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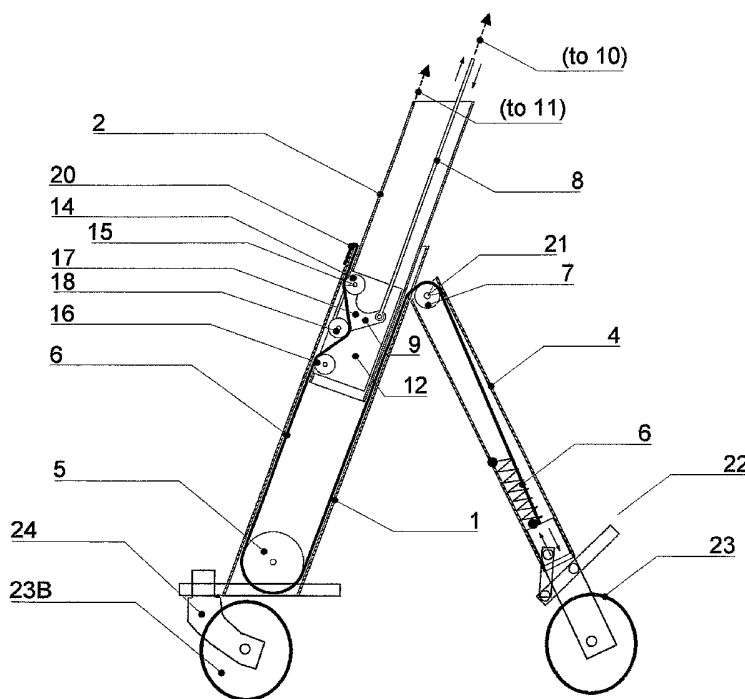
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[Continued on next page]

(54) Title: WALKER WITH ADJUSTABLE HANDLEBAR



(57) Abstract: A rollator with wheels (23, 23B) with a brake (22), with - a main frame with a main part (1) with a telescopic frame member (2) which runs in an almost vertical direction in the main part (1) which is slidably height adjustable in relation to the main part (1), - a handle bar (11) on the telescopic frame member (2) with a brake handle bar (10) which via a brake pull wire or brake bar (8) activates the brake (22) on a wheel (23) by that - a brake wire (6) attached to an upper brake wire fastener (20) on a portion located high on the main part of the main frame (1), wherein a lower end or part of the brake wire (6) is connected to the brake (22); - a brake tensioner plate (12) arranged in a lower portion of the telescopic frame member (2), below the upper brake wire fastener (20); in which the brake tensioner plate (12) comprises an upper sheave (14) and a lower sheave (16) for the brake wire (6), and a tensioner sheave (18) arranged between the upper and the lower sheaves (14, 16), in which the tensioner sheave (18) is laterally displaceable and thus arranged for adjusting the running length of

the brake wire (6) between the upper and the lower sheaves (14, 16), so that the brake wire (6) may be tensioned and thus activate the brake (22), in which the brake tensioner plate (12) with the upper sheave (14), the lower sheave (16) and the tensioner sheave (18) is arranged to be displaced along the brake wire (6) together with the telescopic displacement of the telescopic frame member (2); so that the tensioning of the brake wire (6) occurs independently from the vertical position of the brake tensioning plate (12) and preferably of the telescopic member (2).

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## WALKER WITH ADJUSTABLE HANDLEBAR

### **Introduction.**

This invention relates to a so-called rollator, i.e., a support frame for disabled  
5 persons, in which the support frame is provided with wheels. The particular features  
of this invention is that the support frame is provided with brakes for the wheels, and  
that no supplementary adjustment of the brakes is required when adjusting the height  
of the frame or handle bars. Thus, the rollator becomes more user friendly and more  
easily adapted to the particular user. Other advantages of the invention appear from  
10 the specification below.

The purpose of the invention is among other things, that the tensioning of a  
brake wire may occur independently of the adjusted height of the handle bars, and  
thereby of the telescopic member, in other words, their vertical position.

### **15 Related art.**

Related art often makes use of brake handle bars running in a flexible wire  
hose between a brake handle bar on the steering handle bar and the brake mecha-  
nism on the wheels. In this manner the rollator may be tensioned independently of  
the height of the handle bars and the brake handle bars on the frame. Such brake  
20 wires in wire hoses may form a long and broad curve which may be hooked by  
anything which may protrude or in other ways hamper the movement of the rollator,  
e.g., shop shelves, bushes and shrubbery, fences, arms, signs, children and dogs.

Swedish patent SE 514 269 to Etac AB describes a brake device for rollators  
comprising a brake member which impacts a wheel, and a brake handle which has a  
25 braking position and a locking position. During use the brake member impacts a  
brake stem in one end of a connecting member. The other end of the connecting  
member is adjacent to a pressure area in connection with the brake handle. The  
patent does not show any brake wire.

Norwegian patent NO 311 925 to Sven Malmström describes telescopic height  
30 adjustment of the height of the "main stem" with the handle bars and the brake. A  
corresponding telescopic brake tube runs within the main stem for direct engagement  
with the periphery or thread of the wheel. In order to adjust the height of the handle

bars, a screw is unscrewed, which in other respects locks the telescopic main stem. A corresponding locking screw is present on the telescopic brake tube, but protrudes through the main stem and runs in a slit in the main frame. By adjusting the vertical position of the handle, both locking screws are unscrewed, the telescopic parts of the frame are adjusted and locked by means of the first screw. Thereafter, the other screw is tensioned so as to lock the length of the brake stem. Thus, several screw mechanisms on each side are required for adjusting the height and supplementary adjustment of the brakes.

NO 176 593 Etac AB "Brake device for a walking frame provided with wheels", describes a brake wire which is attached to a lever arm. When the lever arm is turned, the brake is brought into function by being pulled up to or down from a handle bar by means of an operating member which is attached to the lever arm. The brake wire is not integrated in the main frame and does not comprise independent height adjustment.

### Summary of the invention

The invention solves several of the above problems connected with the risk of the previous, externally arranged brake wire to be hooked or get stuck, and that the internal running brake wire or brake stems will have to be subject to supplementary adjustment etterjusteres by means of several different screws or locking pins when adjusting the height of the handle bars, or that some of the previously known rollators are not adjustable, so that they have to be manufactured in many different frame sizes. The invention is defined in claim 1, and is a rollator with wheels with a brake, comprising the following features:

- a main frame comprising a main part with a telescopic frame member running in a generally vertical direction in the main part, and which is slidably height adjustable in relation to the main part,
- a handle bar mounted to the telescopic frame member, together with a brake handle, which via a brake pull wire or brake bar is arranged for activating the brake on a wheel, in which the new and characterizing features of the invention comprise the following:

- a frame wire attached in an upper brake wire fastener on an upper portion on the main part of the main frame, in which a lower end or part of the brake wire is connected with the brake;

5 - a brake tensioner plate arranged in a lower portion of the telescopic frame member, below the upper brake wire fastener;

10 in which the brake tensioner plate comprises an upper sheave and a lower sheave for the brake wire, and a tensioner sheave arranged between the upper and the lower sheave, in which the tensioner sheave is laterally displaceable and thus arranged for adjusting the running length of the brake wire between the upper and the lower sheave, so that the brake wire is tensioned, thus activating the brake,

15 in which the brake tensioner plate with the upper sheave, the lower sheave and the tensioner sheave, is arranged to be slid along the brake wire together with the telescopic sliding of the telescopic frame member; so that the tensioning of the brake wire occurs independently of the vertical position of the brake tensioner plate and preferably the telescopic part.

Other features of the invention are indicated in the dependent claims, please see claims 2 and further.

## 20 **Short description of the drawings.**

The invention is illustrated in the attached drawings. The drawings are intended for illustrating the invention, however, they should not be construed so as to limit the scope of the invention.

25 Figure 1a is a sectional view of a generally vertical main frame of a rollator according to the invention. A sheave and wire system within the vertical main frame is shown schematically in the section. A brake wire tensioner plate is shown arranged on a lower end of an upper telescopic generally vertically slidable part. The upper telescopic frame member is shown in an elevated position. Essential details such as handle bars and wheels are shown in Fig. 3, which indicates a more realistic appearance of the rollator.  
30

Figure 1b corresponds to figure 1a except that the telescopic slidable part of the vertical frame is shown in a lowered position together with the brake wire tensioner plate.

Figure 2a corresponds to figure 1a concerning mutual height adjustments of the frame parts, and shows that a brake bar has been tensioned (by means of a  
5 brake handle, shown in figure 3) so that a sheave which runs behind the brake wire, pulls the brake wire from its less tensioned position to a more tensioned position, so that a brake mechanism in the lower end of the brake wire is tensioned so that the brake is activated.

10 Figure 2b similarly corresponds to figure 1a concerning when the mutual height positions of the frame parts, here in a lowered position, and shows likewise that brake bars have been tensioned so that a sheave running behind the brake wire trekker the brake wire from its less tensioned position to a more tensioned position, so that a brake mechanism in the lower end of the brake wire is tensioned so that the  
15 brake is activated. Please note that all intermediate positions of the brake tensioner plate and thus the upper telescopic frame member provides the same tension of the brake wire for the same tension force on the brake bar. Thus, the handle bar height may be adjusted without offering the brake adjustment a thought.

In addition, it can be seen from the figures 1a to 2b that if the rear support leg  
20 hinged to the upper end is pushed towards the telescopic main frame, the brake will be somewhat tensioned because the wire will have to or run a somewhat longer path around the sheave in the hinged spot, which is an advantage because the assembled rollator thus will not roll about on the rear set of wheels when remaining lying.

Figure 3 shows a perspective view seen aslant and from the front, in a partly  
25 exploded view of the left side of the rollator, so that the brake tensioner plate 12 arranged at the lower end of the upper telescopic part of the main frame (1) is visible.

#### Description of a preferred embodiment of the invention.

The invention relates to a rollator which is illustrated in a partly exploded view  
30 in Fig. 3, with main frame (1) shown in the figures 1a, 1b, 2a, and 2b. The main frames (1) are oblique, almost vertical, and are retained in position by a horizontal transversally positioned beam (30) shown in Fig. 3. The rollator is provided with a

rearwardly protruding frame leg (4), and rear wheel (23) and front wheel (23B). The user holds and guides the rollator by means of a handle bar (11). The rollator is provided with a brake (22) which may be of any type to be activated, tensioned and adjusted, directly or indirectly, by means of a pull wire or pull bar, e.g., such as  
5 indicated on Figs. 1a to 2b, by means of a brake handle bar (10) shown in Fig. 3. The brake (22) itself is shown schematically only in Fig. 1a til 2b, as a rear brake being activated for braking the rotation of at least one of the rear wheels, or for blocking at least one of the rear wheels from rotating.

The rollator according to the invention comprises the following features:

10 - a main frame comprising a main part (1) with a telescopic frame member (2) running generally in a vertical direction in the main part (1). The telescopic frame member (2) is slidably height adjustable in relation to the main part (1), and may be locked in the desired height by means of pins or screws or corresponding locking mechanism. The telescopic frame member (2) is provided with a handle bar (11) (not  
15 shown) mounted near the top of the telescopic frame member (2), which also is provided with a brake handle bar (10) which may be pulled up or be pushed down, and being arranged via a brake pull wire or brake bar (8) to activate the brake (22) on a wheel (not shown). It is also possible to arrange the brakes so that the brake bar (8), by being pulled up or pushed down, deactivates the brake, so that the brake is  
20 activated when the brake handle bar is not loaded and the rollator stands alone.

The solution to the problem as mentioned above is a brake wire (6) which is attached in an upper brake wire fastener (20) on a portion located high on the main part of the main frame (1), in which a lower end or part of the brake wire (6) is connected with the brake (22). The brake wire (6) may run indirectly to the brake (22)  
25 via a lower frame sheave (5) and further up over an upper frame sheave (7) and down again to the brake (22) on a main frame supporting leg (4) as shown in Fig. 1. In an alternative embodiment of the invention the brake wire (6) may run straight down to a brake (22) on the front wheel (not shown) mounted in the lower end of the main frame (1). However, it may be a disadvantage to use a front brake with such a  
30 high and short vehicle as a rollator normally is, with a danger for tilting over the front wheels. For this reason, a rear brake is preferred here.

A central feature of the invention is a brake tensioner plate (12) which has been arranged in a lower portion of the telescopic frame member (2), and further being arranged below the upper brake wire fastener (20), please see Fig. 1a, 1b, 2a, and 2b. In a preferred embodiment of the invention the brake wire runs in its entirety within the main frame, both in the main part (1) and in the telescopic member (2).  
5

The brake tensioner plate (12) comprises an upper sheave (14) and a lower sheave (16) for the brake wire (6), and a tensioner sheave (18) arranged between the upper and the lower sheave (14, 16). In the preferred embodiment the brake tensioner plate is arranged in the lower portion of the telescopic member (2). The tensioner sheave (18) is laterally slidable, and thus arranged for adjusting the running length of the brake wire (6) between the upper and the lower sheave (14,16), so that the brake wire (6) may be tensioned, and thus activating the brake (22), please see the difference between Fig. 1a og Fig. 2a, or between Fig. 1b and Fig. 2b. (The brake wire (6) may possibly be relaxed so that the brake is activated.) The brake tensioner plate (12) with the upper sheave (14), the lower sheave (16) and the tensioner sheave (18) is arranged for sliding along the brake wire (6) in the telescopic displacement between a desired upper position, e.g., such as shown in Fig. 1a and Fig. 2a. Therefore, the tensioning of the brake wire (6) will occur independently of the vertical position of the brake tensioner plate (12) and preferably the telescopic member (2).  
10  
15

The tensioner sheave (18) rests on a brake tensioner plate (17) being pivotable about an axis, preferably the brake tensioner pivotal axis (15), which also may be the shaft for upper sheave (14). The brake tensioner plate (15) is provided with a torque arm (9) which makes an angle in relation to the brake tensioner plate (15) and also an angle in relation to the brake pull wire/bar (10), so that when the brake pull wire/bar (10) is tensioned, the torque on the arm (9) will turn the plate (17) and move the tensioner sheave (18) so that the running length of the wire (6) between the sheaves (14) og (16) is extended, and vice versa.  
20  
25

According to a preferred embodiment of the invention the brake wire (6) runs from the upper brake wire fastener (20) on the portion located high on the main part of the main frame (1), via a lower sheave (5) at the lower end of the main frame (1), and in which the brake wire further is connected with the brake (22).  
30

According to an advantageous and preferred embodiment of the invention, the brake wire (6) and the brake tensioner plate (12) are arranged within the main frame (1). In practice, the brake wire and the brake tensioner plate (12) will be arranged within the telescopic frame member (2). This feature provides for the brake wire will  
5 be protected against mechanical impact from the main frame, so that no wire parts protrudes and may be hooked by protruding objects as described in the beginning of the specification.

The brake tensioner plate (12) may constitute a lower portion of the telescopic frame member (2) itself which projects down into the main frame.

10 According to a preferred embodiment of the invention, the brake on the rear wheel is used by means of the brake wire (6) running from the lower sheave (5) in the main frame (1) via an upper sheave (7) on a frame leg (4) holding the brake (22) which impacts the wheel (23). The frame leg (4) then constitutes a rearwardly directed slanted frame leg when driving in the normal usage direction. The frame leg  
15 (4) is pivotably mounted in the main frame (1) about a shaft (21) preferably constituting the pivotal axis for the sheave (7). In this preferred embodiment the brake (22) impacts the rear wheel (23) on the frame leg (4). The rear wheel (23) is located somewhat behind a vertical line beneath the handle bar (11) and in which the rear wheel (23) is not pivotable in relation to the main frame (1).

20 The front wheels (23B) are arranged beneath the lower end of the main frame (1) in a pivotable fork (24) mounted to a horizontal beam (29) on the lower part of the main frame (1), and in which a hinged bar (25) leads from the rear portion of horizontal bar (29) back to the lower portion of the rear frame leg. Thus, the rollator provides a directional stability feeling and a lateral stability feeling because the rear wheels  
25 (23) are not pivotable, while at the same time the front wheels (23B) provides for simple pivotal properties.

An advantage with a preferred embodiment of the invention by that the rotational movement of the rear frame leg (4) in towards the main frame (1) about the shaft (21) which also holds the sheave (7) involves that the brake wire (6) will have to  
30 run a greater length about the sheave (7), is that the brake (22) is activated and prevents the rollator from rolling in its folded position, e.g., in a cargo compartment in a passenger vehicle.

As shown in Fig. 3, the right and left main frame (1) is connected via a transversal horizontally directed beam (30), and where a seat (28) is arranged between the right and left main frame (1). This seat is in a preferred embodiment of the invention height adjustable by being mounted to a bow (27) which in turn is mounted to right and left fasteners (31, not shown), respectively, which runs in longitudinal profile grooves (32, not shown) on an inwardly directed side each of the slanted, almost vertical main frames (1). A lever under the seat (28) to a spring loaded pin in the fasteners releases or locks the fasteners through apertures in the main frames (1), and so the seat may be set in the desired height and locked.

## CLAIMS

1. A rollator with wheels (23, 23B) with a brake (22), comprising the following features:

- a main frame comprising a main part (1) with a telescopic frame member (2) running generally in a vertical direction in the main part (1) and being slidably height adjustable in relation to the main part (1),

- a handle bar (11) mounted to the telescopic frame member (2), together with a brake handle bar (10) which is arranged via a brake pull wire or brake bar (8) for activating the brake (22) on a wheel (23)

characterized by

- a brake wire (6) attached in an upper brake wire fastener (20) on a portion located high on the main part of the main frame (1), in which a lower end or part of the brake wire (6) is connected to the brake (22);

- a brake tensioner plate (12) arranged in a lower portion of the telescopic frame member (2), below the upper brake wire fastener (20);

in which the brake tensioner plate (12) comprises an upper sheave (14) and a lower sheave (16) for the brake wire (6), and a tensioner sheave (18) arranged between the upper and the lower sheaves (14, 16), in which the tensioner sheave (18) is laterally displaceable and thus arranged for adjusting the running length of the brake wire (6) between the upper and the lower sheaves (14, 16), so that the brake wire (6) may be tensioned and thus activating the brake (22),

in which the brake tensioner plate (12) with the upper sheave (14), the lower sheave (16) and the tensioner sheave (18) is arranged for sliding along the brake wire (6) together with the telescopic displacement of the telescopic frame member (2);

so that the tensioning of the brake wire (6) occurs independently of the vertical position of the brake tensioner plate (12) and preferably of the telescopic member (2).

2. The rollator according to claim 1, in which the tensioner sheave (18) rests on a brake tensioner arm (17) being rotatable about an axis (15), and in which the brake tensioner arm (17) is provided with a torque arm (9) which makes an angle in relation to the brake tensioner arm (17) and also makes an angle in relation to the brake pull wire/bar (10), so that when the brake pull wire/bar (10) is tensioned, the force on the torque arm the torque arm (9) will rotate the brake tensioner arm (17) and move the tensioner sheave (18) so that the running length of the wire (6) between the sheaves (14) and (16) is extended, and vice versa.
3. The rollator according to claim 1, in which the brake wire (6) is running from the upper brake wire fastener (20) on a portion located high on the main part of the main frame (1), via a lower sheave (5) at the lower end of the main frame (1), and in which the brake wire further is connected to the brake (22).
4. The rollator according to claim 1, in which the brake wire (6) and the brake tensioner plate (12) are arranged within the main frame (1).
5. The rollator according to claim 1, in which the brake wire and the brake tensioner plate (12) are arranged within the telescopic frame member (2).
6. The rollator according to claim 1, in which the brake tensioner plate (12) constitutes a lower portion of the telescopic frame member (2) itself.
7. The rollator according to claim 3, in which the brake wire (6) is running from the lower sheave (5) in the main frame (1) via an upper sheave (7) on a frame leg (4) holding the brake (22) which impacts the wheel (23).
8. The rollator according to claim 7, in which the frame leg (4) is pivotably mounted in the main frame (1) about a shaft (21) which preferably constitutes the rotation axis for the sheave (7).

9. The rollator according to claim 7, in which the brake impacts the wheel (23) on the frame leg (4) and in which the wheel (23) constitutes a rear wheel (23), and in which the frame leg (4) thus constitutes a rear frame leg (4), and so that the rear wheel (23) is located somewhat behind a vertical line beneath the handle bar (11) and in which the rear wheel (23) is not pivotable in relation to the main frame (1).

10. The rollator according to claim 9, in which a front wheel is arranged beneath the lower end of the main frame (1) in a pivotable fork (24) mounted on a horizontal beam (29) on the lower part of the main frame (1), and in which a hinged bar (25) leads from the rear portion of the horizontal beam (29) and back to the lower portion of the rear frame leg (4).

11. The rollator according to claim 8, in which the rotational movement of the rear frame leg (4) inwardly towards the main frame (1) about the shaft (21) which also holds the sheave (7) involves that the brake wire (6) have to run a greater length about the sheave (7), whereafter the brake (22) is activated and prevents the rollator from being able to roll in its folded position, e.g. in a cargo compartment in a passenger vehicle.

12. The rollator according to claim 1, in which right and left main frames (1) are connected via a transversal horizontally directed beam (30), and in which a seat (28) is arranged between the right and left main frame (1).

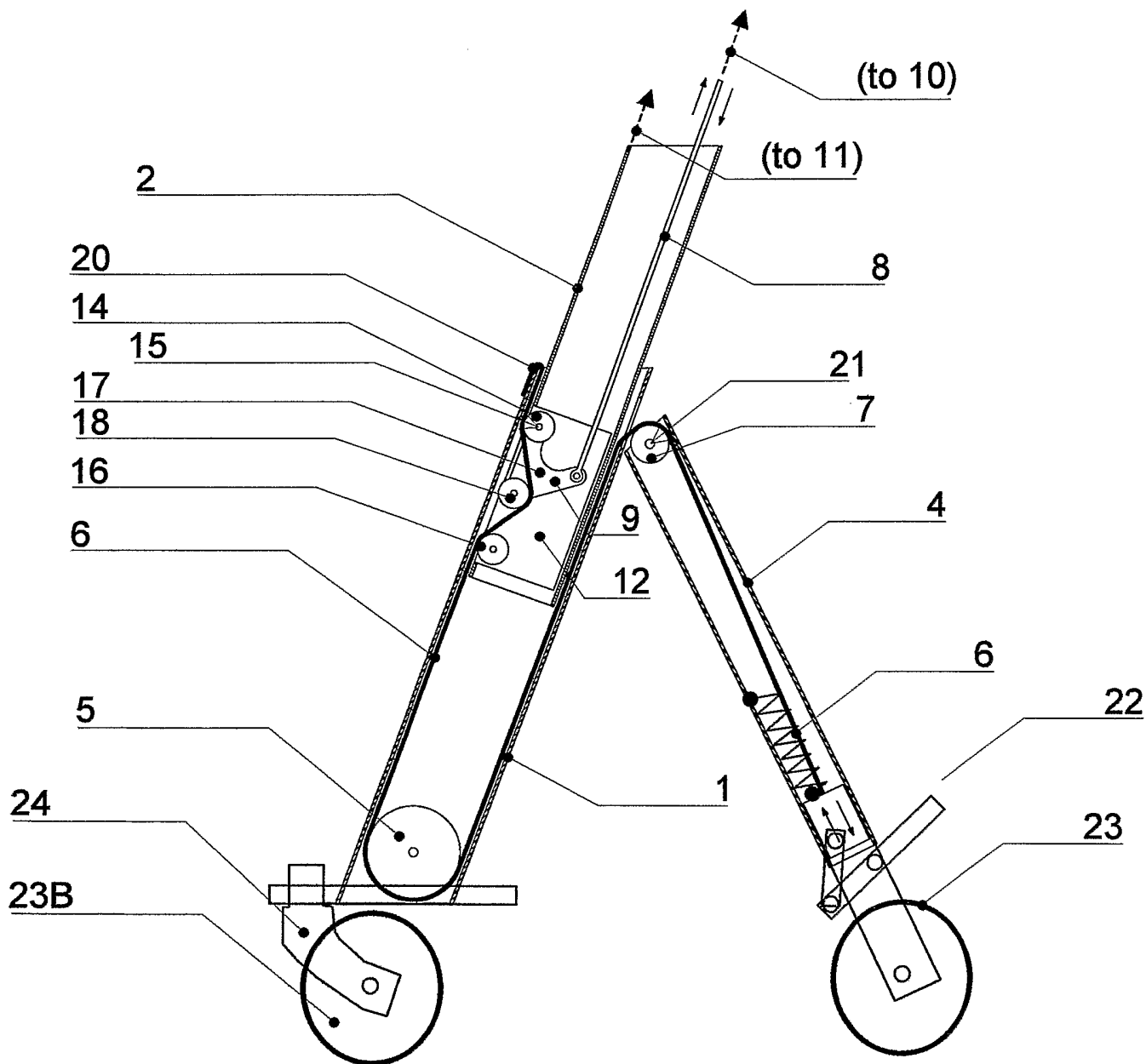


Fig. 1a





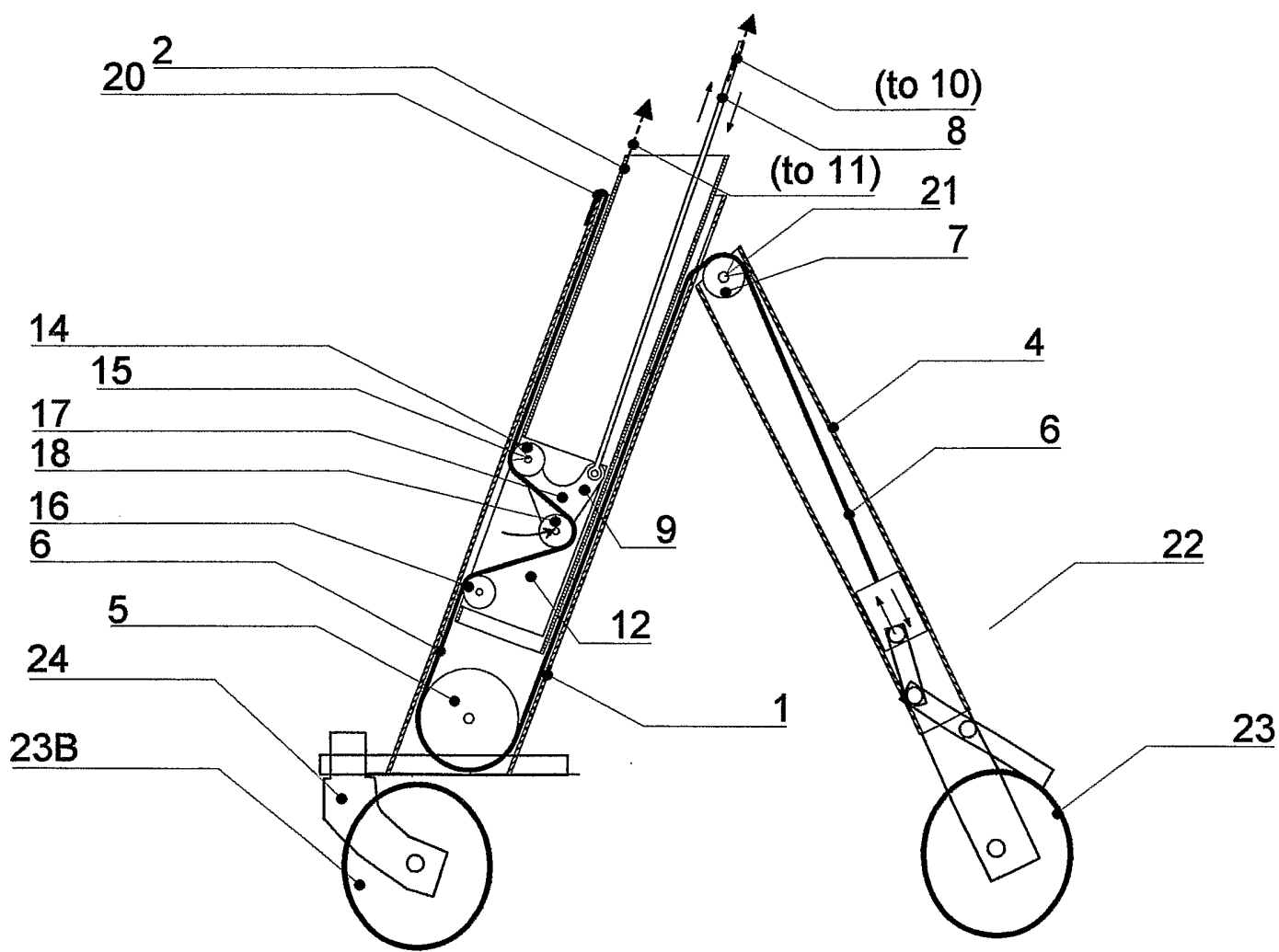


Fig. 2b

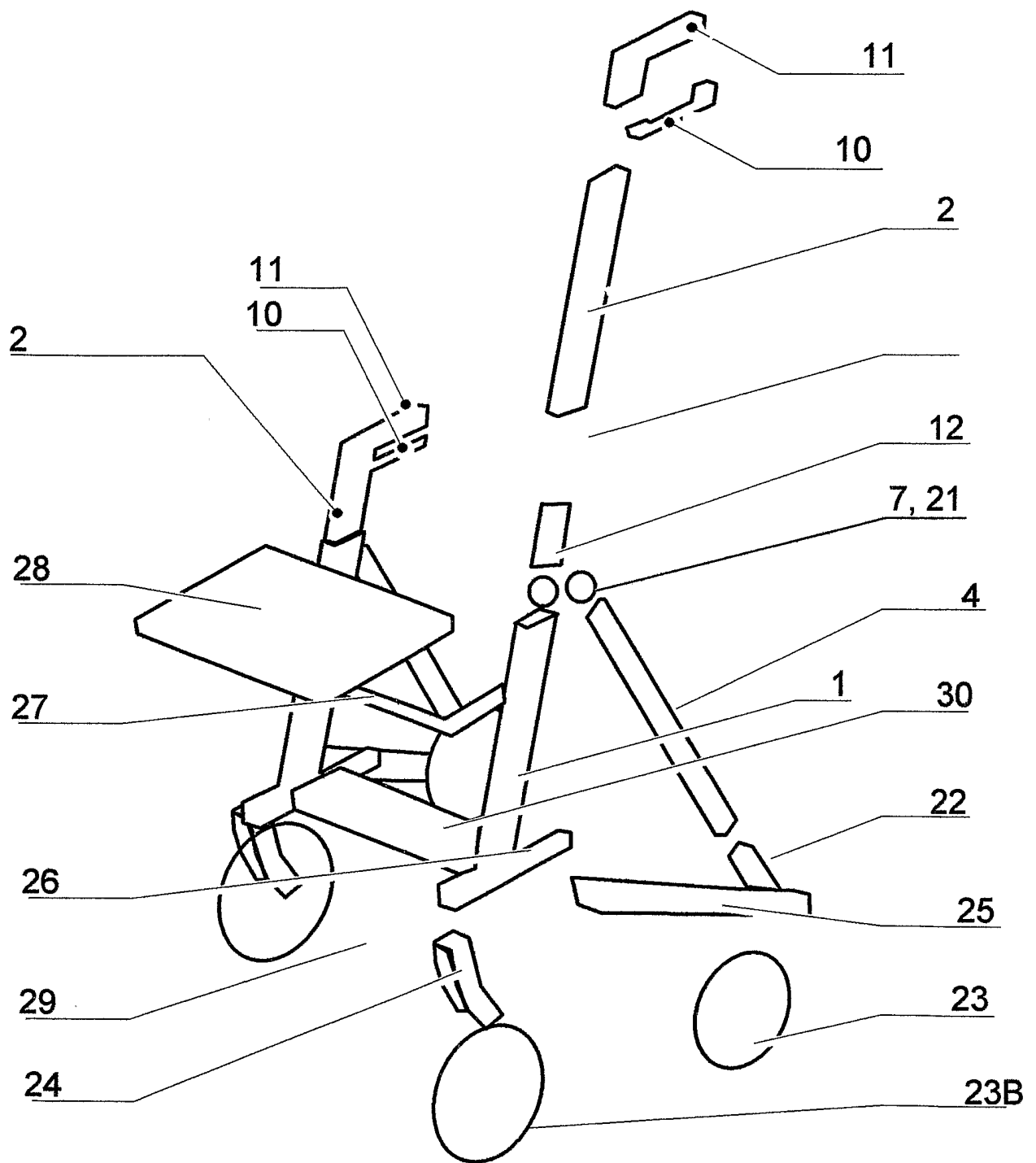


Fig. 3

## INTERNATIONAL SEARCH REPORT

International application No.

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
<b>IPC7: A61H 3/04, B62B 5/04, B60T 1/04</b> According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
<b>IPC7: A61H, B62B, B60T</b>		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>EPO-INTERNAL, WPI DATA</b>		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 0222070 A2 (RANDOM PRODUCTS TRUST), 21 March 2002 (21.03.2002), abstract, figure --	1-10
P,A	WO 2004073578 A1 (DOLOMITE AB), 2 Sept 2004 (02.09.2004), abstract, figure --	1-10
A	NO 311925 B1 (SVEN MALMSTRÖM), 18 February 2002 (18.02.2002), abstract, figure --	1-10
A	US 4962781 A (MAURICE S. KANBAR), 16 October 1990 (16.10.1990), figures 3-5, abstract -- -----	1-10
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search		Date of mailing of the international search report
2 February 2005		07-02-2005
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer  Hélène Erikson/MP Telephone No. +46 8 782 25 00

## INTERNATIONAL SEARCH REPORT

Information on patent family members

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