March 11, 1941. R. W. SUTTON 2,234,483

INVALID CARRIER

Filed Feb. 16, 1938 2 Sheets-Sheet 1

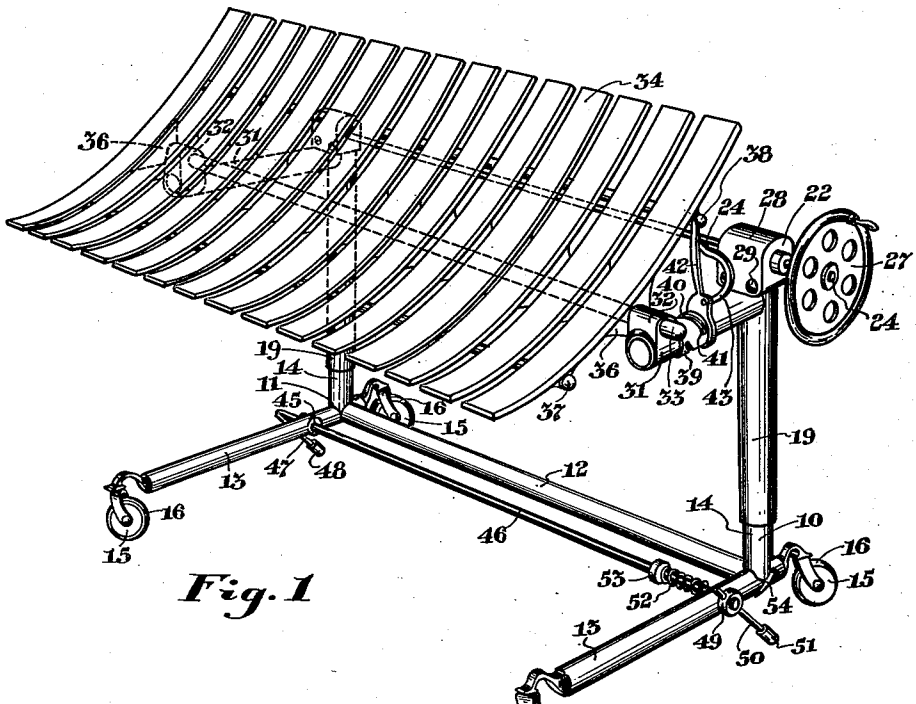


Fig. 1

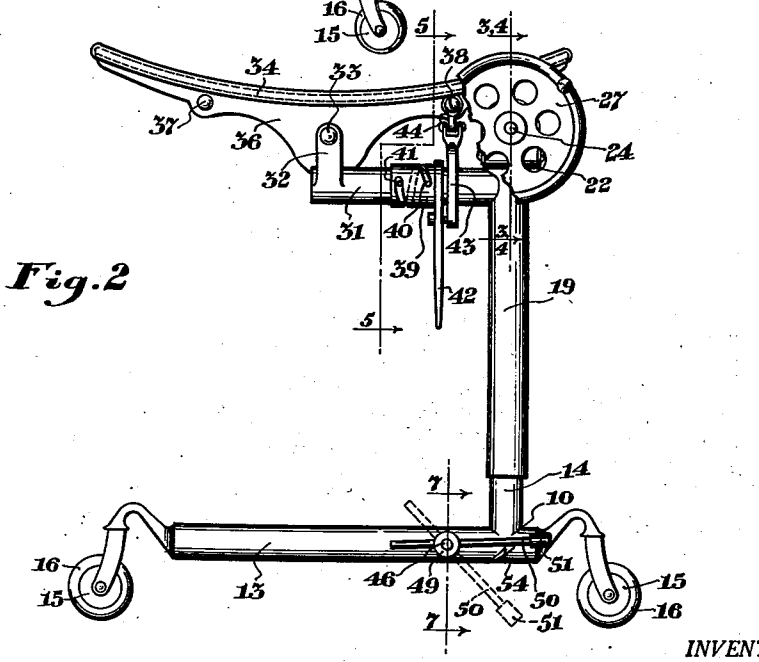


Fig. 2

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Fig. 3

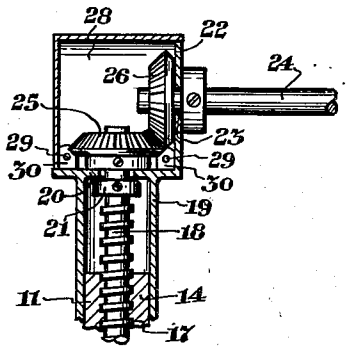
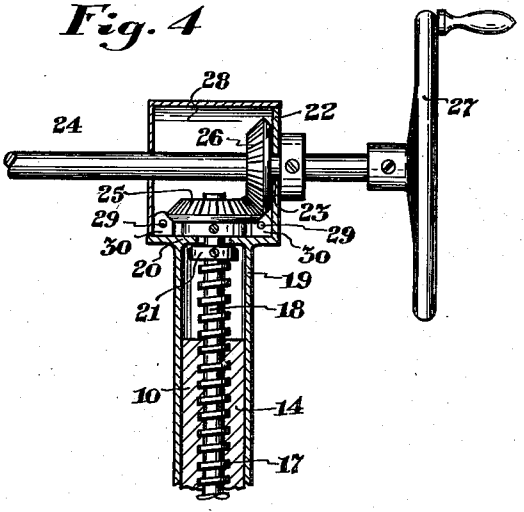


Fig. 4



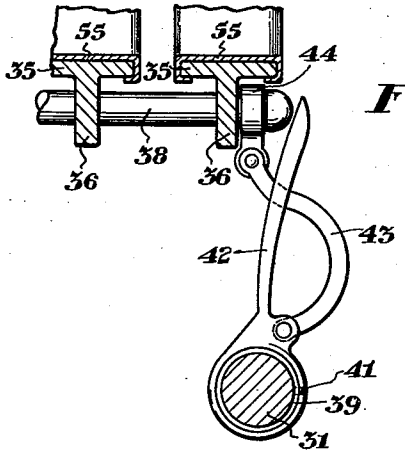


Fig. 5

Fig. 6

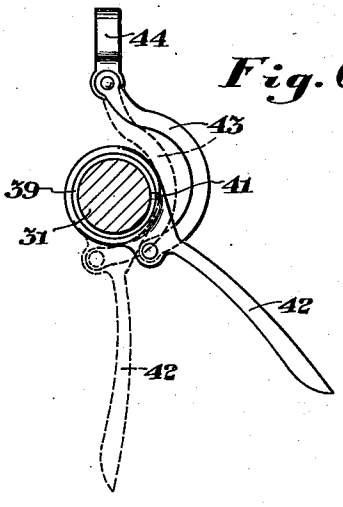
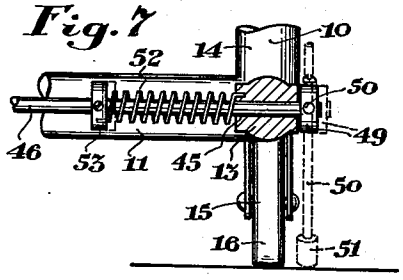


Fig. 7



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UNITED STATES PATENT OFFICE

2,234,483

INVALID CARRIER

Robert W. Sutton, Kalamazoo, Mich., assignor of one-half to Charles H. Andre, Detroit, Mich.

Application February 16, 1938, Serial No. 190,688

8 Claims. (Cl. 5—36)

The present invention relates to invalid carriers and more particularly to a wheeled invalid carrier or stretcher especially adapted for use in hospitals in instances wherein it is desired to move a patient from one bed to another or from one room to another.

The primary objects of the instant invention are to provide an invalid carrier of the general character above indicated which is so constructed as to materially aid in the transfer of the patient from his bed to the carrier, thereby enabling the transfer to be accomplished through the efforts of a single attendant rather than two or frequently three attendants which is the case when equipment of other types is employed; to provide such a carrier which is uniquely adapted for the bathing of a patient reclined thereon; to provide improved mechanism for raising, lowering and turning the "cradle" of the carrier; and, to provide such a carrier having certain other novel features of construction hereinafter appearing and described in the body of this specification.

An illustrative embodiment of the invention is shown in the accompanying drawings, wherein:

Figure 1 is a perspective view of the carrier, the cradle thereof being shown in tilted position;

Figure 2 is an end elevational view of the carrier and showing the cradle in its horizontal or non-tilted position, a crank wheel on the structure being shown fragmentarily to show otherwise hidden parts;

Figure 3 is a sectional view through certain parts at the left hand end of the structure on line 3—3 of Figure 2;

Figure 4 is a similar sectional view of corresponding parts at the right hand end of the structure on line 4—4 of Figure 2;

Figure 5 is a sectional view on line 5—5 of Figure 2;

Figure 6 is a sectional view similar to Figure 5 but showing certain parts in different turned positions from their positions shown in Figure 5; and

Figure 7 is a sectional view on line 7—7 of Figure 2.

Referring then to these drawings in which like numerals designate like parts in the several views, the invalid carrier therein shown has a chassis whose L-shaped end frame members 10, 11 are connected in spaced parallel relation by a cross bar 12. Each of these L-shaped members 10, 11 comprises a cylindrical horizontal bar 13 and a vertical tubular column 14. The horizontal bars 13 are provided with casters 15 at their extremities upon which the structure rests and which are preferably provided with rubber tires 16.

The vertical tubular columns 14 are provided with internal screw threads 17 in which are disposed jack screws 18 and sleeve members 19 vertically slidably embracing the vertical columns 14 are supported on the jack screws 18 by their horizontally extending flanges 20 which rest upon collars 21 secured to the jack screws. The sleeve members 19 are likewise provided with upstanding walls 22 in whose horizontally aligned bearings 23 is journalled a shaft 24.

Bevel gears 25 secured to the upper ends of jack screws 18 mesh with bevel gears 26 secured to the shaft 24 and a crank wheel 27 secured to one end of the shaft 24 may be manually turned to rotate the shaft which through the bevel gears 25 and 26 turns the jack screws 18 to synchronously raise or lower the sleeve members 19.

Cover members 28 secured by screws 29 to vertically extending projections 30 on sleeve members 19 are fitted to the horizontal flanges 20 and upstanding walls 22 of the sleeve members 19 to form housings for the bevel gears 25 and 26 in which housings a lubricant may be packed to insure smooth and quiet meshing of the gears.

Laterally projecting cylindrical arms 31 secured to the upper portions of each sleeve member 19 overhang in horizontally spaced parallel relation the horizontal bars 13 of the L-shaped end frame members 11 which arms 31 are provided at their outer ends with horizontally aligned bearings 32 in which bearings are pivotally mounted the opposite ends of a center rod 33 on which a cradle 34 is supported as hereinafter described.

The cradle 34 comprises a plurality of spaced parallel slats each having a concave upper surface and each having a depending web 36 through the series of aligned apertures of which are passed the center rod 33 and a pair of oppositely disposed side rods or stays 37, 38, all secured to each web as by welding to insure a rigidly supported cradle.

A sleeve 39 slidably and rotatably embracing one of the laterally projecting cylindrical arms 31 is provided with a helical slot 40 through which a guide pin 41 secured to the arm 31 projects and a lever 42, preferably integrally formed with the sleeve 39, is pivotally connected to one end of a hook link 43 whose other end is pivot-

ally connected to a member 44 rotatably embracing the rod or stay 38.

Thus it will be seen that when the lever 42 is in its raised position shown in Figures 1 and 5, the cradle 34 is in a sidewise tilted position whereas when the lever 42 is turned downwardly to its position shown in Figures 2 and 6, the hook lever 43 and member 44 are also drawn downwardly and with them the raised side of cradle 34 which is thus caused to assume a horizontal or non-tilted position. During this downward turning movement of the lever 42, the sleeve 39 is caused to be moved on its arm 31 away from bearing 32, or to the right in Figure 2, by the action of the pin 41 in the helical slot 40 of the sleeve 39. In this manner, hook link 43 is maintained in a vertical plane to prevent binding of the pivotal mountings of the hook link.

The horizontal bars 13 of the L-shaped end frame members 11 are provided with horizontally aligned bearings 45 in which a rod 46 is slidably and turnably disposed. One end on this rod is bent at right angles to form a short leg 47 on the end of which is secured a rubber stop 48 and to the other end of rod 46, a collar 49 is secured having a radially extending leg 50 disposed in parallelism to the leg 47 and which is likewise provided with a rubber stop 51.

A coiled expansion spring 52, best shown in Figure 7, is secured at one of its ends to one of the horizontal bars 13 of the chassis, and at its other end to a collar 53 secured on rod 46. This spring 52 normally urges the rod 46 to the left in Figure 7 or in a clockwise direction as shown in Figure 2. When the invalid carrier is in motion, this braking mechanism is maintained inoperative, as shown in solid lines in Figures 2 and 7, the leg 50 being engaged by a stop 54 on the horizontal bar 13.

When it is desired to brake the device, the rod 46 is manually drawn outwardly against the pressure of spring 52 so that leg 50 clears stop 54 whereupon the spring 52 turns the braking legs to their position shown in Figure 1 whose rubber stops 48 and 51 contact the floor.

The cradle slats 35 may if desired be covered by waterproof rubber jackets 55 as best shown in section in Figure 5.

Operation

When it is desired to remove a patient from his bed, the carrier is rolled sidewise to a position in which the horizontal bars 13 of the L-shaped end frame members 11 project under the bed. The cradle 34 is then adjusted to proper height overhanging the bed by turning the crank wheel 27 and the braking mechanism set to prevent movement of the carrier away from the bed. Lever 41 is then raised so that the cradle is tilted as shown in Figure 1, whereupon the patient may be easily slid thereon.

Since the braking mechanism does not positively brake the carrier against further sidewise movement of the carrier toward the bed, proper manipulation of lever 41 and crank wheel 27 will result in a virtual "scooping" of the patient in a gentle and easy manner from his bed onto the cradle of the carrier. The patient may thereupon be transported to another room or, if desired, bathed on the carrier whose slat cradle permits surplus water to drain therefrom.

It will thus be seen that the invalid carrier herein shown and described is highly utilitarian in use, simple in construction and in operation and is reasonably economical in manufacture.

While but one specific embodiment of the invention has been herein shown and described, it will be understood that certain details of the construction shown may be altered or omitted without departing from the spirit of this invention as the same is defined by the following claims.

I claim:

1. In a structure of the class described, a chassis, and a horizontally disposed cradle pivotally mounted on said chassis for axial tilting movement, said cradle comprising a center rod having its opposite ends pivotally mounted in spaced horizontally aligned bearings respectively on the chassis and a plurality of parallel spaced supporting slats having concave upper surfaces and depending horizontally apertured webs fixedly embracing the center rod.

2. In a structure of the class described, a pair of L-shaped end frame members having vertical and horizontal portions and connected in spaced parallel relation by a cross bar, a laterally projecting arm supported by the vertical portion of each L-shaped member and overhanging its horizontal portion, horizontally aligned bearings on the free ends of said laterally projecting arms, means for raising and lowering said arms, and a horizontally disposed cradle pivotally mounted on said arms for axial tilting movement, said cradle comprising a center rod having its opposite ends pivotally mounted in said bearings respectively and a plurality of parallel spaced supporting slats having concave upper surfaces and depending horizontally apertured webs fixedly embracing the center rod.

3. In a structure of the class described, a pair of L-shaped end frame members having vertical and horizontal portions and connected in spaced parallel relation by a cross bar, a sleeve vertically slidably embracing the vertical portion of each L-shaped member, means for simultaneously raising or lowering said sleeves, an arm secured to each sleeve disposed in overhanging relation to the horizontal portion of each L-shaped member, horizontally aligned bearings on the free ends of said arms, and a cradle supported by said arms, said cradle comprising a center rod having its opposite ends pivotally mounted in said bearings respectively and a plurality of spaced supporting slats having concave upper surfaces and deending horizontally apertured webs fixedly embracing the center rod.

4. In a structure of the class described, a pair of L-shaped end frame members having vertical and horizontal portions and connected in spaced parallel relation by a cross bar, a jack screw turnably seated within the vertical portion of each L-shaped member, an arm supported by each jack screw in overhanging relation to the horizontal portion of each L-shaped member, horizontally aligned bearings on the free ends of said arms, a horizontally disposed cradle pivotally mounted on said arms for axial tilting movement, said cradle comprising a center rod having its opposite ends pivotally mounted in said bearings respectively and a plurality of spaced supporting slats having concave upper surfaces and depending horizontally apertured webs fixedly embracing the center rod, and means for simultaneously turning said jack screws to synchronously raise and lower the same.

5. In a structure of the class described, a pair of L-shaped end frame members having vertical and horizontal portions and connected in spaced

parallel relation by a cross bar, said vertical portions each being internally screw threaded, a jack screw turnably seated within the vertical portion of each L-shaped member in screw-threaded engagement therewith, a bevel gear on the upper end of each jack screw, a sleeve vertically slidably embracing the vertical portion of each L-shaped member, a bearing in the upper end of each sleeve, a horizontally disposed shaft journalled in said bearings, a crank wheel on said shaft, bevel gears on the opposite ends of said shaft in mesh with the bevel gears on said jack screws, an arm on each sleeve overhanging the horizontal portion of each L-shaped member, horizontally aligned bearings on the free ends of said arms, and a horizontally disposed cradle pivotally mounted on said arms for axial tilting movement, said cradle comprising a center rod having its opposite ends pivotally mounted in the bearings on said arms respectively and a plurality of spaced supporting slats having concave upper surfaces and depending horizontally apertured webs fixedly embracing the center rod.

6. In a structure of the class described, a pair of L-shaped end frame members having vertical and horizontal portions and connected in spaced parallel relation by a cross bar, an arm supported by the vertical portion of each L-shaped member overhanging the horizontal portion thereof, horizontally aligned bearings on the free ends of said arms, a horizontally disposed cradle pivotally mounted on said arms for axial tilting movement, said cradle comprising a center rod having its opposite ends pivotally mounted in said bearings respectively and a plurality of spaced supporting slats having concave upper surfaces and depending horizontally apertured webs fixedly embracing the center rod, a lever fulcrumed on one of said arms and extending laterally therefrom, and a link operatively connecting said lever and said cradle whereby movement of the lever effects the tilting of the cradle.

7. In a structure of the class described, a chassis having a pair of spaced parallel supporting arms, a horizontally disposed cradle pivotally mounted on said arms for axial tilting movement, a lever fulcrumed on one of said arms, a hook having a pivotal connection with said lever and a pivotal connection with said cradle at one side of the cradle's pivotal mounting on said arms, said hook being movable with the lever to a raised position in which said cradle is tilted, and also movable with the lever to a lowered position in which the hook engages said supporting arm to maintain the cradle in a non-tilted position.

8. In a structure of the class described, a chassis having a pair of spaced parallel supporting arms, one of said arms being cylindrical, a horizontally disposed cradle pivotally mounted on said arms for axial tilting movement, a sleeve slidably and turnably mounted on said cylindrical arm and having a helical slot therein, a guide pin on said arm extending into said helical slot, and a link pivotally connected to said cradle and to said sleeve whereby rotation of the sleeve effects tilting movement of said cradle.

ROBERT W. SUTTON.