the prior art, the ICU suspension bridges all employ a suspended bridge frame structure equipped with medical gas and power supply interfaces as well as a simple device plate. The ICU suspension bridge is only connected to the ceiling in a suspended manner through a swing pipe, and is not supported by the floor. Therefore, the swing pipe requires maintenance regularly, and has a safety hazard of falling off. Besides, medical gas pipes are all made of hoses and connected to medical gas terminals. The hoses are aged and damaged easily in long-term use, and require regular repair and replacement. Once aged and damaged, the hoses cause safety accidents easily. Besides, it is extremely inconvenient to repair and replace the hoses, thus affecting the usage continuity of the hoses and failing to meet the requirement of 24h uninterrupted medical care and use of the ICU. Meanwhile, a liquid medicine rack of the existing ICU suspension bridge is large in size and is limited by the space of a sickbed during connection and movement, and therefore is inconvenient to use clinically. In addition, transfer of a patient from an ICU sickbed to a transfer sickbed is accomplished by medical staff manually, which not only requires coordination of multiple persons but is also likely to cause a secondary injury to the patient during the transfer process.

SUMMARY

[0003] An objective of the present invention is to provide a multifunctional floor-stand medical cart used beside an ICU sickbed. The medical cart has a vertical section fixed on the floor and a horizontal section connected to the ceiling, so as to be supported more firmly. Medical gas pipes are made of rigid tubes and connected to medical gas terminals. The medical cart further has a medical gas pipe safety control device and a power supply safety control device which facilitate safety control, so that maintenance and repair are convenient. Meanwhile, a liquid medicine pump rack assembly adopts a forward-backward sliding structure to expand the motion range. Moreover, a patient moving and hoisting device is provided. Functional units are configured more completely, so that medical staff can operate and use the medical cart conveniently.

[0004] In order to achieve the foregoing objective, the present invention employs the following technical solution:

A multifunctional floor-stand medical cart, which is mainly used beside an ICU sickbed to support bearing of medical instrument and equipment and installation of nursing functional parts, includes a vertical section fixedly connected and mounted on the floor beside the ICU sickbed and a horizontal section that is connected to an upper portion of the vertical section and extends to be located above the sickbed. The horizontal section is provided with a supporting swing pipe connected to the ceiling. The vertical section or the horizontal section is provided with a medical gas pipe safety control device and a power supply safety control device. Medical gas pipes made of rigid tubes extend into inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding medical gas pipe safety control device and medical gas terminals. A power supply extends into the inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding power supply safety control device and a power supply socket interface. A treatment monitoring functional assembly is installed on the vertical section. The horizontal section is connected to at least one group of a liquid medicine pump rack assembly having a forward-backward sliding structure and a nursing functional assembly. A tail end of the horizontal section is connected to a nursing function integrated device through a movable arm. The medical cart has an integrated structure or a split-type composite structure. In the medical cart, the liquid medicine pump rack assembly can be moved forward and backward to selectively infuse medicine at any part of the body of a patient; in addition, with the coordination of the movable arm structure, the nursing function integrated device can be flipped over and moved from the tail end of the horizontal section to one side of the horizontal section, so as to maximize the medical care space beside the bed.

[0005] In this technical solution, the medical cart further includes a patient moving and hoisting device disposed on the horizontal section.

[0006] In this technical solution, the patient moving and hoisting device adopts a structure of a moving and hoisting arm; the moving and hoisting arm is connected to the horizontal section through a fixed holder; the moving and hoisting arm is flexibly connected to the fixed holder through a shaft; a sling having a hoisting hook and driven by a lifting motor is installed on the moving and hoisting arm.

[0007] In this technical solution, the patient moving and hoisting device alternatively adopts a structure of a lifting arm; the lifting arm is connected to the horizontal section through a fixed holder; the lifting arm is flexibly connected to the fixed holder through a shaft and is driven by a driving device to ascend and descend; a sling having a hoisting hook is fixedly installed on the lifting arm.

[0008] In this technical solution, the lifting arm is alternatively connected to the horizontal section through a shaft seat; one end of the lifting arm is connected to a driving device; a sling having a hoisting hook is fixedly installed on the lifting arm.

[0009] In this technical solution, the treatment monitoring functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a ventilator platform, a call intercom device, a medical instrument platform, a strong/weak power supply device, and a medical gas terminal.

[0010] In this technical solution, the ventilator platform has a fixed structure or a lifting structure.

[0011] In this technical solution, the ventilator platform is connected to a lower end of the vertical section through a platform device, and the platform device has a motor-driven lifting structure or a manually driven lifting structure.

[0012] In this technical solution, the liquid medicine pump rack assembly is hoisted on the horizontal section by using a cantilever; the cantilever is provided with a chute; the liquid medicine pump rack assembly slides forward and backward along the cantilever through the chute.

[0013] In this technical solution, the liquid medicine pump rack assembly is alternatively hoisted on the horizontal section in combination with the cantilever by using a jib I; the cantilever is provided with a chute; the jib I has one end connected to the liquid medicine pump rack assembly and the other end connected to the chute; the jib I enables the liquid medicine pump rack assembly to be unfolded to rotate and slide along the cantilever.

[0014] In this technical solution, the cantilever is connected to an inspection illuminating lamp through a joint arm.

[0015] In this technical solution, the liquid medicine pump rack assembly is alternatively hoisted on the horizontal section by using double jibs; the double jibs have one end connected to the liquid medicine pump rack assembly and the other end connected to the horizontal section; the double jibs enable the liquid medicine pump rack assembly to be unfolded to rotate.

[0016] In this technical solution, the liquid medicine pump rack assembly is alternatively hoisted on the horizontal section by using a flexible swing pipe.

[0017] In this technical solution, the liquid medicine pump rack assembly is formed by a liquid medicine pump rack box, and the liquid medicine pump rack box further includes, but is not limited to, a configuration combination of the following functional units: a power supply socket, an information interface, a central shaft lever, an extension arm, a liquid medicine hook shaft lever assembly, a spooler, and a medical gas terminal.

[0018] In this technical solution, the nursing functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a medical gas terminal, auxiliary lighting, a patient basic information digital display screen, and a sleep lamp.

[0019] In this technical solution, the nursing function integrated device is a cabinet-type nursing terminal box, a function integrated box rack/board, or a digital information image assembly; the nursing function integrated device further includes, but is not limited to, a configuration combination of the following functional units: a medical image digital display device, a film viewer, a keyboard, a mouse box, a flashlight, a plate, a drawer, a suction catheter box, a stethoscope hanger, a power supply socket, a strong/weak power supply device, and a medical gas terminal.

[0020] In this technical solution, the nursing function integrated device employs a structure of a nursing terminal box having a storage box, and the storage box is provided with a terminal box door; the medical image digital display device or film viewer is installed on the nursing terminal box or integrally formed with the terminal box door; the plate and the drawer are integrally connected to the nursing terminal box; the drawer is embedded with the power supply socket and is provided with a protective door I; the strong/weak power supply device is installed on the nursing terminal box; the strong/weak power supply device has a protective door; the keyboard employs a structure flipped over and connected outside the nursing terminal box, or a structure flexibly hidden inside the nursing terminal box.

[0021] In this technical solution, the horizontal section employs an arc arm structure, a straight arm structure, or a special-shaped arm structure.

[0022] In this technical solution, the medical gas pipe safety control device is provided with a pipe valve and a pressure display alarm device that are connected to the medical gas pipes; the power supply safety control device is provided with a power supply break safety device connected to the power supply.

[0023] In this technical solution, the vertical section is further provided with a storage box, and the storage box is provided with a door.

[0024] As an improvement of the technical solution of the present invention, a multifunctional floor-stand medical cart, which is mainly used beside an ICU sickbed to support bearing of medical instrument and equipment and installation of nursing functional parts, includes two vertical sections fixedly connected and mounted on the floor on two sides of the ICU sickbed respectively and a horizontal section that is connected between the two vertical sections and located above the sickbed. The horizontal section is provided with a supporting swing pipe connected to the ceiling. The vertical sections or the horizontal section is provided with a medical gas pipe safety control device and a power supply safety control device. Medical gas pipes made of rigid tubes extend into inner cavities of the vertical sections and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding medical gas pipe safety control device and medical gas terminals. A power supply extends into the inner cavities of the vertical sections and the horizon-

tal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding power supply safety control device and a power supply socket interface. A treatment monitoring functional assembly and a nursing device assembly are installed on the two vertical sections respectively. The horizontal section is connected to at least one group of a liquid medicine pump rack assembly having a forward-backward moving structure and a nursing functional assembly. The medical cart has an integrated structure or a split-type composite structure. In the medical cart, the liquid medicine pump rack assembly can be moved forward and backward to selectively infuse medicine at any part of the body of a patient.

[0025] In this technical solution, the medical cart further includes a patient moving and hoisting device disposed on the horizontal section.

[0026] In this technical solution, the treatment monitoring functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a ventilator platform, a call intercom device, a medical instrument platform, a strong/weak power supply device, and a medical gas terminal.

[0027] In this technical solution, the nursing functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a medical gas terminal, auxiliary lighting, a patient basic information digital display screen, and a sleep lamp.

[0028] In this technical solution, the nursing device assembly further includes, but is not limited to, a configuration combination of the following functional units: a medical image digital display device, a film viewer, a keyboard, a mouse box, a flashlight, a plate, a drawer, a suction catheter box, a power supply socket, a stethoscope hanger, a strong/weak power supply device, and a medical gas terminal.

[0029] The present invention mainly has the following advantages and beneficial effects:

1. By using the technical solution of the present invention, the medical cart consists of a vertical section fixedly connected and mounted on the floor beside an ICU sickbed and a horizontal section that is connected to an upper portion of the vertical section and extends to be located above the sickbed, and the horizontal section is provided with a supporting swing pipe connected to the ceiling. The floor-stand structural design of the present invention fundamentally solves the problem in the prior art that the conventional suspension structure of the ICU suspension bridge has a safety hazard of falling off.

2. In the technical solution of the present invention, medical gas pipes made of rigid tubes extend into inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with corresponding medical gas terminals. A power supply extends into the inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with a corresponding power supply socket interface. The medical gas pipes made of rigid tubes are safe, reliable and durable and have a long service life, thus solving the problem in the prior art that the medical gas pipes made of hoses are damaged easily and have a short service life, effectively ensuring the safety and stability of medical gases in use, and fundamentally preventing deflagration safety accidents caused by a damaged medical gas hose. Meanwhile, the design of a medical gas pipe safety control device and a power supply safety control device provides convenient safety control and guarantee for normal use as well as maintenance and repair of the medical gases and equipment.

3. Further, in the technical solution of the present invention, the liquid medicine pump rack assembly may be hoisted on the horizontal section by a cantilever, or hoisted on the horizontal section in combination with a cantilever through a jib I, or hoisted on the horizontal section through double jibs or a flexible joint. The liquid medicine pump rack assembly and the horizontal section can be assembled in a various manners, so that the liquid medicine pump rack assembly not only can slide from the head of the sickbed to the end of the sickbed, but also can rotate and move in a treatment region of the sickbed. The movement distance of the liquid medicine pump rack assembly is not limited by the sickbed, so that medicine can be selectively infused at any part of the body of a patient, thus meeting a therapeutic service requirement of medical staff.

4. In addition, the horizontal section of the medical cart is provided with a patient moving and hoisting device. By using the patient moving and hoisting device, a patient can be lifted and moved from an ICU sickbed to a transfer sickbed more stably, safely and conveniently without manual handling, thus reducing the amount of labor of the medical staff, and avoiding secondary injuries on the patient caused by manual handling.

5. In the technical solution of the present invention, a nursing function integrated device is connected to a tail end of the horizontal section through a movable arm, so that the nursing function integrated device can be moved by rotation to the other side of the medical cart, thus maximizing the medical care space beside the sickbed.

6. By using the technical solution of the present invention, a treatment monitoring functional assembly is installed on the vertical section. The horizontal section is connected to at least one group of a liquid medicine pump rack assembly and a nursing functional assembly, and a nursing function integrated device is connected at the tail end of the horizontal section. Medical treatment and monitoring nursing

components are configured more completely and reasonably, so as to be operated and used by medical staff handily and provide a superior medical monitoring service for patients.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030]

FIG. 1 is a front schematic structural diagram of the present invention.

FIG. 2 is a schematic structural diagram along direction A in FIG. 1.

FIG. 3 is a schematic structural diagram of a vertical section according to the present invention.

FIG. 4 is a schematic structural diagram along direction B in FIG. 3.

FIG. 5 is a schematic structural diagram of a cross section along line C-C in FIG. 3.

FIG. 6 is a schematic structural diagram of the layout of medical gas pipes and a power supply according to the present invention.

FIG. 7 is a schematic structural diagram of a nursing function integrated device according to the present invention.

FIG. 8 is a schematic structural diagram along direction E in FIG. 7.

FIG. 9 is a schematic structural diagram of a cross section along line D-D in FIG. 7.

FIG. 10 is a lateral partial schematic structural diagram of another composite configuration of the nursing function integrated device according to the present invention.

FIG. 11 is a partial cross-sectional schematic structural diagram of a liquid medicine pump rack assembly according to the present invention.

FIG. 12 is a partial cross-sectional schematic structural diagram of connection between the liquid medicine pump rack assembly and a horizontal section according to the present invention.

FIG. 13 is a lateral partial cross-sectional schematic structural diagram of another connection manner between the liquid medicine pump rack assembly and the horizontal section according to the present invention.

FIG. 14 is a lateral schematic structural diagram of still another connection manner between the liquid medicine pump rack assembly and the horizontal section according to the present invention.

FIG. 15 is a schematic structural diagram of another form of a central shaft lever of the liquid medicine pump rack assembly according to the present invention.

FIG. 16 is a lateral partial cross-sectional schematic structural diagram of a connection manner between a patient moving and hoisting device and the horizontal section according to the present invention.

FIG. 17 is a lateral schematic structural diagram of another connection manner between the patient moving and hoisting device and the horizontal section according to the present invention.

FIG. 18 is a lateral schematic structural diagram of still another connection manner between the patient moving and hoisting device and the horizontal section according to the present invention.

FIG. 19 is an assembly schematic structural diagram of another embodiment of the nursing function integrated device according to the present invention.

FIG. 20 is an assembly schematic structural diagram of still another embodiment of the nursing function integrated device according to the present invention.

FIG. 21 is a schematic structural diagram of another embodiment of the horizontal section according to the present invention.

FIG. 22 is an assembly schematic structural diagram when two vertical sections are used in the present invention.

[0031] Meanings of reference numerals: 1-vertical section, 2-horizontal section, 3-supporting swing pipe, 4-nursing function integrated device, 5-liquid medicine pump rack assembly, 6-patient moving and hoisting device, 7-connecting piece, 8-inspection illuminating lamp, 9-auxiliary lighting, 10-sleep lamp, 11-patient basic information digital display screen, 12-movable arm, 101-ventilator platform, 102-door, 103-call intercom device, 104-medical instrument platform, 105-strong/weak power supply device, 106-medical gas terminal, 107-platform lifting pedal, 108-platform device, 109-storage box, 110-medical gas pipe safety control device, 111-medical gas pipe, 112-pipe valve, 113-power supply safety control device, 114-power supply break safety device, 115-power supply, 116-pressure display alarm device, 401-suction catheter box, 402-drawer, 403-plate, 404-nursing terminal box, 405-mouse box, 406-keyboard, 407-medical image digital display device, 408-flexible joint, 409-flashlight, 410-terminal box door, 411-protective door I, 412-power supply socket, 413-stethoscope hanger, 414-storage box, 501-central shaft lever, 502-spooler, 503-extension arm, 504-liquid medicine hook shaft lever assembly, 505-chute, 506-cantilever, 507-liquid medicine pump rack box, 508-liquid medicine pump rack box door, 510-information interface, 511-jib I, 512-double jibs, 601-fixed holder, 602-shaft, 603-moving and hoisting arm, 604-lifting motor, 605-sling, 606-hoisting hook, 607-lifting arm, 608-driving device, 609-shaft seat.

DETAILED DESCRIPTION

[0032] The present invention is now described in further detail with reference to exemplary embodiments shown in the figures. A lot of details are shown in the following description for thorough understanding of the present invention. However, it is obvious for those skilled in the art that the present invention can be implemented without using some or all of the particular details. In other

embodiments, omission of detailed descriptions of the known operations will not make the present invention incomprehensible.

[0033] As shown in FIG. 1, FIG. 2, FIG. 3, FIG. 4, FIG. 5, FIG. 6, FIG. 7, FIG. 8, FIG. 9, FIG. 10, FIG. 11, FIG. 12, FIG. 13, FIG. 14, FIG. 15, FIG. 16, FIG. 17, FIG. 18, FIG. 19, FIG. 20, FIG. 21, and FIG. 22, the present invention is formed by assembling a vertical section 1, a horizontal section 2, a supporting swing pipe 3, a nursing function integrated device 4, a liquid medicine pump rack assembly 5, a patient moving and hoisting device 6, a connecting piece 7, an inspection illuminating lamp 8, an auxiliary lighting 9, a sleep lamp 10, a patient basic information digital display screen 11, a movable arm 12, a ventilator platform 101, a door 102, a call intercom device 103, a medical instrument platform 104, a strong/weak power supply device 105, a medical gas terminal 106, a platform lifting pedal 107, a platform device 108, a storage box 109, a medical gas pipe safety control device 110, a medical gas pipe 111, a pipe valve 112, a power supply safety control device 113, a power supply break safety device 114, a power supply 115, a pressure display alarm device 116, a suction catheter box 401, a drawer 402, a plate 403, a nursing terminal box 404, a mouse box 405, a keyboard 406, a medical image digital display device 407, a flexible joint 408, a flashlight 409, a terminal box door 410, a protective door I 411, a power supply socket 412, a stethoscope hanger 413, a storage box 414, a central shaft lever 501, a spooler 502, an extension arm 503, a liquid medicine hook shaft lever assembly 504, a chute 505, a cantilever 506, a liquid medicine pump rack box 507, a liquid medicine pump rack box door 508, an information interface 510, a jib I 511, double jibs 512, a fixed holder 601, a shaft 602, a moving and hoisting arm 603, a lifting motor 604, a sling 605, a hoisting hook 606, a lifting arm 607, a driving device 608, and a shaft seat 609 as well as fastening pieces and connection components.

[0034] Structural characteristics of the specific embodiments are as follows:

A multifunctional floor-stand medical cart, which is mainly used beside an ICU sickbed to support bearing of medical instrument and equipment and installation of nursing functional parts, includes a vertical section 1 fixedly connected and mounted on the floor beside the ICU sickbed and a horizontal section 2 that is connected to an upper portion of the vertical section and extends to be located above the sickbed. The horizontal section is provided with a supporting swing pipe 3 connected to the ceiling. The vertical section or the horizontal section is provided with a medical gas pipe safety control device 110 and a power supply safety control device 113. Medical gas pipes 111 made of rigid tubes extend into inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding medical gas pipe safety control device and medical gas terminals. A power supply 115 extends into the inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding power supply safety control device and a power supply socket interface. A treatment monitoring functional assembly is installed on the vertical section. The horizontal section is connected to at least one group of a liquid medicine pump rack assembly 5 having a forward-backward sliding structure and a nursing functional assembly. A tail end of the horizontal section is connected to a nursing function integrated device 4 through a movable arm 12. The medical cart has an integrated structure or a split-type composite structure. In the medical cart, the liquid medicine pump rack assembly can be moved forward and backward to selectively infuse medicine at any part of the body of a patient; in addition, with the coordination of the movable arm structure, the nursing function integrated device 4 can be flipped over and moved from the tail end of the horizontal section to one side of the horizontal section, so as to maximize the medical care space beside the bed.

[0035] More specifically, the medical gas pipes 111 made of rigid tubes include a medical oxygen pipe, a vacuum pipe, an air pipe, and other pipes for medical gases, and are connected to the corresponding medical gas terminals 106 respectively. The medical gas terminals 106 are designed and configured reasonably according to the quantity and installation positions required for clinical use in a hospital.

[0036] It should be noted that, the nursing function integrated device 4 may be connected to the tail end of the horizontal section 2 through a movable arm 12, so as to achieve the objective of flipping over and moving to one side of the horizontal section 2. The nursing function integrated device 4 may also adopt such a structure as being directly connected below the tail end of the horizontal section 2.

[0037] In this embodiment, the medical cart further includes a patient moving and hoisting device 6 disposed on the horizontal section 2.

[0038] In this embodiment, the patient moving and hoisting device adopts a structure of a moving and hoisting arm 603; the moving and hoisting arm is connected to the right end of the horizontal section 1 through a fixed holder 601; the moving and hoisting arm is flexibly connected to the fixed holder through a shaft 602; a sling 605 having a hoisting hook 606 and driven by a lifting motor 604 is installed on the moving and hoisting arm.

[0039] As shown in FIG. 17, the patient moving and hoisting device alternatively adopts a structure of a lifting arm 607; the lifting arm is connected to the right end of the horizontal section 1 through a fixed holder 601; the lifting arm is flexibly connected to the fixed holder through a shaft 602 and is driven by a driving device 608 to ascend and descend; a sling 605 having a hoisting hook 606 is fixedly installed on the lifting arm.

[0040] As shown in FIG. 18, the lifting arm 607 is alternatively connected to the right end of the horizontal

section 1 through a shaft seat 609; one end of the lifting arm is connected to a driving device 608; a sling 605 having a hoisting hook 606 is fixedly installed on the lifting arm.

[0041] In this embodiment, the treatment monitoring functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a ventilator platform 101, a call intercom device 103, a medical instrument platform 104, a strong/weak power supply device 105, and a medical gas terminal 106.

[0042] In this embodiment, the ventilator platform 101 has a fixed structure or a lifting structure.

[0043] In this embodiment, the ventilator platform 101 is connected to a lower end of the vertical section 1 through a platform device 108, and the platform device 108 has a motor-driven lifting structure or a manually driven lifting structure.

[0044] As shown in FIG. 11 and FIG. 12, the liquid medicine pump rack assembly 5 is hoisted on the left end of the horizontal section 2 by using a cantilever 506; the cantilever 506 is provided with a chute 505; the liquid medicine pump rack assembly slides forward and backward along the cantilever through the chute.

[0045] As shown in FIG. 13, the liquid medicine pump rack assembly 5 is alternatively hoisted on the left end of the horizontal section 2 in combination with the cantilever 506 by using a jib I 511; the cantilever is provided with a chute 505; the jib I has one end connected to the liquid medicine pump rack assembly and the other end connected to the chute; the jib I enables the liquid medicine pump rack assembly to be unfolded to rotate and slide along the cantilever.

[0046] In this embodiment, the cantilever 506 is connected to an inspection illuminating lamp 8 through a joint arm.

[0047] As shown in FIG. 14, the liquid medicine pump rack assembly 5 is alternatively hoisted on the left end of the horizontal section 2 by using double jibs 512; the double jibs have one end connected to the liquid medicine pump rack assembly and the other end connected to the horizontal section; the double jibs enable the liquid medicine pump rack assembly to be unfolded to rotate.

[0048] Referring to FIG. 1, in this embodiment, the liquid medicine pump rack assembly 5 may also be hoisted on the right end of the horizontal section 2 by using a flexible swing pipe.

[0049] It should be noted that, the connection structure between the liquid medicine pump rack assembly 5 and the horizontal section 2 as well as the configuration quantity and positions on the horizontal section 2 can all be designed and configured reasonably according to the connection structure, quantity, and positions required for clinical use in a hospital.

[0050] Referring to FIG. 1, FIG. 7, FIG. 8, FIG. 9, and FIG. 10, the liquid medicine pump rack assembly 5 is formed by a liquid medicine pump rack box 507, and the liquid medicine pump rack box further includes, but is not limited to, a configuration combination of the following functional units: a power supply socket 412, an information interface 510, a central shaft lever 501, an extension arm 503, a liquid medicine hook shaft lever assembly 504, a spooler 502, and a medical gas terminal 106.

[0051] Referring to FIG. 11 and FIG. 15, the central shaft lever 501 may be of a strut structure or a ring structure.

[0052] In this embodiment, the nursing functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a medical gas terminal 106, auxiliary lighting 9, a patient basic information digital display screen 11, and a sleep lamp 10, where the medical gas terminal 106 is connected to and mounted on the horizontal section 2 through a connecting piece 7.

[0053] In this embodiment, the nursing function integrated device 4 is a cabinet-type nursing terminal box 404, a function integrated box rack/board or a digital information image assembly. The nursing function integrated device 4 further includes, but is not limited to, a configuration combination of the following functional units: a medical image digital display device 407, a film viewer, a keyboard 406, a mouse box 405, a flashlight 409, a plate 403, a drawer 402, a suction catheter box 401, a stethoscope hanger 413, a power supply socket 412, a strong/weak power supply device 105, and a medical gas terminal 106.

[0054] As shown in FIG. 19 and FIG. 21, the nursing function integrated device 4 in this structure employs a structure of a function integrated box rack.

[0055] In this embodiment, the nursing function integrated device 4 employs a structure of a nursing terminal box 404 having a storage box 414, and the storage box is provided with a terminal box door 410; the medical image digital display device 407 or film viewer is installed on the nursing terminal box or integrally formed with the terminal box door; the plate 403 and the drawer 402 are integrally connected to the nursing terminal box 404; the drawer is embedded with the power supply socket 412 and is provided with a protective door I 411; the strong/weak power supply device 105 is installed on the nursing terminal box; the strong/weak power supply device has a protective door; the keyboard 406 employs a structure flipped over and connected outside the nursing terminal box 404, or a structure flexibly hidden inside the nursing terminal box 404.

[0056] In this embodiment, the horizontal section 2 employs an arc arm structure, a straight arm structure, or a special-shaped arm structure.

[0057] As shown in FIG. 21, the horizontal section 2 employs a straight arm structure.

[0058] In this embodiment, the medical gas pipe safety control device 110 is provided with a pipe valve 112 and a pressure display alarm device 116 that are connected to the medical gas pipes 111; the power supply safety control device 113 is provided with a power supply break safety device 114 connected to the power supply 115.

[0059] In this embodiment, the vertical section 1 is further provided with a storage box 109, and the storage box is provided with a door 102.

[0060] FIG. 22 shows another improved embodiment of the present invention. A multifunctional floor-stand medical cart, which is mainly used beside an ICU sickbed to support bearing of medical instrument and equipment and installation of nursing functional parts, includes two vertical sections 1 fixedly connected and mounted on the floor on two sides of the ICU sickbed respectively and a horizontal section 2 that is connected between the two vertical sections and located above the sickbed. The horizontal section is provided with a supporting swing pipe 3 connected to the ceiling. The vertical sections or the horizontal section is provided with a medical gas pipe safety control device 110 and a power supply safety control device 113. Medical gas pipes 111 made of rigid tubes extend into inner cavities of the vertical sections and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding medical gas pipe safety control device and medical gas terminals. A power supply 115 extends into the inner cavities of the vertical sections and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding power supply safety control device and a power supply socket interface. A treatment monitoring functional assembly and a nursing device assembly are installed on the two vertical sections respectively. The horizontal section is connected to at least one group of a liquid medicine pump rack assembly 3 having a forward-backward sliding structure and a nursing functional assembly. The medical cart has an integrated structure or a split-type composite structure. In the medical cart, the liquid medicine pump rack assembly can be moved forward and backward to selectively infuse medicine at any part of the body of a patient.

[0061] In this embodiment, the medical cart further includes a patient moving and hoisting device 6 disposed on the horizontal section 2.

[0062] In this embodiment, the treatment monitoring functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a ventilator platform 101, a call intercom device 103, a medical instrument platform 104, a strong/weak power supply device 105, and a medical gas terminal 106.

[0063] In this embodiment, the nursing functional assembly further includes, but is not limited to, a configuration combination of the following functional units: a medical gas terminal 106, auxiliary lighting 9, a patient basic information digital display screen 11, and a sleep lamp 10.

[0064] In this embodiment, the nursing device assembly further includes, but is not limited to, a configuration combination of the following functional units: a medical image digital display device 407, a film viewer, a keyboard 406, a mouse box 405, a flashlight 409, a plate 403, a drawer 402, a suction catheter box 401, a power supply socket 412, a stethoscope hanger 413, a strong/weak power supply device 105, and a medical gas terminal 106.

[0065] In this embodiment, the liquid medicine pump rack assembly 5 is formed by a liquid medicine pump rack box 507. The liquid medicine pump rack box further includes, but is not limited to, a configuration combination of the following functional units: a power supply socket 412, an information interface 510, a central shaft lever 501, an extension arm 503, a liquid medicine hook shaft lever assembly 504, a spooler 502, and a medical gas terminal 106.

[0066] Although the present invention is illustrated with reference to different exemplary embodiments, it should be noted that different modifications and changes can be made on the present invention without departing from the scope of the claims of the present invention. In other words, the present invention is not limited to the foregoing embodiments. Especially, all the medical carts obtained by combining different configuration and connection manners of the present invention should fall within the protection scope of the claims of the present invention.

Claims

1. A multifunctional floor-stand medical cart, which is mainly used beside an ICU sickbed to support bearing of medical instrument and equipment and installation of nursing functional parts, comprising a vertical section (1) fixedly connected and mounted on the floor beside the ICU sickbed and a horizontal section (2) that is connected to an upper portion of the vertical section and extends to be located above the sickbed, wherein the horizontal section is provided with a supporting swing pipe (3) connected to the ceiling; the vertical section or the horizontal section is provided with a medical gas pipe safety control device (110) and a power supply safety control device (113); medical gas pipes (111) made of rigid tubes extend into inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding medical gas pipe safety control device and medical gas terminals; a power supply (115) extends into the inner cavities of the vertical section and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding power supply safety control device and a power supply socket interface; a treatment monitoring functional assembly is installed on the vertical section; the horizontal section is connected to at least one group of a liquid medicine pump rack assembly (5) having a forward-backward sliding structure and a nursing functional

assembly; a tail end of the horizontal section is connected to a nursing function integrated device (4) through a movable arm (12); and the medical cart has an integrated structure or a split-type composite structure.

2. The multifunctional floor-stand medical cart according to claim 1, further comprising a patient moving and hoisting device (6) disposed on the horizontal section (2).

3. The multifunctional floor-stand medical cart according to claim 2, wherein the patient moving and hoisting device (6) adopts a structure of a moving and hoisting arm (603); the moving and hoisting arm is connected to the horizontal section (2) through a fixed holder (601); the moving and hoisting arm is flexibly connected to the fixed holder through a shaft (602); a sling (605) having a hoisting hook (606) and driven by a lifting motor (604) is installed on the moving and hoisting arm; and
as another option, the patient moving and hoisting device alternatively adopts a structure of a lifting arm (607); the lifting arm is connected to the horizontal section (2) through a fixed holder (601); the lifting arm is flexibly connected to the fixed holder through a shaft (602) and is driven by a driving device (608) to ascend and descend; a sling (605) having a hoisting hook (606) is fixedly installed on the lifting arm; and more preferably, the lifting arm (607) is alternatively connected to the horizontal section (2) through a shaft seat (609); one end of the lifting arm is connected to a driving device (608); a sling (605) having a hoisting hook (606) is fixedly installed on the lifting arm.

4. The multifunctional floor-stand medical cart according to claim 1, wherein the treatment monitoring functional assembly further comprises, but is not limited to, a configuration combination of the following functional units: a ventilator platform (101), a call intercom device (103), a medical instrument platform (104), a strong/weak power supply device (105), and a medical gas terminal (106); more preferably, the ventilator platform (101) has a fixed structure or a lifting structure; and further preferably, the ventilator platform (101) is connected to a lower end of the vertical section (1) through a platform device (108), and the platform device (108) has a motor-driven lifting structure or a manually driven lifting structure.

5. The multifunctional floor-stand medical cart according to claim 1, wherein the liquid medicine pump rack assembly (5) is hoisted on the horizontal section (2) by using a cantilever (506); the cantilever (506) is provided with a chute (505); the liquid medicine pump rack assembly slides forward and backward along the cantilever through the chute; more preferably, the cantilever (506) is connected to an inspection illuminating lamp (8) through a joint arm; and
as another option, the liquid medicine pump rack assembly (5) is alternatively hoisted on the horizontal section (2) in combination with the cantilever (506) by using a jib I (511); the cantilever is provided with a chute (505); the jib I has one end connected to the liquid medicine pump rack assembly and the other end connected to the chute; the jib I enables the liquid medicine pump rack assembly to be unfolded to rotate and slide along the cantilever; further preferably the cantilever (506) is connected to an inspection illuminating lamp (8) through a joint arm.

6. The multifunctional floor-stand medical cart according to claim 1, wherein the liquid medicine pump rack assembly (5) is alternatively hoisted on the horizontal section (2) by using double jibs (512); the double jibs have one end connected to the liquid medicine pump rack assembly and the other end connected to the horizontal section; the double jibs enable the liquid medicine pump rack assembly to be unfolded to rotate; and
as another option, the liquid medicine pump rack assembly (5) is alternatively hoisted on the horizontal section (2) by using a flexible swing pipe.

7. The multifunctional floor-stand medical cart according to claim 1, 5, or 6, wherein the liquid medicine pump rack assembly (5) is formed by a liquid medicine pump rack box (507), and the liquid medicine pump rack box further comprises, but is not limited to, a configuration combination of the following functional units: a power supply socket (412), an information interface (510), a central shaft lever (501), an extension arm (503), a liquid medicine hook shaft lever assembly (504), a spooler (502), and a medical gas terminal (106).

8. The multifunctional floor-stand medical cart according to claim 1, wherein the nursing functional assembly further comprises, but is not limited to, a configuration combination of the following functional units: a medical gas terminal (106), auxiliary lighting (9), a patient basic information digital display screen (11), and a sleep lamp (10).

9. The multifunctional floor-stand medical cart according to claim 1, wherein the nursing function integrated device (4) is a cabinet-type nursing terminal box (404), a function integrated box rack/board, or a digital information image assembly; the nursing function integrated device (4) further comprises, but is not limited to, a configuration combination of the following functional units: a medical image digital display device (407), a film viewer, a keyboard (406), a mouse box (405), a flashlight (409), a plate (403), a drawer (402), a suction catheter box (401), a steth-

oscope hanger (413), a power supply socket (412), a strong/weak power supply device (105), and a medical gas terminal (106); more preferably, the nursing function integrated device (4) employs a structure of a nursing terminal box (404) having a storage box (414), and the storage box is provided with a terminal box door (410); the medical image digital display device (407) or film viewer is installed on the nursing terminal box or integrally formed with the terminal box door; the plate (403) and the drawer (402) are integrally connected to the nursing terminal box (404); the drawer is embedded with the power supply socket (412) and is provided with a protective door I (411); the strong/weak power supply device (105) is installed on the nursing terminal box; the strong/weak power supply device has a protective door; the keyboard (406) employs a structure flipped over and connected outside the nursing terminal box (404), or a structure flexibly hidden inside the nursing terminal box (404).

10. The multifunctional floor-stand medical cart according to claim 1, wherein the horizontal section (2) employs an arc arm structure, a straight arm structure, or a special-shaped arm structure; as another option, the medical gas pipe safety control device (110) is provided with a pipe valve (112) and a pressure display alarm device (116) that are connected to the medical gas pipes (111); the power supply safety control device (113) is provided with a power supply break safety device (114) connected to the power supply (115); as another option, the vertical section (1) is further provided with a storage box (109), and the storage box is provided with a door (102).

11. A multifunctional floor-stand medical cart, which is mainly used beside an ICU sickbed to support bearing of medical instrument and equipment and installation of nursing functional parts, comprising two vertical sections (1) fixedly connected and mounted on the floor on two sides of the ICU sickbed respectively and a horizontal section (2) that is connected between the two vertical sections and located above the sickbed, wherein the horizontal section is provided with a supporting swing pipe (3) connected to the ceiling; the vertical sections or the horizontal section is provided with a medical gas pipe safety control device (110) and a power supply safety control device (113); medical gas pipes (111) made of rigid tubes extend into inner cavities of the vertical sections and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding medical gas pipe safety control device and medical gas terminals; a power supply (115) extends into the inner cavities of the vertical sections and the horizontal section from the floor or the position of the supporting swing pipe on the ceiling, for installation and connection with the corresponding power supply safety control device and a power supply socket interface; a treatment monitoring functional assembly and a nursing device assembly are installed on the two vertical sections respectively; and the horizontal section is connected to at least one group of a liquid medicine pump rack assembly (3) having a forward-backward moving structure and a nursing functional assembly; and the medical cart has an integrated structure or a split-type composite structure.

12. The multifunctional floor-stand medical cart according to claim 11, wherein the medical cart further comprises a patient moving and hoisting device (6) disposed on the horizontal section (2).

13. The multifunctional floor-stand medical cart according to claim 11, wherein the treatment monitoring functional assembly further comprises, but is not limited to, a configuration combination of the following functional units: a ventilator platform (101), a call intercom device (103), a medical instrument platform (104), a strong/weak power supply device (105), and a medical gas terminal (106).

14. The multifunctional floor-stand medical cart according to claim 11, wherein the nursing functional assembly further comprises, but is not limited to, a configuration combination of the following functional units: a medical gas terminal (106), auxiliary lighting (9), a patient basic information digital display screen (11), and a sleep lamp (10).

15. The multifunctional floor-stand medical cart according to claim 11, wherein the nursing device assembly further comprises, but is not limited to, a configuration combination of the following functional units: a medical image digital display device (407), a film viewer, a keyboard (406), a mouse box (405), a flashlight (409), a plate (403), a drawer (402), a suction catheter box (401), a power supply socket (412), a stethoscope hanger (413), a strong/weak power supply device (105), and a medical gas terminal (106).

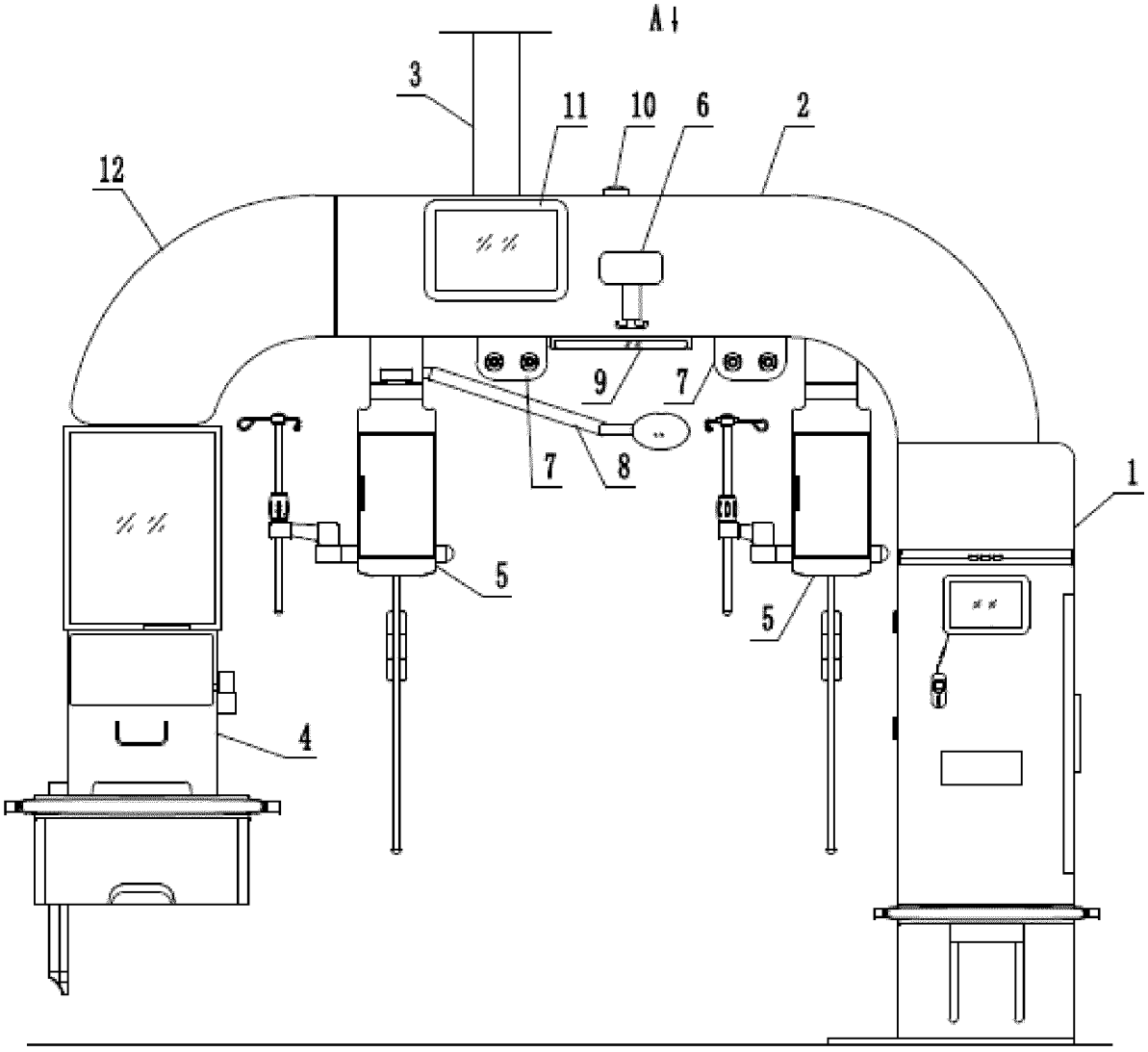

FIG. 1

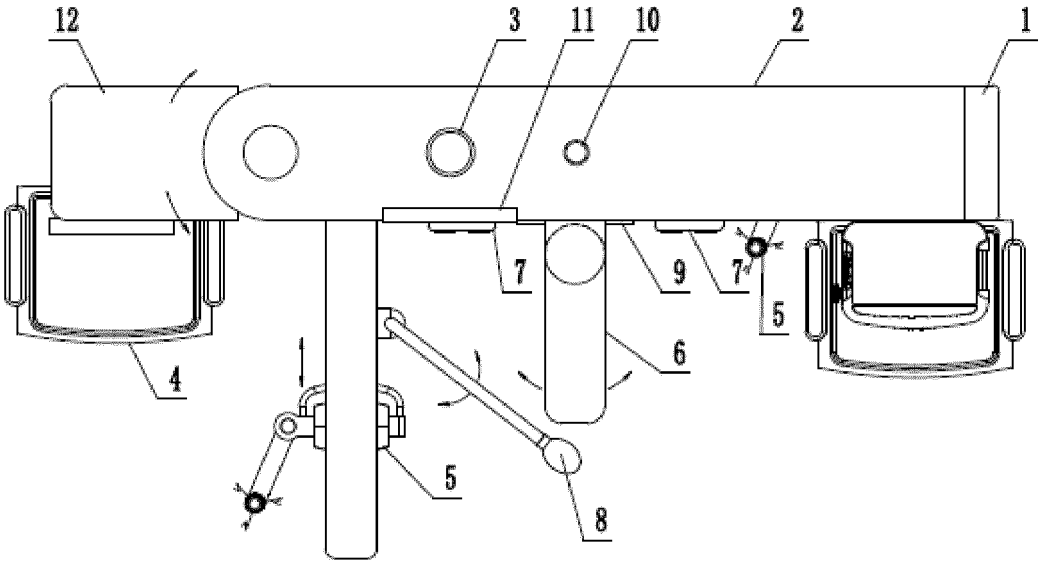

FIG. 2

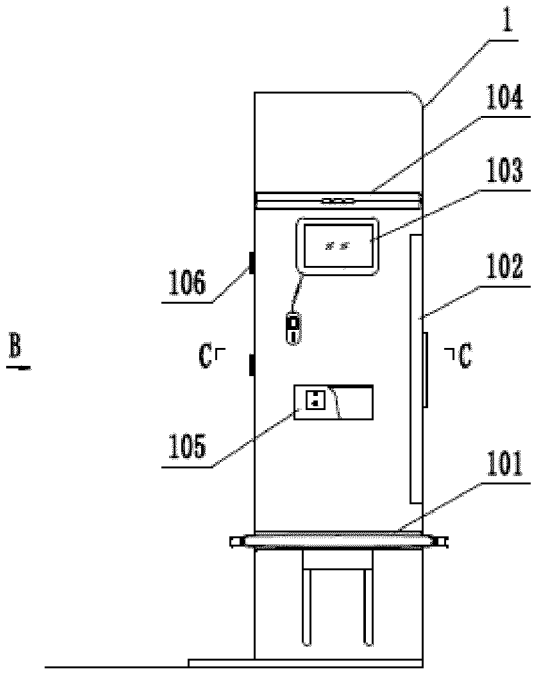

FIG. 3

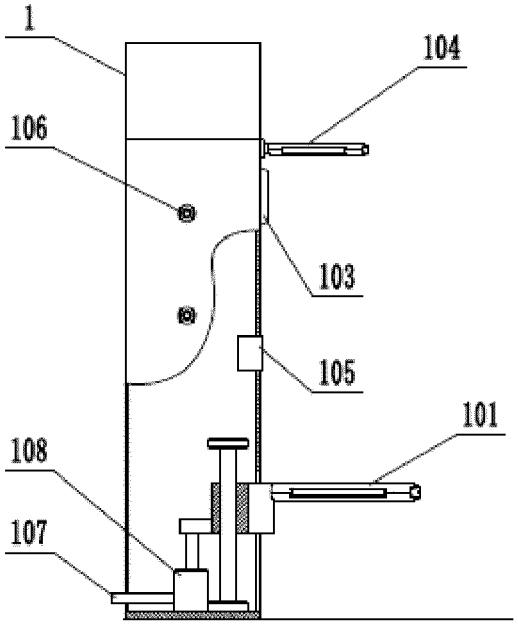

FIG. 4

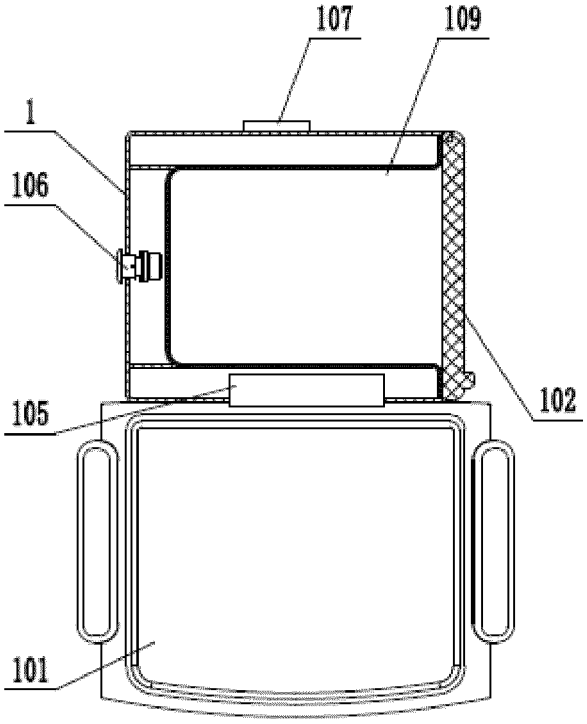

FIG. 5

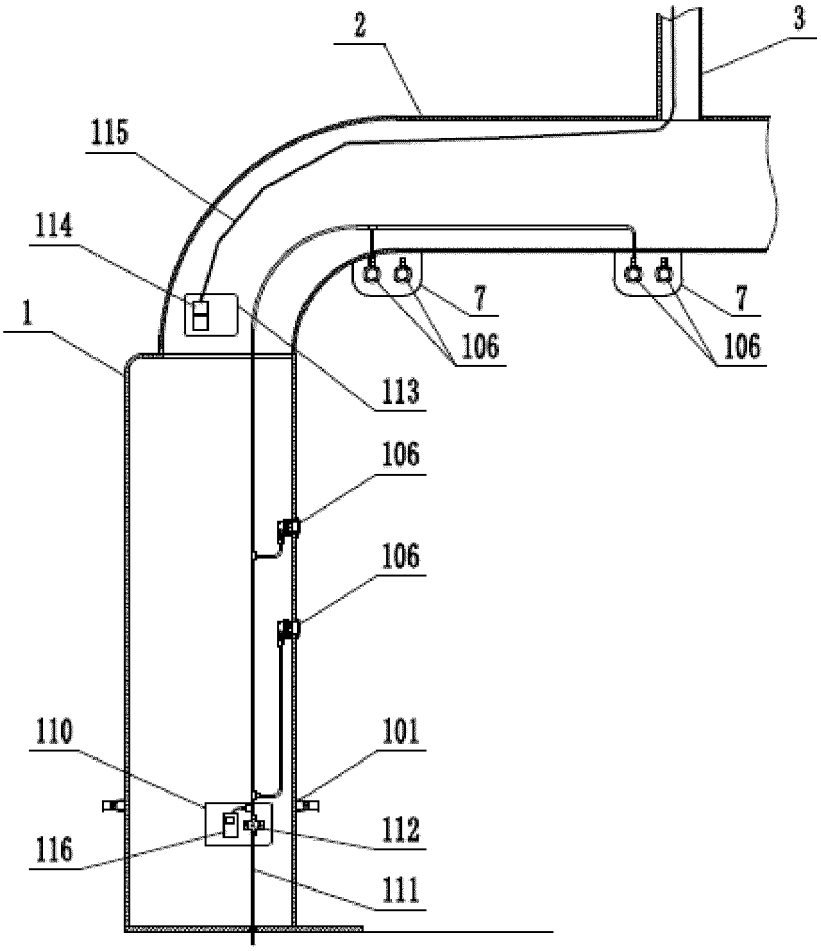

FIG. 6

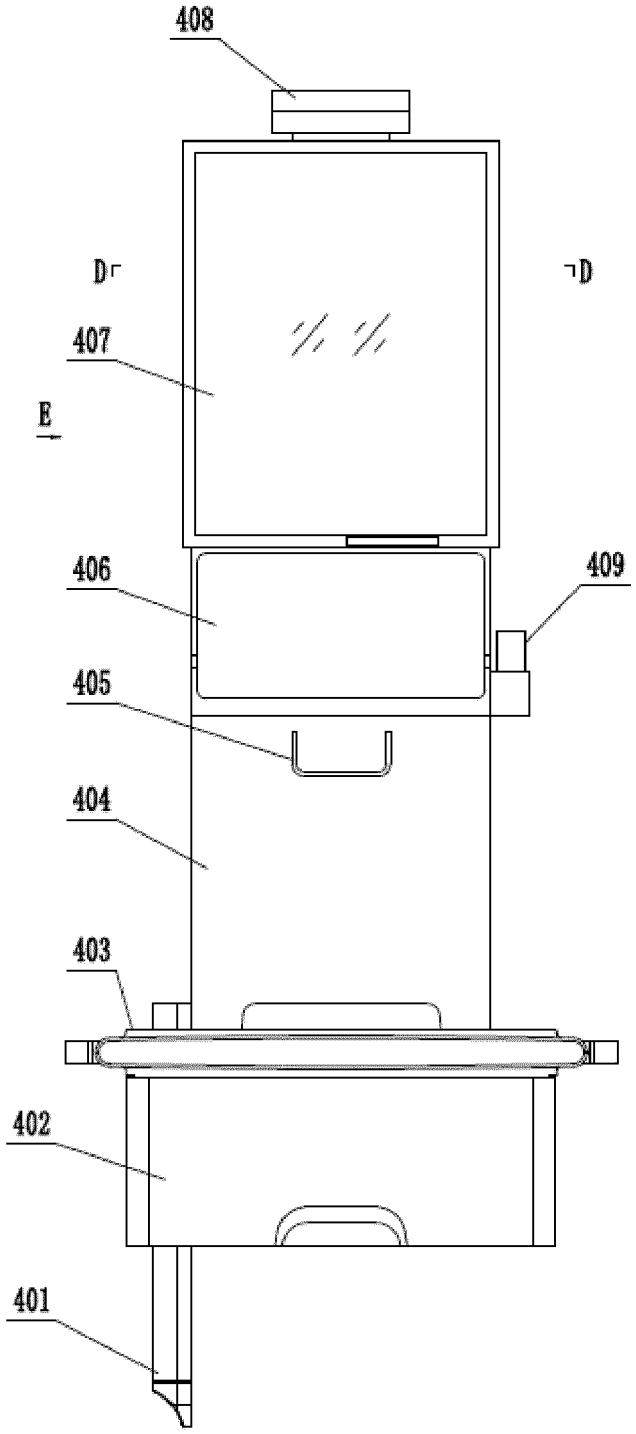

FIG. 7

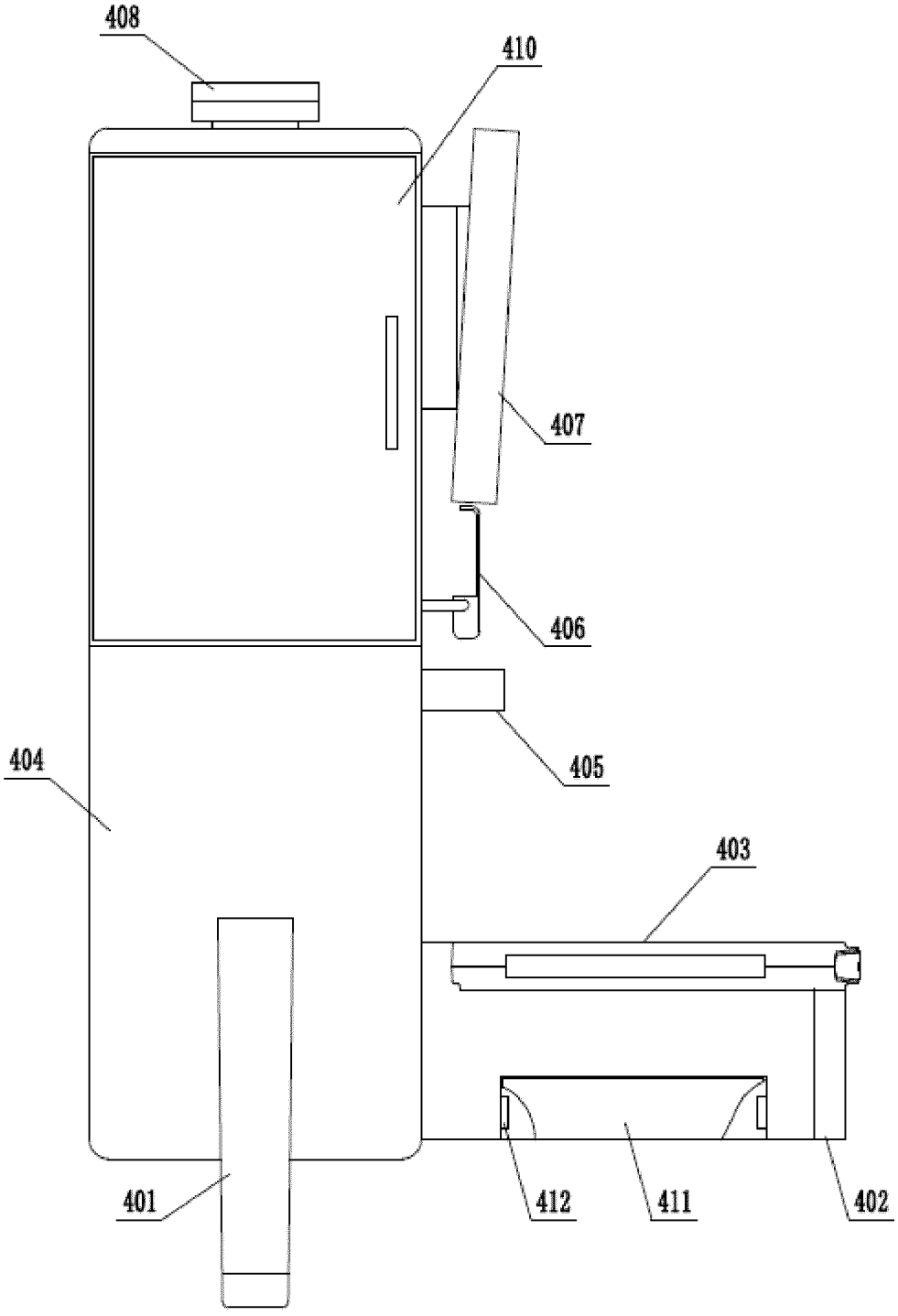

FIG. 8

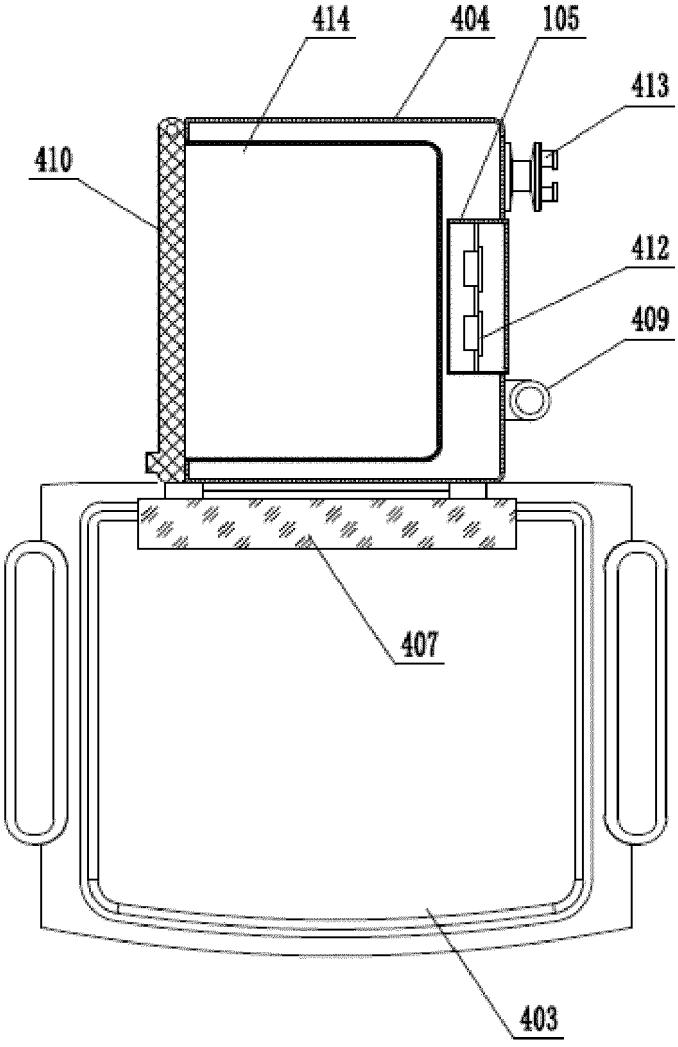

FIG. 9

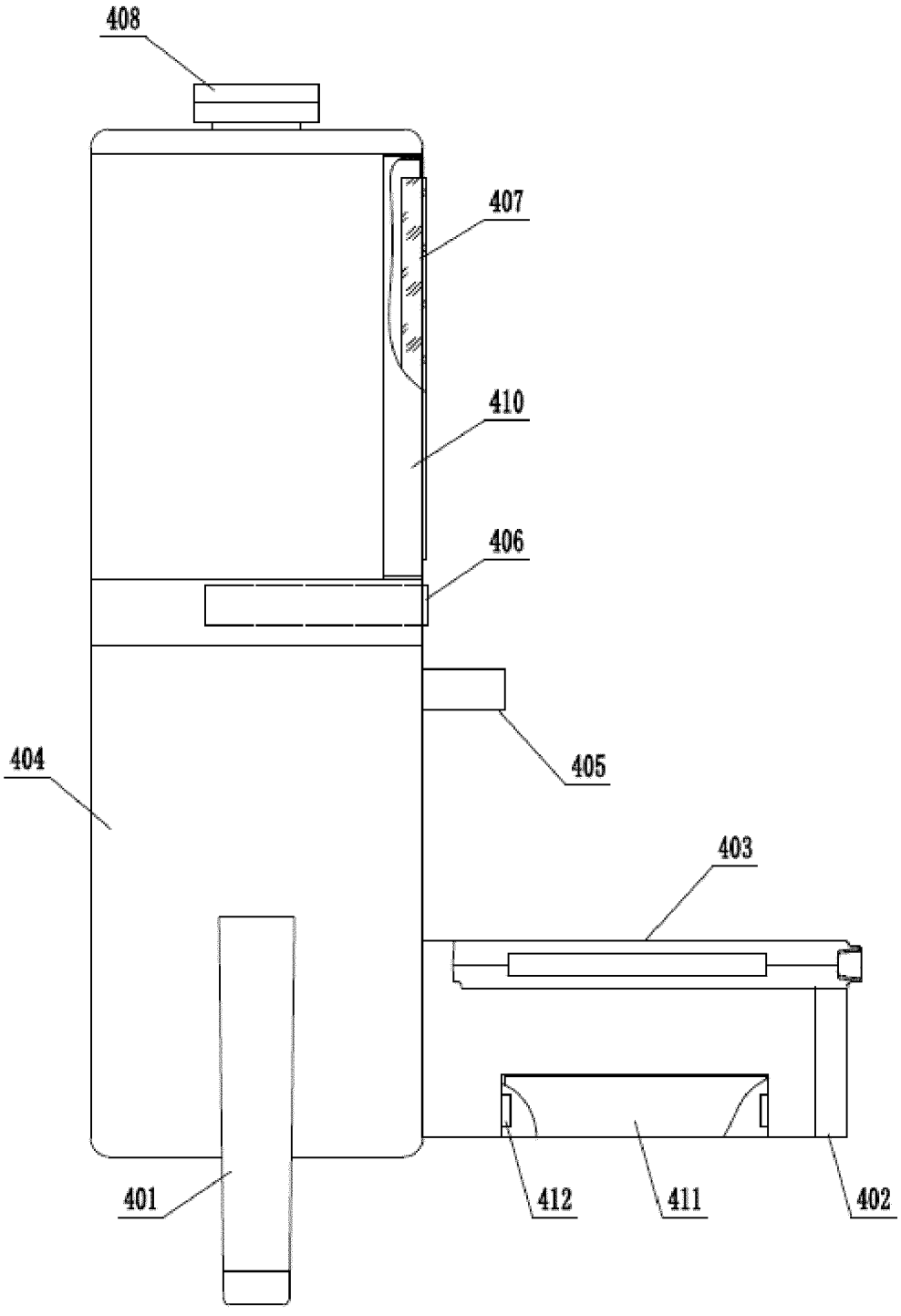

FIG. 10

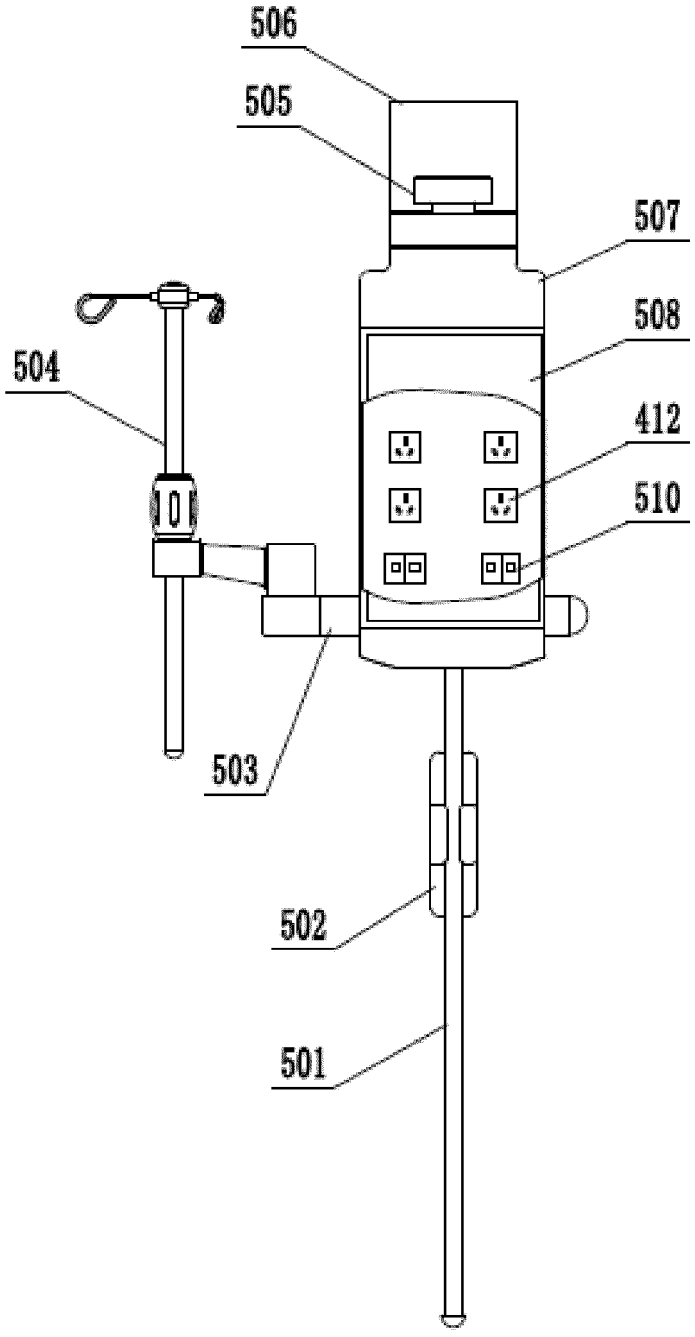

FIG. 11

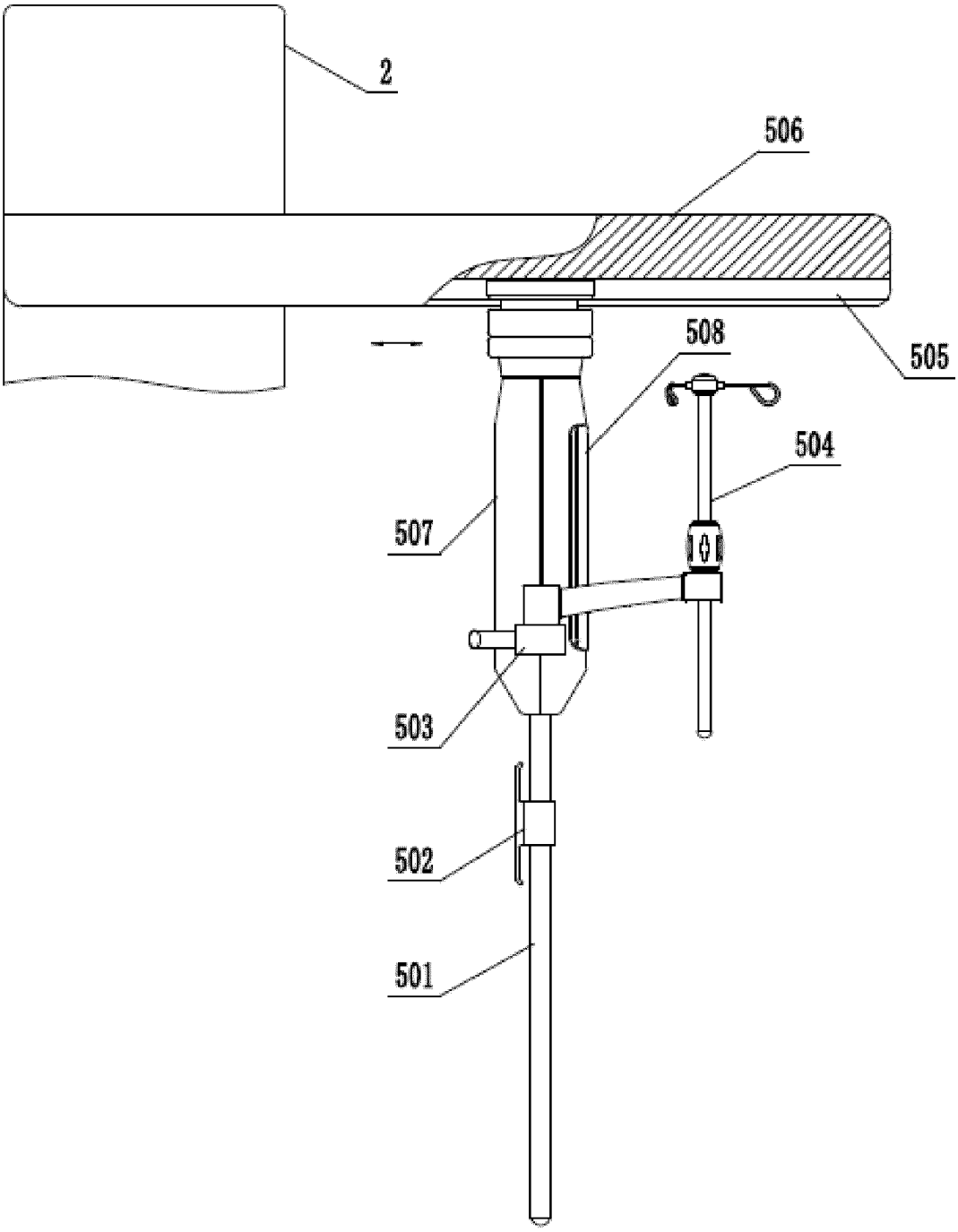

FIG. 12

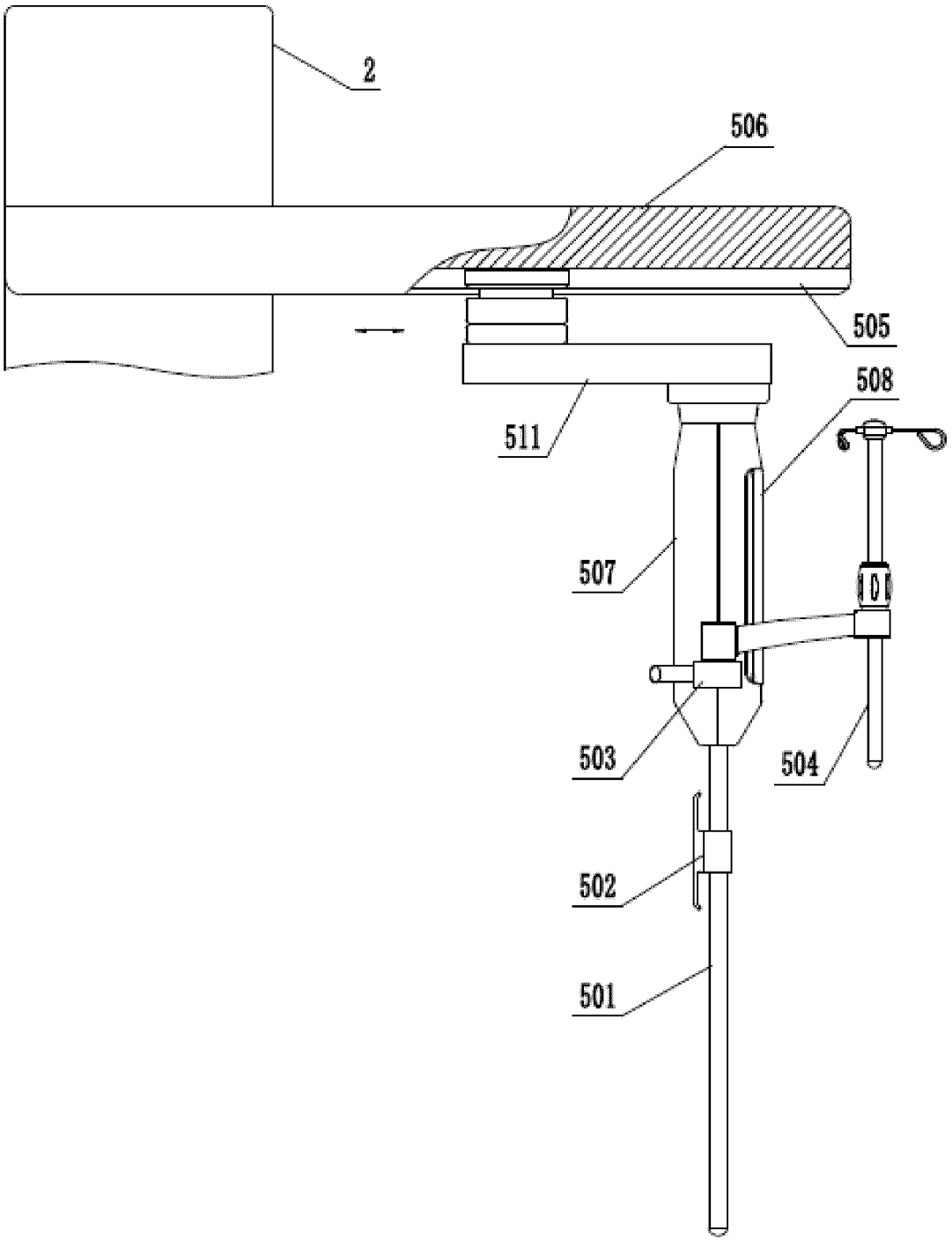

FIG. 13

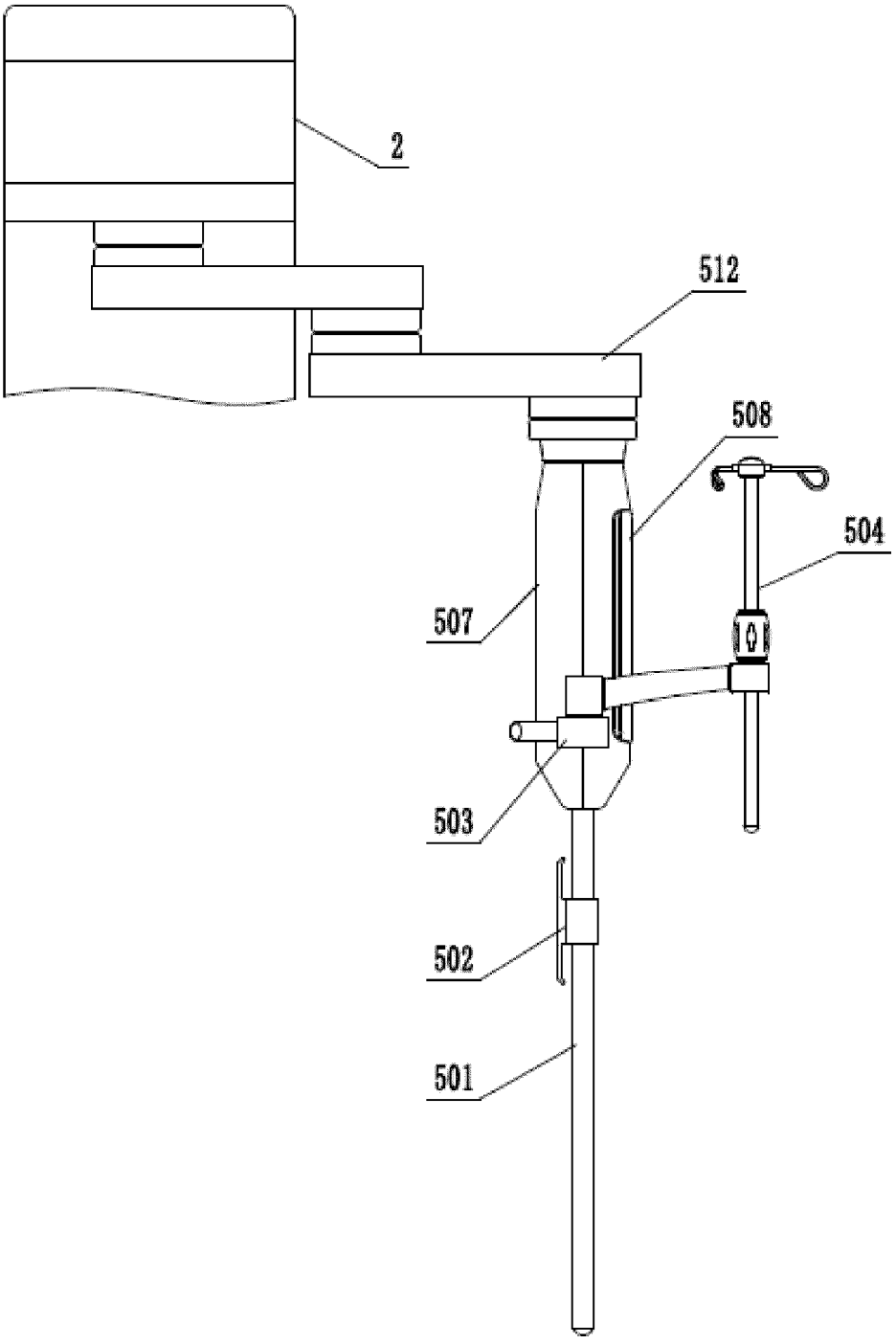

FIG. 14

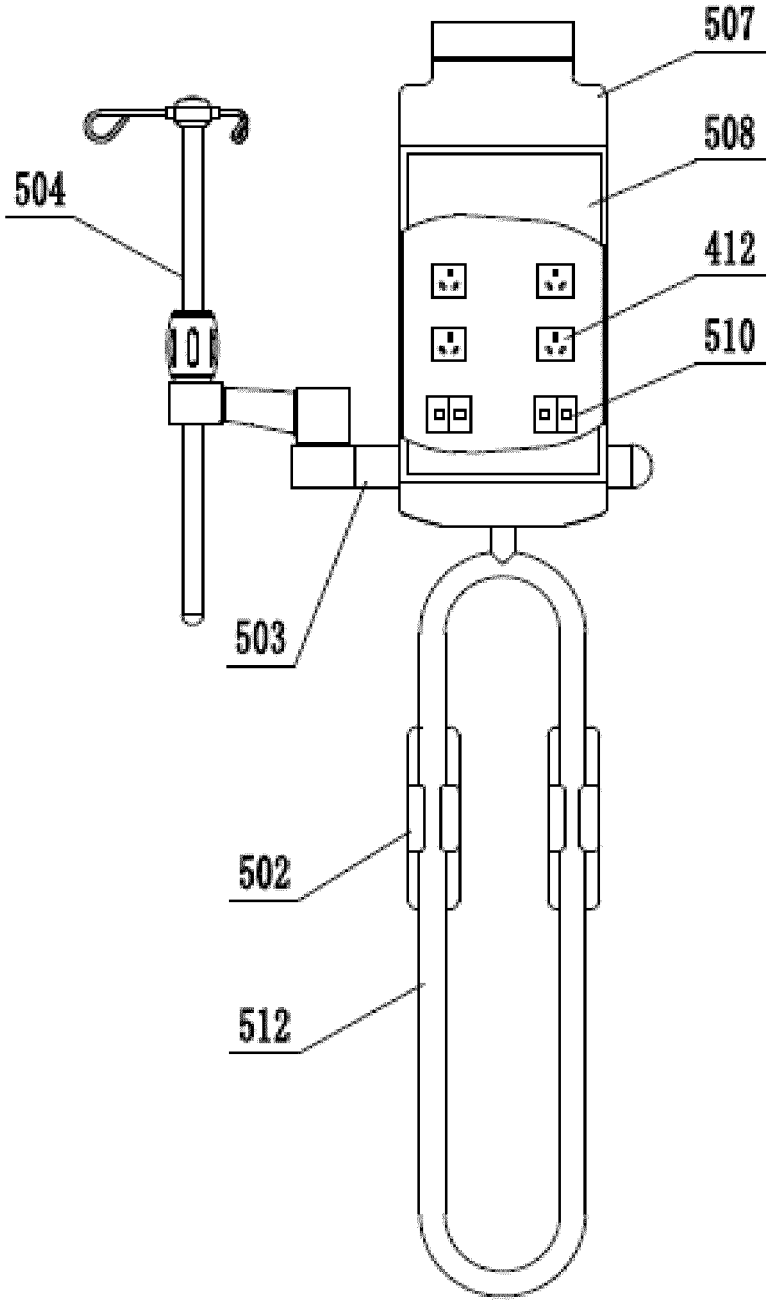

FIG. 15

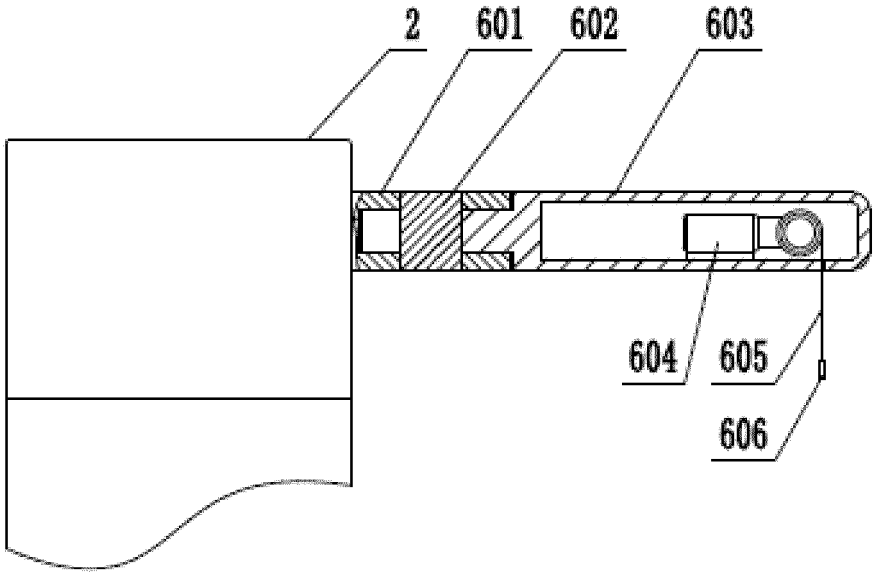

FIG. 16

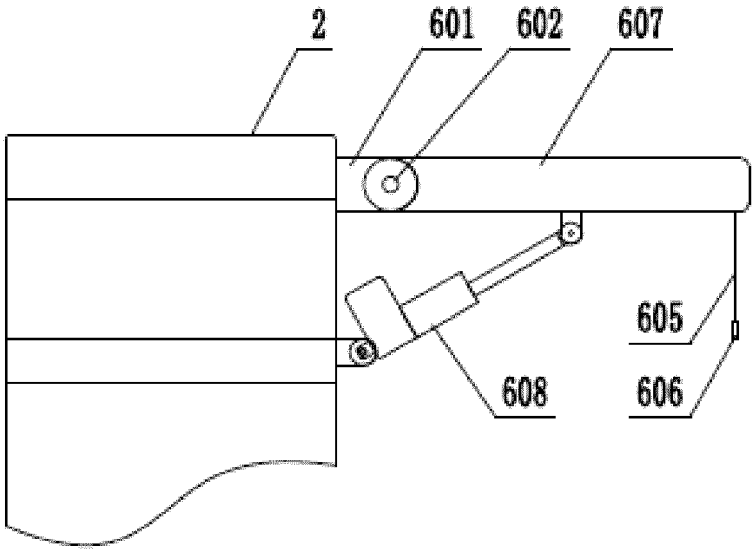

FIG. 17

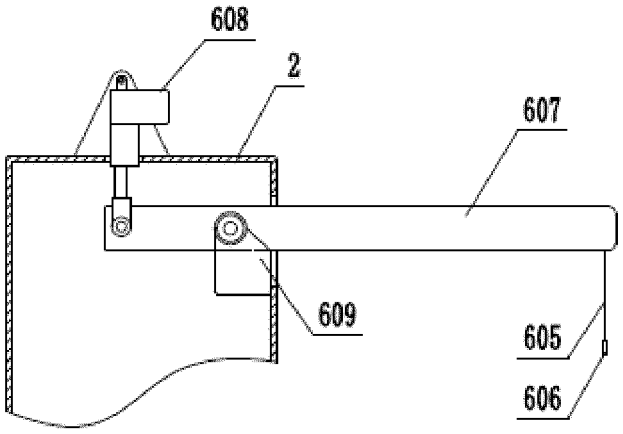

FIG. 18

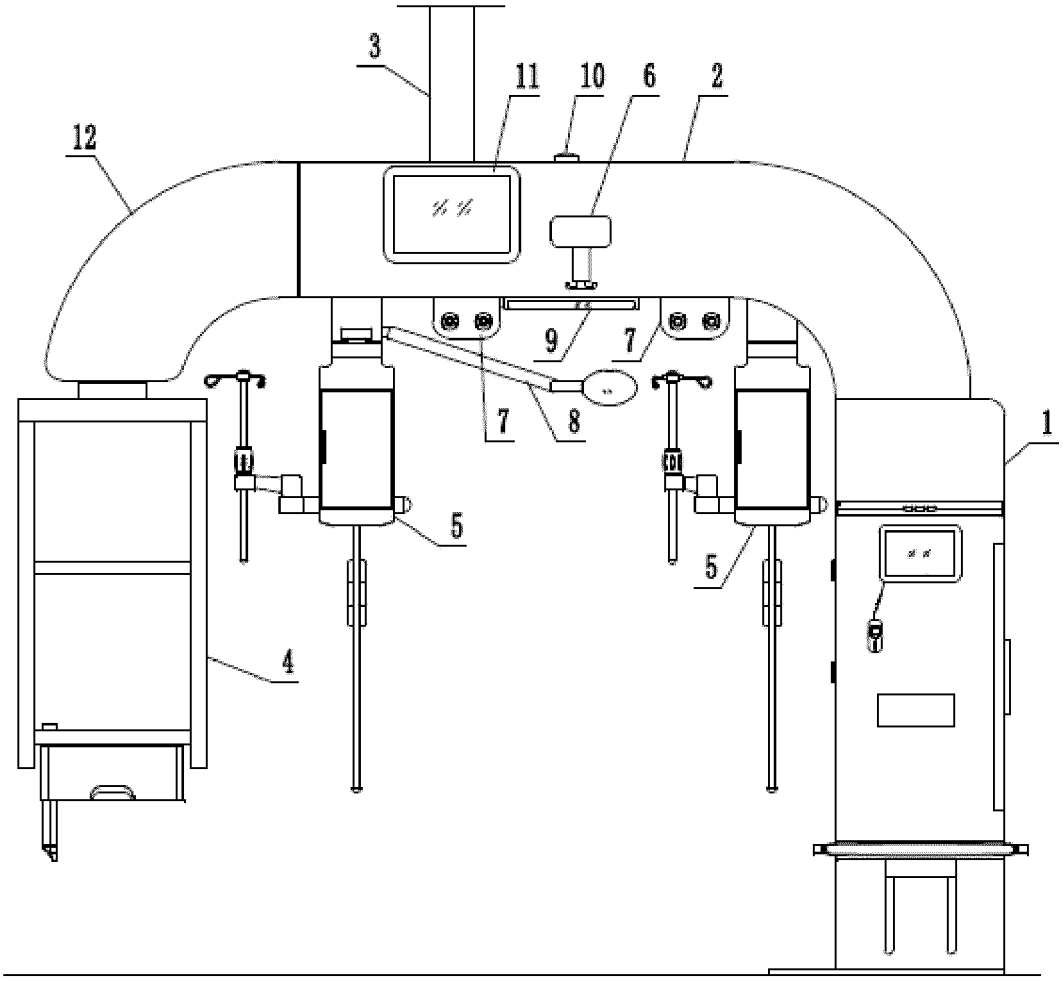

FIG. 19

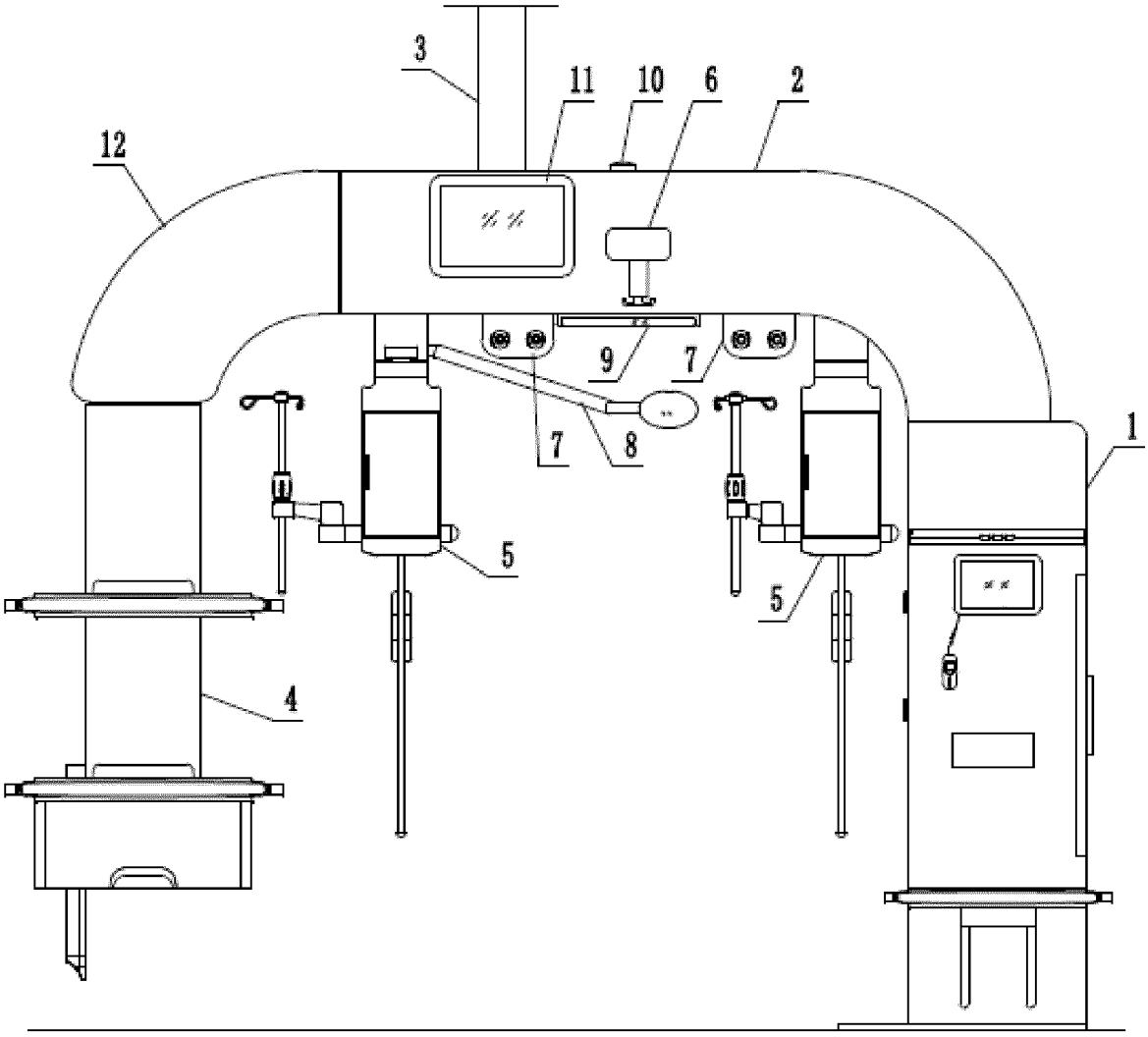

FIG. 20

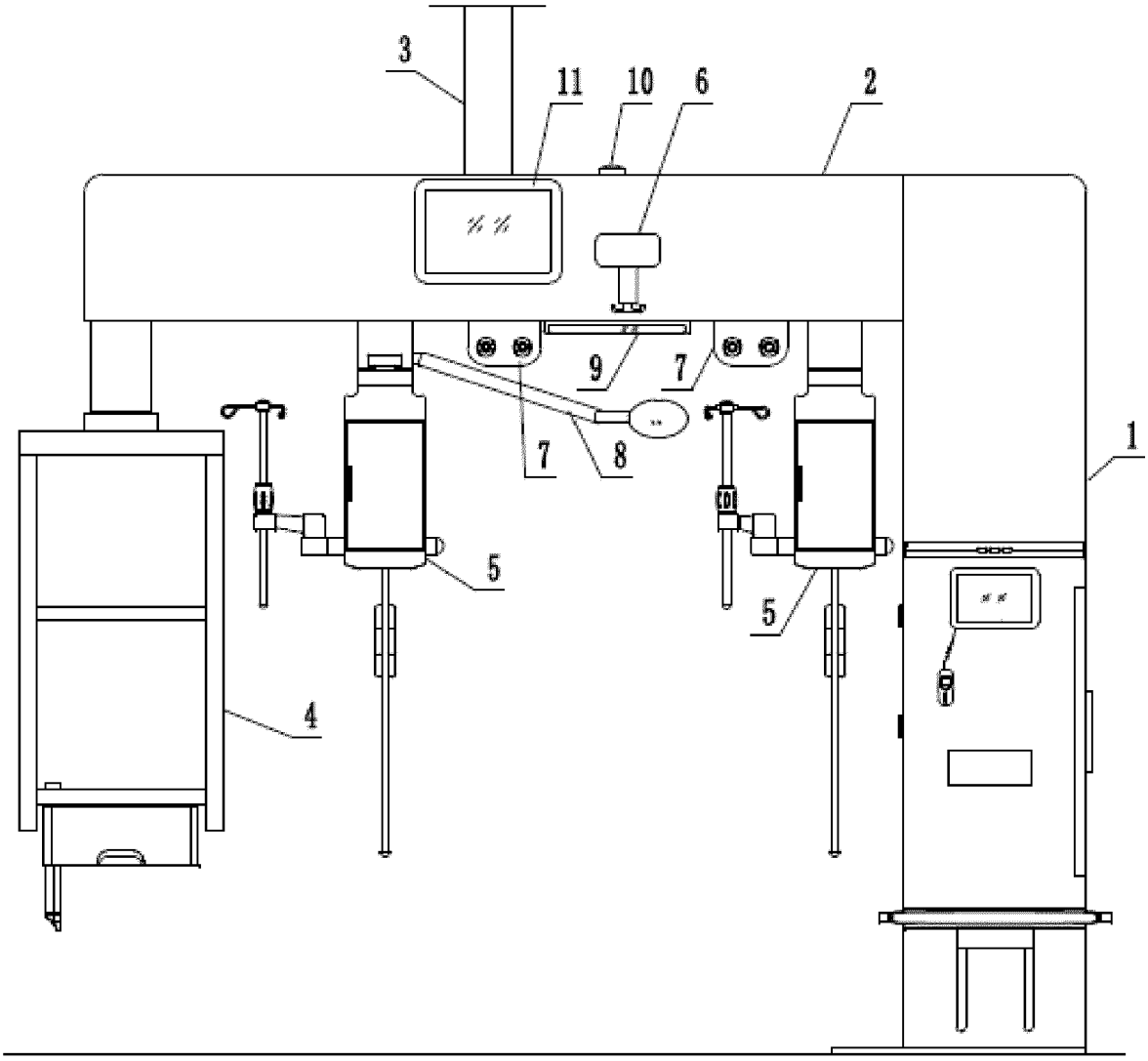

FIG. 21

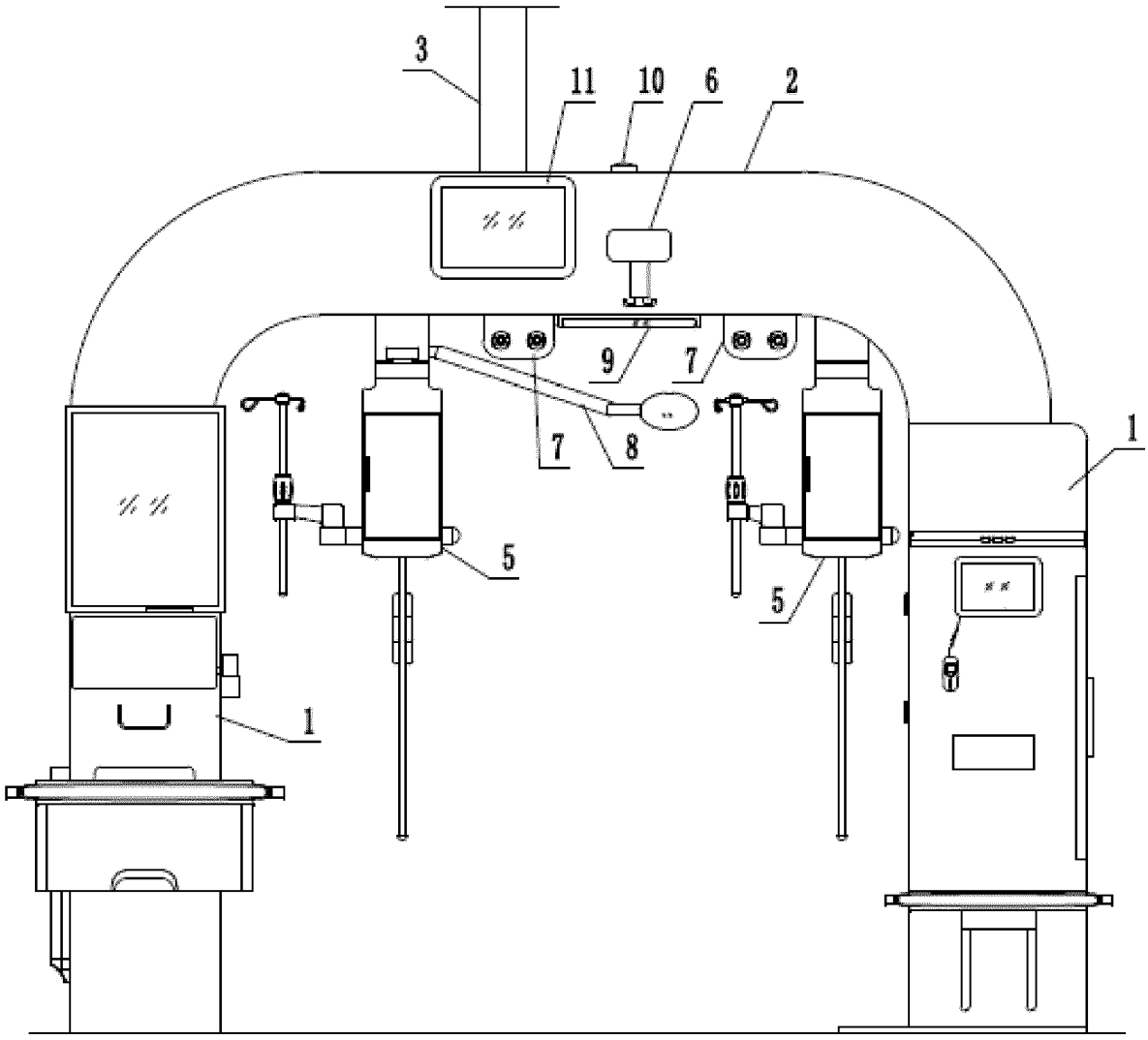

FIG. 22

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EUROPEAN SEARCH REPORT

Application Number
EP 18 20 4865

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2015/062367 A1 (HUNAN TAIYANGLONG MEDICAL TECH COMPANY LTD [CN]) 7 May 2015 (2015-05-07) * the whole document *	1-15	INV. A61G13/10 A61G12/00
A	EP 2 957 272 A1 (UNIV DUNDEE [GB]) 23 December 2015 (2015-12-23) * paragraphs [0011], [0036] - [0046], [0054]; figures 1a-4d *	1,11	
A	WO 96/35403 A1 (MEDAES INC [US]) 14 November 1996 (1996-11-14) * pages 6-9; figures 1, 2, 4, 8-10, 22, 23 *	1,11	
A	WO 98/10150 A1 (JOHNSON SUISSE MEDICAL DEV PTE [SG]; NILSSON AGNE [CY]) 12 March 1998 (1998-03-12) * page 3, line 2 - page 5, line 1; figures 2, 4 *	1,11	
			TECHNICAL FIELDS SEARCHED (IPC) A61G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 March 2019	Petzold, Jan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 18 20 4865

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-03-2019

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82