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(54) **WHEELCHAIR**

ROLLSTUHL FÜR KÖRPERBEHINDERTE PERSONEN

FAUTEUIL ROULANT POUR HANDICAPÉS

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Description

[0001] The present invention relates to a wheelchair for disabled people. Particularly, the present invention relates to a wheelchair for disabled people, comprising a support frame provided with a first axle having mounted thereto a pair of wheels which are rotated about a first axis of rotation: at least one further wheel being mounted to the support frame so as to rotate about a second axis of rotation; and a seat being slidably coupled with the support frame by means of a telescopic coupling device which allows for rectilinear movements along the vertical direction with respect to the support frame so as to adjust the height of the seat with respect to the ground.

[0002] Generally, the seat is locked in a certain position along said vertical direction by means of a plurality of clamping bolts passing through and secured to the telescopic coupling device.

[0003] The known wheelchairs for disabled people of the above-described type have several drawbacks, mainly due to the fact that the adjustment of the vertical position of the seat with respect to the ground leads to serious operational difficulties for the disabled individual, and furthermore, such an adjustment requires relatively long set-up times for the wheelchair and cannot be performed while the disabled individual is sitting in the wheelchair.

[0004] US 20090218784 discloses a wheelchair with an adjustable seat.

[0005] The aim of the present invention is to provide a wheelchair for disabled people, which is free from the drawbacks described above and which is simple and economical to be implemented.

[0006] According to the present invention, there is provided a wheelchair for disabled people as claimed in the appended claims. The invention is defined by a wheelchair as claimed in claim 1.

[0007] The present invention will now be described with reference to the accompanying drawings which illustrate a non-limiting embodiment thereof in which:

Figure 1 is a schematic perspective view of a preferred embodiment of a wheelchair for disabled people according to the present invention;

Figures 2 and 3 are two schematic side views of the wheelchair of Figure 1 as shown in two different operating positions;

Figure 4 is a schematic perspective view of a first detail of the wheelchair of Figure 1; and

Figure 5 is a schematic perspective view of a second detail of the wheelchair of Figure 1.

[0008] With reference to Figures 1, 2, and 3, numeral reference 1 designates generally a wheelchair for disabled people, comprising a support frame 2 which, in turn, comprises a first substantially T-shaped tubular member 3 which is configured so as to define a horizontal axle 4 and a central bar 5 protruding from a middle point of the

axle 4, the first tubular member 3 supporting two wheels 6 which are rotatably mounted to the free ends of the axle 4 so as to rotate about a longitudinal axis 7 of said axle 4.

[0009] The frame 2 further comprises a second tubular member 8 protruding downwardly from the bar 5 and supporting, at a lower free end thereof, a pair of footrests 9 arranged on opposite sides of said member 8 for supporting the feet of a disabled individual.

[0010] The member 8 is rotatably coupled with a free end of the bar 5 so as to rotate, with respect to the member 3, about an axis of rotation 10 which is substantially horizontal and parallel to the axis 7, said member 8 being locked in a certain position with respect to the axis 10 by means of a locking pin (not shown) which is mounted through the bar 5 and the member 8 parallelly to said axis 10.

[0011] The frame 2 further comprises a third tubular member 11 extending transversely to the member 8 and having two swivel wheels 12 connected to its ends and mounted so as to rotate about respective longitudinal axes 13 which are substantially horizontal.

[0012] The member 11 is rotatably connected to a free end of the member 8 so as to rotate, with respect to said member 8, about an axis of rotation 14 which is substantially horizontal and parallel to the axis 10, said member 11 being locked in a certain position with respect to the axis 14 depending on the position of the member 8 with respect to the axis 10.

[0013] Furthermore, the wheelchair 1 comprises a seat 15 which, in turn, comprises a guide 16 (Figure 4) pivotally hinged to the bar 5 so as to rotate, with respect to the frame 2 and under the action of a crank mechanism 17, about an axis of pivoting 18 which is parallel to the axis 7.

[0014] The crank mechanism 17 comprises a tubular swing bar 19 which is fitted on the axle 4 coaxially with the axis 7, and which is rotatably coupled with the axle 4 so as to rotate about the axis 7 with respect to the axle 4, said crank mechanism 17 having an arm 20 formed at a middle point of the swing bar 19, and further having a pair of arms defining two cranks 21 which are located on opposite sides of the bar 5 and aligned with each other in a direction 22 which is parallel to said axis 7.

[0015] Each crank 21 has connected thereto a respective connecting rod 23 extending between two axes 24, 25 which are parallel both to each other and to the axis 7, the axis 24 being the axis of rotation of the connecting rod 23 with respect to the crank 21, and the axis 25 being the axis of rotation of the connecting rod 23 with respect to a straight guide rail 26 (Figure 4) defining a portion of the guide 16.

[0016] As illustrated in Figure 4, the guide 16 also comprises a pair of additional straight guide rails 27 which are attached to the ends of a support pin 28 pivotally hinged to the bar 5 so as to rotate about an axis 18 with respect to the bar 5.

[0017] Moreover, the seat 15 has a rest 29 which is

slidably connected to each rail 26, 27 with the interposition of a respective sliding shoe 30 attached to a lower face of said rest 29, said rest 29 being locked in a position along the rails 26, 27 by means of a locking device 31 comprising two fastening pins 32 each slidably coupled with a respective rail 26 so as to be moved between a raised, locked position in which each pin 32 is engaged with a corresponding hole (not shown) formed in the lower face of the rest 29, and a lowered, released position.

[0018] The pins 32 are moved and usually kept in their raised, locked positions by means of respective springs (not shown) which are interposed between the pins 32 and the respective rails 26, and the pins 32 are moved to their lowered, released position against the action of these springs (not shown) through an actuator (not shown) operated by the disabled individual.

[0019] With reference to Figure 5, the device 33 comprises a support plate 34 attached to the lower face of the rest 29, a crank 35 pivotally hinged to the plate 34 so as to rotate, with respect to plate 34, about an axis of pivoting 36, and a substantially Y-shaped drive member 37 (in this case, a steel wire only partially illustrated in Figure 5) whose one end is attached to the plate 34 and the other two ends are attached to the pins 32.

[0020] In use, while the disabled individual is sitting in the wheelchair 1, he/she operates the crank 35 to disengage the pins 32, pushes the seat 15 along the guide 16, and releases the crank 35 to allow the pins 32 to be moved back to their raised, locked positions under the action of the above-mentioned springs (not shown).

[0021] The seat 15 also comprises a tubular member 38 which is pivotally hinged to the rest 29 so as to rotate, with respect to the rest 29, about an axis of pivoting 39 which is parallel to the axis 7, said tubular member 38 being slidably engaged by a backrest 40.

[0022] The seat 15 is moved between a raised position (Figure 2) and a lowered position (Figure 3) by means of the crank mechanism 17, whose position with respect to the axis 7 is selectively adjusted by a damper cylinder 41, of a known type, which is pivotally hinged to the arm 20 so as to rotate, with respect to the swing bar 19, about an axis of pivoting 42 which is parallel to the axis 7, said damper cylinder 41 having a thrust rod 43 pivotally hinged to the bar 5 so as to rotate, with respect to the bar 5, about an axis of pivoting 44 which is parallel to said axis 7.

[0023] The cylinder 41 cooperates with a drive lever 45 movable between a position in which the cylinder 41 and therefore the crank 17 are locked in a certain position, and a position in which the cylinder 41 and therefore the crank 17 are released.

[0024] The crank mechanism 17 and the damper cylinder 41 allow The disabled individual sitting in the wheelchair 1 to easily move the seat 15 between its raised position and lowered position with the use of the drive lever 45. Particularly, the seat 15 is moved from its raised position to its lowered position by the disabled individual pushing on the rest 29, and the seat 15 is moved from

its lowered position to its raised position by the cylinder 41 pushing on said rest 29.

[0025] According to a variant embodiment, not shown, the tubular member 8 is mounted so as to rotate about an axis of rotation which is parallel to and separate from said longitudinal axis 7 of the axle 4.

[0026] According to a further variant embodiment, not shown, the crank mechanism 17 is eliminated, and the guide 16 is connected to the frame 2 with the interposition of an articulated parallelogram.

Claims

1. Wheelchair comprising a support frame (2) provided with an axle (4) having a pair of wheels (6) mounted so as to rotate about a first axis of rotation (7); at least one further wheel (12) being mounted to the frame support (2) so as to rotate about a second axis of rotation (13); a seat (15); and a device (17, 41) for coupling the seat (15) with the support frame (2), the coupling device (17, 41) being configured for selectively adjusting a position of the seat (15) with respect to said support frame (2); and **characterized in that** the coupling device (17, 41) comprises a crank mechanism (17) which is interposed between the support frame (2) and the seat (15) and which comprises, in turn, at least one crank (21) rotatably connected to the supporting frame (2) so as to rotate about a third axis of rotation (7), wherein the coupling device (17, 41) further comprises damping means (41) interposed between the support frame (2) and the crank mechanism (17) for selectively adjusting the position of said crank mechanism (17), further comprising locking means (45) movable between a position in which the damper means (41) and the crank mechanism (17) are locked in a certain position, and a position in which the damper means (41) and the crank mechanism (17) are released, and wherein the coupling device (17, 41) comprises a swing bar (19) which is mounted so as to rotate about said third axis of rotation (7), the swing bar (19) having a first arm defining said crank (21); the damper means (41) being connected to a second arm (20) of said swing bar (19).
2. Wheelchair for disabled people according to claim 1, wherein said first and third axes of rotation (7) are parallel to each other, particularly coincident with each other.
3. Wheelchair for disabled people according to claim 1 or 2, wherein the coupling device (17, 41) further comprises, for each crank (21), a respective connecting rod (23) which is interposed between the seat (15) and said crank (21).
4. Wheelchair for disabled people according to any one

of the preceding claims, wherein the seat (15) is pivotally hinged to the support frame (2) so as to rotate, with respect to the support frame (2), about an axis of pivoting (18) which is parallel to the first axis of rotation (7).

5. Wheelchair for disabled people according to any one of the preceding claims, wherein the seat (15) comprises a guide (16) and a rest (29) which is slidably coupled with said guide (16); the crank mechanism (17) being interposed between the frame support (2) and the guide (16).
6. Wheelchair for disabled people according to claim 6, further comprising a device (31) for locking the rest (29) in a position along the guide (16).

Patentansprüche

1. Rollstuhl, der einen Stützrahmen (2) umfasst, der mit einer Achse (4) ausgestattet ist, die ein Paar Reifen (6) montiert hat, um über eine erste Drehachse (7) zu drehen; wobei mindestens ein weiterer Reifen (12) am Stützrahmen (2) montiert ist, um über eine zweite Drehachse (13) zu drehen; ein Sitz (15); und eine Vorrichtung (17, 41), um den Sitz (15) an den Stützrahmen (2) zu verankern, wobei die Verankerungsvorrichtung (17, 41) so konfiguriert ist, um gezielt eine Position des Sitzes (15) mit Bezug auf den besagten Stützrahmen (2) einzustellen; und dadurch ausgezeichnet, dass die die Verankerungsvorrichtung (17, 41) einen Kurbelmechanismus (17) umfasst, welcher zwischen den Stützrahmen (2) und dem Sitz (15) eingefügt ist und welcher seinerseits mindestens eine Kurbel (21) umfasst, die drehbar mit dem Stützrahmen (2) verkuppelt ist, um über eine dritte Drehachse (7) zu drehen, worin die Verankerungsvorrichtung (17, 41) weiter Dämpfungselemente (41) umfasst, die zwischen dem Stützrahmen (2) und dem Kurbelmechanismus (17) eingefügt sind, um gezielt die Position des besagten Kurbelmechanismus (17) einzustellen und weiter Verriegelungselemente (45) umfasst, die zwischen einer Position, in welcher die Dämpfungselemente (41) und der Kurbelmechanismus (17) in einer bestimmten Position arretiert sind, und einer Position, in welcher die Dämpfungselemente (41) und der Kurbelmechanismus (17) freigegeben sind, beweglich sind und worin die Verankerungsvorrichtung (17, 41) eine Schwenkstange (19) umfasst, die so montiert ist, dass sie um besagte Drehachse (7) dreht, wobei die Schwenkstange (19) einen ersten Arm hat, der besagte Kurbel (21) bestimmt; wobei das Dämpfungselemente (41) an einem zweiten Arm (20) der besagten Schwenkstange (19) befestigt ist.
2. Rollstuhl für behinderte Personen gemäß Anspruch

1, wobei besagte erste und dritte Drehachse (7) parallel zueinander sind und besonders miteinander übereinstimmen.

3. Rollstuhl für behinderte Personen gemäß Anspruch 1 oder 2, wobei die Verankerungsvorrichtung (17, 41) weiter, für jede Kurbel (21) eine entsprechende Pleuelstange (23) umfasst, welche zwischen dem Sitz (15) und besagter Kurbel (21) eingefügt ist.
4. Rollstuhl für behinderte Personen gemäß einem der vorherigen Ansprüche, wobei der Sitz (15) zentral schwenkbar zum Stützrahmen (2) ist, um, in Bezug zum Stützrahmen (2), über eine Schwenkachse (18), welche parallel zur ersten Drehachse ist (7), zu drehen.
5. Rollstuhl für behinderte Personen gemäß einem der vorherigen Ansprüche, wobei der Sitz (15) eine Schiene (16) und eine Stütze (29), welche verschiebbar mit besagter Schiene (16) verbunden ist, umfasst; wobei der Kurbelmechanismus (17) zwischen dem Stützrahmen (2) und der Schiene (16) eingefügt ist.
6. Rollstuhl für behinderte Personen gemäß Anspruch 6, der weiter eine Vorrichtung (31) umfasst, um die Stütze (29) in einer Position entlang der Schiene (16) zu arretieren.

Revendications

1. Fauteuil roulant comprenant un châssis de soutien (2) muni d'un essieu (4) comprenant deux roues (6) montées de manière à tourner autour d'un premier axe de rotation (7) ; au moins une roue supplémentaire (12) étant montée sur le support du châssis (2) de manière à tourner autour d'un deuxième axe de rotation (13) ; un siège (15) ; et un dispositif (17, 41) pour coupler le siège (15) avec le châssis de soutien (2), le dispositif de couplage (17, 41) étant disposé pour régler sélectivement une position du siège (15) par rapport audit châssis de soutien (2) ; et **caractérisé en ce que** le dispositif de couplage (17, 41) comprend un mécanisme à manivelle (17) interposé entre le châssis de soutien (2) et le siège (15) et qui comprend, à son tour, au moins une manivelle (21) reliée de manière rotative au châssis de soutien (2), de manière à tourner autour d'un troisième axe de rotation (7), dans lequel le dispositif de couplage (17, 41) comprend en outre des moyens d'amortissement (41) interposés entre le châssis de soutien (2) et le mécanisme à manivelle (17) pour le réglage sélectif de la position dudit mécanisme à manivelle (17), comprenant en outre des moyens de blocage (45) mobiles entre une position dans laquelle les moyens d'amortissement (41) et le mécanisme à

manivelle (17) sont bloqués dans une certaine position, et une position dans laquelle les moyens d'amortissement (41) et le mécanisme à manivelle (17) sont relâchés, et dans lequel le dispositif de couplage (17, 41) comprend un palonnier (19) monté de manière à tourner autour dudit troisième axe de rotation (7), le palonnier (19) étant muni d'un premier bras définissant ladite manivelle (21) ; les moyens d'amortissement (41) étant reliés à un deuxième bras (20) dudit palonnier (19).

2. Fauteuil roulant pour personnes handicapées conformément à la revendication 1, dans laquelle lesdits premier et troisième axes de rotation (7) sont parallèles les uns par rapport aux autres, coïncidents en particulier les uns par rapport aux autres,
3. Fauteuil roulant pour personnes handicapées selon la revendication 1 ou 2, dans laquelle le dispositif de couplage (17, 41) comprend en outre, pour chaque manivelle (21), une bielle respective (23) interposée entre le siège (15) et ladite manivelle (21).
4. Fauteuil roulant pour personnes handicapées conformément à une quelconque des revendications précédentes, dans laquelle le siège (15) est articulé de manière pivotante sur le châssis de soutien (2) de manière à tourner, par rapport au châssis de soutien (2), autour d'un axe de pivotement (18) parallèle au premier axe de rotation (7).
5. Fauteuil roulant pour personnes handicapées conformément à une quelconque des revendications précédentes, dans laquelle le siège (15) comprend un guidage (16) et un dossier (29) qui est couplé de manière coulissante avec ledit guidage (16) ; le mécanisme à manivelle (17) étant interposé entre le support du châssis (2) et le guidage (16).
6. Fauteuil roulant pour personnes handicapées conformément à la revendication 6, comprenant en outre un dispositif (31) pour bloquer le support (29) dans une position le long du guidage (16).

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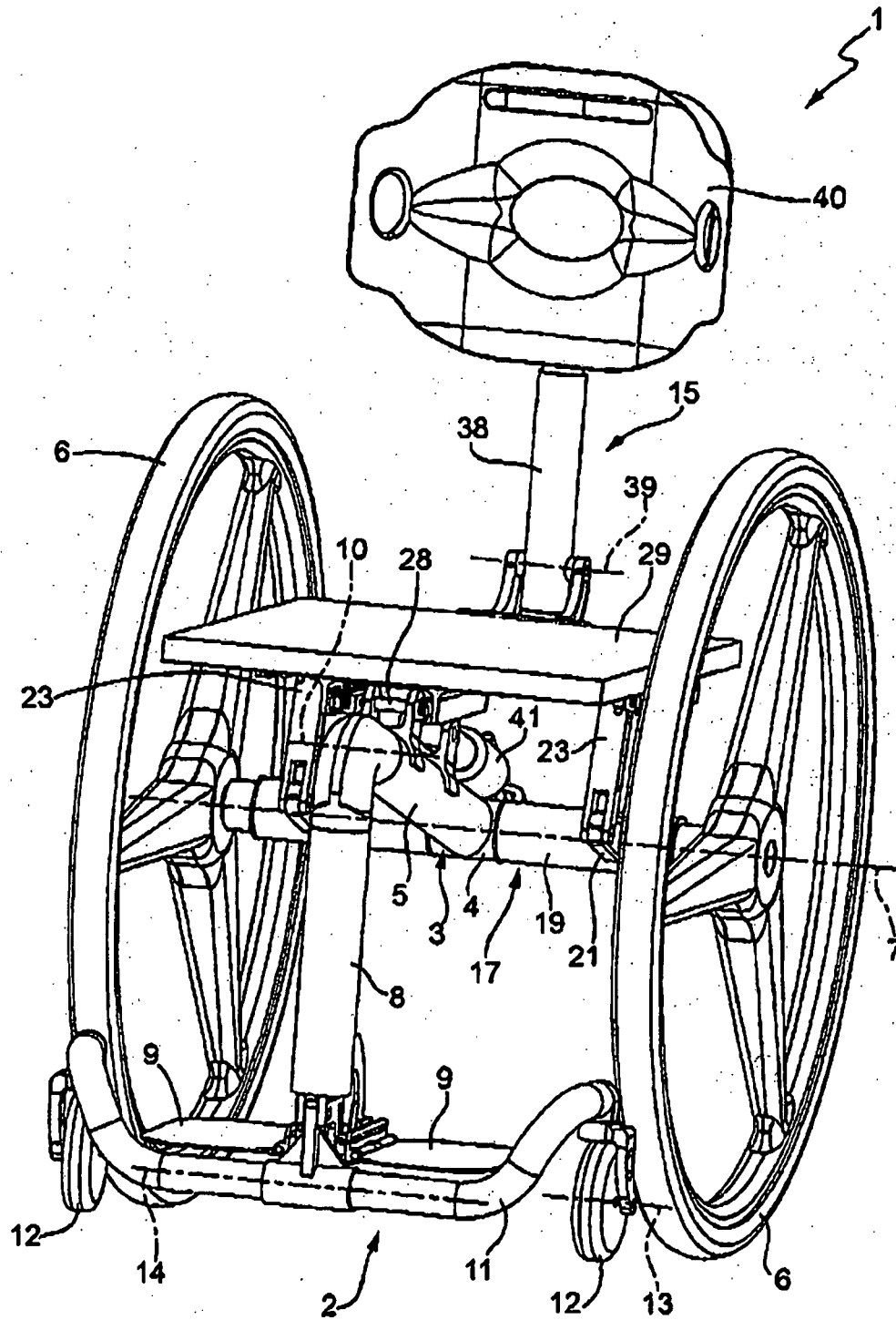


FIG.1

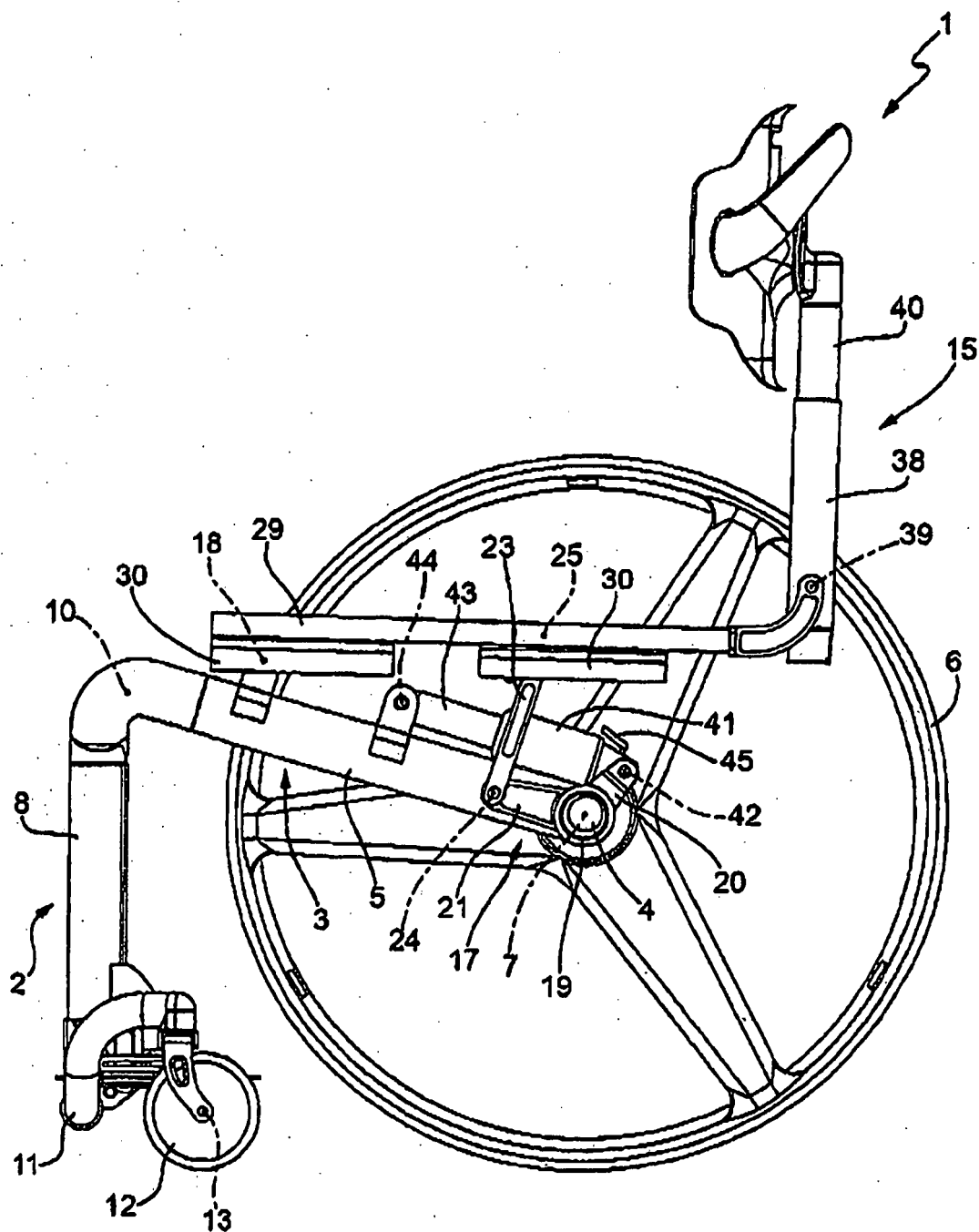


FIG.2

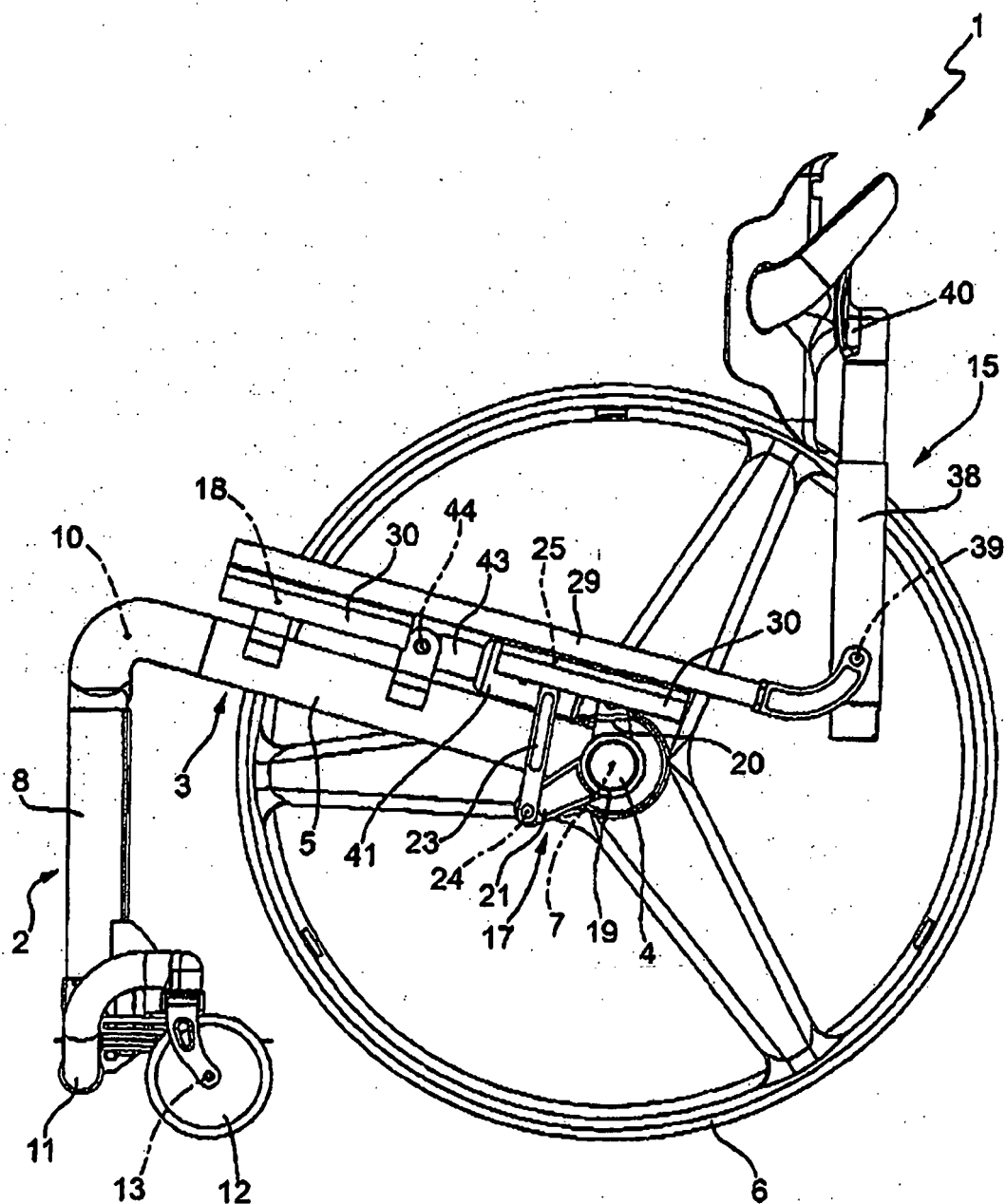


FIG.3

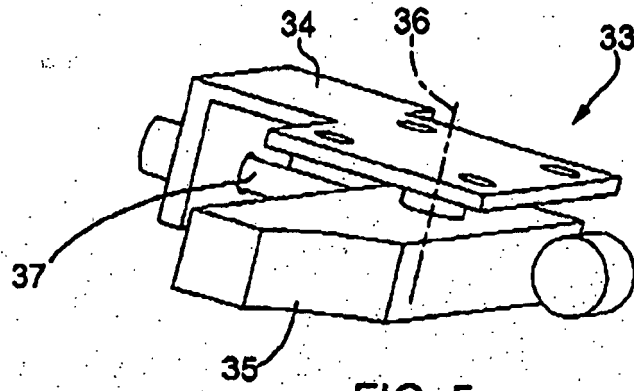


FIG. 5

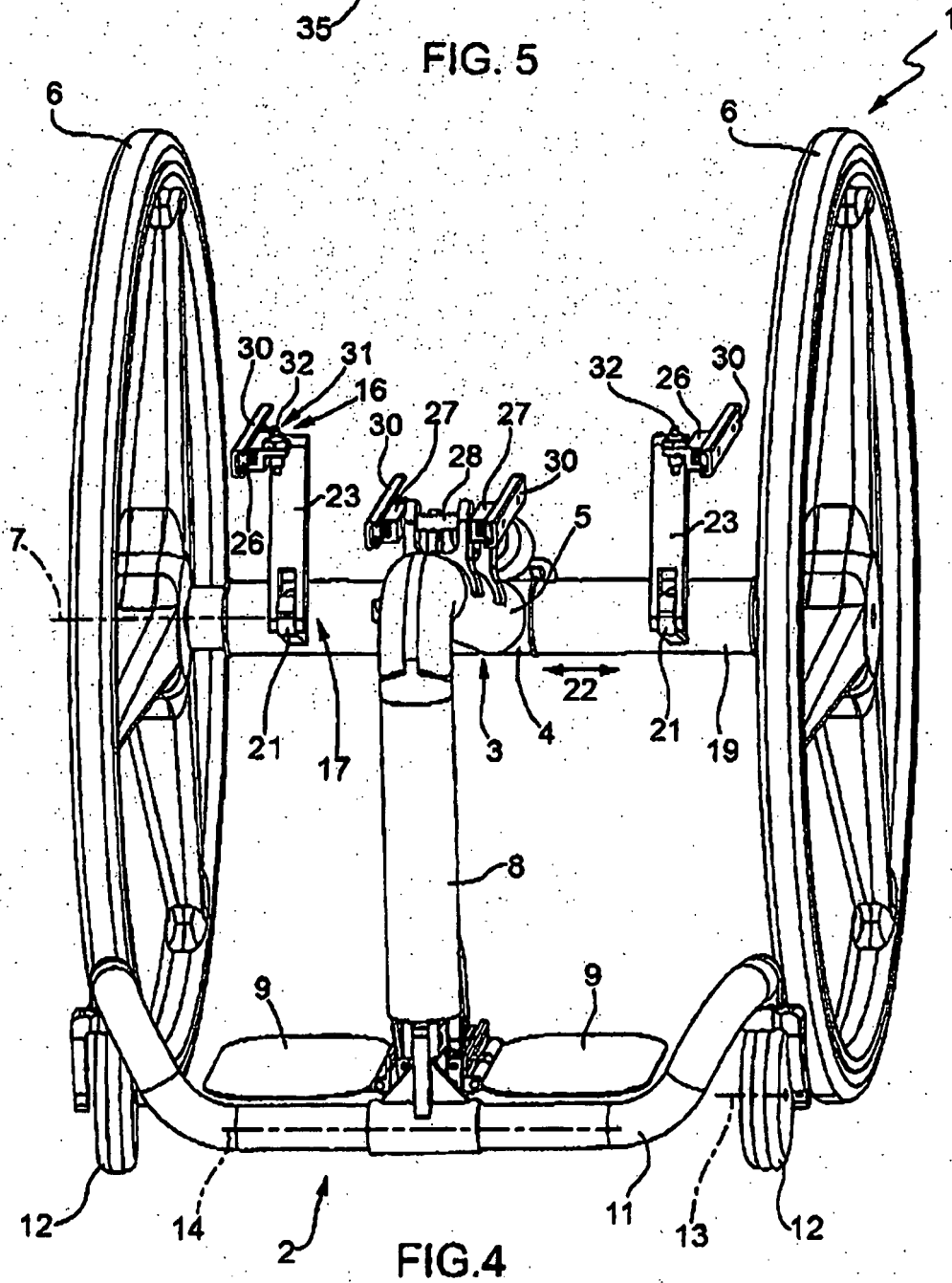


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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