

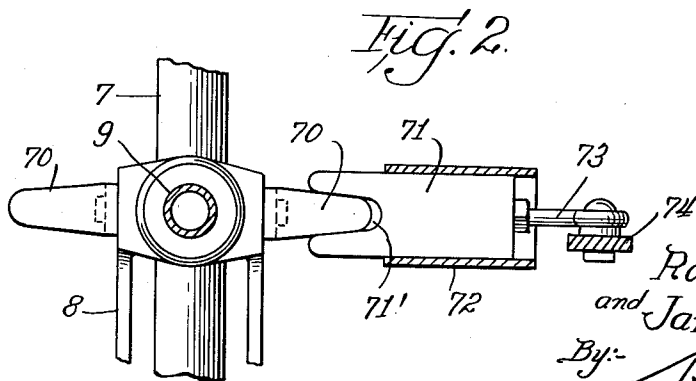
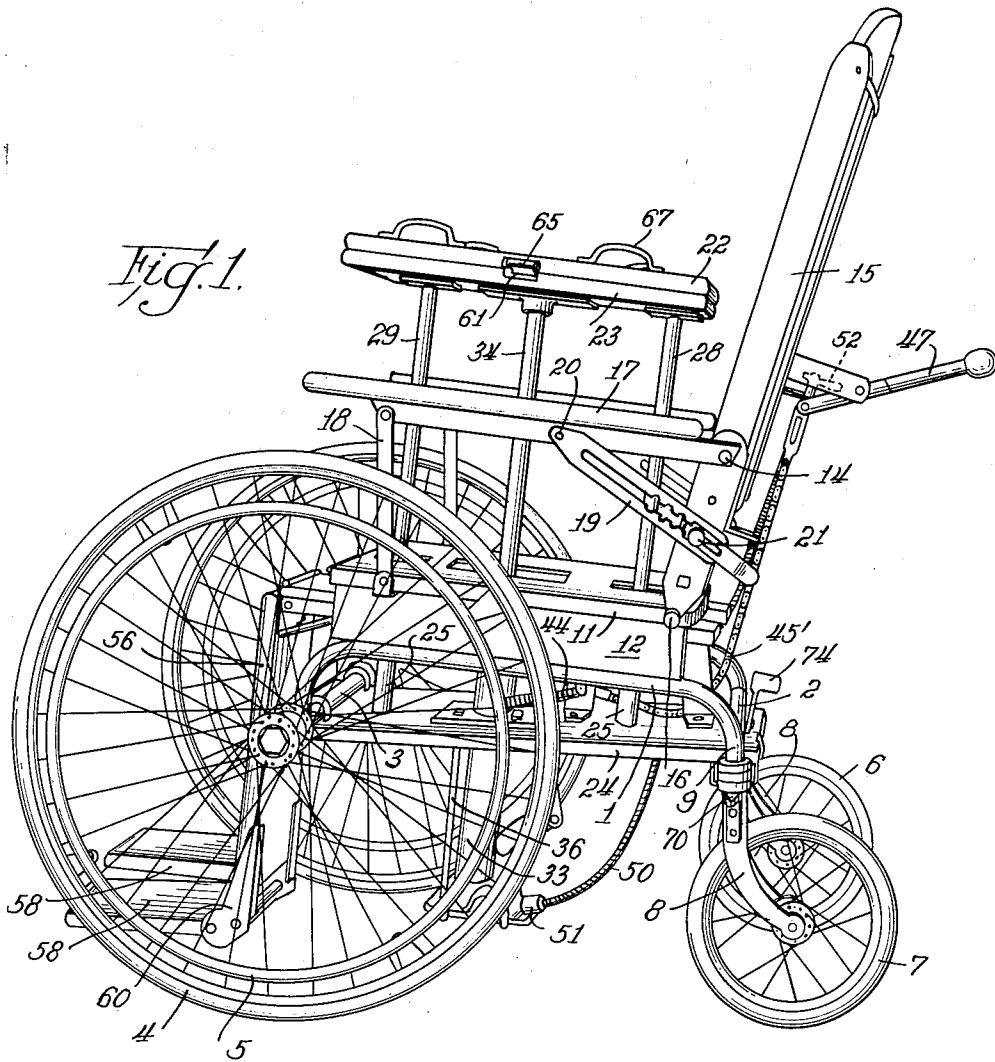
Jan. 3, 1956

R. T. LIDGE ET AL
WHEEL CHAIR OR THE LIKE

2,729,272

Filed June 18, 1953

4 Sheets-Sheet 1



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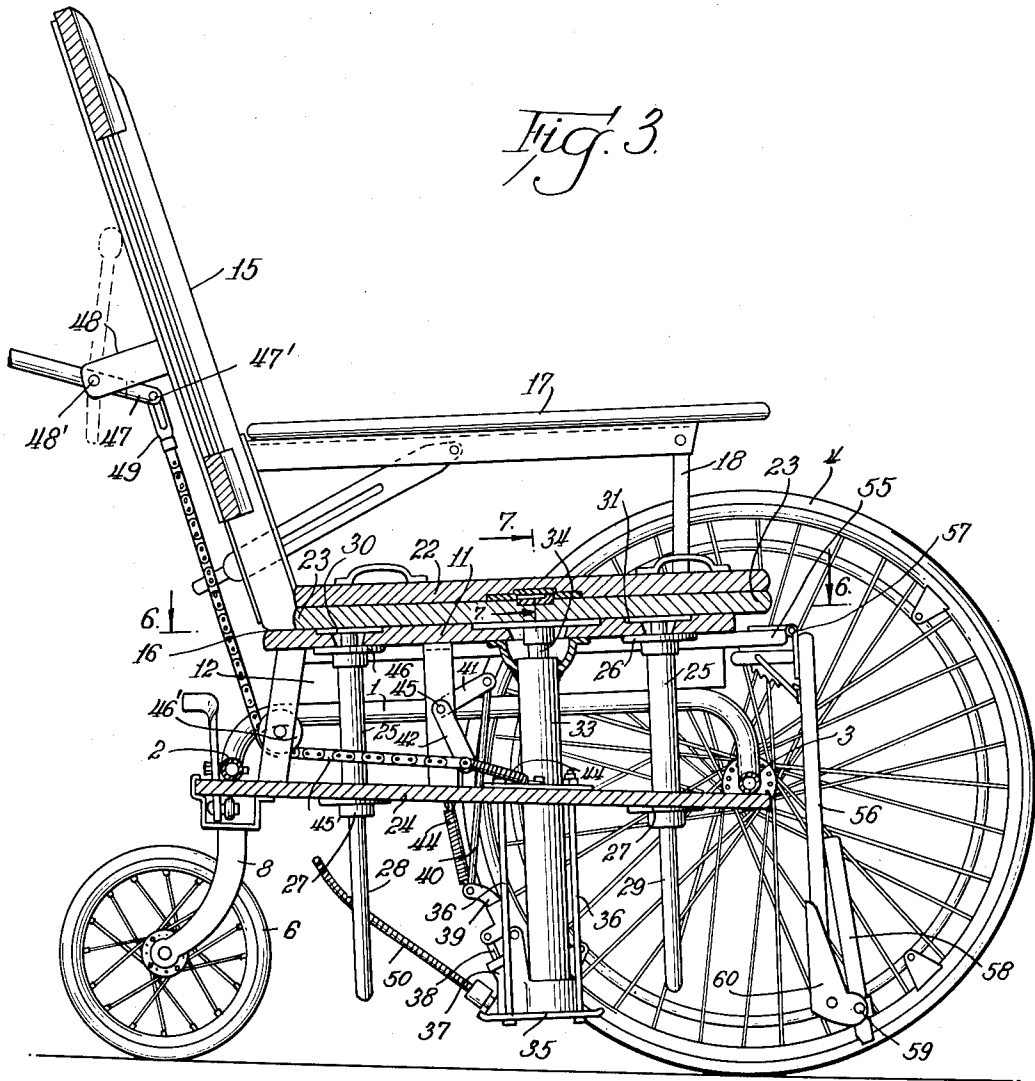
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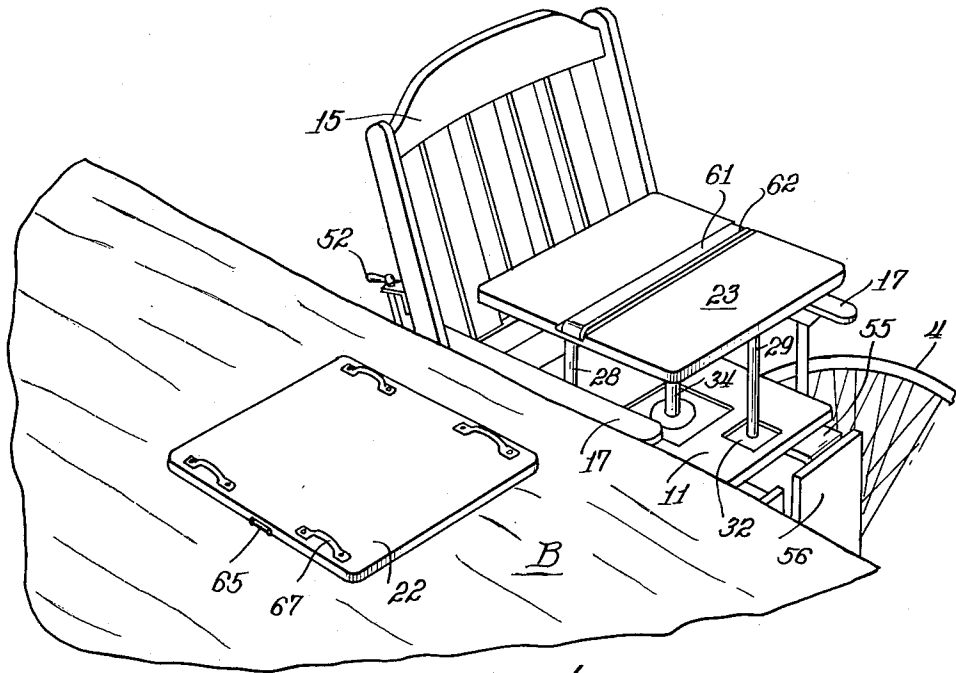


Fig. 4.

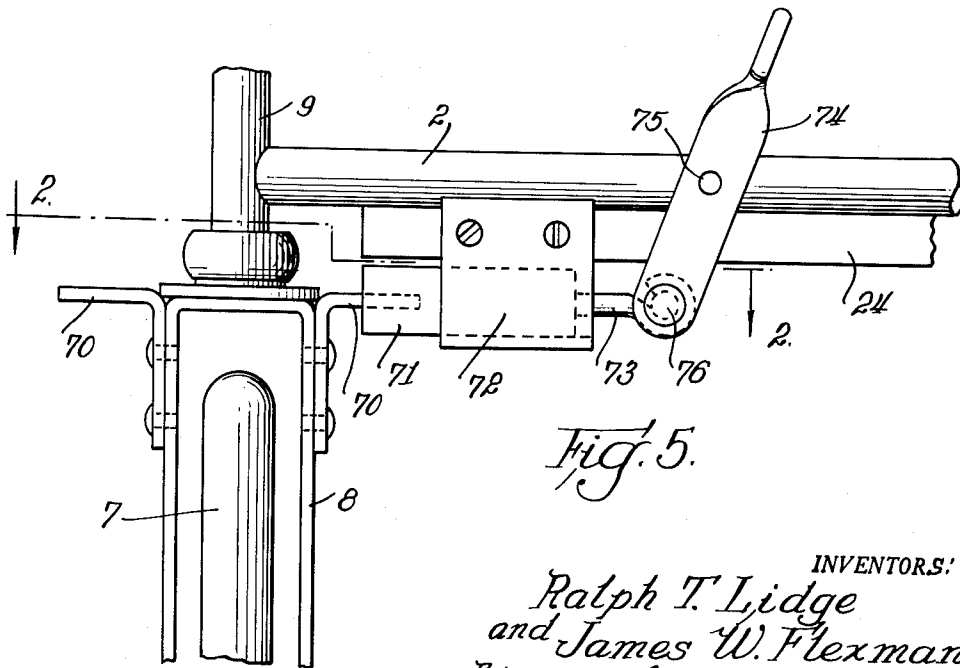


Fig. 5.

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Fig. 6

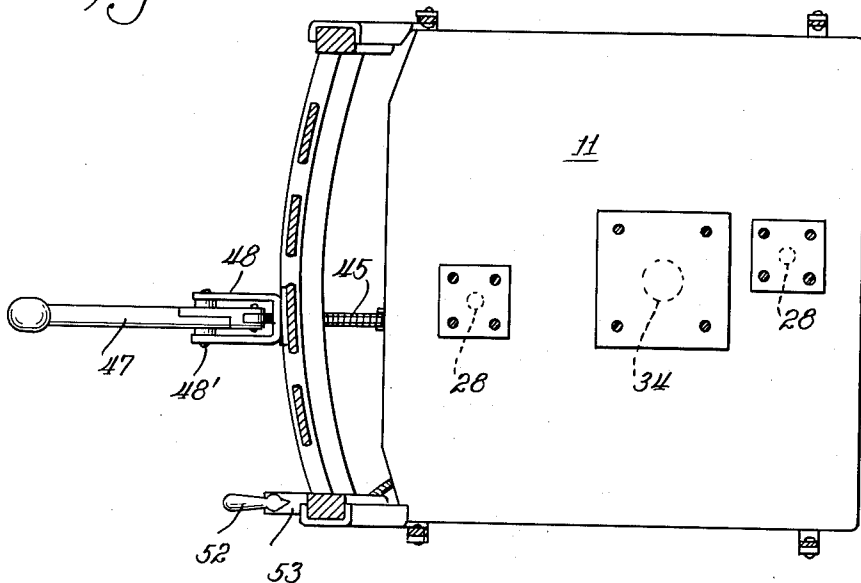


Fig. 7

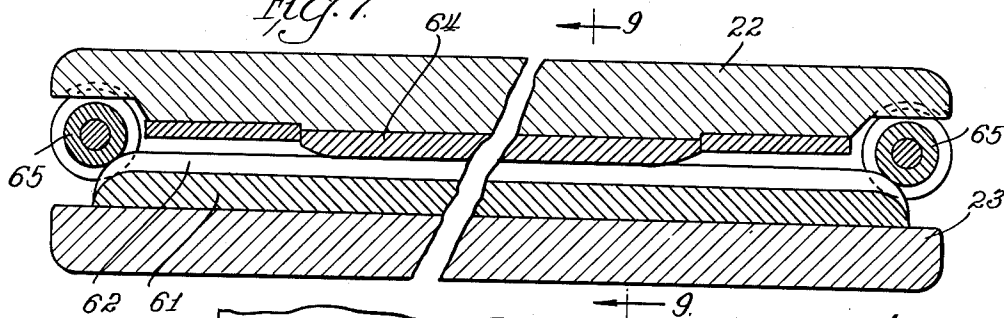


Fig. 8

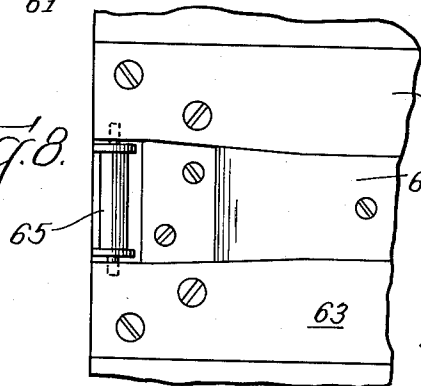
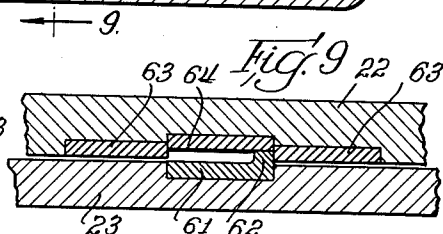


Fig. 9



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WHEEL CHAIR OR THE LIKE

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Application June 18, 1953, Serial No. 362,449

7 Claims. (Cl. 155—30)

Our invention as illustrated relates to a wheel chair for hospital or home use, which embodies features of the conventional wheel chair but in addition is constructed to facilitate the handling of an invalid or patient and transfer of the patient between the chair and a bed or cart with a minimum or no discomfort or injury to the patient and with a minimum effort on the part of the nurse or attendant.

With the foregoing purposes, the invention has among its objects the production of a wheel chair or the like of simple construction, which is of minimum weight and cost and easily operated to perform its functions, and which may be moved or rolled about by the patient or by an attendant when the patient is seated in the chair or other vehicle.

It has among its further objects a chair which may be used as any wheel chair after the patient is able to get on or off of the bed without requiring lifting or handling. In other words, as the patient improves and is able and strong enough to get in or out of bed in the normal way, the chair may be employed like any conventional wheel chair.

A further object is an improved carrier, for example a chair, of the kind described provided with a vertically movable platform which may be raised or lowered adjacent the side of a bed and having a movable and detachable slidable transfer seat which may be moved under the patient and thence moved onto the platform, the seat being easily slidable from the bed onto the platform or to the bed from the platform, means being provided to guide the seat while moving on or off of the platform and to limit movement and center the same when on the platform.

A further object is the construction of a chair in which the movable platform is stabilized during the raising and lowering of the same and particularly during the movement of the transfer seat on or off of the platform.

A further object is the production of a chair of the kind described provided with a conventional tilting back, leg rests and side arms and with suitable mechanism for elevating a platform to a point where the transfer seat may be readily moved over the arm rests when the platform is in its raised position. In the present construction as illustrated an hydraulic lift or jack carries the movable platform, the controlling means for the hydraulic lift being arranged at the rear of the chair on the tilting back so that it may be conveniently and readily handled, operated or controlled by a nurse or attendant, the chair being provided with suitable means for preventing movement of the chair during the time the patient is being transferred between the chair and bed.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end our invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

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In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a side elevation of a wheeled invalid chair embodying the invention;

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 5, illustrating a locking mechanism for one of the swiveling wheels;

Fig. 3 is a sectional view of the chair with portions shown in elevation;

Fig. 4 is a perspective view showing a portion of a bed B and movable platform and transfer seat;

Fig. 5 is a view in elevation of the locking mechanism shown in Fig. 2;

Fig. 6 is a sectional view taken substantially on line 6—6 of Fig. 3;

Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 3;

Fig. 8 is a plan view of a portion of the under side of the transfer seat which shows the rollers at each edge that guide and center it on the movable platform; and

Fig. 9 is a sectional view taken substantially on line 9—9 of Fig. 7.

Referring particularly to Figs. 1 and 3, there is provided a frame consisting of the side members 1 and end members 2 and 3 rigidly secured together. A pair of wheels 4 secured to the frame at the front end and a pair of wheels at the rear support the frame so that the chair may be rolled about, the front wheels having the conventional rings 5 by means of which the occupant of the chair may propel the same without the aid of an assistant. The rear wheels 6 carry the forks 8 which are swiveled on the depending portions 9 of the frame, both wheels being arranged to swivel, locking means hereinafter described being provided for locking one wheel against swiveling.

Arranged at each side member 1 and secured thereto is a member 12 on which is mounted a fixed platform or support 11 which is carried by the members 12 mounted on the frame. A back 15 is pivoted or hinged to the support 11 as indicated at 16. The chair is also provided with two arms 17 which are carried at the front end by the supports 18 pivotally secured at their ends to the arms and to the support 11, the arms being also secured to the back 15 as indicated at 14. The conventional links 19 pivotally secured to the arm at 20 and to the back 15 may be tilted backward or maintained in a desired adjustment. There is also provided a support or platform 24 arranged below the support 11, the same being secured to the frame at the ends 2 and 3. The two supporting members 11 and 24 are connected and spaced by means of tubular pipes 25, having their upper ends secured to the support 11 by means of the plates 26 and to the lower support 24 by means of the plates 27 (see Fig. 3). These tubular members not only serve to rigidly connect the supports 11 and 24 and maintain them in spaced relation, but they also serve as guides for the stabilizing members 28 and 29 which are movable through the supports 11 and 24 and stabilize the movable platform 23 during raising and lowering, and when transferring the patient on the transfer seat.

It will be noted by referring to Fig. 6 that the stabilizing members 28 and 29 are offset transversely relative the rod 34 of the hoist.

Referring to Fig. 3, in which for purposes of illustration an hydraulic lift is provided, 33 represents a fluid and plunger container which is carried by a supporting member 35 carried by the rods 36 secured to and depending from the support 24. At the base of the fluid container 33 is a pumping mechanism consisting of the housing 37 and a piston rod 38 extending into the housing 37. The pump shown is operated by means of bell crank levers 39 and 41, connected by means of a link 40. The link 41 is pivotally secured to the link 40 and to a link

42, forming a bell crank 41—42 pivotally secured at 45. Springs 44 are shown for retrieving the pumping mechanism. A flexible connecting member 45' extends under an idler 46'. The flexible member 45' is connected by a link 49 to a lever 47 pivotally secured at 47' to a bracket 48 at 48'. 47 constitutes a handle by means of which rod 46 and the flexible member 46' can be moved to actuate the bell crank 41—42 and reciprocate the link 49 operatively connected to the pump plunger 37. As shown in Figs. 1, 3 and 6 the lever 47 is constructed in two parts so that it may be folded out of the way when not in use, the spring 44 tending normally to maintain it as shown in Fig. 1 if in one piece.

A valve 51 is provided at the base of the pump 37 (see Fig. 1) which may be controlled by a flexible cable 50 to the back of the chair, a handle 52 at the end of the cable (see Figs. 4 and 6) providing means for turning the cable and opening or closing the valve. This construction is more or less similar to any hydraulic lift such as an automobile jack. While an hydraulic lift or jack is shown, any equivalent may be provided for the purpose for controlling the lifting or lowering of the movable platform 23. The chair illustrated is provided with the usual supports 56 for the patient's legs, which supports are hinged at their upper ends at 57 to members 55 slidably mounted below the platform 11. Foot rests 58 are shown pivotally secured at 59 to brackets 60 on the members 56. The supports for the legs are conventional and it is unnecessary to describe the means for operating and controlling the same.

Referring to Figs. 1, 3 and 4, 22 is a transfer seat preferably covered by rigid Vinylite sheeting bonded to the bottom side and a moisture-proof flexible sheeting bonded to the sides and top, the transfer seat 22 being detached from the platform when transferring the patient onto or off of the chair. As shown, 61 represents what may be termed a track provided with a raised or rail portion 62 at one side, which is secured on the platform 23. Platform 23 is covered with rigid Vinylite sheeting molded to conform to the top and sides and is used to reduce friction. The transfer seat 22 is provided with a member 64 between the two track members 63 arranged so as to fit at each side of the track 62 (see Fig. 9). At each end of the member 64 is arranged a flanged roller 65 (see Figs. 7 and 8), the rollers performing two functions, to carry the transfer seat 22 when moved on or off of the platform, and also when on the platform to drop over the end of the track 62, centering the transfer seat on the platform as well as to prevent its accidental displacement when carrying the patient. The transfer seat is preferably provided with handles 67 or their equivalents to facilitate the moving of the transfer seat from or to bed B. In use, the chair is brought to the side of the bed B as illustrated in Fig. 4, and to prevent the same from being moved away from the bed when transferring the patient to or from the chair, we preferably provide means for locking one of the swivel wheels against swiveling. The simple locking means is shown in Figs. 2 and 5 and consists of a member 70 at each side of the upper end of the fork 8. A slidable member 71 provided with a notch 71' is arranged to engage the adjacent member 70 on the fork 8 (see Fig. 2), preventing the wheel from swiveling. However, the chair may be moved forward or back along the side of the bed even when the wheel is locked so as to position track 62 in relation to rollers 65 when the patient is seated on the transfer seat or a bed. The locking member 71 is slidably carried by the member 72 mounted on the platform 24 as shown in Fig. 5, and is connected by rod 73 to a lever 74 which is pivotally secured at 75 to the frame 2, the rod being rather loosely connected at 76 to the lower end of the lever. Referring to Fig. 5, to unlock the wheel the upper end of lever 74 is moved to the left and to lock it moved in the opposite direction.

In the use of the device, assuming that the patient is on a hospital bed B and is to be moved to the wheel

chair or other carrier, the transfer seat 22 is slipped under the hips of the patient lying on the bed. The chair is then moved to the side of the bed and the rear swivel wheel locked in position by moving the foot lever 74, preventing any sideways movement of the wheel chair while transporting the patient from the bed to the chair. Before moving the patient, the raised platform 23 is raised to slightly below the top level of the bed, for example, approximately one inch or so. Then the track on the raised platform is aligned with the roller 65 at the side of the transfer seat by moving the wheel chair to bring it into position. The patient is then raised to a sitting position on the transfer seat preparatory to moving to the chair. An assistant standing on the far side of the wheel chair reaches across the wheel chair, grasps the handle nearest him on the transfer seat and pulls the seat onto the raised platform. At the same time if a second assistant is present the assistant pushes the other handle, moving the patient seated on the transfer seat to the raised platform. The transfer seat is automatically centered and aligned on the raised platform when the two rollers of the transfer seat drop down over the ends of the track at each side of the raised platform (see Fig. 7). The rollers are longer than the platform rail to give the person moving the transfer seat a reasonable tolerance in aligning the center of the transfer seat rollers with the platform rail.

The transfer seat being in position on the platform 23 and prevented by the rollers 65 and track from displacement, the platform may be lowered by turning valve control 52, carrying the patient and transfer seat to its low position. The foot rests may then be lowered for the comfort of the patient and the wheel 7 unlocked. The handle 47 is then folded upward and out of the way of the attendant who is to push the chair about.

To place the patient seated in the wheel chair back on the bed B, the platform, transfer seat and patient are raised by manipulating the handle 47 at the rear of the chair. The platform being raised above the side arms and slightly higher than the bed, the transfer seat may be slipped off the raised platform by pulling the transfer seat and patient onto the bed. At all times, however, when moving the transfer seat to or from the chair, any movement of the platform is stabilized by means of the stabilizers 28 and 29. After the transfer seat is moved over the bed the patient may be permitted to lie down and the transfer seat withdrawn from under the patient. It will be noted that the transfer seat is guided on the platform and centered by the rollers and is likewise guided off of the platform when moved over the bed.

The transfer of a patient from the bed to the chair or from the chair to the bed causes a minimum of discomfort to the patient and avoids the necessity of rolling the patient on a blanket and pulling the blanket around, which in fracture cases or other injuries might be painful and harmful to the patient.

The body of the platform 23 is made of suitable material such as three-quarter inch or the like plywood, which is covered with rigid Vinylite molded to conform to the top and sides of the platform and bonded to it with suitable adhesive. The bottom surface of the transfer seat is likewise covered to reduce friction when sliding the transfer seat 22.

The hydraulic lift shown has been found to be very satisfactory, but obviously any equivalent hydraulic, compressed gas or mechanical lift or other source of power may be employed and the raising and lowering controlled as desired, depending upon the nature of the lift. The platform and lifting and controlling mechanism may be applied to any conventional wheel chair or cart or carrier, and the transfer seat may be applied to any vehicle with a lift by arranging the platform and transfer seat as shown and described.

As will be obvious, the wheel chair may be used as the conventional wheel chair and pushed about by an

attendant, or moved by the patient grasping the wheel rings 5 as is commonly done with wheel chairs.

While the hoist movable platform and transfer seat are illustrated as applied to a wheeled invalid chair, it is obvious that it may be embodied in a hospital cart, so that a patient could be transferred from a bed to the cart or vice versa by employing the transfer seat and increasing the size of the platform and transfer seat and adding additional rails and rollers. While we have illustrated a chair embodying numerous elements and details found in the conventional chair used solely for transporting a patient in a sitting position, it is obvious that the chair itself may be modified in numerous details, although embodying the features of our invention.

Having thus described our invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of our invention; hence, we do not wish to be understood as limiting ourselves to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What we claim as new and desire to secure by Letters Patent is:

1. In a wheeled vehicle for invalids of the kind described, a frame provided with a wheel at each side and with a pair of wheels at one end swiveled on the frame, a vertically movable platform operatively mounted on the frame, hydraulic means including valve means for raising or lowering the platform, including means for guiding the same during its movement and also including operator-operated means for actuating the hydraulic means and valve means for controlling the position of the platform, a transfer seat operatively mounted on said platform member and movable thereover, complementally formed track means on the platform member and transfer seat for guiding the transfer seat when moved on the platform member, roller means on the transfer seat and operatively engaging the track means on the platform member for centering the same on the platform and preventing its displacement on the platform.

2. An invalid chair for transferring a patient to or from a bed, comprising a frame provided with a wheel at each side and with a pair of rear wheels swiveled at the rear of the frame, a back and arm rests, a vertically movable platform operatively mounted on the frame for movement from a lowermost position for seating a patient to a position above the arm rests, hydraulic means comprising valve means for raising or lowering the same above the plane of the arm rests, including means for guiding the same during its vertical movement and also including operator-operated means for actuating the hydraulic means and valve means for controlling the position of the platform, a transfer seat removably mounted on said platform member and slidable transversely thereover for movement from the platform over the arm rests in the maximum raised position of the platform member, means for guiding the transfer seat when moved on the platform, means for centering the same on the platform and preventing accidental displacement thereof on the platform.

3. An invalid conveyor for transferring a patient to or from a bed comprising a chair frame provided with a wheel at each side and a pair of end wheels swiveled to the frame, a vertically movable platform member mounted on the chair frame, hydraulic means comprising valve means for raising or lowering the platform member, including means for actuating the hydraulic means consisting of a pump handle arranged at the back of the chair and flexibly connected to the hydraulic mechanism, and operator-operated means at the back of the chair operatively connected to the valve means for controlling the lowering of the platform member, a track on the platform member and a transfer seat detachably mounted on said track and transversely movable over said platform member, a handle at each end of the transfer

seat, roller means on the transfer seat at each end thereof for limiting movement of the seat on the platform and centering the same, and means for locking one end wheel and preventing swiveling thereof.

4. A chair comprising a frame provided with a wheel at each side and a pair of rear wheels swiveled to the frame, a vertically movable platform, upper and lower supporting platforms extending transversely the frame and secured thereto, a lifting device including hydraulic lift means operatively carried by the lower platform, said lifting device provided with a vertically extending rod movable through the upper platform and secured to the movable platform, stabilizing rods secured to the movable platform and extending through the upper and lower platforms, means for guiding said stabilizing rods during the raising and lowering of the movable platform, operator-operated means operatively mounted at the rear of the chair and operatively connected with said lifting means for controlling the raising and lowering of the movable platform, said movable platform provided with rails on the top face thereof extending transverse to the axis of the chair, a transfer seat separable from the movable platform, roller means at each side of the transfer seat cooperable with the platform rails for guiding the movement of the transfer seat during its movement on or off of the platform and centering the transfer seat on the platform, and locking means for preventing swiveling of a rear wheel as desired.

5. A chair comprising a frame provided with a wheel at each side and at least one rear wheel swiveled to the frame, a back member and side arms, upper and lower platforms extending transversely the frame and secured thereto, a vertically movable platform arranged thereabove, a hydraulic means carried by the lower platform and provided with a vertically extending rod movable through the upper platform and secured to the movable platform, stabilizing rods secured to the movable platform and depending through the upper and lower platforms, means for guiding said stabilizing rods during the raising and lowering of the movable platform, operator-operated means operatively mounted on the back of the chair and operatively connected with said hydraulic lifting means for controlling the raising and lowering of the movable platform, said movable platform provided with a rail on the top face thereof, a transfer seat separable from the movable platform, roller means at each side of the transfer seat cooperable with the platform for guiding the movement of the transfer seat during its movement on or off of the platform and centering the transfer seat on the platform, locking means for preventing swiveling of the rear wheel as desired, and said transfer seat provided with a handle at each side.

6. A chair comprising a frame provided with a wheel at each side and at least one rear wheel swiveled to the frame, a vertically movable platform member operatively mounted on the frame, hydraulic lift means including valve means for raising or lowering the platform member, said lifting means including operator-operated means for actuating the raising and lowering means including a handle arranged at the back of the chair and operatively connected to the raising means, and operator-operated means at the back of the chair for controlling the lowering of the platform member, a track on the platform member and a transfer seat detachably mounted on said track and movable over said platform member, a handle at each end of the transfer seat, rollers on the transfer seat at each end thereof for the same seat on the platform, and means for locking a rear wheel and preventing swiveling thereof.

7. A wheel chair provided with a back, arm rests and leg rests, movable platform and transfer seat, for transferring a patient to or from a bed, said wheel chair including a frame provided with a wheel at each side and with a pair of end wheels swiveled on the frame, said platform mounted for vertical movement on the frame,

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hydraulic means for raising or lowering the platform; said hydraulic means including valve means and operatively mounted on the aforesaid frame and including means for stabilizing the same and guiding it during its movement; operator-operated means operatively mounted on the back of the wheel chair for actuating the hydraulic means; control means operatively mounted on the back of the wheel chair and connected to the valve means of the hydraulic means for controlling the position of the movable platform during raising and lowering, a detachable transfer seat slidably mounted on said platform member for movement transverse to the longitudinal axis of the wheel chair and over the arm rests in the raised position of the platform, complementally formed

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means on the seat and platform for guiding the transfer seat during movement on the platform, said complementally formed means including flanged rollers for centering the same on the platform and preventing displacement thereof; and means for locking one of said end wheels and preventing swiveling thereof.

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