

March 8, 1960

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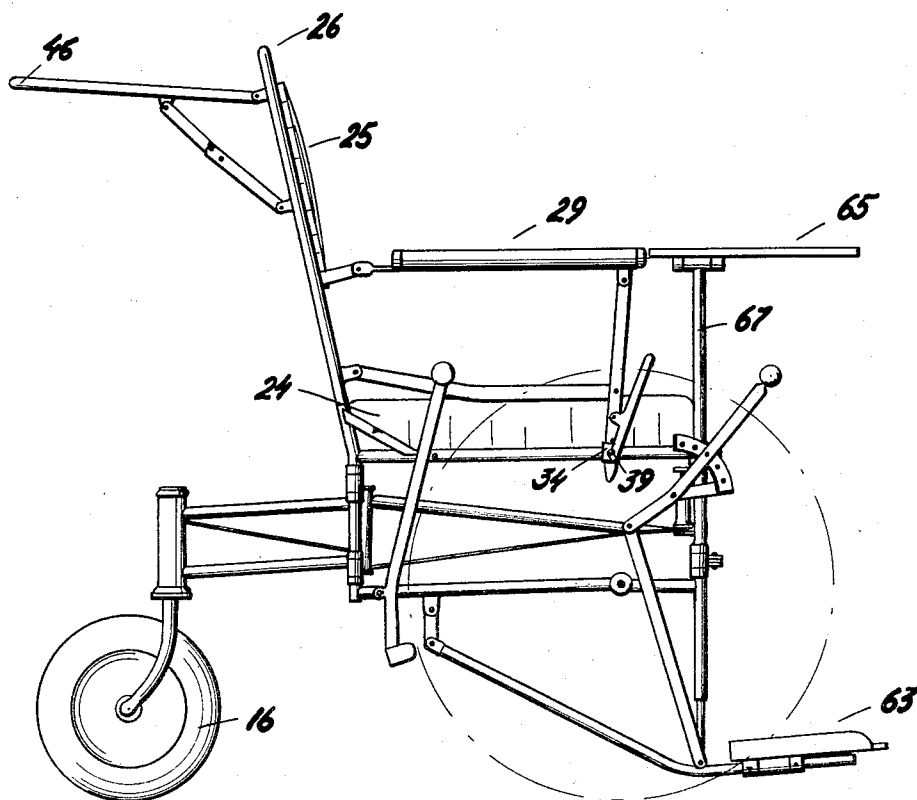
2,927,631

FOLDING WHEEL CHAIR

Filed April 10, 1956

4 Sheets-Sheet 1

Fig. 1.



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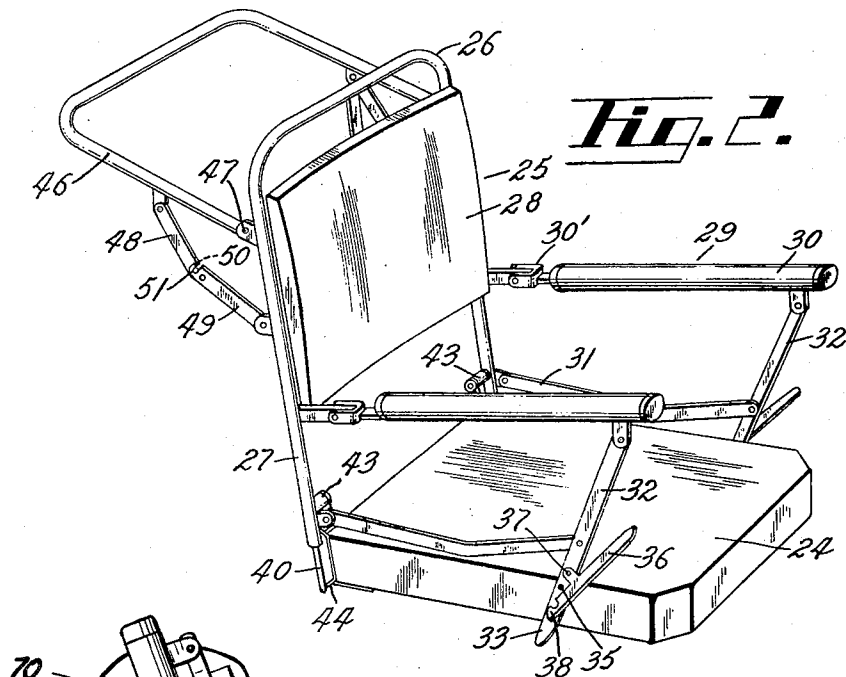


Fig. 2.

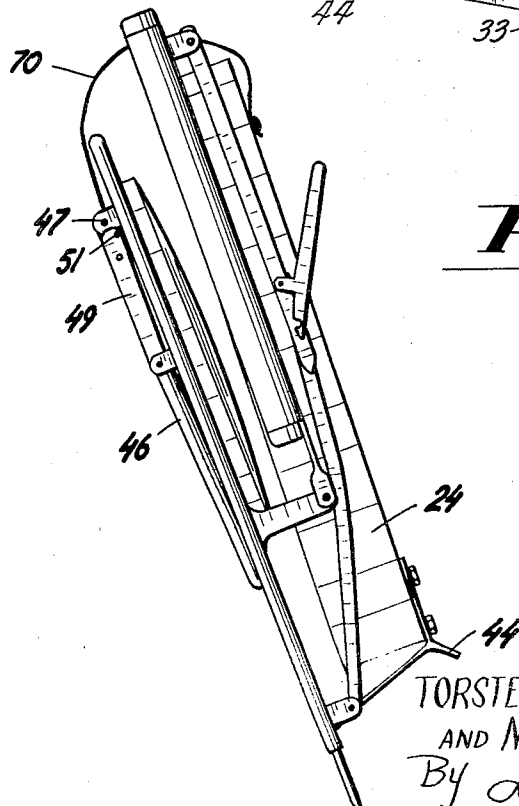


Fig. 3.

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4 Sheets-Sheet 3

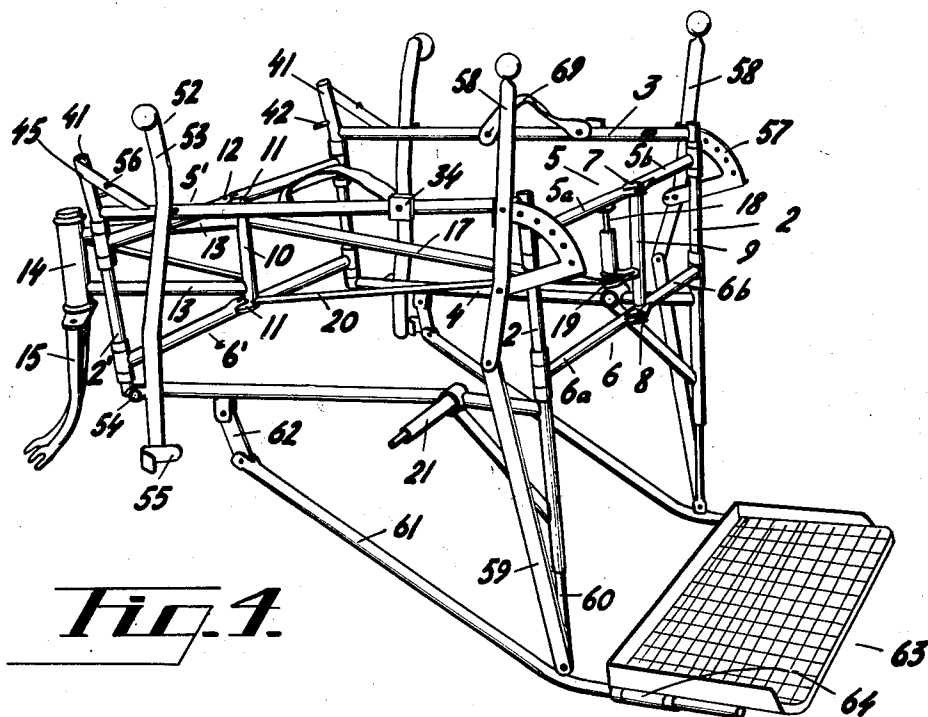
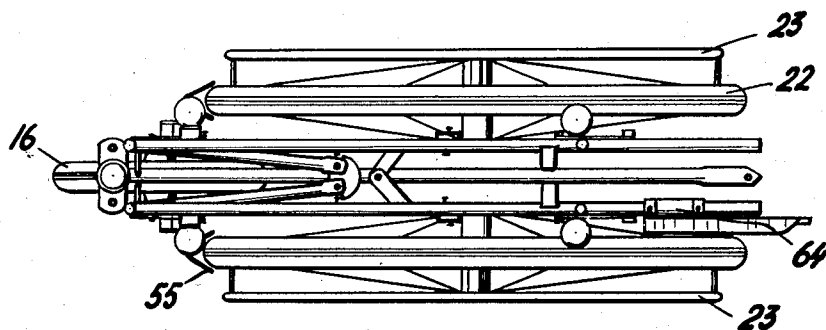


Fig. 1.

Fig. 5.



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Fig. 6.

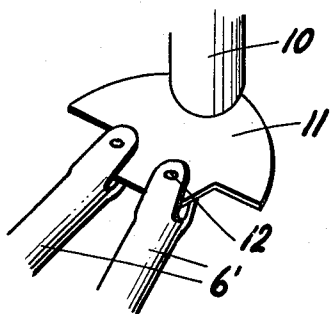


Fig. 7.

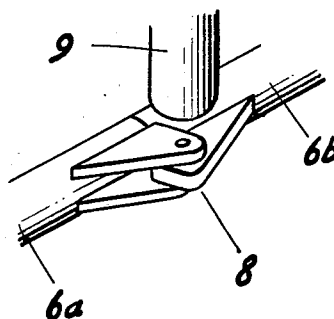
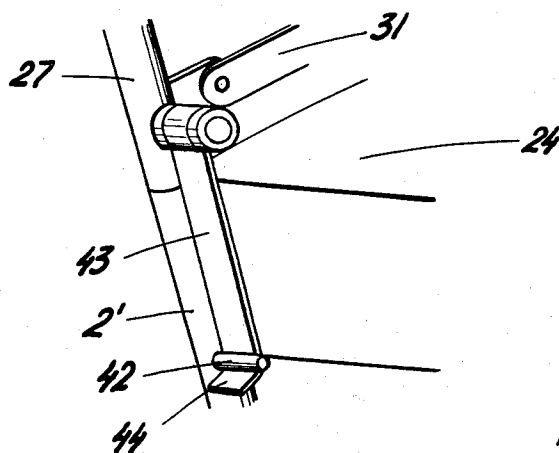


Fig. 8.



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FOLDING WHEEL CHAIR

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Application April 10, 1956, Serial No. 577,242

3 Claims. (Cl. 155—140)

The present invention relates to invalid wheel chairs and is more particularly directed to a collapsible chair of this type.

The principal object of the present invention is to provide a wheel chair such as used by invalids and which chair can be quickly and easily disassembled into two sections, each section of which can be folded into a relatively small and compact unit for convenience in carrying and/or storing the same.

A further and important object of the present invention is to provide a mobile chair which can be economically produced, primarily from tubular members, and also a chair having a wheel carrying supporting frame which can be readily separated from the seat and back of the chair whereupon said supporting frame and seat and back can be collapsed temporarily and as easily expanded and re-assembled for further use.

Another important object of the invention is to provide a wheel chair having arm rests on one or both sides of the seat thereof which arm rests can be readily pivoted for permitting the person using the chair to be easily moved from the chair.

A still further object of the invention is to provide a foot rest for a wheel chair which the user thereof can readily raise or lower while seated in the chair and which foot rest while in its upper position is inclined providing a comfortable foot rest and while in its lowered position rests adjacent the floor for convenience of the person in leaving the chair.

Further objects of the invention will be in part pointed out and in part obvious from the following detailed description of the accompanying drawings, wherein:

Fig. 1 is a side elevation of the present wheel chair minus the driving wheels.

Fig. 2 is a front perspective view of the seat section of the wheel chair.

Fig. 3 is a side view of said seat section in its folded position.

Fig. 4 is a front perspective view of the supporting frame section of the wheel chair; and

Fig. 5 is a top view of said supporting frame section in its folded position including the supporting wheels thereof.

Fig. 6 is an enlarged detailed perspective view of the pivotal connection of the rear frame members forming part of the present chair.

Fig. 7 is also an enlarged detail perspective view of the pivotal connection of the front frame members of the present chair.

Fig. 8 is an enlarged detailed view of the pivotal connection of the seat to the back of the chair.

Referring now more particularly to the accompanying drawings wherein like and corresponding parts are designated by similar reference characters, reference is first made to the supporting frame section shown in its expanded positions in Figs. 1 and 4 and in its collapsed position in Fig. 5. This supporting frame section 1 has a rectangular frame consisting of a pair of front substan-

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tially parallel spaced apart tubular standards 2. A pair of tubular rods 3 are each fixedly connected at one end to the top end portion of one of said standards and extend substantially perpendicular therefrom. A second pair of tubular rods 4 are fixedly connected each at one end to an intermediate portion of one of said standards substantially parallel with rods 3.

A two-piece rod 5 consisting of portions 5a and 5b extend between said standards 2 with sections 5a and 5b having tubular right angle end portions through each of which extends one of said standards for pivotally connecting each rod portion to one of said standards. Similarly, a two-piece rod 6 having portions 6a and 6b also extends between said standards substantially parallel to rod 5 and portions 6a and 6b have right angle tubular end portions through which extend said standards pivotally connecting said rod portions to said standards.

Said rod portions 5a and 5b have their adjacent ends shaped providing a knee joint 7 while similarly portions 6a and 6b likewise have their adjacent end portions shaped providing a knee joint 8. Said knee joints are pivotally connected each to an opposite end of a standard 9 extending between said rods 5 and 6 in such a manner that said rods can fold at said knee joints but only inwardly between rods 3 and 4. A second pair of tubular standards 2' each of which is shorter than said standards 2 has an end of rods 3 and 4 fixedly connected thereto. A standard 10 having flattened end portions 11 has a pair of two-piece rods 5' and 6' each pivotally connected as at 12 to said flattened end portions of standard 10 while the outer ends of said rods 5' and 6' have right angular tubular end portions through which extends standards 2' for pivotally connecting said rods thereto.

A pair of substantially parallel rods 13 are fixedly connected at one end to standard 10 and extend outwardly with their opposite ends fixedly connected to a sleeve 14 which has a wheel fork 15 pivotally mounted therewith. A guide wheel 16 is rotatably mounted between said fork.

A reinforcing arm 17 which may also be of a tubular material is fixedly connected to standard 10 on a side opposite thereof to rods 13 and extends towards standard 9. Said arm 17 has a flattened end portion 19 with a hole therethrough for being inserted between the jaws of a connecting pin mechanism 18 which mechanism is fixedly mounted on standard 9. A reinforcing rod 20 has its ends fixedly connected to standard 10 at one end and to the flattened end portion 19 of arm 17.

Each of the tubular rods 4 has an axle 21 extending substantially perpendicular therefrom which axles are coaxial and are for supporting wheels 22 one on each side of the chair. Said wheels having an annular hand rail 23 connected to a side thereof which is also coaxial with the wheel 22 and permits the user of the chair to move the same by manually moving said hand rails.

A seat section for the present chair is shown in Figs. 1, 2 and 3 and consists of a resilient seat 24 having a supporting frame (not shown) therein. A back for said seat section is provided by an inverted U-shaped support 25 having a head 26 and downwardly extending legs 27 between which is connected a resilient back 28.

A pair of arms 29 extend on each side of said seat and each consist of arm rests 30, a bar 31 and an upright 32 with an end of said arm rest 30 and bar 31 pivotally connected to said upright 32 while arm rests 30 are pivotally connected as by joints 30' to one of said legs 27.

When mounting said seat upon the supporting frame 1 the lower pointed ends 33 of each of said uprights 32 can be inserted within one of a pair of sleeves 34 each mounted on one of said rods 3 until a stop 35 carried by each upright rests upon the upper edge of the respective sleeve 34.

Each upright 32 further carries a locking device con-

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sisting of a lever 36 pivoted at its medial portion to one of said uprights 32 as at 37 and has a catch 38 provided at its lower end for engaging with a pin 39 on said sleeve 34, thus temporarily retaining the uprights 32 from withdrawal from said sleeves.

Each of said legs 27 has a downwardly extending pin 40 capable of being inserted within the sleeve shaped end portions 41 of one of said standards 2' thereby connecting seat 24 at its rear portion to the same portion of said supporting frame. Each of said standards 2' has a stop 42 extending therefrom for limiting the distance pin 40 can be inserted in standards 2'.

Seat 24 is pivotally connected at its rear end portion by a pair of arms 43 each pivotally connected to one of said legs 27 in such a manner that the seat 24 can be pivoted upwardly against the back 28 as shown in Fig. 3. Each arm 43 has an extension 44 which extends beneath one of said stops when said seat is in its lowered position as shown in Fig. 2 with its front end resting upon rod 5 for preventing the withdrawal of pins 40 from standards 2' until the seat has been raised to its folded position of Fig. 3.

A pair of braces 45 each extends from the upper end of a standard 2' to one of said rods 3 for reinforcing said standards.

A U-shaped handle 46 has each end thereof pivotally connected as at 47 to one of said legs 27 permitting the same to be folded downwardly against said legs. A pair of supports are each provided by an arm 48 pivotally connected at one end to handle 46 and at its opposite end to a second arm 49 which in turn is pivotally connected to a leg 27. Arm 48 has a notch in the upper edge thereof for receiving a pin 51 carried by arm 49 to prevent the downward pivoting of said arms. Thus, arms 48 and 49 can only be pivoted upwardly to permit the lowering of handle 46.

A pair of brake rods 53 each having a handle 52 are pivotally connected at their lower portion by pivot 54 to one of said rods 4 whereby brake 55 can be brought to bear against the periphery of one of said wheels 22 for slowing or stopping the movement of the chair. When said rod 53 is brought rearwardly it will engage an abutment 56 for temporarily retaining said brake against said wheels.

A pair of quadrant-shaped plates 57 are each fixedly connected to one of said standards 2 and have a control lever 58 pivoted thereto. A pair of links 59 are each pivotally connected at one end of the lower end of said levers 58 while each link is pivotally connected at its opposite end to one of a pair of rods 60 each slidably extending within the bore of one of said standards 2. Supporting arms 61 are pivotally connected at 62 each to one of said rods 4 and at their medial portion to one of said rods 60 with said supporting arms extending forwardly of said supporting frame. A foot rest 63 extends across and is positioned upon the outer ends of said supporting arms 61 while one end of said foot rest has a sleeve 64 fixedly connected thereto through which extends one of said arms 61 permitting said foot rest to be pivoted upwardly on said sleeve when it is desired to fold the supporting frame of the wheel chair.

When it is desired to use the present invalid chair the elements thereof are positioned as shown in Figs. 1, 2 and 4. That is, rods 5 and 6 are pivoted to a straight position as are rods 5' and 6' and upon inserting pin 18 through the end 19 of rod 17 the frame is given a fixed rectangular configuration. Thereupon uprights 32 of said seat section are inserted in sleeves 34 while pins 40 are inserted in sleeves 41 of standards 2'. Catch 38 will engage pin 39 and extension 44 extending beneath stops 42 for retaining the seat section to the supporting frame section. To use the chair, a person is seated upon the seat 24 and rests against the back 21. By moving control levers 58 foot step 63 can be raised or lowered as desired and retained in that position by pins carried by said con-

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trol levers 58 engaging openings in said quadrants 57. Thereupon the person may manually engage the hand rails 23 and by pushing or pulling the same, move the chair in the position desired, as caster wheel 16 is free to pivot to follow the same. To stop or slow the movement of the chair, the operator can move one or both of the brake rods 53, moving brakes 55 against wheels 22.

Should it be desired for the person in the chair to be lifted therefrom or to slide sideways from seat 24, either or both of the arms 29 can be pivoted upwardly by first pivoting lever 36 releasing catch 38 from pin 39 whereupon the upright 32 can be withdrawn from sleeve 34 and the arm rest 30, bars 31 and uprights 32 pivoted upwardly against legs 27 in the manner shown in Fig. 3 thus providing ready access to the sides of seat 24.

A tray 65 has a pair of legs 67 pivotally connected to the bottom thereof one at each side of said tray. Said legs 67 have the lower end thereof formed for being inserted each within the tubular upper end of one of the standards 2 whereupon the tray is supported in front of the arms 29 as shown in Fig. 1.

In order to collapse the present wheel chair into two compact and individual sections for transporting or storing the same, legs 67, tray 65 should be withdrawn from uprights 2; levers 36 pivoted withdrawing catch 38 from pins 39 and thereafter pivoting arms 30 and 31 upwardly along the side of back 28. Seat 24 also is to be pivoted upwardly against back 28 withdrawing extensions 44 from beneath pins 42 whereupon pins 40 can be lifted from standards 2' detaching the seat and back section from the supporting frame section 1. Pivoting arms 48 and 49 upwardly allows handle 46 to be moved downwardly against legs 27 so that the seat section assumes the position shown in Fig. 3 and a strap 70 having snaps at the end thereof attachable to the bottom of seat 24 and rear of back 28 permit the seat section to be conveniently carried.

Thereafter pin 18 should be lifted withdrawing the same from end 19 of rod 17 whereupon the rod sections 5a, 5b and 6a, 6b can be folded inwardly and similarly the rod sections of rods 5' and 6' folded inwardly bringing rods 3 and 4 of the side frames towards one another until the supporting frame assumes the position shown in Fig. 5. A strap 69 connected to one rod 3 can be attached to pin 39 of the other rod 3 providing a handle in order that the frame can be conveniently carried. Foot rest 63 can be raised by pivoting control arms 53 and also pivoting foot rest 63 about the arms 61 until it assumes a substantially vertical position.

A reversal of the aforementioned procedure permits the wheel chair supporting frame section to be returned to the position of Fig. 4 and the seat section to the position of Fig. 2 whereupon they can be reattached forming the complete chair of Fig. 1.

The present wheel chair is capable of considerable modification and such changes thereto as come within the scope of the appended claims are deemed to be part of the invention.

What we claim is:

1. A wheel chair capable of being folded in two sections comprising in combination a seat and back rest section, a wheel carrying support section consisting of a pair of side frames, a pair of end frames each comprising two pivotally connected horizontal arms which at their free ends are pivotally connected to said side frames and capable of folding inwardly only and in a horizontal plane, an arm pivotally connected to one of said foldable end frames and detachably connected to the other of said foldable end frames and normally retaining said support section open for use in substantially a rectangular position when connected to said other foldable end frame and permitting the collapsing of said section when detached from said other foldable end frame, and means for detachably mounting said seat and back rest section

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on said support section when in said rectangular position.

2. A wheel chair as claimed in claim 1, wherein said mounting means includes sleeves provided on said supporting frame and wherein said seat and back rest section consists of a seat and a back rest having said seat pivotally connected thereto and having pins extending from said seat section and provided to be inserted in said sleeves on the supporting frame, stops provided on said supporting frames and said seat having extensions for engaging said stops when said seat is pivoted from said back for preventing the withdrawal of said pins from said sleeves.

3. A wheel chair as claimed in claim 1, wherein said seat and back rest section consists of a seat, a back having said seat pivotally connected thereto, arms pivotally connected at one end to said back on opposite sides of said seat, uprights each pivotally connecting the arms on one side of said seat, and said mounting means includes pins extending from said seat sections and said supporting frame having a plurality of sleeves each for

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detachably receiving one of said pins and uprights therein for connecting said seat section to said supporting frame, stops extending from said sleeves, catches each carried by one of said uprights for engaging the stops of their respective sleeve for detachably connecting said uprights to their respective sleeves.

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