



(11) **EP 1 767 180 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.03.2007 Bulletin 2007/13

(51) Int Cl.:
A61H 3/04 (2006.01) A61H 3/00 (2006.01)

(21) Application number: **06019530.2**

(22) Date of filing: **19.09.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

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(30) Priority: **22.09.2005 EP 05020701**

(54) **Walking frame**

(57) A walking frame provided with a frame (1,2,3,10,11,12,13) that is supported on a number of wheels (4,5,14,15), and a harness (22) for supporting the user of the walking frame, whereby that the harness is

connected to the frame by a spring system which is orientated so that on the one hand it provides vertical support for the user, and on the other exerts a horizontal spring action on the user in the forward direction of movement.

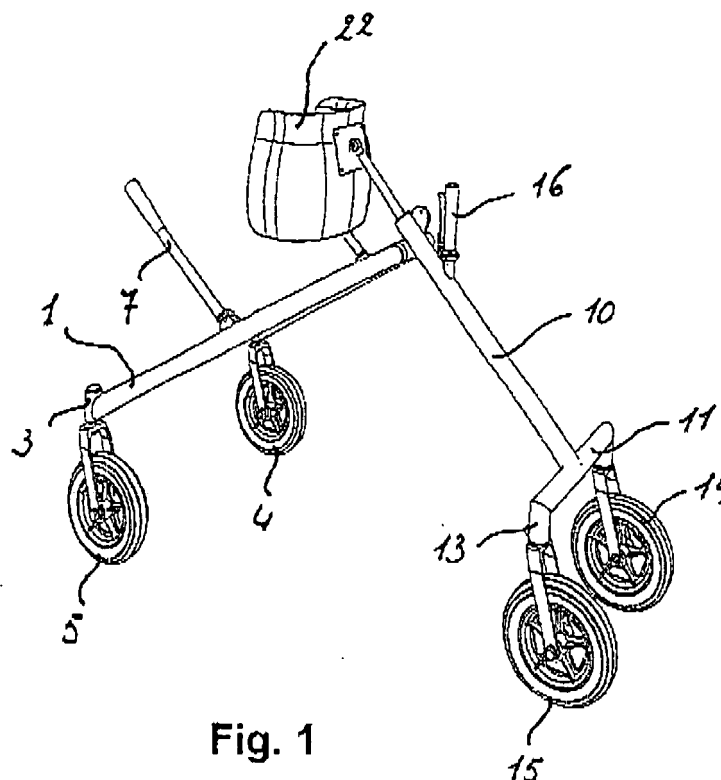


Fig. 1

Description

[0001] The invention relates to a walking frame provided with a frame that is supported on a number of wheels and a harness for supporting the user of the walking frame.

[0002] Such a walking frame is generally of prior art.

[0003] In the walking frame of prior art the user is generally supported vertically by means of a harness which is secured around his/her chest and is also supported by the frame of the walking frame. This prevents the user from assuming a kind of suspended position and there is no encouragement for the user to move forward or walk.

[0004] The object of the invention is to provide a walking frame of the above-mentioned type which encourages the user to walk.

[0005] This object is achieved according to the invention in that the harness is connected to the frame by means of a spring system which is orientated so that on the one hand it provides a vertical support for the user and on the other has a horizontal resilience in the forward direction of movement.

[0006] Because the spring system not only has the vertical component but also a horizontal component, the user is pushed forward, so to speak, causing the user to be pushed off balance, as it were, and is encouraged to take one step forward. As the user moves forward, this effect is increased.

[0007] The spring system preferably consists of a spring which forms an angle of 40 to 50 degrees to the plane of movement of the user.

[0008] Other characteristics and advantages will become clear from the following description with reference to the attached drawings. In the drawings Fig. 1 shows a perspective view, partially in side elevation and partially as a rear view, of an orthopaedic walking frame according to the invention.

[0009] Fig. 2 shows a perspective front view of the walking frame shown in Fig. 1, and

[0010] Fig. 3 shows a perspective view, partially as a rear view and partially in side elevation, of the walking frame shown in Fig. 1.

[0011] The walking frame such as that shown in Figures 1-3 comprises a U-shaped, bent tube 1, the surface of which, when the walking frame is in use, extends at an angle of approx. 45° to the surface on which the walking frame is to move. A tube section 2 and 3 respectively is secured to each free end of U-shaped tube 1, which tube section extends almost vertically when the walking frame is in use. A wheel, 4 and 5, is mounted at each tube end 2 and 3 respectively, so that each wheel 4, 5 rotate about a horizontal axis during the forward movement of the walking frame, and the whole of each wheel, consisting of the wheel, shaft and support strap is connected rotatably around a vertical axis to the associated tube section 2, 3.

[0012] A tube section 6, 7 is also secured to each leg

of U-shaped tube 1. Each tube section 6, 7 extends mainly outwards at an angle of approx. 90° to the surface of the U-shaped tube in the upward direction in the normal operating position of the walking frame. Tube sections 6, 7 may possibly be connected to the legs of the U-shaped tube so that this angle is adjustable and so that when the walking frame is in use the position of the tube sections can be adapted to the user of the walking frame. Handles 8, 9, made for example from rubber or plastic, are fitted to the free ends of tube sections 6, 7, in order to improve and facilitate the grip of the user.

[0013] A straight tube 10 is connected to the U-shaped tube near the central point of the bent part of U-shaped tube 1. The connection between tubes 1 and 10 is detachable so that the two tubes can be rotated relative to each other when a clamping mechanism is released, whereas in the fixed position of the damping mechanism the connection between tubes 1 and 10 is locked. This enables the two sections to be rotated relative to each other so that tube 10 lies in the plane of U-shaped tube 1 and the walking frame is folded up, so to speak. Such a clamping mechanism may be obtained quite simply, for example, by connecting tube 10 rotatably, by means of a bush, to tube 1 and by securing in position, over bush 1, a circular plate which can be connected by a pin or the like to tube 10. For this purpose holes may be made in the circular plate around its periphery and a corresponding hole made in tube 10. The angle between tubes 1 and 10 can therefore be adjusted, even when the position between the tubes is fixed.

[0014] A cross tube 11, which extends horizontally in the normal position of use of the walking frame, is mounted on the lower end of tube 10. A vertically directed tube section 12, 13 is secured to each free end of cross tube 11, in which section 12, 13, in turn a wheel assembly 14, 15 is mounted. In principle this wheel assembly is identical to assemblies 4 and 5, except that wheels 14, 15 cannot swivel but are rigid in terms of their orientation.

[0015] A brake lever 15 is secured near the top of tube 10. The brake lever is connected by a cable to a braking mechanism of prior art on wheels 14 and 15. The brake lever is designed so that it can be fixed in different positions to ensure that a controllable braking force is exerted on wheels 14, 15. This enables the force which must be exerted by the user to push the walking frame forward to be adjusted.

[0016] A rod 20, which rests with its lower end on a spring, not shown, fitted inside tube 10, is inserted in tube 10. To ensure that rod 20 is guided correctly inside tube 10, the inside of the top section of the tube is provided with rollers to form an axial bearing, so to speak, for rod 20. Means are fitted near the bottom of tube 10 for adjusting the force of the spring. This enables the resilience of the spring to be adapted to the weight and capabilities of the user.

[0017] The top of the rod is hinged to a plate 21, which is in turn again connected to a harness 2 of flexible material. Harness 22 consists of a U-shaped section provid-

ed with brakes so that a user can be secured in harness 22, as generally known in the care of handicapped or spastic patients. The support strap may also possibly be provided with fastening mechanisms for support mechanisms for the lower limbs of the user.

[0018] The use of the walking frame according to the invention is intrinsically clear. After the user is secured in harness 22 of the walking frame he or she may or not be assisted by a third person to take his or her first steps. During these steps the spring will always be compressed for part of each step, and will then retract. This gives the user the feeling of being supported so that he or she gains more confidence in moving, whilst at the same time he or she receives a push in the back which brings him or her off balance, encouraging him or her to take the next step to recover his or her balance. The process is then repeated.

[0019] Experiments with subjects with spastic abnormalities have demonstrated that after a short introductory and practice period the users are to move independently without problem after being secured in the walking frame, and are free to choose the direction of their movements.

[0020] It is clear that the invention is not limited to the embodiment described and reproduced but that numerous modifications can be made within the scope of the claim.

Claims

1. A walking frame provided with a frame that is supported on a number of wheels, and a harness for supporting the user of the walking frame, **characterised in that** the harness is connected to the frame by a spring system which is orientated so that on the one hand it provides vertical support for the user, and on the other exerts a horizontal spring action in the forward direction of movement.
2. The walking frame according to claim 1, **characterised in that** the spring system exerts a force in a direction which forms an angle of 40 to 50 degrees to the plane of forward movement.
3. The walking frame according to any one of claims 1 or 2, **characterised in that** the spring force of the spring system is adjustable.

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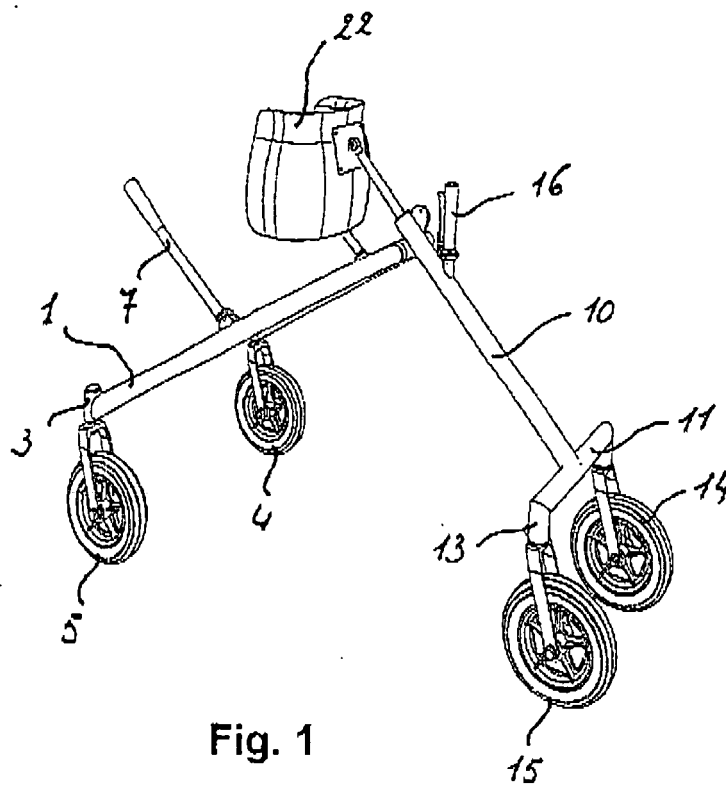


Fig. 1

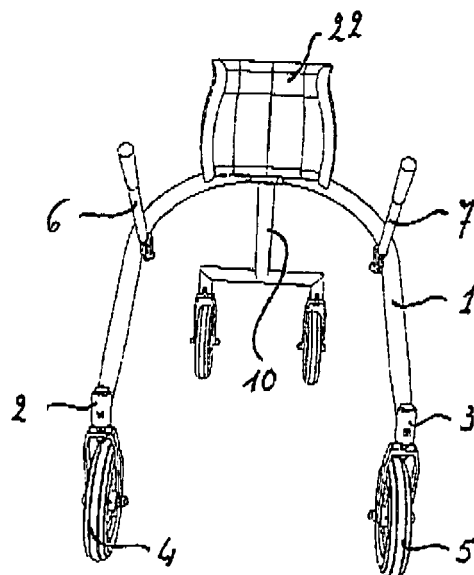


Fig. 2

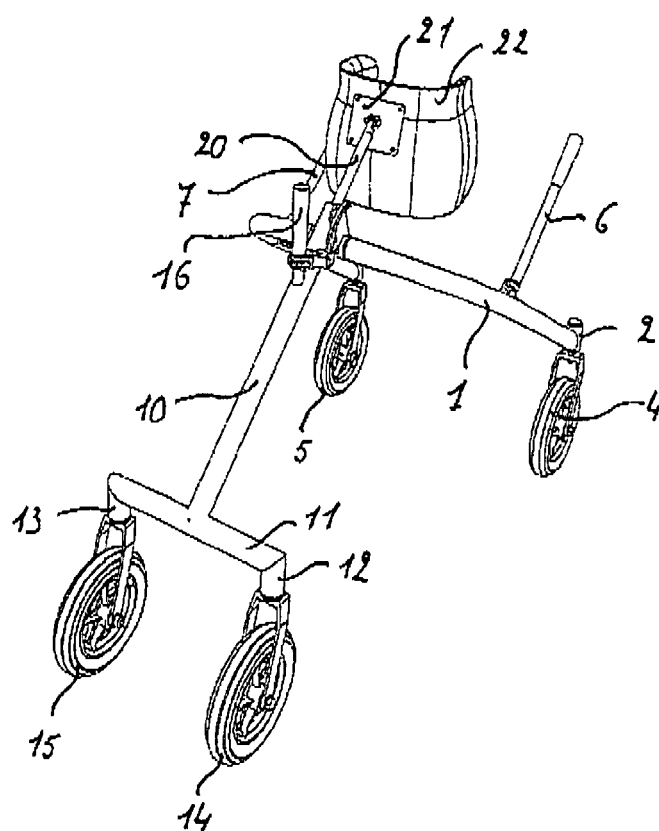


Fig. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 9530

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			TECHNICAL FIELDS SEARCHED (IPC)
			A61H A47D A61G
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 November 2006	Examiner Fischer, Elmar
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 06 01 9530

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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