

United States Patent

[11] 3,593,351

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[54] **PATIENT TRANSFER DEVICE**
5 Claims, 7 Drawing Figs.

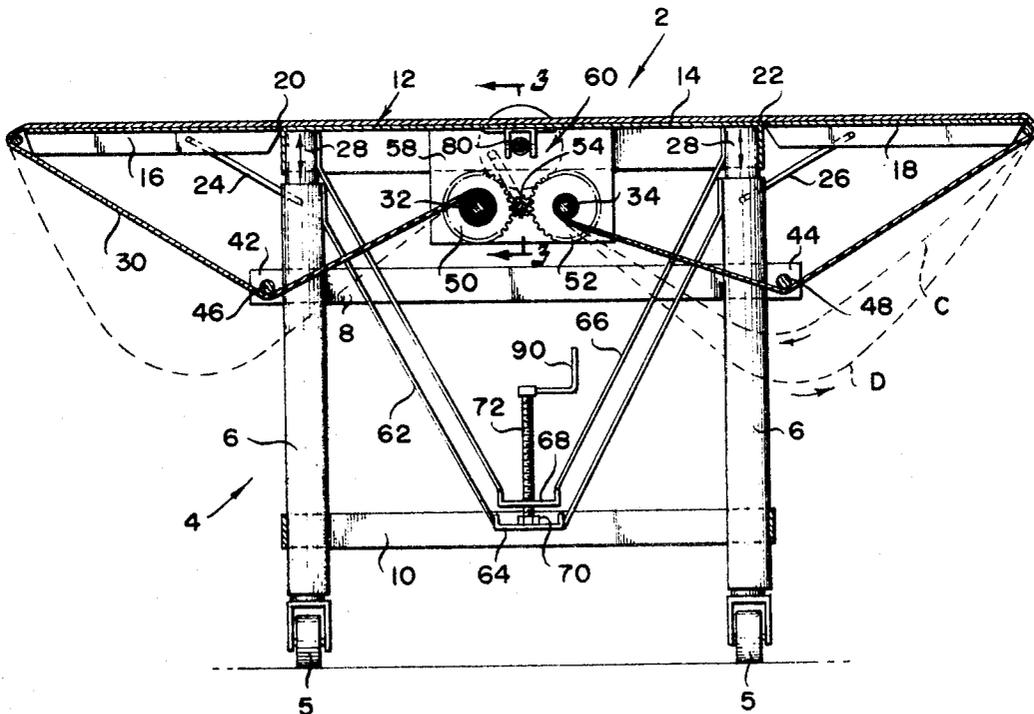
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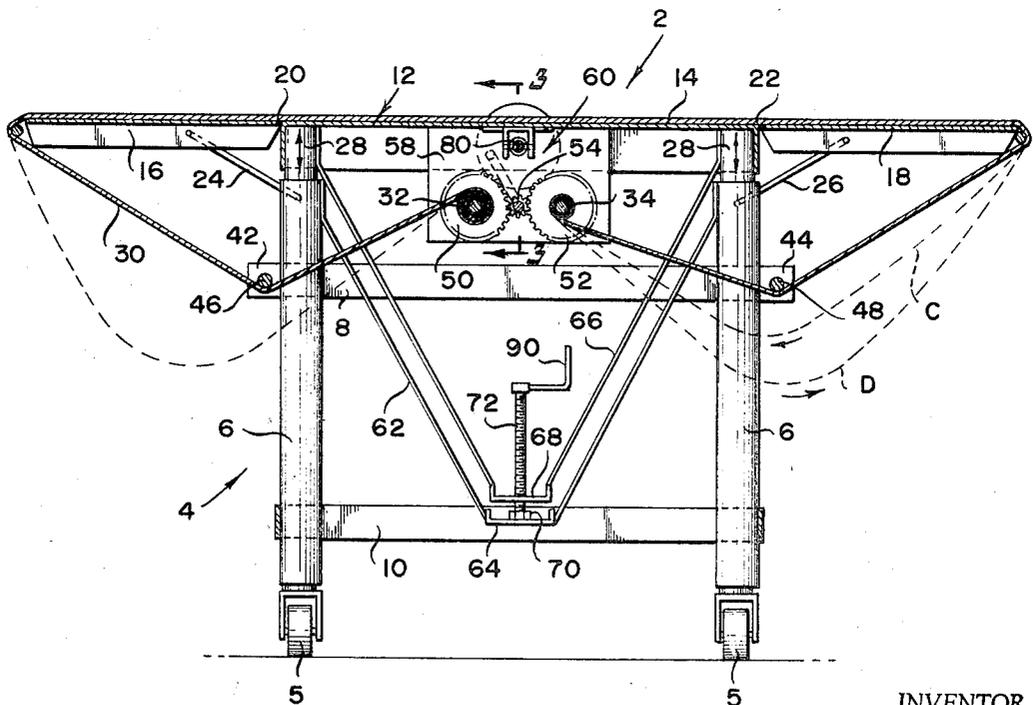
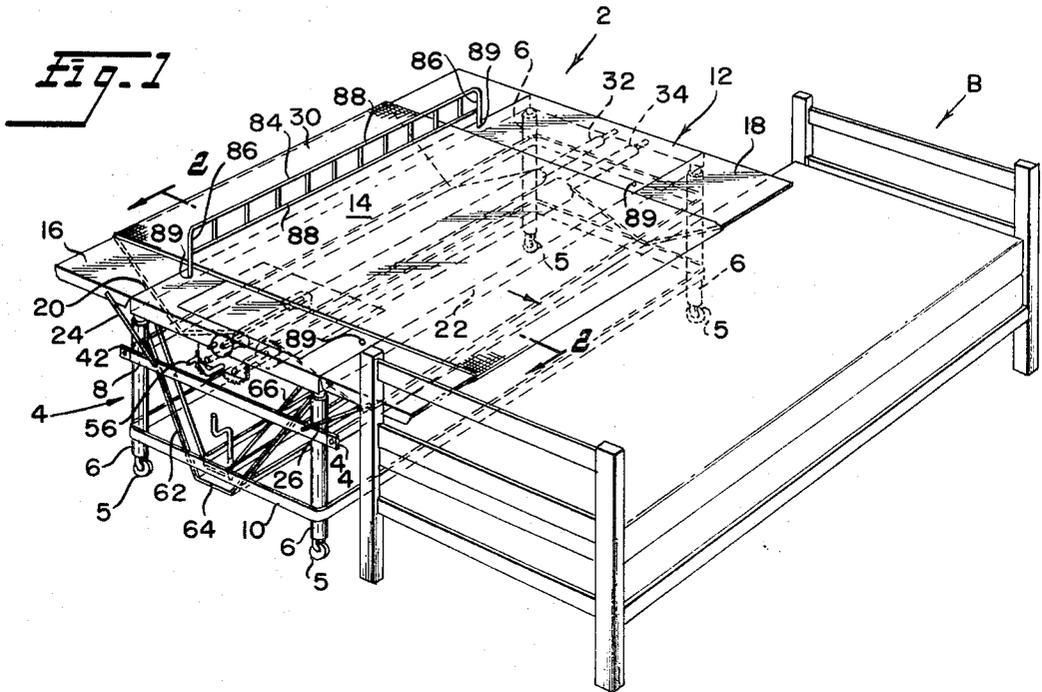
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5/81—88; 117/161, 161 KP

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ABSTRACT: A patient transfer device comprising a frame and a substantially planar table surface for the frame; a movable web supported on the table surface substantially flush therewith and extending from one side of the table surface to the other side of the table surface and a device for moving the web across the table surface from one side to the other.





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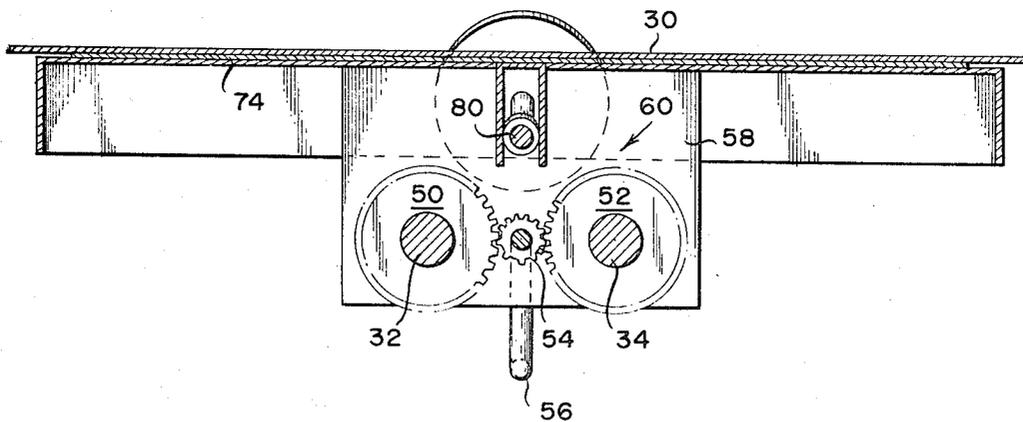
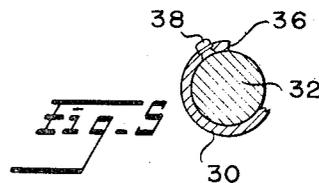
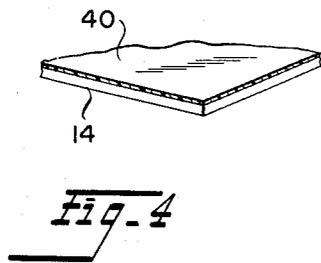
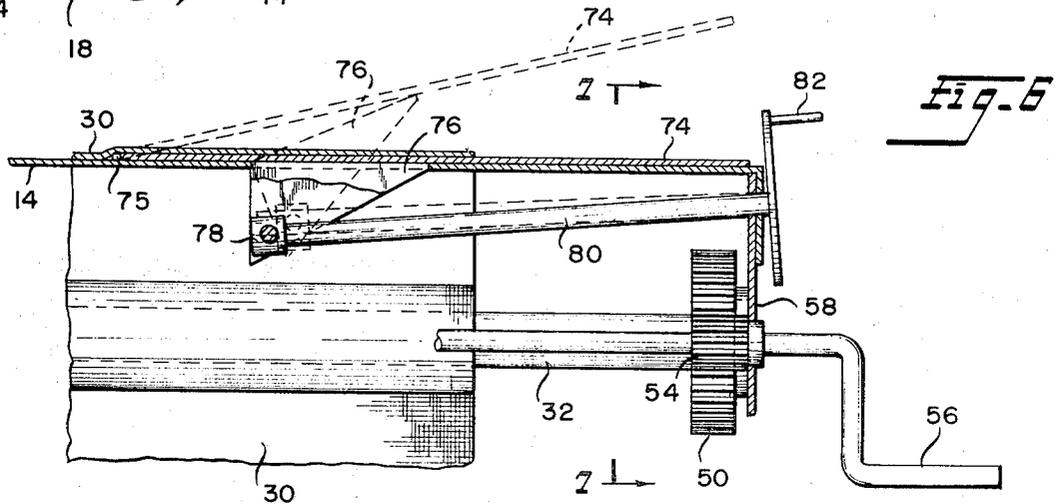
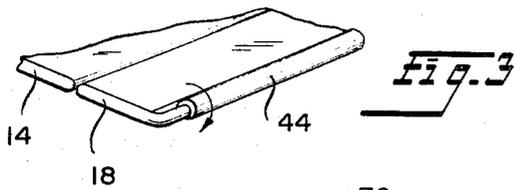


Fig. 1

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PATIENT TRANSFER DEVICE

OBJECTS AND SUMMARY

This invention relates to a patient transfer device for moving patients to and from stretchers, operating tables, hospital beds and the like.

It is an object of this invention to provide a simple and economical device for transferring helpless bed patients to and from a bed and the like.

It is another object of this invention to provide a portable device that can be used with existing hospital beds.

It is another object of this invention to provide a portable frame and a table surface, and a device to elevate the table surface.

It is another object of this invention to provide a movable web for transferring patients.

It is still another object of this invention to provide a roller and gear system for moving the movable web.

It is another object of this invention to provide an antifriction surface on the table surface for ease of movement of the movable web.

It is another object of this invention to provide antifriction guides for ease of movement of the movable web.

It is still another object of this invention to provide guard rails for safely moving the patient transfer device with a patient on it.

It is another object of this invention to provide a unique jack arrangement for elevating the table surface.

Various other objects and advantages of this present invention will be readily apparent from the following detailed description when considered in connection with the accompanying drawings forming a part thereof and in which:

FIG. 1 is a perspective view of the device embodying the present invention when used in conjunction with a hospital bed;

FIG. 2 is a sectional view taken along the lines 2-2 of FIG. 1 and viewed in the direction of the arrows.

FIG. 3 is a fragmentary perspective view of a side section showing an antifriction guide;

FIG. 4 is a fragmentary perspective view of the table surface portions in section showing the antifriction coating;

FIG. 5 is an enlarged fragmentary cross-sectional view of a roller showing a snap fastener joining the movable web to the roller;

FIG. 6 is an enlarged fragmentary cross-sectional view of a typical gear system and head rest assembly with the head rest shown in the down position in solid lines and the up position in dash lines.

FIG. 7 is a fragmentary cross-sectional view of the gear system taken along the lines 7-7 in FIG. 6 and viewed in the direction of the arrows.

Referring to the drawings, FIG. 1 the patient transfer device 2 is shown extending over a hospital bed B. The device 2 has a frame 4 having four tubular legs 6 connected by braces 8 and 10. Legs 6 have casters 5 for moving the transfer device from place to place. The frame 4 supports a planar table surface 12. The table surface 12 has a main section 14 and two side sections 16 and 18, with the main section 14 being connected to the side sections 16 and 18, by hinges 20 and 22 (shown in FIG. 2). Supports 24 and 26 lock the side sections 16 and 18 in a planar relationship with the main section 14 to form the planar table surface 12. In order to lower the side sections 16 and 18, the supports 24 and 26 are released, thereby allowing the side sections 16 and 18 to pivot downwardly.

Pending downwardly from under the main section 14 are legs 28 which are in a spaced relationship to correspond to the spacing of tubular legs 6 of the frame 2. The legs 28 telescope in the tubular legs 6, as best seen in FIG. 2. The means for telescoping the legs 28 and raising the table surface 12 will be described later.

A movable web 30 of substantial length (approximately twice the width of the table surface 14) and width is supported

on the table surface 12. The web 30 extends across the table surface 12 and under the side sections 16 and 18 to fasten to rollers 32 and 34, which are shown in FIG. 1 in broken lines. FIG. 5 shows one end 36 of the web 30 and a snap 38 to fasten the web to the roller 32. The snaps 38 permit easy removal of the web 30 for cleaning and repair.

The movable web 30 is aided in its movement across table surface 12 by an antifriction coating 40 on the table surface 14. The antifriction material may be a synthetic plastic, such as, Teflon. FIG. 4 shows a table surface 14 coated with such a plastic material. Also the lateral end of the side sections 16 and 18 may have roller guides 42 and 44 to aid the web 30 in making the turns around the ends of the planar table surface 12. FIG. 3 shows a guide 44 attached to side section 18.

It may be necessary to have additional guides 46 and 48, similar to those shown in FIG. 2, mounted on braces 8 to prevent wear and binding of the web 30. Of course, it might be advantageous to mount these guides 44, 46 and 48 in some other position, such as to the underside of the table surface 12 and to run the web 30 over them (not shown), thereby eliminating running the web 30 under braces 8.

FIG. 7 shows a plate 58 mounted on the ends of the main section 14 and extending downwardly from the table surface 12 for supporting gear system 60. The other end of the table surface 12 has a similar plate 58, not shown. The gear system 60 transfers web 30 from roller 32 to roller 34 and vice versa. Gear system 60 is mounted on the head end of the transfer device and comprises gears 50 and 52 which are on the ends of rollers 32 and 34, best seen in FIG. 7, and drive gear 54. The drive gear 54 is secured to a crank handle 56 or some other drive means such as an electric motor.

Table surface 12 is movable vertically to adjust to different height beds. For vertically moving the table surface 12 the frame 4 has suspended from near the tops of tubular legs 6, V-shaped members 62 (only one shown), supporting a horizontal jack support 64 which extends the length of the frame 4 where it is supported by another V-shaped member 62 (not shown). The V-shaped members are welded to the tubular legs 6. Nested in V-shaped members 62 is V-shaped member 66 which is suspended from legs 28. The V-shaped member 66 is welded to legs 28 just under the main section 14. A horizontal support 68, FIG. 1, is supported by V-shaped member 66 and extends the length of the main section 14 where it is supported by another V-shaped member 66 (not shown). Horizontal jack support 64 has one or more nuts 70 welded to it, and horizontal support 68 has one or more holes which are aligned with nuts 70 on support 64 with the holes having screw threads. A screwjack 72 is rotatably affixed to the nut 70 and screw threaded in the holes on horizontal support 64.

FIG. 6 shows a head rest 74 pivotally connected to main section 14 by a hinge 75. The head rest 74 is raised by wedge 76. The wedge 76 is pivotally mounted on a screw threaded nut 78 mounted on a threaded shaft 80. The handle end 82 of crank 78 is supported by plate 60.

When transporting a patient on the transfer device 2, it is advisable to add guardrails 84 on the lateral side of the main section 14. These guardrails 84 have interconnected vertical posts 86 and horizontal posts 88. The post 86 fit into openings 89 on the main section 14. The posts 88 are located beyond the width on the movable web 30, and the guardrails 84 extend across and over the width of the web 30.

OPERATION

In operation, the patient transfer device 2 is wheeled beside a hospital bed B (FIG. 1) so that one of the side sections 16 or 18 extends over the bed. Normally the side section 16 or 18 will extend almost one-half the width of an average bed. Once in position, assuming a patient is being transferred from the transfer device 2 to the bed, the planar table surface 12 is vertically adjusted to where the side section 16 or 18 extends over the bed B and barely touches it so that movable web 30 does not bind between the bed B and the underside of the side sec-

tion 16 or 18. Vertical adjustment is made by rotating the jack handle 90 clockwise or counterclockwise, depending upon whether the table surface is to be raised or lowered, With the handle 90 rotating, jack 72 rotates in place moving V-shaped member 66 and horizontal support 68 up or down thereby telescoping or collapsing legs 28 in tubular legs 6, and raising or lowering planar table surface 12. After final adjustment is made, guardrails 84 are removed and the patient is ready to be transferred to the bed.

Each of the rollers 32 and 34 has enough of the movable web 30 wound on them to develop slack in the web 30, thereby preventing the web from being damaged. As the web 30 is paid off of roller 32, for example, a slack is developed (see the dotted line in FIG. 2) prior to winding the web on roller 34 due to the reversing and rewinding of the web 30 on roller 34. Because of the gear arrangement 60 and the way the web 30 is fastened to the roller 32 or 34 the web 30 completely unwinds itself (see dotted line C in FIG. 2) from roller 34 before rewinding it in the other direction (dotted line D in FIG. 2). After the slack is taken up on roller 34, the web 30 travels across the planar table surface 12 moving the patient onto the bed B. An alternate arrangement (not shown) which eliminates the slack in web 30 would be to have an even number of gears so that any web payed from one roller would be directly wound onto the other.

Although mechanical means are illustrated, motors such as electrical, hydraulic, etc., can be used to control the various operations described.

I claim:

- 1. A patient transfer device for handling a patient from either side of a bed including:
 - a. frame means
 - b. said frame means having a substantially planar table surface, adapted to be vertically adjusted so as to align with the surface of said bed,
 - c. first and second roll members mounted on said frame and

- positioned beneath said table surface out of the path of movement of a patient,
 - d. said table surface having hinged leaf portions having extended and folded positions and projecting laterally beyond the sides of said frame means when in said extended position,
 - e. means mounted on said frame for driving said roll members in opposite directions,
 - f. web means secured to and extending from said first roll member over said table surface and said hinged leaf portions to said second roll member and secured thereto,
 - g. whereby upon operation of said driving means, said web means traverses said table surface and said extending portions.
- 2. A patient transfer device as in claim 1 and including:
 - a. a friction reducing coating on said table surface.
 - 3. A patient transfer device as in claim 1 and including:
 - a. legs associated with said frame means for supporting said planar table surface, and
 - b. means associated with said legs for vertically adjusting said table surface.
 - 4. A patient transfer device as in claim 3 and wherein:
 - a. each of said legs comprises inner and outer telescoping tube members,
 - b. a first substantially V-shaped frame member having the legs of the V secured to said inner tube members,
 - c. a second substantially V-shaped frame member having the legs of the V secured to said outer tube members,
 - d. one of said V-shaped frame members being nested within the other of said V-shaped frame members, and
 - e. jack means positioned between the apexes of said V-shaped frame members for urging said V-shaped frame members apart for vertically adjusting said table surface.
 - 5. A patient transfer device as in claim 4 and wherein:
 - a. said drive means includes positive gear drive means.

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