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(54) Improvements in adjustable seating.

(57) The present invention relates to improvements to adjustable seating, particularly wheel chairs.

The invention encompasses a method of joining a collar member 52 to an elongate member 55, which acts to support a component of the seat. The invention further relates to means for providing adjustment for a side bolster 81 in which a cylindrical support member 86 is slidably and rotatably engaged in a tubular frame portion 26. Additionally a method of providing adjustment to the relative positions of the back rest 27, 28 and the seat cushion 19 is also described.

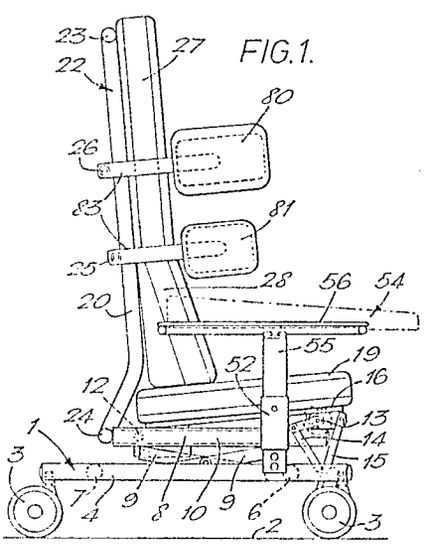

FIG.1.

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Description

IMPROVEMENTS IN ADJUSTABLE SEATING

The present invention relates to improvements in adjustable seating and, in particular, the invention relates to adjustable wheelchairs.

In most modern wheelchairs provision is made for the adjustment of the relative locations of certain of the chair components. For example, the height of the seat, or foot rests above the ground may be adjustable. In more sophisticated designs, the relative positions of the back support and the seat are variable, as are the locations of arm rests and other supporting members. The present invention, in all its aspects, has as an object, improving the ease with which certain wheelchair components may be adjusted.

In a first aspect, the present invention provides a method of joining an elongate member to a collar member wherein the elongate member is slidably engageable within the collar member and is provided with an array of fixing locations, for engaging a locking assembly; said locking assembly is adapted to be releasably engaged with the elongate member in any one of the fixing locations, and comprises spring biasing means acting on bolt means; said collar member has a hole or recess formed therein, so as to be engageable by the bolt means under the influence of the spring biasing means, when the locking assembly is engaged to any of the fixing locations; the method comprising, engaging the locking assembly in any one of the fixing locations, engaging the collar on the elongate member and positioning said collar member on the elongate member so that the bolt means registers with and is sprung into engagement with the hole, or recess in the collar member, to thereby hold the collar member in place with respect to the elongate member. Disengagement of the collar from the elongate member is effected by retracting the bolt means against the spring bias.

An advantage of the present invention is that it provides a method whereby the position on the elongate member where the collar becomes engaged thereto may be adjusted, through adjusting the location of the locking assembly in the array of fixing locations, while allowing the future disengagement and re-engagement of the collar, automatically in the same position on the elongate member, without the need for further adjustment. This is because disengagement of the collar from the elongate member may be effected by disengagement of the bolt from the hole or recess in the collar without disturbing the engagement of the locking assembly and elongate member.

In an embodiment, an axially extending slot is formed in the collar opposite the hole or recess, the fixing locations comprise at least partially threaded openings formed transaxially through the elongate member, the locking assembly is arranged to be threadably engaged in any of said openings, and is provided with a turnable head dimensioned for sliding in the slot. Preferably the end portion of the bolt which extends through the hole in the collar, when engaged therewith, is in the form of a dome. The domed end portion allows the bolt to be manually pushed into the locking assembly a sufficient distance to allow the collar to slid over the end of the bolt and out of engagement with the elongate member. Preferably, the elongate member is a substantially hollow tube.

In an embodiment, both the elongate member and the collar may be portions of larger and more complex members or assemblies.

According to a second aspect of the present invention there is provided apparatus comprising an elongate member slidably engaged within a collar member wherein, the elongate member is provided with an array of fixing locations, for engaging a locking assembly, the locking assembly being adapted to be releasably engaged with the elongate member in any one of the fixing locations and comprising spring biasing means acting on bolt means and, the collar member has a hole or recess formed therein so as to be engageable by the bolt means, under the influence of the spring biasing means and when the locking assembly is engaged in any of the fixing locations, to thereby hold the elongate member in a fixed relationship with the collar member. The arrangement is such that once the locking assembly is fixed to one of the fixing locations, the collar may be moved along the elongate member until the bolt means registers with and is sprung into engagement with the hole, or recess in the collar. Thus, the collar is thereby held in place with respect to the elongate member and hence the supporting member in position with respect to the remainder of the seat. Disengagement of the collar from the elongate member, to allow the relative sliding thereof, is effected by retracting the bolt means against the spring bias.

In an embodiment of this aspect of the present invention the apparatus comprises a seat having a supporting member carried by the elongate member which, in turn, is slidably engaged within the collar member and the collar member is fixed to the frame of the seat.

In further embodiments of this aspect of the present invention, the means required to carry out the embodiments of the method of the first aspect of the invention, set out above, are selectively incorporated.

In a further embodiment, the supporting member is either an arm rest, a tray, a tray support, a seat cushion assembly, or a seat back rest assembly. Preferably, the supporting member is an arm rest or tray support.

In a preferred embodiment, the elongate member is slidable in the collar in a substantially vertical direction and means are provided to prevent the elongate member from sliding out of engagement with the collar, when the locking assembly is engaged to a fixing location. An advantage of this aspect of the present invention, is that a suitable raised position for an arm rest, or tray support, may

be selected by selecting upon which of the fixing locations the locking assembly should be engaged. In order to temporarily lower the arm rest, or tray support the bolt should be disengaged from the hole in the collar. Returning the arm rest, or tray support to the desired raised position is achieved merely by pulling it up, until the bolt re-engages in the hole. Re-adjustment of the height of the arm rest, or tray support each time it is lowered, is thereby unnecessary.

In an embodiment, the seat is in the form of a wheelchair.

In a third aspect, the present invention provides a seat comprising a seat cushion, back rest and an adjustable side bolster, wherein the side bolster is supported on a cylindrical support member slidably and rotatably engaged within a tubular frame portion, the bolster being in a location spaced away from the axis of the tubular member, and the cylindrical support is provided with releasable locking means for locking said support to the tubular member, in a selected position therein. Thus, the side bolster may be swung about the axis of the tube and moved along parallel to said axis into a desired position, where it may be locked in place by the locking means. In order to move the bolster to another position, the locking means should be released to allow relative movement of the cylindrical support and the tubular member, thereby allowing the bolster to be moved to a second position, where the locking means may be re-engaged. Accordingly, an advantage of this aspect of the present invention is that it allows easy adjustment of the side bolster into any one of a wide selection of locations.

In an embodiment, the locking means comprises means for selectively increasing or decreasing the transaxial width of a portion of the support member, to thereby cause said member to be selectively locked in position and released for movement within the tubular member. Preferably, the cylindrical support member is a hollow tube having an axially extending slot formed in the end remote from the bolster and, the locking means comprises a frusto connical plug engaged in the slotted end of the cylindrical support member, together with means for moving said plug axially relative to the cylindrical support member; the arrangement being such that, drawing the plug into the cylindrical support member urges the slotted end thereof to open wider and become jammed in place in the tubular member, whereas releasing the plug from the cylindrical support member releases the grip of the cylindrical support member on the tubular member.

In a further embodiment, the plug has a threaded passage extending axially therethrough and is engaged by a threaded member mounted for rotation, but not axial sliding, within the cylindrical support member, said threaded member being provided with means to facilitate its rotation to thereby draw the plug into, or push it out of engagement with the cylindrical support member.

In a fourth aspect, the present invention provides a seat comprising a cushion and back rest, each supported on a frame portion, wherein the frame portions are joined by means for adjusting the position of the back rest with respect to the seat cushion between two horizontally spaced extremities, said means comprising a threaded member, mounted for axial rotation on one of said frame portions and threadably engaged to the other of said portions; the arrangement being such that axial rotation of the threaded member causes movement of the back rest between the two horizontally spaced extremities. Preferably, at least one member of one of the said frame portions is slidably engaged to a member of the other framed portion to thereby provide stability to the assembled frame portions.

In an embodiment, the threaded member is threadably engaged to the frame portion supporting the seat cushion.

A particular embodiment of all the aspects of the present invention will now be described with reference to the following drawings:-

Figure 1 shows a side view of a wheelchair in accordance with the present invention;

Figure 2 is a front view of the chair shown in figure 1;

Figure 3 is a plan view of the chair shown in figure 1;

Figure 4 is a detailed side view of the lower portion of the chair shown in figure 1;

Figure 5 is a scrap front view of an arm rest support mechanism of the chair shown in figure 1;

Figure 6 is a plan view of the mechanism shown in figure 5;

Figure 7 is a side view of the mechanism shown in figure 5;

Figure 8 is a section of a side bolster support mechanism of the chair shown in figure 1;

Figure 9 is a view of a crank handle for use in conjunction with the chair shown in figure 1 and;

Figure 10 is a section through a locking pin for the arm rest support mechanism shown in figure 5.

The chair will be described as orientated in figures 1 and 2, the front of the chair being to the right hand side of figure 1.

A lower frame 1 is supported above a surface 2 by four conventional casters 3. The lower frame 1 is formed from tubular steel and comprises substantially parallel left 4 and right 5 side members connected by substantially parallel front and rear members 6 and 7. The casters 3 are fitted, by conventional means, to the front and rear extremities of the left and right side members 4 and 5, which extremities extend to the front and rear respectively of the front and rear members 6 and 7. The front extremities of the left and right side members 4 and 5 are turned outwardly to provide the chair with a wider wheel base at the front in comparison to the rear.

An upper frame 8, formed from tubular steel, is supported above the lower frame 1 by a scissor jack mechanism 9. The upper frame 8 comprises left and right side members 10 and 11, which are substantially parallel to the left and right side members 4 and 5 of the lower frame 1 and located inwardly thereof. The left and right side members 10 and 11

are joined by a rear tubular member 12, which is substantially parallel to the rear member 7 of the lower frame 1. A similar front member 13 joins the forward extremities of the left and right side members 10 and 11 of the upper frame 8. The front member 13 provides a support and a pivot for a calf support board mounting mechanism 14 and, in turn, a calf support board 15. A seat cushion support board 16 is fixed by a plurality of brackets 17 and 18 to the side members 10 and 11 of the upper frame 8. The brackets 18, which engage the forward portion of the seat support board 16 are slotted, in order to allow the height of the front portion of the seat support 16 to be adjusted relative to its rear portion. An upholstered seat cushion 19 is attached to the support board 16 by conventional means.

A back support frame 20 is formed from tubular steel and comprises left and right upright members 21 and 22, upper and lower cross members 23 and 24 connecting, respectively, the upper and lower end parts of the upright members 21 and 22 and, two intermediately located cross members 25 and 26. The lower portions of the upright members 21 and 22, between the lower intermediate member 25 and the lower cross member 24 are 'dog legged' to the rear as they extend towards the lower cross member 24. Attached, by conventional means, to the forward face of the back support frame 20 is an upper back cushion 27 and a lower back cushion 28.

Referring now to figure 4. The scissor jacking mechanism, generally indicated at 9, is shown in sufficient detail in this figure for a man skilled in the art to determine its construction and, to ascertain that it is of conventional configuration and that it serves to join the upper and lower frames 1 and 8 in such a way that their vertical spacing may be adjusted. Adjustment of the scissor jacking mechanism 9 is achieved by axial rotation of an elongate screw member 30, which screw member 30 is journaled for rotation half way along the length of the rear member 7 of the lower frame 1.

The back support frame 20 is engaged with the left and right side members 10 and 11 of the upper frame 8 through means of tubular members 31 and 32. Tubular members 31 and 32 extend forwardly from the left and right extremities of the lower cross member 24 of the back support frame 20. Said tubular members 31 and 32 are spaced apart by the same distance as left and right side members 10 and 11 and are dimensioned to be a snug, slidable fit within said left and right side members 10 and 11. A rod member 33 extends through and is journaled for rotation in the central portion of the lower cross member 24 of the back support frame 20. The rod member 33 has a threaded portion 34, extending forwardly of the back support frame 20, and engaged in a threaded passage formed in the rear member 12 of the upper frame 8. A radially outwardly extending shoulder 35 is formed on the rod member 33 between the threaded portion 34 and the back support frame 20. The shoulder 35 abutts a bearing assembly 36, which functions to journal the rod member 33 to the lower cross member 24.

The rear portion of the rod member 33 is of similar diameter to the shoulder 35 and is provided with an annular channel 37 set into its rear face 38. The annular channel 37 is disposed symmetrically about the long axis of the rod member 33. A cylindrical pin 39 extends diametrically across and through the rod member 33, in such a way as to cross through the annular channel 37. The channel 37 and pin 39 allow the rear face 38 to be gripped by suitable means for axially rotating the rod member 33.

A radially outwardly extending collar 110, is fixed to the forward end 111 of the rod member 33, to prevent the rod member 33 from becoming disengaged from the rear member 12 of the upper frame 8.

Figure 9 shows a crank 40 for engaging the rear face 38 of the rod member 33. The crank 40 comprises a handle portion 41, a cranked arm 42 and a cylindrical boss 43. The cylindrical boss 43 is hollowed and slotted so as to engageable with the annular channel 37 and pin 39 of the rear face 38, in order to rotate the rod member 33.

Referring now to figures 3 and 2, substantially oval cross section tubular members 50 and 51 extend outwardly, to the left and right, from the forward end parts of the left and right side members 10 and 11 respectively. The oval tubular members 50 and 51 lie in substantially the same plane as the remainder of the upper frame 8. Oval cross section collars 52 and 53 are joined, by welding, to the outer ends of each of the oval tubular members 50 and 51 respectively. Each collar 52 and 53 supports an arm rest assembly 54. Each arm rest assembly 54 comprises a support tube 55 and an arm rest 56.

Figures 5, 6 and 7 show details of the engagement of one support tube 55 in collar 52 and details of the join between the collar 52 and oval tubular member 50. The other support tube 55, collar 53 and oval tubular member 51 are substantially the same as those shown in figures 5, 6 and 7 and, therefore, will not be independantly described.

Substantially U shaped slots 57 and 58 are formed in the end parts of the substantially parallel upper and lower sides 58 and 59 of the oval tubular member 50. The collar 52 is butt welded to the portions of the oval tubular member 50, which flank the U shaped slots 57. The collar 52 is the same in cross section as the oval tubular member 50, however is slightly larger in overall dimensions. A longitudinally extending slot 60, of the same width as slots 57 is formed in the side of the collar 52, which joins the end of the oval tubular member 50. The slot 60 is in register with both slots 57 and is open at its lower end. A circular hole 61 is formed through the side of the collar 52 opposite the upper, closed end of the slot 60.

The arm rest support tube 55 has an oval cross section and is dimensioned to be a sliding fit within the collar 52. A longitudinally extending array of registering holes 62 is formed through both flat side walls of the arm rest support tube 55. The array of holes 62 is located so as to be in register with the slot 60 and hole 61, when the support tube is engaged in the collar 52. Each of the holes 62 in the array, which lie on the slot side of the collar 52 when the support tube 55 is located therein, is tapped with a screw thread.

A locking pin 70 comprises a hollow substantially

cylindrical cartridge 71 which accomodates a coil spring 72 and a bolt 73. The cartridge 71 comprises a shank portion 74, dimensioned to be a sliding fit in any of the holes 62 and, a head portion 75 having a larger dimension than said holes 62, but being a sliding fit in the slots 57 and 60. The portion of the shank 74 adjacent to the head 75 is threaded so that the cartridge 71 may enter into screw threaded engagement with any one of the tapped holes 62. The bolt 73 is substantially cylindrical and located within the cartridge 71 co-axially thereto. A short portion of the bolt 73 extends out of the head 75 of the cartridge 71, where the bolt is engaged by a circlip 76. The end part of the bolt, which extends out of the shank 74 of the cartridge 71 is rounded into a dome shape and, a circular flange extends radially outwardly from the bolt 73, to slidably engage the inner walls of the cartridge 71 at a location adjacent to its open end, when the circlip 76 abutts the head 75. The coil spring 72 is located around the bolt 73, within the cartridge 71 and acts between the flange 77 and the inside of the bolt head 75, in order to urge the domed end of the bolt 73 outwardly from the cartridge 71.

In figures 5, 6 and 7, the locking pin 70 is shown in threadably engaged in one of the holes 62, with the domed end of the bolt 73 extending out through hole 61.

Upper side bolster 80 and lower side bolster 81 (see figure 1 and 2) are fixed by their respective supporting mechanisms 83 to the intermediate cross members 25 and 26 respectively. Both support mechanisms 83 are substantially the same and, that which holds the upper side bolster 80 will now be described by way of example and with reference to figure 8.

In figure 8 the intermediate cross member 26 is shown separated from the remainder of the back support frame 20. The inside wall of the intermediate cross member 26 is lined with a layer of PTFE tape 85. A hollow cylindrical support member 86 is a sliding and rotatable fit within the PTFE lined portion of the intermediate cross member 26. Diametrically opposed longitudinally extending slots 87 are formed in the wall of the hollow cylindrical support member 86; the slots 87 extending from the end of the support member 86 located within the intermediate cross member 26 about one third of the length of the hollw support member 86. The end of the support member 86 remote from the intermediate cross member 26 is butt welded to a rectangular cross sectioned arm 88. The arm 88 is substantially perpendicular to the axis of the hollow cylindrical support member 86. The side bolster 80 is fixed by bolts (not shown) to the end of the arm 88 which is remote from the hollow cylindrical support member 86.

Extending lengthwise within the hollow support member 86 is a cylindrical rod member 89. The rod member 89 also extends through the part of the rectangular arm 88 which covers the end of the cylindrical support member 86. The rod member 89 is journaled for rotation about its long axis by bearing means 90 located at the juncture of the arm 88 and the hollow cylindrical support member 86. The bearing means 90 are arranged to allow the rod member 89 to rotate, about its long axis, but not slide in an axial direction into or out of the hollow cylindrical support member 86. The end part of the rod member 89, which extends outwardly from the arm 88, is surrounded by a circular cross sectioned cup member 91 and pierced, in a radial direction, by a cylindrical pin 92 within the confines of the cup member 91. The arrangement of the pin 92 and cup member 91 is such that the rod member 89 maybe engaged and caused to rotate, by the crank handle 40 shown in figure 9. A screw thread 101 is formed on the end part of the rod member 89 which is remote from the bearing means 90. The screw thread 101 extends from a location radially opposite the middle of the slots 87 to the end 102 of the rod member 89, which is located within the intermediate cross member 26 and beyond the end of the hollow cylindrical support member 86. A frusto-connical plug 103 is threadably engaged on the screw thread 101, with its smaller diameter portion located inside the hollow cylindrical support member 86.

The arrangement is such that, rotation of the rod member 89 about its long axis causes the plug 103 to be forced into, or out of the open end of the hollow cylindrical support member 86. Since the smaller diameter end of the plug 103 is dimensioned to fit within the hollow cylindrical member 86 and the large diameter end of the plug 103 is dimensioned to be a sliding fit within the PTFE tape 85, drawing the plug 103 into the slotted end of the hollow cylindrical member 86 causes the plug 103 to wedge open the walls of the cylindrical member 86. Reversing the travel of the plug 103 allows the walls of the cylindrical member 86 to relax back into shape. The plug 103 has a radially extending lug 104, which engages in one slot 87 to prevent the rotation of the plug 103 with the rod member 89. A lock nut 105 is engaged on the thread 101 adjacent to the inner end 102 of the rod member 89, to prevent the plug 103 from being wound off the rod member 89.

Thus, the upper side bolster 80 may be moved into a desired position when the hollow cylindrical member 86 is free to slide and rotate within the cross member 26; that is when the plug 103 is not wedged tightly within the hollow cylindrical member 86. Once the upper side bolster 80 is in the desired position, the boss 43 of the crank handle 40 is engaged in the cup member 91, on the pin 92 and, the crank handle 40 is turned to rotate the rod member 89 in the direction which draws the plug 103 into the hollow cylindrical member 86. When tightly engaged within the slotted end of the cylindrical member 86, the plug 103 wedges the walls of the cylindrical member 86 radially outwardly and into tight engagement with the PTFE tape 85, thereby preventing the relative movement of the members 86 and 26. Hence locking the bolster 80 in place. Winding the plug 103 out of the hollow cylindrical member 86 relaxes the wedging action of the plug 103, thereby allowing readjustment of the bolster's location.

The remaining bolsters 81 and 80 may be adjusted in a similar manner.

In use, the back support frame 20 may be adjusted in a forwardly or backwardly direction by rotating the

rod member 33 by means of the crank handle 40. When so rotated, the threaded portion 34 of the rod member 33 cooperates with the threaded portion of the upper frame 8 to either, push the back support frame 20 in a rearwardly direction, or pull the back support frame 20 fowardly, depending on the direction in which the rod member 33 is rotated. As the back support frame 20 is pushed back or pulled forward, the tubular members 31 and 32 slide within the side members 10 and 11, in order to allow the back support frame 20 to slide in a controlled and smooth fashion. As the back support frame 20 is moved, it carries the upper and lower back cushions 27 and 28 with it.

In order to place the arm rest 56 at a desired height, the locking pin 70 is engaged through the support tube 55 in a pair of holes 62, selected from the array of holes 62 formed in the support tube 55, so that when the bolt 73 engages the hole 61 and locks the support tubes 55 in place, the arm rest 54 is at the desired height. To change the height of the arm rest 54, the locking pin 70 must be unscrewed from one pair of holes 62 and reinserted into another pair of holes 62 from the array of holes 62 and, the support tube 55 moved within the collar 52 until the bolt 73 springs into the hole 61. Once the locking pin 70 has been located in the correct pair of holes 62, in order to achieve the desired height for the arm rest 56, the arm rest 56 may be lowered from this position and raised back to said desired position, without the need for further adjustment, by manipulation of the bolt 73. To lower the arm rest 56, the domed portion of the bolt 73 should be pushed in against the spring 72 until the support tube 55 may be caused to slide within the collar 52. The dome at the end of the bolt 73 facilitates such sliding and the head 75 of the cartridge 71 is able to slide through the slots 57 and 60, allowing the arm rest 56 to be lowered until it strikes the top of the collar 52. In order to raise a lowered arm rest 56 back to the desired postion, the arm rest 56 need only be pulled upwardly until the bolt 73 engages the hole 61, whereupon the arm rest 56 becomes fixed in said desired position automatically.

Claims

1. A method of joining an elongate member (55) to a collar member (52), wherein the elongate member (55) is slidably engageable within the collar member (52) and is provided with an array of fixing locations (62), for engaging a locking assembly (70); said locking assembly (70) is adapted to be releasably engaged with the elongate member (55), in any one of the fixing locations (62), and comprises spring biasing means (72) acting on bolt means (73); said collar member (52) has a hole or recess (61) formed therein, so as to be engageable by the bolt means (73) under the influence of the spring biasing means (72), when the locking assembly (70) is engaged in any of the fixing locations (62); the method comprising, engaging the locking assembly (70) in any one of the fixing locations (62), engaging the collar member (52) on the elongate member (55) and positioning said collar member (52) on the elongate member (55) so that the bolt means (73) registers with and is sprung into engagement with the hole, or recess (61) in the collar member (52), to thereby hold the collar member (52) in place with respect to the elongate member (55).

2. Apparatus comprising an elongate member (55), slidably engaged within a collar member (52) characterised in that, the elongate member (55) is provided with an array of fixing locations (62) for engaging a locking assembly (70), the locking assembly (70) being adapted to be releasably engaged within the elongate members (55) in any one of the fixing locations (62) and comprising spring biasing means (72) acting on bolt means (73) and, the collar member (52) has a hole or recess (61) formed therein so as to be engageable by the bolt means (73), under the influence of the spring biasing means (72) and when the locking assembly (70) is engaged in any of the fixing locations (62), to thereby hold the elongate member (55) in a fixed relationship with the collar member (52).

3. Apparatus as claimed in claim 2, comprising a seat having a supporting member (56) carried by the elongate member (55) which, in turn, is slidably engaged within the collar member (52) and the collar member (52) is fixed to the frame (50, 10) of the seat.

4. A method as claimed in claim 1, or apparatus as claimed in either claim 2 or claim 3 characterised in that, an axially extending slot (60) is formed in the collar member (52) opposite the hole or recess (61), the fixing locations (62) comprise at least partially threaded openings (62) formed through the elongate member (55) in a transaxial direction, the locking assembly (70) is arranged to be threadably engaged in any of said openings (62), and the locking assembly (70) is provided with a turnable head (75) dimensioned for sliding in the slot (60).

5. A method or apparatus as claimed in claim 4 characterised in that the end portion of the bolt which extends through the hole in the collar member (52) when engaged therewith, is in the form of a dome (73).

6. A method or apparatus as claimed in claim 5 characterised in that the elongate member (55) is a substantially hollow tube and the fixing locations (62) comprise openings formed through the wall thereof.

7. Apparatus as claimed in any of claims 3-6 characterised in that the supporting member (56) is either an arm rest (56), a tray, a tray support, a seat cushion assembly, or a seat back rest assembly.

8. Apparatus as claimed in claim 7 characterised in that the elongate member (55) is slidable in the collar member (52) in a substantially vertical direction and means are provided

to ensure that the elongate member (55) re-engages the collar member (52) in the same relative position, when the locking assembly (70) is engaged to a fixing location.

9. A seat comprising a seat cushion (19), back rest (20, 27, 28) and an adjustable side bolster (81), characterised in that the side bolster (81) is supported on a cylindrical support member (86) slidably and rotatably engaged within a tubular frame portion (26), the bolster (81) being in a location spaced away from the tubular frame portion (26) in a radical direction, and the cylindrical support member (86) is provided with releasable locking means (87, 89, 90, 91, 92, 101-105) for locking said support member (86) to the tubular frame portion (26), in a selected position therein.

10. A seat as claimed in claim 9 characterised in that the locking means comprises means (87, 89, 103) for selectively increasing or decreasing the axial width of a portion of the cylindrical support member (86), to thereby cause said member (86) to be selectively locked in position or released for movement within the tubular frame portion (26).

11. A seat as claimed in claim 10 characterised in that the cylindrical support member (86) is a hollow tube 86 having an axially extending slot (87) formed in the end remote from the bolster (81) and, the locking means comprises a frusto conical plug (103) engaged in the slotted end of the cylindrical support member (86), together with means (89, 90, 91, 92) for moving said plug (103) axially relative to the cylindrical support member (86).

12. A seat as claimed in claim 11 characterised in that the plug (103) has a threaded passage extending axially therethrough which is engaged by a threaded member (89) mounted for rotation, but not axial sliding, within the cylindrical support member 86, said threaded member (89) being provided with means to facilitate its rotation (90, 92, 92) to thereby draw the plug (103) into, or push it out of engagement with the cylindrical support member (86).

13. A seat comprising a cushion (19) and back rest (27, 28), each supported on a frame portion (20, 8), characterised in that the frame portions (20, 8) are joined by means for adjusting the position of the back rest (27, 28) with respect to the seat cushion (19) between two horizontally spaced extremities, said means comprising a threaded member (73), mounted for axial rotation on one of said frame portions (24) and threadably engaged to the other of said portions (12); the arrangement being such that axial rotation of the threaded member (23) causes movement of the back rest (27, 28) between the two horizontally spaced extremities.

14. A seat as claimed in claim 13 characterised in that at least one member (31, 32) of one of the said frame portions (8, 20) is slidably engaged to a member (10, 11) of the other frame portion (8, 20) to thereby provide stability to the assembled frame portions.

15. A seat as claimed in claim 14 characterised in that the threaded member (33) is threadably engaged to the frame portion (12) supporting the seat cushion.

16. A seat as claimed in any of claims 3-15 wherein said seat is a wheel chair.

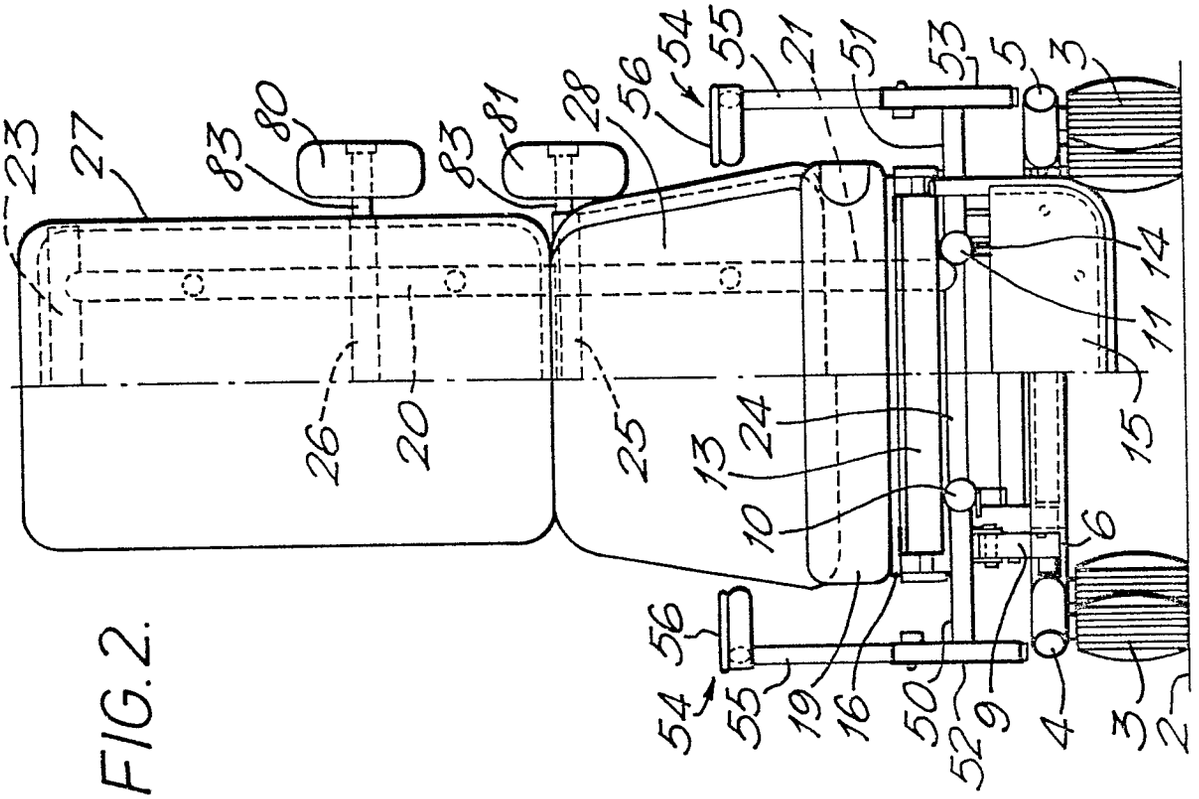


FIG.2.

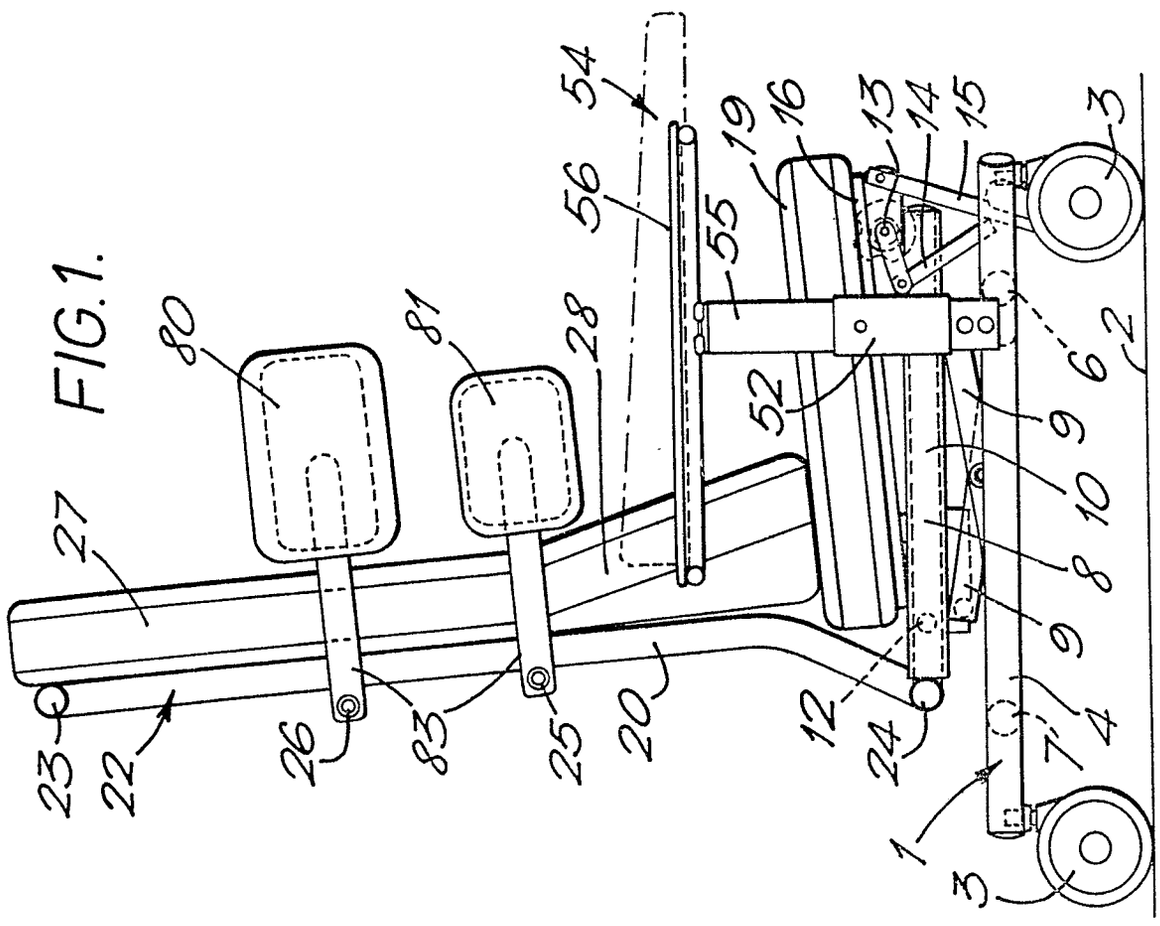
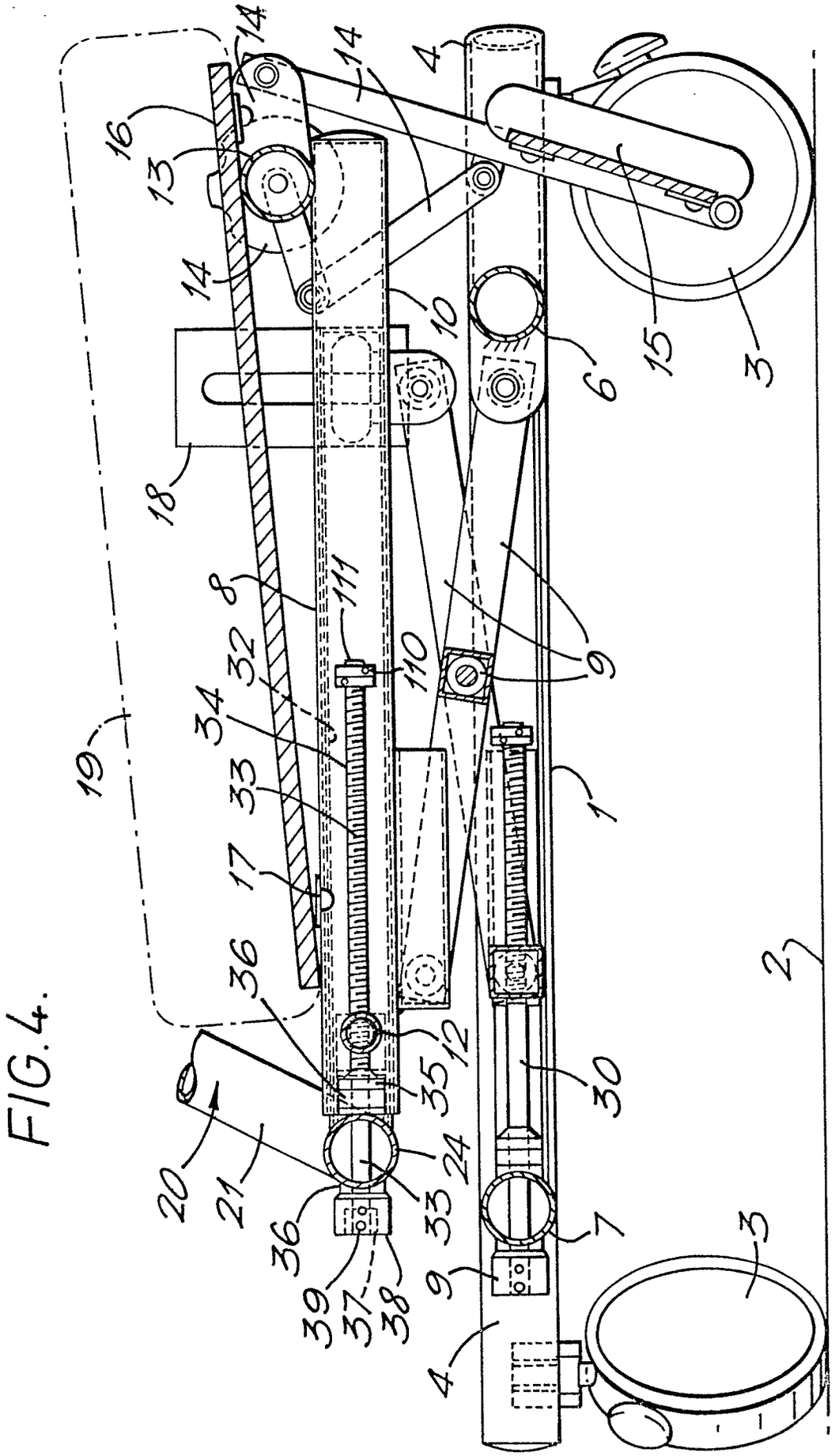


FIG.1.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21
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9
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FIG.4.

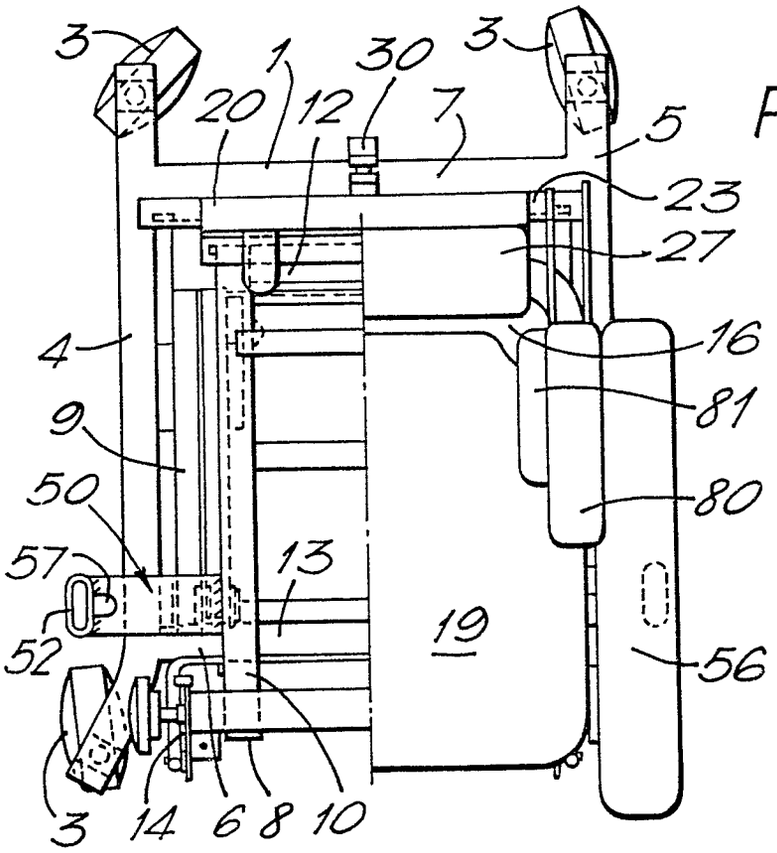
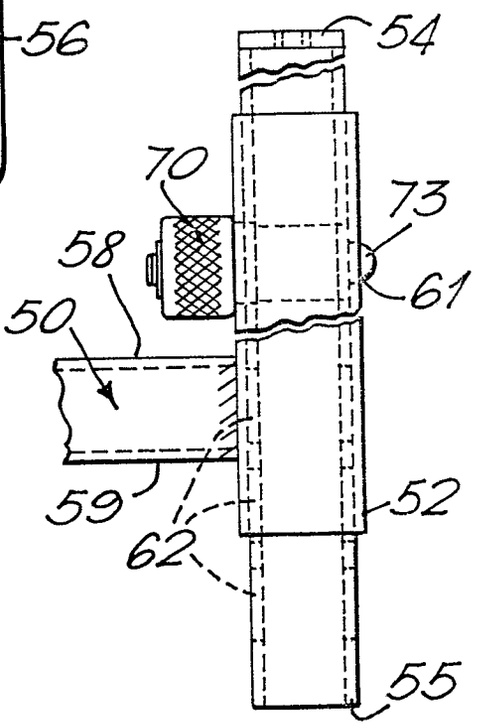


FIG.3.

FIG.5.



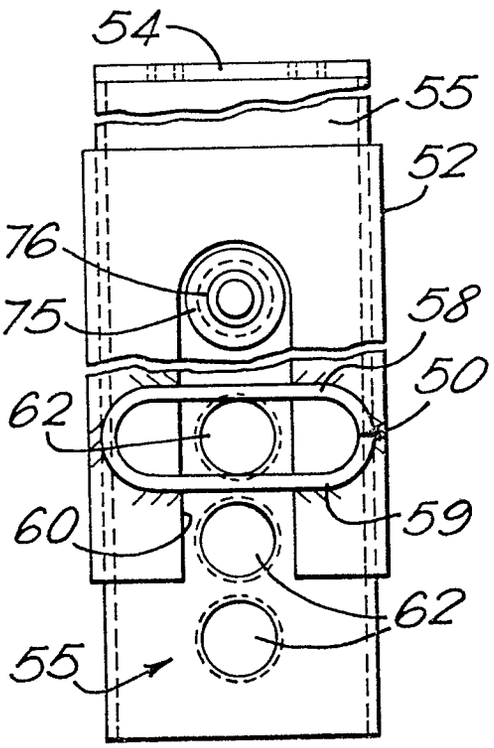


FIG.7.

FIG.6.

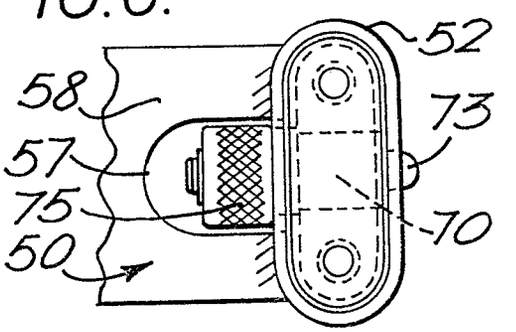


FIG.8.

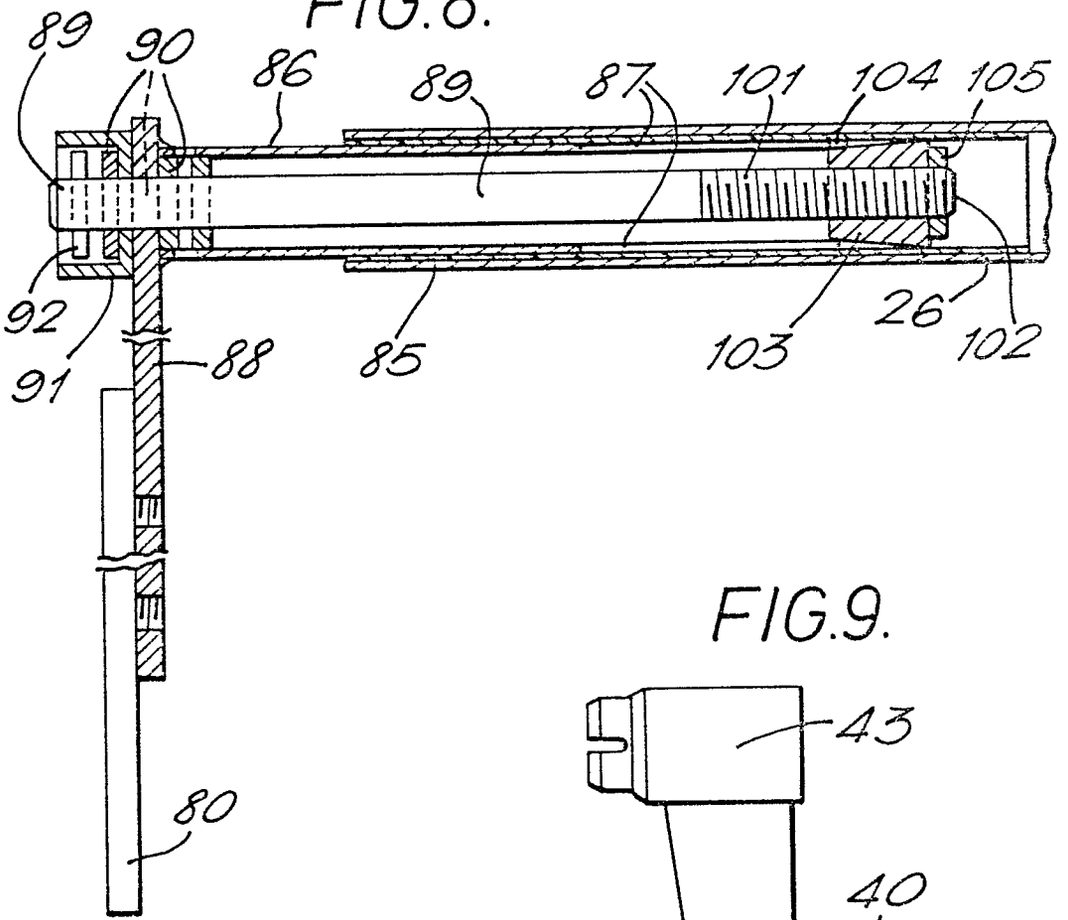


FIG.9.

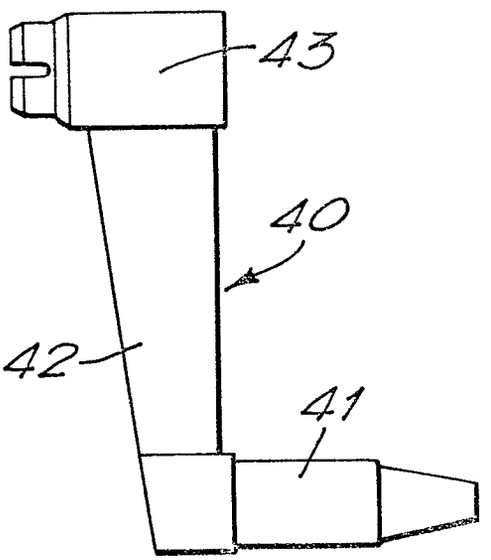


FIG.10.