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LATERALLY FOLDING CHAIR

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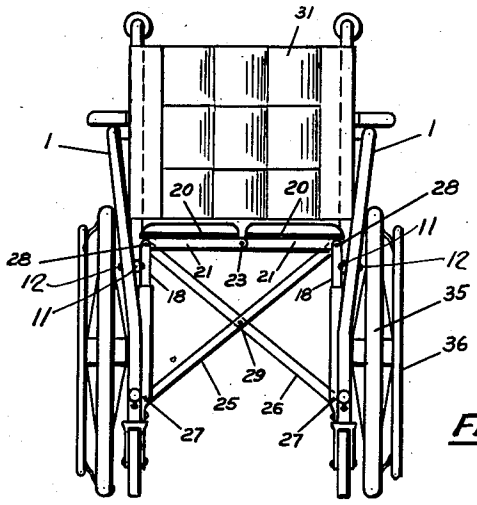


FIG. 2

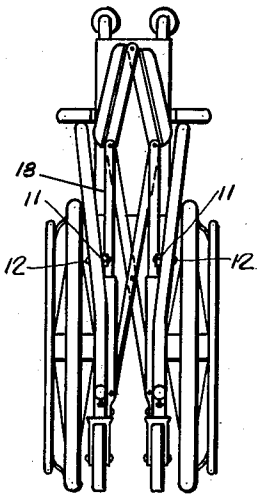


FIG. 3

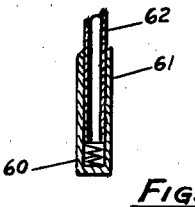


FIG. 6

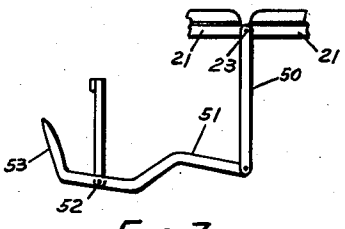


FIG. 7

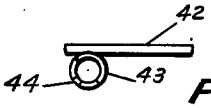


FIG. 5

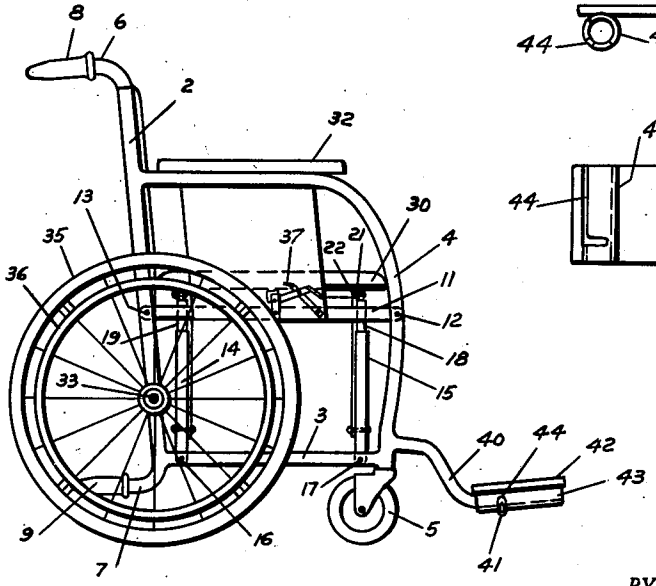


FIG. 1

FIG. 4

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LATERALLY FOLDING CHAIR

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3 Claims. (Cl. 155—140)

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This invention relates generally to folding chairs and more particularly to laterally foldable wheel chairs.

All devices of this character made according to the teachings of the prior art, and with which we are familiar, have been costly and comparatively complicated in construction, and the attempts to make parts of the frame telescoping for flexibility thereof and other attempts to articulate the frame has greatly weakened the frame and made prior devices cumbersome. No simple means has heretofore been provided to carry the chair up stairs or the like and backward tilting of the chair to get over a curb has been likewise difficult in prior devices because of the lack of balance thereof. Many of these prior devices have been top heavy and on many occasions overturned and injured the patient therein.

It is, accordingly, an object of our invention to overcome the above and other defects in laterally foldable wheel chairs, and it is more particularly an object of our invention to provide a laterally foldable wheel chair which is simple in construction, economical in manufacture and cost, rigid and durable in construction, and one which is comfortable and light in weight.

Another object of our invention is to provide a laterally foldable wheel chair capable of self-propulsion which is light and portable, which may be easily carried with a patient disposed therein, and which is compact when folded.

Another object of our invention is to provide a laterally foldable wheel chair with novel means for folding the seat and bracing members.

Another object of our invention is to provide novel wing foot rests and fastening means therefor.

Another object of our invention is to provide a laterally foldable wheel chair which is well balanced and which has provisions for self-propulsion, pushing, tilting and carrying.

Other objects of our invention will become evident from the following detailed description, taken in conjunction with the accompanying drawings, in which

Fig. 1 is a side elevational view of our novel folding wheel chair with parts thereof broken away for better illustration;

Fig. 2 is a front elevational view of our novel folding wheel chair;

Fig. 3 is a front elevational view of our novel folding wheel chair in a folded position;

Fig. 4 is a view taken from the bottom of a wing foot rest for our novel folding wheel chair;

Fig. 5 is a side elevational view of the wing foot rest shown in Fig. 4;

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Fig. 6 is a fragmentary sectional view of a slightly modified form of construction of our novel folding wheel chair; and

Fig. 7 is a fragmentary side elevational view of a lever and linkage means for folding our novel wheel chair.

Referring now to the drawings, Figs. 1 to 5, inclusive, show oppositely disposed, similar side frames 1 made preferably of tubular material and comprising vertically extending slightly inclined rear frame members 2, horizontally extending bottom frame members 3 and substantially right angled arcuate shaped frame members 4 forming inclined front frame members and horizontal arm rests for our novel folding chair, one end of the members 4 being connected to the upper parts of the back frame members 2 and the lower forward parts of the frame members 4 being connected to the forward ends of the lower frame members 3. Swivelling castors 5 are connected to the bottom end of the frame member 4. The back frame members 2 have the upper and lower ends 6 and 7 thereof turned outwardly and rearwardly at substantially right-angles, upper ends 6 forming handle bars or grips and the lower ends 7 forming foot-tilting bars for tilting our novel folding wheel chair. Rubber grips 8 are preferably disposed on the handle bars 6 and likewise rubber members 9 are preferably disposed on the foot tilting bars 7 to prevent the foot from slipping when the chair is being tilted. Intermediate flat brace members 11 extend horizontally of the frames 1 and are attached to the frame members 4 and rear frame members 2 by suitable fastening members 12 and 13. Vertically extending open sleeves 14 and 15 are connected to the lower cross members 3 by suitable fastening devices 16 and 17. Tubular members 18 and 19 are telescopically disposed in the sleeves 14 and 15 and have comparatively rigid seat supporting members 20 with depending supporting brackets 21 hingedly connected to the upper end thereof by suitable pins 22. The seat supporting members 20 are hinged to each other at 23 adjacent the inner marginal portions thereof, the seat supporting members 20 being so constructed that they do not pass below a predetermined horizontal plane such as is shown in Fig. 2. Diagonal folding brace members 25 and 26 extend from the lower portions of the sleeves 14 and 15 to the upper end of the oppositely disposed telescoping members 18 and 19, the members 25 and 26 being pivotally connected at points 27 and 28 and to each other centrally at 29. Suitable cushions 30 are provided on the members 20 for comfort, and a flexible back rest 31 is disposed between the rear frame members 2 as shown particularly in

Fig. 2. Arm rests 32 are preferably provided on the horizontal portion of the frame members 4. Stub shafts 33 are secured by welding or any other suitable means to the outer and lower portions of the rear frame members 2 to provide shafts for receiving wheels 35 having hand rims 36 for self-propulsion of our novel foldable wheel chair. A friction hand brake 37 may be provided to engage the periphery of the wheels 35.

The frames 1 have forwardly extending carrying bars 40 with projecting studs 41. Flat foot rests 42 have a transversely extending tubular portion 43 formed near one end of the undersides thereof with an open T-slot 44. In placing the foot rest 42 on the bars 40, the studs 41 are disposed in the straight longitudinal portion of the T-slot 44 and the foot rests 42 are pushed forwardly until the stud members 41 reach the upper transverse portion of the T-slot 44. The T-slots 44 are of such dimensions that when the foot rests 42 are swung upwardly, the studs 41 engage one end of the transverse portion of the T-slot 44 to hold the foot rests 40 in a vertical position and when the studs 41 are adjacent the opposite end of the transverse portion of T-slots 44 the foot rests 42 are in substantially a horizontal position as shown in Fig. 1.

In Fig. 7 we have shown a modification of our novel device in which a link member 50 extends downwardly from the hinged portion 23 adjacent the inner marginal portions of the seat supporting members 20 and is connected by a horizontally extending arm 51 pivoted on the side frame at 52 and having a handle 53 on the outer end thereof to collapse the wheel chair by pushing down on the handle 53 and forcing the central hinged portion 23 of the seat to move upwardly and thereby cause the side frames 1 to move toward each other.

In Fig. 6 we have provided another modification of our novel invention in which the spring members 60 are disposed in the lower portions of telescoping sleeves 61 and telescoping members 62 seat on the spring members 60, thereby providing four-point spring suspension for our novel wheel chair.

Our novel wheel chair is normally in a position as shown in Figs. 1 and 2 with the members 20 in a horizontal position. In this position a patient may sit on the cushions 30 arranged on the members 20 and propel the vehicle by utilizing the hand rims 36 on the wheels 35. Our chair may be pushed by means of the handle bars 6 and it can be tilted by placing the foot on one of the lower bars 7 thereby causing the casters 5 and forward part of the frame members 1 to move upwardly to move it over a curb. When it is desired to carry our novel wheel chair with a patient therein, the foot rests 42 are removed from the outwardly extending bars 40 and by grasping the handlebars 6 and the bars 40, the chair can be carried. It will be noted that the location of the stub shafts 33 on the rear frame members 2 are comparatively low, thereby providing a balanced wheel chair which may be easily tilted on the stub shafts 33. When it is desired to fold our wheel chair as shown in Fig. 3, the central hinged portion 23 of the seat supporting members 20 is pulled upwardly and the two frames are merely pushed together to a position shown in Fig. 3. In this operation, the diagonal brace members 25 and 26 move upwardly with the telescoping members 18 and 19 to the position shown in Fig. 3. When the chair is unfolded, the two side frames 1 are merely pulled apart, wherein the telescoping members 18 and 19 move into the sleeves 14 and 15 and down to a position shown in Fig. 2. The members 20 are so constructed that they do not move below a horizontal position as shown in Fig. 2.

It will be evident from the foregoing description that we have provided a light, portable, durable and rigidly constructed wheel chair which is well balanced, which may be self-propelled, which may be carried, and which may be folded for storage or for transportation.

Various changes may be made in the specific embodiment of our invention without departing from the spirit thereof, or from the scope of the appended claims.

What we claim is:

1. A folding chair comprising side frames each including vertically extending front and rear frame members, a cross frame member connecting same and vertically extending open sleeves mounted on said cross frame members, spaced pairs of seat supporting members, the inner ends of the members of each pair being hinged to each other on the inner marginal edges thereof, rods telescopically engaged in said sleeves, each of said rods being hingedly connected to the outer marginal portion of a corresponding member of each of said pairs of seat supporting members, and pairs of diagonally extending brace members, the lower ends of the brace members in each pair being pivotally connected to the side frames, each brace member having its upper end pivotally connected to a corresponding rod at the point of connection thereof and its corresponding seat supporting member.

2. A folding chair comprising side frames each including vertically extending front and rear frame members and a cross frame member connecting same, vertically extending sleeves on the cross frame member of said frames, rod members movable in each of said sleeves, pairs of spaced seat supporting members, the inner ends of the members of each pair being correspondingly hinged to each other on the inner marginal edges thereof, each of said rods being hingedly connected to the outer marginal portions of a corresponding member of each pair of seat supporting members, and foldable pairs of cross brace members between said frames, each of said cross brace members being pivotally connected at its lower end to a cross frame member and at its upper end to a corresponding rod at the point of connection thereof and its corresponding seat supporting member.

3. A folding chair as set forth in claim 2 wherein linkage and lever means are attached to the portions of said seat supporting members at which they are hinged to each other to move said seat supporting members angularly upwardly.

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