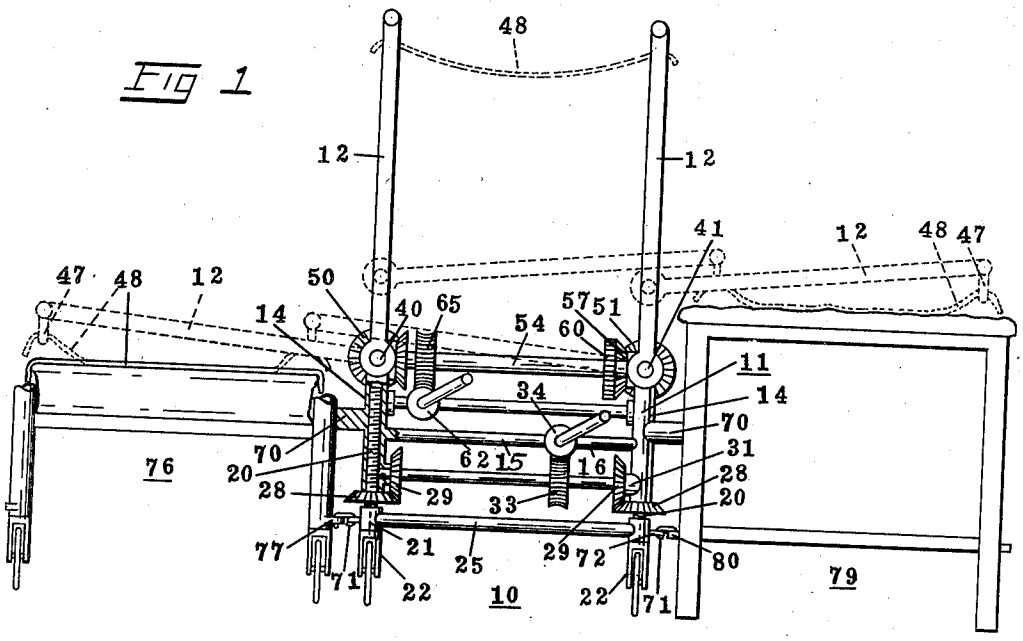
July 16, 1940. J. J. CARTER 2,208,410

PATIENT LIFTING DEVICE

Filed March 3, 1939

Fig 1



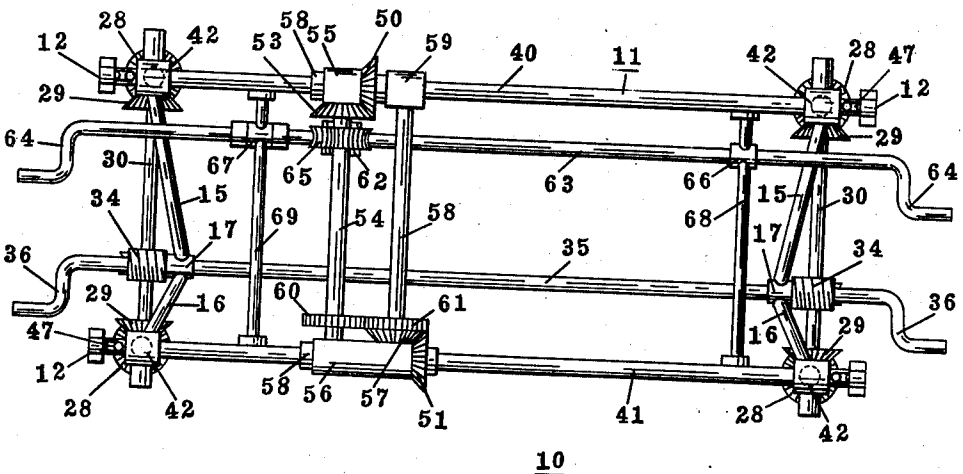


Fig 2

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PATIENT LIFTING DEVICE

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3 Claims. (Cl. 5—81)

The present invention relates to a lifting device and more particularly to a device for lifting and transferring a patient from one bed to another or to and from a bed and operating table.

An object of the invention is to provide a lifting device comprising a frame structure having a plurality of spaced lifting levers pivotally supported on the frame and having means for rotating the levers about their pivots to extend the same beyond the side edges of the frame and over an adjacent bed or the like for connecting the ends of the levers with a sling on which a patient is resting and raising the levers to a vertical position above the frame with the patient supported therebetween.

A further object of the present invention is to provide a device as set forth in the preceding paragraph in which the pivots of the levers may be raised and lowered to adapt the levers to be lowered over beds and tables of various heights.

Other and further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred form of embodiment of the invention is clearly disclosed.

In the drawing:

Fig. 1 is an end view partly in section of a patient lifting device connected to a bed and an operating table, and

Fig. 2 is a plan view of the device shown in Fig. 1.

Referring to the drawing, 10 represents a patient carrying device embodying the present invention. The device 10 comprises generally, a rectangularly shaped frame 11 having a lifting lever 12 pivotally supported at each corner on the top side of the frame.

The frame 11 comprises four legs 14, formed of metal tubes, that are interconnected with various other rods and tubes that serve to stabilize the legs and to support operating elements of the device. Two legs 14 are located at either end of the frame 11 and are joined by cross rods 15 and 16 that serve to maintain the end legs 14 in spaced relation and to support bearing members 17. The rods 15 and 16 are joined at one end with opposite legs 14 respectively, as by welding, and the other ends thereof are similarly joined to a bearing member 17. A bearing member 17 is thus supported at each end of the frame 11. The legs 14 receive a threaded rod 20 on the inside thereof and the lower ends of the legs rest on the face of a bevel gear 28 that is threaded on each of the rods 20. The rods 20 are each formed with a caster socket 21 on the end thereof that receives a caster 22. The frame may thus be readily rolled about on the casters 22. A rod 25 interconnects the caster sockets 21 at either end of the frame 11 for further bracing the legs of the frame.

The gears 28 are each adapted to be rotated by a bevel gear 29 meshed herewith and mounted on a shaft 30 journaled at either end in bushing 31 formed on the legs 14. A shaft 30 is provided at each end of the frame 11, and each of the shafts 30 supports two of the gears 29. The shafts 30 are each rotated by a worm gear 33 mounted thereon and which is adapted to be rotated by a screw gear 34. The screw gears 34 are mounted on a shaft 35 that is journaled adjacent either end in the bearings 17. A crank 36 is provided at each end of the shaft 35 so that the shaft may be rotated by a person at either end of the frame and thereby cause the gears 28 to be rotated and move either upwardly or downwardly along the threaded rods 20. It will be apparent that the gears 28 on one side of the frame will be rotated in one direction and the gears 28 on the opposite side of the frame will be rotated in the opposite direction; therefore, the threads of the rods 20 on one side of the frame are formed right handed and threads of the rods 20 on the opposite side of the frame are formed left handed so that the gears 28 will be raised and lowered simultaneously. Thus the legs 14 and the structure supported thereby may be raised and lowered as desired.

Two rods 40 and 41 extend lengthwise of the frame on opposite sides thereof and are journaled in bearings 42 provided at the upper end of the legs 14. Preferably the bearings 42 and rods 40 and 41 are provided with abutting shoulders for preventing end movement of rods. The ends of the rods 40 and 41 extend outwardly beyond the bearings. The rod 40 is adapted to be rotated by a gear 50 mounted on the rod 40 intermediate the bearings 42, and the rod 41 is adapted to be rotated by a gear 51 mounted on the rod 41. The gear 50 is adapted to be rotated by a bevel gear 53 meshing therewith that is mounted on a shaft 54. The shaft 54 is journaled at either end in bearing members 55 and 56 that are mounted on the rods 40 and 41 respectively. The bearing members 55 and 56 have bearing surfaces extending therethrough in which the rods 40 and 41 rotate. The gear 51 is meshed with a bevel gear 57 that is rotatively mounted on a shaft 58. The latter shaft is journaled at one end in the bearing member 56 and journaled at the opposite

end in a bearing member 59 that is mounted on the rod 40 and is similar to the bearing member 55. A collar 58 is secured to the rods 40 and 41 at one end of the bearings 55 and 56 to prevent movement of the bearings relative to the gears 50 and 51 respectively to insure meshing of the gears 50 with 53 and 51 with 57. The gear 57 is adapted to be rotated by a gear 60 meshed with the gear teeth 61 of the gear 57. The gear 60 is mounted on the shaft 54 and is rotated thereby. The shaft 54 is rotated by worm gear 65 mounted thereon that is adapted to be driven by a screw gear 62 mounted on a rotatable rod 63. The rod 63 extends lengthwise of the frame 11 and is supported at either end in bearings 66 and 67 respectively. The bearing 66 is supported by a cross rod 68 and the bearing 67 is supported by a cross rod 69. The cross rods 68 and 69 are connected at their ends to two frame members that extend lengthwise of the frame and are connected to the legs 14. These frame members do not appear in the drawing as they connect the legs 14 immediately below the bearings 42 and are below the rods 40 and 41. The crank 64 is provided at either end of the rod 63 so that the rod may be rotated from either end of the frame 11. The gears 50, 51, 53, 57 and 60 are of uniform size so that when the worm gear 65 is rotated the rods 40 and 41 will be turned at equal rates. When the worm gear 65 is rotated to the right for example, as viewed in Fig. 2, the gear 53 will rotate the gear 50 clockwise as viewed in Fig. 1. The gear 60 will rotate the gear 61 to the left as viewed in Fig. 2, and the latter gear will rotate the gear 51 clockwise as viewed in Fig. 1. Thus the rods 40 and 41 may be rotated in the same directions and at equal rates by turning the cranks 64.

The lever 12 is connected at one end to each end of the rods 40 and 41 so that the levers will be rotated about the rods in the same directions and at equal rates when the rods are turned. In the present embodiment the levers 12 are secured to the ends of the rods 40 and 41 and are pivoted about the rods when the rods are rotated. Hooks 47 are pivotally mounted on the ends of the levers 12 for supporting a sling in the form of a canvas sheet 48 between the levers. The length of the levers 12 is greater than the width of the frame 11 so that the ends thereof will extend over either side of the frame when the levers are rotated to their lowered positions as shown in the dotted lines of Fig. 1.

A bumper 70 is formed on each of the legs 14 and a hook 71 is secured to an ear 72 formed on each of the castor sockets 21.

When the lifting device is to be used, for example to transfer a patient from the bed 76 to an operating table 79, the device 10 is moved alongside the bed 76 and the height of the frame 11 is adjusted so that the pivoted ends of the levers 12 will be slightly above the top of the bed. This adjustment is made by operating the cranks 36 as described above. The hooks 71 on the side of the frame 11 adjacent the bed are then secured in eyelets 77 formed on the legs of the bed. The bumpers 70 on the side of the frame adjacent the bed will abut the legs of the bed. The crank 64 is then operated to cause the levers 12 to be rotated about their pivots to their lowered positions shown in the dotted lines of Fig. 1. In the lowered position the ends of the levers 12 extend over the side edges of the frame 11 and above the top of the adjacent bed 76. The hooks 47 are then secured through reinforced eyelets formed in the canvas sling 48 on which the patient is resting. Preferably the patient is resting on the canvas at all times so that it is unnecessary to place the patient on the canvas in making the transfer. The crank 64 is then turned to rotate the levers 12 to their raised position, i. e., the position in which the levers extend vertically from the frame as shown in full lines in Fig. 1. When the levers are rotated in their raised positions, the weight of the patient will tend to tilt the frame toward the bed. The bumpers 70 will prevent such tilting and the hooks 71 will prevent separation of the bed and frame. The hooks 71 are then disconnected from the bed and the device is then rolled to a position alongside the operating table 79. The frame is then raised by rotating the crank 36 until the pivots of the levers 12 are level with or slightly above the top of the operating table. The hooks 71 adjacent the table are connected to eyelets 80 formed on the leg of the table and the bumpers 70 will abut the table legs and prevent the frame from tilting when the patient is lowered to the operating table. The crank 64 is then rotated to cause the levers to rotate to the right about their pivots to a lowered position with the ends of the levers extending over the side edges of the frame and above the operating table, as illustrated in the dotted lines of Fig. 1. The hooks 47 are disconnected from the canvas and the levers moved to their raised positions and the device rolled away from the table.

It will be noted that the ends of the levers 12 are at all times in a parallel plane and the canvas sling 48 will be level when the levers are rotated to their raised or lowered positions. Also the hooks 47, being pivotally mounted on the levers 12, will rotate with respect to the levers to always maintain the hooks secured in the eyelets of the canvas.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

I claim:

1. A patient lifting device for use in hospitals or the like comprising in combination, a frame; a plurality of levers pivotally supported on said frame and spaced from one another, said levers being adapted to rotate about their pivots to raised and lowered positions, the free ends of said levers extending beyond a side edge of the frame when in the lowered position and above the frame when in said raised position; means for rotating said levers to the said raised and lowered positions; means for raising and lowering the said levers and their pivots; and means connected adjacent the free ends of the levers for supporting a load therebetween.

2. A patient lifting device for use in hospitals or the like comprising in combination, a frame; a plurality of levers pivotally supported on said frame and spaced from one another, said levers being adapted to rotate about their pivots to raised and lowered positions, the free ends of said levers extending beyond a side edge of the frame when in the lowered position and above the frame when in said raised position; means for rotating said levers to the said raised and lowered positions; means for adjusting the height of said frame; and means connected adjacent the free end of the levers for supporting a load therebetween.

3. A patient lifting device for use in hospitals

or the like comprising in combination, a frame; a plurality of levers pivotally supported on said frame and spaced from one another, said levers being adapted to rotate about their pivots to raised and lowered positions, the free ends of said levers extending beyond a side edge of the frame when in the lowered position and above the frame when in said raised position; means for rotating said levers to the said raised and lowered positions; means for simultaneously raising and lowering the said levers and their pivots; and means connected adjacent the free end of the levers for supporting a load therebetween.

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