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(54) Improved wheelchair

(57) Improved wheelchair of the folding type which consists at least of a frame (2) with wheels (3-4), which frame (2) mainly consists of two side frames (2) which are connected to each other by means of a linking mechanism (13), whereby a seat covering (5) and two foot supports (11) are provided on said frame (2) and a back support (9) formed of two pusher rods (7) in between which is provided a back covering (9), which pusher rods (7) are provided on extending parts (17) of the side frames (12), characterised in that the above mentioned foot supports (11) are provided on extending parts (18) of the side frames (12) as well.

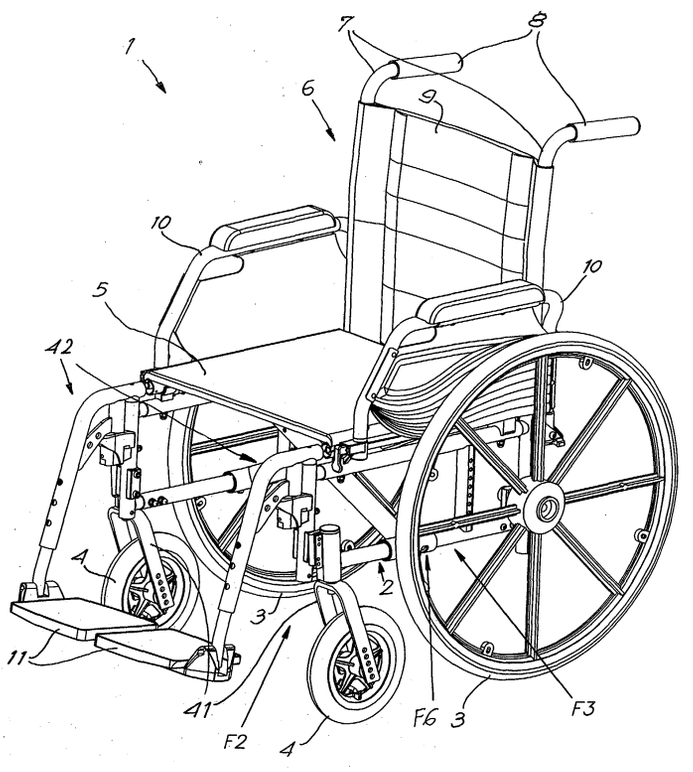

Fig.1

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Description

[0001] The present invention concerns an improved wheelchair.

[0002] In particular, the invention concerns a wheelchair of the folding type which consists at least of a frame with wheels, which frame mainly consists of two side frames which are connected to each other by means of a linking mechanism, whereby a seat covering and two foot supports are provided on said frame and a back support formed of two pusher rods in between which is provided a back covering.

[0003] Wheelchairs are already known whereby the above-mentioned pusher rods can be adjusted in height and whereby the pusher rods are provided on extending parts of the aforesaid side frames, such that the above-mentioned back support can be moved up and down and can also be adjusted more to the front or more to the back, in order to improve the sitting comfort of the wheelchair.

[0004] With these known wheelchairs, the foot supports are fixed to the frame or they are provided in such a manner that they can be hardly or not moved to the front or to the back.

[0005] Although the above-mentioned adjustment facilities of the back support of the known wheelchairs is usually sufficient to obtain a good sitting comfort, it often occurs that in certain cases, for example in the case of persons having extra long legs or a specific handicap, the foot supports are situated too much to the front or too much to the back, so that these persons will necessarily feel uncomfortable in such known wheelchairs due to a lack of sufficient adjustment facilities.

[0006] The present invention aims to remedy the above-mentioned and other disadvantages by providing an improved wheelchair which makes it possible to move the foot supports to the front and to the back as well, so that such a wheelchair can be used with a maximum sitting comfort by anyone.

[0007] To this end, the invention concerns an improved wheelchair of the above-mentioned folding type which consists at least of a frame with wheels, which frame mainly consists of two side frames which are connected to each other by means of a linking mechanism, whereby a seat covering and two foot supports are provided on said frame and a back support formed of two pusher rods in between which is provided a back covering, which pusher rods are provided on extending parts of the side frames, and whereby also the above-mentioned foot supports are provided on extending parts of the side frames.

[0008] Such an improved wheel chair according to the invention makes it possible to adjust the position of the above-mentioned foot supports, for example to the length of the legs of a person taking place in the wheelchair.

[0009] In order to better explain the characteristics of the invention, the following preferred embodiment of an improved wheelchair according to the invention is described as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 schematically represents an improved wheelchair according to the invention in perspective;
figures 2 and 3 represent the parts indicated by F2 and F3 respectively in figure 1;
figure 4 represents a view as in figure 3, but in a partially disassembled condition;
figure 5 represents the part indicated by F5 in figure 4 to a larger scale;
figure 6 represents the part indicated by F6 in figure 2 to a larger scale, but seen from a different angle;
figure 7 represents a view as in figure 6, but in a partially disassembled condition;
figures 8 and 9 represent sections according to the lines VIII-VIII and IX-IX respectively in figure 6 to a larger scale;
figure 10 represents the frame of figure 2 when folded.

[0010] Figure 1 represents a folding wheelchair 1 according to the invention which mainly consists of a folding frame 2, as represented in figure 2, and wheels 3 and 4 on this frame 2 which can be adjusted in height; a seat covering 5; a back support 6 formed of two pusher rods 7 which can be adjusted in height and which are provided with backward directed handgrips 8 in between which is provided a back covering 9; two arm supports 10; and finally two folding foot supports 11.

[0011] The frame 2 mainly consists of two parallel and similar, preferably rectangular side frames 12 which are connected to each other by means of a linking mechanism 13.

[0012] The side frames 12 mainly consist of a centre part which is formed of two horizontal tubes, 14 and 15 respectively, connected at a distance from each other by means of a cross connection 16, and of two extending parts, a rear extending part 17 and a front extending part 18 respectively, which are each formed of an upward directed tube, 19 and 20 respectively, onto which are fixed two parallel and radially directed pins 21 and 22 at a distance from each other.

[0013] The above-mentioned pins 21 and 22 have such dimensions and shapes that they can telescopically work in conjunction with the tubes 14, 15 respectively, and they are positioned such on the upward directed tubes 19-20 that the centre distance between the pins 21-22 of an end part 17-18 is equal to the centre distance between the horizontal tubes 14-15 of the side frames 12.

[0014] In the pins 21 and 22 are provided radial passages 23 provided at regular distances from each other and which, in the case of the figures, are horizontally directed as far as the lower pins 21 are concerned and

are vertically directed as far as the upper pins 22 are concerned.

[0015] Also in the far ends of the tubes 14-15 are provided one or several radial passages 24 which are directed in the same manner, as far as the lower tubes 14, the upper tubes 15 respectively are concerned, as the passages 23 in the lower tubes 14, the upper tubes 15 respectively.

[0016] The end parts 17-18 are provided on the centre parts 13 with their pins 21-22, whereby the pins 21-22 are shifted in the tubes 14-15, and whereby these pins 21-22 are locked in a specific axial position in the tubes 14-15 by means of one or several bolts 25 provided through the passages 23-24 and which are provided with a lock nut 26.

[0017] Around each of the lower tubes 14 is provided a hinge-mounted bush 27 of the linking mechanism 13, which bush 27 is provided with a transversally directed groove 28 extending over a certain angle.

[0018] A sliding sleeve 29 is preferably provided concentrically in each bush 27, made of a material having little shear resistance, such as Teflon or the like, which has been cut lengthwise along a descriptive and which is provided with a transversally directed groove 30 in a manner analogous to that of the bush 27, and which is provided with a standing edge 31 along the perimeter of said groove 30, extending along the edge of the groove 28 in the bush 27.

[0019] The tubes 14 are provided with a radially directed protrusion, for example in the shape of a case 32 fixed on the tube 14 by means of a rivet 33 or the like, which protrusion extends through the grooves 28 and 30 of the bush 27 and the sliding sleeve 29 concerned.

[0020] The above-mentioned linking mechanism 13 which connects the side frames 11 to each other consists of two crossed rods 34 and 35 which are hinge-mounted to each other in a central point and which are each fixed radially on the above-mentioned bushes 27 with one far end by means of welding or the like, while two horizontal tubes 36 are fixed on the other far ends of these rods 34-35, also by means of welding or the like, onto which the above-mentioned seat covering 5 has been provided.

[0021] The frame 2 is provided with means which make it possible to support the frame 2 when unfolded and ready for use as represented in figure 1, whereby these means are for example formed of supporting blocks 37-38 which can work in conjunction with the tubes 36 of the linking mechanism 12, and which are fixed on the upper tubes 15 by means of the above-mentioned bolts 25, whereby the supporting blocks 37 are provided with a locking mechanism 39 for the arm supports 10.

[0022] The tubes 34 and 35 are connected to the upper tubes 15 of the side frames 12 by means of coupling units which are not represented in the figures, in order to maintain the frame 12 together.

[0023] The rear wheels 3 are fixed in a known manner to the upward directed tubes 19 of the rear extending parts 17 by means of supports 40 which can be adjusted in height, while the front wheels 4 can be mounted at different heights in forks 41 which can be turned laterally, fixed on the front extending parts 18.

[0024] The pusher rods 7 which can be adjusted in height have been shifted in the upward directed tubes 19 with their rear ends, and they are fixed to them in a suitable manner.

[0025] Each of the above-mentioned folding foot supports 11 has been provided on a slantingly directed, tubular support 42 whose top part 43 has been bent horizontally, which top part 43 has been provided with a downward directed journal 44 which has been provided in a rotating manner in the upper end of the upward directed tube 20 of the front extending part 18, while the lower part 45 of the tubular support 42 has been made telescopic, and the foot support 11 concerned has been provided in a folding manner on this telescopic part 45.

[0026] The supports 42 of the foot supports 11 are provided with a suitable locking mechanism 46.

[0027] The use of a wheelchair 1 according to the invention is very simple and as follows.

[0028] It is clear that the wheelchair 1 according to the invention has multiple adjustment facilities which make it possible to optimally adjust the configuration of the wheelchair 1 to the figure and stature of a person in the wheelchair 1 and of a person who is to manipulate the wheelchair 1.

[0029] Apart from the known adjustment facilities of known wheelchairs, including moving the back support 6 to the front or to the back, a wheelchair 1 according to the invention is additionally provided with an adjustment facility for the front and backward position of the foot supports 11.

[0030] Said position of the foot supports 11 can indeed be changed in a very simple manner by loosening the bolts 25 and the lock nuts 26 of the front extending parts 18 and by temporarily removing them, after which the front extending parts 18 concerned, together with the foot supports 11 fixed on them, can be moved to the front or to the back into a desired position, after which the extending parts 18 can then be locked in their new position by mounting the bolts 25 and the lock nuts 26 again.

[0031] In this manner, the position of the foot supports 11 can be adjusted as desired, so that for example also persons having extra long legs can use such a wheelchair 1 in a comfortable manner.

[0032] A wheelchair 1 according to the invention can also be easily folded by pulling the tubes 36 of the linking mechanism 13 up, starting from the situation of figure 1, so that, as a result of the movement of the linking mechanism 13 and the connection of the bushes 27 of the linking mechanism 13 with the side frames 12, these side frames 12 are joined together, as represented in figure 10.

[0033] During this movement, the above-mentioned

bushes 27 will rotate around the tubes 14, whereby the bushes 27 are kept in place in the axial direction, thanks to the cases 32 which are fixed on the tubes 14 through the grooves 28 and 30.

[0034] With the known wheelchairs, the bushes 27 are kept in place in the axial direction as these bushes 27 are being held between two protrusions of the tubes 14, as a result of which the mounting and dismounting of these bushes 27 in the case of a known wheelchair is more difficult than in the case of a wheelchair 1 according to the invention.

[0035] It is clear that an improved wheelchair 1 according to the invention must not necessarily have all the above-described adjustment facilities, and that also on simpler wheelchairs, for example on wheelchairs with wheels which are not adjustable in height, the foot supports 11 can be provided on extending parts 18 of the side frames 12.

[0036] Moreover, the foot supports 11 must not necessarily be laterally rotatable or folding, and they may be provided directly on the extending parts 18, without the intervention of a telescopic support 42.

[0037] Although the extending parts 17-18 can be held in a certain position on the tubes 14-15 by means of the above-mentioned bolts 25 and lock nuts 26, it is not excluded to provide other means which make it possible to lock these extending parts in at least two positions in relation to the tubes 14-15, for example by means of an adjustable clamped joint or the like.

[0038] The invention is by no means limited to the above-described embodiment given as an example and represented in the accompanying drawings; on the contrary, such an improved wheelchair 1 according to the invention can be made in all sorts of shapes and dimensions while still remaining within the scope of the invention.

Claims

1. Improved wheelchair of the folding type which consists at least of a frame (2) with wheels (3-4), which frame (2) mainly consists of two side frames (2) which are connected to each other by means of a linking mechanism (13), whereby a seat covering (5) and two foot supports (11) are provided on said frame (2) and a back support (9) formed of two pusher rods (7) in between which is provided a back covering (9), which pusher rods (7) are provided on extending parts (17) of the side frames (12), **characterised in that** the above-mentioned foot supports (11) are provided on extending parts (18) of the side frames (12) as well.

2. Improved wheelchair according to claim 1, **characterised in that** the side frames (12) at least consist of two parallel, horizontal or practically horizontal tubes (14-15) connected to each other at a distance by means of at least one cross connection (16).

3. Improved wheelchair according to claim 2, **characterised in that** the above-mentioned extending parts (17-18) of the side frames (12) are each formed of an upward directed tube (19-20) onto which are fixed parallel pins (21-22) at a distance from each other, whereby these pins (21-22) can telescopically work in conjunction with the above-mentioned horizontal tubes (14-)15 of the side frames (12).

4. Improved wheelchair according to claim 3, **characterised in that** the centre distance between the pins (21-22) of the above-mentioned extending parts (17-18) is equal to the centre distance between the horizontal tubes (14-15) of the side frames (12).

5. Improved wheelchair according to claim 1, **characterised in that** it is provided with means which make it possible to lock the above-mentioned extending parts (17-18) in at least two positions in relation to the horizontal tubes (14-15) of the side frames (12).

6. Improved wheelchair according to claim 4, **characterised in that** one or several radial passages (23-24) are provided in the horizontal tubes (14-15) of the side frames (12) and in the pins (21-22) of the extending parts (17-18).

7. Improved wheelchair according to claim 5 and 6, **characterised in that** the above-mentioned means for locking the extending parts (17-18) are formed of one or several bolts provided through the above-mentioned passages (23-24) in the horizontal tubes (14-15) of the side frames (12) and in the pins (21-22).

8. Improved wheelchair according to claim 3, **characterised in that** each of the above-mentioned foot supports (11) is provided on a support (42) which is provided in a journal (44) which is hinge-mounted in the upward directed tube (20) of an extending part (18) of a side frame (12).

9. Improved wheelchair according to claim 1, **characterised in that** around the lower horizontal tube (14) of each side frame (12) is provided a hinge-mounted bush (27) of the linking mechanism (13), which bush (27) is provided with a transversally directed groove (28) extending over a certain angle, whereby a protrusion is provided on the lower tube (14) concerned extending through the above-mentioned groove (28).

10. Improved wheelchair according to claim 9, **characterised in that** the above-mentioned protrusion on

a lower tube (14) concerned is formed of a case (32) which is radially fixed on the tube (14) concerned.

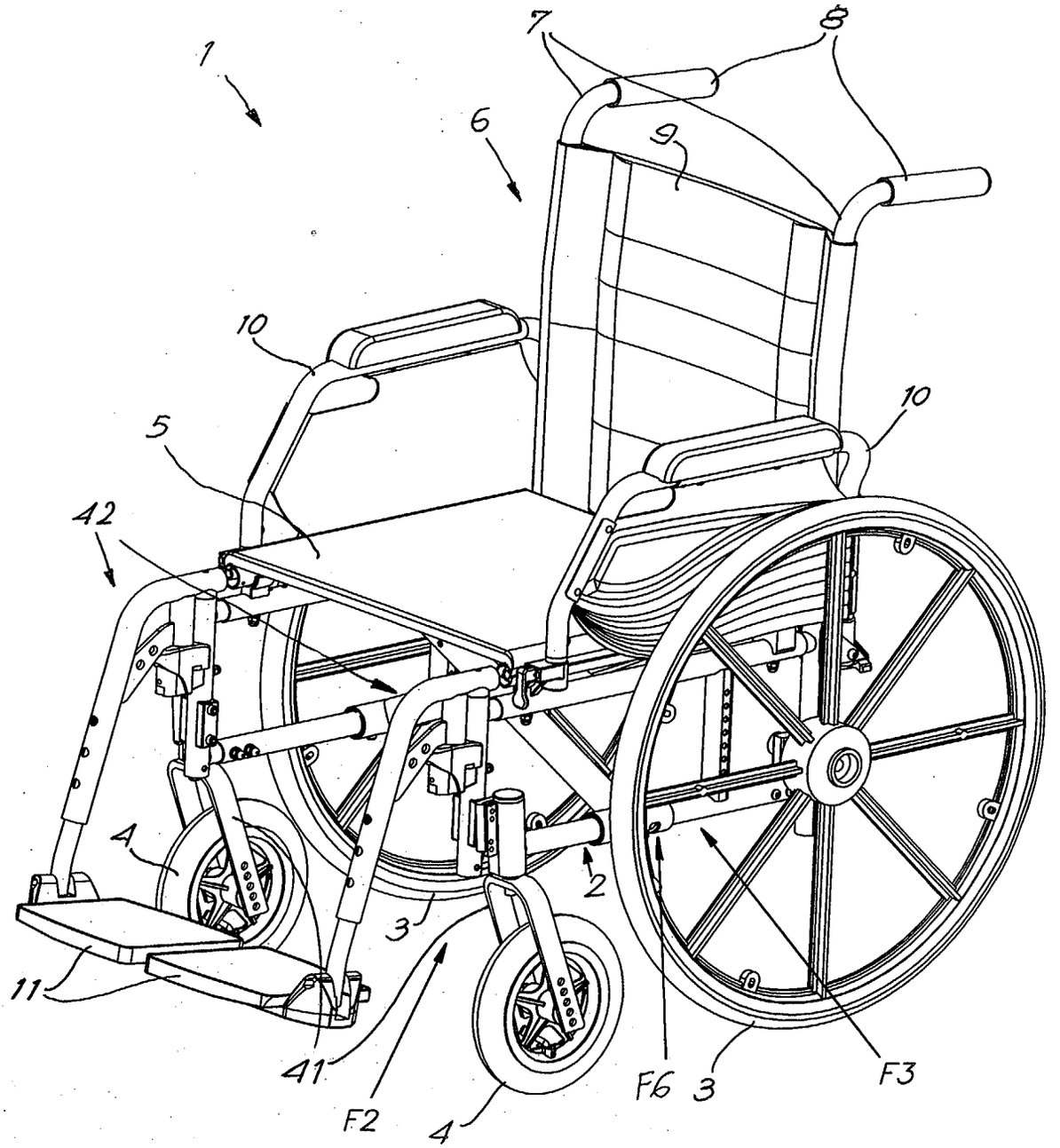

Fig. 1

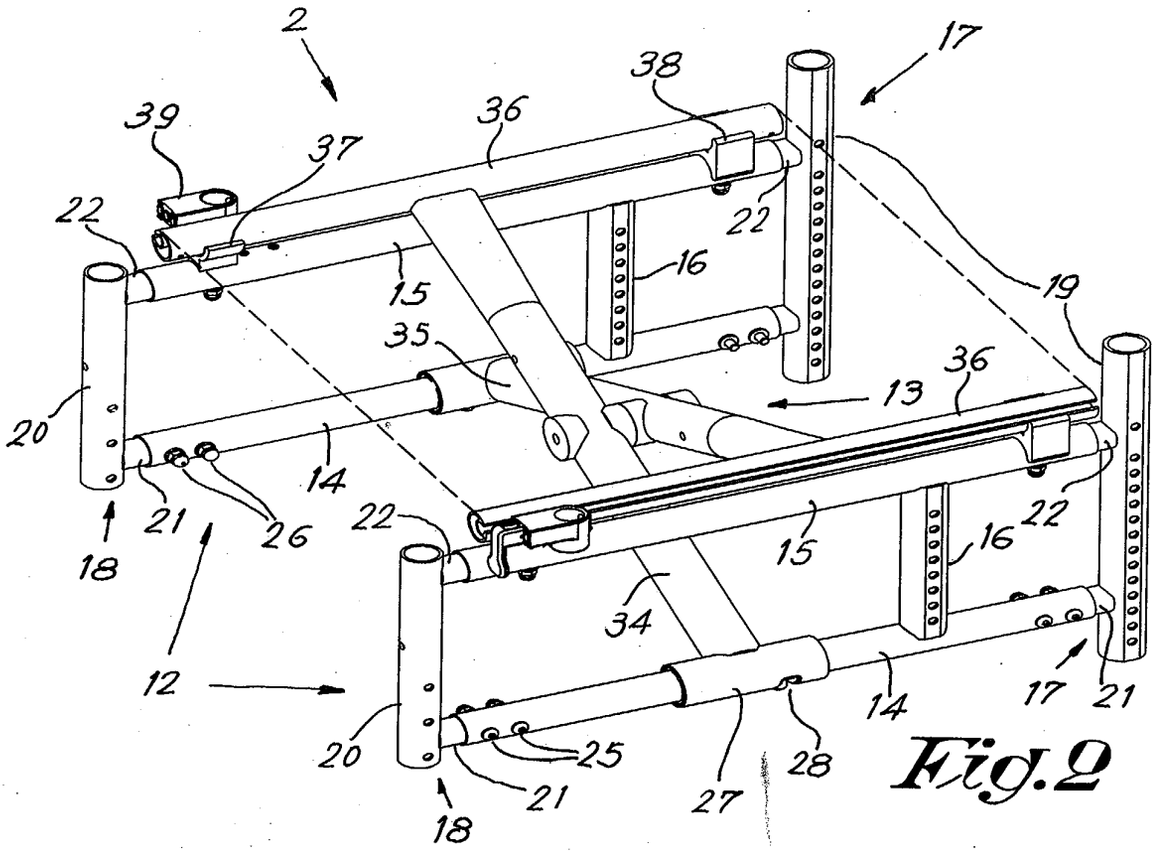
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Fig.2

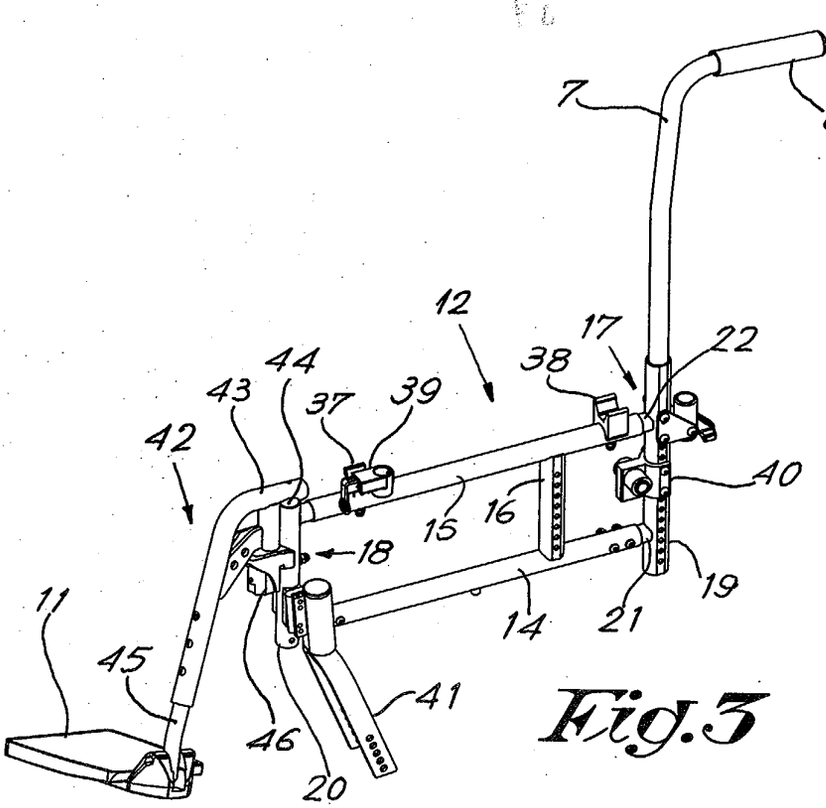
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Fig.3

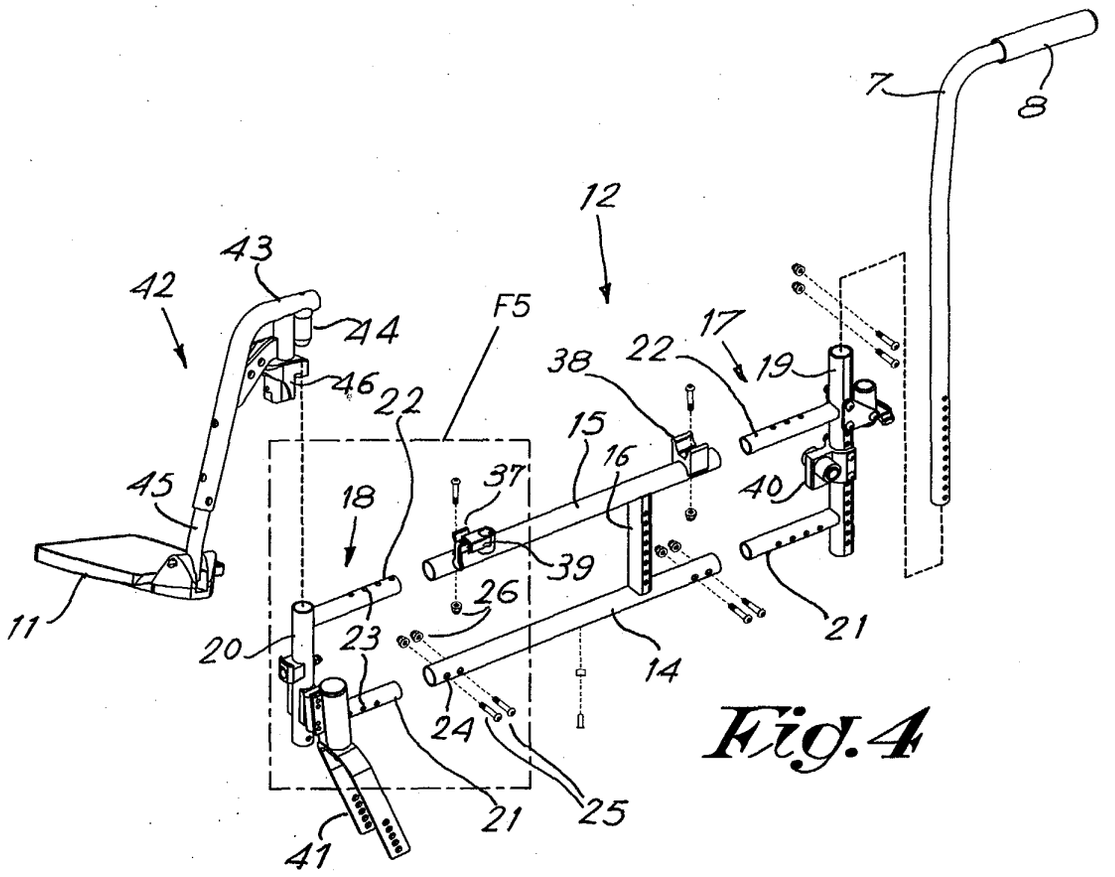
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Fig.4

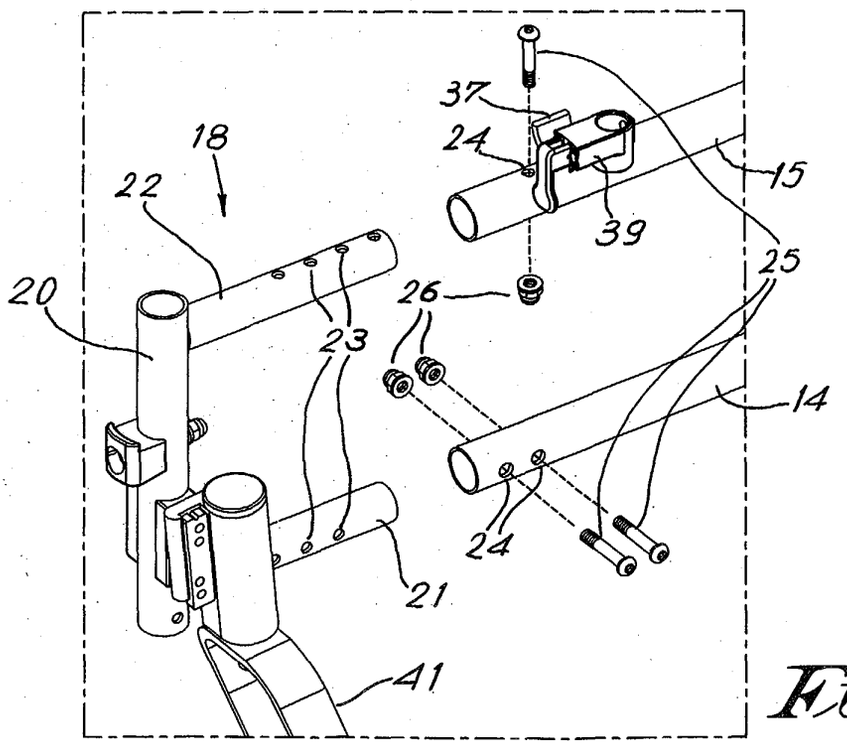
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Fig.5

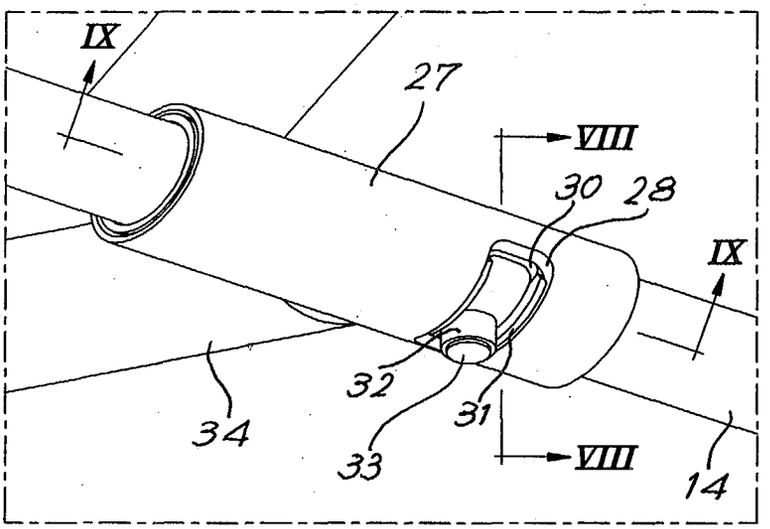

Fig.6

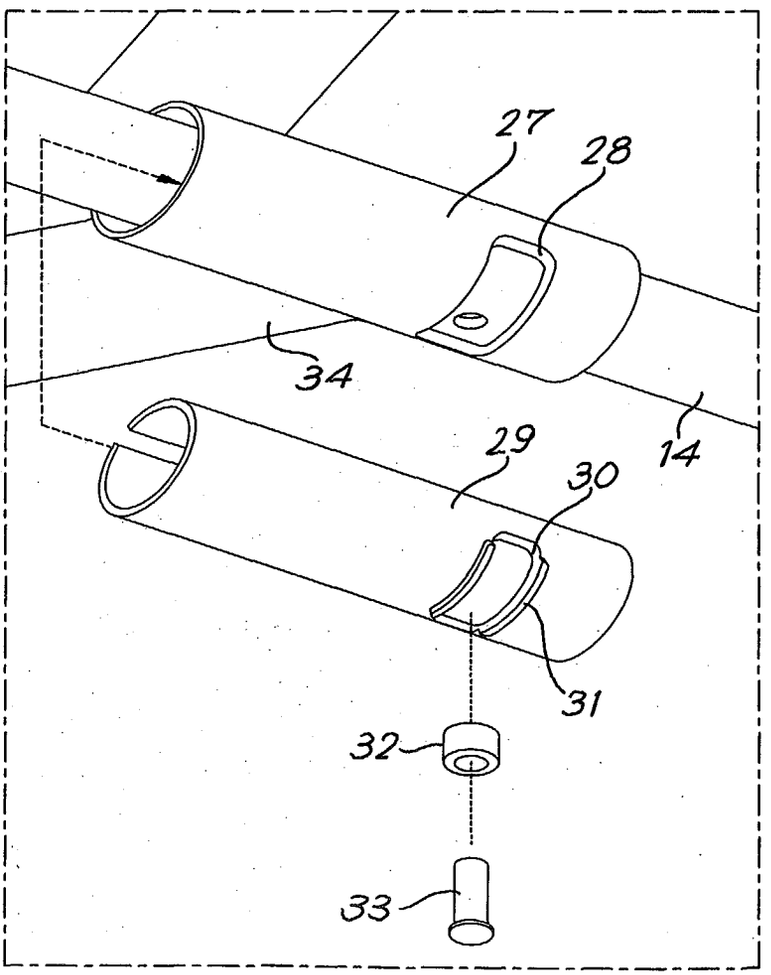

Fig.7

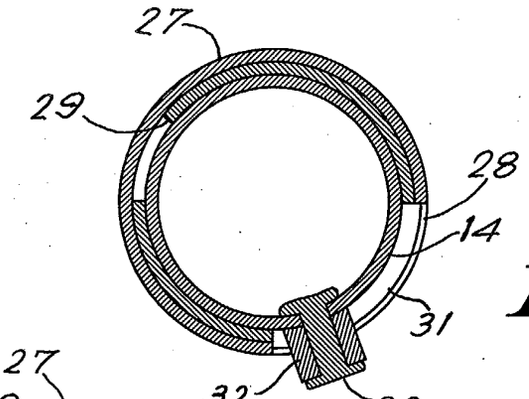

Fig.8

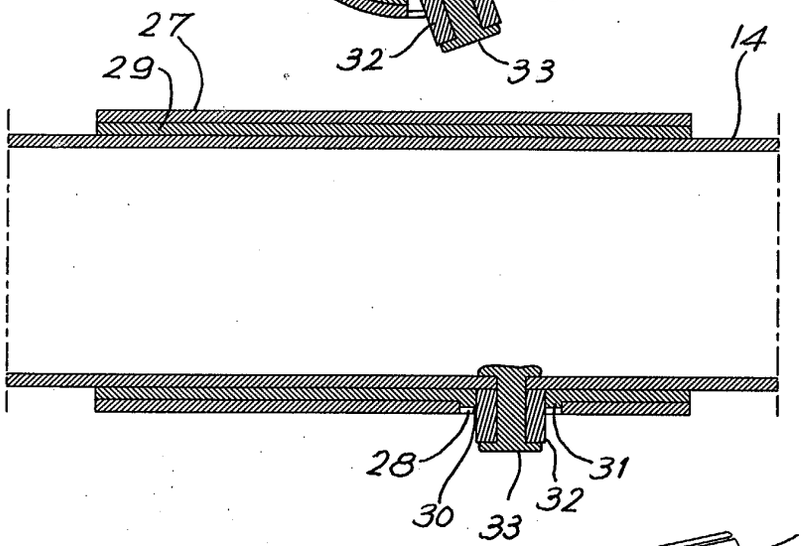

Fig.9

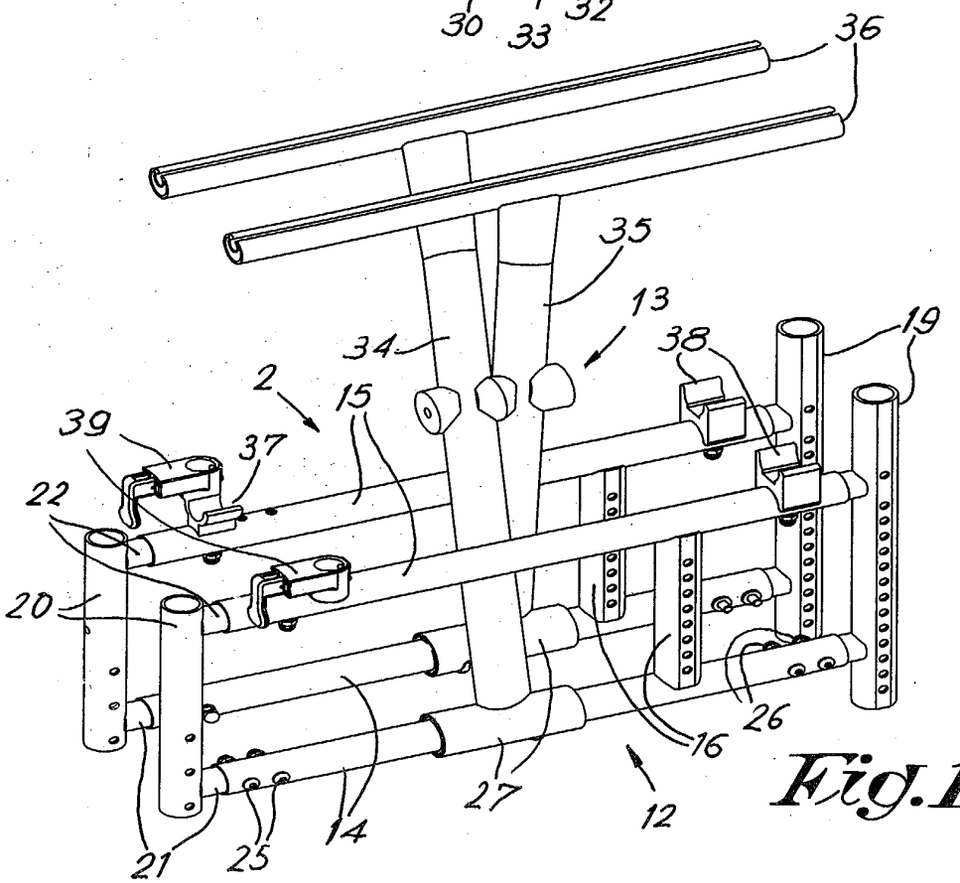

Fig.10

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Application Number
EP 04 07 5918

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	30 June 2004	Baert, F

CATEGORY OF CITED DOCUMENTS

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