July 19, 1960 L. W. HEIDEN 2,945,242

PATIENT ELEVATING DEVICE AND STABILIZING MECHANISM THEREFOR

Filed Jan. 27, 1958 2 Sheets-Sheet 1

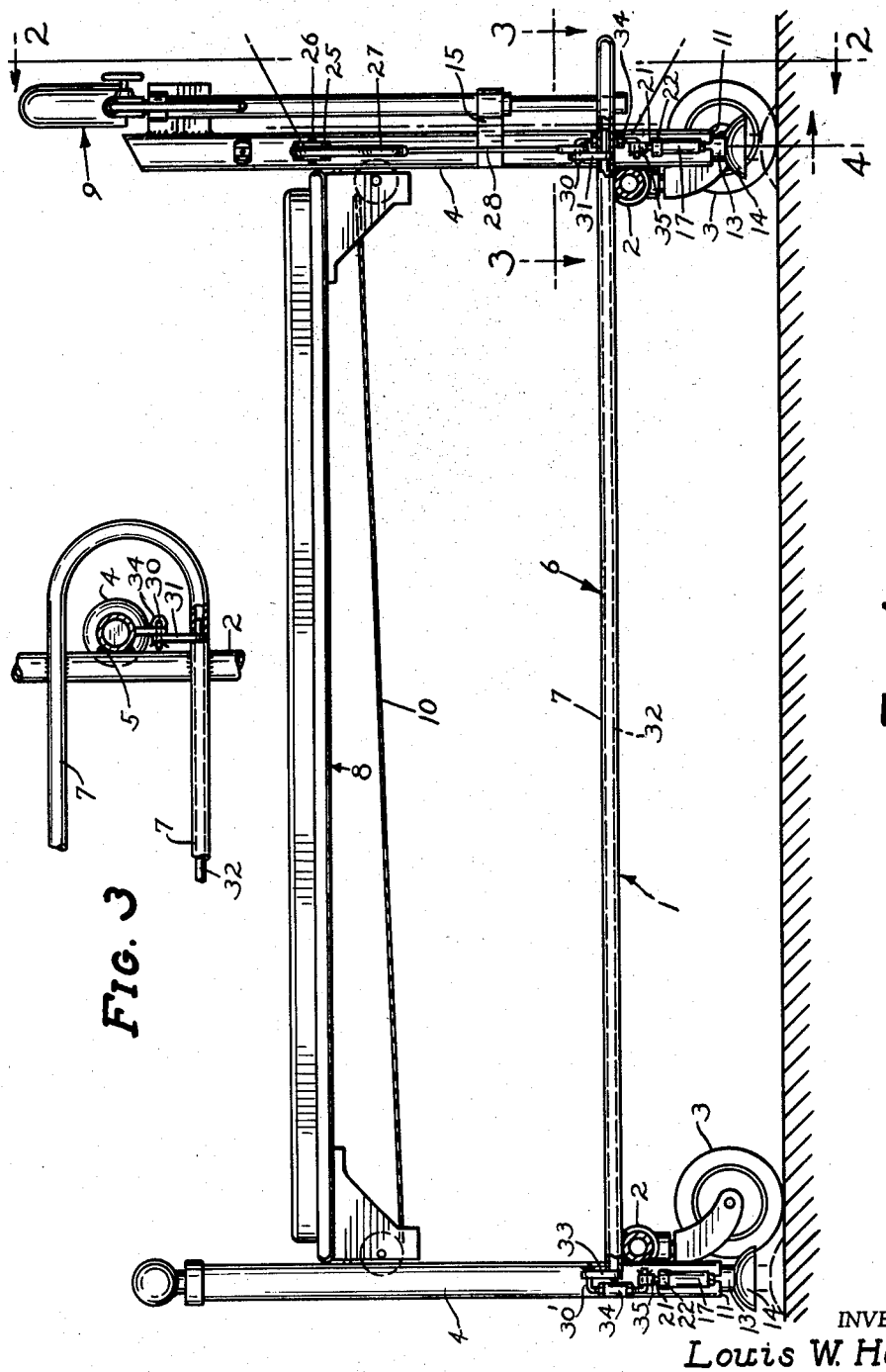


FIG. 1

FIG. 3

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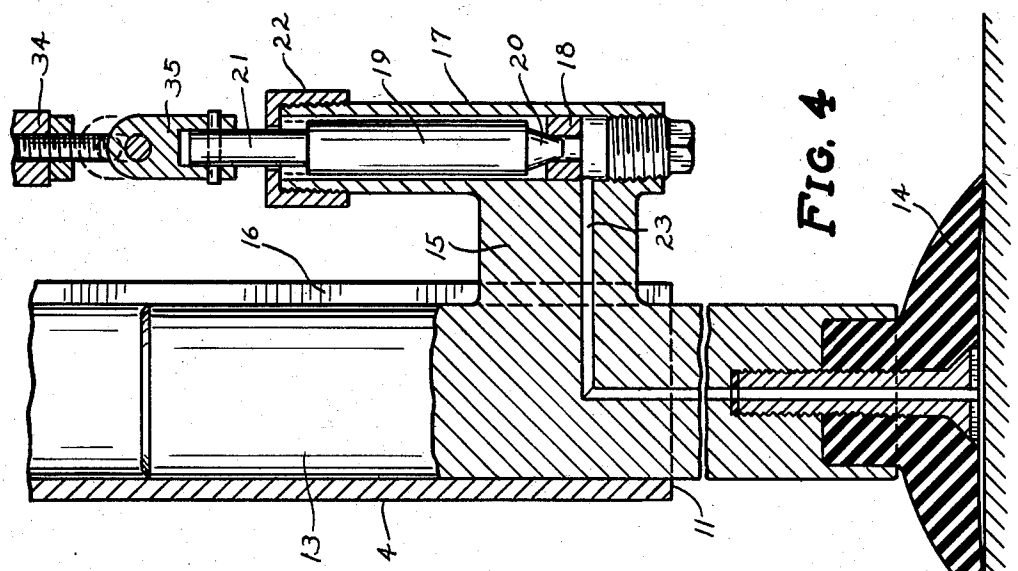


FIG. 4

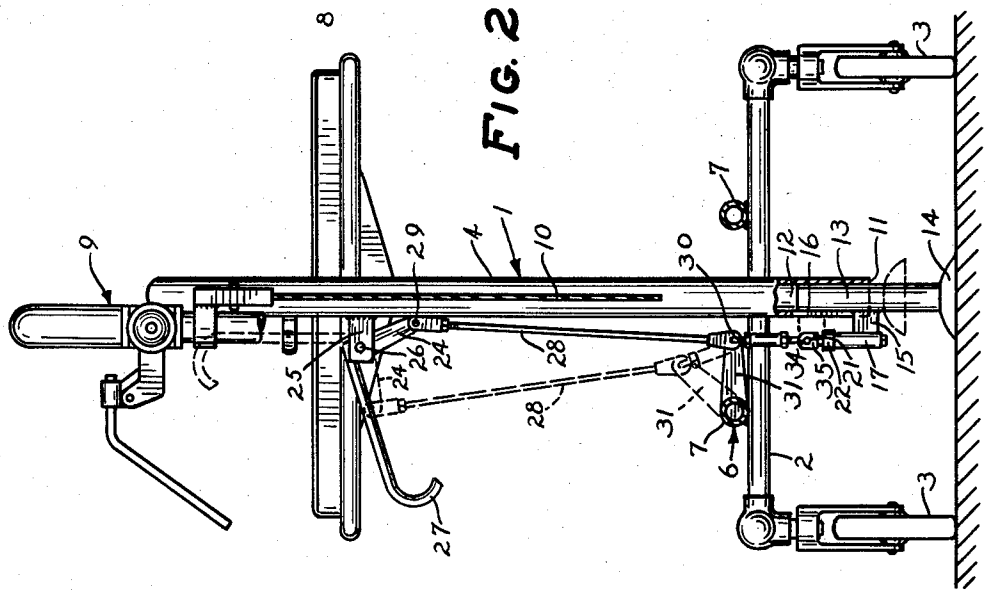


FIG. 2

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2,945,242

PATIENT ELEVATING DEVICE AND STABILIZING MECHANISM THEREFOR

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3 Claims. (Cl. 5—86)

My invention relates generally to wheel-equipped patient elevating devices for use in hospitals or the like, and more particularly to novel means for securely stabilizing or immobilizing such devices when patients are being placed thereon or removed therefrom.

The primary object of my invention is the provision of a device of the class described wherein suction cup-equipped stabilizing legs may be quickly and easily lowered by the operator to cause a gripping engagement between the stabilizing legs and the floor, so as to positively anchor the wheel-equipped patient lifting device when patients are being placed thereon or removed therefrom.

A further object of my invention is the provision of a device of the class described wherein novel means is provided for automatically rendering the suction cups inoperative by introducing air into the interior thereof during initial lifting movements of the stabilizing legs, so as to both facilitate lifting movements and to prevent the lifting up of floor surfaces such as linoleum and tile.

A further object of my invention is the provision of a device of the class described which is relatively inexpensive to produce, which is rugged and durable, and which is highly efficient in its operation.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view in side elevation of my novel structure, some parts being broken away and some parts shown in section;

Fig. 2 is a view partly in end elevation and partly in section as seen from the line 2—2 of Fig. 1, some parts being broken away;

Fig. 3 is an enlarged fragmentary view taken on the line 3—3 of Fig. 1, some parts being omitted; and

Fig. 4 is an enlarged fragmentary view in section taken on the line 4—4 of Fig. 1.

Referring with greater particularity to the drawings, the numeral 1 indicates in its entirety a mobile frame including longitudinally spaced transverse end frame members 2 having caster wheels 3 on opposite ends thereof. The frame 1 also includes upstanding supporting posts 4 each one of which is welded or otherwise rigidly secured as at 5 to the intermediate portion of one of said transverse end frame members 2, and a longitudinally extended frame member 6 which, preferably and as shown particularly in Figs. 2 and 3, is a tubular U-shaped member having spaced parallel side portions 7 which are welded or otherwise rigidly secured to the transverse end frame members 2 on opposite sides of and in spaced relation to the supporting posts 4.

A generally rectangular patient supporting pallet or bed 8 extends between the supporting posts 4 and is mounted for raising and lowering movements with respect thereto by means which includes a handle-equipped hydraulic jack, identified in its entirety by the numeral 9, and a flexible cable 10. However, inasmuch as the pallet

lifting mechanism forms no part of the claimed invention, no further detailed description thereof will be given.

Preferably and as shown, the supporting posts 4 are tubular, the open lower ends 11 thereof being vertically spaced from the floor and defining recesses 12. Mounted and guided in the downwardly opening recesses 12 for vertical extending and retracting movements are stabilizing legs 13, which at their lower ends are provided with rubber suction cups 14. The legs 13 are formed to provide laterally projecting web portions 15 which project outwardly through vertically extended slots 16 in the lower end portions of the supporting posts 4. As shown particularly in Fig. 4, the outer ends of the web portions 15 terminate in valve housings 17, the lower end portions of which define annular valve seats 18. Mounted for limited vertical movements within the valve housings 17 are valve elements 19, the tapered lower ends 20 of which have sealing engagement with the annular seats 18 in their lowermost positions. However, raising of the valve elements 19 by upward forces exerted thereon through connecting rods 21, which project loosely through caps 22, permits air to enter into the interior of the rubber suction cups 14 by way of the passageway 23, thereby rendering same inoperative.

A toggle link 24 is pivotally secured to one of the supporting posts 4 through the medium of a laterally projecting anchoring bracket 25, as indicated at 26. The toggle link 24 is provided with a handle 27. A cooperating toggle link 28 is pivotally secured as at 29 to the projected end of the toggle link 24 and is pivotally secured at its lower end to an angular pin 30 carried by and projecting laterally outwardly from the extended end of an arm 31 rigidly carried by and projecting laterally outwardly from a longitudinally extending rock shaft 32. As shown, the rock shaft 32 is journaled for rotation in one of the tubular side portions 7 of the longitudinal frame member 6. At its opposite end, the rock shaft 32 has an arm 33 which projects therefrom in alignment with the arm 31. Pivotally secured to the extended end of arm 33 is an angular pin 30'. Interposed between the angular pins 30, 30' respectively and the upper end portions of the connecting rods 21 are longitudinally adjustable links, identified by the numeral 34, and which have pivotal connections with said connecting rods 21, as indicated at 35.

When it is desired to securely stabilize or immobilize my patient elevating device above described, it is but necessary for the operator to push downward upon the handle 27 to cause the toggle links 24, 28 to pass beyond dead center position to a point where the pivoted ends thereof engage the supporting post 4, as indicated by full lines in Fig. 2. As there shown, this will cause the extending movements to be imparted directly to the adjacent stabilizing leg 13 and cause the rubber suction cup 14 associated therewith to engage the floor, said cup being locked in this operational position with the valve element 19 associated therewith in engagement with the seat 18. Obviously, simultaneous identical movements are indirectly imparted to the other stabilizing leg 13 through the medium of the arms 31, 33 and the rock shaft 32. The adjustable links 34 are provided for the purpose of assuring synchronous movements of the connecting rods 21.

On the other hand, when it is desired to move the above described mechanism, the operator merely raises the handle 27, whereby to cause handle 27 and the parts associated therewith to assume the dotted line position of Fig. 2. It will be observed that, in view of the fact that the valve elements 19 are operatively coupled to the mechanism for retracting or raising the stabilizing legs 13, the initial raising movements of the toggle link 28, arms 31, 33, rock shaft 32 and links 34 will cause unseating of the valve elements 19 from their cooperat-

ing valve seats 18, consequently allowing air to enter into the interior of the suction cups 14 through the passages 23—thus rendering said suction cups inoperative and facilitating the retracting of the stabilizing legs 13 to their dotted line inoperative positions of Fig. 2.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects and while I have shown a preferred embodiment thereof, I wish it to be specifically understood that same is capable of modification without departure from the scope and spirit of the appended claims.

What I claim is:

1. In a device of the class described, a frame including a pair of longitudinally spaced transverse frame members having wheels at their opposite ends, a pair of supporting posts one each secured to the intermediate portion of said transverse frame members, and a longitudinally extended frame member connecting said transverse members in laterally spaced relation to said posts, a patient supporting pallet extending between said posts and mounted for raising and lowering movements with respect thereto, means for imparting raising and lowering movements to said pallet, said posts terminating at their lower ends in upwardly spaced relationship to the ground and there defining downwardly opening recesses, stabilizer legs mounted in said recesses for extending and retracting movements, suction cup elements formed from yieldable rubber-like material on the lower ends of said legs, means for raising and lowering said legs, and valve means for admitting air to the interior of said cups to render same inoperative, said valve means being operatively and integrally coupled to said leg raising and lowering means and responsive to initial raising movements thereof to admit air to said cups.

2. The structure defined in claim 1 in which said leg raising and lowering means includes a pair of cooperating toggle links one of which is operatively connected to one of said posts and the other of which is operatively coupled to one of said legs and to said air admitting means, said toggle links being movable beyond a dead center relationship during leg lowering movements to releasably lock said leg in its extended position, a rock shaft carried by said longitudinal frame member, and crank arms carried by opposite end portions of said rock shaft and operatively coupled one each to an adjacent one of said legs.

3. An improved stabilizing mechanism for patient elevating devices of the type which include a frame, a pair of supporting posts secured to said frame, a patient supporting pallet mounted between said posts for raising and lowering movements with respect thereto, and means for imparting raising and lowering movements to the pallet, said improved stabilizing mechanism comprising stabilizer legs mounted for extending and retracting movements within downwardly opening recesses defined by the lower ends of said posts which terminate in upwardly spaced relationship to the ground, suction cup elements formed from yieldable rubber-like material on the lower ends of said legs, and means for raising and lowering said legs including integrally coupled means for admitting air into the interior of said cups upon initial raising movements of said leg raising and lowering means.

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