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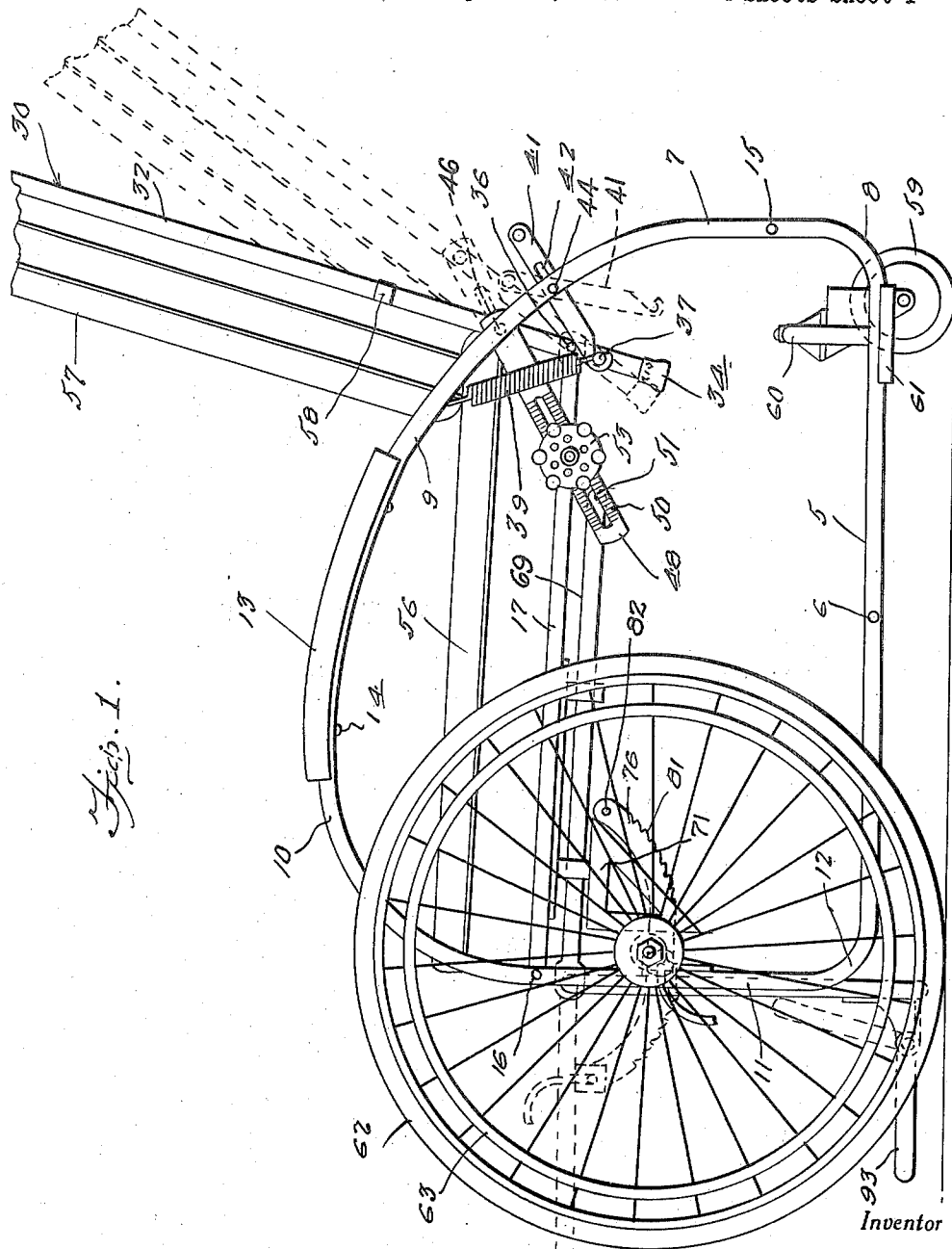
S. DUCAVICH

2,236,089

WHEEL CHAIR

Filed April 21, 1937

4 Sheets-Sheet 1



S. Ducavich

By *Clarence A. O'Brien*
Hyman Berman

Attorneys

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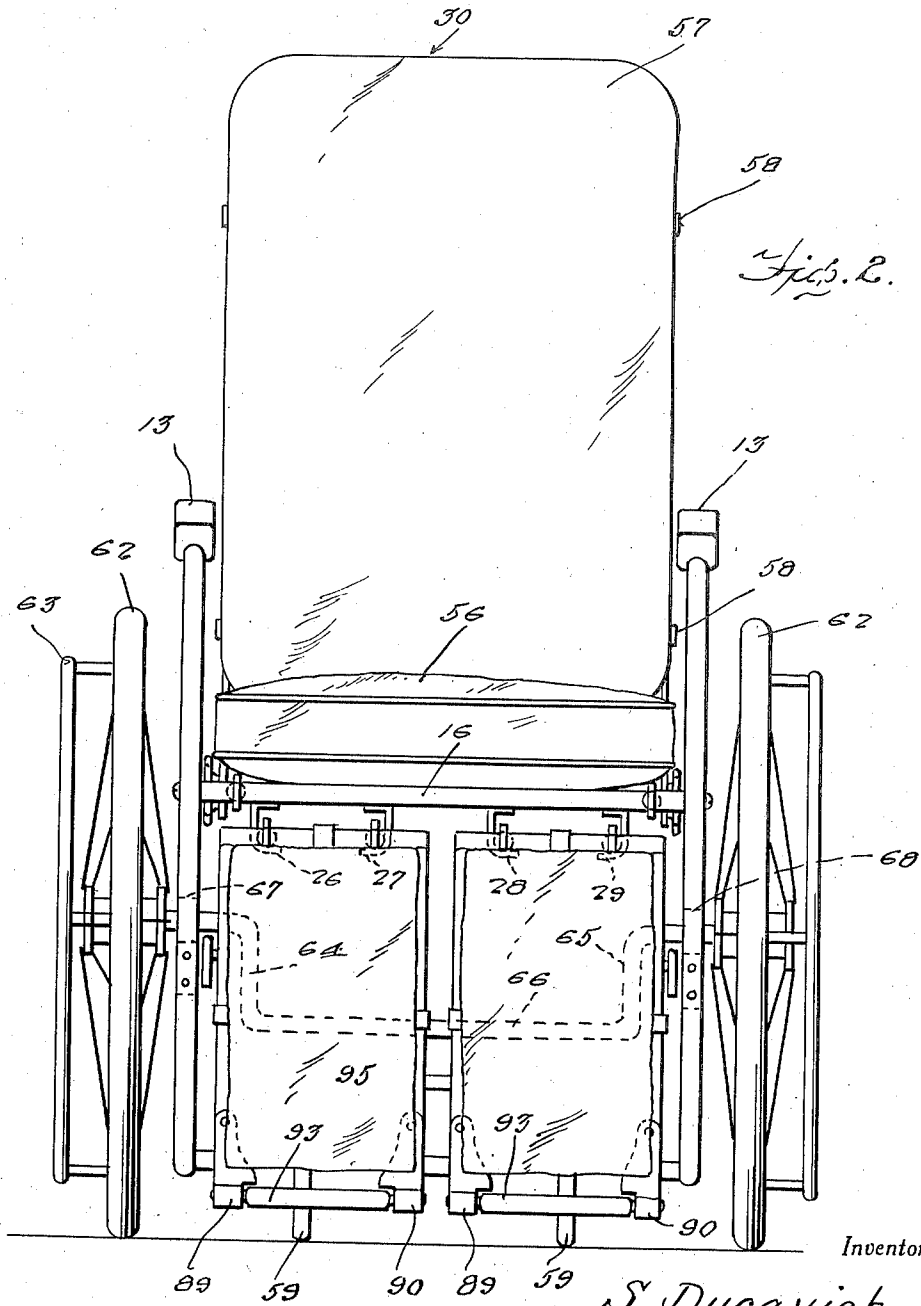
S. DUCAVICH

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By *Clarence A. O'Brien*
Hyman Berman

Attorneys

March 25, 1941.

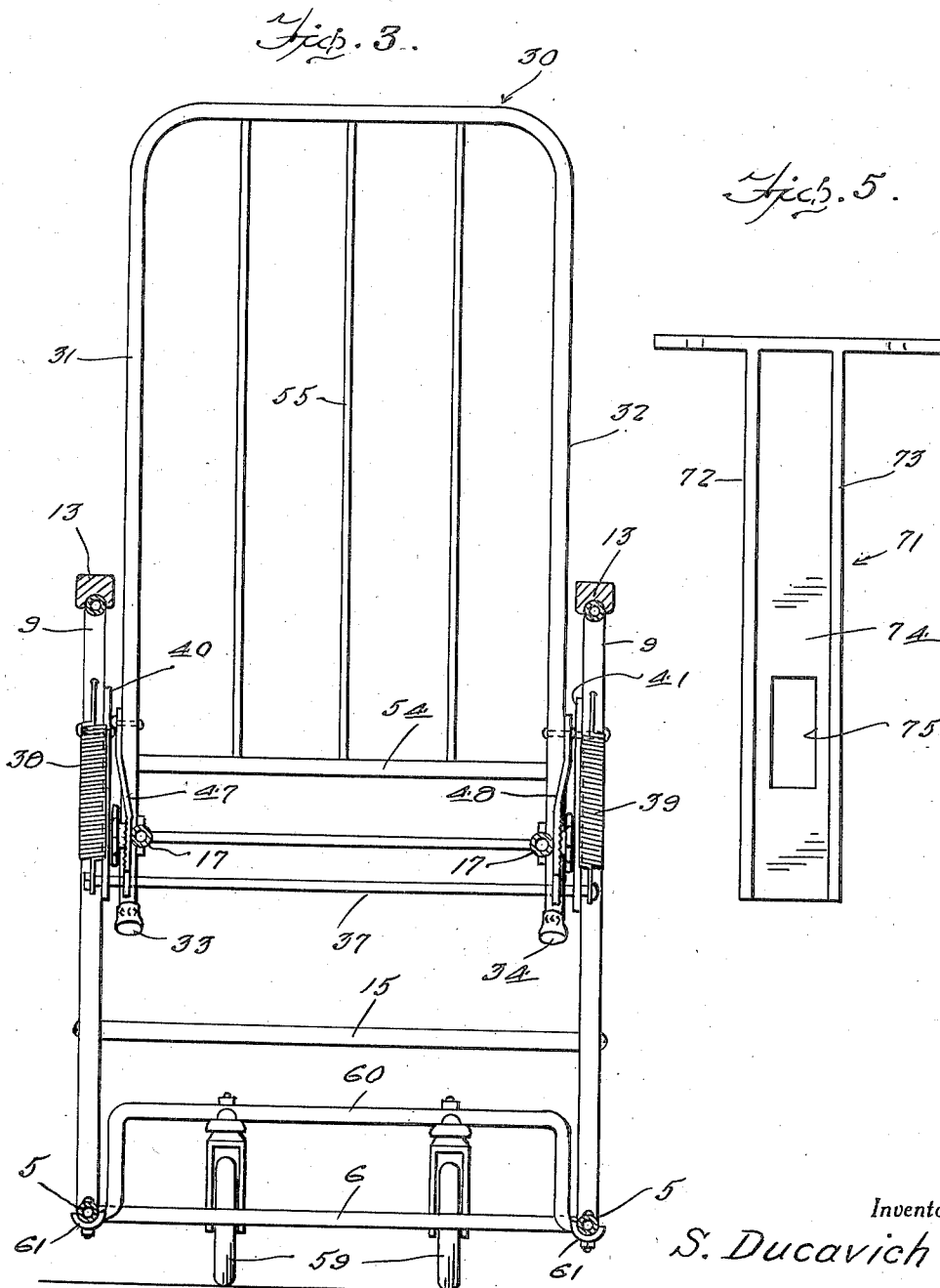
S. DUCAVICH

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Inventor

S. Ducavich

By

Clarence A. O'Brien
Hyman Berman

Attorneys

March 25, 1941.

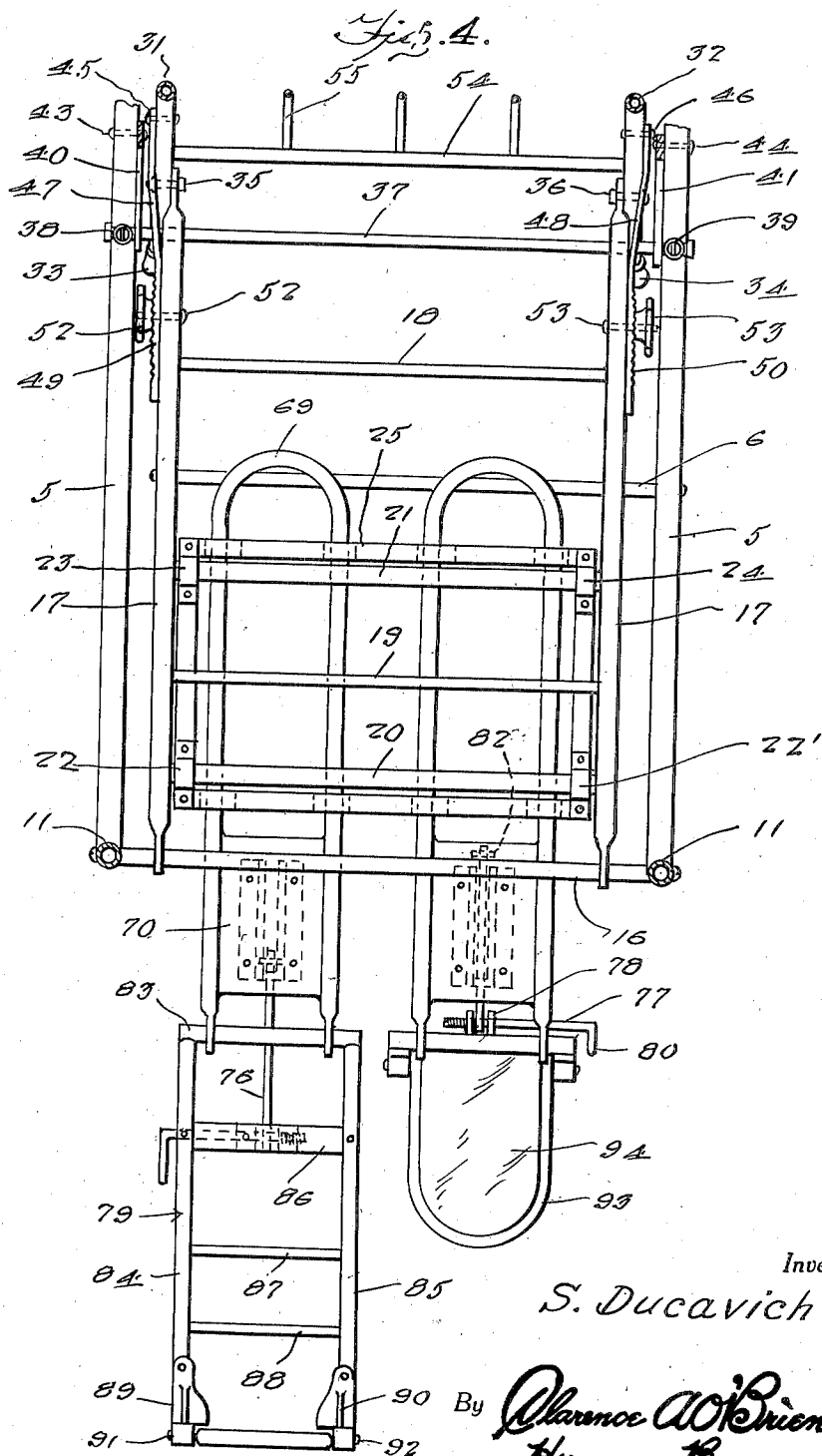
S. DUCAVICH

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Inventor

S. Ducavich

By

Clarence A. O'Brien
Hyman Berman

Attorneys

UNITED STATES PATENT OFFICE

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WHEEL CHAIR

Samuel Ducavich, Chicago, Ill.

Application April 21, 1937, Serial No. 138,259

3 Claims. (Cl. 155—30)

My invention relates to improvements in wheel chairs, and particularly to a wheel chair having a novel frame including more efficient axles for the supporting wheels, and more efficient and easily operable means for adjusting the position of the chair back relative to the seat, and of the leg and foot rests, and an important object of my invention is to provide arrangements of this character which facilitate manufacture, reduce the cost of production, and produce an exceptionally long-life and comfortable wheel chair.

Other important objects of my invention will be apparent from a reading of the following description taken in connection with the drawings, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawings—

Figure 1 is a general elevational view of the left hand side of the embodiment showing in dotted lines adjusted positions of the chair back and of a leg rest.

Figure 2 is an elevational view of the front of the chair with the leg rest in depressed positions.

Figure 3 is a transverse vertical sectional view taken through Figure 1 and looking toward the right.

Figure 4 is a horizontal sectional view taken through Figure 1 and looking downwardly and showing one of the leg rests in a horizontal adjusted position and the other leg rest in a depressed position.

Figure 5 is an elevational view of a detent.

Referring in detail to the drawings, it is seen that the frame of the wheel chair, which is constructed of tubular material as distinct from rectangular cross section material or solid material, and is composed of the similar side members composed of the lower horizontal elements 5 connected by the transverse cross member 6 extending between and connected to points intermediate the ends of said elements. The rear end of each element 5 has a riser 7 on a bend 8 from which projects forwardly and in a generally horizontal position an upwardly bowed upper element 9 having a forwardly downturned front end portion 10, merging into the upper end of a vertical part 11. The lower end of the part 11 is downwardly and rearwardly bent at 12 and terminates in the front end of the element 5.

An arm rest 13 of suitable material is fastened by securing means 14 to the top side of an intermediate portion of the upper element 9. A horizontal rear cross member 15 extends between and is connected to points intermediate the upper and lower ends of the risers 7. Another horizontal member 16 is similarly secured to and between the front vertical portions 11.

Longitudinal side members 17 of the seat frame, which normally occupies a substantially horizontal position, have their front ends pivoted on the

bar 16. The members 17 are pivoted adjacent their rear ends to the side members of the back of the chair, the members 17 being spaced and connected by a cross member 19 adjacent their front ends. Front and rear cross members, of larger cross section than the member 19, space and connect the front portions of the seat frame side members 17. Straps 22, 22' and 23, 24 are arched over the end portions of the larger cross section bars 20 with the ends of the straps fastened to a rectangular frame 25 of flat bar material whereby said rectangular frame is mounted on the seat frame. The front and rear cross members of the frame 25 having longitudinally spaced pairs of channel members 26, 27 and 28, 29 which slidably receive the leg and foot rests, to be hereinafter described, for longitudinal adjustment relative to the seat structure.

The seat back frame of the chair is composed of tubes including the inverted U-shaped member 30 including the depending legs 31 and 32 having shock-absorbing caps 33 and 34, respectively, on their lower ends. At points spaced upwardly from the said lower ends of the legs 31 and 32, flattened rear end portions of the seat frame side members 17 are pivotally secured to the said legs.

A rod 37 extends between and through and is connected to the lower portions of the legs 31 and 32 below the pivotal points 35 and 36, the ends of the rod 37 projecting laterally outwardly beyond the said legs acting as anchors for the lower ends of corresponding helical springs 38 and 39. These springs have their upper ends fastened in openings in the upper elements 9 of the sides of the chair, the action of the springs being to permit the seat frame to yieldably pivot on the axis of the bar 16 when the weight of the occupant of the chair is placed on the seat frame. Depending hooks 40, 41, respectively, are engageable with the outlying ends of the rod 37 at the laterally inward sides of the springs 38 and 39. These hooks are formed on the lower ends of levers which have longitudinal slots 42 intermediate their ends and pivotally and slidably engaging corresponding pivots 43, 44 on the upper elements 9 of the side frames of the chair. While the hooks are disengaged with the ends of the rod 37 with the levers in dependent positions, as shown in dotted lines in Figure 1 of the drawings, the chair back is free to swing relative to the seat frame and the seat frame is free to swing up and down relative to the chair back. However, while the hooks are engaged with the outlying ends of the rod 37, the seat back frame and the seat frame are permitted relative movement only to the extent of the slot 42 in the levers carrying the hooks.

Connected by pivots 45 and 46 to the legs 31 and 32 of the seat back frame are the rear ends

of rearwardly inclined locking plates 47 and 48 which have the forward part thereof serrated, as indicated by the numerals 49 and 50, respectively, and formed with a longitudinal slot 51 through which project respective locking bolts 52, 53 which are mounted in the rear part of the side members 17, the bolts being provided at the serrated sides of the members 49 and 50 with relatively large nuts 52 and 53 which are made in the form of hand-holds and may be tightened to cause the corresponding adjusting leg to be locked in a position and hold the chair back 30 in a correspondingly adjusted tilted position or in a normal position as may be required. A cross member 54 extends between the lower ends of the legs 31 and 32 of the chair back to brace these legs and to form the lower terminus for the vertical bars 55 of the chair back.

A suitable seat cushion 56 of the proper shape and size is laid across and between and along the seat frame side members 17 and the various cross members extending therebetween, and a suitable chair back cushion 57 having clamps 58 engaged with the legs 31 and 32 is laid along the front of the legs 31 and 32 and the bars 54 and 55 of the seat back frame.

Supporting the frame of the chair rollably on a supporting surface are the tired caster wheels 59 which are connected at transversely spaced points on an inverted U-shaped cross member 60 which has the lower ends of its legs connected as indicated by the numerals 61, or by welding, to rearward portions of the lower longitudinal elements 5 of the frame.

The large hand operated wheels 62 have circular grips 63 at the outer side thereof and these wheels are mounted on the laterally outwardly directed ends on the upwardly projecting legs 64 and 65 which are connected by a horizontal bight portion 66 of a tubular axle which extends between and beyond the frame side members, the laterally outwardly extending arms on this axle being mounted in bearings 67 and 68 on the portions 11 of the frame side members.

The leg rests comprise U-shaped horizontal slide portions 69 whose legs slide within the confines of the respective pairs of channels 26, 27 and 28, 29 under the seat frame 25 in a generally horizontal position. The front end portions of the legs of each of the members 69 are connected by a web 70 from which depends a bracket 71 which has spaced vertical side members 72 and 73 of triangular configuration joined by a transverse web 74 provided with an opening 75 in its lower part, and which acts as a catch for the ratchet teeth on the arcuate catches 76 which are pivotally mounted by means of operating rods 77 turning in bearings 78 located on the bottom of the leg rest proper 79. A handle 80 is provided on the operating rods 77 for turning these rods to engage and disengage the teeth 81 selectively with the opening 75 in the bracket 71. A stop pin 82 is provided on the rear end of each catch to engage the back of the web 74 of the detent bracket 71 to prevent the catch from becoming separated from the bracket 71.

The front ends of the slides 69 have ears in which turn rear tubular members 83 of the leg rest frame which is also U-shaped and has legs 84 and 85 between which extends a cross-member 86 on which the operating rods 77 are mounted by the bearings 78. Additional cross members 87 and 88 extend between the legs 84 and 85 and at their front ends the legs have angle brackets 89

and 90 with pivots 91 and 92 turning therein, the said pivots extending in laterally opposite directions from a U-shaped member 93 which is specifically a foot rest and has mounted on the top thereof a suitable cushion 94. Suitable cushions 95 extend across the top of the leg rest frames 79. The frames 93 cooperate with the angle brackets 89 and 90 in such a way that the foot rests may be folded from horizontal to vertical position.

Although I have shown and described herein a preferred embodiment of my invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in the structure and in the materials and arrangement of parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:

1. A chair of the character described, said chair comprising a frame composed of side members each including a lower element and an upper element with a vertical front element connected between said upper and lower elements, ground engaging wheels on the forepart of said frame, a front cross member extending between said side members and connected to said front elements, a seat frame having its front end pivoted on said front cross member, means connecting the rear end of the seat frame with the upper elements of the side members, a chair back having its lower end pivotally supported on the rear end of said seat frame, means on said chair back frame for securing the same in adjusted position, an inverted U-shaped cross member fastened between rear portions of said lower elements of the side members of the frame, and depending ground engaging casters fastened to the bight portion of said inverted U-shaped cross member.

2. A wheel chair of the character described, said wheel chair comprising a frame composed of side members each including a lower element and an upper element with a vertical front element connected between said upper and lower elements, a front cross member extending between said side members and connected to said upper and lower elements, a seat frame having its front end pivoted on said front cross member, means connecting the rear end of the seat frame with the upper elements of the side members, a chair back having its lower end pivotally supported on the rear end of said seat frame, means on said chair back for securing the same in adjusted position, said upper elements including arm rests.

3. A chair of the character described, said chair comprising a support including a pair of laterally spaced members comprising substantially parallel generally horizontal upper elements, a bar connected to and between front end portions of said side members, a seat frame having its forward end pivotally supported on said bar, respective contractile springs stretched between rear end portions of said upper elements and rear end portions of said seat frame and flexibly supporting the rear end of said seat frame, and depending hooks having pivotal and sliding connection with said rear end portions of said upper elements, said hooks being arranged to be engaged with parts of the said rear end portions of the seat frame so as to positively prevent the rear of the seat frame from subsiding below a certain point.

SAMUEL DUCAVICH.