June 21, 1955 A. B. STOEN ET AL 2,710,975

APPARATUS FOR LIFTING AND TRANSFERRING INVALID PERSONS

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Fig. 1

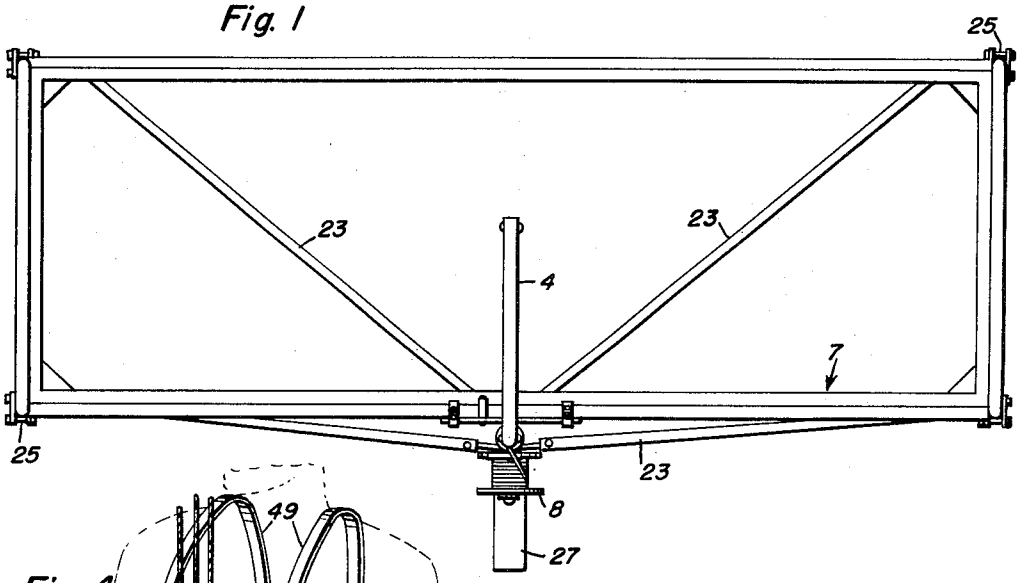


Fig. 4

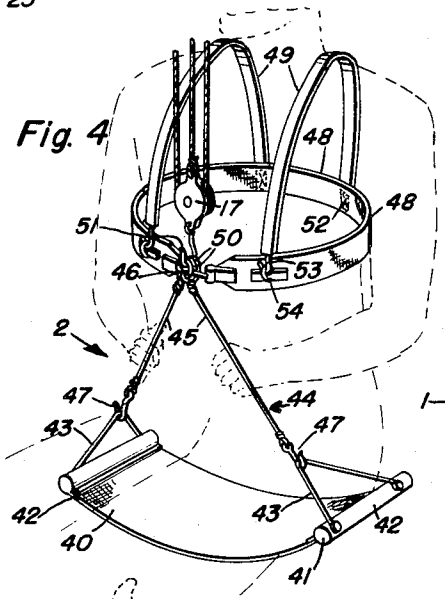


Fig. 2

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APPARATUS FOR LIFTING AND TRANSFERRING INVALID PERSONS

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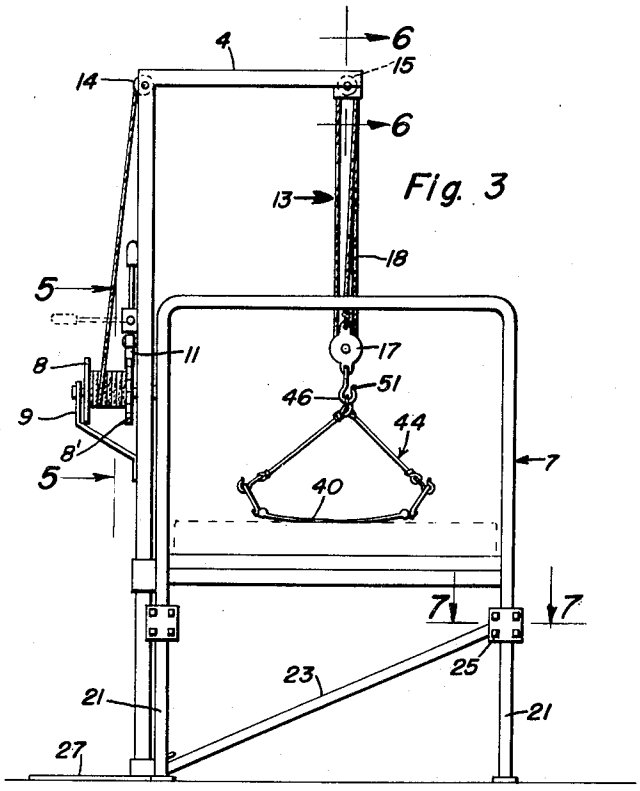


Fig. 3

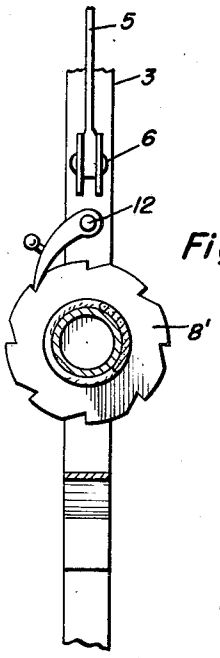


Fig. 5

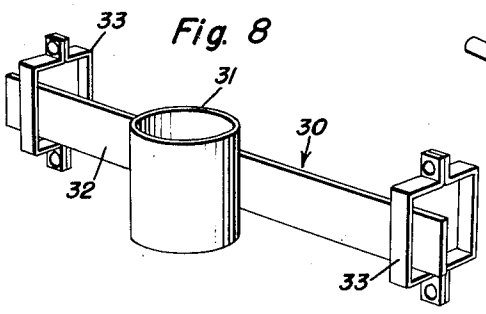


Fig. 8

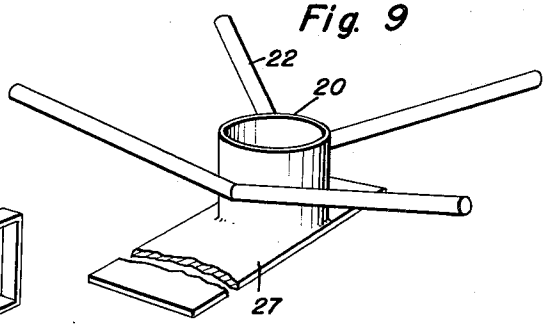


Fig. 9

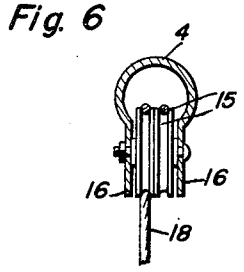


Fig. 6

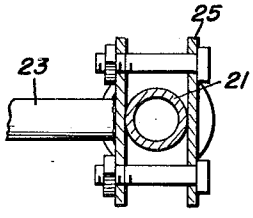


Fig. 7

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2,710,975

APPARATUS FOR LIFTING AND TRANSFERRING INVALID PERSONS

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Application October 31, 1952, Serial No. 318,062

1 Claim. (Cl. 5—84)

Our invention relates to improvements in apparatus of the crane type for lifting invalid persons from a bed and transferring the same to a position at one side of the bed for lowering into a chair or onto another bed.

The primary object of our invention is to provide an apparatus of the type indicated operative to lift an invalid person into sitting position on the bed from a supine position, then off the bed and to swing the lifted person to one side of the bed for lowering at will onto another bed, or a chair, all while the person is securely held, with comfort, in setting position.

Another object is to provide apparatus for the above purpose which is operative with a minimum of effort by the operator to lift and transfer a heavy person.

Another object is to provide in such apparatus means for attaching the same to a bed in a manner such that the bed will not be overbalanced by the weight of the person swung to one side of the bed.

Another object is to provide in such apparatus harness for holding the patient in sitting position while being lifted off the bed and swung to one side of the bed, and which is comfortable, easy to apply, and safe.

Still another object is to provide apparatus for the purposes set forth in the foregoing which is simple in construction, comparatively inexpensive to manufacture, and not liable to get out of order.

Other and subordinate objects, within the purview of our invention, together with the precise nature of our improvements, and the advantages thereof will be readily understood when the succeeding description and claims are read with reference to the drawings, accompanying and forming part of this specification.

In said drawings:

Figure 1 is a view in plan of our improved apparatus, in the preferred embodiment thereof, applied to a bed;

Figure 2 is a view in side elevation illustrating the manner in which the harness is applied to an invalid person, shown in dotted lines, preparatory to lifting the person into sitting position on the bed;

Figure 3 is a view in front elevation;

Figure 4 is an enlarged view in perspective illustrating the manner in which the harness when used for lifting and transferring the person in sitting position is attached to the block and tackle;

Figure 5 is an enlarged fragmentary view in vertical section taken on the line 5—5 of Figure 3;

Figure 6 is an enlarged fragmentary view in vertical section taken on the line 6—6 of Figure 3;

Figure 7 is an enlarged fragmentary view in horizontal section taken on the line 7—7 of Figure 3;

Figure 8 is an enlarged perspective view of the bracket for attaching the post to the side rail of the bed; and

Figure 9 is a fragmentary enlarged perspective view, partly broken away and shown in section, of the floor socket for the post and the attaching arms for the socket.

Referring to the drawings by numerals, the apparatus of our invention comprises, as one component thereof, a jib-type crane 1, as another component, means presently described for attaching the crane to the bed at one side thereof, and as a third component, a harness 2.

The crane 1 includes a tubular post 3, for lightness and strength, and which is of any suitable height and provided at its upper end with a tubular jib arm 4. The post 3 is attached to the conventional bed 7 by the attaching means presently described, for rotating the jib arm 4 to swing selectively over or away from the bed 7. A handle 5 is pivoted to said post 3, as at 6, on the side thereof opposite the jib arm 4 for rotating the post 3 to swing the jib arm 4.

A crank operated cable wind up reel 8 is mounted on the post 3 and on a bracket arm 9 on said post, at the side of said post 3 opposite the jib arm 4, but with the operating crank 10 on said reel, preferably at the same side of the post 3 as said jib arm 4. A ratchet wheel 8' on one end of the reel 8 is dogged by a ratchet 11 pivoted, as at 12, on the post 3 to hold said reel 8 against reverse rotation.

A double block and tackle 13 is carried by the jib arm 4 and comprises a pulley 14 on the upper end of the post 3, which is to say the rear end of the jib arm 4, twin sheaves 15 journaled between depending flanges 16 on the other end of the jib arm 4, and a double sheave fall block 17 suspended from the sheaves 15 by a tackle cable 18 in the usual manner, the cable 18 to be extended through said jib arm 4, which is hollow, and then over the pulley 14 and from the pulley 14 downwardly to the reel 8.

The attaching means for the crane 1 comprises a floor socket 20 for seating the lower end of the post 3 therein, rotatively, and which is attached to all four legs 21 of the bed 7 by rod-like arms 22 attached to the sides of the socket 20 with tubular tie members 23 slidably and detachably fitted at one end thereon and locked thereto by set screws 24, said tie members 23 being provided at the other ends thereof with plate clamps 25 attached to the legs 21. The arms 22 and tie members 23 extend from the socket 20 at angles such that each is aligned with the socket 20 and with each leg 21 while the socket 20 is disposed at one side of the bed 7. The arms 22 and tie members 23 incline upwardly from the socket 20 to position the clamps 25 near the points of connection of the legs with the side rails of the bed 7.

A floor plate 27 on the bottom of the socket 20 extending therefrom and from the side of the post 3 opposite the bed 7, together with the tie members 23 prevents tilting of the bed 7 by weight on the jib arm 4 when said arm is swung away from the bed 7. At this point, it is explained that the jib arm 4 is of sufficient length, so that when it is swung over the bed, it suspends the cable 18 over the longitudinal center of the bed and substantially midway of the ends of the bed, which is to say, the front and rear of the bed.

In addition to the described attaching means for the crane 1, a bearing bracket 30 is provided for rotatably attaching the post 3 to the bed comprising a sleeve 31 through which said post 3 is rotatably extended and which is provided on one side thereof with a cross bar 32 carrying terminal clamps 33 by means of which the bearing bracket 30 is attached to the side rail 35 at the selected side of the bed 7 with the sleeve 31 axially aligned with the socket 20.

The harness 2 comprises a sling including a supporting band 40, of canvas, or the like, and of a width and length sufficient to fit under the thighs of the person to be lifted, rigid cross members 41 at the ends of the band 40 retained in end hems 42 on said band, triangular, rigid handle bails 43 on said end members 42, and a shackle 44 adapted to straddle the thighs of a person and comprising a pair of cables 45 attached at one end to a ring

46 and having hooks 47 on the other ends for engaging said bails 43.

Also included in the harness 2 is a chest band 48 and shoulder straps 49 both formed of canvas, or the like. The chest band 48 is suitably provided with terminal rings 50 for engaging the usual hook 51 on the fall block 17 to fasten said terminals together in front of the person. The shoulder straps 49 are sewed, as at 52, at corresponding ends thereof to the back of the chest band 48, the other ends of said straps being provided with hooks 53 for fastening said ends to eyes 54 on the chest band 48 adjacent the rings 50, so that said ends of the shoulder straps 49 are attachable to said band 48 in front of the chest of the person.

In operating the described apparatus, the post 3 is rotated by means of the handle 5 to swing the jib arm 4 over the bed 7 crosswise thereof. The supporting, or thigh, band 40 is positioned under the thighs of the person, the chest band 48 positioned under the back of the person, that is, under the chest, and the shoulder straps 49 are positioned over the shoulders and attached to the chest band 48, as described, all while the person is lying supine on the bed. The terminals of the chest band 48 are then attached by the rings 50 to the hook 51 so that the chest band 48 and shoulder straps 49 are secured to the person and to the block and tackle 13. The reel 8 is then operated to wind up the cable 18 and lift the person into sitting position on the bed, by imparting lift to the chest band 48. The shackle 44 is now attached to the supporting band 40 by attaching the hooks 47 to the handle bails 43, and said shackle is also attached to the fall block 17 by attaching the ring 50 to the hook 51, all while the person is in sitting position. Thus the harness 2 is coupled to the fall block 17, which is to say, the block and tackle 13 and this is done while the cable 18 is held taut. Now, by further operation of the reel 8 to wind up the cable 18, the person may be lifted, while supported in comfort in sitting position, off and clear of the bed 7, and the post 3 may then be rotated by the handle 5 to swing the jib arm 4 away from the bed 7 and thereby transfer the person to one side of the bed for lowering into a chair or on to another bed, or for any other purpose. As will be seen, the crane 1 is removable out of the sleeve 31 and socket 20 when not in use. The described means for attaching the post 3, or crane 1, may be detached from the bed, when not in use, in a manner which will be obvious.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention, without further explanation.

Manifestly, the invention, as described, is susceptible of modification without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claim.

What is claimed as new is as follows:

For use with an invalid's bed having side rails and corner legs at opposite ends thereof, a jib type crane post adapted to support a lifting harness for an invalid occupying the bed, a floor socket rotatably seating the lower end of the post outwardly of an intermediate portion of one of the side rails, a bearing attachable to said one side rail and in which said post is journaled above said socket, arms attached to and radiating from said socket and inclining upwardly toward said legs, tubular members slidably adjustable on said arms and inclining upwardly and toward said legs for fastening to the legs adjacent said rails, terminal clamping plates on said members attachable to said legs adjacent said rails, and means for fastening the members to said arms in adjusted position.

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