United States Patent [19]

Korpela

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[54] **WHEEL CHAIR WITH PIVOTED HAND BAR**

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[52] **U.S. Cl.** **280/289**, 5/92, 272/70.3, 280/47.37, 297/DIG. 4, 297/DIG. 10

[51] **Int. Cl.** **B60n 3/00**, B62k 3/00

[58] **Field of Search** ..... 280/289, 1.5, 47.37; 297/DIG. 4, DIG. 10, 5, 6; 272/70.3; 5/92

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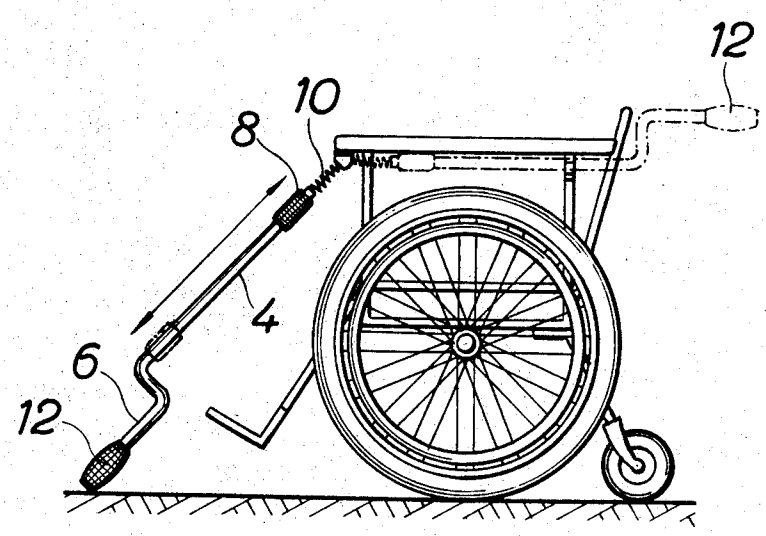
[57] **ABSTRACT**

A wheel chair for handicapped persons. The wheel chair includes a pair of hand bars pivotally mounted to the sides of the chair to assist the disabled person to enter or leave the chair. When not in use, the hand bars may be stored away under the wheel chair's arm-rest, or they may be folded back to act as pushing handles for the chair.

12 Claims, 10 Drawing Figures



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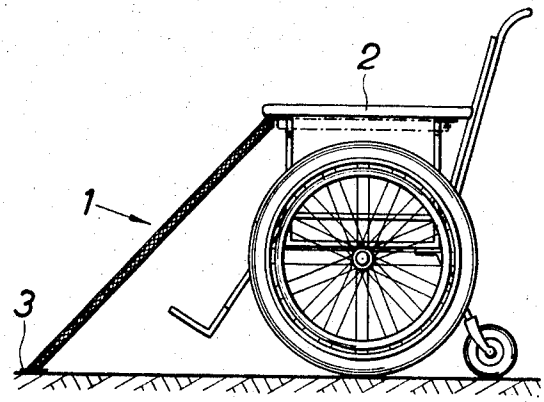

Fig. 1

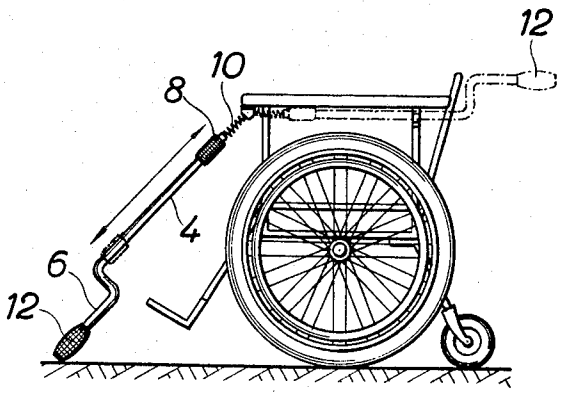

Fig. 2

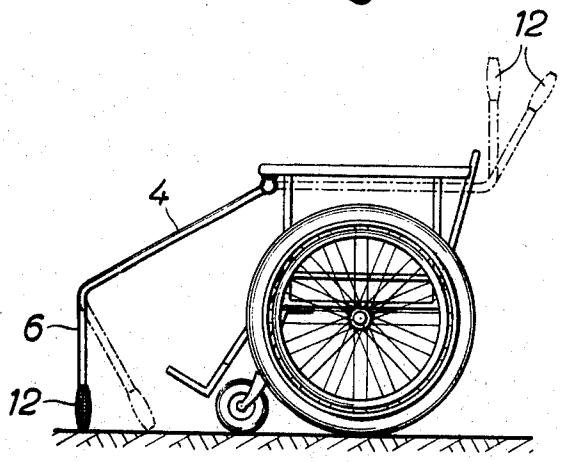

Fig. 3

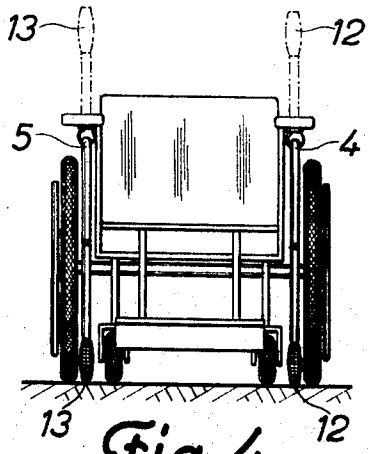

Fig. 4

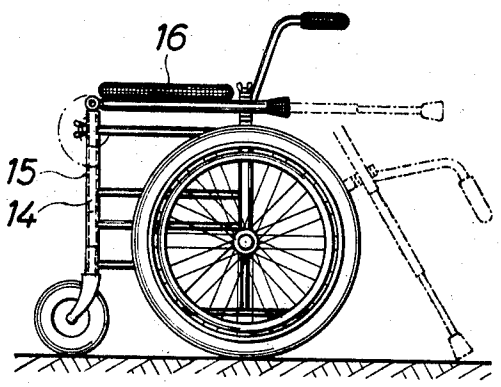

Fig. 5

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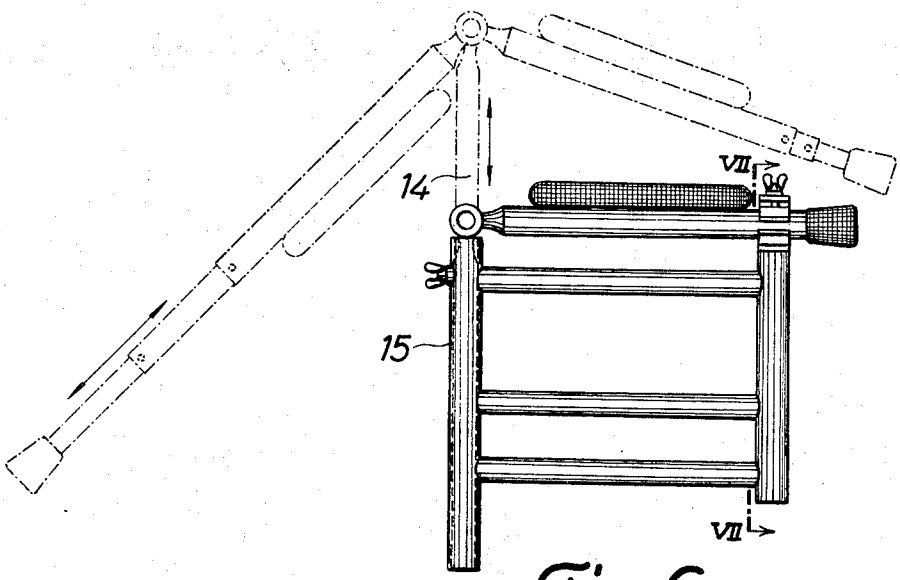

Fig. 6

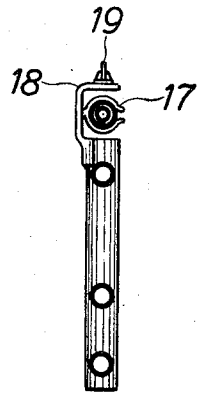

Fig. 7

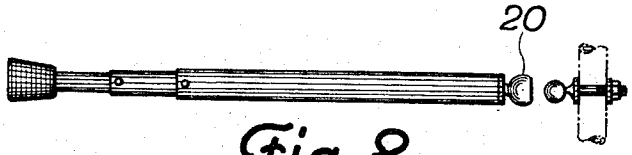

Fig. 8

Fig. 9

Fig. 10

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WHEEL CHAIR WITH PIVOTED HAND BAR

The present invention relates to a wheel chair, and more particularly to a wheel chair with handle bars thereon to assist the ingress and egress of disabled persons. In known wheel chairs, rising out of sitting down in the wheel chair is difficult which affects all those users of a wheel chair who are not able to move on the support of their legs. As an aid, crutches and various elbow and other sticks have been employed, but these are awkward and inconvenient especially in cramped quarters.

The aim of the present invention is to provide an arrangement which solves the problem specified above in a considerably more convenient manner than heretofore. This purpose is achieved, and the invention is characterized, by hand bars which, when resting with one end on the wheel chair and with their opposite end on the floor, a bed, a car or equivalent, enable the body to be transferred by the force of a hand applied by the user to the hand bars.

The embodiments of the invention are described in more detail in the following detailed description, when read with reference to the attached drawings, wherein

FIG. 1 is a side elevational view of one arrangement according to the invention.

FIG. 2 shows another embodiment in elevational view.

FIGS. 3 – 4 show a still further embodiment in side and front elevational views.

FIGS. 5 – 6 illustrate yet another embodiment in front and side elevational views.

FIGS. 7 – 8 show details of hand bars which may be used as an auxiliary device.

FIGS. 9 – 10 show support parts which may be connected with the hand bars.

The illustrated wheel chairs, apart from the novel features of this invention, are of a conventional design. One skilled in the art will appreciate that the invention is not limited to use with a wheel chair but is of use with any kind of chair that a handicapped person might have occasion to sit on, for example commodes, theater seats, etc.

Referring to FIG. 1, one embodiment of the invention comprises a pair of hand bars 1 in association with a wheel chair of conventional design. One end of each hand bar rests on the wheel chair and the other, in the case illustrated, rests on the floor. Thus, the disabled person is enabled to transfer himself by hand force, along the hand bars 1, from the chair onto the floor and vice versa. The ends of the hand bars 1 adjacent to the wheel chair have been so attached by hinges or joints to the wheel chair, most appropriately under the front ends of the arm rests 2, that the opposite ends of the hand bars 1 can be raised and lowered, and displaced laterally, depending on the intended use. The outer ends of the hand bars 1 have been provided with suitable gripping elements 3, which in the case illustrated by the drawing consist of rubber pads. These elements may also be shaped as hooks engaging the side of the bed, or in another way, depending on the place to which the person transfers from the wheel chair.

The hand bars 1 are made telescopic or provided with a pivot joint at their middle, so that the hand bars can be accommodated, for storage, with samll length, such storage being most appropriately effected under the arm rests 2 of the wheel chair.

As is evident from the foregoing, the arrangement according to the invention is highly simple, whereby the additional cost will be low. However, the arrangement makes it possible for a disabled person to use the wheel chair, to sit down in it and too transfer from it onto the floor, into bed, into a car, onto a toilet seat, etc., without crutches, or other similar previously known aids, which are awkward to use in these cases. Furthermore, the hand bars 1 constitute suitable shafts for pushing or drawing the wheel chair, by means of which it can be moved about. It should moreover be noted that the hand bars 1 may be directed not only obliquely downward and horizontally but also in oblique upward direction or, for purposes of rehabilitation exercise, also obliquely backward and upward. The hand bars 1 are made of wood or metal tubing, an appropritate diameter being about 38 mm. The cross-section may be round or oval. It is possible to make the hand bars 1 straight, curved or stepped. In FIG. 1, straight hand bars have been illustrated, but slightly less space is needed for hand bars which curve steeply downwardly at their outer ends.

In the embodiment according to FIG. 2, the lower ends 6 of the hand bars 4 have been bent to form two right angles. Furthermore, handles 8 are free to slide along the hand bars 4, which handles are kept in their upper position by springs 10. This sliding motion has been illustrated by an arrow in FIG. 2. When the wheel chair is in the position illustrated by FIG. 2, the disabled person lowers himself from the chair to the floor by grasping the handles 8 and allowing them to slide along the hand bars 4. The lowest position of the handles is limited by the first bend of the hand bars, as can be seen from FIG. 2. This is in fact the first purpose of the bends on the lower ends of the hand bars. The second purpose is that when the hand bars are turned up into the positions indicated by dot-and-dash lines in FIG. 2, the lower ends of the hand bars also constitute shafts for pushing the wheel chair, so that in fact no other shafts are needed. An arrangement of this kind renders possible the use of a hand bar of one piece, in which thus no movable joints or telescopic structure is needed. This, in its turn, permits sliding handles to be used, since otherwise the sliding might be impeded by the pivoting points or by the junctures of the telescopic rods. The lower ends of the hand bars terminate in handles 12, 13, which are thus understood to rest against the floor when the hand bars are in the lowered position and, when the hand bars have been raised, to provide points where they can be grasped with the hands when the wheel chair is pushed.

In FIGS. 3 – 4 another embodiment has been shown, in which there is one single bend on the lower ends of the hand bars, forming an angle of 120° – 90°. In this case, too, the bend acts as a limit stop for the handle, even though no such handles have been shown in FIG. 3 and 4. When the hand bars have been turned into their upper position, the wheel chair can be pushed and steered by their ends, as shown by the dashed lines.

In FIG. 5 the wheel chair has been shown, as seen from the side. The ends of the hand bars adjacent to the chair have been articularly attached to a tube 14, which can be raised and lowered with reference to the body tube 15, as can be seen especially from FIG. 6. A winged screw is used to fix the tube 14 at desired height. The purpose with this is to adjust the height of the ends adjacent to the chair of the hand bars, which

is particularly required in connection with walking exercises with hand support, in which instance otherwise the floor would be situated too close for the disabled person wearing a supporting bandage. As can be seen from FIGS. 5 – 6, a plate or padding 16 may be attached to the hand bar, in which case the hand bar acts together with this plate or padding also as an arm rest on the invalid's chair.

FIGS. 7 and 8 illustrate the fixing of the hand bar, which in this case has been made telescopic, in the position shown in FIG. 6 with solid lines. To this end, a spring clamp 17 having the form of an interrupted ring is used, which is attached to a bracket 18, which also has a winged screw 19, by means of which the clamping force of the spring clamp 17 can be adjusted.

FIG. 8 illustrates the ball joint 20, by means of which the hand bar has been attached to a wheel chair tube so that the hand bar can be swivelled in any desired direction.

The hand bar may also be entirely detachable from the wheel chair. Such a detachable hand bar is preferrably formed so that it constitutes as such an elbow stick or crutch. In case the hand stick is for example of the type illustrated by FIG. 8, a separate elbow or armpit supporting part (FIG. 9 – 10) may be attached to its one end. Furthermore, it is possible to fit to a wheel chair, from which the hand bars have been detached, to tubes 15, for example, supported by inner tubes, an adjustable table plane which is moved laterally, turned down, when not in use. (This embodiment is not illustrated by the drawings.)

As has become evident from the foregoing, the auxiliary device according to the invention has a number of useful effects. One of them, which deserves to be specially mentioned, is the movability in vertical direction of the chair-side end. The hand bar may be a unitary tube, in which case it is sturdy and cheap to manufacture. The bend on the lower end enables a tube of sufficient functional length to be placed in an upper position in which it is not in the way, but quite to the contrary is useful when the wheel chair is being moved about. The slide blocks acting as handles 5, 6 are useful when, for one reason or another, it is not desirable to let the hands slide along the hand bars. The slide blocks are always returned by their spring loading into the upper position, where they are ready for lowering. In the act of rising these slide blocks are not needed. It is also possible with the aid of the hand bar endowed with versatile swivelling capacity, to reach out to touch and move objects at grater distance, without need to rise from the chair. Moreover, the hand bars may serve, either as such or provided with paddings 13, as arm rests of the chair. It can also be seen from FIG. 5 how the hand bars, when turned up and rearwardly, make sure that the carriage cannot tip over dangerously in the backward direction.

I claim:

1. In combination with a wheel chair for supporting a handicapped person, a hand bar supported at one end by said wheel chair and at the other end by an external support surface, the ingress and egress of said handicapped person to said wheel chair being accomplished by the application of hand force to said hand bar, comprising:

a. means for pivotally connecting said one end of said hand bar to said wheel chair, said hand bar being free to pivot in all directions;

b. means for displacing said connecting means in a vertical direction for supporting the handicapped person when in an erect position; and

c. an outwardly extending telescopic extension for adjustment of the length of said hand bar.

2. The combination according to claim 1, wherein said hand bar has at least on gripping element mounted thereon.

3. The combination according to claim 1, wherein said hand bar curves progressively downwardly at said other end thereof.

4. The combination according to claim 1, wherein said chair is provided with an arm-rest, said arm-rest having a sufficient clearance therebelow, with respect to said chair, such that said hand bar may be stored thereunder when not in use.

5. The combination according to claim 1, wherein said pivotally connecting means is positioned on said chair such that said hand bar is rotatable to the rear of said chair to double as a pushing shaft therefor.

6. The combination according to claim 1, wherein said pivotally connecting means is positioned on said chair such that said hand bar is rotatable to the rear of said chair, and said hand bar has a portion thereon to support the arm of said handicapped person when seated in said chair, when said hand bar is so rotated.

7. The combination according to claim 1, wherein said displacing means comprises a vertical bore in the side of said chair for receiving a tube attached to said connecting means, and means for retaining said tube at a fixed position in said bore.

8. The combination according to claim 1, wherein said hand bar has a portion at said other end thereof which is bent through an angle of from approximately 90° to approximately 120°.

9. The combination according to claim 8, further comprising a handle slidably mounted about said hand bar, and spring means for normally biassing said handle at the end of said hand bar mounted to said chair, the bend in said hand bar serving to limit the degree of downward travel of said handle.

10. The combination according to claim 1, wherein said hand bar has a stepped bend therein at said other end thereof.

11. The combination according to claim 10, further comprising a handle slidably mounted about said hand bar, and spring means for normally biassing said handle at the end of said hand bar mounted to said chair, the bend in said hand bar serving to limit the degree of downward travel of said handle.

12. The combination according to claim 1, wherein said pivotally connecting means includes means for selectively detaching said hand bar from said chair whereby said hand bar may double as a support for said handicapped person when away from said chair.

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