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(71) Applicant: **Vassilli s.r.l.**
35020 Saonara (Padova) (IT)

(72) Inventor: **Vassilli, Berto**
35020 Saonara (Padova) (IT)

(54) Invalid chair

(57) It is a seating for disabled persons suffering from skeletal malformations, which can assist in obtaining a correct posture, or at least a support for the posture.

The part specifically innovative of the seat concerns the backrest, which consists of a plurality of parts, each allowing to be adjusted according to all six freedom degrees, in order to make up the more suitable rest and/or support for said malformations.

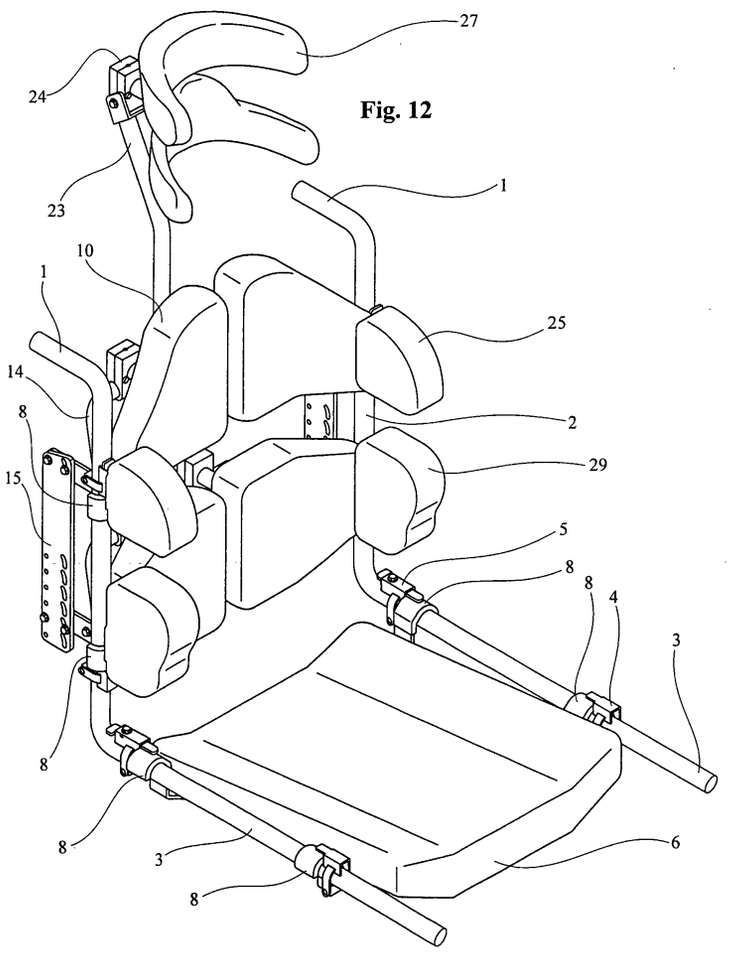

Fig. 12

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Description

[0001] In the orthopaedic field, the medical science studies and suggests, in the different cases, aids concerning disabled persons or traumatized persons.

[0002] One of the above-mentioned aids concerns the invalid chairs or seatings. The seatings available on market are of innumerable types and purposes. There are fixed and tracked seats, standardized and personalized seats. The seats achieved by the various manufacturers according to doctors', therapists' and orthopedists' suggestions, are conceived to reach the highest benefit in compliance with patients' requirements.

[0003] The multiplicity and variety of cases concerning the skeletal and anatomic imperfections have led the seat manufacturers to achieve backrests divided into several parts, allowing suitable and proper adjusting, in consideration also of the build and of the age of patient; this can be a young person, and therefore on growing age, or an adult person.

[0004] The seating of the present patent features a backrest quite different from any other backrest existing on market, and capable of satisfying the various requirements which should arise.

[0005] Said backrest, such as considered as an example in the present patent, is practically made up of four quadrants, independent between them and each capable of being adjusted on an independent and diversified manner compared to the others.

[0006] When a patient, having specific skeletal anomalies in his anatomical structure is placed on seat, the single parts which compose the backrest are adjusted one by one. If with the time, for the same patient, some changes occurr, including the growth variations if the patient is on growing age, you may periodically conform the positioning of the above said parts which compose the backrest by means of adjustments.

[0007] It is understood that the seating, made up by the seat and the backrest above described is equipped, on the various surfaces which come to contact with the person placed on it, with suitable padded cushions.

[0008] Said cushions can be on their turn applied on the bearing surfaces of the seat by means of "Velcro" straps coupling method, which allows its easy removal, replacement and re-positioning.

[0009] The seating bearing frame, without seat and backrest, is schematically composed by two tubular elements, which after the first upper horizontal section, which form the handgrips, go down almost vertically by the length representing the backrest extension and will afterwards shape almost horizontally forwards by thel ength corresponding to seat extension.

[0010] The two elements are kepts spaced by means of cross connections by the required extension to house a seat and a backrest.

[0011] The seat and the backrest generally have their own frame, bolted on two opposed sides, on brackets with a plurality of holes. Said brackets are equipped on one end with a semicircular coupling, whose opening corresponds to the diameter of the tubular elements of the seating bearing frame, where these couplings are to be fitted.

[0012] The seat and backrest, placed ont the seating bearing frame, are hold back by special clamps equipped with extensions which are to be be fitted on the semicircular couplings of the brackets, of which seat and backrest are provided.

[0013] In the specific case of the seating of the patent, the frame of the backrest is achieved by two curved crosspieces arranged almost horizontally, bolted on ends, with brackets having several holes. Said brackets are equipped on one end with semicircular couplings, whose opening corresponds to the diameter of the tubular element of the bearing frame of the seat, on which said couplings are to be placed.

[0014] Said two crosspieces with their brackets are kept spaced by means of two flat elements with almost vertical arrangement, having several holes.

[0015] Said flat elements with their holes plurality allow to modify, when required, the distance from each other of the crosspieces from the backrest frame.

[0016] The single parts which compose the resting surface of the backrest are supported in the middle of the back side, by a spindle which makes up on one end a ball joint coupling with them. The other end of the spindle opposed to the ball joint is engaged in the hole of a block, where it can slide and turn. Said block is provided of a second hole , whose axle is suitably off-centre compared to the axle of the first hole, and makes up with this axle an approximately 90 degrees angle.

[0017] Said block is engaged with said second hole, off-centre, in one position of one of the curved crosspieces, along which it can slide and turn.

[0018] After the adjustment is completed, the block is made integral to the crosspiece which supports it and the spindle with ball joint, supporting one of the parts which represent the backrest support, is made integral to the block.

[0019] The adjustment is completed by operating on the screws which block the movements of the ball joint. As previously said, each single part which form the resting surface of the backrest is capable of being adjusted independently from the others, this being the main characteristic of the patent.

[0020] The seating considered up to now can refer to that of a wheelchair or to that which can be placed inside a car for a disabled persons enabled to drive, and still to any other case or event which may actually occur.

[0021] What said above can be better clarified through the examination of the enclosed drawings.

[0022] Fig. 1 shows schematically one of the two elements of a seating frame, where the seat and the backrest are housed (these latter are not pictured here).

[0023] It can be noticed the handgrip 1, the vertical section 2 and the horizontal section 3. There are not pictured the cross elements which keep the above lateral

elements spaced.

[0024] The devices 4 and 5, which by means of their extensions 19 and 21 hold back seat and backrest, are shown.

[0025] Fig. 2 corresponds to Fig. 1, where the seating frame is completed by the implementation of a generical seat 6 and a generical backrest 7.

[0026] Both seat 6 and backrest 7 are equipped on two opposed sides with brackets 8 which are equipped on their end with semicircular couplings, which surround the tubular elements 2, 3 of the bearing frame of the seat.

[0027] In the picture there are drawn in broken line the possible orientations which can be taken by seat 6 and backrest 7, by properly fixing them to brackets 8, by means of the several holes which are arranged on said brackets 8.

[0028] The extensions 19 and 21 of clamps 4 and 5 are used to hold back seat 6 and backrest 7

[0029] Fig. 3 shows the backrest executed according to patent, alone, not fitted in the seat.

[0030] It can be noticed the bearing frame composed by two curved crosspieces 13 and 14 with almost horizontal arrangement, bolted on ends with brackets 8. Said brackets 8 are equipped on one end with semicircular couplings, whose opening corresponds to the diameter of the tubular element 2 of the bearing frame of the seating. Said two crosspieces 13 and 14 with their brackets 8 are kept spaced by two flat elements 15 with almost vertical arrangement. Said vertical flat elements 15 which are equipped with a plurality of holes, allow to change, when required the distance from each other of crosspieces 13 and 14.

[0031] On crosspieces 13, 14 are fitted the blocks 16 with holes, which surround the branches of said crosspieces.

[0032] Said blocks 16 can slide along crosspieces and rotate around them.

[0033] Each block 16 is equipped with a second hole, whose axle compared to the axle of the hole which surrounds the crosspiece, ensues to be off-centre and forming an angle corresponding approximately to 90 degrees. This second hole represents the seat in which a spindle 17 is placed, equipped on one end with a spherical head 20. Said spindle 17 which can slide and rotate in the seat where it is housed, is meant to support by means of spherical coupling 18 one of parts 9, 10, 11,12 which make up the resting surface of the backrest.

[0034] Once the adjustment is completed, the block 16 is made integral to its corresponding crosspiece 13 or 14 supporting it, and the spindle 17 with ball joint 20, 18 supporting one of parts 9, 10, 11, 12 of the backrest is also made integral to block 16. The adjustment is completed by operating on the screws which block the movement of the ball joint 18, 20. It must be specified that the adjustment of the single parts 9, 10, 11, 12 which make up the resting surface of the backrest, and are all autonomous and independent between them, is carried out when the backrest is fitted on the seat and the patient is sitting in the right position on the seat.

[0035] Fig. 4 shows an exploded view of the various parts, that is, the bar 13, 14, the block 16, the spindle 17, the ball joint 20, 18, these parts permitting to position and block in the required position each of the resting elements 9, 10, 11, 12 of the backrest.

[0036] Fig. 5a shows the block 16 viewed alone; Fig. 5b shows the assembling of block 16 with spindle 17 and the ball joint 18. Fig. 5c corresponds to Fig. 5b, viewed from another angle.

[0037] Fig. 6 shows four different orientations of the ball joint 18, concerning the same parted representation of a crosspiece section 13, 14 coupled with spindle 17 by means block 16.

[0038] Fig. 7 shows the upper part of a seat concerning the backrest executed according to patent, where the structure of the frame is viewed from front side, being the single resting parts 9, 10, 11, 12 of the backrest drawn almost in transparency.

[0039] Fig. 8 corresponds to Fig. 7 viewed according to a different angle.

[0040] Fig. 9 is a view from top corresponding to Fig. 7. The block 22, used to support the upright 23 (not drawn here) of the headrest, fitted on crosspiece 14, can be noticed here.

[0041] Fig. 10 is a representation viewed from top corresponding to picture 9, where parts 9 and 10 of backrest are orientated in a different way.

[0042] Fig. 11 is the axonometric representation of a seating, where the backrest is executed according to patent.

[0043] To better emphasize the structure, the seating appears unprovided with its upholsteries. It can be noticed the two lateral pushing pads 29, the upright 23 which supports by means of a fork equipped with hinge the block 24, the spindle 25, the ball joint 26 and the headrest 27.

[0044] Fig. 12 corresponds to picture 11, but now provided with upholsteries.

[0045] Fig. 13 shows, as an example, a normal wheelchair for disabled persons, whose seating is executed according to a current type.

[0046] Fig. 14 corresponds to Fig. 13, where the seat with backrest executed according to patent has been used.

[0047] Fig. 15 and Fig. 16 show schematically a seat where a manikin 28 has been placed, where the backrest has been manufactued according to patent.

[0048] The seating of this patent constitutes, in the specific field of seats, an innovation solving a lot of problems, either for the persons who will be using them or for their assistants.

[0049] The seating of this patent represents a not limiting version, considering that what has been described and pictured has been made as a example, according to a preferential solution.

[0050] Therefore, every other application, and range

of applications, which a person in the field would achieve and/or apply, even in an improved way, does not fall outside the patent, if he follows the teachings of this patent.

Claims

1. Seating for disabled persons featuring that the resting surface of the backrest is made up of a plurality of single parts (9, 10, 11, 12) distributed both vertically and horizontally, independently adjustable from each other.

2. Seating for disabled persons according to the first claim featuring that each single part (9, 10, 11, 12) making up the resting surface of the backrest can be adjusted according the three threeorthogonal axles; the spindle 17, before blocking, being able to slide inside the block (16) seat, where it is engaged; the block 16 being able of sliding along the bar (13, 14) supporting it; the bar (13,14) supporting the block 16 allowing to be raised or lowered, so varying its engagement with the vertical elements (15), thanks to the plurality of holes they are provided with.

3. Seating for disabled persons according to first claim, featuring that each single part making up the resting surface of the backrest can be adjusted according to the three possible rotations, being capable, before blocking, of moving around the joint (20,18) supporting it.

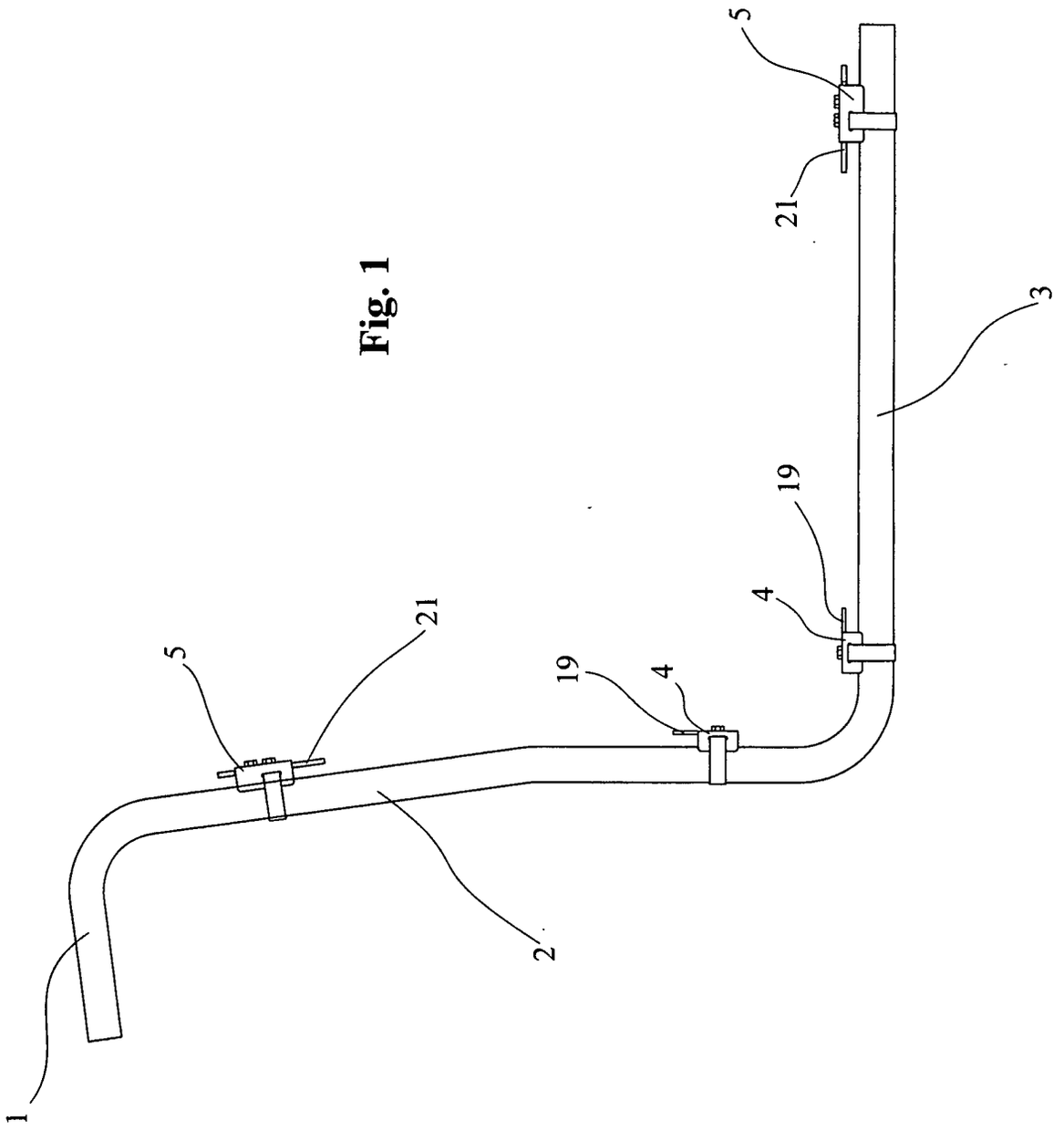
4. Seating for disabled persons according to one or more of the previous claims, featuring that the adjustment of each single part (9, 10, 11, 12) which makes up the resting surface of the backrest allows to be adjusted locally according to the specific skeletal and anatomic requirements of the patient (28) arranged on seat.

5. Seating for disabled persons according to first claim, featuring that the seat frame is equipped on two opposed sides with brackets (8) with a plurality of holes, allowing to take, compared to the bearing frame (3) of the seat, variable depth and inclination degrees.

6. Seating for disabled persons according to claim 1, featuring that the frame of the backrest is equipped on two opposed sides with brackets (8) having one semicircular shaped end with opening corresponding to the diameter of the lateral vertical elements (2) of the bearing frame of the seating.

7. Seating for disabled persons according to claim 6 featuring that the backrest placed on the bearing frame (2) of the seats is hold back by extensions (19,21) of clamps (4,5) fitted on the bearing frame (2) of the seat and that said extensions (19,21) appear to be situated on the semicircular ends of the brackets (8) integral with these latter to the frame.

Fig. 1



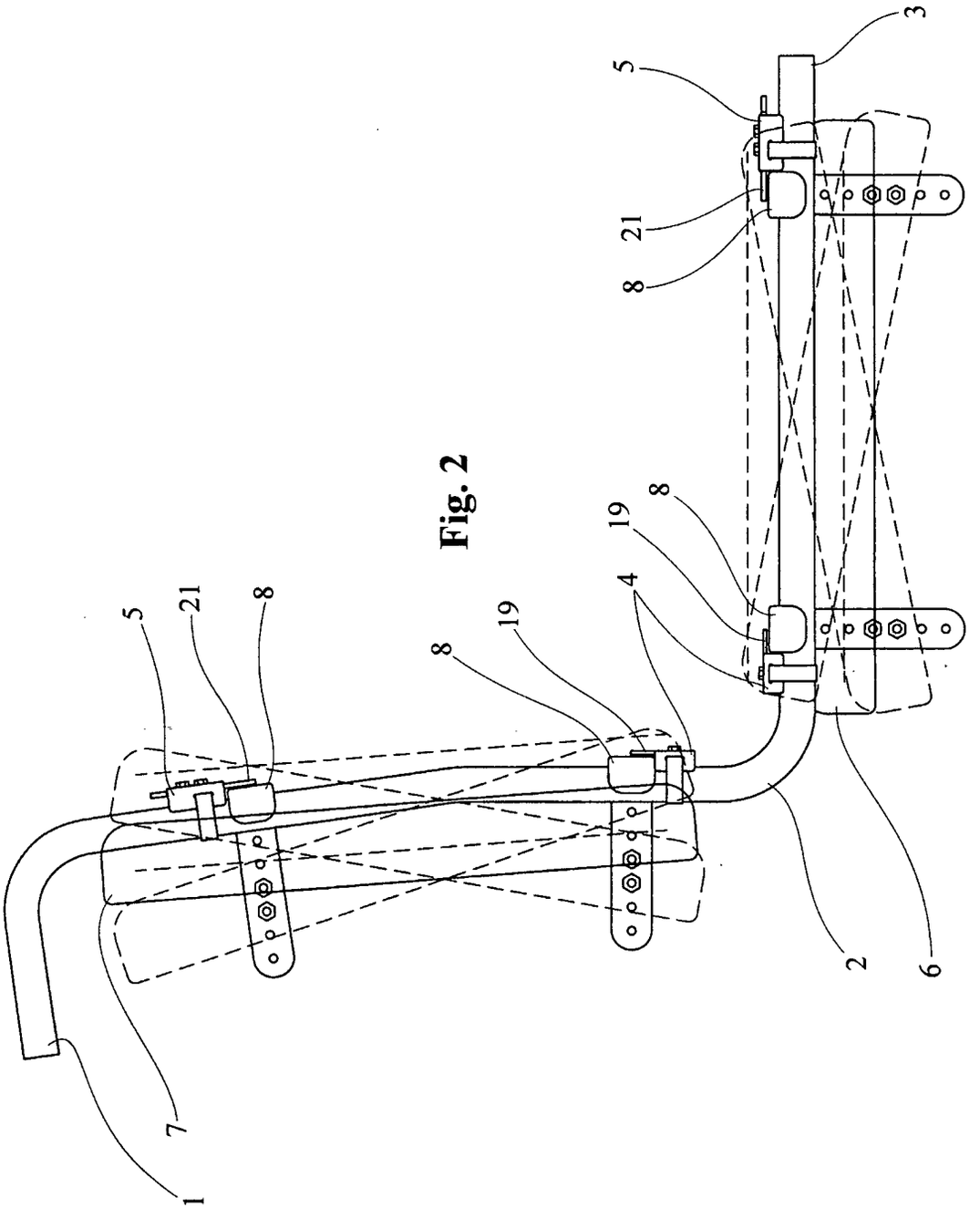


Fig. 2

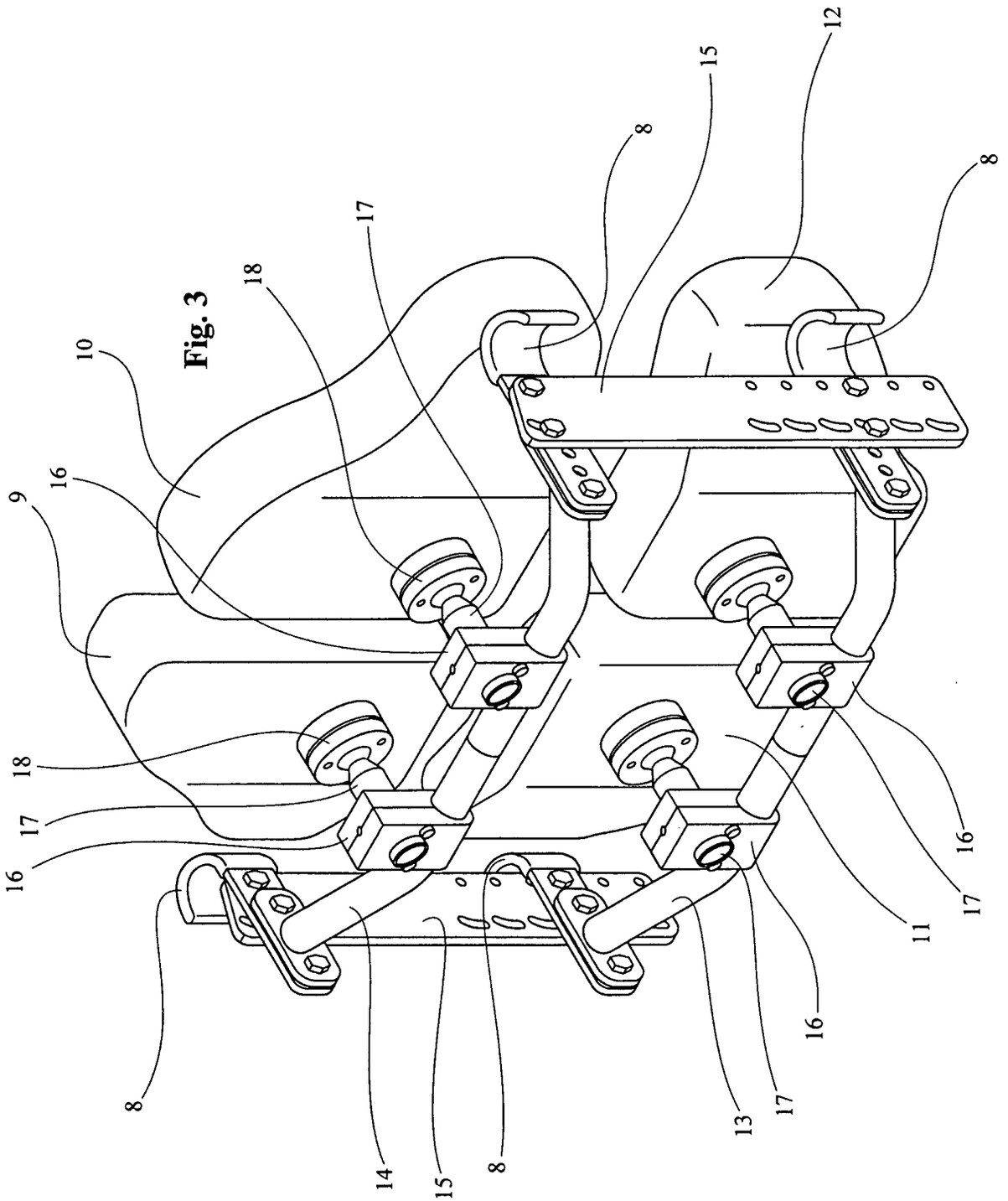


Fig. 3

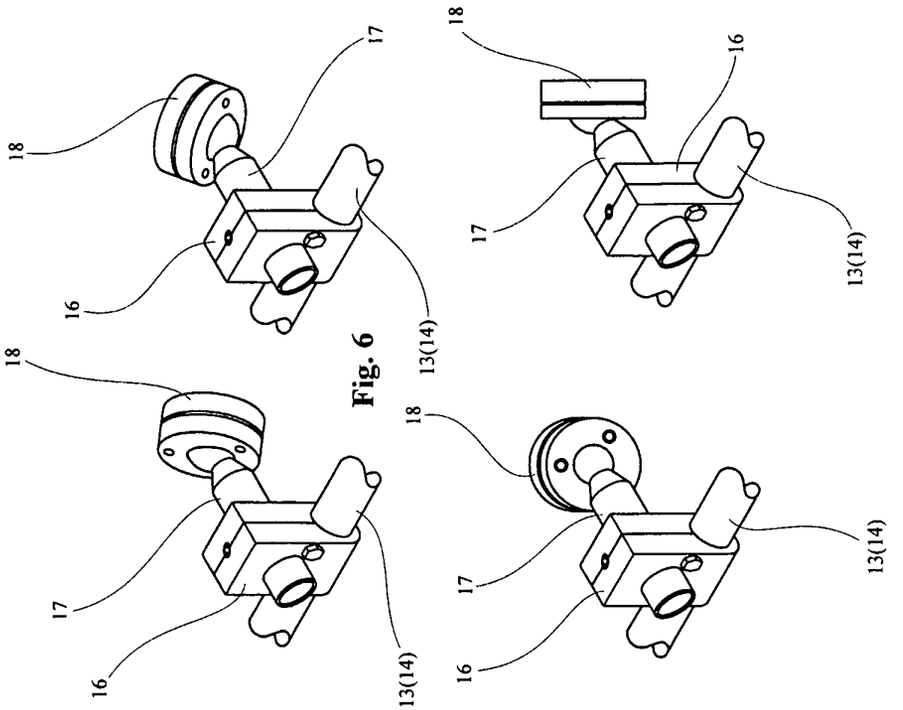

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Fig. 6

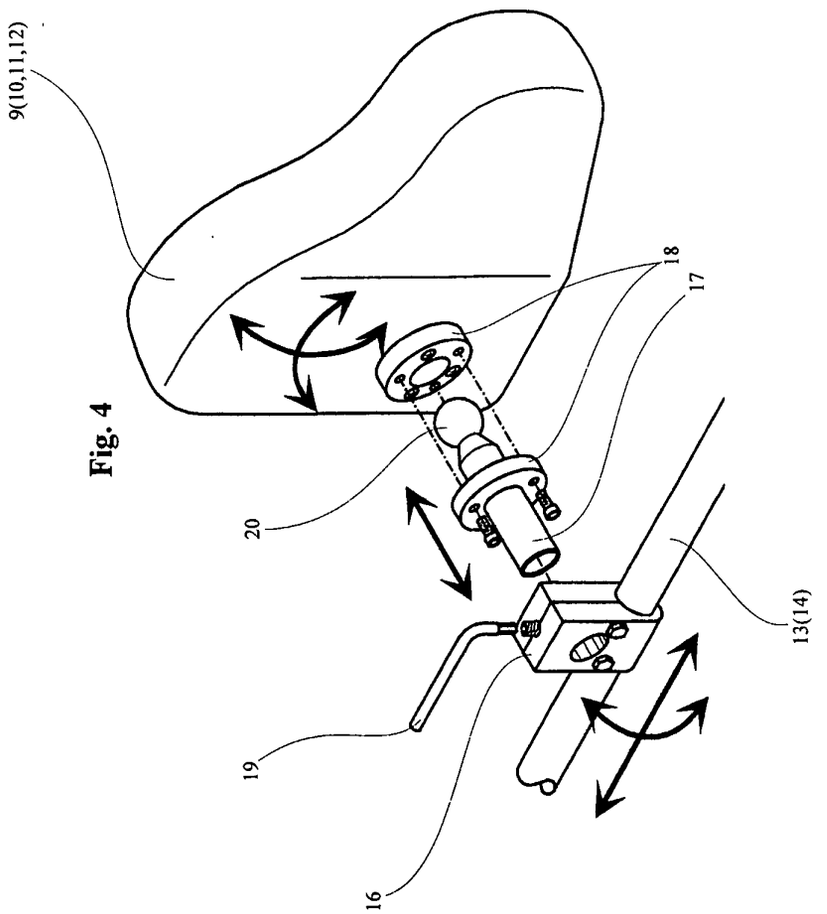
9(10,11,12)
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Fig. 4

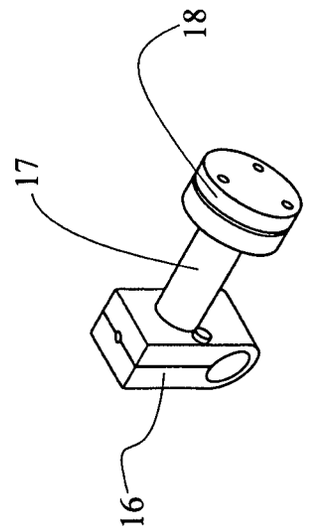

Fig. 5 c

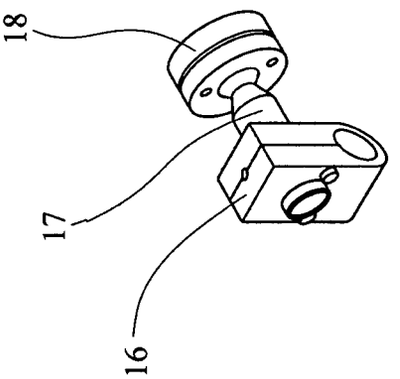

Fig. 5 b

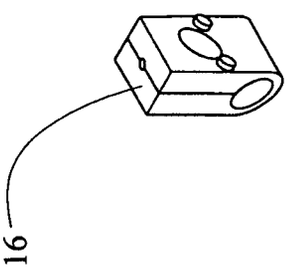

Fig. 5 a

Fig. 8

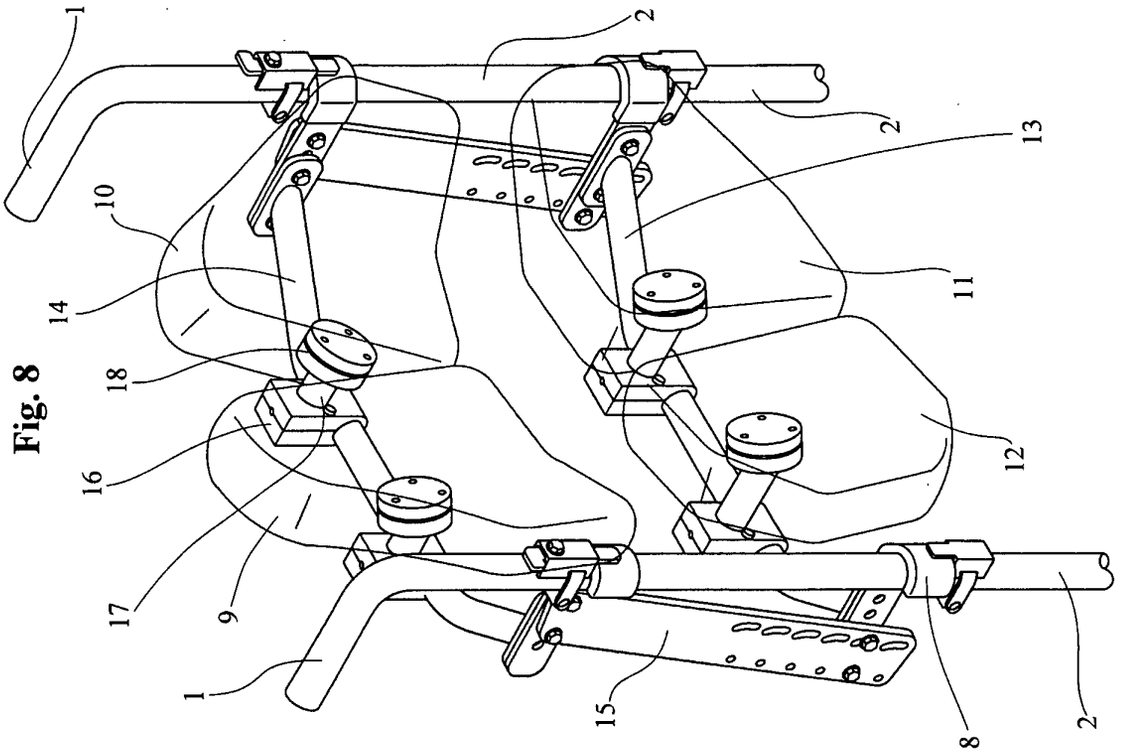
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Fig. 7

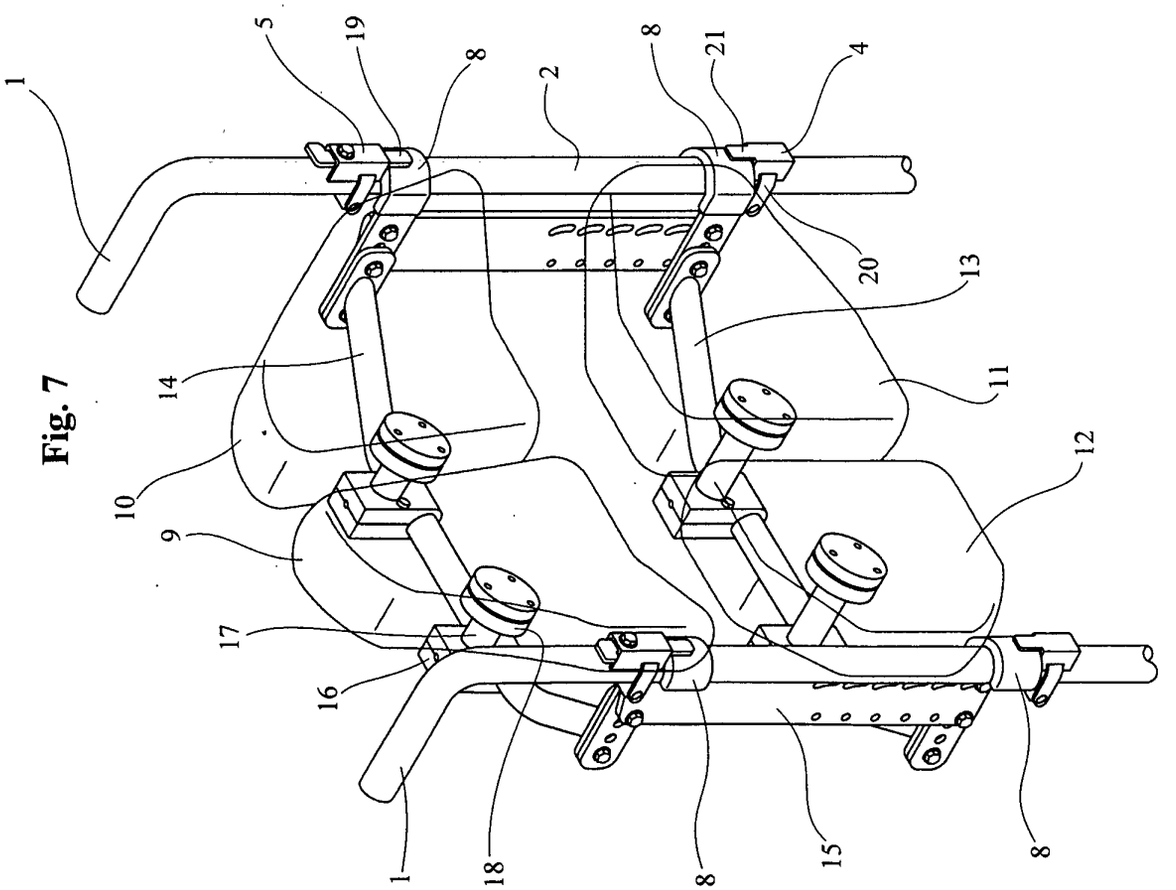
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Fig. 9

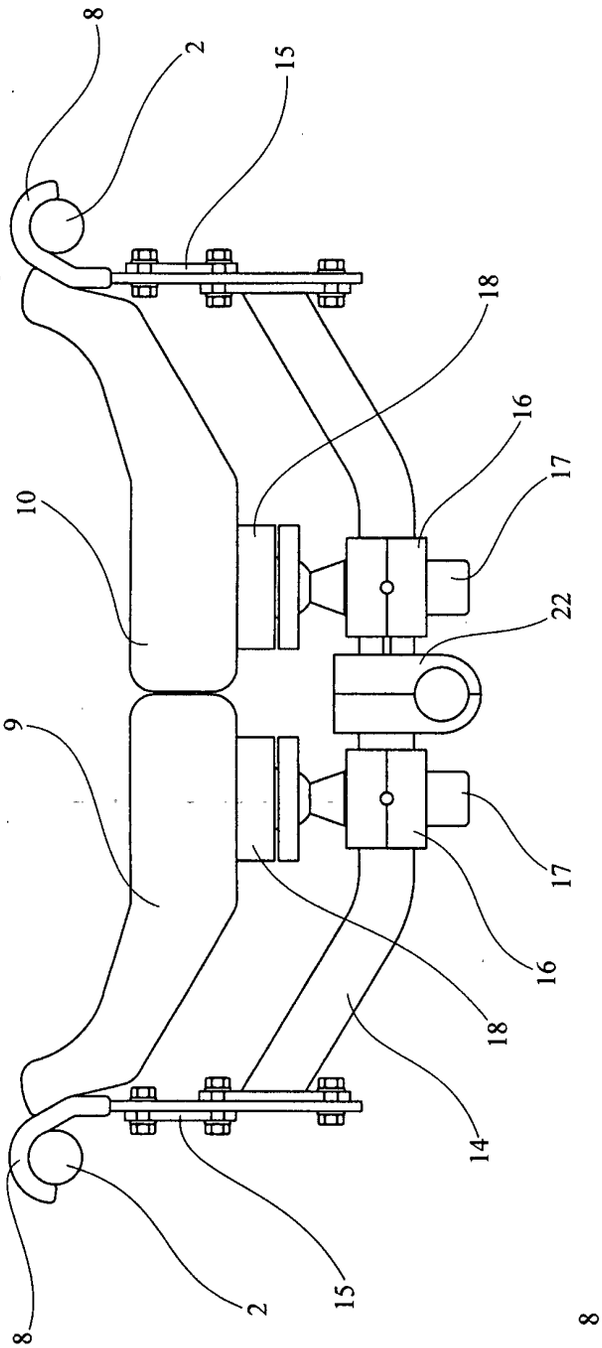
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Fig. 10

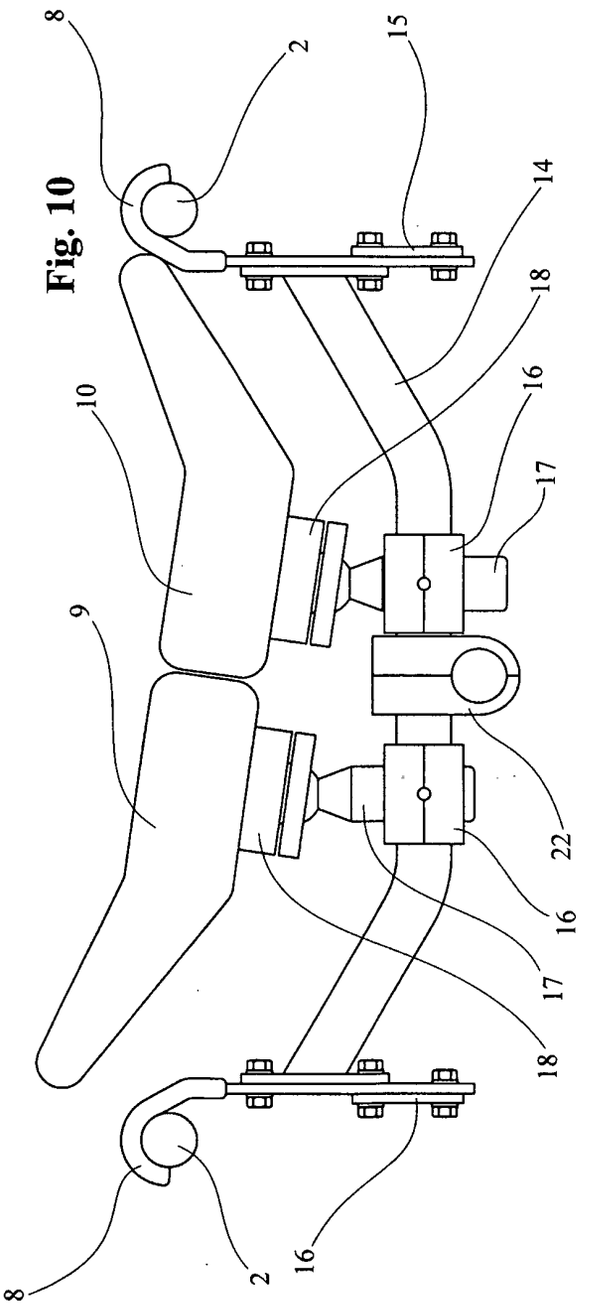
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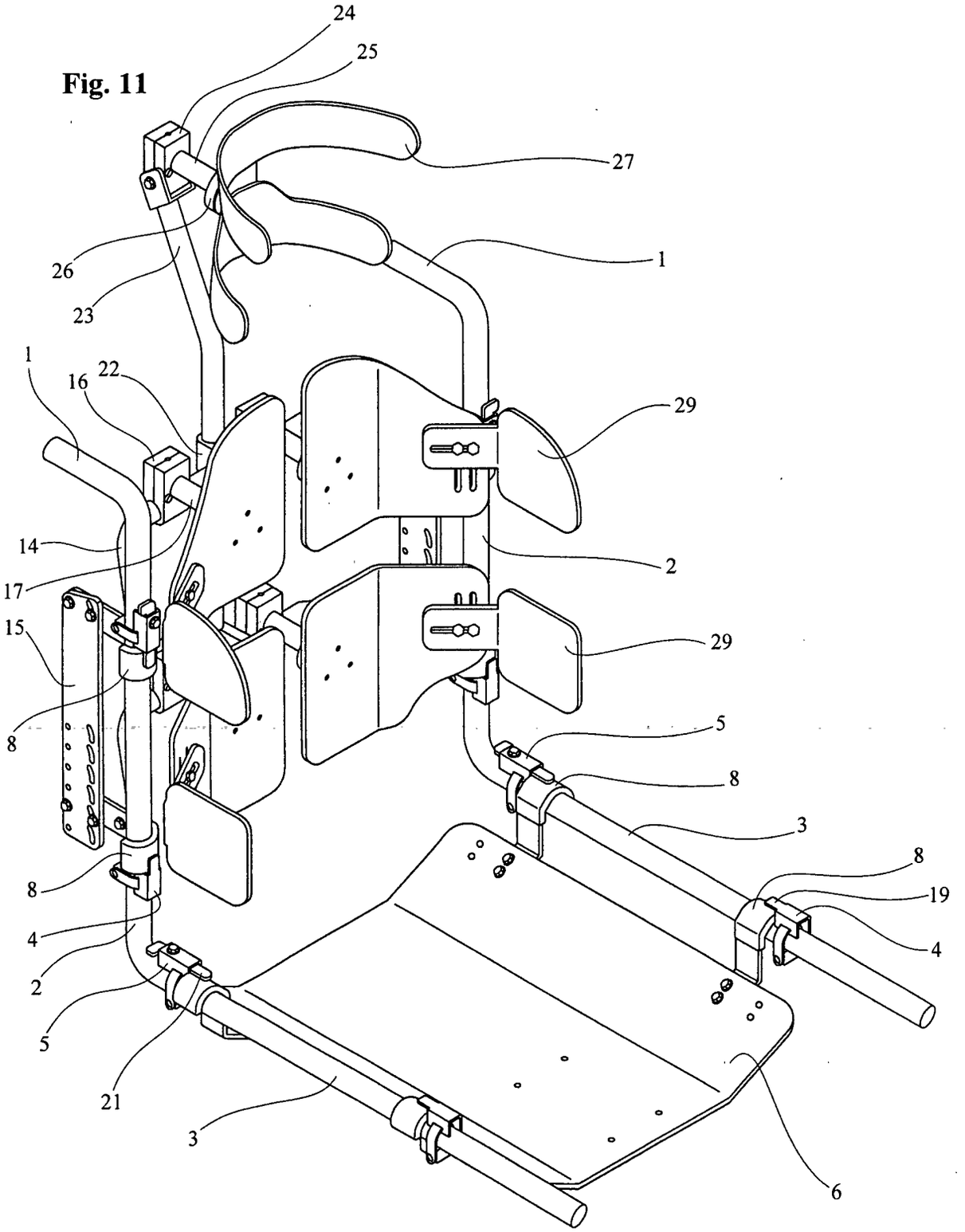
Fig. 11



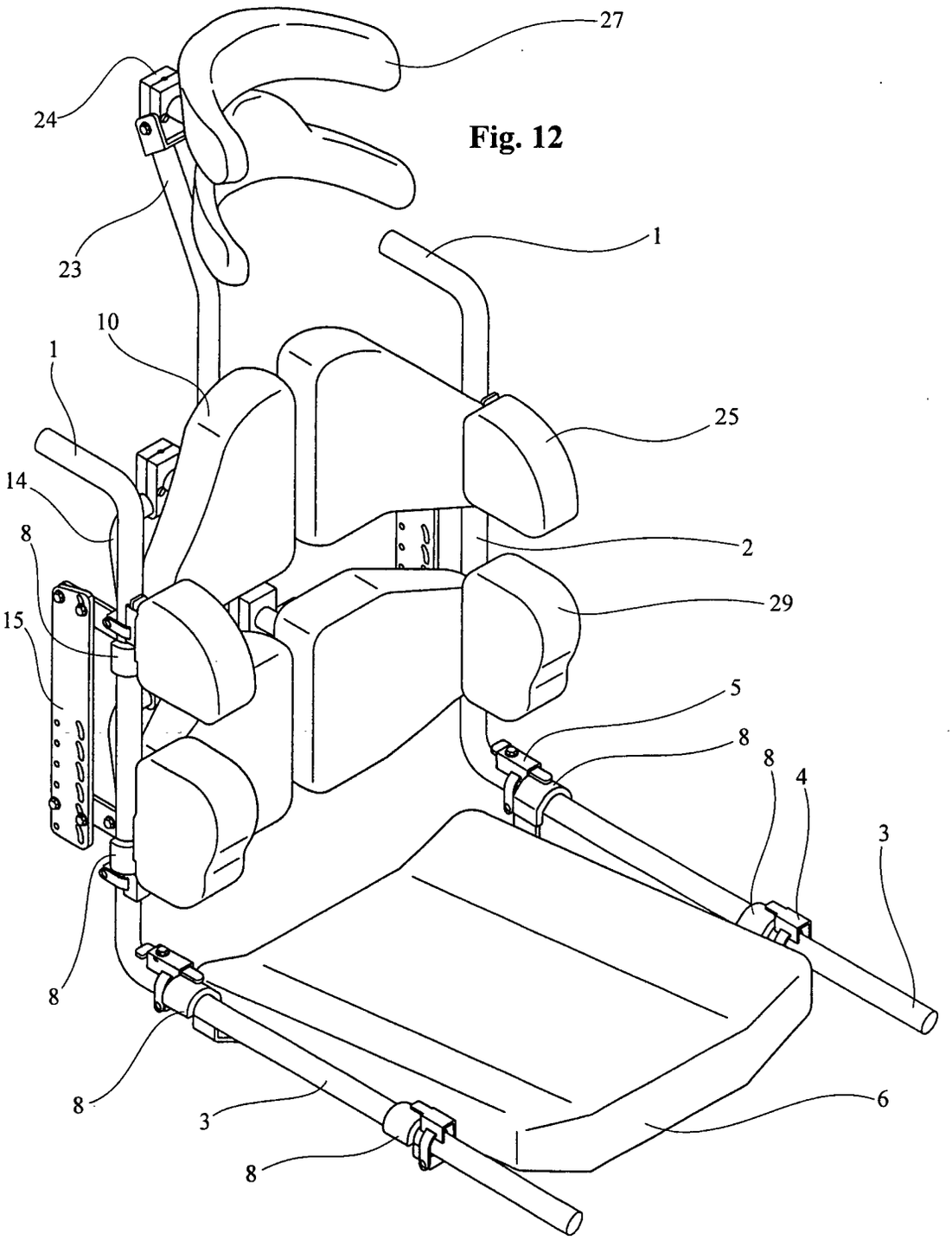


Fig. 12

Fig. 13

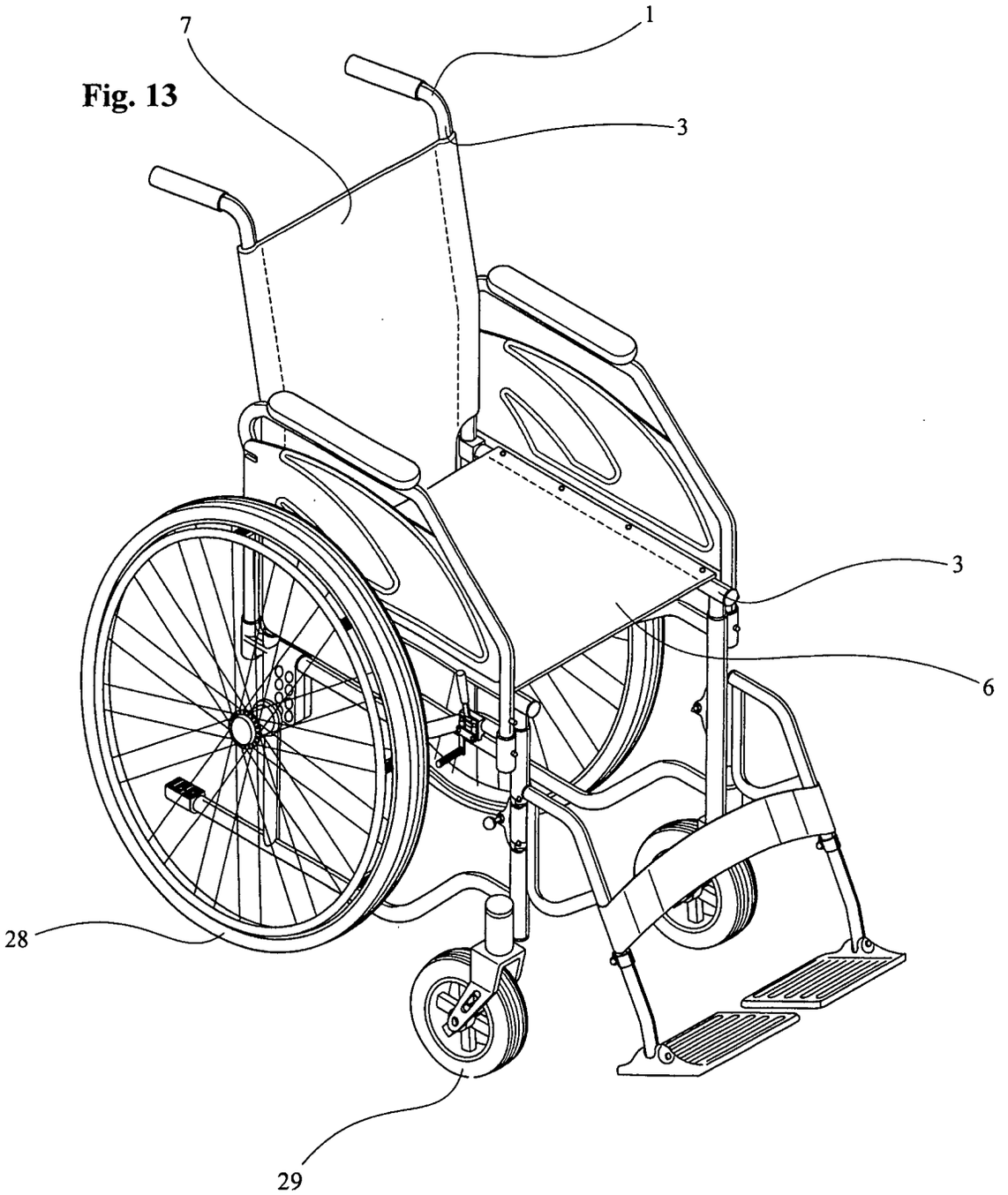


Fig. 14

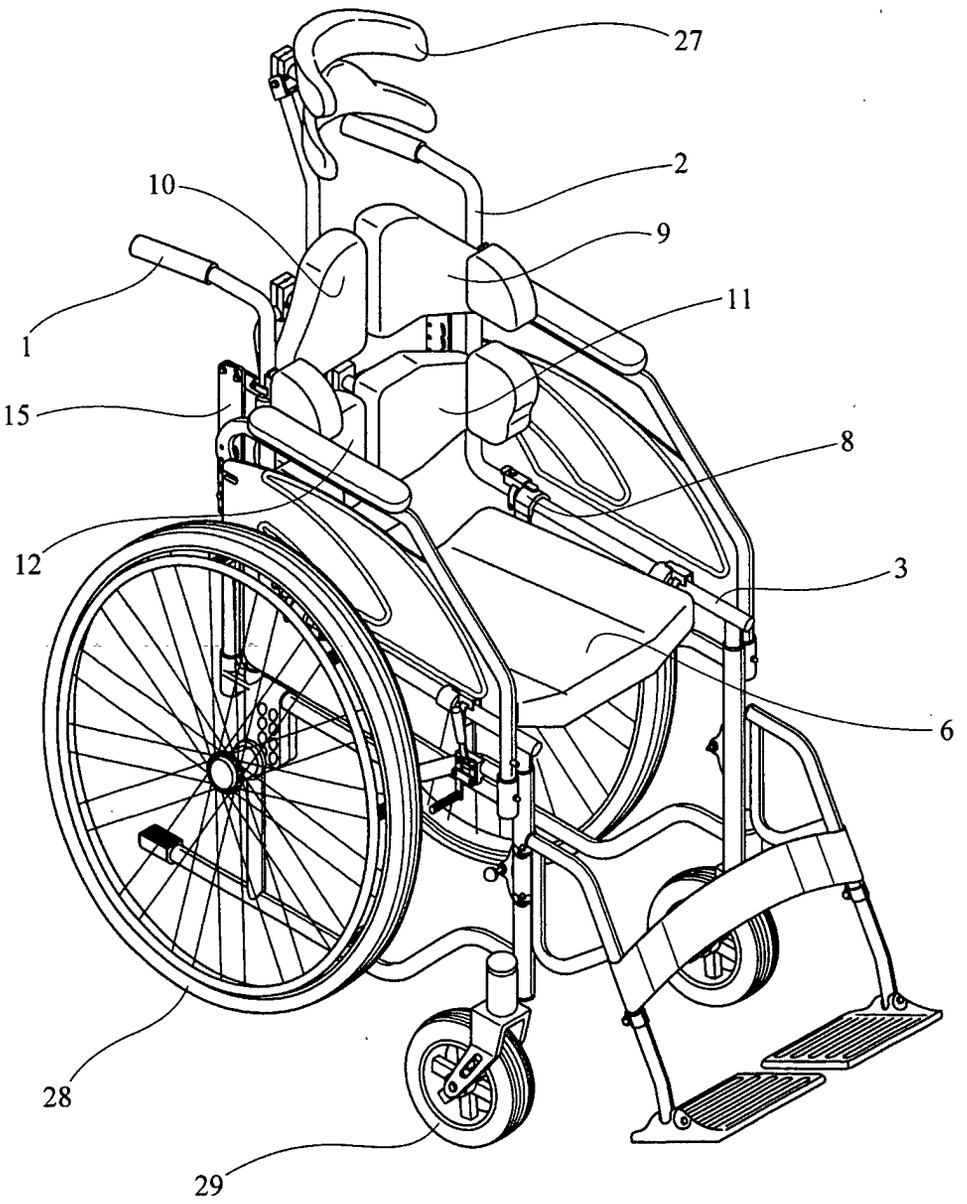


Fig. 16

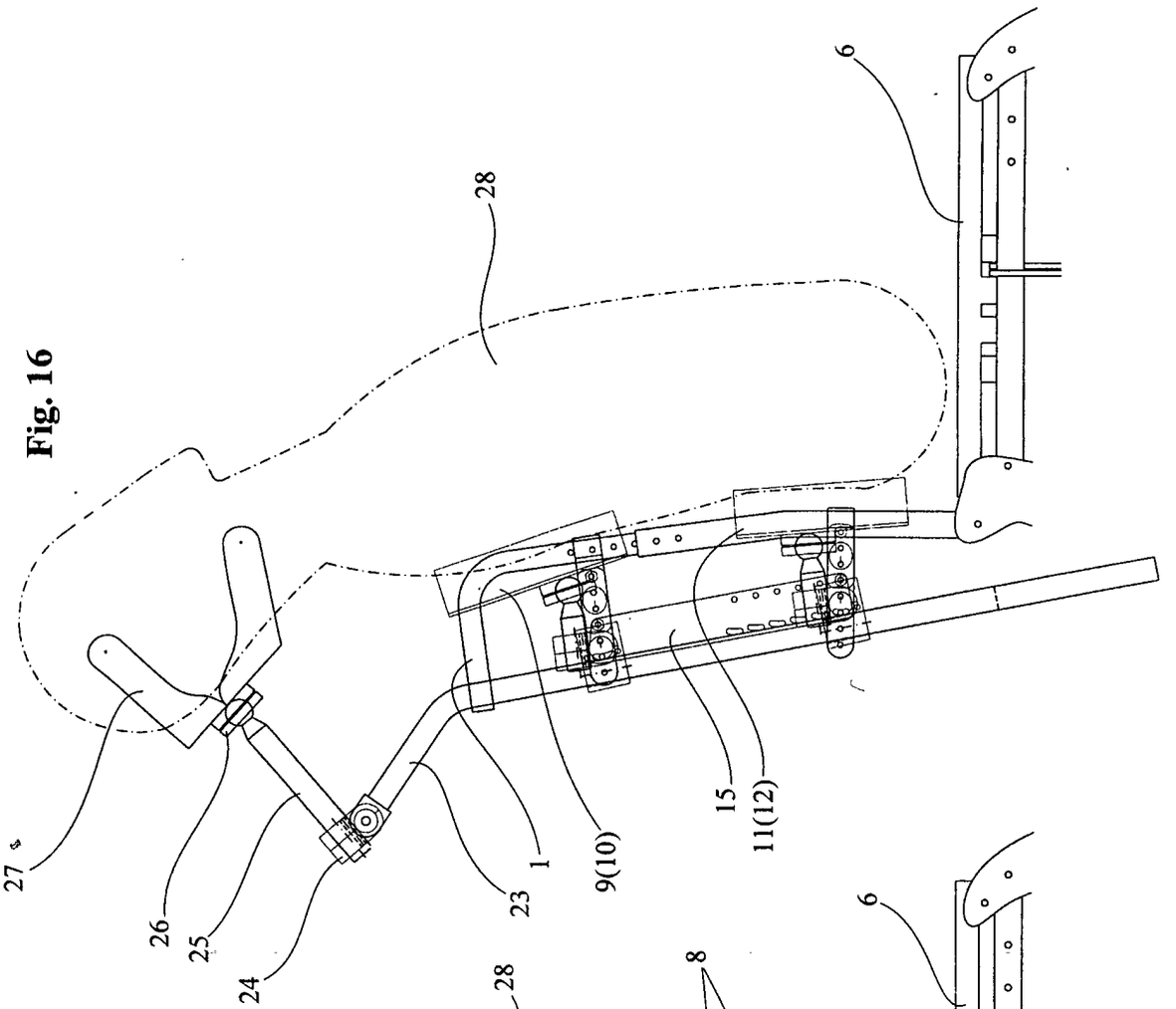


Fig. 15