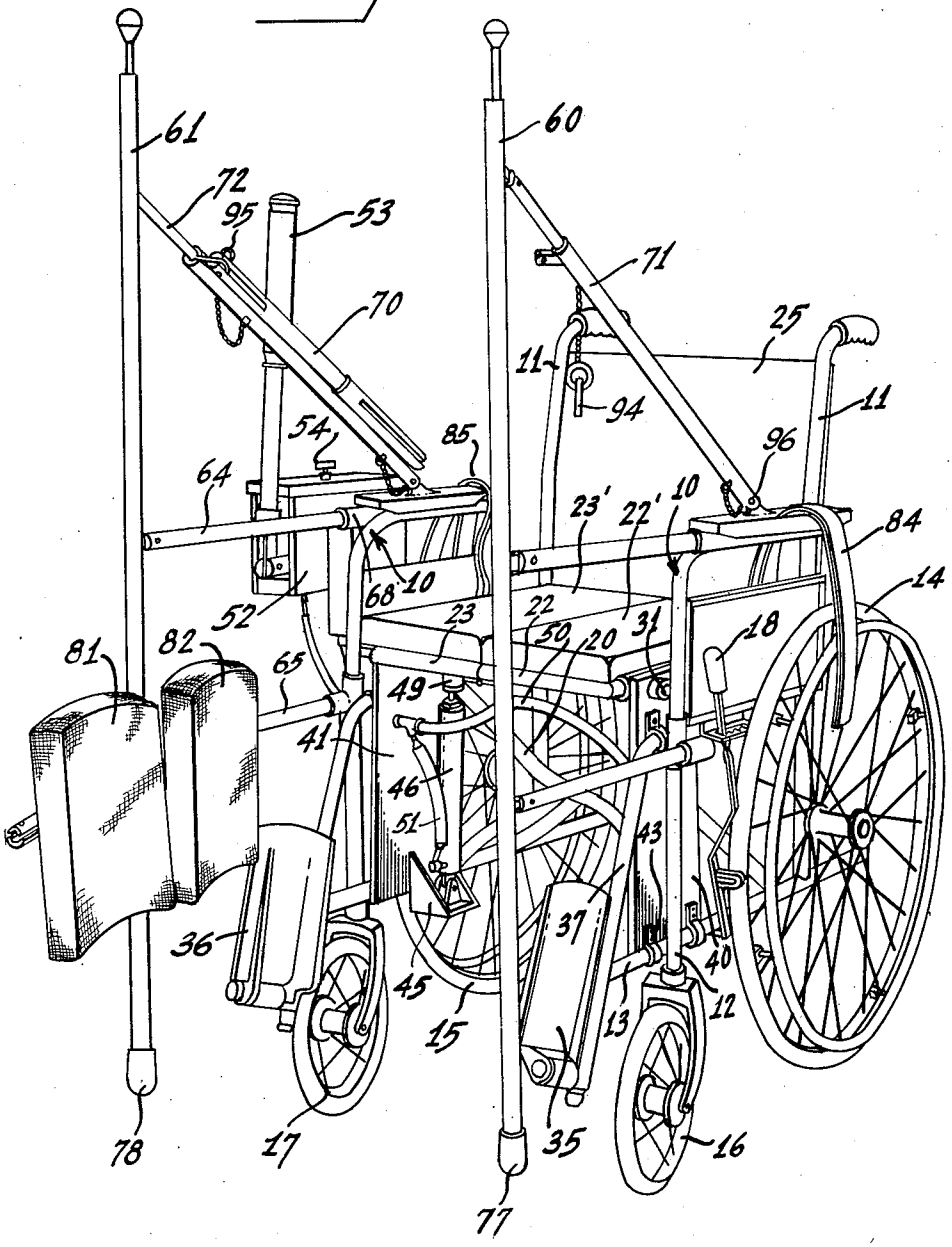
Feb. 27, 1962 J. L. BARTON 3,023,048

WHEEL CHAIRS

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Fig 1.



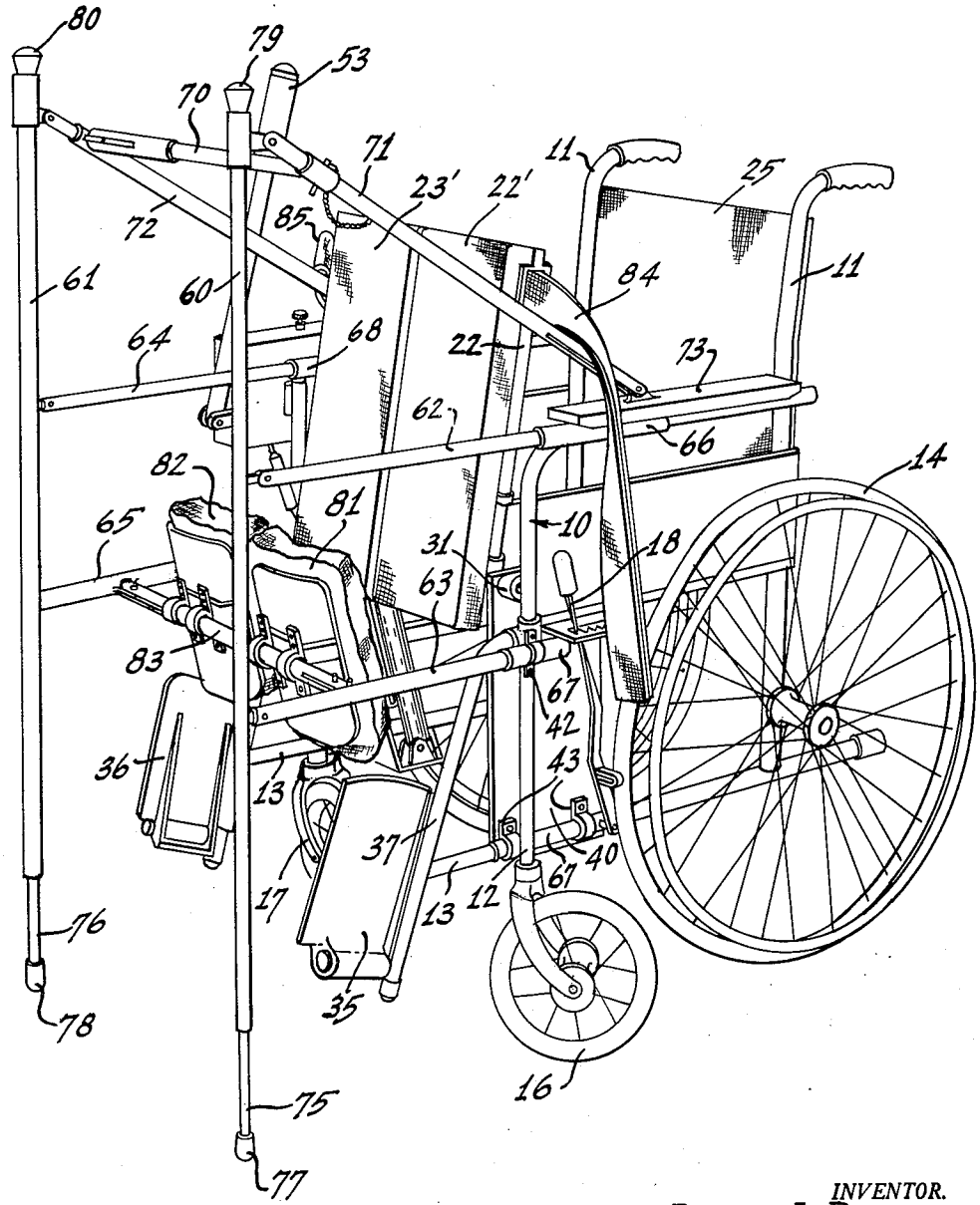
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Fig. 2.



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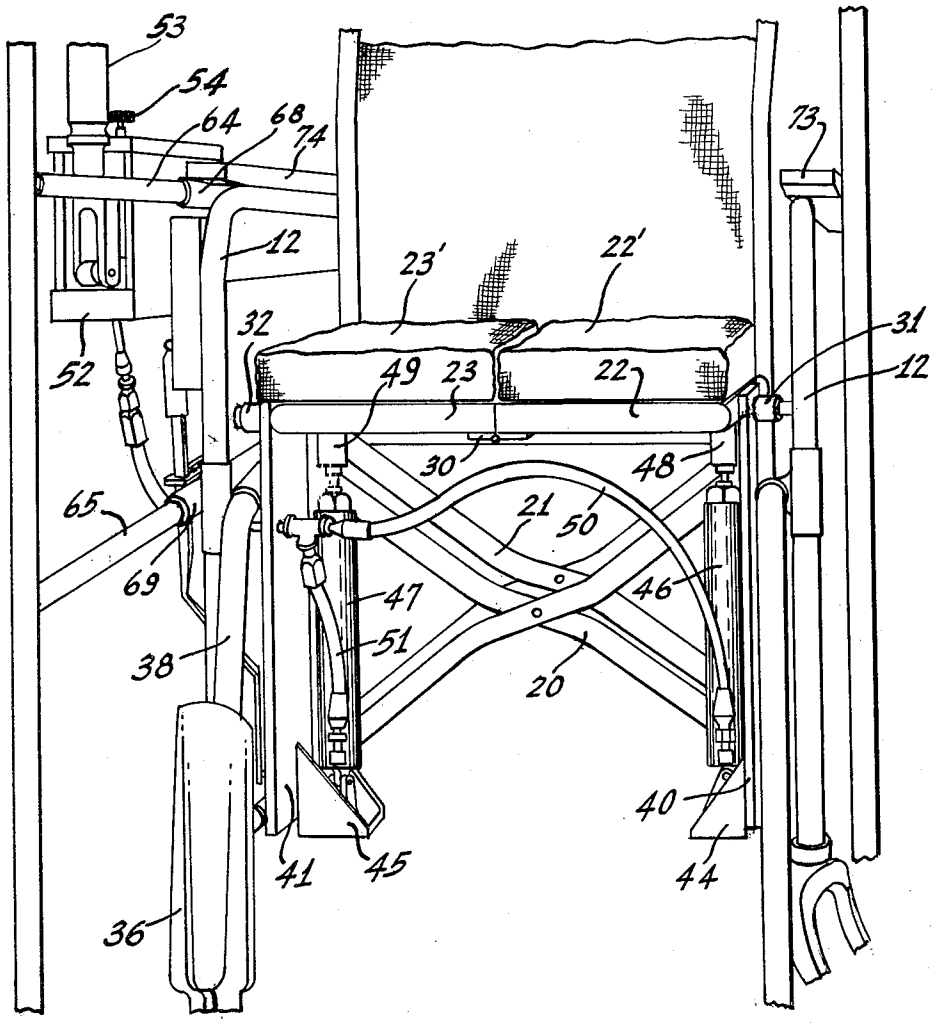


Fig. 3.

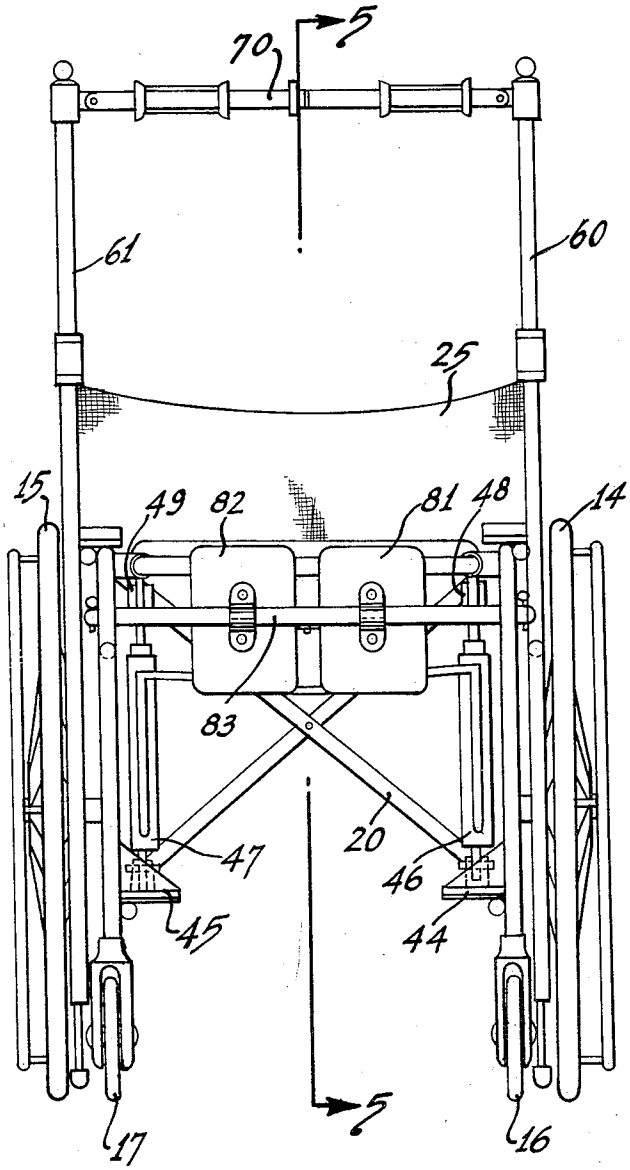
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WHEEL CHAIRS

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Fig. 4.



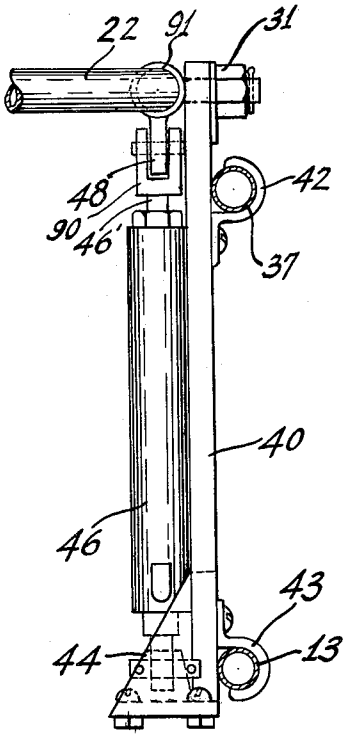


Fig. 6.

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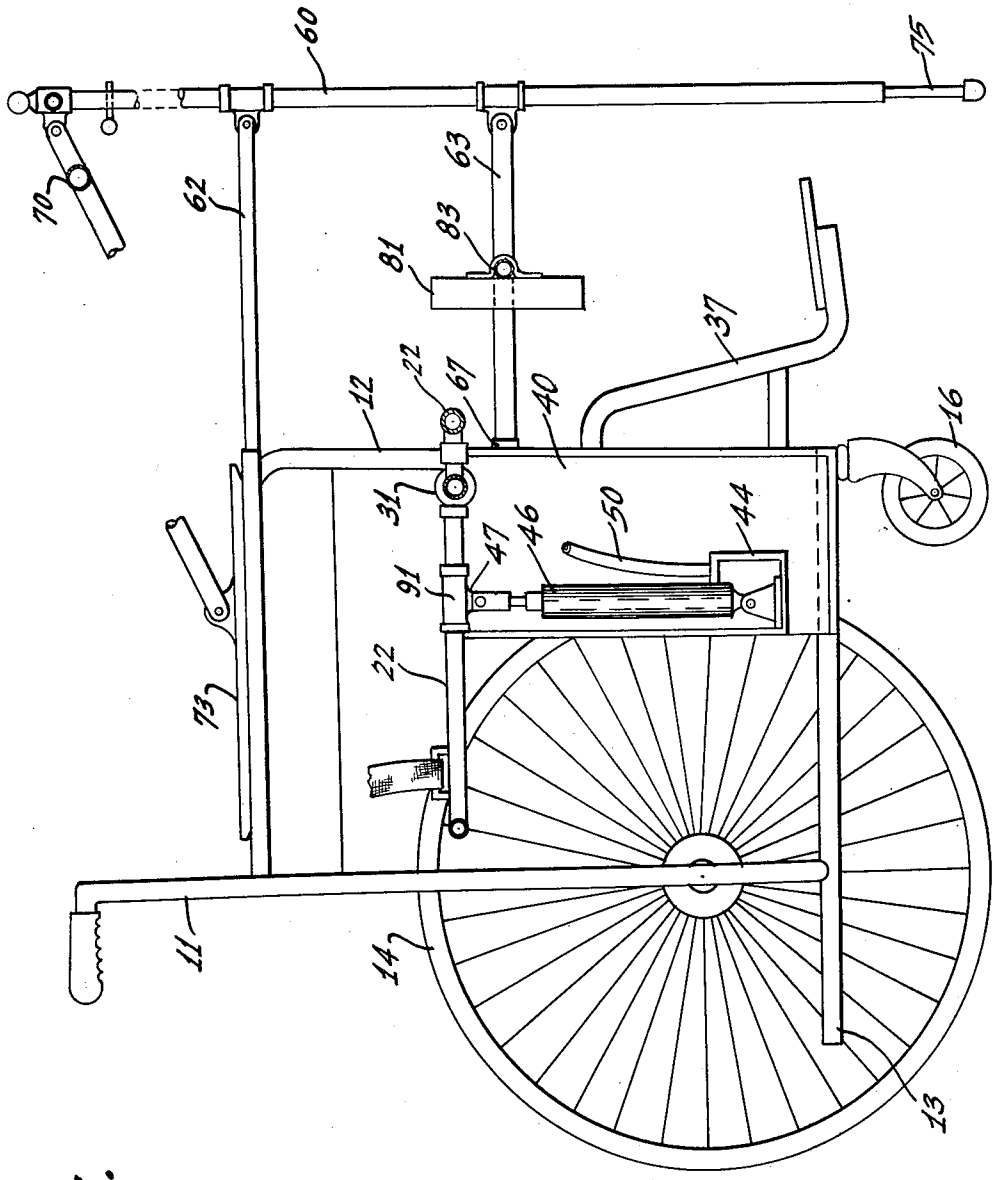


Fig. 5.

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United States Patent Office 3,023,048 Patented Feb. 27, 1962

3,023,048

WHEEL CHAIRS

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Filed Oct. 8, 1959, Ser. No. 845,239
4 Claims. (Cl. 297—330)

My invention relates to new and useful improvements in collapsible wheel chairs for handicapped persons, and particularly to such a chair which can be used by such persons to assist them in moving from a sitting to a standing position and the reverse.

While wheel chairs are known which have a tilting seat, there has not been available a chair which can be used by a person who has paralyzed legs. Such a chair must be capable of raising a paralyzed person completely to a standing position without danger of having the chair move from its position on the floor. Such a chair to be of use to one having paralyzed legs must also have means for preventing collapse of the legs while the user is in a standing position. Furthermore, such a chair must be easily operated by the user to raise the user to standing position and permit the user to return to a sitting position without sudden movements of the seat which might cause bodily injury to the user.

It is therefore an object of my invention to provide a collapsible wheel chair which can be used with safety by a person with paralyzed legs to move from a sitting to a full standing position and the reverse.

It is also an object of my invention to provide such a chair which assists the user while in a standing position and which also prevents collapse of the user's legs.

A further object of my invention is to provide means by which the user may easily and readily operate the chair so that he may without difficulty move between sitting and standing positions.

A still further object of my invention is to provide structure by which any standard wheel chair may be converted into a wheel chair using my invention.

Briefly, a wheel chair using my invention has a pivoted folding seat pivoted at its front end and capable of being rotated nearly 90° so that it can be rotated from the horizontal to nearly a vertical position. This provides a back rest when the user is in standing position. A strap secured to the sides of the seat and strapped around the middle of the user firmly holds the user against the seat. A hydraulic system connected to the seat adjacent its pivot is easily operated by a long-handled pump giving the user a long leverage and requiring very little effort by the user. Knee pads are provided on a frame extending forwardly of the chair which prevent the user's legs from buckling forward when the user is in standing position. The frame is also provided with a hand rail which the user can hold on to or pull himself up on. The frame is also provided at its forward end with a pair of vertically adjustable tubes having rubber tips at their lower ends which when in contact with the floor prevent the chair from moving. These tubes are readily released by the user and are spring biased to return to raised position permitting movement of the chair. Tubular construction and removable clamps permit the various parts of the apparatus made according to my invention to be readily attached to standard wheel chairs which do not incorporate my invention.

Referring to the drawings:

FIGURE 1 is a perspective view showing a wheel chair incorporating my invention with the knee pads swung forward and the foot rests tilted outwardly;

FIGURE 2 is a perspective view showing the seat raised and knee pads in position to support the user in standing position;

FIGURE 3 is a partial perspective showing details of the hydraulic system for raising the seat;

FIGURE 4 is a front elevation of FIG. 1 without the pump showing and with the knee pads and hand rail in place;

FIGURE 5 is a vertical section taken along the line 5—5 of FIG. 4; and

FIGURE 6 is a detail of the hydraulic system for raising the seat.

Referring to the drawings, a wheel chair which utilizes my invention includes a pair of side frames 10 provided with the tubular members 11, 12 and the horizontal member 13 to which are attached wheels 14, 15, 16 and 17. The usual brake 18 is mounted on the side of frame 10.

The side frames 10 are connected together by the pivoted braces 20, 21 and the folding pivoted seat comprising the two frame parts 22, 23 upon which are supported the pads 22' and 23'. A flexible back rest 25 is attached between the tubular members 11, 12. The two-part seat frames 22, 23 are hinged by an elongated hinge 30 which extends to the rear of the seat frame, so that the chair may be folded for storage or to pass through narrow passageways. The seat is also pivotally mounted at the front end on pivots 31, 32.

The usual pivoted front foot rests or supports 35, 36 are supported on the tubular members 37, 38 connected to the chair frames 10.

In accordance with my invention, I clamp the supporting plates 40, 41 to the frame of the chair by means of the clamps 42, 43 (see FIGURE 6). Brackets 44, 45 pivotally support the hydraulic cylinders 46, 47 which have piston rods pivotally connected as at 48 and 49 to the seat frames 22 and 23. Fluid under pressure is supplied to the cylinders 46 and 47 through conduits 50, 51 connected to the pump 52 and operated by the elongated pump handle 53. The needle valve 54 when opened permits fluid to flow back into the pump reservoir (not shown) when the user pushes back against the seat to seat himself, insuring sure and gentle control of the seat from the vertical to the sitting position.

Further, in accordance with my invention I provide a detachable hand rail and pad assembly comprising the vertical tubular members 60, 61 having the horizontal tubular members 62, 63, 64 and 65 pivotally secured to the vertical members 60, 61. The members 62, 63, 64 and 65 are slidably received within the tubular sockets 66, 67, 68 and 69. These can be pinlocked when in place. These tubular sockets can be brazed to the wheel chair frame of a conventional wheel chair.

To support the hand rail 70, I provide a pair of tubular members 71, 72 connected between the arm rests 73, 74 and the upright tubular members 60, 61.

For support and to insure no movement of the chair when desired, I provide means including a pair of vertically adjustable rods 75, 76 rubber tipped at their lower ends 77, 78 and operated by hand grips 79, 80. The rods are biased upwardly by springs (not shown) connected between the rods 75, 76 and tubular members 60, 61. Pins (not shown) extend from rod 75 through the member 60 to lock the rods in place when in contact with the floor. The same arrangement is provided between rod 76 and tubular member 61.

The knee pads 81, 82 are mounted on a cross bar 83 fastened between the tubular members 63 and 65. All of these tubular members are adjustable. Most are pivotally connected as shown in the drawings to permit easy assembly and adjustment. The straps 84, 85 hold the user against the seat while in use.

The details of the seat support which permits the seat to be folded and also to be pivoted forward are shown in FIGURES 5 and 6.

The piston rod 46' has attached to it a yoke 90 attached to the sleeve 91 in which the tubular member 22 is rotat-

ably mounted so that it can rotate about an axis parallel to the side frames. The same arrangement is used on the opposite side. The panels **40** and **41** support the bearings **31** and **32** thereon in which studs, such as **92** fixed to the seat frame, can rotate. This permits the seat member to be applied to standard chair frames and to be folded as well as tilted.

When the chair is to be folded, the various pins, such as **94, 95, 96** and others not shown, which extend through the various tubular telescoped members to lock them in engagement are removed. The forwardly extending frame on which the hand rail **70** and knee pads **81, 82** are mounted can then be removed. Since the side frames are hinged together by members **20** and **21**, and since the seat member is hinged, the chair may then be folded. The forwardly extending frame may also be disassembled in the same way.

What is claimed is:

1. A wheel chair including a pair of laterally spaced side frames, a seat member pivoted at one end and secured to said side frames, means connected between said seat member and said side frames for pivoting said seat member between a horizontal and a vertical position, a belt secured to said seat member, and a frame extending from said side frames, knee pads mounted on said last frame, and a hand rail mounted on said last frame above said knee pads whereby a user may strap himself in a seated position in said seat member and raise himself to a standing position with his knees in contact with said knee pads to assist the user in standing position.

2. A wheel chair including a pair of laterally spaced side frames, a seat member pivoted at its forward end to said side frames, means connected between said seat member and said side frames for pivoting said seat member from a horizontal to a vertical position, a frame extending forwardly from said side frames and secured thereto, knee pads mounted on said forwardly extending frame, and a hand rail mounted on said last frame above said knee pads whereby a user may raise himself from a seated position to a standing position with his knees in

contact with said knee pads to assist the user in standing position.

3. A wheel chair including a pair of laterally spaced side frames, a seat member pivoted at one end and secured to said side frames, hydraulically operated means connected between said seat member and said side frames for pivoting said seat member from a horizontal to a vertical position, a frame extending forwardly of said side frames and secured thereto, knee pads mounted on said forwardly extending frame, means for operating said hydraulically operated means whereby a user may raise himself from a seated position to a standing position with his knees in contact with said knee pads to assist the user in standing position.

4. A wheel chair including a pair of laterally spaced side frames, a seat member, a panel member secured to each of said side frames, said seat member being pivotally connected to said panel members to permit forward pivoted movement of said seat member, means connected between said seat member and said panel members for pivoting said seat member to a vertical position, a frame extending forwardly of said side frames and supported thereon, means on said forwardly extending frame including a hand rail for assisting and supporting a user of said chair to rise from a seated position to a standing position, and knee pads on said forwardly extending frame to assist the user to remain in standing position, said means for pivoting said seat member including manually controlled hydraulic mechanism.

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