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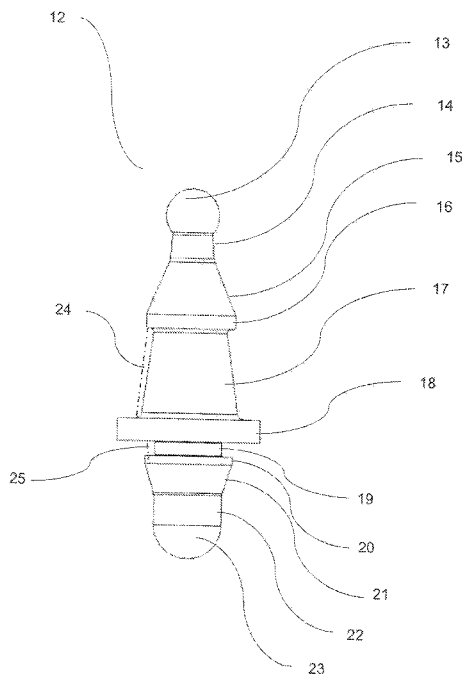


Fig. 6

(57) Abstract: The invention relates to the field of medical devices, such as patient support apparatuses and others, and their additional accessory equipment, such as air compressors for mattresses, additional fifth wheels, or other devices, and discloses a multi-purpose component for safe, fast and rigid attachment and connecting of such additional accessory equipment to patient support apparatuses. The multi-purpose component has connecting and also dampening function as it prevents transmission of undesired shocks and vibrations from this additional accessory equipment onto the patient support apparatus when being activated and working.



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Multi-purpose Connecting and Damping Component for Medical Accessory Equipment

Technical Field

This invention relates in general to patient support apparatuses in healthcare and nursing facilities and their accessory equipment which can be compressors for mattresses, additional fifth wheel and castors, or any other accessory equipment added to patient support apparatuses in healthcare and nursing facilities. Multi-purpose equipment is equipment helping attachment of accessory equipment to patient support apparatuses.

Prior Art

The prior art recognizes patient support apparatuses with casters that enable transport of patients from room to room, from operation hall back to the room etc. in healthcare and nursery facilities. Such patient support apparatuses can be medical and hospital beds, nursery beds, stretchers, transport stretchers, examination chairs, birthing beds or other suitable apparatuses for use in healthcare facilities.

Majority of patient support apparatuses comprises an undercarriage with casters, a frame of undercarriage to which a lifting mechanism is attached, a frame of support deck, a support deck which can be divided into separate parts articular coupled, and a mattress which lies on the support deck. A headboard, a footboard and different side rails are attached to the frame of the support deck and the support deck.

The support deck is preferably divided into several parts such as back part, sitting part, leg part or even foot part to position these parts into the different angles comfortable for a patient to sit on the patient support apparatus or lie having feet or head in an elevated position. The support deck may have 3, 4 or more parts articular coupled to each other. A lifting mechanism is such as lifting columns or scissor mechanisms are attached to the bottom side of the support deck to position the patient support apparatus vertically. A mattress is positioned on the support deck to support a patient on the patient support apparatus.

In principle, different types of mattresses are used to support a patient. Foam mattresses or other mattresses made of similar material that are not active fulfil only supporting function, i.e. to support a patient on the bed. Passive mattresses, in principle, cannot avoid occurrence of decubitus or other impairments relating to long time lying on the bed. Therefore, in healthcare facilities and hospitals active mattresses are very often used that change air pressure inside the mattress to move the patient or change a position of the patient to avoid occurrence of any decubitus or bedsores. Such active mattresses are made of different number of air cells. Prior art recognizes also mattresses that are partially made of foam and partially made of air cells, it means there is a combination of active and passive materials.

In case of using active mattresses, the individual air cells need to be inflated with air, either occasionally or cyclically. Therefore active mattresses need to be coupled to an air compressor to be active and functional. The compressor controls air pressure and volume of inflated or deflated air, or different types of cycling programs can be set in the control unit of the compressor. Air compressors can be directly integrated in the patient support apparatus, however such patient support apparatuses are very expensive and used in majority in intensive care units in healthcare facilities. Such mattresses have very specific functions controlled directly from a control panel or control unit on the patient support apparatus. Another disadvantage of such patient support apparatuses with integrated air compressor is higher weight and structure complexity. The mattress on such patient support apparatus cannot be exchanged for another alternate type of mattress, there always need to be placed a mattress that is compatible with the given type of air compressor.

To use active mattress inflated with air on a patient support apparatus that is not equipped with integrated air compressor it is necessary to add and coupled such air compressors to such patient support apparatuses, in such case we talk about portable compressor. Portable compressor is hung up on the frame of the support deck, on the headboard or footboard or side rail of the patient support apparatus. In some embodiments, portable air compressors are screwed or coupled under the support deck or other suitable part of the patient support apparatus using screws and nuts. The disadvantage of additionally suspended air compressors is that when being activated undesired shocks are transmitted to a given part of the patient support apparatus or to the patient support apparatus itself at the moment when the air compressor is

functioning. In the case of healthcare facilities and hospitals, such undesired shocks are very uncomfortable for patients, shocks often shake the entire side rail or slightly vibrate the patient support apparatus as a whole. As a result, patients often wake up and may even be disordered by such undesired vibrations. Despite the fact that most air compressors have internal noise reduction or damping inside the compressor itself, it is not possible to completely eliminate these vibrations in compressors additionally coupled to or suspended on the patient support apparatus, on which such device was not originally supposed to be.

Due to reasons stated above, it is desirable to develop such connection between the patient support apparatus and the air compressor of the active mattress, which will enable to connect the air compressor of the active mattress to the patient support apparatus very easily and quickly. In addition, with the advantage that undesired shocks are damped and transfer of undesired vibrations or noise, which the air compressor can cause to the structure or surface of the patient support apparatus, is prevented.

Undesired vibrations may also occur with other additional devices should these are additionally attached to patient support apparatuses in hospitals or healthcare facilities

Summary of the Invention

The above-mentioned substantial insufficiencies of additional devices, such as air compressors for patient support apparatuses such as hospital beds or stretchers for rapid rescue services, or nursing beds, are eliminated by a multi-purpose connecting component with damping effects, or also a connecting and damping component on the structure or parts of the above-mentioned patient support apparatuses in healthcare facilities.

However, additional devices do not have to be only compressors, they can be, for example, additional battery or power sources of the fifth caster, a fifth caster or wheel or other accessories that need to be connected to the patient support apparatus. It can also be other accessories suitable for the patient or for patient care, such as e.g. stands, IV poles, folding tables, controllers or additional sockets and external battery sources, etc.

The multi-purpose connecting and damping component disclosed herein is designed to attach the additional device to the relevant part of the patient support apparatus in a certain opening or a relevant fixture of the given patient support apparatus without any need to use any additional components such as screws and nuts, therefore without any need to use screwdrivers, spanners or other service and assembly instruments. There is also no need to insert other elements between screws, nuts and holes, such as various spacers and cushioning pads, which could possibly improve the connection between the accessory equipment and the patient support apparatus. In healthcare, it is important to quickly and easily add the accessory device, for urgent reasons, to provide necessary care to patients as quickly as possible, without using any aforementioned service or assembly instruments. This priority advantage of quick attachment and disconnection of additional accessory equipment is fulfilled by multi-purpose connecting component with a damping effect disclosed herein.

This multi-purpose connecting and damping component can also be considered as a multi-purpose connecting damper for additional equipment or accessory equipment for patient support apparatuses, such as hospital beds, tables, chairs, stretchers or nursing beds, or birthing beds, but also other nursing equipment (e.g. nursing chairs, rehabilitation chairs or wheelchairs, etc.).

Preferably, the multi-purpose connecting and damping component is defined for attaching an additional air compressor for active mattresses to eliminate undesired impacts in the form of shocks developed when attaching the compressor to the structure of a patient support apparatus.

A multi-purpose connecting and damping component is characterized as a connecting damper for attaching one device to another, therewith this connecting damper is made of flexible rubber material, but it can be made of plastic or various plastic alloys or rubber alloys as well. The multi-purpose component disclosed herein has a characteristic shape. A separate figure shows a multi-purpose connecting and damping component, the top of which consists of a sphere or dome, which is cut on one side and bears on a first cylinder, which subsequently bears on a first cone, on narrower upper side of which the first cylinder with a dome is seated. The first cone is then connected with its lower bottom (i.e. the bottom of the first cone) to the second cone. The second cone connects with its lower bottom a second cylinder, whereas the bottom of the second cone is larger in diameter than the diameter of the second cylinder. The

second cylinder is connected with the bottom of a third conversed cone, which is larger in diameter than the diameter of the second cylinder. The third conversed cone is connected with a third cylinder of the same size ended by a dome.

Bevelling of the second cone between the bottom of the first cone and the bottom of the second cone forms a first slot. This first slot of the multi-purpose component forms a locking and clamping part for attaching the additional accessory device, whereas the bottom of the first cone is smaller in diameter than the bottom of the second cone.

A second cylinder, the diameter of which is smaller than the bottom of the second cone, is connected to the lower side of the bottom of the second cone. The bottom of the third conversed cone connects to the opposite lower side of the second cylinder, which is connected to the third conversed cone, where the narrower lower side of which connects to the third cylinder of the same size, which is ended by a dome on its lower side. The difference in width of the second cylinder and the bottom of the third conversed cone forms a second slot. This second slot then serves for fastening the additional accessory device in an opening hole of a fixture in the support deck of the patient support apparatus. This fixture of the support deck of the patient support apparatus is a standard component of frame of any patient support apparatus. The fixture is in the form of a foot fixture with holes, or there are pre-manufactured holes for attachment of additional equipment directly in the frame of the patient support apparatus.

In an embodiment where holes are directly pre-manufactured in the frame of the patient support apparatus, the second cylinder of the multi-purpose connecting and damping component engages directly such hole in the frame structure of the patient support apparatus and thus couples an additional accessory device, for example a portable compressor, to the support deck structure of the patient support apparatus.

All the above-mentioned and described parts of the multi-purpose connecting and damping component form one integral component that passes through individual holes or openings in the fixture or in the frame of the support deck of the patient support apparatus, and through holes or openings of the additional accessory equipment to allow connecting of additional accessory equipment to the patient support apparatus or any main apparatus. The multi-purpose component is made of such a material that

dampens transmission of the undesired impacts of additional assessor equipment, for example a compressor, to other parts of the support deck of the patient support apparatus which are made of metal material.

List of Drawings

Various advantages of this invention will become apparent to those skilled in the art from the following detailed description of the preferred embodiments when read in light of the accompanying drawings.

Fig. 1 shows a patient support apparatus from a bottom view with at least two additional accessory equipment visible.

Fig. 2 shows a patient support apparatus from a top view with a frame of support deck and an additional accessory equipment visible.

Fig. 3 shows a part of a support deck with a frame and attaching of an additional accessory equipment to the frame of the support deck by using a multi-purpose connecting and damping component.

Fig. 4A shows a frame of a support deck of a patient support apparatus with fixtures and openings of a patient support apparatus.

Fig. 4B shows an additional accessory equipment, in this embodiment particularly an air compressor.

Fig. 5 shows a view of a part of a frame of a support deck with an additional accessory equipment attached by using a multi-purpose connecting and damping component.

Fig. 6 shows a multi-purpose connecting and damping component for attachment of an additional accessory equipment.

Fig. 7 shows cross section of a multi-purpose connecting and damping component and attachment thereof to the individual brackets of an additional accessory equipment and to the fixtures of a patient support apparatus.

Fig. 8 shows a view of a part of a frame of a support deck with attached multi-purpose connecting and damping component.

Exemplary Embodiments of the Invention

Patient support apparatuses such as beds, stretchers and chairs are equipped, in principle, with an undercarriage with casters for comfortable movement of such apparatus. The patient support apparatuses further comprise a lower and an upper frame, on the upper side of the lower frame a lifting mechanism is located, in the form of telescopic columns or, in another embodiments, scissor lifting mechanism of various types. The lifting mechanism is connected on its other side to the upper frame of a support deck of a patient support apparatus comprising a divided support deck which is positioned either manually, or electrically by means of hydraulic, electric, or other types of motors. The upper frame of the support deck of the patient support apparatus comprises side rails to avoid undesired bed exit of a patient, i.e. leaving of the patient support apparatus when not desired. The support deck comprises one frame or several parts of the frame. The support deck can be divided into a different number of parts, the support deck can be three-part, four-part, or even five-part, depending on the type of a patient support apparatus. The individual parts of the support deck are coupled to each other articulated in relation to the frame of the support deck.

Fig. 1 shows a view of a patient support apparatus 1 from the bottom view, showing an undercarriage 2 with a fifth guiding wheel, in another embodiment with a fifth driven wheel. The Fig. 1 shows a scissor lifting mechanism of the patient support apparatus coupled to an upper side of an undercarriage 2, on the opposite side the lifting mechanism is coupled to a frame 3 of the patient support apparatus 1. The lifting mechanism of the patient support apparatus can be of any type, for example telescopic columns, etc. A frame 4 of a support deck 5 and a support deck 5 are coupled to the frame 3 of the patient support apparatus 1. The support deck 5 comprises a headboard, a footboard and side rails preventing a patient to leave the patient support apparatus 1. This embodiment shown in the Fig 1 discloses an accessory equipment 8 on the bottom side of the patient support apparatus 1, which can be a fifth wheel or, as shown in this embodiment, an additional air compressor (hereinafter referred to as an accessory equipment) for connecting a reactive or active mattress designed for various patient therapies. The accessory equipment 8 can be attached to the frame 3 of the patient support apparatus 1, or, as shown in this embodiment, to at least one part of the frame 4 of the support deck 5. The frame 4 of the support deck 5 comprises fixtures 6 with openings 7 (not shown) for attaching the accessory equipment 8. Fast attachment of the

accessory equipment 8 is reached by means of a multi-purpose component 12 (not shown in Fig. 1), which is put into the openings 7 (not shown) of the fixtures 6 of the frame 4 of the support deck 5 of the patient support apparatus 1. By attaching the accessory equipment 8 onto the multi-purpose component 12 (not shown) the patient support apparatus 1 is coupled to the accessory equipment 8 as shown in Fig. 5.

Fig. 2 shows a floor plan of a patient support apparatus 1 showing a divided support deck 5 of the patient support apparatus 1, comprising several mutually positionable articulated parts, such as a back part, a seat part, a foot part, etc. An accessory equipment 8 is attached to a frame 4 of the support deck 5. The attachment to the frame 4 of the support deck 5 is not visible in this embodiment, as it is hidden under the plastic part of the support deck 5, which is loosely fitted to the frame 4 of the support deck 5.

Fig. 3 shows a floor plan of a part of a frame 4 of a support deck 5 of a patient support apparatus 1. The Fig. 3 shows that the frame 4 of a support deck 5 comprises at least two fixtures 6 with two openings 7, in which a multi-purpose component 12 (shown in Fig. 6) is fitted for attaching an accessory equipment 8. The accessory equipment 8 comprises, on sides of an enclosure 9 of the accessory equipment 8, at least two brackets 10 of the accessory equipment 8 with openings 11 of brackets 10 (shown in Fig. 4B) for attaching the accessory equipment 8. Alternatively, in another embodiment, one bracket 10 with one opening 11 can be located on each side of the accessory equipment 8 for attaching the accessory equipment 8 to a patient support apparatus 1 by means of the multi-purpose component 12. The multi-purpose component 12 passes through the opening 7 of the fixture 6 of the patient support apparatus 1 as well as through the opening 11 of the bracket 10 of the accessory equipment 8. Alternatively, in another embodiment, no special fixtures 6 with openings 7 of the patient support apparatus 1 for accessory equipment 8 are located on the frame 4 of the support deck 5, but these fixtures 6 with openings 7 can be a permanent part of the frame 3 of the patient support apparatus 1 or the frame 4 of the support deck 5. In another embodiment, the fixtures 6 with openings 7 can be substituted only by openings 7 for attaching the accessory equipment 8. The openings 7 of the patient support apparatus 1 must be as large to engage the multi-purpose component 12 precisely and tightly.

Fig. 4A shows a frame 4 of a support deck 5 of a patient support apparatus 1 which comprises fixtures 6 with openings 7 of the patient support apparatus 1. These fixtures 6 of the patient support apparatus 1 are used to attach an accessory equipment 8 to the patient support apparatus 1. Fast attachment of the accessory equipment 8 is reached by means of a multi-purpose component 12, which is put into the openings 7 of the patient support apparatus 1 which are located, in this embodiment, on the fixtures 6 of the patient support apparatus 1. These fixtures 6 with openings 7 are attached to the frame 4 of the support deck 5 by means of screws, but in another embodiment, these fixtures 6 can be permanently attached to the frame 4 of the support deck 5 or they can form an integral part of the frame 4 of the support deck 5 in the form of openings 7 only.

The next Fig. 4B shows an accessory equipment 8, in this embodiment an air compressor, on which outer enclosure 9 two brackets 10 of an accessory equipment 8 with openings 11 for attaching the accessory equipment 8 are visible. On the opposite side of the accessory equipment 8 there are also two brackets 10 of the accessory equipment 8 with openings 11 for attachment to a frame 4 of a support deck 5 of a patient support apparatus 1. These two brackets 10 are not visible from this view. A multi-purpose component 12 disclosed herein is used to attach the accessory equipment 8 to the frame 4 of the support deck 5 of patient support apparatus 1. This multi-purpose component 12 has both connecting and damping function.

Fig. 5 shows a detailed view of the attachment of an accessory equipment 8 to a part of a frame 4 of a support deck 5, where fixtures 6 of a patient support apparatus 1 for attaching the accessory equipment 8 are shown. In a preferred embodiment, the fixtures 6 are attached to the inner side of the frame 4 of the support deck 5 of the patient support apparatus 1, but, in another embodiment, the fixtures 6 are integral part of a frame 3 of the patient support apparatus 1. The fixture 6 of the patient support apparatus 1 for attachment of the accessory equipment 8 comprises at least one opening 7 (not shown), alternatively there are more openings 7, depending on the size of the fixture 6 or the size and number of opposite brackets 10 of the accessory equipment 8. The Fig. 5 shows that the fixtures 6 of the patient support apparatus 1 are preferably two and are arranged on the frame 4 of the support deck 5 opposite each other. Each of the fixture 6 comprises two openings 7 for engaging a multi-purpose component 12. In a preferred embodiment, there is one multi-purpose component 12 in each opening 7 of the fixture 6 of the patient support apparatus 1, which couples the

accessory equipment 8 to the patient support apparatus 1 such that the respective bracket 10 of the accessory equipment 8, in which there is opening 11 of the bracket 10 of the accessory equipment 8 through which the second larger part of the multi-purpose component 12 passes through, bears on each multi-purpose component 12. Termination of the multi-purpose component 12 protrudes from the opening 11 of the bracket 10 of the accessory equipment 8 above the edge of the bracket 10 of the accessory equipment 8.

Fig. 5 further shows the accessory equipment 8 comprising an outer enclosure 9, at least one bracket 10 with an opening 11 for attaching the accessory equipment 8, however in this embodiment, the accessory equipment 8 preferably comprises four brackets 10 with four openings 11 through which the multi-purpose component 12 passes through. The multi-purpose component 12 serves both for attaching the accessory equipment 8, as well as a damper that prevents the transmission of undesired impacts of the accessory equipment 8 on the structure of the patient support apparatus 1.

Fig. 6 shows a subjected multi-purpose component 12, which serves as a connecting and a damping element. The multi-purpose component 12 has a special shape comprising several parts connected to each other and defined by their particular shapes. Starting from above, the multi-purpose component 12 comprises a dome 13, which is cut off by one-third on its lower side, the dome 13 is followed by a first cylinder 14 of the multi-purpose component 12, which is followed by a first cone 15 of the multi-purpose component 12. The lower side of the first cone 15 of the multi-purpose component 12 is then followed by a first cone bottom 16. The lower side of the first cone bottom 16 is then followed by a second cone 17 whose a second cone bottom 18 is followed by a second cylinder 19. The lower side of the second cylinder 19 is followed by a third conversed cone bottom 20 of the multi-purpose component 12, followed by a third conversed cone 21 and a third cylinder 22 ended with an inversed dome 23. All these parts of the multi-purpose component 12 form one whole, where the upper part of the multi-purpose component 12 resembles a chess figure and the lower part of the multi-purpose component 12 resembles the inversed chess figure. Bevelling of the second cone 17 between the first cone bottom 16 and the second cone bottom 18 forms a first slot 24. This first slot 24 of the multi-purpose component 12 forms a locking and clamping part for attaching an accessory equipment 8. The difference in the width of the

second cylinder 19 and the third conversed cone bottom 20 forms a second slot 25. This second slot 25 serves to secure the accessory equipment 8 to a fixture 6 of a patient support apparatus 1.

The lower part of the multi-purpose component 12 is, by inserting into an opening 7 for attaching the accessory equipment 8 to the patient support apparatus 1, ready to attach the accessory equipment 8 at the moment when the multi-purpose component 12 engages the multi-purpose component 12 in the second slot 25.

A permanent connection between the patient support apparatus 1 and the accessory equipment 8 occurs at the moment when, after inserting the multi-purpose component 12 into the fixture 6 with openings 7 of the patient support apparatus 1, the accessory equipment 8 is attached using the bracket 10 and inserting into the opening 11 at the point of the first slot 24. Two devices are thus permanently and quickly coupled or attached using a single component without any need to use any assembly instruments.

Fig. 7 shows a cross-section between a multi-purpose component 12 and both fixtures of brackets of both devices, i.e. the bracket 10 of an accessory equipment 8, and the fixture 6 of a patient support apparatus 1 (not shown). Fig.7 shows precisely that at the point of a first slot 24 the multi-purpose component 12 is coupled to the bracket 10 of the accessory equipment 8, and at the point of a second slot 25 the multi-purpose component 12 is coupled to the fixture 6 of the patient support apparatus 1. The multi-purpose component 12 thus represents a connecting and, at the same time, damping element.

Fig. 7 shows two multi-purpose components 12 in a cross-section view between two brackets 10 of the accessory equipment 8 and one fixture 6 of the patient support apparatus 1. The first slot 24 allows fixed and rigid connection of the multi-purpose component 12 via the bracket 10 of the accessory equipment 8 with the accessory equipment 8, the second slot 25 allows fixed and rigid connection of the accessory equipment 8 via the fixture 6 with the patient support apparatus 1.

The multi-purpose component 12 is inserted into the opening 7 of the fixture 6 of the patient support apparatus 1 by its lower part, i.e. the lower part of the multi-purpose component 12 comprising an inversed dome 23, a third cylinder 22, a third conversed cone 21, a third conversed cone bottom 20 and a second cylinder 19, passes through

the opening 7 of the fixture 6 of the patient support apparatus 1, and based on the second slot 25, the multi-purpose component 12 is firmly coupled with the fixture 6 of the patient support apparatus 1. Over the protruding upper part of the multi-purpose component 12 comprising a dome 13, a first cylinder 14, a first cone 15 and a first cone bottom 16, the accessory equipment 8 is engaged, where the first slot 24 of the multi-purpose component 12 in the point of a second cone 17 provides firm and rigid connection of the accessory equipment 8 with the patient support apparatus 1. A second cone bottom 18 of the multi-purpose component 12 causes damping effect of the connection of the accessory equipment 8 to the patient support apparatus 1. The second cone bottom 18 is larger than both openings of both devices, i.e. the opening 7 of the fixture 6 of the patient support apparatus 1 and the opening 11 of the bracket 10 of the accessory equipment 8 to simultaneously include a bounding or dividing function between two different materials of two different devices, as well as a damping function since the entire multi-purpose component 12 is made of rubber or other suitable material. The upper and lower parts of the multi-purpose component 12 protruding above or below the fixture 6 of the patient support apparatus 1 and the bracket 10 of the accessory equipment 8 form securing or locking elements due to their shape and overlapping of cones and cylinders that prevent the individual devices to fall out arbitrarily.

Fig. 8 shows a part of a structure of a frame 4 of a support deck 5 of a patient support apparatus 1, where a fixture 6 with openings 7 of the patient support apparatus 1 is attached to the structure of the frame 4 of the support deck 5. The fixtures 6 are either a part of the structure or can be additionally attached to the structure by screws, rivets or other connecting material. The Fig. 8 shows that all openings 7 in the fixtures 6 of the patient support apparatus 1 comprises a multi-purpose component 12 for attaching an accessory equipment 8. The multi-purpose component 12 can be permanently inserted into the openings 7, or this multi-purpose component 12 can be additionally added to the openings 7 with the accessory equipment 8 any time. This Fig. 8 shows that the multi-purpose component 12 is coupled with the opening 7 of the patient support apparatus 1 in a second slot 25 (not shown). The second slot 25 allows the accessory equipment 8 to be firmly and rigidly connected via the fixture 6 to the frame 4 of the support deck 5 of the patient support apparatus 1.

Industrial Applicability

The multi-purpose component disclosed herein functions as a connecting and damping element and is used to attach an additional accessory equipment such as a portable compressor, or an additional fifth wheel, or central dual control of the casters, or any other additional equipment of patient support apparatuses used in hospitals and healthcare facilities. The multi-purpose component can also be used especially in other medical devices, such as chairs and beds, relaxation chairs or examination chairs or one-day surgery chairs and stretchers.

List of references

- 1) Patient support apparatus
- 2) Undercarriage
- 3) Frame (of patient support apparatus)
- 4) Frame (of support deck)
- 5) Support deck
- 6) Fixture (of patient support apparatus)
- 7) Opening (of fixture)
- 8) Accessory equipment
- 9) Enclosure / Casing (of accessory equipment)
- 10) Bracket (of accessory equipment)
- 11) Opening (of bracket)
- 12) Multi-purpose component (multi-purpose connecting and damping component)
- 13) Dome (of multi-purpose element)
- 14) First cylinder (of multi-purpose element)
- 15) First cone (of multi-purpose element)
- 16) First cone bottom
- 17) Second cone (of multi-purpose element)
- 18) Second cone bottom
- 19) Second cylinder (of multi-purpose element)
- 20) Third converse cone bottom
- 21) Third converse cone (of multi-purpose element)
- 22) Third cylinder (of multi-purpose element)
- 23) Inversed dome (of multi-purpose element)
- 24) First slot
- 25) Second slot

Claims

1. A multi-purpose component (12) for a patient support apparatus (1) and for an accessory equipment (8) **characterized in that** it comprises three cones (15, 17, 21) mutually defined by cylinders (14, 19, 22), whereas at least two cylinders (14, 22) are ended with domes (13, 23) and at least one cone (21) is conversed, whereas all elements form one unit.
2. The multi-purpose component (12) for a patient support apparatus (1) and for an accessory equipment (8) according to claim 1 **characterized in that** it comprises three and more cones (15, 17, 21) mutually defined by cylinders (14, 19, 22) and cone bottoms (16, 18, 20), whereas the shape of the second cylinder (19) forms a second slot (25) for attachment to the patient support apparatus (1), and the shape of the second cone (17) forms a first slot (24) for attachment of the accessory equipment (8), whereas at least two cylinders (14, 22) are ended with domes (13, 23), whereas second cone bottom (18) between the first slot (24) and the second slot (25) is a dampening element.
3. The multi-purpose component (12) for a patient support apparatus (1) and for an accessory equipment (8) according to claim 2 **characterized in that** at least two cone bottoms (18, 20) of the multi-purpose component (12) are engaged in an opening (7) of a fixture (6) of a frame (4) of a support deck (5) of a patient support apparatus (1).
4. The multi-purpose component (12) for a patient support apparatus (1) and for an accessory equipment (8) according to claim 2 **characterized in that** at least two cone bottoms (16, 18) in the upper part of the multi-purpose component (12) are engaged in an opening (11) of a bracket (10) of the accessory equipment (8).
5. The multi-purpose component (12) for a patient support apparatus (1) and for an accessory equipment (8) according to claim 2 **characterized in that** at least one or more cylinders (14, 19, 22) and one or more cone bottoms (16, 18, 20) form a damper.

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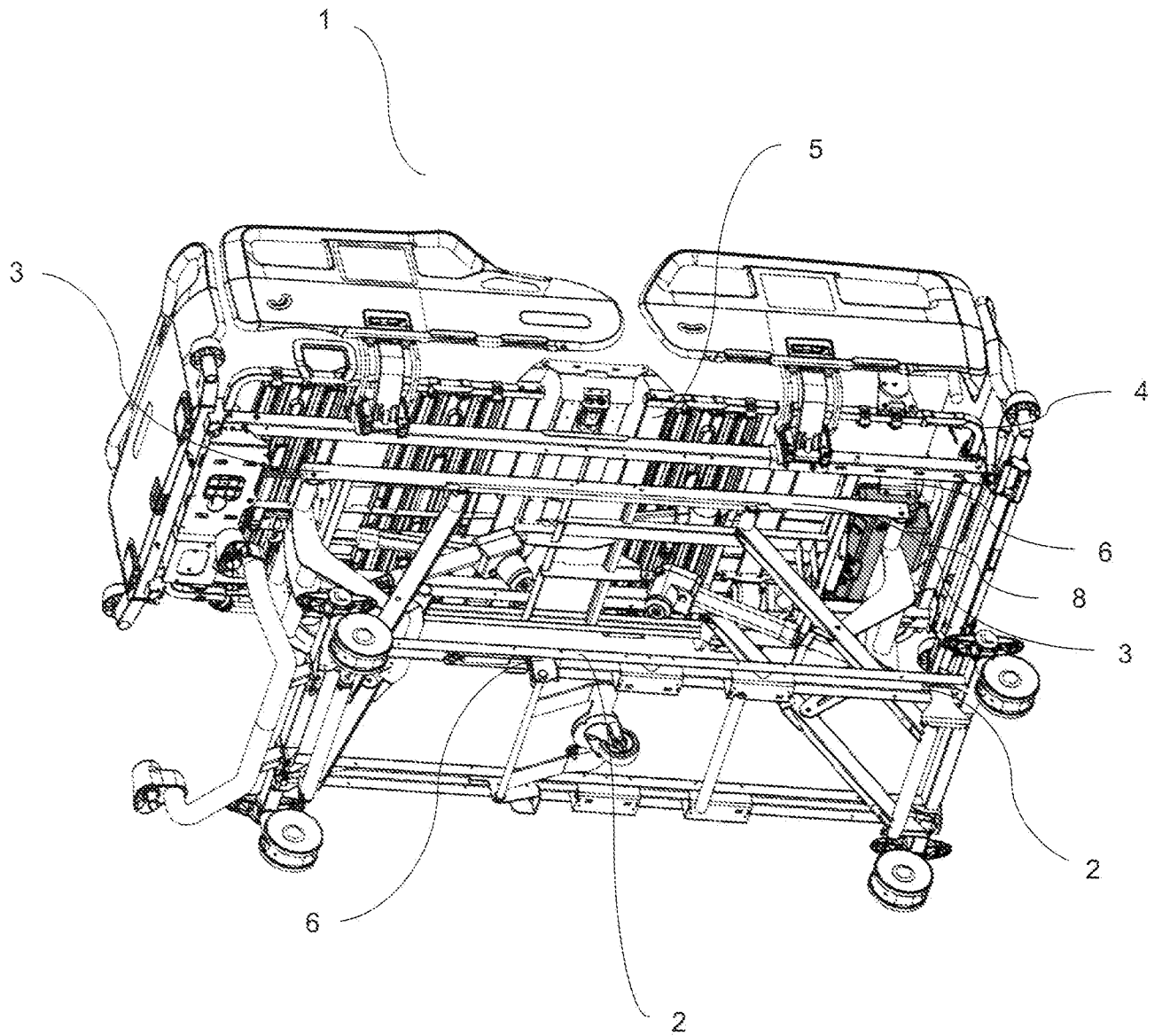


Fig. 1

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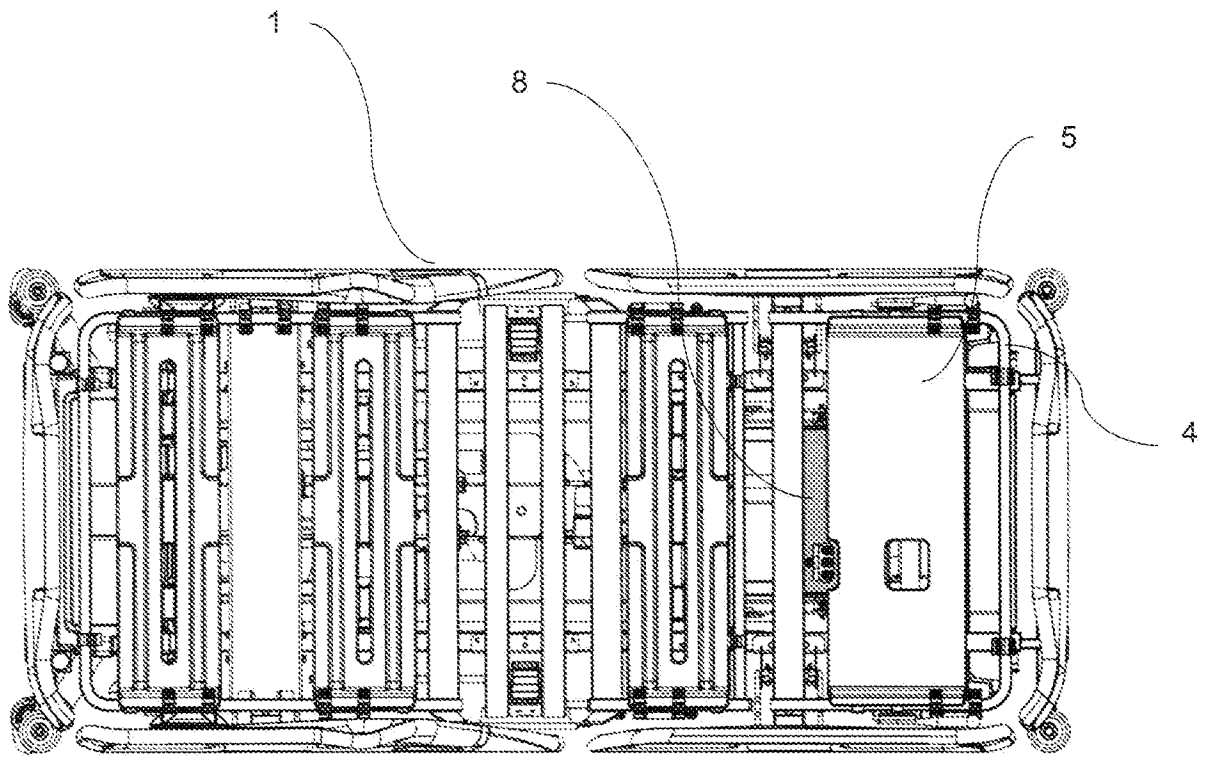


Fig. 2

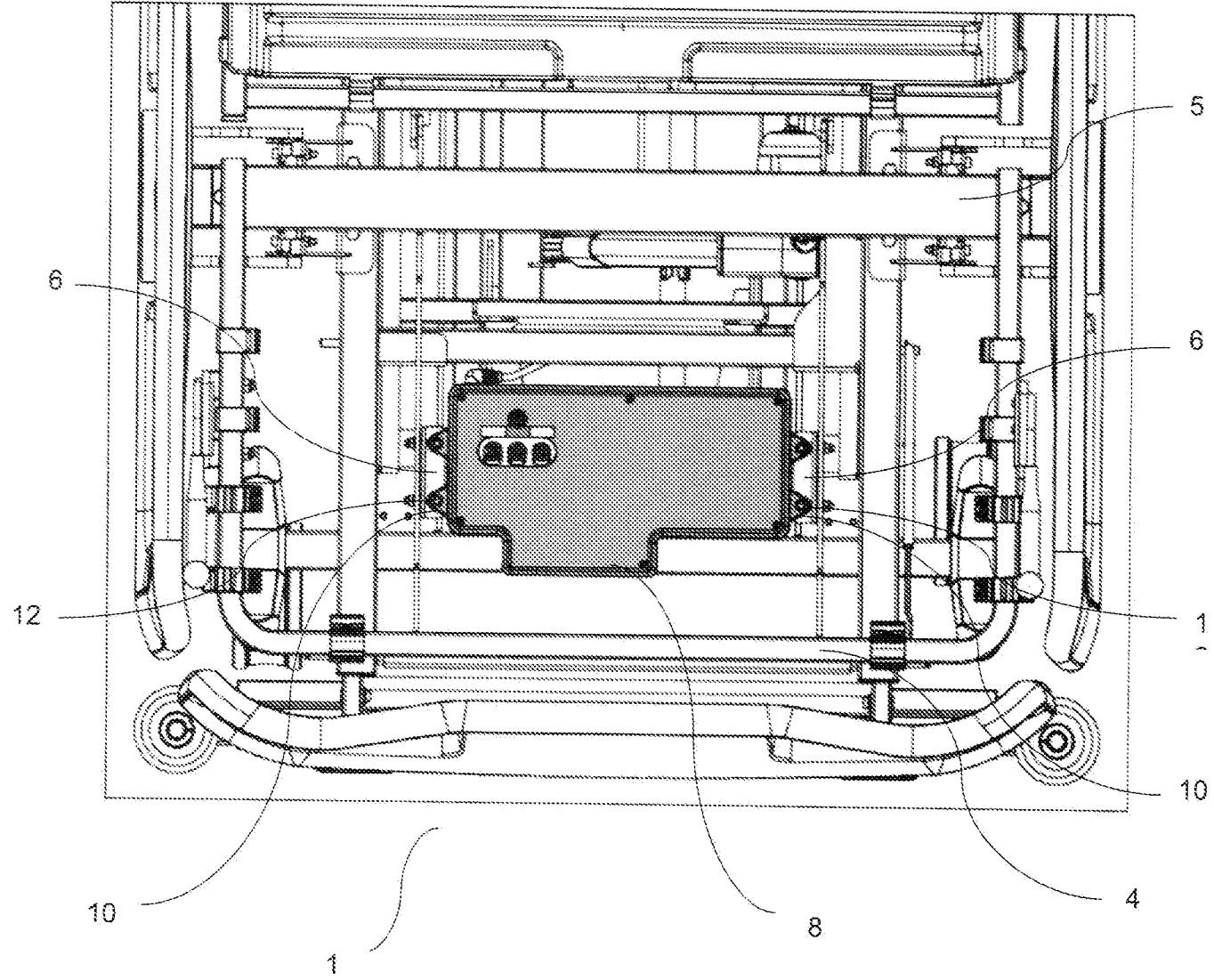


Fig. 3

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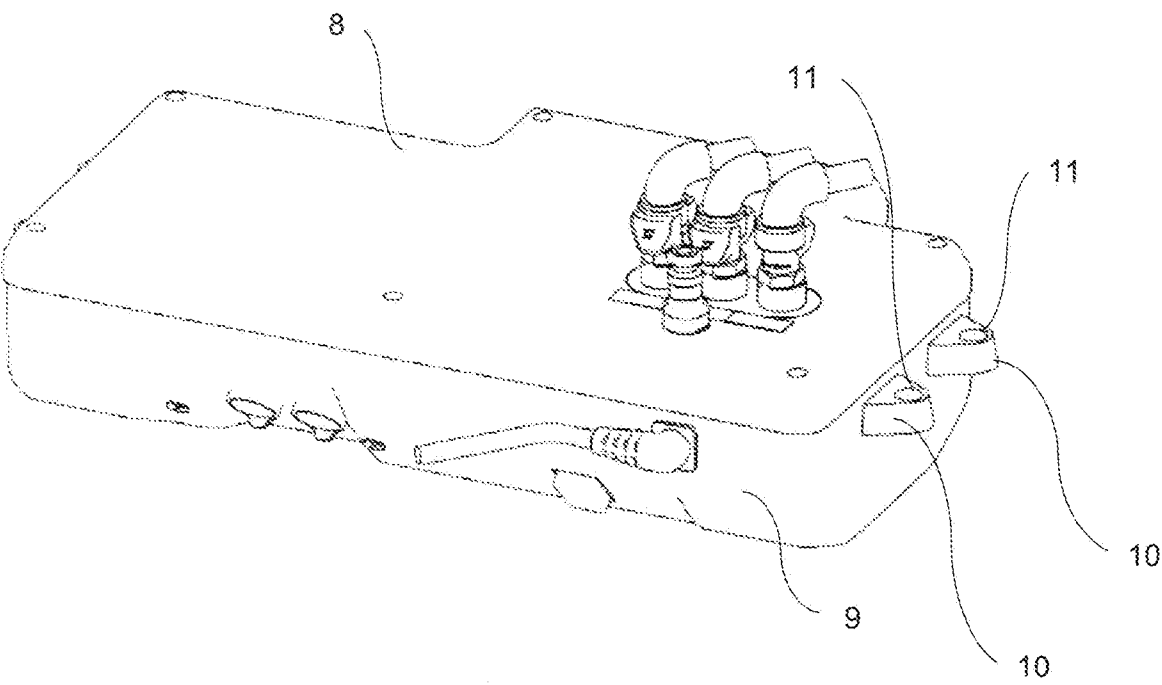
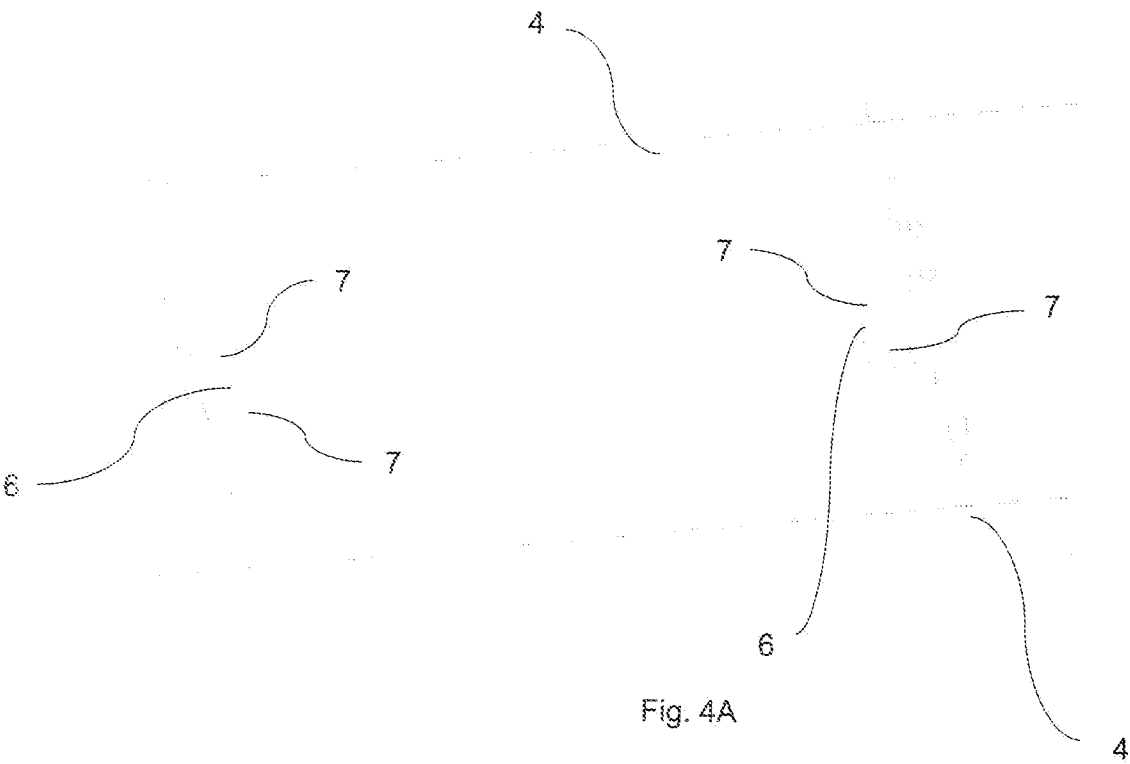


Fig. 4B

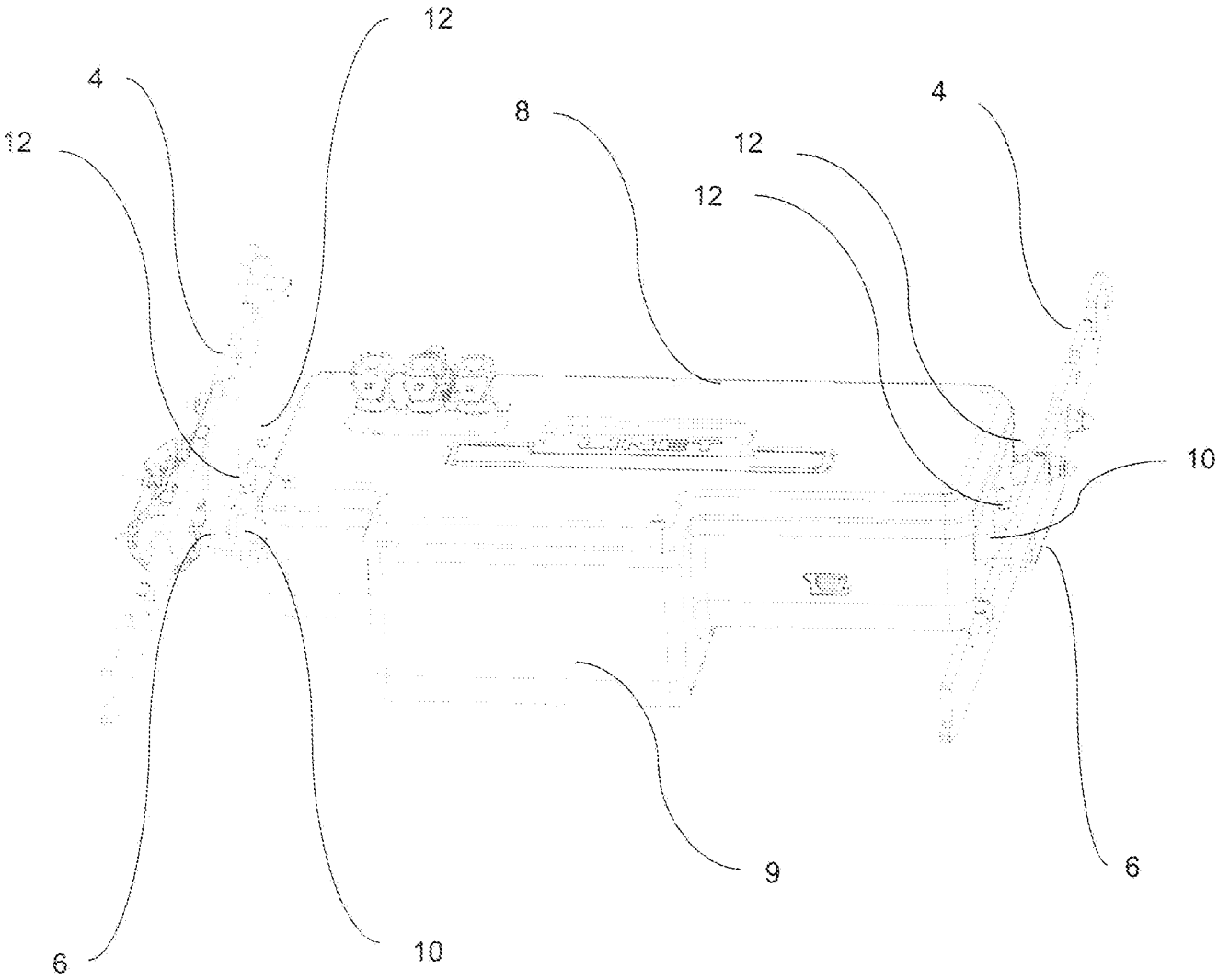


Fig. 5

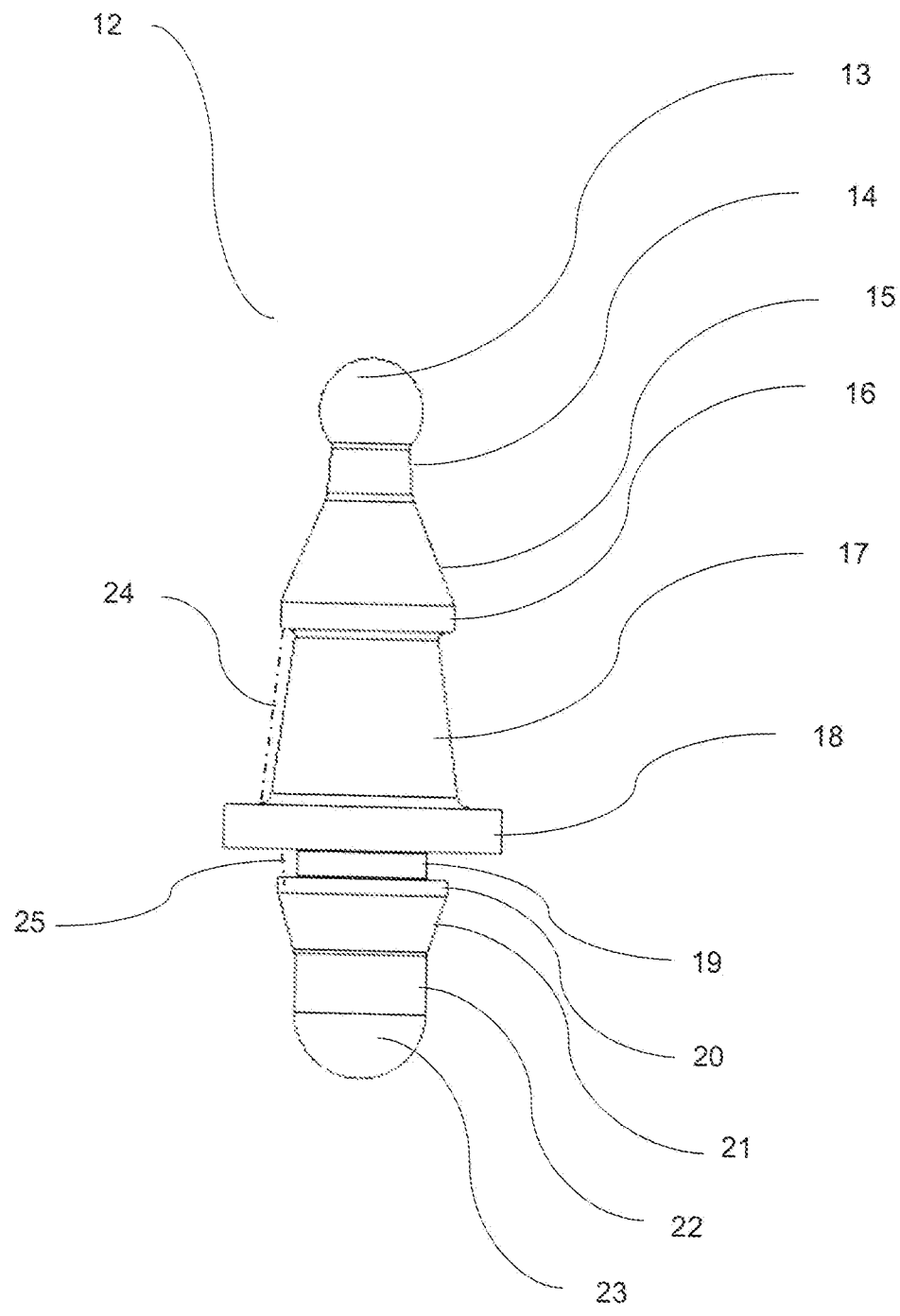


Fig. 6

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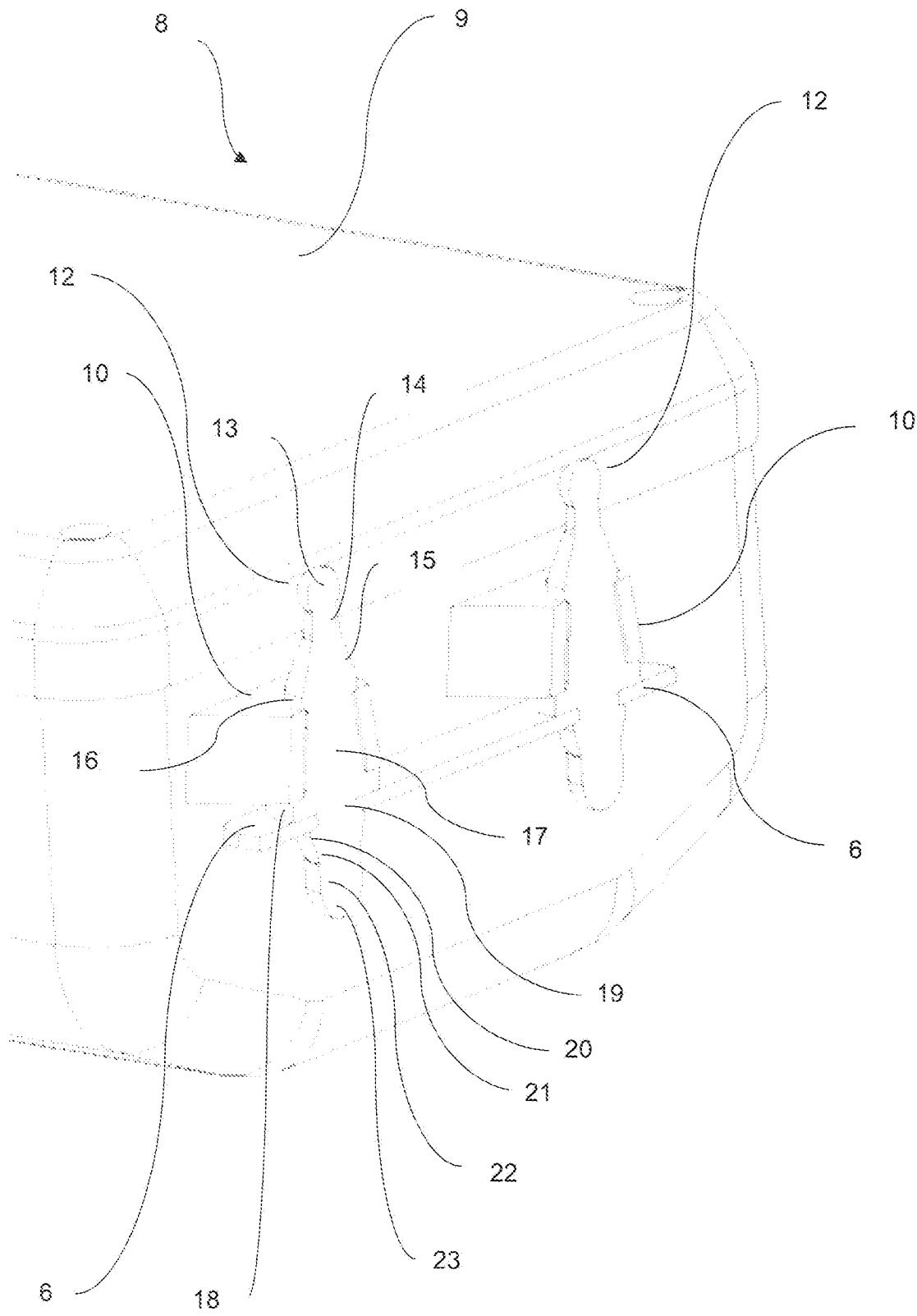


Fig. 7

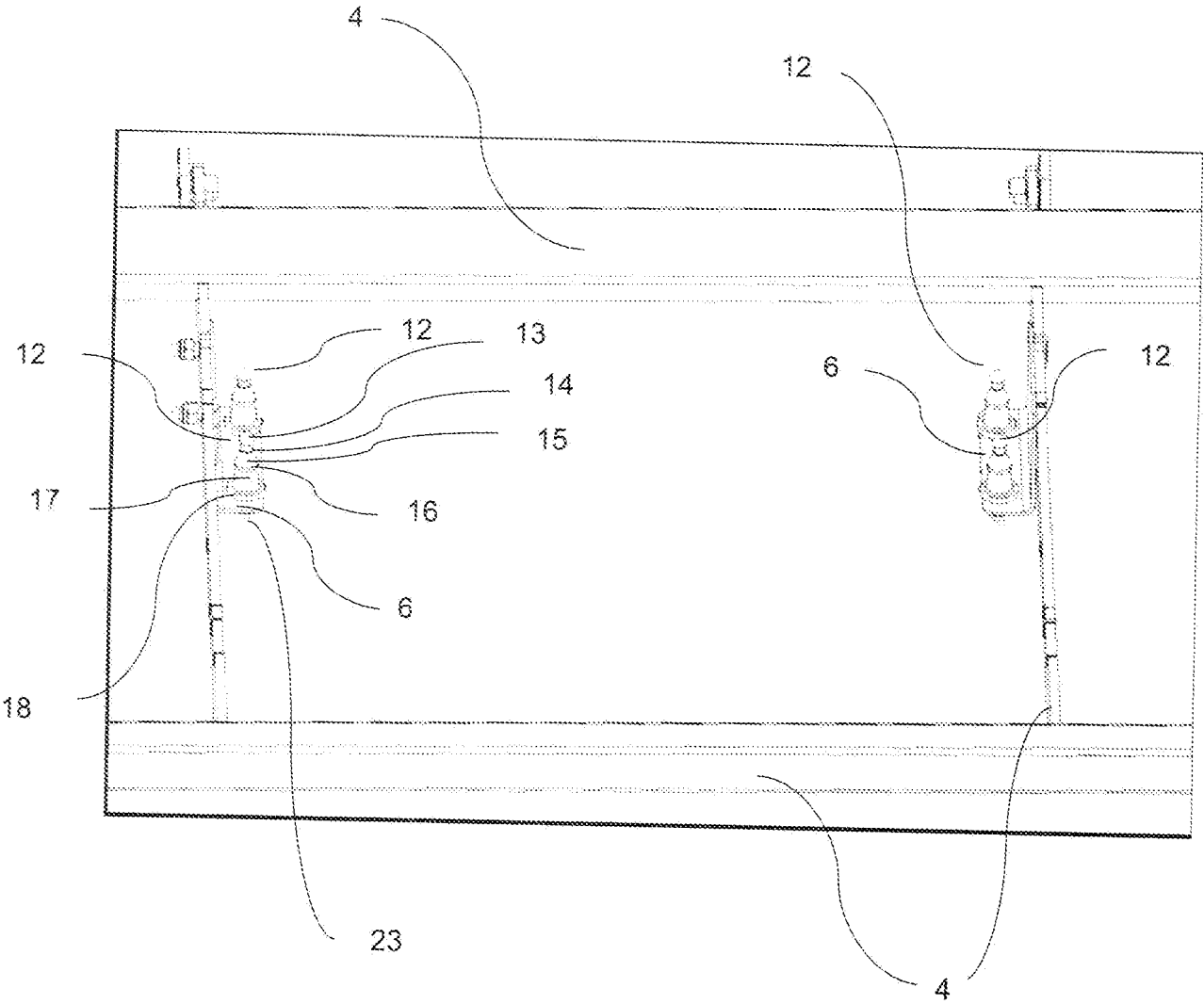


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No

PCT/CZ2024/000004

A. CLASSIFICATION OF SUBJECT MATTER

INV. F16F1/373

ADD. A61G7/05

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)

F16F A61G F16B

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

14 June 2024

Date of mailing of the international search report

01/07/2024

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Authorized officer:

Maroño Martínez, J

INTERNATIONAL SEARCH REPORT

International application No
PCT/CZ2024/000004

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