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(54) **Brake for a wheel chair**

(57) A wheel chair comprises a frame (1) and a number of wheels (2,3) connected thereto, which are rotatable about a shaft. At least one wheel is fitted with a drum brake (5) comprising brake shoes, a brake shoe bearing plate, and an arm for controlling the brake shoes, which is pivot-mounted in the brake shoe bearing plate. The drum brake is positioned on the side of the wheel that faces towards the frame, and the drum brake can be controlled by means of a manually operated control handle (12), which is positioned on the side of the wheel that faces away from the frame, and which is connected to a connecting shaft. The connecting shaft is rotatably supported in the hollow shaft of the wheel, and it is coupled to the arm of the drum brake via a system of rods.

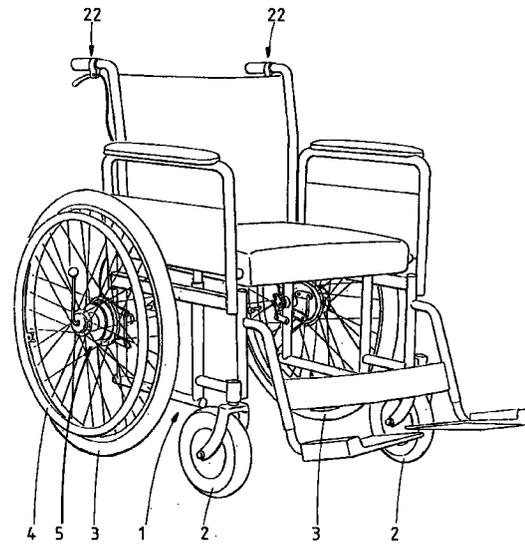


fig.1

EP 0 857 474 A1

Description

The invention relates to a wheel chair comprising a frame and a number of wheels connected thereto, which are rotatable about a shaft, whereby at least one wheel is fitted with a drum brake comprising brake shoes, a brake shoe bearing plate, and an arm for controlling the brake shoes, which is pivot-mounted in the brake shoe bearing plate.

Such a wheel chair is known in various versions thereof. The known wheel chairs exhibit the problem that the construction for controlling the drum brake is relatively complicated, and that it has appeared to be vulnerable in practice, as a result of which the construction breaks down easily.

The object of the invention is to provide an improved wheel chair of the above-mentioned kind, which comprises a robust construction for controlling the drum brake.

In order to accomplish that objective the wheel chair according to the invention is characterized in that the drum brake is positioned on the side of the wheel that faces towards the frame, and that the drum brake can be controlled by means of a manually operated control handle, which is positioned on the side of the wheel that faces away from the frame, and which is connected to a connecting shaft, which is rotatably supported in the hollow shaft of the wheel, and which is coupled to the arm of the drum brake via a system of rods.

In this way a wheel chair is obtained wherein a standard drum brake can be used, whose construction has proved its worth in practice for quite some time already, and wherein the control construction is assembled from simple, robust components.

It is noted that the use of a drum brake in particular in wheel chairs having adjustable frame constructions is to be preferred to brakes that cooperate with a wheel tyre, since brakes of the latter kind require additional provisions for supporting the brakes when an adjustable frame is used.

The invention will be explained in more detail hereafter with reference to the drawing, which shows an embodiment of the wheel chair according to the invention.

Fig. 1 is a perspective view of an embodiment of the wheel chair according to the invention.

Figs. 2 - 4 are larger-scale views of the construction of the drum brake of one of the wheels of the wheel chair of Fig. 1, wherein the spokes of the wheel are not shown for the sake of simplicity.

Fig. 1 is a perspective view of a wheel chair comprising a frame 1 and four wheels 2, 3, the front wheels 3 being castors and the rear wheels 3 being provided with a driving ring 4 for the user of the wheel chair. Each rear wheel 3 is fitted with a drum brake 5, which is shown in detail for one of the rear wheels in Figs. 2 - 4. The drum brake 5 of the other wheel is of identical construction and will not be described in detail hereafter.

Drum brake 5 is a standard drum brake, it comprises a drum 7, which forms part of the hub 6 of the wheel in question, brake shoes (not visible), which are positioned within said drum 7, a brake shoe bearing plate 8, and an arm 9 for operating the brake shoes, which is pivot-mounted in the brake shoe bearing plate. The brake shoes are pressed against the inner side of drum 7 by pivoting arm 9 from the position shown in Fig. 3 to the position shown in Fig. 4.

As is apparent from the drawing, brake drum 5 of each rear wheel 3 is positioned on the side of the wheel that faces frame 1. A hollow shaft 10 is mounted on either side of frame 1 for supporting each rear wheel 3, on which shaft the wheel 3 in question is rotatably supported in bearings. A connecting shaft 11 is capable of rotation within said hollow shaft 10, which connecting shaft is connected, on the side facing away from frame 1, to a control handle 12, which can be manually operated for controlling drum brake 5. In the illustrated embodiment control handle 12 and connecting shaft 11 are in one piece.

Connecting shaft 11 projects from shaft 10 on the side of frame 1, whereby it extends through the part in question of frame 1. The projecting end 13 of connecting shaft 11 is provided with a second arm 14, which faces away from drum brake 5 in the position of rest of the control handle 12 of arm 9 that is shown in Figs. 1-3. Second arm 14 is connected by means of a coupling rod 15 to one end of a lever 16, which is pivot-mounted on frame 1, and whose other end is coupled to arm 9 of brake drum 5 by means of a second coupling rod 17. In the illustrated embodiment lever 16 consists of a U-shaped bracket, which engages round the part of frame 1 in question, whereby one leg 18 of said U-shaped bracket is considerably longer than the other leg 19. Bracket 16 pivots on a shaft 20 with legs 18, 19. As can be seen in Figs. 2 - 4, a usual locking arm 21 of brake shoe bearing plate 8 is coupled to said shaft 20, so that the brake shoe bearing plate 8 cannot rotate about shaft 10.

When control handle 12 is shifted to the left, seen in Fig. 3, from the position of rest which is shown in Fig. 3, second arm 14 will be pivoted upwards, as a result of which arm 9 of brake drum 5 will be pulled downwards via lever 16, and the wheel is braked. When control handle 12 pivots to the parking brake position shown in Fig. 4, second arm 14 will pivot with respect to connecting shaft 11, to the same side as arm 9 of drum brake 5, until the straight connecting line of the points in which coupling rod 15 is connected to second arm 14 and to lever 16 passes connecting shaft 11. Coupling rod 15 will then strike the projecting end 13 of connecting shaft 11, as a result of which the second arm will automatically be locked in the parking brake position.

In the illustrated embodiment the wheel chair comprises brakes 22, which are connected, via a usual Bowden cable 23, to the levers 16 of the associated wheels on the same side as coupling rods 15. As a

result of this arrangement the drum brakes 5 can also be controlled by a person who pushes the wheel chair ahead.

It is noted that in the illustrated embodiment the two rear wheels 3 are fitted with a drum brake, whereby each drum brake can be controlled by means of an associated control handle 12. Alternatively it is also possible to control drum brake 5 of one wheel by means of the control handle 12 of the other wheel, which can be done by coupling the connecting shaft 11 of said control handle 12 to the arm 9 of the drum brake 5 of the other wheel as well. This can be realised in a simple manner by extending the connecting shaft 11 in question from one wheel to the other wheel.

The invention is not limited to the above-described embodiment, which may be varied in various ways within the scope of the claims.

Claims

1. A wheel chair comprising a frame and a number of wheels connected thereto, which are rotatable about a shaft, wherein at least one wheel is fitted with a drum brake comprising brake shoes, a brake shoe bearing plate, and an arm for controlling the brake shoes, which is pivot-mounted in the brake shoe bearing plate, **characterized in that** said drum brake is positioned on the side of the wheel that faces towards the frame, and that the drum brake can be controlled by means of a manually operated control handle, which is positioned on the side of the wheel that faces away from the frame, and which is connected to a connecting shaft, which is rotatably supported in the hollow shaft of the wheel, and which is coupled to the arm of the drum brake via a system of rods.
2. A wheel chair according to claim 1, wherein said control handle can be pivoted from a position of rest, in which the drum brake is inoperative, to a parking brake position, in which the drum brake is operative, in which position the control handle is locked.
3. A wheel chair according to claim 1 or 2, wherein said connecting shaft projects from the hollow shaft of the wheel on the side of the drum brake, and wherein the projecting end of the connecting shaft is coupled, by means of a second arm, to one end of a lever which is pivot-mounted on the frame, with the other end being coupled to the arm of the drum brake.
4. A wheel chair according to claims 2 and 3, wherein said second arm is automatically locked in the parking position when the control handle is pivoted from the position of rest to the parking brake position.
5. A wheel chair according to claim 4, wherein said second arm is connected to one end of the lever by means of a coupling rod and faces away from the arm of the drum brake in the position of rest, wherein the straight connecting line of the points in which the coupling rod is connected to said second arm and said lever passes said connecting shaft when the control handle is pivoted to the parking brake position.
6. A wheel chair according to claim 5, wherein the coupling rod bears against the projecting end of the connecting shaft in the parking brake position.
7. A wheel chair according to any one of the preceding claims, wherein two opposite wheels are each fitted with a drum brake, wherein each drum brake can be controlled by means of an associated control handle.
8. A wheel chair according to any one of the claims 1 - 6, wherein two opposite wheels are each fitted with a drum brake, wherein both drum brakes can be controlled by means of a common control handle, which is coupled to the arm of the two drum brakes, wherein the connecting shaft of the control handle of one wheel extends to the other wheel.

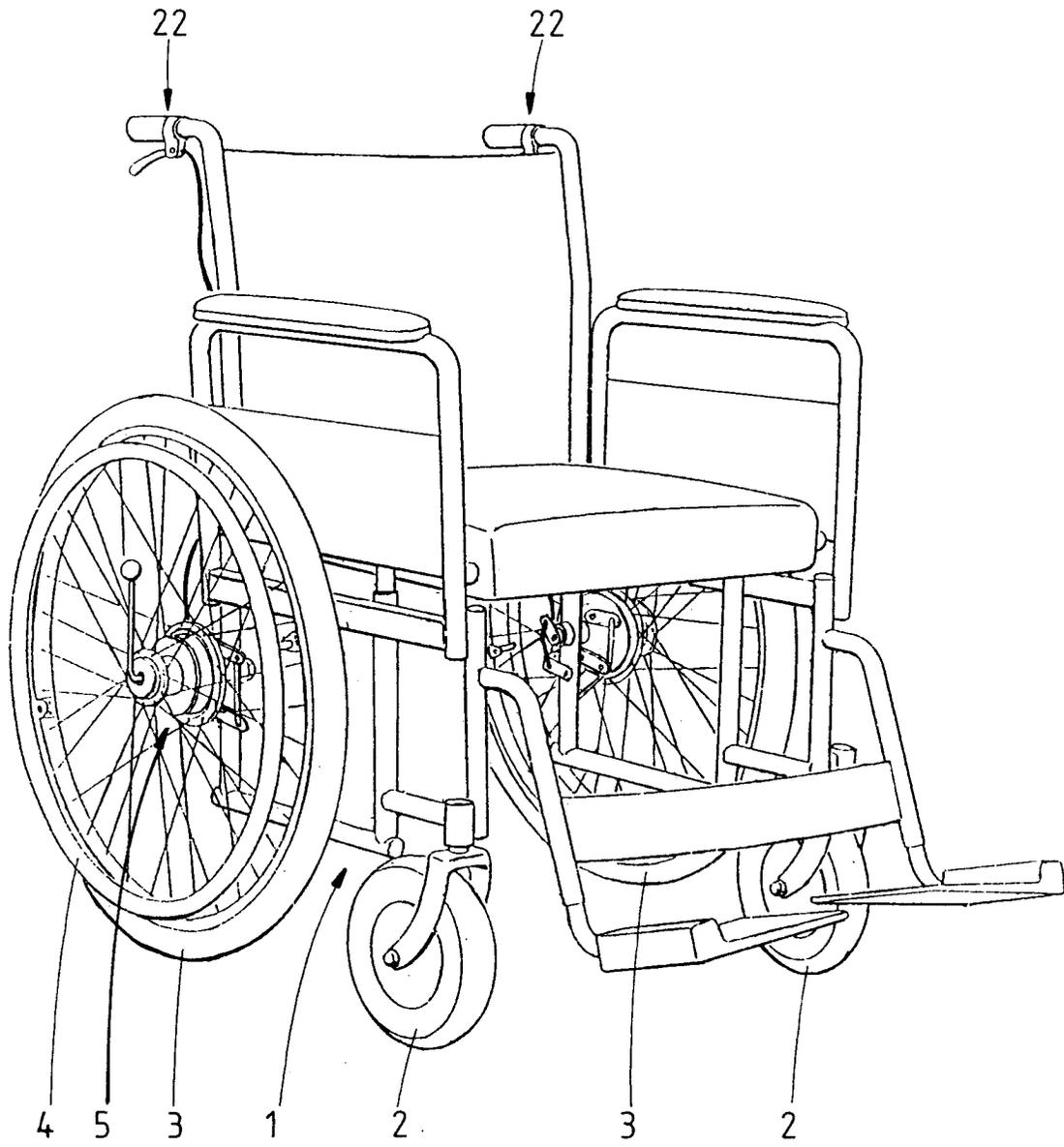


fig. 1

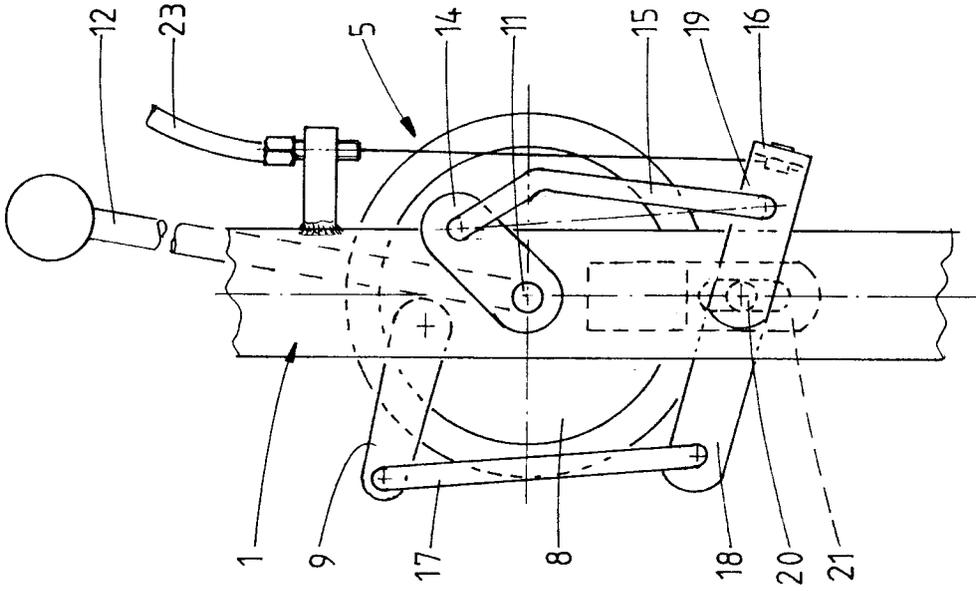


fig. 3

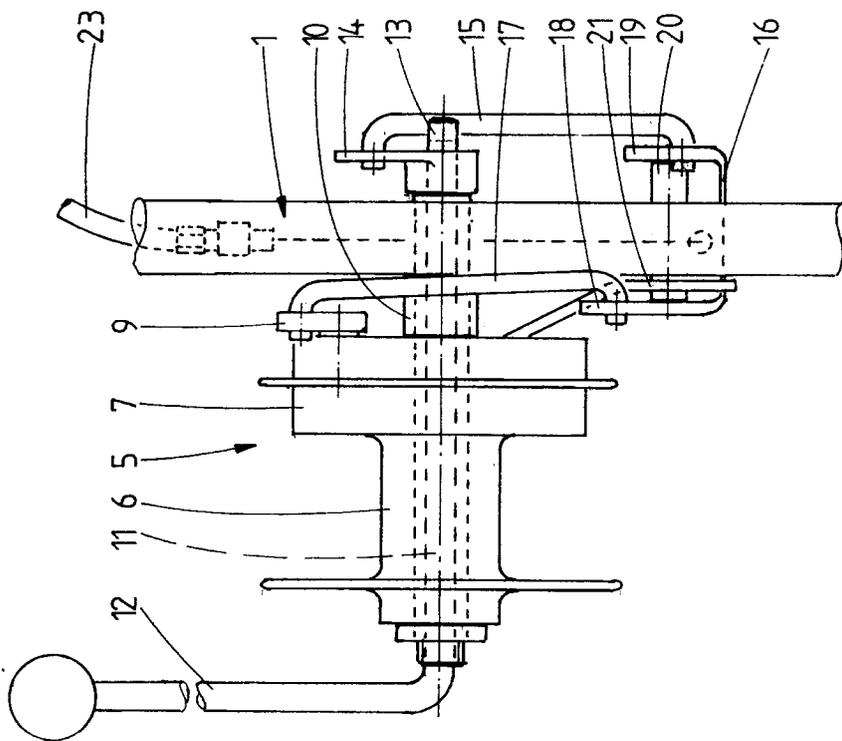


fig 2

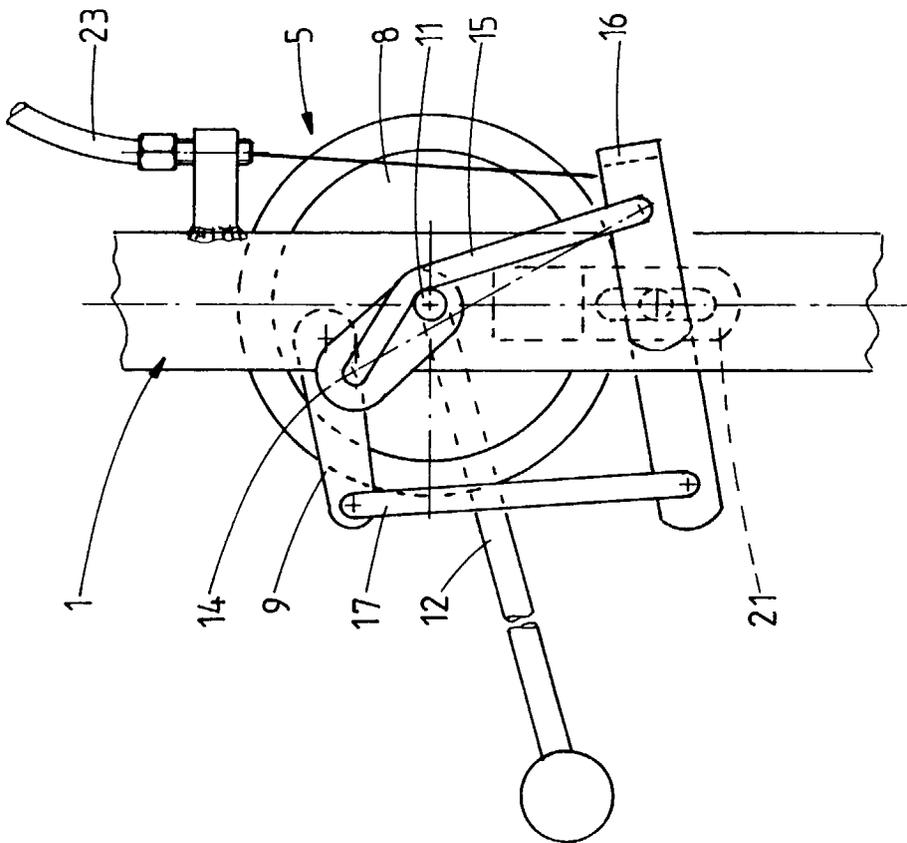


fig. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 0139

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	DE 43 39 507 A (CHRISTEL HORST DIETER) 1 June 1995 * abstract; figure 1 * ----	1	A61G5/10 B62B5/04
A	US 5 379 866 A (PEARCE TONY M ET AL) 10 January 1995 * abstract; figures * ----	1	
A	NL 9 002 166 A (VELDINK ROLSTOELEN B V) 6 May 1992 * claims; figures * ----	1	
A	DE 296 00 021 U (MEYRA WILHELM MEYER GMBH & CO) 29 February 1996 ----		
A	US 4 045 047 A (BUCKLEY CLAIR S) 30 August 1977 -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B62B
Place of search	Date of completion of the search	Examiner	
THE HAGUE	28 April 1998	De Schepper, H	
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