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(54) WHEELCHAIR

(57) The proposed wheelchair comprises the following elements mounted on a frame (1): a folding back rest (2) with padding (3); arm rests (4); a seat (5); driving and front wheels (6 and 7 respectively) bearing a fork (8); and a foot rest (9). The wheelchair has connecting struts (10), rods (11), sleeves (12) connected to the frame (1) and provided with linings (13) with a spring-loaded button (14), the latter having a machined recess (15) on its inner surface. The frame (1) comprises two sections (16) connected transversely by connecting struts (10) and fitted so as to allow adjustment of the width of the seat (5). The back rest (2) has two upright elements (17) separated transversely, connected to one another by connecting struts (10) and mounted on the upper surface of each section (16) of the frame (1) so as to articulate. The axis (18) of the fork (8) is connected to the lining (13) by a locator containing rotating bodies (19) located in apertures in the annular groove (20) in the axis (18) of the fork (8) and in apertures in the lining (13). The spring-loaded button (14) can cover the apertures housing the rotating elements (19) and force them into the machined recess (15) when the button (14) is displaced.

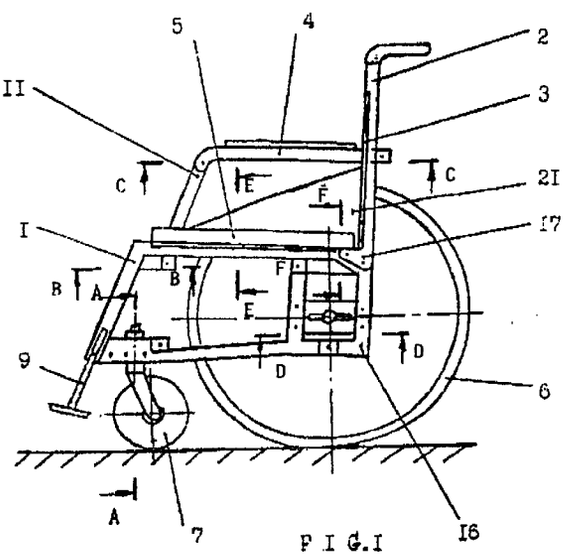

FIG.1

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Description

Technical Field

The present invention relates to construction of invalid wheelchairs intended for moving disabled persons with disturbed motor functions of the lower limbs.

Background Art

One state-of-the-art invalid wheelchair is known to comprise an upholstered folding back, elbow rests, a seat, driving wheels, front wheels carrying the fork, and a footboard (GB Patent # 1,339,992, Cl. B62D 57/02, 1973).

The known invalid wheelchair suffers from too a sophisticated construction, an increased weight of the frame, and is inconvenient in use.

Disclosure of the Invention

The invention has for its principal object to simplify the construction of the proposed invalid wheelchair and to render its use more convenient.

The essence of the present invention resides in that the wheelchair has bracing struts, pitmans, sockets connected to the frame and accommodating sleeves with a spring-actuated button which has a recess on its inner surface, while the frame is made up of two pieces transversely interconnected through bracing struts and adapted for adjusting the seat for width; the back comprises two pillars articulated to the top surface of each of the frame pieces and spaced apart transversely from each other, said pillars being interconnected through bracers; the upholstery is arranged on the surface of the pillars that faces the seat; the pitmans are articulately mounted on the top surface of each of the frame pieces, while the pitman and the pillar of each of the frame pieces are connected to the elbow rest so as to establish a parallel crank motion; the fork axle is associated with the sleeve through a retainer which comprises solids of revolution arranged in an annular groove provided in the fork axle and in the holes of the sleeve, and the spring-actuated button is adapted to cover the holes which accommodate the solids of revolution so that the latter engage the recess in the button when the latter is moving.

It is expedient that the wheelchair be provided with guards located on the frame pieces and the pillars of the back and made of an elastic material.

It is likewise expedient that the sockets be connected to the frame by means of straps. It is necessary that the struts, pitmans, elbow rests, frame pieces, and pillars be made of light alloys, plastics, or composite materials.

Practical application of the invention will help simplify the wheelchair construction and render its use more convenient.

Brief Description of the Drawings

In what follows the present invention is explained in the disclosure of exemplary embodiments thereof given by way of illustration to be taken in conjunction with the accompanying drawings, wherein:

FIG.1 is a general view of the invalid wheelchair, according to the invention;

FIG.2 is a section taken on the line A-A, according to the invention;

FIG.3 is a section taken on the line B-B according to the invention;

FIG.4 is a section taken on the line C-C according to the invention;

FIG.5 is a section taken on the line D-D according to the invention;

FIG.6 is a section taken on the line E-E according to the invention; and

FIG.7 is a section taken on the line F-F according to the invention.

Best Method of Carrying Out the Invention

The invalid wheelchair proposed herein comprises a frame 1 which carries a folding back 2 provided with an upholstery 3, elbow rests 4, a seat 5, driving wheels 6, front wheels 7 carrying a fork 8, and a footboard 9 (FIG.1).

The wheelchair has bracing struts 10, pitmans 11, sockets 12 connected to the frame 1 and accommodating sleeves 13 with a spring-actuated button 14 which has a recess 15 on its inner surface (FIGS.1, 2).

The frame 1 is made up of two pieces 16 transversely interconnected through the bracing struts 10 and adapted for adjusting the seat 5 for width; the back 2 comprises two pillars 17 articulated to the top surface of each of the pieces 16 of the frame 1 and spaced apart transversely from each other, said pillars being interconnected through bracing struts 10.

The upholstery 3 is arranged on the surface of the pillars 17 that faces the seat 5, while the pitmans 11 are articulately mounted on the top surface of each of the pieces 16 of the frame 1.

The pitman 11 and the pillar 17 of each of the pieces 16 of the frame 1 are connected to the elbow rest 4 so as to establish a parallel crank motion (FIG.1).

An axle 18 of the fork 8 in associated with the sleeve 13 through a retainer which comprises solids 19 of revolution arranged in an annular groove 20 provided in the axle 18 of the fork 8 and in the holes of the sleeve 13, and the spring-actuated button 14 is adapted to cover the holes which accommodate the solids 19 of revolution so that the latter engage the recess 15 in the button 14 (FIG.2) when the latter is moving.

The wheelchair is provided with guards 21 located on the pieces 16 of the frame 1 and on the pillars 17 of the back 2, said guards being made of an elastic material.

The sockets 12 are connected to the frame 1 by means of straps 22 (FIG.2).

The elbow rests 4, struts 10, the pitmans 11, the pieces 16 of the frame 1, and the pillars 17 are made of light alloys, plastics, or composite materials.

The wheelchair has also springs 23 and bearings 24. Annular grooves 25 (FIG.2) are provided for the straps 22.

Provision is also made in the wheelchair proposed herein for hinge joints 26, 27, strips 28, screws 29, nuts 30, screws 31, a nut 32, and seat upholstery 33 (FIGS.3-7).

The pieces 16 of the frame 1 are similar in shape and size and feature an equally strong open thin-walled profile.

Provision of the wheelchair construction elements made of light alloys, plastics, or composite materials and manufactured by the casting or moulding technique helps reduce labor consumption required for wheelchair manufacture and produce a lighter, adequately rigid and cheap wheelchair construction.

The bracing struts 10 are unequal in length, whereby the structural dimensions of the wheelchair can be varied so as to use it in both child and adult versions.

Use of elastic materials for the guards 21 and the folding back 2, as well as provision of the quick-to-remove driving wheels 6 and the front wheels 7 enables the wheelchair to be rapidly and conveniently folded down to minimum overall dimensions for transportation.

Use of the proposed wheelchair is made as follows.

To remove the front wheel 7 together with the fork 8, the button 14 is let to move down so that the recess 15 be opposite to the solids 19 of revolution (i.e., balls).

Then the fork 8 is pulled down while keeping the button 14 in position, with the result that the edge of the annular groove 20 forces the solids 19 of revolution into the recess 15, thus releasing the axle 18 of the fork 8 for its being extracted from the sleeve 13, whereupon the button 14 is released.

For the front wheel 7 to be reinstalled on the frame 1, the button 14 is lowered and the axle 18 of the fork 8 is fitted into the sleeve 13 until the axle rests against the sleeve end. Next the button 14 is released, with the result that the edge of the recess 15 forces the solids 19 of revolution from the sleeve 15 into annular groove 20. While moving further the button 14 locks the solids 19 of revolution, thus preventing them from disengaging the annular groove 20 in case of inadvertent pulling down of the axle 18.

The user travels on the wheelchair by rotating manually the driving wheels 6.

Thus, the invention simplifies the construction of wheelchair and renders its use more convenient.

Industrial Applicability

The invention can find application in the manufacture of invalid wheelchairs.

Claims

1. An invalid wheelchair, comprising a frame (1) carrying a folded back (2) provided with an upholstery (3), elbow rests (4), a seat (5), driving wheels (6), front wheels (7) carrying a fork (8) and a footboard (9), CHARACTERIZED in that it has bracing struts (10), pitmans (11), sockets (12) connected to the frame (1) and accommodating sleeves (13) with a spring-actuated button (14) which has a recess (15) on its inner surface, while the frame is made up of two pieces (16) transversely interconnected through the bracing struts (10) and adapted for adjusting the seat (5) for width; the back (2) comprises two pillars (17) articulated to the top surface of each of the pieces (16) of the frame (1) and spaced apart transversely from each other, said pillars being interconnected through the bracing struts (10); the upholstery (3) is arranged on the surface of the pillars (17) that faces the seat (5); the pitmans (11) are articulately mounted on the top surface of each of the pieces (16) of the frame (1), while the pitman (11) and the pillar (17) of each of the pieces (16) of the frame (1) are connected to the elbow rest (4) so as to establish a parallel crank motion; the axle (18) of the fork (8) is associated with the sleeve (13) through a retainer which comprises solids (19) of revolution arranged in an annular groove (20) provided in the axle (18) of the fork (8) and in holes of the sleeve (13), and the spring-actuated button (14) is adapted to cover the holes which accommodate the solids (19) of revolution so that the latter could engage the recess (15) in the button (14) when the latter is moving.

2. A wheelchair as set forth in claim 1, CHARACTERIZED in that it has guards (21) located on the pieces (16) of the frame (1) and on the pillars (17) of the back (2) and made of an elastic material.

3. A wheelchair as set forth in claim 1, CHARACTERIZED in that the sockets (12) are connected to the frame (1) by means of straps (22).

4. A wheelchair as set forth in claims 1 through 3, CHARACTERIZED in that the elbow rests (4), the bracing struts (10), the pitmans (11), the pieces (16) of the frame (1), and pillars (17) are made of light alloys, plastics, or composite materials.

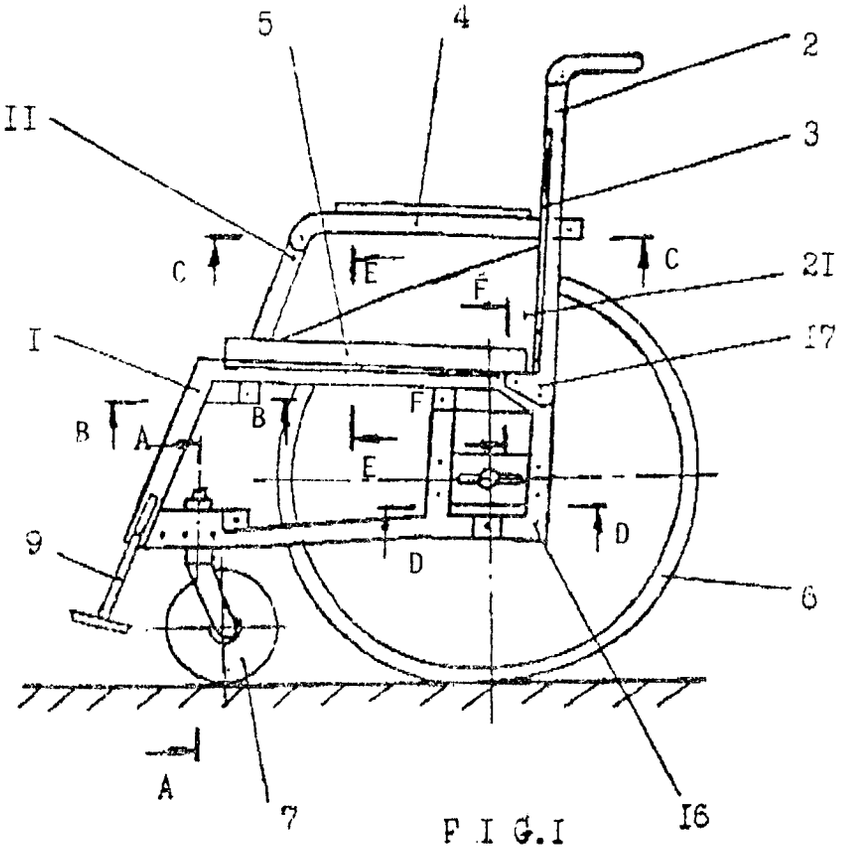


FIG.1

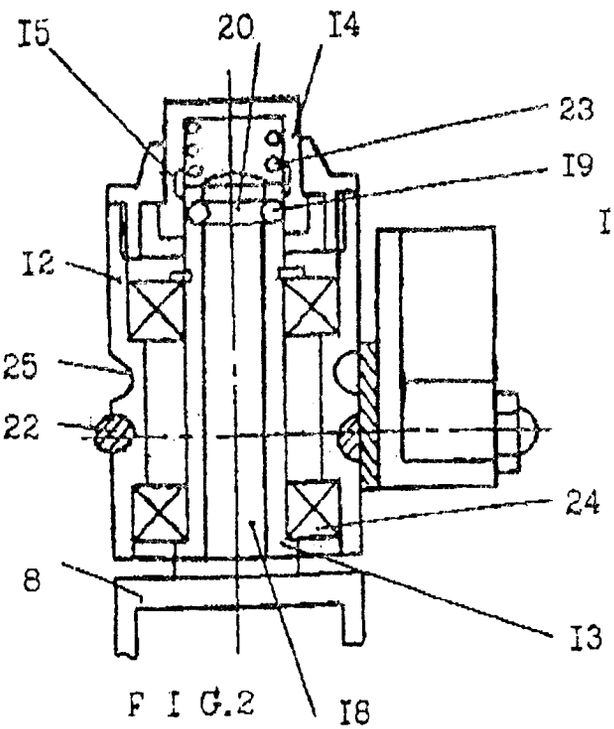


FIG.2

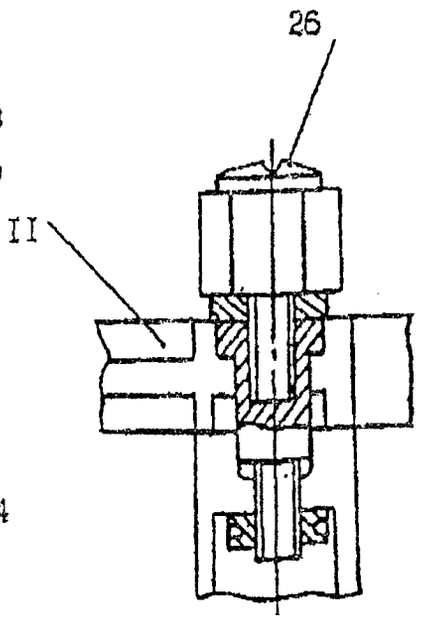
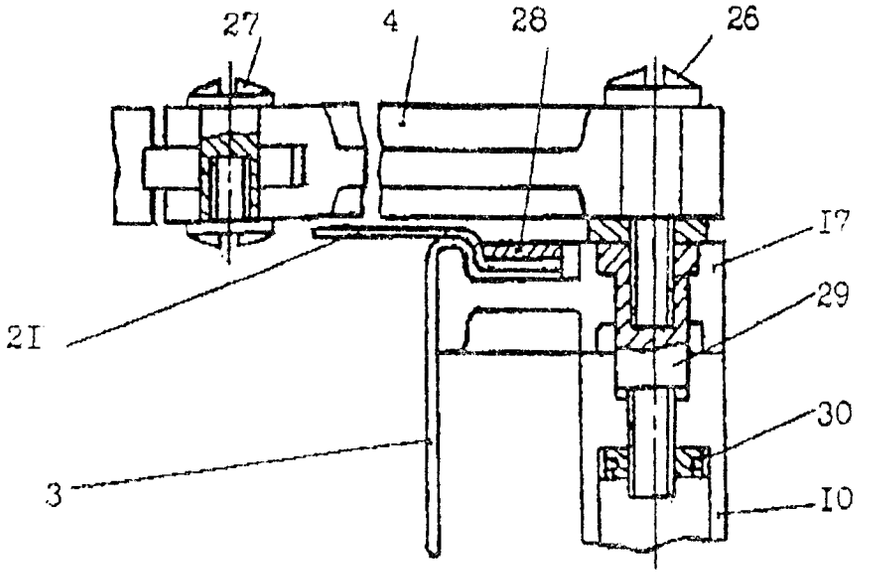


FIG.3



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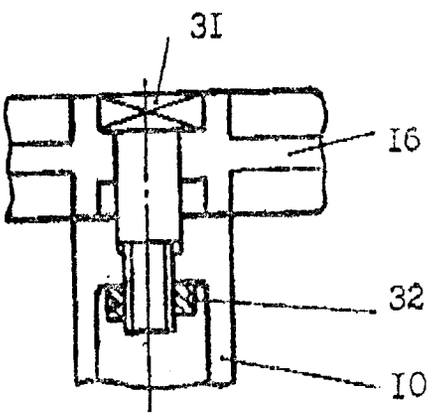

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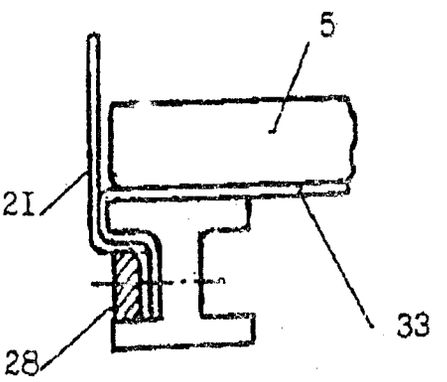

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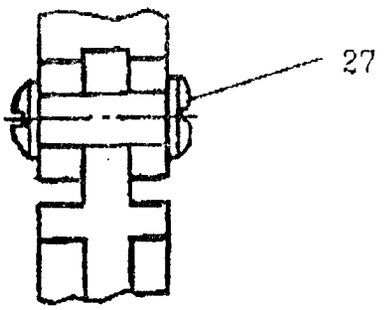

F I G.7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 96/00073

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61G 5/02, B62B 9/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6 A61G 5/00,5/02,5/08,5/10, B62B 9/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4679849 (JATAB,JAN TORGNY AB),14 July 1987 (14.07.87), figs. 1,5,6	1
A	US, A 4840390 (INVACARE CORPORATION), 20 June 1989 (20.06.89), figs. 1-2	1-4
A	WO, A1, 91/07936 (MARSHALL, PHILIP, GEOFFREY), 13 June 1991 (13.06.91), figs. 1-3	1

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
03 June 1996 (03.06.96)	11 June 1996 (11.06.96)
Name and mailing address of the ISA/ RU	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)