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(54) **Locking fitting for coupling and locking a wheel chair component to a wheel chair frame as well as a wheel chair**

Verriegelungsvorrichtung zum Kuppeln und Verriegeln einer Rollstuhlkomponente zum Rollstuhlrahmen sowie ein Rollstuhl

Dispositif de verrouillage pour accoupler et verrouiller un élément de fauteuil roulant avec un cadre de fauteuil roulant ainsi que fauteuil roulant

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US-A- 4 790 553 **US-A- 4 988 114**

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Description

[0001] The present invention relates generally to wheel chairs and more particularly to structures or a locking fitting for coupling and locking a wheel chair component such as a leg support, an arm rest or a back rest to a frame of a wheel chair, the locking fitting having coupling means adapted to couple the wheel chair component to the wheel chair frame in such a manner that the wheel chair component may pivot to an angle relative to the wheel chair frame around a pivoting axis defined by the wheel chair frame, as well as locking means being switchable between a first position wherein the wheel chair component is locked to the wheel chair frame and a second position wherein the wheel chair component is pivotable with respect to the wheel chair frame around said pivoting axis.

[0002] A structure of this type is in this context designated a locking fitting and is to be considered as a generic term comprising not only separate fittings but also structural elements that may comprise one, two or more separate parts that can be coupled together to provide the said coupling or locking of a wheel chair component to a wheel chair frame. A special application of the locking fitting according to the present invention is coupling or locking a leg support to the wheel chair frame.

[0003] In connection with wheel chairs, a constantly increasing need has been demonstrated during recent years for providing structures that on one hand exhibit a high degree of flexibility and thus may be assembled and employed in various ways according to, on one hand the user thereof and, on the other hand the particular situation, and which, on the other hand must be easy to operate, not alone for a nurse or assistant but also for the user him- or herself, the users in many cases being on their own and having to be able to operate the wheel chair in which the user is sitting. In connection with leg supports for wheel chairs it has been demonstrated that in many cases it is desirable to be able to swing the leg support to one side such that the wheel chair be may guided in under e.g. a table or a bed when the user is to sit at the table or be moved from or to the wheel chair to or from the bed. The prior art locking fittings for use in connection with the coupling or locking of in particular leg supports to wheel chair frames only allow the leg support to swing to one of the sides which to a large extent limits the usefulness of not alone the leg support but of the entire wheel chair. An example of such a prior art locking fitting is shown and described in US Patent No. 4,770,467 describing a leg support for a wheel chair. The leg support comprises a pivoting arm journaled pivotably with respect to the wheel chair frame, a foot support plate being mounted in the outer free end of said arm. In the normal operative position, the leg support is locked to the wheel chair frame and projects forwards from the wheel chair frame in such a manner that the person or patient sitting in the wheel chair may rest his or her feet on said plate of the leg

support. The leg support may as described above, e.g. when the user is to sit at a table or be moved from the wheel chair to or from a bed, be swung away and out to one side so that it is possible to guide the wheel chair in under a table or bed as described above. The prior art leg support structure, however, does not allow swinging the leg support in under the wheel chair frame and therefore, operative situations arise where the leg supports and other corresponding wheel chair components of a wheel chair that only may be swung to one side with respect to a normal operative position necessarily will be in the way for either the user or any assistant independent of whether the leg support or the corresponding wheel chair component is locked in the normal operative position or has been swung to the side.

[0004] Accordingly, a need exists for a structure or a locking fitting for use in connection with wheel chairs and for coupling or locking a wheel chair component, particularly a leg support for a wheel chair frame, the locking fitting allowing swinging the leg support to any side from a locked position and at the same time constituting a structure which, on one hand is simple and robust and, on the other hand is easy to operate, not only for an assistant or a nurse but also for the user him- or herself.

[0005] According to the invention, this object is achieved with a locking fitting for coupling or locking a wheel chair component, particularly a leg support for a wheel chair frame, the locking fitting according to the invention being characterized in that the locking fitting is provided with coupling means adapted to couple the wheel chair component to the wheel chair frame in such a way that the wheel chair component can pivot to an angle with respect to the wheel chair frame around a pivoting axis defined by the wheel chair frame, and locking means being switchable between a first position wherein the wheel chair component is locked to the wheel chair frame and a second position wherein the wheel chair component is pivotable with respect to the wheel chair frame around said pivoting axis, and that the first position corresponds to a specific angular position of the wheel chair component with respect to the wheel chair frame, the wheel chair component being able to pivot from said angular position to one or the other side when the locking means have been switched to the second position.

[0006] By means of the locking fitting according to the invention a structure is obtained that achieves the object mentioned above, i.e. allows a wheel chair component to swing to any side from the locking position and at the same time constitutes a robust, simple and easily operated structure. The locking fitting according to the present invention is, however, not only for use in connection with coupling and locking a leg support to a wheel chair frame but may furthermore e.g. be used for coupling or locking an arm rest, a back rest or some other component of a wheel chair relative to the wheel chair frame. The locking fitting according to the invention may furthermore be modified such that the fitting not only ex-

hibits one single locking position but two or more locking positions corresponding to e.g. locking a back rest in two or more positions relative to the seat of the wheel chair.

[0007] However, a wheel chair component such as a leg support should not only because of functional reasons be able to swing from one side to another in relation to the locking position but it should also advantageously be able to be dismantled or removed from the wheel chair frame to allow that the wheel chair component, when the wheel chair is constructed with a collapsible and transportable wheel chair frame, may be dismantled or removed from the wheel chair frame. According to the preferred embodiment of the locking fitting according to the present invention, the locking means are therefore adapted to allow that the wheel chair component, particularly the leg support, may be removed from the wheel chair frame when the wheel chair component has been swung to one of the sides from said angular position. In the preferred embodiment of the locking fitting according to the present invention the wheel chair component may accordingly not be removed from the wheel chair frame when only the locking fitting has been switched over to the other position but it can only be removed from the wheel chair frame when the wheel chair component has been swung to said one of the sides from said angular position corresponding to the first position or locking position of the locking means. In a further development of the preferred embodiment of the locking fitting according to the present invention, the locking fitting is adapted to only allow that the wheel chair component, particularly the leg support, may be removed from the wheel chair frame when the wheel chair component has been swung to one of the sides while the wheel chair component, particularly the leg support, cannot be removed from the wheel chair frame when the wheel chair component has been swung to the other position from said angular position.

[0008] In accordance with an alternative and advantageous embodiment of the locking fitting according to the present invention, the locking means are adapted to allow that the wheel chair component, particularly the leg support, may be removed from the wheel chair frame when the wheel chair component has been swung to one or the other side from said angular position. In accordance with this alternative and advantageous embodiment of locking fitting according to the present invention, the wheel chair component, particularly the leg support, may thus be removed from the wheel chair frame if only the wheel component has been swung to one or the other side from said angular position wherein removal of the wheel chair component is prevented by the locking means.

[0009] As explained above, the locking fitting according to the present invention particularly advantageously constitutes a locking fitting for coupling and locking a leg support to a wheel chair frame, and the locking fitting according to the present invention may thus, as ex-

plained above, constitute one single component or a structure comprising several components cooperating to couple or lock the leg support with respect to the wheel chair frame. In the presently preferred embodiment of the locking fitting according to the present invention, the locking fitting is adapted to couple and lock a leg support to a vertical support tube of a wheel chair frame.

[0010] To provide a particularly simple and at the same time strong and reliable locking fitting structure, the locking fitting comprises a plate shaped component fixedly connected to the leg support and defining a cylinder surface constituting said coupling means and adapted to abut an outer surface of the support tube when the leg support is mounted on the wheel chair frame, the locking means comprising a locking pin fixedly connected to the support tube and arranged at a peripheral distance from said outer surface of the support tube, as well as at least two locking pawls supported by said plate shaped component and adapted to, in the first position of the locking means, project forwards from an edge of said plate shaped component and at least partly grip around said locking pin as well as being adapted to, in the second position of the locking means, be move back behind said edge of the plate shaped component so as to release the locking pawls from the engagement with the locking pin.

[0011] So as to allow switching of the locking means from the first position to the second position, the locking fitting according to the present invention is preferably provided with an operating means which according to alternative embodiments may be constituted by a push button, a twirling knob, a thumb screw, etc. In the preferred embodiment of the locking fitting according to the present invention, the operating means is constituted by a handle allowing operation of the locking fitting and switching of the locking means from the first to the second position even for users that are physically weak and accordingly would have difficulties in exerting a pressure necessary to activate e.g. a push button, the locking pawls being movable by means of a handle between the position projecting forwards from the edge of the plate shaped component and said retracted position corresponding to the first position and second position, respectively, of the locking means.

[0012] The currently preferred embodiment of the locking fitting according to the present invention is furthermore preferably provided with a locking knob adapted to engage in a locking incision in the locking pin in said first position of the locking means.

[0013] The locking fitting according to the present invention preferably comprises a locking knob located between the locking pawls and displayed with respect to the locking pawls when viewed in the axial direction of the locking pin.

[0014] A second aspect of the present invention concerns a wheel chair with a wheel chair frame, two wheels connected to the wheel chair frame, a seat as well as a

wheel chair component such as a leg support, an arm rest or a back rest, being pivotably mounted on the wheel chair frame and lockable with respect to same, the wheel chair frame having a locking fitting according to the first aspect of the present invention.

[0015] The locking fitting in the wheel chair according to the second aspect of the present invention may exhibit any of the in the foregoing described characterizing features of the locking fitting according to the first aspect of the present invention. In the following, the invention will be described more in detail with reference to the drawings in which:

Figure 1 is a perspective view of an embodiment of a locking fitting according to the present invention in locked position;

Figure 2 is a perspective view corresponding to Fig. 1 of the locking fitting according to the present invention in released position pivoted to an angle from the locked position;

Figure 3 is a perspective exploded view of the locking fitting according to the present invention in Fig. 1 and Fig. 2;

Figure 4a is a cross-sectional top view of the locking fitting of Fig. 1-3 in locked position;

Figure 4b is a cross-sectional top view of the locking fitting of Fig. 1-3 in released position;

Figure 5 is a perspective view of a wheel chair according to the present invention and having a locking fitting for a leg support according to the present invention;

Figure 6 is perspective view of a leg support for use by amputation patients and

having the locking means according to the present invention; Figure 7 is a perspective view of an alternative embodiment of a leg support for use by children and having the locking fitting according to the present invention;

Figure 8 is perspective exploded view corresponding to Fig. 3 and showing an alternative embodiment of the locking fitting according to the present invention;

Figure 9a is a cross-sectional view corresponding to Fig. 4a of the alternative embodiment of the locking means according to the present invention shown in Fig. 8 and showing the locking fitting in locked position;

Figures. 9b and 9c are cross-sectional views corre-

sponding to the cross-sectional view of Fig. 4b showing the alternative embodiment of the locking fitting according to the present invention shown in Fig. 8 in two alternative release positions.

[0016] Fig. 5 shows a wheel chair generally indicated by the reference number 10. The wheel chair 10 has a support frame 12 being a per se known collapsible frame supporting a seat 14, a back rest 16 wherefrom two handles 18 and 20 extend rearwards, the handles being for use by an assistant or a nurse to push the wheel chair 10 and a person or patient sitting in same, two arm rests 22 and 24, two wheels 26 and 28, two bracing wheels 30 and 32 as well as two leg supports 34 and 36 being mounted on the frame 12 by means of locking fittings 38 and 40, respectively, constructed in accordance with the teaching of the invention and being mutually inversely symmetrical. The locking fitting 40 will be explained more in detail in the following with reference to Figs. 1-4 but it should be understood that the locking fitting 38 is constructed in a like manner but being inversely symmetrical with respect to the locking fitting 40. It should be noted that the same locking fitting, e.g. the locking fitting 40, may be used in the wheel chair for mounting the leg supports 34 and 36 with respect to the frame 12, but it is preferable from an operational point of view and for ease of use that the locking fittings be inversely symmetrical. It should also be noted that the locking fitting constructed according to the teaching of the invention alternatively may be used for pivotable but lockable fastening of e.g. pivotable arm rests corresponding to the arm rests 22 and 24 in such a manner that the arm rests can be pivoted forwards and rearwards with respect to a locked central position or alternatively may be used for fastening and locking a back rest such as back rest 16 shown in Fig. 4 when the back rest is mounted pivotable with respect to the seat 14, or rather with respect to the frame 12. The locking fitting according to the invention may alternatively be used in other connections with relation to wheel chairs where a pivotable component is used that must be able to be locked relative to the frame of the wheel chair or some other component of the wheel chair but which in certain circumstances should be able to turn to one or the other side with respect to the locked position and perhaps be released in this or those positions and perhaps be dismantled or removed from the wheel chair.

[0017] Fig. 1 shows the locking fitting 40 by means of which the leg support 36 is coupled to the wheel chair frame shown in Fig. 1 as comprising a vertical tube 42 and a horizontal tube 44 on which the seat 14 is arranged. The tubes 42 and 44 are fixedly connected to each other and to the tube 42 and furthermore fastened, on one hand to a square section tube 46 connected to the tube 42 by means of a plate shaped component 48, and, on the other hand to a horizontally outwards projecting plate 50 on which an upwards projecting pin 52 is fastened, the pin cooperating with the locking fitting

40 as will be explained below.

[0018] The leg support 36 shown in Fig. 5 and correspondingly, the leg support 34 also shown in Fig. 5 comprise a bent tube 54 defining an upper horizontal length to which is fastened a coupling component constituted by a plastic body 56 fitting into the hollow vertical tube 42 of the wheel chair frame 12. The bent tube 54 of the leg support 36 extends from the horizontal length mentioned above obliquely downwards to form an angle of typically 60° or 70°, the bent tube 54 being at its lower end coupled to a tube or a rod 35 being internally displaceable with respect to the tube 54 and at its outer free end being connected to a foot rest 37. These components constituting per se well known components within the technical field of wheel chairs will not be described in detail.

[0019] As shown in Fig. 1, a plate shaped component or connecting plate 58 extends from the tube 54, the locking fitting being fastened on said plate. The plate shaped component 58 provided with a semi circular incision 60 allowing the plate shaped component 58 to partially grip around the vertical tube 52 of the wheel chair frame 12 and at the same time allowing the plate formed component 58 to, on one hand pivot around the tube 42 and, on the other hand be uncoupled from the tube 42. Block 62 is fixedly bolted on the underside of the plate shaped component 58 and defines part of an inner surface 64 of a cylinder being adapted to abut against and slide against the outer surface of the tube 42.

[0020] The block 62 is furthermore provided with an outwardly projecting pin shaped portion 66 which, in the locked position of the locking fitting 40 shown in Fig. 1 is adapted to engage in an incision 68 in the pin 52 and prevent the block 62 and thereby the leg support 36 fastened to the block 62 by means of the plate shaped component 58 from being lifted or lowered for release of the leg support from the wheel chair frame e.g. as shown in Fig. 2. The block 62 is fastened to the plate shaped component 58 by means of a number of bolts, one of which being indicated by the reference number 17, and two locking pawls 72 and 74 are supported in the block 62 and will be described more in detail below with reference to Fig. 3 and 4, the locking pawls 72 and 74 in the locking position shown in Fig. 1 gripping opposite sides of the head of the pin 54 above the incision 68 and thus lock the leg support 36 with respect to the head of the pin 52 and thereby the wheel chair frame 12.

[0021] A handle 75 is provided to uncouple the locking pawls 72 and 74 from the locking relationship with respect to the head of the pin 58, the handle 75 cooperating with the locking pawls 72 and 64 in a coupling which will be described below with reference to Fig. 3. The locking fitting 40 shown in Fig. 1 and 2 allows the leg support 36 to be locked in the position shown in Fig. 1 with respect to the tube 42 and thereby the wheel chair frame 12, the portion 66 projecting from the block 62 engaging in the recess 61 in the pin 52 and thereby pre-

venting the block 62 and the entire leg support 36 from moving upwards or downwards with respect to the pin 52 and thereby the wheel chair frame 12. At the same time the locking pawls 72 and 74 engage in a locking relationship as described above around the head of the pin 52 and thereby prevent pivoting of the plate shaped component 58 and thereby the leg support 36 around a vertical axis with respect to the vertical tube 42 of the wheel chair 12.

[0022] Additionally, it should be noted that the structure has the advantage that it, on one hand is very stable and, on the other hand is able to resist even extremely large forces, as the locking relationship between the leg support 36 and the wheel chair frame is brought about by means of the plate shaped component 58 that, in connection with the forces exerted in the locking fitting in use, functions as an edgewise placed plate shaped component which furthermore in relation to the structure affords the advantage that the moment to the taken up by the mutually locking portions, i.e. to be taken up by the projecting portion 66 of the block 62 and the incision 68 in the pin 52, is transferred by means of a moment arm determined by the outer end of the projecting portion 66 of the block 62 and thus, compared with a structure in which the locking moment is provided by the periphery of the vertical tube, exhibits a considerable larger moment arm and thereby gives rise to considerably smaller loads for the same moment. The structure thus constitutes, when viewed from above, a triangular structure in which the centre of rotation of the leg support is located at one side of the triangle, the apex of which is connected to the tube 54, the locking relationship between, on one hand the projecting portion 66 of the block 62 and the incision 68 in the pin 52 and, on the other hand the engagement of the locking pawls 72 and 74 with the locking pin 52 is located in the apex of the triangle opposite the centre of rotation mentioned above.

[0023] The locking fitting 40 may be released from the locking position shown in Fig. 1 by activating the handle 75, whereby the locking pawls 72 and 74 are moved in under the plate shaped component 58 as described below with reference to Figs. 3 and 4, whereafter the leg support 36 can be pivoted to one or the other side with relation to the position shown in Fig. 1 whereby the projecting portion 66 of the block 62 is released from engagement in the incision 68 in the pin 52. Thereafter the leg support 36 may furthermore as shown in Fig. 2 be disengaged from the wheel chair frame 12, the body 56 being extracted from the tube 52. Alternatively, the leg support 36 being fastened only to the wheel chair frame 12 by means of the body 56 may be pivoted freely towards the wheel 28 or alternatively in under the seat 14, the locking fitting 14 when the position shown in Fig. 1 is passed, again locking the leg support 36 with respect to the wheel chair frame 12.

[0024] Fig. 3 is a detailed view of the construction of the locking fitting 40 shown disassembled or exploded.

Fig. 3 thus shows the coupling between the locking pawls 72 and 74 being influenced towards the positions shown in Fig. 1 and 2 by means of two springs 76 and 78, respectively, that force the locking pawls 72 and 74 outwards from the location inserted in and hidden under the plate shaped component 58. The springs 76 and 78 are received in corresponding recesses or milled indentations in the block 62 provided as shown in Fig. 3 with through going bores arranged aligned with the bores in the plate shaped component 58 and wherein the assembly screws are fitted. In Fig. 3 the reference number 82 indicates a hole or a boring in the plate shaped component 58, the bolt 78 being fitted in said hole. Correspondingly, the reference number 84 indicates a milled indentation wherein the handle 75 is fitted and extends downwards to engage in a hole 80 in the locking pawl 74. Fig. 4a shows a horizontal section through the locking fitting 40 mounted on the tube 42. The locking fitting is in the locked position shown in Fig. 1, in which position the projecting portion 66 of the block 62 engages in the milled indentation or incision 68 in the pin 52 while the locking pawls 72 and 74 being biased by the springs 76 and 78 grip around the head of the pin 52. By activating the handle 75 in the direction indicated by an arrow in Fig. 4 the locking pawl 74 is forced inwards against the biasing of the spring 78 and at the same time by abutting against a projecting knob 73 on the locking pawl 72 carries this locking pawl along inwards to the position shown in Fig. 4b in which the locking pawls 72 and 74 have been moved in under a plate shaped component 52 and thus are uncoupled from the locking engagement with the head on the pin 52. Thereafter, the leg support 36 coupled to the plate shaped component 38 may freely pivot as shown in Fig. 2 and Fig. 4b.

[0025] Fig. 6 shows an alternative design of a leg support which the locking fitting 40 according to the present invention. The leg support shown in Fig. 6 is generally indicated by means of the reference number 36' and constitutes a leg support intended for use by amputation patients. The leg support comprises a horizontal block or a beam 54' on which the body 56 is being mounted in much the same way as the body 56 is mounted on the bent tube 54 in the leg support 36 shown in Figs. 1 and 2. The block 54' is connected to a vertical tube 55 that, in the position shown in Fig. 6 in which the leg support 36' is fastened to the wheel chair frame 12, extends parallel to the tube 42. A tube 35' extends from the tube 55 horizontally inwards with respect to the wheel chair frame and supports a bowl shaped leg support plate 37'. The horizontal tube 35' may possibly be connected to the vertical tube 55 by means of a coupling allowing vertical adjustment of the leg support 37' with respect to the tube 55 and thus with respect to the seat 14 of the wheel chair.

[0026] Fig. 7 shows an alternative constructions of a leg support intended for use by children. The leg support shown in Fig. 7 is generally indicated by means of the reference number 36" and comprises the components

54' and 55 described above and shown in Fig. 6. An inner tube 35" is fastened to the lower end of the tube 55 and is able to be displaced internally in the tube 55 and be locked with respect to same by means of a locking screw 57. Corresponding to the leg support 36 shown in Fig. 5, the tube 35" is connected to a foot plate 37".

[0027] Corresponding to Fig. 3, Fig. 8 shows an alternative embodiment of the locking fitting according to the present invention. In Fig. 8 and 9a-9c the same reference numbers are used for components corresponding to components described above with reference to Figs. 1-7, the components shown in Figs. 8 and 9a-9c being, however, indicated by the reference '. The individual components or elements of the locking fitting 40' shown in Fig. 8 will thus not be described, but the structural and functional differences between the locking fitting 40' shown in Fig. 8 and the locking fitting 40 described above will be explained. The locking fitting 40 explained above is adapted to allow the locking fitting to be uncoupled from the normal locked position by pressing the handle 75 towards the connecting plate 58. while the alternative embodiment of the locking fitting 40' according to the present invention shown in Fig. 8 is adapted to allow the locking fitting to be uncoupled from the normal locking position by moving the handle 75' in a direction either inwards towards the plate shaped component 58' or outwards from the plate shaped component 58' as shown in Fig. 9c and Fig. 9b, respectively. The locking fitting shown in Fig. 8 differs generally speaking from the locking fitting described above in that the handle 75' is arranged pivotable with relation to the block 52' by means of a bolt 71' to allow the handle 75' to swing both ways with respect to the normal position shown in Fig. 9a in which position the respective leg support is locked by means of the engagement of the locking pawls 72' and 74' with the pin 52. The locking pawls 72' and 74' are moreover provided with two guiding pins 73' engaging in corresponding guiding tracks 84' in the plate shaped component 58' such that the locking pawls 72' and 74', upon turning the handle 75' in a direction inwards or oppositely in the direction outwards, is pressed inwards for uncoupling from the engagement around the pin 52, the two guiding pins 73' being guided in corresponding guiding recesses in the underside of the handle 75'. Corresponding to Fig. 4a, Fig. 9a shows the position in which the locking pawls 72' and 74' lock around the pin 52 and lock the leg support to the corresponding wheel chair in the given locked position.

[0028] Fig. 9b and 9c show two alternative release positions for the locking fitting 40', the handle 75' in Fig. 9b being moved forwards or outwards with respect to the plate shaped component 58, the locking pawls 72' and 74' moved by the two guiding pins 73' being pressed inwards from the engagement around the pin 52 whereafter the leg support can pivot to one or the other side with respect to the wheel chair frame. Fig. 9c correspondingly shows the position of the handle 75 in which the handle has been moved inwards towards the plate

shaped component 58 corresponding to the position shown in Fig. 4b in which the locking pawls 72' and 74', just as in Fig. 9b, are uncoupled from engagement and locking with respect to the pin 52.

[0029] Although the invention has been explained above with reference to the currently preferred embodiment of a locking fitting according to the present invention and alternative constructions of leg supports for use in connection with a wheel chair according to the present invention, it is obvious to those skilled in the art that numerous modifications may be carried out within the scope of the invention as defined in the appended claims without thereby departing from the purpose and intent of the invention. It should particularly be noted that the locking fitting and the wheel chair may be constructed such that the leg support only can be removed from the wheel chair frame when the leg support has been swung to one side with respect to the position shown in Fig. 1, the projecting portion 66 of the block 62 being designed such that the projecting portion extends along a substantial peripheral portion of the block 62 and thus, by swinging the leg support 66 to one side wherein the projecting portion designed with a larger peripheral extent, engages in the incision 68 in the pin 52 and thereby prevents the removal described above of the leg support 66 from the wheel chair frame 12. Moreover, it should be noted that the leg support may be designed in any per se known manner just as the locking fitting as mentioned above may be utilized for other applications in connection with a wheel chair.

Claims

1. A locking fitting (40) for coupling and locking a wheel chair component (36) such a leg support, an arm rest or a back rest to a wheel chair frame (42, 44), the locking fitting (40) having coupling means (56, 58) being adapted to couple the wheel chair component (36) to the wheel chair frame (42, 44) in such a manner that the wheel chair component (36) may pivot to an angle with respect to the wheel chair frame (42, 44) around a pivoting axis defined by the wheel chair frame, and locking means (62, 66, 52, 72, 74) arranged such that they may be switched between a first position wherein the wheel chair component (36) is locked to the wheel chair frame (42, 44) and second position wherein the wheel chair component (36) is pivotable with respect to the wheel chair frame (42, 44) around said pivoting axis, **characterized in that** the first position corresponds to a specific angular position of the wheel chair component (36) with respect to the wheel chair frame (42, 44) from which angular position the locking means allow the wheel chair component (36) to be able to swing to both sides when the locking means (62, 66, 52, 72, 74) have been switched to the other position.
2. A locking fitting (40) according to claim 1, **characterized in that** the locking means (62, 66, 52, 72, 74) are adapted to allow that the wheel chair component (36) may be removed from the wheel chair frame (42, 44) when the wheel chair component (36) has been swung to one side from the said angular position.
3. A locking fitting (40) according to claim 1 or 2, **characterized in that** the locking means (62, 66, 52, 72, 74) are adapted to allow the wheel chair component (36) to be removed from the wheel chair frame (42, 44) when the wheel chair component (36) has been swung to one or the other side from said angular position.
4. A locking fitting (40) according to any of the claims 1-3, **characterized in that** the locking fitting (40) is adapted to couple and lock a leg support to a vertical support tube (42) of a wheel chair frame (42, 44).
5. A locking fitting (40) according to claim 4, **characterized in that** the locking fitting (40) comprises a plate shaped component (58) fixedly connected to the leg support (36) and defining a cylinder surface constituting said coupling means and adapted to abut against an outer surface of the support tube (42) when the leg support (36) is mounted on the wheel chair frame (42, 44), that the locking means comprise a locking pin (52) fixedly connected to the support tube (42) and located at a peripheral distance from said outer surface of the support tube, and locking pawls (72, 74) being supported by said plate shaped component (58) and being adapted to, in the first position of the locking means, project forwards from an edge of said plate shaped component and at least partially grip around said locking pin (52) as well as being adapted to, in the second position of the locking means, be moved back behind said edge of the plate shaped component so as to uncouple the locking pawls from engagement with the locking pin (52).
6. A locking fitting (40) according to claim 5, **characterized in that** the locking pawls (72, 74) are movable by means of a handle (75) between the location projecting forwards from the edge of the plate shaped component and said retracted location corresponding to the first and second position, respectively, of the locking means.
7. A locking fitting according to any of claims 5 or 6, **characterized in that** the locking means (62, 66, 52, 72, 74) further comprise a locking knob (66) adapted to engage in a locking incision (68) in the locking pin (52) in said first position of the locking means.

8. A locking fitting (40) according to claim 7, **characterized in that** said locking knob (66) is located between the locking pawls (72, 74) and displaced with relation to the locking pawls when viewed in the axial direction of the locking pin.
9. A wheel chair (10) having a wheel chair frame (12), two wheels (26, 28) connected to the wheel chair frame (12, 42, 44), a seat (14) as well as a wheel chair component such a leg support (36), an arm rest (22, 24) or a back rest (16), being pivotably mounted on the wheel chair frame (12, 42, 44) and able to be lock with respect to same, the wheel chair frame (12, 42, 44) having a locking fitting (40) according to one of the preceding claims, **characterized in that** the first position corresponds to a specific angular position of the wheel chair component (36) with respect to the wheel chair frame (12, 42, 44), from which angular position the wheel chair component (36) may swing to one or the other side when the locking means (62, 66, 52, 72, 74) have been switched to the second position.

Patentansprüche

1. Verriegelungsvorrichtung (40) zum Kuppeln und Verriegeln einer Rollstuhlkomponente (36) wie z.B. einer Beinstütze, einer Armlehne oder einer Rückenlehne an einen Rollstuhlrahmen (42, 44), wobei die Verriegelungsvorrichtung (40) mit einem Kuppelungsmechanismus (56, 58) versehen ist, der zum Kuppeln der Rollstuhlkomponente (36) an den Rollstuhlrahmen (42, 44) so eingerichtet ist, dass die Rollstuhlkomponente (36) in einem Winkel zum Rollstuhlrahmen (42, 44) um eine vom Rollstuhlrahmen definierte Drehaxel drehen kann, sowie mit Verriegelungsmechanismen (62, 66, 52, 72, 74) versehen ist, die so angebracht sind, dass sie zwischen einer ersten Position, in welcher die Rollstuhlkomponente (36) mit dem Rollstuhlrahmen (42, 44) verriegelt ist, und einer zweiten Position, in welcher die Rollstuhlkomponente (36) im Verhältnis zum Rollstuhlrahmen (42, 44) um eine Drehaxel drehbar ist, umgestellt werden können, **dadurch gekennzeichnet, dass** die erste Position einer spezifischen Winkelstellung der Rollstuhlkomponente (36) zum Rollstuhlrahmen (42, 44) entspricht, aus welcher Winkelstellung heraus die Verriegelungsmechanismen es der Rollstuhlkomponente (36) ermöglichen, nach beiden Seiten hinzuschwingen, wenn die Verriegelungsmechanismen (62, 66, 52, 72, 74) in die andere Position umgestellt sind.
2. Verriegelungsvorrichtung (40) gemäss Anspruch 1, **dadurch gekennzeichnet, dass** die Verriegelungsmechanismen (62, 66, 52, 72, 74) so eingerichtet sind, dass sie die Entfernung der Rollstuhl-

komponente (36) vom Rollstuhlrahmen (42, 44) zulassen, wenn die Rollstuhlkomponente (36) aus der genannten Winkelstellung zu der einen Seite geschwungen ist.

3. Verriegelungsvorrichtung (40) gemäss den Ansprüchen 1 oder 2, **dadurch gekennzeichnet, dass** die Verriegelungsmechanismen (62, 66, 52, 72, 74) so eingerichtet sind, dass sie die Entfernung der Rollstuhlkomponente (36) vom Rollstuhlrahmen (42, 44) zulassen, wenn die Rollstuhlkomponente (36) aus der genannten Winkelstellung zu der einen oder der anderen Seite geschwungen ist.
4. Verriegelungsvorrichtung (40) gemäss einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Verriegelungsvorrichtung (40) so eingerichtet ist, dass eine Beinstütze an ein senkrechtes Stützrohr (42) eines Rollstuhlrahmens (42, 44) gekuppelt und mit diesem verriegelt wird.
5. Verriegelungsvorrichtung (40) gemäss Anspruch 4, **dadurch gekennzeichnet, dass** die Verriegelungsvorrichtung (40) eine plattenförmige Komponente (58) umfasst, die mit der Beinstütze (36) fest verbunden ist und eine zylindrische Fläche definiert, die den genannten Kuppelungsmechanismus bildet und so eingerichtet ist, dass sie gegen die Aussenfläche des Stützrohres (42) anliegt, wenn die Beinstütze (36) an dem Rollstuhlrahmen (42, 44) montiert ist, dass die Verriegelungsmechanismen einen Sicherungsstift (52) umfassen, der fest mit dem Stützrohr (42) verbunden ist und in einem peripherischen Abstand von der genannten Aussenfläche des Stützrohres angebracht ist, sowie Nachschlagsicherungen (72, 74), die von der genannten plattenförmigen Komponente (58) gestützt werden und so eingerichtet sind, dass sie in der ersten Position der Verriegelungsmechanismen von einer Kante der genannten plattenförmigen Komponente nach vorne herausragen und mindestens teilweise den genannten Sicherungsstift (52) umgreifen, und dass sie in der zweiten Position der Verriegelungsmechanismen hinter die genannte Kante der plattenförmigen Komponente zurückbewegt werden, sodass die Nachschlagsicherungen aus dem Eingriff mit dem Sicherungsstift (52) entkuppelt werden.
6. Verriegelungsvorrichtung (40) gemäss Anspruch 5, **dadurch gekennzeichnet, dass** die Nachschlagsicherungen (72, 74) mit Hilfe eines Handgriffs (75) zwischen der Stellung, die von der Kante der plattenförmigen Komponente nach vorne herausragt, und der genannten zurückgezogenen Stellung entsprechend der ersten bzw. zweiten Position der Verriegelungsmechanismen bewegt werden können.

7. Verriegelungsvorrichtung gemäss eines der Ansprüche 5 oder 6, **dadurch gekennzeichnet, dass** die Verriegelungsmechanismen (62, 66, 52, 72, 74) weiterhin einen Verriegelungsnocken (66) umfassen, der so eingerichtet ist, dass er in einen Verriegelungseinschnitt (68) im Sicherungsstift (52) in der genannten ersten Position der Verriegelungsmechanismen eingreift.
8. Verriegelungsvorrichtung (40) gemäss Anspruch 7, **dadurch gekennzeichnet, dass** der genannte Verriegelungsnocken (66) zwischen den Nachschlagsicherungen (72, 74) angebracht ist und im Verhältnis zu den Nachschlagsicherungen in die axiale Richtung des Sicherungsstiftes verschoben wird.
9. Rollstuhl (10) mit einem Rollstuhlrahmen (12), zwei mit dem Rollstuhlrahmen (12, 42, 44) verbundenen Rädern (26, 28), einem Sitz (14) sowie einer Rollstuhlkomponente wie z.B. einer Beinstütze (36), einer Armlehne (22, 24) oder einer Rückenlehne (16), die drehbar an dem Rollstuhlrahmen (12, 42, 44) montiert ist und mit diesem verriegelt werden kann, welcher Rollstuhlrahmen (12, 42, 44) eine Verriegelungsvorrichtung (40) gemäss einem der obigen Ansprüche umfasst, **dadurch gekennzeichnet, dass** die erste Position einer spezifischen Winkelstellung der Rollstuhlkomponente (36) im Verhältnis zum Rollstuhlrahmen (12, 42, 44) entspricht, aus welcher Winkelstellung heraus die Rollstuhlkomponente (36) zu der einen oder der anderen Seite schwingen kann, wenn die Verriegelungsmechanismen (62, 66, 52, 72, 74) in die zweite Position umgestellt sind.

Revendications

- Dispositif de verrouillage (40) pour accoupler et verrouiller un élément de fauteuil roulant (36), tel qu'un soutien de jambes, un accoudoir ou un dossier pour un cadre de fauteuil roulant (42, 44), le dispositif de verrouillage (40) ayant des moyens d'accouplement (56, 58) étant adaptés à accoupler l'élément de fauteuil roulant (36) au cadre de fauteuil roulant (42, 44) de telle manière que l'élément de fauteuil roulant (36) peut pivoter d'un angle par rapport au cadre de fauteuil roulant (42, 44) autour d'un axe pivotant défini par le cadre de fauteuil roulant, ainsi que des moyens de verrouillage (62, 66, 52, 72, 74) organisés de manière à ce qu'ils puissent être alternés entre une première position dans laquelle l'élément de fauteuil roulant (36) est verrouillé au cadre de fauteuil roulant (42, 44) et une deuxième position dans laquelle l'élément de fauteuil roulant (36) est pivotable par rapport au cadre de fauteuil roulant (42, 44) autour dudit axe pivotant, **caractérisé en ce que** ladite première position correspond
- à une position angulaire spécifique de l'élément de fauteuil roulant (36) par rapport au cadre de fauteuil roulant (42, 44), à partir de quelle position angulaire les moyens de verrouillage (62, 66, 52, 72, 74) permettent à l'élément de fauteuil roulant (36) d'être capable de pivoter des deux côtés lorsque les moyens de verrouillage (62, 66, 52, 72, 74) ont été mis dans l'autre position.
- Dispositif de verrouillage (40) selon la revendication 1, **caractérisé en ce que** les moyens de verrouillage (62, 66, 52, 72, 74) sont adaptés à permettre à l'élément de fauteuil roulant (36) d'être démonté du cadre de fauteuil roulant (42, 44) lorsque l'élément de fauteuil roulant (36) a été pivoté d'un côté à partir de ladite position angulaire.
- Dispositif de verrouillage (40) selon la revendication 1 ou 2, **caractérisé en ce que** les moyens de verrouillage (62, 66, 52, 72, 74) sont adaptés à permettre à l'élément de fauteuil roulant (36) d'être démonté du cadre de fauteuil roulant (42, 44) lorsque l'élément de fauteuil roulant (36) a été pivoté à l'un ou à l'autre côté à partir de ladite position angulaire.
- Dispositif de verrouillage (40) selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** le dispositif de verrouillage (40) est adapté à accoupler et verrouiller un support de jambe à un tube de support vertical (42) d'un cadre de fauteuil roulant (42, 44).
- Dispositif de verrouillage (40) selon la revendication 4, **caractérisé en ce que** le dispositif de verrouillage (40) comprend un élément ayant la forme d'une plaque (58) fermement lié au support de jambe (36), et définissant une surface cylindrique constituant lesdits moyens d'accouplement et adapté à appuyer sur une surface extérieure du tube de support (42) lorsque le support de jambe (36) est monté sur le cadre de fauteuil roulant (42, 44), **en ce que** les moyens de verrouillage comprennent une broche de verrouillage (52) fermement lié au tube de support (42) et localisé à une distance périphérique de ladite surface extérieure du tube de support, et des cliquets d'arrêt (72, 74) étant soutenus par ledit élément ayant la forme d'une plaque (58) et étant adaptés, dans la première position des moyens de verrouillage, à être projetés en avant à partir d'un bord dudit élément ayant la forme d'une plaque et au moins partiellement saisir autour de ladite broche de serrure (52) ainsi qu'étant adaptés, dans la deuxième position des moyens de verrouillage, à être ramenés derrière ledit bord dudit élément ayant la forme d'une plaque de manière à découpler les cliquets d'arrêt de l'engagement avec la broche de serrure (52).

6. Dispositif de verrouillage (40) selon la revendication 5, **caractérisé en ce que** les cliquets d'arrêt (72, 74) sont mobiles à l'aide d'une poignée (75) entre l'emplacement de projection en avant du bord de l'élément ayant la forme d'une plaque et l'emplacement retiré correspondant à la première position et à la deuxième position, respectivement, des moyens de verrouillage. 5
7. Dispositif de verrouillage (40) selon l'une quelconque des revendications 5 ou 6, **caractérisé en ce que** les moyens de verrouillage (62, 66, 52, 72, 74) comprennent ultérieurement un taquet de verrouillage (66) adapté à s'engager dans une entaille de verrouillage (68) dans la broche de serrure (52) dans ladite première position des moyens de verrouillage. 10 15
8. Dispositif de verrouillage (40) selon la revendication 7, **caractérisé en ce que** ledit taquet de verrouillage (66) est localisé entre les cliquets d'arrêt (72, 74) et déplacé par rapport aux cliquets d'arrêt vu dans la direction axiale de la broche de serrure. 20
9. Fauteuil roulant (10) ayant un cadre de fauteuil roulant (12), deux roues (26, 28) liés au cadre de fauteuil roulant (12, 42, 44), un siège (14) ainsi qu'un élément de fauteuil roulant tel qu'un support de jambes (36), un accoudoir (22, 24) ou un dossier (16), étant monté pivotablement sur le cadre de fauteuil roulant (12, 42, 44) et pouvant être verrouillé par rapport à cela, le cadre de fauteuil roulant (12, 42, 44) ayant un dispositif de verrouillage (40) selon l'une des revendications précédentes, **caractérisé en ce que** la première position correspond à une position angulaire spécifique dudit élément de fauteuil roulant (36) par rapport au cadre de fauteuil roulant (12, 42, 44), à partir de quelle position angulaire l'élément de fauteuil roulant (36) peut pivoter à l'un ou l'autre côté lorsque les moyens de verrouillage (62, 66, 52, 72, 74) ont été mis dans la deuxième position. 25 30 35 40

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Fig. 1

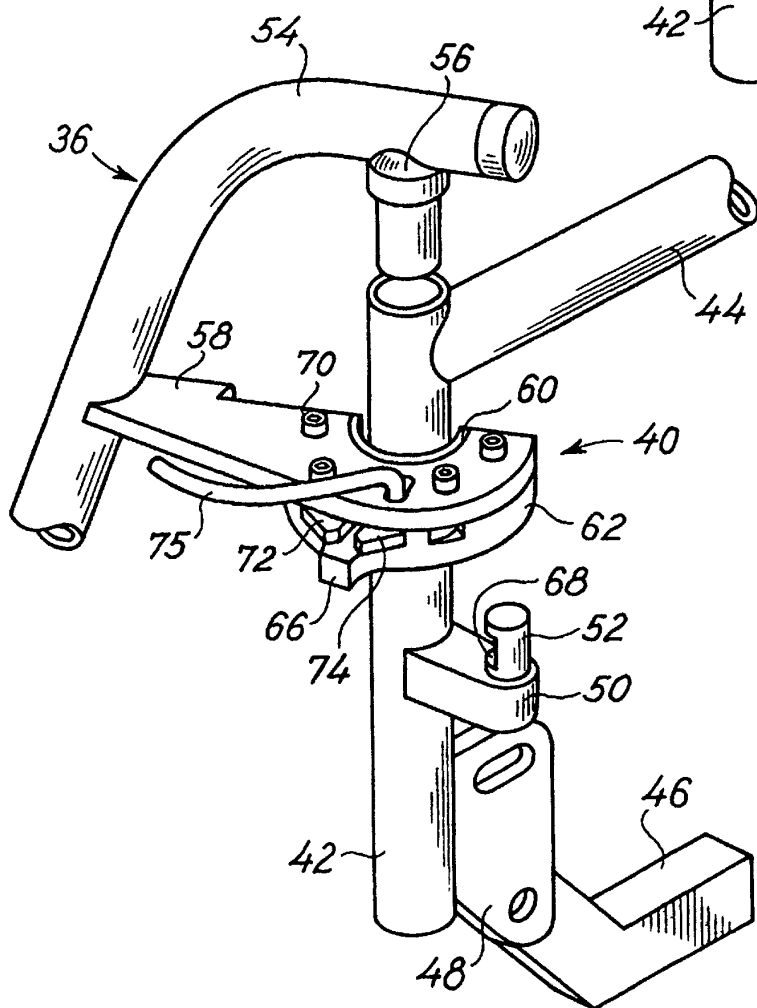
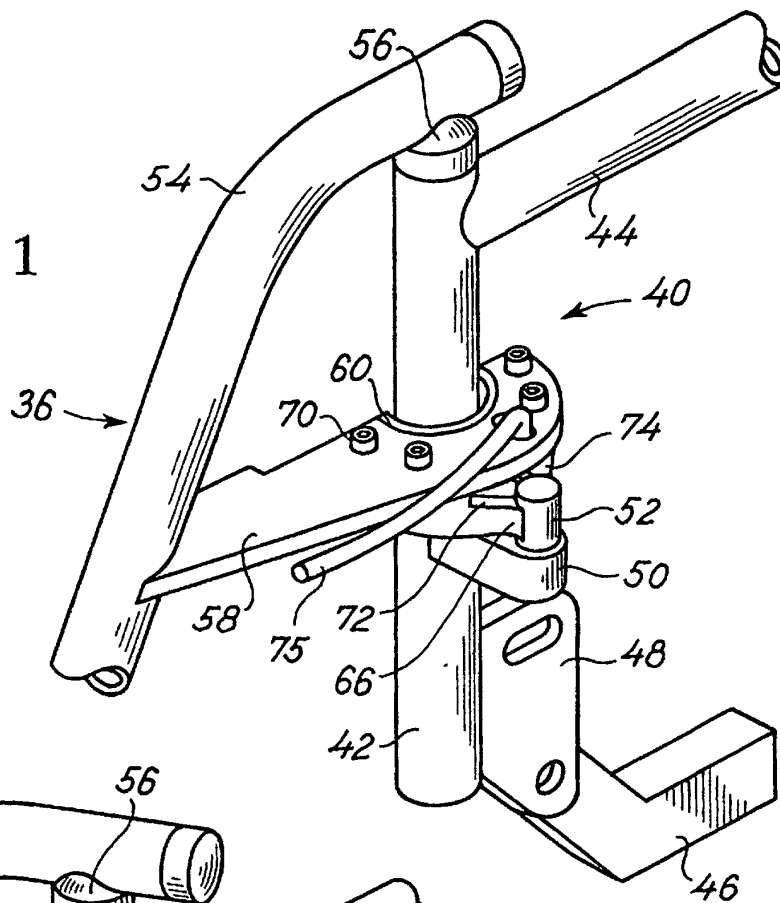
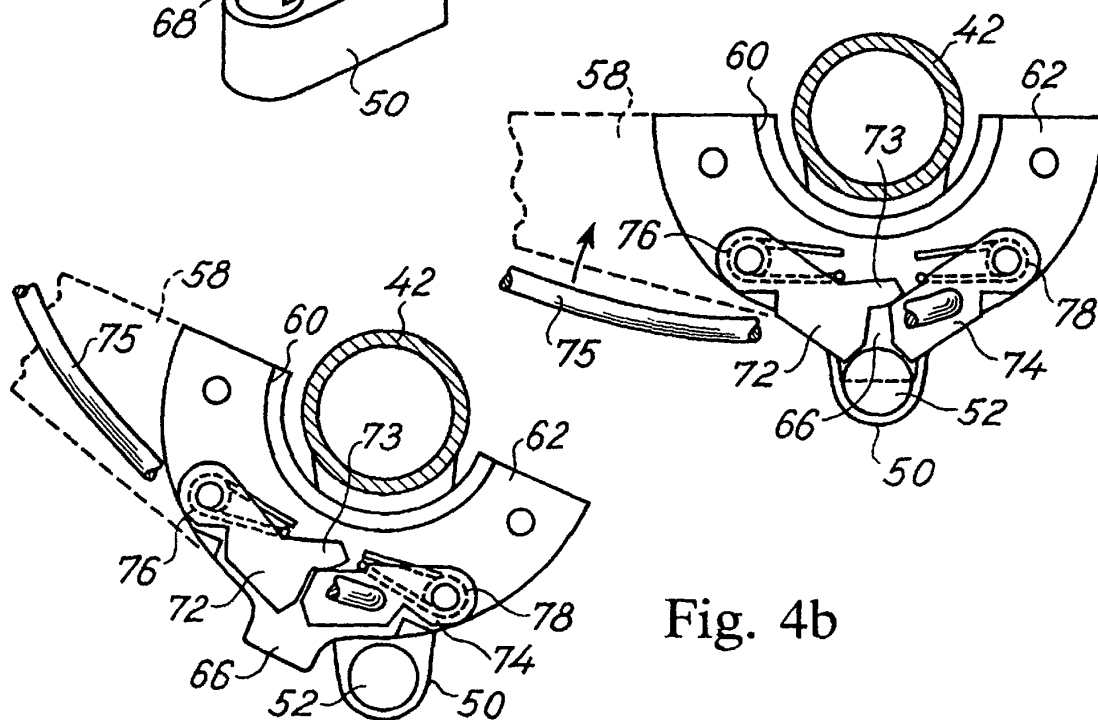
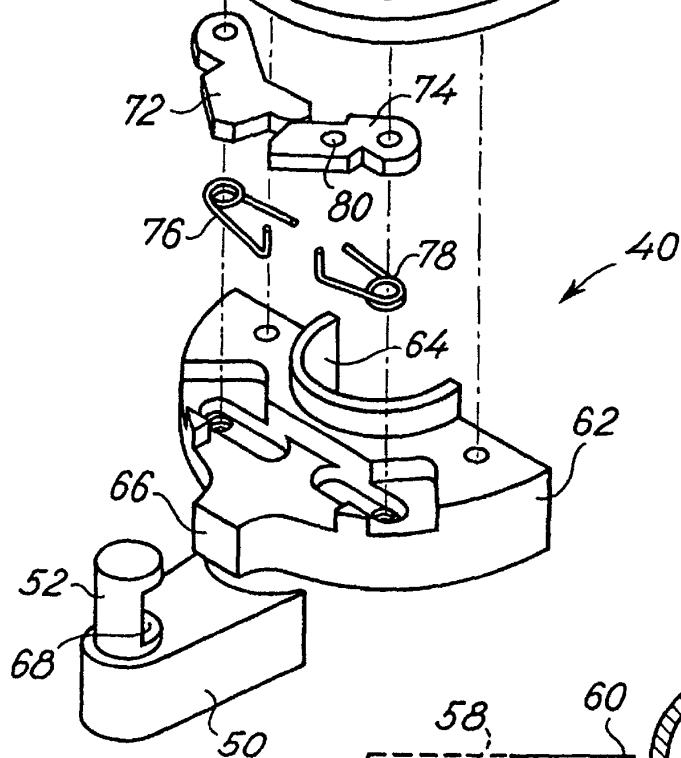
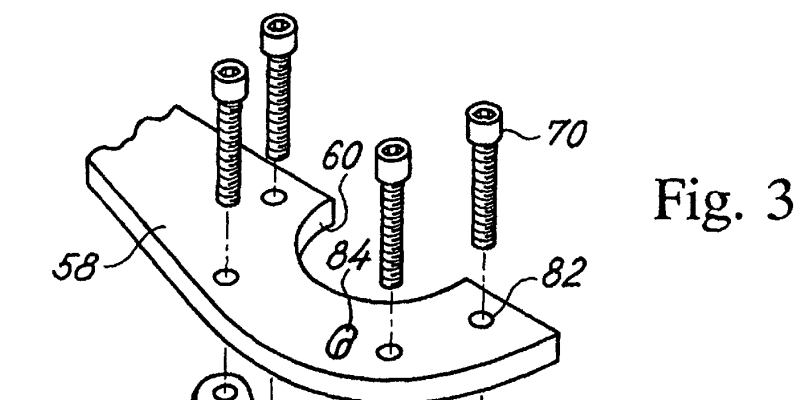


Fig. 2



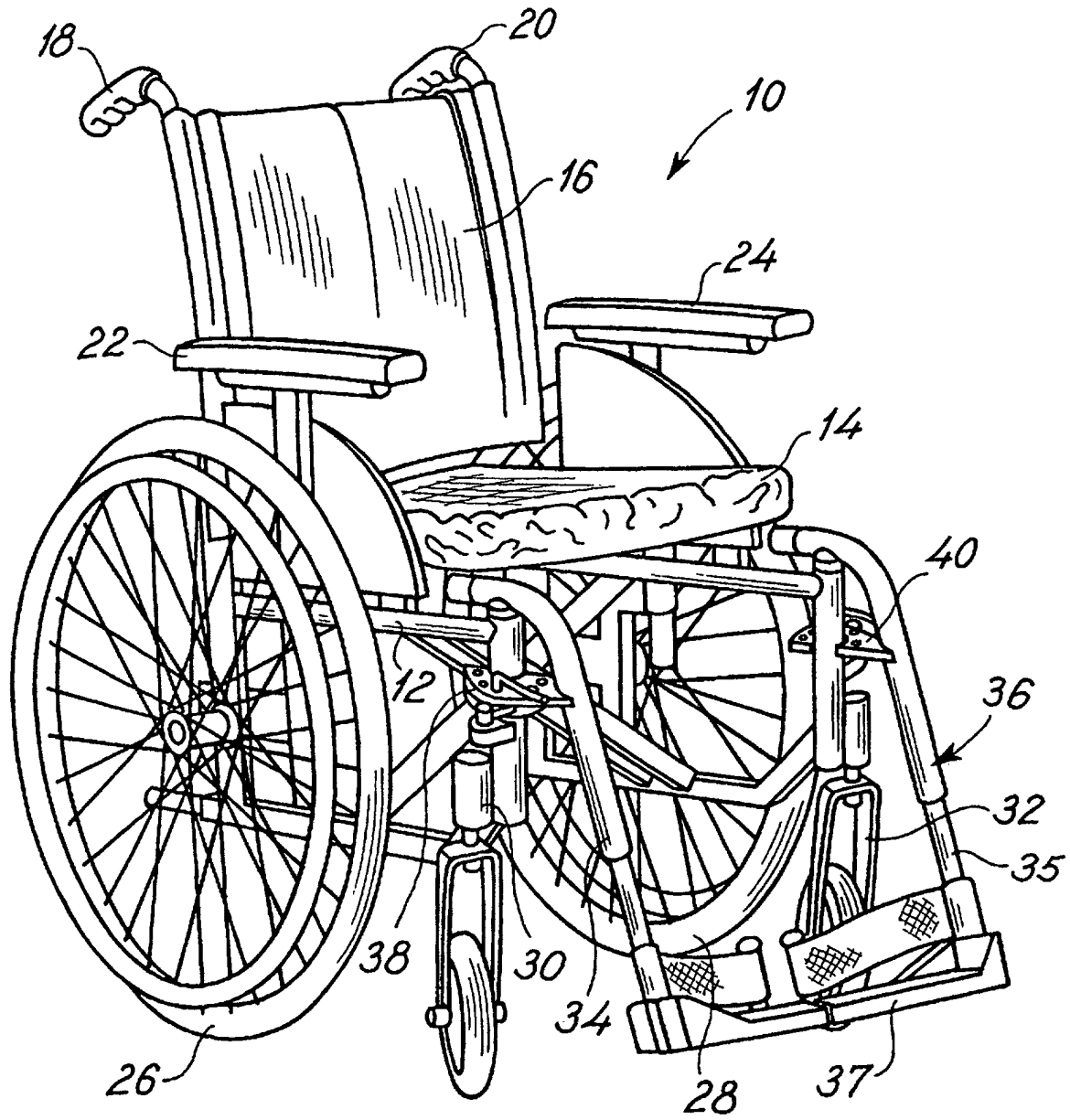


Fig. 5

Fig. 6

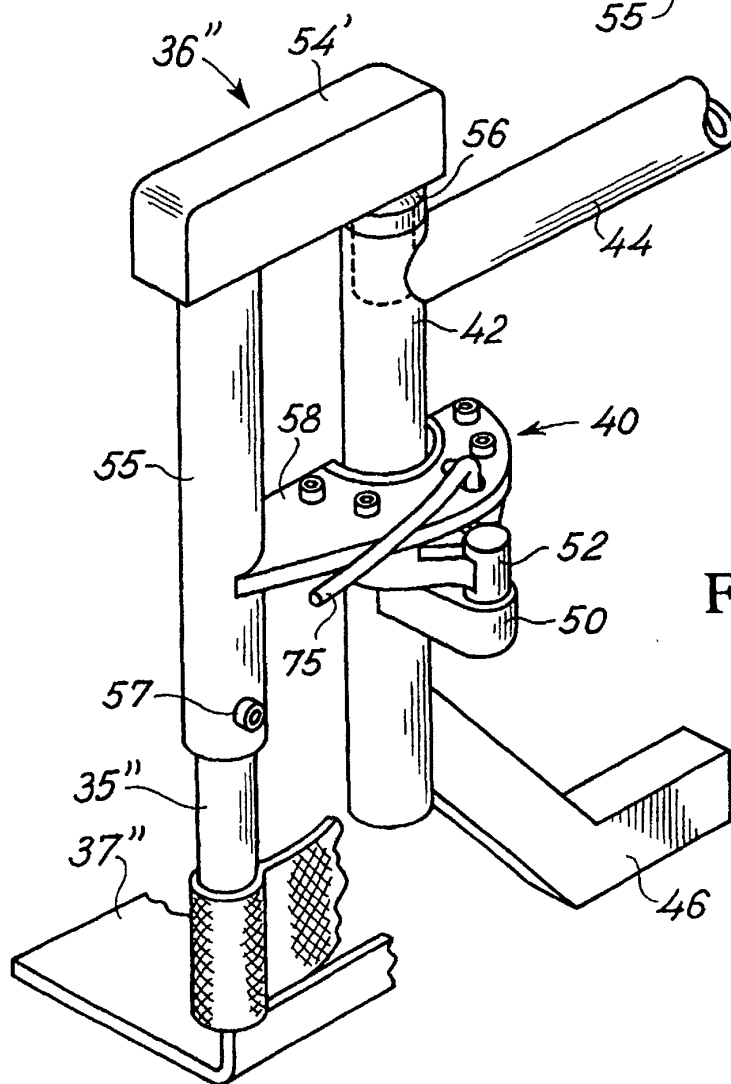
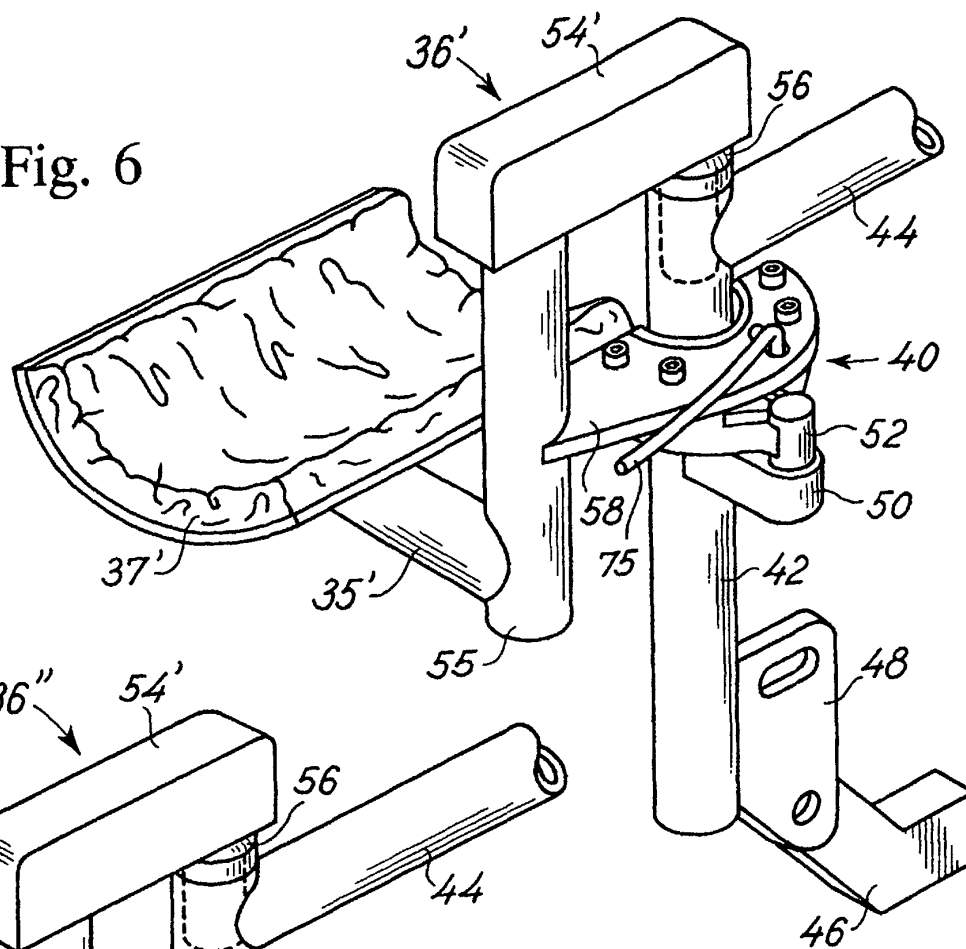


Fig. 7

